

FRON bn, LLC (Frontier Solar)
Second Supplemental Response to Siting Board Staff's First Request for Information
Case No. 2023-00360

Request No. 34:

Provide any historic or archeologic studies that have been planned or completed for the project site.

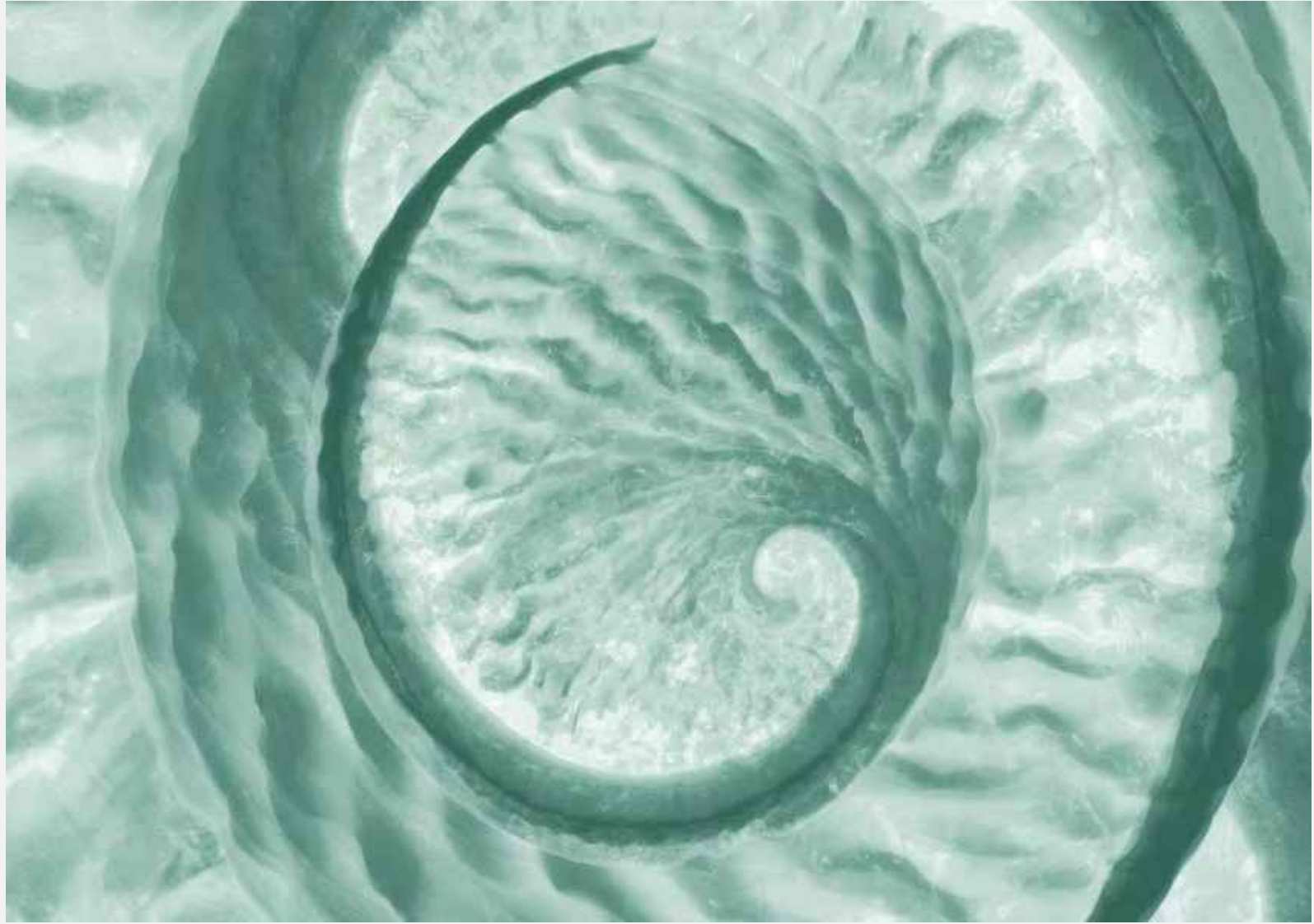
Response No. 34:

Applicant is in the process of evaluating potentially responsive documents to this request. A supplement to this response shall be provided within two weeks.

Supplemental Response:

Please find the Applicant's redacted Critical Issues Analysis (CIA) attached. A copy of the unredacted portions of the CIA have been provided to the Siting Board under seal.

Responding Witness: Michael Tincher



Frontier Solar Project Critical Issues Analysis

Marion and Washington Counties, Kentucky

August 4, 2022

Document details	The details entered below are automatically shown on the cover and the main page footer. PLEASE NOTE: This table must NOT be removed from this document.
Document title	Frontier Solar Project Critical Issues Analysis
Document subtitle	Marion and Washington Counties, Kentucky
Project No.	0650014
Date	August 4, 2022
Version	2.0
Author	Michael Tincher
Client Name	BrightNight LLC

Document history

Version	Revision	Author	Reviewed by	ERM approval to issue		Comments
				Name	Date	
Draft	00	Michael Tincher	Tara Low	Chris Wu	06.03.2022	Text
Draft	01	Michael Tincher	Tara Low	Chris Wu	06.30.2022	Text

CONTENTS

1. INTRODUCTION 2

2. SITE LOCATION 2

3. NATURAL AND CULTURAL RESOURCES AND ASSOCIATED PERMITTING AND CONSULTATIONS 3

3.1 Special Status Species 3

3.1.1 Federally Threatened and Endangered Species 5

3.1.2 State Sensitive Species 6

3.2 Water Resources 7

3.2.1 Floodplains 7

3.2.2 Wetlands and Waterbodies 7

3.2.3 Clean Water Act 7

3.3 Cultural Resources 8

3.4 Environmentally Impaired Lands 18

3.5 Protected Areas and Lands 18

3.6 Recreational Resources 18

3.7 Natural Resources 18

3.8 Commercial Resources 18

4. SOILS AND GEOLOGY 19

4.1 SOIL CLASSIFICATIONS AND RATINGS 24

4.2 Geology 24

5. KENTUCKY PUBLIC SERVICE COMMISSION 25

6. LOCAL LAND USE AND DEVELOPMENT PERMITTING 28

6.1 Marion County 28

6.1.1 Land Use & Zoning 28

6.1.2 Community Acceptance 29

6.2 Washington County 29

6.2.1 Land Use & Zoning 29

6.2.2 Washington County Fiscal Court 29

6.2.3 Community Acceptance 29

7. FEDERAL AVIATION ADMINISTRATION CONSULTATION 30

8. PERMITTING WORKPLAN 30

8.1 Initial Action Items (90 days) 30

8.2 Mid-Term Action Items (3 – 6 months) 31

8.3 Long-Term Action Items (6 – 18 months) 31

FIGURES

APPENDIX A PERMITTING MATRIX
APPENDIX B THREATENED AND ENDANGERED SPECIES LISTS
APPENDIX C USFWS BAT MITIGATION TABLE
APPENDIX D LOCAL PLANNING AND PERMITTING
APPENDIX E FEDERAL AVIATION ADMINISTRATION NOTICE CRITERIA TOOL

List of Tables

Table 1: State and Federal Listed Species Known to Occur in Marion and Washington Counties, Kentucky..... 3
Table 2: Previous Cultural Resources Surveys within the Project Site and One-Mile Buffer 8
Table 3: Archaeological Sites within the Project Site..... 9
Table 4: Known Cemeteries within the One-Mile Buffer 9
Table 5: National Register Historic Districts within the One-Mile Buffer 10
Table 6: Architectural Resources within the Project Site and One-Mile Buffer..... 10
Table 7: USDA NRCS Soils within the Frontier Solar Site, Marion and Washington Counties, Kentucky . 19

List of Figures

Figure 1: Project Location Map
Figure 2: Topographic Map
Figure 3: FEMA Flood Hazard Areas Map
Figure 4: Wetlands and Waters Map
Figure 5: Cultural Resources Map
Figure 6: Protected Areas Map
Figure 7: National Land Cover Map
Figure 8: Soils Map
Figure 9: Aviation Map

EXECUTIVE SUMMARY

BrightNight, LLC (BrightNight) is considering the development of the Frontier Solar (FRON bn, LLC) photovoltaic solar project (Project). The area being considered for development of the Project is approximately 9,192 acres of land located in Marion and Washington Counties, Kentucky (Site). While the parcel evaluated exceeds 9,000 acres, the land to be developed will be approximately 713 acres. A review of potential constraints indicates the following subject matters should be carefully considered when determining if the Site is suitable for development:

- Consultation with the USFWS will be necessary for the clearing of forested habitat.
- Numerous stream channels and potential wetlands are located throughout the Site and may require permitting or coordination at the federal and/or state level.
- Six previously identified archaeological sites are located within the Project. Two sites have been previously evaluated for National Register of Historic Places (NRHP) and determined ineligible. The other four sites have not been evaluated.
- Approximately 32.3% of the Project is within “all areas are prime farmland” and 31.4% is within “farmland of statewide importance.”
- Part of the Project is within Lebanon City’s three-mile buffer within Marion County. Portions of the project within this buffer will require a Conditional Use Permit through Lebanon City Board of Adjustments.
- Several permits will be required from the county (e.g. building and access permits) and a stormwater construction permit is required from the state.

1. INTRODUCTION

BrightNight, LLC (BrightNight) is considering the development of the Frontier Solar (FRON bn, LLC) photovoltaic solar project (Project). The area being considered for development of the Project is approximately 9,192 acres of land located in Marion and Washington Counties, Kentucky (Site)(Figure 1 – Project Location Map). BrightNight retained Environmental Resources Management, Inc. (ERM) to complete a Critical Issues Analysis (CIA) to identify regulated resources and assess potential development constraints on and around the proposed Site. This report presents the results of the analysis and includes a description of baseline Site conditions, potential environmental constraints, and permitting and regulatory requirements. These results are informed by desktop analyses only. The report focuses on the Site where the solar facility is proposed and does not specifically address the development constraints or permitting associated with the transmission line. Development constraints or permitting associated with the transmission line are not likely to vary from the those of the solar facility.

ERM compiled an environmental permitting matrix for the proposed project (**Appendix A**) summarizing federal, state, and local permits or compliance that will likely be required to construct and operate a solar and wind facility at the proposed Site.¹ A summary of zoning, regulatory, and permitting requirements is presented below. Permit applications and informative websites are linked throughout this document and in the Permit Matrix in **Appendix A**.

A summary of significant findings from this report are listed below:

- Consultation with the USFWS will be necessary for the clearing of forested habitat.
- Numerous stream channels and potential wetlands are located throughout the Site and may require permitting or coordination at the federal and/or state level.
- Six previously identified archaeological sites are located within the Project. Two sites have been previously evaluated for National Register of Historic Places (NRHP) and determined ineligible. The other four sites have not been evaluated.
- Approximately 32.3% of the Project is within “all areas are prime farmland” and 31.4% is within “farmland of statewide importance.”
- Part of the Project is within Lebanon City’s three-mile buffer within Marion County. Portions of the project within this buffer will require a Conditional Use Permit through Lebanon City Board of Adjustments.
- Several permits will be required from the county (e.g. building and access permits) and a stormwater construction permit is required from the state.

2. SITE LOCATION

The Site is located in the north central portion of Marion County and south central part of Washington County (**Figure 1 – Project Location Map**). The Site consists of approximately 9,192 acres on private land across numerous parcels. Topography on the Site is gentle to moderately sloping, with elevation ranging from 730 feet to 870 feet above mean sea level and several stream valleys present (**Figure 2 – Topographic Map**). Aerial imagery suggests the land is used mainly for agricultural practices.

¹ This document focuses solely on the environmental review and associated local, state, and federal permitting pertaining to development, and does not describe the civil or electrical engineering, energy service contracts or power purchase agreements, interconnect studies, development incentives, acquisition of property rights, surveying or geotechnical surveys, tax incentives, detailed state renewable energy portfolio standards, site selection, or solar resource analysis.

3. NATURAL AND CULTURAL RESOURCES AND ASSOCIATED PERMITTING AND CONSULTATIONS

3.1 Special Status Species

ERM consulted publicly available resources to determine whether federal and state special-status species and/or their associated habitats occurred within the Project, and if they have the potential to be impacted by the proposed Project. On May 27, 2022, ERM accessed the USFWS' Information for Planning and Consultation (IPaC) tool, which provides a list of federally listed species that may occur in the proposed Project's location or may be affected by development of the proposed Project (**Appendix B**). ERM also reviewed data available from the Kentucky Department of Fish and Wildlife Resources (KDFWR), which details species of concern for Marion and Washington counties (**Appendix B**). **Table 1** presents state and federally listed species, their preferred habitat, and the potential for occurrence on the Site based on the desktop assessment of potentially suitable habitat.

A field habitat assessment is recommended prior to financial investment decision to confirm if suitable habitat is present within the Site, and if any species-specific surveys may be required. Federal threatened or endangered species are protected under the Endangered Species Act of 1973. State threatened or endangered species are not specifically protected under a regulation, law, or policy in the state of Kentucky.

Table 1: State and Federal Listed Species Known to Occur in Marion and Washington Counties, Kentucky

Taxonomic Group ^b	Species	Status ^b	Preferred Habitat	Potential for Occurrence ^b	Recommendations
Molluscs	Elktoe <i>Alasmodonta marginata</i>	ST	Occurs in large to medium sized streams, however is more typical of smaller streams in swift currents.	Possible	No action recommended
	Clubshell <i>Pleurboema clava</i>	FE	Small streams to large rivers, islands in clean, coarse sand where cobble mixes with the current.	Possible	Conduct Habitat Assessment
	Fanshell <i>Cyprogenia stegaria</i>	FE	Medium-sized to large streams. Stable substrates of sand, gravel, and cobble.	Unlikely	Conduct Habitat Assessment
	Orangefoot pimpleback <i>Plethobasus cooperianus</i>	FE	Main-channel habitats of large rivers in sand and gravel substrates with flowing water.	Unlikely	Conduct Habitat Assessment
	Pink mucket <i>Lampsilis abrupta</i>	FE	Main-channel habitats of medium-sized to large streams in gravel and sand substrates.	Unlikely	Conduct Habitat Assessment
	Rabbitsfoot <i>Quadrula cylindrical cylindrical</i>	FT	Medium-sized to large streams, in shallow water areas along the bank.	Unlikely	Conduct Habitat Assessment

Taxonomic Group ^b	Species	Status ^b	Preferred Habitat	Potential for Occurrence ^b	Recommendations
	Ring pink <i>Ovobaria retusa</i>	FE	Main-channel habitats of medium-sized to large streams in gravel and sandy substrates.	Unlikely	Conduct Habitat Assessment
	Snuffbox <i>Epioblasma triquetra</i>	SE, FE	Riffles of small and medium creeks, in large rivers, and in wave-washed shores of lakes.	Unlikely	Conduct Habitat Assessment
	Pocketbook <i>Lampsilis ovata</i>	SE	Impoundment habitats as well as free-flowing, shallow rivers.	Unlikely	No action recommended
	Little spectaclecase <i>Leaunio lienosus aquilonius</i>	ST	Small creeks to medium-sized rivers, usually along the banks in slower currents.	Possible	No action recommended
	Round hickorynut <i>Obovaria subrotunda</i>	ST	Medium-sized to large streams and rivers in sand and gravel areas with moderate flow.	Possible	No action recommended
	Salamander mussel <i>Simpsonaias ambigua</i>	ST	Sand or silt under large, flat stones in areas of a swift current in medium to large rivers and lakes.	Unlikely	No action recommended
	Elusive clubtail <i>Stylurus notatus</i>	SE	Large, clear rivers with moderate current and gravel or sandy benthos.	Unlikely	No action recommended
Mammals	Gray bat <i>Myotis grisescens</i>	FE, ST	Caves with deep vertical shafts that provide a cold air trap during winter and caves with domed ceilings that trap warm air during summer.	Unlikely	No action recommended due to species being a cave roosting bat - suitable habitat (i.e., caves) not present within Project; may occur as a transient species during foraging.
	Northern long-eared bat <i>Myotis septentrionalis</i>	FT, SE	Large caves and abandoned mines. Roosts in small crevices and cracks in walls and ceilings.	Possible	Conduct Habitat Assessment TOYR may apply.
	Indiana bat <i>Myotis sodalis</i>	FE	Caves located in karst areas of the east-central United States. Forest blocks and woodlots, as well as riparian	Possible	Conduct Habitat Assessment TOYR may apply.

Taxonomic Group ^b	Species	Status ^b	Preferred Habitat	Potential for Occurrence ^b	Recommendations
			forests and other wooded corridors.		
	Eastern pipistrelle (Tricolored bat) <i>Perimyotis subflavus</i>	ST	Forested landscapes along waterways, in riparian areas.	Possible	No action recommended
Insects	Monarch Butterfly <i>Danaus plexippus</i>	C	Breeding exclusively occurs on patches of milkweed; otherwise may occupy old fields and mixed woodland habitats.	Possible	No action recommended
Birds	Short-eared owl <i>Asio flammeus</i>	SE	Open land with low vegetation, fresh and saltwater marshes, old fields, meadows, savannas, open woodland	Possible	No action recommended
	Brown creeper <i>Certhia Americana</i>	ST	Forest, woodlands, forested floodplains, and swamps.	Possible	No action recommended
	Peregrine falcon <i>Falco peregrinus</i>	SE	Tundra, moorlands, seacoasts, especially where there are suitable nesting cliffs, mountains, open forested regions	Unlikely	No action recommended
	American coot <i>Fulica Americana</i>	SE	Freshwater lakes, ponds, marshes, and large rivers.	Unlikely	No action recommended
	Bachman's sparrow <i>Peucaea aestivalis</i>	SE	Mature to old growth southern pine woodland subject to frequent growing-season fires.	Unlikely	No action recommended
	Pied-billed grebe <i>Podilymbus podiceps</i>	SE	Ponds, sloughs, and marshes, in marshy inlets and along edges or rivers, lakes, and reservoirs	Unlikely	No action recommended
Reptiles	Southeastern crowned snake <i>Tantilla coronate</i>	ST	Dry and wooded, with an abundance of rocks, logs, or rotting stumps on the surface.	Possible	No action recommended

- a) F = Federal, S = State, T = Threatened, E = Endangered, C = Candidate, TOYR = Time of Year Restrictions
 b) Based on desktop review of Project boundary

3.1.1 Federally Threatened and Endangered Species

The IPaC report generated for the Project (**Appendix B**) identified the federally-threatened northern long-eared bat (NLEB; *Myotis septentrionalis*) and rabbitsfoot (*Quadrula cylindrical cylindrical*); the federally-

endangered gray bat (*Myotis grisescens*), Indiana bat (*Myotis sodalis*), clubshell (*Pleurobema clava*), fanshell (*Cyprogenia stegaria*), orangefoot pimpleback (*Plethobasus cooperianus*), pink mucket (*Lampsilis abrupta*), and ring pink (*Obovaria retusa*); as well as the federal candidate Monarch butterfly (*Danaus plexippus*) as species with potential to occur within or in the vicinity of the Project (**Table 1**). Critical habitats for federally listed species are not present in the Site.

Although it did not appear on the IPaC, the KDFWR lists the potential for the federally endangered snuffbox mussel (*Epioblasma triquetra*) to occur within Marion and Washington counties. Preferred habitat snuffbox includes riffles of small to medium-sized creeks and large rivers.

The clubshell primarily inhabit small creeks to large streams with gravel and sandy substrates. According to the NHD and NWI, there are several streams and open waters within the Project; therefore, there is potential for this species to occur. The remaining mussel species are unlikely to occur due to lack of streams or rivers of sufficient size.

The Project is predominately comprised of pasture land, cultivated crops and forested areas, which may provide suitable summer habitat for the NLEB and Indiana bat. USFWS – Kentucky Field Office requires mitigation for removal of forested habitat. The amount of mitigation is based on the USFWS designated habitat type and time of tree clearing (**Appendix C**). Based on the IPaC, the Site is within USFWS designated “potential” habitat areas. Therefore, mitigation will be required as follows:

- 0.5:1 ratio when tree clearing occurs between October 15 and March 31.
- 1:1 ratio when tree clearing occurs between April 1 and October 14.

USFWS – Kentucky Field Office allows purchasing mitigation credits into their Imperiled Bat Fund on a project by project basis. Cost is approximately \$3,000/acre and subject to change on an annual basis. A habitat assessment report and request will need to be sent to USFWS for their approval.

The gray bat typically roosts in caves year-round. Habitat requirements for roosts are highly specific, as gray bats utilize caves with deep vertical shafts that provide a cold air trap during winter, and caves with domed ceilings that trap warm air during summer. No caves or mine openings were identified during the desktop review, and there is no critical habitat designed for this species. Therefore, the Project is not likely to impact gray bats.

The federal candidate monarch butterfly inhabits open meadows containing milkweed. The Project consists of abundant hay and pasture fields, with scattered forested areas. There is no critical habitat designated for this species, however it is possible for the monarch butterfly to occur within the Project because there is potentially suitable habitat on the Site.

3.1.2 State Sensitive Species

According to the KDFWR (**Appendix B**), there are 14 additional state-listed species known or likely to occur within Marion or Washington Counties. State-threatened species included: elktoe (*Alasmidonta marginata*), little spectaclecase (*Leaunio lienosus aquilonius*), round hickorynut (*Obovaria subrotunda*), salamander mussel (*Simpsonaias ambigua*), eastern pipistrelle (*Perimyotis subflavus*), brown creeper (*Certhia americana*), and southeastern crowned snake (*Tantilla coronate*). State-endangered species included: pocketbook (*Lampsilis ovata*), elusive clubtail (*Stylurus notatus*), short-eared owl (*Asio flammeus*), peregrine falcon (*Falco peregrinus*), American coot (*Fulica Americana*), Bachman’s sparrow (*Peucaea aestivalis*), and pied-billed grebe (*Podilymbus podiceps*). The following paragraphs describe specific habitat and likelihood listed species to occur within the Project area.

The elktoe, little spectaclecase, and round hickorynut mussels are commonly found in small-sized to large streams, typically with slow to moderate currents. It is possible for these species to occur on the Site as there are several streams and open waters within the Project.

The eastern pipistrelle, also known as the tri-colored bat, inhabits forested landscapes along waterways and in riparian areas. This habitat is present within the Project; therefore, it is possible for it to occur on Site.

The short-eared owl inhabits open land with low vegetation and open woodland areas. The brown creeper is often found in forested floodplains and woodlands. It is possible for these species to occur on Site because there are scattered forested areas and several streams and open waters within the Project. The peregrine falcon often nests on cliffs and mountains, while the Bachman's sparrow inhabits mature to old growth pine forests. The Site is not characterized by mountains or old growth forests subject to frequent fires, therefore it is unlikely for these species to occur on Site.

The southeastern crowned snake inhabits dry and wooded areas with an abundance of rocks. There are scattered forests within the Project, therefore it is possible for this species to occur on Site.

3.2 Water Resources

The proposed Project is located in the Lower Cartwright Creek Watershed (Hydrologic Unit Code [HUC] 051401030302) and the Upper Cartwright Creek Watershed (HUC 051401030301) and is characterized by gently rolling topography.

3.2.1 Floodplains

ERM reviewed data available from the Federal Emergency Management Agency's (FEMA) National Flood Hazard Layer (NFHL) to determine the presence of floodplains or special flood hazard areas. Approximately 1,124 acres of the Project are located within Zone A (**Figure 3 – FEMA Flood Hazard Areas Map**), which has a one percent annual chance of flood hazard.

3.2.2 Wetlands and Waterbodies

Data available from the National Hydrography Dataset (NHD) and the National Wetland Inventory (NWI) were reviewed to determine broad-scale information (e.g., likely presence, location, size, and type) regarding wetlands within the Project. The USFWS generates NWI data based on aerial photograph interpretation and may contain inaccuracies due to changes in land use since the maps were developed or errors derived from remote sensing methods, and therefore, there is potential for additional surface water features to occur. A review of the NWI identified 2.74 acres of palustrine emergent (PEM) wetlands, 0.67 acres of palustrine forested (PFO) wetlands, 88.78 acres of freshwater pond (PUB), 31.38 acres of lake (L1UB), and 101.83 acres of riverine (R4SBC and R5UBH) wetlands within the Project. According to the NHD, there are approximately 185,426 linear feet of streams on Site (**Figure 4 – Wetlands and Waters Map**).

3.2.3 Clean Water Act

If the Project will result in impacts to regulated wetlands or waters, a Clean Water Act (CWA) Section 404 permit and Section 401 Water Quality Certification (WQC) will be required. Based on the current waters of the U.S. (WOTUS) regulations, which follow the 2020 Navigable Waters Protection Rule, intermittent and perennial streams are typically jurisdictional, while ephemeral streams are not. The Site may contain a combination of perennial, intermittent, and ephemeral streams. An Approved Jurisdictional Determination (AJD) from the U.S. Army Corps of Engineers (USACE) may be necessary to determine which features are regulated/jurisdictional and would require permitting for impacts. The primary benefit of an AJD would be

verifying isolated features that do not exhibit a significant nexus to a traditional navigable water under the pre-2015 WOTUS regulatory definition (i.e., Rapanos Guidance). A field survey of wetlands and waters will help determine the best approach for avoiding and minimizing impacts to WOTUS, and how to permit any potential impacts.

Impacts to jurisdictional features would require a 404 Permit from the USACE (e.g. Nationwide Permit 51, Land-Based Renewable Energy Generation Facilities). A Section 401 WQC through the Kentucky Division of Water is automatically issued with the authorization of a Nationwide Permit by USACE. A separate Section 401 WQC would be required if an Individual Permit were required through USACE.

3.3 Cultural Resources

ERM conducted a desktop review of cultural resources utilizing data obtained from the Kentucky Office of State Archaeology (OSA) and the Kentucky Heritage Council (KHC) / State Historic Preservation Office (SHPO). The review encompassed the approximate Project boundary and a one-mile buffer. ERM conducted the review to determine the number, nature, and location of known archaeological and architectural sites within that area.

According to OSA, three cultural resource surveys have been conducted within the Project and two cultural resource surveys have been conducted within the one-mile buffer (**Table 2, Figure 5 – Archaeological Resources Map**).² The surveys conducted within the Project were small water tank and cellular tower surveys and did not identify cultural resources. Additional surveys may be required if the project incurs a federal nexus and triggers Section 106 of the NHPA.

Table 2: Previous Cultural Resources Surveys within the Project Site and One-Mile Buffer

Survey #	Report Title	Date	Within Project Site?
011-015	An Archaeological Survey of the Proposed U.S. 150 Relocation Project and Springfield Bypass, Boyle and Washington Counties, Kentucky	1990	No
078-023	A Phase I Archaeological Survey of a Water Tank Site Associated with the Marion County Water Expansion Project, Marion County, Kentucky	2000	Yes
078-029	An Archaeological Survey of the Proposed Cartwright Creek Cellular Communication Tower Site, Marion County, Kentucky	2007	Yes
115-009	An Archeological Assessment of the Proposed Springfield Industrial Park, Washington County, Kentucky	1995	Yes
115-015	A Phase I Cultural Resource Survey of Alternates 4 and 5 of the Springfield By-Pass, Washington County, Kentucky	1996	No

There are six previously identified archaeological sites located within the Project and no previously identified sites within the one-mile buffer (**Table 3, Figure 5 – Archaeological Resources Map**). Of the six archaeological sites within the Site, four are prehistoric open habitation sites (15WS18, 15WS33, 15WS37 and 15WS307) and two are unknown sites (15MN322 and 15MN323) with no information regarding their time period or site type. Two of the archaeological sites have been evaluated for the National Register of Historic Places (NRHP) and determined ineligible, including 15MN322 and 15WS18. Agency consultations

² University of Kentucky. 2022. Kentucky Office of State Archaeology. <https://anthropology.as.uky.edu/office-state-archaeology>.

and field surveys could be warranted to satisfy Section 106 of the National Historic Preservation Act (NHPA) if federal permits are required.

Table 3: Archaeological Sites within the Project Site

Site Number	Time Period	Site Type	NRHP Status
15MN322	Unknown	Unknown	Not Eligible
15MN323	Unknown	Unknown	Unevaluated
15WS18	Unknown Prehistoric	Open Habitation	Not Eligible
15WS33	Late Paleo-Indian	Open Habitation	Unevaluated
15WS37	Early Paleo-Indian	Open Habitation	Unevaluated
15WS307	Unknown Prehistoric	Open Habitation	Unevaluated

There are no known cemeteries recorded within the Project; however, there are four known cemeteries located within the one-mile buffer (**Table 4, Figure 5 – Archaeological Resources Map**).³ Although there are no recorded cemeteries within the Project, unmarked rural cemeteries and graves are known to occur throughout Kentucky. If human remains are encountered, stop work immediately and follow the protocols set out in KRS 72.0204.

Table 4: Known Cemeteries within the One-Mile Buffer

Name	Time Period	Status/Condition
Cemetery Hill	1810-present	Active; Maintained
Saint Catharine Cemetery	1826-present	Active; Maintained
Saint Dominics Cemetery	1829-present	Active; Maintained
Saint Rose Cemetery	1793-present	Active; Maintained

According to the Kentucky Heritage Council (2022), there are three National Register Historic Districts within a one-mile buffer (**Table 5**). In addition, there are four architectural resources located within the Project Site and 176 architectural resources located within the one-mile buffer (**Table 6; Figure 5 – Archaeological Resources Map**).⁵ Of the four resources within the Project Site, one is a tenant house (WS1170), one is a bridge (WS137) and two are single dwellings (WS46 and WS722). None of the resources have been evaluated for the National Register except for the Cartwright Creek Bridge (WS137), which has been determined eligible. The Cartwright Creek Bridge was built in the late 19th century and is located in the central portion of the Project Site on Booker Road.⁶ Of the 176 resources within the one-mile buffer, 16 are listed on the National Register, 24 are contributing resources to NR listed historic districts, 12 are suggested NR group resources, two meet NR criteria, one is eligible, and 120 have not been assessed. The 16 NR listed resources include six single dwellings, five secular structures, three historic districts, one courthouse, one armory, and one mill. All of the NR listed resources are located to the north and northeast of the Project Site, and are concentrated in the town of Springfield.

³ Find a Grave. 2022. Find a Grave. <https://www.findagrave.com/>

⁴ Kentucky Statutes. 1982. (KRS 72.020) Notification of Legal Authorities when Human Remains Are Discovered. <https://anthropology.as.uky.edu/sites/default/files/Kentucky%20Laws%20Pertaining%20to%20Archaeology.pdf>.

⁵ Kentucky Heritage Council (KHC). 2022. Data received July 29, 2022.

⁶ National Park Service (NPS). 2022. National Register of Historic Places. <https://www.nps.gov/subjects/nationalregister/index.htm>.

According to historic aerials, USGS topographic maps, there are unrecorded architectural resources within the Project Site that are 50 years or older⁷. This suggests that no systematic architectural survey has been conducted in the area.

Table 5: National Register Historic Districts within the One-Mile Buffer

NR Number	Name	NRHP
11000803	Springfield Main Street Historic District	Listed in 2011
88003434	Springfield Historic Commercial District	Listed
88003435	Walnut Street Historic District	Listed in 1989

Table 6: Architectural Resources within the Project Site and One-Mile Buffer

Number	Name	Date	Description	NRHP Status	Within Project Site?
MN12	Joseph Spalding House	1825-1849	Single Dwelling	Undetermined	No
MN14	Evergreen Bend	1825-1849	Single Dwelling	Undetermined	No
MN90	House	1825-1849	Single Dwelling	Undetermined	No
WSS1	William McChord House	1900-1924	Single Dwelling	Listed (NR #78001412)	No
WSS2	Washington County Courthouse	1800-1824	Courthouse	Listed (NR #77000660)	No
WSS2.1	World War I Memorial	1900-1924	Memorial	Undetermined	No
WSS2.2	Lincoln Bond Memorial	Unknown	Memorial	Undetermined	No
WSS3	St. Dominic's Catholic Church	1875-1899	Church	Listed (NR #88003388)	No
WSS3.1	Saint Dominic Church Rectory	1900-1924	Rectory	Undetermined	No
WSS3.2	Garage	1900-1924	Garage	Undetermined	No
WSS3.3	St. Dominic Church School	1925-1949	School	Undetermined	No
WSS10	Wall Building	1875-1899	Unknown	Contributing to NR District	No
WSS11	House	1925-1949	Single Dwelling	Undetermined	No

⁷ NETR Online. 2022. Historic Aerials. <https://www.historicaerials.com/>.

Number	Name	Date	Description	NRHP Status	Within Project Site?
WSS12	Opera House	1900-1924	Opera House	Contributing to NR District	No
WSS13	Springfield Christian Church	1875-1899	Church	Undetermined	No
WSS16	House	1875-1899	Single Dwelling	Undetermined	No
WSS17	S. F. Turner & Co (Steam Flouring & Grist Mill)	1875-1899	Grist Mill	Listed (NR #88003390)	No
WSS18	House	1875-1899	Single Dwelling	Undetermined	No
WSS21	Barber/Rice House	1875-1899	Single Dwelling	Contributing to NR District	No
WSS22	Robertson & McCord Building	1875-1899	Unknown	Contributing to NR District	No
WSS23	G. L. Haydon Building	1875-1899	Unknown	Contributing to NR District	No
WSS25	Methodist Episcopal Church South	1900-1924	Church	Undetermined	No
WSS27	Peoples Deposit Bank/Majestic Theatre	1875-1899	Bank/Theatre	Contributing to NR District	No
WSS28	William Blackwell Home	1825-1849	Single Dwelling	Listed (NR #88003391)	No
WSS30	McClure & Mayes Building	1900-1924	Unknown	Contributing to NR District	No
WSS31	House	1875-1899	Single Dwelling	Listed (No NR # Found)	No
WSS32	William H Hayes Law Office	1850-1874	Office	Undetermined	No
WSS33	Springfield Baptist Church	1900-1924	Church	Listed (NR #88003394)	No
WSS35	St. Catherine of Sienna Convent & Academy	1900-1924	Convent/School	Listed (NR #88003395)	No
WSS36	Washington Bank Building	1850-1874	Bank	Contributing to NR District	No
WSS37	US Post Office – Springfield	1925-1949	Post Office	Undetermined	No
WSS38	Springfield Masonic Lodge Building	1900-1924	Masonic Lodge	Contributing to NR District	No

Number	Name	Date	Description	NRHP Status	Within Project Site?
WSS39	House with Shop	1875-1899	Single Dwelling/Shop	Contributing to NR District	No
WSS40	E. H. Campbell Building	1925-1949	Unknown	Contributing to NR District	No
WSS41	Commercial Building	1850-1874	Commercial Building	Contributing to NR District	No
WSS42	La Burns Building	1900-1924	Unknown	Contributing to NR District	No
WSS44	Louisville Store	1875-1899	Store	Contributing to NR District	No
WSS46	Commercial Building	1875-1899	Commercial Building	Contributing to NR District	No
WSS47	Commercial Building	1875-1899	Commercial Building	Contributing to NR District	No
WSS48	Progress Printing Office	1875-1899	Office	Contributing to NR District	No
WSS49	Pat Grisby Law Office	1875-1899	Office	Contributing to NR District	No
WSS50	Haydon & Robertson Drugs	1850-1874	Drug Store	Contributing to NR District	No
WSS51	McCord & Robertson Store	1850-1874	Store	Contributing to NR District	No
WSS52	Meeks/Craycroft Saddler's Shop	1875-1899	Store	Contributing to NR District	No
WSS53	Commercial Building	1900-1924	Unknown	Undetermined	No
WSS54	Cunningham's Dry Goods	1875-1899	Store	Contributing to NR District	No
WSS55	Leo Haydon Drugs	1875-1899	Drug Store	Contributing to NR District	No
WSS56	Commercial Building	1800-1824	Commercial Building	Contributing to NR District	No
WSS57	George Dudley Robertson Home	1875-1899	Single Dwelling	Undetermined	No
WSS61	Old Ford Garage	1900-1924	Garage	Contributing to NR District	No
WSS94	Kentucky National Guard Armory	1925-1949	Armory	Listed (No NR # Found)	No

Number	Name	Date	Description	NRHP Status	Within Project Site?
WSS95	House	1900-1924	Single Dwelling	Undetermined	No
WSS96	House	1900-1924	Single Dwelling	Undetermined	No
WSS97	House	1900-1924	Single Dwelling	Undetermined	No
WSS106	Clerk's Office	1875-1899	Office	Suggested NR Group	No
WSS107	Polin Building	1950-1974	Unknown	Suggested NR Group	No
WSS108	House/Government Office	1900-1924	Single Dwelling/Office	Suggested NR Group	No
WSS109	Empty Lot	Unknown	Lot	Undetermined	No
WSS111	Springfield State Bank	1950-1974	Bank	Undetermined	No
WSS112	Commercial Building	1875-1899	Commercial Building	Undetermined	No
WSS113	Simms Shell Station	1950-1974	Gas Station	Undetermined	No
WSS114	Parking Lot	Unknown	Lot	Undetermined	No
WSS115	DX Gas Station	1950-1974	Gas Station	Undetermined	No
WSS115.1	Garage	1925-1949	Garage	Undetermined	No
WSS149	Kelly's Drugs	1950-1974	Drug Store	Undetermined	No
WSS150	Cecconi's Restaurant	1875-1899	Restaurant	Undetermined	No
WSS151	Commercial Building	1900-1924	Commercial Building	Undetermined	No
WSS152	Joe Maye's Barber Shop	1950-1974	Barber Shop	Undetermined	No
WSS153	Springfield City Hall	1975-2000	City Hall	Undetermined	No
WSS154	Commercial/Residential Building	1925-1949	Commercial/Residential Building	Undetermined	No
WSS155	Commercial Building	1975-2000	Commercial Building	Undetermined	No
WSS156	Commercial Building	1925-1949	Commercial Building	Undetermined	No
WSS157	Gas Station	1975-2000	Gas Station	Undetermined	No
WSS158	Pontiac Garage	1950-1974	Garage	Undetermined	No
WSS159	Commercial Building	1975-2000	Commercial Building	Undetermined	No
WSS160	Millburn Shoe Shop	1950-1974	Commercial/Residential Building	Undetermined	No
WSS161	House	1875-1899	Single Dwelling	Undetermined	No

Number	Name	Date	Description	NRHP Status	Within Project Site?
WSS162	Professional Office Building	1950-1974	Office	Undetermined	No
WSS163	House	1925-1949	Single Dwelling	Undetermined	No
WSS164	Mary Hamilton House	1925-1949	Single Dwelling	Undetermined	No
WSS165	Commercial Building/ Community Center	1900-1924	Commercial Building/ Community Center	Undetermined	No
WSS166	House	1900-1924	Single Dwelling	Undetermined	No
WSS167	Commercial Building/ Auto Repair	1900-1924	Commercial Building/ Garage	Undetermined	No
WSS168	House	1925-1949	Single Dwelling	Undetermined	No
WSS169	Purdom House	1900-1924	Single Dwelling	Undetermined	No
WSS170	House	1875-1899	Single Dwelling	Undetermined	No
WSS171	House	1925-1949	Single Dwelling	Undetermined	No
WSS172	House	1900-1924	Single Dwelling	Undetermined	No
WSS173	House	1900-1924	Single Dwelling	Undetermined	No
WSS174	Frank and Louise Hamilton House	1925-1949	Single Dwelling	Undetermined	No
WSS175	House	1925-1949	Single Dwelling	Undetermined	No
WSS176	Hamilton Barber House	1925-1949	Single Dwelling	Undetermined	No
WSS177	Clell Boblitt House	1925-1949	Single Dwelling	Undetermined	No
WSS178	House	1900-1924	Single Dwelling	Undetermined	No
WSS179	House	1875-1899	Single Dwelling	Undetermined	No
WSS180	Springfield Apartments	1950-1974	Multi-family Dwelling	Undetermined	No
WSS181	House	1900-1924	Single Dwelling	Undetermined	No
WSS182	House	1875-1899	Single Dwelling	Undetermined	No
WSS183	Leon and Delina Simms House	1925-1949	Single Dwelling	Undetermined	No
WSS184	House	1925-1949	Single Dwelling	Undetermined	No
WSS185	Tom and Kathleen Wheatley House	1925-1949	Single Dwelling	Undetermined	No
WSS186	House	1925-1949	Single Dwelling	Undetermined	No
WSS187	Vacant Lot	Unknown	Lot	Undetermined	No

Number	Name	Date	Description	NRHP Status	Within Project Site?
WSS188	Haydon Coal and Oil	1925-1949	Coal and Oil Plant	Undetermined	No
WSS188.5	Haydon Coal and Oil Tire Retread Building	1925-1949	Tire Retread Building	Undetermined	No
WSS189	Springfield Warehouse	1900-1924	Warehouse	Undetermined	No
WSS190	House	1875-1899	Single Dwelling	Undetermined	No
WSS191	House	1900-1924	Single Dwelling	Undetermined	No
WSS192	House	1950-1974	Single Dwelling	Undetermined	No
WSS193	House	1900-1924	Single Dwelling	Undetermined	No
WSS195	House	1900-1924	Single Dwelling	Undetermined	No
WSS196	Parking Lot	Unknown	Lot	Undetermined	No
WSS197	Mobile Home	1950-1974	Single Dwelling	Undetermined	No
WSS198	Purina Feed Mill	1900-1924	Mill	Undetermined	No
WSS199	Commercial/ Residential Building	1950-1974	Commercial/ Residential Building	Undetermined	No
WSS200	Warehouse	1900-1924	Warehouse	Undetermined	No
WSS201	Duplex	1975-2000	Duplex	Undetermined	No
WSS202	Commercial Building	1925-1949	Commercial Building	Undetermined	No
WSS203	Hatchery/Commercial Building	1925-1949	Hatchery/Commercial Building	Undetermined	No
WSS204	Warehouse	1925-1949	Warehouse	Undetermined	No
WSS205	Commercial/ Residential Building	1950-1974	Commercial/ Residential Building	Suggested NR Group	No
WSS206	County Road Department Garage	1925-1949	Garage	Undetermined	No
WSS207	Residential Building	1925-1949	Residential Building	Undetermined	No
WSS208	Industrial Building	1925-1949	Industrial Building	Undetermined	No
WSS208.1	House	1925-1949	Single Dwelling	Suggested NR Group	No
WSS210	House/ Commercial Building	1925-1949	Single Dwelling/ Commercial Building	Undetermined	No
WSS211	Bridge over Road Run Creek	1950-1974	Bridge	Undetermined	No
WSS212	House	1875-1899	Single Dwelling	Undetermined	No

Number	Name	Date	Description	NRHP Status	Within Project Site?
WSS213	Pinky Thompson's Welding Shop	1925-1949	Welding Shop	Undetermined	No
WSS214	House	1925-1949	Single Dwelling	Undetermined	No
WSS215	Commercial Building	1875-1899	Commercial Building	Suggested NR Group	No
WSS216	Commercial Building	1875-1899	Commercial Building	Suggested N/R Group	No
WSS217	Commercial Building	1925-1949	Commercial Building	Undetermined	No
WSS218	G. L. H. Building	1925-1949	Unknown	Suggested NR Group	No
WSS219	Commercial Building	1925-1949	Commercial Building	Suggested NR Group	No
WSS220	Washington County Senior Center	1975-2000	Senior Center	Undetermined	No
WSS221	Taylor Tire Building	1900-1924	Tire Building	Suggested NR Group	No
WSS222	KY 528 Bridge over Road Run Branch	1900-1924	Bridge	Suggested NR Group	No
WSS224	Commercial/Residential Building	1950-1974	Commercial/Residential Building	Undetermined	No
WSS225	Commercial/Residential Building	1950-1974	Commercial/Residential Building	Undetermined	No
WSS226	Garage Building	1950-1974	Garage	Undetermined	No
WSS227	Culvert over Road Run Creek	1900-1924	Bridge	Undetermined	No
WSS229	Parking Lot	Unknown	Lot	Undetermined	No
WSS230	Vacant Lot	Unknown	Lot	Suggested NR Group	No
WS9	Saint Rose Roman Catholic Church Complex	1850-1874	Church	Listed (NR #78001413)	No
WS30	Walton Manor	Pre 1800	Single Dwelling	Listed (NR #77000659)	No
WS32	Elmwood	1850-1874	Single Dwelling	Listed (NR #77000658)	No
WS42	Cherry Hill House	1850-1874	Single Dwelling	Eligible	No

Number	Name	Date	Description	NRHP Status	Within Project Site?
WS45	Levi J. Smith House	1850-1874	Single Dwelling	Listed (NR #88003411)	No
WS46	J E Oresman House	1875-1899	Single Dwelling	Undetermined	Yes
WS131	Hilary Osborne Home	1875-1899	Single Dwelling	Undetermined	No
WS137	Cartwright Creek Bridge	1875-1899	Bridge	Eligible	Yes
WS139	Basil Mullican Home	1825-1849	Single Dwelling	Undetermined	No
WS143	McMurtry Home	1850-1874	Single Dwelling	Meets NR Criteria	No
WS224	House	1875-1899	Single Dwelling	Undetermined	No
WS226	House	1925-1949	Single Dwelling	Undetermined	No
WS227	House	1875-1899	Single Dwelling	Undetermined	No
WS722	Martha Vize House	1950-1974	Single Dwelling	Undetermined	Yes
WS723	Mary Johnson House	1950-1974	Single Dwelling	Undetermined	No
WS723.1	Meat House	1950-1974	Meat House	Undetermined	No
WS932	St. Rose School	1950-1974	School	Undetermined	No
WS933	Log House	Unknown	Single Dwelling	Undetermined	No
WS934	Cumberland House	1925-1949	Single Dwelling	Undetermined	No
WS935	Double Pen House	1925-1949	Single Dwelling	Undetermined	No
WS936	Double Pen House	1925-1949	Single Dwelling	Undetermined	No
WS939	Ms. Tucker's House	1900-1924	Single Dwelling	Undetermined	No
WS940	Holy Rosary Catholic Church	1925-1949	Church	Meets NR Criteria	No
WS940.1	Religious Education Center	Unknown	Education Center	Undetermined	No
WS940.2	Recreational Area with Concession Buildings	Unknown	Recreational Area	Undetermined	No
WS940.3	Covered Picnic Shelter	Unknown	Shelter	Undetermined	No
WS942	Cumberland House	1900-1924	Single Dwelling	Undetermined	No
WS943	T-Plan House	1900-1924	Single Dwelling	Undetermined	No
WS944	Old Gas Station	1925-1949	Gas Station	Undetermined	No
WS945	Double Pen House	1925-1949	House	Undetermined	No
WS1164	Jodie Smith House	1925-1949	Single Dwelling	Undetermined	No

Number	Name	Date	Description	NRHP Status	Within Project Site?
WS1164.1	Barn	1925-1949	Barn	Undetermined	No
WS1170	Moraja Tenant House	1875-1899	Tenant House	Undetermined	Yes

3.4 Environmentally Impaired Lands

There are no facilities or environmentally impaired lands listed on the U.S. Environmental Protection Agency (EPA) EnviroMapper at the Project Site. Several other facilities reporting to the EPA are located adjacent to the Site, including Showcase Custom Marble, Nally & Haydon Surfacing LLC Springfield Asphalt Plant, and IMI South LLC. According to the Kentucky Geological Survey Oil and Gas Well Search, there are no known oil or gas wells located in the Site.⁸

At the time of this report, a Phase I Environmental Site Assessment (ESA) has not been conducted for the Project. ERM is currently conducting a Phase I ESA in accordance with ASTM standards for this Project within the approximately 713 acres proposed for development.

3.5 Protected Areas and Lands

No protected areas or lands were identified within the Project or a one-mile buffer of the Project (**Figure 6 – Protected Areas Map**).

3.6 Recreational Resources

No trails, scenic byways, or other significant recreational resources are located within the Site. However, the Rosewood Golf and Country Club abuts the southern extent of the Site.

3.7 Natural Resources

No areas known to contain protected species or significant natural heritage features are known to occur within the Project.

3.8 Commercial Resources

The National Land Cover Database (NLCD) characterizes the land within the Project as predominately hay/pasture and cultivated crops, with scattered areas of evergreen and deciduous forest, open water, and open space (**Figure 7 – National Land Cover Map**).⁹

According to the U.S. Department of Agriculture – Natural Resources Conservation Service’s (USDA-NRCS) Web Soil Survey, the majority of the Project is classified as “all areas are prime farmland” (approximately 2,969 acres or 32.3%), “farmland of statewide importance” (2,895 acres or 31.4%), “not prime farmland” (3,034 acres or 33.0%). The remaining portions of the Project are classified as “prime farmland if drained,” “prime farmland if drained and either protected from flooding or not frequently flooded during the growing season,” or “prime farmland if protected from flooding or not frequently flooded during the growing season.”¹⁰

⁸ Kentucky Geological Survey Oil and Gas Wells Search. <https://kgs.uky.edu/kygeode/services/oilgas/>. Accessed June 2022.

⁹National Land Cover Database. <https://www.usgs.gov/centers/eros/science/national-land-cover-database> Accessed May 2022.

¹⁰ Websoil Survey. <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>. Accessed May 2022.

Federal projects or federally funded projects may convert farmland, as defined by the Farmland Protection Policy Act (FPPA), to non-agricultural uses by completing the Land Evaluation and Site Assessment (LESA) process, which helps state and local officials make sound decisions about land use. This requirement will only apply to the Project if it receives federal funds or if a federal permit is necessary.

Kentucky Senate Bill 52 from the 2022 legislative session proposed a fee of \$100 per acre for converting agricultural or horticultural land to any other use, including solar facilities.¹¹ The proposed bill was sent to the Kentucky Appropriations and Revenue Committee for review, but discussions were adjourned sine die.

4. SOILS AND GEOLOGY

The USDA-NRCS Web Soil Survey was reviewed to provide a soil characterization within the Project, as well as ratings of soil use.¹² Hydric soils are mapped within the portions of the Site. **Table 7** characterizes the soils identified within the Project in **Figure 8 – Soils Map**.

Table 7: USDA NRCS Soils within the Frontier Solar Site, Marion and Washington Counties, Kentucky

Map Unit Name	Map Symbol	Percent Slopes	Hydric Rating	Drainage Class	Farmland Rating	Acreage
Beasley silty clay loam	BcC2	6 to 12 percent	0	Well drained	Farmland of statewide importance	3.4
Cynthiana-Faywood-Rock outcrop complex, eroded	CyF2	20 to 60 percent	0	Well drained	Not prime farmland	0.8
Elk silt loam, rarely flooded	EkB	2 to 6 percent	0	Well drained	All areas are prime farmland	50.3
Elk silt loam, eroded	EkC2	6 to 12 percent	0	Well drained	Farmland of statewide importance	11.6
Faywood silty clay loam, eroded	FaC2	6 to 12 percent	0	Well drained	Farmland of statewide importance	127.3
Faywood silty clay loam, eroded	FaD2	12 to 20 percent	0	Well drained	Not prime farmland	511.2
Faywood-Cynthiana complex, eroded, very rocky	FcE2	20 to 30 percent	0	Well drained	Not prime farmland	155.5
Lowell silty clay loam, eroded	LoC2	6 to 12 percent	0	Well drained	Farmland of statewide importance	609.6

¹¹ Kentucky General Assembly. <https://apps.legislature.ky.gov/record/22rs/sb52.html>. Accessed June 2022.

¹² Web Soil Survey. <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm> Accessed Mat 2022.

Map Unit Name	Map Symbol	Percent Slopes	Hydric Rating	Drainage Class	Farmland Rating	Acreeage
Lowell silty clay loam, eroded	LoD2	12 to 20 percent	0	Well drained	Not prime farmland	29.7
Lowell silty clay, severely eroded	LpC3	6 to 12 percent	0	Well drained	Not prime farmland	98.2
Newark silt loam, frequently flooded	Ne	0 to 2 percent	2	Somewhat poorly drained	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	36.7
Nicholson silt loam	NhB	2 to 6 percent	0	Moderately well drained	All areas are prime farmland	16.3
Nolin silt loam, frequently flooded	No	0 to 2 percent	2	Well drained	Prime farmland if protected from flooding or not frequently flooded during the growing season	152.2
Otwell silt loam	OtB	2 to 8 percent	0	Moderately well drained	All areas are prime farmland	58.1
Sandview silt loam	SaB	2 to 6 percent	0	Well drained	All areas are prime farmland	400.2
Lowell-Faywood silt loams	uLfc	6 to 12 percent	0	Well drained	Farmland of statewide importance	479.2
Lowell-Sandview silt loams	uLsoB	2 to 6 percent	0	Well drained	All areas are prime farmland	190.7

Map Unit Name	Map Symbol	Percent Slopes	Hydric Rating	Drainage Class	Farmland Rating	Acreage
Beasley silt loam	BeB	2 to 6 percent	0	Well drained	All areas are prime farmland	63.8
Beasley silt loam	BeC	6 to 12 percent	0	Well drained	Farmland of statewide importance	21.5
Dunning silty clay loam, frequently flooded	Du	0 to 2 percent	95	Poorly drained	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	17.4
Elk silt loam	EkB	2 to 6 percent	0	Well drained	All areas are prime farmland	14.6
Elk silt loam	EkC	6 to 12 percent	0	Well drained	Farmland of statewide importance	11.3
Elk silt loam, rarely flooded	ErA	0 to 2 percent	0	Well drained	All areas are prime farmland	82.3
Elk silt loam, rarely flooded	ErB	2 to 6 percent	0	Well drained	All areas are prime farmland	198.8
Elk silt loam, rarely flooded	ErC	6 to 12 percent	0	Well drained	Farmland of statewide importance	11.7
Fairmount-Rock outcrop complex	FaD	6 to 20 percent	0	Well drained	Not prime farmland	693.3
Fairmount-Rock outcrop complex	FaF	20 to 50 percent	0	Well drained	Not prime farmland	308.3
Faywood silt loam	FdB	2 to 6 percent	0	Well drained	All areas are prime farmland	120.8

Map Unit Name	Map Symbol	Percent Slopes	Hydric Rating	Drainage Class	Farmland Rating	Acreage
Faywood silty clay loam, eroded	FoC2	6 to 12 percent	0	Well drained	Farmland of statewide importance	532.4
Faywood silty clay loam, eroded	FoD2	12 to 20 percent	0	Well drained	Not prime farmland	434.4
Faywood silty clay, severely eroded	FwC3	6 to 20 percent	0	Well drained	Not prime farmland	321.9
Faywood-Shrouts silty clay loams, very rocky, severely eroded	FyE3	12 to 30 percent	0	Well drained	Not prime farmland	97.5
Lawrence silt loam , rarely flooded	La	0 to 2 percent	4	Somewhat poorly drained	Prime farmland if drained	6.4
Lowell silty clay loam, severely eroded	LwC3	6 to 12 percent	0	Well drained	Not prime farmland	106.2
Newark silt loam, frequently flooded	Ne	-	4	Somewhat poorly drained	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	65.4
Nicholson silt loam	NhB	2 to 6 percent slopes	0	Moderately well drained	All areas are prime farmland	104.4
Nicholson silt loam	NhC	6 to 12 percent	0	Moderately well drained	Farmland of statewide importance	28.7
Nolin silt loam, occasionally flooded	No	0 to 2 percent	1	Well drained	All areas are prime farmland	564.6
Otwood silt loam, rarely flooded	OtA	0 to 2 percent	0	Moderately well drained	All areas are prime farmland	8.2

Map Unit Name	Map Symbol	Percent Slopes	Hydric Rating	Drainage Class	Farmland Rating	Acreage
Otwood silt loam	OtB	2 to 6 percent slopes	0	Moderately well drained	All areas are prime farmland	52.8
Pits, quarries	Pt	-	0	-	Not prime farmland	101.6
Shelbyville silt loam	SeB	2 to 6 percent slopes	0	Well drained	All areas are prime farmland	264.6
Shelbyville silt loam	SeC	6 to 12 percent	0	Well drained	Farmland of statewide importance	182
Shrouts silt loam	ShB	2 to 6 percent slopes	0	Well drained	All areas are prime farmland	35.2
Shrouts silt loam, rocky, eroded	ShC2	6 to 12 percent	0	Well drained	Farmland of statewide importance	142.5
Boonesboro silt loam, frequently flooded	uBofA	0 to 4 percent	0	Well drained	Prime farmland if protected from flooding or not frequently flooded during the growing season	17.5
Lowell-Faywood silt loams	uLfc	6 to 12 percent	0	Well drained	Farmland of statewide importance	733.3
Lowell-Faywood silt loams	uLfd	12 to 20 percent	0	Well drained	Not prime farmland	57.3
Lowell-Sandview silt loams	uLsoB	2 to 6 percent slopes	0	Well drained	All areas are prime farmland	743.4
Water	W	Water	0	-	Not prime farmland	118.2
Total Acreage	-	-	-	-	-	9193.7

4.1 SOIL CLASSIFICATIONS AND RATINGS

Ratings for suitability of shallow excavations six (6) feet or less in depth are given as “not limited”, “somewhat limited”, and “very limited”. Ratings are also given for risk for the corrosion of concrete and steel which indicates the potential for a soil series to corrode or weaken concrete or steel, which may impact Project foundation infrastructure. The rate of corrosion of concrete is based primarily on the sulfate and sodium content, texture, moisture content, and acidity of the soil. The rate of corrosion of steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. Ratings for corrosion of steel and concrete are given as “low”, “moderate”, and “high” (USDA-NRCS 2021). The overall composition of soils within the Project as grouped by these factors is described as follows:

Corrosion of Steel

- High Potential to Corrode Steel: approximately 85.5%
- Moderate Potential to Corrode Steel: approximately 6.1%
- Low Potential to Corrode Steel: approximately 8.4%

Corrosion of Concrete

- High Potential to Corrode Concrete: approximately 0.0 %
- Moderate Potential to Corrode Concrete: approximately 22.2%
- Low Potential to Corrode Concrete: approximately 77.8%

Shallow Excavations

- Somewhat limited for Shallow Excavations: approximately 57.6%
- Very Limited for Shallow Excavations: approximately 42.4%
- Not rated for Shallow Excavations: approximately 0.0%

Due to the high potential to corrode steel and concrete and somewhat to very limited potential for shallow excavations within the Site, a geotechnical subsurface investigation is recommended to accurately determine soil characteristics that may affect construction.

4.2 Geology

The Site is located within the Interior Plateau physiographic area and the Outer Bluegrass sub-province.¹³ The Outer Bluegrass sub-province is characterized by springs, sinkholes, entrenched rivers, and intermittent and perennial streams with moderate to high gradients of cobble and glacial drift. Bedrock geology in the vicinity of the Project is predominately underlain by Upper Ordovician limestone and shale. Cropland and pastures are dominant throughout the Outer Bluegrass sub-providence, and local relief is variable.

¹³ Ecoregions of Kentucky. https://gaftp.epa.gov/EPADDataCommons/ORD/Ecoregions/ky/ky_front.pdf

5. KENTUCKY PUBLIC SERVICE COMMISSION

In Kentucky, the Public Services Commission (PSC) must approve a solar facility if that project falls into one of the following categories:

Kentucky Revised Statute (KRS) 278 addresses public utilities,¹⁴ and the proposed Project is expected to be considered a “Merchant electric generating facility”, which KRS 278.700 defines as follows:

- (2) *“Merchant electric generating facility” means, except for a qualifying facility as defined in subsection (7) of this section, an electricity generating facility or facilities that, together with all associated structures and facilities:*
- (a) *Are capable of operating at an aggregate capacity of ten megawatts (10MW) or more; and*
 - (b) *Sell the electricity they produce in the wholesale market, at rates and charges not regulated by the Public Service Commission;*

KRS 278.704 further specifies that, “No person shall commence to construct a merchant electric generating facility until that person has applied for and obtained a construction certificate for the facility.”

As specified in the Kentucky State Board on Electric Generation and Transmission Siting (the Siting Board) document titled *Kentucky’s Electric Generation and Transmission Siting Process for Merchant Facilities: A Guide to Public Participation*,¹⁵ the Siting Board “was created in 2002 by an act of the Kentucky General Assembly. Its purpose is to review applications and, as appropriate, grant certificates for the construction of electric generating facilities and transmission lines that are not regulated by the Kentucky Public Service Commission (PSC)...The generating facilities reviewed by the Siting Board sell power on the wholesale market and are commonly known as merchant power plants or independent power producers (IPPs). Siting Board approval is required for merchant plants with a generating capacity of 10 megawatts or more and for non-regulated transmission lines capable of carrying 69,000 volts or more.” This document further specifies that the Siting Board Review focuses on three areas including:

- *Environmental matters not covered by permits issued by the Kentucky Department for Environmental Protection. The Department issues permits for air emissions, water withdrawals and discharges and solid waste disposal...The Siting Board review covers matters such as noise and visual impacts, among others.*
- *Economic impacts.*
- *Impact of the proposed facility on Kentucky’s electric transmission grid.*¹⁶

KRS 278.706 specifies the application and process to construct an electric generating facility:

Any person seeking to obtain a construction certificate shall file an application at the office of the Public Service Commission. A completed application shall include:

- a) *The name, address, and telephone number of the person proposing to construct and own the electric generating facility;*
- b) *A full description of the proposed site, including a map showing the distance of the proposed site from residential neighborhoods, the nearest residential structures, schools, and public and private parks that are located within a two (2) mile radius of the proposed facility;*

¹⁴[Kentucky Revised Statutes - Chapter 278](https://apps.legislature.ky.gov/law/statutes/chapter.aspx?id=38583) Public Utilities Generally,

<https://apps.legislature.ky.gov/law/statutes/chapter.aspx?id=38583>

¹⁵ Kentucky’s Electric Generation and Transmission Siting Process for Merchant Facilities: A Guide to Public Participation,

https://psc.ky.gov/agencies/psc/siting_board/guide.pdf

¹⁶ “Kentucky Public Service Commission.” Electric Generation and Transmission Siting Board, <https://psc.ky.gov/home/egtsb>.

- c) *Evidence of public notice that shall include the location of the proposed site and a general description of the project, state that the proposed construction is subject to approval by the board, and provide the telephone number and address of the Public Service Commission. Public notice shall be given within thirty (30) days immediately preceding the application filing to:*
 - 1. *Landowners whose property borders the proposed site; and*
 - 2. *The general public in a newspaper of general circulation in the county or municipality in which the facility is proposed to be located;*
- d) *A statement certifying that the proposed plant will be in compliance with all local ordinances and regulations concerning noise control and with any local planning and zoning ordinances. The statement shall also disclose setback requirements established by the planning and zoning commission.*
- e) *[Not Applicable – applies only to facilities using waste coal as a fuel source.]*
- f) *A complete report of the applicant's public involvement program activities undertaken prior to the filing of the application, including:*
 - 1. *The scheduling and conducting of a public meeting in the county or counties in which the proposed facility will be constructed at least ninety (90) days prior to the filing of an application, for the purpose of informing the public of the project being considered and receiving comment on it;*
 - 2. *Evidence that notice of the time, subject, and location of the meeting was published in the newspaper of general circulation in the county, and that individual notice was mailed to all owners of property adjoining the proposed project at least two (2) weeks prior to the meeting; and*
 - 3. *Any use of media coverage, direct mailing, fliers, newsletters, additional public meetings, establishment of a community advisory group, and any other efforts to obtain local involvement in the siting process;*
- g) *A summary of the efforts made by the applicant to locate the proposed facility on a site where existing electric generating facilities are located;*
- h) *Proof of service of a copy of the application upon the chief executive officer of each county and municipal corporation in which the proposed facility is to be located, and upon the chief officer of each public agency charged with the duty of planning land use in the jurisdiction in which the facility is proposed to be located;*
- i) *An analysis of the proposed facility's projected effect on the electricity transmission system in Kentucky;*
- j) *An analysis of the proposed facility's economic impact on the affected region and the state;*
- k) *A detailed listing of all violations by it, or any person with an ownership interest, of federal or state environmental laws, rules, or administrative regulations, whether judicial or administrative, where violations have resulted in criminal convictions or civil or administrative fines exceeding five thousand dollars (\$5,000). The status of any pending action, whether judicial or administrative, shall also be submitted; and*
- l) *A site assessment report as specified in KRS 278.708. The applicant may submit and the board may accept documentation of compliance with the National Environmental Policy Act (NEPA) rather than a site assessment report.*

The Siting Board application and review process is expected to take a minimum of 150 days starting with the filing of a notice of intent at least 30 days prior to application submittal. In practicality, the process will likely take approximately 270 to 300 days total. This process will include an evidentiary hearing (participation limited to the applicants and investors), and public hearing to give the general public an opportunity to be heard by the Siting Board. The application will be considered by five (5) board members, three (3) members of the Kentucky PSC and two (2) ad hoc members that depend on if the facility is located in a single county or multiple counties. A list of case studies and supporting application material and processes can be found on the PSC website under the tab "Merchant Power Plant Electronic Case Files."¹⁷ An example of all application materials and processes can be found on the website, and processes are tracked through the Case Management System (**Appendix E**). ERM recommends consulting legal counsel to facilitate the Siting Board application and review process.

Environmental Site Assessment

As specified in KRS 278.708, any person proposing to construct a merchant electric generating facility shall file a site assessment report with the board. KRS 278.708(3) specifies that a complete site assessment report shall include:

- (a) *A description of the proposed facility that shall include a proposed site development plan that describes:*
 1. *Surrounding land uses for residential, commercial, agricultural, and recreational purposes;*
 2. *The legal boundaries of the proposed site;*
 3. *Proposed access control to the site;*
 4. *The location of facility buildings, transmission lines, and other structures;*
 5. *Location and use of access ways, internal roads, and railways;*
 6. *Existing or proposed utilities to service the facility;*
 7. *Compliance with applicable setback requirements as provided under KRS 278.704(2), (3), (4), or (5); and*
 8. *Evaluation of the noise levels expected to be produced by the facility;*
- (b) *An evaluation of the compatibility of the facility with scenic surroundings;*
- (c) *The potential changes in property values and land use resulting from the siting, construction, and operation of the proposed facility for property owners adjacent to the facility;*
- (d) *Evaluation of anticipated peak and average noise levels associated with the facility's construction and operation at the property boundary; and*
- (e) *The impact of the facility's operation on road and rail traffic to and within the facility, including anticipated levels of fugitive dust created by the traffic and any anticipated degradation of roads and lands in the vicinity of the facility.*

KRS 278.08 further specifies the following:

- (4) *The site assessment report shall also suggest any mitigating measures to be implemented by the applicant to minimize or avoid adverse effects identified in the site assessment report.*

¹⁷ "Kentucky Public Service Commission." Electric Generation and Transmission Siting Board, <https://psc.ky.gov/home/egtsb>

- (5) *The board shall have the authority to hire a consultant to review the site assessment report and provide recommendations concerning the adequacy of the report and proposed mitigation measures. The board may direct the consultant to prepare a separate site assessment report. Any expenses or fees incurred by the board's hiring of a consultant shall be borne by the applicant.*
- (6) *The applicant shall be given the opportunity to present evidence to the board regarding any mitigation measures. As a condition of approval for an application to obtain a construction certificate, the board may require the implementation of any mitigation measures that the board deems appropriate.*

6. LOCAL LAND USE AND DEVELOPMENT PERMITTING

Neither Marion County nor Washington County have enacted zoning ordinances. The state of Kentucky has provided a Model Solar Zoning Ordinance for jurisdictions to consider enacting to, “provide a framework for the regulation of land uses involving the construction and operation of solar facilities.”¹⁸ However, neither jurisdiction has adopted any variation of the Model Ordinance.

Washington County adopted a Comprehensive Plan in 2010 which includes a provision for the development and adoption of a zoning ordinance, but does not address solar facilities or renewable energy. Conversations with Marion County staff indicated that the County does not have an adopted Comprehensive Plan.

6.1 Marion County

6.1.1 Land Use & Zoning

ERM contacted Marion County Clerk department anonymously to identify local requirements for the potential solar facility that will cross into Marion County. During ERM's conversation with the County Clerk's office, County staff indicated that Marion County has limited provisions for solar energy and referred ERM to contact the County Judge Office for specific information regarding utility scale solar processes. The County Judge Office Staff informed ERM that the majority of Marion County does not have zoning, unless located within Lebanon City's 3-mile buffer.

The Site is partially located within Lebanon City's 3-mile buffer (**Appendix D**). This area may be subject to Lebanon City approval processes, which would include submittal of a Conditional Use Permit (CUP) to the Board of Adjustments (including a Boundary Survey and Site Plan), a public hearing 30 days after receipt of CUP, and applicable permits, which may include, but is not limited to, zoning permit, building permit, and/or development permit(s). Additional information is needed from John G. Thompson, the City of Lebanon's Building Inspector & Zoning Administrative Official, on how portions of the Project Boundary within the City's 3-mile buffer would be regulated (Parcel Identification Number, 055-023-02-01A).

The remainder of the Project Boundary is located in the unincorporated portion of Marion County, which is not governed by any land use, zoning or building permit regulations, but private land use restrictions may exist in the target area in the form of restrictive covenants or deed restrictions. Further information is needed from the County Judge. ERM is pending a returned call from Marion County Judge to confirm utility scale solar processes and/or permits needed within the County.

Notwithstanding any additional zoning or land use processes required for the City of Lebanon, the Project will need to abide by state building codes and standards. Consultation with the State of Kentucky Division

¹⁸ Model Solar Ordinance (2020). Retrieved June 2, 2022, from <https://www.kyrc.org/news/legislative-advocacy/model-ordinance-solar-zoning#:~:text=The%20ordinance%20offers%20a%20%E2%80%9Cmenu,and%20operation%20of%20solar%20facilities.>

of Building Codes Enforcement Department is recommended to understand construction plan and any other requirements.

6.1.2 Community Acceptance

Marion County currently houses a utility scale solar project (Northern Bobwhite). During its public information meeting on July 30, 2019 there was little to no opposition related to the solar project. The public raised questions about decommissioning plans, project financing, labor and jobs, power generation and storage, agriculture and lease agreements, landowner interests, individual and local business participation.

6.2 Washington County

6.2.1 Land Use & Zoning

ERM contacted Buddy Parker, a member of the Washington County Planning Commission, anonymously to identify local requirements for a potential solar facility within Washington County. During ERM's conversation with the Planning Commissioner, Mr. Parker indicated that Washington County has limited provisions for utility scale solar. To date, no zoning ordinance exists in Washington County, and no extraterritorial land use authority exists extending beyond the City of Springfield boundary. Limited setback and lot size performance standards exist in the Washington County subdivision ordinance.²⁰ The setback is half the width of the street right-of-way or no less than 30 feet. The subdivision ordinance states that rear and side setbacks must be appropriate for the type of use. Additional private land use restrictions may exist in the target area in the form of restrictive covenants or deed restrictions.

6.2.2 Washington County Fiscal Court

The Fiscal Court is responsible for setting policy, enacting ordinances, approving the county budget, and voting on all fiscal matters which pertain to a variety of services including roads, public safety, parks and recreation, and human services. They have taken no action on implementing zoning or other land use controls beyond the subdivision ordinance. No local building permits are required for solar construction. However, the proposed project must follow state building codes and standards.

6.2.3 Community Acceptance

Washington County currently houses a utility scale solar project (Ralph Martin). Local news coverage of the new Solar Project indicated that residents are excited to see the benefits solar brings to their community. According to a Johnson City Press article, an adjacent neighbor stated, "she and her 10-year-old daughter Corrie and her son Colt, 6, are 'really excited' to see the solar power project come to their neighborhood. The alternative to the project, she said, might have been a subdivision that would have brought traffic, congestion and noise to her rural community in western Washington County." The article continued stating that this neighbor is, "pleased that the 24,375 solar panels to be installed at the Martin Solar Farm will generate clean energy that will be offered to East Tennessee State University and to children's schools and other K-12."²¹

¹⁹ Price, K. (n.d.). Exhibit D, Public Information Meeting (PIM) from, https://psc.ky.gov/pscecf/2020-00208/ken.gish%40kgates.com/12222020032223/NBW_App_Materials_Exh_D_-_N.pdf

²⁰ Washington County Subdivision Regulations. <https://www.washingtoncountky.com/departments.html#planning>

²¹ Houk, Robert. Local Officials Break Ground on New Solar Farm in Washington County, 8 June 2021, https://www.johnsoncitypress.com/news/business/local-officials-break-ground-on-new-solar-farm-in-washington-county/article_2d1a96b6-c897-11eb-ba11-97fcf71b9839.html. Accessed 31 May 2022.

7. FEDERAL AVIATION ADMINISTRATION CONSULTATION

Publicly available Federal Aviation Administration (FAA) data were reviewed, and zero (0) airports were identified within the Project. However, three (3) airports were identified within a 5-mile buffer (**Figure 9 - Aviation Map**). The closest airport to the Project is the Lebanon-Springfield Airport, located approximately 0.2 mile east of the Project. Other airports within the 5-mile buffer include the Springfield Hospital Heliport (approximately 1.9 miles south) and the Arnolds Airport (approximately 4.3 miles east). Given the predominance of agriculture in the vicinity of the Project, there is potential for small airfields or landing strips to be present for spraying crops or other farming practices.

ERM utilized the FAA Notice Criteria Tool (NCT) to evaluate the Project with respect to CFR Title 14 Part 77.9 (FAA, 2021). According to the FAA NCT, a project must file with the FAA at least 45 days prior to construction if:

- a structure will exceed 200 feet above ground level,
- a structure will be in proximity to an airport and will exceed the slope ratio,
- a structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b),
- a structure will emit frequencies, and does not meet the conditions of the FAA Co-location Policy,
- a structure will be in an instrument approach area and might exceed part 77 Subpart C,
- a proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception,
- a structure will be on an airport or heliport, or
- a filing has been requested by the FAA.

ERM's review of the FAA NCT included evaluation of five locations at the approximate corners and center of the Site and an assumed maximum structure height of 20 feet (**Appendix F**). Based on these parameters, the NCT indicates that the center of the Site is, "in proximity to a navigation facility and may impact the assurance of navigation signal reception." In accordance with CFR Title 14 Part 77.9, the Project should be filed with the FAA. ERM recommends evaluating the Project again once preliminary design is available.

8. PERMITTING WORKPLAN

ERM understands the purpose of this CIA is to aid BrightNight in identifying environmental concerns on the Site, and to define the potential permitting needs for the proposed Project for construction and development. Based on the information ascertained through this desktop analysis, an actionable work plan is presented below. A permitting matrix is also provided in **Appendix A**.

The following summarizes major actions that should be taken during the initial, mid-term, and long-term planning phases of the project.

8.1 Initial Action Items (90 days)

- Prepare preliminary/conceptual Site design
- Initiate consultation with state and local agencies, including Marion and Washington Counties.
- Conduct site visit including wetland and waterbody delineations and sensitive species and habitat surveys

- Submit request for USACE Jurisdictional Determination
- Conduct a Phase I ESA

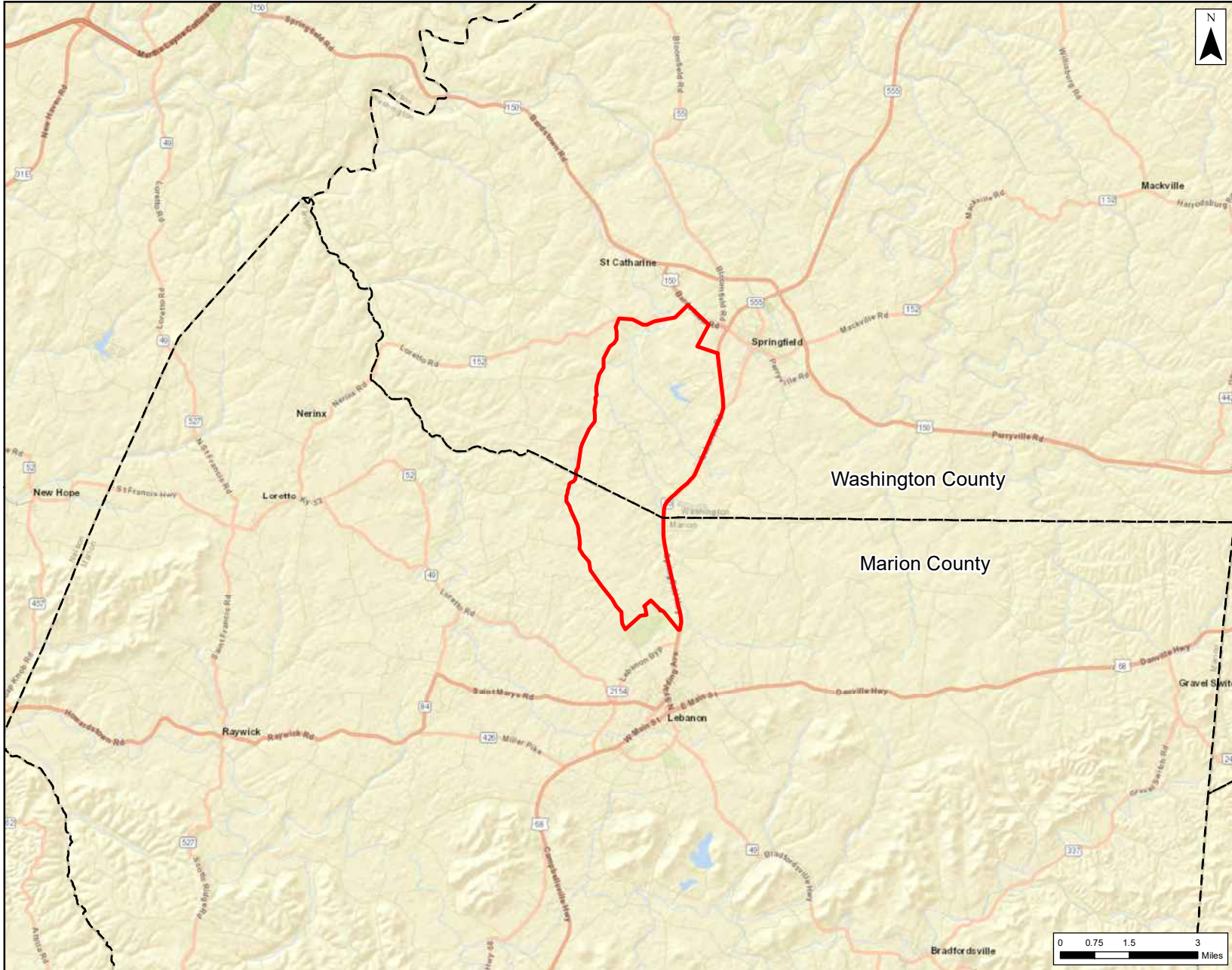
8.2 Mid-Term Action Items (3 – 6 months)

- Continue additional permitting discussions based on refined Site design
- Review site layout and refer to the online FAA tool to determine if FAA notification is required
- Continue to coordinate with Marion and Washington Counties.
- Initiate stakeholder/public engagement
- Prepare and submit Conditional Use Permit application if needed within city buffer

8.3 Long-Term Action Items (6 – 18 months)

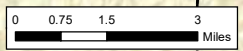
- Finalize Site design and layout, suitable for full permitting
- Submit CWA Section 404 and 401 permitting, if required
- Stormwater Pollution Prevention Plan (SWPPP) preparation and permit application submittal to obtain Construction Stormwater General Permit
- Prepare for construction

FIGURES

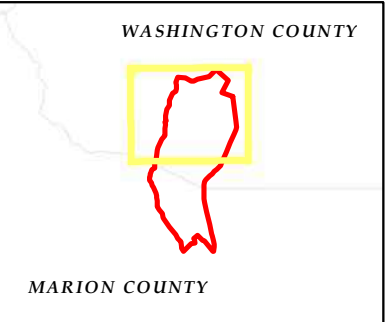
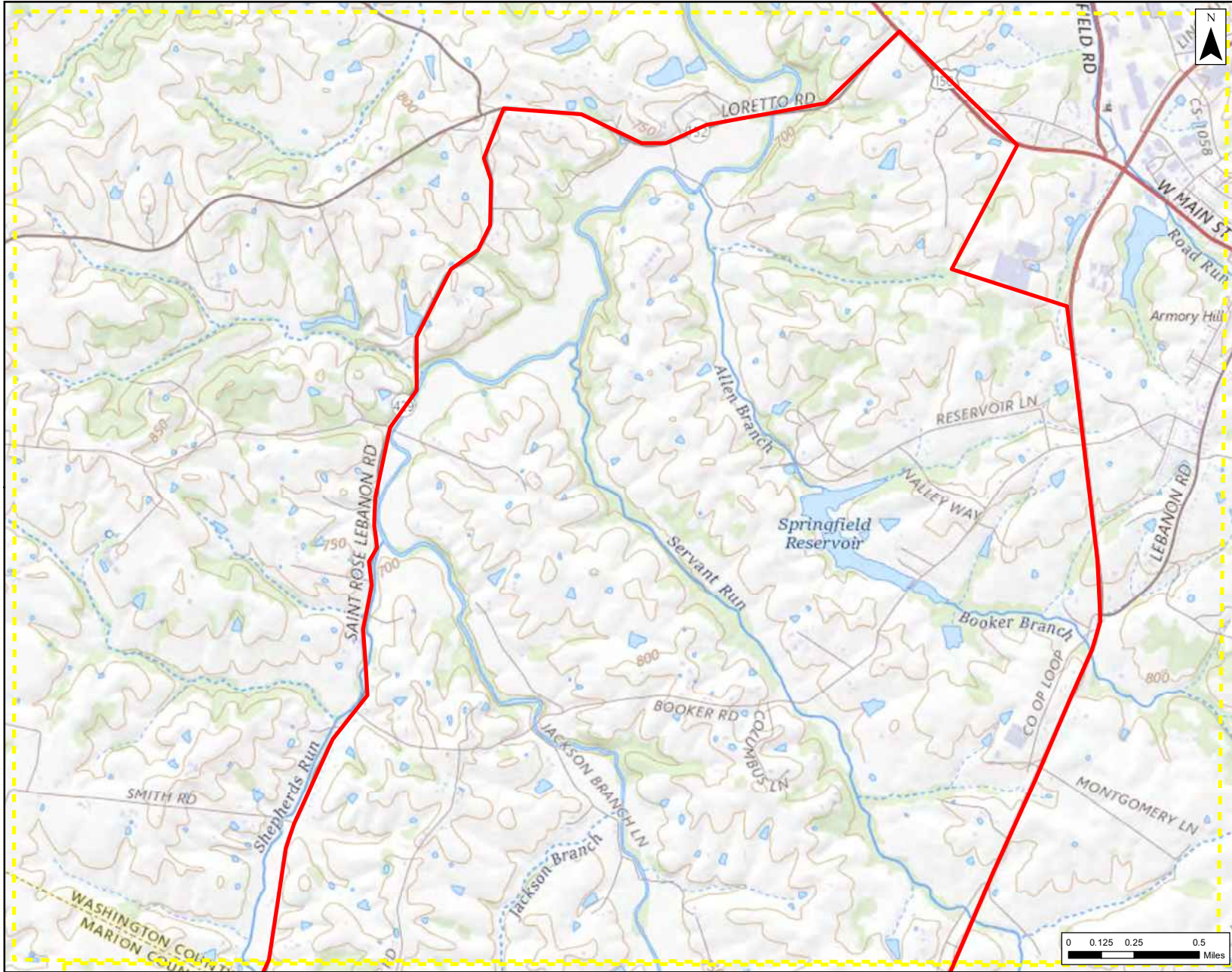


Legend
 Project Boundary
 County Boundary

Figure 1
Project Location
 Fronteir Solar Site
 BrightNight
 Marion and Washington
 Counties, Kentucky



Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community; NAD 1983 StatePlane Kentucky North FIPS 1601 Feet

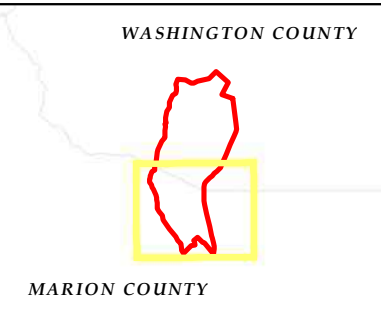
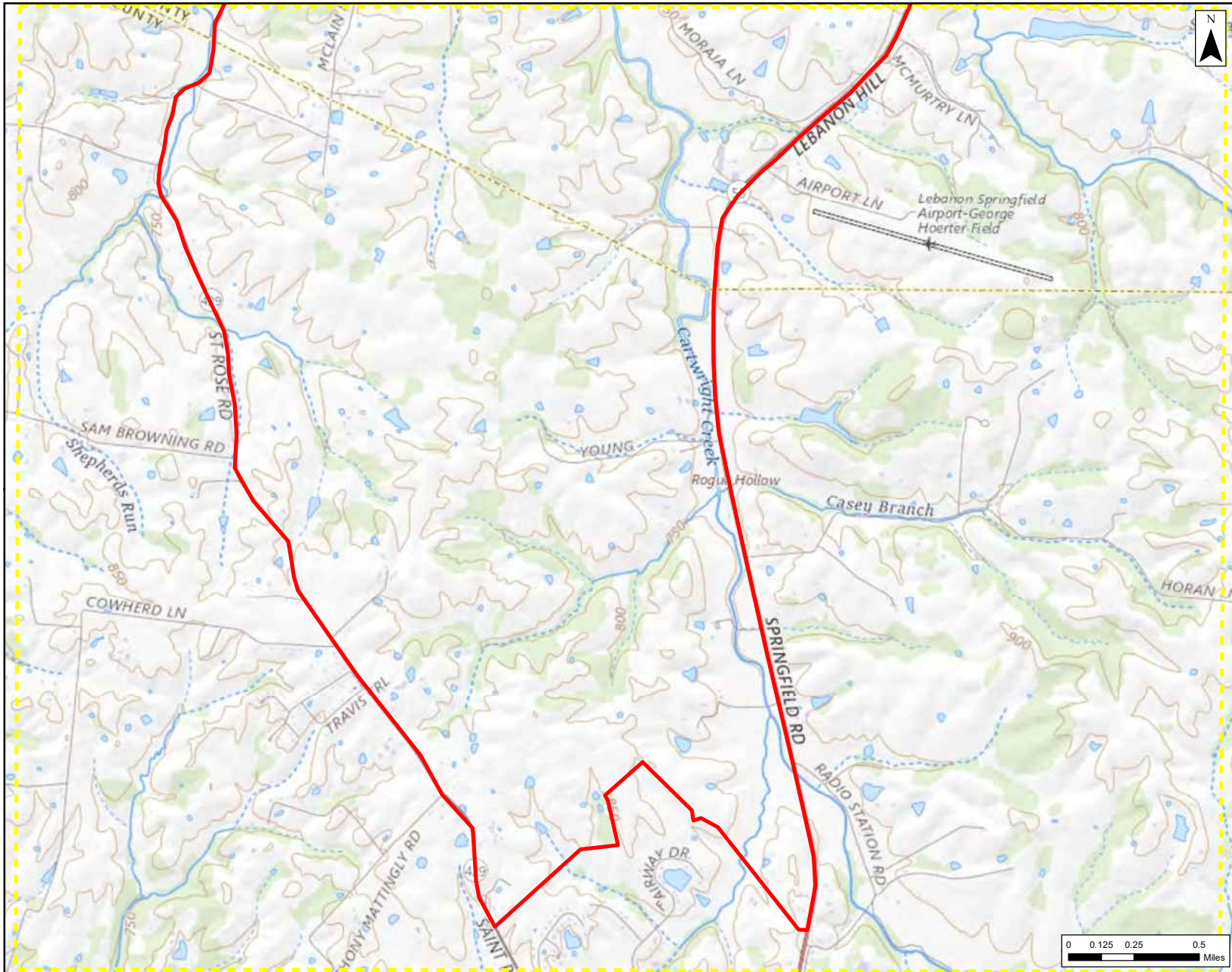


- Legend**
- Project Boundary
 - Index Grid

Figure 2
Topographic Map
 Fronteir Solar Site
 BrightNight
 Marion and Washington
 Counties, Kentucky



Service Layer Credits: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed August, 2021.; NAD 1983 StatePlane Kentucky North FIPS 1601 Feet

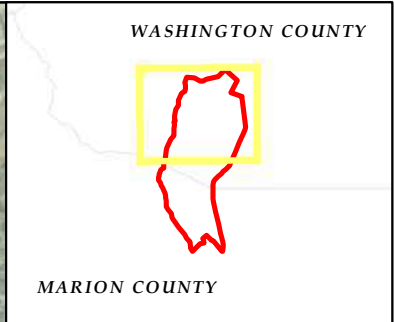
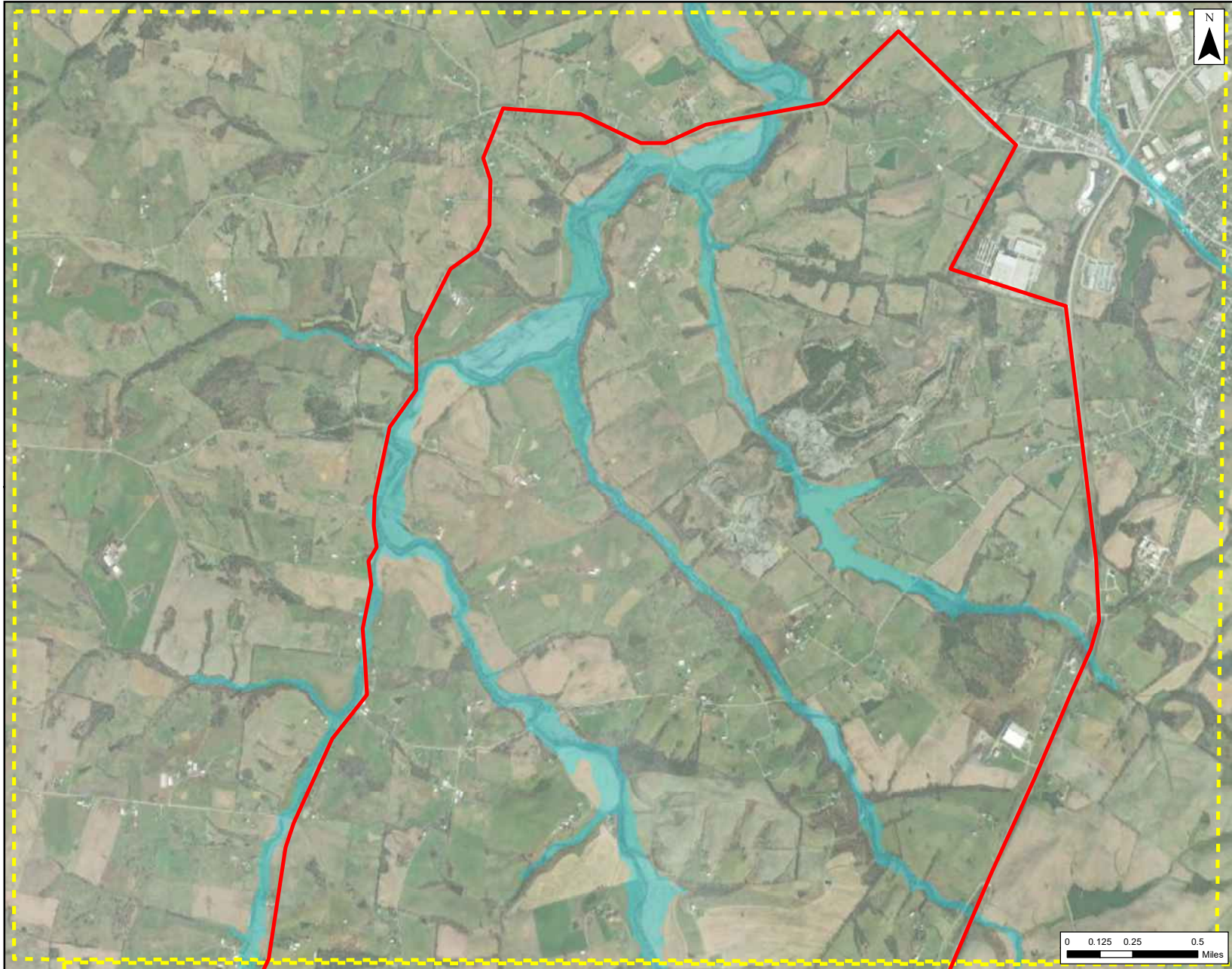


Legend
 Project Boundary
 Index Grid

Figure 2
Topographic Map
 Fronteir Solar Site
 BrightNight
 Marion and Washington
 Counties, Kentucky



Service Layer Credits: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed August, 2021.; NAD 1983 StatePlane Kentucky North FIPS 1601 Feet



Legend

- Project Boundary
- Index Grid

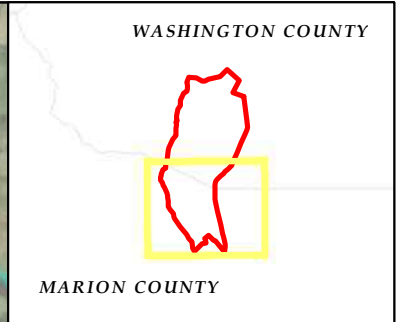
Flood Hazard Zones

- 1% Annual Chance Flood Hazard

Figure 3
FEMA Flood Hazard Areas
 Fronteir Solar Site
 BrightNight
 Marion and Washington
 Counties, Kentucky



Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; NAD 1983 StatePlane Kentucky North FIPS 1601 Feet



Legend

- Project Boundary
- Index Grid

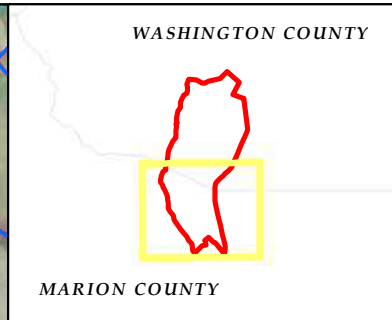
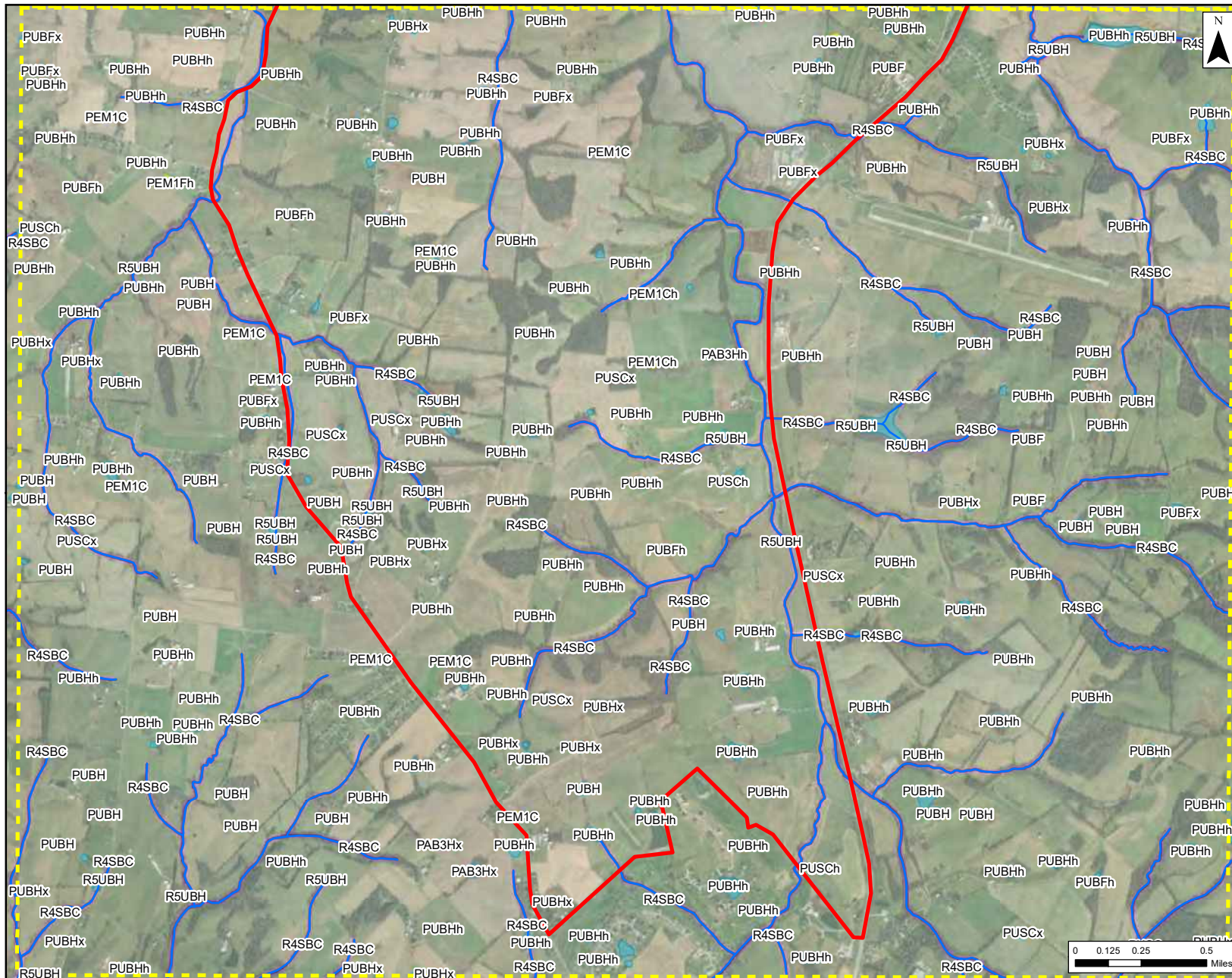
Flood Hazard Zones

- 1% Annual Chance Flood Hazard

Figure 3
FEMA Flood Hazard Areas
 Fronteir Solar Site
 BrightNight
 Marion and Washington
 Counties, Kentucky

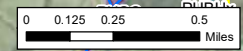


Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; NAD 1983 StatePlane Kentucky North FIPS 1601 Feet



- Legend**
- Project Boundary
 - Index Grid
 - National Hydrography Dataset
- National Wetland Inventory**
- Freshwater Emergent Wetland
 - Freshwater Forested/Shrub Wetland
 - Freshwater Pond
 - Lake
 - Riverine

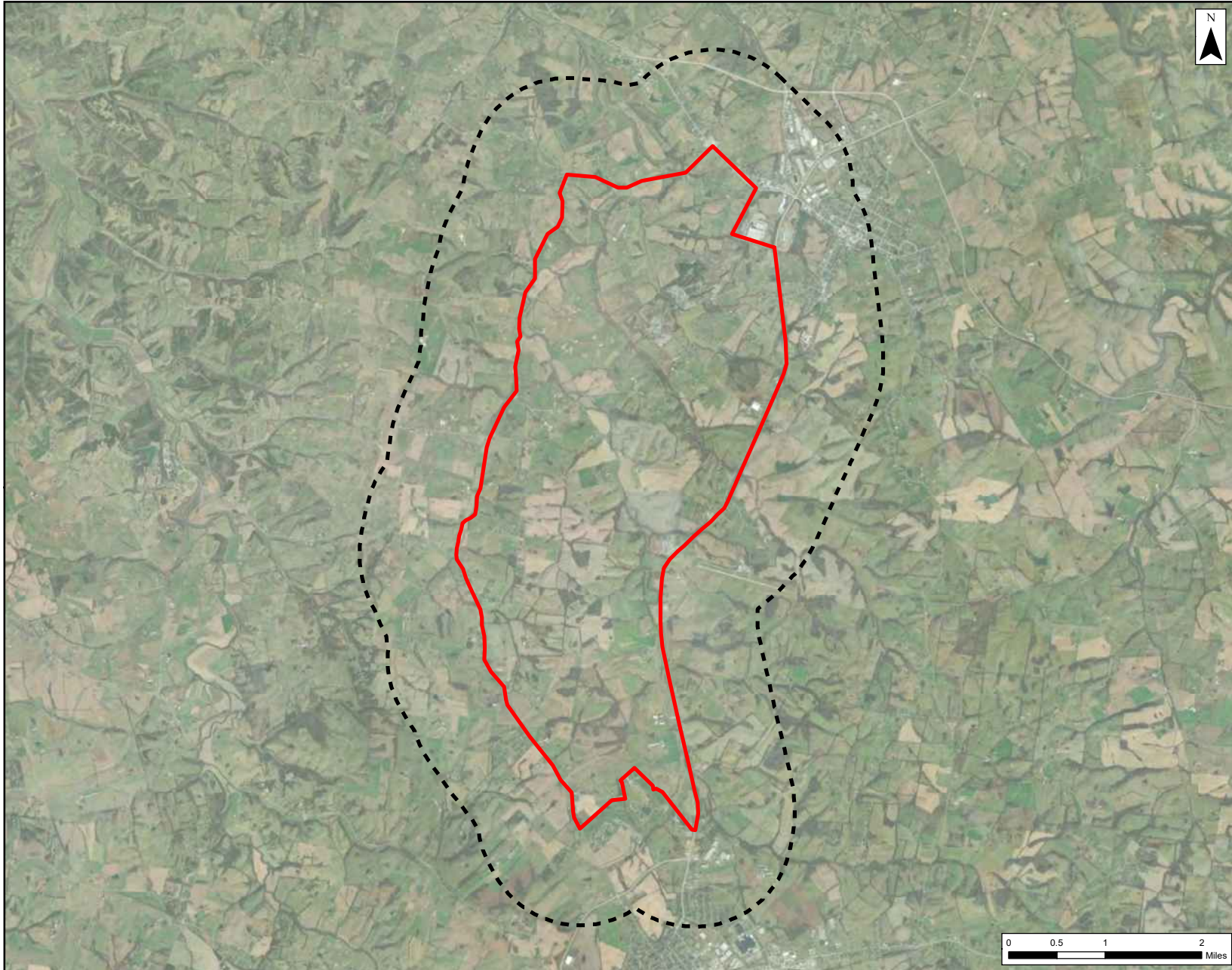
Figure 4
Wetlands and Waters Map
 Fronteir Solar Site
 BrightNight
 Marion and Washington
 Counties, Kentucky



Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; NAD 1983 StatePlane Kentucky North FIPS 1601 Feet

**FIGURE 5 FILED
UNDER SEAL WITH
THE SITING BOARD**

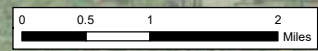
**FIGURE 5 FILED
UNDER SEAL WITH
THE SITING BOARD**



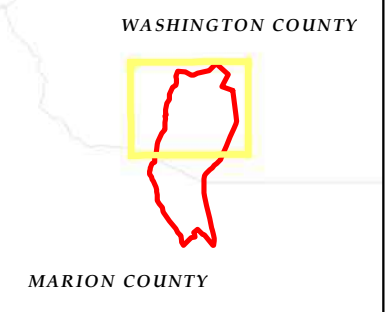
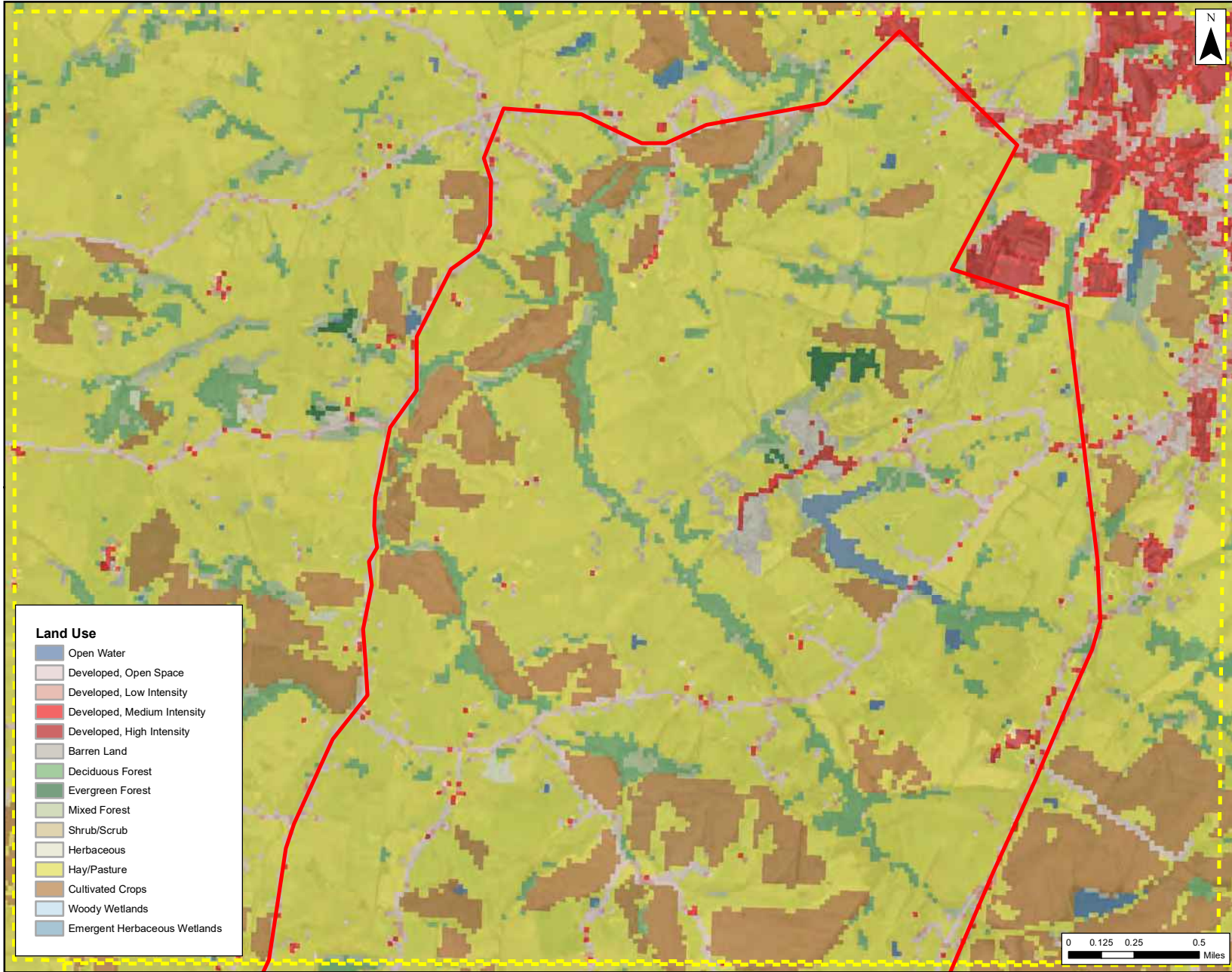
- Legend**
- Project Boundary
 - One Mile Buffer

There are no protected areas within the Project Boundary or one-mile buffer.

Figure 6
Protected Areas Map
 Fronteir Solar Site
 BrightNight
 Marion and Washington
 Counties, Kentucky



Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
 Esri
 Source: TPL, Ducks Unlimited, Esri; NAD 1983 StatePlane Kentucky North FIPS 1601 Feet



Legend

- Project Boundary
- Index Grid

- Land Use**
- Open Water
 - Developed, Open Space
 - Developed, Low Intensity
 - Developed, Medium Intensity
 - Developed, High Intensity
 - Barren Land
 - Deciduous Forest
 - Evergreen Forest
 - Mixed Forest
 - Shrub/Scrub
 - Herbaceous
 - Hay/Pasture
 - Cultivated Crops
 - Woody Wetlands
 - Emergent Herbaceous Wetlands

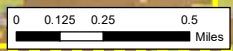
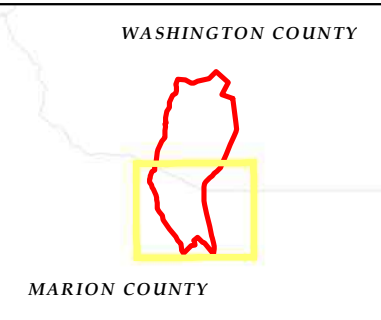
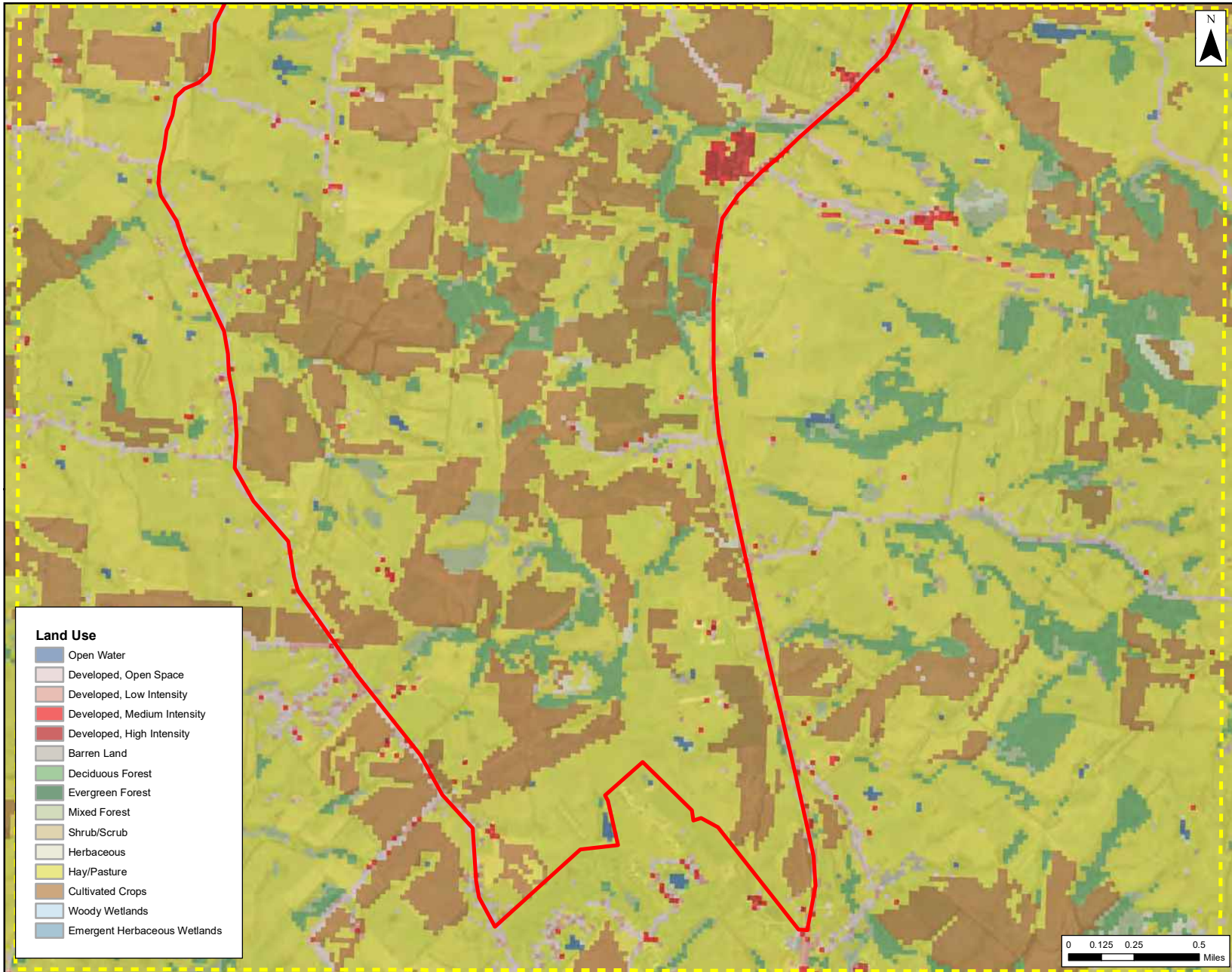


Figure 7
National Land Cover Map
 Fronteir Solar Site
 BrightNight
 Marion and Washington
 Counties, Kentucky



Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; NAD 1983 StatePlane Kentucky North FIPS 1601 Feet



- Legend**
- ▭ Project Boundary
 - Index Grid

- Land Use**
- ▭ Open Water
 - ▭ Developed, Open Space
 - ▭ Developed, Low Intensity
 - ▭ Developed, Medium Intensity
 - ▭ Developed, High Intensity
 - ▭ Barren Land
 - ▭ Deciduous Forest
 - ▭ Evergreen Forest
 - ▭ Mixed Forest
 - ▭ Shrub/Scrub
 - ▭ Herbaceous
 - ▭ Hay/Pasture
 - ▭ Cultivated Crops
 - ▭ Woody Wetlands
 - ▭ Emergent Herbaceous Wetlands

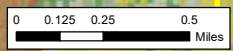
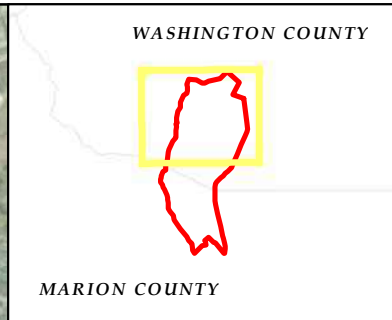
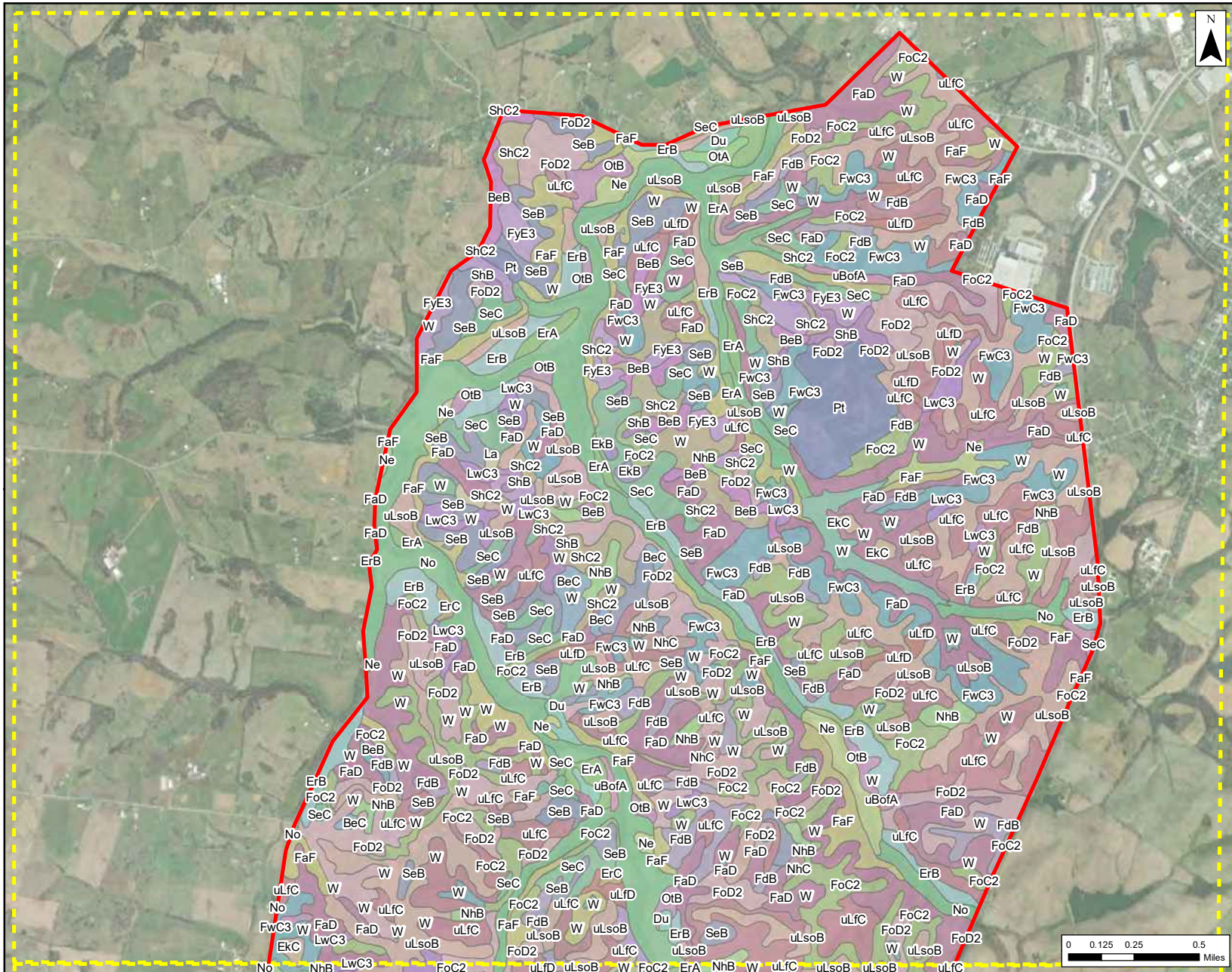


Figure 7
National Land Cover Map
 Fronteir Solar Site
 BrightNight
 Marion and Washington
 Counties, Kentucky



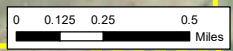
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; NAD 1983 StatePlane Kentucky North FIPS 1601 Feet



Legend

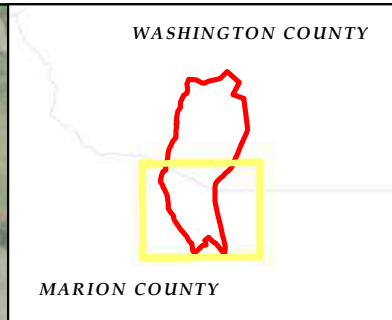
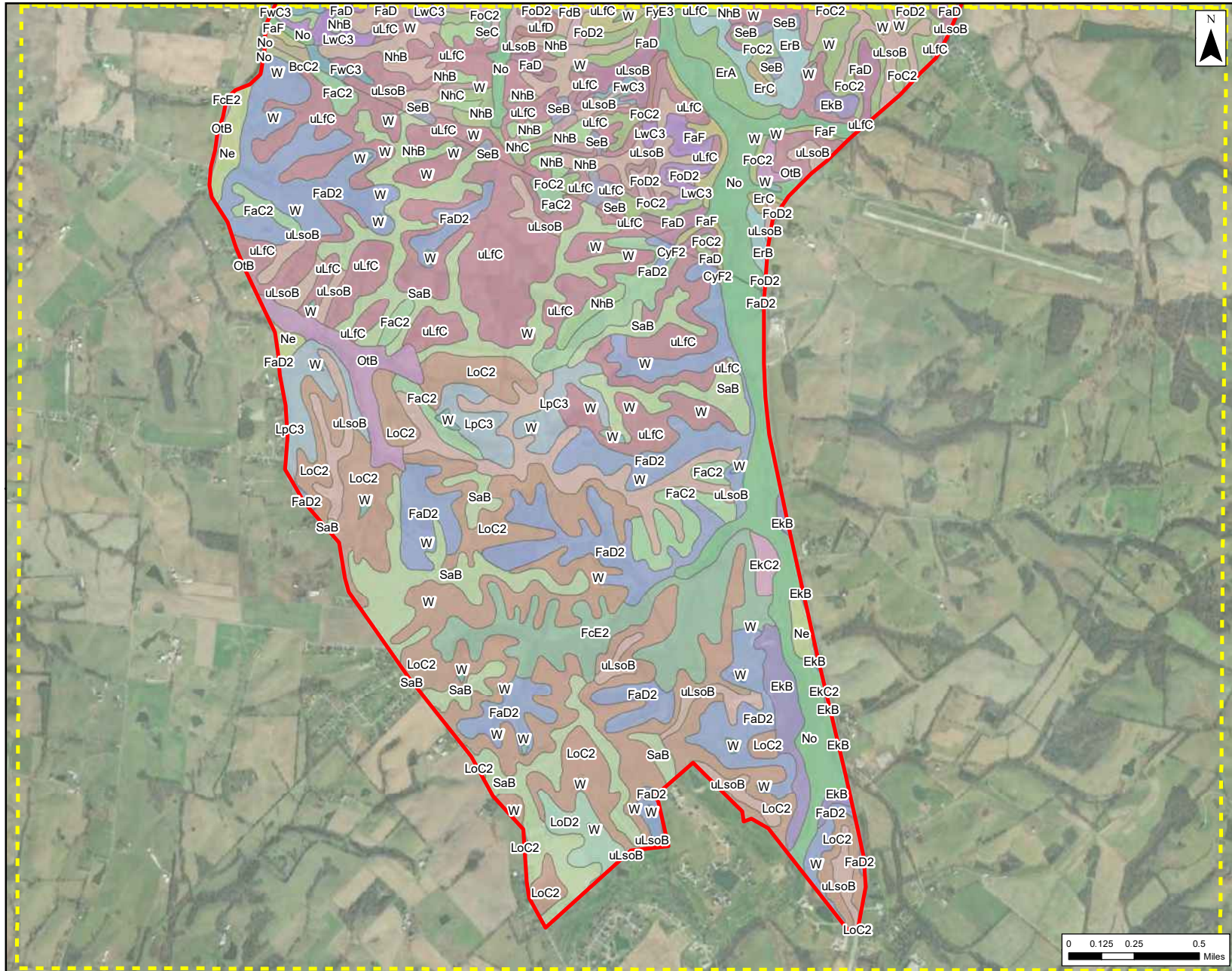
- Project Boundary
- Index Grid

Figure 8
Soils Map
 Fronteir Solar Site
 BrightNight
 Marion and Washington
 Counties, Kentucky



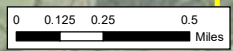
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; NAD 1983 StatePlane Kentucky North FIPS 1601 Feet



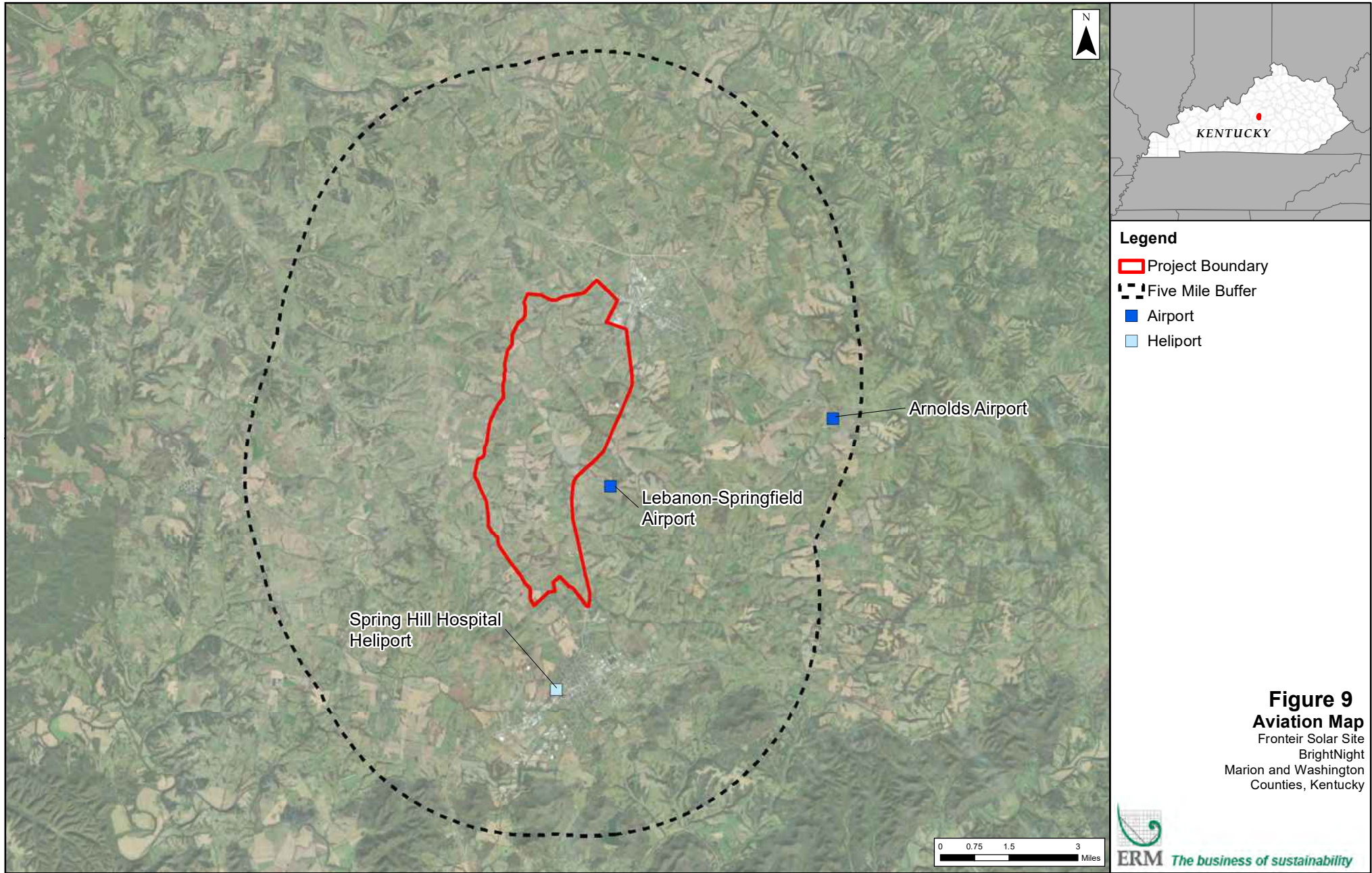


Legend
▬ Project Boundary
 Index Grid

Figure 8
Soils Map
 Fronteir Solar Site
 BrightNight
 Marion and Washington
 Counties, Kentucky



Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; NAD 1983 StatePlane Kentucky North FIPS 1601 Feet



- Legend**
- Project Boundary
 - Five Mile Buffer
 - Airport
 - Heliport

Arnolds Airport

Lebanon-Springfield Airport

Spring Hill Hospital Heliport

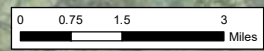


Figure 9
Aviation Map
 Fronteir Solar Site
 BrightNight
 Marion and Washington
 Counties, Kentucky



Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community; NAD 1983 StatePlane Kentucky North FIPS 1601 Feet

APPENDIX A PERMITTING MATRIX

Permitting Table – BrightNight Energy – Frontier Solar, Marion and Washington Counties, Kentucky

Permit / Activity / Consultation	Agency	Regulatory Trigger	Submittal Requirements	Timeline	Comments	Fee
COUNTY						
Conditional Use Permit (CUP)	City of Lebanon Planning and Zoning	County does not have zoning. CUP likely not needed, unless Lebanon City requires the CUP for parcel partially located within the 3-mile buffer boundary. Further Coordination with County and City is required	Coordination with the City of Lebanon is needed for parcel partially located within 3-mile buffer. Without zoning in the county, CUP likely not needed.	Typically 2-3 months	ERM attempted to contact Mr. Thompson of the City of Lebanon and Judge Daugherty of Marion County but was unable to speak to them prior to issuance of this report.	Varies
Zoning Permit	City of Lebanon Planning and Zoning	County does not have zoning. Zoning permit likely not needed. Further Coordination with Marion County Judge is required	Coordination with the City of Lebanon is needed for parcel partially located within 3-mile buffer.	Varies	ERM attempted to contact Mr. Thompson of the City of Lebanon and Judge Daugherty of Marion County but was unable to speak to them prior to issuance of this report.	Varies
Building Permit	Marion County Judge Executive	Permit typically needed prior to the erection, enlargement or conversion of any structure. Further coordination with County Judge is required.	TBD	Typically 20-30 days	Coordination with the City of Lebanon is needed for parcel partially located within 3-mile buffer. ERM attempted to contact Mr. Thompson of the City of Lebanon and Judge Daugherty of Marion County but was unable to speak to them prior to issuance of this report.	Varies
Driveway	Marion County Judge Executive	May be required for connection of Solar Facility to County roads.	TBD	Varies	Coordination with the City of Lebanon is needed for parcel partially located within 3-mile buffer. ERM attempted to contact Mr. Thompson of the City of Lebanon and Judge Daugherty of Marion County but was unable to speak to them prior to issuance of this report.	Varies
Development Permit	Marion County Judge Executive	A development permit shall be obtained before any construction or other development begins within any special flood hazard area.	Application for a development permit shall be made on forms furnished by Floodplain Administrator prior to any development activities: https://eec.ky.gov/Environmental-Protection/Water/FloodDrought/Documents/FloodplainCoordinatorsList.pdf	Varies	N/A	Varies
Conditional Use Permit (CUP)	Washington County Zoning Administrator	County does not have zoning so CUP likely not needed	N/A	N/A	County does not have zoning so CUP likely not needed. Further coordination with the County is recommended.	N/A
Zoning Permit	Washington County Zoning Administrator	County does not have zoning. Zoning permit likely not needed	N/A	N/A	County does not have zoning so zoning permit likely not needed. Further coordination with the County is recommended.	N/A
Building Permit	Washington County Zoning Administrator	Permit typically needed prior to the erection, enlargement or conversion of any structure. Zoning Administrator indicated that Building permit would not be needed. Further coordination needed.	TBD	Typically 20-30 days following CUP approval	Zoning Administrator indicated that Building permit would not be needed. Further coordination with the County is recommended.	Varies

Permitting Table – BrightNight Energy – Frontier Solar, Marion and Washington Counties, Kentucky

Permit / Activity / Consultation	Agency	Regulatory Trigger	Submittal Requirements	Timeline	Comments	Fee
Driveway Permit	Washington County Zoning Administrator	No zoning or codes exist within County, but may be required for connection of Solar Facility to county roads.	TBD	Varies	Driveway permit may be required depending on whether access roads intersect County or State roads. Further coordination with the County is recommended.	Varies
STATE						
Construction Certificate	Kentucky Public Service Commission	Per KRS 278.704, "No person shall commence to construct a merchant electric generating facility until that person has applied for and obtained a construction certificate for the facility."	Application shall be filed at the office of the Public Service Commission as stated by Kentucky Revised Statute (KRS) 278 that addresses public utilities: https://apps.legislature.ky.gov/law/statutes/chapter.aspx?id=38583 Application: https://psc.ky.gov/agencies/psc/siting_board/forms/chk102.pdf See KRS 278.706 for complete list of application requirements.	150 days minimum (in practicality, process takes approximately 270 days in total) -Notice of intent to be filed at least 30 days prior to filing of application. -Application review process takes 120 days minimum (typically closer to 180 days in actuality).	-Evidentiary hearing (participation limited to the applicants and investors) -Public hearing to give the general public an opportunity to be heard by the board	Varies - Application fees for a construction certificate shall be set by the board
Public Involvement Report	Kentucky Public Service Commission	Per KRS 278.706, applications must include "A complete report of the applicant's public involvement program activities should be undertaken prior to the filing the application for the construction certificate."	See KRS 278.706(f) for complete requirements.	Public meetings to be held 90 days prior to filing application. Report of activities to be included filed with application.	Public meeting(s) in the county or counties in which the proposed facility will be constructed.	Varies
Site Assessment Report	Kentucky Public Service Commission	Per KRS 278.708, "Any person proposing to construct a merchant electric generating facility shall file a site assessment report with the board."	See KRS 278.708 for Site Assessment Report requirements.	To be filed with application.	N/A	Varies
Floodplain Construction Permit	Kentucky Division of Water	Endorsement of local administrator is required before a state floodplain construction permit can be processed. In Marion County, John Thompson (Building Inspector & Zoning Official) would be responsible for endorsing as the local administrator. In Washington County, Kevin Devine (Emergency Management Director) would be responsible for endorsing as the local administrator.	Blank Application provided : https://campbellcountyky.gov/egov/documents/79b702ed_6ebc_c578_3ab1_aad3cb076f9e.pdf	2-4 weeks	N/A	Varies
Clean Water Act Section 401 Water Quality Certification	Kentucky Division of Water	Required when a Section 404 Individual Permit is needed. If stream and/or wetland impacts meet the threshold for a Section 404 Nationwide Permit, the applicant automatically obtains a Section 401 Water Quality Certification (i.e., separate coordination and submittal for a Section 401 Water Quality Certification would not be required).	N/A	3-6 months	N/A	N/A

Permitting Table – BrightNight Energy – Frontier Solar, Marion and Washington Counties, Kentucky

Permit / Activity / Consultation	Agency	Regulatory Trigger	Submittal Requirements	Timeline	Comments	Fee
FEDERAL						
Clean Water Act Section 404 Permit and Jurisdictional Determination	United States Army Corps of Engineers (USACE), Louisville District	Impacts to jurisdictional wetlands and waters of the United States.	The Approved Jurisdictional Determination (AJD) application is in the form of a report and includes a completed wetlands and waters delineation report. If impacts are unavoidable, type of permit will depend on level of impact. Nationwide Permit 51 may apply if the loss of waters of the U.S. is less than 1/2 acres of wetlands or 0.03 . A pre-construction notification (PCN) to the USACE, prior to construction, is required if the discharge results in a loss of greater than 1/10 acre of waters of the U.S.	60 – 90 days for Nationwide Permit review and approval Nationwide Permit process and consultations: 3 - 6 months		None
Endangered Species Act (ESA), Section 7 Consultation	United States Fish and Wildlife Services (USFWS)	A federal nexus (e.g., Section 404 permit) would trigger this consultation. Federal agencies are required consult with the USFWS in order to authorize a project when the activity may affect listed federal T&E species.	If the project may affect listed species, sensitive species information would be provided in the PCN sent to the USACE for the Section 404 permit. The USACE would initiate the consultation with USFWS. Informal consultation with the USFWS may be recommended as part of the initial project review.	1 month		None
Endangered Species Act (ESA), Section 10 Consultation (Incidental Take Permit)	United States Fish and Wildlife Services (USFWS)	Believe that project will result in incidental take of a federal threatened or endangered species.	Develop a Habitat Conservation Plan and possibly National Environmental Policy Act documentation (e.g., categorical exclusion, Environmental Assessment, Environmental Impact Statement).	3 – 12 months	Allows for the take of a listed threatened or endangered species by developing a Habitat Conservation Plan.	\$100
Migratory Bird Treaty Act (MBTA) Compliance	United States Fish and Wildlife Services (USFWS)	The act prohibits the take and harvest of migratory birds and nests.	No submittal required. Best management practices may be advised for the project.	N/A	The October 4, 2021 revision published by USFWS asserts that incidental take is prohibited under the MBTA.	None
Bald and Golden Eagle Protection Act (BGEPA) Compliance	United States Fish and Wildlife Services (USFWS)	The act protects eagles, including their parts, nests, and eggs by prohibiting their take, possession, or commerce.	Coordination with USFWS may be necessary if impacts to eagles may occur.	30 - 90 days		None
National Historic Preservation Act (NHPA) Section 106	Kentucky Heritage Council	A federal nexus (e.g., Section 404 permit) would trigger Section 106 compliance and requires consultation for those permit areas. The USACE has an obligation to consider impacts to cultural resources and would complete the formal federal consultation.	A survey for historic and cultural resources, preparation of a cultural resources assessment report, and an inadvertent discovery plan may be required.	60 – 90 days	Occurs during CWA Section 404 review processes	None
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (ASTM Phase I Environmental Site	Environmental Protection Agency (EPA)	Phase I ESA is recommended to identify contaminated properties and recognized environmental conditions for development financing. No official permit needed.	N/A	N/A	Phase I ESA is recommended to identify contaminated properties and recognized environmental conditions for development financing. No official permit needed.	N/A

Permitting Table – BrightNight Energy – Frontier Solar, Marion and Washington Counties, Kentucky

Permit / Activity / Consultation	Agency	Regulatory Trigger	Submittal Requirements	Timeline	Comments	Fee
Assessment) (ESA)						
Form FAA 7460-1 Notice of Proposed Construction	Federal Aviation Administration (FAA)	<p>A project must file with the FAA at least 45 days prior to construction if:</p> <ul style="list-style-type: none"> a structure will exceed 200 feet above ground level, a structure will be in proximity to an airport and will exceed the slope ratio, a structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b), a structure will emit frequencies, and does not meet the conditions of the FAA Co-location Policy, a structure will be in an instrument approach area and might exceed part 77 Subpart C, a proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception, a structure will be on an airport or heliport, or a filing has been requested by the FAA. 	<p>The FAA Notice Criteria Tool is the first step in determining whether FAA notice may be required. https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp</p> <p>Federal Regulation Title 14 Part 77 establishes standards and notification requirements for objects affecting navigable airspace. This notification serves as the basis for:</p> <ul style="list-style-type: none"> Evaluating the effect of the construction or alteration on operating procedures Determining the potential hazardous effect of the proposed construction on air navigation Identifying mitigating measures Charting of new objects <p>Notification allows the FAA to identify potential aeronautical hazards in advance thus preventing or minimizing the adverse impacts to the safe and efficient use of navigable airspace.</p> <p>An Obstruction Evaluation/Airport Airspace Analysis filing must be made online. Must file at least 45 days prior to construction.</p> <p>Following review, a Notice of Proposed Construction or Alteration form (FAA 7460-1) must be submitted prior to construction to ensure panels will not interfere with aviation. Siting near a military or civilian airfield may trigger an analysis of possible impact of turbine towers on radar from airfields. FAA will provide a Hazard/No Hazard Determination and may require lighting on turbines to address potential hazards.</p>	45 days	<p>Consultation early in site development is recommended to de-risk the project and address any concerns prior to local permitting.</p> <p>ERM recommends consulting with FAA to confirm whether notification would be required. A glare analysis may still be required if requested by FAA.</p>	TBD

APPENDIX B THREATENED AND ENDANGERED SPECIES LISTS

IPaC resource list

This hal (US bel tha

IPaC is experiencing problems with the map layer services and you may get an "Unexpected error" dialog when loading your project, if you have layers displayed or add a layer to your project. Removing those layers from your map should fix the issue. We are working on the issue and hope to have it resolved soon.

cal
e's
nced
t

However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Marion and Washington counties, Kentucky



Local office

Kentucky Ecological Services Field Office

☎ (502) 695-0468

📅 (502) 695-1024

J C Watts Federal Building, Room 265
330 West Broadway
Frankfort, KY 40601-8670

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

-
1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
<p>Gray Bat <i>Myotis grisescens</i></p> <p>Wherever found</p> <p>This species only needs to be considered if the following condition applies:</p> <ul style="list-style-type: none"> The project area includes potential gray bat habitat. <p>No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6329</p>	Endangered
<p>Indiana Bat <i>Myotis sodalis</i></p> <p>Wherever found</p> <p>This species only needs to be considered if the following condition applies:</p> <ul style="list-style-type: none"> The project area includes 'potential' habitat. All activities in this location should consider possible effects to this species. <p>There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/5949</p>	Endangered
<p>Northern Long-eared Bat <i>Myotis septentrionalis</i></p> <p>Wherever found</p> <p>This species only needs to be considered if the following condition applies:</p> <ul style="list-style-type: none"> The specified area includes areas in which incidental take would not be prohibited under the 4(d) rule. For reporting purposes, please use the "streamlined consultation form," linked to in the "general project design guidelines" for the species. <p>No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045</p>	Threatened

Clams

NAME	STATUS
------	--------

Clubshell <i>Pleurobema clava</i>	Endangered
This species only needs to be considered if the following condition applies:	
<ul style="list-style-type: none">The species may be affected by projects that significantly impact the Salt River mainstem, and/or any of its following tributaries: Beech Fork, and/or Rolling Fork.	
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3789	
Fanshell <i>Cyprogenia stegaria</i>	Endangered
Wherever found	
This species only needs to be considered if the following condition applies:	
<ul style="list-style-type: none">The species may be affected by projects that significantly impact the Salt River mainstem, and/or any of its following tributaries: Beech Fork, and/or Rolling Fork.	
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4822	
Orangefoot Pimpleback (pearlymussel) <i>Plethobasus cooperianus</i>	Endangered
Wherever found	
This species only needs to be considered if the following condition applies:	
<ul style="list-style-type: none">The species may be affected by projects that significantly impact the Salt River mainstem, and/or any of its following tributaries: Beech Fork, and/or Rolling Fork.	
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1132	
Pink Mucket (pearlymussel) <i>Lampsilis abrupta</i>	Endangered
Wherever found	
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7829	

Rabbitsfoot *Quadrula cylindrica cylindrica*

Threatened

Wherever found

This species only needs to be considered if the following condition applies:

- The species may be affected by projects that significantly impact the Salt River mainstem, and/or any of its following tributaries: Beech Fork, and/or Rolling Fork.

There is **final** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/5165>

Ring Pink (mussel) *Obovaria retusa*

Endangered

Wherever found

This species only needs to be considered if the following condition applies:

- The species may be affected by projects that significantly impact the Salt River mainstem, and/or any of its following tributaries: Beech Fork, and/or Rolling Fork.

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/4128>

Insects

NAME

STATUS

Monarch Butterfly *Danaus plexippus*

Candidate

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/9743>

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds
<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS

ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Bald Eagle *Haliaeetus leucocephalus*

Breeds Sep 1 to Jul 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

Lesser Yellowlegs *Tringa flavipes*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9679>

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence

at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

- The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

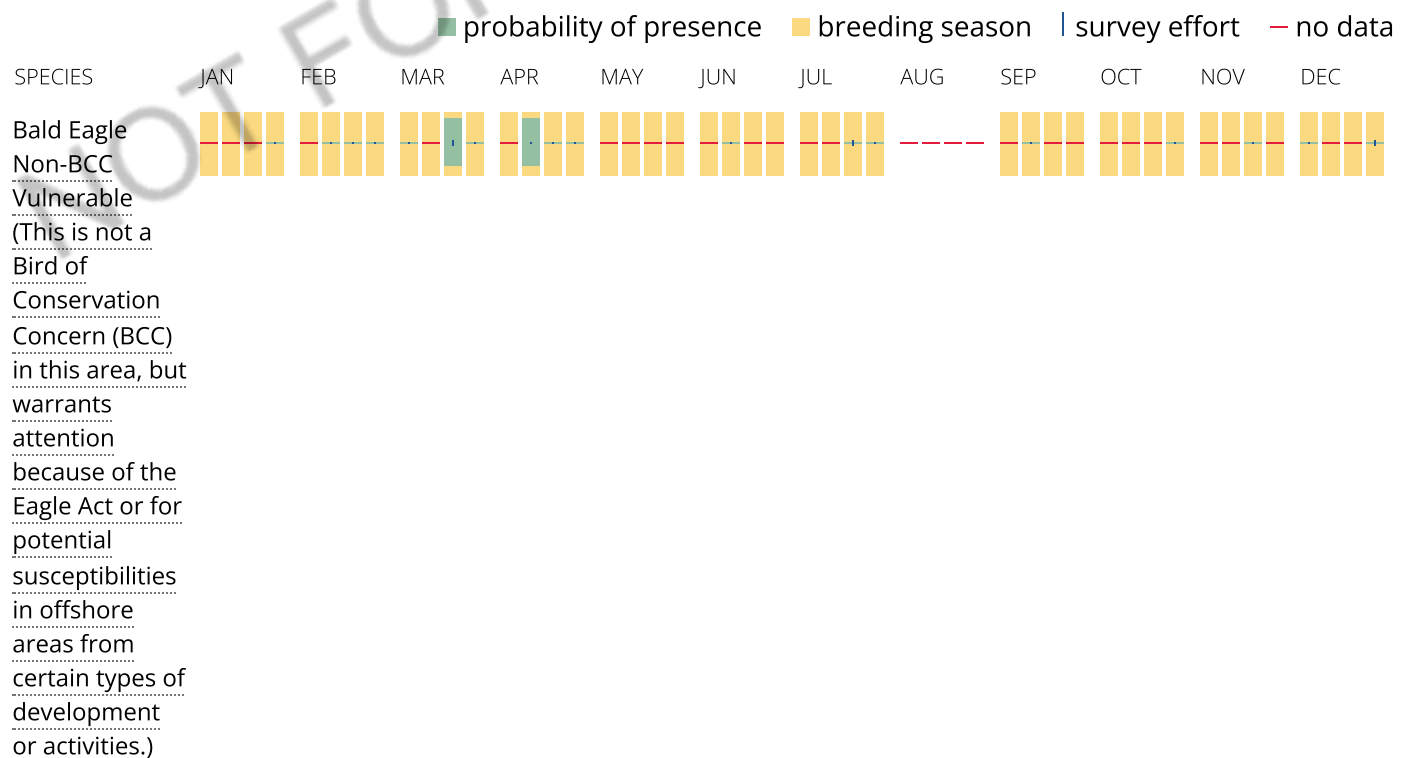
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (-)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Lesser
Yellowlegs
BCC Rangewide
(CON) (This is a
Bird of
Conservation
Concern (BCC)
throughout its
range in the
continental
USA and
Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Coastal Barrier Resources System

Projects within the [John H. Chafee Coastal Barrier Resources System](#) (CBRS) may be subject to the restrictions on federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local [Ecological Services Field Office](#) or visit the [CBRA Consultations website](#). The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

THERE ARE NO KNOWN COASTAL BARRIERS AT THIS LOCATION.

Data limitations

The CBRS boundaries used in IPaC are representations of the controlling boundaries, which are depicted on the [official CBRS maps](#). The boundaries depicted in this layer are not to be considered authoritative for in/out determinations close to a CBRS boundary (i.e., within the "CBRS Buffer Zone" that appears as a hatched area on either side of the boundary). For projects that are very close to a CBRS boundary but do not clearly intersect a unit, you may contact the Service for an official determination by following the instructions here: <https://www.fws.gov/service/coastal-barrier-resources-system-property-documentation>

Data exclusions

CBRS units extend seaward out to either the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS data, therefore projects in the offshore areas of units (e.g., dredging, breakwaters, offshore wind energy or oil and gas projects) may be

subject to CBRA even if they do not intersect the CBRS data. For additional information, please contact CBRA@fws.gov.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER POND

[Palustrine](#)

LAKE

[Lacustrine](#)

RIVERINE

[Riverine](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.



Species Information

State Threatened, Endangered, and Special Concern Species observations for selected counties

Linked life history provided courtesy of [NatureServe Explorer](#).

Records may include both recent and historical observations.

[US Status Definitions](#) [Kentucky Status Definitions](#)

List State Threatened, Endangered, and Special Concern Species observations in 2 selected counties.

Selected counties are: Marion, Washington.

Scientific Name and Life History	Common Name and Pictures	Class	County	US Status	KY Status	WAP	Reference
<i>Alasmidonta marginata</i>	Yes	Elktoe	Bivalvia	Marion	N	T	Reference
<i>Alasmidonta viridis</i>	Yes	Slippershell Mussel	Bivalvia	Marion	N	S	Reference
<i>Alasmidonta viridis</i>	Yes	Slippershell Mussel	Bivalvia	Washington	N	S	Reference

<i>Asio flammeus</i>	Yes	Short-eared Owl	Aves	Marion	N	E	Reference
<i>Centronyx henslowii</i>	Yes	Henslow's Sparrow	Aves	Marion	N	S	Reference
<i>Centronyx henslowii</i>	Yes	Henslow's Sparrow	Aves	Washington	N	S	Reference
<i>Certhia americana</i>		Brown Creeper	Aves	Marion	N	T	Reference
<i>Chondestes grammacus</i>		Lark Sparrow	Aves	Washington	N	S	Reference
<i>Cryptobranchus alleganiensis alleganiensis</i>	Yes	Eastern Hellbender	Amphibia	Marion	N	S	Reference
<i>Dolichonyx oryzivorus</i>	Yes	Bobolink	Aves	Washington	N	S	Reference
<i>Epioblasma triquetra</i>	Yes	Snuffbox	Bivalvia	Marion	E	E	Reference
<i>Falco peregrinus</i>	Yes	Peregrine Falcon	Aves	Washington	N	E	Reference
<i>Fulica americana</i>		American Coot	Aves	Marion	N	E	Reference
<i>Haliaeetus leucocephalus</i>	Yes	Bald Eagle	Aves	Marion	N	S	Reference
<i>Junco hyemalis</i>		Dark-eyed Junco	Aves	Washington	N	S	Reference
<i>Lampsilis ovata</i>	Yes	Pocketbook	Bivalvia	Marion	N	E	Reference

<i>Lanius ludovicianus</i>	Yes	Loggerhead Shrike	Aves	Washington	N	S	Reference
<i>Lanius ludovicianus</i>	Yes	Loggerhead Shrike	Aves	Marion	N	S	Reference
<i>Leaunio lienosus aquilonius</i>	Yes	Little Spectaclecase	Bivalvia	Marion	N	T	Reference
<i>Maccaffertium bednariki</i>		A Heptageniid Mayfly	Bivalvia	Marion	N	S	Reference
<i>Mustela nivalis</i>	Yes	Least Weasel	Mammalia	Washington	N	S	Reference
<i>Myotis grisescens</i>	Yes	Gray Myotis	Mammalia	Marion	E	T	Reference
<i>Myotis lucifugus</i>	Yes	Little Brown Bat	Mammalia	Marion	N	T	Reference
<i>Myotis septentrionalis</i>	Yes	Northern Myotis	Mammalia	Marion	T	E	Reference
<i>Noturus stigmosus</i>	Yes	Northern Madtom	Actinopterygii	Marion	N	S	Reference
<i>Obovaria subrotunda</i>	Yes	Round Hickorynut	Bivalvia	Marion	N	T	Reference
<i>Passerculus sandwichensis</i>	Yes	Savannah Sparrow	Aves	Washington	N	S	Reference
<i>Perimyotis subflavus</i>	Yes	Eastern Pipistrelle	Mammalia	Marion	N	T	Reference
<i>Peucaea aestivalis</i>	Yes	Bachman's Sparrow	Aves	Washington	N	E	Reference

<i>Podilymbus podiceps</i>	Yes	Pied-billed Grebe	Aves	Marion	N	E	Reference
<i>Pseudanophthalmus parvus</i>		Tatum Cave Beetle	Aves	Marion	C	H	Reference
<i>Simpsonaias ambigua</i>	Yes	Salamander Mussel	Bivalvia	Marion	N	T	Reference
<i>Stylurus notatus</i>		Elusive Clubtail	Bivalvia	Marion	N	E	Reference
<i>Tantilla coronata</i>	Yes	Southeastern Crowned Snake	Reptilia	Marion	N	T	Reference
<i>Thryomanes bewickii</i>	Yes	Bewick's Wren	Aves	Marion	N	H	Reference
<i>Thryomanes bewickii</i>	Yes	Bewick's Wren	Aves	Washington	N	H	Reference
<i>Tyto alba</i>	Yes	Barn Owl	Aves	Washington	N	S	Reference
<i>Tyto alba</i>	Yes	Barn Owl	Aves	Marion	N	S	Reference

38 species are listed

APPENDIX C USFWS BAT MITIGATION TABLE

APPENDIX B: Mitigation Multipliers by Habitat Type and Season

	Nov. 15 – Mar. 31 (all habitats unoccupied)	Apr. 1 – Aug. 15 (swarming unoccupied*; potential, summer occupied)	Jun. 1 – Jul 31** (non-volant period: swarming unoccupied; potential, summer occupied)	Aug.16 – Oct. 14 (swarming & potential occupied; summer unoccupied)	Oct. 15 – Nov. 14 (swarming occupied; potential, summer unoccupied)
Summer 1 + Swarming 1	2.5	3.0 (4.0)*	4.0	3.5	3.5
Summer 1 + Swarming 2	2.0	2.5 (3.5)*	3.5	3.0	3.0
Summer 2 + Swarming 1	2.0	2.5 (3.5)*	3.5	3.0	3.0
Summer 2 + Swarming 2	1.5	2.0 (3.0)*	3.0	2.5	2.5
Swarming 1	1.5	2.0 (3.0)*	3.0	2.5	2.5
Swarming 2	1.0	1.5 (2.5)*	2.5	2.0	2.0
Summer 1	1.5	2.0	3.0	1.5	1.5
Summer 2	1.0	1.5	2.5	1.0	1.0
Potential	0.5	1.0	2.0	1.0	0.5

Summer 1 = Indiana bat maternity and northern long-eared bat summer habitat

Summer 2 = Indiana bat non-maternity summer habitat

Swarming 1 = Indiana bat priority 1 & 2 hibernacula swarming areas

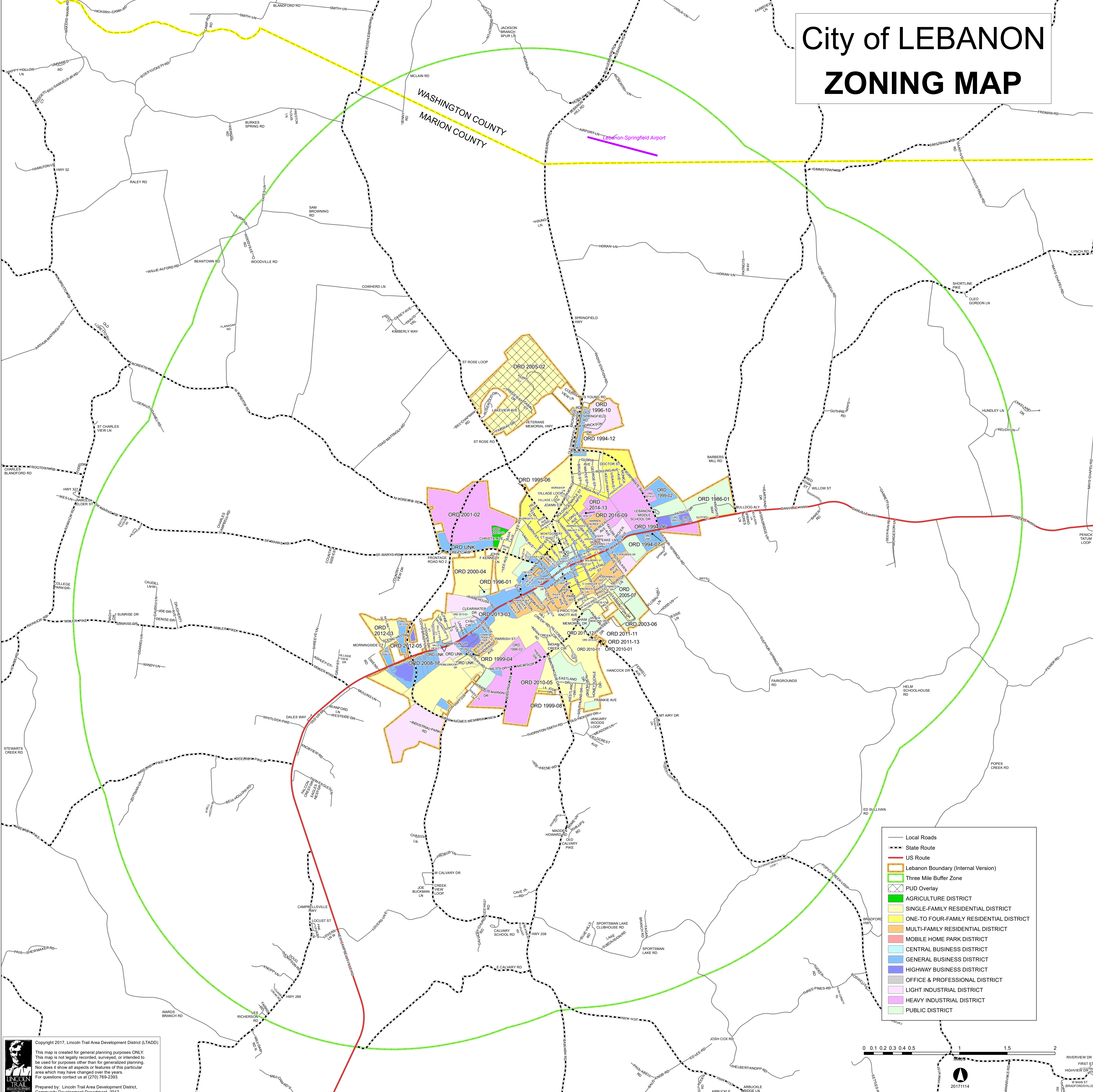
Swarming 2 = Indiana bat priority 3 & 4 and northern long-eared bat hibernacula swarming areas

*Spring emergence occurs close to the hibernacula entrances in the early spring with females emerging in early to mid-April and males emerging in late April – early May. Swarming habitat within 1 mile of P1 and P2 hibernacula entrances and within ½ mile of P3 and P4 hibernacula entrances will be considered occupied between April 1 and May 14. Projects within these areas require project-specific evaluation by the Service and may require additional mitigation, please see page 19 for more information.

** Projects impacting known or potential Summer 1 habitat and that occur June 1 - July 31 require project-specific evaluation by the Service, please see page 19 for more information. A limited amount of impact under the CMOU process is available for impacts during the non-volant season, however additional mitigation is required to compensate for the increased severity of the impacts. June – July impacts per project may not exceed 20 acres.

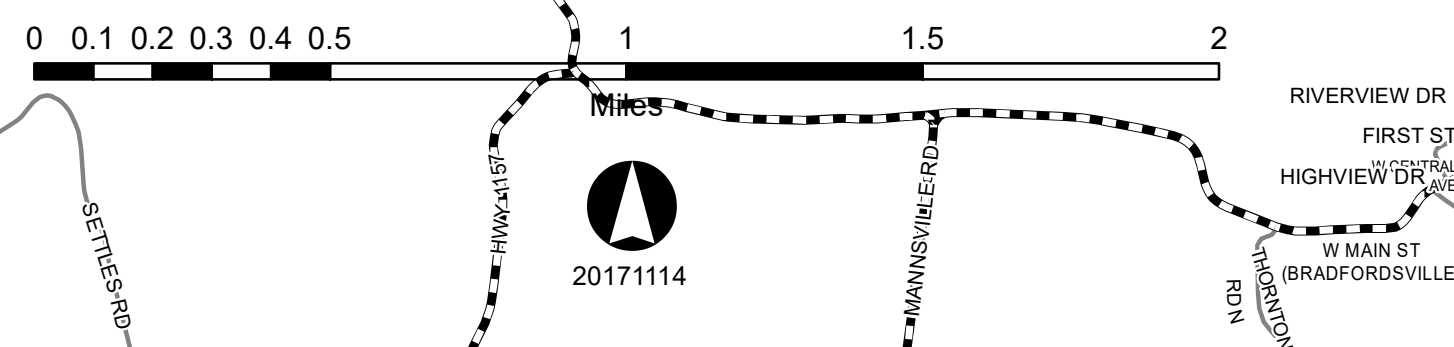
APPENDIX D LOCAL PLANNING AND PERMITTING

City of LEBANON ZONING MAP



- Local Roads
- - - State Route
- US Route
- ▭ Lebanon Boundary (Internal Version)
- ▭ Three Mile Buffer Zone
- ▭ PUD Overlay
- ▭ AGRICULTURE DISTRICT
- ▭ SINGLE-FAMILY RESIDENTIAL DISTRICT
- ▭ ONE-TO FOUR-FAMILY RESIDENTIAL DISTRICT
- ▭ MULTI-FAMILY RESIDENTIAL DISTRICT
- ▭ MOBILE HOME PARK DISTRICT
- ▭ CENTRAL BUSINESS DISTRICT
- ▭ GENERAL BUSINESS DISTRICT
- ▭ HIGHWAY BUSINESS DISTRICT
- ▭ OFFICE & PROFESSIONAL DISTRICT
- ▭ LIGHT INDUSTRIAL DISTRICT
- ▭ HEAVY INDUSTRIAL DISTRICT
- ▭ PUBLIC DISTRICT

Copyright 2017, Lincoln Trail Area Development District (LTADD)
 This map is created for general planning purposes ONLY. This map is not legally recorded, surveyed, or intended to be used for purposes other than for general planning. Nor does it show all aspects or features of this particular area which may have changed over the years. For questions contact us at (270) 769-2393.
 Prepared by: Lincoln Trail Area Development District, Community Development Department, 2017.



20171114

Exhibit D

Public Information Meeting (“PIM”)

- 1. PIM Letter**
- 2. List of Neighboring Landowners**
- 3. Scan Certified Receipts**
- 4. Open House for PIM**
- 5. Presentation for PIM**
- 6. Fact Sheet for PIM**
- 7. Summary Transcript of PIM**
- 8. Published Notice**
- 9. Affidavit of Publication**



July 13, 2020

CERTIFIED MAIL, RETURN RECEIPT REQUESTED

«AddressBlock»

Subj: Northern Bobwhite Solar Project Public Information Meetings

Dear Neighbor,

As was discussed in our prior letter, we are writing today to invite you, as a nearby landowner of the Northern Bobwhite Solar Project, to participate in the project's public engagement activities. In light of concerns relating to the current COVID-19 pandemic, however, we are providing multiple opportunities for you to learn about the project, ask questions, and provide comments.

First, we have created a project-specific website at www.geenexsolar.com/northernbobwhite. On this website, you will find a map of the project, a PowerPoint presentation describing the project, a summary of frequently asked questions and responses, contact information, and instructions for submitting questions and comments on the project. The website will also provide instructions on how to request additional information on the project.

Second, we are hosting in-person "office hours" from 10 a.m. to 3 p.m. on Thursday, July 30, 2020 at the Marion County Cooperative Extension office located at 416 Fairgrounds Road, Lebanon, KY 40033-1550. During these office hours, information about the project will be available and you may ask questions of and provide comments to project staff. Social distancing will be maintained during these interactions.

Finally, we are hosting a live, virtual public information meeting on Thursday July 30, 2020 from 6:00 p.m. to 8:00 p.m. The virtual public information meeting will include a presentation about the project as well as a question and answer session. You can join the virtual public information meeting via web link or via telephone. The presentation will be accessible online at www.GeenexVirtualMeetings.com. Participants can also call in (toll free) at 877-229-8493 and use the ID code 119758. We look forward to the opportunity to meet with you, virtually or at our office hours, to discuss the project and answer any questions you may have. In the meantime, below is a list of project team members who are available to answer your questions.

Kara W. Price, SVP of Permitting/Development
859-309-4415
northernbobwhite@geenexsolar.com

Doug Schulte, Director of Operations - KY
859-309-7662
northernbobwhite@geenexsolar.com

Best wishes and stay well,

A handwritten signature in blue ink that reads 'Kara W. Price'.

Kara W. Price
Geenex Solar
Northern Bobwhite Solar

Enclosed: Northern Bobwhite Solar Fact Sheet

Exhibit D.2 List of Adjacent Landowners for Public Information Meeting Letter

Name	Address2	City	State	Zip
ABELL DOUGLAS SCOTT & JOAN	3325 BARBERS MILL RD	LEBANON	KY	40033
AVERITT JUDY & MARY ROSE HINES	3135 SPRINGFIELD HWY	LEBANON	KY	40033
BAGWELL STEVEN J & MARGARET B	2640 BARBERS MILL RD	LEBANON	KY	40033
BALLINGER JAMES WENDELL II & MELISSA	1618 WOODS MILL ROAD	LOUISVILLE	KY	40272
BEAMS ABELL FARM LLLP	4088 SPRINGFIELD HWY	SPRINGFIELD	KY	40069
BEGLEY TRAVIS MORGAN & BILLY JOE &	465 RADIO STATION RD	LEBANON	KY	40033
BLAIR DAVID WALLACE & JESSICA MARIE	3415 BARBERS MILL RD	LEBANON	KY	40033
BLAIR WILLIAM B JR	122 MEADOW LN	SPRINGFIELD	KY	40069-
BRADSHAW JAMES R	1500 BARBERS MILL RD	LEBANON	KY	40033
BRADSHAW JOHN D & JUDY &	330 E MAIN ST	LEBANON	KY	40033
BROWN MICHAEL A	1150 GENE CAMPBELL RD	LEBANON	KY	40033
BROWN RUBY K & MARTHA J CRUMBIE &	513 DOVER RD	LEXINGTON	KY	40505
BUCKMAN J CALEB & SARAH E MURPHY	455 RADIO STATION RD	LEBANON	KY	40033
CAMPBELL EUGENE & CYNTHIA	1375 GENE CAMPBELL RD	LEBANON	KY	40033
CBC OF MARION CO INC	113 WEST PUBLIC SQUARE	GLASGOW	KY	42141
CLARK PATRICK S	2100 ED SULLIVAN RD	LEBANON	KY	40033
CLARK PAUL JR & KAY	2625 SHORTLINE PIKE	LEBANON	KY	40033
CONLEY GREG & SEIDINA	60 HOURIGAN LANE	LEBANON	KY	40033
COOK CHRISTOPHER E & MARY E	2740 BARBERS MILL RD	LEBANON	KY	40033
COOK JAMES O & MARIAN	PO BOX 666	LEBANON	KY	40033
DEDMAN DAVID	1660 HORAN LN	SPRINGFIELD	KY	40069
DEERING WILLIAM S	1780 HORAN LN	SPRINGFIELD	KY	40069
ERCHAK NICHOLAS & TERI	2825 BARBERS MILL RD	LEBANON	KY	40033
FARMER MICHAEL & ALICIA	2617 SPRINGFIELD HWY	LEBANON	KY	40033
FIELDS CAM	2925 BARBERS MILL RD	LEBANON	KY	40033
GLASSCOCK TERRY & JACQUELINE	11579 MAHOGANY DR	ARLINGTON	TN	38002-
GOOTEE KIMBERLY A	2793 BARBERS MILL RD	LEBANON	KY	40033
GOOTEE MICHAEL ADAM & KRISTAL	176 COURSE VIEW LN	LEBANON	KY	40033
GREENWELL DANIEL P & BECKY JO	2960 BARBERS MILL RD	LEBANON	KY	40033
HAMILTON DANA M	2769 BARBERS MILL RD	LEBANON	KY	40033
HAMILTON DONNIE & CRAIG	660 ADA DRIVE	HARRODSBURG	KY	40330
HARDIN ROGER DALE & PATRICIA	6472 BRADFORDSVILLE RD	LEBANON	KY	40033
HARDIN WILLIAM TODD & JILL	2200 SHORTLINE PK	LEBANON	KY	40033
HARMON JAMES & NANCY JOINT REVOCABLE	2455 SHORTLINE PIKE	LEBANON	KY	40033
HAYS WILLIAM KENNETH	800 WILLIS TRAIL	LEBANON	KY	40033
HILL JAMES BRADLEY & REBECCA A	3115 BARBERS MILL RD	LEBANON	KY	40033
HUNT DAVID IVAN & TERESA ANN	485 HARLAN CAULK RD	CAMPBELLSVILLE	KY	42718
HUNT TERESA A AS TRUSTEE OF	PO BOX 807	LEBANON	KY	40033
JOHNSON BRENT	2675 SHORTLINE PIKE	LEBANON	KY	40033
KUTTER JOHN T & PAULETTA O	3835 SIMMSTOWN RD	LEBANON	KY	40033
LANHAM JOSEPH STEVEN & CAROLINE	174 PATRIOTS WAY	SPRINGFIELD	KY	40069
LAWSON RANDALL & CONNIE	5120 SHORTLINE PIKE	LEBANON	KY	40033
LEAKE ANTHONY HOWARD	640 GENE CAMPBELL RD	LEBANON	KY	40033
LEAKE JOSEPH T JR & BARBARA TRUST	640 GENE CAMPBELL RD	LEBANON	KY	40033
LEAKE KEVIN A & ELLEN	499 GENE CAMPBELL RD	LEBANON	KY	40033
LIVERS MARY ANN BATTCHER	257 PATRIOTS WAY	SPRINGFIELD	KY	40069
MARION & WASHINGTON CO	P.O. BOX 805	LEBANON KY.		40033
MATTINGLY DAVID J	4000 SPRINGFIELD HWY	SPRINGFIELD	KY	40069
MATTINGLY JAMES TROY & GLENDA	2626 BARBERS MILL RD	LEBANON	KY	40033
MATTINGLY THOMAS RAY	780 ST MARYS ROAD	LEBANON	KY	40033
MCMICHAEL MARTIN ALLEN	1335 BARBERS MILL RD	LEBANON	KY	40033
MONTGOMERY CHARLES FORREST &	520 THORNTON SMITH RD	LEBANON	KY	40033
MOORE WILLIAM M	3154 JIMTOWN RD	SPRINGFIELD	KY	40069
MULLINS CLARENCE RUDOLPH JR	1285 BARBERS MILL RD	LEBANON	KY	40033
PARKERS PRIDE FARMS LLLP	4088 SPRINGFIELD HWY	SPRINGFIELD	KY	40069
PITTMAN RYAN PATRICK & LINDSEY	770 GENE CAMPBELL RD	LEBANON	KY	40033
ROBBINS ALLISON & BRANDON	1335 HORAN LN	SPRINGFIELD	KY	40069
ROBINSON CLAYTON JAMES & LAUREN	2840 ST FRANCIS ROAD	ST FRANCIS	KY	40062

Exhibit D.2 List of Adjacent Landowners for Public Information Meeting Letter

ROUTIN ROGER ALLEN & JESSICA MARIE	850 HORAN LN	SPRINGFIELD	KY	40069-
SANDUSKY DAVID & RHONDA M	3200 ST ROSE RD	LEBANON	KY	40033
SINGLETON NICOLE MATTINGLY &	2879 BARBERS MILL RD	LEBANON	KY	40033
SPALDING CHRISTOPHER	195 SHORTLINE PIKE	LEBANON	KY	40033
SPALDING NICHOLAS J & KRISTIN N	40 GRAY ST	LEBANON	KY	40033
SYLVESTER & ALICE BROWN FAMILY	1500 HORAN LANE	SPRINGFIELD	KY	40069
TATUM TERRY(SAMUEL) & THERESE	2355 BARBERS MILL RD	LEBANON	KY	40033
TRACEY TABITHA & ISRAEL	1240 GENE CAMPBELL RD	LEBANON	KY	40033
TUCKER JAMES E JR	2718 BARBERS MILL ROAD	LEBANON	KY	40033
TUCKER MARY THERESA	2899 BARBERS MILL RD	LEBANON	KY	40033
VANDERVEER JOHN & MARY ANN	2340 HORAN LN	SPRINGFIELD	KY	40069
WALLS MICHAEL S & KIMBERLY MORGAN	190 TWIN EAGLES LANE	LEBANON	KY	40033
WILSON MASON T	2737 BARBERS MILL RD	LEBANON	KY	40033
WRIGHT DANNY R & BETTY	3025 SHORTLINE PIKE	LEBANON	KY	40033
HAMILTON THOMAS B	499 SILVERTON HILL RD	SPRINGFIELD	KY	40069
PARROTT TAMMY	2571 SIMMSTOWN RD	LEBANON	KY	40033
HODGE DAVID LARRY & HODGE MAX HALE	101 KALARAMAR DR	SPRINGFIELD	KY	40069

Exhibit D
Public Information Meeting (PIM)

3. Scan Certified Mail Receipts

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY														
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> Robbins <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) CW Robbins</p> <p>C. Date of Delivery 7/16/20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>														
<p>1. Article Addressed to:</p> <p>Allison & Brandon Robbins 1335 Horan Ln Springfield, KY 40069</p>	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Mail Restricted Delivery (00)</td> <td></td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery	<input type="checkbox"/> Mail Restricted Delivery (00)	
<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®														
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™														
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery														
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise														
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™														
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery														
<input type="checkbox"/> Mail Restricted Delivery (00)															
<p>2. Article Number (Transfer from service label)</p> <p>7013 1710 0002 0778 1443</p>	<p>9590 9402 3356 7227 6224 09</p>														
<p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p>	<p>Domestic Return Receipt</p>														

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY														
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> X <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) RR</p> <p>C. Date of Delivery 7/16/20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>														
<p>1. Article Addressed to:</p> <p>Anthony Howard Leake 640 Gene Campbell Rd Lebanon, KY 40033</p>	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Mail Restricted Delivery (00)</td> <td></td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery	<input type="checkbox"/> Mail Restricted Delivery (00)	
<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®														
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™														
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery														
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise														
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™														
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery														
<input type="checkbox"/> Mail Restricted Delivery (00)															
<p>2. Article Number (Transfer from service label)</p> <p>7013</p>	<p>9590 9402 5778 0003 2619 17</p>														
<p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p>	<p>Domestic Return Receipt</p>														

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY														
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> Beam <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) CW Robbins</p> <p>C. Date of Delivery 7/16/20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>														
<p>1. Article Addressed to:</p> <p>Beams Abell Farm LLLP 4088 Springfield Hwy Springfield, KY 40069</p>	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Mail Restricted Delivery (00)</td> <td></td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery	<input type="checkbox"/> Mail Restricted Delivery (00)	
<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®														
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™														
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery														
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise														
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™														
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery														
<input type="checkbox"/> Mail Restricted Delivery (00)															
<p>2. Article Number (Transfer from service label)</p> <p>7019 2280 0000 9906 7774</p>	<p>9590 9402 5778 0003 2622 97</p>														
<p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p>	<p>Domestic Return Receipt</p>														

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY														
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> X <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) RR</p> <p>C. Date of Delivery 7/16/20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>														
<p>1. Article Addressed to:</p> <p>Brent Johnson 2675 Shortline Pike Lebanon, KY 40033</p>	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Mail Restricted Delivery (00)</td> <td></td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery	<input type="checkbox"/> Mail Restricted Delivery (00)	
<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®														
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™														
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery														
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise														
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™														
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery														
<input type="checkbox"/> Mail Restricted Delivery (00)															
<p>2. Article Number (Transfer from service label)</p> <p>7015</p>	<p>9590 9402 5778 0003 2619 55</p>														
<p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p>	<p>Domestic Return Receipt</p>														

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY														
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> X <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) RR</p> <p>C. Date of Delivery 7/16/20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>														
<p>1. Article Addressed to:</p> <p>Cam Fields 2925 Barbers Mill Rd Lebanon, KY 40033</p>	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Mail Restricted Delivery (00)</td> <td></td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery	<input type="checkbox"/> Mail Restricted Delivery (00)	
<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®														
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™														
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery														
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise														
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™														
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery														
<input type="checkbox"/> Mail Restricted Delivery (00)															
<p>2. Article Number (Transfer from service label)</p> <p>7013</p>	<p>9590 9402 5778 0003 2620 99</p>														
<p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p>	<p>Domestic Return Receipt</p>														

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY														
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> X <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) S. Caffee</p> <p>C. Date of Delivery 7/16/20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>														
<p>1. Article Addressed to:</p> <p>CBC Of Marion Co Inc 113 West Public Square Glasgow, KY 42141</p>	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Mail Restricted Delivery (00)</td> <td></td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery	<input type="checkbox"/> Mail Restricted Delivery (00)	
<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®														
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™														
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery														
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise														
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™														
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery														
<input type="checkbox"/> Mail Restricted Delivery (00)															
<p>2. Article Number (Transfer from service label)</p> <p>7013 1710 0002 0778 1085</p>	<p>9590 9402 5778 0003 2621 98</p>														
<p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p>	<p>Domestic Return Receipt</p>														

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY												
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>Charles Montgomery</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <input type="checkbox"/> Date</p> <p>C. Date of Delivery <input type="checkbox"/> 7/16/20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>												
<p>1. Article Addressed to:</p> <p>Charles Forrest & Elizabeth M. Montgomery 520 Thornton Smith Rd Lebanon, KY 40033</p>	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery
<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®												
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™												
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery												
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise												
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™												
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery												
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 2124 6132 8901 83</p> <p>7015 1520 0000 7795 4982</p>	<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2621 50</p>												
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt												

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY												
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>RR</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <input type="checkbox"/> Date</p> <p>C. Date of Delivery <input type="checkbox"/> 7/16/20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>												
<p>1. Article Addressed to:</p> <p>Christopher E & Mary E Cook 2740 Barbers Mill Rd Lebanon, KY 40033</p>	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery
<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®												
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™												
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery												
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise												
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™												
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery												
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 2124 6132 8901 83</p> <p>7015 1520 0000 7795 4982</p>	<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2621 50</p>												
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt												

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY												
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>RR</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <input type="checkbox"/> Date</p> <p>C. Date of Delivery <input type="checkbox"/> 7/16/20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>												
<p>1. Article Addressed to:</p> <p>Christopher Spalding 195 Shortline Pike Lebanon, KY 40033</p>	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery
<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®												
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™												
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery												
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise												
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™												
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery												
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 4117 8092 6760 30</p> <p>7015 1520 0000 7795 4982</p>	<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5025 9063 6081 63</p>												
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt												

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY												
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>RR</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <input type="checkbox"/> Date</p> <p>C. Date of Delivery <input type="checkbox"/> 7/16/20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>												
<p>1. Article Addressed to:</p> <p>Clarence Rudolph Jr Mullins 1285 Barbers Mill Rd Lebanon, KY 40033</p>	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery
<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®												
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™												
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery												
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise												
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™												
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery												
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 4117 8092 6760 30</p> <p>7015 1520 0000 7795 4982</p>	<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5025 9063 6081 63</p>												
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt												

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY												
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>Dana Hamilton</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <input type="checkbox"/> Date</p> <p>C. Date of Delivery <input type="checkbox"/> 7-21-20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>												
<p>1. Article Addressed to:</p> <p>Clayton James & Lauren Robinson 2840 St Francis Road St Francis, KY 40062</p>	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery
<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®												
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™												
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery												
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise												
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™												
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery												
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 2124 6132 8902 06</p> <p>7015 0640 0007 7009 1676</p>	<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2620 44</p>												
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt												

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY												
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>RR</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <input type="checkbox"/> Date</p> <p>C. Date of Delivery <input type="checkbox"/> 7/16/20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>												
<p>1. Article Addressed to:</p> <p>Dana M Hamilton 2769 Barbers Mill Rd Lebanon, KY 40033</p>	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery
<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®												
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™												
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery												
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise												
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™												
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery												
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 2124 6132 8902 06</p> <p>7015 0640 0007 7009 1676</p>	<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2620 44</p>												
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt												

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>KE</i> C. Date of Delivery <i>7/16/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Daniel P & Becky Jo Greenwell 2960 Barbers Mill Rd Lebanon, KY 40033</p>	<p>3. Service Type</p> <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Insured Mail
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2620 51</p>	<p>2. Article Number (Transfer from service label)</p> <p>701E</p>
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt


SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>RR</i> C. Date of Delivery <i>7/16/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Danny R & Betty Wright 3025 Shortline Pike Lebanon, KY 40033</p>	<p>3. Service Type</p> <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Insured Mail
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 4948 9063 4945 70</p>	<p>2. Article Number (Transfer from service label)</p> <p>701E</p>
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt

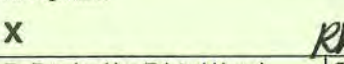
SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>W</i> C. Date of Delivery <i>7-15-20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>David & Rhonda M Sandusky 3200 St Rose Rd Lebanon, KY 40033</p>	<p>3. Service Type</p> <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Insured Mail
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 4117 8092 6757 29</p>	<p>2. Article Number (Transfer from service label)</p> <p>7013 1710 0002 0778 1436</p>
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt


SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>D Dedman</i> C. Date of Delivery <i>7/14/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>David Dedman 1660 Horan Ln Springfield, KY 40069</p>	<p>3. Service Type</p> <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Insured Mail
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2621 36</p>	<p>2. Article Number (Transfer from service label)</p> <p>7013 1710 0002 0778 1146</p>
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>Moyom</i> C. Date of Delivery <i>7-17-20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>David Ivan & Teresa Ann Hunt 485 Harlan Caulk Rd Campbellsville, KY 42718</p>	<p>3. Service Type</p> <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Insured Mail
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2619 79</p>	<p>2. Article Number (Transfer from service label)</p> <p>7013 1710 0002 0778 1306</p>
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>L. Hodge</i> C. Date of Delivery <i>7-16-20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>David Larry & Max Hale Hodge 101 Kalaramar Dr Springfield, KY 40069</p>	<p>3. Service Type</p> <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Insured Mail
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 4948 9063 4945 87</p>	<p>2. Article Number (Transfer from service label)</p> <p>7013 1710 0002 0778 1382</p>
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt


SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature  <input type="checkbox"/> Agent <input checked="" type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <input type="checkbox"/> C. Date of Delivery Donnie & Craig Hamilton 7-18-20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Donnie & Craig Hamilton 660 Ada Drive Harrodsburg, KY 40330</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>7013 1710 0002 0778 1245</p>	<p>9590 9402 5778 0003 2620 37</p>
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature  <input type="checkbox"/> Agent <input checked="" type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <input type="checkbox"/> C. Date of Delivery Douglas Scott & Joan Abell 7/16/20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Douglas Scott & Joan Abell 3325 Barbers Mill Rd Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>7019</p>	<p>9590 9402 5778 0003 2623 34</p>
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature  <input type="checkbox"/> Agent <input checked="" type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <input type="checkbox"/> C. Date of Delivery Eugene & Cynthia Campbell 7/14/20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Eugene & Cynthia Campbell 1375 Gene Campbell Rd Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>7013 1710 0002 0778 1078</p>	<p>9590 9402 5778 0003 2622 04</p>
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature  <input type="checkbox"/> Agent <input checked="" type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <input type="checkbox"/> C. Date of Delivery Greg & Seidina Conley 7/14/20</p> <p>D. Is delivery address different from item 1? <input checked="" type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No 800 Clear Creek Rd Raywick, Ky 40060</p>
<p>1. Article Addressed to:</p> <p>Greg & Seidina Conley 60 Hourigan Lane Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>7013 1710 0002 0778 1115</p>	<p>9590 9402 5778 0003 2621 67</p>
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature  <input type="checkbox"/> Agent <input checked="" type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <input type="checkbox"/> C. Date of Delivery J Caleb Buckman & Sarah E Murphy 7-16-20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>J Caleb Buckman & Sarah E Murphy 455 Radio Station Rd Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>7013 1710 0002 0778 1061</p>	<p>9590 9402 5778 0003 2622 11</p>
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature  <input type="checkbox"/> Agent <input checked="" type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <input type="checkbox"/> C. Date of Delivery J Caleb Buckman & Sarah E Murphy 7-16-20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>J Caleb Buckman & Sarah E Murphy 455 Radio Station Rd Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>7015 0640 0007 7009 1690</p>	<p>9590 9402 2124 6132 8901 45</p>
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>Nancy Harmon</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>Nancy Harmon</i> C. Date of Delivery</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>James & Nancy Harmon Joint Revocable Trust, C/O: Matthew Miller Harmon 2455 Shortline Pike Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2620 06</p> <p>7013 1710 0002 0778 1276</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p> <p>Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>RR Agent</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) C. Date of Delivery <i>7/16/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>James Bradley & Rebecca A Hill 3115 Barbers Mill Rd Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2619 86</p> <p>701</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p> <p>Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>Steve Tucker</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>Steve Tucker</i> C. Date of Delivery <i>7-20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input checked="" type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>James E Tucker Jr 2718 Barbers Mill Road Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 2124 6132 8902 37</p> <p>7015 1520 0000 7795 4951</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p> <p>Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>A. Reed</i> <input type="checkbox"/> Agent <input checked="" type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>Aronda Reed</i> C. Date of Delivery</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input checked="" type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>James O & Marian Cook P.O. Box 666 Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2621 43</p> <p>7013 1710 0002 0778 1139</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p> <p>Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>RR Agent</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) C. Date of Delivery <i>7/16/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>James R Bradshaw 1500 Barbers Mill Rd Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2622 66</p> <p>7013</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p> <p>Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>RR Agent</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) C. Date of Delivery <i>7/16/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>James Troy & Glenda Mattingly 2626 Barbers Mill Rd Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 2124 6132 8901 76</p> <p>7015</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p> <p>Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>James Wendell II</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>James Wendell II</i> C. Date of Delivery <i>7/16/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>James Wendell II & Melissa Ballinger 1618 Woods Mill Road Louisville, KY 40272</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2623 03</p> <p>7019 2280 0000 9906 7767</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>John Vanderveer</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>JOHN VANDERVEER</i> C. Date of Delivery <i>7/17/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>John & Mary Ann Vanderveer 2340 Horan Ln Springfield, KY 40069</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 4948 9063 4945 63</p> <p>7013 1710 0002 0778 1405</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>Judy Bradshaw</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>Judy Bradshaw</i> C. Date of Delivery <i>7/16/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>John D & Judy Bradshaw 330 E Main St Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2622 42</p> <p>7013</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>John T & Pauletta O Kutter</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>John T & Pauletta O Kutter</i> C. Date of Delivery <i>7/16/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>John T & Pauletta O Kutter 3835 Simmstown Rd Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2619 48</p> <p>7013</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>Joseph T Jr & Barbara Leake</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>Joseph T Jr & Barbara Leake</i> C. Date of Delivery <i>7/16/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Joseph T Jr & Barbara Leake 640 Gene Campbell Rd Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2619 00</p> <p>7013 1710 0002 0778 1368</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>Joseph Steven & Caroline Lanham</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>Joseph Steven & Caroline Lanham</i> C. Date of Delivery <i>7/16/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Joseph Steven & Caroline Lanham 174 Patriots Way Springfield, KY 40069</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2619 31</p> <p>7013 1710 0002 0778 1337</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION		COMPLETE THIS SECTION ON DELIVERY	
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 		<p>A. Signature <input checked="" type="checkbox"/> Agent <input checked="" type="checkbox"/> Addressee</p>	
<p>1. Article Addressed to:</p> <p>Judy Averitt & Mary Rose Hines 3135 Springfield Hwy Lebanon, KY 40033</p>		<p>B. Received by (Printed Name) <i>[Signature]</i> C. Date of Delivery <i>7-16-20</i></p>	
<p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>		<p>3. Service Type</p> <p><input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail</p>	
<p>2. Article Number (Transfer from service label) 9590 9402 5778 0003 2623 27</p>		<p>7019 2280 0000 9906 7736</p>	
PS Form 3811, July 2015 PSN 7530-02-000-9053		Domestic Return Receipt	

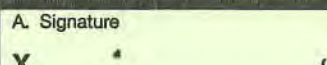
SENDER: COMPLETE THIS SECTION		COMPLETE THIS SECTION ON DELIVERY	
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 		<p>A. Signature <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p>	
<p>1. Article Addressed to:</p> <p>Kevin A & Ellen Leake 499 Gene Campbell Rd Lebanon, KY 40033</p>		<p>B. Received by (Printed Name) <i>[Signature]</i> C. Date of Delivery <i>7/16/20</i></p>	
<p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>		<p>3. Service Type</p> <p><input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail</p>	
<p>2. Article Number (Transfer from service label) 9590 9402 5778 0003 2618 94</p>		<p>7013</p>	
PS Form 3811, July 2015 PSN 7530-02-000-9053		Domestic Return Receipt	

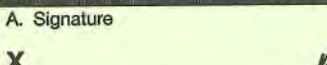
SENDER: COMPLETE THIS SECTION		COMPLETE THIS SECTION ON DELIVERY	
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 		<p>A. Signature <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p>	
<p>1. Article Addressed to:</p> <p>Kimberly A Gootee 2793 Barbers Mill Rd Lebanon, KY 40033</p>		<p>B. Received by (Printed Name) <i>[Signature]</i> C. Date of Delivery <i>7/16/20</i></p>	
<p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>		<p>3. Service Type</p> <p><input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail</p>	
<p>2. Article Number (Transfer from service label) 9590 9402 5778 0003 2620 75</p>		<p>701E</p>	
PS Form 3811, July 2015 PSN 7530-02-000-9053		Domestic Return Receipt	

SENDER: COMPLETE THIS SECTION		COMPLETE THIS SECTION ON DELIVERY	
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 		<p>A. Signature <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p>	
<p>1. Article Addressed to:</p> <p>Lebanon Springfield-George Hoerter Field P.O. Box 805 Lebanon, KY 40033</p>		<p>B. Received by (Printed Name) <i>[Signature]</i> C. Date of Delivery <i>7-17-20</i></p>	
<p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>		<p>3. Service Type</p> <p><input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail</p>	
<p>2. Article Number (Transfer from service label) 9590 9402 4117 8092 6757 43</p>		<p>7015 1520 0000 7795 4944</p>	
PS Form 3811, July 2015 PSN 7530-02-000-9053		Domestic Return Receipt	

SENDER: COMPLETE THIS SECTION		COMPLETE THIS SECTION ON DELIVERY	
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 		<p>A. Signature <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p>	
<p>1. Article Addressed to:</p> <p>Martin Allen McMichael 1335 Barbers Mill Rd Lebanon, KY 40033</p>		<p>B. Received by (Printed Name) <i>[Signature]</i> C. Date of Delivery <i>7/16/20</i></p>	
<p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>		<p>3. Service Type</p> <p><input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail</p>	
<p>2. Article Number (Transfer from service label) 9590 9402 5025 9063 6081 70</p>		<p>7013</p>	
PS Form 3811, July 2015 PSN 7530-02-000-9053		Domestic Return Receipt	


SENDER: COMPLETE THIS SECTION		COMPLETE THIS SECTION ON DELIVERY	
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 		<p>A. Signature <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p>	
<p>1. Article Addressed to:</p> <p>Mary Ann Battcher Livers 257 Patriots Way Springfield, KY 40069</p>		<p>B. Received by (Printed Name) <i>[Signature]</i> C. Date of Delivery <i>7-21-20</i></p>	
<p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>		<p>3. Service Type</p> <p><input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail</p>	
<p>2. Article Number (Transfer from service label) 9590 9402 2124 6132 8901 69</p>		<p>7015 0640 0007 7009 1751</p>	
PS Form 3811, July 2015 PSN 7530-02-000-9053		Domestic Return Receipt	


SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature X  <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <u>RR</u> C. Date of Delivery <u>7/16/20</u></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Mary Theresa Tucker 2899 Barbers Mill Rd Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>7013 1710 0002 0778 1177</p> <p>PS Form 38</p>	<p>Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature X  <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <u>RR</u> C. Date of Delivery <u>7/16/20</u></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Mason T Wilson 2737 Barbers Mill Rd Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>7013</p> <p>PS Form 381</p>	<p>Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature X  <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <u>RR</u> C. Date of Delivery <u>7/16/20</u></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Michael & Alicia Farmer 2617 Springfield Hwy Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>7013 1710 0002 0778 1177</p> <p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p>	<p>Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature X  <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <u>RR</u> C. Date of Delivery <u>7/16/20</u></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Michael A Brown 1150 Gene Campbell Rd Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>7013 1710 0002 0778 1047</p> <p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p>	<p>Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature X  <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <u>RR</u> C. Date of Delivery <u>7-16-20</u></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Michael Adam & Krystal Gotee 176 Course View Ln Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>7013 1710 0002 0778 1214</p> <p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p>	<p>Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature X  <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <u>RR</u> C. Date of Delivery <u>7/16/20</u></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Nicholas & Teri Erchak 2825 Barbers Mill Rd Lebanon, KY 40033</p>	<p>3. Service Type <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery</p>
<p>2. Article Number (Transfer from service label)</p> <p>7013</p> <p>PS Form 3811</p>	<p>Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>Yhuntsley</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>Kristin Spalding</i></p> <p>C. Date of Delivery <i>7-29-20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Nicholas J & Kristin N Spalding 40 Gray St Lebanon, KY 40033</p>	<p>3. Service Type</p> <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 4948 9063 4945 49</p> <p>7013 1710 0002 0778 1429</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p> <p>Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>RR</i> <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>RR</i></p> <p>C. Date of Delivery <i>7/27/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Nicole Mattingly Singleton & Phillip G. Huff 2879 Barbers Mill Rd Lebanon, KY 40033</p>	<p>3. Service Type</p> <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 2124 6132 8902 13</p> <p>7013</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p> <p>Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>Beam</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>OW RISCIE</i></p> <p>C. Date of Delivery <i>7/14/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Parkers Pride Farms LLLP 4088 Springfield Hwy Springfield, KY 40069</p>	<p>3. Service Type</p> <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 2124 6132 8901 90</p> <p>7015 1520 0000 7795 4975</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p> <p>Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>Beth Clark</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>Beth Clark</i></p> <p>C. Date of Delivery <i>7/14/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Patrick S Clark 2100 Ed Sullivan Rd Lebanon, KY 40033</p>	<p>3. Service Type</p> <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2621 81</p> <p>7013 1710 0002 0778 1092</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p> <p>Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>RR</i> <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>RR</i></p> <p>C. Date of Delivery <i>7/14/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Paul Jr & Kay Clark 2625 Shortline Pike Lebanon, KY 40033</p>	<p>3. Service Type</p> <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2621 74</p> <p>7013</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p> <p>Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>RR</i> <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>RR</i></p> <p>C. Date of Delivery <i>7/16/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Randall & Connie Lawson 5120 Shortline Pike Lebanon, KY 40033</p>	<p>3. Service Type</p> <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Registered Mail Restricted Delivery
<p>2. Article Number (Transfer from service label)</p> <p>9590 9402 5778 0003 2619 24</p> <p>7013</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p> <p>Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>R Routin</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>CW Rtsch</i> C. Date of Delivery <i>7/16/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Roger Allen & Jessica Marie Routin 850 Horan Ln Springfield, KY 40069-</p>	<p>3. Service Type</p> <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery
<p>2. Article Number (Transfer from service label)</p> <p>7013 1710 0002 0778 1009</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>M Crumie</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) C. Date of Delivery</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Ruby K Brown & Martha J Crumie 513 Dover Rd Lexington, KY 40505</p>	<p>3. Service Type</p> <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery
<p>2. Article Number (Transfer from service label)</p> <p>7015 0640 0007 7009 1683</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>RR</i> <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) C. Date of Delivery <i>7/16/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Ryan Patrick & Lindsey Pittman 770 Gene Campbell Rd Lebanon, KY 40033</p>	<p>3. Service Type</p> <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery
<p>2. Article Number (Transfer from service label)</p> <p>7013 1710 0002 0778 1559</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>RR</i> <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) C. Date of Delivery <i>7/16/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Steven J & Margaret B Bagwell 2640 Barbers Mill Rd Lebanon, KY 40033</p>	<p>3. Service Type</p> <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery
<p>2. Article Number (Transfer from service label)</p> <p>7013 1710 0002 0778 1559</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>D Davi</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>D Davi</i> C. Date of Delivery <i>7/17/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Sylvester & Alice Brown Family 1500 Horan Lane Springfield, KY 40069</p>	<p>3. Service Type</p> <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery
<p>2. Article Number (Transfer from service label)</p> <p>7015 0640 0007 7009 1812</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>RR</i> <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) C. Date of Delivery <i>7/16/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
<p>1. Article Addressed to:</p> <p>Tabitha & Israel Tracey 1240 Gene Campbell Rd Lebanon, KY 40033</p>	<p>3. Service Type</p> <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery
<p>2. Article Number (Transfer from service label)</p> <p>7013 1710 0002 0778 1412</p>	<p>PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt</p>

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY												
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature X <i>RR</i> <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) C. Date of Delivery 7/16/20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>												
<p>1. Article Addressed to:</p> <p>Tammy Parrott 2571 Simmstown Rd Lebanon, KY 40033</p>	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery
<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®												
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™												
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery												
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise												
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™												
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery												
<p>2. Article Number (Transfer from service label)</p> <p>7013</p> <p>PS Form 381</p>	<p>9590 9402 4117 8092 6760 78</p> <p>7013 1710 0002 0778 1313</p> <p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p>												

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY												
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature X <i>Amanda Blandford</i> <input type="checkbox"/> Agent <input checked="" type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) C. Date of Delivery Amanda Blandford</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>												
<p>1. Article Addressed to:</p> <p>Teresa A Hunt P.O Box 807 Lebanon, KY 40033</p>	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery
<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®												
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™												
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery												
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise												
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™												
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery												
<p>2. Article Number (Transfer from service label)</p> <p>7013</p> <p>PS Form 381</p>	<p>9590 9402 2124 6132 8901 52</p> <p>7013 1710 0002 0778 1313</p> <p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p>												

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY												
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature X <i>RT</i> <input type="checkbox"/> Agent <input checked="" type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) C. Date of Delivery 7/16/20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>												
<p>1. Article Addressed to:</p> <p>Terry (Samuel) & Therese Tatum 2355 Barbers Mill Rd Lebanon, KY 40033</p>	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery
<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®												
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™												
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery												
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise												
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™												
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery												
<p>2. Article Number (Transfer from service label)</p> <p>7013</p> <p>PS Form 381</p>	<p>9590 9402 4117 8092 6760 47</p> <p>7013 1710 0002 0778 1313</p> <p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p>												

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY												
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature X <i>T Hamilton</i> <input type="checkbox"/> Agent <input checked="" type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) C. Date of Delivery CW Rts Onig 7/16/20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>												
<p>1. Article Addressed to:</p> <p>Thomas B Hamilton 499 Silverton Hill Rd Springfield, KY 40069</p>	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery
<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®												
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™												
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery												
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise												
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™												
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery												
<p>2. Article Number (Transfer from service label)</p> <p>7015</p> <p>PS Form 381</p>	<p>9590 9402 4117 8092 6757 36</p> <p>7015 0640 0007 7009 1799</p> <p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p>												

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY												
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature X <i>Alice Mattingly</i> <input type="checkbox"/> Agent <input checked="" type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) C. Date of Delivery Alice Mattingly 7-16-20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>												
<p>1. Article Addressed to:</p> <p>Thomas Ray Mattingly 780 St Marys Road Lebanon, KY 40033</p>	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery
<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®												
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™												
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery												
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise												
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™												
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery												
<p>2. Article Number (Transfer from service label)</p> <p>7013</p> <p>PS Form 381</p>	<p>9590 9402 4117 8092 6759 96</p> <p>7013 1710 0002 0778 1542</p> <p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p>												

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY												
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature X <i>[Signature]</i> <input type="checkbox"/> Agent <input checked="" type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) C. Date of Delivery 7-16-20</p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>												
<p>1. Article Addressed to:</p> <p>Travis Morgan & Billy Joe Begley 465 Radio Station Rd Lebanon, KY 40033</p>	<p>3. Service Type</p> <table border="0"> <tr> <td><input type="checkbox"/> Adult Signature</td> <td><input type="checkbox"/> Priority Mail Express®</td> </tr> <tr> <td><input type="checkbox"/> Adult Signature Restricted Delivery</td> <td><input type="checkbox"/> Registered Mail™</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail®</td> <td><input type="checkbox"/> Registered Mail Restricted Delivery</td> </tr> <tr> <td><input type="checkbox"/> Certified Mail Restricted Delivery</td> <td><input type="checkbox"/> Return Receipt for Merchandise</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery</td> <td><input type="checkbox"/> Signature Confirmation™</td> </tr> <tr> <td><input type="checkbox"/> Collect on Delivery Restricted Delivery</td> <td><input type="checkbox"/> Signature Confirmation Restricted Delivery</td> </tr> </table>	<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®	<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™	<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery	<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™	<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery
<input type="checkbox"/> Adult Signature	<input type="checkbox"/> Priority Mail Express®												
<input type="checkbox"/> Adult Signature Restricted Delivery	<input type="checkbox"/> Registered Mail™												
<input type="checkbox"/> Certified Mail®	<input type="checkbox"/> Registered Mail Restricted Delivery												
<input type="checkbox"/> Certified Mail Restricted Delivery	<input type="checkbox"/> Return Receipt for Merchandise												
<input type="checkbox"/> Collect on Delivery	<input type="checkbox"/> Signature Confirmation™												
<input type="checkbox"/> Collect on Delivery Restricted Delivery	<input type="checkbox"/> Signature Confirmation Restricted Delivery												
<p>2. Article Number (Transfer from service label)</p> <p>7019</p> <p>PS Form 381</p>	<p>9590 9402 5778 0003 2622 80</p> <p>7019 2280 0000 9906 7781</p> <p>PS Form 3811, July 2015 PSN 7530-02-000-9053</p>												

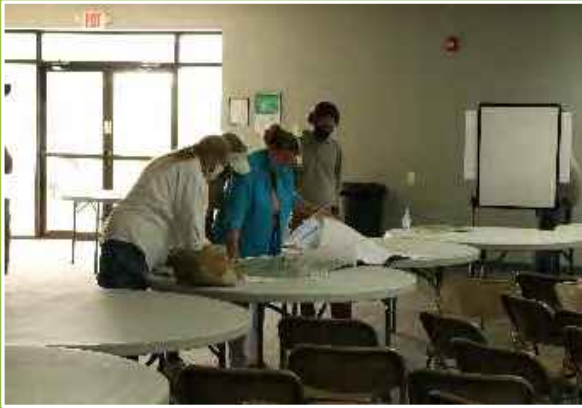
SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>Wm. B. Blair Jr</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) <i>Wm. B. Blair Jr</i> C. Date of Delivery <i>7/20/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
1. Article Addressed to: William B Blair Jr 122 Meadow Ln Springfield, KY 40069-	<p>3. Service Type</p> <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail
2. Article Number (Transfer from service label) 7016 0750 0001 0913 6363	
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>RR</i> <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) C. Date of Delivery <i>7/16/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
1. Article Addressed to: William Kenneth Hays 800 Willis Trail Lebanon, KY 40033	<p>3. Service Type</p> <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail
2. Article Number (Transfer from service label) 7013	
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>William M Moore</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) C. Date of Delivery <i>7-17-20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
1. Article Addressed to: William M Moore 3154 Jimtown Rd Springfield, KY 40069	<p>3. Service Type</p> <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail
2. Article Number (Transfer from service label) 7013 1710 0002 0778 1535	
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> Complete items 1, 2, and 3. Print your name and address on the reverse so that we can return the card to you. Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> <i>RR</i> <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p>B. Received by (Printed Name) C. Date of Delivery <i>7/16/20</i></p> <p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No</p>
1. Article Addressed to: William Todd & Jill Hardin 2200 Shortline Pk Lebanon, KY 40033	<p>3. Service Type</p> <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery <input type="checkbox"/> Insured Mail
2. Article Number (Transfer from service label) 7013	
PS Form 3811, July 2015 PSN 7530-02-000-9053	Domestic Return Receipt

Northern Bobwhite Solar Public Information Meeting



Thursday, July 30th, 2020
10 a.m. – 3 p.m.

Marion County Agricultural
Extension Center



Northern Bobwhite Solar Public Information Meeting

Thursday, July 30th, 2020
10 a.m. – 3 p.m.

Marion County Agricultural
Extension Center



Available for Review at Meeting

- Large-Scale Site Plans of Northern Bobwhite Solar Project
- Northern Bobwhite Solar Overview Sheet
- Description of Kentucky Generation and Transmission Siting Process
- NCSU Clean Energy Technology Center Research on Health & Safety of Solar Photovoltaics
- NCSU Clean Energy Technology Center Research on Balancing Agriculture with Solar Development
- Northern Bobwhite Solar Property Value Impact Analysis by Kirkland Appraisal
- Frequent Question and Answers Regarding Utility-Scale Solar
- Information on the Educational and Workforce Development Programs of the Center for Energy Education

Northern Bobwhite Solar

Marion County, Kentucky



The Developer



Your local greenfield developer of utility-scale solar projects

306 MW in operation :: 415 MW under construction
5000+ MW under development

- Highly skilled in all aspects of solar development: site evaluation, real estate procurement, environmental analysis and federal, state and local permitting.
- Focused on solar development, local community engagement and education in the Southeastern U.S. since 2012.
- Geenex projects are valued by our development partners for their well-sited locations, their adherence to best-development practices and their standards that meet and usually exceed county and state requirements.
- Geenex Solar is the founder of the non-profit Center for Energy Education based in Halifax County whose programs are currently being introduced in the Kentucky communities in which we are developing.





Center for **Energy Education**

The Center for Energy Education (C4EE) is a 501(c)3 nonprofit corporation and a center for renewable energy research, education, and workforce development for the eastern United States. The C4EE provides a place to raise awareness of renewable energy and its importance locally, regionally, and globally. The C4EE is a hub for the renewable energy industry, a hands-on training ground for solar installations, a destination for students and families to learn about renewable energy resources, and an education and training facility to provide the knowledge and skills needed to pursue a career in the growing renewable energy industry.



Utility-Scale Solar



Solar Energy Generation – The Basics



Solar panel

The PV Solar Panels convert sunlight into DC power.



Inverters

The power from the solar panels is sent to an inverter. These inverters convert DC power to AC power.



Transformer and Substation

The electricity is gathered throughout the solar farm in transformers and then into a substation that converts the voltage to meet the higher voltage of the distribution or transmission lines.



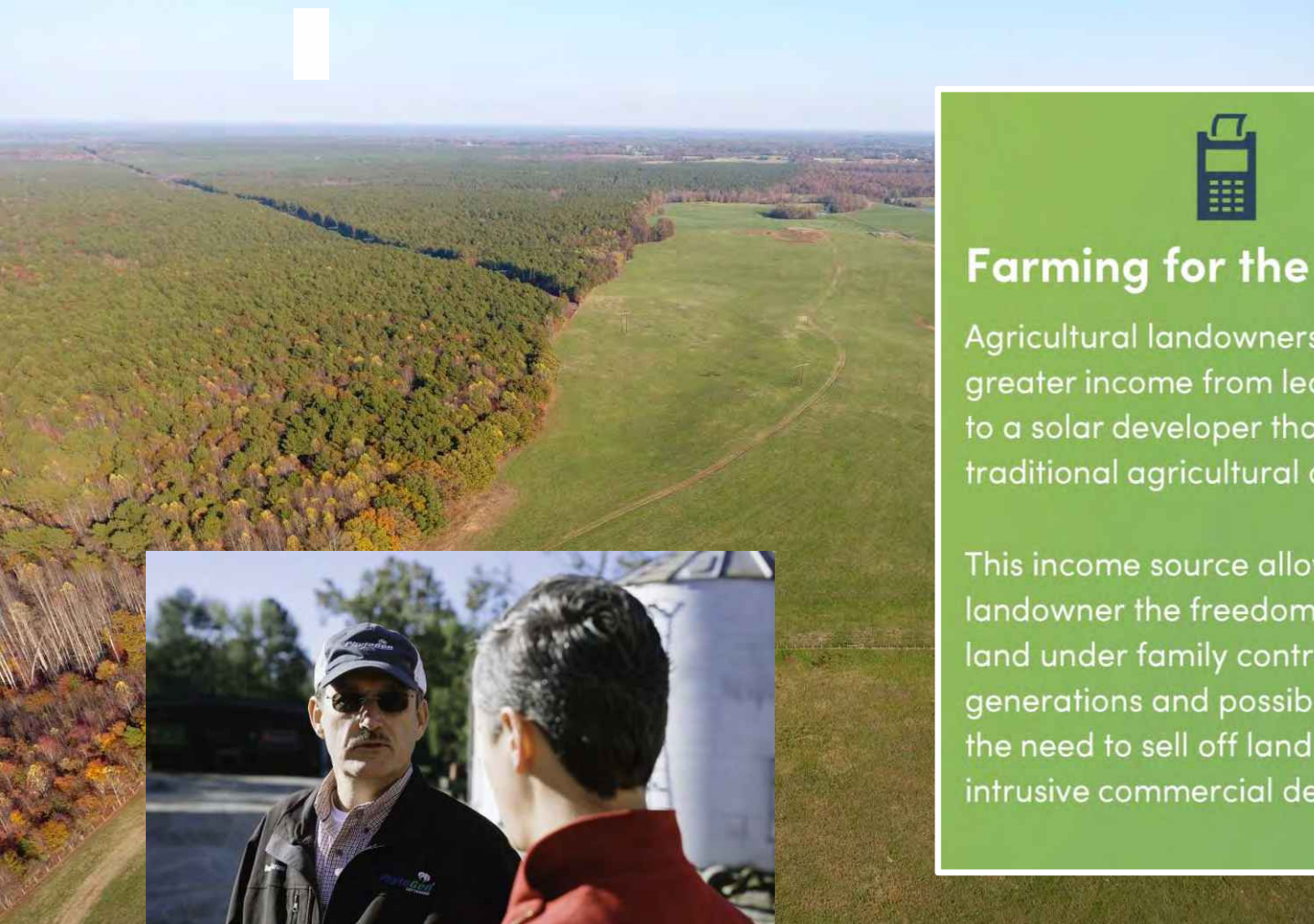
Electricity Grid

The generated electricity is fed into the grid. Some of the solar generated electricity might be consumed close by, some might travel to other cities and even other states.

Why Solar? Why Now? Why Marion County, KY?



- High demand for low-carbon renewable energy by customers, corporations, and institutions.
- Cost of solar continues to decrease making it highly competitive with traditional fossil fuel sources.
- Location, location, location – good solar resource combined with good topography near areas with high energy demands.
- Available land with existing transmission and/or distribution lines with available capacity for more energy.
- Landowners wanting to diversify income and protect their real estate assets.



Farming for the Future

Agricultural landowners earn greater income from leasing land to a solar developer than from traditional agricultural operations.

This income source allows the landowner the freedom to keep the land under family control for future generations and possibly eliminate the need to sell off land for more intrusive commercial development.



Property Impact Analysis

Matched pairs in multiple areas across the southeastern and midwestern U.S. show no impact on adjoining property value.

The criteria for making downward adjustments on property values such as appearance, noise, odor, and traffic all indicate that a solar farm is a compatible use for a rural/residential transition area.

“We have to get our power from somewhere and I would much rather see a solar farm next to my land than a nuclear or coal plant that could be dangerous. Solar farms are safe and make good, clean power. I am pleased to have worked with Geenex Solar on such a project.”

- David Dunlow, Hemlock Solar Landowner in Northampton County, NC



Solar: A Proven & Environmentally Safe Technology

- Solar photovoltaic technology has been in use for more than 50 years.
- No emissions or contamination (air, water or soil)
- No noise outside of fence line.
- Very little reflectivity or glare from panels that are designed to absorb as much sunlight as possible.
- More than 90% of materials can be sold for scrap or recycled at end of project's useful life.
- Land can be returned to its original agricultural use after its life as a solar farm; solar is a place-holder for the future.





Decommissioning Plan

- An integral part of each landowner's agreement is the commitment to decommission the Project.
- This agreement ensures the landowner, the County, and its citizens will not be financially liable for the future return of the proposed site to its pre-existing condition and use.
- Provides that the Project site will be stabilized and restored in such a manner to ensure it is clean, safe and able to return to previous land use.
- Sets guidelines for updating plan to:
 - 1- Address changes in the economics of decommissioning costs; and
 - 2- Ensure the use of best management practices and procedures at time of decommissioning.



Extensive Permitting Oversight

Federal Agencies

**US Army Corps of Engineers, Federal Aviation Administration,
US Fish and Wildlife Service**

State Regulatory Agencies

KY State Board – Electric Generation & Transmission Siting

In conjunction with KY PSC; includes Environmental Site Assessment with extensive studies on impacts to wildlife, vegetation, water quality, and more as well as a full cultural resource impact analysis overseen by the State Historical Preservation Office

KY Dept. of Transportation

State Driveway Permits

Pre-Construction Permits

Stormwater & Erosion Control

Local Jurisdiction

Local Use Permits and/or Building & Electrical Permits

PJM / Utility

Interconnection studies and agreements including affected system reviews by LGE/KU and TVA

Kentucky State Board Siting Permit

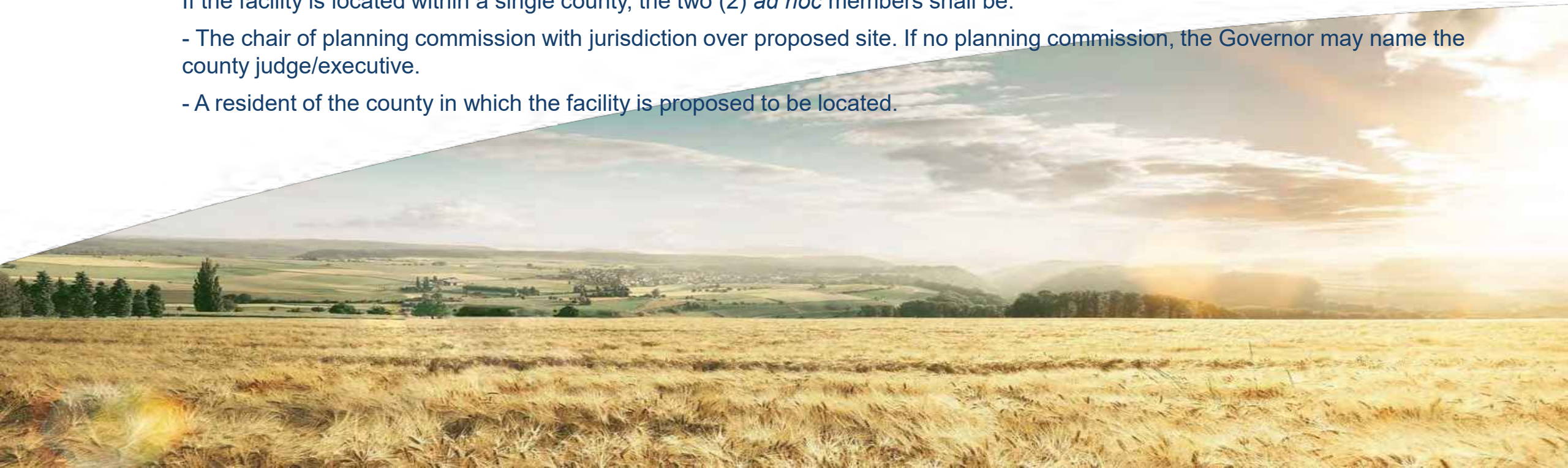
MEMBERSHIP OF THE SITING BOARD

The Siting Board has five (5) permanent *ex officio* members and two *ad hoc* members who are appointed by the Governor to review specific applications. The permanent *ex officio* members are:

- The three (3) members of the Kentucky Public Service Commission. The chairperson of the PSC also chairs the Siting Board.
- The secretary of the Kentucky Environmental and Public Protection Cabinet, or his designee
- The secretary of the Kentucky Cabinet for Economic Development, or his designee

If the facility is located within a single county, the two (2) *ad hoc* members shall be:

- The chair of planning commission with jurisdiction over proposed site. If no planning commission, the Governor may name the county judge/executive.
- A resident of the county in which the facility is proposed to be located.



Kentucky State Board Siting Permit

APPLICATION PROCESS

- **Notice of Intent:** Filed and publicly noticed at least 30 days prior to application submittal
- **Filing of Application:** The application must contain certain information, including:
 - Evidence that public notice of the application has been made and a report on public involvement activities conducted by the applicant.
 - A comprehensive site assessment report containing a detailed description of the project and thorough analysis of the impacts to be considered by the Siting Board (visual impacts, traffic, property values, etc.)
 - A statement of compliance with any local zoning regulations and noise control ordinances
 - An analysis of the effects of the proposed facility on the electric transmission grid
 - An analysis of the economic impacts of the proposed facility

EVIDENTIARY HEARING: The evidentiary hearing, if determined to be required by the PSC, is a formal proceeding with participation limited to the applicants and the parties to the case (intervenors). Testimony is taken under oath. It may be held in the county where the proposed facility would be located or at the PSC's offices.

PUBLIC HEARING & PUBLIC COMMENTS: This is an informal proceeding held to give the general public an opportunity to be heard by the Siting Board. Comments should focus on aspects of the proposed facility, rather than simply general support or opposition.

Please visit psc.ky.gov for more information.



NORTHERN BOBWHITE SOLAR

96 MW AC Solar Photovoltaic Facility

Northern Bobwhite Project Review

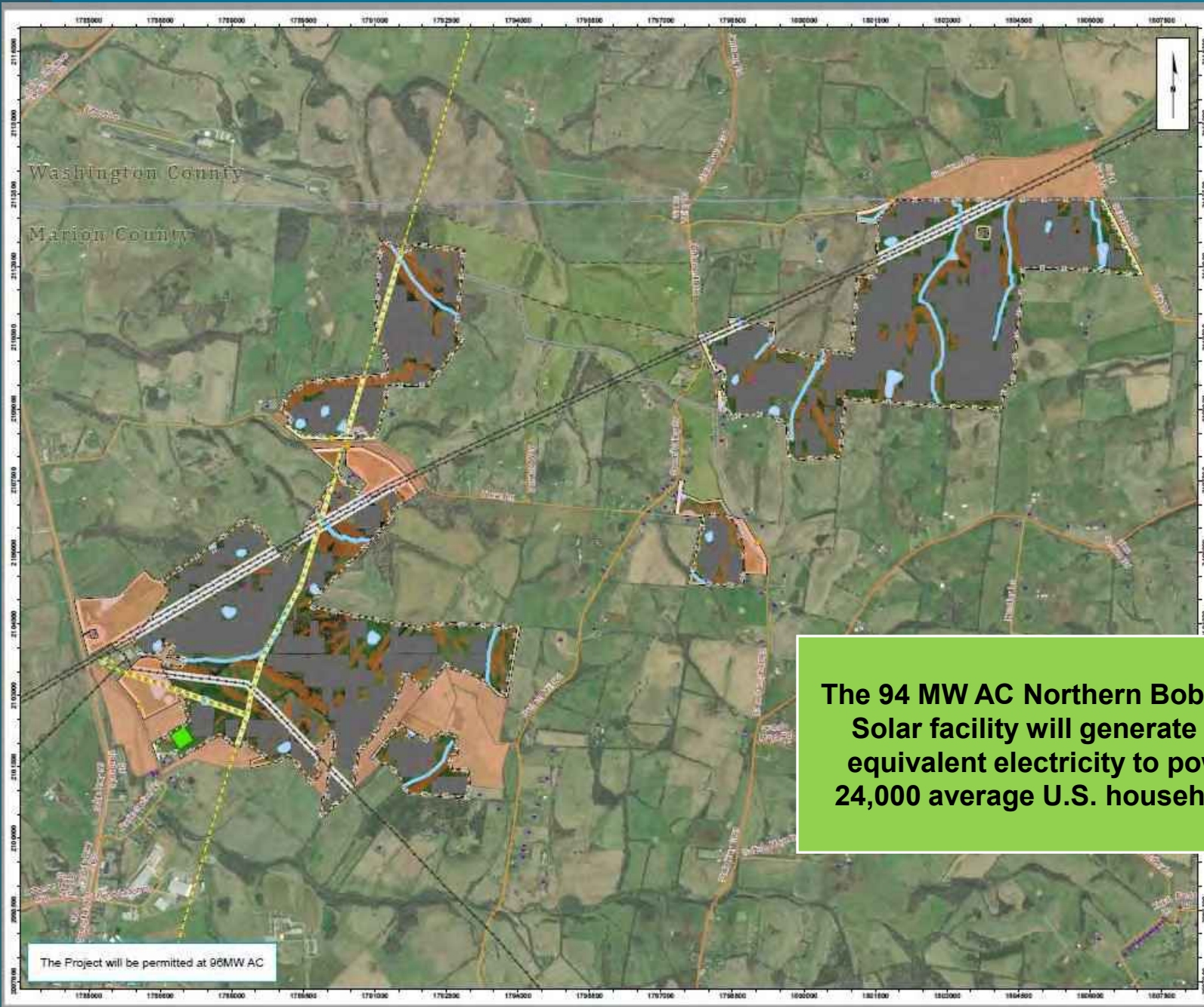


Northern Bobwhite Solar is ground-mount utility-scale solar project for up to 96 MW in generation that is currently under development in Marion County, KY just north of the town of Lebanon.

The project will consist of approximately 1,500 – 1,900 acres secured via land lease agreements with final fenced-in acreage yet to be determined. Only 30% of the site will be “under glass” with virtually no impermeable surface or permanent land use impacts.

Northern Bobwhite will pursue the issuance of an Industrial Revenue Bond with Marion County consistent with state regulations to incentivize solar energy and promote economic development.

Once operational, the 96 MW project would generate enough electricity each year to offset the consumption of approximately 24,000 average U.S households.



The 94 MW AC Northern Bobwhite Solar facility will generate the equivalent electricity to power 24,000 average U.S. households

Legend

Project Components

- Project Area
- Solar Module
- 3.27MW inverter
- Fence Line
- Access Point
- Vegetative Buffers
- Easement Property
- Proposed Parking Lot
- Proposed Laydown Area

Other Components

- Residence / Unidentified Structure
- Electrical Line (69 kV)
- Transmission Line (> 69 kV)
- State Road
- Public Road
- NWI Wetland
- FEMA Flood Zone

Constraints

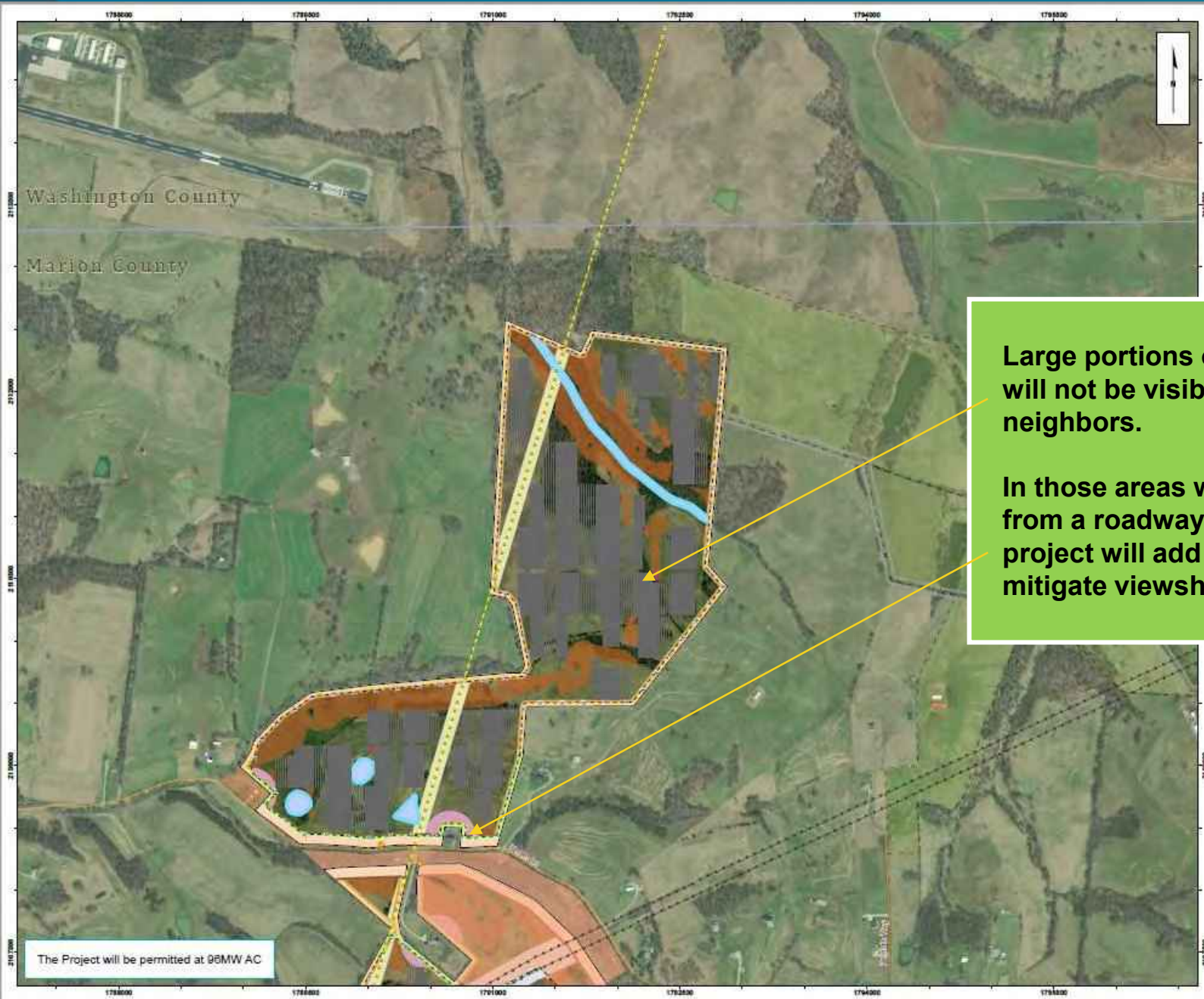
- No Development Area
- Residence / Unidentified Structure (200 ft)
- NWI Wetland / FEMA Flood Zone (25 ft)
- Electrical Line (69 kV) ROW, Pipeline (50 ft)
- Transmission Line (> 69 kV) ROW (75 ft)
- Non Participating Property (30 ft to Fence Line)
- Non Participating Property (50 ft to Solar Installations)
- Road Right of Way (80 ft to Fence Line)
- Road Right of Way (100 ft to Solar Installations)
- Slope > 15%

Notes:

- (1) PRELIMINARY LAYOUT: Not for Construction
- (2) Based on a high-level constraints review
- (3) Transformer and metering facilities are not shown.

0 0.25 0.5 0.75 1 1.25 Miles
0 0.25 0.5 0.75 1 1.25 Kilometers

SITE DETAIL 1



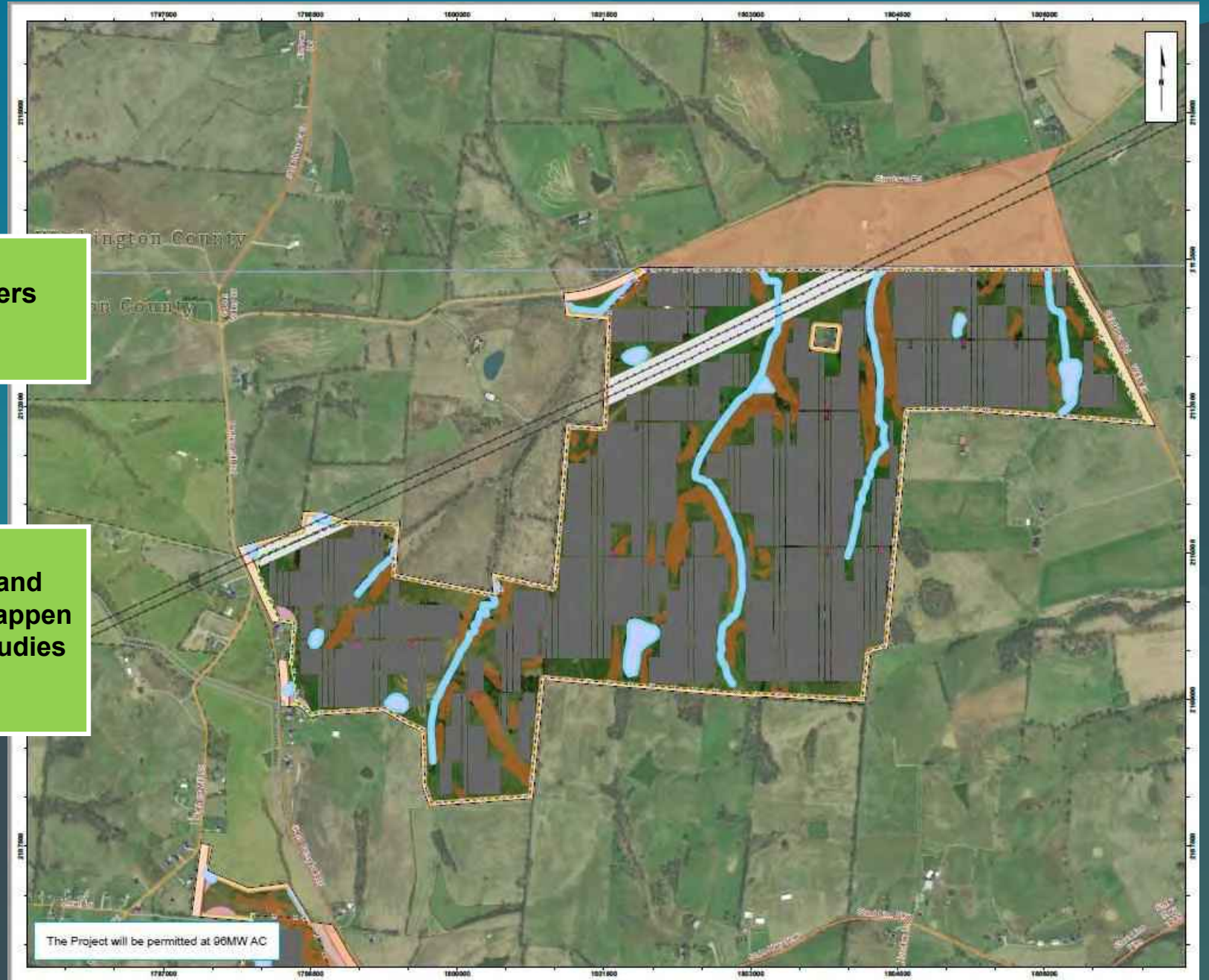
Large portions of the site are in areas that will not be visible from any roadways or neighbors.

In those areas where project could be visible from a roadway or neighboring residence, the project will add vegetative screening to mitigate viewshed impacts.

SITE DETAIL 2

There are 12 Marion County landowners whose land comprises the project.

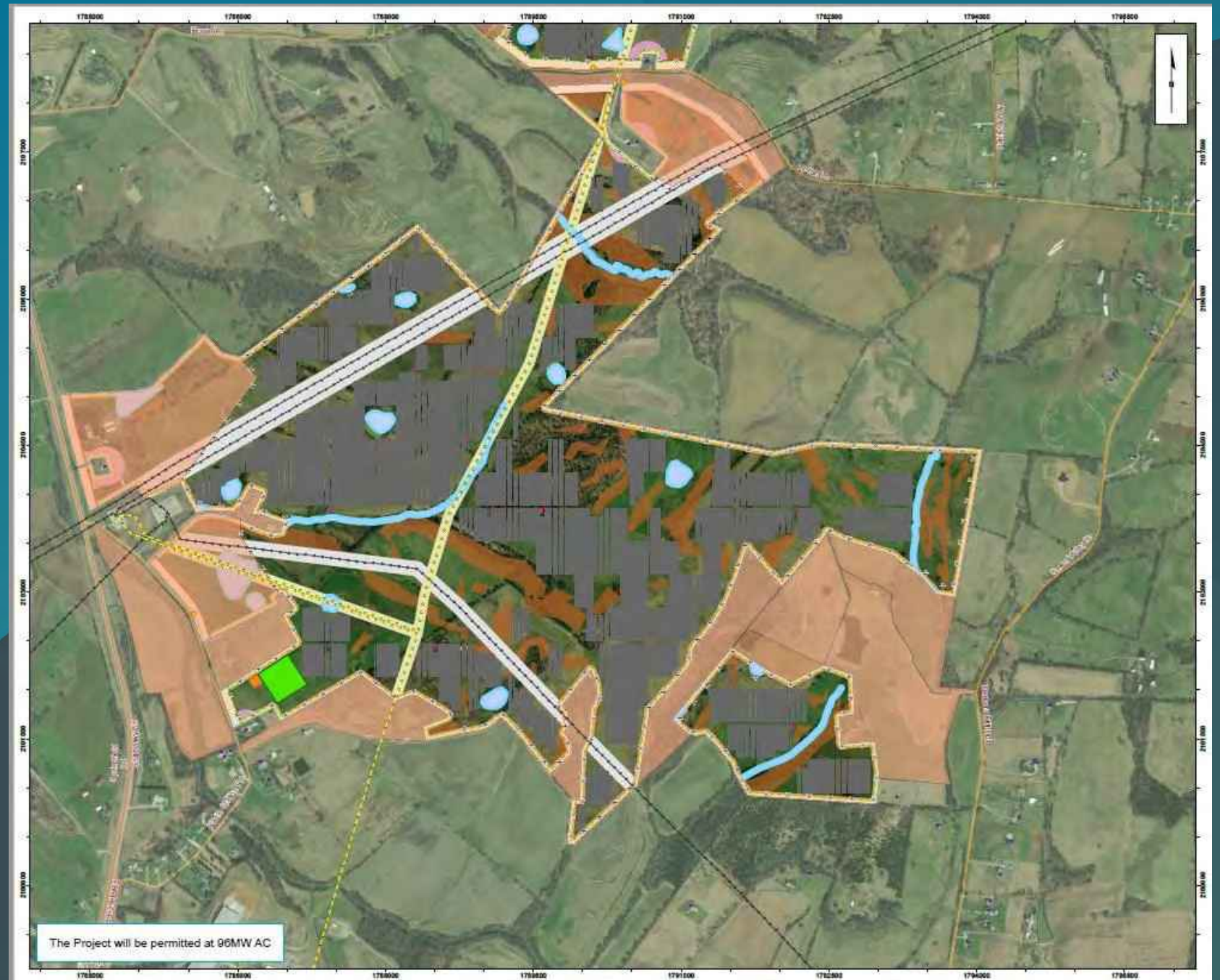
Current panel placement is preliminary and minor shifts within the fence line may happen after final wetland and environmental studies are complete.



SITE DETAIL 3

Minimum setbacks from roadways are 100 feet from solar equipment. The setback from non-participating property owner to solar equipment is a minimum of 50 feet.

Any adjoining residences are at a minimum 200 feet from any solar equipment with the average being more than 1,000 feet away. Again, screening will be utilized to buffer the project from the view of neighboring homeowners.



SITE DETAIL 4



The design of the site allows for different fenced areas for the panels. This in turn allows wildlife to continue to traverse the area with only minor shifts to their patterns of behavior.

In addition the site is primarily open land requiring only minimal tree removal for construction which further protects wildlife and wetlands.

Community Benefits



WORKFORCE DEVELOPMENT

- ❑ Solar construction companies actively seek local hires for installation and additional support positions. Construction activities for a project of this size may last 12 -16 months with an estimate of 100-150 local hires.
- ❑ Local contractors may be utilized for equipment rental, fencing, site work and more.
- ❑ Permanent positions supported during facility's operation
 - Landscaping and grounds-keeping
 - Site operations and maintenance
- ❑ Local workforce development programs through the Center for Energy Education's engagement with local community colleges and other area workforce organizations.



ECONOMIC & EDUCATIONAL

- ❑ Increased business for local restaurants, supply stores, gas stations, accommodations. and others during construction.
- ❑ Solar facilities can enhance a county's reputation as an attractive and friendly environment for advanced manufacturing, technology and other related jobs.
- ❑ The issuance of Industrial Revenue Bonds to finance the costs of solar facilities promotes the growth of renewable energy and provides incentives for the project while promoting economic development opportunities for the County. IRBs may include beneficial payments in lieu of taxes (PILOT) to the local school district.
- ❑ Geenex Solar facilities are also a resource for educational opportunities for local students and teachers. The Center for Energy Education has and is continuing to include area teachers and students in summer camps and educational training programs.





Questions?

Marion County, KY



PROJECT OVERVIEW

Northern Bobwhite Solar is a proposed solar photovoltaic generation facility under development in Marion County, KY. The project plans to deliver 96 MW of clean renewable energy to the utility grid by the end of 2023.

Solar photovoltaic systems produce no emissions or contaminants, generate no noise outside of the fence line, and the panels are designed to absorb light so there is no glare. The land can be returned to agricultural use after its life as a solar farm making solar a great placeholder for the future. The developer will provide setbacks and vegetative screening to mitigate viewshed impacts to neighbors of the project.

Please visit
www.geenexsolar.com/northernbobwhite
for more details.

- ❖ THE DEVELOPERS OF NORTHERN BOBWHITE SOLAR DIRECTLY SUPPORT THE EDUCATION AND WORKFORCE DEVELOPMENT PROGRAMS OF THE CENTER FOR ENERGY EDUCATION.
- ❖ THE PROJECT WILL RECRUIT & HIRE FROM WITHIN THE LOCAL & REGIONAL COMMUNITY. THE SOLAR INDUSTRY NOW EMPLOYS MORE WORKERS THAN THE OIL, COAL AND GAS INDUSTRIES COMBINED.



NORTHERN BOBWHITE SOLAR



96 MW GROUND-MOUNTED SINGLE-AXIS TRACKING PHOTOVOLTAIC SYSTEM



ENOUGH POWER FOR
24,000 AVERAGE U.S.
HOMES ANNUALLY



POSSIBLE
CONSTRUCTION
START IN 2021



USE OF SETBACKS & VEGETATIVE
SCREENING WILL MITIGATE IMPACTS
TO NEIGHBORS AND COMMUNITY

Why Solar? Why Now? Why Marion County, KY?

- High demand for low-carbon renewable energy by customers, corporations and institutions.
- Cost of solar continues to decrease making it highly competitive with traditional fossil fuel sources.
- Location, location, location - great solar resource combined with good topography near areas with high energy demands.
- Available land with existing and accessible utility infrastructure.
- Landowners wanting to diversify their income and protect their real estate assets.

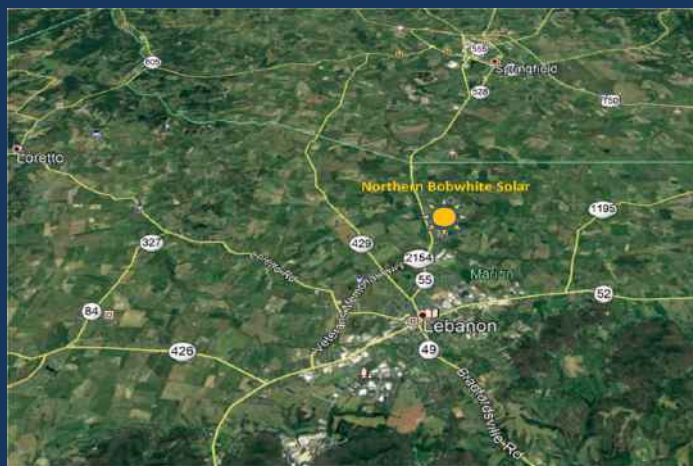
NORTHERN BOBWHITE SOLAR BENEFITS

Northern Bobwhite Solar will provide a number of benefits to the county and surrounding community. The Project will bring a significant number of jobs to the area during construction. In addition, long-term jobs are created by the on-going maintenance of the site and the facility as well as the future growth of the solar industry in Kentucky.

The spending on development, construction and operation of such a project also provides a number of financial opportunities for local businesses (fencing, landscaping, machine rentals, etc.). The increased economic activity in the area also increases revenue for local hotels, restaurants and other vendors.

Northern Bobwhite Solar has and will continue to engage in local community outreach to address questions from neighboring landowners. The Project also looks forward to supporting local charities and will provide funds to the County for future projects that support education, workforce development and local first responders.

And finally, the Northern Bobwhite Solar Facility will be producing clean renewable energy that will have a number of positive impacts for the community and our environment for years to come.



Geenex Solar is a developer of utility-scale solar projects. For more information, see <http://www.geenexsolar.com/>

Please feel free to reach out to us at northernbobwhite@geenexsolar.com or call Kara Price at 859-309-4415 or Doug Schulte at 859-309-7662.

Exhibit D.7 Summary Transcript of PIM

Geenex // Northern Bobwhite // Virtual Meeting Overview

Date and Time: July 30, 2020 from 6-8 pm

Attendees:

Dial-In Users:

- Jen with Support
- Hunter with Support
- Kade with Support
- Karen Thompson
- James O Cook
- Jessica Gilha
- Brett Moulton
- Terry - Moderator
- Karen Thompson
- Donna Robichaud
- Benjamin
- Juergen Fehr
- Woo Smith
- Scott
- Mozine Lowe
- Patrick Rust
- Nathan Coleman
- Rich Kirkland
- Terry
- Allan Hug
- Doug Schulte
- Aron Caudill
- Kara Price

Web Users:

- Jen Chamberlin
- Jessica Gilha
- Cole Mattingly
- Brett Moulton
- Patrick Clark
- Michael Leathers

Summary of Response:

Following a slideshow about the project, public participants were encouraged to ask questions of the Northern Bobwhite team. The topics raised by the community at the virtual meeting were wide-ranging, indicating curiosity about several aspects of the project. It should be noted that every question asked by the public was answered during the virtual meeting.

Topics raised included decommissioning, financing of the project, labor and jobs, power generation and storage, agriculture, lease agreements, and landowner interests. The community seemed interested in understanding the commitments Geenex has made to the community, specifics about the facility's geography, information about how land is leased, and general timeline regarding the project's construction.

Comments and questions about how individuals and local businesses can become involved into the project were also recurrent. There were multiple questions in regard to if Geenex would need more land to complete the project, and a question about how one would go about entering a contract with the company. Such inquiries point to this virtual meeting being successful in drawing people who were interested in learning more about Northern Bobwhite. One participant added this comment near the meeting's end, "I just want to say that I am impressed that all questions asked were addressed."

Exhibit D
Public Information Meeting ("PIM")

8. Published Notice

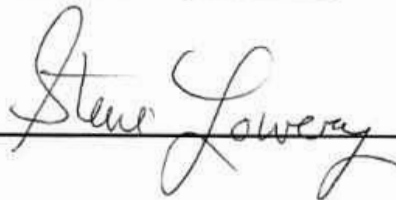
The Lebanon Enterprise

119 S. Proctor Knott Ave. • Lebanon, KY 40033
Phone: (270) 692-6026 • FAX: (270) 692-2118
Advertising/Bookkeeping: enugent@lebanonenterprise.com

AFFIDAVIT OF PUBLICATION

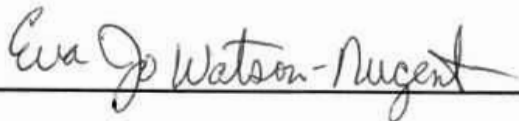
The following affidavit is to be executed by an officer of the newspaper attesting publication of legal advertisements as required under an Act of Kentucky Legislature of 1958.

Stevie Lowery of Lebanon, Kentucky, being first duly sworn, says that *she* is *Publisher* of The Lebanon Enterprise, a newspaper published in the State of Kentucky, County of Marion, and having general circulation in the County of Marion, and that the advertisement of which the annexed is a true copy has been published in said newspaper on the following dates 7-15-2020.



Stevie Lowery

Subscribed and sworn to before me, a Notary Public within and for the State and County aforesaid, by Stevie Lowery to me personally known, this 15th day of July 2020. My commission expires the 11th day of February, 2021.



Eva Jo Watson-Nugent
Notary Public, State At Large 570155

Exhibit E
Certifying Statement of No Zoning
Requirements

KENTUCKY STATE BOARD ON ELECTRIC
GENERATION AND TRANSMISSION SITING

NORTHERN BOBWHITE SOLAR LLC
CASE NO. 2020-00208

STATEMENT REGARDING CERTIFICATIONS REQUIRED BY KRS 278.706(2)(d)

Comes the undersigned and states as follows:

1. That my name is Kate O’Hair, and I am the Vice President of Northern Bobwhite Solar LLC, the Applicant herein;
2. That I am over 18 years of age and am a resident of the state of Minnesota;
3. That I have conducted an inquiry into the facts contained in this Statement and believe them to be true to the best of my knowledge;
4. That the proposed facility as planned will be in compliance with any and all local ordinances and regulations concerning noise control, and will also be in compliance with any and all applicable local planning and zoning ordinances as provided in KRS 278.705(3).
5. There are no setback requirements established by the planning and zoning commission for land located outside the City of Lebanon, include Northern Bobwhite’s projects area.

Signed the 7 day of December 2020.

DocuSigned by:
Kate O'Hair
9D34FE611436485...

Kate O’Hair

Exhibit F

Public Involvement Documents

- 1. Utility-Scale Solar Workshop – October 19, 2019**
 - a. Invitation**
 - b. Agenda**
- 2. Introductory Letter to Neighboring Landowners – June 22, 2020**
 - a. Sample Letter to Neighboring Landowners**
 - b. List of Adjacent Landowners for Letter**



Center for **Energy Education**

Dear Public Officials and County Leaders,

The Center for Energy Education is excited to offer our first Utility-Scale Solar Workshop for Public Officials in Kentucky on Tuesday, October 29, 2019 from 8:30 AM – 2:30 PM. The energy environment in Kentucky is changing. If you haven't already, you may soon have solar developers knocking on your county's door. This event is designed to provide key information on utility-scale solar to elected and appointed officials, municipal and county staff members, economic development professionals, as well as community leaders and other interested parties.

Our workshop will provide the latest information and updates on topics related to solar facilities from industry experts, academia and county officials. The featured topics for this meeting will include:

- Solar Industry Updates
- State and Local Permitting
- Health and Safety Impacts of Solar Technology
- Legal Considerations for Landowners and Officials
- Tax Treatment and Revenue Impacts

Attached is a draft of the proposed agenda. A final agenda with full details on our line-up of speakers will be provided two weeks prior to the event.

You will have the unique opportunity to hear first-hand lessons learned from officials in other states, property owners, and solar industry experts. Lunch will be provided and we will conclude the day with a virtual tour of operational solar farms. **There is no cost for this workshop.**

The workshop will be held at the Marion County Public Library Community Room located at 201 East Main Street, Lebanon, Kentucky.

If you are interested in attending, please call (252) 541-3004 to register to reserve your spot today. We look forward to seeing you on October 29th!



Center for **Energy Education**

Dear Public Officials and County Leaders,

The Center for Energy Education is excited to offer our first Utility-Scale Solar Workshop for Public Officials in Kentucky on Tuesday, October 29, 2019 from 8:30 AM – 2:30 PM. The energy environment in Kentucky is changing. If you haven't already, you may soon have solar developers knocking on your county's door. This event is designed to provide key information on utility-scale solar to elected and appointed officials, municipal and county staff members, economic development professionals, as well as community leaders and other interested parties.

Our workshop will provide the latest information and updates on topics related to solar facilities from industry experts, academia and county officials. The featured topics for this meeting will include:

- Solar Industry Updates
- State and Local Permitting
- Health and Safety Impacts of Solar Technology
- Legal Considerations for Landowners and Officials
- Tax Treatment and Revenue Impacts

Attached is the current agenda with details on our line-up of speakers. Additional speakers may be added.

You will have the unique opportunity to hear first-hand lessons learned from officials in other states, property owners, and solar industry experts. Lunch will be provided and we will conclude the day with a virtual tour of operational solar farms. **There is no cost for this workshop.**

The workshop will be held at the Marion County Public Library Community Room located at 201 East Main Street, Lebanon, Kentucky.

If you are interested in attending, please call (252) 541-3004 to register to reserve your spot today. We look forward to seeing you on October 29th!



Utility-Scale Solar Workshop for Public Officials

Tuesday, October 29, 2019

8:30 am – 2:30 pm

Marion Co. Public Library, 201 E. Main Street, Lebanon, KY

8:30 AM	CONTINENTAL BREAKFAST	
9:00 AM	Welcome / Workshop Overview & Introductions	
9:30 AM	The Solar Industry: What Drives the Need for Renewable Energy? What Should Kentucky Expect Over the Next 3-5 Years?	
10:00 AM	Solar Facilities - Land Development & Permitting	Kara Price, SVP Permitting & Dev. Geenex Solar
10:45 AM	BREAK	
11:00 AM	Solar Facilities - Environmental Health & Safety	Karen Thompson, CHMM, PG Smith Management Group
11:30 AM	Solar Facilities - Property Value Impacts	Richard C. Kirkland, Jr., MAI Kirkland Appraisals
12:00 PM	LUNCH	Panel Discussion
1:00 PM	Legal Considerations for Landowners/Counties	Ken Gish, Attorney Solomon Van Meter, Attorney
1:30 PM	Economic & Educational Benefits	Mozine Lowe, Executive Director Center for Energy Education
2:00 PM	Virtual Solar Farm Tour	
	Kentucky SolarCats from Bath County High School	



June 22, 2020

[First name, Last name]
[Street Address]
[City, State, Zip]

Dear Neighbor,

We hope this letter finds you and your family safe and well. We wanted to reach out and introduce ourselves as the developer of a solar project within your local community called Northern Bobwhite Solar. As a nearby landowner of the project, you will be invited to future public information meetings (whether in person and/or virtual) and provided links to online information regarding the project's specific details. Until that time, this letter will provide some high-level details and contact information should you have any specific questions we can address.

Geenex Solar is a privately-held company based in Charlotte, North Carolina. From our two (2) initial solar projects in 2012 to now more than 35 projects over five (5) states, we attribute our success to our community-focused approach to utility-scale solar development. Geenex takes pride in developing renewable energy projects that deliver clean energy to the grid while providing long-term financial stability to our landowners and vital economic benefits to our project communities. This community focus led to the founding of the non-profit Center for Energy Education which has already been actively engaged in several Kentucky communities including Marion County.

Our proposed 96 Megawatt (MW) Northern Bobwhite Solar project sits just north of Lebanon. Each year, the facility will generate enough electricity to offset the annual consumption of nearly 24,000 average American homes. The project is still undergoing interconnection studies and environmental due diligence but will be presented to Marion County officials and to the general community over the coming months. As we mentioned, we also plan to provide community education and engagement opportunities for neighbors and citizens to learn more about utility-scale solar and the details of the project itself. The site will offer notable setbacks and added vegetative screening to protect current viewsheds and to help the facility fit within the rural character of the community.

We look forward to speaking with you and members of the Marion County community to discuss our project in more detail. In the meantime, if you have any questions or concerns, we would hope that you would reach out to us. Below is a list of Geenex team members who are here to answer and help where we can.

Kara W. Price
SVP Permitting & Development
859-309-4415
northernbobwhite@geenexsolar.com

Doug Schulte
Director of Operations - KY
859-309-7662
northernbobwhite@geenexsolar.com

Best wishes and stay well,

Kara W. Price

Kara W. Price
Senior Vice President
Permitting & Development
Geenex Solar

Geenex Solar LLC
1930 Abbott Street
Suite 420
Charlotte, NC 28203
980-237-7926
info@geenexsolar.com
www.geenexsolar.com



Marion County, KY

Northern Bobwhite Solar

Powered by 

Northern Bobwhite Solar LLC

Northern Bobwhite Solar is currently in development in Marion County north of Lebanon, Kentucky. Marion County officials are aware of our development efforts; however, the project is still in the land acquisition / environmental analysis stage so official community meetings have not yet been held.

Geenex Solar

Geenex Solar has been focused on solar development, local community engagement and renewable energy education in the U.S. since 2012.

Geenex projects are valued for their well-sited locations, their adherence to best-development practices and their standards that meet and usually exceed county and state requirements.

Geenex Solar is the founder of the non-profit Center for Energy Education based in Halifax County, NC. The Center has already hosted education events and teacher training in Marion County.

Geenex-sourced projects are in demand from some of the largest developers, utilities and investors in the country.

PROJECT FACTS

1. GROUND-MOUNTED SINGLE-AXIS TRACKING SOLAR PHOTOVOLTAIC SYSTEM DELIVERING CLEAN ENERGY TO THE GRID.
2. INTERCONNECTION FOR UP TO 96 MW AC SOLAR FACILITY.
3. PROJECT OUTPUT, ENOUGH TO OFFSET THE POWER OF 24,000 AVERAGE U. S. HOMES ANNUALLY. POWER WILL BE SOLD INTO THE PJM WHOLESALE ELECTRICITY MARKET.
4. PROJECT WILL BE REVIEWED AND/OR PERMITTED THROUGH VARIOUS LOCAL, STATE & FEDERAL AGENCIES INCLUDING: Federal Energy Regulatory Commission, U.S. Army Corps of Engineers, Federal Aviation Administration, KY State Siting Board, KY Dept of Transportation, local County and other agencies as required.
5. POSSIBLE CONSTRUCTION START IN 2021.
6. UNIQUE LAYOUT, NOTABLE SETBACKS & VEGETATIVE SCREENING WILL MITIGATE IMPACTS TO NEIGHBORS AND COMMUNITY.

BENEFITS

Northern Bobwhite Solar will provide a number of benefits to the county and surrounding community. The Project will bring a significant number of jobs to the area during construction. In addition, long-term jobs are created by the on-going maintenance of the site and facility.

The spending on development and permitting of such a project also provides a number of financial opportunities for local businesses (fencing, landscaping, machine rentals, etc.). The increased economic activity in the area also increases revenue for local hotels, restaurants and vendors.

Northern Bobwhite Solar has, and will continue, to engage in community outreach to address questions from neighboring landowners. The Project will also support local charities and will provide funds to the County for future projects that support education, workforce development and local first responders.

Finally the Northern Bobwhite Solar Project will be producing clean renewable energy that has a number of positive impacts to our communities and our environment.



SOLAR IS CLEAN, QUIET, SAFE WITH NO HEALTH IMPACTS.



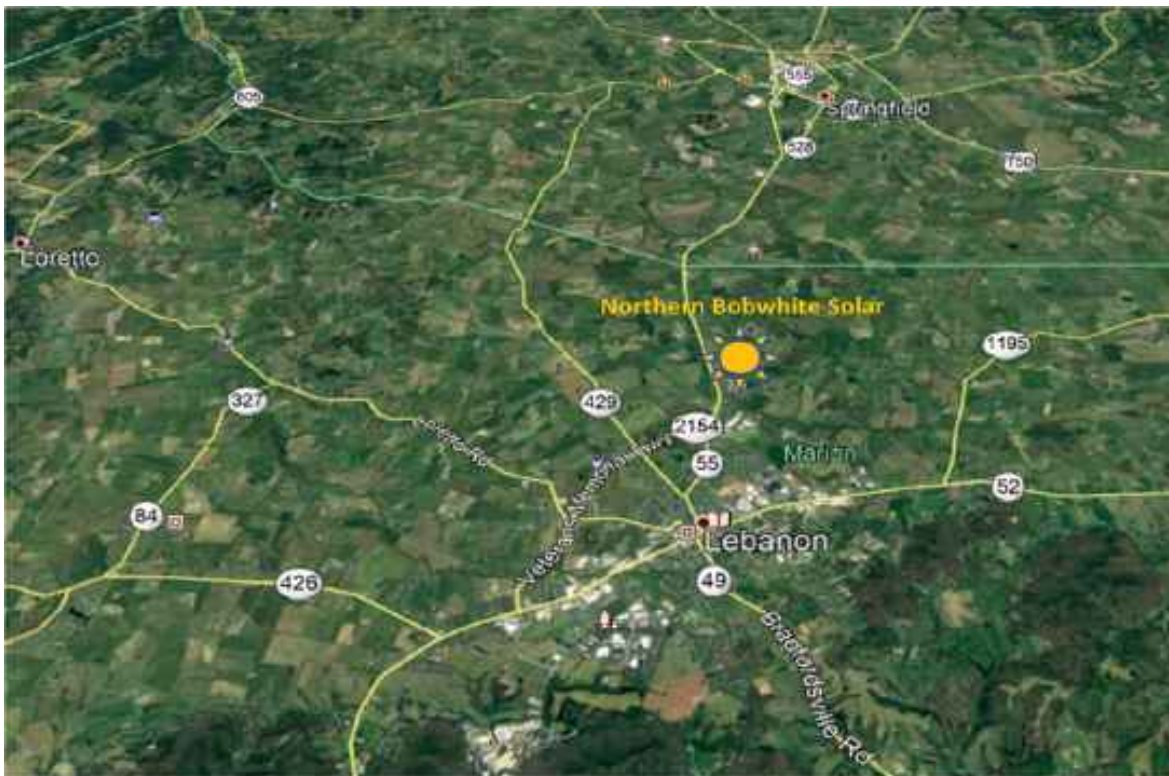
SOLAR INCREASES THE COUNTY'S TAX BASE AND PROVIDES ECONOMIC DEVELOPMENT OPPORTUNITIES.



THE DEVELOPERS OF THIS PROJECT DIRECTLY SUPPORT THE EDUCATION AND WORKFORCE DEVELOPMENT PROGRAMS OF THE CENTER FOR ENERGY EDUCATION.



THE PROJECT WILL RECRUIT & HIRE FROM WITHIN THE LOCAL COMMUNITY. THE SOLAR INDUSTRY NOW EMPLOYS MORE WORKERS THAN THE OIL, COAL AND GAS INDUSTRIES COMBINED.



CONTACT US

GEENEX SOLAR

northernbobwhite@geenexsolar.com

859-309-4415 or

859-309-7662

Name	Address2	City	Stat Zip
ABELL DOUGLAS SCOTT & JOAN	3325 BARBERS MILL RD	LEBANON	KY 40033
AVERITT JUDY & MARY ROSE HINES	3135 SPRINGFIELD HWY	LEBANON	KY 40033
BAGWELL STEVEN J & MARGARET B	2640 BARBERS MILL RD	LEBANON	KY 40033
BALLINGER JAMES WENDELL II & MELISSA	1618 WOODS MILL ROAD	LOUISVILLE	KY 40272
BEAMS ABELL FARM LLLP	4088 SPRINGFIELD HWY	SPRINGFIELD	KY 40069
BEGLEY TRAVIS MORGAN & BILLY JOE &	465 RADIO STATION RD	LEBANON	KY 40033
BLAIR DAVID WALLACE & JESSICA MARIE	3415 BARBERS MILL RD	LEBANON	KY 40033
BLAIR WILLIAM B JR	122 MEADOW LN	SPRINGFIELD	KY 40069-
BRADSHAW JAMES R	1500 BARBERS MILL RD	LEBANON	KY 40033
BRADSHAW JOHN D & JUDY &	330 E MAIN ST	LEBANON	KY 40033
BROWN MICHAEL A	1150 GENE CAMPBELL RD	LEBANON	KY 40033
BROWN RUBY K & MARTHA J CRUMBIE &	513 DOVER RD	LEXINGTON	KY 40505
BUCKMAN J CALEB & SARAH E MURPHY	455 RADIO STATION RD	LEBANON	KY 40033
CAMPBELL EUGENE & CYNTHIA	1375 GENE CAMPBELL RD	LEBANON	KY 40033
CBC OF MARION CO INC	113 WEST PUBLIC SQUARE	GLASGOW	KY 42141
CLARK PATRICK S	2100 ED SULLIVAN RD	LEBANON	KY 40033
CLARK PAUL JR & KAY	2625 SHORTLINE PIKE	LEBANON	KY 40033
CONLEY GREG & SEIDINA	60 HOURIGAN LANE	LEBANON	KY 40033
COOK CHRISTOPHER E & MARY E	2740 BARBERS MILL RD	LEBANON	KY 40033
COOK JAMES O & MARIAN	PO BOX 666	LEBANON	KY 40033
DEDMAN DAVID	1660 HORAN LN	SPRINGFIELD	KY 40069
DEERING WILLIAM S	1780 HORAN LN	SPRINGFIELD	KY 40069
ERCHAK NICHOLAS & TERI	2825 BARBERS MILL RD	LEBANON	KY 40033
FARMER MICHAEL & ALICIA	2617 SPRINGFIELD HWY	LEBANON	KY 40033
FIELDS CAM	2925 BARBERS MILL RD	LEBANON	KY 40033
GLASSCOCK TERRY & JACQUELINE	11579 MAHOGANY DR	ARLINGTON	TN 38002-
GOOTEE KIMBERLY A	2793 BARBERS MILL RD	LEBANON	KY 40033
GOOTEE MICHAEL ADAM & KRYSTAL	176 COURSE VIEW LN	LEBANON	KY 40033
GREENWELL DANIEL P & BECKY JO	2960 BARBERS MILL RD	LEBANON	KY 40033
HAMILTON DANA M	2769 BARBERS MILL RD	LEBANON	KY 40033
HAMILTON DONNIE & CRAIG	660 ADA DRIVE	HARRODSBURG	KY 40330
HARDIN ROGER DALE & PATRICIA	6472 BRADFORDSVILLE RD	LEBANON	KY 40033
HARDIN WILLIAM TODD & JILL	2200 SHORTLINE PK	LEBANON	KY 40033
HARMON JAMES & NANCY JOINT REVOCABLE	2455 SHORTLINE PIKE	LEBANON	KY 40033
HAYS WILLIAM KENNETH	800 WILLIS TRAIL	LEBANON	KY 40033
HILL JAMES BRADLEY & REBECCA A	3115 BARBERS MILL RD	LEBANON	KY 40033
HUNT DAVID IVAN & TERESA ANN	485 HARLAN CAULK RD	CAMPBELLSVILLE	KY 42718
HUNT TERESA A AS TRUSTEE OF	PO BOX 807	LEBANON	KY 40033
JOHNSON BRENT	2675 SHORTLINE PIKE	LEBANON	KY 40033
KUTTER JOHN T & PAULETTA O	3835 SIMMSTOWN RD	LEBANON	KY 40033
LANHAM JOSEPH STEVEN & CAROLINE	174 PATRIOTS WAY	SPRINGFIELD	KY 40069
LAWSON RANDALL & CONNIE	5120 SHORTLINE PIKE	LEBANON	KY 40033
LEAKE ANTHONY HOWARD	640 GENE CAMPBELL RD	LEBANON	KY 40033
LEAKE JOSEPH T JR & BARBARA TRUST	640 GENE CAMPBELL RD	LEBANON	KY 40033
LEAKE KEVIN A & ELLEN	499 GENE CAMPBELL RD	LEBANON	KY 40033
LIVERS MARY ANN BATTCHER	257 PATRIOTS WAY	SPRINGFIELD	KY 40069
MARION & WASHINGTON CO	P.O. BOX 805	LEBANON KY.	40033
MATTINGLY DAVID J	4000 SPRINGFIELD HWY	SPRINGFIELD	KY 40069
MATTINGLY JAMES TROY & GLENDA	2626 BARBERS MILL RD	LEBANON	KY 40033
MATTINGLY THOMAS RAY	780 ST MARYS ROAD	LEBANON	KY 40033
MCMICHAEL MARTIN ALLEN	1335 BARBERS MILL RD	LEBANON	KY 40033
MONTGOMERY CHARLES FORREST &	520 THORNTON SMITH RD	LEBANON	KY 40033
MOORE WILLIAM M	3154 JIMTOWN RD	SPRINGFIELD	KY 40069
MULLINS CLARENCE RUDOLPH JR	1285 BARBERS MILL RD	LEBANON	KY 40033
PARKERS PRIDE FARMS LLLP	4088 SPRINGFIELD HWY	SPRINGFIELD	KY 40069
PITTMAN RYAN PATRICK & LINDSEY	770 GENE CAMPBELL RD	LEBANON	KY 40033
ROBBINS ALLISON & BRANDON	1335 HORAN LN	SPRINGFIELD	KY 40069

ROBINSON CLAYTON JAMES & LAUREN	2840 ST FRANCIS ROAD	ST FRANCIS	KY 40062
ROUTIN ROGER ALLEN & JESSICA MARIE	850 HORAN LN	SPRINGFIELD	KY 40069-
SANDUSKY DAVID & RHONDA M	3200 ST ROSE RD	LEBANON	KY 40033
SINGLETON NICOLE MATTINGLY & SPALDING CHRISTOPHER	2879 BARBERS MILL RD 195 SHORTLINE PIKE	LEBANON LEBANON	KY 40033 KY 40033
SPALDING NICHOLAS J & KRISTIN N	40 GRAY ST	LEBANON	KY 40033
SYLVESTER & ALICE BROWN FAMILY	1500 HORAN LANE	SPRINGFIELD	KY 40069
TATUM TERRY(SAMUEL) & THERESE	2355 BARBERS MILL RD	LEBANON	KY 40033
TRACEY TABITHA & ISRAEL	1240 GENE CAMPBELL RD	LEBANON	KY 40033
TUCKER JAMES E JR	2718 BARBERS MILL ROAD	LEBANON	KY 40033
TUCKER MARY THERESA	2899 BARBERS MILL RD	LEBANON	KY 40033
VANDERVEER JOHN & MARY ANN	2340 HORAN LN	SPRINGFIELD	KY 40069
WALLS MICHAEL S & KIMBERLY MORGAN	190 TWIN EAGLES LANE	LEBANON	KY 40033
WILSON MASON T	2737 BARBERS MILL RD	LEBANON	KY 40033
WRIGHT DANNY R & BETTY	3025 SHORTLINE PIKE	LEBANON	KY 40033
HAMILTON THOMAS B	499 SILVERTON HILL RD	SPRINGFIELD	KY 40069
PARROTT TAMMY	2571 SIMMSTOWN RD	LEBANON	KY 40033
HODGE DAVID LARRY & HODGE MAX HALE	101 KALARAMAR DR	SPRINGFIELD	KY 40069

Exhibit G

PJM Feasibility Study Report

***Generation Interconnection
Feasibility Study Report***

For

***PJM Generation Interconnection Request
Queue Position AE1-143***

Marion County 161 kV

February 2019

Preface

The intent of the feasibility study is to determine a plan, with ballpark cost and construction time estimates, to connect the subject generation to the PJM network at a location specified by the Interconnection Customer. The Interconnection Customer may request the interconnection of generation as a capacity resource or as an energy-only resource. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: (1) Direct Connections, which are new facilities and/or facilities upgrades needed to connect the generator to the PJM network, and (2) Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system.

In some instances a generator interconnection may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection, may also contribute to the need for the same network reinforcement. The possibility of sharing the reinforcement costs with other projects may be identified in the feasibility study, but the actual allocation will be deferred until the impact study is performed.

The Feasibility Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities. The project developer is responsible for the right of way, real estate, and construction permit issues. For properties currently owned by Transmission Owners, the costs may be included in the study.

General

Northern Bobwhite Solar LLC, the Interconnection Customer (IC), has proposed a solar / battery storage generating facility located in Madison County, KY. The installed facilities will have a total capability of 96 MW with 64.16 MW of this output being recognized by PJM as capacity. The capacity & energy rights are associated with the solar generating facility only. The proposed in-service date for this project is June 1, 2022. **This study does not imply a EKPC commitment to this in-service date.**

Point of Interconnection

AE1-143 will interconnect with the EKPC Transmission system along one of the following points of interconnection:

1. At the Marion County 161kV Switchyard
2. Along the Marion County - Casey County 161kV Line

Cost Summary

The AE1-143 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	\$ 0
Direct Connection Network Upgrades	\$ 2,500,000
Non Direct Connection Network Upgrades	\$ 0
Total Costs	\$ 2,500,000

In addition, the AE1-143 project may be responsible for a contribution to the following costs:

Description	Total Cost
System Upgrades	\$ 17,400,000
Total Costs	\$ 17,400,000

Attachment Facilities

No Attachment Facilities are required to support this interconnection request.

Direct Connection Cost Estimate

The total preliminary cost estimate for the Direct Connection work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
Expand the existing 161 kV Marion County substation. Preliminary TOL Provided Estimated Time to Construct: 18 months	\$ 2,500,000
Total Direct Connection Facility Costs	\$ 2,500,000

Non-Direct Connection Cost Estimate

No Non-Direct Connection Facilities are required to support this interconnection request.

Interconnection Customer Requirements

1. An Interconnection Customer entering the New Services Queue on or after October 1, 2012 with a proposed new Customer Facility that has a Maximum Facility Output equal to or greater than 100 MW shall install and maintain, at its expense, phasor measurement units (PMUs). See Section 8.5.3 of Appendix 2 to the Interconnection Service Agreement as well as section 4.3 of PJM Manual 14D for additional information.
2. The Interconnection Customer may be required to install and/or pay for metering as necessary to properly track real time output of the facility as well as installing metering which shall be used for billing purposes. See Section 8 of Appendix 2 to the Interconnection Service Agreement as well as Section 4 of PJM Manual 14D for additional information.
3. The Interconnection Customer seeking to interconnect a wind generation facility shall maintain meteorological data facilities as well as provide that meteorological data which is required per item 5.iv. of Schedule H to the Interconnection Service Agreement.

Revenue Metering and SCADA Requirements

PJM Requirements

The Interconnection Customer will be required to install equipment necessary to provide Revenue Metering (KWH, KVARH) and real time data (KW, KVAR) for IC's generating Resource. See PJM Manuals M-01 and M-14D, and PJM Tariff Sections 24.1 and 24.2.

EKPC Requirements

The Interconnection Customer will be required to comply with all EKPC Revenue Metering Requirements for Generation Interconnection Customers. The Revenue Metering Requirements may be found within the "EKPC Facility Connection Requirements" document located at the following link:

<http://www.pjm.com/planning/design-engineering/to-tech-standards/ekpc.aspx>

Network Impacts

The Queue Project AE1-143 was evaluated as a 96 MW (Capacity 64.163 MW) injection at the Marion County 161 kV substation in the EKPC area. Project AE1-143 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE1-143 was studied with a commercial probability of 53%. Potential network impacts were as follows:

The results for the Primary & Secondary POI are included in the section below. Since both POI's are in very close proximity to each other, the load flow results are identical, and separate primary/secondary results are not provided.

Summer Peak Analysis – 2022

Contingency Descriptions

The following contingencies resulted in overloads:

Contingency Name	Contingency Definition
EKPC_P1-2_LAUR-L DAM161	CONTINGENCY 'EKPC_P1-2_LAUR-L DAM161' /* LAUREL CO - LAUREL DAM OPEN BRANCH FROM BUS 342754 TO BUS 342757 CKT 1 /* 342754 5LAUREL CO 161.00 342757 5LAUREL DAM 161.00 END
EKPC_P7-1_COOP 161 DBL 2	CONTINGENCY 'EKPC_P7-1_COOP 161 DBL 2' /* COOPER - ELIHU 161 & COOPER - LAUREL DAM 161 OPEN BRANCH FROM BUS 324141 TO BUS 342718 CKT 1 /* 324141 5ELIHU 161.00 342718 5COOPER2 161.00 OPEN BRANCH FROM BUS 342718 TO BUS 342757 CKT 1 /* 342718 5COOPER2 161.00 342757 5LAUREL DAM 161.00 END
EKPC_P7-1_LAURL 161 DBL	CONTINGENCY 'EKPC_P7-1_LAURL 161 DBL' /* LAUREL CO - LAUREL DAM 161 & LAUREL CO - TYNER 161 OPEN BRANCH FROM BUS 342754 TO BUS 342757 CKT 1 /* 342754 5LAUREL CO 161.00 342757 5LAUREL DAM 161.00 OPEN BRANCH FROM BUS 342754 TO BUS 342781 CKT 1 /* 342754 5LAUREL CO 161.00 342781 5PITTSBURG 161.00 OPEN BRANCH FROM BUS 342781 TO BUS 342820 CKT 1 /* 342781 5PITTSBURG 161.00 342820 5TYNER 161.00 END
AEP_P1-2_#363	CONTINGENCY 'AEP_P1-2_#363' OPEN BRANCH FROM BUS 243208 TO BUS 243209 CKT 1 / 243208 05JEFRSO 765 243209 05ROCKPT 765 1 END
AEP_P1-2_#1027	CONTINGENCY 'AEP_P1-2_#1027' OPEN BRANCH FROM BUS 248000 TO BUS 324114 CKT 1 / 248000 06CLIFTY 345 324114 7TRIMBLE CO 345 1 END
Base Case	
EKPC_P4-5_LAURL S50-1024	CONTINGENCY 'EKPC_P4-5_LAURL S50-1024' /* LAUREL CO OPEN BUS 342754 /* 5LAUREL CO DROPS BUS OPEN BRANCH FROM BUS 324688 TO BUS 342781 CKT 1 /* 324688 2PITTSKU 69.000 342781 5PITTSBURG 161.00 OPEN BRANCH FROM BUS 342781 TO BUS 342820 CKT 1 /* 342781 5PITTSBURG 161.00 342820 5TYNER 161.00 END

Generator Deliverability

(Single or N-1 contingencies for the Capacity portion only of the interconnection)

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
115553	342718	5SCOOPER2	EKPC	324141	5ELIHU	LGEE	1	EKPC_P1-2_LAURL DAM161	single	277.0	95.96	99.61	DC	10.09
115562	342838	7SPURLOCK	EKPC	253077	09STUART	DAY	1	AEP_P1-2_#1027	single	1421.0	99.89	100.14	DC	7.79

Note: Please see Attachment 2 for projects providing impacts to flowgate violations. The values in the Reference column correspond to the proper table in the Attachment.

Multiple Facility Contingency

(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
115984	342287	2SOMERSET KU	EKPC	324531	2FERGUSON SO	LGEE	1	EKPC_P7-1_COOP 161 DBL 2	tower	105.0	93.68	102.9	DC	9.65
114832	342718	5SCOOPER2	EKPC	324141	5ELIHU	LGEE	1	EKPC_P4-5_LAURL S50-1024	breaker	277.0	96.1	101.54	DC	15.06
115973	342718	5SCOOPER2	EKPC	324141	5ELIHU	LGEE	1	EKPC_P7-1_LAURL 161 DBL	tower	277.0	96.14	101.58	DC	15.06

Note: Please see Attachment 2 for projects providing impacts to flowgate violations. The values in the Reference column correspond to the proper table in the Attachment.

Contribution to Previously Identified Overloads

(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
115211	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVEC	1	Base Case	single	1134.0	157.13	158.16	DC	11.59
116018	342715	5SCOOPER1	EKPC	341344	2COOPER	EKPC	1	EKPC_P7-1_COOP 161 DBL 2	tower	131.0	106.83	108.87	DC	5.88

Note: Please see Attachment 2 for projects providing impacts to flowgate violations. The values in the Reference column correspond to the proper table in the Attachment.

Short Circuit

(Summary of impacted circuit breakers)

None

Steady-State Voltage Requirements

(Summary of the VAR requirements based upon the results of the steady-state voltage studies)

Steady State Voltage Studies to be conducted during later study phases

Stability and Reactive Power Requirement for Low Voltage Ride Through

(Summary of the VAR requirements based upon the results of the dynamic studies)

Stability Studies to be conducted during later study phases

Affected System Analysis & Mitigation

LG&E Impacts:

LG&E Impacts to be determined during later study phases (as applicable)

Light Load Analysis - 2021

Light Load Studies to be conducted during later study phases

Potential Congestion due to Local Energy Deliverability

PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC/DC	MW IMPACT
115207	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVEC	1	Base Case	operation	1134.0	160.73	162.26	DC	17.33
115208	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVEC	1	AEP_P1-2_#363	operation	1451.0	159.83	161.03	DC	17.43
115552	342718	5COOPER2	EKPC	324141	5ELIHU	LGEE	1	EKPC_P1-2_LAUR-L DAM161	operation	277.0	96.02	101.47	DC	15.09

Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed which shall study all overload conditions associated with the overloaded element(s) identified.

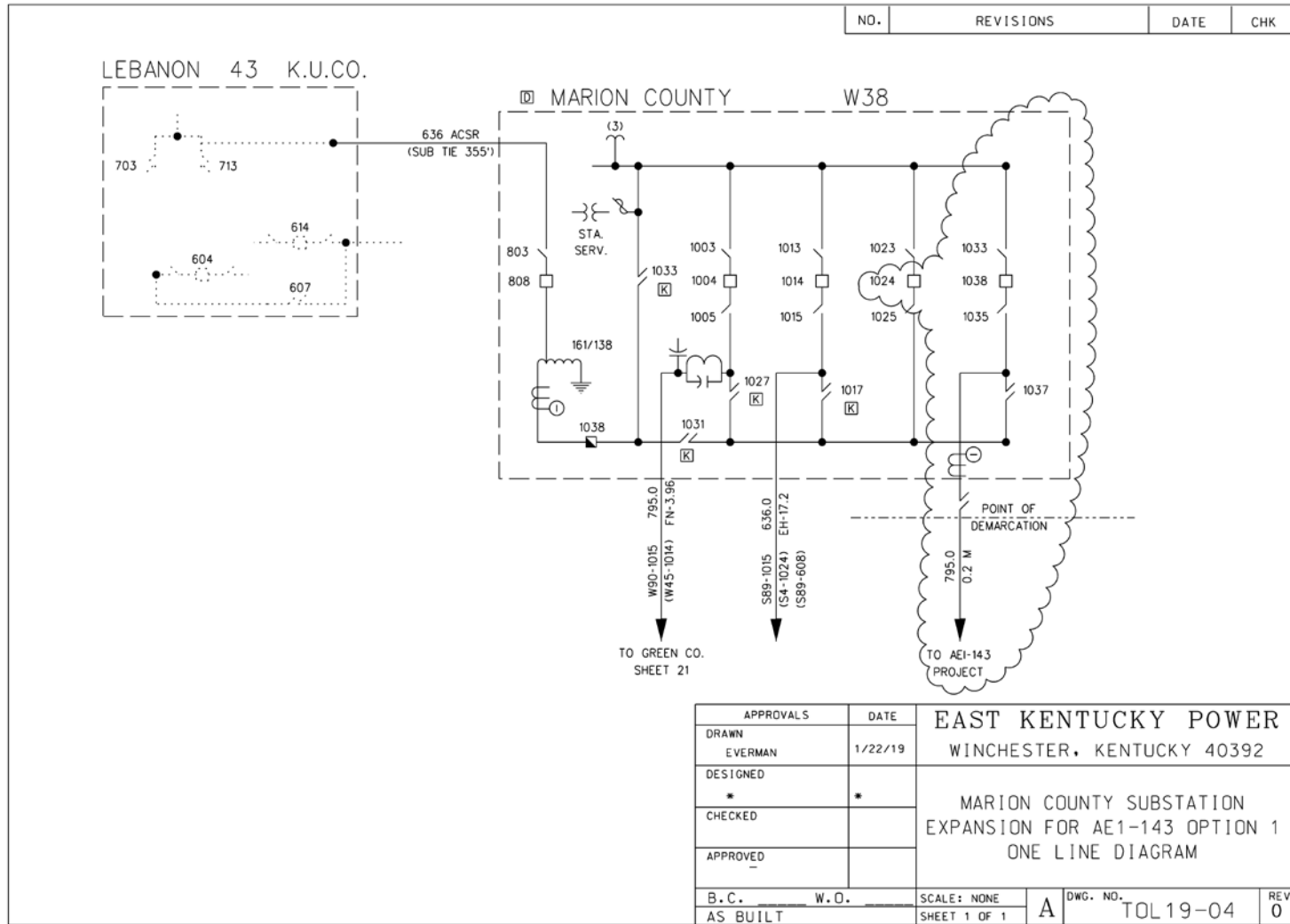
System Reinforcements

(Upgrades required to mitigate reliability criteria violations, i.e. Network Impacts, initially caused by the addition of this project generation)

(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study)

ID	Index	Facility	Upgrade Description	Cost
114832,115553,15973	1	5COOPER2 161.0 kV - 5ELIHU 161.0 kV Ckt 1	Description : No Violation. EKPC emergency rating 298 MVA	\$0
116018	5	5COOPER1 161.0 kV - 2COOPER 69.0 kV Ckt 1	Description : No Violation. EKPC emergency rating 152 MVA	\$0
115211	4	7TRIMBLE CO 345.0 kV - 06CLIFTY 345.0 kV Ckt 1	<p>In order to mitigate the overloads, the following reinforcements are required:</p> <ul style="list-style-type: none"> To relieve the Trimble – Clifty 345 kV line overload: LG&E upgrade is to reconductor the line with a high temperature conductor and upgrade any necessary terminal equipment to achieve expected ratings of 2610/2610 MVA SN/SE. <p>Cost estimate is \$17.4M with a time estimate of 18 months. PJM Network Upgrade N5469.</p>	\$17,400,000
115562	2	7SPURLOCK 345.0 kV - 09STUART 345.0 kV Ckt 1	Description : No Violation. EKPC emergency rating 1792 MVA	\$0
115984	3	2SOMERSET KU 69.0 kV - 2FERGUSON SO 69.0 kV Ckt 1	Description : No Violation. EKPC emergency rating 152 MVA	\$0
			TOTAL COST	\$0

Attachment 1. Single Line Diagram



Attachment 2. Flowgate Details

Appendices

The following appendices contain additional information about each flowgate presented in the body of the report. For each appendix, a description of the flowgate and its contingency was included for convenience. However, the intent of the appendix section is to provide more information on which projects/generators have contributions to the flowgate in question. Although this information is not used "as is" for cost allocation purposes, it can be used to gage other generators impact.

It should be noted the generator contributions presented in the appendices sections are full contributions, whereas in the body of the report, those contributions take into consideration the commercial probability of each project.

Index 1

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
115973	342718	5COOPER2	EKPC	324141	5ELIHU	LGEE	1	EKPC_P7-1_LAURL 161 DBL	tower	277.0	96.14	101.58	DC	15.06

Bus #	Bus	MW Impact
342900	1COOPER1 G	9.88
342903	1COOPER2 G	19.23
342945	1LAUREL 1G	5.98
939131	AE1-143 C	10.07
939132	AE1-143 E	4.99
940041	AE1-246 C O1	9.04
940042	AE1-246 E O1	4.4
940051	AE1-247 C O1	15.38
940052	AE1-247 E O1	7.62
CARR	CARR	0.06
CBM-S1	CBM-S1	3.77
CBM-S2	CBM-S2	0.41
CBM-W1	CBM-W1	1.16
CBM-W2	CBM-W2	18.98
CIN	CIN	0.56
CPLE	CPLE	0.09
DEARBORN	DEARBORN	0.09
G-007	G-007	0.17
IPL	IPL	0.23
MEC	MEC	2.27
O-066	O-066	0.56
RENSELAER	RENSELAER	0.05
TRIMBLE	TRIMBLE	0.02
WEC	WEC	0.15

Index 2

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
115562	342838	7SPURLOCK	EKPC	253077	09STUART	DAY	1	AEP_P1-2_#1027	single	1421.0	99.89	100.14	DC	7.79

Bus #	Bus	MW Impact
251968	08ZIMRHP	27.66
251970	08MELDL1	1.58
251971	08MELDL2	1.58
251972	08MELDL3	1.59
342918	1JKCT 1G	4.16
342921	1JKCT 2G	4.16
342924	1JKCT 3G	4.16
342927	1JKCT 4G	2.76
342930	1JKCT 5G	2.74
342933	1JKCT 6G	2.76
342936	1JKCT 7G	2.76
342939	1JKCT 9G	3.04
342942	1JKCT 10G	3.04
342957	1SPURLK1G	20.47
342960	1SPURLK2G	38.6
342963	1SPURLK3G	20.28
342966	1SPURLK4G	20.28
925981	AC1-074 C O1	14.85
926101	AC1-089 C O1	4.46
932551	AC2-075 C	3.53
935011	AD1-134	17.07
936281	AD2-036 C	10.61
936381	AD2-048 C	11.64
936571	AD2-072 C O1	10.19
936821	AD2-105 C O1	4.73
936831	AD2-106 C O1	2.85
936841	AD2-107 C O1	2.22
939131	AE1-143 C	7.79
939141	AE1-144 C O1	30.1
940041	AE1-246 C O1	6.93
940051	AE1-247 C O1	11.78
940091	AE1-251 C O1	14.93
AE1-042	AE1-042	6.91
CARR	CARR	0.49
CBM-S1	CBM-S1	17.34
CBM-S2	CBM-S2	2.3
CBM-W1	CBM-W1	6.17
CBM-W2	CBM-W2	83.5
CIN	CIN	10.09
CPL	CPL	0.53
DEARBORN	DEARBORN	0.76
IPL	IPL	6.11
LGEE	LGEE	7.41
MEC	MEC	10.44
RENSSELAER	RENSSELAER	0.38

Bus #	Bus	MW Impact
WEC	WEC	0.99

Index 3

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
115984	342287	2SOMERSET KU	EKPC	324531	2FERGUSON SO	LGEE	1	EKPC_P7-1_COOP 161 DBL 2	tower	105.0	93.68	102.9	DC	9.65

Bus #	Bus	MW Impact
342900	1COOPER1 G	4.81
342903	1COOPER2 G	9.33
939131	AE1-143 C	6.45
939132	AE1-143 E	3.2
940041	AE1-246 C O1	6.25
940042	AE1-246 E O1	3.04
940051	AE1-247 C O1	10.63
940052	AE1-247 E O1	5.26
CARR	CARR	0.03
CBM-S1	CBM-S1	2.57
CBM-S2	CBM-S2	0.28
CBM-W1	CBM-W1	1.02
CBM-W2	CBM-W2	13.35
CIN	CIN	0.5
CPLE	CPLE	0.06
DEARBORN	DEARBORN	0.02
G-007	G-007	0.08
IPL	IPL	0.23
MEC	MEC	1.69
O-066	O-066	0.27
RENSSELAER	RENSSELAER	0.02
WEC	WEC	0.13

Index 4

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
115211	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVEC	1	Base Case	single	1134.0	157.13	158.16	DC	11.59

Bus #	Bus	MW Impact
342900	1COOPER1 G	2.62
342903	1COOPER2 G	5.08
342918	1JKCT 1G	2.1
342921	1JKCT 2G	2.1
342924	1JKCT 3G	2.1
342927	1JKCT 4G	1.4
342930	1JKCT 5G	1.39

Bus #	Bus	MW Impact
342933	1JKCT 6G	1.4
342936	1JKCT 7G	1.4
342939	1JKCT 9G	1.43
342942	1JKCT 10G	1.43
342945	1LAUREL 1G	1.48
925981	AC1-074 C O1	5.09
932551	AC2-075 C	1.21
935011	AD1-134	8.85
936281	AD2-036 C	3.64
936381	AD2-048 C	4.45
936571	AD2-072 C O1	12.34
936821	AD2-105 C O1	4.16
936831	AD2-106 C O1	2.23
936841	AD2-107 C O1	1.48
939131	AE1-143 C	11.59
940041	AE1-246 C O1	14.33
940051	AE1-247 C O1	24.35
940091	AE1-251 C O1	9.99
952471	J708	47.83
952811	J759	11.51
952821	J762	36.23
952861	J783 C	10.9
953281	J795	4.0
953611	J800	14.76
953831	J842 C	3.43
953841	J843 C	3.7
953931	J856	10.8
AE1-042	AE1-042	12.54
CARR	CARR	0.1
CBM-S1	CBM-S1	44.54
CBM-S2	CBM-S2	4.85
CBM-W1	CBM-W1	5.85
CBM-W2	CBM-W2	163.29
CIN	CIN	24.92
CPLE	CPLE	1.43
DEARBORN	DEARBORN	0.55
IPL	IPL	12.6
LGEE	LGEE	27.86
MEC	MEC	14.99
RENSSELAER	RENSSELAER	0.08
WEC	WEC	0.92

Index 5

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC/DC	MW IMPACT
116018	342715	5COOPER1	EKPC	341344	2COOPER	EKPC	1	EKPC_P7-1_COOP 161 DBL 2	tower	131.0	106.83	108.87	DC	5.88

Bus #	Bus	MW Impact
342900	1COOPER1 G	4.78
342903	1COOPER2 G	9.26
939131	AE1-143 C	3.93
939132	AE1-143 E	1.95
CARR	CARR	0.02
CBM-S1	CBM-S1	1.24
CBM-S2	CBM-S2	0.11
CBM-W1	CBM-W1	0.38
CBM-W2	CBM-W2	6.25
CIN	CIN	0.22
CPLE	CPLE	0.02
DEARBORN	DEARBORN	0.03
G-007	G-007	0.06
IPL	IPL	0.09
MEC	MEC	0.75
O-066	O-066	0.22
RENSSELAER	RENSSELAER	0.02
WEC	WEC	0.05

Exhibit H

PJM System Impact Study Report



**Generation Interconnection
Impact Study Report
for
Queue Project AE1-143
MARION COUNTY 161 KV
64.163 MW Capacity / 96 MW Energy**

August, 2019

Table of Contents

1	Preface.....	3
2	General.....	4
2.1	Point of Interconnection	5
2.2	Cost Summary.....	5
3	Transmission Owner Scope of Work.....	6
4	Attachment Facilities	6
5	Direct Connection Cost Estimate.....	6
6	Non-Direct Connection Cost Estimate.....	6
7	Incremental Capacity Transfer Rights (ICTRs)	7
8	Interconnection Customer Requirements.....	8
9	Revenue Metering and SCADA Requirements	9
9.1	PJM Requirements.....	9
9.2	EKPC Requirements.....	9
10	Network Impacts.....	10
11	Generation Deliverability	12
12	Multiple Facility Contingency	12
13	Contribution to Previously Identified Overloads	12
14	Potential Congestion due to Local Energy Deliverability.....	12
15	System Reinforcements.....	13
16	Steady-State Voltage Requirements.....	13
17	Stability and Reactive Power Requirement for Low Voltage Ride Through	13
18	Flow Gate Details	14
18.1	Index 3	15
19	Affected Systems	17
19.1	LG&E.....	17
19.2	MISO	17
19.3	TVA.....	17
19.4	Duke Energy Progress.....	17
19.5	NYISO	17
20	Contingency Descriptions.....	18
21	Short Circuit.....	20
22	Attachment 1. Single Line Diagram	21

1 Preface

The intent of the System Impact Study is to determine a plan, with approximate cost and construction time estimates, to connect the subject generation interconnection project to the PJM network at a location specified by the Interconnection Customer. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system. All facilities required for interconnection of a generation interconnection project must be designed to meet the technical specifications (on PJM web site) for the appropriate transmission owner.

In some instances an Interconnection Customer may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection or merchant transmission upgrade, may also contribute to the need for the same network reinforcement. The possibility of sharing the reinforcement costs with other projects may be identified in the Feasibility Study, but the actual allocation will be deferred until the System Impact Study is performed.

The System Impact Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities. The project developer is responsible for the right of way, real estate, and construction permit issues. For properties currently owned by Transmission Owners, the costs may be included in the study.

The Interconnection Customer seeking to interconnect a wind or solar generation facility shall maintain meteorological data facilities as well as provide that meteorological data which is required per Schedule H to the Interconnection Service Agreement and Section 8 of Manual 14D.

2 General

Northern Bobwhite Solar LLC, the Interconnection Customer (IC), has proposed a solar / battery storage generating facility located in Madison County, KY. The installed facilities will have a total capability of 96 MW with 64.16 MW of this output being recognized by PJM as capacity. The capacity & energy rights are associated with the solar generating facility only. The proposed in-service date for this project is June 1, 2022. This study does not imply a EKPC commitment to this in-service date.

Queue Number	AE1-143
Project Name	MARION COUNTY 161 KV
Interconnection Customer	Northern Bobwhite Solar LLC
State	KY
County	Madison
Transmission Owner	EKPC
MFO	96
MWE	96
MWC	64.163
Fuel	Solar; Storage
Basecase Study Year	2022

2.1 Point of Interconnection

AE1-143 will interconnect with the EKPC Transmission system at the Marion County 161kV Switchyard.

2.2 Cost Summary

The AE1-143 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	\$250,000
Direct Connection Network Upgrade	\$0
Non Direct Connection Network Upgrades	\$2,250,000
Allocation for New System Upgrades	\$0
Contribution for Previously Identified Upgrades	\$0
Total Costs	\$2,500,000

3 Transmission Owner Scope of Work

4 Attachment Facilities

The total preliminary cost estimate for the Attachment work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
Install a 161 kV switch structure at the point of demarcation, revenue metering, and attachment facility line/bus and associated hardware to accept the Interconnection Customer generator lead line/bus terminating at the AE1-143 Interconnection switching station.	\$250,000
Total Attachment Facility Costs	\$250,000

5 Direct Connection Cost Estimate

There are no Direct Connection Facilities are required to support this interconnection.

6 Non-Direct Connection Cost Estimate

The total preliminary cost estimate for the Non-Direct Connection work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
Expand the existing 161 kV Marion County substation. Preliminary TOL Provided Estimated Time to Construct: 18 months	\$2,250,000
Total Non-Direct Connection Facility Costs	\$2,250,000

7 Incremental Capacity Transfer Rights (ICTRs)

Will be determined at a later study phase

8 Interconnection Customer Requirements

1. An Interconnection Customer entering the New Services Queue on or after October 1, 2012 with a proposed new Customer Facility that has a Maximum Facility Output equal to or greater than 100 MW shall install and maintain, at its expense, phasor measurement units (PMUs). See Section 8.5.3 of Appendix 2 to the Interconnection Service Agreement as well as section 4.3 of PJM Manual 14D for additional information.
2. The Interconnection Customer may be required to install and/or pay for metering as necessary to properly track real time output of the facility as well as installing metering which shall be used for billing purposes. See Section 8 of Appendix 2 to the Interconnection Service Agreement as well as Section 4 of PJM Manual 14D for additional information.
3. The Interconnection Customer seeking to interconnect a wind generation facility shall maintain meteorological data facilities as well as provide that meteorological data which is required per item 5.iv. of Schedule H to the Interconnection Service Agreement.

9 Revenue Metering and SCADA Requirements

9.1 PJM Requirements

The Interconnection Customer will be required to install equipment necessary to provide Revenue Metering (KWH, KVARH) and real time data (KW, KVAR) for IC's generating Resource. See PJM Manuals M-01 and M-14D, and PJM Tariff Section 8 of Attachment O.

9.2 EKPC Requirements

The Interconnection Customer will be required to comply with all EKPC Revenue Metering Requirements for Generation Interconnection Customers. The Revenue Metering Requirements may be found within the “EKPC Facility Connection Requirements” document located at the following link:

<http://www.pjm.com/planning/design-engineering/to-tech-standards/ekpc.aspx>

10 Network Impacts

The Queue Project AE1-143 was evaluated as a 96.0 MW (Capacity 64.2 MW) injection into the Marion County 161 kV substation in the EKPC area. Project AE1-143 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE1-143 was studied with a commercial probability of 1.00. Potential network impacts were as follows:

Summer Peak Load Flow

11 Generation Deliverability

(Single or N-1 contingencies for the Capacity portion only of the interconnection)

None

12 Multiple Facility Contingency

(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

None

13 Contribution to Previously Identified Overloads

(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
747923	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVEC	1	Base Case	single	1134.0	140.52	141.56	AC	11.59

14 Potential Congestion due to Local Energy Deliverability

PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.

Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed which shall study all overload conditions associated with the overloaded element(s) identified.

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
747919	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVEC	1	Base Case	operation	1134.0	144.87	146.42	AC	17.33
747920	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVEC	1	AEP_P1-2_#363	operation	1451.0	146.83	148.06	AC	17.43

15 System Reinforcements

ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE1-143	NUN
		Trimble – Clifty 345 kV line	No OVEC end upgrade required. The line is owned by LG&E. A LG&E Affected System Study will be required for AE1-143. The AE1-143 customer will need to sign onto a LG&E Affected System Study Agreement. LG&E will determine if there are any LG&E system impacts, including on the Trimble – Clifty LG&E-OVEC tie line. Final LG&E Impacts and necessary LG&E system upgrade(s) will be determined once the LG&E affected system study is completed by LG&E.	TBD	TBD	N/A

16 Steady-State Voltage Requirements

(Summary of the VAR requirements based upon the results of the steady-state voltage studies)

To be determined during the Facilities Study Phase

17 Stability and Reactive Power Requirement for Low Voltage Ride Through

(Summary of the VAR requirements based upon the results of the dynamic studies)

To be determined during the Facilities Study Phase

18 Flow Gate Details

The following appendices contain additional information about each flowgate presented in the body of the report. For each appendix, a description of the flowgate and its contingency was included for convenience. However, the intent of the appendix section is to provide more information on which projects/generators have contributions to the flowgate in question. Although this information is not used "as is" for cost allocation purposes, it can be used to gage other generators impact. It should be noted the generator contributions presented in the appendices sections are full contributions, whereas in the body of the report, those contributions take into consideration the commercial probability of each project.

18.1 Index 3

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
747923	324114	7TRIMBLE CO	LGEE	248000	06CLIFTY	OVEC	1	Base Case	single	1134.0	140.52	141.56	AC	11.59

Bus #	Bus	MW Impact
342900	1COOPER1 G	2.4
342903	1COOPER2 G	4.66
342918	1JKCT 1G	1.93
342921	1JKCT 2G	1.93
342924	1JKCT 3G	1.93
342927	1JKCT 4G	1.28
342930	1JKCT 5G	1.27
342933	1JKCT 6G	1.28
342936	1JKCT 7G	1.28
342939	1JKCT 9G	1.32
342942	1JKCT 10G	1.32
342945	1LAUREL 1G	1.36
925981	AC1-074 C O1	5.09
932551	AC2-075 C	1.21
936281	AD2-036 C	3.64
936381	AD2-048 C	4.45
936571	AD2-072 C O1	12.34
936821	AD2-105 C O1	3.66
936831	AD2-106 C O1	2.21
936841	AD2-107 C O1	1.48
939131	AE1-143 C	11.59
940041	AE1-246 C O1	14.33
940051	AE1-247 C O1	24.34
952471	J708	47.79
952811	J759	11.5
952821	J762	36.21
952861	J783 C	10.89
953611	J800	14.73
953831	J842 C	3.43
953841	J843 C	3.69
953931	J856	10.79
CARR	CARR	0.1
CBM-S1	CBM-S1	44.75
CBM-S2	CBM-S2	4.86
CBM-W1	CBM-W1	5.89
CBM-W2	CBM-W2	163.81
CIN	CIN	24.93
CPL	CPL	1.43
IPL	IPL	12.6
LGEE	LGEE	27.86
MEC	MEC	14.99
RENSELAER	RENSELAER	0.08
WEC	WEC	0.92

Affected Systems

19 Affected Systems

19.1 LG&E

A LG&E Affected System Study will be required for AE1-143. The AE1-143 customer will need to sign onto a LG&E Affected System Study Agreement.

Potential impacts were identified by PJM on the Trimble-Clifty 345 kV tie line between LG&E and OVEC. The line is owned by LG&E. LG&E will determine if there are any LG&E system impacts, including on the Trimble – Clifty LG&E-OVEC tie line. Final LG&E Impacts and necessary LG&E system upgrade(s) will be determined once the LG&E affected system study is completed by LG&E. The potential upgrade on the Trimble-Clifty 345 kV line, if determined to be a constraint by LG&E, is to reconductor the line with a high temperature conductor and upgrade necessary terminal equipment to achieve ratings of 2610/2610 MVA SN/SE. Cost estimate is \$17.4M with a time estimate of 18 months.

19.2 MISO

MISO Impacts to be determined during later study phases (as applicable).

19.3 TVA

A TVA Affected System Study will be required for AE1-143. The AE1-143 customer will need to sign onto a TVA Affected System Study Agreement.

19.4 Duke Energy Progress

None

19.5 NYISO

None

20 Contingency Descriptions

The following contingencies resulted in overloads:

Contingency Name	Contingency Definition
EKPC_P1-2_LAUR-L DAM161	CONTINGENCY 'EKPC_P1-2_LAUR-L DAM161' /* LAUREL CO - LAUREL DAM OPEN BRANCH FROM BUS 342754 TO BUS 342757 CKT 1 /* 342754 5LAUREL CO 161.00 342757 5LAUREL DAM 161.00 END
EKPC_P7-1_COOP 161 DBL 2	CONTINGENCY 'EKPC_P7-1_COOP 161 DBL 2' /* COOPER - ELIHU 161 & COOPER - LAUREL DAM 161 OPEN BRANCH FROM BUS 324141 TO BUS 342718 CKT 1 /* 324141 5ELIHU 161.00 342718 5COOPER2 161.00 OPEN BRANCH FROM BUS 342718 TO BUS 342757 CKT 1 /* 342718 5COOPER2 161.00 342757 5LAUREL DAM 161.00 END
EKPC_P7-1_LAURL 161 DBL	CONTINGENCY 'EKPC_P7-1_LAURL 161 DBL' /* LAUREL CO - LAUREL DAM 161 & LAUREL CO - TYNER 161 OPEN BRANCH FROM BUS 342754 TO BUS 342757 CKT 1 /* 342754 5LAUREL CO 161.00 342757 5LAUREL DAM 161.00 OPEN BRANCH FROM BUS 342754 TO BUS 342781 CKT 1 /* 342754 5LAUREL CO 161.00 342781 5PITTSBURG 161.00 OPEN BRANCH FROM BUS 342781 TO BUS 342820 CKT 1 /* 342781 5PITTSBURG 161.00 342820 5TYNER 161.00 END
AEP_P1-2_#363	CONTINGENCY 'AEP_P1-2_#363' OPEN BRANCH FROM BUS 243208 TO BUS 243209 CKT 1 / 243208 05JEFRSO 765 243209 05ROCKPT 765 1 END
Base Case	
EKPC_P4-5_LAURL S50-1024	CONTINGENCY 'EKPC_P4-5_LAURL S50-1024' /* LAUREL CO OPEN BUS 342754 /* 5LAUREL CO DROPS BUS OPEN BRANCH FROM BUS 324688 TO BUS 342781 CKT 1 /* 324688 2PITTSKU 69.000 342781 5PITTSBURG 161.00 OPEN BRANCH FROM BUS 342781 TO BUS 342820 CKT 1 /* 342781 5PITTSBURG 161.00 342820 5TYNER 161.00 END

Short Circuit

21 Short Circuit

The following Breakers are overduty

None

22 Attachment 1. Single Line Diagram

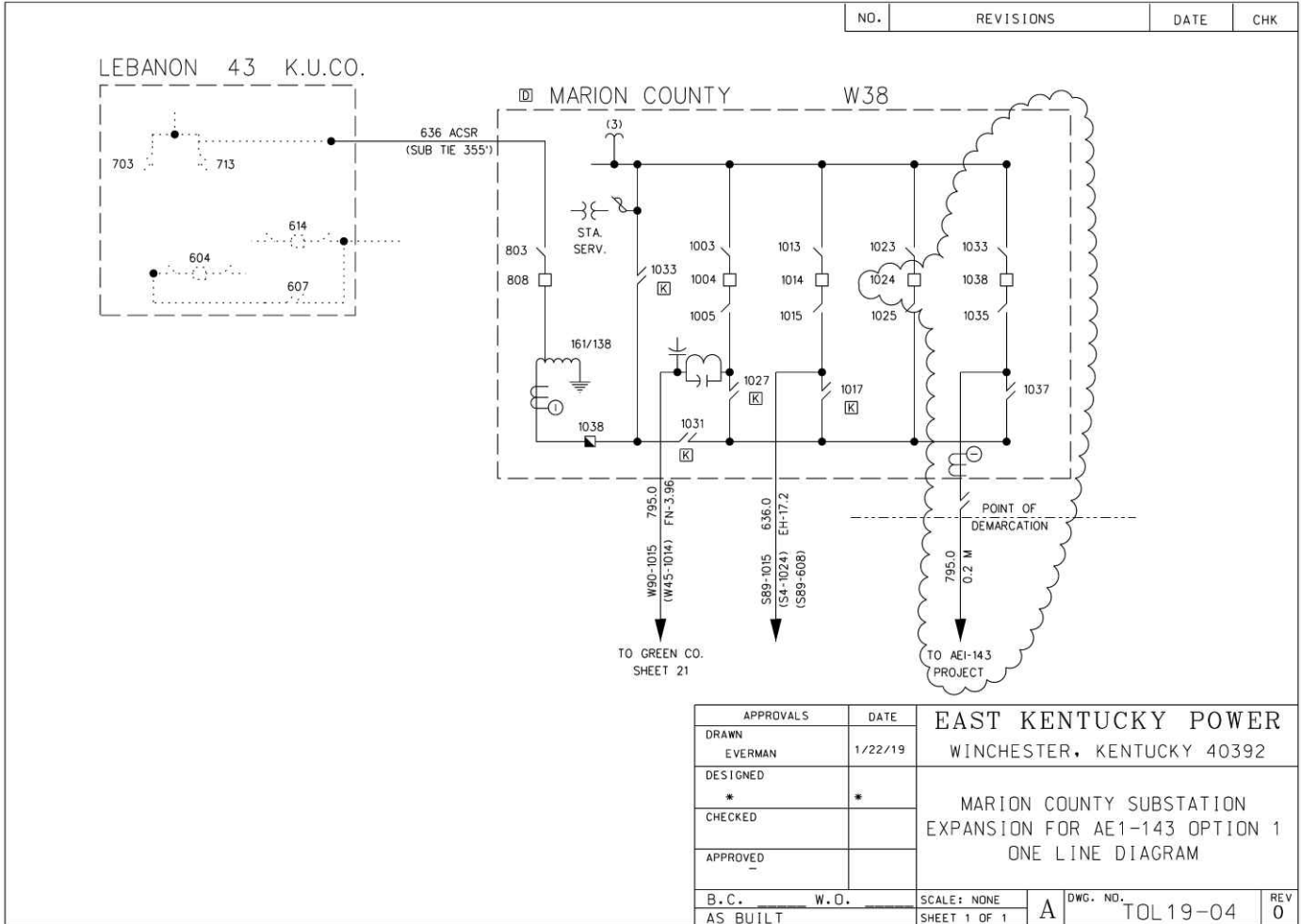


Exhibit I

PJM Facility Study Report

***Generation Interconnection
Facilities Study Report***

For

***PJM Generation Interconnection Request
Queue Position – AE1-143***

***Marion County 161 kV
96 MW***

July 2020

General

Northern Bobwhite Solar LLC, the Interconnection Customer, has proposed a solar generating facility located in Marion County, Kentucky. This solar facility will have a total capability of 96 MW with 64.163 MW of this output being recognized by PJM as capacity. The proposed in-service date for this project is June 1, 2022. **This study does not imply an East Kentucky Power Cooperative commitment to this in-service date.**

Point of Interconnection

AE1-143 will interconnect with the East Kentucky Power Cooperative (“EKPC”) transmission system at the existing Marion County Substation at the 161 kV voltage level.

Cost Summary

The AE1-143 project shall be responsible for the following costs:

Description	Total Cost
Attachment Facilities	\$ 1,190,000
Direct Connection Network Upgrades	\$ 0
Non Direct Connection Network Upgrades	\$ 0
Allocation for New System Upgrades	\$ 0
Contribution for Previously Identified Upgrades	\$ 0
Total Costs	\$ 1,190,000

A. Transmission Owner Facilities Study Summary

1. General Description of Project

Northern Bobwhite Solar LLC (“Northern Bobwhite Solar”), the Interconnection Customer (“IC”), has proposed a 96 MW solar generating facility located near Lebanon, Kentucky. PJM studied AE1-143 as a 96 MW injection into the EKPC 161 kV transmission system at the Marion County transmission substation (“Marion County Substation”), and evaluated it for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). The proposed in-service date is June 1, 2022.

The intent of this study is to develop detailed engineering cost estimates and construction schedules for necessary EKPC transmission facilities and system reinforcements, and protection requirements to accommodate this Generator Interconnection Request.

2. Amendments to the System Impact Study Data or System Impact Study Results

The project costs and construction schedule have been refined in this report for increased accuracy and thereby differ from that which was presented in the Feasibility and System Impact Study reports. All estimates have been created based on meeting the planned in-service date of June 1, 2022, and the associated needed backfeed date for the project of March 1, 2022. EKPC estimates a twelve (12) month implementation duration after a project kickoff meeting is held. Therefore, the requested in-service date of June 1, 2022 is possible if an Interconnection Construction Service Agreement (“ICSA”) is executed in an expedient manner. Any delay in the execution of this ICSA could result in a delay in the projected in-service date for EKPC’s required facilities.

3. Interconnection Customer’s Milestone Schedule

The IC’s requested Commercial Operation Date (“COD”) for the Marion County Solar generation facility is **June 1, 2022**. Milestone details have not been provided for the IC’s schedule.

4. Scope of Interconnection Customer’s Work

The Point of Interconnection (“POI”) will be the IC side of a 161 kV disconnect switch to be installed by EKPC at the interface between the IC-owned substation facilities and EKPC’s substation facilities at the existing Marion County Substation. The exact location of this switch will be determined during project scoping, and EKPC may require that this switch be located in the IC’s substation, although EKPC will install, own, operate, and maintain it. The IC substation is expected to be constructed near the existing EKPC Marion County Substation. The IC will install necessary 161 kV equipment (bus conductors, jumpers, etc.) from this 161 kV disconnect switch to its substation equipment. The IC will be responsible for acquiring all rights-of-way,

easements, and environmental approvals and permits for its facilities. The IC will be responsible for constructing, owning, operating, and maintaining its facilities, and EKPC will have no responsibility for any of these activities.

5. Description of Facilities Included in Facilities Study

This report describes the EKPC transmission system additions and upgrades necessary to support the IC’s project.

EKPC will expand its existing Marion County Substation in order to add necessary equipment (bus, circuit breakers, switches, relays, etc.) to accommodate the direct connection of the IC’s substation facilities to EKPC’s Marion County Substation. EKPC will also construct a 69 kV disconnect switch structure which will be the POI interface. A proposed one-line diagram and draft layout of the EKPC substation are included as Attachments I and II of this study.

6. Total Costs of Transmission Owner Facilities included in Facilities Study

The costs estimated below are in 2020 dollars and do not include a Contribution in Aid of Construction (“CIAC”) Federal Income Tax Gross Up charge. This tax may or may not be charged based on IRS requirements.

Description	Total Cost
Attachment Facilities	\$ 1,190,000
Direct Connection Network Upgrades	\$ 0
Non Direct Connection Network Upgrades	\$ 0
Total Costs	\$ 1,190,000

7. Summary of Milestone Schedules for Completion of Work Included in Facilities Study:

A twelve (12) month construction schedule is estimated from the date of a fully executed ICSPA to complete construction of necessary EKPC facilities. This schedule is dependent on several factors, including convening a construction kickoff meeting immediately after execution of the Interconnection Service Agreement (“ISA”). A more detailed construction schedule will be developed after the construction kickoff meeting. EKPC’s construction shall not begin until any applicable permits, easements and land rights have been obtained.

This proposed schedule assumes the following:

1. Required transmission line and substation outages can be scheduled as planned. Transmission line and substation outages are:
 - a. typically not taken in the summer (June-August) or winter (December-February) periods,
 - b. cancelled during extreme weather conditions, and
 - c. in some cases, are required to be scheduled twelve (12) months or more in advance.

2. No delays due to equipment delivery, environmental, regulatory, permitting, real estate, extreme weather, or similar events.
3. No significant sub-surface rock is encountered during construction, and soil conditions are suitable for EKPC standard ground grid and foundation installations.
4. Required easements for line installation, if any, and access to facilities can be acquired by EKPC in a timely manner.
5. Suitable and adequate substation property is available to EKPC or can be acquired in a timely manner.
6. Necessary permits can be acquired and environmental reviews can be completed in a timely manner.

If any of these assumptions are not correct, the schedule is likely to be negatively impacted. EKPC’s preliminary milestone schedule beginning from the project kickoff meeting month is shown below.

Description	Start Month	Completion Month
Project Kickoff Meeting	Month 0	Month 0
Design (Including Site Grading Design)	Month 1	Month 3
Procure Materials and Equipment	Month 4	Month 9
Site Preparation	Month 9	Month 9
Substation Construction	Month 10	Month 11
Commissioning and Testing	Month 11	Month 12

8. Technical Considerations/Requirements:

The proposed Northern Bobwhite Solar facility will be located within close proximity (approximately 6.3 miles) to EKPC’s existing Marion County Industrial Park distribution substation. This facility serves industrial facilities that are potentially sensitive to extreme fluctuations in voltages and power harmonics. Therefore, EKPC performed flicker analysis to determine if the Northern Bobwhite Solar facility could have detrimental power quality impacts on the customers served from the Marion County Industrial Park substation.

EKPC evaluated three transmission topology scenarios utilizing powerflow models representing 2021 Light Load, 2021 Summer peak and 2021/22 Winter peak conditions. The five scenarios analyzed were:

- No transmission outages
- Green County-Taylor County Junction 161 kV line section out of service

- Marion County-Casey County 161 kV line out of service
- Marion County 161/138 kV transformer out of service
- Marion County-Marion County Industrial Tap 161 kV line section out of service

For each scenario, three levels of real-power output from the Northern Bobwhite Solar facility were evaluated – 0 MW, 48 MW, and 96 MW. The intent of this analysis is to determine the change in voltages at nearby distribution substations due to sudden changes in the real-power output at the proposed solar facility.

This analysis assumed that the proposed solar facility can operate in the reactive range of 95% leading to 95% lagging power factor. However, for the 0 MW level, the initial assumption was that the facility would not provide any reactive power injection into the system. This was updated to include continuous operation of the inverters associated with the facility within the +/- 95% power factor range for the 2021 Summer peak load analysis, since this scenario appeared to represent the most likely case where the facility could swing from full output to no output at peak-load conditions.

The tables below summarize the results of the analysis.

2021 Light Load Power Flow Analysis – Bus Voltages				
Transmission Outage Scenario	Distribution Substation Monitored	96 MW Solar Facility Output Level	48 MW Solar Facility Output Level	0 MW Solar Facility Output Level With No Reactive Injection
No outages	Marion County Industrial Park	101.0%	100.9%	101.6%
	Saloma	101.1%	101.0%	101.6%
Green County-Taylor County Junction 161 kV line section	Marion County Industrial Park	100.8%	100.8%	101.3%
	Saloma	100.7%	100.6%	101.1%
Marion County-Casey County 161 kV line	Marion County Industrial Park	100.9%	100.9%	100.6%
	Saloma	101.0%	101.0%	100.8%
Marion County 161/138 kV transformer	Marion County Industrial Park	101.6%	101.0%	102.6%
	Saloma	101.6%	101.1%	102.3%
Marion County-Marion County Industrial Park 161 kV line section	Marion County Industrial Park	101.2%	101.2%	101.3%
	Saloma	101.2%	101.2%	101.3%

2021/22 Winter Peak Load Power Flow Analysis – Bus Voltages				
Transmission Outage Scenario	Distribution Substation Monitored	96 MW Solar Facility Output Level	48 MW Solar Facility Output Level	0 MW Solar Facility Output Level With No Reactive Injection
No outages	Marion County Industrial Park	100.5%	100.5%	98.3%
	Saloma	100.1%	100.0%	98.1%
Green County-Taylor County Junction 161 kV line section	Marion County Industrial Park	100.4%	100.4%	97.1%
	Saloma	99.7%	99.6%	96.5%
Marion County-Casey County 161 kV line	Marion County Industrial Park	100.5%	100.5%	97.1%
	Saloma	100.1%	100.0%	97.3%
Marion County 161/138 kV transformer	Marion County Industrial Park	100.6%	100.5%	99.1%
	Saloma	100.0%	99.9%	98.7%
Marion County-Marion County Industrial Park 161 kV line section	Marion County Industrial Park	98.0%	97.9%	97.4%
	Saloma	98.1%	98.0%	97.5%

2021 Summer Peak Load Power Flow Analysis – Bus Voltages					
Transmission Outage Scenario	Distribution Substation Monitored	96 MW Solar Facility Output Level	48 MW Solar Facility Output Level	0 MW Solar Facility Output Level With No Reactive Injection	0 MW Solar Facility Output Level With Reactive Injection
No outages	Marion County Industrial Park	100.5%	100.5%	99.3%	100.4%
	Saloma	100.1%	100.0%	99.0%	99.9%
Green County-Taylor County Junction 161 kV line section	Marion County Industrial Park	100.4%	100.4%	98.4%	100.4%
	Saloma	99.7%	99.7%	97.8%	99.6%
Marion County-Casey County 161 kV line	Marion County Industrial Park	100.5%	100.5%	97.9%	100.4%
	Saloma	100.1%	99.9%	97.8%	99.8%
Marion County 161/138 kV transformer	Marion County Industrial Park	100.5%	100.5%	99.8%	100.5%
	Saloma	100.1%	100.0%	99.3%	99.9%
Marion County-Marion County Industrial Park 161 kV line section	Marion County Industrial Park	97.3%	97.2%	97.0%	97.1%
	Saloma	97.6%	97.5%	97.2%	97.3%

These results indicate that without the inverters continuing to provide reactive support if the real power output drops to zero, unacceptable voltage swings will be experienced at the Marion County Industrial Park substation. Therefore, EKPC will require that the facility be capable of providing at least 90 seconds of reactive support when real-power output ceases. This will provide sufficient time for EKPC transmission capacitor banks in the area to switch online, plus allow distribution substation voltage regulators to adjust to maintain consistent voltage on the distribution system.

The proposed facility must meet EKPC’s published facility connection requirements. The latest version of these requirements can be accessed via the following link:

<https://www.pjm.com/planning/design-engineering/to-tech-standards/ekpc.aspx>

The following discussion of requirements regarding connection of inverter-based generating facilities to the EKPC system is excerpted from this document (section 5.9).

A Generating Facility comprising static inverters shall utilize inverters that have been tested and certified to UL 1741 with Advanced Inverter functionality (UL 1741 SA or subsequent UL equivalent), by a NRTL certified by OSHA to perform the UL 1741 SA test standard. The programming/set points to be determined per EKPC recommendations and proof such shall be provided by the IC (i.e. certified test report, inverter settings print-out, and/or EKPC inspection/validation). Unity power factor shall be the default mode unless otherwise determined by mutual consent between EKPC and the IC. At a minimum, the following grid support features are required unless otherwise specified by EKPC:

- a) Anti-Islanding – Support anti-islanding to trip off under extended anomalous conditions*
- b) Volt/Var Mode – Voltage/Var control through dynamic reactive power injection through autonomous responses to local voltage measurement*
- c) Volt/Watt Mode – Voltage/Watt control through dynamic reactive power injection through autonomous responses to local voltage measurement*
- d) Fixed Power Factor Mode – Reactive Power by fixed power factor*
- e) Constant Reactive Power Mode – Reactive power by a fixed percentage of kVA rating of the inverter nameplate*
- f) Frequency/Watt Mode – Frequency/Watt control to counteract frequency excursions beyond normal limits by decreasing or increasing real power*
- g) Low/High Voltage Ride-Through (LHVRT) – Ride-through of low/high voltage excursions beyond normal limits*
- h) Low/High Frequency Ride-Through (LHFRT) - Ride-through of low/high frequency excursions beyond normal limits*
- i) Ramping – Capability to define active and reactive power ramp rates*
- j) Soft-Start Reconnection – Reconnect after grid power is restored*
- k) Cease to Energize – Capability to remotely turn off active power delivery*
- l) Power Curtailment – Capability to remotely curtail the active power production within the range of 0% to 100%*

A redundant over/undervoltage relay will be required for static inverters with an AC output nominal rating of ≥ 1000 kW, or whenever the aggregate inverter AC output nominal rating of a Generating Facility ≥ 1000 kW. For installations ≥ 10 MW redundant over/undervoltage and over/underfrequency protection will be required. Such protection shall be applied to one or more breakers external to the inverter(s).

The IC shall ensure, at a minimum, that the inverter performance tests specified below are performed and certified by a NRTL to ensure compliance with the following sections of IEEE1547-2018 Section 7.0 Power Quality

- a. *Section 7.1 Limitation of DC Injection*
- b. *Section 7.2 Limitation of Voltage Fluctuations induced by the DER*
- c. *Section 7.3 Limitation of Current Distortion*
- d. *Section 7.4 Limitation of Overvoltage Contribution*

The IC shall provide EKPC with a copy of the test results and certification from the NRTL, for EKPC review and approval.

B. Transmission Owner Facilities Study Results

The facilities identified to be installed, replaced, and/or upgraded by EKPC to accommodate the proposed project are described in this section. During detailed design and analysis, other components may be identified for installation or replacement due to this project.

1. Transmission Lines – New

No new EKPC transmission lines were determined to be needed for interconnection of the Northern Bobwhite Solar facility.

2. Transmission Line – Upgrades

No upgrades of EKPC transmission lines were determined to be needed for interconnection of the Northern Bobwhite Solar facility.

3. New Substation/Switchyard Facilities

No new EKPC substations were determined to be needed for interconnection of the Northern Bobwhite Solar facility.

4. Upgrades to Substation/Switchyard Facilities

EKPC shall install the required attachment facilities and non-direct connection network substation upgrades at the Marion County Substation to accommodate the addition of the Northern Bobwhite Solar facility.

For attachment facilities, EKPC will construct a 161 kV switch structure to provide a single stand-alone isolation point between the EKPC substation and the IC substation. The POI between EKPC and the IC will be the 4-hole pad on the disconnect switch on this structure. The IC will build its bus conductors from its facilities to this demarcation point. The exact location of the switch structure will be determined at project scoping, and it may be determined that the location should be in the IC's substation. EKPC will own, operate, and maintain this switch and its associated structure. EKPC will require permanent 24/7 access to the IC substation for this switch if the switch is located in the IC substation. The attachment facilities also include the required interconnection metering facilities and telecommunications facilities installed by EKPC on the connection facilities between the EKPC Marion County Substation and the IC substation.

EKPC will also add an A-frame structure for termination of the new 161 kV connection from the isolation switch structure to the Marion County substation. EKPC will also add a new 161 kV circuit breaker and associated switches, as well as bus conductors, supports, insulators, and other miscellaneous required equipment. EKPC will need to expand the substation to add this equipment, requiring site grading to extend the substation fence and ground grid. EKPC will install necessary relay panels and associated equipment to accommodate this new connection. **(PJM ID n6732)**

The major equipment and material associated with this substation expansion is listed below:

QTY	Unit	DESCRIPTION
1	Each	161 kV A-Frame Substation Structure
1	Each	161 kV, 2000 Amp Circuit Breakers
6	Each	161 kV GOAB Switches
1	Lot	Electrical Material (insulators, terminals, etc.)
3	Each	Arresters, Lightning 132 kV Station 108 MCOV Polymer
3	Each	CT's, 161 kV

The IC is responsible for construction of all of the facilities on its side of the POI, as shown in the attached one-line diagram.

System Protection

The following system protection scope of work applies for this project. All system protection equipment described in this section will be owned, operated, and maintained by EKPC.

Control House: AC and DC power supplies shall be pulled from the AC/DC panels within the control house to the new line panel.

Relay Panel: Line Panel – EKPC shall install a standard line panel with P1 & P2 SEL-421 relays. Line option relays shall utilize step distance protection to reach into the customer solar transformer impedance with an instantaneous zone 1. An SEL-451 relay shall be utilized for breaker control, breaker failure, and reclosing. The existing transfer breaker control (W38-1029) and associated relaying shall be modified such that the new transmission line can be put on the transfer bus and protected by breaker W38-1029 if maintenance on the new breaker addition is necessary. The 161 kV bus differential circuitry shall be modified to account for the line addition. Additionally, the P1 and P2 bus differential lock-out relays shall operate the new breaker in the event of bus fault or breaker failure incident of any 161 kV breaker in the substation.

EKPC requires the IC to utilize all Schweitzer Engineering Laboratories (SEL) relays and related protective equipment for facilities that will be interconnecting or communicating with EKPC relaying. EKPC reserves the right to specify relays or other protective equipment utilized in the

IC substation as required based on the protection schemes utilized. All protection system designs shall be reviewed by EKPC System Protection during the design phase to ensure proper clearing times, coordination, and compliance with applicable NERC regulations.

Control cables shall be pulled from the new circuit breaker and other required equipment to the control house.

Commissioning: The relay panel and breaker shall be fully commissioned prior to being placed in service. Commissioning shall include AC current and potential circuits, DC functional testing, and relay testing.

Relay Settings Analysis: EKPC shall update the short circuit model to properly assess the impact of the Northern Bobwhite Solar facility and to identify any necessary modifications to relay settings at the local and remote terminals. EKPC shall coordinate with LGE&KU to agree upon relay settings for associated interconnected transmission lines.

The estimated total cost for the substation and system protection construction for this project is \$1,190,000. This estimate also includes costs for metering and telecommunications equipment that will be located inside the EKPC's Marion County substation. The estimated cost of \$1,190,000 is broken down as follows:

- \$825,000 for the substation expansion, 161 kV circuit breaker, switches, relay panel, etc.
- \$170,000 for the 161 kV switch structure and switch for isolation
- \$130,000 for interconnection metering facilities
- \$65,000 for telecommunications facilities between the EKPC substation and the IC substation

Substation & System Protection Assumptions:

The following general assumptions have been included for the substation information provided:

1. No delays due to equipment or material delivery, environmental, regulatory, permitting, property/easement acquisitions, extreme weather, or similar events.
2. No significant sub-surface rock encountered during construction, and soil conditions suitable for standard ground-grid and foundation installations.

The following engineering assumptions have been included for the substation information provided:

1. Neither foundation nor structural analyses have been performed. Information provided assumes that no significant foundation or structural issues are present.
2. The schedule assumes no issues related to scheduling any necessary outages at the Marion County Substation.
3. Material and equipment-related costs are based on current (March 2020) pricing.

4. Environmental permits and reviews will be completed by EKPC and can be completed in a timely manner.

5. Metering & Communications

EKPC Metering:

Metering requirements for this facility include the installation of EKPC's standard revenue quality metering package, including potential transformers, current transformers, remote-terminal unit and associated SCADA equipment.

The cost for installation of the metering facilities contained in the new EKPC substation are included in the substation costs provided in Section 3 above.

Metering Assumptions:

The following assumptions have been included for the metering information provided:

1. No delays due to equipment or material delivery, environmental, regulatory, permitting, real estate, extreme weather, or similar events.
2. Fiber-optic cable and associated equipment installation is completed as scheduled.
3. Material and equipment-related costs are based on current (March 2020) pricing.
4. Once fiber-optic cable installation is complete, the fiber will not be damaged.

Communications:

EKPC shall use telecommunications equipment that matches its current network and equipment requirements.

A 48-count ADSS fiber will be installed between the EKPC substation control house and the IC facility for relaying, metering, and SCADA circuit requirements. The exact details and installation plans for this fiber will be developed during project scoping.

The cost for installation of the telecommunications facilities contained in the new EKPC substation are included in the substation costs provided in Section 3 above.

Communications Assumptions:

The following assumptions have been included for the telecommunications information provided:

1. No delays due to equipment or material delivery, environmental, regulatory, permitting, real estate, extreme weather, or similar events.
2. Material and equipment-related costs are based on current (March 2020) pricing.
3. Once fiber-optic cable installation is complete, the fiber will not be damaged.

6. Other Required Upgrades

No other required upgrades were identified on the EKPC transmission system.

7. Environmental, Real Estate and Permitting Issues

EKPC will perform all necessary environmental assessments and obtain all necessary permits/approvals associated with construction of all EKPC facilities required to facilitate the interconnection of the new generating facility.

The following general assumptions have been included for environmental permitting requirements:

1. For the IC’s project, there are no “federal actions” (i.e. federal financial assistance or grants; or federal permit, license or approval) present that would trigger NEPA compliance obligations for the EKPC facilities as a connected action.
2. No additional property will need to be acquired adjacent to the existing Marion County substation to facilitate the project. Likewise, if required, expansion of the existing Marion County substation to the south or east will not impact on-site waters of the U.S. Expansion of the substation property and/or impacts to waters of the U.S. would require a re-evaluation of the permitting obligations.

8. Cost Summary

The necessary projects and estimated costs to facilitate interconnection of the AE1-143 queue project (Northern Bobwhite Solar) are summarized in the tables below:

Description	Direct Labor	Direct Material	Indirect Labor	Indirect Material	Total
Attachment Facilities					
EKPC to install necessary equipment (a 161 kV isolation switch structure and associated switch, plus interconnection metering, fiber-optic connection and telecommunications equipment, circuit breaker and associated switches, and relay panel) at the existing Marion County Substation to accept the IC generator lead line/bus (PJM ID n6732)	\$283,709	\$639,412	\$174,291	\$92,588	\$1,190,000
Direct Connection					
None Identified	N/A	N/A	N/A	N/A	N/A
Non-Direct Connection					
None Identified	N/A	N/A	N/A	N/A	N/A
Total EKPC Facility Costs	\$283,709	\$639,412	\$174,291	\$92,588	\$1,190,000

Total Estimated Costs of EKPC Facilities	
Description	Total Cost
Attachment Facilities	\$ 1,190,000
Direct Connection Network Upgrades	\$ 0
Non Direct Connection Network Upgrades	\$ 0
Total Costs	\$ 1,190,000

9. Attachments

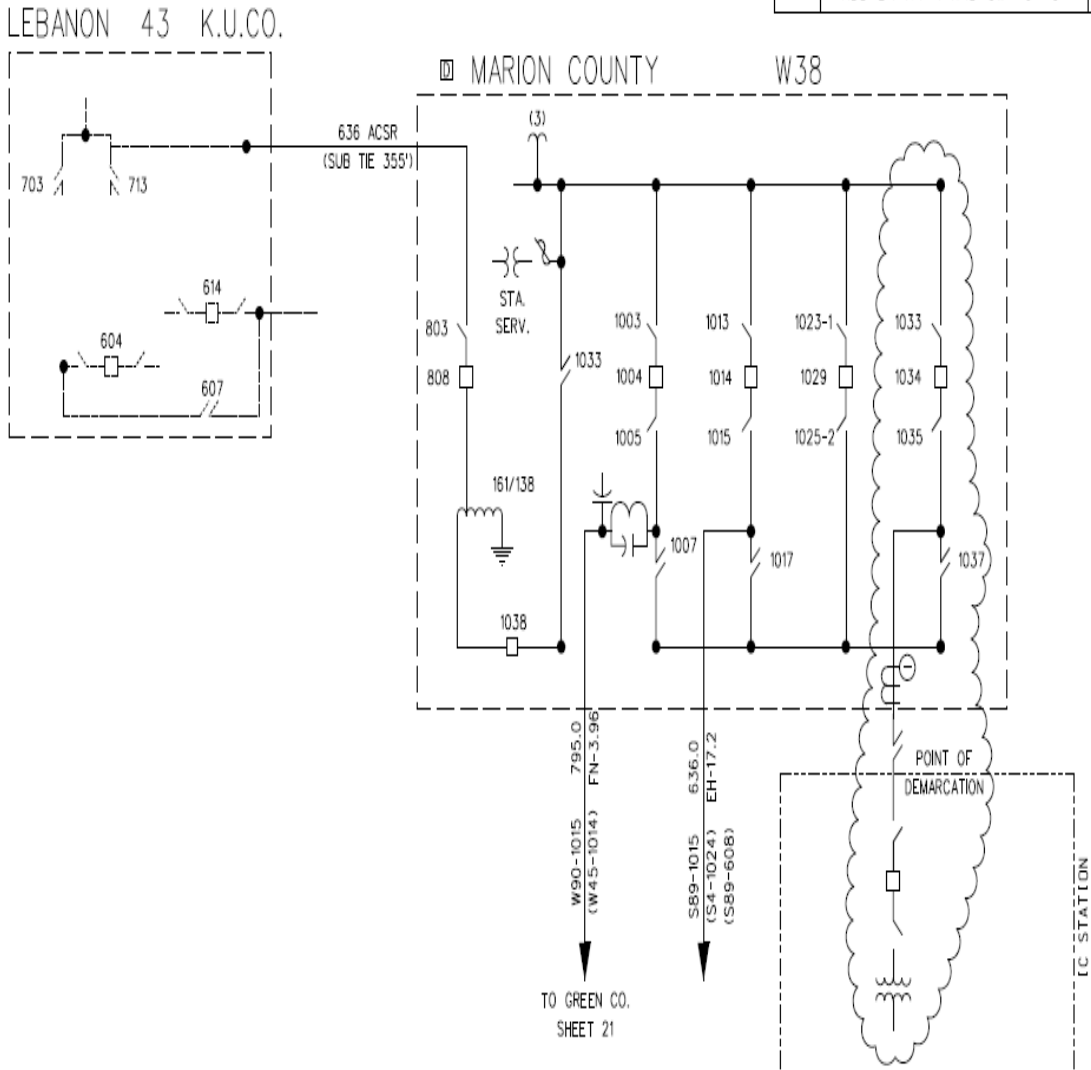
Attachment 1 – EKPC Temporary One Line Diagram

Attachment 2 – EKPC Preliminary Substation Site Plan

Attachment 1:

EKPC Temporary One Line Diagram

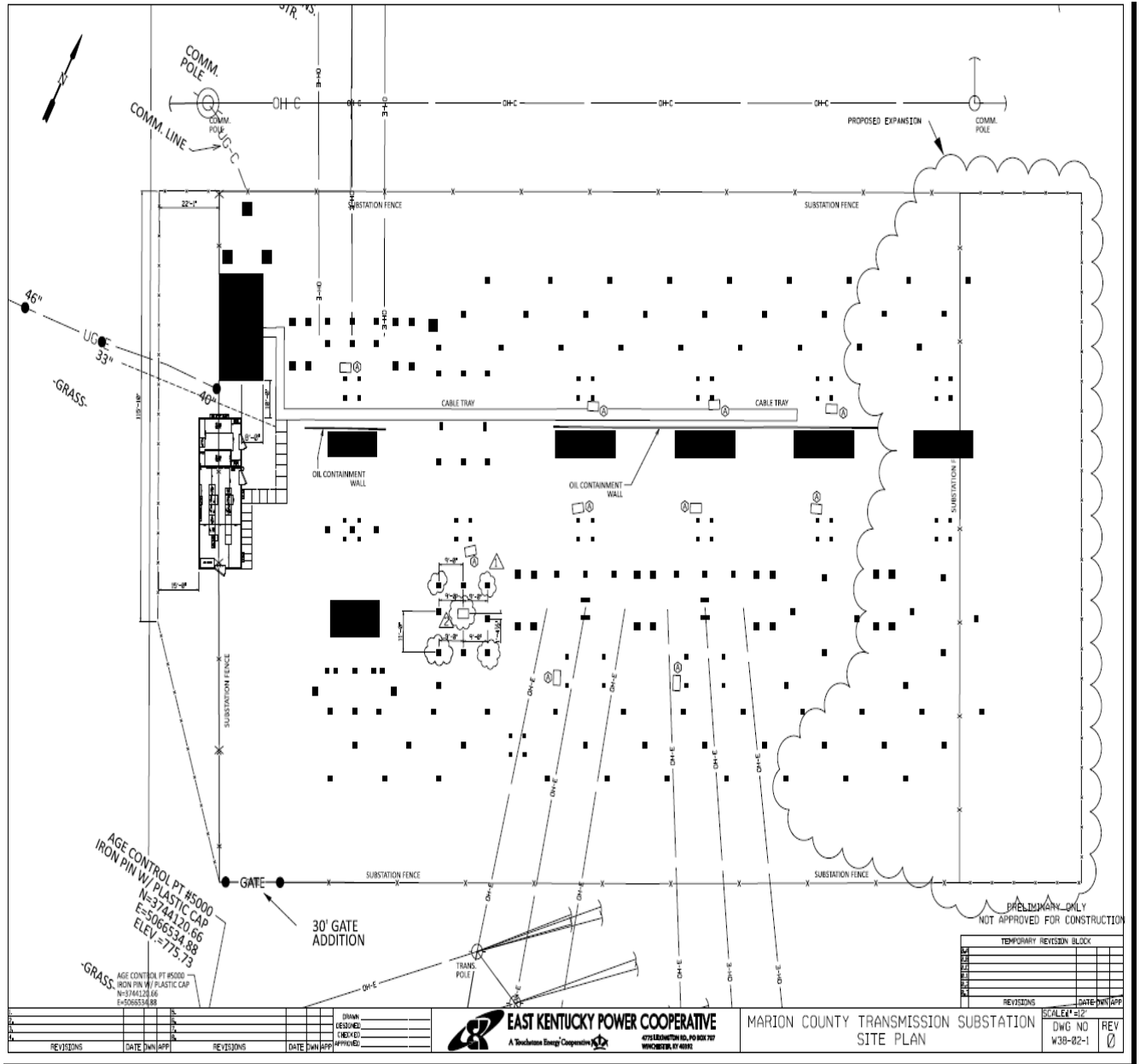
NO.	REVISIONS	DATE	CHK
1	ADD BREAKER AND SWITCHES	3/19/20	DAC



APPROVALS	DATE	EAST KENTUCKY POWER WINCHESTER, KENTUCKY 40392	
DRAWN EVERMAN	1/22/19	MARION COUNTY SUBSTATION EXPANSION FOR AE1-143 ONE LINE DIAGRAM	
DESIGNED *	*		
CHECKED			
APPROVED -			
B.C. _____ W.O. _____	SCALE: NONE	A DWG. NO. TOL19-04	REV 1
AS BUILT	SHEET 1 OF 1		

Attachment 2:

EKPC Preliminary Substation Site Plan



PRELIMINARY ONLY
NOT APPROVED FOR CONSTRUCTION

TEMPORARY REVISION BLOCK			
NO.	DATE	BY	APP.

NO.	DATE	BY	APP.	REVISIONS

EAST KENTUCKY POWER COOPERATIVE
A Transmission Energy Cooperative

4715 LEBANON RD., PO BOX 707
WINCHESTER, KY 40391

MARION COUNTY TRANSMISSION SUBSTATION
SITE PLAN

SCALE: 1"=12'	REV
DWG NO. W38-02-1	0

Exhibit J

PJM/EKPC Interconnection Service Agreement

Service Agreement No. []

(PJM Queue #AE1-143)

INTERCONNECTION SERVICE AGREEMENT
Among
PJM INTERCONNECTION, L.L.C.
And
NORTHERN BOBWHITE SOLAR LLC
And
EAST KENTUCKY POWER COOPERATIVE, INC.

INTERCONNECTION SERVICE AGREEMENT

By and Among

PJM Interconnection, L.L.C.

And

Northern Bobwhite Solar LLC

And

East Kentucky Power Cooperative, Inc.

(PJM Queue Position #AE1-143)

- 1.0 Parties. This Interconnection Service Agreement (“ISA”) including the Specifications, Schedules and Appendices attached hereto and incorporated herein, is entered into by and between PJM Interconnection, L.L.C., the Regional Transmission Organization for the PJM Region (hereinafter “Transmission Provider” or “PJM”), Northern Bobwhite Solar LLC (“Interconnection Customer”) and East Kentucky Power Cooperative, Inc. (“Interconnected Transmission Owner” or “EKPC”). All capitalized terms herein shall have the meanings set forth in the appended definitions of such terms as stated in Part I of the PJM Open Access Transmission Tariff (“Tariff”).
- 2.0 Authority. This ISA is entered into pursuant to Part VI of the Tariff. Interconnection Customer has requested an Interconnection Service Agreement under the Tariff, and Transmission Provider has determined that Interconnection Customer is eligible under the Tariff to obtain this ISA. The standard terms and conditions for interconnection as set forth in Appendix 2 to this ISA are hereby specifically incorporated as provisions of this ISA. Transmission Provider, Interconnected Transmission Owner and Interconnection Customer agree to and assume all of the rights and obligations of the Transmission Provider, Interconnected Transmission Owner and Interconnection Customer, respectively, as set forth in Appendix 2 to this ISA.
- 3.0 Customer Facility Specifications. Attached are Specifications for the Customer Facility that Interconnection Customer proposes to interconnect with the Transmission System. Interconnection Customer represents and warrants that, upon completion of construction of such facilities, it will own or control the Customer Facility identified in section 1.0 of the Specifications attached hereto and made a part hereof. In the event that Interconnection Customer will not own the Customer Facility, Interconnection Customer represents and warrants that it is authorized by the owner(s) thereof to enter into this ISA and to represent such control.
- 4.0 Effective Date. Subject to any necessary regulatory acceptance, this ISA shall become effective on the date it is executed by all Interconnection Parties, or, if the agreement is filed with FERC unexecuted, upon the date specified by FERC. This ISA shall terminate on such date as mutually agreed upon by the parties, unless earlier terminated in accordance with the terms set forth in Appendix 2 to this ISA. The term of the ISA shall be as provided in Section 1.3 of Appendix 2 to this ISA. Interconnection Service shall commence as provided in Section 1.2 of Appendix 2 to this ISA.

5.0 Security. In accord with Section 212.4 of the Tariff, Interconnection Customer shall provide the Transmission Provider (for the benefit of the Interconnected Transmission Owner) with a letter of credit from an agreed provider or other form of security reasonably acceptable to the Transmission Provider and that names the Transmission Provider as beneficiary (“Security”) in the amount of \$297,500. This amount represents the sum of the estimated Costs, determined in accordance with Sections 212 and 217 of the Tariff, for which the Interconnection Customer will be responsible, less any Costs already paid by Interconnection Customer. Interconnection Customer acknowledges that its ultimate cost responsibility in accordance with Section 217 of the Tariff will be based upon the actual Costs of the facilities described in the Specifications, whether greater or lesser than the amount of the payment security provided under this section.

Should Interconnection Customer fail to provide security at the time the Interconnection Customer executes this ISA, or, if deferred, by the end of the 120-day period, this ISA shall be terminated.

6.0 Project Specific Milestones. In addition to the milestones stated in Section 212.5 of the Tariff, as applicable, during the term of this ISA, Interconnection Customer shall ensure that it meets each of the following development milestones:

6.1 Substantial Site work completed. On or before February 28, 2023 Interconnection Customer must demonstrate completion of at least 20% of project site construction. At this time, Interconnection Customer must submit to Interconnected Transmission Owner and Transmission Provider initial drawings, certified by a professional engineer, of the Customer Interconnection Facilities.

6.2 Delivery of major electrical equipment. On or before May 31, 2023, Interconnection Customer must demonstrate that all generating units have been delivered to Interconnection Customer’s project site.

6.3 Commercial Operation. On or before November 30, 2023, Interconnection Customer must demonstrate commercial operation of all generating units. Demonstrating commercial operation includes achieving Initial Operation in accordance with Section 1.4 of Appendix 2 to this ISA and making commercial sales or use of energy, as well as, if applicable, obtaining capacity qualification in accordance with the requirements of the Reliability Assurance Agreement Among Load Serving Entities in the PJM Region.

6.4 Local, county and state site permits. Interconnection Customer must obtain all necessary local, county and state site permits by December 31, 2022.

6.5 Within one (1) month following commercial operation of generating unit(s), Interconnection Customer must provide certified documentation demonstrating that “as-built” Customer Facility and Customer Interconnection Facilities are in accordance with applicable PJM studies and agreements. Interconnection Customer must also provide PJM

with “as-built” electrical modeling data or confirm that previously submitted data remains valid.

Interconnection Customer shall demonstrate the occurrence of each of the foregoing milestones to Transmission Provider’s reasonable satisfaction. Transmission Provider may reasonably extend any such milestone dates, in the event of delays that Interconnection Customer (i) did not cause and (ii) could not have remedied through the exercise of due diligence. The milestone dates stated in this ISA shall be deemed to be extended coextensively with any suspension of work initiated by Interconnection Customer in accordance with the Interconnection Construction Service Agreement.

- 7.0 Provision of Interconnection Service. Transmission Provider and Interconnected Transmission Owner agree to provide for the interconnection to the Transmission System in the PJM Region of Interconnection Customer’s Customer Facility identified in the Specifications in accordance with Part IV and Part VI of the Tariff, the Operating Agreement of PJM Interconnection, L.L.C. (“Operating Agreement”), and this ISA, as they may be amended from time to time.
- 8.0 Assumption of Tariff Obligations. Interconnection Customer agrees to abide by all rules and procedures pertaining to generation and transmission in the PJM Region, including but not limited to the rules and procedures concerning the dispatch of generation or scheduling transmission set forth in the Tariff, the Operating Agreement and the PJM Manuals.
- 9.0 Facilities Study. In analyzing and preparing the Facilities Study, and in designing and constructing the Attachment Facilities, Local Upgrades and/or Network Upgrades described in the Specifications attached to this ISA, Transmission Provider, the Interconnected Transmission Owner(s), and any other subcontractors employed by Transmission Provider have had to, and shall have to, rely on information provided by Interconnection Customer and possibly by third parties and may not have control over the accuracy of such information. Accordingly, NEITHER TRANSMISSION PROVIDER, THE INTERCONNECTED TRANSMISSION OWNER(s), NOR ANY OTHER SUBCONTRACTORS EMPLOYED BY TRANSMISSION PROVIDER OR INTERCONNECTED TRANSMISSION OWNER MAKES ANY WARRANTIES, EXPRESS OR IMPLIED, WHETHER ARISING BY OPERATION OF LAW, COURSE OF PERFORMANCE OR DEALING, CUSTOM, USAGE IN THE TRADE OR PROFESSION, OR OTHERWISE, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH REGARD TO THE ACCURACY, CONTENT, OR CONCLUSIONS OF THE FACILITIES STUDY OR THE SYSTEM IMPACT STUDY IF A FACILITIES STUDY WAS NOT REQUIRED OR OF THE ATTACHMENT FACILITIES, THE LOCAL UPGRADES AND/OR THE NETWORK UPGRADES, PROVIDED, HOWEVER, that Transmission Provider warrants that the Transmission Owner Interconnection Facilities and any Merchant Transmission Upgrades described in the Specifications will be designed and constructed (to the extent that Interconnected Transmission Owner is responsible for design and construction thereof) and operated in accordance with Good Utility Practice, as such term is defined in the Operating Agreement.

Interconnection Customer acknowledges that it has not relied on any representations or warranties not specifically set forth herein and that no such representations or warranties have formed the basis of its bargain hereunder.

10.0 Construction of Transmission Owner Interconnection Facilities

10.1. Cost Responsibility. Interconnection Customer shall be responsible for and shall pay upon demand all Costs associated with the interconnection of the Customer Facility as specified in the Tariff. These Costs may include, but are not limited to, an Attachment Facilities charge, a Local Upgrades charge, a Network Upgrades charge and other charges. A description of the facilities required and an estimate of the Costs of these facilities are included in Sections 3.0 and 4.0 of the Specifications to this ISA.

10.2. Billing and Payments. Transmission Provider shall bill the Interconnection Customer for the Costs associated with the facilities contemplated by this ISA, estimates of which are set forth in the Specifications to this ISA, and the Interconnection Customer shall pay such Costs, in accordance with Section 11 of Appendix 2 to this ISA and the applicable Interconnection Construction Service Agreement. Upon receipt of each of Interconnection Customer's payments of such bills, Transmission Provider shall reimburse the applicable Interconnected Transmission Owner. Pursuant to Section 212.4 of the Tariff, Interconnection Customer requests that Transmission Provider provide a quarterly cost reconciliation:

_____ Yes

 X No

10.3. Contract Option. In the event that the Interconnection Customer and Interconnected Transmission Owner agree to utilize the Negotiated Contract Option provided by the Interconnection Construction Service Agreement to establish, subject to FERC acceptance, non-standard terms regarding cost responsibility, payment, billing and/or financing, the terms of Sections 10.1 and/or 10.2 of this Section 10.0 shall be superseded to the extent required to conform to such negotiated terms, as stated in a schedule attached to the parties' Interconnection Construction Service Agreement relating to interconnection of the Customer Facility.

10.4 In the event that the Interconnection Customer elects to construct some or all of the Transmission Owner Interconnection Facilities under the Option to Build of the Interconnection Construction Service Agreement, billing and payment for the Costs associated with the facilities contemplated by this ISA shall relate only to such portion of the Interconnection Facilities as the Interconnected Transmission Owner is responsible for building.

11.0 Interconnection Specifications

- 11.1 Point of Interconnection. The Point of Interconnection shall be as identified on the one-line diagram attached as Schedule B to this ISA.
 - 11.2 List and Ownership of Interconnection Facilities. The Interconnection Facilities to be constructed and ownership of the components thereof are identified in Section 3.0 of the Specifications attached to this ISA.
 - 11.3 Ownership and Location of Metering Equipment. The Metering Equipment to be constructed, the capability of the Metering Equipment to be constructed, and the ownership thereof, are identified on the attached Schedule C to this ISA.
 - 11.4 Applicable Technical Standards. The Applicable Technical Requirements and Standards that apply to the Customer Facility and the Interconnection Facilities are identified in Schedule D to this ISA.
- 12.0 Power Factor Requirement.
- Consistent with Section 4.7 of Appendix 2 to this ISA, the power factor requirement is as follows:
- The Generation Interconnection Customer shall design its non-synchronous Customer Facility with the ability to maintain a power factor of at least 0.95 leading to 0.95 lagging measured at the high-side of the facility substation transformers.
- 13.0 Charges. In accordance with Sections 10 and 11 of Appendix 2 to this ISA, the Interconnection Customer shall pay to the Transmission Provider the charges applicable after Initial Operation, as set forth in Schedule E to this ISA. Promptly after receipt of such payments, the Transmission Provider shall forward such payments to the appropriate Interconnected Transmission Owner.
 - 14.0 Third Party Beneficiaries. No third party beneficiary rights are created under this ISA, except, however, that, subject to modification of the payment terms stated in Section 10 of this ISA pursuant to the Negotiated Contract Option, payment obligations imposed on Interconnection Customer under this ISA are agreed and acknowledged to be for the benefit of the Interconnected Transmission Owner(s). Interconnection Customer expressly agrees that the Interconnected Transmission Owner(s) shall be entitled to take such legal recourse as it deems appropriate against Interconnection Customer for the payment of any Costs or charges authorized under this ISA or the Tariff with respect to Interconnection Service for which Interconnection Customer fails, in whole or in part, to pay as provided in this ISA, the Tariff and/or the Operating Agreement.
 - 15.0 Waiver. No waiver by either party of one or more defaults by the other in performance of any of the provisions of this ISA shall operate or be construed as a waiver of any other or further default or defaults, whether of a like or different character.

- 16.0 Amendment. This ISA or any part thereof, may not be amended, modified, or waived other than by a written document signed by all parties hereto.
- 17.0 Construction With Other Parts Of The Tariff. This ISA shall not be construed as an application for service under Part II or Part III of the Tariff.
- 18.0 Notices. Any notice or request made by either party regarding this ISA shall be made, in accordance with the terms of Appendix 2 to this ISA, to the representatives of the other party and as applicable, to the Interconnected Transmission Owner(s), as indicated below:

Transmission Provider:

PJM Interconnection, L.L.C.
2750 Monroe Blvd.
Audubon, PA 19403

Interconnection Customer:
Northern Bobwhite Solar LLC
7804-C Fairview Rd
#257
Charlotte, NC 28226
Attn: Donna Robichaud

Interconnected Transmission Owner:
East Kentucky Power Cooperative, Inc.
4775 Lexington Road
P.O. Box 707
Winchester, KY 40392-0707
Attn: Darrin Adams, Director – Transmission Planning & Protection
Email: darrin.adams@ekpc.coop

- 19.0 Incorporation Of Other Documents. All portions of the Tariff and the Operating Agreement pertinent to the subject matter of this ISA and not otherwise made a part hereof are hereby incorporated herein and made a part hereof.
- 20.0 Addendum of Non-Standard Terms and Conditions for Interconnection Service. Subject to FERC approval, the parties agree that the terms and conditions set forth in Schedule F hereto are hereby incorporated herein by reference and be made a part of this ISA. In the event of any conflict between a provision of Schedule F that FERC has accepted and any provision of Appendix 2 to this ISA that relates to the same subject matter, the pertinent provision of Schedule F shall control.
- 21.0 Addendum of Interconnection Customer's Agreement to Conform with IRS Safe Harbor Provisions for Non-Taxable Status. To the extent required, in accordance with Section 24.1 of Appendix 2 to this ISA, Schedule G to this ISA shall set forth the Interconnection

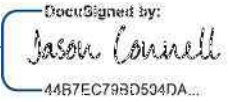
Customer's agreement to conform with the IRS safe harbor provisions for non-taxable status.

- 22.0 Addendum of Interconnection Requirements for all Wind or Non-synchronous Generation Facilities. To the extent required, Schedule H to this ISA sets forth interconnection requirements for a wind or non-synchronous generation facilities and is hereby incorporated by reference and made a part of this ISA.
- 23.0 All interconnection parties agree to comply with all infrastructure security requirements of the North American Electric Reliability Corporation.

IN WITNESS WHEREOF, Transmission Provider, Interconnection Customer and Interconnected Transmission Owner have caused this ISA to be executed by their respective authorized officials.

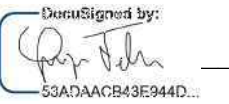
(PJM Queue Position #AE1-143)

Transmission Provider: PJM Interconnection, L.L.C.

By  _____ Manager, Interconnection Projects 10/7/2020
44B7EC793D594DA... Title Date

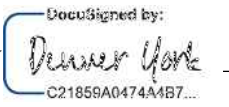
Printed name of signer: Jason Connell

Interconnection Customer: **Northern Bobwhite Solar LLC**

By  _____ Manager 8/28/2020
53ADAACB43E944D... Title Date

Printed name of signer: Juergen Fehr

Interconnected Transmission Owner: **East Kentucky Power Cooperative, Inc.**

By  _____ Sr. VP Power Delivery 10/7/2020
C21859A0474A4B7... Title Date

Printed name of signer: Denver York

**SPECIFICATIONS FOR
INTERCONNECTION SERVICE AGREEMENT
By and Among
PJM INTERCONNECTION, L.L.C.
And
NORTHERN BOBWHITE SOLAR LLC
And
EAST KENTUCKY POWER COOPERATIVE, INC.
(PJM Queue Position # AE1-143)**

- 1.0 Description of generating unit(s) (the Customer Facility) to be interconnected with the Transmission System in the PJM Region:
- a. Name of Customer Facility:

Northern Bobwhite Solar
 - b. Location of Customer Facility:

500 Radio Station Rd, Lebanon, KY 40033
(GPS Coordinates 37.6010210, -85.2388300)
 - c. Size in megawatts of Customer Facility:

For Generation Interconnection Customer:

Maximum Facility Output of 96 MW
 - d. Description of the equipment configuration:

Photovoltaic Solar Panels, DC connected batteries, and 33 Power Electronics FS3225 Utility Inverters
- 2.0 Rights
- 2.1 Capacity Interconnection Rights:

Pursuant to and subject to the applicable terms of the Tariff, the Interconnection Customer shall have Capacity Interconnection Rights at the Point(s) of Interconnection specified in this Interconnection Service Agreement in the amount of 64.16 MW.
 - 2.1a To the extent that any portion of the Customer Facility described in section 1.0 is not a Capacity Resource with Capacity Interconnection Rights, such portion of the Customer Facility shall be an Energy Resource. PJM reserves the right to limit

total injections to the Maximum Facility Output in the event reliability would be affected by output greater than such quantity.

2.3 Incremental Deliverability Rights:

Pursuant to Section 235 of the Tariff, Interconnection Customer shall have Incremental Deliverability Rights at each indicated Point of Interconnection in the following quantity(ies):

None

2.4 Incremental Available Transfer Capability Revenue Rights:

Pursuant to Section 233 of the Tariff, Interconnection Customer shall have Incremental Available Transfer Capability Revenue Rights at each indicated Point of Interconnection in the following quantities:

None

2.5 Incremental Auction Revenue Rights:

Pursuant to Section 231 of the Tariff, Interconnection Customer shall have Incremental Auction Revenue Rights in the following quantities:

None

2.6 Incremental Capacity Transfer Rights:

Pursuant to Section 234 of the Tariff, Interconnection Customer shall have Incremental Capacity Transfer Rights between the following associated source(s) and sink(s) in the indicated quantities:

None

3.0 Construction Responsibility and Ownership of Interconnection Facilities

a. Interconnection Customer.

(1) Interconnection Customer shall construct and, unless otherwise indicated, shall own, the following Interconnection Facilities:

- a) One (1) attachment line between the Marion County 161kV switching station and the Customer Facility;
- b) One (1) 161kV circuit breaker and associated equipment located at the Customer Facility;
- c) One (1) 34.5/161kV generator step-up transformer located at the Customer Facility;

- d) Minimum relay and protective equipment, supervisory control and data acquisition (SCADA) equipment, and telecommunications equipment; and
- e) Necessary metering equipment as specified in Schedule C of this ISA.

(2) In the event that, in accordance with the Interconnection Construction Service Agreement, Interconnection Customer has exercised the Option to Build, it is hereby permitted to build in accordance with and subject to the conditions and limitations set forth in that Section, the following portions of the Transmission Owner Interconnection Facilities which constitute or are part of the Customer Facility:

None.

Ownership of the facilities built by Interconnection Customer pursuant to the Option to Build shall be as provided in the Interconnection Construction Service Agreement.

b. Interconnected Transmission Owner

Attachment Facility:

Construct and own a 161 kV isolation switch structure and associated switch, interconnection metering, fiber-optic connection and telecommunications equipment, circuit breaker and associated switches, and relay panel at the existing Marion County 161kV Substation to accept the Interconnection Customer's generator lead line/bus. PJM Network Upgrade Number n6732.

4.0 Subject to modification pursuant to the Negotiated Contract Option and/or the Option to Build under the Interconnection Construction Service Agreement, Interconnection Customer shall be subject to the estimated charges detailed below, which shall be billed and paid in accordance with Appendix 2, Section 11 of this ISA and the applicable Interconnection Construction Service Agreement.

4.1 Attachment Facilities Charge: \$1,190,000

4.2 Network Upgrades Charge: \$0

4.3 Local Upgrades Charge: \$0

4.4 Other Charges: \$0

4.5 Cost breakdown:

\$ 283,709 Direct Labor

\$ 639,412 Direct Material
\$ 174,291 Indirect Labor
\$ 92,588 Indirect Material

\$ 1,190,000 Total

4.6 Security Amount Breakdown:

\$ 0 Estimated Cost of Non-Direct Connection Local Upgrades and/or
Non-Direct Connection Network Upgrades

plus \$ 297,500 Estimated cost of the work (for the first three months after
construction commences in earnest) on the required Attachment Facilities, Direct
Connection Local Upgrades, and Direct Connection Network Upgrades

plus \$ 0 Option to Build Security for Transmission Owner Attachment
Facilities and Direct Connection Network Upgrades (including Cancellation Costs)

\$ 297,500 Total Security required with ISA

less \$ 0 Costs already paid by Interconnection Customer

\$ 297,500 Total Security required with ISA

APPENDICES:

- **APPENDIX 1 - DEFINITIONS**
- **APPENDIX 2 - STANDARD TERMS AND CONDITIONS FOR INTERCONNECTIONS**

SCHEDULES:

- **SCHEDULE A - CUSTOMER FACILITY LOCATION/SITE PLAN**
- **SCHEDULE B - SINGLE-LINE DIAGRAM**
- **SCHEDULE C - LIST OF METERING EQUIPMENT**
- **SCHEDULE D - APPLICABLE TECHNICAL REQUIREMENTS AND STANDARDS**
- **SCHEDULE E - SCHEDULE OF CHARGES**
- **SCHEDULE F - SCHEDULE OF NON-STANDARD TERMS & CONDITIONS**
- **SCHEDULE G - INTERCONNECTION CUSTOMER'S AGREEMENT TO CONFORM WITH IRS SAFE HARBOR PROVISIONS FOR NON-TAXABLE STATUS**
- **SCHEDULE H - INTERCONNECTION REQUIREMENTS FOR A WIND GENERATION FACILITY**
- **SCHEDULE I – INTERCONNECTION SPECIFICATIONS FOR AN ENERGY STORAGE RESOURCE**
- **SCHEDULE J – SCHEDULE OF TERMS AND CONDITIONS FOR SURPLUS INTERCONNECTION SERVICE**
- **SCHEDULE K – REQUIREMENTS FOR INTERCONNECTION SERVICE BELOW FULL ELECTRICAL GENERATING CAPABILITY**

APPENDIX 1

DEFINITIONS

**From the PJM Tariff accepted for filing by the Commission
as of the effective date of this agreement**

1. Definitions

Unless the context otherwise specifies or requires, capitalized terms used in this PJM Tariff shall have the respective meanings assigned herein or in the Schedules hereto, or in the PJM Operating Agreement or RAA if not otherwise defined in this PJM Tariff, for all purposes of this PJM Tariff (such definitions to be equally applicable to both the singular and the plural forms of the terms defined). Unless otherwise specified, all references herein to sections, Schedules, Exhibits or Appendices are to sections, Schedules, Exhibits or Appendices of this Agreement. As used in this Agreement.

Abnormal Condition:

“Abnormal Condition” shall mean any condition on the Interconnection Facilities which, determined in accordance with Good Utility Practice, is: (i) outside normal operating parameters such that facilities are operating outside their normal ratings or that reasonable operating limits have been exceeded; and (ii) could reasonably be expected to materially and adversely affect the safe and reliable operation of the Interconnection Facilities; but which, in any case, could reasonably be expected to result in an Emergency Condition. Any condition or situation that results from lack of sufficient generating capacity to meet load requirements or that results solely from economic conditions shall not, standing alone, constitute an Abnormal Condition.

Acceleration Request:

“Acceleration Request” shall mean a request pursuant to Operating Agreement, Schedule 1, section 1.9.4A, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.9.4A, to accelerate or reschedule a transmission outage scheduled pursuant to Operating Agreement, Schedule 1, section 1.9.2 or Operating Agreement, Schedule 1, section 1.9.4, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.9.2 or Tariff, Attachment K-Appendix, section 1.9.4.

Additional Day-ahead Scheduling Reserves Requirement:

“Additional Day-ahead Scheduling Reserves Requirement” shall mean the portion of the Day-ahead Scheduling Reserves Requirement that is required in addition to the Base Day-ahead Scheduling Reserves Requirement to ensure adequate resources are procured to meet real-time load and operational needs, as specified in the PJM Manuals.

Affected System:

“Affected System” shall mean an electric system other than the Transmission Provider’s Transmission System that may be affected by a proposed interconnection or on which a proposed interconnection or addition of facilities or upgrades may require modifications or upgrades to the Transmission System.

Affected System Operator:

“Affected System Operator” shall mean an entity that operates an Affected System or, if the

Affected System is under the operational control of an independent system operator or a regional transmission organization, such independent entity.

Affiliate:

”Affiliate” shall mean any two or more entities, one of which Controls the other or that are under common Control. “Control,” as that term is used in this definition, shall mean the possession, directly or indirectly, of the power to direct the management or policies of an entity. Ownership of publicly-traded equity securities of another entity shall not result in Control or affiliation for purposes of the Tariff or Operating Agreement if the securities are held as an investment, the holder owns (in its name or via intermediaries) less than 10 percent (10%) of the outstanding securities of the entity, the holder does not have representation on the entity’s board of directors (or equivalent managing entity) or vice versa, and the holder does not in fact exercise influence over day-to-day management decisions. Unless the contrary is demonstrated to the satisfaction of the Members Committee, Control shall be presumed to arise from the ownership of or the power to vote, directly or indirectly, ten percent or more of the voting securities of such entity.

Agreements:

“Agreements” shall mean the Amended and Restated Operating Agreement of PJM Interconnection, L.L.C., the PJM Open Access Transmission Tariff, the Reliability Assurance Agreement, and/or other agreements between PJM Interconnection, L.L.C. and its Members.

Ancillary Services:

“Ancillary Services” shall mean those services that are necessary to support the transmission of capacity and energy from resources to loads while maintaining reliable operation of the Transmission Provider’s Transmission System in accordance with Good Utility Practice.

Annual Demand Resource:

“Annual Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Annual Energy Efficiency Resource:

“Annual Energy Efficiency Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Annual Resource:

“Annual Resource” shall mean a Generation Capacity Resource, an Annual Energy Efficiency Resource or an Annual Demand Resource.

Annual Resource Price Adder:

“Annual Resource Price Adder” shall mean, for Delivery Years starting June 1, 2014 and ending May 31, 2017, an addition to the marginal value of Unforced Capacity and the Extended Summer Resource Price Adder as necessary to reflect the price of Annual Resources required to meet the applicable Minimum Annual Resource Requirement.

Annual Revenue Rate:

“Annual Revenue Rate” shall mean the rate employed to assess a compliance penalty charge on a Curtailment Service Provider under Tariff, Attachment DD, section 11.

Annual Transmission Costs:

“Annual Transmission Costs” shall mean the total annual cost of the Transmission System for purposes of Network Integration Transmission Service shall be the amount specified in Attachment H for each Zone until amended by the applicable Transmission Owner or modified by the Commission.

Applicable Laws and Regulations:

“Applicable Laws and Regulations” shall mean all duly promulgated applicable federal, State and local laws, regulations, rules, ordinances, codes, decrees, judgments, directives, or judicial or administrative orders, permits and other duly authorized actions of any Governmental Authority having jurisdiction over the relevant parties, their respective facilities, and/or the respective services they provide.

Applicable Regional Entity:

“Applicable Regional Entity” shall mean the Regional Entity for the region in which a Network Customer, Transmission Customer, New Service Customer, or Transmission Owner operates.

Applicable Standards:

“Applicable Standards” shall mean the requirements and guidelines of NERC, the Applicable Regional Entity, and the Control Area in which the Customer Facility is electrically located; the PJM Manuals; and Applicable Technical Requirements and Standards.

Applicable Technical Requirements and Standards:

“Applicable Technical Requirements and Standards” shall mean those certain technical requirements and standards applicable to interconnections of generation and/or transmission facilities with the facilities of an Interconnected Transmission Owner or, as the case may be and to the extent applicable, of an Electric Distributor, as published by Transmission Provider in a PJM Manual provided, however, that, with respect to any generation facilities with maximum generating capacity of 2 MW or less (*synchronous*) or 5 MW or less (*inverter-based*) for which the Interconnection Customer executes a Construction Service Agreement or Interconnection Service Agreement on or after March 19, 2005, “Applicable Technical Requirements and

Standards” shall refer to the “PJM Small Generator Interconnection Applicable Technical Requirements and Standards.” All Applicable Technical Requirements and Standards shall be publicly available through postings on Transmission Provider’s internet website.

Applicant:

“Applicant” shall mean an entity desiring to become a PJM Member, become a Market Participant, engage in market activities, or to take Transmission Service that has submitted the PJMSettlement credit application, PJMSettlement credit agreement and other required submittals as set forth in Tariff, Attachment Q.

Application:

“Application” shall mean a request by an Eligible Customer for transmission service pursuant to the provisions of the Tariff.

Attachment Facilities:

“Attachment Facilities” shall mean the facilities necessary to physically connect a Customer Facility to the Transmission System or interconnected distribution facilities.

Attachment H:

“Attachment H” shall refer collectively to the Attachments to the PJM Tariff with the prefix “H” that set forth, among other things, the Annual Transmission Rates for Network Integration Transmission Service in the PJM Zones.

Auction Revenue Rights:

“Auction Revenue Rights” or “ARRs” shall mean the right to receive the revenue from the Financial Transmission Right auction, as further described in Operating Agreement, Schedule 1, section 7.4, and the parallel provisions of Tariff, Attachment K-Appendix, section 7.4.

Auction Revenue Rights Credits:

“Auction Revenue Rights Credits” shall mean the allocated share of total FTR auction revenues or costs credited to each holder of Auction Revenue Rights, calculated and allocated as specified in Operating Agreement, Schedule 1, section 7.4.3, and the parallel provisions of Tariff, Attachment K-Appendix, section 7.4.3.

Authorized Government Agency:

“Authorized Government Agency” means a regulatory body or government agency, with jurisdiction over PJM, the PJM Market, or any entity doing business in the PJM Market, including, but not limited to, the Commission, State Commissions, and state and federal attorneys general.

Avoidable Cost Rate:

“Avoidable Cost Rate” shall mean a component of the Market Seller Offer Cap calculated in accordance with Tariff, Attachment DD, section 6.

Balancing Congestion Charges:

“Balancing Congestion Charges” shall be equal to the sum of congestion charges collected from Market Participants that are purchasing energy in the Real-time Energy Market minus [the sum of congestion charges paid to Market Participants that are selling energy in the Real-time Energy Market plus any congestion charges calculated pursuant to the Joint Operating Agreement between the Midcontinent Independent Transmission System Operator, Inc. and PJM Interconnection, L.L.C. (PJM Rate Schedule FERC No. 38), plus any congestion charges calculated pursuant to the Joint Operating Agreement Among and Between New York Independent System Operator Inc. and PJM Interconnection, L.L.C. (PJM Rate Schedule FERC No. 45), plus any congestion charges calculated pursuant to agreements between the Office of the Interconnection and other entities, plus any charges or credits calculated pursuant to Operating Agreement, Schedule 1, section 3.8, and the parallel provisions of Tariff, Attachment K-Appendix, section 3.8, as applicable)].

Balancing Ratio:

“Balancing Ratio” shall have the meaning provided in Tariff, Attachment DD, section 10A.

Base Capacity Demand Resource:

“Base Capacity Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Base Capacity Demand Resource Constraint:

“Base Capacity Demand Resource Constraint” for the PJM Region or an LDA, shall mean, for the 2018/2019 and 2019/2020 Delivery Years, the maximum Unforced Capacity amount, determined by PJM, of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources that is consistent with the maintenance of reliability. As more fully set forth in the PJM Manuals, PJM calculates the Base Capacity Demand Resource Constraint for the PJM Region or an LDA, by first determining a reference annual loss of load expectation (“LOLE”) assuming no Base Capacity Resources, including no Base Capacity Demand Resources or Base Capacity Energy Efficiency Resources. The calculation for the PJM Region uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast and iteratively shifting the load distributions to result in the Installed Reserve Margin established for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). The calculation for each relevant LDA uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity

availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). For the relevant LDA calculation, the weekly capacity distributions are adjusted to reflect the Capacity Emergency Transfer Limit for the Delivery Year in question.

For both the PJM Region and LDA analyses, PJM then models the commitment of varying amounts of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources (displacing otherwise committed generation) as interruptible from June 1 through September 30 and unavailable the rest of the Delivery Year in question and calculates the LOLE at each DR and EE level. The Base Capacity Demand Resource Constraint is the combined amount of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources, stated as a percentage of the unrestricted annual peak load, that produces no more than a five percent increase in the LOLE, compared to the reference value. The Base Capacity Demand Resource Constraint shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [the Forecast Pool Requirement] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

Base Capacity Demand Resource Price Decrement:

“Base Capacity Demand Resource Price Decrement” shall mean, for the 2018/2019 and 2019/2020 Delivery Years, a difference between the clearing price for Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources and the clearing price for Base Capacity Resources and Capacity Performance Resources, representing the cost to procure additional Base Capacity Resources or Capacity Performance Resources out of merit order when the Base Capacity Demand Resource Constraint is binding.

Base Capacity Energy Efficiency Resource:

“Base Capacity Energy Efficiency Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Base Capacity Resource:

“Base Capacity Resource” shall mean a Capacity Resource as described in Tariff, Attachment DD, section 5.5A(b).

Base Capacity Resource Constraint:

“Base Capacity Resource Constraint” for the PJM Region or an LDA, shall mean, for the 2018/2019 and 2019/2020 Delivery Years, the maximum Unforced Capacity amount, determined by PJM, of Base Capacity Resources, including Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources, that is consistent with the maintenance of reliability. As more fully set forth in the PJM Manuals, PJM calculates the above Base Capacity Resource Constraint for the PJM Region or an LDA, by first determining a reference annual loss of load expectation (“LOLE”) assuming no Base Capacity Resources, including no Base Capacity Demand Resources or Base Capacity Energy Efficiency Resources. The calculation for the PJM

Region uses the weekly load distribution from the Installed Reserve Margin study for the Delivery Year in question (based on the most recent load forecast and iteratively shifting the load distributions to result in the Installed Reserve Margin established for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). The calculation for each relevant LDA uses a weekly load distribution (based on the Installed Reserve Margin study and the most recent load forecast for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). For the relevant LDA calculation, the weekly capacity distributions are adjusted to reflect the Capacity Emergency Transfer Limit for the Delivery Year in question. Additionally, for the PJM Region and relevant LDA calculation, the weekly capacity distributions are adjusted to reflect winter ratings.

For both the PJM Region and LDA analyses, PJM models the commitment of an amount of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources equal to the Base Capacity Demand Resource Constraint (displacing otherwise committed generation). PJM then models the commitment of varying amounts of Base Capacity Resources (displacing otherwise committed generation) as unavailable during the peak week of winter and available the rest of the Delivery Year in question and calculates the LOLE at each Base Capacity Resource level. The Base Capacity Resource Constraint is the combined amount of Base Capacity Demand Resources, Base Capacity Energy Efficiency Resources and Base Capacity Resources, stated as a percentage of the unrestricted annual peak load, that produces no more than a ten percent increase in the LOLE, compared to the reference value. The Base Capacity Resource Constraint shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [one minus the pool-wide average EFORD] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

Base Capacity Resource Price Decrement:

“Base Capacity Resource Price Decrement” shall mean, for the 2018/2019 and 2019/2020 Delivery Years, a difference between the clearing price for Base Capacity Resources and the clearing price for Capacity Performance Resources, representing the cost to procure additional Capacity Performance Resources out of merit order when the Base Capacity Resource Constraint is binding.

Base Day-ahead Scheduling Reserves Requirement:

“Base Day-ahead Scheduling Reserves Requirement” shall mean the thirty-minute reserve requirement for the PJM Region established consistent with the Applicable Standards, plus any additional thirty-minute reserves scheduled in response to an RTO-wide Hot or Cold Weather Alert or other reasons for conservative operations.

Base Load Generation Resource

“Base Load Generation Resource” shall mean a Generation Capacity Resource that operates at least 90 percent of the hours that it is available to operate, as determined by the Office of the Interconnection in accordance with the PJM Manuals.

Base Offer Segment:

“Base Offer Segment” shall mean a component of a Sell Offer based on an existing Generation Capacity Resource, equal to the Unforced Capacity of such resource, as determined in accordance with the PJM Manuals. If the Sell Offers of multiple Market Sellers are based on a single Existing Generation Capacity Resource, the Base Offer Segments of such Market Sellers shall be determined pro rata based on their entitlements to Unforced Capacity from such resource.

Base Residual Auction:

“Base Residual Auction” shall mean the auction conducted three years prior to the start of the Delivery Year to secure commitments from Capacity Resources as necessary to satisfy any portion of the Unforced Capacity Obligation of the PJM Region not satisfied through Self-Supply.

Batch Load Demand Resource:

“Batch Load Demand Resource” shall mean a Demand Resource that has a cyclical production process such that at most times during the process it is consuming energy, but at consistent regular intervals, ordinarily for periods of less than ten minutes, it reduces its consumption of energy for its production processes to minimal or zero megawatts.

Behind The Meter Generation:

“Behind The Meter Generation” shall refer to a generation unit that delivers energy to load without using the Transmission System or any distribution facilities (unless the entity that owns or leases the distribution facilities has consented to such use of the distribution facilities and such consent has been demonstrated to the satisfaction of the Office of the Interconnection); provided, however, that Behind The Meter Generation does not include (i) at any time, any portion of such generating unit’s capacity that is designated as a Generation Capacity Resource; or (ii) in an hour, any portion of the output of such generating unit that is sold to another entity for consumption at another electrical location or into the PJM Interchange Energy Market.

Black Start Service:

“Black Start Service” shall mean the capability of generating units to start without an outside electrical supply or the demonstrated ability of a generating unit with a high operating factor (subject to Transmission Provider concurrence) to automatically remain operating at reduced levels when disconnected from the grid.

Border Yearly Charge:

“Border Yearly Charge” shall mean the yearly charge determined in accordance with Tariff, Schedule 7.

Breach:

“Breach” shall mean the failure of a party to perform or observe any material term or condition of Tariff, Part IV or Tariff, Part VI, or any agreement entered into thereunder as described in the relevant provisions of such agreement.

Breaching Party:

“Breaching Party” shall mean a party that is in Breach of Tariff, Part IV or Tariff, Part VI and/or an agreement entered into thereunder.

Business Day:

“Business Day” shall mean a day in which the Federal Reserve System is open for business and is not a scheduled PJM holiday.

Buy Bid:

“Buy Bid” shall mean a bid to buy Capacity Resources in any Incremental Auction.

Canadian Guaranty:

“Canadian Guaranty” shall mean a Corporate Guaranty provided by an Affiliate of a Participant that is domiciled in Canada, and meets all of the provisions of Tariff, Attachment Q.

Cancellation Costs:

“Cancellation Costs” shall mean costs and liabilities incurred in connection with: (a) cancellation of supplier and contractor written orders and agreements entered into to design, construct and install Attachment Facilities, Direct Assignment Facilities and/or Customer-Funded Upgrades, and/or (b) completion of some or all of the required Attachment Facilities, Direct Assignment Facilities and/or Customer-Funded Upgrades, or specific unfinished portions and/or removal of any or all of such facilities which have been installed, to the extent required for the Transmission Provider and/or Transmission Owner(s) to perform their respective obligations under Tariff, Part IV and/or Part VI.

Capacity:

“Capacity” shall mean the installed capacity requirement of the Reliability Assurance Agreement or similar such requirements as may be established.

Capacity Emergency Transfer Limit:

“Capacity Emergency Transfer Limit” or “CETL” shall have the meaning provided in the Reliability Assurance Agreement.

Capacity Emergency Transfer Objective:

“Capacity Emergency Transfer Objective” or “CETO” shall have the meaning provided in the Reliability Assurance Agreement.

Capacity Export Transmission Customer:

“Capacity Export Transmission Customer” shall mean a customer taking point to point transmission service under Tariff, Part II to export capacity from a generation resource located in the PJM Region that has qualified for an exception to the RPM must-offer requirement as described in Tariff, Attachment DD, section 6.6(g).

Capacity Import Limit:

“Capacity Import Limit” shall have the meaning provided in the Reliability Assurance Agreement.

Capacity Interconnection Rights:

“Capacity Interconnection Rights” shall mean the rights to input generation as a Generation Capacity Resource into the Transmission System at the Point of Interconnection where the generating facilities connect to the Transmission System.

Capacity Market Buyer:

“Capacity Market Buyer” shall mean a Member that submits bids to buy Capacity Resources in any Incremental Auction.

Capacity Market Seller:

“Capacity Market Seller” shall mean a Member that owns, or has the contractual authority to control the output or load reduction capability of, a Capacity Resource, that has not transferred such authority to another entity, and that offers such resource in the Base Residual Auction or an Incremental Auction.

Capacity Performance Resource:

“Capacity Performance Resource” shall mean a Capacity Resource as described in Tariff, Attachment DD, section 5.5A(a).

Capacity Performance Transition Incremental Auction:

“Capacity Performance Transition Incremental Auction” shall have the meaning specified in

Tariff, Attachment DD, section 5.14D.

Capacity Resource:

“Capacity Resource” shall have the meaning provided in the Reliability Assurance Agreement.

Capacity Resource Clearing Price:

“Capacity Resource Clearing Price” shall mean the price calculated for a Capacity Resource that offered and cleared in a Base Residual Auction or Incremental Auction, in accordance with Tariff, Attachment DD, section 5.

Capacity Storage Resource:

“Capacity Storage Resource” shall mean any Energy Storage Resource that participates in the Reliability Pricing Model or is otherwise treated as capacity in PJM’s markets such as through a Fixed Resource Requirement Capacity Plan.

Capacity Transfer Right:

“Capacity Transfer Right” shall mean a right, allocated to LSEs serving load in a Locational Deliverability Area, to receive payments, based on the transmission import capability into such Locational Deliverability Area, that offset, in whole or in part, the charges attributable to the Locational Price Adder, if any, included in the Zonal Capacity Price calculated for a Locational Delivery Area.

Capacity Transmission Injection Rights:

“Capacity Transmission Injection Rights” shall mean the rights to schedule energy and capacity deliveries at a Point of Interconnection of a Merchant Transmission Facility with the Transmission System. Capacity Transmission Injection Rights may be awarded only to a Merchant D.C. Transmission Facility and/or Controllable A.C. Merchant Transmission Facilities that connects the Transmission System to another control area. Deliveries scheduled using Capacity Transmission Injection Rights have rights similar to those under Firm Point-to-Point Transmission Service or, if coupled with a generating unit external to the PJM Region that satisfies all applicable criteria specified in the PJM Manuals, similar to Capacity Interconnection Rights.

Cold/Warm/Hot Notification Time:

“Cold/Warm/Hot Notification Time” shall mean the time interval between PJM notification and the beginning of the start sequence for a generating unit that is currently in its cold/warm/hot temperature state. The start sequence may include steps such as any valve operation, starting feed water pumps, startup of auxiliary equipment, etc.

Cold/Warm/Hot Start-up Time:

For all generating units that are not combined cycle units, “Cold/Warm/Hot Start-up Time” shall mean the time interval, measured in hours, from the beginning of the start sequence to the point after generator breaker closure, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero for a generating unit in its cold/warm/hot temperature state. For combined cycle units, “Cold/Warm/Hot Start-up Time” shall mean the time interval from the beginning of the start sequence to the point after first combustion turbine generator breaker closure in its cold/warm/hot temperature state, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero. For all generating units, the start sequence may include steps such as any valve operation, starting feed water pumps, startup of auxiliary equipment, etc. Other more detailed actions that could signal the beginning of the start sequence could include, but are not limited to, the operation of pumps, condensers, fans, water chemistry evaluations, checklists, valves, fuel systems, combustion turbines, starting engines or systems, maintaining stable fuel/air ratios, and other auxiliary equipment necessary for startup.

Cold Weather Alert:

“Cold Weather Alert” shall mean the notice that PJM provides to PJM Members, Transmission Owners, resource owners and operators, customers, and regulators to prepare personnel and facilities for expected extreme cold weather conditions.

Collateral:

“Collateral” shall be a cash deposit, including any interest thereon, or a Letter of Credit issued for the benefit of PJM or PJMSettlement, in an amount and form determined by and acceptable to PJM or PJMSettlement, provided by a Participant to PJM or PJMSettlement as credit support in order to participate in the PJM Markets or take Transmission Service.

Collateral Call:

“Collateral Call” shall mean a notice to a Participant that additional Collateral, or possibly early payment, is required in order to remain in, or to regain, compliance with Tariff, Attachment Q.

Commencement Date:

“Commencement Date” shall mean the date on which Interconnection Service commences in accordance with an Interconnection Service Agreement.

Committed Offer:

The “Committed Offer” shall mean 1) for pool-scheduled resources, an offer on which a resource was scheduled by the Office of the Interconnection for a particular clock hour for an Operating Day, and 2) for self-scheduled resources, either the offer on which the Market Seller has elected to schedule the resource or the applicable offer for the resource determined pursuant to Operating Agreement, Schedule 1, section 6.4, and the parallel provisions of Tariff, Attachment K-

Appendix, section 6.4, or Operating Agreement, Schedule 1, section 6.6, and the parallel provisions of Tariff, Attachment K-Appendix, section 6.6, for a particular clock hour for an Operating Day.

Completed Application:

“Completed Application” shall mean an application that satisfies all of the information and other requirements of the Tariff, including any required deposit.

Compliance Aggregation Area (CAA):

“Compliance Aggregation Area” or “CAA” shall mean a geographic area of Zones or sub-Zones that are electrically-contiguous and experience for the relevant Delivery Year, based on Resource Clearing Prices of, for Delivery Years through May 31, 2018, Annual Resources and for the 2018/2019 Delivery Year and subsequent Delivery Years, Capacity Performance Resources, the same locational price separation in the Base Residual Auction, the same locational price separation in the First Incremental Auction, the same locational price separation in the Second Incremental Auction, or the same locational price separation in the Third Incremental Auction.

Conditional Incremental Auction:

“Conditional Incremental Auction” shall mean an Incremental Auction conducted for a Delivery Year if and when necessary to secure commitments of additional capacity to address reliability criteria violations arising from the delay in a Backbone Transmission upgrade that was modeled in the Base Residual Auction for such Delivery Year.

CONE Area:

“CONE Area” shall mean the areas listed in Tariff, Attachment DD, section 5.10(a)(iv)(A) and any LDAs established as CONE Areas pursuant to Tariff, Attachment DD, section 5.10(a)(iv)(B).

Confidential Information:

“Confidential Information” shall mean any confidential, proprietary, or trade secret information of a plan, specification, pattern, procedure, design, device, list, concept, policy, or compilation relating to the present or planned business of a New Service Customer, Transmission Owner, or other Interconnection Party or Construction Party, which is designated as confidential by the party supplying the information, whether conveyed verbally, electronically, in writing, through inspection, or otherwise, and shall include, without limitation, all information relating to the producing party’s technology, research and development, business affairs and pricing, and any information supplied by any New Service Customer, Transmission Owner, or other Interconnection Party or Construction Party to another such party prior to the execution of an Interconnection Service Agreement or a Construction Service Agreement.

Congestion Price:

“Congestion Price” shall mean the congestion component of the Locational Marginal Price, which is the effect on transmission congestion costs (whether positive or negative) associated with increasing the output of a generation resource or decreasing the consumption by a Demand Resource, based on the effect of increased generation from or consumption by the resource on transmission line loadings, calculated as specified in Operating Agreement, Schedule 1, section 2, and the parallel provisions of Tariff, Attachment K-Appendix.

Consolidated Transmission Owners Agreement, PJM Transmission Owners Agreement or Transmission Owners Agreement:

“Consolidated Transmission Owners Agreement,” “PJM Transmission Owners Agreement” or “Transmission Owners Agreement” shall mean the certain Consolidated Transmission Owners Agreement dated as of December 15, 2005, by and among the Transmission Owners and by and between the Transmission Owners and PJM Interconnection, L.L.C. on file with the Commission, as amended from time to time.

Constraint Relaxation Logic:

“Constraint Relaxation Logic” shall mean the logic applied in the market clearing software where the transmission limit is increased to prevent the Transmission Constraint Penalty Factor from setting the Marginal Value of a transmission constraint.

Constructing Entity:

“Constructing Entity” shall mean either the Transmission Owner or the New Services Customer, depending on which entity has the construction responsibility pursuant to Tariff, Part VI and the applicable Construction Service Agreement; this term shall also be used to refer to an Interconnection Customer with respect to the construction of the Customer Interconnection Facilities.

Construction Party:

“Construction Party” shall mean a party to a Construction Service Agreement. “Construction Parties” shall mean all of the Parties to a Construction Service Agreement.

Construction Service Agreement:

“Construction Service Agreement” shall mean either an Interconnection Construction Service Agreement or an Upgrade Construction Service Agreement.

Contingent Facilities:

“Contingent Facilities” shall mean those unbuilt Interconnection Facilities and Network Upgrades upon which the Interconnection Request’s costs, timing, and study findings are dependent and, if delayed or not built, could cause a need for restudies of the Interconnection

Request or a reassessment of the Interconnection Facilities and/or Network Upgrades and/or costs and timing.

Control Area:

“Control Area” shall mean an electric power system or combination of electric power systems bounded by interconnection metering and telemetry to which a common automatic generation control scheme is applied in order to:

(1) match the power output of the generators within the electric power system(s) and energy purchased from entities outside the electric power system(s), with the load within the electric power system(s);

(2) maintain scheduled interchange with other Control Areas, within the limits of Good Utility Practice;

(3) maintain the frequency of the electric power system(s) within reasonable limits in accordance with Good Utility Practice; and

(4) provide sufficient generating capacity to maintain operating reserves in accordance with Good Utility Practice.

Control Zone:

“Control Zone” shall have the meaning given in the Operating Agreement.

Controllable A.C. Merchant Transmission Facilities:

“Controllable A.C. Merchant Transmission Facilities” shall mean transmission facilities that (1) employ technology which Transmission Provider reviews and verifies will permit control of the amount and/or direction of power flow on such facilities to such extent as to effectively enable the controllable facilities to be operated as if they were direct current transmission facilities, and (2) that are interconnected with the Transmission System pursuant to Tariff, Part IV and Part VI.

Coordinated External Transaction:

“Coordinated External Transaction” shall mean a transaction to simultaneously purchase and sell energy on either side of a CTS Enabled Interface in accordance with the procedures of Operating Agreement, Schedule 1, section 1.13, and the parallel provisions of Tariff, Attachment K-Appendix.

Coordinated Transaction Scheduling:

“Coordinated Transaction Scheduling” or “CTS” shall mean the scheduling of Coordinated External Transactions at a CTS Enabled Interface in accordance with the procedures of Operating Agreement, Schedule 1, section 1.13, and the parallel provisions of Tariff, Attachment

K-Appendix.

Corporate Guaranty:

“Corporate Guaranty” shall mean a legal document, in a form acceptable to PJM and/or PJMSettlement, used by a Credit Affiliate of an entity to guaranty the obligations of another entity.

Cost of New Entry:

“Cost of New Entry” or “CONE” shall mean the nominal levelized cost of a Reference Resource, as determined in accordance with Tariff, Attachment DD, section 5.

Costs:

As used in Tariff, Part IV, Part VI and related attachments, “Costs” shall mean costs and expenses, as estimated or calculated, as applicable, including, but not limited to, capital expenditures, if applicable, and overhead, return, and the costs of financing and taxes and any Incidental Expenses.

Counterparty:

“Counterparty” shall mean PJMSettlement as the contracting party, in its name and own right and not as an agent, to an agreement or transaction with a Market Participant or other entities, including the agreements and transactions with customers regarding transmission service and other transactions under the PJM Tariff and the Operating Agreement. PJMSettlement shall not be a counterparty to (i) any bilateral transactions between Members, or (ii) any Member’s self-supply of energy to serve its load, or (iii) any Member’s self-schedule of energy reported to the Office of the Interconnection to the extent that energy serves that Member’s own load.

Credit Affiliate:

“Credit Affiliate” shall mean Principals, corporations, partnerships, firms, joint ventures, associations, joint stock companies, trusts, unincorporated organizations or entities, one of which directly or indirectly controls the other or that are both under common Control. “Control,” as that term is used in this definition, shall mean the possession, directly or indirectly, of the power to direct the management or policies of a person or an entity.

Credit Available for Export Transactions:

“Credit Available for Export Transactions” shall mean a designation of credit to be used for Export Transactions that is allocated by each Market Participant from its Credit Available for Virtual Transactions, and which reduces the Market Participant's Credit Available for Virtual Transactions accordingly.

Credit Available for Virtual Transactions:

“Credit Available for Virtual Transactions” shall mean the Market Participant’s Working Credit Limit for Virtual Transactions calculated on its credit provided in compliance with its Peak Market Activity requirement plus available credit submitted above that amount, less any unpaid billed and unbilled amounts owed to PJMSettlement, plus any unpaid unbilled amounts owed by PJMSettlement to the Market Participant, less any applicable credit required for Minimum Participation Requirements, FTRs, RPM activity, or other credit requirement determinants as defined in Tariff, Attachment Q.

Credit Breach:

“Credit Breach” shall mean (a) the failure of a Participant to perform, observe, meet or comply with any requirements of Tariff, Attachment Q or other provisions of the Agreements, other than a Financial Default, or (b) a determination by PJM and notice to the Participant that a Participant represents an unreasonable credit risk to the PJM Markets; that, in either event, has not been cured or remedied after any required notice has been given and any cure period has elapsed.

Credit-Limited Offer:

“Credit-Limited Offer” shall mean a Sell Offer that is submitted by a Market Participant in an RPM Auction subject to a maximum credit requirement specified by such Market Participant.

Credit Support Default:

“Credit Support Default,” shall mean (a) the failure of any Guarantor of a Market Participant to make any payment, or to perform, observe, meet or comply with any provisions of the applicable Guaranty or Credit Support Document that has not been cured or remedied, after any required notice has been given and an opportunity to cure (if any) has elapsed, (b) a representation made or deemed made by a Guarantor in any Credit Support Document that proves to be false, incorrect or misleading in any material respect when made or deemed made, (c) the failure of a Guaranty or other Credit Support Document to be in full force and effect prior to the satisfaction of all obligations of such Participant to PJM, without PJM’s consent, or (d) a Guarantor repudiating, disaffirming, disclaiming or rejecting, in whole or in part, its obligations under the Guaranty or challenging the validity of the Guaranty.

Credit Support Document:

“Credit Support Document” shall mean any agreement or instrument in any way guaranteeing or securing any or all of a Participant’s obligations under the Agreements (including, without limitation, the provisions of Tariff, Attachment Q), any agreement entered into under, pursuant to, or in connection with the Agreements or any agreement entered into under, pursuant to, or in connection with the Agreements and/or any other agreement to which PJM, PJMSettlement and the Participant are parties, including, without limitation, any Corporate Guaranty, Letter of Credit, or agreement granting PJM and PJMSettlement a security interest.

CTS Enabled Interface:

“CTS Enabled Interface” shall mean an interface between the PJM Control Area and an adjacent Control Area at which the Office of the Interconnection has authorized the use of Coordinated Transaction Scheduling (“CTS”). The CTS Enabled Interfaces between the PJM Control Area and the New York Independent System Operator, Inc. Control Area shall be designated in Schedule A to the Joint Operating Agreement Among and Between New York Independent System Operator Inc. and PJM Interconnection, L.L.C. (PJM Rate Schedule FERC No. 45). The CTS Enabled Interfaces between the PJM Control Area and the Midcontinent Independent System Operator, Inc. shall be designated consistent with Attachment 3, section 2 of the Joint Operating Agreement between Midcontinent Independent System Operator, Inc. and PJM Interconnection, L.L.C.

CTS Interface Bid:

“CTS Interface Bid” shall mean a unified real-time bid to simultaneously purchase and sell energy on either side of a CTS Enabled Interface in accordance with the procedures of Operating Agreement, Schedule 1, section 1.13, and the parallel provisions of Tariff, Attachment K-Appendix.

Curtailement:

“Curtailement” shall mean a reduction in firm or non-firm transmission service in response to a transfer capability shortage as a result of system reliability conditions.

Curtailement Service Provider:

“Curtailement Service Provider” or “CSP” shall mean a Member or a Special Member, which action on behalf of itself or one or more other Members or non-Members, participates in the PJM Interchange Energy Market, Ancillary Services markets, and/or Reliability Pricing Model by causing a reduction in demand.

Customer Facility:

“Customer Facility” shall mean Generation Facilities or Merchant Transmission Facilities interconnected with or added to the Transmission System pursuant to an Interconnection Request under Subpart A of Tariff, Part IV.

Customer-Funded Upgrade:

“Customer-Funded Upgrade” shall mean any Network Upgrade, Local Upgrade, or Merchant Network Upgrade for which cost responsibility (i) is imposed on an Interconnection Customer or an Eligible Customer pursuant to Tariff, Part VI, section 217, or (ii) is voluntarily undertaken by a New Service Customer in fulfillment of an Upgrade Request. No Network Upgrade, Local Upgrade or Merchant Network Upgrade or other transmission expansion or enhancement shall be a Customer-Funded Upgrade if and to the extent that the costs thereof are included in the rate base of a public utility on which a regulated return is earned.

Customer Interconnection Facilities:

“Customer Interconnection Facilities” shall mean all facilities and equipment owned and/or controlled, operated and maintained by Interconnection Customer on Interconnection Customer’s side of the Point of Interconnection identified in the appropriate appendices to the Interconnection Service Agreement and to the Interconnection Construction Service Agreement, including any modifications, additions, or upgrades made to such facilities and equipment, that are necessary to physically and electrically interconnect the Customer Facility with the Transmission System.

Daily Deficiency Rate:

“Daily Deficiency Rate” shall mean the rate employed to assess certain deficiency charges under Tariff, Attachment DD, section 7, Tariff, Attachment DD, section 8, Tariff, Attachment DD, section 9, or Tariff, Attachment DD, section 13.

Daily Unforced Capacity Obligation:

“Daily Unforced Capacity Obligation” shall mean the capacity obligation of a Load Serving Entity during the Delivery Year, determined in accordance with Reliability Assurance Agreement, Schedule 8, or, as to an FRR entity, in Reliability Assurance Agreement, Schedule 8.1.

Day-ahead Congestion Price:

“Day-ahead Congestion Price” shall mean the Congestion Price resulting from the Day-ahead Energy Market.

Day-ahead Energy Market:

“Day-ahead Energy Market” shall mean the schedule of commitments for the purchase or sale of energy and payment of Transmission Congestion Charges developed by the Office of the Interconnection as a result of the offers and specifications submitted in accordance with Operating Agreement, Schedule 1, section 1.10 and the parallel provisions of Tariff, Attachment K-Appendix.

Day-ahead Energy Market Injection Congestion Credits:

“Day-ahead Energy Market Injection Congestion Credits” shall mean those congestion credits paid to Market Participants for supply transactions in the Day-ahead Energy Market including generation schedules, Increment Offers, Up-to Congestion Transactions, import transactions, and Day-Ahead Pseudo-Tie Transactions.

Day-ahead Energy Market Transmission Congestion Charges:

“Day-ahead Energy Market Transmission Congestion Charges” shall be equal to the sum of Day-ahead Energy Market Withdrawal Congestion Charges minus [the sum of Day-ahead Energy Market Injection Congestion Credits plus any congestion charges calculated pursuant to the Joint Operating Agreement between the Midcontinent Independent Transmission System Operator, Inc. and PJM Interconnection, L.L.C. (PJM Rate Schedule FERC No. 38), plus any congestion charges calculated pursuant to the Joint Operating Agreement Among and Between New York Independent System Operator Inc. and PJM Interconnection, L.L.C. (PJM Rate Schedule FERC No. 45), plus any congestion charges calculated pursuant to agreements between the Office of the Interconnection and other entities, as applicable)].

Day-ahead Energy Market Withdrawal Congestion Charges:

“Day-ahead Energy Market Withdrawal Congestion Charges” shall mean those congestion charges collected from Market Participants for withdrawal transactions in the Day-ahead Energy Market from transactions including Demand Bids, Decrement Bids, Up-to Congestion Transactions, Export Transactions, and Day-Ahead Pseudo-Tie Transactions.

Day-ahead Loss Price:

“Day-ahead Loss Price” shall mean the Loss Price resulting from the Day-ahead Energy Market.

Day-ahead Prices:

“Day-ahead Prices” shall mean the Locational Marginal Prices resulting from the Day-ahead Energy Market.

Day-Ahead Pseudo-Tie Transaction:

“Day-Ahead Pseudo-Tie Transaction” shall mean a transaction scheduled in the Day-ahead Energy Market to the PJM-MISO interface from a generator within the PJM balancing authority area that Pseudo-Ties into the MISO balancing authority area.

Day-ahead Scheduling Reserves:

“Day-ahead Scheduling Reserves” shall mean thirty-minute reserves as defined by the Reliability *First* Corporation and SERC.

Day-ahead Scheduling Reserves Market:

“Day-ahead Scheduling Reserves Market” shall mean the schedule of commitments for the purchase or sale of Day-ahead Scheduling Reserves developed by the Office of the Interconnection as a result of the offers and specifications submitted in accordance with Operating Agreement, Schedule 1, section 1.10 and the parallel provisions of Tariff, Attachment K-Appendix.

Day-ahead Scheduling Reserves Requirement:

“Day-ahead Scheduling Reserves Requirement” shall mean the sum of Base Day-ahead Scheduling Reserves Requirement and Additional Day-ahead Scheduling Reserves Requirement.

Day-ahead Scheduling Reserves Resources:

“Day-ahead Scheduling Reserves Resources” shall mean synchronized and non-synchronized generation resources and Demand Resources electrically located within the PJM Region that are capable of providing Day-ahead Scheduling Reserves.

Day-ahead Settlement Interval:

“Day-ahead Settlement Interval” shall mean the interval used by settlements, which shall be every one clock hour.

Day-ahead System Energy Price:

“Day-ahead System Energy Price” shall mean the System Energy Price resulting from the Day-ahead Energy Market.

Deactivation:

“Deactivation” shall mean the retirement or mothballing of a generating unit governed by Tariff, Part V.

Deactivation Avoidable Cost Credit:

“Deactivation Avoidable Cost Credit” shall mean the credit paid to Generation Owners pursuant to Tariff, Part V, section 114.

Deactivation Avoidable Cost Rate:

“Deactivation Avoidable Cost Rate” shall mean the formula rate established pursuant to Tariff, Part V, section 115 of this Tariff.

Deactivation Date:

“Deactivation Date” shall mean the date a generating unit within the PJM Region is either retired or mothballed and ceases to operate.

Decrement Bid:

“Decrement Bid” shall mean a type of Virtual Transaction that is a bid to purchase energy at a specified location in the Day-ahead Energy Market. A cleared Decrement Bid results in scheduled load at the specified location in the Day-ahead Energy Market.

Default:

As used in the Interconnection Service Agreement and Construction Service Agreement, “Default” shall mean the failure of a Breaching Party to cure its Breach in accordance with the applicable provisions of an Interconnection Service Agreement or Construction Service Agreement.

Delivering Party:

“Delivering Party” shall mean the entity supplying capacity and energy to be transmitted at Point(s) of Receipt.

Delivery Year:

“Delivery Year” shall mean the Planning Period for which a Capacity Resource is committed pursuant to the auction procedures specified in Tariff, Attachment DD, or pursuant to an FRR Capacity Plan under Reliability Assurance Agreement, Schedule 8.1.

Demand Bid:

“Demand Bid” shall mean a bid, submitted by a Load Serving Entity in the Day-ahead Energy Market, to purchase energy at its contracted load location, for a specified timeframe and megawatt quantity, that if cleared will result in energy being scheduled at the specified location in the Day-ahead Energy Market and in the physical transfer of energy during the relevant Operating Day.

Demand Bid Limit:

“Demand Bid Limit” shall mean the largest MW volume of Demand Bids that may be submitted by a Load Serving Entity for any hour of an Operating Day, as determined pursuant to Operating Agreement, Schedule 1, section 1.10.1B, and the parallel provisions of Tariff, Attachment K-Appendix.

Demand Bid Screening:

“Demand Bid Screening” shall mean the process by which Demand Bids are reviewed against the applicable Demand Bid Limit, and rejected if they would exceed that limit, as determined pursuant to Operating Agreement, Schedule 1, section 1.10.1B, and the parallel provisions of Tariff, Attachment K-Appendix.

Demand Resource:

“Demand Resource” shall mean a resource with the capability to provide a reduction in demand.

Demand Resource Factor or DR Factor:

“Demand Resource Factor” or (“DR Factor”) shall have the meaning specified in the Reliability Assurance Agreement.

Designated Agent:

“Designated Agent” shall mean any entity that performs actions or functions on behalf of the Transmission Provider, a Transmission Owner, an Eligible Customer, or the Transmission Customer required under the Tariff.

Designated Entity:

“Designated Entity” shall have the same meaning provided in the Operating Agreement.

Direct Assignment Facilities:

“Direct Assignment Facilities” shall mean facilities or portions of facilities that are constructed for the sole use/benefit of a particular Transmission Customer requesting service under the Tariff. Direct Assignment Facilities shall be specified in the Service Agreement that governs service to the Transmission Customer and shall be subject to Commission approval.

Direct Charging Energy:

“Direct Charging Energy” shall mean the energy that an Energy Storage Resource purchases from the PJM Interchange Energy Market and (i) later resells to the PJM Interchange Energy Market; or (ii) is lost to conversion inefficiencies, provided that such inefficiencies are an unavoidable component of the conversion, storage, and discharge process that is used to resell energy back to the PJM Interchange Energy Market.

Direct Load Control:

“Direct Load Control” shall mean load reduction that is controlled directly by the Curtailment Service Provider’s market operations center or its agent, in response to PJM instructions.

Dispatch Rate:

“Dispatch Rate” shall mean the control signal, expressed in dollars per megawatt-hour, calculated and transmitted continuously and dynamically to direct the output level of all generation resources dispatched by the Office of the Interconnection in accordance with the Offer Data.

Dispatched Charging Energy:

“Dispatched Charging Energy” shall mean Direct Charging Energy that an Energy Storage Resource Model Participant receives from the electric grid pursuant to PJM dispatch while providing a service in the PJM markets.

Dynamic Schedule:

“Dynamic Schedule” shall have the same meaning provided in the Operating Agreement.

Dynamic Transfer:

“Dynamic Transfer” shall have the same meaning provided in the Operating Agreement.

Economic-based Enhancement or Expansion:

“Economic-based Enhancement or Expansion” shall have the same meaning provided in the Operating Agreement.

Economic Load Response Participant:

“Economic Load Response Participant” shall mean a Member or Special Member that qualifies under Operating Agreement, Schedule 1, section 1.5A, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.5A, to participate in the PJM Interchange Energy Market and/or Ancillary Services markets through reductions in demand.

Economic Maximum:

“Economic Maximum” shall mean the highest incremental MW output level, submitted to PJM market systems by a Market Participant, that a unit can achieve while following economic dispatch.

Economic Minimum:

“Economic Minimum” shall mean the lowest incremental MW output level, submitted to PJM market systems by a Market Participant, that a unit can achieve while following economic dispatch.

Effective FTR Holder:

“Effective FTR Holder” shall mean:

- (i) For an FTR Holder that is either a (a) privately held company, or (b) a municipality or electric cooperative, as defined in the Federal Power Act, such FTR Holder, together with any Affiliate, subsidiary or parent of the FTR Holder, any other entity that is under common ownership, wholly or partly, directly or indirectly, or has the ability to influence, directly or indirectly, the management or policies of the FTR Holder; or
- (ii) For an FTR Holder that is a publicly traded company including a wholly owned subsidiary of a publicly traded company, such FTR Holder, together with any Affiliate, subsidiary or parent of the FTR Holder, any other PJM Member has over 10% common ownership with the FTR Holder, wholly or partly, directly or indirectly, or has the ability to

influence, directly or indirectly, the management or policies of the FTR Holder; or

(iii) an FTR Holder together with any other PJM Member, including also any Affiliate, subsidiary or parent of such other PJM Member, with which it shares common ownership, wholly or partly, directly or indirectly, in any third entity which is a PJM Member (e.g., a joint venture).

EFORD:

“EFORD” shall have the meaning specified in the PJM Reliability Assurance Agreement.

Electrical Distance:

“Electrical Distance” shall mean, for a Generation Capacity Resource geographically located outside the metered boundaries of the PJM Region, the measure of distance, based on impedance and in accordance with the PJM Manuals, from the Generation Capacity Resource to the PJM Region.

Eligible Customer:

“Eligible Customer” shall mean:

(i) Any electric utility (including any Transmission Owner and any power marketer), Federal power marketing agency, or any person generating electric energy for sale for resale is an Eligible Customer under the Tariff. Electric energy sold or produced by such entity may be electric energy produced in the United States, Canada or Mexico. However, with respect to transmission service that the Commission is prohibited from ordering by Section 212(h) of the Federal Power Act, such entity is eligible only if the service is provided pursuant to a state requirement that the Transmission Provider or Transmission Owner offer the unbundled transmission service, or pursuant to a voluntary offer of such service by a Transmission Owner.

(ii) Any retail customer taking unbundled transmission service pursuant to a state requirement that the Transmission Provider or a Transmission Owner offer the transmission service, or pursuant to a voluntary offer of such service by a Transmission Owner, is an Eligible Customer under the Tariff. As used in Tariff, Part VI, Eligible Customer shall mean only those Eligible Customers that have submitted a Completed Application.

Emergency Action:

“Emergency Action” shall mean any emergency action for locational or system-wide capacity shortages that either utilizes pre-emergency mandatory load management reductions or other emergency capacity, or initiates a more severe action including, but not limited to, a Voltage Reduction Warning, Voltage Reduction Action, Manual Load Dump Warning, or Manual Load Dump Action.

Emergency Condition:

“Emergency Condition” shall mean a condition or situation (i) that in the judgment of any Interconnection Party is imminently likely to endanger life or property; or (ii) that in the judgment of the Interconnected Transmission Owner or Transmission Provider is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to, the Transmission System, the Interconnection Facilities, or the transmission systems or distribution systems to which the Transmission System is directly or indirectly connected; or (iii) that in the judgment of Interconnection Customer is imminently likely (as determined in a non-discriminatory manner) to cause damage to the Customer Facility or to the Customer Interconnection Facilities. System restoration and black start shall be considered Emergency Conditions, provided that a Generation Interconnection Customer is not obligated by an Interconnection Service Agreement to possess black start capability. Any condition or situation that results from lack of sufficient generating capacity to meet load requirements or that results solely from economic conditions shall not constitute an Emergency Condition, unless one or more of the enumerated conditions or situations identified in this definition also exists.

Emergency Load Response Program:

“Emergency Load Response Program” shall mean the program by which Curtailment Service Providers may be compensated by PJM for Demand Resources that will reduce load when dispatched by PJM during emergency conditions, and is described in Operating Agreement, Schedule 1, section 8 and the parallel provisions of Tariff, Attachment K-Appendix, section 8.

Energy Efficiency Resource:

“Energy Efficiency Resource” shall have the meaning specified in the PJM Reliability Assurance Agreement.

Energy Market Opportunity Cost:

“Energy Market Opportunity Cost” shall mean the difference between (a) the forecasted cost to operate a specific generating unit when the unit only has a limited number of available run hours due to limitations imposed on the unit by Applicable Laws and Regulations, and (b) the forecasted future Locational Marginal Price at which the generating unit could run while not violating such limitations. Energy Market Opportunity Cost therefore is the value associated with a specific generating unit’s lost opportunity to produce energy during a higher valued period of time occurring within the same compliance period, which compliance period is determined by the applicable regulatory authority and is reflected in the rules set forth in PJM Manual 15. Energy Market Opportunity Costs shall be limited to those resources which are specifically delineated in Operating Agreement, Schedule 2.

Energy Resource:

“Energy Resource” shall mean a Generating Facility that is not a Capacity Resource.

Energy Settlement Area:

“Energy Settlement Area” shall mean the bus or distribution of busses that represents the physical location of Network Load and by which the obligations of the Network Customer to PJM are settled.

Energy Storage Resource:

“Energy Storage Resource” shall mean a resource capable of receiving electric energy from the grid and storing it for later injection to the grid that participates in the PJM Energy, Capacity and/or Ancillary Services markets as a Market Participant.

Energy Storage Resource Model Participant:

“Energy Storage Resource Model Participant” shall mean an Energy Storage Resource utilizing the Energy Storage Resource Participation Model.

Energy Storage Resource Participation Model:

“Energy Storage Resource Participation Model” shall mean the participation model accepted by the Commission in Docket No. ER19-XXX-000.

Energy Transmission Injection Rights:

“Energy Transmission Injection Rights” shall mean the rights to schedule energy deliveries at a specified point on the Transmission System. Energy Transmission Injection Rights may be awarded only to a Merchant D.C. Transmission Facility that connects the Transmission System to another control area. Deliveries scheduled using Energy Transmission Injection Rights have rights similar to those under Non-Firm Point-to-Point Transmission Service.

Environmental Laws:

“Environmental Laws” shall mean applicable Laws or Regulations relating to pollution or protection of the environment, natural resources or human health and safety.

Environmentally-Limited Resource:

“Environmentally-Limited Resource” shall mean a resource which has a limit on its run hours imposed by a federal, state, or other governmental agency that will significantly limit its availability, on either a temporary or long-term basis. This includes a resource that is limited by a governmental authority to operating only during declared PJM capacity emergencies.

Equivalent Load:

“Equivalent Load” shall mean the sum of a Market Participant’s net system requirements to serve its customer load in the PJM Region, if any, plus its net bilateral transactions.

Event of Default:

“Event of Default,” as that term is used in Tariff, Attachment Q, shall mean a Financial Default, Credit Breach, or Credit Support Default.

Existing Generation Capacity Resource:

“Existing Generation Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Export Credit Exposure:

“Export Credit Exposure” is determined for each Market Participant for a given Operating Day, and shall mean the sum of credit exposures for the Market Participant’s Export Transactions for that Operating Day and for the preceding Operating Day.

Export Nodal Reference Price:

“Export Nodal Reference Price” at each location is the 97th percentile, shall be, the real-time hourly integrated price experienced over the corresponding two-month period in the preceding calendar year, calculated separately for peak and off-peak time periods. The two-month time periods used in this calculation shall be January and February, March and April, May and June, July and August, September and October, and November and December.

Export Transaction:

“Export Transaction” shall be a transaction by a Market Participant that results in the transfer of energy from within the PJM Control Area to outside the PJM Control Area. Coordinated External Transactions that result in the transfer of energy from the PJM Control Area to an adjacent Control Area are one form of Export Transaction.

Export Transaction Price Factor:

“Export Transaction Price Factor” for a prospective time interval shall be the greater of (i) PJM’s forecast price for the time interval, if available, or (ii) the Export Nodal Reference Price, but shall not exceed the Export Transaction’s dispatch ceiling price cap, if any, for that time interval. The Export Transaction Price Factor for a past time interval shall be calculated in the same manner as for a prospective time interval, except that the Export Transaction Price Factor may use a tentative or final settlement price, as available. If an Export Nodal Reference Price is not available for a particular time interval, PJM may use an Export Transaction Price Factor for that time interval based on an appropriate alternate reference price.

Export Transaction Screening:

“Export Transaction Screening” shall be the process PJM uses to review the Export Credit Exposure of Export Transactions against the Credit Available for Export Transactions, and deny

or curtail all or a portion of an Export Transaction, if the credit required for such transactions is greater than the credit available for the transactions.

Export Transactions Net Activity:

“Export Transactions Net Activity” shall mean the aggregate net total, resulting from Export Transactions, of (i) Spot Market Energy charges, (ii) Transmission Congestion Charges, and (iii) Transmission Loss Charges, calculated as set forth in Operating Agreement, Schedule 1 and the parallel provisions of Tariff, Attachment K-Appendix. Export Transactions Net Activity may be positive or negative.

Extended Primary Reserve Requirement:

“Extended Primary Reserve Requirement” shall equal the Primary Reserve Requirement in a Reserve Zone or Reserve Sub-zone, plus 190 MW, plus any additional reserves scheduled under emergency conditions necessary to address operational uncertainty. The Extended Primary Reserve Requirement is calculated in accordance with the PJM Manuals.

Extended Summer Demand Resource:

“Extended Summer Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Extended Summer Resource Price Adder:

“Extended Summer Resource Price Adder” shall mean, for Delivery Years through May 31, 2018, an addition to the marginal value of Unforced Capacity as necessary to reflect the price of Annual Resources and Extended Summer Demand Resources required to meet the applicable Minimum Extended Summer Resource Requirement.

Extended Synchronized Reserve Requirement:

“Extended Synchronized Reserve Requirement” shall equal the Synchronized Reserve Requirement in a Reserve Zone or Reserve Sub-zone, plus 190 MW, plus any additional reserves scheduled under emergency conditions necessary to address operational uncertainty. The Extended Synchronized Reserve Requirement is calculated in accordance with the PJM Manuals.

External Market Buyer:

“External Market Buyer” shall mean a Market Buyer making purchases of energy from the PJM Interchange Energy Market for consumption by end-users outside the PJM Region, or for load in the PJM Region that is not served by Network Transmission Service.

External Resource:

“External Resource” shall mean a generation resource located outside the metered boundaries of

the PJM Region.

Facilities Study:

“Facilities Study” shall be an engineering study conducted by the Transmission Provider (in coordination with the affected Transmission Owner(s)) to: (1) determine the required modifications to the Transmission Provider’s Transmission System necessary to implement the conclusions of the System Impact Study; and (2) complete any additional studies or analyses documented in the System Impact Study or required by PJM Manuals, and determine the required modifications to the Transmission Provider’s Transmission System based on the conclusions of such additional studies. The Facilities Study shall include the cost and scheduled completion date for such modifications, that will be required to provide the requested transmission service or to accommodate a New Service Request. As used in the Interconnection Service Agreement or Construction Service Agreement, Facilities Study shall mean that certain Facilities Study conducted by Transmission Provider (or at its direction) to determine the design and specification of the Customer Funded Upgrades necessary to accommodate the New Service Customer’s New Service Request in accordance with Tariff, Part VI, section 207.

Federal Power Act:

“Federal Power Act” shall mean the Federal Power Act, as amended, 16 U.S.C. §§ 791a, et seq.

FERC or Commission:

“FERC” or “Commission” shall mean the Federal Energy Regulatory Commission or any successor federal agency, commission or department exercising jurisdiction over the Tariff, Operating Agreement and Reliability Assurance Agreement.

FERC Market Rules:

“FERC Market Rules” mean the market behavior rules and the prohibition against electric energy market manipulation codified by the Commission in its Rules and Regulations at 18 CFR §§ 1c.2 and 35.37, respectively; the Commission-approved PJM Market Rules and any related proscriptions or any successor rules that the Commission from time to time may issue, approve or otherwise establish.

Final Offer:

“Final Offer” shall mean the offer on which a resource was dispatched by the Office of the Interconnection for a particular clock hour for the Operating Day.

Final RTO Unforced Capacity Obligation:

“Final RTO Unforced Capacity Obligation” shall mean the capacity obligation for the PJM Region, determined in accordance with RAA, Schedule 8.

Financial Close:

“Financial Close” shall mean the Capacity Market Seller has demonstrated that the Capacity Market Seller or its agent has completed the act of executing the material contracts and/or other documents necessary to (1) authorize construction of the project and (2) establish the necessary funding for the project under the control of an independent third-party entity. A sworn, notarized certification of an independent engineer certifying to such facts, and that the engineer has personal knowledge of, or has engaged in a diligent inquiry to determine, such facts, shall be sufficient to make such demonstration. For resources that do not have external financing, Financial Close shall mean the project has full funding available, and that the project has been duly authorized to proceed with full construction of the material portions of the project by the appropriate governing body of the company funding such project. A sworn, notarized certification by an officer of such company certifying to such facts, and that the officer has personal knowledge of, or has engaged in a diligent inquiry to determine, such facts, shall be sufficient to make such demonstration.

Financial Default:

“Financial Default” shall mean (a) the failure of a Member or Transmission Customer to make any payment for obligations under the Agreements when due, including but not limited to an invoice payment that has not been cured or remedied after notice has been given and any cure period has elapsed, (b) a bankruptcy proceeding filed by a Member, Transmission Customer or its Guarantor, or filed against a Member, Transmission Customer or its Guarantor and to which the Member, Transmission Customer or Guarantor, as applicable, acquiesces or that is not dismissed within 60 days, (c) a Member, Transmission Customer or its Guarantor, if any, is unable to meet its financial obligations as they become due, or (d) a Merger Without Assumption occurs in respect of the Member, Transmission Customer or any Guarantor of such Member or Transmission Customer.

Financial Transmission Right:

“Financial Transmission Right” or “FTR” shall mean a right to receive Transmission Congestion Credits as specified in Operating Agreement, Schedule 1, section 5.2.2 and the parallel provisions of Tariff, Attachment K-Appendix, section 5.2.2.

Financial Transmission Right Obligation:

“Financial Transmission Right Obligation” shall mean a right to receive Transmission Congestion Credits as specified in Operating Agreement, Schedule 1, section 5.2.2(b), and the parallel provisions of Tariff, Attachment K-Appendix, section 5.2.2(b).

Financial Transmission Right Option:

“Financial Transmission Right Option” shall mean a right to receive Transmission Congestion Credits as specified in Operating Agreement, Schedule 1, section 5.2.2(c), and the parallel provisions of Tariff, Attachment K-Appendix, section 5.2.2(c).

Flexible Resource:

“Flexible Resource” shall mean a generating resource that must have a combined Start-up Time and Notification Time of less than or equal to two hours; and a Minimum Run Time of less than or equal to two hours.

Firm Point-To-Point Transmission Service:

“Firm Point-To-Point Transmission Service” shall mean Transmission Service under the Tariff that is reserved and/or scheduled between specified Points of Receipt and Delivery pursuant to Tariff, Part II.

Firm Transmission Feasibility Study:

“Firm Transmission Feasibility Study” shall mean a study conducted by the Transmission Provider in accordance with Tariff, Part II, section 19.3 and Tariff, Part III, section 32.3.

Firm Transmission Withdrawal Rights:

“Firm Transmission Withdrawal Rights” shall mean the rights to schedule energy and capacity withdrawals from a Point of Interconnection of a Merchant Transmission Facility with the Transmission System. Firm Transmission Withdrawal Rights may be awarded only to a Merchant D.C. Transmission Facility that connects the Transmission System with another control area. Withdrawals scheduled using Firm Transmission Withdrawal Rights have rights similar to those under Firm Point-to-Point Transmission Service.

First Incremental Auction:

“First Incremental Auction” shall mean an Incremental Auction conducted 20 months prior to the start of the Delivery Year to which it relates.

Forecast Pool Requirement:

“Forecast Pool Requirement” shall have the meaning specified in the Reliability Assurance Agreement.

Foreign Guaranty:

“Foreign Guaranty” shall mean a Corporate Guaranty provided by an Affiliate of a Participant that is domiciled in a foreign country, and meets all of the provisions of Tariff, Attachment Q.

Form 715 Planning Criteria:

“Form 715 Planning Criteria” shall have the same meaning provided in the Operating Agreement.

FTR Credit Limit:

“FTR Credit Limit” shall mean the amount of credit established with PJMSettlement that an FTR Participant has specifically designated to be used for FTR activity in a specific customer account. Any such credit so set aside shall not be considered available to satisfy any other credit requirement the FTR Participant may have with PJMSettlement.

FTR Credit Requirement:

“FTR Credit Requirement” shall mean the amount of credit that a Participant must provide in order to support the FTR positions that it holds and/or for which it is bidding. The FTR Credit Requirement shall not include months for which the invoicing has already been completed, provided that PJMSettlement shall have up to two Business Days following the date of the invoice completion to make such adjustments in its credit systems. FTR Credit Requirements are calculated and applied separately for each separate customer account.

FTR Flow Undiversified:

“FTR Flow Undiversified” shall have the meaning established in Tariff, Attachment Q, section VI.C.6.

FTR Historical Value:

For each FTR for each month, “FTR Historical Value” shall mean the weighted average of historical values over three years for the FTR path using the following weightings: 50% - most recent year; 30% - second year; 20% - third year.

FTR Holder:

“FTR Holder” shall mean the PJM Member that has acquired and possesses an FTR.

FTR Monthly Credit Requirement Contribution:

For each FTR, for each month, “FTR Monthly Credit Requirement Contribution” shall mean the total FTR cost for the month, prorated on a daily basis, less the FTR Historical Value for the month. For cleared FTRs, this contribution may be negative; prior to clearing, FTRs with negative contribution shall be deemed to have zero contribution.

FTR Net Activity:

“FTR Net Activity” shall mean the aggregate net value of the billing line items for auction revenue rights credits, FTR auction charges, FTR auction credits, and FTR congestion credits, and shall also include day-ahead and balancing/real-time congestion charges up to a maximum net value of the sum of the foregoing auction revenue rights credits, FTR auction charges, FTR auction credits and FTR congestion credits.

FTR Participant:

“FTR Participant” shall mean any Market Participant that provides or is required to provide Collateral in order to participate in PJM’s FTR market.

FTR Portfolio Auction Value:

“FTR Portfolio Auction Value” shall mean for each customer account of a Market Participant, the sum, calculated on a monthly basis, across all FTRs, of the FTR price times the FTR volume in MW.

Fuel Cost Policy:

“Fuel Cost Policy” shall mean the document provided by a Market Seller to PJM and the Market Monitoring Unit in accordance with PJM Manual 15 and Operating Agreement, Schedule 2, which documents the Market Seller’s method used to price fuel for calculation of the Market Seller’s cost-based offer(s) for a generation resource.

Full Notice to Proceed:

“Full Notice to Proceed” shall mean that all material third party contractors have been given the notice to proceed with construction by the Capacity Market Seller or its agent, with a guaranteed completion date backed by liquidated damages.

Generating Facilities:

“Generating Facilities” shall mean Interconnection Customer’s device for the production and/or storage for later injection of electricity identified in the Interconnection Request, but shall not include the Interconnection Customer’s Interconnection Facilities.

Generating Market Buyer:

“Generating Market Buyer” shall mean an Internal Market Buyer that is a Load Serving Entity that owns or has contractual rights to the output of generation resources capable of serving the Market Buyer’s load in the PJM Region, or of selling energy or related services in the PJM Interchange Energy Market or elsewhere.

Generation Capacity Resource:

“Generation Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Generation Interconnection Customer:

“Generation Interconnection Customer” shall mean an entity that submits an Interconnection

Request to interconnect a new generation facility or to increase the capacity of an existing generation facility interconnected with the Transmission System in the PJM Region.

Generation Interconnection Facilities Study:

“Generation Interconnection Facilities Study” shall mean a Facilities Study related to a Generation Interconnection Request.

Generation Interconnection Feasibility Study:

“Generation Interconnection Feasibility Study” shall mean a study conducted by the Transmission Provider (in coordination with the affected Transmission Owner(s)) in accordance with Tariff, Part IV, section 36.2.

Generation Interconnection Request:

“Generation Interconnection Request” shall mean a request by a Generation Interconnection Customer pursuant to Tariff, Part IV, subpart A, to interconnect a generating unit with the Transmission System or to increase the capacity of a generating unit interconnected with the Transmission System in the PJM Region.

Generation Owner:

“Generation Owner” shall mean a Member that owns, leases with rights equivalent to ownership, or otherwise controls and operates one or more operating generation resources located in the PJM Region. The foregoing notwithstanding, for a planned generation resource to qualify a Member as a Generation Owner, such resource shall have cleared an RPM auction, and for Energy Resources, the resource shall have a FERC-jurisdictional interconnection agreement or wholesale market participation agreement within PJM. Purchasing all or a portion of the output of a generation resource shall not be sufficient to qualify a Member as a Generation Owner. For purposes of Members Committee sector classification, a Member that is primarily a retail end-user of electricity that owns generation may qualify as a Generation Owner if: (1) the generation resource is the subject of a FERC-jurisdictional interconnection agreement or wholesale market participation agreement within PJM; (2) the average physical unforced capacity owned by the Member and its affiliates over the five Planning Periods immediately preceding the relevant Planning Period exceeds the average PJM capacity obligation of the Member and its affiliates over the same time period; and (3) the average energy produced by the Member and its affiliates within PJM over the five Planning Periods immediately preceding the relevant Planning Period exceeds the average energy consumed by the Member and its affiliates within PJM over the same time period.

Generation Resource Maximum Output:

“Generation Resource Maximum Output” shall mean, for Customer Facilities identified in an Interconnection Service Agreement or Wholesale Market Participation Agreement, the Generation Resource Maximum Output for a generating unit shall equal the unit’s pro rata share

of the Maximum Facility Output, determined by the Economic Maximum values for the available units at the Customer Facility. For generating units not identified in an Interconnection Service Agreement or Wholesale Market Participation Agreement, the Generation Resource Maximum Output shall equal the generating unit's Economic Maximum.

Generator Forced Outage:

“Generator Forced Outage” shall mean an immediate reduction in output or capacity or removal from service, in whole or in part, of a generating unit by reason of an Emergency or threatened Emergency, unanticipated failure, or other cause beyond the control of the owner or operator of the facility, as specified in the relevant portions of the PJM Manuals. A reduction in output or removal from service of a generating unit in response to changes in market conditions shall not constitute a Generator Forced Outage.

Generator Maintenance Outage:

“Generator Maintenance Outage” shall mean the scheduled removal from service, in whole or in part, of a generating unit in order to perform necessary repairs on specific components of the facility, if removal of the facility meets the guidelines specified in the PJM Manuals.

Generator Planned Outage:

“Generator Planned Outage” shall mean the scheduled removal from service, in whole or in part, of a generating unit for inspection, maintenance or repair with the approval of the Office of the Interconnection in accordance with the PJM Manuals.

Good Utility Practice:

“Good Utility Practice” shall mean any of the practices, methods and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather is intended to include acceptable practices, methods, or acts generally accepted in the region; including those practices required by Federal Power Act, section 215(a)(4).

Governmental Authority:

“Governmental Authority” shall mean any federal, state, local or other governmental, regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, arbitrating body, or other governmental authority having jurisdiction over any Interconnection Party or Construction Party or regarding any matter relating to an Interconnection Service Agreement or Construction Service Agreement, as applicable.

Guarantor:

“Guarantor” shall mean a credit support provider for a Participant that provides a Corporate Guaranty accepted by PJM and/or PJMSettlement, and for which PJM has made a determination that the Guarantor meets applicable creditworthiness requirements under Tariff, Attachment Q.

Hazardous Substances:

“Hazardous Substance” shall mean any chemicals, materials or substances defined as or included in the definition of “hazardous substances,” “hazardous wastes,” “hazardous materials,” “hazardous constituents,” “restricted hazardous materials,” “extremely hazardous substances,” “toxic substances,” “radioactive substances,” “contaminants,” “pollutants,” “toxic pollutants” or words of similar meaning and regulatory effect under any applicable Environmental Law, or any other chemical, material or substance, exposure to which is prohibited, limited or regulated by any applicable Environmental Law.

Hot Weather Alert:

“Hot Weather Alert” shall mean the notice provided by PJM to PJM Members, Transmission Owners, resource owners and operators, customers, and regulators to prepare personnel and facilities for extreme hot and/or humid weather conditions which may cause capacity requirements and/or unit unavailability to be substantially higher than forecast are expected to persist for an extended period.

IDR Transfer Agreement:

“IDR Transfer Agreement” shall mean an agreement to transfer, subject to the terms of Tariff, Part VI, section 237, Incremental Deliverability Rights to a party for the purpose of eliminating or reducing the need for Local or Network Upgrades that would otherwise have been the responsibility of the party receiving such rights.

Immediate-need Reliability Project:

“Immediate-need Reliability Project” shall have the same meaning provided in the Operating Agreement.

Inadvertent Interchange:

“Inadvertent Interchange” shall mean the difference between net actual energy flow and net scheduled energy flow into or out of the individual Control Areas operated by PJM.

Incidental Expenses:

“Incidental Expenses” shall mean those expenses incidental to the performance of construction pursuant to an Interconnection Construction Service Agreement, including, but not limited to, the

expense of temporary construction power, telecommunications charges, Interconnected Transmission Owner expenses associated with, but not limited to, document preparation, design review, installation, monitoring, and construction-related operations and maintenance for the Customer Facility and for the Interconnection Facilities.

Incremental Auction:

“Incremental Auction” shall mean any of several auctions conducted for a Delivery Year after the Base Residual Auction for such Delivery Year and before the first day of such Delivery Year, including the First Incremental Auction, Second Incremental Auction, Third Incremental Auction or Conditional Incremental Auction. Incremental Auctions (other than the Conditional Incremental Auction), shall be held for the purposes of:

(i) allowing Market Sellers that committed Capacity Resources in the Base Residual Auction for a Delivery Year, which subsequently are determined to be unavailable to deliver the committed Unforced Capacity in such Delivery Year (due to resource retirement, resource cancellation or construction delay, resource derating, EFORd increase, a decrease in the Nominated Demand Resource Value of a Planned Demand Resource, delay or cancellation of a Qualifying Transmission Upgrade, or similar occurrences) to submit Buy Bids for replacement Capacity Resources; and

(ii) allowing the Office of the Interconnection to reduce or increase the amount of committed capacity secured in prior auctions for such Delivery Year if, as a result of changed circumstances or expectations since the prior auction(s), there is, respectively, a significant excess or significant deficit of committed capacity for such Delivery Year, for the PJM Region or for an LDA.

Incremental Auction Revenue Rights:

“Incremental Auction Revenue Rights” shall mean the additional Auction Revenue Rights, not previously feasible, created by the addition of Incremental Rights-Eligible Required Transmission Enhancements, Merchant Transmission Facilities, or of one or more Customer-Funded Upgrades.

Incremental Available Transfer Capability Revenue Rights:

“Incremental Available Transfer Capability Revenue Rights” shall mean the rights to revenues that are derived from incremental Available Transfer Capability created by the addition of Merchant Transmission Facilities or of one of more Customer-Funded Upgrades.

Incremental Capacity Transfer Right:

“Incremental Capacity Transfer Right” shall mean a Capacity Transfer Right allocated to a Generation Interconnection Customer or Transmission Interconnection Customer obligated to fund a transmission facility or upgrade, to the extent such upgrade or facility increases the transmission import capability into a Locational Deliverability Area, or a Capacity Transfer

Right allocated to a Responsible Customer in accordance with Tariff, Schedule 12A.

Incremental Deliverability Rights (IDRs):

“Incremental Deliverability Rights” or “IDRs” shall mean the rights to the incremental ability, resulting from the addition of Merchant Transmission Facilities, to inject energy and capacity at a point on the Transmission System, such that the injection satisfies the deliverability requirements of a Capacity Resource. Incremental Deliverability Rights may be obtained by a generator or a Generation Interconnection Customer, pursuant to an IDR Transfer Agreement, to satisfy, in part, the deliverability requirements necessary to obtain Capacity Interconnection Rights.

Incremental Multi-Driver Project:

“Incremental Multi-Driver Project” shall have the same meaning provided in the Operating Agreement.

Incremental Rights-Eligible Required Transmission Enhancements:

“Incremental Rights-Eligible Required Transmission Enhancements” shall mean Regional Facilities and Necessary Lower Voltage Facilities or Lower Voltage Facilities (as defined in Tariff, Schedule 12) and meet one of the following criteria: (1) cost responsibility is assigned to non-contiguous Zones that are not directly electrically connected; or (2) cost responsibility is assigned to Merchant Transmission Providers that are Responsible Customers.

Increment Offer:

“Increment Offer” shall mean a type of Virtual Transaction that is an offer to sell energy at a specified location in the Day-ahead Energy Market. A cleared Increment Offer results in scheduled generation at the specified location in the Day-ahead Energy Market.

Independent Auditor:

“Independent Auditor” shall mean an external accountant or external accounting firm who is not an employee of, not otherwise related to, not obligated to, has no interest in, and is independent in the performance of professional services for, the entity he/she/it is auditing, its management and/or its owners.

Incremental Energy Offer:

“Incremental Energy Offer” shall mean offer segments comprised of a pairing of price (in dollars per MWh) and megawatt quantities, which must be a non-decreasing function and taken together produce all of the energy segments above a resource’s Economic Minimum. No-load Costs are not included in the Incremental Energy Offer.

Initial Operation:

“Initial Operation” shall mean the commencement of operation of the Customer Facility and Customer Interconnection Facilities after satisfaction of the conditions of Tariff, Attachment O-Appendix 2, section 1.4 (an Interconnection Service Agreement).

Interconnected Entity:

“Interconnected Entity” shall mean either the Interconnection Customer or the Interconnected Transmission Owner; Interconnected Entities shall mean both of them.

Interconnected Transmission Owner:

“Interconnected Transmission Owner” shall mean the Transmission Owner to whose transmission facilities or distribution facilities Customer Interconnection Facilities are, or as the case may be, a Customer Facility is, being directly connected. When used in an Interconnection Construction Service Agreement, the term may refer to a Transmission Owner whose facilities must be upgraded pursuant to the Facilities Study, but whose facilities are not directly interconnected with those of the Interconnection Customer.

Interconnection Construction Service Agreement:

“Interconnection Construction Service Agreement” shall mean the agreement entered into by an Interconnection Customer, Interconnected Transmission Owner and the Transmission Provider pursuant to Tariff, Part VI, Subpart B and in the form set forth in Tariff, Attachment P, relating to construction of Attachment Facilities, Network Upgrades, and/or Local Upgrades and coordination of the construction and interconnection of an associated Customer Facility. A separate Interconnection Construction Service Agreement will be executed with each Transmission Owner that is responsible for construction of any Attachment Facilities, Network Upgrades, or Local Upgrades associated with interconnection of a Customer Facility.

Interconnection Customer:

“Interconnection Customer” shall mean a Generation Interconnection Customer and/or a Transmission Interconnection Customer.

Interconnection Facilities:

“Interconnection Facilities” shall mean the Transmission Owner Interconnection Facilities and the Customer Interconnection Facilities.

Interconnection Feasibility Study:

“Interconnection Feasibility Study” shall mean either a Generation Interconnection Feasibility Study or Transmission Interconnection Feasibility Study.

Interconnection Party:

“Interconnection Party” shall mean a Transmission Provider, Interconnection Customer, or the Interconnected Transmission Owner. Interconnection Parties shall mean all of them.

Interconnection Request:

“Interconnection Request” shall mean a Generation Interconnection Request, a Transmission Interconnection Request and/or an IDR Transfer Agreement.

Interconnection Service:

“Interconnection Service” shall mean the physical and electrical interconnection of the Customer Facility with the Transmission System pursuant to the terms of Tariff, Part IV and Tariff, Part VI and the Interconnection Service Agreement entered into pursuant thereto by Interconnection Customer, the Interconnected Transmission Owner and Transmission Provider.

Interconnection Service Agreement:

“Interconnection Service Agreement” shall mean an agreement among the Transmission Provider, an Interconnection Customer and an Interconnected Transmission Owner regarding interconnection under Tariff, Part IV and Tariff, Part VI.

Interconnection Studies:

“Interconnection Studies” shall mean the Interconnection Feasibility Study, the System Impact Study, and the Facilities Study described in Tariff, Part IV and Tariff, Part VI.

Interface Pricing Point:

“Interface Pricing Point” shall have the meaning specified in Operating Agreement, Schedule 1, section 2.6A, and the parallel provisions of Tariff, Attachment K-Appendix.

Intermittent Resource:

“Intermittent Resource” shall mean a Generation Capacity Resource with output that can vary as a function of its energy source, such as wind, solar, run of river hydroelectric power and other renewable resources.

Internal Credit Score:

“Internal Credit Score” shall mean a composite numerical score determined by PJMSettlement using quantitative and qualitative metrics to estimate various predictors of a credit event happening to a Market Participant that may trigger a credit event.

Internal Market Buyer:

“Internal Market Buyer” shall mean a Market Buyer making purchases of energy from the PJM Interchange Energy Market for ultimate consumption by end-users inside the PJM Region that are served by Network Transmission Service.

Interregional Transmission Project:

“Interregional Transmission Project” shall mean transmission facilities that would be located within two or more neighboring transmission planning regions and are determined by each of those regions to be a more efficient or cost effective solution to regional transmission needs.

Interruption:

“Interruption” shall mean a reduction in non-firm transmission service due to economic reasons pursuant to Tariff, Part II, section 14.7.

Letter of Credit:

“Letter of Credit” shall mean a Credit Support Document acceptable to PJM and/or PJM Settlement, issued by a financial institution acceptable to PJM and/or PJM Settlement, naming PJM and/or PJM Settlement as beneficiary, in substantially the form posted on PJM’s website.

Limited Demand Resource:

“Limited Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Limited Demand Resource Reliability Target:

“Limited Demand Resource Reliability Target” for the PJM Region or an LDA, shall mean the maximum amount of Limited Demand Resources determined by PJM to be consistent with the maintenance of reliability, stated in Unforced Capacity that shall be used to calculate the Minimum Extended Summer Demand Resource Requirement for Delivery Years through May 31, 2017 and the Limited Resource Constraint for the 2017/2018 and 2018/2019 Delivery Years for the PJM Region or such LDA. As more fully set forth in the PJM Manuals, PJM calculates the Limited Demand Resource Reliability Target by first: i) testing the effects of the ten-interruption requirement by comparing possible loads on peak days under a range of weather conditions (from the daily load forecast distributions for the Delivery Year in question) against possible generation capacity on such days under a range of conditions (using the cumulative capacity distributions employed in the Installed Reserve Margin study for the PJM Region and in the Capacity Emergency Transfer Objective study for the relevant LDAs for such Delivery Year) and, by varying the assumed amounts of DR that is committed and displaces committed generation, determines the DR penetration level at which there is a ninety percent probability that DR will not be called (based on the applicable operating reserve margin for the PJM Region and for the relevant LDAs) more than ten times over those peak days; ii) testing the six-hour duration requirement by calculating the MW difference between the highest hourly unrestricted peak load and seventh highest hourly unrestricted peak load on certain high peak load days (e.g.,

the annual peak, loads above the weather normalized peak, or days where load management was called) in recent years, then dividing those loads by the forecast peak for those years and averaging the result; and (iii) (for the 2016/2017 and 2017/2018 Delivery Years) testing the effects of the six-hour duration requirement by comparing possible hourly loads on peak days under a range of weather conditions (from the daily load forecast distributions for the Delivery Year in question) against possible generation capacity on such days under a range of conditions (using a Monte Carlo model of hourly capacity levels that is consistent with the capacity model employed in the Installed Reserve Margin study for the PJM Region and in the Capacity Emergency Transfer Objective study for the relevant LDAs for such Delivery Year) and, by varying the assumed amounts of DR that is committed and displaces committed generation, determines the DR penetration level at which there is a ninety percent probability that DR will not be called (based on the applicable operating reserve margin for the PJM Region and for the relevant LDAs) for more than six hours over any one or more of the tested peak days. Second, PJM adopts the lowest result from these three tests as the Limited Demand Resource Reliability Target. The Limited Demand Resource Reliability Target shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [the Forecast Pool Requirement] times [the DR Factor] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

Limited Resource Constraint:

“Limited Resource Constraint” shall mean, for the 2017/2018 Delivery Year and for FRR Capacity Plans the 2017/2018 and Delivery Years, for the PJM Region or each LDA for which the Office of the Interconnection is required under Tariff, Attachment DD, section 5.10(a) to establish a separate VRR Curve for a Delivery Year, a limit on the total amount of Unforced Capacity that can be committed as Limited Demand Resources for the 2017/2018 Delivery Year in the PJM Region or in such LDA, calculated as the Limited Demand Resource Reliability Target for the PJM Region or such LDA, respectively, minus the Short Term Resource Procurement Target for the PJM Region or such LDA, respectively.

Limited Resource Price Decrement:

“Limited Resource Price Decrement” shall mean, for the 2017/2018 Delivery Year, a difference between the clearing price for Limited Demand Resources and the clearing price for Extended Summer Demand Resources and Annual Resources, representing the cost to procure additional Extended Summer Demand Resources or Annual Resources out of merit order when the Limited Resource Constraint is binding.

List of Approved Contractors:

“List of Approved Contractors” shall mean a list developed by each Transmission Owner and published in a PJM Manual of (a) contractors that the Transmission Owner considers to be qualified to install or construct new facilities and/or upgrades or modifications to existing facilities on the Transmission Owner’s system, provided that such contractors may include, but need not be limited to, contractors that, in addition to providing construction services, also provide design and/or other construction-related services, and (b) manufacturers or vendors of

major transmission-related equipment (e.g., high-voltage transformers, transmission line, circuit breakers) whose products the Transmission Owner considers acceptable for installation and use on its system.

Load Management:

“Load Management” shall mean a Demand Resource (“DR”) as defined in the Reliability Assurance Agreement.

Load Management Event:

“Load Management Event” shall mean a) a single temporally contiguous dispatch of Demand Resources in a Compliance Aggregation Area during an Operating Day, or b) multiple dispatches of Demand Resources in a Compliance Aggregation Area during an Operating Day that are temporally contiguous.

Load Ratio Share:

“Load Ratio Share” shall mean the ratio of a Transmission Customer’s Network Load to the Transmission Provider’s total load.

Load Reduction Event:

“Load Reduction Event” shall mean a reduction in demand by a Member or Special Member for the purpose of participating in the PJM Interchange Energy Market.

Load Serving Charging Energy:

“Load Serving Charging Energy” shall mean energy that is purchased from the PJM Interchange Energy Market and stored in an Energy Storage Resource for later resale to end-use load.

Load Serving Entity (LSE):

“Load Serving Entity” or “LSE” shall have the meaning specified in the Reliability Assurance Agreement.

Load Shedding:

“Load Shedding” shall mean the systematic reduction of system demand by temporarily decreasing load in response to transmission system or area capacity shortages, system instability, or voltage control considerations under Tariff, Part II or Tariff, Part III.

Local Upgrades:

“Local Upgrades” shall mean modifications or additions of facilities to abate any local thermal loading, voltage, short circuit, stability or similar engineering problem caused by the

interconnection and delivery of generation to the Transmission System. Local Upgrades shall include:

(i) Direct Connection Local Upgrades which are Local Upgrades that only serve the Customer Interconnection Facility and have no impact or potential impact on the Transmission System until the final tie-in is complete; and

(ii) Non-Direct Connection Local Upgrades which are parallel flow Local Upgrades that are not Direct Connection Local Upgrades.

Location:

“Location” as used in the Economic Load Response rules shall mean an end-use customer site as defined by the relevant electric distribution company account number.

Locational Deliverability Area (LDA):

“Locational Deliverability Area” or “LDA” shall mean a geographic area within the PJM Region that has limited transmission capability to import capacity to satisfy such area’s reliability requirement, as determined by the Office of the Interconnection in connection with preparation of the Regional Transmission Expansion Plan, and as specified in Reliability Assurance Agreement, Schedule 10.1.

Locational Deliverability Area Reliability Requirement:

“Locational Deliverability Area Reliability Requirement” shall mean the projected internal capacity in the Locational Deliverability Area plus the Capacity Emergency Transfer Objective for the Delivery Year, as determined by the Office of the Interconnection in connection with preparation of the Regional Transmission Expansion Plan, less the minimum internal resources required for all FRR Entities in such Locational Deliverability Area.

Locational Price Adder:

“Locational Price Adder” shall mean an addition to the marginal value of Unforced Capacity within an LDA as necessary to reflect the price of Capacity Resources required to relieve applicable binding locational constraints.

Locational Reliability Charge:

“Locational Reliability Charge” shall have the meaning specified in the Reliability Assurance Agreement.

Locational UCAP:

“Locational UCAP” shall mean unforced capacity that a Member with available uncommitted capacity sells in a bilateral transaction to a Member that previously committed capacity through

an RPM Auction but now requires replacement capacity to fulfill its RPM Auction commitment. The Locational UCAP Seller retains responsibility for performance of the resource providing such replacement capacity.

Locational UCAP Seller:

“Locational UCAP Seller” shall mean a Member that sells Locational UCAP.

LOC Deviation:

“LOC Deviation,” shall mean, for units other than wind units, the LOC Deviation shall equal the desired megawatt amount for the resource determined according to the point on the Final Offer curve corresponding to the Real-time Settlement Interval real-time Locational Marginal Price at the resource’s bus and adjusted for any Regulation or Tier 2 Synchronized Reserve assignments and limited to the lesser of the unit’s Economic Maximum or the unit’s Generation Resource Maximum Output, minus the actual output of the unit. For wind units, the LOC Deviation shall mean the deviation of the generating unit’s output equal to the lesser of the PJM forecasted output for the unit or the desired megawatt amount for the resource determined according to the point on the Final Offer curve corresponding to the Real-time Settlement Interval real-time Locational Marginal Price at the resource’s bus, and shall be limited to the lesser of the unit’s Economic Maximum or the unit’s Generation Resource Maximum Output, minus the actual output of the unit.

Long-lead Project:

“Long-lead Project” shall have the same meaning provided in the Operating Agreement.

Long-Term Firm Point-To-Point Transmission Service:

“Long-Term Firm Point-To-Point Transmission Service” shall mean firm Point-To-Point Transmission Service under Tariff, Part II with a term of one year or more.

Loss Price:

“Loss Price” shall mean the loss component of the Locational Marginal Price, which is the effect on transmission loss costs (whether positive or negative) associated with increasing the output of a generation resource or decreasing the consumption by a Demand Resource based on the effect of increased generation from or consumption by the resource on transmission losses, calculated as specified in Operating Agreement, Schedule 1, section 2, and the parallel provisions of Tariff, Attachment K-Appendix, section 2.

M2M Flowgate:

“M2M Flowgate” shall have the meaning provided in the Joint Operating Agreement between the Midcontinent Independent Transmission System Operator, Inc. and PJM Interconnection, L.L.C.

Maintenance Adder:

“Maintenance Adder” shall mean an adder that may be included to account for variable operation and maintenance expenses in a Market Seller’s Fuel Cost Policy. The Maintenance Adder is calculated in accordance with the applicable provisions of PJM Manual 15, and may only include expenses incurred as a result of electric production.

Manual Load Dump Action:

“Manual Load Dump Action” shall mean an Operating Instruction, as defined by NERC, from PJM to shed firm load when the PJM Region cannot provide adequate capacity to meet the PJM Region’s load and tie schedules, or to alleviate critically overloaded transmission lines or other equipment.

Manual Load Dump Warning:

“Manual Load Dump Warning” shall mean a notification from PJM to warn Members of an increasingly critical condition of present operations that may require manually shedding load.

Marginal Value:

“Marginal Value” shall mean the incremental change in system dispatch costs, measured as a \$/MW value incurred by providing one additional MW of relief to the transmission constraint.

Mark-to-Auction Value:

“Mark-to-Auction Value” shall mean the net increase (or decrease) in value of a portfolio of FTRs, as further described in Tariff, Attachment Q, section IV.C.9.

Market Monitor:

“Market Monitor” means the head of the Market Monitoring Unit.

Market Monitoring Unit or MMU:

“Market Monitoring Unit” or “MMU” means the independent Market Monitoring Unit defined in 18 CFR § 35.28(a)(7) and established under the PJM Market Monitoring Plan (Attachment M) to the PJM Tariff that is responsible for implementing the Market Monitoring Plan, including the Market Monitor. The Market Monitoring Unit may also be referred to as the IMM or Independent Market Monitor for PJM

Market Monitoring Unit Advisory Committee or MMU Advisory Committee:

“Market Monitoring Unit Advisory Committee” or “MMU Advisory Committee” shall mean the committee established under Tariff, Attachment M, section III.H.

Market Operations Center:

“Market Operations Center” shall mean the equipment, facilities and personnel used by or on behalf of a Market Participant to communicate and coordinate with the Office of the Interconnection in connection with transactions in the PJM Interchange Energy Market or the operation of the PJM Region.

Market Participant:

“Market Participant” shall mean a Market Buyer, a Market Seller, and/or an Economic Load Response Participant, except when that term is used in or pertaining to Tariff, Attachment M, Tariff, Attachment Q, Operating Agreement, section 15, Tariff, Attachment K-Appendix, section 1.4 and Operating Agreement, Schedule 1, section 1.4. “Market Participant,” when such term is used in Tariff, Attachment M, shall mean an entity that generates, transmits, distributes, purchases, or sells electricity, ancillary services, or any other product or service provided under the PJM Tariff or Operating Agreement within, into, out of, or through the PJM Region, but it shall not include an Authorized Government Agency that consumes energy for its own use but does not purchase or sell energy at wholesale. “Market Participant,” when such term is used in or pertaining to Tariff, Attachment Q, Operating Agreement, section 15, Tariff, Attachment K-Appendix, section 1.4 and Operating Agreement, Schedule 1, section 1.4, shall mean a Market Buyer, a Market Seller, an Economic Load Response Participant, an FTR Participant, a Capacity Market Buyer, or a Capacity Market Seller.

Market Participant Energy Injection:

“Market Participant Energy Injection” shall mean transactions in the Day-ahead Energy Market and Real-time Energy Market, including but not limited to Day-ahead generation schedules, real-time generation output, Increment Offers, internal bilateral transactions and import transactions, as further described in the PJM Manuals.

Market Participant Energy Withdrawal:

“Market Participant Energy Withdrawal” shall mean transactions in the Day-ahead Energy Market and Real-time Energy Market, including but not limited to Demand Bids, Decrement Bids, real-time load (net of Behind The Meter Generation expected to be operating, but not to be less than zero), internal bilateral transactions and Export Transactions, as further described in the PJM Manuals.

Market Seller Offer Cap:

“Market Seller Offer Cap” shall mean a maximum offer price applicable to certain Market Sellers under certain conditions, as determined in accordance with Tariff, Attachment DD, section 6 and Tariff, Attachment M-Appendix, section II.E.

Market Violation:

“Market Violation” shall mean a tariff violation, violation of a Commission-approved order, rule or regulation, market manipulation, or inappropriate dispatch that creates substantial concerns regarding unnecessary market inefficiencies, as defined in 18 C.F.R. § 35.28(b)(8).

Material Adverse Change:

“Material Adverse Change” shall mean (i) any material adverse change in the financial condition of the respective entity or (ii) any adverse change, event or occurrence which, individually or in the aggregate is likely to have a material adverse effect on the ability of the Participant to pay and perform its obligations to PJM or on the operations, business, assets, financial condition, results, or creditworthiness of the respective entity or its credit support provider, and may include, without limitation, the items listed in Tariff, Attachment Q.

Material Modification:

“Material Modification” shall mean any modification to an Interconnection Request that has a material adverse effect on the cost or timing of Interconnection Studies related to, or any Network Upgrades or Local Upgrades needed to accommodate, any Interconnection Request with a later Queue Position.

Maximum Daily Starts:

“Maximum Daily Starts” shall mean the maximum number of times that a generating unit can be started in an Operating Day under normal operating conditions.

Maximum Emergency:

“Maximum Emergency” shall mean the designation of all or part of the output of a generating unit for which the designated output levels may require extraordinary procedures and therefore are available to the Office of the Interconnection only when the Office of the Interconnection declares a Maximum Generation Emergency and requests generation designated as Maximum Emergency to run. The Office of the Interconnection shall post on the PJM website the aggregate amount of megawatts that are classified as Maximum Emergency.

Maximum Facility Output:

“Maximum Facility Output” shall mean the maximum (not nominal) net electrical power output in megawatts, specified in the Interconnection Service Agreement, after supply of any parasitic or host facility loads, that a Generation Interconnection Customer’s Customer Facility is expected to produce, provided that the specified Maximum Facility Output shall not exceed the output of the proposed Customer Facility that Transmission Provider utilized in the System Impact Study.

Maximum Generation Emergency:

“Maximum Generation Emergency” shall mean an Emergency declared by the Office of the Interconnection to address either a generation or transmission emergency in which the Office of the Interconnection anticipates requesting one or more Generation Capacity Resources, or Non-Retail Behind The Meter Generation resources to operate at its maximum net or gross electrical power output, subject to the equipment stress limits for such Generation Capacity Resource or Non-Retail Behind The Meter resource in order to manage, alleviate, or end the Emergency.

Maximum Generation Emergency Alert:

“Maximum Generation Emergency Alert” shall mean an alert issued by the Office of the Interconnection to notify PJM Members, Transmission Owners, resource owners and operators, customers, and regulators that a Maximum Generation Emergency may be declared, for any Operating Day in either, as applicable, the Day-ahead Energy Market or the Real-time Energy Market, for all or any part of such Operating Day.

Maximum Run Time:

“Maximum Run Time” shall mean the maximum number of hours a generating unit can run over the course of an Operating Day, as measured by PJM’s State Estimator.

Maximum Weekly Starts:

“Maximum Weekly Starts” shall mean the maximum number of times that a generating unit can be started in one week, defined as the 168 hour period starting Monday 0001 hour, under normal operating conditions.

Member:

“Member” shall have the meaning provided in the Operating Agreement.

Merchant A.C. Transmission Facilities:

“Merchant A.C. Transmission Facility” shall mean Merchant Transmission Facilities that are alternating current (A.C.) transmission facilities, other than those that are Controllable A.C. Merchant Transmission Facilities.

Merchant D.C. Transmission Facilities:

“Merchant D.C. Transmission Facilities” shall mean direct current (D.C.) transmission facilities that are interconnected with the Transmission System pursuant to Tariff, Part IV and Tariff, Part VI.

Merchant Network Upgrades:

“Merchant Network Upgrades” shall mean additions to, or modifications or replacements of, physical facilities of the Interconnected Transmission Owner that, on the date of the pertinent

Transmission Interconnection Customer's Upgrade Request, are part of the Transmission System or are included in the Regional Transmission Expansion Plan.

Merchant Transmission Facilities:

“Merchant Transmission Facilities” shall mean A.C. or D.C. transmission facilities that are interconnected with or added to the Transmission System pursuant to Tariff, Part IV and Tariff, Part VI and that are so identified in Tariff, Attachment T, provided, however, that Merchant Transmission Facilities shall not include (i) any Customer Interconnection Facilities, (ii) any physical facilities of the Transmission System that were in existence on or before March 20, 2003 ; (iii) any expansions or enhancements of the Transmission System that are not identified as Merchant Transmission Facilities in the Regional Transmission Expansion Plan and Tariff, Attachment T, or (iv) any transmission facilities that are included in the rate base of a public utility and on which a regulated return is earned.

Merchant Transmission Provider:

“Merchant Transmission Provider” shall mean an Interconnection Customer that (1) owns, controls, or controls the rights to use the transmission capability of, Merchant D.C. Transmission Facilities and/or Controllable A.C. Merchant Transmission Facilities that connect the Transmission System with another control area, (2) has elected to receive Transmission Injection Rights and Transmission Withdrawal Rights associated with such facility pursuant to Tariff, Part IV, section 36, and (3) makes (or will make) the transmission capability of such facilities available for use by third parties under terms and conditions approved by the Commission and stated in the Tariff, consistent with Tariff, Part IV, section 38.

Merger Without Assumption:

“Merger Without Assumption” shall mean when a Market Participant, or any Guarantor or other credit support provider of such Market Participant, merges with or transfers all or substantially all of its assets to, or consolidates, amalgamates, reorganizes, reincorporates or reconstitutes into or as, another entity and, at the time of such consolidation, amalgamation, merger, transfer, reorganization, reincorporation or reconstitution (a) the resulting, surviving or transferee entity does not assume all the obligations of such Market Participant, or any Guarantor or other credit support provider of such Market Participant under the Agreements or any Credit Support Document to which it or its predecessor was a party; or (b) the benefits of any Credit Support Document do not extend (without the consent of the other party) to the performance by such resulting, surviving or transferee entity of its obligations under the Agreements.

Metering Equipment:

“Metering Equipment” shall mean all metering equipment installed at the metering points designated in the appropriate appendix to an Interconnection Service Agreement.

Minimum Annual Resource Requirement:

“Minimum Annual Resource Requirement” shall mean, for Delivery Years through May 31, 2017, the minimum amount of capacity that PJM will seek to procure from Annual Resources for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under Tariff, Attachment DD, section 5.10(a) to establish a separate VRR Curve for such Delivery Year. For the PJM Region, the Minimum Annual Resource Requirement shall be equal to the RTO Reliability Requirement minus [the Sub-Annual Resource Reliability Target for the RTO in Unforced Capacity]. For an LDA, the Minimum Annual Resource Requirement shall be equal to the LDA Reliability Requirement minus [the LDA CETL] minus [the Sub-Annual Resource Reliability Target for such LDA in Unforced Capacity]. The LDA CETL may be adjusted pro rata for the amount of load served under the FRR Alternative.

Minimum Down Time:

For all generating units that are not combined cycle units, “Minimum Down Time” shall mean the minimum number of hours under normal operating conditions between unit shutdown and unit startup, calculated as the shortest time difference between the unit’s generator breaker opening and after the unit’s generator breaker closure, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero. For combined cycle units, “Minimum Down Time” shall mean the minimum number of hours between the last generator breaker opening and after first combustion turbine generator breaker closure, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero.

Minimum Extended Summer Resource Requirement:

“Minimum Extended Summer Resource Requirement” shall mean, for Delivery Years through May 31, 2017, the minimum amount of capacity that PJM will seek to procure from Extended Summer Demand Resources and Annual Resources for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under Tariff, Attachment DD, section 5.10(a) to establish a separate VRR Curve for such Delivery Year. For the PJM Region, the Minimum Extended Summer Resource Requirement shall be equal to the RTO Reliability Requirement minus [the Limited Demand Resource Reliability Target for the PJM Region in Unforced Capacity]. For an LDA, the Minimum Extended Summer Resource Requirement shall be equal to the LDA Reliability Requirement minus [the LDA CETL] minus [the Limited Demand Resource Reliability Target for such LDA in Unforced Capacity]. The LDA CETL may be adjusted pro rata for the amount of load served under the FRR Alternative.

Minimum Generation Emergency:

“Minimum Generation Emergency” shall mean an Emergency declared by the Office of the Interconnection in which the Office of the Interconnection anticipates requesting one or more generating resources to operate at or below Normal Minimum Generation, in order to manage, alleviate, or end the Emergency.

Minimum Participation Requirements:

“Minimum Participation Requirements” shall mean a set of minimum training, risk management, communication, and capital or collateral requirements required for Participants in the PJM Markets, as set forth in Tariff, Attachment Q and in the Form of Annual Certification set forth as Tariff, Attachment Q, Appendix 1. FTR Participants in certain circumstances will be required to demonstrate additional capital and collateral requirements as set forth in Tariff, Attachment Q, and risk management procedures and controls as further set forth in the Annual Certification found in Tariff, Attachment Q, Appendix 1.

Minimum Run Time:

For all generating units that are not combined cycle units, “Minimum Run Time” shall mean the minimum number of hours a unit must run, in real-time operations, from the time after generator breaker closure, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero, to the time of generator breaker opening, as measured by PJM's State Estimator. For combined cycle units, “Minimum Run Time” shall mean the time period after the first combustion turbine generator breaker closure, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero, and the last generator breaker opening as measured by PJM’s State Estimator.

MISO:

“MISO” shall mean the Midcontinent Independent System Operator, Inc. or any successor thereto.

MTA Collateral Call:

“MTA Collateral Call” shall mean a demand for additional Collateral issued due to a credit shortfall arising from a Mark-to-Auction Value change. The requirements and remedies for an MTA Collateral Call may be different from the requirements and remedies for a Collateral Call.

Multi-Driver Project:

“Multi-Driver Project” shall have the same meaning provided in the Operating Agreement.

Municipalities and Cooperatives; Municipality and Cooperative; Municipality or Cooperative:

“Municipalities and Cooperatives,” “Municipality and Cooperative,” and “Municipality or Cooperative,” as those terms are used in Tariff, Attachment Q or elsewhere regarding credit scoring, shall mean Participants that are not-for-profit municipal electric systems, municipalities, electric cooperatives, generation cooperatives, transmission cooperatives and/or joint municipal agencies, or agents duly authorized to represent one or more of such entities and whose credit quality is directly derived from the credit quality of the entity(ies) represented through the agency relationship.

Nationally Recognized Statistical Rating Organization:

“Nationally Recognized Statistical Rating Organization” or “NRSRO” shall have the meaning as set forth in Securities Exchange Act of 1934, section 3(a)(62), 15 U.S.C. §78(a)(62).

Native Load Customers:

“Native Load Customers” shall mean the wholesale and retail power customers of a Transmission Owner on whose behalf the Transmission Owner, by statute, franchise, regulatory requirement, or contract, has undertaken an obligation to construct and operate the Transmission Owner’s system to meet the reliable electric needs of such customers.

NERC:

“NERC” shall mean the North American Electric Reliability Corporation or any successor thereto.

NERC Interchange Distribution Calculator:

“NERC Interchange Distribution Calculator” shall mean the NERC mechanism that is in effect and being used to calculate the distribution of energy, over specific transmission interfaces, from energy transactions.

Net Benefits Test:

“Net Benefits Test” shall mean a calculation to determine whether the benefits of a reduction in price resulting from the dispatch of Economic Load Response exceeds the cost to other loads resulting from the billing unit effects of the load reduction, as specified in Operating Agreement, Schedule 1, section 3.3A.4 and the parallel provisions of Tariff, Attachment K-Appendix, section 3.3A.4.

Net Cost of New Entry:

“Net Cost of New Entry” shall mean the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset.

Net Obligation:

“Net Obligation” shall mean the amount owed to PJMSettlement and PJM for purchases from the PJM Markets, Transmission Service, (under Tariff, Parts II and III , and other services pursuant to the Agreements, after applying a deduction for amounts owed to a Participant by PJMSettlement as it pertains to monthly market activity and services. Should other markets be formed such that Participants may incur future Obligations in those markets, then the aggregate amount of those Obligations will also be added to the Net Obligation.

Net Sell Position:

“Net Sell Position” shall mean the amount of Net Obligation when Net Obligation is negative.

Network Customer:

“Network Customer” shall mean an entity receiving transmission service pursuant to the terms of the Transmission Provider’s Network Integration Transmission Service under Tariff, Part III.

Network External Designated Transmission Service:

“Network External Designated Transmission Service” shall have the meaning set forth in Reliability Assurance Agreement, Article I.

Network Integration Transmission Service:

“Network Integration Transmission Service” shall mean the transmission service provided under Tariff, Part III.

Network Load:

“Network Load” shall mean the load that a Network Customer designates for Network Integration Transmission Service under Tariff, Part III. The Network Customer’s Network Load shall include all load (including losses, Non-Dispatched Charging Energy, and Load Serving Charging Energy) served by the output of any Network Resources designated by the Network Customer. A Network Customer may elect to designate less than its total load as Network Load but may not designate only part of the load at a discrete Point of Delivery. Where an Eligible Customer has elected not to designate a particular load at discrete points of delivery as Network Load, the Eligible Customer is responsible for making separate arrangements under Tariff, Part II for any Point-To-Point Transmission Service that may be necessary for such non-designated load. Network Load shall not include Dispatched Charging Energy.

Network Operating Agreement:

“Network Operating Agreement” shall mean an executed agreement that contains the terms and conditions under which the Network Customer shall operate its facilities and the technical and operational matters associated with the implementation of Network Integration Transmission Service under Tariff, Part III.

Network Operating Committee:

“Network Operating Committee” shall mean a group made up of representatives from the Network Customer(s) and the Transmission Provider established to coordinate operating criteria and other technical considerations required for implementation of Network Integration Transmission Service under Tariff, Part III.

Network Resource:

“Network Resource” shall mean any designated generating resource owned, purchased, or leased by a Network Customer under the Network Integration Transmission Service Tariff. Network Resources do not include any resource, or any portion thereof, that is committed for sale to third parties or otherwise cannot be called upon to meet the Network Customer’s Network Load on a non-interruptible basis, except for purposes of fulfilling obligations under a reserve sharing program.

Network Service User:

“Network Service User” shall mean an entity using Network Transmission Service.

Network Transmission Service:

“Network Transmission Service” shall mean transmission service provided pursuant to the rates, terms and conditions set forth in Tariff, Part III, or transmission service comparable to such service that is provided to a Load Serving Entity that is also a Transmission Owner.

Network Upgrades:

“Network Upgrades” shall mean modifications or additions to transmission-related facilities that are integrated with and support the Transmission Provider’s overall Transmission System for the general benefit of all users of such Transmission System. Network Upgrades shall include:

(i) **Direct Connection Network Upgrades** which are Network Upgrades that are not part of an Affected System; only serve the Customer Interconnection Facility; and have no impact or potential impact on the Transmission System until the final tie-in is complete. Both Transmission Provider and Interconnection Customer must agree as to what constitutes Direct Connection Network Upgrades and identify them in the Interconnection Construction Service Agreement, Schedule D. If the Transmission Provider and Interconnection Customer disagree about whether a particular Network Upgrade is a Direct Connection Network Upgrade, the Transmission Provider must provide the Interconnection Customer a written technical explanation outlining why the Transmission Provider does not consider the Network Upgrade to be a Direct Connection Network Upgrade within 15 days of its determination.

(ii) **Non-Direct Connection Network Upgrades** which are parallel flow Network Upgrades that are not Direct Connection Network Upgrades.

Neutral Party:

“Neutral Party” shall have the meaning provided in Tariff, Part I, section 9.3(v).

New PJM Zone(s):

“New PJM Zone(s)” shall mean the Zone included in the Tariff, along with applicable Schedules and Attachments, for Commonwealth Edison Company, The Dayton Power and Light Company and the AEP East Operating Companies (Appalachian Power Company, Columbus Southern

Power Company, Indiana Michigan Power Company, Kentucky Power Company, Kingsport Power Company, Ohio Power Company and Wheeling Power Company).

New Service Customers:

“New Service Customers” shall mean all customers that submit an Interconnection Request, a Completed Application, or an Upgrade Request that is pending in the New Services Queue.

New Service Request:

“New Service Request” shall mean an Interconnection Request, a Completed Application, or an Upgrade Request.

New Services Queue:

“New Service Queue” shall mean all Interconnection Requests, Completed Applications, and Upgrade Requests that are received within each six-month period ending on April 30 and October 31 of each year shall collectively comprise a New Services Queue.

New Services Queue Closing Date:

“New Services Queue Closing Date” shall mean each April 30 and October 31 shall be the Queue Closing Date for the New Services Queue comprised of Interconnection Requests, Completed Applications, and Upgrade Requests received during the six-month period ending on such date.

New York ISO or NYISO:

“New York ISO” or “NYISO” shall mean the New York Independent System Operator, Inc. or any successor thereto.

Nodal Reference Price:

The “Nodal Reference Price” at each location shall mean the 97th percentile price differential between day-ahead and real-time prices experienced over the corresponding two-month reference period in the prior calendar year. Reference periods will be Jan-Feb, Mar-Apr, May-Jun, Jul-Aug, Sept-Oct, Nov-Dec. For any given current-year month, the reference period months will be the set of two months in the prior calendar year that include the month corresponding to the current month. For example, July and August 2003 would each use July-August 2002 as their reference period.

No-load Cost:

“No-load Cost” shall mean the hourly cost required to create the starting point of a monotonically increasing incremental offer curve for a generating unit.

Nominal Rated Capability:

“Nominal Rated Capability” shall mean the nominal maximum rated capability in megawatts of a Transmission Interconnection Customer’s Customer Facility or the nominal increase in transmission capability in megawatts of the Transmission System resulting from the interconnection or addition of a Transmission Interconnection Customer’s Customer Facility, as determined in accordance with pertinent Applicable Standards and specified in the Interconnection Service Agreement.

Nominated Demand Resource Value:

“Nominated Demand Resource Value” shall mean the amount of load reduction that a Demand Resource commits to provide either through direct load control, firm service level or guaranteed load drop programs. For existing Demand Resources, the maximum Nominated Demand Resource Value is limited, in accordance with the PJM Manuals, to the value appropriate for the method by which the load reduction would be accomplished, at the time the Base Residual Auction or Incremental Auction is being conducted.

Nominated Energy Efficiency Value:

“Nominated Energy Efficiency Value” shall mean the amount of load reduction that an Energy Efficiency Resource commits to provide through installation of more efficient devices or equipment or implementation of more efficient processes or systems.

Non-Dispatched Charging Energy:

“Non-Dispatched Charging Energy” shall mean all Direct Charging Energy that an Energy Storage Resource Model Participant receives from the electric grid that is not otherwise Dispatched Charging Energy.

Non-Firm Point-To-Point Transmission Service:

“Non-Firm Point-To-Point Transmission Service” shall mean Point-To-Point Transmission Service under the Tariff that is reserved and scheduled on an as-available basis and is subject to Curtailment or Interruption as set forth in Tariff, Part II, section 14.7. Non-Firm Point-To-Point Transmission Service is available on a stand-alone basis for periods ranging from one hour to one month.

Non-Firm Sale:

“Non-Firm Sale” shall mean an energy sale for which receipt or delivery may be interrupted for any reason or no reason, without liability on the part of either the buyer or seller.

Non-Firm Transmission Withdrawal Rights:

“No-Firm Transmission Withdrawal Rights” shall mean the rights to schedule energy

withdrawals from a specified point on the Transmission System. Non-Firm Transmission Withdrawal Rights may be awarded only to a Merchant D.C. Transmission Facility that connects the Transmission System to another control area. Withdrawals scheduled using Non-Firm Transmission Withdrawal Rights have rights similar to those under Non-Firm Point-to-Point Transmission Service.

Non-Performance Charge:

“Non-Performance Charge” shall mean the charge applicable to Capacity Performance Resources as defined in Tariff, Attachment DD, section 10A(e).

Nonincumbent Developer:

“Nonincumbent Developer” shall have the same meaning provided in the Operating Agreement.

Non-Regulatory Opportunity Cost:

“Non-Regulatory Opportunity Cost” shall mean the difference between (a) the forecasted cost to operate a specific generating unit when the unit only has a limited number of starts or available run hours resulting from (i) the physical equipment limitations of the unit, for up to one year, due to original equipment manufacturer recommendations or insurance carrier restrictions, (ii) a fuel supply limitation, for up to one year, resulting from an event of Catastrophic Force Majeure; and, (b) the forecasted future Locational Marginal Price at which the generating unit could run while not violating such limitations. Non-Regulatory Opportunity Cost therefore is the value associated with a specific generating unit’s lost opportunity to produce energy during a higher valued period of time occurring within the same period of time in which the unit is bound by the referenced restrictions, and is reflected in the rules set forth in PJM Manual 15. Non-Regulatory Opportunity Costs shall be limited to those resources which are specifically delineated in Operating Agreement, Schedule 2.

Non-Retail Behind The Meter Generation:

“Non-Retail Behind The Meter Generation” shall mean Behind the Meter Generation that is used by municipal electric systems, electric cooperatives, or electric distribution companies to serve load.

Non-Synchronized Reserve:

“Non-Synchronized Reserve” shall mean the reserve capability of non-emergency generation resources that can be converted fully into energy within ten minutes of a request from the Office of the Interconnection dispatcher, and is provided by equipment that is not electrically synchronized to the Transmission System.

Non-Synchronized Reserve Event:

“Non-Synchronized Reserve Event” shall mean a request from the Office of the Interconnection to generation resources able and assigned to provide Non-Synchronized Reserve in one or more

specified Reserve Zones or Reserve Sub-zones, within ten minutes to increase the energy output by the amount of assigned Non-Synchronized Reserve capability.

Non-Variable Loads:

“Non-Variable Loads” shall have the meaning specified in Operating Agreement, Schedule 1, section 1.5A.6, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.5A.6.

Non-Zone Network Load:

“Non-Zone Network Load shall mean Network Load that is located outside of the PJM Region.

Normal Maximum Generation:

“Normal Maximum Generation” shall mean the highest output level of a generating resource under normal operating conditions.

Normal Minimum Generation:

“Normal Minimum Generation” shall mean the lowest output level of a generating resource under normal operating conditions.

Obligation:

“Obligation” shall mean all amounts owed to PJMSettlement for purchases from the PJM Markets, Transmission Service, (under both Tariff, Part II and Tariff, Part III), and other services or obligations pursuant to the Agreements. In addition, aggregate amounts that will be owed to PJMSettlement in the future for capacity purchases within the PJM capacity markets will be added to this figure. Should other markets be formed such that Participants may incur future Obligations in those markets, then the aggregate amount of those Obligations will also be added to the Net Obligation.

Offer Data:

“Offer Data” shall mean the scheduling, operations planning, dispatch, new resource, and other data and information necessary to schedule and dispatch generation resources and Demand Resource(s) for the provision of energy and other services and the maintenance of the reliability and security of the Transmission System in the PJM Region, and specified for submission to the PJM Interchange Energy Market for such purposes by the Office of the Interconnection.

Office of the Interconnection:

“Office of the Interconnection” shall mean the employees and agents of PJM Interconnection, L.L.C. subject to the supervision and oversight of the PJM Board, acting pursuant to the Operating Agreement.

Office of the Interconnection Control Center:

“Office of the Interconnection Control Center” shall mean the equipment, facilities and personnel used by the Office of the Interconnection to coordinate and direct the operation of the PJM Region and to administer the PJM Interchange Energy Market, including facilities and equipment used to communicate and coordinate with the Market Participants in connection with transactions in the PJM Interchange Energy Market or the operation of the PJM Region.

On-Site Generators:

“On-Site Generators” shall mean generation facilities (including Behind The Meter Generation) that (i) are not Capacity Resources, (ii) are not injecting into the grid, (iii) are either synchronized or non-synchronized to the Transmission System, and (iv) can be used to reduce demand for the purpose of participating in the PJM Interchange Energy Market.

Open Access Same-Time Information System (OASIS) or PJM Open Access Same-Time Information System:

“Open Access Same-Time Information System,” “PJM Open Access Same-Time Information System” or “OASIS” shall mean the electronic communication and information system and standards of conduct contained in Part 37 and Part 38 of the Commission’s regulations and all additional requirements implemented by subsequent Commission orders dealing with OASIS for the collection and dissemination of information about transmission services in the PJM Region, established and operated by the Office of the Interconnection in accordance with FERC standards and requirements.

Operating Agreement of the PJM Interconnection, L.L.C., Operating Agreement or PJM Operating Agreement:

“Operating Agreement of the PJM Interconnection, L.L.C.,” “Operating Agreement” or “PJM Operating Agreement” shall mean the Amended and Restated Operating Agreement of PJM Interconnection, L.L.C. dated as of April 1, 1997 and as amended and restated as of June 2, 1997, including all Schedules, Exhibits, Appendices, addenda or supplements hereto, as amended from time to time thereafter, among the Members of the PJM Interconnection, L.L.C., on file with the Commission.

Operating Day:

“Operating Day” shall mean the daily 24 hour period beginning at midnight for which transactions on the PJM Interchange Energy Market are scheduled.

Operating Margin:

“Operating Margin” shall mean the incremental adjustments, measured in megawatts, required in PJM Region operations in order to accommodate, on a first contingency basis, an operating contingency in the PJM Region resulting from operations in an interconnected Control Area. Such adjustments may result in constraints causing Transmission Congestion Charges, or may

result in Ancillary Services charges pursuant to the PJM Tariff.

Operating Margin Customer:

“Operating Margin Customer” shall mean a Control Area purchasing Operating Margin pursuant to an agreement between such other Control Area and the LLC.

Operationally Deliverable:

“Operationally Deliverable” shall mean, as determined by the Office of the Interconnection, that there are no operational conditions, arrangements or limitations experienced or required that threaten, impair or degrade effectuation or maintenance of deliverability of capacity or energy from the external Generation Capacity Resource to loads in the PJM Region in a manner comparable to the deliverability of capacity or energy to such loads from Generation Capacity Resources located inside the metered boundaries of the PJM Region, including, without limitation, an identified need by an external Balancing Authority Area for a remedial action scheme or manual generation trip protocol, transmission facility switching arrangements that would have the effect of radializing load, or excessive or unacceptable frequency of regional reliability limit violations or (outside an interregional agreed congestion management process) of local reliability dispatch instructions and commitments.

Opportunity Cost:

“Opportunity Cost” shall mean a component of the Market Seller Offer Cap calculated in accordance with Tariff, Attachment DD, section 6.

OPSI Advisory Committee:

“OPSI Advisory Committee” shall mean the committee established under Tariff, Attachment M, section III.G.

Option to Build:

“Option to Build” shall mean the option of the New Service Customer to build certain Customer-Funded Upgrades, as set forth in, and subject to the terms of, the Construction Service Agreement.

Optional Interconnection Study:

“Optional Interconnection Study” shall mean a sensitivity analysis of an Interconnection Request based on assumptions specified by the Interconnection Customer in the Optional Interconnection Study Agreement.

Optional Interconnection Study Agreement:

“Optional Interconnection Study Agreement” shall mean the form of agreement for preparation

of an Optional Interconnection Study, as set forth in Tariff, Attachment N-3.

Part I:

“Part I” shall mean the Tariff Definitions and Common Service Provisions contained in Tariff, Part I, sections 1 through 12A.

Part II:

“Part II” shall mean Tariff, Part II, sections 13 through 27A pertaining to Point-To-Point Transmission Service in conjunction with the applicable Common Service Provisions of Tariff, Part I and appropriate Schedules and Attachments.

Part III:

“Part III” shall mean Tariff, Part III, sections 28 through 35 pertaining to Network Integration Transmission Service in conjunction with the applicable Common Service Provisions of Tariff, Part I and appropriate Schedules and Attachments.

Part IV:

“Part IV” shall mean Tariff, Part IV, sections 36 through 112C pertaining to generation or merchant transmission interconnection to the Transmission System in conjunction with the applicable Common Service Provisions of Tariff, Part I and appropriate Schedules and Attachments.

Part V:

“Part V” shall mean Tariff, Part V, sections 113 through 122 pertaining to the deactivation of generating units in conjunction with the applicable Common Service Provisions of Tariff, Part I and appropriate Schedules and Attachments.

Part VI:

“Part VI” shall mean Tariff, Part VI, sections 200 through 237 pertaining to the queuing, study, and agreements relating to New Service Requests, and the rights associated with Customer-Funded Upgrades in conjunction with the applicable Common Service Provisions of Tariff, Part I and appropriate Schedules and Attachments.

Participant:

“Participant” shall mean a Market Participant and/or Transmission Customer and/or Applicant requesting to be an active Market Participant and/or Transmission Customer.

Parties:

“Parties” shall mean the Transmission Provider, as administrator of the Tariff, and the Transmission Customer receiving service under the Tariff. PJMSettlement shall be the Counterparty to Transmission Customers.

Peak-Hour Dispatch:

“Peak-Hour Dispatch” shall mean, for purposes of calculating the Energy and Ancillary Services Revenue Offset under Tariff, Attachment DD, section 5, an assumption, as more fully set forth in the PJM Manuals, that the Reference Resource is committed in the Day-ahead Energy Market in four distinct blocks of four hours of continuous output for each block from the peak-hour period beginning with the hour ending 0800 EPT through to the hour ending 2300 EPT for any day when the average day-ahead LMP for the area for which the Net Cost of New Entry is being determined is greater than, or equal to, the cost to generate (including the cost for a complete start and shutdown cycle), plus 10% of such costs, for at least two hours during each four-hour block, where such blocks shall be assumed to be committed independently; provided that, if there are not at least two economic hours in any given four-hour block, then the Reference Resource shall be assumed not to be committed for such block; and to the extent not committed in any such block in the Day-ahead Energy Market under the above conditions based on Day-Ahead LMPs, is dispatched in the Real-time Energy Market for such block if the Real-Time LMP is greater than or equal to the cost to generate, plus 10% of such costs, under the same conditions as described above for the Day-ahead Energy Market.

Peak Market Activity:

“Peak Market Activity” shall mean a measure of exposure for which credit is required, involving peak exposures in rolling three-week periods over a year timeframe, with two semi-annual reset points, pursuant to provisions of Tariff, Attachment Q, section VII.A. Peak Market Activity shall exclude FTR Net Activity, Virtual Transactions Net Activity, and Export Transactions Net Activity.

Peak Season:

“Peak Season” shall mean the weeks containing the 24th through 36th Wednesdays of the calendar year. Each such week shall begin on a Monday and end on the following Sunday, except for the week containing the 36th Wednesday, which shall end on the following Friday.

Percentage Internal Resources Required:

“Percentage Internal Resources Required” shall have the meaning specified in the Reliability Assurance Agreement.

Performance Assessment Interval:

“Performance Assessment Interval” shall mean each Real-time Settlement Interval for which an Emergency Action has been declared by the Office of the Interconnection, provided, however, that Performance Assessment Intervals for a Base Capacity Resource shall not include any intervals outside the calendar months of June through September.

PJM:

“PJM” shall mean PJM Interconnection, L.L.C., including the Office of the Interconnection as referenced in the PJM Operating Agreement. When such term is being used in the RAA it shall also include the PJM Board.

PJM Administrative Service:

“PJM Administrative Service” shall mean the services provided by PJM pursuant to Tariff, Schedule 9.

PJM Board:

“PJM Board” shall mean the Board of Managers of the LLC, acting pursuant to the Operating Agreement, except when such term is being used in Tariff, Attachment M, in which case PJM Board shall mean the Board of Managers of PJM or its designated representative, exclusive of any members of PJM Management.

PJM Control Area:

“PJM Control Area” shall mean the Control Area recognized by NERC as the PJM Control Area.

PJM Entities:

“PJM Entities” shall mean PJM, including the Market Monitoring Unit, the PJM Board, and PJM’s officers, employees, representatives, advisors, contractors, and consultants.

PJM Interchange:

“PJM Interchange” shall mean the following, as determined in accordance with the Operating Agreement and Tariff: (a) for a Market Participant that is a Network Service User, the amount by which its interval Equivalent Load exceeds, or is exceeded by, the sum of the interval outputs of its operating generating resources; or (b) for a Market Participant that is not a Network Service User, the amount of its Spot Market Backup; or (c) the interval scheduled deliveries of Spot Market Energy by a Market Seller from an External Resource; or (d) the interval net metered output of any other Market Seller; or (e) the interval scheduled deliveries of Spot Market Energy to an External Market Buyer; or (f) the interval scheduled deliveries to an Internal Market Buyer that is not a Network Service User.

PJM Interchange Energy Market:

“PJM Interchange Energy Market” shall mean the regional competitive market administered by the Office of the Interconnection for the purchase and sale of spot electric energy at wholesale in interstate commerce and related services established pursuant to Operating Agreement, Schedule 1, and the parallel provisions of Tariff, Attachment K - Appendix.

PJM Interchange Export:

“PJM Interchange Export” shall mean the following, as determined in accordance with the Operating Agreement and Tariff: (a) for a Market Participant that is a Network Service User, the amount by which its interval Equivalent Load is exceeded by the sum of the interval outputs of its operating generating resources; or (b) for a Market Participant that is not a Network Service User, the amount of its Spot Market Backup sales; or (c) the interval scheduled deliveries of Spot Market Energy by a Market Seller from an External Resource; or (d) the interval net metered output of any other Market Seller.

PJM Interchange Import:

“PJM Interchange Import” shall mean the following, as determined in accordance with the Operating Agreement and Tariff: (a) for a Market Participant that is a Network Service User, the amount by which its interval Equivalent Load exceeds the sum of the interval outputs of its operating generating resources; or (b) for a Market Participant that is not a Network Service User, the amount of its Spot Market Backup purchases; or (c) the interval scheduled deliveries of Spot Market Energy to an External Market Buyer; or (d) the interval scheduled deliveries to an Internal Market Buyer that is not a Network Service User.

PJM Liaison:

“PJM Liaison” shall mean the liaison established under Tariff, Attachment M, section III.I.

PJM Management:

“PJM Management” shall mean the officers, executives, supervisors and employee managers of PJM.

PJM Manuals:

“PJM Manuals” shall mean the instructions, rules, procedures and guidelines established by the Office of the Interconnection for the operation, planning, and accounting requirements of the PJM Region and the PJM Interchange Energy Market.

PJM Markets:

“PJM Markets” shall mean the PJM Interchange Energy Market, capacity markets, including the RPM auctions, and any other market operated by PJM, together with all bilateral or other wholesale electric power and energy transactions, capacity transactions, ancillary services transactions (including black start service), transmission transactions, Financial Transmission Rights transactions, or transactions in any other market operated under the Agreements within the PJM Region, wherein Market Participants may incur Obligations to PJM and/or PJMSettlement.

PJM Market Rules:

“PJM Market Rules” shall mean the rules, standards, procedures, and practices of the PJM Markets set forth in the PJM Tariff, the PJM Operating Agreement, the PJM Reliability Assurance Agreement, the PJM Consolidated Transmission Owners Agreement, the PJM Manuals, the PJM Regional Practices Document, the PJM-Midwest Independent Transmission System Operator Joint Operating Agreement or any other document setting forth market rules.

PJM Net Assets:

“PJM Net Assets” shall mean the total assets per PJM’s consolidated quarterly or year-end financial statements most recently issued as of the date of the receipt of written notice of a claim less amounts for which PJM is acting as a temporary custodian on behalf of its Members, transmission developers/Designated Entities, and generation developers, including, but not limited to, cash deposits related to credit requirement compliance, study and/or interconnection receivables, member prepayments, invoiced amounts collected from Net Buyers but have not yet been paid to Net Sellers, and excess congestion (as described in Operating Agreement, Schedule 1, section 5.2.6, and the parallel provisions of Tariff, Attachment K-Appendix, section 5.2.6).

PJM Region:

“PJM Region” shall have the meaning specified in the Operating Agreement.

PJM Regional Practices Document:

“PJM Regional Practices Document” shall mean the document of that title that compiles and describes the practices in the PJM Markets and that is made available in hard copy and on the Internet.

PJM Region Installed Reserve Margin:

“PJM Region Installed Reserve Margin” shall mean the percent installed reserve margin for the PJM Region required pursuant to RAA, Schedule 4.1, as approved by the PJM Board.

PJM Region Peak Load Forecast:

“PJM Region Peak Load Forecast” shall mean the peak load forecast used by the Office of the Interconnection in determining the PJM Region Reliability Requirement, and shall be determined on both a preliminary and final basis as set forth in Tariff, Attachment DD, section 5.

PJM Region Reliability Requirement:

“PJM Region Reliability Requirement” shall mean, for purposes of the Base Residual Auction, the Forecast Pool Requirement multiplied by the Preliminary PJM Region Peak Load Forecast, less the sum of all Preliminary Unforced Capacity Obligations of FRR Entities in the PJM Region; and, for purposes of the Incremental Auctions, the Forecast Pool Requirement multiplied by the updated PJM Region Peak Load Forecast, less the sum of all updated Unforced Capacity Obligations of FRR Entities in the PJM Region.

PJM Settlement:

“PJM Settlement” or “PJM Settlement, Inc.” shall mean PJM Settlement, Inc. (or its successor), established by PJM as set forth in Operating Agreement, section 3.3.

PJM Tariff, Tariff, O.A.T.T., OATT or PJM Open Access Transmission Tariff:

“PJM Tariff,” “Tariff,” “O.A.T.T.,” “OATT,” or “PJM Open Access Transmission Tariff” shall mean that certain PJM Open Access Transmission Tariff, including any schedules, appendices or exhibits attached thereto, on file with FERC and as amended from time to time thereafter.

Plan:

“Plan” shall mean the PJM market monitoring plan set forth in Tariff, Attachment M.

Planned Demand Resource:

“Planned Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Planned External Financed Generation Capacity Resource:

“Planned External Financed Generation Capacity Resource” shall mean a Planned External Generation Capacity Resource that, prior to August 7, 2015, has an effective agreement that is the equivalent of an Interconnection Service Agreement, has submitted to the Office of the Interconnection the appropriate certification attesting achievement of Financial Close, and has secured at least 50 percent of the MWs of firm transmission service required to qualify such resource under the deliverability requirements of the Reliability Assurance Agreement.

Planned External Generation Capacity Resource:

“Planned External Generation Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Planned Financed Generation Capacity Resource:

“Planned Financed Generation Capacity Resource” shall mean a Planned Generation Capacity Resource that, prior to August 7, 2015, has an effective Interconnection Service Agreement and has submitted to the Office of the Interconnection the appropriate certification attesting achievement of Financial Close.

Planned Generation Capacity Resource:

“Planned Generation Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Planning Period:

“Planning Period” shall mean the 12 months beginning June 1 and extending through May 31 of the following year, or such other period approved by the Members Committee.

Planning Period Balance:

“Planning Period Balance” shall mean the entire period of time remaining in the Planning Period following the month that a monthly auction is conducted.

Planning Period Quarter:

“Planning Period Quarter” shall mean any of the following three month periods in the Planning Period: June, July and August; September, October and November; December, January and February; or March, April and May.

Point(s) of Delivery:

“Point(s) of Delivery” shall mean the point(s) on the Transmission Provider’s Transmission System where capacity and energy transmitted by the Transmission Provider will be made available to the Receiving Party under Tariff, Part II. The Point(s) of Delivery shall be specified in the Service Agreement for Long-Term Firm Point-To-Point Transmission Service.

Point of Interconnection:

“Point of Interconnection” shall mean the point or points where the Customer Interconnection Facilities interconnect with the Transmission Owner Interconnection Facilities or the Transmission System.

Point(s) of Receipt:

“Point(s) of Receipt” shall mean point(s) of interconnection on the Transmission Provider’s Transmission System where capacity and energy will be made available to the Transmission Provider by the Delivering Party under Tariff, Part II. The Point(s) of Receipt shall be specified in the Service Agreement for Long-Term Firm Point-To-Point Transmission Service.

Point-To-Point Transmission Service:

“Point-To-Point Transmission Service shall mean the reservation and transmission of capacity and energy on either a firm or non-firm basis from the Point(s) of Receipt to the Point(s) of Delivery under Tariff, Part II.

Power Purchaser:

“Power Purchaser” shall mean the entity that is purchasing the capacity and energy to be

transmitted under the Tariff.

PRD Curve:

“PRD Curve” shall have the meaning provided in the Reliability Assurance Agreement.

PRD Provider:

“PRD Provider” shall have the meaning provided in the Reliability Assurance Agreement.

PRD Reservation Price:

“PRD Reservation” Price shall have the meaning provided in the Reliability Assurance Agreement.

PRD Substation:

“PRD Substation” shall have the meaning provided in the Reliability Assurance Agreement.

Pre-Confirmed Application:

“Pre-Confirmed Application” shall be an Application that commits the Eligible Customer to execute a Service Agreement upon receipt of notification that the Transmission Provider can provide the requested Transmission Service.

Pre-Emergency Load Response Program:

“Pre-Emergency Load Response Program” shall be the program by which Curtailment Service Providers may be compensated by PJM for Demand Resources that will reduce load when dispatched by PJM during pre-emergency conditions, and is described in Operating Agreement, Schedule 1, section 8 and the parallel provisions of Tariff, Attachment K-Appendix, section 8.

Pre-Expansion PJM Zones:

“Pre-Expansion PJM Zones” shall be zones included in the Tariff, along with applicable Schedules and Attachments, for certain Transmission Owners - Atlantic City Electric Company, Baltimore Gas and Electric Company, Delmarva Power and Light Company, Jersey Central Power and Light Company, Mid-Atlantic Interstate Transmission, LLC (“MAIT”) (MAIT owns and operates the transmission facilities in the Metropolitan Edison Company Zone and the Pennsylvania Electric Company Zone), PECO Energy Company, Pennsylvania Power & Light Group, Potomac Electric Power Company, Public Service Electric and Gas Company, Allegheny Power, and Rockland Electric Company.

Price Responsive Demand:

“Price Responsive Demand” shall have the meaning provided in the Reliability Assurance

Agreement.

Primary Reserve:

“Primary Reserve” shall mean the total reserve capability of generation resources that can be converted fully into energy or Demand Resources whose demand can be reduced within ten minutes of a request from the Office of the Interconnection dispatcher, and is comprised of both Synchronized Reserve and Non-Synchronized Reserve.

Primary Reserve Alert

“Primary Reserve Alert” shall mean a notification from PJM to alert Members of an anticipated shortage of Operating Reserve capacity for a future critical period.

Primary Reserve Requirement:

“Primary Reserve Requirement” shall mean the megawatts required to be maintained in a Reserve Zone or Reserve Sub-zone as Primary Reserve, absent any increase to account for additional reserves scheduled to address operational uncertainty. The Primary Reserve Requirement is calculated in accordance with the PJM Manuals.

Principal:

“Principal” shall mean (i) the chief executive officer or senior manager that controls or directs strategy for the Participant, (ii) the chief legal officer or general counsel, (iii) the chief financial officer or senior manager that controls or directs the financial affairs and investments of the Participant, (iv) the chief risk officer or senior manager responsible for managing commodity and derivatives market risks, and (v) the officer or senior manager responsible for or to be responsible for transactions in the applicable PJM Markets. If, due to the Participant’s business enterprise, structure or otherwise, the functions attributed to any of such Principals are performed by an individual or entity separate from the Participant (such as a risk management department in an affiliate, or a director or manager at an entity that controls or invests in the Participant), then for that Participant the term Principal shall mean that individual, or the senior officer or manager of that entity, that performs such function.

Prior CIL Exception External Resource:

“Prior CIL Exception External Resource” shall mean an external Generation Capacity Resource for which (1) a Capacity Market Seller had, prior to May 9, 2017, cleared a Sell Offer in an RPM Auction under the exception provided to the definition of Capacity Import Limit as set forth in RAA, Article I or (2) an FRR Entity committed, prior to May 9, 2017, in an FRR Capacity Plan under the exception provided in the definition of Capacity Import Limit. In the event only a portion (in MW) of an external Generation Capacity Resource has a Pseudo-Tie into the PJM Region, that portion of the external Generation Capacity Resource, which can include up to the maximum megawatt amount cleared in any prior RPM auction or committed in an FRR Capacity Plan (and no other portion thereof), is eligible for treatment as a Prior CIL Exception External

Resource if such portion satisfies the requirements of the first sentence of this definition.

Project Financing:

“Project Financing” shall mean: (a) one or more loans, leases, equity and/or debt financings, together with all modifications, renewals, supplements, substitutions and replacements thereof, the proceeds of which are used to finance or refinance the costs of the Customer Facility, any alteration, expansion or improvement to the Customer Facility, the purchase and sale of the Customer Facility or the operation of the Customer Facility; (b) a power purchase agreement pursuant to which Interconnection Customer’s obligations are secured by a mortgage or other lien on the Customer Facility; or (c) loans and/or debt issues secured by the Customer Facility.

Project Finance Entity:

“Project Finance Entity” shall mean: (a) a holder, trustee or agent for holders, of any component of Project Financing; or (b) any purchaser of capacity and/or energy produced by the Customer Facility to which Interconnection Customer has granted a mortgage or other lien as security for some or all of Interconnection Customer’s obligations under the corresponding power purchase agreement.

Projected PJM Market Revenues:

“Projected PJM Market Revenues” shall mean a component of the Market Seller Offer Cap calculated in accordance with Tariff, Attachment DD, section 6.

Proportional Multi-Driver Project:

“Proportional Multi-Driver Project” shall have the same meaning provided in the Operating Agreement.

Pseudo-Tie:

“Pseudo-Tie” shall have the same meaning provided in the Operating Agreement.

Public Policy Objectives:

“Public Policy Objectives” shall have the same meaning provided in the Operating Agreement.

Public Policy Requirements:

“Public Policy Requirements” shall have the same meaning provided in the Operating Agreement.

Qualifying Transmission Upgrade:

“Qualifying Transmission Upgrade” shall mean a proposed enhancement or addition to the

Transmission System that: (a) will increase the Capacity Emergency Transfer Limit into an LDA by a megawatt quantity certified by the Office of the Interconnection; (b) the Office of the Interconnection has determined will be in service on or before the commencement of the first Delivery Year for which such upgrade is the subject of a Sell Offer in the Base Residual Auction; (c) is the subject of a Facilities Study Agreement executed before the conduct of the Base Residual Auction for such Delivery Year and (d) a New Service Customer is obligated to fund through a rate or charge specific to such facility or upgrade.

Queue Position:

“Queue Position” shall mean the priority assigned to an Interconnection Request, a Completed Application, or an Upgrade Request pursuant to applicable provisions of Tariff, Part VI.

Ramping Capability:

“Ramping Capability” shall mean the sustained rate of change of generator output, in megawatts per minute.

Rating Agency:

“Rating Agency” shall mean a Nationally Recognized Statistical Rating Organization that assesses the financial condition, strength and stability of companies and governmental entities and their ability to timely make principal and interest payments on their debts and the likelihood of default, and assigns a rating that reflects its assessment of the ability of the company or governmental entity to make the debt payments

Real-time Congestion Price:

“Real-time Congestion Price” shall mean the Congestion Price resulting from the Office of the Interconnection’s dispatch of the PJM Interchange Energy Market in the Operating Day.

Real-time Loss Price:

“Real-time Loss Price” shall mean the Loss Price resulting from the Office of the Interconnection’s dispatch of the PJM Interchange Energy Market in the Operating Day.

Real-time Energy Market:

“Real-time Energy Market” shall mean the purchase or sale of energy and payment of Transmission Congestion Charges for quantity deviations from the Day-ahead Energy Market in the Operating Day.

Real-time Offer:

“Real-time Offer” shall mean a new offer or an update to a Market Seller’s existing cost-based or market-based offer for a clock hour, submitted for use after the close of the Day-ahead Energy

Market.

Real-time Prices:

“Real-time Prices” shall mean the Locational Marginal Prices resulting from the Office of the Interconnection’s dispatch of the PJM Interchange Energy Market in the Operating Day.

Real-time Settlement Interval:

“Real-time Settlement Interval” shall mean the interval used by settlements, which shall be every five minutes.

Real-time System Energy Price:

“Real-time System Energy Price” shall mean the System Energy Price resulting from the Office of the Interconnection’s dispatch of the PJM Interchange Energy Market in the Operating Day.

Reasonable Efforts:

“Reasonable Efforts” shall mean, with respect to any action required to be made, attempted, or taken by an Interconnection Party or by a Construction Party under Tariff, Part IV or Tariff, Part VI, an Interconnection Service Agreement, or a Construction Service Agreement, such efforts as are timely and consistent with Good Utility Practice and with efforts that such party would undertake for the protection of its own interests.

Receiving Party:

“Receiving Party” shall mean the entity receiving the capacity and energy transmitted by the Transmission Provider to Point(s) of Delivery.

Referral:

“Referral” shall mean a formal report of the Market Monitoring Unit to the Commission for investigation of behavior of a Market Participant, of behavior of PJM, or of a market design flaw, pursuant to Tariff, Attachment M, section IV.I.

Reference Resource:

“Reference Resource” shall mean a combustion turbine generating station, configured with a single General Electric Frame 7HA turbine with evaporative cooling, Selective Catalytic Reduction technology all CONE Areas, dual fuel capability, and a heat rate of 9.134 Mmbtu/MWh.

Regional Entity:

“Regional Entity” shall have the same meaning specified in the Operating Agreement.

Regional Transmission Expansion Plan:

“Regional Transmission Expansion Plan” shall mean the plan prepared by the Office of the Interconnection pursuant to Operating Agreement, Schedule 6 for the enhancement and expansion of the Transmission System in order to meet the demands for firm transmission service in the PJM Region.

Regional Transmission Group (RTG):

“Regional Transmission Group” or “RTG” shall mean a voluntary organization of transmission owners, transmission users and other entities approved by the Commission to efficiently coordinate transmission planning (and expansion), operation and use on a regional (and interregional) basis.

Regulation:

“Regulation” shall mean the capability of a specific generation resource or Demand Resource with appropriate telecommunications, control and response capability to separately increase and decrease its output or adjust load in response to a regulating control signal, in accordance with the specifications in the PJM Manuals.

Regulation Zone:

“Regulation Zone” shall mean any of those one or more geographic areas, each consisting of a combination of one or more Control Zone(s) as designated by the Office of the Interconnection in the PJM Manuals, relevant to provision of, and requirements for, regulation service.

Relevant Electric Retail Regulatory Authority:

“Relevant Electric Retail Regulatory Authority” shall mean an entity that has jurisdiction over and establishes prices and policies for competition for providers of retail electric service to end-customers, such as the city council for a municipal utility, the governing board of a cooperative utility, the state public utility commission or any other such entity.

Reliability Assurance Agreement or PJM Reliability Assurance Agreement:

“Reliability Assurance Agreement” or “PJM Reliability Assurance Agreement” shall mean that certain Reliability Assurance Agreement Among Load Serving Entities in the PJM Region, on file with FERC as PJM Interconnection L.L.C. Rate Schedule FERC No. 44, and as amended from time to time thereafter.

Reliability Pricing Model Auction:

“Reliability Pricing Model Auction” or “RPM Auction” shall mean the Base Residual Auction or any Incremental Auction, or, for the 2016/2017 and 2017/2018 Delivery Years, any Capacity Performance Transition Incremental Auction.

Required Transmission Enhancements:

“Regional Transmission Enhancements” shall mean enhancements and expansions of the Transmission System that (1) a Regional Transmission Expansion Plan developed pursuant to Operating Agreement, Schedule 6 or (2) any joint planning or coordination agreement between PJM and another region or transmission planning authority set forth in Tariff, Schedule 12-Appendix B (“Appendix B Agreement”) designates one or more of the Transmission Owner(s) to construct and own or finance. Required Transmission Enhancements shall also include enhancements and expansions of facilities in another region or planning authority that meet the definition of transmission facilities pursuant to FERC’s Uniform System of Accounts or have been classified as transmission facilities in a ruling by FERC addressing such facilities constructed pursuant to an Appendix B Agreement cost responsibility for which has been assigned at least in part to PJM pursuant to such Appendix B Agreement.

Reserved Capacity:

“Reserved Capacity” shall mean the maximum amount of capacity and energy that the Transmission Provider agrees to transmit for the Transmission Customer over the Transmission Provider’s Transmission System between the Point(s) of Receipt and the Point(s) of Delivery under Tariff, Part II. Reserved Capacity shall be expressed in terms of whole megawatts on a sixty (60) minute interval (commencing on the clock hour) basis.

Reserve Penalty Factor:

“Reserve Penalty Factor” shall mean the cost, in \$/MWh, associated with being unable to meet a specific reserve requirement in a Reserve Zone or Reserve Sub-zone. A Reserve Penalty Factor will be defined for each reserve requirement in a Reserve Zone or Reserve Sub-zone.

Reserve Sub-zone:

“Reserve Sub-zone” shall mean any of those geographic areas wholly contained within a Reserve Zone, consisting of a combination of a portion of one or more Control Zone(s) as designated by the Office of the Interconnection in the PJM Manuals, relevant to provision of, and requirements for, reserve service.

Reserve Zone:

“Reserve Zone” shall mean any of those geographic areas consisting of a combination of one or more Control Zone(s), as designated by the Office of the Interconnection in the PJM Manuals, relevant to provision of, and requirements for, reserve service.

Residual Auction Revenue Rights:

“Residual Auction Revenue Rights” shall mean incremental stage 1 Auction Revenue Rights created within a Planning Period by an increase in transmission system capability, including the

return to service of existing transmission capability, that was not modeled pursuant to Operating Agreement, Schedule 1, section 7.5 and the parallel provisions of Tariff, Attachment K-Appendix, section 7.5 in compliance with Operating Agreement, Schedule 1, section 7.4.2 (h) and the parallel provisions of Tariff, Attachment K-Appendix, section 7.4.2(h), and, if modeled, would have increased the amount of stage 1 Auction Revenue Rights allocated pursuant to Operating Agreement, Schedule 1, section 7.4.2 and the parallel provisions of Tariff, Attachment K-Appendix, section 7.4.2; provided that, the foregoing notwithstanding, Residual Auction Revenue Rights shall exclude: 1) Incremental Auction Revenue Rights allocated pursuant to Tariff, Part VI; and 2) Auction Revenue Rights allocated to entities that are assigned cost responsibility pursuant to Operating Agreement, Schedule 6 for transmission upgrades that create such rights.

Residual Metered Load:

“Residual Metered Load” shall mean all load remaining in an electric distribution company’s fully metered franchise area(s) or service territory(ies) after all nodally priced load of entities serving load in such area(s) or territory(ies) has been carved out.

Resource Substitution Charge:

“Resource Substitution Charge” shall mean a charge assessed on Capacity Market Buyers in an Incremental Auction to recover the cost of replacement Capacity Resources.

Restricted Collateral:

“Restricted Collateral” shall mean Collateral, held by PJM or PJMSettlement, which cannot be used, netted, credited or spent by the Participant to satisfy any other obligations.

Revenue Data for Settlements:

“Revenue Data for Settlements” shall mean energy quantities used in accounting and billing as determined pursuant to Tariff, Attachment K-Appendix and the corresponding provisions of Operating Agreement, Schedule 1.

RPM Seller Credit:

“RPM Seller Credit” shall mean an additional form of Unsecured Credit defined in Tariff, Attachment Q, section VI.

Scheduled Incremental Auctions:

“Scheduled Incremental Auctions” shall refer to the First, Second, or Third Incremental Auction.

Schedule of Work:

“Schedule of Work” shall mean that schedule attached to the Interconnection Construction Service

Agreement setting forth the timing of work to be performed by the Constructing Entity pursuant to the Interconnection Construction Service Agreement, based upon the Facilities Study and subject to modification, as required, in accordance with Transmission Provider's scope change process for interconnection projects set forth in the PJM Manuals.

Scope of Work:

"Scope of Work" shall mean that scope of the work attached as a schedule to the Interconnection Construction Service Agreement and to be performed by the Constructing Entity(ies) pursuant to the Interconnection Construction Service Agreement, provided that such Scope of Work may be modified, as required, in accordance with Transmission Provider's scope change process for interconnection projects set forth in the PJM Manuals.

Seasonal Capacity Performance Resource:

"Seasonal Capacity Performance Resource" shall have the same meaning specified in Tariff, Attachment DD, section 5.5A.

Secondary Systems:

"Secondary Systems" shall mean control or power circuits that operate below 600 volts, AC or DC, including, but not limited to, any hardware, control or protective devices, cables, conductors, electric raceways, secondary equipment panels, transducers, batteries, chargers, and voltage and current transformers.

Second Incremental Auction:

"Second Incremental Auction" shall mean an Incremental Auction conducted ten months before the Delivery Year to which it relates.

Security:

"Security" shall mean the security provided by the New Service Customer pursuant to Tariff, section 212.4 or Tariff, Part VI, section 213.4 to secure the New Service Customer's responsibility for Costs under the Interconnection Service Agreement or Upgrade Construction Service Agreement and Tariff, Part VI, section 217.

Segment:

"Segment" shall have the same meaning as described in Operating Agreement, Schedule 1, section 3.2.3(e), and the parallel provisions of Tariff, Attachment K-Appendix, section 3.2.3(e).

Self-Supply:

"Self-Supply" shall mean Capacity Resources secured by a Load-Serving Entity, by ownership or contract, outside a Reliability Pricing Model Auction, and used to meet obligations under this

Attachment or the Reliability Assurance Agreement through submission in a Base Residual Auction or an Incremental Auction of a Sell Offer indicating such Market Seller's intent that such Capacity Resource be Self-Supply. Self-Supply may be either committed regardless of clearing price or submitted as a Sell Offer with a price bid. A Load Serving Entity's Sell Offer with a price bid for an owned or contracted Capacity Resource shall not be deemed "Self-Supply," unless it is designated as Self-Supply and used by the LSE to meet obligations under this Attachment or the Reliability Assurance Agreement.

Sell Offer:

"Sell Offer" shall mean an offer to sell Capacity Resources in a Base Residual Auction, Incremental Auction, or Reliability Backstop Auction.

Service Agreement:

"Service Agreement" shall mean the initial agreement and any amendments or supplements thereto entered into by the Transmission Customer and the Transmission Provider for service under the Tariff.

Service Commencement Date:

"Service Commencement Date" shall mean the date the Transmission Provider begins to provide service pursuant to the terms of an executed Service Agreement, or the date the Transmission Provider begins to provide service in accordance with Tariff, Part II, section 15.3 or Tariff, Part III, section 29.1.

Short-Term Firm Point-To-Point Transmission Service:

"Short-Term Firm Point-To-Point Transmission Service" shall mean Firm Point-To-Point Transmission Service under Tariff, Part II with a term of less than one year.

Short-term Project:

"Short-term Project" shall have the same meaning provided in the Operating Agreement.

Short-Term Resource Procurement Target:

"Short-Term Resource Procurement Target" shall mean, for Delivery Years through May 31, 2018, as to the PJM Region, for purposes of the Base Residual Auction, 2.5% of the PJM Region Reliability Requirement determined for such Base Residual Auction, for purposes of the First Incremental Auction, 2% of the of the PJM Region Reliability Requirement as calculated at the time of the Base Residual Auction; and, for purposes of the Second Incremental Auction, 1.5% of the of the PJM Region Reliability Requirement as calculated at the time of the Base Residual Auction; and, as to any Zone, an allocation of the PJM Region Short-Term Resource Procurement Target based on the Preliminary Zonal Forecast Peak Load, reduced by the amount of load served under the FRR Alternative. For any LDA, the LDA Short-Term Resource

Procurement Target shall be the sum of the Short-Term Resource Procurement Targets of all Zones in the LDA.

Short-Term Resource Procurement Target Applicable Share:

“Short-Term Resource Procurement Target Applicable Share” shall mean, for Delivery Years through May 31, 2018: (i) for the PJM Region, as to the First and Second Incremental Auctions, 0.2 times the Short-Term Resource Procurement Target used in the Base Residual Auction and, as to the Third Incremental Auction for the PJM Region, 0.6 times such target; and (ii) for an LDA, as to the First and Second Incremental Auctions, 0.2 times the Short-Term Resource Procurement Target used in the Base Residual Auction for such LDA and, as to the Third Incremental Auction, 0.6 times such target.

Site:

“Site” shall mean all of the real property, including but not limited to any leased real property and easements, on which the Customer Facility is situated and/or on which the Customer Interconnection Facilities are to be located.

Small Commercial Customer:

“Small Commercial Customer,” as used in RAA, Schedule 6 and Tariff, Attachment DD-1, shall mean a commercial retail electric end-use customer of an electric distribution company that participates in a mass market demand response program under the jurisdiction of a RERRA and satisfies the definition of a “small commercial customer” under the terms of the applicable RERRA’s program, provided that the customer has an annual peak demand no greater than 100kW.

Small Generation Resource:

“Small Generation Resource” shall mean an Interconnection Customer’s device of 20 MW or less for the production and/or storage for later injection of electricity identified in an Interconnection Request, but shall not include the Interconnection Customer’s Interconnection Facilities. This term shall include Energy Storage Resources and/or other devices for storage for later injection of energy.

Small Inverter Facility:

“Small Inverter Facility” shall mean an Energy Resource that is a certified small inverter-based facility no larger than 10 kW.

Small Inverter ISA:

“Small Inverter ISA” shall mean an agreement among Transmission Provider, Interconnection Customer, and Interconnected Transmission Owner regarding interconnection of a Small Inverter Facility under Tariff, Part IV, section 112B.

Special Member:

“Special Member” shall mean an entity that satisfies the requirements of Operating Agreement, Schedule 1, section 1.5A.02, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.5A.02, or the special membership provisions established under the Emergency Load Response and Pre-Emergency Load Response Programs.

Spot Market Backup:

“Spot Market Backup” shall mean the purchase of energy from, or the delivery of energy to, the PJM Interchange Energy Market in quantities sufficient to complete the delivery or receipt obligations of a bilateral contract that has been curtailed or interrupted for any reason.

Spot Market Energy:

“Spot Market Energy” shall mean energy bought or sold by Market Participants through the PJM Interchange Energy Market at System Energy Prices determined as specified in Operating Agreement, Schedule 1, section 2, and the parallel provisions of Tariff, Attachment K-Appendix, section 2.

Start Additional Labor Costs:

“Start Additional Labor Costs” shall mean additional labor costs for startup required above normal station manning levels.

Start-Up Costs:

“Start-Up Costs” shall mean the unit costs to bring the boiler, turbine and generator from shutdown conditions to the point after breaker closure which is typically indicated by telemetered or aggregated state estimator megawatts greater than zero and is determined based on the cost of start fuel, total fuel-related cost, performance factor, electrical costs (station service), start maintenance adder, and additional labor cost if required above normal station manning. Start-Up Costs can vary with the unit offline time being categorized in three unit temperature conditions: hot, intermediate and cold.

State:

“State” shall mean the District of Columbia and any State or Commonwealth of the United States.

State Commission:

“State Commission” shall mean any state regulatory agency having jurisdiction over retail electricity sales in any State in the PJM Region.

State Estimator:

“State Estimator” shall mean the computer model of power flows specified in Operating Agreement, Schedule 1, section 2.3 and the parallel provisions of Tariff, Attachment K-Appendix, section 2.3.

Station Power:

“Station Power” shall mean energy used for operating the electric equipment on the site of a generation facility located in the PJM Region or for the heating, lighting, air-conditioning and office equipment needs of buildings on the site of such a generation facility that are used in the operation, maintenance, or repair of the facility. Station Power does not include any energy (i) used to power synchronous condensers; (ii) used for pumping at a pumped storage facility; (iii) used in association with restoration or black start service; or (iv) that is Direct Charging Energy.

Sub-Annual Resource Constraint:

“Sub-Annual Resource Constraint” shall mean, for the 2017/2018 Delivery Year and for FRR Capacity Plans the 2017/2018 and 2018/2019 Delivery Years, for the PJM Region or for each LDA for which the Office of the Interconnection is required under Tariff, Attachment DD, section 5.10(a) to establish a separate VRR Curve for a Delivery Year, a limit on the total amount of Unforced Capacity that can be committed as Limited Demand Resources and Extended Summer Demand Resources for the 2017/2018 Delivery Year in the PJM Region or in such LDA, calculated as the Sub-Annual Resource Reliability Target for the PJM Region or for such LDA, respectively, minus the Short-Term Resource Procurement Target for the PJM Region or for such LDA, respectively.

Sub-Annual Resource Price Decrement:

“Sub-Annual Resource Price Decrement” shall mean, for the 2017/2018 Delivery Year, a difference between the clearing price for Extended Summer Demand Resources and the clearing price for Annual Resources, representing the cost to procure additional Annual Resources out of merit order when the Sub-Annual Resource Constraint is binding.

Sub-Annual Resource Reliability Target:

“Sub-Annual Reliability Target” for the PJM Region or an LDA, shall mean the maximum amount of the combination of Extended Summer Demand Resources and Limited Demand Resources in Unforced Capacity determined by PJM to be consistent with the maintenance of reliability, stated in Unforced Capacity, that shall be used to calculate the Minimum Annual Resource Requirement for Delivery Years through May 31, 2017 and the Sub-Annual Resource Constraint for the 2017/2018 and 2018/2019 Delivery Years. As more fully set forth in the PJM Manuals, PJM calculates the Sub-Annual Resource Reliability Target, by first determining a reference annual loss of load expectation (“LOLE”) assuming no Demand Resources. The calculation for the unconstrained portion of the PJM Region uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast and iteratively shifting the load distributions to result in the Installed Reserve Margin established for the

Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). The calculation for each relevant LDA uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Capacity Emergency Transfer Objective study for the Delivery Year in question). For the relevant LDA calculation, the weekly capacity distributions are adjusted to reflect the Capacity Emergency Transfer Limit for the Delivery Year in question.

For both the PJM Region and LDA analyses, PJM then models the commitment of varying amounts of DR (displacing otherwise committed generation) as interruptible from May 1 through October 31 and unavailable from November 1 through April 30 and calculates the LOLE at each DR level. The Extended Summer DR Reliability Target is the DR amount, stated as a percentage of the unrestricted peak load, that produces no more than a ten percent increase in the LOLE, compared to the reference value. The Sub-Annual Resource Reliability Target shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [the Forecast Pool Requirement] times [the DR Factor] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

Sub-meter:

“Sub-meter” shall mean a metering point for electricity consumption that does not include all electricity consumption for the end-use customer as defined by the electric distribution company account number. PJM shall only accept sub-meter load data from end-use customers for measurement and verification of Regulation service as set forth in the Economic Load Response rules and PJM Manuals.

Summer-Period Capacity Performance Resource:

“Summer-Period Capacity Performance Resource” shall have the same meaning specified in Tariff, Attachment DD, section 5.5A.

Surplus Interconnection Service:

“Surplus Interconnection Service” shall mean any unneeded portion of Interconnection Service established in an Interconnection Service Agreement, such that if Surplus Interconnection Service is utilized, the total amount of Interconnection Service at the Point of Interconnection would remain the same.

Switching and Tagging Rules:

“Switching and Tagging Rules” shall mean the switching and tagging procedures of Interconnected Transmission Owners and Interconnection Customer as they may be amended from time to time.

Synchronized Reserve:

“Synchronized Reserve” shall mean the reserve capability of generation resources that can be converted fully into energy or Demand Resources whose demand can be reduced within ten minutes from the request of the Office of the Interconnection dispatcher, and is provided by equipment that is electrically synchronized to the Transmission System.

Synchronized Reserve Event:

“Synchronized Reserve Event” shall mean a request from the Office of the Interconnection to generation resources and/or Demand Resources able, assigned or self-scheduled to provide Synchronized Reserve in one or more specified Reserve Zones or Reserve Sub-zones, within ten minutes, to increase the energy output or reduce load by the amount of assigned or self-scheduled Synchronized Reserve capability.

Synchronized Reserve Requirement:

“Synchronized Reserve Requirement” shall mean the megawatts required to be maintained in a Reserve Zone or Reserve Sub-zone as Synchronized Reserve, absent any increase to account for additional reserves scheduled to address operational uncertainty. The Synchronized Reserve Requirement is calculated in accordance with the PJM Manuals.

System Condition:

“System Condition” shall mean a specified condition on the Transmission Provider’s system or on a neighboring system, such as a constrained transmission element or flowgate, that may trigger Curtailment of Long-Term Firm Point-to-Point Transmission Service using the curtailment priority pursuant to Tariff, Part II, section 13.6. Such conditions must be identified in the Transmission Customer’s Service Agreement.

System Energy Price:

“System Energy Price” shall mean the energy component of the Locational Marginal Price, which is the price at which the Market Seller has offered to supply an additional increment of energy from a resource, calculated as specified in Operating Agreement, Schedule 1, section 2 and the parallel provisions of Tariff, Attachment K-Appendix, section 2.

System Impact Study:

“System Impact Study” shall mean an assessment by the Transmission Provider of (i) the adequacy of the Transmission System to accommodate a Completed Application, an Interconnection Request or an Upgrade Request, (ii) whether any additional costs may be incurred in order to provide such transmission service or to accommodate an Interconnection Request, and (iii) with respect to an Interconnection Request, an estimated date that an Interconnection Customer’s Customer Facility can be interconnected with the Transmission System and an estimate of the Interconnection Customer’s cost responsibility for the interconnection; and (iv) with respect to an

Upgrade Request, the estimated cost of the requested system upgrades or expansion, or of the cost of the system upgrades or expansion, necessary to provide the requested incremental rights.

System Protection Facilities:

“System Protection Facilities” shall refer to the equipment required to protect (i) the Transmission System, other delivery systems and/or other generating systems connected to the Transmission System from faults or other electrical disturbance occurring at or on the Customer Facility, and (ii) the Customer Facility from faults or other electrical system disturbance occurring on the Transmission System or on other delivery systems and/or other generating systems to which the Transmission System is directly or indirectly connected. System Protection Facilities shall include such protective and regulating devices as are identified in the Applicable Technical Requirements and Standards or that are required by Applicable Laws and Regulations or other Applicable Standards, or as are otherwise necessary to protect personnel and equipment and to minimize deleterious effects to the Transmission System arising from the Customer Facility.

Tangible Net Worth:

“Tangible Net Worth” shall mean total assets less goodwill and other intangible assets, minus total liabilities.

Target Allocation:

“Target Allocation” shall mean the allocation of Transmission Congestion Credits as set forth in Operating Agreement, Schedule 1, section 5.2.3, and the parallel provisions of Tariff, Attachment K-Appendix, section 5.2.3, or the allocation of Auction Revenue Rights Credits as set forth in Operating Agreement, Schedule 1, section 7.4.3, and the parallel provisions of Tariff, Attachment K-Appendix, section 7.4.3.

Third Incremental Auction:

“Third Incremental Auction” shall mean an Incremental Auction conducted three months before the Delivery Year to which it relates.

Third-Party Sale:

“Third-Party Sale” shall mean any sale for resale in interstate commerce to a Power Purchaser that is not designated as part of Network Load under the Network Integration Transmission Service but not including a sale of energy through the PJM Interchange Energy Market established under the PJM Operating Agreement.

Tie Line:

“Tie Line” shall mean a circuit connecting two balancing authority areas, Control Areas or fully metered electric system regions. Tie Lines may be classified as external or internal as set forth in the PJM Manuals.

Total Lost Opportunity Cost Offer:

“Total Lost Opportunity Cost Offer” shall mean the applicable offer used to calculate lost opportunity cost credits. For pool-scheduled resources specified in PJM Operating Agreement, Schedule 1, section 3.2.3(f-1), and the parallel provisions of Tariff, Attachment K-Appendix, section 3.2.3(f-1), the Total Lost Opportunity Cost Offer shall equal the Real-time Settlement Interval offer integrated under the applicable offer curve for the LOC Deviation, as determined by the greater of the Committed Offer or last Real-Time Offer submitted for the offer on which the resource was committed in the Day-ahead Energy Market for each hour in an Operating Day. For all other pool-scheduled resources, the Total Lost Opportunity Cost Offer shall equal the Real-time Settlement Interval offer integrated under the applicable offer curve for the LOC Deviation, as determined by the offer curve associated with the greater of the Committed Offer or Final Offer for each hour in an Operating Day. For self-scheduled generation resources, the Total Lost Opportunity Cost Offer shall equal the Real-time Settlement Interval offer integrated under the applicable offer curve for the LOC Deviation, where for self-scheduled generation resources (a) operating pursuant to a cost-based offer, the applicable offer curve shall be the greater of the originally submitted cost-based offer or the cost-based offer that the resource was dispatched on in real-time; or (b) operating pursuant to a market-based offer, the applicable offer curve shall be determined in accordance with the following process: (1) select the greater of the cost-based day-ahead offer and updated cost-based Real-time Offer; (2) for resources with multiple cost-based offers, first, for each cost-based offer select the greater of the day-ahead offer and updated Real-time Offer, and then select the lesser of the resulting cost-based offers; and (3) compare the offer selected in (1), or for resources with multiple cost-based offers the offer selected in (2), with the market-based day-ahead offer and the market-based Real-time Offer and select the highest offer.

Total Net Obligation:

“Total Net Obligation” shall mean all unpaid billed Net Obligations plus any unbilled Net Obligation incurred to date, as determined by PJMSettlement on a daily basis, plus any other Obligations owed to PJMSettlement at the time.

Total Net Sell Position:

“Total Net Sell Position” shall mean all unpaid billed Net Sell Positions plus any unbilled Net Sell Positions accrued to date, as determined by PJMSettlement on a daily basis.

Total Operating Reserve Offer:

“Total Operating Reserve Offer” shall mean the applicable offer used to calculate Operating Reserve credits. The Total Operating Reserve Offer shall equal the sum of all individual Real-time Settlement Interval energy offers, inclusive of Start-Up Costs (shut-down costs for Demand Resources) and No-load Costs, for every Real-time Settlement Interval in a Segment, integrated under the applicable offer curve up to the applicable megawatt output as further described in the PJM Manuals. The applicable offer used to calculate day-ahead Operating Reserve credits shall

be the Committed Offer, and the applicable offer used to calculate balancing Operating Reserve credits shall be lesser of the Committed Offer or Final Offer for each hour in an Operating Day.

Trade Reference:

“Trade Reference” shall mean a reference from a contact or firm that had or has a material business relationship with a Participant.

Transmission Congestion Charge:

“Transmission Congestion Charge” shall mean a charge attributable to the increased cost of energy delivered at a given load bus when the transmission system serving that load bus is operating under constrained conditions, or as necessary to provide energy for third-party transmission losses which shall be calculated and allocated as specified in Operating Agreement, Schedule 1, section 5.1 and the parallel provisions of Tariff, Attachment K-Appendix, section 5.1.

Transmission Congestion Credit:

“Transmission Congestion Credit” shall mean the allocated share of total Transmission Congestion Charges credited to each FTR Holder, calculated and allocated as specified in Operating Agreement, Schedule 1, section 5.2, and the parallel provisions of Tariff, Attachment K-Appendix, section 5.2.

Transmission Constraint Penalty Factor:

“Transmission Constraint Penalty Factor” shall mean the maximum cost of the re-dispatch incurred to control the flows across a transmission constraint and establishes the maximum limit on the Marginal Value.

Transmission Customer:

“Transmission Customer” shall mean any Eligible Customer (or its Designated Agent) that (i) executes a Service Agreement, or (ii) requests in writing that the Transmission Provider file with the Commission a proposed unexecuted Service Agreement, to receive transmission service under Tariff, Part II. This term is used in Tariff, Part I and Tariff, Part VI to include customers receiving transmission service under Tariff, Part II and Tariff, Part III.

Where used in Tariff, Attachment K-Appendix and the parallel provisions of Operating Agreement, Schedule 1, Transmission Customer shall mean an entity using Point-to-Point Transmission Service.

Transmission Facilities:

“Transmission Facilities” shall have the meaning set forth in the Operating Agreement.

Transmission Forced Outage:

“Transmission Forced Outage” shall mean an immediate removal from service of a transmission facility by reason of an Emergency or threatened Emergency, unanticipated failure, or other cause beyond the control of the owner or operator of the transmission facility, as specified in the relevant portions of the PJM Manuals. A removal from service of a transmission facility at the request of the Office of the Interconnection to improve transmission capability shall not constitute a Forced Transmission Outage.

Transmission Injection Rights:

“Transmission Injection Rights” shall mean Capacity Transmission Injection Rights and Energy Transmission Injection Rights.

Transmission Interconnection Customer:

“Transmission Interconnection Customer” shall mean an entity that submits an Interconnection Request to interconnect or add Merchant Transmission Facilities to the Transmission System or to increase the capacity of Merchant Transmission Facilities interconnected with the Transmission System in the PJM Region or an entity that submits an Upgrade Request for Merchant Network Upgrades (including accelerating the construction of any transmission enhancement or expansion, other than Merchant Transmission Facilities, that is included in the Regional Transmission Expansion Plan prepared pursuant to Operating Agreement, Schedule 6).

Transmission Interconnection Facilities Study:

“Transmission Interconnection Facilities Study” shall mean a Facilities Study related to a Transmission Interconnection Request.

Transmission Interconnection Feasibility Study:

“Transmission Interconnection Feasibility Study” shall mean a study conducted by the Transmission Provider in accordance with Tariff, Part IV, section 36.2.

Transmission Interconnection Request:

“Transmission Interconnection Request” shall mean a request by a Transmission Interconnection Customer pursuant to Tariff, Part IV to interconnect or add Merchant Transmission Facilities to the Transmission System or to increase the capacity of existing Merchant Transmission Facilities interconnected with the Transmission System in the PJM Region.

Transmission Loading Relief:

“Transmission Loading Relief” shall mean NERC’s procedures for preventing operating security limit violations, as implemented by PJM as the security coordinator responsible for maintaining transmission security for the PJM Region.

Transmission Loading Relief Customer:

“Transmission Loading Relief Customer” shall mean an entity that, in accordance with Operating Agreement, Schedule 1, section 1.10.6A and the parallel provisions of Tariff, Attachment K-Appendix, section 1.10.6A has elected to pay Transmission Congestion Charges during Transmission Loading Relief in order to continue energy schedules over contract paths outside the PJM Region that are increasing the cost of energy in the PJM Region.

Transmission Loss Charge:

“Transmission Loss Charge” shall mean the charges to each Market Participant, Network Customer, or Transmission Customer for the cost of energy lost in the transmission of electricity from a generation resource to load as specified in Operating Agreement, Schedule 1, section 5, and the parallel provisions of Tariff, Attachment K-Appendix, section 5.

Transmission Owner:

“Transmission Owner” shall mean a Member that owns or leases with rights equivalent to ownership Transmission Facilities and is a signatory to the PJM Transmission Owners Agreement. Taking transmission service shall not be sufficient to qualify a Member as a Transmission Owner.

Transmission Owner Attachment Facilities:

“Transmission Owner Attachment Facilities” shall mean that portion of the Transmission Owner Interconnection Facilities comprised of all Attachment Facilities on the Interconnected Transmission Owner’s side of the Point of Interconnection.

Transmission Owner Interconnection Facilities:

“Transmission Owner Interconnection Facilities” shall mean all Interconnection Facilities that are not Customer Interconnection Facilities and that, after the transfer under Tariff, Attachment P, Appendix 2, section 5.5 to the Interconnected Transmission Owner of title to any Transmission Owner Interconnection Facilities that the Interconnection Customer constructed, are owned, controlled, operated and maintained by the Interconnected Transmission Owner on the Interconnected Transmission Owner’s side of the Point of Interconnection identified in appendices to the Interconnection Service Agreement and to the Interconnection Construction Service Agreement, including any modifications, additions or upgrades made to such facilities and equipment, that are necessary to physically and electrically interconnect the Customer Facility with the Transmission System or interconnected distribution facilities.

Transmission Owner Upgrade:

“Transmission Owner Upgrade” shall have the same meaning provided in the Operating Agreement.

Transmission Planned Outage:

“Transmission Planned Outage” shall mean any transmission outage scheduled in advance for a pre-determined duration and which meets the notification requirements for such outages specified in Operating Agreement, Schedule 1, and the parallel provisions of Tariff, Attachment K-Appendix or the PJM Manuals.

Transmission Provider:

The “Transmission Provider” shall be the Office of the Interconnection for all purposes, provided that the Transmission Owners will have the responsibility for the following specified activities:

- (a) The Office of the Interconnection shall direct the operation and coordinate the maintenance of the Transmission System, except that the Transmission Owners will continue to direct the operation and maintenance of those transmission facilities that are not listed in the PJM Designated Facilities List contained in the PJM Manual on Transmission Operations;
- (b) Each Transmission Owner shall physically operate and maintain all of the facilities that it owns; and
- (c) When studies conducted by the Office of the Interconnection indicate that enhancements or modifications to the Transmission System are necessary, the Transmission Owners shall have the responsibility, in accordance with the applicable terms of the Tariff, Operating Agreement and/or the Consolidated Transmission Owners Agreement to construct, own, and finance the needed facilities or enhancements or modifications to facilities.

Transmission Provider’s Monthly Transmission System Peak:

“Transmission Provider’s Monthly Transmission System Peak” shall mean the maximum firm usage of the Transmission Provider’s Transmission System in a calendar month.

Transmission Service:

“Transmission Service” shall mean Point-To-Point Transmission Service provided under Tariff, Part II on a firm and non-firm basis.

Transmission Service Request:

“Transmission Service Request” shall mean a request for Firm Point-To-Point Transmission Service or a request for Network Integration Transmission Service.

Transmission System:

“Transmission System” shall mean the facilities controlled or operated by the Transmission Provider within the PJM Region that are used to provide transmission service under Tariff, Part

II and Part III.

Transmission Withdrawal Rights:

“Transmission Withdrawal Rights” shall mean Firm Transmission Withdrawal Rights and Non-Firm Transmission Withdrawal Rights.

Turn Down Ratio:

“Turn Down Ratio” shall mean the ratio of a generating unit’s economic maximum megawatts to its economic minimum megawatts.

Unconstrained LDA Group:

“Unconstrained LDA Group” shall mean a combined group of LDAs that form an electrically contiguous area and for which a separate Variable Resource Requirement Curve has not been established under Tariff, Attachment DD, section 5.10. Any LDA for which a separate Variable Resource Requirement Curve has not been established under Tariff, Attachment DD, section 5.10 shall be combined with all other such LDAs that form an electrically contiguous area.

Unforced Capacity:

“Unforced Capacity” shall have the meaning specified in the Reliability Assurance Agreement.

Unsecured Credit:

“Unsecured Credit” shall mean any credit granted by PJMSettlement to a Participant that is not secured by Collateral.

Unsecured Credit Allowance:

“Unsecured Credit Allowance” shall mean Unsecured Credit extended by PJMSettlement in an amount determined by PJMSettlement’s evaluation of the creditworthiness of a Participant. This is also defined as the amount of credit that a Participant qualifies for based on the strength of its own financial condition without having to provide Collateral. See also: “Working Credit Limit.”

Updated VRR Curve:

“Updated VRR Curve” shall mean the Variable Resource Requirement Curve for use in the Base Residual Auction of the relevant Delivery Year, updated to reflect any change in the Reliability Requirement from the Base Residual Auction to such Incremental Auction, and for Delivery Years through May 31, 2018, the Short-term Resource Procurement Target applicable to the relevant Incremental Auction.

Updated VRR Curve Decrement:

“Updated VRR Curve Decrement” shall mean the portion of the Updated VRR Curve to the left of a vertical line at the level of Unforced Capacity on the x-axis of such curve equal to the net Unforced Capacity committed to the PJM Region as a result of all prior auctions conducted for such Delivery Year and adjusted, if applicable, by a change in Unforced Capacity commitments associated with the transition provision of Tariff, Attachment DD, section 5.14C, Tariff, Attachment DD, section 5.14D (as related to the 2016/2017 and 2017/2018 Delivery Years), Tariff, Attachment DD, section 5.14E, and Tariff, Attachment DD, section 5.5A(c)(i)(B), and RAA, Schedule 6, section L.9.

Updated VRR Curve Increment:

“Updated VRR Curve Increment” shall mean the portion of the Updated VRR Curve to the right of a vertical line at the level of Unforced Capacity on the x-axis of such curve equal to the net Unforced Capacity committed to the PJM Region as a result of all prior auctions conducted for such Delivery Year and adjusted, if applicable, by a change in Unforced Capacity commitments associated with the transition provision of Tariff, Attachment DD, section 5.14C, Tariff, Attachment DD, section 5.14D (as related to the 2016/2017 and 2017/2018 Delivery Years), Tariff, Attachment DD, section 5.14E, and Tariff, Attachment DD, section 5.5A(c)(i)(B), and RAA, Schedule 6, section L.9.

Upgrade Construction Service Agreement:

“Upgrade Construction Service Agreement” shall mean that agreement entered into by an Eligible Customer, Upgrade Customer or Interconnection Customer proposing Merchant Network Upgrades, a Transmission Owner, and the Transmission Provider, pursuant to Tariff, Part VI, Subpart B, and in the form set forth in Tariff, Attachment GG.

Upgrade Customer:

“Upgrade Customer” shall mean a customer that submits an Upgrade Request pursuant to Operating Agreement, Schedule 1, section 7.8, and the parallel provisions of Tariff, Attachment K-Appendix, section 7.8.

Upgrade Feasibility Study:

“Upgrade Feasibility Study” shall mean a study conducted by the Transmission Provider in accordance with Tariff, Part IV, section 36.3.

Upgrade-Related Rights:

“Upgrade-Related Rights” shall mean Incremental Auction Revenue Rights, Incremental Available Transfer Capability Revenue Rights, Incremental Deliverability Rights, and Incremental Capacity Transfer Rights.

Upgrade Request:

“Upgrade Request” shall mean a request submitted in the form prescribed in Tariff, Attachment EE, for evaluation by the Transmission Provider of the feasibility and estimated costs of (a) a Merchant Network Upgrade or (b) the Customer-Funded Upgrades that would be needed to provide Incremental Auction Revenue Rights specified in a request pursuant to Operating Agreement, Schedule 1, section 7.8, and the parallel provisions of Tariff, Attachment K-Appendix, section 7.8.

Up-to Congestion Counterflow Transaction:

“Up-to Congestion Counterflow Transaction” shall mean an Up-to Congestion Transaction will be deemed an Up-to Congestion Counterflow Transaction if the following value is negative: (a) when bidding, the lower of the bid price and the prior Up-to Congestion Historical Month’s average real-time value for the transaction; or (b) for cleared Virtual Transactions, the cleared day-ahead price of the Virtual Transactions.

Up-to Congestion Historical Month:

“Up-to Congestion Historical Month” shall mean a consistently-defined historical period nominally one month long that is as close to a calendar month as PJM determines is practical.

Up-to Congestion Prevailing Flow Transaction:

An Up-to Congestion Transaction shall mean an “Up-to Congestion Prevailing Flow Transaction” if it is not an Up-to Congestion Counterflow Transaction.

Up-to Congestion Reference Price:

“Up-to Congestion Reference Price” for an Up-to Congestion Transaction, shall be the specified percentile price differential between source and sink (defined as sink price minus source price) for real-time prices experienced over the prior Up-to Congestion Historical Month, averaged with the same percentile value calculated for the second prior Up-to Congestion Historical Month. Up-to Congestion Reference Prices shall be calculated using the following historical percentiles:

- For Up-to Congestion Prevailing Flow Transactions: 30th percentile
- For Up-to Congestion Counterflow Transactions when bid: 20th percentile
- For Up-to Congestion Counterflow Transactions when cleared: 5th percentile

Up-to Congestion Transaction:

“Up-to Congestion Transaction” shall have the meaning specified in Operating Agreement, Schedule 1, section 1.10.1A, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.10.1A.

Variable Loads:

“Variable Loads” shall have the meaning specified in Operating Agreement, Schedule 1, section 1.5A.6, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.5A.6.

Variable Resource Requirement Curve:

“Variable Resource Requirement Curve” shall mean a series of maximum prices that can be cleared in a Base Residual Auction for Unforced Capacity, corresponding to a series of varying resource requirements based on varying installed reserve margins, as determined by the Office of the Interconnection for the PJM Region and for certain Locational Deliverability Areas in accordance with the methodology provided in Tariff, Attachment DD, section 5.

Virtual Credit Exposure:

“Virtual Credit Exposure” shall mean the amount of potential credit exposure created by a market participant’s bid submitted into the Day-ahead market, as defined in Tariff, Attachment Q.

Virtual Transaction:

“Virtual Transaction” shall mean a Decrement Bid, Increment Offer and/or Up-to Congestion Transaction.

Virtual Transaction Screening:

“Virtual Transaction Screening” shall be the process of reviewing the Virtual Credit Exposure of submitted Virtual Transactions against the Credit Available for Virtual Transactions. If the credit required is greater than credit available, then the Virtual Transactions will not be accepted.

Virtual Transactions Net Activity:

“Virtual Transactions Net Activity” shall mean the aggregate net total, resulting from Virtual Transactions, of (i) Spot Market Energy charges, (ii) Transmission Congestion Charges, and (iii) Transmission Loss Charges, calculated as set forth in Tariff, Attachment K-Appendix, and the parallel provisions of Operating Agreement, Schedule 1. Virtual Transactions Net Activity may be positive or negative.

Voltage Reduction Action:

“Voltage Reduction Action” shall mean a notification during capacity deficient conditions in which PJM notifies Members to reduce voltage on the distribution system in order to reduce demand and therefore provide a sufficient amount of reserves, maintain tie flow schedules and preserve limited energy sources.

Voltage Reduction Alert:

“Voltage Reduction Alert” shall mean a notification from PJM to alert Members that a voltage reduction may be required during a future critical period.

Voltage Reduction Warning:

“Voltage Reduction Warning” shall mean a notification from PJM to warn Members that PJM’s available Synchronized Reserve is less than the Synchronized Reserve Requirement and that present operations have deteriorated such that a voltage reduction may be required.

Wholesale Transaction:

As used in Tariff, Part IV, “Wholesale Transaction” shall mean any transaction involving the transmission or sale for resale of electricity in interstate commerce that utilizes any portion of the Transmission System.

Winter-Period Capacity Performance Resource:

“Winter-Period Capacity Performance Resource” shall have the same meaning specified in Tariff, Attachment DD, section 5.5A.

Working Credit Limit:

“Working Credit Limit” shall mean an amount that is 75% of the Participant’s Unsecured Credit Allowance and/or 75% of the Collateral provided by the Participant to PJMSettlement. The Working Credit Limit establishes the maximum amount of Total Net Obligation that a Participant may have outstanding at any time. The calculation of Working Credit Limit shall take into account applicable reductions for Minimum Participation Requirements, FTR participation (for which there is no Unsecured Credit Allowance available), or other credit requirement determinants as defined in Tariff, Attachment Q.

Working Credit Limit for Virtual Transactions:

The “Working Credit Limit for Virtual Transactions” shall be calculated as 75% of the Market Participant’s Unsecured Credit Allowance and/or 75% of the Collateral provided by the Market Participant to PJMSettlement when the Market Participant is at or below its Peak Market Activity credit requirements as specified in Tariff, Attachment Q, section VII.A. When the Market Participant has available Unsecured Credit Allowance and/or has provided Collateral in excess of its Peak Market Activity credit requirements, such additional Unsecured Credit Allowance and/or Financial Security shall not be discounted by 25% when calculating the Working Credit Limit for Virtual Transactions. The Working Credit Limit for Virtual Transactions is a component in the calculation of Credit Available for Virtual Transactions. The calculation of Working Credit Limit for Virtual Transactions shall take into account applicable reductions for Minimum Participation Requirements, FTR, or other credit requirement determinants as defined in Tariff, Attachment Q.

Zonal Base Load:

“Zonal Base Load” shall mean the lowest daily zonal peak load from the twelve month period ending October 21 of the calendar year immediately preceding the calendar year in which an annual Auction Revenue Right allocation is conducted, increased by the projected load growth

rate for the relevant Zone, when non-extraordinary conditions exist for the applicable twelve month period, as determined by PJM. If the lowest daily zonal peak load from the applicable twelve month period is abnormally low due to extraordinary conditions, as determined by PJM, Zonal Base Load shall mean the next lowest daily zonal peak load that was not affected by extraordinary conditions during the applicable twelve month period, increased by the projected load growth rate for the relevant Zone. For the purposes of this definition, extraordinary conditions shall mean a significant event, or combination of events, that affect the operation of the bulk power system in an atypical manner and results in an abnormal reduction in the consumption of energy within a Zone.

Zonal Capacity Price:

“Zonal Capacity Price” shall mean the clearing price required in each Zone to meet the demand for Unforced Capacity and satisfy Locational Deliverability Requirements for the LDA or LDAs associated with such Zone. If the Zone contains multiple LDAs with different Capacity Resource Clearing Prices, the Zonal Capacity Price shall be a weighted average of the Capacity Resource Clearing Prices for such LDAs, weighted by the Unforced Capacity of Capacity Resources cleared in each such LDA.

Zone or Zonal:

“Zone” or “Zonal” shall mean an area within the PJM Region, as set forth in Tariff, Attachment J and RAA, Schedule 15, or as such areas may be (i) combined as a result of mergers or acquisitions or (ii) added as a result of the expansion of the boundaries of the PJM Region. A Zone shall include any Non-Zone Network Load located outside the PJM Region that is served from such Zone under Tariff, Attachment H-A.

Zone Network Load:

“Zone Network Load” shall mean Network Load that is located inside of the area comprised of the PJM Region.

APPENDIX 2

STANDARD TERMS AND CONDITIONS FOR INTERCONNECTIONS

1 Commencement, Term of and Conditions Precedent to Interconnection Service

1.1 Commencement Date:

The effective date of an Interconnection Service Agreement shall be the date provided in Section 4.0 of the Interconnection Service Agreement. Interconnection Service under this Interconnection Service Agreement shall commence upon the satisfaction of the conditions precedent set forth in Section 1.2 below.

1.2 Conditions Precedent:

The following conditions must be satisfied prior to the commencement of Interconnection Service under this Interconnection Service Agreement:

(a) This Interconnection Service Agreement, if filed with FERC, shall have been accepted for filing by the FERC;

(b) All requirements for Initial Operation as specified in Section 1.4 below shall have been met and Initial Operation of the Customer Facility shall have been completed.

(c) Interconnection Customer shall be in compliance with all Applicable Technical Requirements and Standards for interconnection under the Tariff (as determined by the Transmission Provider).

1.3 Term:

This Interconnection Service Agreement shall remain in full force and effect until it is terminated in accordance with Section 16 of this Appendix 2.

1.4 Initial Operation:

The following requirements shall be satisfied prior to Initial Operation of the Customer Facility:

1.4.1 The construction of all Interconnection Facilities necessary for the interconnection of the Customer Facility has been completed;

1.4.2 The Interconnected Transmission Owner has accepted any Interconnection Facilities constructed by Interconnection Customer pursuant to the Interconnection Construction Service Agreement;

1.4.3 The Interconnection Customer and the Interconnected Transmission Owner have all necessary systems and personnel in place to allow for parallel operation of their respective facilities;

1.4.4 The Interconnected Transmission Owner has received all applicable documentation for the Interconnection Facilities built by the Interconnection Customer, certified as correct, including,

but not limited to, access to the field copy of marked-up drawings reflecting the as-built condition, pre-operation test reports, and instruction books; and

1.4.5 Interconnection Customer shall have received any necessary authorization from Transmission Provider to synchronize with the Transmission System or to energize, as applicable per the determination of Transmission Provider, the Customer Facility and Interconnection Facilities.

1.4A Limited Operation:

If any of the Transmission Owner Interconnection Facilities are not reasonably expected to be completed prior to the Interconnection Customer's planned date of Initial Operation, and provided that the Interconnected Transmission Owner has accepted the Customer Interconnection Facilities pursuant to the Interconnection Construction Service Agreement, Transmission Provider shall, upon the request and at the expense of Interconnection Customer, perform appropriate power flow or other operating studies on a timely basis to determine the extent to which the Customer Facility and the Customer Interconnection Facilities may operate prior to the completion of the Transmission Owner Interconnection Facilities consistent with Applicable Laws and Regulations, Applicable Reliability Standards, Good Utility Practice, and the Interconnection Service Agreement. In accordance with the results of such studies and subject to such conditions as Transmission Provider determines to be reasonable and appropriate, Transmission Provider shall (a) permit Interconnection Customer to operate the Customer Facility and the Customer Interconnection Facilities, and (b) grant Interconnection Customer limited, interim Interconnection Rights commensurate with the extent to which operation of the Customer Facility is permitted.

1.5 Survival:

The Interconnection Service Agreement shall continue in effect after termination to the extent necessary to provide for final billings and payments; to permit the determination and enforcement of liability and indemnification obligations arising from acts or events that occurred while the Interconnection Service Agreement was in effect; and to permit each Interconnection Party to have access to the real property, including but not limited to leased property and easements of the other Interconnection Parties pursuant to Section 16 of this Appendix 2 to disconnect, remove or salvage its own facilities and equipment.

2 Interconnection Service

2.1 Scope of Service:

Interconnection Service shall be provided to the Interconnection Customer at the Point of Interconnection (a), in the case of interconnection of the Customer Facility of a Generation Interconnection Customer, up to the Maximum Facility Output, and (b), in the case of interconnection of the Customer Facility of a Transmission Interconnection Customer, up to the Nominal Rated Capability. The location of the Point of Interconnection shall be mutually agreed by the Interconnected Entities, provided, however, that if the Interconnected Entities are unable to agree on the Point of Interconnection, the Transmission Provider shall determine the Point of

Interconnection, provided that Transmission Provider shall not select a Point of Interconnection that would impose excessive costs on either of the Interconnected Entities and shall take material system reliability considerations into account in such selection. Specifications for the Customer Facility and the location of the Point of Interconnection shall be set forth in an appendix to the Interconnection Service Agreement and shall conform to those stated in the Facilities Study.

2.2 Non-Standard Terms:

The standard terms and conditions of this Appendix 2 shall not apply, to such extent as Transmission Provider determines to be reasonably necessary to accommodate such circumstances, in the event that the Interconnection Customer acquires an ownership interest in facilities which, under the standard terms and conditions of the Interconnection Construction Service Agreement would be part of the Transmission Owner Interconnection Facilities. In such circumstances and to the extent determined by Transmission Provider to be reasonably necessary, non-standard terms and conditions mutually agreed upon by all Interconnection Parties shall apply, subject to FERC and any other necessary regulatory acceptance or approval. In addition, a Generation Interconnection Customer that acquires an ownership interest in such facilities shall become, and shall remain for so long as it retains such interest, a signatory to the Consolidated Transmission Owners Agreement.

2.3 No Transmission Services:

The execution of an Interconnection Service Agreement does not constitute a request for transmission service, or entitle Interconnection Customer to receive transmission service, under Part II or Part III of the Tariff. Nor does the execution of an Interconnection Service Agreement obligate the Interconnected Transmission Owner or Transmission Provider to procure, supply or deliver to Interconnection Customer or the Customer Facility any energy, capacity, Ancillary Services or Station Power (and any associated distribution services).

2.4 Use of Distribution Facilities:

To the extent that a Generation Interconnection Customer uses distribution facilities for the purpose of delivering energy to the Transmission System, Interconnection Service under this Tariff shall include the construction and/or use of such distribution facilities. In such cases, to such extent as Transmission Provider determines to be reasonably necessary to accommodate such circumstances, the Interconnection Service Agreement may include non-standard terms and conditions mutually agreed upon by all Interconnection Parties as needed to conform with Applicable Laws and Regulations and Applicable Standards relating to such distribution facilities.

2.5 Election by Behind The Meter Generation:

In the event that a Generation Interconnection Customer's Customer Facility is Behind The Meter Generation, the Generation Interconnection Customer may elect from time to time, subject to the terms of this section, whether to operate all or a portion of its Customer Facility's generating capacity as a Capacity Resource under the Tariff and the Operating Agreement.

2.5.1 Capacity Resource Election:

The Generation Interconnection Customer may elect to operate all or a portion of its Customer Facility as a Capacity Resource only to the extent that the Interconnection Service Agreement grants Capacity Interconnection Rights. Such an election may include all or any portion of the Customer Facility's capacity for which Capacity Interconnection Rights have been granted.

2.5.2 Timing and Duration of Election:

The Generation Interconnection Customer shall make an initial election under this section no later than 30 days prior to the commencement of Interconnection Service. Thereafter, the Generation Interconnection Customer may make the election authorized by this Section 2.5 only once in each calendar year and must notify Transmission Provider of such an election no later than May 1, and no sooner than March 15, of each year. Each such election shall be effective commencing on June 1 following Transmission Provider's receipt of notice of the election. An election under this Section 2.5 shall remain in effect unless and until the Generation Interconnection Customer modifies or terminates it in a subsequent election made in accordance with the terms of this section.

3 Modification Of Facilities

3.1 General:

Subject to Applicable Laws and Regulations and to any applicable requirements or conditions of the Tariff and the Operating Agreement, either Interconnected Entity may undertake modifications to its facilities. In the event that an Interconnected Entity plans to undertake a modification that reasonably may be expected upon completion to have a permanent material impact on the other Interconnected Entity's facilities, that Interconnected Entity, in accordance with Good Utility Practice, shall provide the other Interconnection Parties with sufficient information regarding such modification, so that the other Interconnection Parties may evaluate the potential impact of such modification prior to commencement of the work. The Interconnected Entity desiring to perform such modification shall provide the relevant drawings, plans, and specifications to the other Interconnection Parties at least ninety days, or such shorter period to which the Interconnection Parties receiving the information may agree (which agreement shall not unreasonably be withheld, conditioned, or delayed), in advance of the beginning of the work. The Interconnection Customer shall notify Transmission Provider and Interconnected Transmission Owner of the proposed modifications and Transmission Provider shall provide, within sixty days of receipt of the relevant drawings and specifications (or within such other time upon which the Interconnection Parties may agree), an estimate of any modifications to the Transmission System that would be necessary to accommodate the proposed modifications by Interconnection Customer and a good faith estimate of the costs thereof.

3.2 Interconnection Request:

This Section 3 shall not apply to any proposed modifications by Interconnection Customer to its facilities for which Interconnection Customer must make an Interconnection Request under the

Tariff. In such circumstances, the Interconnection Customer and Transmission Provider shall follow the requirements of Subpart A of Part IV of the Tariff.

3.3 Standards:

Any additions, modifications, or replacements made to an Interconnected Entity's facilities shall be constructed and operated in accordance with Good Utility Practice, Applicable Standards and Applicable Laws and Regulations.

3.4 Modification Costs:

Unless otherwise required by Applicable Laws and Regulations or this Appendix 2 and, with respect to a Transmission Interconnection Customer, subject to the terms of Section 236.2 of the Tariff:

(a) Interconnection Customer shall not be responsible for the costs of any additions, modifications, or replacements that the Interconnected Transmission Owner in its discretion or at the direction of Transmission Provider makes to the Interconnection Facilities or the Transmission System in order to facilitate the interconnection of a third party to the Interconnection Facilities or the Transmission System, or to provide transmission service under the Tariff to a third party.

(b) Interconnection Customer shall be responsible for the costs of any additions, modifications, or replacements to the Interconnection Facilities or the Transmission System that are required, in accord with Good Utility Practice and/or to maintain compliance with Applicable Laws and Regulations or Applicable Standards, in order to accommodate additions, modifications, or replacements made by Interconnection Customer to the Customer Facility or to the Customer Interconnection Facilities.

(c) Interconnection Customer shall be responsible for the costs of any additions, modifications, or replacements to the Customer Interconnection Facilities or the Customer Facility that are required, in accord with Good Utility Practice and/or to maintain compliance with Applicable Laws and Regulations or Applicable Standards, in order to accommodate additions, modifications, or replacements that Transmission Provider or the Interconnected Transmission Owner makes to the Transmission System or to the Transmission Owner Interconnection Facilities, but only to the extent that Transmission Provider's or the Interconnected Transmission Owner's changes to the Transmission System or the Transmission Owner Interconnection Facilities are made pursuant to Good Utility Practice and/or to maintain compliance with Applicable Laws and Regulations or Applicable Standards.

4 Operations

4.1 General:

Each Interconnected Entity shall operate, or shall cause operation of, its facilities in a safe and reliable manner in accord with (i) the terms of this Appendix 2; (ii) Applicable Standards; (iii) applicable rules, procedures and protocols set forth in the Tariff and the Operating Agreement, as

any or all may be amended from time to time; (iv) Applicable Laws and Regulations, and (v) Good Utility Practice.

4.1.1 Interconnection Customer Drawings:

Within one hundred twenty (120) days after the date of Initial Operation, unless the Interconnection Parties agree on another mutually acceptable deadline, the Interconnection Customer shall deliver to the Transmission Provider and the Interconnected Transmission Owner final, “as-built” drawings, information and documents regarding the Customer Interconnection Facilities, including, as and to the extent applicable: a one-line diagram, a site plan showing the Customer Facility and the Customer Interconnection Facilities, plan and elevation drawings showing the layout of the Customer Interconnection Facilities, a relay functional diagram, relaying AC and DC schematic wiring diagrams and relay settings for all facilities associated with the Interconnection Customer's step-up transformers, the facilities connecting the Customer Facility to the step-up transformers and the Customer Interconnection Facilities, and the impedances (determined by factory tests) for the associated step-up transformers and the Customer Facility. As applicable, the Interconnection Customer shall provide Transmission Provider and the Interconnected Transmission Owner specifications for the excitation system, automatic voltage regulator, Customer Facility control and protection settings, transformer tap settings, and communications.

4.2 [Reserved.]

4.3 Interconnection Customer Obligations:

Interconnection Customer shall obtain Transmission Provider’s approval prior to either synchronizing with the Transmission System or energizing, as applicable per the determination of Transmission Provider, the Customer Facility or, except in an Emergency Condition, disconnecting the Customer Facility from the Transmission System, and shall coordinate such synchronizations, energizations, and disconnections with the Interconnected Transmission Owner.

4.4 Transmission Interconnection Customer Obligations:

A Transmission Interconnection Customer that will be a Merchant Transmission Provider is subject to the terms and conditions in Tariff, Section 38.

4.5 Permits and Rights-of-Way:

Each Interconnected Entity at its own expense shall maintain in full force and effect all permits, licenses, rights-of-way and other authorizations as may be required to maintain the Customer Facility and the Interconnection Facilities that the entity owns, operates and maintains and, upon reasonable request of the other Interconnected Entity, shall provide copies of such permits, licenses, rights-of-way and other authorizations at its own expense to the requesting party.

4.6 No Ancillary Services:

Except as provided in Section 4.7 of this Appendix 2, nothing in this Appendix 2 is intended to obligate the Interconnection Customer to supply Ancillary Services to either Transmission Provider or the Interconnected Transmission Owner.

4.7 Reactive Power and Primary Frequency Response

4.7.1 Reactive Power

4.7.1.1 Reactive Power Design Criteria

4.7.1.1.1 New Facilities:

For all new Generating Facilities to be interconnected pursuant to the Tariff, other than wind-powered and other non-synchronous generation facilities, the Generation Interconnection Customer shall design its Customer Facility to maintain a composite power delivery at continuous rated power output at a power factor of at least 0.95 leading to 0.90 lagging. For all new wind-powered and other non-synchronous generation facilities the Generation Interconnection Customer shall design its Customer Facility with the ability to maintain a composite power delivery at a power factor of at least 0.95 leading to 0.95 lagging across the full range of continuous rated power output. For all wind-powered and other non-synchronous generation facilities entering the New Service Queue on or after November 1, 2016, the power factor requirement shall be measured at the high-side of the facility substation transformers. This power factor range standard shall be dynamic and can be met using, for example, power electronics designed to supply this level of reactive capability (taking into account any limitations due to voltage level, real power output, etc.) or fixed and switched capacitors, or a combination of the two. For all wind-powered and other non-synchronous generation facilities entering the New Service Queue on or after May 1, 2015, and before November 1, 2016, the power factor requirement shall be measured at the generator's terminals. For new generation resources of more than 20 MW, other than wind-powered and other non-synchronous Generating Facilities, the power factor requirement shall be measured at the generator's terminals. For new generation resources of 20 MW or less, and all wind-powered and other non-synchronous generation facilities entering the New Service Queue prior to May 1, 2015, the power factor requirement shall be measured at the Point of Interconnection. Any different reactive power design criteria that Transmission Provider determines to be appropriate for a wind-powered or other non-synchronous generation facility shall be stated in the Interconnection Service Agreement. A Transmission Interconnection Customer interconnecting Merchant D.C. Transmission Facilities and/ or Controllable A.C. Merchant Transmission Facilities shall design its Customer Facility to maintain a power factor at the Point of Interconnection of at least 0.95 leading and 0.95 lagging, when the Customer Facility is operating at any level within its approved operating range.

4.7.1.1.2 Increases in Generating Capacity or Energy Output:

All increases in the capacity or energy output of any generation facility interconnected with the Transmission System, other than wind-powered and other non-synchronous Generating Facilities, shall be designed with the ability to maintain a composite power delivery at continuous rated power output at a power factor for all incremental MW of capacity or energy output, of at least 1.0 (unity)

to 0.90 lagging. Wind-powered generation facilities and other non-synchronous generation facilities entering the New Service Queue on or after November 1, 2016, shall be designed with the ability to maintain a composite power delivery at a power factor for all incremental MW of capacity or energy output of at least 0.95 leading to 0.95 lagging measured at the high-side of the facility substation transformers across the full range of continuous rated power output. This power factor range standard shall be dynamic and can be met using, for example, power electronics designed to supply this level of reactive capability (taking into account any limitations due to voltage level, real power output, etc.) or fixed and switched capacitors, or a combination of the two. Wind-powered generation facilities and other non-synchronous generation facilities entering the New Service Queue on or after May 1, 2015, and before November 1, 2016, shall be designed with the ability to maintain a composite power delivery at a power factor for all incremental MW of capacity or energy output, of at least 0.95 leading to 0.95 lagging measured at the generator's terminals under conditions in which a wind-powered generation facility's real power output exceeds 25 percent of its continuous rated power output and, for all other non-synchronous generation facilities, across the full range of continuous rated power output. Wind-powered generation facilities and other non-synchronous generation facilities entering the New Service Queue prior to May 1, 2015 shall be designed with the ability to maintain a composite power delivery at continuous rated power output at a power factor for all incremental MW of capacity or energy output of at least 1.0 (unity) to 0.95 lagging measured at the generator's terminals. The power factor requirement associated with increases in capacity or energy output of more than 20 MW to synchronous generation facilities interconnected with the Transmission System shall be measured at the generator's terminals. The power factor requirement associated with increases in capacity or energy output of 20 MW or less to synchronous generation facilities interconnected to the Transmission System shall be measured at the Point of Interconnection.

4.7.1.2 Obligation to Supply Reactive Power:

Interconnection Customer agrees, as and when so directed by Transmission Provider or when so directed by the Interconnected Transmission Owner acting on behalf or at the direction of Transmission Provider, to operate the Customer Facility to produce reactive power within the design limitations of the Customer Facility pursuant to voltage schedules, reactive power schedules or power factor schedules established by Transmission Provider or, as appropriate, the Interconnected Transmission Owner. Transmission Provider shall maintain oversight over such schedules to ensure that all sources of reactive power in the PJM Region, as applicable, are treated in an equitable and not unduly discriminatory manner. Interconnection Customer agrees that Transmission Provider and the Interconnected Transmission Owner, acting on behalf or at the direction of Transmission Provider, may make changes to the schedules that they respectively establish as necessary to maintain the reliability of the Transmission System.

4.7.1.3 Deviations from Schedules:

In the event that operation of the Customer Facility of an Interconnection Customer causes the Transmission System or the Interconnected Transmission Owner's facilities to deviate from appropriate voltage schedules and/or reactive power schedules as specified by Transmission Provider or the Interconnected Transmission Owner's operations control center (acting on behalf or at the direction of Transmission Provider), or that otherwise is inconsistent with Good Utility

Practice and results in an unreasonable deterioration of the quality of electric service to other customers of Transmission Provider or the Interconnected Transmission Owner, the Interconnection Customer shall, upon discovery of the problem or upon notice from Transmission Provider or the Interconnected Transmission Owner, acting on behalf or at the direction of Transmission Provider, take whatever steps are reasonably necessary to alleviate the situation at its expense, in accord with Good Utility Practice and within the reactive capability of the Customer Facility. In the event that the Interconnection Customer does not alleviate the situation within a reasonable period of time following Transmission Provider's or the Interconnected Transmission Owner's notice thereof, the Interconnected Transmission Owner, with Transmission Provider's approval, upon notice to the Interconnection Customer and at the Interconnection Customer's expense, may take appropriate action, including installation on the Transmission System of power factor correction or other equipment, as is reasonably required, consistent with Good Utility Practice, to remedy the situation cited in Transmission Provider's or the Interconnected Transmission Owner's notice to the Interconnection Customer under this section.

4.7.1.4 Payment for Reactive Power:

Any payments to the Interconnection Customer for reactive power shall be in accordance with Schedule 2 of the Tariff.

4.7.2 Primary Frequency Response:

Section 4.7.2 of this ISA and its subsections apply to New Service Requests received on or after October 1, 2018.

Generation Interconnection Customer shall ensure the primary frequency response capability of its Customer Facility by installing, maintaining, and operating a functioning governor or equivalent controls. The term "functioning governor or equivalent controls" as used herein shall mean the required hardware and/or software that provides frequency responsive real power control with the ability to sense changes in system frequency and autonomously adjust the Customer Facility's real power output in accordance with the droop and deadband parameters and in the direction needed to correct frequency deviations. Generation Interconnection Customer is required to install a governor or equivalent controls with the capability of operating: (1) with a maximum 5 percent droop and ± 0.036 Hz deadband; or (2) in accordance with the relevant droop, deadband, and timely and sustained response settings from an approved NERC Reliability Standard providing for equivalent or more stringent parameters. The droop characteristic shall be: (1) based on the nameplate capacity of the Customer Facility, and shall be linear in the range of frequencies between 59 to 61 Hz that are outside of the deadband parameter; or (2) based on an approved NERC Reliability Standard providing for an equivalent or more stringent parameter. The deadband parameter shall be: the range of frequencies above and below nominal (60 Hz) in which the governor or equivalent controls is not expected to adjust the Customer Facility's real power output in response to frequency deviations. The deadband shall be implemented: (1) without a step to the droop curve, that is, once the frequency deviation exceeds the deadband parameter, the expected change in the Customer Facility's real power output in response to frequency deviations shall start from zero and then increase (for under-frequency deviations) or decrease (for over-frequency deviations) linearly in proportion to the magnitude of the frequency deviation; or (2) in accordance with an approved NERC Reliability Standard providing for an equivalent or more stringent parameter. Generation Interconnection Customer shall notify Transmission Provider that the

primary frequency response capability of the Customer Facility has been tested and confirmed during commissioning. Once Generation Interconnection Customer has synchronized the Customer Facility with the Transmission System, Generation Interconnection Customer shall operate the Customer Facility consistent with the provisions specified in sections 4.7.2.1 and 4.7.2.2 of this agreement. The primary frequency response requirements contained herein shall apply to both synchronous and non-synchronous Customer Facilities.

4.7.2.1 Governor or Equivalent Controls:

Whenever the Customer Facility is operated in parallel with the Transmission System, Generation Interconnection Customer shall operate the Customer Facility with its governor or equivalent controls in service and responsive to frequency. Generation Interconnection Customer shall: (1) in coordination with Transmission Provider and/or the relevant balancing authority, set the deadband parameter to: (1) a maximum of ± 0.036 Hz and set the droop parameter to a maximum of 5 percent; or (2) implement the relevant droop and deadband settings from an approved NERC Reliability Standard that provides for equivalent or more stringent parameters. Generation Interconnection Customer shall be required to provide the status and settings of the governor or equivalent controls to Transmission Provider and/or the relevant balancing authority upon request. If Generation Interconnection Customer needs to operate the Customer Facility with its governor or equivalent controls not in service, Generation Interconnection Customer shall immediately notify Transmission Provider and the relevant balancing authority, and provide both with the following information: (1) the operating status of the governor or equivalent controls (i.e., whether it is currently out of service or when it will be taken out of service); (2) the reasons for removing the governor or equivalent controls from service; and (3) a reasonable estimate of when the governor or equivalent controls will be returned to service. Generation Interconnection Customer shall make Reasonable Efforts to return its governor or equivalent controls into service as soon as practicable. Generation Interconnection Customer shall make Reasonable Efforts to keep outages of the Customer Facility's governor or equivalent controls to a minimum whenever the Customer Facility is operated in parallel with the Transmission System.

4.7.2.2 Timely and Sustained Response:

Generation Interconnection Customer shall ensure that the Customer Facility's real power response to sustained frequency deviations outside of the deadband setting is automatically provided and shall begin immediately after frequency deviates outside of the deadband, and to the extent the Customer Facility has operating capability in the direction needed to correct the frequency deviation. Generation Interconnection Customer shall not block or otherwise inhibit the ability of the governor or equivalent controls to respond and shall ensure that the response is not inhibited, except under certain operational constraints including, but not limited to, ambient temperature limitations, physical energy limitations, outages of mechanical equipment, or regulatory requirements. The Customer Facility shall sustain the real power response at least until system frequency returns to a value within the deadband setting of the governor or equivalent controls. A Commission-approved Reliability Standard with equivalent or more stringent requirements shall supersede the above requirements.

4.7.2.3 Exemptions:

Customer Facilities that are regulated by the United States Nuclear Regulatory Commission shall be exempt from sections 4.7.2, 4.7.2.1, and 4.7.2.2 of this agreement. Customer Facilities that are behind the meter generation that is sized-to-load (i.e., the thermal load and the generation are near-balanced in real-time operation and the generation is primarily controlled to maintain the unique thermal, chemical, or mechanical output necessary for the operating requirements of its host facility) shall be required to install primary frequency response capability in accordance with the droop and deadband capability requirements specified in section 4.7.2, but shall be otherwise exempt from the operating requirements in sections 4.7.2, 4.7.2.1, 4.7.2.2, and 4.7.2.4 of this agreement.

4.7.2.4 Energy Storage Resources:

Generation Interconnection Customer interconnecting an Energy Storage Resource shall establish an operating range in Schedule I of this ISA that specifies a minimum state of charge and a maximum state of charge between which the Energy Storage Resource will be required to provide primary frequency response consistent with the conditions set forth in sections 4.7.2, 4.7.2.1, 4.7.2.2, and 4.7.2.3 of this agreement. Schedule I shall specify whether the operating range is static or dynamic, and shall consider (1) the expected magnitude of frequency deviations in the interconnection; (2) the expected duration that system frequency will remain outside of the deadband parameter in the interconnection; (3) the expected incidence of frequency deviations outside of the deadband parameter in the interconnection; (4) the physical capabilities of the Energy Storage Resource; (5) operational limitations of the Energy Storage Resource due to manufacturer specifications; and (6) any other relevant factors agreed to by Transmission Provider and Generation Interconnection Customer, and in consultation with the relevant transmission owner or balancing authority as appropriate. If the operating range is dynamic, then Schedule I must establish how frequently the operating range will be reevaluated and the factors that may be considered during its reevaluation.

Generation Interconnection Customer's Energy Storage Resource is required to provide timely and sustained primary frequency response consistent with section 4.7.2.2 of this agreement when it is online and dispatched to inject electricity to the Transmission System and/or receive electricity from the Transmission System. This excludes circumstances when the Energy Storage Resource is not dispatched to inject electricity to the Transmission System and/or dispatched to receive electricity from the Transmission System. If Generation Interconnection Customer's Energy Storage Resource is charging at the time of a frequency deviation outside of its deadband parameter, it is to increase (for over-frequency deviations) or decrease (for under-frequency deviations) the rate at which it is charging in accordance with its droop parameter. Generation Interconnection Customer's Energy Storage Resource is not required to change from charging to discharging, or vice versa, unless the response necessitated by the droop and deadband settings requires it to do so and it is technically capable of making such a transition.

4.8 Under- and Over-Frequency and Under- and Over- Voltage Conditions:

The Generation Interconnection Customer shall ensure "frequency ride through" capability and "voltage ride through" capability of its Customer Facility. The Generation Interconnection

Customer shall enable these capabilities such that its Customer Facility shall not disconnect automatically or instantaneously from the system or equipment of the Transmission Provider and any Affected Systems for a defined under-frequency or over-frequency condition, or an under-voltage or over-voltage condition, as tested pursuant to Section 1.4.4 of Appendix 2 of this Interconnection Service Agreement. The defined conditions shall be in accordance with Good Utility Practice and consistent with any standards and guidelines that are applied to other Generating Facilities in the PJM Region on a comparable basis. The Customer Facility's protective equipment settings shall comply with the Transmission Provider's automatic load-shed program. The Transmission Provider shall review the protective equipment settings to confirm compliance with the automatic load-shed program. The term "ride through" as used herein shall mean the ability of a Customer Facility to stay connected to and synchronized with the system or equipment of the Transmission Provider and any Affected Systems during system disturbances within a range of conditions, in accordance with Good Utility Practice and consistent with any standards and guidelines that are applied to other Generating Facilities in the Balancing Authority on a comparable basis. The term "frequency ride through" as used herein shall mean the ability of a Generation Interconnection Customer's Customer Facility Customer Facility to stay connected to and synchronized with the Transmission System or equipment of the Transmission Provider and any Affected Systems during system disturbances within a range of under-frequency and over-frequency conditions, in accordance with Good Utility Practice and consistent with any standards and guidelines that are applied to other Generating Facilities in the PJM Region on a comparable basis. The term "voltage ride through" as used herein shall mean the ability of a Customer Facility to stay connected to and synchronized with the system or equipment of the Transmission Provider and any Affected Systems during system disturbances within a range of under-voltage and over-voltage conditions, in accordance with Good Utility Practice and consistent with any standards and guidelines that are applied to other Generating Facilities in the PJM Region on a comparable basis.

The Transmission System is designed to automatically activate a load-shed program as required by NERC and each Applicable Regional Entity in the event of an under-frequency system disturbance. A Generation Interconnection Customer shall implement under-frequency and over-frequency relay set points for the Customer Facility as required by NERC and each Applicable Regional Entity to ensure "frequency ride through" capability of the Transmission System. The response of a Generation Interconnection Customer's Customer Facility to frequency deviations of predetermined magnitudes, both under-frequency and over-frequency deviations shall be studied and coordinated with the Transmission Provider in accordance with Good Utility Practice.

4.9 System Protection and Power Quality

4.9.1 System Protection:

Interconnection Customer shall, at its expense, install, operate and maintain such System Protection Facilities as may be required in connection with operation of the Customer Facility and the Customer Interconnection Facilities consistent with Applicable Technical Requirements and Standards. Interconnected Transmission Owner shall install any System Protection Facilities that may be required, as determined by Transmission Provider, on the Transmission Owner

Interconnection Facilities or the Transmission System in connection with the operation of the Customer Facility and the Customer Interconnection Facilities. Responsibility for the cost of any System Protection Facilities required on the Transmission Owner Interconnection Facilities or the Transmission System shall be allocated as provided in Section 217 of the Tariff.

4.9.2 Power Quality:

The Customer Facility and Customer Interconnection Facilities shall not cause excessive deviations from the power quality criteria set forth in the Applicable Technical Requirements and Standards.

4.10 Access Rights:

Each Interconnected Entity shall provide the other Interconnected Entity access to areas under its control as reasonably necessary to permit the other Interconnected Entity to perform its obligations under this Appendix 2, including operation and maintenance obligations. An Interconnected Entity that obtains such access shall comply with all safety rules applicable to the area to which access is obtained. Each Interconnected Entity agrees to inform the other Interconnected Entity's representatives of safety rules applicable to an area.

4.11 Switching and Tagging Rules:

The Interconnected Entities shall comply with applicable Switching and Tagging Rules in obtaining clearances for work or for switching operations on equipment. Such Switching and Tagging Rules shall be developed in accordance with OSHA standards codified at 29 C.F.R. Part 1910, or successor standards. Each Interconnected Entity shall provide the other Interconnected Entity a copy of its Switching and Tagging Rules that are applicable to the other Interconnected Entity's activities.

4.12 Communications and Data Protocol:

The Interconnected Entities shall comply with any communications and data protocol that the Transmission Provider may establish.

4.13 Nuclear Generating Facilities:

In the event that the Customer Facility is a nuclear Generating Facility, the Interconnection Parties shall agree to such non-standard terms and conditions as are reasonably necessary to accommodate the Interconnection Customer's satisfaction of Nuclear Regulatory Commission requirements relating to the safety and reliability of operations of such facilities.

5 Maintenance

5.1 General:

Each Interconnected Entity shall maintain, or shall cause the maintenance of, its facilities in a safe and reliable manner in accord with (i) the terms of this Appendix 2; (ii) Applicable Standards; (iii) applicable rules, procedures and protocols set forth in the Tariff and the Operating Agreement, as any or all may be amended from time to time; (iv) Applicable Laws and Regulations, and (v) Good Utility Practice.

5.2 [Reserved.]

5.3 Outage Authority and Coordination

5.3.1 Coordination:

The Interconnection Parties agree to confer regularly to coordinate the planning, scheduling and performance of preventive and corrective maintenance on the Customer Facility, the Customer Interconnection Facilities and any Attachment Facilities owned by the Interconnected Transmission Owner.

5.3.2 Authority:

Each Interconnected Entity may, in accordance with Good Utility Practice, remove from service its facilities that may affect the other Interconnected Entity's facilities in order to perform maintenance or testing or to install or replace equipment. Except in the event of an Emergency Condition, the Interconnection Customer proposing to remove such facilities from service shall provide prior notice of such activities to the Transmission Provider and the Interconnected Transmission Owner, and the Interconnected Entities shall coordinate all scheduling of planned facility outages with Transmission Provider, in accordance with applicable sections of the Operating Agreement, the PJM Manuals and any other applicable operating guidelines or directives of the Transmission Provider. Subject to the foregoing, the Interconnected Entity scheduling a facility outage shall use Reasonable Efforts to coordinate such outage with the other Interconnected Entity's scheduled outages.

5.3.3 Outages Required for Maintenance:

Subject to any necessary approval by Transmission Provider, each Interconnected Entity shall provide necessary equipment outages to allow the other Interconnected Entity to perform periodic maintenance, repair or replacement of its facilities and such outages shall be provided at mutually agreeable times, unless conditions arise which an Interconnected Entity believes, in accordance with Good Utility Practice, may endanger persons or property.

5.3.4 Rescheduling of Planned Outages:

To the extent so provided by the Tariff, the Operating Agreement, and the PJM Manuals, an Interconnected Entity may seek compensation from Transmission Provider for any costs related to rejection by Transmission Provider of a request of such Interconnected Entity for a planned maintenance outage.

5.3.5 Outage Restoration:

If an outage on an Interconnected Entity's facilities adversely affects the other Interconnected Entity's facilities, the Interconnected Entity that owns or controls the facility that is out of service shall use Reasonable Efforts to restore the facility to service promptly.

5.4 Inspections and Testing:

Each Interconnected Entity shall perform routine inspection and testing of its facilities and equipment in accordance with Good Utility Practice as may be necessary to ensure the continued interconnection of the Customer Facility with the Transmission System in a safe and reliable manner. Each Interconnected Entity shall have the right, upon advance written notice, to request reasonable additional testing of an Interconnected Entity's facilities for good cause, as may be in accordance with Good Utility Practice.

5.5 Right to Observe Testing:

Each Interconnected Entity shall notify the other Interconnected Entity in advance of its performance of tests of its portion of the Interconnection Facilities. The other Interconnected Entity shall, at its own expense, have the right, but not the obligation, to:

- (a) Observe the other Party's tests and/or inspection of any of its system protection facilities and other protective equipment, including power system stabilizers;
- (b) Review the settings of the other Party's system protection facilities and other protective equipment;
- (c) Review the other Party's maintenance record relative to the Interconnection Facilities, system protection facilities and other protective equipment; and
- (d) Exercise these rights from time to time as it deems necessary upon reasonable notice to the other Party.

5.6 Secondary Systems:

Each Interconnected Entity agrees to cooperate with the other in the inspection, maintenance, and testing of those Secondary Systems directly affecting the operation of an Interconnected Entity's facilities and equipment which may reasonably be expected to affect the other Interconnected Entity's facilities. Each Interconnected Entity shall provide advance notice to the other Interconnected Entity before undertaking any work on such equipment, especially in electrical circuits involving circuit breaker trip and close contacts, current transformers, or potential transformers.

5.7 Access Rights:

Each Interconnected Entity shall provide the other Interconnected Entity access to areas under its control as reasonably necessary to permit the other Interconnected Entity to perform its obligations under this Appendix 2, including operation and maintenance obligations. An Interconnected Entity that obtains such access shall comply with all safety rules applicable to the area to which access is obtained. Each Interconnected Entity agrees to inform the other Interconnected Entity's representatives of safety rules applicable to an area.

5.8 Observation of Deficiencies:

If an Interconnection Party observes any Abnormal Condition on, or becomes aware of a lack of scheduled maintenance and testing with respect to, an Interconnection Party's facilities and equipment that might reasonably be expected to adversely affect the observing Interconnection Party's facilities and equipment, the observing Interconnection Party shall provide prompt notice under the circumstances to the appropriate Interconnection Party, and such Interconnection Party shall consider such notice in accordance with Good Utility Practice. Any Interconnection Party's review, inspection, and approval related to the other Interconnection Party's facilities and equipment shall be limited to the purpose of assessing the safety, reliability, protection and control of the Transmission System and shall not be construed as confirming or endorsing the design of such facilities and equipment, or as a warranty of any type, including safety, durability or reliability thereof. Notwithstanding the foregoing, the observing Interconnection Party shall have no liability whatsoever for failure to give a deficiency notice to the other Interconnection Party and the Interconnected Entity that owns the relevant Interconnection Facilities shall remain fully liable for its failure to determine and correct deficiencies and defects in its facilities and equipment.

6 Emergency Operations

6.1 Obligations:

Subject to Applicable Laws and Regulations, each Interconnection Party shall comply with the Emergency Condition procedures of NERC, the Applicable Regional Entity, Transmission Provider, the Interconnected Transmission Owner and Interconnection Customer.

6.2 Notice:

Each Interconnection Party shall notify the other parties promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect operation of the Customer Facility, the Customer Interconnection Facilities, the Transmission Owner Interconnection Facilities, or the Transmission System. To the extent information is known, the notification shall describe the Emergency Condition, the extent of the damage or deficiency, the expected effect on the facilities and/or operation thereof, its anticipated duration and the corrective action taken and/or to be taken. The initial notice shall be followed as soon as practicable with written notice.

6.3 Immediate Action:

An Interconnection Party becoming aware of an Emergency Condition may take such action, including disconnection of the Customer Facility from the Transmission System, as is reasonable and necessary in accord with Good Utility Practice (i) to prevent, avoid, or mitigate injury or

danger to, or loss of, life or property; (ii) to preserve the reliability of, in the case of Interconnection Customer, the Customer Facility, or, in the case of Transmission Provider or the Interconnected Transmission Owner, the Transmission System and interconnected sub-transmission and distribution facilities; or (iii) to expedite restoration of service. Unless, in Interconnection Customer's reasonable judgment, immediate action is required to prevent imminent loss of life or property, Interconnection Customer shall obtain the consent of Transmission Provider and the Interconnected Transmission Owner prior to performing any manual switching operations at the Customer Facility or the Generation Interconnection Facilities. Each Interconnection Party shall use Reasonable Efforts to minimize the effect of its actions during an Emergency Condition on the facilities and operations of the other Interconnection Parties.

6.4 Record-Keeping Obligations:

Each Interconnection Party shall keep and maintain records of actions taken during an Emergency Condition that may reasonably be expected to affect the other parties' facilities and make such records available for audit in accordance with Section 19.3 of this Appendix 2.

7 Safety

7.1 General:

Each Interconnected Entity shall perform all work under this Appendix 2 that may reasonably be expected to affect the other Interconnected Entity in accordance with Good Utility Practice and all Applicable Laws and Regulations pertaining to the safety of persons or property. An Interconnected Entity performing work within the boundaries of the other Interconnected Entity's facilities must abide by the safety rules applicable to the site. Each party agrees to inform the other party's representatives of applicable safety rules that must be obeyed on the premises.

7.2 Environmental Releases:

Each Interconnected Entity shall notify the other Interconnection Parties, first orally and promptly thereafter in writing, of the release of any Hazardous Substances, any asbestos or lead abatement activities, or any type of remediation activities, related to the Customer Facility or the Interconnection Facilities, any of which may reasonably be expected to affect one or both of the other parties. The notifying party shall (i) provide the notice as soon as possible; (ii) make a good faith effort to provide the notice within twenty-four (24) hours after the party becomes aware of the occurrence; and (iii) promptly furnish to the other parties copies of any publicly available reports filed with any governmental agencies addressing such events.

8 Metering

8.1 General:

Interconnection Customer shall have the right to install, own, operate, test and maintain the necessary Metering Equipment. In the event that Interconnection Customer exercises this option, the Interconnected Transmission Owner shall have the right to install its own check meter(s), at its

own expense, at or near the location of the Metering Equipment. If both Interconnection Customer and Interconnected Transmission Owner install meters, the meter installed by the Interconnection Customer shall control unless it is determined by testing to be inaccurate. If the Interconnection Customer does not exercise the option provided by the first sentence of this section, the Interconnected Transmission Owner shall have the option to install, own, operate, test and maintain all necessary Metering Equipment at Interconnection Customer's expense. If the Interconnected Transmission Owner does not exercise this option, the Interconnection Customer shall install, own, operate, test and maintain all necessary Metering Equipment. Transmission Provider shall determine the location where the Metering Equipment shall be installed, after consulting with Interconnection Customer and the Interconnected Transmission Owner. All Metering Equipment shall be tested prior to any operation of the Customer Facility. Power flows to and from the Customer Facility shall be compensated to the Point of Interconnection, or, upon the mutual agreement of the Interconnected Transmission Owner and the Interconnection Customer, to another location.

8.2 Standards:

All Metering Equipment installed pursuant to this Appendix 2 to be used for billing and payments shall be revenue quality Metering Equipment and shall satisfy applicable ANSI standards and Transmission Provider's metering standards and requirements. Nothing in this Appendix 2 precludes the use of Metering Equipment for any retail services of the Interconnected Transmission Owner provided, however, that in such circumstances Applicable Laws and Regulations shall control.

8.3 Testing of Metering Equipment:

The Interconnected Entity that, pursuant to Section 8.1 of this Appendix 2, owns the Metering Equipment shall operate, maintain, inspect and test all Metering Equipment upon installation and at least once every two years thereafter. Upon reasonable request by the other Interconnected Entity, the owner of the Metering Equipment shall inspect or test the Metering Equipment more frequently than every two years, but in no event more frequently than three times in any 24-month period. The owner of the Metering Equipment shall give reasonable notice to the Interconnection Parties of the time when any inspection or test of the owner's Metering Equipment shall take place, and the other parties may have representatives present at the test or inspection. If Metering Equipment is found to be inaccurate or defective, it shall be adjusted, repaired or replaced in order to provide accurate metering. Where the Interconnected Transmission Owner owns the Metering Equipment, the expense of such adjustment, repair or replacement shall be borne by the Interconnection Customer, except that the Interconnection Customer shall not be responsible for such expenses where the inaccuracy or defect is caused by the Interconnected Transmission Owner. If Metering Equipment fails to register, or if the measurement made by Metering Equipment during a test varies by more than one percent from the measurement made by the standard meter used in the test, the owner of the Metering Equipment shall inform Transmission Provider, and the Transmission Provider shall inform the other Interconnected Entity, of the need to correct all measurements made by the inaccurate meter for the period during which the inaccurate measurements were made, if the period can be determined. If the period of inaccurate measurement cannot be determined, the correction shall be for the period immediately preceding

the test of the Metering Equipment that is equal to one-half of the time from the date of the last previous test of the Metering Equipment, provided that the period subject to correction shall not exceed nine (9) months.

8.4 Metering Data:

At Interconnection Customer's expense, the metered data shall be telemetered (a) to a location designated by Transmission Provider; (b) to a location designated by the Interconnected Transmission Owner, unless the Interconnected Transmission Owner agrees otherwise; and (c) to a location designated by Interconnection Customer. Data from the Metering Equipment at the Point of Interconnection shall be used, under normal operating conditions, as the official measurement of the amount of energy delivered from or to the Customer Facility to the Point of Interconnection, provided that the Transmission Provider's rules applicable to Station Power shall control with respect to a Generation Interconnection Customer's consumption of Station Power.

8.5 Communications

8.5.1 Interconnection Customer Obligations:

Interconnection Customer shall install and maintain satisfactory operating communications with Transmission Provider's system dispatcher or its other designated representative and with the Interconnected Transmission Owner. Interconnection Customer shall provide standard voice line, dedicated voice line and facsimile communications at its Customer Facility control room through use of the public telephone system. Interconnection Customer also shall provide and maintain backup communication links with both Transmission Provider and Interconnected Transmission Owner for use during abnormal conditions as specified by Transmission Provider and Interconnected Transmission Owner, respectively. Interconnection Customer further shall provide the dedicated data circuit(s) necessary to provide Interconnection Customer data to the Transmission Provider and Interconnected Transmission Owner as necessary to conform with Applicable Technical Requirements and Standards.

8.5.2 Remote Terminal Unit:

Unless otherwise deemed unnecessary by Transmission Provider and Interconnected Transmission Owner, as indicated in the Interconnection Service Agreement, prior to any operation of the Customer Facility, a remote terminal unit, or equivalent data collection and transfer equipment acceptable to the Interconnection Parties, shall be installed by Interconnection Customer, or by the Interconnected Transmission Owner at Interconnection Customer's expense, to gather accumulated and instantaneous data to be telemetered to the location(s) designated by Transmission Provider and Interconnected Transmission Owner through use of a dedicated point-to-point data circuit(s) as indicated in Section 8.5.1 of this Appendix 2. Instantaneous, bi-directional real power and, with respect to a Generation Interconnection Customer's Customer Facility, reactive power flow information, must be telemetered directly to the location(s) specified by Transmission Provider and the Interconnected Transmission Owner.

8.5.3. Phasor Measurement Units (PMUs):

An Interconnection Customer entering the New Services Queue on or after October 1, 2012 with a proposed new Customer Facility that has a Maximum Facility Output equal to or greater than 100 MW shall install and maintain, at its expense, phasor measurement units (PMUs). PMUs shall be installed on the Customer Facility low side of the generator step-up transformer, unless it is a non-synchronous generation facility, in which case the PMUs shall be installed on the Customer Facility side of the Point of Interconnection. The PMUs must be capable of performing phasor measurements at a minimum of 30 samples per second which are synchronized via a high-accuracy satellite clock. To the extent Interconnection Customer installs similar quality equipment, such as relays or digital fault recorders, that can collect data at least at the same rate as PMUs and which data is synchronized via a high-accuracy satellite clock, such equipment would satisfy this requirement. As provided for in the PJM Manuals, an Interconnection Customer shall be required to install and maintain, at its expense, PMU equipment which includes the communication circuit capable of carrying the PMU data to a local data concentrator, and then transporting the information continuously to the Transmission Provider; as well as store the PMU data locally for thirty days. Interconnection Customer shall provide to Transmission Provider all necessary and requested information through the Transmission Provider synchrophasor system, including the following: (a) gross MW and MVAR measured at the Customer Facility side of the generator step-up transformer (or, for a non-synchronous generation facility, to be measured at the Customer Facility side of the Point of Interconnection); (b) generator terminal voltage; (c) generator terminal frequency; and (d) generator field voltage and current, where available. The Transmission Provider will install and provide for the ongoing support and maintenance of the network communications linking the data concentrator to the Transmission Provider. Additional details regarding the requirements and guidelines of PMU data and telecommunication of such data are contained in the PJM Manuals.

9 Force Majeure

9.1 Notice:

An Interconnection Party that is unable to carry out an obligation imposed on it by this Appendix 2 due to Force Majeure shall notify the other parties in writing or by telephone within a reasonable time after the occurrence of the cause relied on.

9.2 Duration of Force Majeure:

An Interconnection Party shall not be responsible, or considered to be in Breach or Default under this Interconnection Service Agreement, for any non-performance, any interruption or failure of service, deficiency in the quality or quantity of service, or any other failure to perform any obligation hereunder to the extent that such failure or deficiency is due to Force Majeure. An Interconnection Party shall be excused from whatever performance is affected only for the duration of the Force Majeure and while the Interconnection Party exercises Reasonable Efforts to alleviate such situation. As soon as the non-performing Interconnection Party is able to resume performance of its obligations excused because of the occurrence of Force Majeure, such Interconnection Party shall resume performance and give prompt notice thereof to the other parties.

9.3 Obligation to Make Payments:

Any Interconnection Party's obligation to make payments for services shall not be suspended by Force Majeure.

9.4 Definition of Force Majeure:

For the purposes of this section, an event of force majeure shall mean any cause beyond the control of the affected Interconnection Party or Construction Party, including but not restricted to, acts of God, flood, drought, earthquake, storm, fire, lightning, epidemic, war, riot, civil disturbance or disobedience, labor dispute, labor or material shortage, sabotage, acts of public enemy, explosions, orders, regulations or restrictions imposed by governmental, military, or lawfully established civilian authorities, which, in any of the foregoing cases, by exercise of due diligence such party could not reasonably have been expected to avoid, and which, by the exercise of due diligence, it has been unable to overcome. Force majeure does not include (i) a failure of performance that is due to an affected party's own negligence or intentional wrongdoing; (ii) any removable or remediable causes (other than settlement of a strike or labor dispute) which an affected party fails to remove or remedy within a reasonable time; or (iii) economic hardship of an affected party.

10 Charges

10.1 Specified Charges:

If and to the extent required by the Interconnected Transmission Owner, after the Initial Operation of the Customer Facility, Interconnection Customer shall pay one or more of the types of recurring charges described in this section to compensate the Interconnected Transmission Owner for costs incurred in performing certain of its obligations under this Appendix 2. All such charges shall be stated in Schedule E of the Interconnection Service Agreement. Interconnected Transmission Owner shall provide Transmission Provider and Interconnection Customer with appropriate cost data, schedules and/or written testimony in support of any charges under this section in such manner and at such time as to allow Transmission Provider to include such materials in its filing of the Interconnection Service Agreement with the FERC. Transmission Provider will deliver a copy of such filing to Interconnection Customer. Permissible charges under this section may include:

(a) Administration Charge — Any such charge may recover only the costs and expenses incurred by the Interconnected Transmission Owner in connection with administrative obligations such as the preparation of bills, the processing of Customer Facility-specific data on energy delivered at the Point of Interconnection and costs incurred in similar types of administrative processes related to Interconnection Customer's Interconnection Service. An Administration Charge shall not be permitted to the extent that the Interconnected Transmission Owner's other charges to the Interconnection Customer under the same Interconnection Service Agreement include an allocation of Interconnected Transmission Owner's administrative and general expenses and/or other corporate overhead costs.

(b) Metering Charge — Any such charge may recover only the Interconnected Transmission Owner's costs and expenses associated with operation, maintenance, inspection, testing, and carrying or capital replacement charges for any Metering Equipment that is owned by the Interconnected Transmission Owner.

(c) Telemetry Charge — Any such charge may recover only the Interconnected Transmission Owner's costs and expenses associated with operation, maintenance, inspection, testing, and carrying or capital replacement charges for any telemetry equipment that is owned by the Interconnected Transmission Owner and that is used exclusively in conjunction with Interconnection Service for the Interconnection Customer.

(d) Customer Facility Operations and Maintenance Charge — Any such charge may recover only the Interconnected Transmission Owner's costs and expenses associated with operation, maintenance, inspection, testing, modifications, taxes and carrying or capital replacement charges for Attachment Facilities related to the Interconnection Customer's Interconnection Service and that are owned by the Interconnected Transmission Owner, provided that

(i) any such charge shall exclude costs and expenses associated with Transmission Owner Interconnection Facilities owned by the Interconnected Transmission Owner that are radial line facilities that serve load in addition to an Interconnection Customer; and

(ii) except as otherwise provided by Applicable Laws and Regulations, any such charge may include only an allocated share, derived in accordance with the allocations contained in the Facilities Study, of costs and expenses associated with Transmission Owner Interconnection Facilities owned by the Interconnected Transmission Owner that are radial line facilities that serve more than one Interconnection Customer. At the discretion of the affected Interconnected Entities, a Customer Facility Operations and Maintenance Charge authorized under this section may apply on a per-incident basis or on a monthly or other periodic basis.

(e) Other Charges — Any other charges applicable to the Interconnection Customer, as mutually agreed upon by the Interconnection Customer and the Interconnected Transmission Owner and as accepted by the FERC as part of an Interconnection Service Agreement.

10.2 FERC Filings:

To the extent required by law or regulation, each Interconnection Party shall seek FERC acceptance or approval of its respective charges or the methodology for the calculation of such charges.

11 Security, Billing And Payments

11.1 Recurring Charges Pursuant to Section 10:

The following provisions shall apply with respect to recurring charges applicable to Interconnection Service after Initial Operation of the Customer Facility pursuant to Section 10 of this Appendix 2.

11.1.1 General:

Except as, and to the extent, otherwise provided in the Interconnection Service Agreement, billing and payment of any recurring charges applicable to Interconnection Service after Initial Operation of the Customer Facility pursuant to Section 10 of this Appendix 2 shall be in accordance with Section 7 of the Tariff. The Interconnected Transmission Owner shall provide Transmission Provider with all necessary information and supporting data that Transmission Provider may reasonably require to administer billing for and payment of applicable charges under this Appendix 2. Transmission Provider shall remit to the Interconnected Transmission Owner revenues received in payment of Interconnected Transmission Owner's charges to Interconnection Customer under this Appendix 2 upon Transmission Provider's receipt of such revenues. At Transmission Provider's reasonable discretion, charges to Interconnection Customer and remittances to Interconnected Transmission Owner under this Appendix 2 may be netted against other amounts owed by or to such parties under the Tariff.

11.1.2 Billing Disputes:

In the event of a billing dispute between Transmission Provider and Interconnection Customer, Transmission Provider shall continue to provide interconnection service under this Appendix 2 as long as Interconnection Customer (i) continues to make all payments not in dispute, and (ii) pays to Transmission Provider or into an independent escrow account the portion of the invoice in dispute, pending resolution of such dispute. If Interconnection Customer fails to meet these two requirements for continuation of service, then Transmission Provider shall so inform the Interconnection Parties and may provide notice to Interconnection Customer of a Breach pursuant to Section 15 of this Appendix 2. Within thirty days after the resolution of the dispute, the Interconnection Party that owes money to the other Interconnection Party shall pay the amount due with interest calculated in accord with Section 11.4.

11.2 Costs for Transmission Owner Interconnection Facilities:

The following provisions shall apply with respect to charges for the Costs of the Interconnected Transmission Owner for which the Interconnection Customer is responsible.

11.2.1 Adjustments to Security:

The Security provided by Interconnection Customer at or before execution of the Interconnection Service Agreement (a) shall be reduced as portions of the work are completed, and/or (b) shall be increased or decreased as required to reflect adjustments to Interconnection Customer's cost responsibility, as determined in accordance with Section 217, to correspond with changes in the Scope of Work developed in accordance with Transmission Provider's scope change process for interconnection projects set forth in the PJM Manuals.

11.2.2 Invoice:

The Interconnected Transmission Owner shall provide Transmission Provider a quarterly statement of the Interconnected Transmission Owner's scheduled expenditures during the next three months for, as applicable (a) the design, engineering and construction of, and/or for other charges related to, construction of the Interconnection Facilities for which the Interconnected Transmission Owner is responsible under the Interconnection Service Agreement and the Interconnection Construction Service Agreement, or (b) in the event that the Interconnection Customer exercises the Option to Build pursuant to Tariff, Attachment P, Appendix 2, section 3.2.3.1, for the Interconnected Transmission Owner's oversight costs (i.e. costs incurred by the Transmission Owner when engaging in oversight activities to satisfy itself that the Interconnection Customer is complying with the Transmission Owner's standards and specifications for the construction of facilities) associated with Interconnection Customer's building Transmission Owner Attachment Facilities and Direct Connection Network Upgrades, including but not limited to Costs for tie-in work and Cancellation Costs. Interconnected Transmission Owner oversight costs shall be consistent with Tariff, Attachment P, Appendix 2, section 3.2.3.2(a)(12). Transmission Provider shall bill Interconnection Customer on behalf of the Interconnected Transmission Owner, for the Interconnected Transmission Owner's expected Costs during the subsequent three months. Interconnection Customer shall pay each bill within twenty (20) days after receipt thereof. Upon receipt of each of Interconnection Customer's payments of such bills, Transmission Provider shall reimburse the Interconnected Transmission Owner. Interconnection Customer may request that the Transmission Provider provide a quarterly cost reconciliation. Such a quarterly cost reconciliation will have a one-quarter lag, e.g., reconciliation of Costs for the first calendar quarter of work will be provided at the start of the third calendar quarter of work, provided, however, that Section 11.2.3 of this Appendix 2 shall govern the timing of the final cost reconciliation upon completion of the work.

11.2.3 Final Invoice:

Within 120 days after the Interconnected Transmission Owner completes construction and installation of the Interconnection Facilities for which the Interconnected Transmission Owner is responsible under the Interconnection Service Agreement and the Interconnection Construction Service Agreement, Transmission Provider shall provide Interconnection Customer with an accounting of, and the appropriate Construction Party shall make any payment to the other that is necessary to resolve, any difference between (a) Interconnection Customer's responsibility under the Tariff for the actual Cost of such facilities, and (b) Interconnection Customer's previous aggregate payments to Transmission Provider for the Costs of such facilities. Notwithstanding the foregoing, however, Transmission Provider shall not be obligated to make any payment to either the Interconnection Customer or the Interconnected Transmission Owner that the preceding sentence requires it to make unless and until the Transmission Provider has received the payment that it is required to refund from the Construction Party owing the payment.

11.2.4 Disputes:

In the event of a billing dispute between any of the Construction Parties, Transmission Provider and the Interconnected Transmission Owner shall continue to perform their respective obligations pursuant to this Interconnection Service Agreement and any related Interconnection Construction Service Agreements so long as (a) Interconnection Customer continues to make all payments not in dispute, and (b) the Security held by the Transmission Provider while the dispute is pending exceeds the amount in dispute, or (c) Interconnection Customer pays to Transmission Provider or into an independent escrow account the portion of the invoice in dispute, pending resolution of such dispute. If Interconnection Customer fails to meet any of these requirements, then Transmission Provider shall so inform the other Construction Parties and Transmission Provider or the Interconnected Transmission Owner may provide notice to Interconnection Customer of a Breach pursuant to Section 15 of this Appendix 2.

11.3 No Waiver:

Payment of an invoice shall not relieve Interconnection Customer from any other responsibilities or obligations it has under this Appendix 2, nor shall such payment constitute a waiver of any claims arising hereunder.

11.4 Interest:

Interest on any unpaid amounts shall be calculated in accordance with the methodology specified for interest on refunds in the FERC's regulations at 18 C.F.R. § 35.19a(a)(2)(iii). Interest on delinquent amounts shall be calculated from the due date of the bill to the date of payment.

12.0 Assignment

12.1 Assignment with Prior Consent:

Except as provided in Section 12.2 to this Appendix 2, no Interconnection Party shall assign its rights or delegate its duties, or any part of such rights or duties, under the Interconnection Service Agreement without the written consent of the other Interconnection Parties, which consent shall not be unreasonably withheld, conditioned, or delayed. Any such assignment or delegation made without such written consent shall be null and void. An Interconnection Party may make an assignment in connection with the sale, merger, or transfer of a substantial portion or all of its properties including the Interconnection Facilities which it owns, so long as the assignee in such a sale, merger, or transfer assumes in writing all rights, duties and obligations arising under this Interconnection Service Agreement. In addition, the Interconnected Transmission Owner shall be entitled, subject to Applicable Laws and Regulations, to assign the Interconnection Service Agreement to any Affiliate or successor that owns and operates all or a substantial portion of the Interconnected Transmission Owner's transmission facilities.

12.2 Assignment Without Prior Consent

12.2.1 Assignment to Owners:

Interconnection Customer may assign the Interconnection Service Agreement without the Interconnected Transmission Owner's or Transmission Provider's prior consent to any Affiliate or person that purchases or otherwise acquires, directly or indirectly, all or substantially all of the Customer Facility and the Customer Interconnection Facilities, provided that prior to the effective date of any such assignment, the assignee shall demonstrate that, as of the effective date of the assignment, the assignee has the technical and operational competence to comply with the requirements of this Interconnection Service Agreement and assumes in a writing provided to the Interconnected Transmission Owner and Transmission Provider all rights, duties, and obligations of Interconnection Customer arising under this Interconnection Service Agreement. However, any assignment described herein shall not relieve or discharge the Interconnection Customer from any of its obligations hereunder absent the written consent of the Transmission Provider, such consent not to be unreasonably withheld, conditioned or delayed.

12.2.2 Assignment to Lenders:

Interconnection Customer may, without the consent of the Transmission Provider or the Interconnected Transmission Owner, assign the Interconnection Service Agreement to any Project Finance Entity(ies), provided that such assignment does not alter or diminish Interconnection Customer's duties and obligations under this Interconnection Service Agreement. If Interconnection Customer provides the Interconnected Transmission Owner with notice of an assignment to any Project Finance Entity(ies) and identifies such Project Finance Entities as contacts for notice purposes pursuant to Section 21 of this Appendix 2, the Transmission Provider or Interconnected Transmission Owner shall provide notice and reasonable opportunity for such entity(ies) to cure any Breach under this Interconnection Service Agreement in accordance with this Interconnection Service Agreement. Transmission Provider or Interconnected Transmission Owner shall, if requested by such lenders, provide such customary and reasonable documents, including consents to assignment, as may be reasonably requested with respect to the assignment and status of the Interconnection Service Agreement, provided that such documents do not alter or diminish the rights of the Transmission Provider or Interconnected Transmission Owner under this Interconnection Service Agreement, except with respect to providing notice of Breach to a Project Finance Entity. Upon presentation of the Transmission Provider and/or the Interconnected Transmission Owner's invoice therefor, Interconnection Customer shall pay the Transmission Provider and/or the Interconnected Transmission Owner's reasonable documented cost of providing such documents and certificates. Any assignment described herein shall not relieve or discharge the Interconnection Customer from any of its obligations hereunder absent the written consent of the Interconnected Transmission Owner and Transmission Provider.

12.3 Successors and Assigns:

This Interconnection Service Agreement and all of its provisions are binding upon, and inure to the benefit of, the Interconnection Parties and their respective successors and permitted assigns.

13 Insurance

13.1 Required Coverages For Generation Resources Of More Than 20 Megawatts or Merchant Transmission Facilities:

Each Interconnected Entity shall maintain insurance as described in paragraphs (a) through (e) below. All insurance shall be procured from insurance companies rated “A-,” VII or better by AM Best and authorized to do business in a state or states in which the Interconnection Facilities are located. Failure to maintain required insurance shall be a Breach of the Interconnection Service Agreement.

(a) Workers Compensation insurance with statutory limits, as required by the state and/or jurisdiction in which the work is to be performed, and employer's liability insurance with limits of not less than one million dollars (\$1,000,000).

(b) Commercial General Liability Insurance and/or Excess Liability Insurance covering liability arising out of premises, operations, personal injury, advertising, products and completed operations coverage, independent contractors coverage, liability assumed under an insured contract, coverage for pollution to the extent normally available and punitive damages to the extent allowable under applicable law, with limits of not less than one million dollars (\$1,000,000) per occurrence/one million dollars (\$1,000,000) general aggregate/one million dollars (\$1,000,000) products and completed operations aggregate.

(c) Business/Commercial Automobile Liability Insurance for coverage of owned and non-owned and hired vehicles, trailers or semi-trailers designed for travel on public roads, with a minimum, combined single limit of one million dollars (\$1,000,000) each accident for bodily injury, including death, and property damage.

(d) Excess and/or Umbrella Liability Insurance with a limit of liability of not less than twenty million dollars (\$20,000,000) per occurrence. These limits apply in excess of the employer's liability, commercial general liability and business/commercial automobile liability coverages described above. This requirement can be met alone or via a combination of primary, excess and/or umbrella insurance.

(e) Professional Liability Insurance providing errors, omissions and/or malpractice coverage in the amount of five million dollars (\$5,000,000) per occurrence/aggregate. Coverage shall be provided for the Interconnected Entity's duties, responsibilities and performance outlined in this Appendix 2, the Interconnection Service Agreement, and if applicable, the Interconnection Construction Service Agreement.

An Interconnected Entity may meet the Professional Liability Insurance requirements by requiring third-party contractors, designers, or engineers, or other parties that are responsible for design work associated with the transmission facilities or Interconnection Facilities necessary for the interconnection to procure professional liability insurance in the amounts and upon the terms prescribed by this section 13.1(e), and providing evidence of such insurance to the other Interconnected Entity. Such insurance shall be procured from companies rated “A-,” VII or better by AM Best and authorized to do business in a state or states in which the Interconnection Facilities are located. Nothing in this section relieves the Interconnected Entity from complying with the insurance requirements. In the event that the policies of the designers, engineers, or other parties used to satisfy the Interconnected Entity's insurance obligations under this section become invalid

for any reason, including but not limited to, (i) the policy(ies) lapsing or otherwise terminating or expiring; (ii) the coverage limits of such policy(ies) are decreased; or (iii) the policy(ies) do not comply with the terms and conditions of the Tariff; Interconnected Entity shall be required to procure insurance sufficient to meet the requirements of this section, such that there is no lapse in insurance coverage. Notwithstanding the foregoing, in the event an Interconnected Entity will not design or construct or cause to design or construct any new transmission facilities or Interconnection Facilities, Transmission Provider, in its discretion, may waive the requirement that an Interconnected Entity maintain the Professional Liability Insurance pursuant to this section.

13.1A. Required Coverages For Generation Resources Of 20 Megawatts Or Less:

Each Interconnected Entity shall maintain the types of insurance as described in section 13.1 paragraphs (a) through (e) in an amount sufficient to insure against all reasonably foreseeable direct liabilities given the size and nature of the generating equipment being interconnected, the interconnection itself, and the characteristics of the system to which the interconnection is made. Additional insurance may be required by the Interconnection Customer, as a function of owning and operating a Generating Facility. All insurance shall be procured from insurance companies rated “A-,” VII or better by AM Best and authorized to do business in a state or states in which the Interconnection Facilities are located. Failure to maintain required insurance shall be a Breach of the Interconnection Service Agreement.

13.2 Additional Insureds:

The Commercial General Liability, Business/Commercial Automobile Liability and Excess and/or Umbrella Liability policies procured by each Interconnected Entity (the “Insuring Interconnected Entity”) shall include each other Interconnection Party (the “Insured Interconnection Party”), and its respective officers, agents and employees as additional insureds, providing all standard coverages and covering liability of the Insured Interconnection Party arising out of bodily injury and/or property damage (including loss of use) in any way connected with the operations, performance, or lack of performance under this Interconnection Service Agreement.

13.3 Other Required Terms:

The above-mentioned insurance policies (except workers’ compensation) shall provide the following:

(a) Each policy shall contain provisions that specify that it is primary and non contributory for any liability arising out of that party’s negligence, and shall apply to such extent without consideration for other policies separately carried and shall state that each insured is provided coverage as though a separate policy had been issued to each, except the insurer’s liability shall not be increased beyond the amount for which the insurer would have been liable had only one insured been covered. Each Insuring Interconnected Entity shall be responsible for its respective deductibles or retentions.

(b) If any coverage is written on a Claims First Made Basis, continuous coverage shall be maintained or an extended discovery period will be exercised for a period of not less than two (2) years after termination of the Interconnection Service Agreement.

(c) Provide for a waiver of all rights of subrogation which the Insuring Interconnected Entity's insurance carrier might exercise against the Insured Interconnection Party.

13.3A No Limitation of Liability:

The requirements contained herein as to the types and limits of all insurance to be maintained by the Interconnected Entities are not intended to and shall not in any manner, limit or qualify the liabilities and obligations assumed by the Interconnection Parties under the Interconnection Service Agreement.

13.4 Self-Insurance:

Notwithstanding the foregoing, each Interconnected Entity may self-insure to meet the minimum insurance requirements of this Section 13 of this Appendix 2 to the extent it maintains a self-insurance program, provided that such Interconnected Entity's senior secured debt is rated at investment grade or better by Standard & Poor's and its self-insurance program meets the minimum insurance requirements of this Section 13. For any period of time that an Interconnected Entity's senior secured debt is unrated by Standard & Poor's or is rated at less than investment grade by Standard & Poor's, such Party shall comply with the insurance requirements applicable to it under this Section 13. In the event that an Interconnected Entity is permitted to self-insure pursuant to this section, it shall notify the other Interconnection Parties that it meets the requirements to self-insure and that its self-insurance program meets the minimum insurance requirements in a manner consistent with that specified in Section 13.5 of this Appendix 2.

13.5 Notices; Certificates of Insurance:

All policies of insurance shall provide for thirty days prior written notice of cancellation or material adverse change. If the policies of insurance do not or cannot be endorsed to provide thirty days prior notice of cancellation or material adverse change, each Interconnected Entity shall provide the other Interconnected Entities with thirty days prior written notice of cancellation or material adverse change to any of the insurance required in this agreement. Each Interconnected Entity shall provide the other with certificates of insurance prior to Initial Operation of the Customer Facility and thereafter at such time intervals as they shall mutually agree upon, provided that such interval shall not be less than one year. All certificates of insurance shall indicate that the certificate holder is included as an additional insured under the Commercial General Liability, Business/Commercial Automobile Liability and Excess and/or Umbrella Liability coverages, and that this insurance is primary with a waiver of subrogation included in favor of the other Interconnected Entities.

13.6 Subcontractor Insurance:

In accord with Good Utility Practice, each Interconnected Entity shall require each of its subcontractors to maintain and provide evidence of insurance coverage of types, and in amounts, commensurate with the risks associated with the services provided by the subcontractor. Bonding of contractors or subcontractors shall be at the hiring Interconnected Entity's discretion, but regardless of bonding, the hiring principal shall be responsible for the performance or non-performance of any contractor or subcontractor it hires.

13.7 Reporting Incidents

The Interconnection Parties shall report to each other in writing as soon as practical all accidents or occurrences resulting in injuries to any person, including death, and any property damage arising out of the Interconnection Service Agreement.

14 Indemnity

14.1 Indemnity:

Each Interconnection Party shall indemnify and hold harmless the other Interconnection Parties, and the other Interconnection Parties' officers, shareholders, stakeholders, members, managers, representatives, directors, agents and employees, and Affiliates, from and against any and all loss, liability, damage, cost or expense to third parties, including damage and liability for bodily injury to or death of persons, or damage to property or persons (including reasonable attorneys' fees and expenses, litigation costs, consultant fees, investigation fees, sums paid in settlements of claims, penalties or fines imposed under Applicable Laws and Regulations, and any such fees and expenses incurred in enforcing this indemnity or collecting any sums due hereunder) (collectively, "Loss") to the extent arising out of, in connection with, or resulting from (i) the indemnifying Interconnection Party's breach of any of the representations or warranties made in, or failure of the indemnifying Interconnection Party or any of its subcontractors to perform any of its obligations under, this Interconnection Service Agreement (including Appendix 2), or (ii) the negligence or willful misconduct of the indemnifying Interconnection Party or its contractors; provided, however, that no Interconnection Party shall have any indemnification obligations under this Section 14.1 in respect of any Loss to the extent the Loss results from the negligence or willful misconduct of the Interconnection Party seeking indemnity.

14.2 Indemnity Procedures:

Promptly after receipt by a Person entitled to indemnity ("Indemnified Person") of any claim or notice of the commencement of any action or administrative or legal proceeding or investigation as to which the indemnity provided for in Section 14.1 may apply, the Indemnified Person shall notify the indemnifying Interconnection Party of such fact. Any failure of or delay in such notification shall not affect an Interconnection Party's indemnification obligation unless such failure or delay is materially prejudicial to the indemnifying Interconnection Party. The Indemnified Person shall cooperate with the indemnifying Interconnection Party with respect to the matter for which indemnification is claimed. The indemnifying Interconnection Party shall have the right to assume the defense thereof with counsel designated by such indemnifying Interconnection Party and reasonably satisfactory to the Indemnified Person. If the defendants in

any such action include one or more Indemnified Persons and the indemnifying Interconnection Party and if the Indemnified Person reasonably concludes that there may be legal defenses available to it and/or other Indemnified Persons which are different from or additional to those available to the indemnifying Interconnection Party, the Indemnified Person shall have the right to select separate counsel to assert such legal defenses and to otherwise participate in the defense of such action on its own behalf. In such instances, the indemnifying Interconnection Party shall only be required to pay the fees and expenses of one additional attorney to represent an Indemnified Person or Indemnified Persons having such differing or additional legal defenses. The Indemnified Person shall be entitled, at its expense, to participate in any action, suit or proceeding, the defense of which has been assumed by the indemnifying Interconnection Party. Notwithstanding the foregoing, the indemnifying Interconnection Party (i) shall not be entitled to assume and control the defense of any such action, suit or proceedings if and to the extent that, in the opinion of the Indemnified Person and its counsel, such action, suit or proceeding involves the potential imposition of criminal liability on the Indemnified Person, or there exists a conflict or adversity of interest between the Indemnified Person and the indemnifying Interconnection Party, in such event the indemnifying Interconnection Party shall pay the reasonable expenses of the Indemnified Person, and (ii) shall not settle or consent to the entry of any judgment in any action, suit or proceeding without the consent of the Indemnified Person, which shall not be unreasonably withheld, conditioned or delayed.

14.3 Indemnified Person:

If an Indemnified Person is entitled to indemnification under this Section 14 as a result of a claim by a third party, and the indemnifying Interconnection Party fails, after notice and reasonable opportunity to proceed under Section 14.2 of this Appendix 2, to assume the defense of such claim, such Indemnified Person may at the expense of the indemnifying Interconnection Party contest, settle or consent to the entry of any judgment with respect to, or pay in full, such claim.

14.4 Amount Owing:

If an indemnifying Interconnection Party is obligated to indemnify and hold any Indemnified Person harmless under this Section 14, the amount owing to the Indemnified Person shall be the amount of such Indemnified Person's actual Loss, net of any insurance or other recovery.

14.5 Limitation on Damages:

Except as otherwise provided in this Section 14, the liability of an Interconnection Party under this Appendix 2 shall be limited to direct actual damages, and all other damages at law are waived. Under no circumstances shall any Interconnection Party or its Affiliates, directors, officers, employees and agents, or any of them, be liable to another Interconnection Party, whether in tort, contract or other basis in law or equity for any special, indirect punitive, exemplary or consequential damages, including lost profits. The limitations on damages specified in this Section 14.5 are without regard to the cause or causes related thereto, including the negligence of any Interconnection Party, whether such negligence be sole, joint or concurrent, or active or passive. This limitation on damages shall not affect any Interconnection Party's rights to obtain equitable

relief as otherwise provided in this Appendix 2. The provisions of this Section 14.5 shall survive the termination or expiration of the Interconnection Service Agreement.

14.6 Limitation of Liability in Event of Breach:

An Interconnection Party (“Breaching Party”) shall have no liability hereunder to the other Interconnection Parties, and the other Interconnection Parties hereby release the Breaching Party, for all claims or damages that either of them incurs that are associated with any interruption in the availability of the Customer Facility, Interconnection Facilities, Transmission System or Interconnection Service or damages to an Interconnection Party’s facilities, except to the extent such interruption or damage is caused by the Breaching Party’s gross negligence or willful misconduct in the performance of its obligations under this Interconnection Service Agreement (including Appendix 2).

14.7 Limited Liability in Emergency Conditions:

Except as otherwise provided in the Tariff or the Operating Agreement, no Interconnection Party shall be liable to any other Interconnection Party for any action that it takes in responding to an Emergency Condition, so long as such action is made in good faith, is consistent with Good Utility Practice and is not contrary to the directives of the Transmission Provider or of the Interconnected Transmission Owner with respect to such Emergency Condition. Notwithstanding the above, Interconnection Customer shall be liable in the event that it fails to comply with any instructions of Transmission Provider or the Interconnected Transmission Owner related to an Emergency Condition.

15 Breach, Cure And Default

15.1 Breach:

A Breach of this Interconnection Service Agreement shall include:

- (a) The failure to pay any amount when due;
- (b) The failure to comply with any material term or condition of this Appendix 2 or of the other portions of the Interconnection Service Agreement, including but not limited to any material breach of a representation, warranty or covenant (other than in subsections (a) and (c)-(e) of this Section) made in this Appendix 2;
- (c) Assignment of the Interconnection Service Agreement in a manner inconsistent with its terms;
- (d) Failure of an Interconnection Party to provide access rights, or an Interconnection Party's attempt to revoke or terminate access rights, that are provided under this Appendix 2; or

(e) Failure of an Interconnection Party to provide information or data required to be provided under this Appendix 2 to another Interconnection Party for such other Interconnection Party to satisfy its obligations under this Appendix 2.

15.2 Continued Operation:

In the event of a Breach or Default by either Interconnected Entity, and subject to termination of the Interconnection Service Agreement under Section 16 of this Appendix 2, the Interconnected Entities shall continue to operate and maintain, as applicable, such DC power systems, protection and Metering Equipment, telemetering equipment, SCADA equipment, transformers, Secondary Systems, communications equipment, building facilities, software, documentation, structural components, and other facilities and appurtenances that are reasonably necessary for Transmission Provider and the Interconnected Transmission Owner to operate and maintain the Transmission System and the Transmission Owner Interconnection Facilities and for Interconnection Customer to operate and maintain the Customer Facility and the Customer Interconnection Facilities, in a safe and reliable manner.

15.3 Notice of Breach:

An Interconnection Party not in Breach shall give written notice of an event of Breach to the Breaching Party, to Transmission Provider and to other persons that the Breaching Party identifies in writing to the other Interconnection Party in advance. Such notice shall set forth, in reasonable detail, the nature of the Breach, and where known and applicable, the steps necessary to cure such Breach. In the event of a Breach by Interconnection Customer, Transmission Provider and the Interconnected Transmission Owner agree to provide notice of such Breach, at the same time and in the same manner as its notice to Interconnection Customer, to any Project Finance Entity provided that the Interconnection Customer has provided the notifying Interconnection Party with notice of an assignment to such Project Finance Entity(ies) and identifies such Project Finance Entity(ies) as contacts for notice purposes pursuant to Section 21 of this Appendix 2.

15.4 Cure and Default:

An Interconnection Party that commits a Breach and does not take steps to cure the Breach pursuant to this Section 15.4 is in Default of this Appendix 2 and of the Interconnection Service Agreement.

15.4.1 Cure of Breach:

Except for the event of Breach set forth in Section 15.1(a) above, the Breaching Interconnection Party (a) may cure the Breach within thirty days from the receipt of such notice; or (b) if the Breach cannot be cured within thirty (30) days, may commence in good faith all steps that are reasonable and appropriate to cure the Breach within such thirty day time period and thereafter diligently pursue such action to completion. In an event of Breach set forth in Section 15.1(a), the Breaching Interconnection Party may cure the Breach within five (5) days from the receipt of notice of the Breach.

15.5 Right to Compel Performance:

Notwithstanding the foregoing, upon the occurrence of an event of Default, a non-Defaulting Interconnection Party shall be entitled to (a) commence an action to require the Defaulting Interconnection Party to remedy such Default and specifically perform its duties and obligations hereunder in accordance with the terms and conditions hereof, (b) withhold payments, (c) suspend performance hereunder, and (d) exercise such other rights and remedies as it may have in equity or at law; provided, however, that the Transmission Provider shall not terminate the Interconnection Service Agreement due to the failure of Interconnection Customer to make a payment hereunder unless such failure could reasonably be expected to have a material adverse effect on the Interconnected Transmission Owner.

15.6 Remedies Cumulative:

Subject to Section 20.1, no remedy conferred by any provision of this Appendix 2 is intended to be exclusive of any other remedy and each and every remedy shall be cumulative and shall be in addition to every other remedy given hereunder or now or hereafter existing at law or in equity or by statute or otherwise. The election of any one or more remedies shall not constitute a waiver of the right to pursue other available remedies.

16 Termination

16.1 Termination:

This Interconnection Service Agreement and Interconnection Service under this Interconnection Service Agreement may be terminated by the following means:

16.1.1 By Mutual Consent:

Interconnection Service may be terminated as of the date on which the Interconnection Parties mutually agree to terminate the Interconnection Service Agreement.

16.1.2 By Interconnection Customer:

Interconnection Customer may unilaterally terminate the Interconnection Service Agreement pursuant to Applicable Laws and Regulations upon providing Transmission Provider and the Interconnected Transmission Owner sixty (60) days prior written notice thereof, provided that Interconnection Customer is not then in Default under the Interconnection Service Agreement.

16.1.3 Upon Default of Interconnection Customer:

Transmission Provider may terminate the Interconnection Service Agreement upon the Default of Interconnection Customer of its obligations under the Interconnection Service Agreement by providing Interconnection Customer and the Interconnected Transmission Owner prior written notice of termination; provided, however, that Transmission Provider shall not terminate the Interconnection Service Agreement due to the failure of Interconnection Customer to make a

payment hereunder unless such failure could reasonably be expected to have a material adverse effect on the Interconnected Transmission Owner.

16.2 Disposition of Facilities Upon Termination

16.2.1 Disconnection:

Upon termination of the Interconnection Service Agreement in accordance with this Section 16, Transmission Provider and/or the Interconnected Transmission Owner shall, in coordination with Interconnection Customer, physically disconnect the Customer Facility from the Transmission System, except to the extent otherwise allowed by this Appendix 2.

16.2.2 Network Facilities:

At the time of termination, the Transmission Provider and the Interconnected Entities shall keep in place any portion of the Interconnection Facilities that the Transmission Provider deems necessary for the safety, integrity and/or reliability of the Transmission System. Otherwise, Transmission Provider may, in its discretion, within 30 days following termination of Interconnection Service, require the removal of all or any part of the Interconnection Facilities.

16.2.2.1 In the event that (i) the Interconnection Service Agreement and Interconnection Service under this Appendix 2 are terminated and (ii) Transmission Provider determines that some or all of the Interconnection Facilities that are owned by the Interconnection Customer are necessary for the safety, integrity and/or reliability of the Transmission System, Interconnection Customer, subject to Applicable Laws and Regulations, shall transfer to the Interconnected Transmission Owner title to the Interconnection Facilities that Transmission Provider has determined to be necessary for the safety, integrity and/or reliability of the Transmission System.

16.2.2.2 In the event that removal of some or all of the Interconnection Facilities is necessary to maintain compliance with Applicable Standards, Interconnection Customer shall be responsible for the costs of any such removal. Interconnection Customer shall have the right to take or retain title to equipment and/or facilities that are removed pursuant to this section; alternatively, in the event that the Interconnection Customer does not wish to retain title to removed equipment and/or facilities that it owns, the Interconnected Transmission Owner may elect to pay the Interconnection Customer a mutually agreed amount to acquire and own such equipment and/or facilities.

16.2.3 Request for Disposition Determination:

Interconnection Customer may request a determination from the Transmission Provider whether any Interconnection Facilities will be removed in the event of any termination of Interconnection Service to the Customer Facility within the following year. Transmission Provider shall respond to that request no later than sixty (60) days after receipt.

16.3 FERC Approval:

Notwithstanding any other provision of this Appendix 2, no termination hereunder shall become effective until the Interconnected Entities and/or Transmission Provider have complied with all Applicable Laws and Regulations applicable to such termination, including the filing with the FERC of a notice of termination of the Interconnection Service Agreement, and acceptance of such notice for filing by the FERC.

16.4 Survival of Rights:

Termination of this Interconnection Service Agreement shall not relieve any Interconnection Party of any of its liabilities and obligations arising under this Interconnection Service Agreement (including Appendix 2) prior to the date on which termination becomes effective, and each Interconnection Party may take whatever judicial or administrative actions it deems desirable or necessary to enforce its rights hereunder. Applicable provisions of this Appendix 2 will continue in effect after termination to the extent necessary to provide for final billings, billing adjustments, and the determination and enforcement of liability and indemnification obligations arising from events or acts that occurred while the Interconnection Service Agreement was in effect.

17 Confidentiality:

Information is Confidential Information only if it is clearly designated or marked in writing as confidential on the face of the document, or, if the information is conveyed orally or by inspection, if the Interconnection Party providing the information orally informs the Interconnection Party receiving the information that the information is confidential. If requested by any Interconnection Party, the disclosing Interconnection Party shall provide in writing the basis for asserting that the information referred to in this section warrants confidential treatment, and the requesting Interconnection Party may disclose such writing to an appropriate Governmental Authority. Any Interconnection Party shall be responsible for the costs associated with affording confidential treatment to its information.

17.1 Term:

During the term of the Interconnection Service Agreement, and for a period of three (3) years after the expiration or termination of the Interconnection Service Agreement, except as otherwise provided in this Section 17, each Interconnection Party shall hold in confidence, and shall not disclose to any person, Confidential Information provided to it by any other Interconnection Party.

17.2 Scope:

Confidential Information shall not include information that the receiving Interconnection Party can demonstrate: (i) is generally available to the public other than as a result of a disclosure by the receiving Interconnection Party; (ii) was in the lawful possession of the receiving Interconnection Party on a non-confidential basis before receiving it from the disclosing Interconnection Party; (iii) was supplied to the receiving Interconnection Party without restriction by a third party, who, to the knowledge of the receiving Interconnection Party, after due inquiry, was under no obligation to the disclosing Interconnection Party to keep such information confidential; (iv) was

independently developed by the receiving Interconnection Party without reference to Confidential Information of the disclosing Interconnection Party; (v) is, or becomes, publicly known, through no wrongful act or omission of the receiving Interconnection Party or breach of this Appendix 2; or (vi) is required, in accordance with Section 17.7 of this Appendix 2, to be disclosed to any Governmental Authority or is otherwise required to be disclosed by law or subpoena, or is necessary in any legal proceeding establishing rights and obligations under the Interconnection Service Agreement. Information designated as Confidential Information shall no longer be deemed confidential if the Interconnection Party that designated the information as confidential notifies the other Interconnection Parties that it no longer is confidential.

17.3 Release of Confidential Information:

No Interconnection Party shall disclose Confidential Information to any other person, except to its Affiliates (limited by the Commission's Standards of Conduct requirements), subcontractors, employees, consultants or to parties who may be or considering providing financing to or equity participation in Interconnection Customer or to potential purchasers or assignees of Interconnection Customer, on a need-to-know basis in connection with the Interconnection Service Agreement, unless such person has first been advised of the confidentiality provisions of this Section 17 and has agreed to comply with such provisions. Notwithstanding the foregoing, an Interconnection Party providing Confidential Information to any person shall remain primarily responsible for any release of Confidential Information in contravention of this Section 17.

17.4 Rights:

Each Interconnection Party retains all rights, title, and interest in the Confidential Information that it discloses to any other Interconnection Party. An Interconnection Party's disclosure to another Interconnection Party of Confidential Information shall not be deemed a waiver by any Interconnection Party or any other person or entity of the right to protect the Confidential Information from public disclosure.

17.5 No Warranties:

By providing Confidential Information, no Interconnection Party makes any warranties or representations as to its accuracy or completeness. In addition, by supplying Confidential Information, no Interconnection Party obligates itself to provide any particular information or Confidential Information to any other Interconnection Party nor to enter into any further agreements or proceed with any other relationship or joint venture.

17.6 Standard of Care:

Each Interconnection Party shall use at least the same standard of care to protect Confidential Information it receives as the Interconnection Party uses to protect its own Confidential Information from unauthorized disclosure, publication or dissemination. Each Interconnection Party may use Confidential Information solely to fulfill its obligations to the other Interconnection Parties under the Interconnection Service Agreement or to comply with Applicable Laws and Regulations.

17.7 Order of Disclosure:

If a Governmental Authority with the right, power, and apparent authority to do so requests or requires an Interconnection Party, by subpoena, oral deposition, interrogatories, requests for production of documents, administrative order, or otherwise, to disclose Confidential Information, that Interconnection Party shall provide the Interconnection Party that provided the information with prompt prior notice of such request(s) or requirement(s) so that the providing Interconnection Party may seek an appropriate protective order or waive compliance with the terms of this Appendix 2 or the Interconnection Service Agreement. Notwithstanding the absence of a protective order or agreement, or waiver, the Interconnection Party that is subjected to the request or order may disclose such Confidential Information which, in the opinion of its counsel, the Interconnection Party is legally compelled to disclose. Each Interconnection Party shall use Reasonable Efforts to obtain reliable assurance that confidential treatment will be accorded any Confidential Information so furnished.

17.8 Termination of Interconnection Service Agreement:

Upon termination of the Interconnection Service Agreement for any reason, each Interconnection Party shall, within ten (10) calendar days of receipt of a written request from another party, use Reasonable Efforts to destroy, erase, or delete (with such destruction, erasure and deletion certified in writing to the requesting party) or to return to the other party, without retaining copies thereof, any and all written or electronic Confidential Information received from the requesting party.

17.9 Remedies:

The Interconnection Parties agree that monetary damages would be inadequate to compensate an Interconnection Party for another Interconnection Party's Breach of its obligations under this Section 17. Each Interconnection Party accordingly agrees that the other Interconnection Parties shall be entitled to equitable relief, by way of injunction or otherwise, if the first Interconnection Party breaches or threatens to breach its obligations under this Section 17, which equitable relief shall be granted without bond or proof of damages, and the receiving Interconnection Party shall not plead in defense that there would be an adequate remedy at law. Such remedy shall not be deemed to be an exclusive remedy for the breach of this Section 17, but shall be in addition to all other remedies available at law or in equity. The Interconnection Parties further acknowledge and agree that the covenants contained herein are necessary for the protection of legitimate business interests and are reasonable in scope. No Interconnection Party, however, shall be liable for indirect, incidental or consequential or punitive damages of any nature or kind resulting from or arising in connection with this Section 17.

17.10 Disclosure to FERC or its Staff:

Notwithstanding anything in this Section 17 to the contrary, and pursuant to 18 C.F.R. § 1b.20, if FERC or its staff, during the course of an investigation or otherwise, requests information from one of the Interconnection Parties that is otherwise required to be maintained in confidence pursuant to this Interconnection Service Agreement, the Interconnection Party, shall provide the

requested information to FERC or its staff, within the time provided for in the request for information. In providing the information to FERC or its staff, the Interconnection Party must, consistent with 18 C.F.R. § 388.122, request that the information be treated as confidential and non-public by FERC and its staff and that the information be withheld from public disclosure. Interconnection Parties are prohibited from notifying the other Interconnection Parties prior to the release of the Confidential Information to the Commission or its staff. An Interconnection Party shall notify the other Interconnection Parties to the Interconnection Service Agreement when it is notified by FERC or its staff that a request to release Confidential Information has been received by FERC, at which time any of the Interconnection Parties may respond before such information would be made public, pursuant to 18 C.F.R. § 388.112.

17.11

Subject to the exception in Section 17.10 of this Appendix 2, no Interconnection Party shall disclose Confidential Information of another Interconnection Party to any person not employed or retained by the Interconnection Party, except to the extent disclosure is (i) required by law; (ii) reasonably deemed by the disclosing Interconnection Party to be required in connection with a dispute between or among the Interconnection Parties, or the defense of litigation or dispute; (iii) otherwise permitted by consent of the Interconnection Party that provided such Confidential Information, such consent not to be unreasonably withheld; or (iv) necessary to fulfill its obligations under this Interconnection Service Agreement or as a transmission service provider or a Control Area operator including disclosing the Confidential Information to an RTO or ISO or to a regional or national reliability organization. Prior to any disclosures of another Interconnection Party's Confidential Information under this subparagraph, the disclosing Interconnection Party shall promptly notify the other Interconnection Parties in writing and shall assert confidentiality and cooperate with the other Interconnection Parties in seeking to protect the Confidential Information from public disclosure by confidentiality agreement, protective order or other reasonable measures.

17.12

This provision shall not apply to any information that was or is hereafter in the public domain (except as a result of a Breach of this provision).

17.13 Return or Destruction of Confidential Information:

If an Interconnection Party provides any Confidential Information to another Interconnection Party in the course of an audit or inspection, the providing Interconnection Party may request the other party to return or destroy such Confidential Information after the termination of the audit period and the resolution of all matters relating to that audit. Each Interconnection Party shall make Reasonable Efforts to comply with any such requests for return or destruction within ten days of receiving the request and shall certify in writing to the other Interconnection Party that it has complied with such request.

18 Subcontractors

18.1 Use of Subcontractors:

Nothing in this Appendix 2 shall prevent the Interconnection Parties from utilizing the services of subcontractors as they deem appropriate to perform their respective obligations hereunder, provided, however, that each Interconnection Party shall require its subcontractors to comply with all applicable terms and conditions of this Appendix 2 in providing such services.

18.2 Responsibility of Principal:

The creation of any subcontract relationship shall not relieve the hiring Interconnection Party of any of its obligations under this Appendix 2. Each Interconnection Party shall be fully responsible to the other Interconnection Parties for the acts and/or omissions of any subcontractor it hires as if no subcontract had been made.

18.3 Indemnification by Subcontractors:

To the fullest extent permitted by law, an Interconnection Party that uses a subcontractor to carry out any of the Interconnection Party's obligations under this Appendix 2 shall require each of its subcontractors to indemnify, hold harmless and defend each other Interconnection Party, its representatives and assigns from and against any and all claims and/or liability for damage to property, injury to or death of any person, including the employees of any Interconnection Party or of any Affiliate of any Interconnection Party, or any other liability incurred by the other Interconnection Party or any of its Affiliates, including all expenses, legal or otherwise, to the extent caused by any act or omission, negligent or otherwise, by such subcontractor and/or its officers, directors, employees, agents and assigns, that arises out of or is connected with the operation of the facilities of either Interconnected Entity described in this Appendix 2; provided, however, that no Interconnection Party or Affiliate thereof shall be entitled to indemnity under this Section 18.3 in respect of any injury, loss, or damage to the extent that such loss, injury, or damage results from the negligence or willful misconduct of the Interconnection Party or Affiliate seeking indemnity.

18.4 Subcontractors Not Beneficiaries:

No subcontractor is intended to be, or shall be deemed to be, a third-party beneficiary of an Interconnection Service Agreement.

19 Information Access And Audit Rights

19.1 Information Access:

Consistent with Applicable Laws and Regulations, each Interconnection Party shall make available such information and/or documents reasonably requested by another Interconnection Party that are necessary to (i) verify the costs incurred by the other Interconnection Party for which the requesting Interconnection Party is responsible under this Appendix 2 and (ii) carry out obligations and responsibilities under this Appendix 2, provided that the Interconnection Parties shall not use

such information for purposes other than those set forth in this Section 19.1 and to enforce their rights under this Appendix 2.

19.2 Reporting of Non-Force Majeure Events:

Each Interconnection Party shall notify the other Interconnection Parties when it becomes aware of its inability to comply with the provisions of this Appendix 2 for a reason other than an event of force majeure as defined in Section 9.4 of this Appendix 2. The parties agree to cooperate with each other and provide necessary information regarding such inability to comply, including, but not limited to, the date, duration, reason for the inability to comply, and corrective actions taken or planned to be taken with respect to such inability to comply. Notwithstanding the foregoing, notification, cooperation or information provided under this Section shall not entitle the receiving Interconnection Party to allege a cause of action for anticipatory breach of the Interconnection Service Agreement.

19.3 Audit Rights:

Subject to the requirements of confidentiality under Section 17 of this Appendix 2, each Interconnection Party shall have the right, during normal business hours, and upon prior reasonable notice to the pertinent other Interconnection Party, to audit at its own expense the other Interconnection Party's accounts and records pertaining to such Interconnection Party's performance and/or satisfaction of obligations arising under this Appendix 2. Any audit authorized by this Section shall be performed at the offices where such accounts and records are maintained and shall be limited to those portions of such accounts and records that relate to obligations under this Appendix 2. Any request for audit shall be presented to the Interconnection Party to be audited not later than twenty-four months after the event as to which the audit is sought. Each Interconnection Party shall preserve all records held by it for the duration of the audit period.

20 Disputes

20.1 Submission:

Any claim or dispute that any Interconnection Party may have against another arising out of the Interconnection Service Agreement may be submitted for resolution in accordance with the dispute resolution provisions of the Tariff.

20.2 Rights Under The Federal Power Act:

Nothing in this Section shall restrict the rights of any Interconnection Party to file a complaint with FERC under relevant provisions of the Federal Power Act.

20.3 Equitable Remedies:

Nothing in this Section shall prevent any Interconnection Party from pursuing or seeking any equitable remedy available to it under Applicable Laws and Regulations.

21 Notices

21.1 General:

Any notice, demand or request required or permitted to be given by any Interconnection Party to another and any instrument required or permitted to be tendered or delivered by any Interconnection Party in writing to another may be so given, tendered or delivered, by recognized national courier, or by depositing the same with the United States Postal Service with postage prepaid, for delivery by certified or registered mail, addressed to the Interconnection Party, or personally delivered to the Interconnection Party, at the address specified in the Interconnection Service Agreement. Such notices, if agreed to by the Interconnection Parties, may be made via electronic means, with e-mail confirmation of delivery.

21.2 Emergency Notices:

Moreover, notwithstanding the foregoing, any notice hereunder concerning an Emergency Condition or other occurrence requiring prompt attention, or as necessary during day-to-day operations, may be made by telephone or in person, provided that such notice is confirmed in writing promptly thereafter. Notice in an Emergency Condition, or as necessary during day-to-day operations, shall be provided (i) if by the Interconnected Transmission Owner, to the shift supervisor at, as applicable, a Generation Interconnection Customer's Customer Facility or a Transmission Interconnection Customer's control center; and (ii) if by the Interconnection Customer, to the shift supervisor at the Interconnected Transmission Owner's transmission control center.

21.3 Operational Contacts:

Each Interconnection Party shall designate, and provide to each other Interconnection Party contact information concerning, a representative to be responsible for addressing and resolving operational issues as they arise during the term of the Interconnection Service Agreement.

22 Miscellaneous

22.1 Regulatory Filing:

In the event that this Interconnection Service Agreement contains any terms that deviate materially from the form included in Attachment O of the Tariff, Transmission Provider shall file the Interconnection Service Agreement on behalf of itself and the Interconnected Transmission Owner with FERC as a service schedule under the Tariff within thirty days after execution. Interconnection Customer may request that any information so provided be subject to the confidentiality provisions of Section 17 of this Appendix 2. An Interconnection Customer shall have the right, with respect to any Interconnection Service Agreement tendered to it, to request (a) dispute resolution under Section 12 of the Tariff or, if concerning the Regional Transmission Expansion Plan, consistent with Schedule 5 of the Operating Agreement, or (b) that Transmission Provider file the agreement unexecuted with the Commission. With the filing of any unexecuted Interconnection Service Agreement, Transmission Provider may, in its discretion, propose to

FERC a resolution of any or all of the issues in dispute between or among the Interconnection Parties.

22.2 Waiver:

Any waiver at any time by an Interconnection Party of its rights with respect to a Breach or Default under this Interconnection Service Agreement or with respect to any other matters arising in connection with this Appendix 2, shall not be deemed a waiver or continuing waiver with respect to any subsequent Breach or Default or other matter.

22.3 Amendments and Rights Under the Federal Power Act:

This Interconnection Service Agreement may be amended or supplemented only by a written instrument duly executed by all Interconnection Parties. An amendment to the Interconnection Service Agreement shall become effective and a part of this Interconnection Service Agreement upon satisfaction of all Applicable Laws and Regulations. Notwithstanding the foregoing, nothing contained in this Interconnection Service Agreement shall be construed as affecting in any way any of the rights of any Interconnection Party with respect to changes in applicable rates or charges under Section 205 of the Federal Power Act and/or FERC's rules and regulations thereunder, or any of the rights of any Interconnection Party under Section 206 of the Federal Power Act and/or FERC's rules and regulations thereunder. The terms and conditions of this Interconnection Service Agreement and every appendix referred to therein shall be amended, as mutually agreed by the Interconnection Parties, to comply with changes or alterations made necessary by a valid applicable order of any Governmental Authority having jurisdiction hereof.

22.4 Binding Effect:

This Interconnection Service Agreement, including this Appendix 2, and the rights and obligations thereunder shall be binding upon, and shall inure to the benefit of, the successors and assigns of the Interconnection Parties.

22.5 Regulatory Requirements:

Each Interconnection Party's performance of any obligation under this Interconnection Service Agreement for which such party requires approval or authorization of any Governmental Authority shall be subject to its receipt of such required approval or authorization in the form and substance satisfactory to the receiving Interconnection Party, or the Interconnection Party making any required filings with, or providing notice to, such Governmental Authorities, and the expiration of any time period associated therewith. Each Interconnection Party shall in good faith seek, and shall use Reasonable Efforts to obtain, such required authorizations or approvals as soon as reasonably practicable.

23 Representations And Warranties

23.1 General:

Each Interconnected Entity hereby represents, warrants and covenants as follows with these representations, warranties, and covenants effective as to the Interconnected Entity during the time the Interconnection Service Agreement is effective:

23.1.1 Good Standing:

Such Interconnected Entity is duly organized or formed, as applicable, validly existing and in good standing under the laws of its State of organization or formation, and is in good standing under the laws of the respective State(s) in which it is incorporated and operates as stated in the Interconnection Service Agreement.

23.1.2 Authority:

Such Interconnected Entity has the right, power and authority to enter into the Interconnection Service Agreement, to become a party hereto and to perform its obligations hereunder. The Interconnection Service Agreement is a legal, valid and binding obligation of such Interconnected Entity, enforceable against such Interconnected Entity in accordance with its terms, except as the enforceability thereof may be limited by applicable bankruptcy, insolvency, reorganization or other similar laws affecting creditors' rights generally and by general equitable principles (regardless of whether enforceability is sought in a proceeding in equity or at law).

23.1.3 No Conflict:

The execution, delivery and performance of the Interconnection Service Agreement does not violate or conflict with the organizational or formation documents, or bylaws or operating agreement, of the Interconnected Entity, or with any judgment, license, permit, order, material agreement or instrument applicable to or binding upon the Interconnected Entity or any of its assets.

23.1.4 Consent and Approval:

Such Interconnected Entity has sought or obtained, or, in accordance with the Interconnection Service Agreement will seek or obtain, each consent, approval, authorization, order, or acceptance by any Governmental Authority in connection with the execution, delivery and performance of the Interconnection Service Agreement and it will provide to any Governmental Authority notice of any actions under this Appendix 2 that are required by Applicable Laws and Regulations.

24 Tax Liability

24.1 Safe Harbor Provisions:

This Section 24.1 is applicable only to Generation Interconnection Customers. Provided that Interconnection Customer agrees to conform to all requirements of the Internal Revenue Service ("IRS") (e.g., the "safe harbor" provisions of IRS Notice 2016-36, 2016-25 I.R.B. (6/20/2016)) that would confer nontaxable status on some or all of the transfer of property, including money, by Interconnection Customer to the Interconnected Transmission Owner for payment of the Costs

of construction of the Transmission Owner Interconnection Facilities, the Interconnected Transmission Owner, based on such agreement and on current law, shall treat such transfer of property to it as nontaxable income and, except as provided in Section 24.4.2 below, shall not include income taxes in the Costs of Transmission Owner Interconnection Facilities that are payable by Interconnection Customer under the Interconnection Service Agreement or the Interconnection Construction Service Agreement. Interconnection Customer shall document its agreement to conform to IRS requirements for such non-taxable status in the Interconnection Service Agreement, the Interconnection Construction Service Agreement, and/or the Interim Interconnection Service Agreement.

24.2 Tax Indemnity:

Interconnection Customer shall indemnify the Interconnected Transmission Owner for any costs that Interconnected Transmission Owner incurs in the event that the IRS and/or a state department of revenue (State) determines that the property, including money, transferred by Interconnection Customer to the Interconnected Transmission Owner with respect to the construction of the Transmission Owner Interconnection Facilities is taxable income to the Interconnected Transmission Owner. Interconnection Customer shall pay to the Interconnected Transmission Owner, on demand, the amount of any income taxes that the IRS or a State assesses to the Interconnected Transmission Owner in connection with such transfer of property and/or money, plus any applicable interest and/or penalty charged to the Interconnected Transmission Owner. In the event that the Interconnected Transmission Owner chooses to contest such assessment, either at the request of Interconnection Customer or on its own behalf, and prevails in reducing or eliminating the tax, interest and/or penalty assessed against it, the Interconnected Transmission Owner shall refund to Interconnection Customer the excess of its demand payment made to the Interconnected Transmission Owner over the amount of the tax, interest and penalty for which the Interconnected Transmission Owner is finally determined to be liable. Interconnection Customer's tax indemnification obligation under this section shall survive any termination of the Interconnection Service Agreement or Interconnection Construction Service Agreement.

24.3 Taxes Other Than Income Taxes:

Upon the timely request by Interconnection Customer, and at Interconnection Customer's sole expense, the Interconnected Transmission Owner shall appeal, protest, seek abatement of, or otherwise contest any tax (other than federal or state income tax) asserted or assessed against the Interconnected Transmission Owner for which Interconnection Customer may be required to reimburse Transmission Provider under the terms of this Appendix 2 or Part VI of the Tariff. Interconnection Customer shall pay to the Interconnected Transmission Owner on a periodic basis, as invoiced by the Interconnected Transmission Owner, the Interconnected Transmission Owner's documented reasonable costs of prosecuting such appeal, protest, abatement, or other contest. Interconnection Customer and the Interconnected Transmission Owner shall cooperate in good faith with respect to any such contest. Unless the payment of such taxes is a prerequisite to an appeal or abatement or cannot be deferred, no amount shall be payable by Interconnection Customer to the Interconnected Transmission Owner for such contested taxes until they are assessed by a final, non-appealable order by any court or agency of competent jurisdiction. In the event that a tax payment is withheld and ultimately due and payable after appeal, Interconnection

Customer will be responsible for all taxes, interest and penalties, other than penalties attributable to any delay caused by the Interconnected Transmission Owner.

24.4 Income Tax Gross-Up

24.4.1 Additional Security:

In the event that Interconnection Customer does not provide the safe harbor documentation required under Section 24.1 prior to execution of the Interconnection Service Agreement, within 15 days after such execution, Transmission Provider shall notify Interconnection Customer in writing of the amount of additional Security that Interconnection Customer must provide. The amount of Security that a Transmission Interconnection Customer must provide initially pursuant to this Interconnection Service Agreement shall include any amounts described as additional Security under this Section 24.4 regarding income tax gross-up.

24.4.2 Amount:

The required additional Security shall be in an amount equal to the amount necessary to gross up fully for currently applicable federal and state income taxes the estimated Costs of Local Upgrades and Network Upgrades for which Interconnection Customer previously provided Security. Accordingly, the additional Security shall equal the amount necessary to increase the total Security provided to the amount that would be sufficient to permit the Interconnected Transmission Owner to receive and retain, after the payment of all applicable income taxes ("Current Taxes") and taking into account the present value of future tax deductions for depreciation that would be available as a result of the anticipated payments or property transfers (the "Present Value Depreciation Amount"), an amount equal to the estimated Costs of Local Upgrades and Network Upgrades for which Interconnection Customer is responsible under the Interconnection Service Agreement. For this purpose, Current Taxes shall be computed based on the composite federal and state income tax rates applicable to the Interconnected Transmission Owner at the time the additional Security is received, determined using the highest marginal rates in effect at that time (the "Current Tax Rate"), and (ii) the Present Value Depreciation Amount shall be computed by discounting the Interconnected Transmission Owner's anticipated tax depreciation deductions associated with such payments or property transfers by its current weighted average cost of capital.

24.4.3 Time for Payment:

Interconnection Customer must provide the additional Security, in a form and with terms as required by Sections 212.4 of the Tariff, within 15 days after its receipt of Transmission Provider's notice under this section. The requirement for additional Security under this section shall be treated as a milestone included in the Interconnection Service Agreement pursuant to Section 217.5 of the Tariff.

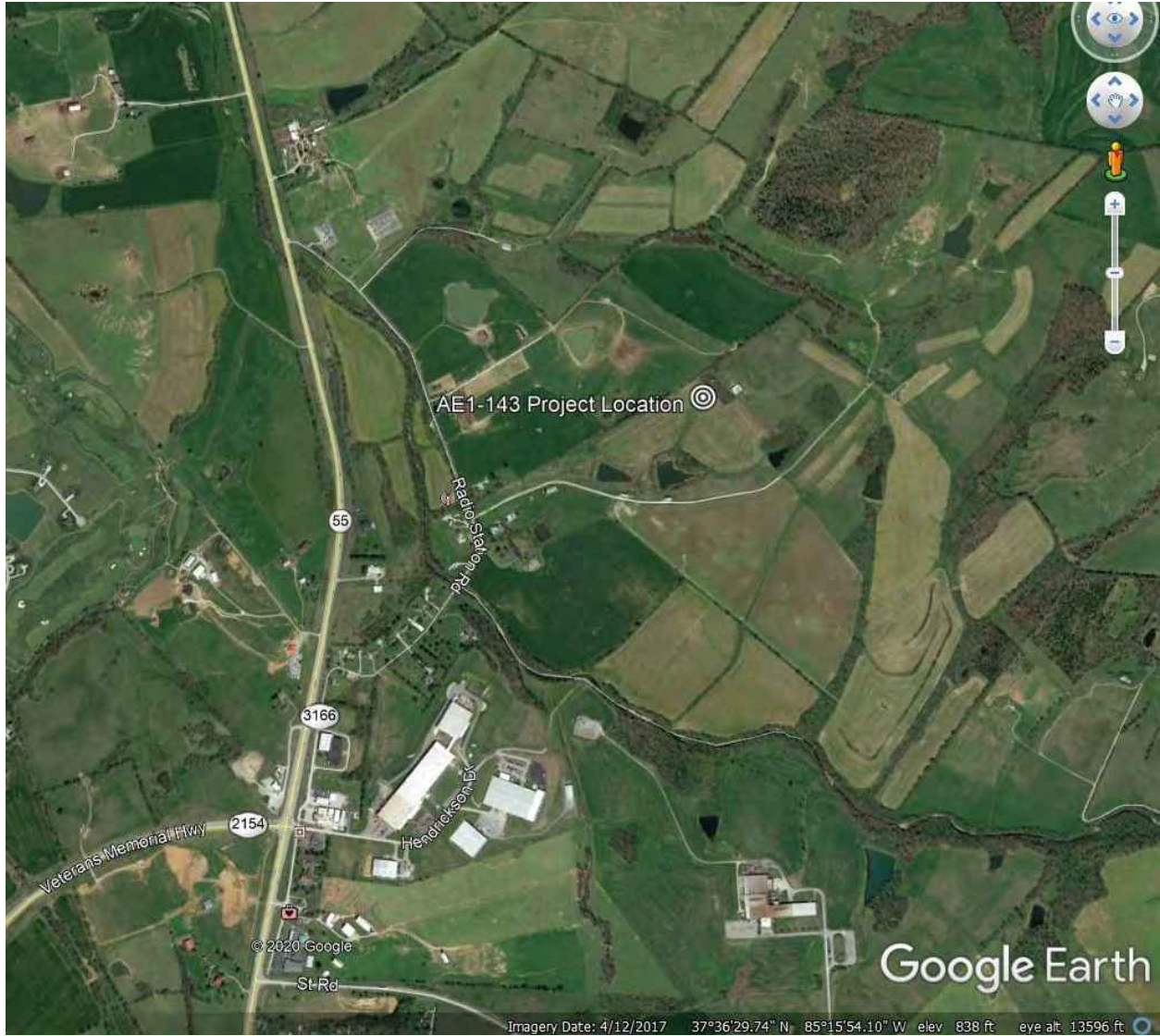
24.5 Tax Status:

Each Party shall cooperate with the other to maintain the other Party's tax status. Nothing in this Interconnection Service Agreement or Part VI of the Tariff is intended to adversely affect any

Interconnected Transmission Owner's tax exempt status with respect to the issuance of bonds including, but not limited to, local furnishing bonds.

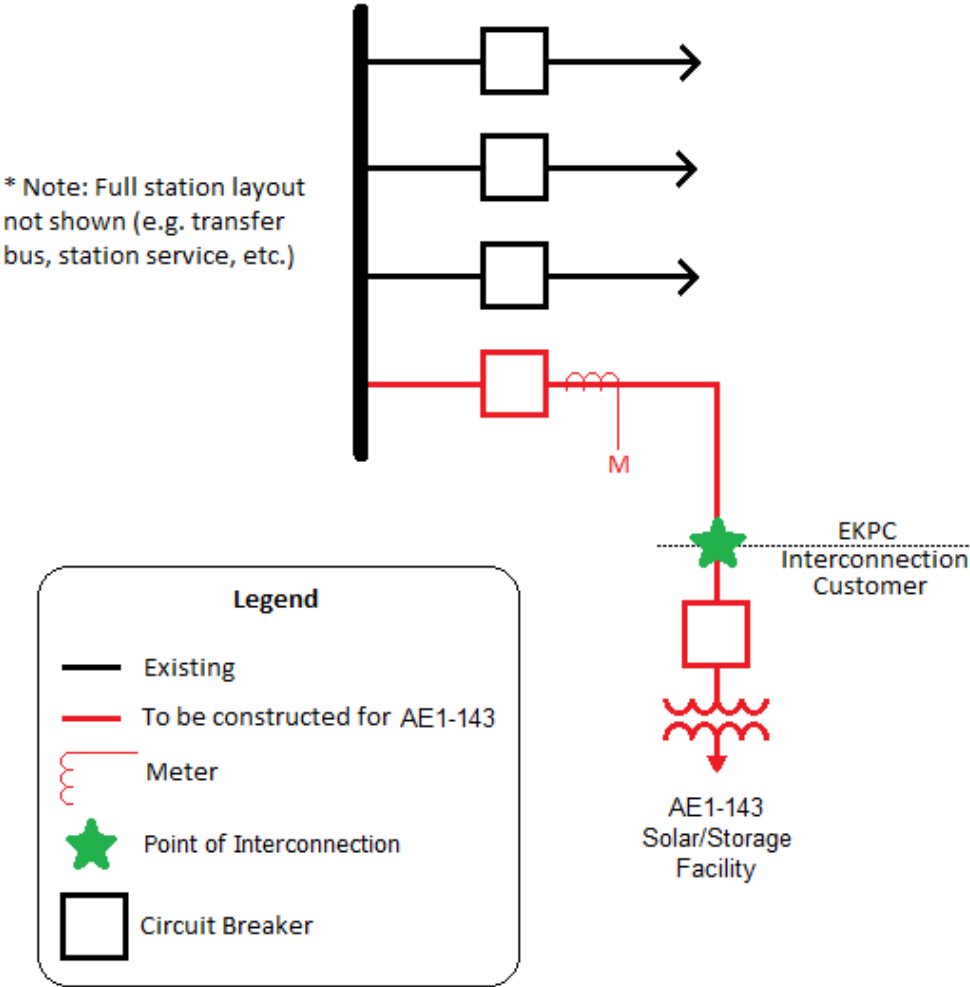
SCHEDULE A

CUSTOMER FACILITY LOCATION/SITE PLAN



SCHEDULE B
SINGLE-LINE DIAGRAM

Marion County 161kV



SCHEDULE C

LIST OF METERING EQUIPMENT

Interconnection Customer shall install the necessary equipment to provide “Revenue Metering (KWH, KVARH)” and real time data (KW, KVAR) for the Interconnection Customer’s Customer Facility that comply with the requirements set forth in Sections 8.1 through 8.5 of Appendix 2 to this ISA.

SCHEDULE D

APPLICABLE TECHNICAL REQUIREMENTS AND STANDARDS

“EKPC Facility Connection Requirements” rev. 11, dated June 30, 2019 shall apply. The “EKPC Facility Connection Requirements” rev. 11, dated June 30, 2019, are available on the PJM website. To the extent that these Applicable Technical Requirements and Standards conflict with the terms and conditions of the Tariff or any other provision of this ISA, the Tariff and/or this ISA shall control.

SCHEDULE E

SCHEDULE OF CHARGES

The Administration, Metering, Telemetering, and Operation and Maintenance (“O&M”) charges referenced below refer to charges described in Section 10.1 of the Standard Terms and Conditions for Interconnections, which are contained in Appendix 2 of this ISA.

ADMINISTRATION CHARGES

The charges that EKPC would assess for Administration Charges would be its actual costs.

METERING CHARGES

The charges that EKPC would assess for Metering Charges would be its actual costs.

TELEMETERING CHARGES

The charges that EKPC would assess for Telemetering Charges would be its actual costs.

O&M CHARGES

EKPC reserves the right to charge its actual costs to the Interconnection Customer for O&M expenses to maintain the Interconnection Customer’s Attachment Facilities including metering equipment owned by Interconnected Transmission Owner.

SCHEDULE F

SCHEDULE OF NON-STANDARD TERMS & CONDITIONS

None

SCHEDULE G

INTERCONNECTION CUSTOMER'S AGREEMENT TO CONFORM WITH IRS SAFE HARBOR PROVISIONS FOR NON-TAXABLE STATUS

As provided in Section 24.1 of Appendix 2 to this ISA and subject to the requirements thereof, Interconnection Customer represents that it meets all qualifications and requirements as set forth in Section 118(a) and 118(b) of the Internal Revenue Code of 1986, as amended and interpreted by Notice 2016-36, 2016-25 I.R.B. (6/20/2016) (the "IRS Notice"). Interconnection Customer agrees to conform with all requirements of the safe harbor provisions specified in the IRS Notice, as they may be amended, as required to confer non-taxable status on some or all of the transfer of property, including money, by Interconnection Customer to Interconnected Transmission Owner with respect to the payment of the Costs of construction and installation of the Transmission Owner Interconnection Facilities specified in this ISA.

Nothing in Interconnection Customer's agreement pursuant to this Schedule G shall change Interconnection Customer's indemnification obligations under Section 24.2 of Appendix 2 to this ISA.

SCHEDULE H

INTERCONNECTION REQUIREMENTS FOR ALL WIND, SOLAR AND NON-SYNCHRONOUS GENERATION FACILITIES

A. Voltage Ride Through Requirements

The Customer Facility shall be designed to remain in service (not trip) for voltages and times as specified for the Eastern Interconnection in Attachment 1 of NERC Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low voltage conditions, irrespective of generator size, subject to the permissive trip exceptions established in PRC-024-1 (and successor Reliability Standards).

B. Frequency Ride Through Requirements

The Customer Facility shall be designed to remain in service (not trip) for frequencies and times as specified in Attachment 2 of NERC Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low frequency condition, irrespective of generator size, subject to the permissive trip exceptions established in PRC-024-1 (and successor Reliability Standards).

C. Supervisory Control and Data Acquisition (SCADA) Capability

The wind, solar or non-synchronous generation facility shall provide SCADA capability to transmit data and receive instructions from the Transmission Provider to protect system reliability. The Transmission Provider and the wind, solar or non-synchronous generation facility Interconnection Customer shall determine what SCADA information is essential for the proposed wind, solar or non-synchronous generation facility, taking into account the size of the facility and its characteristics, location, and importance in maintaining generation resource adequacy and transmission system reliability in its area.

D. Meteorological Data Reporting Requirement (Applicable to wind generation facilities only)

The wind generation facility shall, at a minimum, be required to provide the Transmission Provider with site-specific meteorological data including:

- Temperature (degrees Fahrenheit)
- Wind speed (meters/second)
- Wind direction (degrees from True North)
- Atmosphere pressure (hectopascals)
- Forced outage data (wind turbine and MW unavailability)

E. Meteorological Data Reporting Requirement (Applicable to solar generation facilities only)

The solar generation facility shall, at a minimum, be required to provide the Transmission Provider with site-specific meteorological data including:

- Temperature (degrees Fahrenheit)
- Irradiance
- Forced outage data

The Transmission Provider and Interconnection Customer may mutually agree to any additional meteorological data that are required for the development and deployment of a power production forecast. All requirements for meteorological and forced outage data must be commensurate with the power production forecasting employed by the Transmission Provider. Such additional mutually agreed upon requirements for meteorological and forced outage data are set forth below:

NOT APPLICABLE FOR THIS ISA

SCHEDULE I
INTERCONNECTION SPECIFICATIONS FOR AN
ENERGY STORAGE RESOURCE

Not Required

SCHEDULE J

**SCHEDULE OF TERMS AND CONDITIONS FOR
SURPLUS INTERCONNECTION SERVICE**

Not Required

SCHEDULE K
REQUIREMENTS FOR INTERCONNECTION SERVICE BELOW FULL
ELECTRICAL GENERATING CAPABILITY

Not Required

Exhibit K

PJM/EKPC Interconnection Construction Service Agreement

Service Agreement No. []

(PJM Queue #AE1-143)

INTERCONNECTION CONSTRUCTION SERVICE AGREEMENT

Among

PJM INTERCONNECTION, L.L.C.

And

NORTHERN BOBWHITE SOLAR LLC

And

EAST KENTUCKY POWER COOPERATIVE, INC.

INTERCONNECTION CONSTRUCTION SERVICE AGREEMENT

**By and Among
PJM Interconnection, L.L.C.
And
Northern Bobwhite Solar LLC
And
East Kentucky Power Cooperative, Inc.**

(PJM Queue Position #AE1-143)

- 1.0 Parties. This Interconnection Construction Service Agreement (“CSA”) including the Schedules and Appendices attached hereto and incorporated herein, is entered into by and between PJM Interconnection, L.L.C. (“Transmission Provider” or “PJM”) and the following Interconnection Customer and Interconnected Transmission Owner:

Interconnection Customer:

Northern Bobwhite Solar LLC

Interconnected Transmission Owner:

East Kentucky Power Cooperative, Inc. (or “EKPC”)

All capitalized terms herein shall have the meanings set forth in the appended definitions of such terms as stated in Part I of the Tariff.

- 2.0 Authority. This CSA is entered into pursuant to Part VI of the Tariff. The standard terms and conditions for construction are attached at Appendix 2 to this CSA and are hereby specifically incorporated as provisions of this agreement. Transmission Provider, the Interconnection Customer and the Interconnected Transmission Owner agree to and assume all of their respective rights and obligations as set forth in the standard terms and conditions for construction in Appendix 2 to this CSA. Further, Interconnection Customer and the Interconnected Transmission Owner each agrees to and assumes all of the rights and obligations of a Constructing Entity with respect to the facilities that each of them is responsible for constructing, as set forth in this CSA.

- 3.0 Customer Facility. This CSA specifically relates to the following Customer Facility at the following location:

a. Name of Customer Facility:

Northern Bobwhite Solar

b. Location of Customer Facility:

500 Radio Station Rd, Lebanon, KY 40033
(GPS Coordinates 37.6010210, -85.2388300)

4.0 Effective Date and Term.

4.1 Effective Date. This CSA shall become effective on the later of (i) the date the agreement has been executed by all Construction Parties, or (ii) the date of Interconnection Customer's delivery of Security to the Transmission Provider, provided, however, that if the CSA is filed with the FERC unexecuted, the Effective Date shall be the date specified by the FERC. The Interconnected Transmission Owner shall have no obligation to begin construction of the Transmission Owner Interconnection Facilities prior to the Effective Date. Construction shall commence as provided in the Schedule of Work set forth in Schedule J to this CSA.

4.2 Term. This CSA shall continue in full force and effect from the Effective Date until the termination thereof pursuant to Section 14 of Appendix 2 to this CSA.

4.3 Survival. This CSA shall continue in effect after termination to the extent necessary to provide for final billings and payments, including billings and payments pursuant to Section 9 and/or Section 14 of Appendix 2 to this CSA, and to permit the determination and enforcement of liability and indemnification obligations arising from acts or events that occurred while the CSA was in effect.

5.0 Construction Responsibility for

a. Customer Interconnection Facilities. Interconnection Customer is responsible for designing and constructing the Customer Interconnection Facilities described on the attached Schedule G to this CSA.

b. Construction of Transmission Owner Interconnection Facilities.

1. The Transmission Owner Interconnection Facilities regarding which Interconnected Transmission Owner shall be the Constructing Entity are described on the attached Schedule C to this CSA.

2. Election of Construction Option. Specify below whether the Constructing Entities have mutually agreed to construction of the Transmission Owner Interconnection Facilities that will be built by the Interconnected Transmission Owner pursuant to the Standard Option or the Negotiated Contract Option. (See Section 3.2 of the Appendix 2 to this CSA.)

 X Standard Option.

 Negotiated Contract Option.

If the parties have mutually agreed to use the Negotiated Contract Option, the permitted, negotiated terms on which they have agreed and which are not already set forth as part of the Scope of Work and/or Schedule of Work attached to this CSA as Schedules I and J, respectively, shall be as set forth in Schedule H attached to this CSA.

3. Exercise of Option to Build. Has Interconnection Customer timely exercised the Option to Build in accordance with Section 3.2.3 of Appendix 2 to this CSA with respect to some or all of the Transmission Owner Interconnection Facilities?

_____ Yes

 X No

If Yes is indicated, Interconnection Customer shall build, in accordance with and subject to the conditions and limitations set forth in Section 3.2.3 of Appendix 2 to this CSA, those portions of the Transmission Owner Interconnection Facilities described on Schedule D attached to this CSA.

6.0 [Reserved].

7.0 Scope of Work. The Scope of Work for all construction pursuant to this CSA shall be as set forth in the attached Schedule I, provided, however, that the scope of work is subject to change in accordance with Transmission Provider's scope change process for interconnection projects as set forth in the PJM Manuals.

8.0 Schedule of Work. The Schedule of Work for all construction pursuant to this CSA shall be as set forth in the attached Schedule J, provided, however, that such schedule is subject to change in accordance with Section 3.3 of Appendix 2 to this CSA.

9.0 [Reserved.]

10.0 Notices. Any notice or request made to or by any party regarding this CSA shall be made in accordance with the standard terms and conditions for construction set forth in Appendix 2 to this CSA to the representatives of the other parties, as indicated below:

Transmission Provider:

PJM Interconnection, L.L.C.
2750 Monroe Blvd.
Audubon, PA 19403

Interconnection Customer:
Northern Bobwhite Solar LLC
7804-C Fairview Rd
#257
Charlotte, NC 28226

Attn: Donna Robichaud

Interconnected Transmission Owner:
East Kentucky Power Cooperative, Inc.
4775 Lexington Road
P.O. Box 707
Winchester, KY 40392-0707
Attn: Darrin Adams, Director – Transmission Planning & Protection
Email: darrin.adams@ekpc.coop


- 11.0 Waiver. No waiver by any party of one or more defaults by another in performance of any of the provisions of this CSA shall operate or be construed as a waiver of any other or further default or defaults, whether of a like or different character.
- 12.0 Amendment. This CSA or any part thereof, may not be amended, modified, assigned, or waived other than by a writing signed by all parties.
- 13.0 Incorporation of Other Documents. All portions of the Tariff and the Operating Agreement pertinent to the subject of this CSA and not otherwise made a part hereof are hereby incorporated herein and made a part hereof.
- 14.0 Addendum of Interconnection Customer's Agreement to Conform with IRS Safe Harbor Provisions for Non-Taxable Status. To the extent required, in accordance with Section 2.4.1 of Appendix 2 to this CSA, Schedule L to this CSA shall set forth the Interconnection Customer's agreement to conform with the IRS safe harbor provisions for non-taxable status.
- 15.0 Addendum of Non-Standard Terms and Conditions for Construction Service. Subject to FERC approval, the parties agree that the terms and conditions set forth in the attached Schedule M are hereby incorporated by reference, and made a part of, this CSA. In the event of any conflict between a provision of Schedule M that FERC has accepted and any provision of the standard terms and conditions set forth in Appendix 2 to this CSA that relates to the same subject matter, the pertinent provision of Schedule M shall control.
- 16.0 Addendum of Interconnection Requirements for all Wind or Non-synchronous Generation Facilities. To the extent required, Schedule N to this CSA sets forth interconnection requirements for all wind and non-synchronous generation facilities and is hereby incorporated by reference and made a part of this CSA.
- 17.0 Infrastructure security of electric system equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. All Transmission Providers, Interconnected Transmission Owners, market participants, and Interconnection Customers interconnected with electric systems are to comply with the recommendations offered by the President's Critical Infrastructure Protection Board and best practice recommendations from the electric reliability authority. All public utilities

are expected to meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber-security practices.

IN WITNESS WHEREOF, the parties have caused this Interconnection Construction Service Agreement to be executed by their respective authorized officials.

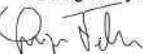
(PJM Queue Position #AE1-143)

Transmission Provider: PJM Interconnection, L.L.C.:

By:  _____
DocuSigned by: _____ Manager, Interconnection Projects
44B7EC798D594DA... 11/6/2020
1 name Title Date


Printed name of signer: Jason Connell

Interconnection Customer: **Northern Bobwhite Solar LLC**

By:  _____
DocuSigned by: _____ Manager
53ADAACB43E944D... 9/30/2020
1 name Title Date

Printed name of signer: Juergen Fehr

Interconnected Transmission Owner: **East Kentucky Power Cooperative, Inc.**

By:  _____
DocuSigned by: _____ V.P. Engineering & Construction
AFC2CA258EA746B... 11/6/2020
1 name Title Date

Printed name of signer: Mary Jane Warner

APPENDICES:

- **APPENDIX 1 - DEFINITIONS**
- **APPENDIX 2 - STANDARD CONSTRUCTION TERMS AND CONDITIONS**

SCHEDULES:

- **SCHEDULE A - SITE PLAN**
- **SCHEDULE B - SINGLE-LINE DIAGRAM OF INTERCONNECTION FACILITIES**
- **SCHEDULE C - TRANSMISSION OWNER INTERCONNECTION FACILITIES TO BE BUILT BY INTERCONNECTED TRANSMISSION OWNER**
- **SCHEDULE D - TRANSMISSION OWNER INTERCONNECTION FACILITIES TO BE BUILT BY INTERCONNECTION CUSTOMER PURSUANT TO OPTION TO BUILD**
- **SCHEDULE E – [Reserved]**
- **SCHEDULE F – [Reserved]**
- **SCHEDULE G - CUSTOMER INTERCONNECTION FACILITIES**
- **SCHEDULE H - NEGOTIATED CONTRACT OPTION TERMS**
- **SCHEDULE I - SCOPE OF WORK**
- **SCHEDULE J - SCHEDULE OF WORK**
- **SCHEDULE K - APPLICABLE TECHNICAL REQUIREMENTS AND STANDARDS**
- **SCHEDULE L - INTERCONNECTION CUSTOMER'S AGREEMENT TO CONFORM WITH IRS SAFE HARBOR PROVISIONS FOR NON-TAXABLE STATUS**
- **SCHEDULE M - SCHEDULE OF NON-STANDARD TERMS AND CONDITIONS**
- **SCHEDULE N - INTERCONNECTION REQUIREMENTS FOR A WIND GENERATION FACILITY**

APPENDIX 1

DEFINITIONS

**From the PJM Tariff accepted for filing by the Commission
As of the effective date of this CSA**

1. Definitions

Unless the context otherwise specifies or requires, capitalized terms used in this PJM Tariff shall have the respective meanings assigned herein or in the Schedules hereto, or in the PJM Operating Agreement or RAA if not otherwise defined in this PJM Tariff, for all purposes of this PJM Tariff (such definitions to be equally applicable to both the singular and the plural forms of the terms defined). Unless otherwise specified, all references herein to sections, Schedules, Exhibits or Appendices are to sections, Schedules, Exhibits or Appendices of this Agreement. As used in this Agreement.

Abnormal Condition:

“Abnormal Condition” shall mean any condition on the Interconnection Facilities which, determined in accordance with Good Utility Practice, is: (i) outside normal operating parameters such that facilities are operating outside their normal ratings or that reasonable operating limits have been exceeded; and (ii) could reasonably be expected to materially and adversely affect the safe and reliable operation of the Interconnection Facilities; but which, in any case, could reasonably be expected to result in an Emergency Condition. Any condition or situation that results from lack of sufficient generating capacity to meet load requirements or that results solely from economic conditions shall not, standing alone, constitute an Abnormal Condition.

Acceleration Request:

“Acceleration Request” shall mean a request pursuant to Operating Agreement, Schedule 1, section 1.9.4A, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.9.4A, to accelerate or reschedule a transmission outage scheduled pursuant to Operating Agreement, Schedule 1, section 1.9.2 or Operating Agreement, Schedule 1, section 1.9.4, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.9.2 or Tariff, Attachment K-Appendix, section 1.9.4.

Additional Day-ahead Scheduling Reserves Requirement:

“Additional Day-ahead Scheduling Reserves Requirement” shall mean the portion of the Day-ahead Scheduling Reserves Requirement that is required in addition to the Base Day-ahead Scheduling Reserves Requirement to ensure adequate resources are procured to meet real-time load and operational needs, as specified in the PJM Manuals.

Affected System:

“Affected System” shall mean an electric system other than the Transmission Provider’s Transmission System that may be affected by a proposed interconnection or on which a proposed interconnection or addition of facilities or upgrades may require modifications or upgrades to the Transmission System.

Affected System Operator:

“Affected System Operator” shall mean an entity that operates an Affected System or, if the

Affected System is under the operational control of an independent system operator or a regional transmission organization, such independent entity.

Affiliate:

”Affiliate” shall mean any two or more entities, one of which Controls the other or that are under common Control. “Control,” as that term is used in this definition, shall mean the possession, directly or indirectly, of the power to direct the management or policies of an entity. Ownership of publicly-traded equity securities of another entity shall not result in Control or affiliation for purposes of the Tariff or Operating Agreement if the securities are held as an investment, the holder owns (in its name or via intermediaries) less than 10 percent (10%) of the outstanding securities of the entity, the holder does not have representation on the entity’s board of directors (or equivalent managing entity) or vice versa, and the holder does not in fact exercise influence over day-to-day management decisions. Unless the contrary is demonstrated to the satisfaction of the Members Committee, Control shall be presumed to arise from the ownership of or the power to vote, directly or indirectly, ten percent or more of the voting securities of such entity.

Agreements:

“Agreements” shall mean the Amended and Restated Operating Agreement of PJM Interconnection, L.L.C., the PJM Open Access Transmission Tariff, the Reliability Assurance Agreement, and/or other agreements between PJM Interconnection, L.L.C. and its Members.

Ancillary Services:

“Ancillary Services” shall mean those services that are necessary to support the transmission of capacity and energy from resources to loads while maintaining reliable operation of the Transmission Provider’s Transmission System in accordance with Good Utility Practice.

Annual Demand Resource:

“Annual Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Annual Energy Efficiency Resource:

“Annual Energy Efficiency Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Annual Resource:

“Annual Resource” shall mean a Generation Capacity Resource, an Annual Energy Efficiency Resource or an Annual Demand Resource.

Annual Resource Price Adder:

“Annual Resource Price Adder” shall mean, for Delivery Years starting June 1, 2014 and ending May 31, 2017, an addition to the marginal value of Unforced Capacity and the Extended Summer Resource Price Adder as necessary to reflect the price of Annual Resources required to meet the applicable Minimum Annual Resource Requirement.

Annual Revenue Rate:

“Annual Revenue Rate” shall mean the rate employed to assess a compliance penalty charge on a Curtailment Service Provider under Tariff, Attachment DD, section 11.

Annual Transmission Costs:

“Annual Transmission Costs” shall mean the total annual cost of the Transmission System for purposes of Network Integration Transmission Service shall be the amount specified in Attachment H for each Zone until amended by the applicable Transmission Owner or modified by the Commission.

Applicable Laws and Regulations:

“Applicable Laws and Regulations” shall mean all duly promulgated applicable federal, State and local laws, regulations, rules, ordinances, codes, decrees, judgments, directives, or judicial or administrative orders, permits and other duly authorized actions of any Governmental Authority having jurisdiction over the relevant parties, their respective facilities, and/or the respective services they provide.

Applicable Regional Entity:

“Applicable Regional Entity” shall mean the Regional Entity for the region in which a Network Customer, Transmission Customer, New Service Customer, or Transmission Owner operates.

Applicable Standards:

“Applicable Standards” shall mean the requirements and guidelines of NERC, the Applicable Regional Entity, and the Control Area in which the Customer Facility is electrically located; the PJM Manuals; and Applicable Technical Requirements and Standards.

Applicable Technical Requirements and Standards:

“Applicable Technical Requirements and Standards” shall mean those certain technical requirements and standards applicable to interconnections of generation and/or transmission facilities with the facilities of an Interconnected Transmission Owner or, as the case may be and to the extent applicable, of an Electric Distributor, as published by Transmission Provider in a PJM Manual provided, however, that, with respect to any generation facilities with maximum generating capacity of 2 MW or less (*synchronous*) or 5 MW or less (*inverter-based*) for which the Interconnection Customer executes a Construction Service Agreement or Interconnection Service Agreement on or after March 19, 2005, “Applicable Technical Requirements and

Standards” shall refer to the “PJM Small Generator Interconnection Applicable Technical Requirements and Standards.” All Applicable Technical Requirements and Standards shall be publicly available through postings on Transmission Provider’s internet website.

Applicant:

“Applicant” shall mean an entity desiring to become a PJM Member, become a Market Participant, engage in market activities, or to take Transmission Service that has submitted the PJMSettlement credit application, PJMSettlement credit agreement and other required submittals as set forth in Tariff, Attachment Q.

Application:

“Application” shall mean a request by an Eligible Customer for transmission service pursuant to the provisions of the Tariff.

Attachment Facilities:

“Attachment Facilities” shall mean the facilities necessary to physically connect a Customer Facility to the Transmission System or interconnected distribution facilities.

Attachment H:

“Attachment H” shall refer collectively to the Attachments to the PJM Tariff with the prefix “H” that set forth, among other things, the Annual Transmission Rates for Network Integration Transmission Service in the PJM Zones.

Auction Revenue Rights:

“Auction Revenue Rights” or “ARRs” shall mean the right to receive the revenue from the Financial Transmission Right auction, as further described in Operating Agreement, Schedule 1, section 7.4, and the parallel provisions of Tariff, Attachment K-Appendix, section 7.4.

Auction Revenue Rights Credits:

“Auction Revenue Rights Credits” shall mean the allocated share of total FTR auction revenues or costs credited to each holder of Auction Revenue Rights, calculated and allocated as specified in Operating Agreement, Schedule 1, section 7.4.3, and the parallel provisions of Tariff, Attachment K-Appendix, section 7.4.3.

Authorized Government Agency:

“Authorized Government Agency” means a regulatory body or government agency, with jurisdiction over PJM, the PJM Market, or any entity doing business in the PJM Market, including, but not limited to, the Commission, State Commissions, and state and federal attorneys general.

Avoidable Cost Rate:

“Avoidable Cost Rate” shall mean a component of the Market Seller Offer Cap calculated in accordance with Tariff, Attachment DD, section 6.

Balancing Congestion Charges:

“Balancing Congestion Charges” shall be equal to the sum of congestion charges collected from Market Participants that are purchasing energy in the Real-time Energy Market minus [the sum of congestion charges paid to Market Participants that are selling energy in the Real-time Energy Market plus any congestion charges calculated pursuant to the Joint Operating Agreement between the Midcontinent Independent Transmission System Operator, Inc. and PJM Interconnection, L.L.C. (PJM Rate Schedule FERC No. 38), plus any congestion charges calculated pursuant to the Joint Operating Agreement Among and Between New York Independent System Operator Inc. and PJM Interconnection, L.L.C. (PJM Rate Schedule FERC No. 45), plus any congestion charges calculated pursuant to agreements between the Office of the Interconnection and other entities, plus any charges or credits calculated pursuant to Operating Agreement, Schedule 1, section 3.8, and the parallel provisions of Tariff, Attachment K-Appendix, section 3.8, as applicable)].

Balancing Ratio:

“Balancing Ratio” shall have the meaning provided in Tariff, Attachment DD, section 10A.

Base Capacity Demand Resource:

“Base Capacity Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Base Capacity Demand Resource Constraint:

“Base Capacity Demand Resource Constraint” for the PJM Region or an LDA, shall mean, for the 2018/2019 and 2019/2020 Delivery Years, the maximum Unforced Capacity amount, determined by PJM, of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources that is consistent with the maintenance of reliability. As more fully set forth in the PJM Manuals, PJM calculates the Base Capacity Demand Resource Constraint for the PJM Region or an LDA, by first determining a reference annual loss of load expectation (“LOLE”) assuming no Base Capacity Resources, including no Base Capacity Demand Resources or Base Capacity Energy Efficiency Resources. The calculation for the PJM Region uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast and iteratively shifting the load distributions to result in the Installed Reserve Margin established for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). The calculation for each relevant LDA uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity

availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). For the relevant LDA calculation, the weekly capacity distributions are adjusted to reflect the Capacity Emergency Transfer Limit for the Delivery Year in question.

For both the PJM Region and LDA analyses, PJM then models the commitment of varying amounts of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources (displacing otherwise committed generation) as interruptible from June 1 through September 30 and unavailable the rest of the Delivery Year in question and calculates the LOLE at each DR and EE level. The Base Capacity Demand Resource Constraint is the combined amount of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources, stated as a percentage of the unrestricted annual peak load, that produces no more than a five percent increase in the LOLE, compared to the reference value. The Base Capacity Demand Resource Constraint shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [the Forecast Pool Requirement] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

Base Capacity Demand Resource Price Decrement:

“Base Capacity Demand Resource Price Decrement” shall mean, for the 2018/2019 and 2019/2020 Delivery Years, a difference between the clearing price for Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources and the clearing price for Base Capacity Resources and Capacity Performance Resources, representing the cost to procure additional Base Capacity Resources or Capacity Performance Resources out of merit order when the Base Capacity Demand Resource Constraint is binding.

Base Capacity Energy Efficiency Resource:

“Base Capacity Energy Efficiency Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Base Capacity Resource:

“Base Capacity Resource” shall mean a Capacity Resource as described in Tariff, Attachment DD, section 5.5A(b).

Base Capacity Resource Constraint:

“Base Capacity Resource Constraint” for the PJM Region or an LDA, shall mean, for the 2018/2019 and 2019/2020 Delivery Years, the maximum Unforced Capacity amount, determined by PJM, of Base Capacity Resources, including Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources, that is consistent with the maintenance of reliability. As more fully set forth in the PJM Manuals, PJM calculates the above Base Capacity Resource Constraint for the PJM Region or an LDA, by first determining a reference annual loss of load expectation (“LOLE”) assuming no Base Capacity Resources, including no Base Capacity Demand Resources or Base Capacity Energy Efficiency Resources. The calculation for the PJM

Region uses the weekly load distribution from the Installed Reserve Margin study for the Delivery Year in question (based on the most recent load forecast and iteratively shifting the load distributions to result in the Installed Reserve Margin established for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). The calculation for each relevant LDA uses a weekly load distribution (based on the Installed Reserve Margin study and the most recent load forecast for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). For the relevant LDA calculation, the weekly capacity distributions are adjusted to reflect the Capacity Emergency Transfer Limit for the Delivery Year in question. Additionally, for the PJM Region and relevant LDA calculation, the weekly capacity distributions are adjusted to reflect winter ratings.

For both the PJM Region and LDA analyses, PJM models the commitment of an amount of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources equal to the Base Capacity Demand Resource Constraint (displacing otherwise committed generation). PJM then models the commitment of varying amounts of Base Capacity Resources (displacing otherwise committed generation) as unavailable during the peak week of winter and available the rest of the Delivery Year in question and calculates the LOLE at each Base Capacity Resource level. The Base Capacity Resource Constraint is the combined amount of Base Capacity Demand Resources, Base Capacity Energy Efficiency Resources and Base Capacity Resources, stated as a percentage of the unrestricted annual peak load, that produces no more than a ten percent increase in the LOLE, compared to the reference value. The Base Capacity Resource Constraint shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [one minus the pool-wide average EFORD] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

Base Capacity Resource Price Decrement:

“Base Capacity Resource Price Decrement” shall mean, for the 2018/2019 and 2019/2020 Delivery Years, a difference between the clearing price for Base Capacity Resources and the clearing price for Capacity Performance Resources, representing the cost to procure additional Capacity Performance Resources out of merit order when the Base Capacity Resource Constraint is binding.

Base Day-ahead Scheduling Reserves Requirement:

“Base Day-ahead Scheduling Reserves Requirement” shall mean the thirty-minute reserve requirement for the PJM Region established consistent with the Applicable Standards, plus any additional thirty-minute reserves scheduled in response to an RTO-wide Hot or Cold Weather Alert or other reasons for conservative operations.

Base Load Generation Resource

“Base Load Generation Resource” shall mean a Generation Capacity Resource that operates at least 90 percent of the hours that it is available to operate, as determined by the Office of the Interconnection in accordance with the PJM Manuals.

Base Offer Segment:

“Base Offer Segment” shall mean a component of a Sell Offer based on an existing Generation Capacity Resource, equal to the Unforced Capacity of such resource, as determined in accordance with the PJM Manuals. If the Sell Offers of multiple Market Sellers are based on a single Existing Generation Capacity Resource, the Base Offer Segments of such Market Sellers shall be determined pro rata based on their entitlements to Unforced Capacity from such resource.

Base Residual Auction:

“Base Residual Auction” shall mean the auction conducted three years prior to the start of the Delivery Year to secure commitments from Capacity Resources as necessary to satisfy any portion of the Unforced Capacity Obligation of the PJM Region not satisfied through Self-Supply.

Batch Load Demand Resource:

“Batch Load Demand Resource” shall mean a Demand Resource that has a cyclical production process such that at most times during the process it is consuming energy, but at consistent regular intervals, ordinarily for periods of less than ten minutes, it reduces its consumption of energy for its production processes to minimal or zero megawatts.

Behind The Meter Generation:

“Behind The Meter Generation” shall refer to a generation unit that delivers energy to load without using the Transmission System or any distribution facilities (unless the entity that owns or leases the distribution facilities has consented to such use of the distribution facilities and such consent has been demonstrated to the satisfaction of the Office of the Interconnection); provided, however, that Behind The Meter Generation does not include (i) at any time, any portion of such generating unit’s capacity that is designated as a Generation Capacity Resource; or (ii) in an hour, any portion of the output of such generating unit that is sold to another entity for consumption at another electrical location or into the PJM Interchange Energy Market.

Black Start Service:

“Black Start Service” shall mean the capability of generating units to start without an outside electrical supply or the demonstrated ability of a generating unit with a high operating factor (subject to Transmission Provider concurrence) to automatically remain operating at reduced levels when disconnected from the grid.

Border Yearly Charge:

“Border Yearly Charge” shall mean the yearly charge determined in accordance with Tariff, Schedule 7.

Breach:

“Breach” shall mean the failure of a party to perform or observe any material term or condition of Tariff, Part IV or Tariff, Part VI, or any agreement entered into thereunder as described in the relevant provisions of such agreement.

Breaching Party:

“Breaching Party” shall mean a party that is in Breach of Tariff, Part IV or Tariff, Part VI and/or an agreement entered into thereunder.

Business Day:

“Business Day” shall mean a day in which the Federal Reserve System is open for business and is not a scheduled PJM holiday.

Buy Bid:

“Buy Bid” shall mean a bid to buy Capacity Resources in any Incremental Auction.

Canadian Guaranty:

“Canadian Guaranty” shall mean a Corporate Guaranty provided by an Affiliate of a Participant that is domiciled in Canada, and meets all of the provisions of Tariff, Attachment Q.

Cancellation Costs:

“Cancellation Costs” shall mean costs and liabilities incurred in connection with: (a) cancellation of supplier and contractor written orders and agreements entered into to design, construct and install Attachment Facilities, Direct Assignment Facilities and/or Customer-Funded Upgrades, and/or (b) completion of some or all of the required Attachment Facilities, Direct Assignment Facilities and/or Customer-Funded Upgrades, or specific unfinished portions and/or removal of any or all of such facilities which have been installed, to the extent required for the Transmission Provider and/or Transmission Owner(s) to perform their respective obligations under Tariff, Part IV and/or Part VI.

Capacity:

“Capacity” shall mean the installed capacity requirement of the Reliability Assurance Agreement or similar such requirements as may be established.

Capacity Emergency Transfer Limit:

“Capacity Emergency Transfer Limit” or “CETL” shall have the meaning provided in the Reliability Assurance Agreement.

Capacity Emergency Transfer Objective:

“Capacity Emergency Transfer Objective” or “CETO” shall have the meaning provided in the Reliability Assurance Agreement.

Capacity Export Transmission Customer:

“Capacity Export Transmission Customer” shall mean a customer taking point to point transmission service under Tariff, Part II to export capacity from a generation resource located in the PJM Region that has qualified for an exception to the RPM must-offer requirement as described in Tariff, Attachment DD, section 6.6(g).

Capacity Import Limit:

“Capacity Import Limit” shall have the meaning provided in the Reliability Assurance Agreement.

Capacity Interconnection Rights:

“Capacity Interconnection Rights” shall mean the rights to input generation as a Generation Capacity Resource into the Transmission System at the Point of Interconnection where the generating facilities connect to the Transmission System.

Capacity Market Buyer:

“Capacity Market Buyer” shall mean a Member that submits bids to buy Capacity Resources in any Incremental Auction.

Capacity Market Seller:

“Capacity Market Seller” shall mean a Member that owns, or has the contractual authority to control the output or load reduction capability of, a Capacity Resource, that has not transferred such authority to another entity, and that offers such resource in the Base Residual Auction or an Incremental Auction.

Capacity Performance Resource:

“Capacity Performance Resource” shall mean a Capacity Resource as described in Tariff, Attachment DD, section 5.5A(a).

Capacity Performance Transition Incremental Auction:

“Capacity Performance Transition Incremental Auction” shall have the meaning specified in

Tariff, Attachment DD, section 5.14D.

Capacity Resource:

“Capacity Resource” shall have the meaning provided in the Reliability Assurance Agreement.

Capacity Resource Clearing Price:

“Capacity Resource Clearing Price” shall mean the price calculated for a Capacity Resource that offered and cleared in a Base Residual Auction or Incremental Auction, in accordance with Tariff, Attachment DD, section 5.

Capacity Storage Resource:

“Capacity Storage Resource” shall mean any Energy Storage Resource that participates in the Reliability Pricing Model or is otherwise treated as capacity in PJM’s markets such as through a Fixed Resource Requirement Capacity Plan.

Capacity Transfer Right:

“Capacity Transfer Right” shall mean a right, allocated to LSEs serving load in a Locational Deliverability Area, to receive payments, based on the transmission import capability into such Locational Deliverability Area, that offset, in whole or in part, the charges attributable to the Locational Price Adder, if any, included in the Zonal Capacity Price calculated for a Locational Delivery Area.

Capacity Transmission Injection Rights:

“Capacity Transmission Injection Rights” shall mean the rights to schedule energy and capacity deliveries at a Point of Interconnection of a Merchant Transmission Facility with the Transmission System. Capacity Transmission Injection Rights may be awarded only to a Merchant D.C. Transmission Facility and/or Controllable A.C. Merchant Transmission Facilities that connects the Transmission System to another control area. Deliveries scheduled using Capacity Transmission Injection Rights have rights similar to those under Firm Point-to-Point Transmission Service or, if coupled with a generating unit external to the PJM Region that satisfies all applicable criteria specified in the PJM Manuals, similar to Capacity Interconnection Rights.

Cold/Warm/Hot Notification Time:

“Cold/Warm/Hot Notification Time” shall mean the time interval between PJM notification and the beginning of the start sequence for a generating unit that is currently in its cold/warm/hot temperature state. The start sequence may include steps such as any valve operation, starting feed water pumps, startup of auxiliary equipment, etc.

Cold/Warm/Hot Start-up Time:

For all generating units that are not combined cycle units, “Cold/Warm/Hot Start-up Time” shall mean the time interval, measured in hours, from the beginning of the start sequence to the point after generator breaker closure, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero for a generating unit in its cold/warm/hot temperature state. For combined cycle units, “Cold/Warm/Hot Start-up Time” shall mean the time interval from the beginning of the start sequence to the point after first combustion turbine generator breaker closure in its cold/warm/hot temperature state, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero. For all generating units, the start sequence may include steps such as any valve operation, starting feed water pumps, startup of auxiliary equipment, etc. Other more detailed actions that could signal the beginning of the start sequence could include, but are not limited to, the operation of pumps, condensers, fans, water chemistry evaluations, checklists, valves, fuel systems, combustion turbines, starting engines or systems, maintaining stable fuel/air ratios, and other auxiliary equipment necessary for startup.

Cold Weather Alert:

“Cold Weather Alert” shall mean the notice that PJM provides to PJM Members, Transmission Owners, resource owners and operators, customers, and regulators to prepare personnel and facilities for expected extreme cold weather conditions.

Collateral:

“Collateral” shall be a cash deposit, including any interest thereon, or a Letter of Credit issued for the benefit of PJM or PJMSettlement, in an amount and form determined by and acceptable to PJM or PJMSettlement, provided by a Participant to PJM or PJMSettlement as credit support in order to participate in the PJM Markets or take Transmission Service.

Collateral Call:

“Collateral Call” shall mean a notice to a Participant that additional Collateral, or possibly early payment, is required in order to remain in, or to regain, compliance with Tariff, Attachment Q.

Commencement Date:

“Commencement Date” shall mean the date on which Interconnection Service commences in accordance with an Interconnection Service Agreement.

Committed Offer:

The “Committed Offer” shall mean 1) for pool-scheduled resources, an offer on which a resource was scheduled by the Office of the Interconnection for a particular clock hour for an Operating Day, and 2) for self-scheduled resources, either the offer on which the Market Seller has elected to schedule the resource or the applicable offer for the resource determined pursuant to Operating Agreement, Schedule 1, section 6.4, and the parallel provisions of Tariff, Attachment K-

Appendix, section 6.4, or Operating Agreement, Schedule 1, section 6.6, and the parallel provisions of Tariff, Attachment K-Appendix, section 6.6, for a particular clock hour for an Operating Day.

Completed Application:

“Completed Application” shall mean an application that satisfies all of the information and other requirements of the Tariff, including any required deposit.

Compliance Aggregation Area (CAA):

“Compliance Aggregation Area” or “CAA” shall mean a geographic area of Zones or sub-Zones that are electrically-contiguous and experience for the relevant Delivery Year, based on Resource Clearing Prices of, for Delivery Years through May 31, 2018, Annual Resources and for the 2018/2019 Delivery Year and subsequent Delivery Years, Capacity Performance Resources, the same locational price separation in the Base Residual Auction, the same locational price separation in the First Incremental Auction, the same locational price separation in the Second Incremental Auction, or the same locational price separation in the Third Incremental Auction.

Conditional Incremental Auction:

“Conditional Incremental Auction” shall mean an Incremental Auction conducted for a Delivery Year if and when necessary to secure commitments of additional capacity to address reliability criteria violations arising from the delay in a Backbone Transmission upgrade that was modeled in the Base Residual Auction for such Delivery Year.

CONE Area:

“CONE Area” shall mean the areas listed in Tariff, Attachment DD, section 5.10(a)(iv)(A) and any LDAs established as CONE Areas pursuant to Tariff, Attachment DD, section 5.10(a)(iv)(B).

Confidential Information:

“Confidential Information” shall mean any confidential, proprietary, or trade secret information of a plan, specification, pattern, procedure, design, device, list, concept, policy, or compilation relating to the present or planned business of a New Service Customer, Transmission Owner, or other Interconnection Party or Construction Party, which is designated as confidential by the party supplying the information, whether conveyed verbally, electronically, in writing, through inspection, or otherwise, and shall include, without limitation, all information relating to the producing party’s technology, research and development, business affairs and pricing, and any information supplied by any New Service Customer, Transmission Owner, or other Interconnection Party or Construction Party to another such party prior to the execution of an Interconnection Service Agreement or a Construction Service Agreement.

Congestion Price:

“Congestion Price” shall mean the congestion component of the Locational Marginal Price, which is the effect on transmission congestion costs (whether positive or negative) associated with increasing the output of a generation resource or decreasing the consumption by a Demand Resource, based on the effect of increased generation from or consumption by the resource on transmission line loadings, calculated as specified in Operating Agreement, Schedule 1, section 2, and the parallel provisions of Tariff, Attachment K-Appendix.

Consolidated Transmission Owners Agreement, PJM Transmission Owners Agreement or Transmission Owners Agreement:

“Consolidated Transmission Owners Agreement,” “PJM Transmission Owners Agreement” or “Transmission Owners Agreement” shall mean the certain Consolidated Transmission Owners Agreement dated as of December 15, 2005, by and among the Transmission Owners and by and between the Transmission Owners and PJM Interconnection, L.L.C. on file with the Commission, as amended from time to time.

Constraint Relaxation Logic:

“Constraint Relaxation Logic” shall mean the logic applied in the market clearing software where the transmission limit is increased to prevent the Transmission Constraint Penalty Factor from setting the Marginal Value of a transmission constraint.

Constructing Entity:

“Constructing Entity” shall mean either the Transmission Owner or the New Services Customer, depending on which entity has the construction responsibility pursuant to Tariff, Part VI and the applicable Construction Service Agreement; this term shall also be used to refer to an Interconnection Customer with respect to the construction of the Customer Interconnection Facilities.

Construction Party:

“Construction Party” shall mean a party to a Construction Service Agreement. “Construction Parties” shall mean all of the Parties to a Construction Service Agreement.

Construction Service Agreement:

“Construction Service Agreement” shall mean either an Interconnection Construction Service Agreement or an Upgrade Construction Service Agreement.

Contingent Facilities:

“Contingent Facilities” shall mean those unbuilt Interconnection Facilities and Network Upgrades upon which the Interconnection Request’s costs, timing, and study findings are dependent and, if delayed or not built, could cause a need for restudies of the Interconnection

Request or a reassessment of the Interconnection Facilities and/or Network Upgrades and/or costs and timing.

Control Area:

“Control Area” shall mean an electric power system or combination of electric power systems bounded by interconnection metering and telemetry to which a common automatic generation control scheme is applied in order to:

- (1) match the power output of the generators within the electric power system(s) and energy purchased from entities outside the electric power system(s), with the load within the electric power system(s);
- (2) maintain scheduled interchange with other Control Areas, within the limits of Good Utility Practice;
- (3) maintain the frequency of the electric power system(s) within reasonable limits in accordance with Good Utility Practice; and
- (4) provide sufficient generating capacity to maintain operating reserves in accordance with Good Utility Practice.

Control Zone:

“Control Zone” shall have the meaning given in the Operating Agreement.

Controllable A.C. Merchant Transmission Facilities:

“Controllable A.C. Merchant Transmission Facilities” shall mean transmission facilities that (1) employ technology which Transmission Provider reviews and verifies will permit control of the amount and/or direction of power flow on such facilities to such extent as to effectively enable the controllable facilities to be operated as if they were direct current transmission facilities, and (2) that are interconnected with the Transmission System pursuant to Tariff, Part IV and Part VI.

Coordinated External Transaction:

“Coordinated External Transaction” shall mean a transaction to simultaneously purchase and sell energy on either side of a CTS Enabled Interface in accordance with the procedures of Operating Agreement, Schedule 1, section 1.13, and the parallel provisions of Tariff, Attachment K-Appendix.

Coordinated Transaction Scheduling:

“Coordinated Transaction Scheduling” or “CTS” shall mean the scheduling of Coordinated External Transactions at a CTS Enabled Interface in accordance with the procedures of Operating Agreement, Schedule 1, section 1.13, and the parallel provisions of Tariff, Attachment

K-Appendix.

Corporate Guaranty:

“Corporate Guaranty” shall mean a legal document, in a form acceptable to PJM and/or PJMSettlement, used by a Credit Affiliate of an entity to guaranty the obligations of another entity.

Cost of New Entry:

“Cost of New Entry” or “CONE” shall mean the nominal levelized cost of a Reference Resource, as determined in accordance with Tariff, Attachment DD, section 5.

Costs:

As used in Tariff, Part IV, Part VI and related attachments, “Costs” shall mean costs and expenses, as estimated or calculated, as applicable, including, but not limited to, capital expenditures, if applicable, and overhead, return, and the costs of financing and taxes and any Incidental Expenses.

Counterparty:

“Counterparty” shall mean PJMSettlement as the contracting party, in its name and own right and not as an agent, to an agreement or transaction with a Market Participant or other entities, including the agreements and transactions with customers regarding transmission service and other transactions under the PJM Tariff and the Operating Agreement. PJMSettlement shall not be a counterparty to (i) any bilateral transactions between Members, or (ii) any Member’s self-supply of energy to serve its load, or (iii) any Member’s self-schedule of energy reported to the Office of the Interconnection to the extent that energy serves that Member’s own load.

Credit Affiliate:

“Credit Affiliate” shall mean Principals, corporations, partnerships, firms, joint ventures, associations, joint stock companies, trusts, unincorporated organizations or entities, one of which directly or indirectly controls the other or that are both under common Control. “Control,” as that term is used in this definition, shall mean the possession, directly or indirectly, of the power to direct the management or policies of a person or an entity.

Credit Available for Export Transactions:

“Credit Available for Export Transactions” shall mean a designation of credit to be used for Export Transactions that is allocated by each Market Participant from its Credit Available for Virtual Transactions, and which reduces the Market Participant's Credit Available for Virtual Transactions accordingly.

Credit Available for Virtual Transactions:

“Credit Available for Virtual Transactions” shall mean the Market Participant’s Working Credit Limit for Virtual Transactions calculated on its credit provided in compliance with its Peak Market Activity requirement plus available credit submitted above that amount, less any unpaid billed and unbilled amounts owed to PJMSettlement, plus any unpaid unbilled amounts owed by PJMSettlement to the Market Participant, less any applicable credit required for Minimum Participation Requirements, FTRs, RPM activity, or other credit requirement determinants as defined in Tariff, Attachment Q.

Credit Breach:

“Credit Breach” shall mean (a) the failure of a Participant to perform, observe, meet or comply with any requirements of Tariff, Attachment Q or other provisions of the Agreements, other than a Financial Default, or (b) a determination by PJM and notice to the Participant that a Participant represents an unreasonable credit risk to the PJM Markets; that, in either event, has not been cured or remedied after any required notice has been given and any cure period has elapsed.

Credit-Limited Offer:

“Credit-Limited Offer” shall mean a Sell Offer that is submitted by a Market Participant in an RPM Auction subject to a maximum credit requirement specified by such Market Participant.

Credit Support Default:

“Credit Support Default,” shall mean (a) the failure of any Guarantor of a Market Participant to make any payment, or to perform, observe, meet or comply with any provisions of the applicable Guaranty or Credit Support Document that has not been cured or remedied, after any required notice has been given and an opportunity to cure (if any) has elapsed, (b) a representation made or deemed made by a Guarantor in any Credit Support Document that proves to be false, incorrect or misleading in any material respect when made or deemed made, (c) the failure of a Guaranty or other Credit Support Document to be in full force and effect prior to the satisfaction of all obligations of such Participant to PJM, without PJM’s consent, or (d) a Guarantor repudiating, disaffirming, disclaiming or rejecting, in whole or in part, its obligations under the Guaranty or challenging the validity of the Guaranty.

Credit Support Document:

“Credit Support Document” shall mean any agreement or instrument in any way guaranteeing or securing any or all of a Participant’s obligations under the Agreements (including, without limitation, the provisions of Tariff, Attachment Q), any agreement entered into under, pursuant to, or in connection with the Agreements or any agreement entered into under, pursuant to, or in connection with the Agreements and/or any other agreement to which PJM, PJMSettlement and the Participant are parties, including, without limitation, any Corporate Guaranty, Letter of Credit, or agreement granting PJM and PJMSettlement a security interest.

CTS Enabled Interface:

“CTS Enabled Interface” shall mean an interface between the PJM Control Area and an adjacent Control Area at which the Office of the Interconnection has authorized the use of Coordinated Transaction Scheduling (“CTS”). The CTS Enabled Interfaces between the PJM Control Area and the New York Independent System Operator, Inc. Control Area shall be designated in Schedule A to the Joint Operating Agreement Among and Between New York Independent System Operator Inc. and PJM Interconnection, L.L.C. (PJM Rate Schedule FERC No. 45). The CTS Enabled Interfaces between the PJM Control Area and the Midcontinent Independent System Operator, Inc. shall be designated consistent with Attachment 3, section 2 of the Joint Operating Agreement between Midcontinent Independent System Operator, Inc. and PJM Interconnection, L.L.C.

CTS Interface Bid:

“CTS Interface Bid” shall mean a unified real-time bid to simultaneously purchase and sell energy on either side of a CTS Enabled Interface in accordance with the procedures of Operating Agreement, Schedule 1, section 1.13, and the parallel provisions of Tariff, Attachment K-Appendix.

Curtailement:

“Curtailement” shall mean a reduction in firm or non-firm transmission service in response to a transfer capability shortage as a result of system reliability conditions.

Curtailement Service Provider:

“Curtailement Service Provider” or “CSP” shall mean a Member or a Special Member, which action on behalf of itself or one or more other Members or non-Members, participates in the PJM Interchange Energy Market, Ancillary Services markets, and/or Reliability Pricing Model by causing a reduction in demand.

Customer Facility:

“Customer Facility” shall mean Generation Facilities or Merchant Transmission Facilities interconnected with or added to the Transmission System pursuant to an Interconnection Request under Subpart A of Tariff, Part IV.

Customer-Funded Upgrade:

“Customer-Funded Upgrade” shall mean any Network Upgrade, Local Upgrade, or Merchant Network Upgrade for which cost responsibility (i) is imposed on an Interconnection Customer or an Eligible Customer pursuant to Tariff, Part VI, section 217, or (ii) is voluntarily undertaken by a New Service Customer in fulfillment of an Upgrade Request. No Network Upgrade, Local Upgrade or Merchant Network Upgrade or other transmission expansion or enhancement shall be a Customer-Funded Upgrade if and to the extent that the costs thereof are included in the rate base of a public utility on which a regulated return is earned.

Customer Interconnection Facilities:

“Customer Interconnection Facilities” shall mean all facilities and equipment owned and/or controlled, operated and maintained by Interconnection Customer on Interconnection Customer’s side of the Point of Interconnection identified in the appropriate appendices to the Interconnection Service Agreement and to the Interconnection Construction Service Agreement, including any modifications, additions, or upgrades made to such facilities and equipment, that are necessary to physically and electrically interconnect the Customer Facility with the Transmission System.

Daily Deficiency Rate:

“Daily Deficiency Rate” shall mean the rate employed to assess certain deficiency charges under Tariff, Attachment DD, section 7, Tariff, Attachment DD, section 8, Tariff, Attachment DD, section 9, or Tariff, Attachment DD, section 13.

Daily Unforced Capacity Obligation:

“Daily Unforced Capacity Obligation” shall mean the capacity obligation of a Load Serving Entity during the Delivery Year, determined in accordance with Reliability Assurance Agreement, Schedule 8, or, as to an FRR entity, in Reliability Assurance Agreement, Schedule 8.1.

Day-ahead Congestion Price:

“Day-ahead Congestion Price” shall mean the Congestion Price resulting from the Day-ahead Energy Market.

Day-ahead Energy Market:

“Day-ahead Energy Market” shall mean the schedule of commitments for the purchase or sale of energy and payment of Transmission Congestion Charges developed by the Office of the Interconnection as a result of the offers and specifications submitted in accordance with Operating Agreement, Schedule 1, section 1.10 and the parallel provisions of Tariff, Attachment K-Appendix.

Day-ahead Energy Market Injection Congestion Credits:

“Day-ahead Energy Market Injection Congestion Credits” shall mean those congestion credits paid to Market Participants for supply transactions in the Day-ahead Energy Market including generation schedules, Increment Offers, Up-to Congestion Transactions, import transactions, and Day-Ahead Pseudo-Tie Transactions.

Day-ahead Energy Market Transmission Congestion Charges:

“Day-ahead Energy Market Transmission Congestion Charges” shall be equal to the sum of Day-ahead Energy Market Withdrawal Congestion Charges minus [the sum of Day-ahead Energy Market Injection Congestion Credits plus any congestion charges calculated pursuant to the Joint Operating Agreement between the Midcontinent Independent Transmission System Operator, Inc. and PJM Interconnection, L.L.C. (PJM Rate Schedule FERC No. 38), plus any congestion charges calculated pursuant to the Joint Operating Agreement Among and Between New York Independent System Operator Inc. and PJM Interconnection, L.L.C. (PJM Rate Schedule FERC No. 45), plus any congestion charges calculated pursuant to agreements between the Office of the Interconnection and other entities, as applicable)].

Day-ahead Energy Market Withdrawal Congestion Charges:

“Day-ahead Energy Market Withdrawal Congestion Charges” shall mean those congestion charges collected from Market Participants for withdrawal transactions in the Day-ahead Energy Market from transactions including Demand Bids, Decrement Bids, Up-to Congestion Transactions, Export Transactions, and Day-Ahead Pseudo-Tie Transactions.

Day-ahead Loss Price:

“Day-ahead Loss Price” shall mean the Loss Price resulting from the Day-ahead Energy Market.

Day-ahead Prices:

“Day-ahead Prices” shall mean the Locational Marginal Prices resulting from the Day-ahead Energy Market.

Day-Ahead Pseudo-Tie Transaction:

“Day-Ahead Pseudo-Tie Transaction” shall mean a transaction scheduled in the Day-ahead Energy Market to the PJM-MISO interface from a generator within the PJM balancing authority area that Pseudo-Ties into the MISO balancing authority area.

Day-ahead Scheduling Reserves:

“Day-ahead Scheduling Reserves” shall mean thirty-minute reserves as defined by the Reliability *First* Corporation and SERC.

Day-ahead Scheduling Reserves Market:

“Day-ahead Scheduling Reserves Market” shall mean the schedule of commitments for the purchase or sale of Day-ahead Scheduling Reserves developed by the Office of the Interconnection as a result of the offers and specifications submitted in accordance with Operating Agreement, Schedule 1, section 1.10 and the parallel provisions of Tariff, Attachment K-Appendix.

Day-ahead Scheduling Reserves Requirement:

“Day-ahead Scheduling Reserves Requirement” shall mean the sum of Base Day-ahead Scheduling Reserves Requirement and Additional Day-ahead Scheduling Reserves Requirement.

Day-ahead Scheduling Reserves Resources:

“Day-ahead Scheduling Reserves Resources” shall mean synchronized and non-synchronized generation resources and Demand Resources electrically located within the PJM Region that are capable of providing Day-ahead Scheduling Reserves.

Day-ahead Settlement Interval:

“Day-ahead Settlement Interval” shall mean the interval used by settlements, which shall be every one clock hour.

Day-ahead System Energy Price:

“Day-ahead System Energy Price” shall mean the System Energy Price resulting from the Day-ahead Energy Market.

Deactivation:

“Deactivation” shall mean the retirement or mothballing of a generating unit governed by Tariff, Part V.

Deactivation Avoidable Cost Credit:

“Deactivation Avoidable Cost Credit” shall mean the credit paid to Generation Owners pursuant to Tariff, Part V, section 114.

Deactivation Avoidable Cost Rate:

“Deactivation Avoidable Cost Rate” shall mean the formula rate established pursuant to Tariff, Part V, section 115 of this Tariff.

Deactivation Date:

“Deactivation Date” shall mean the date a generating unit within the PJM Region is either retired or mothballed and ceases to operate.

Decrement Bid:

“Decrement Bid” shall mean a type of Virtual Transaction that is a bid to purchase energy at a specified location in the Day-ahead Energy Market. A cleared Decrement Bid results in scheduled load at the specified location in the Day-ahead Energy Market.

Default:

As used in the Interconnection Service Agreement and Construction Service Agreement, “Default” shall mean the failure of a Breaching Party to cure its Breach in accordance with the applicable provisions of an Interconnection Service Agreement or Construction Service Agreement.

Delivering Party:

“Delivering Party” shall mean the entity supplying capacity and energy to be transmitted at Point(s) of Receipt.

Delivery Year:

“Delivery Year” shall mean the Planning Period for which a Capacity Resource is committed pursuant to the auction procedures specified in Tariff, Attachment DD, or pursuant to an FRR Capacity Plan under Reliability Assurance Agreement, Schedule 8.1.

Demand Bid:

“Demand Bid” shall mean a bid, submitted by a Load Serving Entity in the Day-ahead Energy Market, to purchase energy at its contracted load location, for a specified timeframe and megawatt quantity, that if cleared will result in energy being scheduled at the specified location in the Day-ahead Energy Market and in the physical transfer of energy during the relevant Operating Day.

Demand Bid Limit:

“Demand Bid Limit” shall mean the largest MW volume of Demand Bids that may be submitted by a Load Serving Entity for any hour of an Operating Day, as determined pursuant to Operating Agreement, Schedule 1, section 1.10.1B, and the parallel provisions of Tariff, Attachment K-Appendix.

Demand Bid Screening:

“Demand Bid Screening” shall mean the process by which Demand Bids are reviewed against the applicable Demand Bid Limit, and rejected if they would exceed that limit, as determined pursuant to Operating Agreement, Schedule 1, section 1.10.1B, and the parallel provisions of Tariff, Attachment K-Appendix.

Demand Resource:

“Demand Resource” shall mean a resource with the capability to provide a reduction in demand.

Demand Resource Factor or DR Factor:

“Demand Resource Factor” or (“DR Factor”) shall have the meaning specified in the Reliability Assurance Agreement.

Designated Agent:

“Designated Agent” shall mean any entity that performs actions or functions on behalf of the Transmission Provider, a Transmission Owner, an Eligible Customer, or the Transmission Customer required under the Tariff.

Designated Entity:

“Designated Entity” shall have the same meaning provided in the Operating Agreement.

Direct Assignment Facilities:

“Direct Assignment Facilities” shall mean facilities or portions of facilities that are constructed for the sole use/benefit of a particular Transmission Customer requesting service under the Tariff. Direct Assignment Facilities shall be specified in the Service Agreement that governs service to the Transmission Customer and shall be subject to Commission approval.

Direct Charging Energy:

“Direct Charging Energy” shall mean the energy that an Energy Storage Resource purchases from the PJM Interchange Energy Market and (i) later resells to the PJM Interchange Energy Market; or (ii) is lost to conversion inefficiencies, provided that such inefficiencies are an unavoidable component of the conversion, storage, and discharge process that is used to resell energy back to the PJM Interchange Energy Market.

Direct Load Control:

“Direct Load Control” shall mean load reduction that is controlled directly by the Curtailment Service Provider’s market operations center or its agent, in response to PJM instructions.

Dispatch Rate:

“Dispatch Rate” shall mean the control signal, expressed in dollars per megawatt-hour, calculated and transmitted continuously and dynamically to direct the output level of all generation resources dispatched by the Office of the Interconnection in accordance with the Offer Data.

Dispatched Charging Energy:

“Dispatched Charging Energy” shall mean Direct Charging Energy that an Energy Storage Resource Model Participant receives from the electric grid pursuant to PJM dispatch while providing a service in the PJM markets.

Dynamic Schedule:

“Dynamic Schedule” shall have the same meaning provided in the Operating Agreement.

Dynamic Transfer:

“Dynamic Transfer” shall have the same meaning provided in the Operating Agreement.

Economic-based Enhancement or Expansion:

“Economic-based Enhancement or Expansion” shall have the same meaning provided in the Operating Agreement.

Economic Load Response Participant:

“Economic Load Response Participant” shall mean a Member or Special Member that qualifies under Operating Agreement, Schedule 1, section 1.5A, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.5A, to participate in the PJM Interchange Energy Market and/or Ancillary Services markets through reductions in demand.

Economic Maximum:

“Economic Maximum” shall mean the highest incremental MW output level, submitted to PJM market systems by a Market Participant, that a unit can achieve while following economic dispatch.

Economic Minimum:

“Economic Minimum” shall mean the lowest incremental MW output level, submitted to PJM market systems by a Market Participant, that a unit can achieve while following economic dispatch.

Effective FTR Holder:

“Effective FTR Holder” shall mean:

- (i) For an FTR Holder that is either a (a) privately held company, or (b) a municipality or electric cooperative, as defined in the Federal Power Act, such FTR Holder, together with any Affiliate, subsidiary or parent of the FTR Holder, any other entity that is under common ownership, wholly or partly, directly or indirectly, or has the ability to influence, directly or indirectly, the management or policies of the FTR Holder; or
- (ii) For an FTR Holder that is a publicly traded company including a wholly owned subsidiary of a publicly traded company, such FTR Holder, together with any Affiliate, subsidiary or parent of the FTR Holder, any other PJM Member has over 10% common ownership with the FTR Holder, wholly or partly, directly or indirectly, or has the ability to

influence, directly or indirectly, the management or policies of the FTR Holder; or

(iii) an FTR Holder together with any other PJM Member, including also any Affiliate, subsidiary or parent of such other PJM Member, with which it shares common ownership, wholly or partly, directly or indirectly, in any third entity which is a PJM Member (e.g., a joint venture).

EFORD:

“EFORD” shall have the meaning specified in the PJM Reliability Assurance Agreement.

Electrical Distance:

“Electrical Distance” shall mean, for a Generation Capacity Resource geographically located outside the metered boundaries of the PJM Region, the measure of distance, based on impedance and in accordance with the PJM Manuals, from the Generation Capacity Resource to the PJM Region.

Eligible Customer:

“Eligible Customer” shall mean:

(i) Any electric utility (including any Transmission Owner and any power marketer), Federal power marketing agency, or any person generating electric energy for sale for resale is an Eligible Customer under the Tariff. Electric energy sold or produced by such entity may be electric energy produced in the United States, Canada or Mexico. However, with respect to transmission service that the Commission is prohibited from ordering by Section 212(h) of the Federal Power Act, such entity is eligible only if the service is provided pursuant to a state requirement that the Transmission Provider or Transmission Owner offer the unbundled transmission service, or pursuant to a voluntary offer of such service by a Transmission Owner.

(ii) Any retail customer taking unbundled transmission service pursuant to a state requirement that the Transmission Provider or a Transmission Owner offer the transmission service, or pursuant to a voluntary offer of such service by a Transmission Owner, is an Eligible Customer under the Tariff. As used in Tariff, Part VI, Eligible Customer shall mean only those Eligible Customers that have submitted a Completed Application.

Emergency Action:

“Emergency Action” shall mean any emergency action for locational or system-wide capacity shortages that either utilizes pre-emergency mandatory load management reductions or other emergency capacity, or initiates a more severe action including, but not limited to, a Voltage Reduction Warning, Voltage Reduction Action, Manual Load Dump Warning, or Manual Load Dump Action.

Emergency Condition:

“Emergency Condition” shall mean a condition or situation (i) that in the judgment of any Interconnection Party is imminently likely to endanger life or property; or (ii) that in the judgment of the Interconnected Transmission Owner or Transmission Provider is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to, the Transmission System, the Interconnection Facilities, or the transmission systems or distribution systems to which the Transmission System is directly or indirectly connected; or (iii) that in the judgment of Interconnection Customer is imminently likely (as determined in a non-discriminatory manner) to cause damage to the Customer Facility or to the Customer Interconnection Facilities. System restoration and black start shall be considered Emergency Conditions, provided that a Generation Interconnection Customer is not obligated by an Interconnection Service Agreement to possess black start capability. Any condition or situation that results from lack of sufficient generating capacity to meet load requirements or that results solely from economic conditions shall not constitute an Emergency Condition, unless one or more of the enumerated conditions or situations identified in this definition also exists.

Emergency Load Response Program:

“Emergency Load Response Program” shall mean the program by which Curtailment Service Providers may be compensated by PJM for Demand Resources that will reduce load when dispatched by PJM during emergency conditions, and is described in Operating Agreement, Schedule 1, section 8 and the parallel provisions of Tariff, Attachment K-Appendix, section 8.

Energy Efficiency Resource:

“Energy Efficiency Resource” shall have the meaning specified in the PJM Reliability Assurance Agreement.

Energy Market Opportunity Cost:

“Energy Market Opportunity Cost” shall mean the difference between (a) the forecasted cost to operate a specific generating unit when the unit only has a limited number of available run hours due to limitations imposed on the unit by Applicable Laws and Regulations, and (b) the forecasted future Locational Marginal Price at which the generating unit could run while not violating such limitations. Energy Market Opportunity Cost therefore is the value associated with a specific generating unit’s lost opportunity to produce energy during a higher valued period of time occurring within the same compliance period, which compliance period is determined by the applicable regulatory authority and is reflected in the rules set forth in PJM Manual 15. Energy Market Opportunity Costs shall be limited to those resources which are specifically delineated in Operating Agreement, Schedule 2.

Energy Resource:

“Energy Resource” shall mean a Generating Facility that is not a Capacity Resource.

Energy Settlement Area:

“Energy Settlement Area” shall mean the bus or distribution of busses that represents the physical location of Network Load and by which the obligations of the Network Customer to PJM are settled.

Energy Storage Resource:

“Energy Storage Resource” shall mean a resource capable of receiving electric energy from the grid and storing it for later injection to the grid that participates in the PJM Energy, Capacity and/or Ancillary Services markets as a Market Participant.

Energy Storage Resource Model Participant:

“Energy Storage Resource Model Participant” shall mean an Energy Storage Resource utilizing the Energy Storage Resource Participation Model.

Energy Storage Resource Participation Model:

“Energy Storage Resource Participation Model” shall mean the participation model accepted by the Commission in Docket No. ER19-XXX-000.

Energy Transmission Injection Rights:

“Energy Transmission Injection Rights” shall mean the rights to schedule energy deliveries at a specified point on the Transmission System. Energy Transmission Injection Rights may be awarded only to a Merchant D.C. Transmission Facility that connects the Transmission System to another control area. Deliveries scheduled using Energy Transmission Injection Rights have rights similar to those under Non-Firm Point-to-Point Transmission Service.

Environmental Laws:

“Environmental Laws” shall mean applicable Laws or Regulations relating to pollution or protection of the environment, natural resources or human health and safety.

Environmentally-Limited Resource:

“Environmentally-Limited Resource” shall mean a resource which has a limit on its run hours imposed by a federal, state, or other governmental agency that will significantly limit its availability, on either a temporary or long-term basis. This includes a resource that is limited by a governmental authority to operating only during declared PJM capacity emergencies.

Equivalent Load:

“Equivalent Load” shall mean the sum of a Market Participant’s net system requirements to serve its customer load in the PJM Region, if any, plus its net bilateral transactions.

Event of Default:

“Event of Default,” as that term is used in Tariff, Attachment Q, shall mean a Financial Default, Credit Breach, or Credit Support Default.

Existing Generation Capacity Resource:

“Existing Generation Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Export Credit Exposure:

“Export Credit Exposure” is determined for each Market Participant for a given Operating Day, and shall mean the sum of credit exposures for the Market Participant’s Export Transactions for that Operating Day and for the preceding Operating Day.

Export Nodal Reference Price:

“Export Nodal Reference Price” at each location is the 97th percentile, shall be, the real-time hourly integrated price experienced over the corresponding two-month period in the preceding calendar year, calculated separately for peak and off-peak time periods. The two-month time periods used in this calculation shall be January and February, March and April, May and June, July and August, September and October, and November and December.

Export Transaction:

“Export Transaction” shall be a transaction by a Market Participant that results in the transfer of energy from within the PJM Control Area to outside the PJM Control Area. Coordinated External Transactions that result in the transfer of energy from the PJM Control Area to an adjacent Control Area are one form of Export Transaction.

Export Transaction Price Factor:

“Export Transaction Price Factor” for a prospective time interval shall be the greater of (i) PJM’s forecast price for the time interval, if available, or (ii) the Export Nodal Reference Price, but shall not exceed the Export Transaction’s dispatch ceiling price cap, if any, for that time interval. The Export Transaction Price Factor for a past time interval shall be calculated in the same manner as for a prospective time interval, except that the Export Transaction Price Factor may use a tentative or final settlement price, as available. If an Export Nodal Reference Price is not available for a particular time interval, PJM may use an Export Transaction Price Factor for that time interval based on an appropriate alternate reference price.

Export Transaction Screening:

“Export Transaction Screening” shall be the process PJM uses to review the Export Credit Exposure of Export Transactions against the Credit Available for Export Transactions, and deny

or curtail all or a portion of an Export Transaction, if the credit required for such transactions is greater than the credit available for the transactions.

Export Transactions Net Activity:

“Export Transactions Net Activity” shall mean the aggregate net total, resulting from Export Transactions, of (i) Spot Market Energy charges, (ii) Transmission Congestion Charges, and (iii) Transmission Loss Charges, calculated as set forth in Operating Agreement, Schedule 1 and the parallel provisions of Tariff, Attachment K-Appendix. Export Transactions Net Activity may be positive or negative.

Extended Primary Reserve Requirement:

“Extended Primary Reserve Requirement” shall equal the Primary Reserve Requirement in a Reserve Zone or Reserve Sub-zone, plus 190 MW, plus any additional reserves scheduled under emergency conditions necessary to address operational uncertainty. The Extended Primary Reserve Requirement is calculated in accordance with the PJM Manuals.

Extended Summer Demand Resource:

“Extended Summer Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Extended Summer Resource Price Adder:

“Extended Summer Resource Price Adder” shall mean, for Delivery Years through May 31, 2018, an addition to the marginal value of Unforced Capacity as necessary to reflect the price of Annual Resources and Extended Summer Demand Resources required to meet the applicable Minimum Extended Summer Resource Requirement.

Extended Synchronized Reserve Requirement:

“Extended Synchronized Reserve Requirement” shall equal the Synchronized Reserve Requirement in a Reserve Zone or Reserve Sub-zone, plus 190 MW, plus any additional reserves scheduled under emergency conditions necessary to address operational uncertainty. The Extended Synchronized Reserve Requirement is calculated in accordance with the PJM Manuals.

External Market Buyer:

“External Market Buyer” shall mean a Market Buyer making purchases of energy from the PJM Interchange Energy Market for consumption by end-users outside the PJM Region, or for load in the PJM Region that is not served by Network Transmission Service.

External Resource:

“External Resource” shall mean a generation resource located outside the metered boundaries of

the PJM Region.

Facilities Study:

“Facilities Study” shall be an engineering study conducted by the Transmission Provider (in coordination with the affected Transmission Owner(s)) to: (1) determine the required modifications to the Transmission Provider’s Transmission System necessary to implement the conclusions of the System Impact Study; and (2) complete any additional studies or analyses documented in the System Impact Study or required by PJM Manuals, and determine the required modifications to the Transmission Provider’s Transmission System based on the conclusions of such additional studies. The Facilities Study shall include the cost and scheduled completion date for such modifications, that will be required to provide the requested transmission service or to accommodate a New Service Request. As used in the Interconnection Service Agreement or Construction Service Agreement, Facilities Study shall mean that certain Facilities Study conducted by Transmission Provider (or at its direction) to determine the design and specification of the Customer Funded Upgrades necessary to accommodate the New Service Customer’s New Service Request in accordance with Tariff, Part VI, section 207.

Federal Power Act:

“Federal Power Act” shall mean the Federal Power Act, as amended, 16 U.S.C. §§ 791a, et seq.

FERC or Commission:

“FERC” or “Commission” shall mean the Federal Energy Regulatory Commission or any successor federal agency, commission or department exercising jurisdiction over the Tariff, Operating Agreement and Reliability Assurance Agreement.

FERC Market Rules:

“FERC Market Rules” mean the market behavior rules and the prohibition against electric energy market manipulation codified by the Commission in its Rules and Regulations at 18 CFR §§ 1c.2 and 35.37, respectively; the Commission-approved PJM Market Rules and any related proscriptions or any successor rules that the Commission from time to time may issue, approve or otherwise establish.

Final Offer:

“Final Offer” shall mean the offer on which a resource was dispatched by the Office of the Interconnection for a particular clock hour for the Operating Day.

Final RTO Unforced Capacity Obligation:

“Final RTO Unforced Capacity Obligation” shall mean the capacity obligation for the PJM Region, determined in accordance with RAA, Schedule 8.

Financial Close:

“Financial Close” shall mean the Capacity Market Seller has demonstrated that the Capacity Market Seller or its agent has completed the act of executing the material contracts and/or other documents necessary to (1) authorize construction of the project and (2) establish the necessary funding for the project under the control of an independent third-party entity. A sworn, notarized certification of an independent engineer certifying to such facts, and that the engineer has personal knowledge of, or has engaged in a diligent inquiry to determine, such facts, shall be sufficient to make such demonstration. For resources that do not have external financing, Financial Close shall mean the project has full funding available, and that the project has been duly authorized to proceed with full construction of the material portions of the project by the appropriate governing body of the company funding such project. A sworn, notarized certification by an officer of such company certifying to such facts, and that the officer has personal knowledge of, or has engaged in a diligent inquiry to determine, such facts, shall be sufficient to make such demonstration.

Financial Default:

“Financial Default” shall mean (a) the failure of a Member or Transmission Customer to make any payment for obligations under the Agreements when due, including but not limited to an invoice payment that has not been cured or remedied after notice has been given and any cure period has elapsed, (b) a bankruptcy proceeding filed by a Member, Transmission Customer or its Guarantor, or filed against a Member, Transmission Customer or its Guarantor and to which the Member, Transmission Customer or Guarantor, as applicable, acquiesces or that is not dismissed within 60 days, (c) a Member, Transmission Customer or its Guarantor, if any, is unable to meet its financial obligations as they become due, or (d) a Merger Without Assumption occurs in respect of the Member, Transmission Customer or any Guarantor of such Member or Transmission Customer.

Financial Transmission Right:

“Financial Transmission Right” or “FTR” shall mean a right to receive Transmission Congestion Credits as specified in Operating Agreement, Schedule 1, section 5.2.2 and the parallel provisions of Tariff, Attachment K-Appendix, section 5.2.2.

Financial Transmission Right Obligation:

“Financial Transmission Right Obligation” shall mean a right to receive Transmission Congestion Credits as specified in Operating Agreement, Schedule 1, section 5.2.2(b), and the parallel provisions of Tariff, Attachment K-Appendix, section 5.2.2(b).

Financial Transmission Right Option:

“Financial Transmission Right Option” shall mean a right to receive Transmission Congestion Credits as specified in Operating Agreement, Schedule 1, section 5.2.2(c), and the parallel provisions of Tariff, Attachment K-Appendix, section 5.2.2(c).

Flexible Resource:

“Flexible Resource” shall mean a generating resource that must have a combined Start-up Time and Notification Time of less than or equal to two hours; and a Minimum Run Time of less than or equal to two hours.

Firm Point-To-Point Transmission Service:

“Firm Point-To-Point Transmission Service” shall mean Transmission Service under the Tariff that is reserved and/or scheduled between specified Points of Receipt and Delivery pursuant to Tariff, Part II.

Firm Transmission Feasibility Study:

“Firm Transmission Feasibility Study” shall mean a study conducted by the Transmission Provider in accordance with Tariff, Part II, section 19.3 and Tariff, Part III, section 32.3.

Firm Transmission Withdrawal Rights:

“Firm Transmission Withdrawal Rights” shall mean the rights to schedule energy and capacity withdrawals from a Point of Interconnection of a Merchant Transmission Facility with the Transmission System. Firm Transmission Withdrawal Rights may be awarded only to a Merchant D.C. Transmission Facility that connects the Transmission System with another control area. Withdrawals scheduled using Firm Transmission Withdrawal Rights have rights similar to those under Firm Point-to-Point Transmission Service.

First Incremental Auction:

“First Incremental Auction” shall mean an Incremental Auction conducted 20 months prior to the start of the Delivery Year to which it relates.

Forecast Pool Requirement:

“Forecast Pool Requirement” shall have the meaning specified in the Reliability Assurance Agreement.

Foreign Guaranty:

“Foreign Guaranty” shall mean a Corporate Guaranty provided by an Affiliate of a Participant that is domiciled in a foreign country, and meets all of the provisions of Tariff, Attachment Q.

Form 715 Planning Criteria:

“Form 715 Planning Criteria” shall have the same meaning provided in the Operating Agreement.

FTR Credit Limit:

“FTR Credit Limit” shall mean the amount of credit established with PJMSettlement that an FTR Participant has specifically designated to be used for FTR activity in a specific customer account. Any such credit so set aside shall not be considered available to satisfy any other credit requirement the FTR Participant may have with PJMSettlement.

FTR Credit Requirement:

“FTR Credit Requirement” shall mean the amount of credit that a Participant must provide in order to support the FTR positions that it holds and/or for which it is bidding. The FTR Credit Requirement shall not include months for which the invoicing has already been completed, provided that PJMSettlement shall have up to two Business Days following the date of the invoice completion to make such adjustments in its credit systems. FTR Credit Requirements are calculated and applied separately for each separate customer account.

FTR Flow Undiversified:

“FTR Flow Undiversified” shall have the meaning established in Tariff, Attachment Q, section VI.C.6.

FTR Historical Value:

For each FTR for each month, “FTR Historical Value” shall mean the weighted average of historical values over three years for the FTR path using the following weightings: 50% - most recent year; 30% - second year; 20% - third year.

FTR Holder:

“FTR Holder” shall mean the PJM Member that has acquired and possesses an FTR.

FTR Monthly Credit Requirement Contribution:

For each FTR, for each month, “FTR Monthly Credit Requirement Contribution” shall mean the total FTR cost for the month, prorated on a daily basis, less the FTR Historical Value for the month. For cleared FTRs, this contribution may be negative; prior to clearing, FTRs with negative contribution shall be deemed to have zero contribution.

FTR Net Activity:

“FTR Net Activity” shall mean the aggregate net value of the billing line items for auction revenue rights credits, FTR auction charges, FTR auction credits, and FTR congestion credits, and shall also include day-ahead and balancing/real-time congestion charges up to a maximum net value of the sum of the foregoing auction revenue rights credits, FTR auction charges, FTR auction credits and FTR congestion credits.

FTR Participant:

“FTR Participant” shall mean any Market Participant that provides or is required to provide Collateral in order to participate in PJM’s FTR market.

FTR Portfolio Auction Value:

“FTR Portfolio Auction Value” shall mean for each customer account of a Market Participant, the sum, calculated on a monthly basis, across all FTRs, of the FTR price times the FTR volume in MW.

Fuel Cost Policy:

“Fuel Cost Policy” shall mean the document provided by a Market Seller to PJM and the Market Monitoring Unit in accordance with PJM Manual 15 and Operating Agreement, Schedule 2, which documents the Market Seller’s method used to price fuel for calculation of the Market Seller’s cost-based offer(s) for a generation resource.

Full Notice to Proceed:

“Full Notice to Proceed” shall mean that all material third party contractors have been given the notice to proceed with construction by the Capacity Market Seller or its agent, with a guaranteed completion date backed by liquidated damages.

Generating Facilities:

“Generating Facilities” shall mean Interconnection Customer’s device for the production and/or storage for later injection of electricity identified in the Interconnection Request, but shall not include the Interconnection Customer’s Interconnection Facilities.

Generating Market Buyer:

“Generating Market Buyer” shall mean an Internal Market Buyer that is a Load Serving Entity that owns or has contractual rights to the output of generation resources capable of serving the Market Buyer’s load in the PJM Region, or of selling energy or related services in the PJM Interchange Energy Market or elsewhere.

Generation Capacity Resource:

“Generation Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Generation Interconnection Customer:

“Generation Interconnection Customer” shall mean an entity that submits an Interconnection

Request to interconnect a new generation facility or to increase the capacity of an existing generation facility interconnected with the Transmission System in the PJM Region.

Generation Interconnection Facilities Study:

“Generation Interconnection Facilities Study” shall mean a Facilities Study related to a Generation Interconnection Request.

Generation Interconnection Feasibility Study:

“Generation Interconnection Feasibility Study” shall mean a study conducted by the Transmission Provider (in coordination with the affected Transmission Owner(s)) in accordance with Tariff, Part IV, section 36.2.

Generation Interconnection Request:

“Generation Interconnection Request” shall mean a request by a Generation Interconnection Customer pursuant to Tariff, Part IV, subpart A, to interconnect a generating unit with the Transmission System or to increase the capacity of a generating unit interconnected with the Transmission System in the PJM Region.

Generation Owner:

“Generation Owner” shall mean a Member that owns, leases with rights equivalent to ownership, or otherwise controls and operates one or more operating generation resources located in the PJM Region. The foregoing notwithstanding, for a planned generation resource to qualify a Member as a Generation Owner, such resource shall have cleared an RPM auction, and for Energy Resources, the resource shall have a FERC-jurisdictional interconnection agreement or wholesale market participation agreement within PJM. Purchasing all or a portion of the output of a generation resource shall not be sufficient to qualify a Member as a Generation Owner. For purposes of Members Committee sector classification, a Member that is primarily a retail end-user of electricity that owns generation may qualify as a Generation Owner if: (1) the generation resource is the subject of a FERC-jurisdictional interconnection agreement or wholesale market participation agreement within PJM; (2) the average physical unforced capacity owned by the Member and its affiliates over the five Planning Periods immediately preceding the relevant Planning Period exceeds the average PJM capacity obligation of the Member and its affiliates over the same time period; and (3) the average energy produced by the Member and its affiliates within PJM over the five Planning Periods immediately preceding the relevant Planning Period exceeds the average energy consumed by the Member and its affiliates within PJM over the same time period.

Generation Resource Maximum Output:

“Generation Resource Maximum Output” shall mean, for Customer Facilities identified in an Interconnection Service Agreement or Wholesale Market Participation Agreement, the Generation Resource Maximum Output for a generating unit shall equal the unit’s pro rata share

of the Maximum Facility Output, determined by the Economic Maximum values for the available units at the Customer Facility. For generating units not identified in an Interconnection Service Agreement or Wholesale Market Participation Agreement, the Generation Resource Maximum Output shall equal the generating unit's Economic Maximum.

Generator Forced Outage:

“Generator Forced Outage” shall mean an immediate reduction in output or capacity or removal from service, in whole or in part, of a generating unit by reason of an Emergency or threatened Emergency, unanticipated failure, or other cause beyond the control of the owner or operator of the facility, as specified in the relevant portions of the PJM Manuals. A reduction in output or removal from service of a generating unit in response to changes in market conditions shall not constitute a Generator Forced Outage.

Generator Maintenance Outage:

“Generator Maintenance Outage” shall mean the scheduled removal from service, in whole or in part, of a generating unit in order to perform necessary repairs on specific components of the facility, if removal of the facility meets the guidelines specified in the PJM Manuals.

Generator Planned Outage:

“Generator Planned Outage” shall mean the scheduled removal from service, in whole or in part, of a generating unit for inspection, maintenance or repair with the approval of the Office of the Interconnection in accordance with the PJM Manuals.

Good Utility Practice:

“Good Utility Practice” shall mean any of the practices, methods and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather is intended to include acceptable practices, methods, or acts generally accepted in the region; including those practices required by Federal Power Act, section 215(a)(4).

Governmental Authority:

“Governmental Authority” shall mean any federal, state, local or other governmental, regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, arbitrating body, or other governmental authority having jurisdiction over any Interconnection Party or Construction Party or regarding any matter relating to an Interconnection Service Agreement or Construction Service Agreement, as applicable.

Guarantor:

“Guarantor” shall mean a credit support provider for a Participant that provides a Corporate Guaranty accepted by PJM and/or PJMSettlement, and for which PJM has made a determination that the Guarantor meets applicable creditworthiness requirements under Tariff, Attachment Q.

Hazardous Substances:

“Hazardous Substance” shall mean any chemicals, materials or substances defined as or included in the definition of “hazardous substances,” “hazardous wastes,” “hazardous materials,” “hazardous constituents,” “restricted hazardous materials,” “extremely hazardous substances,” “toxic substances,” “radioactive substances,” “contaminants,” “pollutants,” “toxic pollutants” or words of similar meaning and regulatory effect under any applicable Environmental Law, or any other chemical, material or substance, exposure to which is prohibited, limited or regulated by any applicable Environmental Law.

Hot Weather Alert:

“Hot Weather Alert” shall mean the notice provided by PJM to PJM Members, Transmission Owners, resource owners and operators, customers, and regulators to prepare personnel and facilities for extreme hot and/or humid weather conditions which may cause capacity requirements and/or unit unavailability to be substantially higher than forecast are expected to persist for an extended period.

IDR Transfer Agreement:

“IDR Transfer Agreement” shall mean an agreement to transfer, subject to the terms of Tariff, Part VI, section 237, Incremental Deliverability Rights to a party for the purpose of eliminating or reducing the need for Local or Network Upgrades that would otherwise have been the responsibility of the party receiving such rights.

Immediate-need Reliability Project:

“Immediate-need Reliability Project” shall have the same meaning provided in the Operating Agreement.

Inadvertent Interchange:

“Inadvertent Interchange” shall mean the difference between net actual energy flow and net scheduled energy flow into or out of the individual Control Areas operated by PJM.

Incidental Expenses:

“Incidental Expenses” shall mean those expenses incidental to the performance of construction pursuant to an Interconnection Construction Service Agreement, including, but not limited to, the

expense of temporary construction power, telecommunications charges, Interconnected Transmission Owner expenses associated with, but not limited to, document preparation, design review, installation, monitoring, and construction-related operations and maintenance for the Customer Facility and for the Interconnection Facilities.

Incremental Auction:

“Incremental Auction” shall mean any of several auctions conducted for a Delivery Year after the Base Residual Auction for such Delivery Year and before the first day of such Delivery Year, including the First Incremental Auction, Second Incremental Auction, Third Incremental Auction or Conditional Incremental Auction. Incremental Auctions (other than the Conditional Incremental Auction), shall be held for the purposes of:

(i) allowing Market Sellers that committed Capacity Resources in the Base Residual Auction for a Delivery Year, which subsequently are determined to be unavailable to deliver the committed Unforced Capacity in such Delivery Year (due to resource retirement, resource cancellation or construction delay, resource derating, EFORd increase, a decrease in the Nominated Demand Resource Value of a Planned Demand Resource, delay or cancellation of a Qualifying Transmission Upgrade, or similar occurrences) to submit Buy Bids for replacement Capacity Resources; and

(ii) allowing the Office of the Interconnection to reduce or increase the amount of committed capacity secured in prior auctions for such Delivery Year if, as a result of changed circumstances or expectations since the prior auction(s), there is, respectively, a significant excess or significant deficit of committed capacity for such Delivery Year, for the PJM Region or for an LDA.

Incremental Auction Revenue Rights:

“Incremental Auction Revenue Rights” shall mean the additional Auction Revenue Rights, not previously feasible, created by the addition of Incremental Rights-Eligible Required Transmission Enhancements, Merchant Transmission Facilities, or of one or more Customer-Funded Upgrades.

Incremental Available Transfer Capability Revenue Rights:

“Incremental Available Transfer Capability Revenue Rights” shall mean the rights to revenues that are derived from incremental Available Transfer Capability created by the addition of Merchant Transmission Facilities or of one of more Customer-Funded Upgrades.

Incremental Capacity Transfer Right:

“Incremental Capacity Transfer Right” shall mean a Capacity Transfer Right allocated to a Generation Interconnection Customer or Transmission Interconnection Customer obligated to fund a transmission facility or upgrade, to the extent such upgrade or facility increases the transmission import capability into a Locational Deliverability Area, or a Capacity Transfer

Right allocated to a Responsible Customer in accordance with Tariff, Schedule 12A.

Incremental Deliverability Rights (IDRs):

“Incremental Deliverability Rights” or “IDRs” shall mean the rights to the incremental ability, resulting from the addition of Merchant Transmission Facilities, to inject energy and capacity at a point on the Transmission System, such that the injection satisfies the deliverability requirements of a Capacity Resource. Incremental Deliverability Rights may be obtained by a generator or a Generation Interconnection Customer, pursuant to an IDR Transfer Agreement, to satisfy, in part, the deliverability requirements necessary to obtain Capacity Interconnection Rights.

Incremental Multi-Driver Project:

“Incremental Multi-Driver Project” shall have the same meaning provided in the Operating Agreement.

Incremental Rights-Eligible Required Transmission Enhancements:

“Incremental Rights-Eligible Required Transmission Enhancements” shall mean Regional Facilities and Necessary Lower Voltage Facilities or Lower Voltage Facilities (as defined in Tariff, Schedule 12) and meet one of the following criteria: (1) cost responsibility is assigned to non-contiguous Zones that are not directly electrically connected; or (2) cost responsibility is assigned to Merchant Transmission Providers that are Responsible Customers.

Increment Offer:

“Increment Offer” shall mean a type of Virtual Transaction that is an offer to sell energy at a specified location in the Day-ahead Energy Market. A cleared Increment Offer results in scheduled generation at the specified location in the Day-ahead Energy Market.

Independent Auditor:

“Independent Auditor” shall mean an external accountant or external accounting firm who is not an employee of, not otherwise related to, not obligated to, has no interest in, and is independent in the performance of professional services for, the entity he/she/it is auditing, its management and/or its owners.

Incremental Energy Offer:

“Incremental Energy Offer” shall mean offer segments comprised of a pairing of price (in dollars per MWh) and megawatt quantities, which must be a non-decreasing function and taken together produce all of the energy segments above a resource’s Economic Minimum. No-load Costs are not included in the Incremental Energy Offer.

Initial Operation:

“Initial Operation” shall mean the commencement of operation of the Customer Facility and Customer Interconnection Facilities after satisfaction of the conditions of Tariff, Attachment O-Appendix 2, section 1.4 (an Interconnection Service Agreement).

Interconnected Entity:

“Interconnected Entity” shall mean either the Interconnection Customer or the Interconnected Transmission Owner; Interconnected Entities shall mean both of them.

Interconnected Transmission Owner:

“Interconnected Transmission Owner” shall mean the Transmission Owner to whose transmission facilities or distribution facilities Customer Interconnection Facilities are, or as the case may be, a Customer Facility is, being directly connected. When used in an Interconnection Construction Service Agreement, the term may refer to a Transmission Owner whose facilities must be upgraded pursuant to the Facilities Study, but whose facilities are not directly interconnected with those of the Interconnection Customer.

Interconnection Construction Service Agreement:

“Interconnection Construction Service Agreement” shall mean the agreement entered into by an Interconnection Customer, Interconnected Transmission Owner and the Transmission Provider pursuant to Tariff, Part VI, Subpart B and in the form set forth in Tariff, Attachment P, relating to construction of Attachment Facilities, Network Upgrades, and/or Local Upgrades and coordination of the construction and interconnection of an associated Customer Facility. A separate Interconnection Construction Service Agreement will be executed with each Transmission Owner that is responsible for construction of any Attachment Facilities, Network Upgrades, or Local Upgrades associated with interconnection of a Customer Facility.

Interconnection Customer:

“Interconnection Customer” shall mean a Generation Interconnection Customer and/or a Transmission Interconnection Customer.

Interconnection Facilities:

“Interconnection Facilities” shall mean the Transmission Owner Interconnection Facilities and the Customer Interconnection Facilities.

Interconnection Feasibility Study:

“Interconnection Feasibility Study” shall mean either a Generation Interconnection Feasibility Study or Transmission Interconnection Feasibility Study.

Interconnection Party:

“Interconnection Party” shall mean a Transmission Provider, Interconnection Customer, or the Interconnected Transmission Owner. Interconnection Parties shall mean all of them.

Interconnection Request:

“Interconnection Request” shall mean a Generation Interconnection Request, a Transmission Interconnection Request and/or an IDR Transfer Agreement.

Interconnection Service:

“Interconnection Service” shall mean the physical and electrical interconnection of the Customer Facility with the Transmission System pursuant to the terms of Tariff, Part IV and Tariff, Part VI and the Interconnection Service Agreement entered into pursuant thereto by Interconnection Customer, the Interconnected Transmission Owner and Transmission Provider.

Interconnection Service Agreement:

“Interconnection Service Agreement” shall mean an agreement among the Transmission Provider, an Interconnection Customer and an Interconnected Transmission Owner regarding interconnection under Tariff, Part IV and Tariff, Part VI.

Interconnection Studies:

“Interconnection Studies” shall mean the Interconnection Feasibility Study, the System Impact Study, and the Facilities Study described in Tariff, Part IV and Tariff, Part VI.

Interface Pricing Point:

“Interface Pricing Point” shall have the meaning specified in Operating Agreement, Schedule 1, section 2.6A, and the parallel provisions of Tariff, Attachment K-Appendix.

Intermittent Resource:

“Intermittent Resource” shall mean a Generation Capacity Resource with output that can vary as a function of its energy source, such as wind, solar, run of river hydroelectric power and other renewable resources.

Internal Credit Score:

“Internal Credit Score” shall mean a composite numerical score determined by PJMSettlement using quantitative and qualitative metrics to estimate various predictors of a credit event happening to a Market Participant that may trigger a credit event.

Internal Market Buyer:

“Internal Market Buyer” shall mean a Market Buyer making purchases of energy from the PJM Interchange Energy Market for ultimate consumption by end-users inside the PJM Region that are served by Network Transmission Service.

Interregional Transmission Project:

“Interregional Transmission Project” shall mean transmission facilities that would be located within two or more neighboring transmission planning regions and are determined by each of those regions to be a more efficient or cost effective solution to regional transmission needs.

Interruption:

“Interruption” shall mean a reduction in non-firm transmission service due to economic reasons pursuant to Tariff, Part II, section 14.7.

Letter of Credit:

“Letter of Credit” shall mean a Credit Support Document acceptable to PJM and/or PJM Settlement, issued by a financial institution acceptable to PJM and/or PJM Settlement, naming PJM and/or PJM Settlement as beneficiary, in substantially the form posted on PJM’s website.

Limited Demand Resource:

“Limited Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Limited Demand Resource Reliability Target:

“Limited Demand Resource Reliability Target” for the PJM Region or an LDA, shall mean the maximum amount of Limited Demand Resources determined by PJM to be consistent with the maintenance of reliability, stated in Unforced Capacity that shall be used to calculate the Minimum Extended Summer Demand Resource Requirement for Delivery Years through May 31, 2017 and the Limited Resource Constraint for the 2017/2018 and 2018/2019 Delivery Years for the PJM Region or such LDA. As more fully set forth in the PJM Manuals, PJM calculates the Limited Demand Resource Reliability Target by first: i) testing the effects of the ten-interruption requirement by comparing possible loads on peak days under a range of weather conditions (from the daily load forecast distributions for the Delivery Year in question) against possible generation capacity on such days under a range of conditions (using the cumulative capacity distributions employed in the Installed Reserve Margin study for the PJM Region and in the Capacity Emergency Transfer Objective study for the relevant LDAs for such Delivery Year) and, by varying the assumed amounts of DR that is committed and displaces committed generation, determines the DR penetration level at which there is a ninety percent probability that DR will not be called (based on the applicable operating reserve margin for the PJM Region and for the relevant LDAs) more than ten times over those peak days; ii) testing the six-hour duration requirement by calculating the MW difference between the highest hourly unrestricted peak load and seventh highest hourly unrestricted peak load on certain high peak load days (e.g.,

the annual peak, loads above the weather normalized peak, or days where load management was called) in recent years, then dividing those loads by the forecast peak for those years and averaging the result; and (iii) (for the 2016/2017 and 2017/2018 Delivery Years) testing the effects of the six-hour duration requirement by comparing possible hourly loads on peak days under a range of weather conditions (from the daily load forecast distributions for the Delivery Year in question) against possible generation capacity on such days under a range of conditions (using a Monte Carlo model of hourly capacity levels that is consistent with the capacity model employed in the Installed Reserve Margin study for the PJM Region and in the Capacity Emergency Transfer Objective study for the relevant LDAs for such Delivery Year) and, by varying the assumed amounts of DR that is committed and displaces committed generation, determines the DR penetration level at which there is a ninety percent probability that DR will not be called (based on the applicable operating reserve margin for the PJM Region and for the relevant LDAs) for more than six hours over any one or more of the tested peak days. Second, PJM adopts the lowest result from these three tests as the Limited Demand Resource Reliability Target. The Limited Demand Resource Reliability Target shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [the Forecast Pool Requirement] times [the DR Factor] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

Limited Resource Constraint:

“Limited Resource Constraint” shall mean, for the 2017/2018 Delivery Year and for FRR Capacity Plans the 2017/2018 and Delivery Years, for the PJM Region or each LDA for which the Office of the Interconnection is required under Tariff, Attachment DD, section 5.10(a) to establish a separate VRR Curve for a Delivery Year, a limit on the total amount of Unforced Capacity that can be committed as Limited Demand Resources for the 2017/2018 Delivery Year in the PJM Region or in such LDA, calculated as the Limited Demand Resource Reliability Target for the PJM Region or such LDA, respectively, minus the Short Term Resource Procurement Target for the PJM Region or such LDA, respectively.

Limited Resource Price Decrement:

“Limited Resource Price Decrement” shall mean, for the 2017/2018 Delivery Year, a difference between the clearing price for Limited Demand Resources and the clearing price for Extended Summer Demand Resources and Annual Resources, representing the cost to procure additional Extended Summer Demand Resources or Annual Resources out of merit order when the Limited Resource Constraint is binding.

List of Approved Contractors:

“List of Approved Contractors” shall mean a list developed by each Transmission Owner and published in a PJM Manual of (a) contractors that the Transmission Owner considers to be qualified to install or construct new facilities and/or upgrades or modifications to existing facilities on the Transmission Owner’s system, provided that such contractors may include, but need not be limited to, contractors that, in addition to providing construction services, also provide design and/or other construction-related services, and (b) manufacturers or vendors of

major transmission-related equipment (e.g., high-voltage transformers, transmission line, circuit breakers) whose products the Transmission Owner considers acceptable for installation and use on its system.

Load Management:

“Load Management” shall mean a Demand Resource (“DR”) as defined in the Reliability Assurance Agreement.

Load Management Event:

“Load Management Event” shall mean a) a single temporally contiguous dispatch of Demand Resources in a Compliance Aggregation Area during an Operating Day, or b) multiple dispatches of Demand Resources in a Compliance Aggregation Area during an Operating Day that are temporally contiguous.

Load Ratio Share:

“Load Ratio Share” shall mean the ratio of a Transmission Customer’s Network Load to the Transmission Provider’s total load.

Load Reduction Event:

“Load Reduction Event” shall mean a reduction in demand by a Member or Special Member for the purpose of participating in the PJM Interchange Energy Market.

Load Serving Charging Energy:

“Load Serving Charging Energy” shall mean energy that is purchased from the PJM Interchange Energy Market and stored in an Energy Storage Resource for later resale to end-use load.

Load Serving Entity (LSE):

“Load Serving Entity” or “LSE” shall have the meaning specified in the Reliability Assurance Agreement.

Load Shedding:

“Load Shedding” shall mean the systematic reduction of system demand by temporarily decreasing load in response to transmission system or area capacity shortages, system instability, or voltage control considerations under Tariff, Part II or Tariff, Part III.

Local Upgrades:

“Local Upgrades” shall mean modifications or additions of facilities to abate any local thermal loading, voltage, short circuit, stability or similar engineering problem caused by the

interconnection and delivery of generation to the Transmission System. Local Upgrades shall include:

(i) Direct Connection Local Upgrades which are Local Upgrades that only serve the Customer Interconnection Facility and have no impact or potential impact on the Transmission System until the final tie-in is complete; and

(ii) Non-Direct Connection Local Upgrades which are parallel flow Local Upgrades that are not Direct Connection Local Upgrades.

Location:

“Location” as used in the Economic Load Response rules shall mean an end-use customer site as defined by the relevant electric distribution company account number.

Locational Deliverability Area (LDA):

“Locational Deliverability Area” or “LDA” shall mean a geographic area within the PJM Region that has limited transmission capability to import capacity to satisfy such area’s reliability requirement, as determined by the Office of the Interconnection in connection with preparation of the Regional Transmission Expansion Plan, and as specified in Reliability Assurance Agreement, Schedule 10.1.

Locational Deliverability Area Reliability Requirement:

“Locational Deliverability Area Reliability Requirement” shall mean the projected internal capacity in the Locational Deliverability Area plus the Capacity Emergency Transfer Objective for the Delivery Year, as determined by the Office of the Interconnection in connection with preparation of the Regional Transmission Expansion Plan, less the minimum internal resources required for all FRR Entities in such Locational Deliverability Area.

Locational Price Adder:

“Locational Price Adder” shall mean an addition to the marginal value of Unforced Capacity within an LDA as necessary to reflect the price of Capacity Resources required to relieve applicable binding locational constraints.

Locational Reliability Charge:

“Locational Reliability Charge” shall have the meaning specified in the Reliability Assurance Agreement.

Locational UCAP:

“Locational UCAP” shall mean unforced capacity that a Member with available uncommitted capacity sells in a bilateral transaction to a Member that previously committed capacity through

an RPM Auction but now requires replacement capacity to fulfill its RPM Auction commitment. The Locational UCAP Seller retains responsibility for performance of the resource providing such replacement capacity.

Locational UCAP Seller:

“Locational UCAP Seller” shall mean a Member that sells Locational UCAP.

LOC Deviation:

“LOC Deviation,” shall mean, for units other than wind units, the LOC Deviation shall equal the desired megawatt amount for the resource determined according to the point on the Final Offer curve corresponding to the Real-time Settlement Interval real-time Locational Marginal Price at the resource’s bus and adjusted for any Regulation or Tier 2 Synchronized Reserve assignments and limited to the lesser of the unit’s Economic Maximum or the unit’s Generation Resource Maximum Output, minus the actual output of the unit. For wind units, the LOC Deviation shall mean the deviation of the generating unit’s output equal to the lesser of the PJM forecasted output for the unit or the desired megawatt amount for the resource determined according to the point on the Final Offer curve corresponding to the Real-time Settlement Interval real-time Locational Marginal Price at the resource’s bus, and shall be limited to the lesser of the unit’s Economic Maximum or the unit’s Generation Resource Maximum Output, minus the actual output of the unit.

Long-lead Project:

“Long-lead Project” shall have the same meaning provided in the Operating Agreement.

Long-Term Firm Point-To-Point Transmission Service:

“Long-Term Firm Point-To-Point Transmission Service” shall mean firm Point-To-Point Transmission Service under Tariff, Part II with a term of one year or more.

Loss Price:

“Loss Price” shall mean the loss component of the Locational Marginal Price, which is the effect on transmission loss costs (whether positive or negative) associated with increasing the output of a generation resource or decreasing the consumption by a Demand Resource based on the effect of increased generation from or consumption by the resource on transmission losses, calculated as specified in Operating Agreement, Schedule 1, section 2, and the parallel provisions of Tariff, Attachment K-Appendix, section 2.

M2M Flowgate:

“M2M Flowgate” shall have the meaning provided in the Joint Operating Agreement between the Midcontinent Independent Transmission System Operator, Inc. and PJM Interconnection, L.L.C.

Maintenance Adder:

“Maintenance Adder” shall mean an adder that may be included to account for variable operation and maintenance expenses in a Market Seller’s Fuel Cost Policy. The Maintenance Adder is calculated in accordance with the applicable provisions of PJM Manual 15, and may only include expenses incurred as a result of electric production.

Manual Load Dump Action:

“Manual Load Dump Action” shall mean an Operating Instruction, as defined by NERC, from PJM to shed firm load when the PJM Region cannot provide adequate capacity to meet the PJM Region’s load and tie schedules, or to alleviate critically overloaded transmission lines or other equipment.

Manual Load Dump Warning:

“Manual Load Dump Warning” shall mean a notification from PJM to warn Members of an increasingly critical condition of present operations that may require manually shedding load.

Marginal Value:

“Marginal Value” shall mean the incremental change in system dispatch costs, measured as a \$/MW value incurred by providing one additional MW of relief to the transmission constraint.

Mark-to-Auction Value:

“Mark-to-Auction Value” shall mean the net increase (or decrease) in value of a portfolio of FTRs, as further described in Tariff, Attachment Q, section IV.C.9.

Market Monitor:

“Market Monitor” means the head of the Market Monitoring Unit.

Market Monitoring Unit or MMU:

“Market Monitoring Unit” or “MMU” means the independent Market Monitoring Unit defined in 18 CFR § 35.28(a)(7) and established under the PJM Market Monitoring Plan (Attachment M) to the PJM Tariff that is responsible for implementing the Market Monitoring Plan, including the Market Monitor. The Market Monitoring Unit may also be referred to as the IMM or Independent Market Monitor for PJM

Market Monitoring Unit Advisory Committee or MMU Advisory Committee:

“Market Monitoring Unit Advisory Committee” or “MMU Advisory Committee” shall mean the committee established under Tariff, Attachment M, section III.H.

Market Operations Center:

“Market Operations Center” shall mean the equipment, facilities and personnel used by or on behalf of a Market Participant to communicate and coordinate with the Office of the Interconnection in connection with transactions in the PJM Interchange Energy Market or the operation of the PJM Region.

Market Participant:

“Market Participant” shall mean a Market Buyer, a Market Seller, and/or an Economic Load Response Participant, except when that term is used in or pertaining to Tariff, Attachment M, Tariff, Attachment Q, Operating Agreement, section 15, Tariff, Attachment K-Appendix, section 1.4 and Operating Agreement, Schedule 1, section 1.4. “Market Participant,” when such term is used in Tariff, Attachment M, shall mean an entity that generates, transmits, distributes, purchases, or sells electricity, ancillary services, or any other product or service provided under the PJM Tariff or Operating Agreement within, into, out of, or through the PJM Region, but it shall not include an Authorized Government Agency that consumes energy for its own use but does not purchase or sell energy at wholesale. “Market Participant,” when such term is used in or pertaining to Tariff, Attachment Q, Operating Agreement, section 15, Tariff, Attachment K-Appendix, section 1.4 and Operating Agreement, Schedule 1, section 1.4, shall mean a Market Buyer, a Market Seller, an Economic Load Response Participant, an FTR Participant, a Capacity Market Buyer, or a Capacity Market Seller.

Market Participant Energy Injection:

“Market Participant Energy Injection” shall mean transactions in the Day-ahead Energy Market and Real-time Energy Market, including but not limited to Day-ahead generation schedules, real-time generation output, Increment Offers, internal bilateral transactions and import transactions, as further described in the PJM Manuals.

Market Participant Energy Withdrawal:

“Market Participant Energy Withdrawal” shall mean transactions in the Day-ahead Energy Market and Real-time Energy Market, including but not limited to Demand Bids, Decrement Bids, real-time load (net of Behind The Meter Generation expected to be operating, but not to be less than zero), internal bilateral transactions and Export Transactions, as further described in the PJM Manuals.

Market Seller Offer Cap:

“Market Seller Offer Cap” shall mean a maximum offer price applicable to certain Market Sellers under certain conditions, as determined in accordance with Tariff, Attachment DD, section 6 and Tariff, Attachment M-Appendix, section II.E.

Market Violation:

“Market Violation” shall mean a tariff violation, violation of a Commission-approved order, rule or regulation, market manipulation, or inappropriate dispatch that creates substantial concerns regarding unnecessary market inefficiencies, as defined in 18 C.F.R. § 35.28(b)(8).

Material Adverse Change:

“Material Adverse Change” shall mean (i) any material adverse change in the financial condition of the respective entity or (ii) any adverse change, event or occurrence which, individually or in the aggregate is likely to have a material adverse effect on the ability of the Participant to pay and perform its obligations to PJM or on the operations, business, assets, financial condition, results, or creditworthiness of the respective entity or its credit support provider, and may include, without limitation, the items listed in Tariff, Attachment Q.

Material Modification:

“Material Modification” shall mean any modification to an Interconnection Request that has a material adverse effect on the cost or timing of Interconnection Studies related to, or any Network Upgrades or Local Upgrades needed to accommodate, any Interconnection Request with a later Queue Position.

Maximum Daily Starts:

“Maximum Daily Starts” shall mean the maximum number of times that a generating unit can be started in an Operating Day under normal operating conditions.

Maximum Emergency:

“Maximum Emergency” shall mean the designation of all or part of the output of a generating unit for which the designated output levels may require extraordinary procedures and therefore are available to the Office of the Interconnection only when the Office of the Interconnection declares a Maximum Generation Emergency and requests generation designated as Maximum Emergency to run. The Office of the Interconnection shall post on the PJM website the aggregate amount of megawatts that are classified as Maximum Emergency.

Maximum Facility Output:

“Maximum Facility Output” shall mean the maximum (not nominal) net electrical power output in megawatts, specified in the Interconnection Service Agreement, after supply of any parasitic or host facility loads, that a Generation Interconnection Customer’s Customer Facility is expected to produce, provided that the specified Maximum Facility Output shall not exceed the output of the proposed Customer Facility that Transmission Provider utilized in the System Impact Study.

Maximum Generation Emergency:

“Maximum Generation Emergency” shall mean an Emergency declared by the Office of the Interconnection to address either a generation or transmission emergency in which the Office of the Interconnection anticipates requesting one or more Generation Capacity Resources, or Non-Retail Behind The Meter Generation resources to operate at its maximum net or gross electrical power output, subject to the equipment stress limits for such Generation Capacity Resource or Non-Retail Behind The Meter resource in order to manage, alleviate, or end the Emergency.

Maximum Generation Emergency Alert:

“Maximum Generation Emergency Alert” shall mean an alert issued by the Office of the Interconnection to notify PJM Members, Transmission Owners, resource owners and operators, customers, and regulators that a Maximum Generation Emergency may be declared, for any Operating Day in either, as applicable, the Day-ahead Energy Market or the Real-time Energy Market, for all or any part of such Operating Day.

Maximum Run Time:

“Maximum Run Time” shall mean the maximum number of hours a generating unit can run over the course of an Operating Day, as measured by PJM’s State Estimator.

Maximum Weekly Starts:

“Maximum Weekly Starts” shall mean the maximum number of times that a generating unit can be started in one week, defined as the 168 hour period starting Monday 0001 hour, under normal operating conditions.

Member:

“Member” shall have the meaning provided in the Operating Agreement.

Merchant A.C. Transmission Facilities:

“Merchant A.C. Transmission Facility” shall mean Merchant Transmission Facilities that are alternating current (A.C.) transmission facilities, other than those that are Controllable A.C. Merchant Transmission Facilities.

Merchant D.C. Transmission Facilities:

“Merchant D.C. Transmission Facilities” shall mean direct current (D.C.) transmission facilities that are interconnected with the Transmission System pursuant to Tariff, Part IV and Tariff, Part VI.

Merchant Network Upgrades:

“Merchant Network Upgrades” shall mean additions to, or modifications or replacements of, physical facilities of the Interconnected Transmission Owner that, on the date of the pertinent

Transmission Interconnection Customer's Upgrade Request, are part of the Transmission System or are included in the Regional Transmission Expansion Plan.

Merchant Transmission Facilities:

“Merchant Transmission Facilities” shall mean A.C. or D.C. transmission facilities that are interconnected with or added to the Transmission System pursuant to Tariff, Part IV and Tariff, Part VI and that are so identified in Tariff, Attachment T, provided, however, that Merchant Transmission Facilities shall not include (i) any Customer Interconnection Facilities, (ii) any physical facilities of the Transmission System that were in existence on or before March 20, 2003 ; (iii) any expansions or enhancements of the Transmission System that are not identified as Merchant Transmission Facilities in the Regional Transmission Expansion Plan and Tariff, Attachment T, or (iv) any transmission facilities that are included in the rate base of a public utility and on which a regulated return is earned.

Merchant Transmission Provider:

“Merchant Transmission Provider” shall mean an Interconnection Customer that (1) owns, controls, or controls the rights to use the transmission capability of, Merchant D.C. Transmission Facilities and/or Controllable A.C. Merchant Transmission Facilities that connect the Transmission System with another control area, (2) has elected to receive Transmission Injection Rights and Transmission Withdrawal Rights associated with such facility pursuant to Tariff, Part IV, section 36, and (3) makes (or will make) the transmission capability of such facilities available for use by third parties under terms and conditions approved by the Commission and stated in the Tariff, consistent with Tariff, Part IV, section 38.

Merger Without Assumption:

“Merger Without Assumption” shall mean when a Market Participant, or any Guarantor or other credit support provider of such Market Participant, merges with or transfers all or substantially all of its assets to, or consolidates, amalgamates, reorganizes, reincorporates or reconstitutes into or as, another entity and, at the time of such consolidation, amalgamation, merger, transfer, reorganization, reincorporation or reconstitution (a) the resulting, surviving or transferee entity does not assume all the obligations of such Market Participant, or any Guarantor or other credit support provider of such Market Participant under the Agreements or any Credit Support Document to which it or its predecessor was a party; or (b) the benefits of any Credit Support Document do not extend (without the consent of the other party) to the performance by such resulting, surviving or transferee entity of its obligations under the Agreements.

Metering Equipment:

“Metering Equipment” shall mean all metering equipment installed at the metering points designated in the appropriate appendix to an Interconnection Service Agreement.

Minimum Annual Resource Requirement:

“Minimum Annual Resource Requirement” shall mean, for Delivery Years through May 31, 2017, the minimum amount of capacity that PJM will seek to procure from Annual Resources for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under Tariff, Attachment DD, section 5.10(a) to establish a separate VRR Curve for such Delivery Year. For the PJM Region, the Minimum Annual Resource Requirement shall be equal to the RTO Reliability Requirement minus [the Sub-Annual Resource Reliability Target for the RTO in Unforced Capacity]. For an LDA, the Minimum Annual Resource Requirement shall be equal to the LDA Reliability Requirement minus [the LDA CETL] minus [the Sub-Annual Resource Reliability Target for such LDA in Unforced Capacity]. The LDA CETL may be adjusted pro rata for the amount of load served under the FRR Alternative.

Minimum Down Time:

For all generating units that are not combined cycle units, “Minimum Down Time” shall mean the minimum number of hours under normal operating conditions between unit shutdown and unit startup, calculated as the shortest time difference between the unit’s generator breaker opening and after the unit’s generator breaker closure, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero. For combined cycle units, “Minimum Down Time” shall mean the minimum number of hours between the last generator breaker opening and after first combustion turbine generator breaker closure, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero.

Minimum Extended Summer Resource Requirement:

“Minimum Extended Summer Resource Requirement” shall mean, for Delivery Years through May 31, 2017, the minimum amount of capacity that PJM will seek to procure from Extended Summer Demand Resources and Annual Resources for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under Tariff, Attachment DD, section 5.10(a) to establish a separate VRR Curve for such Delivery Year. For the PJM Region, the Minimum Extended Summer Resource Requirement shall be equal to the RTO Reliability Requirement minus [the Limited Demand Resource Reliability Target for the PJM Region in Unforced Capacity]. For an LDA, the Minimum Extended Summer Resource Requirement shall be equal to the LDA Reliability Requirement minus [the LDA CETL] minus [the Limited Demand Resource Reliability Target for such LDA in Unforced Capacity]. The LDA CETL may be adjusted pro rata for the amount of load served under the FRR Alternative.

Minimum Generation Emergency:

“Minimum Generation Emergency” shall mean an Emergency declared by the Office of the Interconnection in which the Office of the Interconnection anticipates requesting one or more generating resources to operate at or below Normal Minimum Generation, in order to manage, alleviate, or end the Emergency.

Minimum Participation Requirements:

“Minimum Participation Requirements” shall mean a set of minimum training, risk management, communication, and capital or collateral requirements required for Participants in the PJM Markets, as set forth in Tariff, Attachment Q and in the Form of Annual Certification set forth as Tariff, Attachment Q, Appendix 1. FTR Participants in certain circumstances will be required to demonstrate additional capital and collateral requirements as set forth in Tariff, Attachment Q, and risk management procedures and controls as further set forth in the Annual Certification found in Tariff, Attachment Q, Appendix 1.

Minimum Run Time:

For all generating units that are not combined cycle units, “Minimum Run Time” shall mean the minimum number of hours a unit must run, in real-time operations, from the time after generator breaker closure, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero, to the time of generator breaker opening, as measured by PJM's State Estimator. For combined cycle units, “Minimum Run Time” shall mean the time period after the first combustion turbine generator breaker closure, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero, and the last generator breaker opening as measured by PJM’s State Estimator.

MISO:

“MISO” shall mean the Midcontinent Independent System Operator, Inc. or any successor thereto.

MTA Collateral Call:

“MTA Collateral Call” shall mean a demand for additional Collateral issued due to a credit shortfall arising from a Mark-to-Auction Value change. The requirements and remedies for an MTA Collateral Call may be different from the requirements and remedies for a Collateral Call.

Multi-Driver Project:

“Multi-Driver Project” shall have the same meaning provided in the Operating Agreement.

Municipalities and Cooperatives; Municipality and Cooperative; Municipality or Cooperative:

“Municipalities and Cooperatives,” “Municipality and Cooperative,” and “Municipality or Cooperative,” as those terms are used in Tariff, Attachment Q or elsewhere regarding credit scoring, shall mean Participants that are not-for-profit municipal electric systems, municipalities, electric cooperatives, generation cooperatives, transmission cooperatives and/or joint municipal agencies, or agents duly authorized to represent one or more of such entities and whose credit quality is directly derived from the credit quality of the entity(ies) represented through the agency relationship.

Nationally Recognized Statistical Rating Organization:

“Nationally Recognized Statistical Rating Organization” or “NRSRO” shall have the meaning as set forth in Securities Exchange Act of 1934, section 3(a)(62), 15 U.S.C. §78(a)(62).

Native Load Customers:

“Native Load Customers” shall mean the wholesale and retail power customers of a Transmission Owner on whose behalf the Transmission Owner, by statute, franchise, regulatory requirement, or contract, has undertaken an obligation to construct and operate the Transmission Owner’s system to meet the reliable electric needs of such customers.

NERC:

“NERC” shall mean the North American Electric Reliability Corporation or any successor thereto.

NERC Interchange Distribution Calculator:

“NERC Interchange Distribution Calculator” shall mean the NERC mechanism that is in effect and being used to calculate the distribution of energy, over specific transmission interfaces, from energy transactions.

Net Benefits Test:

“Net Benefits Test” shall mean a calculation to determine whether the benefits of a reduction in price resulting from the dispatch of Economic Load Response exceeds the cost to other loads resulting from the billing unit effects of the load reduction, as specified in Operating Agreement, Schedule 1, section 3.3A.4 and the parallel provisions of Tariff, Attachment K-Appendix, section 3.3A.4.

Net Cost of New Entry:

“Net Cost of New Entry” shall mean the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset.

Net Obligation:

“Net Obligation” shall mean the amount owed to PJMSettlement and PJM for purchases from the PJM Markets, Transmission Service, (under Tariff, Parts II and III , and other services pursuant to the Agreements, after applying a deduction for amounts owed to a Participant by PJMSettlement as it pertains to monthly market activity and services. Should other markets be formed such that Participants may incur future Obligations in those markets, then the aggregate amount of those Obligations will also be added to the Net Obligation.

Net Sell Position:

“Net Sell Position” shall mean the amount of Net Obligation when Net Obligation is negative.

Network Customer:

“Network Customer” shall mean an entity receiving transmission service pursuant to the terms of the Transmission Provider’s Network Integration Transmission Service under Tariff, Part III.

Network External Designated Transmission Service:

“Network External Designated Transmission Service” shall have the meaning set forth in Reliability Assurance Agreement, Article I.

Network Integration Transmission Service:

“Network Integration Transmission Service” shall mean the transmission service provided under Tariff, Part III.

Network Load:

“Network Load” shall mean the load that a Network Customer designates for Network Integration Transmission Service under Tariff, Part III. The Network Customer’s Network Load shall include all load (including losses, Non-Dispatched Charging Energy, and Load Serving Charging Energy) served by the output of any Network Resources designated by the Network Customer. A Network Customer may elect to designate less than its total load as Network Load but may not designate only part of the load at a discrete Point of Delivery. Where an Eligible Customer has elected not to designate a particular load at discrete points of delivery as Network Load, the Eligible Customer is responsible for making separate arrangements under Tariff, Part II for any Point-To-Point Transmission Service that may be necessary for such non-designated load. Network Load shall not include Dispatched Charging Energy.

Network Operating Agreement:

“Network Operating Agreement” shall mean an executed agreement that contains the terms and conditions under which the Network Customer shall operate its facilities and the technical and operational matters associated with the implementation of Network Integration Transmission Service under Tariff, Part III.

Network Operating Committee:

“Network Operating Committee” shall mean a group made up of representatives from the Network Customer(s) and the Transmission Provider established to coordinate operating criteria and other technical considerations required for implementation of Network Integration Transmission Service under Tariff, Part III.

Network Resource:

“Network Resource” shall mean any designated generating resource owned, purchased, or leased by a Network Customer under the Network Integration Transmission Service Tariff. Network Resources do not include any resource, or any portion thereof, that is committed for sale to third parties or otherwise cannot be called upon to meet the Network Customer’s Network Load on a non-interruptible basis, except for purposes of fulfilling obligations under a reserve sharing program.

Network Service User:

“Network Service User” shall mean an entity using Network Transmission Service.

Network Transmission Service:

“Network Transmission Service” shall mean transmission service provided pursuant to the rates, terms and conditions set forth in Tariff, Part III, or transmission service comparable to such service that is provided to a Load Serving Entity that is also a Transmission Owner.

Network Upgrades:

“Network Upgrades” shall mean modifications or additions to transmission-related facilities that are integrated with and support the Transmission Provider’s overall Transmission System for the general benefit of all users of such Transmission System. Network Upgrades shall include:

(i) **Direct Connection Network Upgrades** which are Network Upgrades that are not part of an Affected System; only serve the Customer Interconnection Facility; and have no impact or potential impact on the Transmission System until the final tie-in is complete. Both Transmission Provider and Interconnection Customer must agree as to what constitutes Direct Connection Network Upgrades and identify them in the Interconnection Construction Service Agreement, Schedule D. If the Transmission Provider and Interconnection Customer disagree about whether a particular Network Upgrade is a Direct Connection Network Upgrade, the Transmission Provider must provide the Interconnection Customer a written technical explanation outlining why the Transmission Provider does not consider the Network Upgrade to be a Direct Connection Network Upgrade within 15 days of its determination.

(ii) **Non-Direct Connection Network Upgrades** which are parallel flow Network Upgrades that are not Direct Connection Network Upgrades.

Neutral Party:

“Neutral Party” shall have the meaning provided in Tariff, Part I, section 9.3(v).

New PJM Zone(s):

“New PJM Zone(s)” shall mean the Zone included in the Tariff, along with applicable Schedules and Attachments, for Commonwealth Edison Company, The Dayton Power and Light Company and the AEP East Operating Companies (Appalachian Power Company, Columbus Southern

Power Company, Indiana Michigan Power Company, Kentucky Power Company, Kingsport Power Company, Ohio Power Company and Wheeling Power Company).

New Service Customers:

“New Service Customers” shall mean all customers that submit an Interconnection Request, a Completed Application, or an Upgrade Request that is pending in the New Services Queue.

New Service Request:

“New Service Request” shall mean an Interconnection Request, a Completed Application, or an Upgrade Request.

New Services Queue:

“New Service Queue” shall mean all Interconnection Requests, Completed Applications, and Upgrade Requests that are received within each six-month period ending on April 30 and October 31 of each year shall collectively comprise a New Services Queue.

New Services Queue Closing Date:

“New Services Queue Closing Date” shall mean each April 30 and October 31 shall be the Queue Closing Date for the New Services Queue comprised of Interconnection Requests, Completed Applications, and Upgrade Requests received during the six-month period ending on such date.

New York ISO or NYISO:

“New York ISO” or “NYISO” shall mean the New York Independent System Operator, Inc. or any successor thereto.

Nodal Reference Price:

The “Nodal Reference Price” at each location shall mean the 97th percentile price differential between day-ahead and real-time prices experienced over the corresponding two-month reference period in the prior calendar year. Reference periods will be Jan-Feb, Mar-Apr, May-Jun, Jul-Aug, Sept-Oct, Nov-Dec. For any given current-year month, the reference period months will be the set of two months in the prior calendar year that include the month corresponding to the current month. For example, July and August 2003 would each use July-August 2002 as their reference period.

No-load Cost:

“No-load Cost” shall mean the hourly cost required to create the starting point of a monotonically increasing incremental offer curve for a generating unit.

Nominal Rated Capability:

“Nominal Rated Capability” shall mean the nominal maximum rated capability in megawatts of a Transmission Interconnection Customer’s Customer Facility or the nominal increase in transmission capability in megawatts of the Transmission System resulting from the interconnection or addition of a Transmission Interconnection Customer’s Customer Facility, as determined in accordance with pertinent Applicable Standards and specified in the Interconnection Service Agreement.

Nominated Demand Resource Value:

“Nominated Demand Resource Value” shall mean the amount of load reduction that a Demand Resource commits to provide either through direct load control, firm service level or guaranteed load drop programs. For existing Demand Resources, the maximum Nominated Demand Resource Value is limited, in accordance with the PJM Manuals, to the value appropriate for the method by which the load reduction would be accomplished, at the time the Base Residual Auction or Incremental Auction is being conducted.

Nominated Energy Efficiency Value:

“Nominated Energy Efficiency Value” shall mean the amount of load reduction that an Energy Efficiency Resource commits to provide through installation of more efficient devices or equipment or implementation of more efficient processes or systems.

Non-Dispatched Charging Energy:

“Non-Dispatched Charging Energy” shall mean all Direct Charging Energy that an Energy Storage Resource Model Participant receives from the electric grid that is not otherwise Dispatched Charging Energy.

Non-Firm Point-To-Point Transmission Service:

“Non-Firm Point-To-Point Transmission Service” shall mean Point-To-Point Transmission Service under the Tariff that is reserved and scheduled on an as-available basis and is subject to Curtailment or Interruption as set forth in Tariff, Part II, section 14.7. Non-Firm Point-To-Point Transmission Service is available on a stand-alone basis for periods ranging from one hour to one month.

Non-Firm Sale:

“Non-Firm Sale” shall mean an energy sale for which receipt or delivery may be interrupted for any reason or no reason, without liability on the part of either the buyer or seller.

Non-Firm Transmission Withdrawal Rights:

“No-Firm Transmission Withdrawal Rights” shall mean the rights to schedule energy

withdrawals from a specified point on the Transmission System. Non-Firm Transmission Withdrawal Rights may be awarded only to a Merchant D.C. Transmission Facility that connects the Transmission System to another control area. Withdrawals scheduled using Non-Firm Transmission Withdrawal Rights have rights similar to those under Non-Firm Point-to-Point Transmission Service.

Non-Performance Charge:

“Non-Performance Charge” shall mean the charge applicable to Capacity Performance Resources as defined in Tariff, Attachment DD, section 10A(e).

Nonincumbent Developer:

“Nonincumbent Developer” shall have the same meaning provided in the Operating Agreement.

Non-Regulatory Opportunity Cost:

“Non-Regulatory Opportunity Cost” shall mean the difference between (a) the forecasted cost to operate a specific generating unit when the unit only has a limited number of starts or available run hours resulting from (i) the physical equipment limitations of the unit, for up to one year, due to original equipment manufacturer recommendations or insurance carrier restrictions, (ii) a fuel supply limitation, for up to one year, resulting from an event of Catastrophic Force Majeure; and, (b) the forecasted future Locational Marginal Price at which the generating unit could run while not violating such limitations. Non-Regulatory Opportunity Cost therefore is the value associated with a specific generating unit’s lost opportunity to produce energy during a higher valued period of time occurring within the same period of time in which the unit is bound by the referenced restrictions, and is reflected in the rules set forth in PJM Manual 15. Non-Regulatory Opportunity Costs shall be limited to those resources which are specifically delineated in Operating Agreement, Schedule 2.

Non-Retail Behind The Meter Generation:

“Non-Retail Behind The Meter Generation” shall mean Behind the Meter Generation that is used by municipal electric systems, electric cooperatives, or electric distribution companies to serve load.

Non-Synchronized Reserve:

“Non-Synchronized Reserve” shall mean the reserve capability of non-emergency generation resources that can be converted fully into energy within ten minutes of a request from the Office of the Interconnection dispatcher, and is provided by equipment that is not electrically synchronized to the Transmission System.

Non-Synchronized Reserve Event:

“Non-Synchronized Reserve Event” shall mean a request from the Office of the Interconnection to generation resources able and assigned to provide Non-Synchronized Reserve in one or more

specified Reserve Zones or Reserve Sub-zones, within ten minutes to increase the energy output by the amount of assigned Non-Synchronized Reserve capability.

Non-Variable Loads:

“Non-Variable Loads” shall have the meaning specified in Operating Agreement, Schedule 1, section 1.5A.6, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.5A.6.

Non-Zone Network Load:

“Non-Zone Network Load shall mean Network Load that is located outside of the PJM Region.

Normal Maximum Generation:

“Normal Maximum Generation” shall mean the highest output level of a generating resource under normal operating conditions.

Normal Minimum Generation:

“Normal Minimum Generation” shall mean the lowest output level of a generating resource under normal operating conditions.

Obligation:

“Obligation” shall mean all amounts owed to PJMSettlement for purchases from the PJM Markets, Transmission Service, (under both Tariff, Part II and Tariff, Part III), and other services or obligations pursuant to the Agreements. In addition, aggregate amounts that will be owed to PJMSettlement in the future for capacity purchases within the PJM capacity markets will be added to this figure. Should other markets be formed such that Participants may incur future Obligations in those markets, then the aggregate amount of those Obligations will also be added to the Net Obligation.

Offer Data:

“Offer Data” shall mean the scheduling, operations planning, dispatch, new resource, and other data and information necessary to schedule and dispatch generation resources and Demand Resource(s) for the provision of energy and other services and the maintenance of the reliability and security of the Transmission System in the PJM Region, and specified for submission to the PJM Interchange Energy Market for such purposes by the Office of the Interconnection.

Office of the Interconnection:

“Office of the Interconnection” shall mean the employees and agents of PJM Interconnection, L.L.C. subject to the supervision and oversight of the PJM Board, acting pursuant to the Operating Agreement.

Office of the Interconnection Control Center:

“Office of the Interconnection Control Center” shall mean the equipment, facilities and personnel used by the Office of the Interconnection to coordinate and direct the operation of the PJM Region and to administer the PJM Interchange Energy Market, including facilities and equipment used to communicate and coordinate with the Market Participants in connection with transactions in the PJM Interchange Energy Market or the operation of the PJM Region.

On-Site Generators:

“On-Site Generators” shall mean generation facilities (including Behind The Meter Generation) that (i) are not Capacity Resources, (ii) are not injecting into the grid, (iii) are either synchronized or non-synchronized to the Transmission System, and (iv) can be used to reduce demand for the purpose of participating in the PJM Interchange Energy Market.

Open Access Same-Time Information System (OASIS) or PJM Open Access Same-Time Information System:

“Open Access Same-Time Information System,” “PJM Open Access Same-Time Information System” or “OASIS” shall mean the electronic communication and information system and standards of conduct contained in Part 37 and Part 38 of the Commission’s regulations and all additional requirements implemented by subsequent Commission orders dealing with OASIS for the collection and dissemination of information about transmission services in the PJM Region, established and operated by the Office of the Interconnection in accordance with FERC standards and requirements.

Operating Agreement of the PJM Interconnection, L.L.C., Operating Agreement or PJM Operating Agreement:

“Operating Agreement of the PJM Interconnection, L.L.C.,” “Operating Agreement” or “PJM Operating Agreement” shall mean the Amended and Restated Operating Agreement of PJM Interconnection, L.L.C. dated as of April 1, 1997 and as amended and restated as of June 2, 1997, including all Schedules, Exhibits, Appendices, addenda or supplements hereto, as amended from time to time thereafter, among the Members of the PJM Interconnection, L.L.C., on file with the Commission.

Operating Day:

“Operating Day” shall mean the daily 24 hour period beginning at midnight for which transactions on the PJM Interchange Energy Market are scheduled.

Operating Margin:

“Operating Margin” shall mean the incremental adjustments, measured in megawatts, required in PJM Region operations in order to accommodate, on a first contingency basis, an operating contingency in the PJM Region resulting from operations in an interconnected Control Area. Such adjustments may result in constraints causing Transmission Congestion Charges, or may

result in Ancillary Services charges pursuant to the PJM Tariff.

Operating Margin Customer:

“Operating Margin Customer” shall mean a Control Area purchasing Operating Margin pursuant to an agreement between such other Control Area and the LLC.

Operationally Deliverable:

“Operationally Deliverable” shall mean, as determined by the Office of the Interconnection, that there are no operational conditions, arrangements or limitations experienced or required that threaten, impair or degrade effectuation or maintenance of deliverability of capacity or energy from the external Generation Capacity Resource to loads in the PJM Region in a manner comparable to the deliverability of capacity or energy to such loads from Generation Capacity Resources located inside the metered boundaries of the PJM Region, including, without limitation, an identified need by an external Balancing Authority Area for a remedial action scheme or manual generation trip protocol, transmission facility switching arrangements that would have the effect of radializing load, or excessive or unacceptable frequency of regional reliability limit violations or (outside an interregional agreed congestion management process) of local reliability dispatch instructions and commitments.

Opportunity Cost:

“Opportunity Cost” shall mean a component of the Market Seller Offer Cap calculated in accordance with Tariff, Attachment DD, section 6.

OPSI Advisory Committee:

“OPSI Advisory Committee” shall mean the committee established under Tariff, Attachment M, section III.G.

Option to Build:

“Option to Build” shall mean the option of the New Service Customer to build certain Customer-Funded Upgrades, as set forth in, and subject to the terms of, the Construction Service Agreement.

Optional Interconnection Study:

“Optional Interconnection Study” shall mean a sensitivity analysis of an Interconnection Request based on assumptions specified by the Interconnection Customer in the Optional Interconnection Study Agreement.

Optional Interconnection Study Agreement:

“Optional Interconnection Study Agreement” shall mean the form of agreement for preparation

of an Optional Interconnection Study, as set forth in Tariff, Attachment N-3.

Part I:

“Part I” shall mean the Tariff Definitions and Common Service Provisions contained in Tariff, Part I, sections 1 through 12A.

Part II:

“Part II” shall mean Tariff, Part II, sections 13 through 27A pertaining to Point-To-Point Transmission Service in conjunction with the applicable Common Service Provisions of Tariff, Part I and appropriate Schedules and Attachments.

Part III:

“Part III” shall mean Tariff, Part III, sections 28 through 35 pertaining to Network Integration Transmission Service in conjunction with the applicable Common Service Provisions of Tariff, Part I and appropriate Schedules and Attachments.

Part IV:

“Part IV” shall mean Tariff, Part IV, sections 36 through 112C pertaining to generation or merchant transmission interconnection to the Transmission System in conjunction with the applicable Common Service Provisions of Tariff, Part I and appropriate Schedules and Attachments.

Part V:

“Part V” shall mean Tariff, Part V, sections 113 through 122 pertaining to the deactivation of generating units in conjunction with the applicable Common Service Provisions of Tariff, Part I and appropriate Schedules and Attachments.

Part VI:

“Part VI” shall mean Tariff, Part VI, sections 200 through 237 pertaining to the queuing, study, and agreements relating to New Service Requests, and the rights associated with Customer-Funded Upgrades in conjunction with the applicable Common Service Provisions of Tariff, Part I and appropriate Schedules and Attachments.

Participant:

“Participant” shall mean a Market Participant and/or Transmission Customer and/or Applicant requesting to be an active Market Participant and/or Transmission Customer.

Parties:

“Parties” shall mean the Transmission Provider, as administrator of the Tariff, and the Transmission Customer receiving service under the Tariff. PJMSettlement shall be the Counterparty to Transmission Customers.

Peak-Hour Dispatch:

“Peak-Hour Dispatch” shall mean, for purposes of calculating the Energy and Ancillary Services Revenue Offset under Tariff, Attachment DD, section 5, an assumption, as more fully set forth in the PJM Manuals, that the Reference Resource is committed in the Day-ahead Energy Market in four distinct blocks of four hours of continuous output for each block from the peak-hour period beginning with the hour ending 0800 EPT through to the hour ending 2300 EPT for any day when the average day-ahead LMP for the area for which the Net Cost of New Entry is being determined is greater than, or equal to, the cost to generate (including the cost for a complete start and shutdown cycle), plus 10% of such costs, for at least two hours during each four-hour block, where such blocks shall be assumed to be committed independently; provided that, if there are not at least two economic hours in any given four-hour block, then the Reference Resource shall be assumed not to be committed for such block; and to the extent not committed in any such block in the Day-ahead Energy Market under the above conditions based on Day-Ahead LMPs, is dispatched in the Real-time Energy Market for such block if the Real-Time LMP is greater than or equal to the cost to generate, plus 10% of such costs, under the same conditions as described above for the Day-ahead Energy Market.

Peak Market Activity:

“Peak Market Activity” shall mean a measure of exposure for which credit is required, involving peak exposures in rolling three-week periods over a year timeframe, with two semi-annual reset points, pursuant to provisions of Tariff, Attachment Q, section VII.A. Peak Market Activity shall exclude FTR Net Activity, Virtual Transactions Net Activity, and Export Transactions Net Activity.

Peak Season:

“Peak Season” shall mean the weeks containing the 24th through 36th Wednesdays of the calendar year. Each such week shall begin on a Monday and end on the following Sunday, except for the week containing the 36th Wednesday, which shall end on the following Friday.

Percentage Internal Resources Required:

“Percentage Internal Resources Required” shall have the meaning specified in the Reliability Assurance Agreement.

Performance Assessment Interval:

“Performance Assessment Interval” shall mean each Real-time Settlement Interval for which an Emergency Action has been declared by the Office of the Interconnection, provided, however, that Performance Assessment Intervals for a Base Capacity Resource shall not include any intervals outside the calendar months of June through September.

PJM:

“PJM” shall mean PJM Interconnection, L.L.C., including the Office of the Interconnection as referenced in the PJM Operating Agreement. When such term is being used in the RAA it shall also include the PJM Board.

PJM Administrative Service:

“PJM Administrative Service” shall mean the services provided by PJM pursuant to Tariff, Schedule 9.

PJM Board:

“PJM Board” shall mean the Board of Managers of the LLC, acting pursuant to the Operating Agreement, except when such term is being used in Tariff, Attachment M, in which case PJM Board shall mean the Board of Managers of PJM or its designated representative, exclusive of any members of PJM Management.

PJM Control Area:

“PJM Control Area” shall mean the Control Area recognized by NERC as the PJM Control Area.

PJM Entities:

“PJM Entities” shall mean PJM, including the Market Monitoring Unit, the PJM Board, and PJM’s officers, employees, representatives, advisors, contractors, and consultants.

PJM Interchange:

“PJM Interchange” shall mean the following, as determined in accordance with the Operating Agreement and Tariff: (a) for a Market Participant that is a Network Service User, the amount by which its interval Equivalent Load exceeds, or is exceeded by, the sum of the interval outputs of its operating generating resources; or (b) for a Market Participant that is not a Network Service User, the amount of its Spot Market Backup; or (c) the interval scheduled deliveries of Spot Market Energy by a Market Seller from an External Resource; or (d) the interval net metered output of any other Market Seller; or (e) the interval scheduled deliveries of Spot Market Energy to an External Market Buyer; or (f) the interval scheduled deliveries to an Internal Market Buyer that is not a Network Service User.

PJM Interchange Energy Market:

“PJM Interchange Energy Market” shall mean the regional competitive market administered by the Office of the Interconnection for the purchase and sale of spot electric energy at wholesale in interstate commerce and related services established pursuant to Operating Agreement, Schedule 1, and the parallel provisions of Tariff, Attachment K - Appendix.

PJM Interchange Export:

“PJM Interchange Export” shall mean the following, as determined in accordance with the Operating Agreement and Tariff: (a) for a Market Participant that is a Network Service User, the amount by which its interval Equivalent Load is exceeded by the sum of the interval outputs of its operating generating resources; or (b) for a Market Participant that is not a Network Service User, the amount of its Spot Market Backup sales; or (c) the interval scheduled deliveries of Spot Market Energy by a Market Seller from an External Resource; or (d) the interval net metered output of any other Market Seller.

PJM Interchange Import:

“PJM Interchange Import” shall mean the following, as determined in accordance with the Operating Agreement and Tariff: (a) for a Market Participant that is a Network Service User, the amount by which its interval Equivalent Load exceeds the sum of the interval outputs of its operating generating resources; or (b) for a Market Participant that is not a Network Service User, the amount of its Spot Market Backup purchases; or (c) the interval scheduled deliveries of Spot Market Energy to an External Market Buyer; or (d) the interval scheduled deliveries to an Internal Market Buyer that is not a Network Service User.

PJM Liaison:

“PJM Liaison” shall mean the liaison established under Tariff, Attachment M, section III.I.

PJM Management:

“PJM Management” shall mean the officers, executives, supervisors and employee managers of PJM.

PJM Manuals:

“PJM Manuals” shall mean the instructions, rules, procedures and guidelines established by the Office of the Interconnection for the operation, planning, and accounting requirements of the PJM Region and the PJM Interchange Energy Market.

PJM Markets:

“PJM Markets” shall mean the PJM Interchange Energy Market, capacity markets, including the RPM auctions, and any other market operated by PJM, together with all bilateral or other wholesale electric power and energy transactions, capacity transactions, ancillary services transactions (including black start service), transmission transactions, Financial Transmission Rights transactions, or transactions in any other market operated under the Agreements within the PJM Region, wherein Market Participants may incur Obligations to PJM and/or PJMSettlement.

PJM Market Rules:

“PJM Market Rules” shall mean the rules, standards, procedures, and practices of the PJM Markets set forth in the PJM Tariff, the PJM Operating Agreement, the PJM Reliability Assurance Agreement, the PJM Consolidated Transmission Owners Agreement, the PJM Manuals, the PJM Regional Practices Document, the PJM-Midwest Independent Transmission System Operator Joint Operating Agreement or any other document setting forth market rules.

PJM Net Assets:

“PJM Net Assets” shall mean the total assets per PJM’s consolidated quarterly or year-end financial statements most recently issued as of the date of the receipt of written notice of a claim less amounts for which PJM is acting as a temporary custodian on behalf of its Members, transmission developers/Designated Entities, and generation developers, including, but not limited to, cash deposits related to credit requirement compliance, study and/or interconnection receivables, member prepayments, invoiced amounts collected from Net Buyers but have not yet been paid to Net Sellers, and excess congestion (as described in Operating Agreement, Schedule 1, section 5.2.6, and the parallel provisions of Tariff, Attachment K-Appendix, section 5.2.6).

PJM Region:

“PJM Region” shall have the meaning specified in the Operating Agreement.

PJM Regional Practices Document:

“PJM Regional Practices Document” shall mean the document of that title that compiles and describes the practices in the PJM Markets and that is made available in hard copy and on the Internet.

PJM Region Installed Reserve Margin:

“PJM Region Installed Reserve Margin” shall mean the percent installed reserve margin for the PJM Region required pursuant to RAA, Schedule 4.1, as approved by the PJM Board.

PJM Region Peak Load Forecast:

“PJM Region Peak Load Forecast” shall mean the peak load forecast used by the Office of the Interconnection in determining the PJM Region Reliability Requirement, and shall be determined on both a preliminary and final basis as set forth in Tariff, Attachment DD, section 5.

PJM Region Reliability Requirement:

“PJM Region Reliability Requirement” shall mean, for purposes of the Base Residual Auction, the Forecast Pool Requirement multiplied by the Preliminary PJM Region Peak Load Forecast, less the sum of all Preliminary Unforced Capacity Obligations of FRR Entities in the PJM Region; and, for purposes of the Incremental Auctions, the Forecast Pool Requirement multiplied by the updated PJM Region Peak Load Forecast, less the sum of all updated Unforced Capacity Obligations of FRR Entities in the PJM Region.

PJM Settlement:

“PJM Settlement” or “PJM Settlement, Inc.” shall mean PJM Settlement, Inc. (or its successor), established by PJM as set forth in Operating Agreement, section 3.3.

PJM Tariff, Tariff, O.A.T.T., OATT or PJM Open Access Transmission Tariff:

“PJM Tariff,” “Tariff,” “O.A.T.T.,” “OATT,” or “PJM Open Access Transmission Tariff” shall mean that certain PJM Open Access Transmission Tariff, including any schedules, appendices or exhibits attached thereto, on file with FERC and as amended from time to time thereafter.

Plan:

“Plan” shall mean the PJM market monitoring plan set forth in Tariff, Attachment M.

Planned Demand Resource:

“Planned Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Planned External Financed Generation Capacity Resource:

“Planned External Financed Generation Capacity Resource” shall mean a Planned External Generation Capacity Resource that, prior to August 7, 2015, has an effective agreement that is the equivalent of an Interconnection Service Agreement, has submitted to the Office of the Interconnection the appropriate certification attesting achievement of Financial Close, and has secured at least 50 percent of the MWs of firm transmission service required to qualify such resource under the deliverability requirements of the Reliability Assurance Agreement.

Planned External Generation Capacity Resource:

“Planned External Generation Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Planned Financed Generation Capacity Resource:

“Planned Financed Generation Capacity Resource” shall mean a Planned Generation Capacity Resource that, prior to August 7, 2015, has an effective Interconnection Service Agreement and has submitted to the Office of the Interconnection the appropriate certification attesting achievement of Financial Close.

Planned Generation Capacity Resource:

“Planned Generation Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

Planning Period:

“Planning Period” shall mean the 12 months beginning June 1 and extending through May 31 of the following year, or such other period approved by the Members Committee.

Planning Period Balance:

“Planning Period Balance” shall mean the entire period of time remaining in the Planning Period following the month that a monthly auction is conducted.

Planning Period Quarter:

“Planning Period Quarter” shall mean any of the following three month periods in the Planning Period: June, July and August; September, October and November; December, January and February; or March, April and May.

Point(s) of Delivery:

“Point(s) of Delivery” shall mean the point(s) on the Transmission Provider’s Transmission System where capacity and energy transmitted by the Transmission Provider will be made available to the Receiving Party under Tariff, Part II. The Point(s) of Delivery shall be specified in the Service Agreement for Long-Term Firm Point-To-Point Transmission Service.

Point of Interconnection:

“Point of Interconnection” shall mean the point or points where the Customer Interconnection Facilities interconnect with the Transmission Owner Interconnection Facilities or the Transmission System.

Point(s) of Receipt:

“Point(s) of Receipt” shall mean point(s) of interconnection on the Transmission Provider’s Transmission System where capacity and energy will be made available to the Transmission Provider by the Delivering Party under Tariff, Part II. The Point(s) of Receipt shall be specified in the Service Agreement for Long-Term Firm Point-To-Point Transmission Service.

Point-To-Point Transmission Service:

“Point-To-Point Transmission Service shall mean the reservation and transmission of capacity and energy on either a firm or non-firm basis from the Point(s) of Receipt to the Point(s) of Delivery under Tariff, Part II.

Power Purchaser:

“Power Purchaser” shall mean the entity that is purchasing the capacity and energy to be

transmitted under the Tariff.

PRD Curve:

“PRD Curve” shall have the meaning provided in the Reliability Assurance Agreement.

PRD Provider:

“PRD Provider” shall have the meaning provided in the Reliability Assurance Agreement.

PRD Reservation Price:

“PRD Reservation” Price shall have the meaning provided in the Reliability Assurance Agreement.

PRD Substation:

“PRD Substation” shall have the meaning provided in the Reliability Assurance Agreement.

Pre-Confirmed Application:

“Pre-Confirmed Application” shall be an Application that commits the Eligible Customer to execute a Service Agreement upon receipt of notification that the Transmission Provider can provide the requested Transmission Service.

Pre-Emergency Load Response Program:

“Pre-Emergency Load Response Program” shall be the program by which Curtailment Service Providers may be compensated by PJM for Demand Resources that will reduce load when dispatched by PJM during pre-emergency conditions, and is described in Operating Agreement, Schedule 1, section 8 and the parallel provisions of Tariff, Attachment K-Appendix, section 8.

Pre-Expansion PJM Zones:

“Pre-Expansion PJM Zones” shall be zones included in the Tariff, along with applicable Schedules and Attachments, for certain Transmission Owners - Atlantic City Electric Company, Baltimore Gas and Electric Company, Delmarva Power and Light Company, Jersey Central Power and Light Company, Mid-Atlantic Interstate Transmission, LLC (“MAIT”) (MAIT owns and operates the transmission facilities in the Metropolitan Edison Company Zone and the Pennsylvania Electric Company Zone), PECO Energy Company, Pennsylvania Power & Light Group, Potomac Electric Power Company, Public Service Electric and Gas Company, Allegheny Power, and Rockland Electric Company.

Price Responsive Demand:

“Price Responsive Demand” shall have the meaning provided in the Reliability Assurance

Agreement.

Primary Reserve:

“Primary Reserve” shall mean the total reserve capability of generation resources that can be converted fully into energy or Demand Resources whose demand can be reduced within ten minutes of a request from the Office of the Interconnection dispatcher, and is comprised of both Synchronized Reserve and Non-Synchronized Reserve.

Primary Reserve Alert

“Primary Reserve Alert” shall mean a notification from PJM to alert Members of an anticipated shortage of Operating Reserve capacity for a future critical period.

Primary Reserve Requirement:

“Primary Reserve Requirement” shall mean the megawatts required to be maintained in a Reserve Zone or Reserve Sub-zone as Primary Reserve, absent any increase to account for additional reserves scheduled to address operational uncertainty. The Primary Reserve Requirement is calculated in accordance with the PJM Manuals.

Principal:

“Principal” shall mean (i) the chief executive officer or senior manager that controls or directs strategy for the Participant, (ii) the chief legal officer or general counsel, (iii) the chief financial officer or senior manager that controls or directs the financial affairs and investments of the Participant, (iv) the chief risk officer or senior manager responsible for managing commodity and derivatives market risks, and (v) the officer or senior manager responsible for or to be responsible for transactions in the applicable PJM Markets. If, due to the Participant’s business enterprise, structure or otherwise, the functions attributed to any of such Principals are performed by an individual or entity separate from the Participant (such as a risk management department in an affiliate, or a director or manager at an entity that controls or invests in the Participant), then for that Participant the term Principal shall mean that individual, or the senior officer or manager of that entity, that performs such function.

Prior CIL Exception External Resource:

“Prior CIL Exception External Resource” shall mean an external Generation Capacity Resource for which (1) a Capacity Market Seller had, prior to May 9, 2017, cleared a Sell Offer in an RPM Auction under the exception provided to the definition of Capacity Import Limit as set forth in RAA, Article I or (2) an FRR Entity committed, prior to May 9, 2017, in an FRR Capacity Plan under the exception provided in the definition of Capacity Import Limit. In the event only a portion (in MW) of an external Generation Capacity Resource has a Pseudo-Tie into the PJM Region, that portion of the external Generation Capacity Resource, which can include up to the maximum megawatt amount cleared in any prior RPM auction or committed in an FRR Capacity Plan (and no other portion thereof), is eligible for treatment as a Prior CIL Exception External

Resource if such portion satisfies the requirements of the first sentence of this definition.

Project Financing:

“Project Financing” shall mean: (a) one or more loans, leases, equity and/or debt financings, together with all modifications, renewals, supplements, substitutions and replacements thereof, the proceeds of which are used to finance or refinance the costs of the Customer Facility, any alteration, expansion or improvement to the Customer Facility, the purchase and sale of the Customer Facility or the operation of the Customer Facility; (b) a power purchase agreement pursuant to which Interconnection Customer’s obligations are secured by a mortgage or other lien on the Customer Facility; or (c) loans and/or debt issues secured by the Customer Facility.

Project Finance Entity:

“Project Finance Entity” shall mean: (a) a holder, trustee or agent for holders, of any component of Project Financing; or (b) any purchaser of capacity and/or energy produced by the Customer Facility to which Interconnection Customer has granted a mortgage or other lien as security for some or all of Interconnection Customer’s obligations under the corresponding power purchase agreement.

Projected PJM Market Revenues:

“Projected PJM Market Revenues” shall mean a component of the Market Seller Offer Cap calculated in accordance with Tariff, Attachment DD, section 6.

Proportional Multi-Driver Project:

“Proportional Multi-Driver Project” shall have the same meaning provided in the Operating Agreement.

Pseudo-Tie:

“Pseudo-Tie” shall have the same meaning provided in the Operating Agreement.

Public Policy Objectives:

“Public Policy Objectives” shall have the same meaning provided in the Operating Agreement.

Public Policy Requirements:

“Public Policy Requirements” shall have the same meaning provided in the Operating Agreement.

Qualifying Transmission Upgrade:

“Qualifying Transmission Upgrade” shall mean a proposed enhancement or addition to the

Transmission System that: (a) will increase the Capacity Emergency Transfer Limit into an LDA by a megawatt quantity certified by the Office of the Interconnection; (b) the Office of the Interconnection has determined will be in service on or before the commencement of the first Delivery Year for which such upgrade is the subject of a Sell Offer in the Base Residual Auction; (c) is the subject of a Facilities Study Agreement executed before the conduct of the Base Residual Auction for such Delivery Year and (d) a New Service Customer is obligated to fund through a rate or charge specific to such facility or upgrade.

Queue Position:

“Queue Position” shall mean the priority assigned to an Interconnection Request, a Completed Application, or an Upgrade Request pursuant to applicable provisions of Tariff, Part VI.

Ramping Capability:

“Ramping Capability” shall mean the sustained rate of change of generator output, in megawatts per minute.

Rating Agency:

“Rating Agency” shall mean a Nationally Recognized Statistical Rating Organization that assesses the financial condition, strength and stability of companies and governmental entities and their ability to timely make principal and interest payments on their debts and the likelihood of default, and assigns a rating that reflects its assessment of the ability of the company or governmental entity to make the debt payments

Real-time Congestion Price:

“Real-time Congestion Price” shall mean the Congestion Price resulting from the Office of the Interconnection’s dispatch of the PJM Interchange Energy Market in the Operating Day.

Real-time Loss Price:

“Real-time Loss Price” shall mean the Loss Price resulting from the Office of the Interconnection’s dispatch of the PJM Interchange Energy Market in the Operating Day.

Real-time Energy Market:

“Real-time Energy Market” shall mean the purchase or sale of energy and payment of Transmission Congestion Charges for quantity deviations from the Day-ahead Energy Market in the Operating Day.

Real-time Offer:

“Real-time Offer” shall mean a new offer or an update to a Market Seller’s existing cost-based or market-based offer for a clock hour, submitted for use after the close of the Day-ahead Energy

Market.

Real-time Prices:

“Real-time Prices” shall mean the Locational Marginal Prices resulting from the Office of the Interconnection’s dispatch of the PJM Interchange Energy Market in the Operating Day.

Real-time Settlement Interval:

“Real-time Settlement Interval” shall mean the interval used by settlements, which shall be every five minutes.

Real-time System Energy Price:

“Real-time System Energy Price” shall mean the System Energy Price resulting from the Office of the Interconnection’s dispatch of the PJM Interchange Energy Market in the Operating Day.

Reasonable Efforts:

“Reasonable Efforts” shall mean, with respect to any action required to be made, attempted, or taken by an Interconnection Party or by a Construction Party under Tariff, Part IV or Tariff, Part VI, an Interconnection Service Agreement, or a Construction Service Agreement, such efforts as are timely and consistent with Good Utility Practice and with efforts that such party would undertake for the protection of its own interests.

Receiving Party:

“Receiving Party” shall mean the entity receiving the capacity and energy transmitted by the Transmission Provider to Point(s) of Delivery.

Referral:

“Referral” shall mean a formal report of the Market Monitoring Unit to the Commission for investigation of behavior of a Market Participant, of behavior of PJM, or of a market design flaw, pursuant to Tariff, Attachment M, section IV.I.

Reference Resource:

“Reference Resource” shall mean a combustion turbine generating station, configured with a single General Electric Frame 7HA turbine with evaporative cooling, Selective Catalytic Reduction technology all CONE Areas, dual fuel capability, and a heat rate of 9.134 Mmbtu/MWh.

Regional Entity:

“Regional Entity” shall have the same meaning specified in the Operating Agreement.

Regional Transmission Expansion Plan:

“Regional Transmission Expansion Plan” shall mean the plan prepared by the Office of the Interconnection pursuant to Operating Agreement, Schedule 6 for the enhancement and expansion of the Transmission System in order to meet the demands for firm transmission service in the PJM Region.

Regional Transmission Group (RTG):

“Regional Transmission Group” or “RTG” shall mean a voluntary organization of transmission owners, transmission users and other entities approved by the Commission to efficiently coordinate transmission planning (and expansion), operation and use on a regional (and interregional) basis.

Regulation:

“Regulation” shall mean the capability of a specific generation resource or Demand Resource with appropriate telecommunications, control and response capability to separately increase and decrease its output or adjust load in response to a regulating control signal, in accordance with the specifications in the PJM Manuals.

Regulation Zone:

“Regulation Zone” shall mean any of those one or more geographic areas, each consisting of a combination of one or more Control Zone(s) as designated by the Office of the Interconnection in the PJM Manuals, relevant to provision of, and requirements for, regulation service.

Relevant Electric Retail Regulatory Authority:

“Relevant Electric Retail Regulatory Authority” shall mean an entity that has jurisdiction over and establishes prices and policies for competition for providers of retail electric service to end-customers, such as the city council for a municipal utility, the governing board of a cooperative utility, the state public utility commission or any other such entity.

Reliability Assurance Agreement or PJM Reliability Assurance Agreement:

“Reliability Assurance Agreement” or “PJM Reliability Assurance Agreement” shall mean that certain Reliability Assurance Agreement Among Load Serving Entities in the PJM Region, on file with FERC as PJM Interconnection L.L.C. Rate Schedule FERC No. 44, and as amended from time to time thereafter.

Reliability Pricing Model Auction:

“Reliability Pricing Model Auction” or “RPM Auction” shall mean the Base Residual Auction or any Incremental Auction, or, for the 2016/2017 and 2017/2018 Delivery Years, any Capacity Performance Transition Incremental Auction.

Required Transmission Enhancements:

“Regional Transmission Enhancements” shall mean enhancements and expansions of the Transmission System that (1) a Regional Transmission Expansion Plan developed pursuant to Operating Agreement, Schedule 6 or (2) any joint planning or coordination agreement between PJM and another region or transmission planning authority set forth in Tariff, Schedule 12-Appendix B (“Appendix B Agreement”) designates one or more of the Transmission Owner(s) to construct and own or finance. Required Transmission Enhancements shall also include enhancements and expansions of facilities in another region or planning authority that meet the definition of transmission facilities pursuant to FERC’s Uniform System of Accounts or have been classified as transmission facilities in a ruling by FERC addressing such facilities constructed pursuant to an Appendix B Agreement cost responsibility for which has been assigned at least in part to PJM pursuant to such Appendix B Agreement.

Reserved Capacity:

“Reserved Capacity” shall mean the maximum amount of capacity and energy that the Transmission Provider agrees to transmit for the Transmission Customer over the Transmission Provider’s Transmission System between the Point(s) of Receipt and the Point(s) of Delivery under Tariff, Part II. Reserved Capacity shall be expressed in terms of whole megawatts on a sixty (60) minute interval (commencing on the clock hour) basis.

Reserve Penalty Factor:

“Reserve Penalty Factor” shall mean the cost, in \$/MWh, associated with being unable to meet a specific reserve requirement in a Reserve Zone or Reserve Sub-zone. A Reserve Penalty Factor will be defined for each reserve requirement in a Reserve Zone or Reserve Sub-zone.

Reserve Sub-zone:

“Reserve Sub-zone” shall mean any of those geographic areas wholly contained within a Reserve Zone, consisting of a combination of a portion of one or more Control Zone(s) as designated by the Office of the Interconnection in the PJM Manuals, relevant to provision of, and requirements for, reserve service.

Reserve Zone:

“Reserve Zone” shall mean any of those geographic areas consisting of a combination of one or more Control Zone(s), as designated by the Office of the Interconnection in the PJM Manuals, relevant to provision of, and requirements for, reserve service.

Residual Auction Revenue Rights:

“Residual Auction Revenue Rights” shall mean incremental stage 1 Auction Revenue Rights created within a Planning Period by an increase in transmission system capability, including the

return to service of existing transmission capability, that was not modeled pursuant to Operating Agreement, Schedule 1, section 7.5 and the parallel provisions of Tariff, Attachment K-Appendix, section 7.5 in compliance with Operating Agreement, Schedule 1, section 7.4.2 (h) and the parallel provisions of Tariff, Attachment K-Appendix, section 7.4.2(h), and, if modeled, would have increased the amount of stage 1 Auction Revenue Rights allocated pursuant to Operating Agreement, Schedule 1, section 7.4.2 and the parallel provisions of Tariff, Attachment K-Appendix, section 7.4.2; provided that, the foregoing notwithstanding, Residual Auction Revenue Rights shall exclude: 1) Incremental Auction Revenue Rights allocated pursuant to Tariff, Part VI; and 2) Auction Revenue Rights allocated to entities that are assigned cost responsibility pursuant to Operating Agreement, Schedule 6 for transmission upgrades that create such rights.

Residual Metered Load:

“Residual Metered Load” shall mean all load remaining in an electric distribution company’s fully metered franchise area(s) or service territory(ies) after all nodally priced load of entities serving load in such area(s) or territory(ies) has been carved out.

Resource Substitution Charge:

“Resource Substitution Charge” shall mean a charge assessed on Capacity Market Buyers in an Incremental Auction to recover the cost of replacement Capacity Resources.

Restricted Collateral:

“Restricted Collateral” shall mean Collateral, held by PJM or PJMSettlement, which cannot be used, netted, credited or spent by the Participant to satisfy any other obligations.

Revenue Data for Settlements:

“Revenue Data for Settlements” shall mean energy quantities used in accounting and billing as determined pursuant to Tariff, Attachment K-Appendix and the corresponding provisions of Operating Agreement, Schedule 1.

RPM Seller Credit:

“RPM Seller Credit” shall mean an additional form of Unsecured Credit defined in Tariff, Attachment Q, section VI.

Scheduled Incremental Auctions:

“Scheduled Incremental Auctions” shall refer to the First, Second, or Third Incremental Auction.

Schedule of Work:

“Schedule of Work” shall mean that schedule attached to the Interconnection Construction Service

Agreement setting forth the timing of work to be performed by the Constructing Entity pursuant to the Interconnection Construction Service Agreement, based upon the Facilities Study and subject to modification, as required, in accordance with Transmission Provider's scope change process for interconnection projects set forth in the PJM Manuals.

Scope of Work:

"Scope of Work" shall mean that scope of the work attached as a schedule to the Interconnection Construction Service Agreement and to be performed by the Constructing Entity(ies) pursuant to the Interconnection Construction Service Agreement, provided that such Scope of Work may be modified, as required, in accordance with Transmission Provider's scope change process for interconnection projects set forth in the PJM Manuals.

Seasonal Capacity Performance Resource:

"Seasonal Capacity Performance Resource" shall have the same meaning specified in Tariff, Attachment DD, section 5.5A.

Secondary Systems:

"Secondary Systems" shall mean control or power circuits that operate below 600 volts, AC or DC, including, but not limited to, any hardware, control or protective devices, cables, conductors, electric raceways, secondary equipment panels, transducers, batteries, chargers, and voltage and current transformers.

Second Incremental Auction:

"Second Incremental Auction" shall mean an Incremental Auction conducted ten months before the Delivery Year to which it relates.

Security:

"Security" shall mean the security provided by the New Service Customer pursuant to Tariff, section 212.4 or Tariff, Part VI, section 213.4 to secure the New Service Customer's responsibility for Costs under the Interconnection Service Agreement or Upgrade Construction Service Agreement and Tariff, Part VI, section 217.

Segment:

"Segment" shall have the same meaning as described in Operating Agreement, Schedule 1, section 3.2.3(e), and the parallel provisions of Tariff, Attachment K-Appendix, section 3.2.3(e).

Self-Supply:

"Self-Supply" shall mean Capacity Resources secured by a Load-Serving Entity, by ownership or contract, outside a Reliability Pricing Model Auction, and used to meet obligations under this

Attachment or the Reliability Assurance Agreement through submission in a Base Residual Auction or an Incremental Auction of a Sell Offer indicating such Market Seller's intent that such Capacity Resource be Self-Supply. Self-Supply may be either committed regardless of clearing price or submitted as a Sell Offer with a price bid. A Load Serving Entity's Sell Offer with a price bid for an owned or contracted Capacity Resource shall not be deemed "Self-Supply," unless it is designated as Self-Supply and used by the LSE to meet obligations under this Attachment or the Reliability Assurance Agreement.

Sell Offer:

"Sell Offer" shall mean an offer to sell Capacity Resources in a Base Residual Auction, Incremental Auction, or Reliability Backstop Auction.

Service Agreement:

"Service Agreement" shall mean the initial agreement and any amendments or supplements thereto entered into by the Transmission Customer and the Transmission Provider for service under the Tariff.

Service Commencement Date:

"Service Commencement Date" shall mean the date the Transmission Provider begins to provide service pursuant to the terms of an executed Service Agreement, or the date the Transmission Provider begins to provide service in accordance with Tariff, Part II, section 15.3 or Tariff, Part III, section 29.1.

Short-Term Firm Point-To-Point Transmission Service:

"Short-Term Firm Point-To-Point Transmission Service" shall mean Firm Point-To-Point Transmission Service under Tariff, Part II with a term of less than one year.

Short-term Project:

"Short-term Project" shall have the same meaning provided in the Operating Agreement.

Short-Term Resource Procurement Target:

"Short-Term Resource Procurement Target" shall mean, for Delivery Years through May 31, 2018, as to the PJM Region, for purposes of the Base Residual Auction, 2.5% of the PJM Region Reliability Requirement determined for such Base Residual Auction, for purposes of the First Incremental Auction, 2% of the of the PJM Region Reliability Requirement as calculated at the time of the Base Residual Auction; and, for purposes of the Second Incremental Auction, 1.5% of the of the PJM Region Reliability Requirement as calculated at the time of the Base Residual Auction; and, as to any Zone, an allocation of the PJM Region Short-Term Resource Procurement Target based on the Preliminary Zonal Forecast Peak Load, reduced by the amount of load served under the FRR Alternative. For any LDA, the LDA Short-Term Resource

Procurement Target shall be the sum of the Short-Term Resource Procurement Targets of all Zones in the LDA.

Short-Term Resource Procurement Target Applicable Share:

“Short-Term Resource Procurement Target Applicable Share” shall mean, for Delivery Years through May 31, 2018: (i) for the PJM Region, as to the First and Second Incremental Auctions, 0.2 times the Short-Term Resource Procurement Target used in the Base Residual Auction and, as to the Third Incremental Auction for the PJM Region, 0.6 times such target; and (ii) for an LDA, as to the First and Second Incremental Auctions, 0.2 times the Short-Term Resource Procurement Target used in the Base Residual Auction for such LDA and, as to the Third Incremental Auction, 0.6 times such target.

Site:

“Site” shall mean all of the real property, including but not limited to any leased real property and easements, on which the Customer Facility is situated and/or on which the Customer Interconnection Facilities are to be located.

Small Commercial Customer:

“Small Commercial Customer,” as used in RAA, Schedule 6 and Tariff, Attachment DD-1, shall mean a commercial retail electric end-use customer of an electric distribution company that participates in a mass market demand response program under the jurisdiction of a RERRA and satisfies the definition of a “small commercial customer” under the terms of the applicable RERRA’s program, provided that the customer has an annual peak demand no greater than 100kW.

Small Generation Resource:

“Small Generation Resource” shall mean an Interconnection Customer’s device of 20 MW or less for the production and/or storage for later injection of electricity identified in an Interconnection Request, but shall not include the Interconnection Customer’s Interconnection Facilities. This term shall include Energy Storage Resources and/or other devices for storage for later injection of energy.

Small Inverter Facility:

“Small Inverter Facility” shall mean an Energy Resource that is a certified small inverter-based facility no larger than 10 kW.

Small Inverter ISA:

“Small Inverter ISA” shall mean an agreement among Transmission Provider, Interconnection Customer, and Interconnected Transmission Owner regarding interconnection of a Small Inverter Facility under Tariff, Part IV, section 112B.

Special Member:

“Special Member” shall mean an entity that satisfies the requirements of Operating Agreement, Schedule 1, section 1.5A.02, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.5A.02, or the special membership provisions established under the Emergency Load Response and Pre-Emergency Load Response Programs.

Spot Market Backup:

“Spot Market Backup” shall mean the purchase of energy from, or the delivery of energy to, the PJM Interchange Energy Market in quantities sufficient to complete the delivery or receipt obligations of a bilateral contract that has been curtailed or interrupted for any reason.

Spot Market Energy:

“Spot Market Energy” shall mean energy bought or sold by Market Participants through the PJM Interchange Energy Market at System Energy Prices determined as specified in Operating Agreement, Schedule 1, section 2, and the parallel provisions of Tariff, Attachment K-Appendix, section 2.

Start Additional Labor Costs:

“Start Additional Labor Costs” shall mean additional labor costs for startup required above normal station manning levels.

Start-Up Costs:

“Start-Up Costs” shall mean the unit costs to bring the boiler, turbine and generator from shutdown conditions to the point after breaker closure which is typically indicated by telemetered or aggregated state estimator megawatts greater than zero and is determined based on the cost of start fuel, total fuel-related cost, performance factor, electrical costs (station service), start maintenance adder, and additional labor cost if required above normal station manning. Start-Up Costs can vary with the unit offline time being categorized in three unit temperature conditions: hot, intermediate and cold.

State:

“State” shall mean the District of Columbia and any State or Commonwealth of the United States.

State Commission:

“State Commission” shall mean any state regulatory agency having jurisdiction over retail electricity sales in any State in the PJM Region.

State Estimator:

“State Estimator” shall mean the computer model of power flows specified in Operating Agreement, Schedule 1, section 2.3 and the parallel provisions of Tariff, Attachment K-Appendix, section 2.3.

Station Power:

“Station Power” shall mean energy used for operating the electric equipment on the site of a generation facility located in the PJM Region or for the heating, lighting, air-conditioning and office equipment needs of buildings on the site of such a generation facility that are used in the operation, maintenance, or repair of the facility. Station Power does not include any energy (i) used to power synchronous condensers; (ii) used for pumping at a pumped storage facility; (iii) used in association with restoration or black start service; or (iv) that is Direct Charging Energy.

Sub-Annual Resource Constraint:

“Sub-Annual Resource Constraint” shall mean, for the 2017/2018 Delivery Year and for FRR Capacity Plans the 2017/2018 and 2018/2019 Delivery Years, for the PJM Region or for each LDA for which the Office of the Interconnection is required under Tariff, Attachment DD, section 5.10(a) to establish a separate VRR Curve for a Delivery Year, a limit on the total amount of Unforced Capacity that can be committed as Limited Demand Resources and Extended Summer Demand Resources for the 2017/2018 Delivery Year in the PJM Region or in such LDA, calculated as the Sub-Annual Resource Reliability Target for the PJM Region or for such LDA, respectively, minus the Short-Term Resource Procurement Target for the PJM Region or for such LDA, respectively.

Sub-Annual Resource Price Decrement:

“Sub-Annual Resource Price Decrement” shall mean, for the 2017/2018 Delivery Year, a difference between the clearing price for Extended Summer Demand Resources and the clearing price for Annual Resources, representing the cost to procure additional Annual Resources out of merit order when the Sub-Annual Resource Constraint is binding.

Sub-Annual Resource Reliability Target:

“Sub-Annual Reliability Target” for the PJM Region or an LDA, shall mean the maximum amount of the combination of Extended Summer Demand Resources and Limited Demand Resources in Unforced Capacity determined by PJM to be consistent with the maintenance of reliability, stated in Unforced Capacity, that shall be used to calculate the Minimum Annual Resource Requirement for Delivery Years through May 31, 2017 and the Sub-Annual Resource Constraint for the 2017/2018 and 2018/2019 Delivery Years. As more fully set forth in the PJM Manuals, PJM calculates the Sub-Annual Resource Reliability Target, by first determining a reference annual loss of load expectation (“LOLE”) assuming no Demand Resources. The calculation for the unconstrained portion of the PJM Region uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast and iteratively shifting the load distributions to result in the Installed Reserve Margin established for the

Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). The calculation for each relevant LDA uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Capacity Emergency Transfer Objective study for the Delivery Year in question). For the relevant LDA calculation, the weekly capacity distributions are adjusted to reflect the Capacity Emergency Transfer Limit for the Delivery Year in question.

For both the PJM Region and LDA analyses, PJM then models the commitment of varying amounts of DR (displacing otherwise committed generation) as interruptible from May 1 through October 31 and unavailable from November 1 through April 30 and calculates the LOLE at each DR level. The Extended Summer DR Reliability Target is the DR amount, stated as a percentage of the unrestricted peak load, that produces no more than a ten percent increase in the LOLE, compared to the reference value. The Sub-Annual Resource Reliability Target shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [the Forecast Pool Requirement] times [the DR Factor] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

Sub-meter:

“Sub-meter” shall mean a metering point for electricity consumption that does not include all electricity consumption for the end-use customer as defined by the electric distribution company account number. PJM shall only accept sub-meter load data from end-use customers for measurement and verification of Regulation service as set forth in the Economic Load Response rules and PJM Manuals.

Summer-Period Capacity Performance Resource:

“Summer-Period Capacity Performance Resource” shall have the same meaning specified in Tariff, Attachment DD, section 5.5A.

Surplus Interconnection Service:

“Surplus Interconnection Service” shall mean any unneeded portion of Interconnection Service established in an Interconnection Service Agreement, such that if Surplus Interconnection Service is utilized, the total amount of Interconnection Service at the Point of Interconnection would remain the same.

Switching and Tagging Rules:

“Switching and Tagging Rules” shall mean the switching and tagging procedures of Interconnected Transmission Owners and Interconnection Customer as they may be amended from time to time.

Synchronized Reserve:

“Synchronized Reserve” shall mean the reserve capability of generation resources that can be converted fully into energy or Demand Resources whose demand can be reduced within ten minutes from the request of the Office of the Interconnection dispatcher, and is provided by equipment that is electrically synchronized to the Transmission System.

Synchronized Reserve Event:

“Synchronized Reserve Event” shall mean a request from the Office of the Interconnection to generation resources and/or Demand Resources able, assigned or self-scheduled to provide Synchronized Reserve in one or more specified Reserve Zones or Reserve Sub-zones, within ten minutes, to increase the energy output or reduce load by the amount of assigned or self-scheduled Synchronized Reserve capability.

Synchronized Reserve Requirement:

“Synchronized Reserve Requirement” shall mean the megawatts required to be maintained in a Reserve Zone or Reserve Sub-zone as Synchronized Reserve, absent any increase to account for additional reserves scheduled to address operational uncertainty. The Synchronized Reserve Requirement is calculated in accordance with the PJM Manuals.

System Condition:

“System Condition” shall mean a specified condition on the Transmission Provider’s system or on a neighboring system, such as a constrained transmission element or flowgate, that may trigger Curtailment of Long-Term Firm Point-to-Point Transmission Service using the curtailment priority pursuant to Tariff, Part II, section 13.6. Such conditions must be identified in the Transmission Customer’s Service Agreement.

System Energy Price:

“System Energy Price” shall mean the energy component of the Locational Marginal Price, which is the price at which the Market Seller has offered to supply an additional increment of energy from a resource, calculated as specified in Operating Agreement, Schedule 1, section 2 and the parallel provisions of Tariff, Attachment K-Appendix, section 2.

System Impact Study:

“System Impact Study” shall mean an assessment by the Transmission Provider of (i) the adequacy of the Transmission System to accommodate a Completed Application, an Interconnection Request or an Upgrade Request, (ii) whether any additional costs may be incurred in order to provide such transmission service or to accommodate an Interconnection Request, and (iii) with respect to an Interconnection Request, an estimated date that an Interconnection Customer’s Customer Facility can be interconnected with the Transmission System and an estimate of the Interconnection Customer’s cost responsibility for the interconnection; and (iv) with respect to an

Upgrade Request, the estimated cost of the requested system upgrades or expansion, or of the cost of the system upgrades or expansion, necessary to provide the requested incremental rights.

System Protection Facilities:

“System Protection Facilities” shall refer to the equipment required to protect (i) the Transmission System, other delivery systems and/or other generating systems connected to the Transmission System from faults or other electrical disturbance occurring at or on the Customer Facility, and (ii) the Customer Facility from faults or other electrical system disturbance occurring on the Transmission System or on other delivery systems and/or other generating systems to which the Transmission System is directly or indirectly connected. System Protection Facilities shall include such protective and regulating devices as are identified in the Applicable Technical Requirements and Standards or that are required by Applicable Laws and Regulations or other Applicable Standards, or as are otherwise necessary to protect personnel and equipment and to minimize deleterious effects to the Transmission System arising from the Customer Facility.

Tangible Net Worth:

“Tangible Net Worth” shall mean total assets less goodwill and other intangible assets, minus total liabilities.

Target Allocation:

“Target Allocation” shall mean the allocation of Transmission Congestion Credits as set forth in Operating Agreement, Schedule 1, section 5.2.3, and the parallel provisions of Tariff, Attachment K-Appendix, section 5.2.3, or the allocation of Auction Revenue Rights Credits as set forth in Operating Agreement, Schedule 1, section 7.4.3, and the parallel provisions of Tariff, Attachment K-Appendix, section 7.4.3.

Third Incremental Auction:

“Third Incremental Auction” shall mean an Incremental Auction conducted three months before the Delivery Year to which it relates.

Third-Party Sale:

“Third-Party Sale” shall mean any sale for resale in interstate commerce to a Power Purchaser that is not designated as part of Network Load under the Network Integration Transmission Service but not including a sale of energy through the PJM Interchange Energy Market established under the PJM Operating Agreement.

Tie Line:

“Tie Line” shall mean a circuit connecting two balancing authority areas, Control Areas or fully metered electric system regions. Tie Lines may be classified as external or internal as set forth in the PJM Manuals.

Total Lost Opportunity Cost Offer:

“Total Lost Opportunity Cost Offer” shall mean the applicable offer used to calculate lost opportunity cost credits. For pool-scheduled resources specified in PJM Operating Agreement, Schedule 1, section 3.2.3(f-1), and the parallel provisions of Tariff, Attachment K-Appendix, section 3.2.3(f-1), the Total Lost Opportunity Cost Offer shall equal the Real-time Settlement Interval offer integrated under the applicable offer curve for the LOC Deviation, as determined by the greater of the Committed Offer or last Real-Time Offer submitted for the offer on which the resource was committed in the Day-ahead Energy Market for each hour in an Operating Day. For all other pool-scheduled resources, the Total Lost Opportunity Cost Offer shall equal the Real-time Settlement Interval offer integrated under the applicable offer curve for the LOC Deviation, as determined by the offer curve associated with the greater of the Committed Offer or Final Offer for each hour in an Operating Day. For self-scheduled generation resources, the Total Lost Opportunity Cost Offer shall equal the Real-time Settlement Interval offer integrated under the applicable offer curve for the LOC Deviation, where for self-scheduled generation resources (a) operating pursuant to a cost-based offer, the applicable offer curve shall be the greater of the originally submitted cost-based offer or the cost-based offer that the resource was dispatched on in real-time; or (b) operating pursuant to a market-based offer, the applicable offer curve shall be determined in accordance with the following process: (1) select the greater of the cost-based day-ahead offer and updated cost-based Real-time Offer; (2) for resources with multiple cost-based offers, first, for each cost-based offer select the greater of the day-ahead offer and updated Real-time Offer, and then select the lesser of the resulting cost-based offers; and (3) compare the offer selected in (1), or for resources with multiple cost-based offers the offer selected in (2), with the market-based day-ahead offer and the market-based Real-time Offer and select the highest offer.

Total Net Obligation:

“Total Net Obligation” shall mean all unpaid billed Net Obligations plus any unbilled Net Obligation incurred to date, as determined by PJMSettlement on a daily basis, plus any other Obligations owed to PJMSettlement at the time.

Total Net Sell Position:

“Total Net Sell Position” shall mean all unpaid billed Net Sell Positions plus any unbilled Net Sell Positions accrued to date, as determined by PJMSettlement on a daily basis.

Total Operating Reserve Offer:

“Total Operating Reserve Offer” shall mean the applicable offer used to calculate Operating Reserve credits. The Total Operating Reserve Offer shall equal the sum of all individual Real-time Settlement Interval energy offers, inclusive of Start-Up Costs (shut-down costs for Demand Resources) and No-load Costs, for every Real-time Settlement Interval in a Segment, integrated under the applicable offer curve up to the applicable megawatt output as further described in the PJM Manuals. The applicable offer used to calculate day-ahead Operating Reserve credits shall

be the Committed Offer, and the applicable offer used to calculate balancing Operating Reserve credits shall be lesser of the Committed Offer or Final Offer for each hour in an Operating Day.

Trade Reference:

“Trade Reference” shall mean a reference from a contact or firm that had or has a material business relationship with a Participant.

Transmission Congestion Charge:

“Transmission Congestion Charge” shall mean a charge attributable to the increased cost of energy delivered at a given load bus when the transmission system serving that load bus is operating under constrained conditions, or as necessary to provide energy for third-party transmission losses which shall be calculated and allocated as specified in Operating Agreement, Schedule 1, section 5.1 and the parallel provisions of Tariff, Attachment K-Appendix, section 5.1.

Transmission Congestion Credit:

“Transmission Congestion Credit” shall mean the allocated share of total Transmission Congestion Charges credited to each FTR Holder, calculated and allocated as specified in Operating Agreement, Schedule 1, section 5.2, and the parallel provisions of Tariff, Attachment K-Appendix, section 5.2.

Transmission Constraint Penalty Factor:

“Transmission Constraint Penalty Factor” shall mean the maximum cost of the re-dispatch incurred to control the flows across a transmission constraint and establishes the maximum limit on the Marginal Value.

Transmission Customer:

“Transmission Customer” shall mean any Eligible Customer (or its Designated Agent) that (i) executes a Service Agreement, or (ii) requests in writing that the Transmission Provider file with the Commission a proposed unexecuted Service Agreement, to receive transmission service under Tariff, Part II. This term is used in Tariff, Part I and Tariff, Part VI to include customers receiving transmission service under Tariff, Part II and Tariff, Part III.

Where used in Tariff, Attachment K-Appendix and the parallel provisions of Operating Agreement, Schedule 1, Transmission Customer shall mean an entity using Point-to-Point Transmission Service.

Transmission Facilities:

“Transmission Facilities” shall have the meaning set forth in the Operating Agreement.

Transmission Forced Outage:

“Transmission Forced Outage” shall mean an immediate removal from service of a transmission facility by reason of an Emergency or threatened Emergency, unanticipated failure, or other cause beyond the control of the owner or operator of the transmission facility, as specified in the relevant portions of the PJM Manuals. A removal from service of a transmission facility at the request of the Office of the Interconnection to improve transmission capability shall not constitute a Forced Transmission Outage.

Transmission Injection Rights:

“Transmission Injection Rights” shall mean Capacity Transmission Injection Rights and Energy Transmission Injection Rights.

Transmission Interconnection Customer:

“Transmission Interconnection Customer” shall mean an entity that submits an Interconnection Request to interconnect or add Merchant Transmission Facilities to the Transmission System or to increase the capacity of Merchant Transmission Facilities interconnected with the Transmission System in the PJM Region or an entity that submits an Upgrade Request for Merchant Network Upgrades (including accelerating the construction of any transmission enhancement or expansion, other than Merchant Transmission Facilities, that is included in the Regional Transmission Expansion Plan prepared pursuant to Operating Agreement, Schedule 6).

Transmission Interconnection Facilities Study:

“Transmission Interconnection Facilities Study” shall mean a Facilities Study related to a Transmission Interconnection Request.

Transmission Interconnection Feasibility Study:

“Transmission Interconnection Feasibility Study” shall mean a study conducted by the Transmission Provider in accordance with Tariff, Part IV, section 36.2.

Transmission Interconnection Request:

“Transmission Interconnection Request” shall mean a request by a Transmission Interconnection Customer pursuant to Tariff, Part IV to interconnect or add Merchant Transmission Facilities to the Transmission System or to increase the capacity of existing Merchant Transmission Facilities interconnected with the Transmission System in the PJM Region.

Transmission Loading Relief:

“Transmission Loading Relief” shall mean NERC’s procedures for preventing operating security limit violations, as implemented by PJM as the security coordinator responsible for maintaining transmission security for the PJM Region.

Transmission Loading Relief Customer:

“Transmission Loading Relief Customer” shall mean an entity that, in accordance with Operating Agreement, Schedule 1, section 1.10.6A and the parallel provisions of Tariff, Attachment K-Appendix, section 1.10.6A has elected to pay Transmission Congestion Charges during Transmission Loading Relief in order to continue energy schedules over contract paths outside the PJM Region that are increasing the cost of energy in the PJM Region.

Transmission Loss Charge:

“Transmission Loss Charge” shall mean the charges to each Market Participant, Network Customer, or Transmission Customer for the cost of energy lost in the transmission of electricity from a generation resource to load as specified in Operating Agreement, Schedule 1, section 5, and the parallel provisions of Tariff, Attachment K-Appendix, section 5.

Transmission Owner:

“Transmission Owner” shall mean a Member that owns or leases with rights equivalent to ownership Transmission Facilities and is a signatory to the PJM Transmission Owners Agreement. Taking transmission service shall not be sufficient to qualify a Member as a Transmission Owner.

Transmission Owner Attachment Facilities:

“Transmission Owner Attachment Facilities” shall mean that portion of the Transmission Owner Interconnection Facilities comprised of all Attachment Facilities on the Interconnected Transmission Owner’s side of the Point of Interconnection.

Transmission Owner Interconnection Facilities:

“Transmission Owner Interconnection Facilities” shall mean all Interconnection Facilities that are not Customer Interconnection Facilities and that, after the transfer under Tariff, Attachment P, Appendix 2, section 5.5 to the Interconnected Transmission Owner of title to any Transmission Owner Interconnection Facilities that the Interconnection Customer constructed, are owned, controlled, operated and maintained by the Interconnected Transmission Owner on the Interconnected Transmission Owner’s side of the Point of Interconnection identified in appendices to the Interconnection Service Agreement and to the Interconnection Construction Service Agreement, including any modifications, additions or upgrades made to such facilities and equipment, that are necessary to physically and electrically interconnect the Customer Facility with the Transmission System or interconnected distribution facilities.

Transmission Owner Upgrade:

“Transmission Owner Upgrade” shall have the same meaning provided in the Operating Agreement.

Transmission Planned Outage:

“Transmission Planned Outage” shall mean any transmission outage scheduled in advance for a pre-determined duration and which meets the notification requirements for such outages specified in Operating Agreement, Schedule 1, and the parallel provisions of Tariff, Attachment K-Appendix or the PJM Manuals.

Transmission Provider:

The “Transmission Provider” shall be the Office of the Interconnection for all purposes, provided that the Transmission Owners will have the responsibility for the following specified activities:

- (a) The Office of the Interconnection shall direct the operation and coordinate the maintenance of the Transmission System, except that the Transmission Owners will continue to direct the operation and maintenance of those transmission facilities that are not listed in the PJM Designated Facilities List contained in the PJM Manual on Transmission Operations;
- (b) Each Transmission Owner shall physically operate and maintain all of the facilities that it owns; and
- (c) When studies conducted by the Office of the Interconnection indicate that enhancements or modifications to the Transmission System are necessary, the Transmission Owners shall have the responsibility, in accordance with the applicable terms of the Tariff, Operating Agreement and/or the Consolidated Transmission Owners Agreement to construct, own, and finance the needed facilities or enhancements or modifications to facilities.

Transmission Provider’s Monthly Transmission System Peak:

“Transmission Provider’s Monthly Transmission System Peak” shall mean the maximum firm usage of the Transmission Provider’s Transmission System in a calendar month.

Transmission Service:

“Transmission Service” shall mean Point-To-Point Transmission Service provided under Tariff, Part II on a firm and non-firm basis.

Transmission Service Request:

“Transmission Service Request” shall mean a request for Firm Point-To-Point Transmission Service or a request for Network Integration Transmission Service.

Transmission System:

“Transmission System” shall mean the facilities controlled or operated by the Transmission Provider within the PJM Region that are used to provide transmission service under Tariff, Part

II and Part III.

Transmission Withdrawal Rights:

“Transmission Withdrawal Rights” shall mean Firm Transmission Withdrawal Rights and Non-Firm Transmission Withdrawal Rights.

Turn Down Ratio:

“Turn Down Ratio” shall mean the ratio of a generating unit’s economic maximum megawatts to its economic minimum megawatts.

Unconstrained LDA Group:

“Unconstrained LDA Group” shall mean a combined group of LDAs that form an electrically contiguous area and for which a separate Variable Resource Requirement Curve has not been established under Tariff, Attachment DD, section 5.10. Any LDA for which a separate Variable Resource Requirement Curve has not been established under Tariff, Attachment DD, section 5.10 shall be combined with all other such LDAs that form an electrically contiguous area.

Unforced Capacity:

“Unforced Capacity” shall have the meaning specified in the Reliability Assurance Agreement.

Unsecured Credit:

“Unsecured Credit” shall mean any credit granted by PJMSettlement to a Participant that is not secured by Collateral.

Unsecured Credit Allowance:

“Unsecured Credit Allowance” shall mean Unsecured Credit extended by PJMSettlement in an amount determined by PJMSettlement’s evaluation of the creditworthiness of a Participant. This is also defined as the amount of credit that a Participant qualifies for based on the strength of its own financial condition without having to provide Collateral. See also: “Working Credit Limit.”

Updated VRR Curve:

“Updated VRR Curve” shall mean the Variable Resource Requirement Curve for use in the Base Residual Auction of the relevant Delivery Year, updated to reflect any change in the Reliability Requirement from the Base Residual Auction to such Incremental Auction, and for Delivery Years through May 31, 2018, the Short-term Resource Procurement Target applicable to the relevant Incremental Auction.

Updated VRR Curve Decrement:

“Updated VRR Curve Decrement” shall mean the portion of the Updated VRR Curve to the left of a vertical line at the level of Unforced Capacity on the x-axis of such curve equal to the net Unforced Capacity committed to the PJM Region as a result of all prior auctions conducted for such Delivery Year and adjusted, if applicable, by a change in Unforced Capacity commitments associated with the transition provision of Tariff, Attachment DD, section 5.14C, Tariff, Attachment DD, section 5.14D (as related to the 2016/2017 and 2017/2018 Delivery Years), Tariff, Attachment DD, section 5.14E, and Tariff, Attachment DD, section 5.5A(c)(i)(B), and RAA, Schedule 6, section L.9.

Updated VRR Curve Increment:

“Updated VRR Curve Increment” shall mean the portion of the Updated VRR Curve to the right of a vertical line at the level of Unforced Capacity on the x-axis of such curve equal to the net Unforced Capacity committed to the PJM Region as a result of all prior auctions conducted for such Delivery Year and adjusted, if applicable, by a change in Unforced Capacity commitments associated with the transition provision of Tariff, Attachment DD, section 5.14C, Tariff, Attachment DD, section 5.14D (as related to the 2016/2017 and 2017/2018 Delivery Years), Tariff, Attachment DD, section 5.14E, and Tariff, Attachment DD, section 5.5A(c)(i)(B), and RAA, Schedule 6, section L.9.

Upgrade Construction Service Agreement:

“Upgrade Construction Service Agreement” shall mean that agreement entered into by an Eligible Customer, Upgrade Customer or Interconnection Customer proposing Merchant Network Upgrades, a Transmission Owner, and the Transmission Provider, pursuant to Tariff, Part VI, Subpart B, and in the form set forth in Tariff, Attachment GG.

Upgrade Customer:

“Upgrade Customer” shall mean a customer that submits an Upgrade Request pursuant to Operating Agreement, Schedule 1, section 7.8, and the parallel provisions of Tariff, Attachment K-Appendix, section 7.8.

Upgrade Feasibility Study:

“Upgrade Feasibility Study” shall mean a study conducted by the Transmission Provider in accordance with Tariff, Part IV, section 36.3.

Upgrade-Related Rights:

“Upgrade-Related Rights” shall mean Incremental Auction Revenue Rights, Incremental Available Transfer Capability Revenue Rights, Incremental Deliverability Rights, and Incremental Capacity Transfer Rights.

Upgrade Request:

“Upgrade Request” shall mean a request submitted in the form prescribed in Tariff, Attachment EE, for evaluation by the Transmission Provider of the feasibility and estimated costs of (a) a Merchant Network Upgrade or (b) the Customer-Funded Upgrades that would be needed to provide Incremental Auction Revenue Rights specified in a request pursuant to Operating Agreement, Schedule 1, section 7.8, and the parallel provisions of Tariff, Attachment K-Appendix, section 7.8.

Up-to Congestion Counterflow Transaction:

“Up-to Congestion Counterflow Transaction” shall mean an Up-to Congestion Transaction will be deemed an Up-to Congestion Counterflow Transaction if the following value is negative: (a) when bidding, the lower of the bid price and the prior Up-to Congestion Historical Month’s average real-time value for the transaction; or (b) for cleared Virtual Transactions, the cleared day-ahead price of the Virtual Transactions.

Up-to Congestion Historical Month:

“Up-to Congestion Historical Month” shall mean a consistently-defined historical period nominally one month long that is as close to a calendar month as PJM determines is practical.

Up-to Congestion Prevailing Flow Transaction:

An Up-to Congestion Transaction shall mean an “Up-to Congestion Prevailing Flow Transaction” if it is not an Up-to Congestion Counterflow Transaction.

Up-to Congestion Reference Price:

“Up-to Congestion Reference Price” for an Up-to Congestion Transaction, shall be the specified percentile price differential between source and sink (defined as sink price minus source price) for real-time prices experienced over the prior Up-to Congestion Historical Month, averaged with the same percentile value calculated for the second prior Up-to Congestion Historical Month. Up-to Congestion Reference Prices shall be calculated using the following historical percentiles:

- For Up-to Congestion Prevailing Flow Transactions: 30th percentile
- For Up-to Congestion Counterflow Transactions when bid: 20th percentile
- For Up-to Congestion Counterflow Transactions when cleared: 5th percentile

Up-to Congestion Transaction:

“Up-to Congestion Transaction” shall have the meaning specified in Operating Agreement, Schedule 1, section 1.10.1A, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.10.1A.

Variable Loads:

“Variable Loads” shall have the meaning specified in Operating Agreement, Schedule 1, section 1.5A.6, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.5A.6.

Variable Resource Requirement Curve:

“Variable Resource Requirement Curve” shall mean a series of maximum prices that can be cleared in a Base Residual Auction for Unforced Capacity, corresponding to a series of varying resource requirements based on varying installed reserve margins, as determined by the Office of the Interconnection for the PJM Region and for certain Locational Deliverability Areas in accordance with the methodology provided in Tariff, Attachment DD, section 5.

Virtual Credit Exposure:

“Virtual Credit Exposure” shall mean the amount of potential credit exposure created by a market participant’s bid submitted into the Day-ahead market, as defined in Tariff, Attachment Q.

Virtual Transaction:

“Virtual Transaction” shall mean a Decrement Bid, Increment Offer and/or Up-to Congestion Transaction.

Virtual Transaction Screening:

“Virtual Transaction Screening” shall be the process of reviewing the Virtual Credit Exposure of submitted Virtual Transactions against the Credit Available for Virtual Transactions. If the credit required is greater than credit available, then the Virtual Transactions will not be accepted.

Virtual Transactions Net Activity:

“Virtual Transactions Net Activity” shall mean the aggregate net total, resulting from Virtual Transactions, of (i) Spot Market Energy charges, (ii) Transmission Congestion Charges, and (iii) Transmission Loss Charges, calculated as set forth in Tariff, Attachment K-Appendix, and the parallel provisions of Operating Agreement, Schedule 1. Virtual Transactions Net Activity may be positive or negative.

Voltage Reduction Action:

“Voltage Reduction Action” shall mean a notification during capacity deficient conditions in which PJM notifies Members to reduce voltage on the distribution system in order to reduce demand and therefore provide a sufficient amount of reserves, maintain tie flow schedules and preserve limited energy sources.

Voltage Reduction Alert:

“Voltage Reduction Alert” shall mean a notification from PJM to alert Members that a voltage reduction may be required during a future critical period.

Voltage Reduction Warning:

“Voltage Reduction Warning” shall mean a notification from PJM to warn Members that PJM’s available Synchronized Reserve is less than the Synchronized Reserve Requirement and that present operations have deteriorated such that a voltage reduction may be required.

Wholesale Transaction:

As used in Tariff, Part IV, “Wholesale Transaction” shall mean any transaction involving the transmission or sale for resale of electricity in interstate commerce that utilizes any portion of the Transmission System.

Winter-Period Capacity Performance Resource:

“Winter-Period Capacity Performance Resource” shall have the same meaning specified in Tariff, Attachment DD, section 5.5A.

Working Credit Limit:

“Working Credit Limit” shall mean an amount that is 75% of the Participant’s Unsecured Credit Allowance and/or 75% of the Collateral provided by the Participant to PJMSettlement. The Working Credit Limit establishes the maximum amount of Total Net Obligation that a Participant may have outstanding at any time. The calculation of Working Credit Limit shall take into account applicable reductions for Minimum Participation Requirements, FTR participation (for which there is no Unsecured Credit Allowance available), or other credit requirement determinants as defined in Tariff, Attachment Q.

Working Credit Limit for Virtual Transactions:

The “Working Credit Limit for Virtual Transactions” shall be calculated as 75% of the Market Participant’s Unsecured Credit Allowance and/or 75% of the Collateral provided by the Market Participant to PJMSettlement when the Market Participant is at or below its Peak Market Activity credit requirements as specified in Tariff, Attachment Q, section VII.A. When the Market Participant has available Unsecured Credit Allowance and/or has provided Collateral in excess of its Peak Market Activity credit requirements, such additional Unsecured Credit Allowance and/or Financial Security shall not be discounted by 25% when calculating the Working Credit Limit for Virtual Transactions. The Working Credit Limit for Virtual Transactions is a component in the calculation of Credit Available for Virtual Transactions. The calculation of Working Credit Limit for Virtual Transactions shall take into account applicable reductions for Minimum Participation Requirements, FTR, or other credit requirement determinants as defined in Tariff, Attachment Q.

Zonal Base Load:

“Zonal Base Load” shall mean the lowest daily zonal peak load from the twelve month period ending October 21 of the calendar year immediately preceding the calendar year in which an annual Auction Revenue Right allocation is conducted, increased by the projected load growth

rate for the relevant Zone, when non-extraordinary conditions exist for the applicable twelve month period, as determined by PJM. If the lowest daily zonal peak load from the applicable twelve month period is abnormally low due to extraordinary conditions, as determined by PJM, Zonal Base Load shall mean the next lowest daily zonal peak load that was not affected by extraordinary conditions during the applicable twelve month period, increased by the projected load growth rate for the relevant Zone. For the purposes of this definition, extraordinary conditions shall mean a significant event, or combination of events, that affect the operation of the bulk power system in an atypical manner and results in an abnormal reduction in the consumption of energy within a Zone.

Zonal Capacity Price:

“Zonal Capacity Price” shall mean the clearing price required in each Zone to meet the demand for Unforced Capacity and satisfy Locational Deliverability Requirements for the LDA or LDAs associated with such Zone. If the Zone contains multiple LDAs with different Capacity Resource Clearing Prices, the Zonal Capacity Price shall be a weighted average of the Capacity Resource Clearing Prices for such LDAs, weighted by the Unforced Capacity of Capacity Resources cleared in each such LDA.

Zone or Zonal:

“Zone” or “Zonal” shall mean an area within the PJM Region, as set forth in Tariff, Attachment J and RAA, Schedule 15, or as such areas may be (i) combined as a result of mergers or acquisitions or (ii) added as a result of the expansion of the boundaries of the PJM Region. A Zone shall include any Non-Zone Network Load located outside the PJM Region that is served from such Zone under Tariff, Attachment H-A.

Zone Network Load:

“Zone Network Load” shall mean Network Load that is located inside of the area comprised of the PJM Region.

APPENDIX 2

STANDARD CONSTRUCTION TERMS AND CONDITIONS

Preamble

The construction of any Interconnection Facilities required to interconnect a Customer Facility with the Transmission System shall be in accordance with the following Standard Construction Terms and Conditions.

1 Facilitation by Transmission Provider

Transmission Provider shall keep itself apprised of the status of the Constructing Entities' construction-related activities and, upon request of either of them, Transmission Provider shall meet with the Constructing Entities separately or together to assist them in resolving issues between them regarding their respective activities, rights and obligations under this Appendix 2 to this CSA. Each Constructing Entity shall cooperate in good faith with the other Construction Parties in Transmission Provider's efforts to facilitate resolution of disputes.

2 Construction Obligations

2.1 Interconnection Customer Obligations

2.1.1 Generally:

Interconnection Customer shall, at its sole cost and expense, design, procure, construct, own and install the Customer Facility and the Customer Interconnection Facilities in accordance with this Appendix 2 to this CSA, Applicable Standards, Applicable Laws and Regulations, Good Utility Practice, the Scope of Work and the Facilities Study (to the extent that design of the Customer Interconnection Facilities is included therein), provided, however, that, in the event and to the extent that the Customer Facility is comprised of or includes Merchant Network Upgrades, subject to the terms of Section 3.2.3 of this Appendix 2, the Interconnected Transmission Owner, shall design, procure, construct and install such Merchant Network Upgrades.

2.1.2 Interconnection Customer Drawings:

On or before the applicable date specified in the Milestones of the Interconnection Service Agreement, Interconnection Customer shall submit to the Interconnected Transmission Owner and Transmission Provider initial drawings, certified by a professional engineer, of the Customer Interconnection Facilities. Interconnected Transmission Owner and Transmission Provider shall review the drawings to assess the consistency of Interconnection Customer's design of the Customer Interconnection Facilities with the design that was analyzed in the planning model as described in PJM Manuals. After consulting with the Interconnected Transmission Owner, Transmission Provider shall provide comments on the drawings to Interconnection Customer within forty-five (45) days after its receipt thereof, after which time any drawings not subject to comment shall be deemed to be approved. All drawings provided hereunder shall be deemed to be Confidential Information.

2.1.3 Effect of Review:

Interconnected Transmission Owner's and Transmission Provider's reviews of Interconnection Customer's initial drawings of the Customer Interconnection Facilities shall not be construed as confirming, endorsing or providing a warranty as to the fitness, safety, durability or reliability of such facilities or the design thereof. At its sole cost and expense, Interconnection Customer shall make such changes to the design of the Customer Interconnection Facilities as may reasonably be required by Transmission Provider, in consultation with the Interconnected Transmission Owner, to ensure that the Customer Interconnection Facilities meet Applicable Standards and, to the extent that design of the Customer Interconnection Facilities is included in the Facilities Study, to ensure that such facilities conform with the Facilities Study.

2.2 Transmission Owner Interconnection Facilities

2.2.1 Generally:

All Transmission Owner Interconnection Facilities necessary for the interconnection of the Customer Facility shall be designed, procured, installed and constructed in accordance with this Appendix 2, Applicable Standards, Applicable Laws and Regulations, Good Utility Practice, the Facilities Study and the Scope of Work under the Interconnection Construction Service Agreement(s).

2.2.2 Cost Responsibility:

Responsibility for the Costs of the Transmission Owner Interconnection Facilities shall be assigned in accordance with Section 217 of the Tariff, as applicable, and shall be stated in the Interconnection Service Agreement.

2.2.3 Construction Responsibility:

Except as otherwise permitted under, or as otherwise agreed upon by the Interconnection Customer and the Interconnected Transmission Owner pursuant to, Section 3 of this Appendix 2, the Interconnected Transmission Owner shall be responsible for the design, procurement, construction and installation of the Transmission Owner Interconnection Facilities. In the event that there are multiple Interconnected Transmission Owners, the Transmission Provider shall determine how to allocate the construction responsibility among them unless they have reached agreement among themselves on how to proceed.

2.2.4 Ownership of Transmission Owner Interconnection Facilities:

The Interconnected Transmission Owner shall own all Transmission Owner Interconnection Facilities that it builds. In addition, the Interconnection Customer will convey to the Interconnected Transmission Owner, as provided in Section 5.5 of this Appendix 2, title to all Transmission Owner Interconnection Facilities built by the Interconnection Customer pursuant to the terms of Section 3.2 of this Appendix 2. Nothing in this section shall affect the interconnection rights otherwise available to a Transmission Interconnection Customer under Subpart C of Part VI of the Tariff.

2.2A Scope of Applicable Technical Requirements and Standards:

Applicable Technical Requirements and Standards shall apply to the design, procurement, construction and installation of the Interconnection Facilities and Merchant A.C. Transmission Facilities only to the extent that the provisions thereof relate to the design, procurement, construction and/or installation of such facilities. Such provisions relating to the design, procurement, construction and/or installation of facilities shall be appended to the Interconnection Construction Service Agreement. The Interconnection Parties shall mutually agree upon, or in the absence of such agreement, Transmission Provider shall determine, which provisions of the Applicable Technical Requirements and Standards should be identified in the Interconnection Construction Service Agreement. In the event of any conflict between the provisions of the Applicable Technical Requirements and Standards that are appended to this Interconnection Construction Service Agreement and any later-modified provisions that are stated in the pertinent PJM Manual, the provisions appended to this Interconnection Construction Service Agreement shall control.

2.3 Construction By Interconnection Customer

2.3.1 Construction Prior to Execution of Interconnection Construction Service Agreement:

If the Interconnection Customer procures materials for, and/or commences construction of, the Customer Interconnection Facilities, any Transmission Owner Interconnection Facilities that it has elected to construct by exercising the Option to Build under Section 3.2.3 of this Appendix 2, or for any subsequent modification thereto, prior to the execution of the Interconnection Construction Service Agreement or, if the Interconnection Construction Service Agreement has been executed, before the Interconnected Transmission Owner and Transmission Provider have accepted the Interconnection Customer's initial design, or any subsequent modification to the design, of such Interconnection Facilities, such procurement and/or construction shall be at the Interconnection Customer's sole risk, cost and expense.

2.3.2 Monitoring and Inspection:

The Interconnected Transmission Owner may monitor construction and installation of Interconnection Facilities that the Interconnection Customer is constructing. Upon reasonable notice, authorized personnel of the Interconnected Transmission Owner may inspect any or all of such Interconnection Facilities to assess their conformity with Applicable Standards.

2.3.3 Notice of Completion:

The Interconnection Customer shall notify the Transmission Provider and the Interconnected Transmission Owner in writing when it has completed construction of (i) the Customer Facility; (ii) the Customer Interconnection Facilities; and (iii) any Transmission Owner Interconnection Facilities for which it has exercised the Option to Build under Section 3 of this Appendix 2.

2.4 Tax Liability

2.4.1 Safe Harbor Provisions:

This Section 2.4.1 is applicable only to Generation Interconnection Customers. Provided that Interconnection Customer agrees to conform to all requirements of the Internal Revenue Service (“IRS”) (e.g., the “safe harbor” provisions of IRS Notices 2001-82 and 88-129) that would confer nontaxable status on some or all of the transfer of property, including money, by Interconnection Customer to the Interconnected Transmission Owner for payment of the Costs of construction of the Transmission Owner Interconnection Facilities, the Interconnected Transmission Owner, based on such agreement and on current law, shall treat such transfer of property to it as nontaxable income and, except as provided in Section 2.4.2 of this Appendix 2, shall not include income taxes in the Costs of Transmission Owner Interconnection Facilities that are payable by Interconnection Customer under this Appendix 2. Interconnection Customer shall document its agreement to conform to IRS requirements for such non-taxable status in the Interconnection Service Agreement, the Interconnection Construction Service Agreement, and/or the Interim Interconnection Service Agreement.

2.4.2 Tax Indemnity:

Interconnection Customer shall indemnify the Interconnected Transmission Owner for any costs that Interconnected Transmission Owner incurs in the event that the IRS and/or a state department of revenue (State) determines that the property, including money, transferred by Interconnection Customer to the Interconnected Transmission Owner with respect to the construction of the Transmission Owner Interconnection Facilities is taxable income to the Interconnected Transmission Owner. Interconnection Customer shall pay to the Interconnected Transmission Owner, on demand, the amount of any income taxes that the IRS or a State assesses to the Interconnected Transmission Owner in connection with such transfer of property and/or money, plus any applicable interest and/or penalty charged to the Interconnected Transmission Owner. In the event that the Interconnected Transmission Owner chooses to contest such assessment, either at the request of Interconnection Customer or on its own behalf, and prevails in reducing or eliminating the tax, interest and/or penalty assessed against it, the Interconnected Transmission Owner shall refund to Interconnection Customer the excess of its demand payment made to the Interconnected Transmission Owner over the amount of the tax, interest and penalty for which the Interconnected Transmission Owner is finally determined to be liable. Interconnection Customer’s tax indemnification obligation under this section shall survive any termination of the Interconnection Construction Service Agreement.

2.4.3 Taxes Other Than Income Taxes:

Upon the timely request by Interconnection Customer, and at Interconnection Customer’s sole expense, the Interconnected Transmission Owner shall appeal, protest, seek abatement of, or otherwise contest any tax (other than federal or state income tax) asserted or assessed against the Interconnected Transmission Owner for which Interconnection Customer may be required to reimburse Transmission Provider under the terms of this Interconnection Construction Service Agreement, or Part VI of the Tariff. Interconnection Customer shall pay to the Interconnected Transmission Owner on a periodic basis, as invoiced by the Interconnected Transmission Owner, the Interconnected Transmission Owner’s documented reasonable costs of prosecuting such

appeal, protest, abatement, or other contest. Interconnection Customer and the Interconnected Transmission Owner shall cooperate in good faith with respect to any such contest. Unless the payment of such taxes is a prerequisite to an appeal or abatement or cannot be deferred, no amount shall be payable by Interconnection Customer to the Interconnected Transmission Owner for such contested taxes until they are assessed by a final, non-appealable order by any court or agency of competent jurisdiction. In the event that a tax payment is withheld and ultimately due and payable after appeal, Interconnection Customer will be responsible for all taxes, interest and penalties, other than penalties attributable to any delay caused by the Interconnected Transmission Owner.

2.4.4 Income Tax Gross-Up

2.4.4.1 Additional Security:

In the event that Interconnection Customer does not provide the safe harbor documentation required under Section 2.4.1 of this Appendix 2 prior to execution of the Interconnection Construction Service Agreement, within 15 days after such execution, Transmission Provider shall notify Interconnection Customer in writing of the amount of additional Security that Interconnection Customer must provide. The amount of Security that a Transmission Interconnection Customer must provide initially shall include any amounts described as additional Security under this Section 2.4.4 regarding income tax gross-up.

2.4.4.2 Amount:

The required additional Security shall be in an amount equal to the amount necessary to gross up fully for currently applicable federal and state income taxes the estimated Costs of Local Upgrades and Network Upgrades for which Interconnection Customer previously provided Security. Accordingly, the additional Security shall equal the amount necessary to increase the total Security provided to the amount that would be sufficient to permit the Interconnected Transmission Owner to receive and retain, after the payment of all applicable income taxes (“Current Taxes”) and taking into account the present value of future tax deductions for depreciation that would be available as a result of the anticipated payments or property transfers (the “Present Value Depreciation Amount”), an amount equal to the estimated Costs of Local Upgrades and Network Upgrades for which Interconnection Customer is responsible under the Interconnection Service Agreement. For this purpose, Current Taxes shall be computed based on the composite federal and state income tax rates applicable to the Interconnected Transmission Owner at the time the additional Security is received, determined using the highest marginal rates in effect at that time (the “Current Tax Rate”), and (ii) the Present Value Depreciation Amount shall be computed by discounting the Interconnected Transmission Owner’s anticipated tax depreciation deductions associated with such payments or property transfers by its current weighted average cost of capital.

2.4.4.3 Time for Payment:

Interconnection Customer must provide the additional Security, in a form and with terms as required by Section 212.4, within 15 days after its receipt of Transmission Provider’s notice under this section. The requirement for additional Security under this section shall be treated as a milestone included in the Interconnection Service Agreement pursuant to Section 212.5.

2.4.5 Tax Status:

Each Party shall cooperate with the other to maintain the other Party's tax status. Nothing in this Interconnection Construction Service Agreement or the Tariff is intended to adversely affect any Interconnected Transmission Owner's tax exempt status with respect to the issuance of bonds including, but not limited to, local furnishing bonds.

2.5 Safety

2.5.1 General:

Each Construction Party shall perform all work hereunder that may reasonably be expected to affect any other Construction Party in accordance with Good Utility Practice, Applicable Standards and Applicable Laws and Regulations pertaining to the safety of persons or property. A Construction Party performing work within an area controlled by another Construction Party must abide by the safety rules applicable to the area.

2.5.2 Environmental Releases:

Each Construction Party shall notify each other Construction Party, first orally and then in writing, of the release of any Hazardous Substances, any asbestos or lead abatement activities, or any type of remediation activities related to the Customer Facility or the Interconnection Facilities, any of which may reasonably be expected to affect another Construction Party. The notifying Construction Party shall (i) provide the notice as soon as possible, (ii) make a good faith effort to provide the notice within twenty-four hours after the Construction Party becomes aware of the occurrence, and (iii) promptly furnish to each other Construction Party copies of any publicly available reports filed with any governmental agencies addressing such events.

2.6 Construction-Related Access Rights:

The Interconnected Transmission Owner and the Interconnection Customer herein grant each other at no charge such rights of access to areas that it owns or otherwise controls as may be necessary for performance of their respective obligations, and exercise of their respective rights, pursuant to this Appendix 2, provided that either of them performing the construction will abide by the safety, security and work rules applicable to the area where construction activity is occurring.

2.7 Coordination Among Construction Parties:

The Transmission Provider, the Interconnection Customer, and all Interconnected Transmission Owners shall communicate and coordinate their activities as necessary to satisfy their obligations under this Interconnection Construction Service Agreement.

3 Schedule Of Work

3.1 Construction by Interconnection Customer:

The Interconnection Customer shall use Reasonable Efforts to design, procure, construct and install the Customer Interconnection Facilities and any Transmission Owner Interconnection Facilities that it elects to build by exercise of the Option to Build (defined in Section 3.2.3.1 below) in accordance with the Schedule of Work.

3.2 Construction by Interconnected Transmission Owner

3.2.1 Standard Option:

The Interconnected Transmission Owner shall use Reasonable Efforts to design, procure, construct and install the Transmission Owner Interconnection Facilities that it is responsible for constructing in accordance with the Schedule of Work.

3.2.1.1 Construction Sequencing:

In general, the sequence of the proposed dates of Initial Operation of Interconnection Customers seeking interconnection to the Transmission System will determine the sequence of construction of Network Upgrades.

3.2.2 Negotiated Contract Option:

As an alternative to the Standard Option set forth in Section 3.2.1 of this Appendix 2, the Interconnected Transmission Owner and the Interconnection Customer may mutually agree to a Negotiated Contract Option for the Interconnected Transmission Owner's design, procurement, construction and installation of the Transmission Owner Interconnection Facilities. Under the Negotiated Contract Option, the Interconnection Customer and the Interconnected Transmission Owner may agree to terms different from those included in the Standard Option of Section 3.2.1 above and the corresponding standard terms set forth in the applicable provisions of Part VI of the Tariff and this Appendix 2. Under the Negotiated Contract Option, negotiated terms may include the work schedule applicable to the Interconnected Transmission Owner's construction activities and changes to same (Section 3.3 of this Appendix 2); payment provisions, including the schedule of payments; incentives, penalties and/or liquidated damages related to timely completion of construction (Section 3.2.1 of this Appendix 2); use of third party contractors; and responsibility for Costs, but only as between the Interconnection Customer and the Interconnected Transmission Owner that are parties to this Interconnection Construction Service Agreement; no other Interconnection Customer's responsibility for Costs may be affected (Section 217 of the Tariff). No other terms of the Tariff or this Appendix 2 shall be subject to modification under the Negotiated Contract Option. The terms and conditions of the Tariff that may be negotiated pursuant to the Negotiated Contract Option shall not be affected by use of the Negotiated Contract Option except as and to the extent that they are modified by the parties' agreement pursuant to such option. All terms agreed upon pursuant to the Negotiated Contract Option shall be stated in full in an appendix to this Interconnection Construction Service Agreement.

3.2.3 Option to Build

3.2.3.1 Option:

Interconnection Customer shall have the option, (“Option to Build”) to assume responsibility for the design, procurement, and construction of Transmission Owner Interconnection Facilities that are Transmission Owner Attachment Facilities and Direct Connection Network Upgrades on the dates specified in Schedule J (Schedule of Work) of this Agreement. Transmission Provider and Interconnection Customer must agree as to what constitutes Direct Connection Network Upgrades and identify such Direct Connection Network Upgrades in Schedule D (Option to Build) of this Agreement. If the Transmission Provider and Interconnection Customer disagree about whether a particular Network Upgrade is a Direct Connection Network Upgrade, the Transmission Provider must provide the Interconnection Customer with a written technical explanation outlining why the Transmission Provider does not consider the Network Upgrade to be a Direct Connection Network Upgrade within fifteen (15) days of its determination. Except for Direct Connection Network Upgrades, Interconnection Customer shall have no right to construct Network Upgrades under this option. In order to exercise this Option to Build, Interconnection Customer must provide Transmission Provider and the Interconnected Transmission Owner with written notice of Interconnection Customer’s election to exercise the option no later than thirty (30) days from the date the Interconnection Customer receives the results of the Facilities Study (or, if no Facilities Study was required, completion of the System Impact Study). Interconnection Customer may not elect Option to Build after such date.

3.2.3.2 General Conditions Applicable to Option:

In addition to the other terms and conditions applicable to the construction of facilities under this Appendix 2, the Option to Build is subject to the following conditions:

(a) If the Interconnection Customer assumes responsibility for the design, procurement and construction of Transmission Owner Interconnection Facilities that are Transmission Owner Attachment Facilities and Direct Connection Network Upgrades:

(i) Interconnection Customer shall engineer, procure equipment, and construct Transmission Owner Interconnection Facilities that are Transmission Owner Attachment Facilities and Direct Connection Network Upgrades (or portions thereof) using Good Utility Practice and using standards and specifications provided in advance by Transmission Owner;

(ii) Interconnection Customer’s engineering, procurement and construction of Transmission Owner Interconnection Facilities that are Transmission Owner Attachment Facilities and Direct Connection Network Upgrades shall comply with all requirements of law to which Interconnected Transmission Owner shall be subject in the engineering, procurement or construction of Interconnected Transmission Owner Interconnection Facilities that are Transmission Owner Attachment Facilities and Direct Connection Network Upgrades;

(iii) Interconnected Transmission Owner shall review and approve engineering design, equipment acceptance tests, and the construction of Interconnected Transmission Owner Interconnection Facilities that are Transmission Owner Attachment Facilities and Direct Connection Network Upgrades;

(iv) Prior to commencement of construction, Interconnection Customer shall provide to Interconnected Transmission Owner a schedule for construction of Transmission Owner Interconnection Facilities that are Transmission Owner Attachment Facilities and Direct Connection Network Upgrades and shall promptly respond to requests for information from Transmission Owner;

(v) At any time during construction, Interconnected Transmission Owner shall have the right to gain unrestricted access to Transmission Owner Interconnection Facilities that are Transmission Owner Attachment Facilities and Direct Connection Network Upgrades and to conduct inspections of the same;

(vi) At any time during construction, should any phase of the engineering, equipment procurement, or construction of Transmission Owner Interconnection Facilities that are Transmission Owner Attachment Facilities that are Transmission Owner Attachment Facilities and Direct Connection Network Upgrades not meet the standards and specifications provided by Interconnection Transmission Owner, Interconnection Customer shall be obligated to remedy deficiencies in that portion of Transmission Owner Interconnection Facilities that are Transmission Owner Attachment Facilities and Direct Connection Network Upgrades;

(vii) *Interconnection Customer shall indemnify Interconnected Transmission Owner and Transmission Provider for claims arising from Interconnection Customer's construction of Transmission Owner Interconnection Facilities that are Transmission Owner Attachment Facilities and Direct Connection Network Upgrades under the terms and procedures applicable to Sections 12.1, 12.2, 12.3, and 12.4 of this Appendix 2.*

(viii) Interconnection Customer shall transfer control of Transmission Owner Interconnection Facilities that are Transmission Owner Attachment Facilities and Direct Connection Network Upgrades to Interconnected Transmission Owner;

(ix) Unless Parties otherwise agree, Interconnection Customer shall transfer ownership of Transmission Owner Attachment Facilities that are Transmission Owner Attachment Facilities and Direct Connection Network Upgrades to Interconnected Transmission Owner;

(x) Interconnected Transmission Owner shall approve and accept for operation and maintenance Transmission Owner Interconnection Facilities that are Transmission Owner Attachment Facilities and Direct Connection Network Upgrades to the extent engineered, procured, and constructed in accordance with this ICSA, Appendix 2, section 3.2.3.2;

(xi) Interconnection Customer shall deliver to Transmission Owner "as-built" drawings, information, and any other documents that are reasonably required by Transmission Provider to assure that the Transmission Owner Interconnection Facilities that are Transmission Owner Attachment Facilities and Direct Connection Network Upgrades are built to the standards and specifications required by Transmission Provider; and

(xii) If Interconnection Customer exercises the Option to Build pursuant to section 3.2.3.1, Interconnection Customer shall pay Interconnected Transmission Owner the agreed upon amount of [\$] for Interconnected Transmission Owner to execute the responsibilities enumerated to Interconnected Transmission Owner under section 3.2.3.2. Interconnected Transmission Owner shall invoice Interconnection Customer for this total amount to be divided on a monthly basis pursuant to Interconnection Service Agreement, Tariff, Attachment O, Appendix 2, section 11.2.2.

(b) In addition to the General Conditions applicable to Option to Build set forth in section 3.2.3.2(a) above, the following conditions also apply:

(i) The Interconnection Customer must obtain or arrange to obtain all necessary permits and authorizations for the construction and installation of the Transmission Owner Interconnection Facilities that it is building, provided, however, that when the Interconnected Transmission Owner's assistance is required, the Interconnected Transmission Owner shall assist the Interconnection Customer in obtaining such necessary permits or authorizations with efforts similar in nature and extent to those that the Interconnected Transmission Owner typically undertakes in acquiring permits and authorizations for construction of facilities on its own behalf;

(ii) The Interconnection Customer must obtain all necessary land rights for the construction and installation of the Transmission Owner Interconnection Facilities that it is building, provided, however, that upon Interconnection Customer's reasonable request, the Interconnected Transmission Owner shall assist the Interconnection Customer in acquiring such land rights with efforts similar in nature and extent to those that the Interconnected Transmission Owner typically undertakes in acquiring land rights for construction of facilities on its own behalf;

(iii) Notwithstanding anything stated herein, each Interconnected Transmission Owner shall have the exclusive right and obligation to perform the line attachments (tie-in work), and to calibrate remote terminal units and relay settings, required for the interconnection to such Interconnected Transmission Owner's existing facilities of any Transmission Owner Interconnection Facilities that the Interconnection Customer builds;

(iv) The Transmission Owner Interconnection Facilities built by the Interconnection Customer shall be successfully inspected, tested and energized pursuant to Sections 3.8 and 3.9 of this Appendix 2; and

3.2.3.3 Additional Conditions Regarding Network Facilities:

To the extent that the Interconnection Customer utilizes the Option to Build for design, procurement, construction and/or installation of (a) any Transmission Owner Interconnection Facilities that are Direct Connection Network Upgrades to Transmission System facilities that are in existence or under construction by or on behalf of the Interconnected Transmission Owner on the date that the Interconnection Customer solicits bids under Section 3.2.3.7 below, or (b) Transmission Owner Interconnection Facilities that are Transmission Owner Attachment Facilities and Direct Connection Network Upgrades that are to be located on land or in right-of-way owned

or controlled by the Interconnected Transmission Owner, and in addition to the other terms and conditions applicable to the design, procurement, construction and/or installation of facilities under this Appendix 2, all work shall comply with the following further conditions:

(i) All work performed by or on behalf of the Interconnection Customer shall be conducted by contractors, and using equipment manufacturers or vendors, that are listed on the Interconnected Transmission Owner's List of Approved Contractors;

(ii) The Interconnected Transmission Owner shall have full site control of, and reasonable access to, its property at all times for purposes of tagging or operation, maintenance, repair or construction of modifications to, its existing facilities and/or for performing all tie-ins of Interconnection Facilities built by or for the Interconnection Customer; and for acceptance testing of any equipment that will be owned and/or operated by the Interconnected Transmission Owner;

(iii) The Interconnected Transmission Owner shall have the right to have a reasonable number of appropriate representatives present for all work done on its property/facilities or regarding the Transmission Owner Attachment Facilities and Direct Connection Network Upgrades and the right to stop, or to order corrective measures with respect to, any such work that reasonably could be expected to have an adverse effect on reliability, safety or security of persons or of property of the Interconnected Transmission Owner or any portion of the Transmission System, provided that, unless circumstances do not reasonably permit such consultations, the Interconnected Transmission Owner shall consult with the Interconnection Customer and with Transmission Provider before directing that work be stopped or ordering any corrective measures;

(iv) The Interconnection Customer and its contractors, employees and agents shall comply with the Interconnected Transmission Owner's safety, security and work rules, environmental guidelines and training requirements applicable to the area(s) where construction activity is occurring and shall provide all reasonably required documentation to the Interconnected Transmission Owner, provided that the Interconnected Transmission Owner previously has provided its safety, security and work rules and training requirements applicable to work on its facilities to Transmission Provider and the Interconnection Customer within 20 Business Days after a request therefor made by Interconnection Customer following its receipt of the Facilities Study;

(v) The Interconnection Customer shall be responsible for controlling the performance of its contractors, employees and agents; and

(vi) All activities performed by or on behalf of the Interconnection Customer pursuant to its exercise of the Option to Build shall be subject to compliance with Applicable Laws and Regulations, including those governing union staffing and bargaining unit obligations, and Applicable Standards.

3.2.3.4 Administration of Conditions:

To the extent that the Interconnected Transmission Owner exercises any discretion in the application of any of the conditions stated in Sections 3.2.3.2 and 3.2.3.3 of this Appendix 2, it

shall apply each such condition in a manner that is reasonable and not unduly discriminatory and it shall not unreasonably withhold, condition, or delay any approval or authorization that the Interconnection Customer may require for the purpose of complying with any of those conditions.

3.2.3.5 Approved Contractors:

(a) Each Transmission Owner shall develop and shall provide to Transmission Provider a List of Approved Contractors. Each Transmission Owner shall include on its List of Approved Contractors no fewer than three contractors and no fewer than three manufacturers or vendors of major transmission-related equipment, unless a Transmission Owner demonstrates to Transmission Provider's reasonable satisfaction that it is feasible only to include a lesser number of construction contractors, or manufacturers or vendors, on its List of Approved Contractors. Transmission Provider shall publish each Transmission Owner's List of Approved Contractors in a PJM Manual and shall make such manual available on its internet website.

(b) Upon request of an Interconnection Customer, a Transmission Owner shall add to its List of Approved Contractors (1) any design or construction contractor regarding which the Interconnection Customer provides such information as the Transmission Owner may reasonably require which demonstrates to the Transmission Owner's reasonable satisfaction that the candidate contractor is qualified to design, or to install and/or construct new facilities or upgrades or modifications to existing facilities on the Transmission Owner's system, or (2) any manufacturer or vendor of major transmission-related equipment (e.g., high-voltage transformers, transmission line, circuit breakers) regarding which the Interconnection Customer provides such information as the Transmission Owner may reasonably require which demonstrates to the Transmission Owner's reasonable satisfaction that the candidate entity's major transmission-related equipment is acceptable for installation and use on the Transmission Owner's system. No Transmission Owner shall unreasonably withhold, condition, or delay its acceptance of a contractor, manufacturer, or vendor proposed for addition to its List of Approved Contractors.

3.2.3.6 Construction by Multiple Interconnection Customers:

In the event that there are multiple Interconnection Customers that wish to exercise an Option to Build with respect to Interconnection Facilities of the types described in Section 3.2.3.3 to this Appendix 2, the Transmission Provider shall determine how to allocate the construction responsibility among them unless they reach agreement among themselves on how to proceed.

3.2.3.7 Option Procedures:

(a) Within 10 days after notifying Transmission Provider and the Interconnected Transmission Owner of its election to exercise the Option to Build, Interconnection Customer shall solicit bids from one or more Approved Contractors named on the Interconnected Transmission Owner's List of Approved Contractors to procure equipment for, and/or to design, construct and/or install, the Transmission Owner Interconnection Facilities that the Interconnection Customer seeks to build under the Option to Build on terms (i) that will meet the Interconnection Customer's proposed schedule; (ii) that, if the Interconnection Customer seeks to have an Approved Contractor construct or install Transmission Owner Attachment Facilities and Direct Connection Network

Upgrades, will satisfy all of the conditions on construction specified in Sections 3.2.3.2 and 3.2.3.3 of this Appendix 2; and (iii) that will satisfy the obligations of a Constructing Entity (other than those relating to responsibility for the costs of facilities) under this Appendix 2.

(b) Any additional costs arising from the bidding process or from the final bid of the successful Approved Contractor shall be the sole responsibility of the Interconnection Customer.

(c) Upon receipt of a qualifying bid acceptable to it, the Interconnection Customer shall contract with the Approved Contractor that submitted the qualifying bid. Such contract shall meet the standards stated in paragraph (a) of this section.

(d) In the absence of a qualifying bid acceptable to the Interconnection Customer in response to its solicitation, the Interconnected Transmission Owner(s) shall be responsible for the design, procurement, construction and installation of the Transmission Owner Interconnection Facilities in accordance with the Standard Option described in Section 3.2.1 of this Appendix 2.

3.2.3.8 Interconnection Customer Drawings:

Interconnection Customer shall submit to the Interconnected Transmission Owner and Transmission Provider initial drawings, certified by a professional engineer, of the Transmission Owner Interconnection Facilities that Interconnection Customer arranges to build under this Option to Build. The Interconnected Transmission Owner shall review and approve the initial drawings and engineering design of the Transmission Owner Interconnection Facilities to be constructed under the Option to Build. The Interconnected Transmission Owner shall review the drawings to assess the consistency of Interconnection Customer's design of the pertinent Transmission Owner Interconnection Facilities with Applicable Standards and the Facilities Study. Interconnected Transmission Owner, with facilitation and oversight by Transmission Provider, shall provide comments on such drawings to Interconnection Customer within sixty days after its receipt thereof, after which time any drawings not subject to comment shall be deemed to be approved. All drawings provided hereunder shall be deemed to be Confidential Information.

3.2.3.9 Effect of Review:

Interconnected Transmission Owner's review of Interconnection Customer's initial drawings of the Transmission Owner Interconnection Facilities that the Interconnection Customer is building shall not be construed as confirming, endorsing or providing a warranty as to the fitness, safety, durability or reliability of such facilities or the design thereof. At its sole cost and expense, Interconnection Customer shall make such changes to the design of the pertinent Transmission Owner Interconnection Facilities as may reasonably be required by Transmission Provider, in consultation with the Interconnected Transmission Owner, to ensure that the Transmission Owner Interconnection Facilities that Interconnection Customer is building meet Applicable Standards and conform with the Facilities Study.

3.3 Revisions to Schedule of Work:

The Schedule of Work shall be revised as required in accordance with Transmission Provider's scope change process for interconnection projects set forth in the PJM Manuals, or otherwise by mutual agreement of the Construction Parties, which agreement shall not be unreasonably withheld, conditioned or delayed.

3.4 Suspension:

The following provision applies to Interconnection Requests which have entered the New Services Queue prior to February 1, 2011:

Interconnection Customer shall have the right, upon written notice to Transmission Provider and Interconnected Transmission Owner, to suspend at any time all work by Interconnected Transmission Owner associated with the construction and installation of the Transmission Owner Interconnection Facilities required under an Interconnection Service Agreement or Interconnection Construction Service Agreement, with the condition that, notwithstanding such suspension, the Transmission System shall be left in a safe and reliable condition in accordance with Good Utility Practice and Transmission Provider's safety and reliability criteria. This suspension right permits the Interconnection Customer to request one or more suspensions of work for a cumulative period of up to three years. Interconnection Customer's notice of suspension shall include an estimated duration of the suspension and other information related to the suspension.

The following provision applies to Interconnection Requests which have entered the New Services Queue on or after February 1, 2011:

Interconnection Customer shall have the right, upon written notice to Transmission Provider and Interconnected Transmission Owner, to suspend at any time all work by Interconnected Transmission Owner associated with the construction and installation of the Transmission Owner Interconnection Facilities required under an Interconnection Service Agreement or Interconnection Construction Service Agreement, with the condition that, notwithstanding such suspension, the Transmission System shall be left in a safe and reliable condition in accordance with Good Utility Practice and Transmission Provider's safety and reliability criteria. This suspension right permits the Interconnection Customer to request one or more suspensions of work for a cumulative period of up to (i) three years if the Transmission Provider determines that such suspension would not be deemed a Material Modification, or (ii) one year if the Transmission Provider determines that such suspension would be deemed a Material Modification. Interconnection Customer's notice of suspension shall include an estimated duration of the suspension and other information related to the suspension.

3.4.1 Costs:

In the event of a suspension under this section, Interconnection Customer shall be responsible for all reasonable and necessary Cancellation Costs which Interconnected Transmission Owner or Transmission Provider (i) has incurred pursuant to the Interconnection Service Agreement or Interconnection Construction Service Agreement prior to the suspension and (ii) incurs in suspending such work, including any costs incurred to perform such work as may be necessary to ensure the safety of persons and property and the integrity of the Transmission System during

such suspension and, if applicable, any costs incurred in connection with the cancellation or suspension of material, equipment and/or labor contracts which Interconnected Transmission Owner or Transmission Provider cannot reasonably avoid; provided, however, that prior to cancelling or suspending any such material, equipment or labor contract, Interconnected Transmission Owner or Transmission Provider, as the case may be, shall obtain Interconnection Customer's authorization to do so. Transmission Provider shall invoice Interconnection Customer pursuant to Section 9 of this Appendix 2 for Cancellation Costs for which the customer is liable under this section. Interconnected Transmission Owner and Transmission Provider shall use due diligence to minimize Cancellation Costs in the event of a suspension of work.

3.4.2 Duration of Suspension:

In the event Interconnection Customer suspends work by Interconnected Transmission Owner required under an Interconnection Service Agreement or Interconnection Construction Service Agreement pursuant to this Section 3.4, and has not requested Transmission Provider and the Interconnected Transmission Owner to recommence the work required under the applicable agreement(s) on or before the expiration of the time period allowed under this Section 3.4 following commencement of such suspension, the Interconnection Construction Service Agreement and the Interconnection Service Agreement for the Interconnection Request for which Interconnection Customer suspended work shall be deemed terminated as of the end of such suspension time period. The suspension time shall begin on the date the suspension is requested, or on the date of Interconnection Customer's written notice of suspension to Transmission Provider, if no effective date was specified.

3.5 Right to Complete Transmission Owner Interconnection Facilities:

In the event that, at any time prior to successful Stage Two energization of the Transmission Owner Interconnection Facilities pursuant to Section 3.9 of Appendix 2, the Interconnection Customer terminates its obligations under this Appendix 2 pursuant to Section 14.1.2 below due to a Default by the Interconnected Transmission Owner, the Interconnection Customer may elect to complete the design, procurement, construction and installation of the Transmission Owner Interconnection Facilities. The Interconnection Customer shall notify the Interconnected Transmission Owner and Transmission Provider in writing of its election to complete the Transmission Owner Interconnection Facilities within 10 days after the date of Interconnection Customer's notice of termination pursuant to Section 14.1.2 of this Appendix 2. In the event that the Interconnection Customer elects to complete the Transmission Owner Interconnection Facilities, it shall do so in accordance with the terms and conditions of the Option to Build under Section 3.2.3 of this Appendix 2 and shall be responsible for paying all costs of completing the Transmission Owner Interconnection Facilities incurred after the date of its notice of election to complete the facilities. Interconnection Customer may take possession of, and may use in completing the Transmission Owner Interconnection Facilities, any materials and supplies and equipment (other than equipment and facilities that already have been installed or constructed) acquired by the Interconnected Transmission Owner for construction, and included in the Costs, of the Transmission Owner Interconnection Facilities, provided that Interconnection Customer shall pay Transmission Provider, for the benefit of the Interconnected Transmission Owner and upon presentation by Interconnected Transmission Owner of reasonable and appropriate documentation thereof, any

amounts expended by the Interconnected Transmission Owner for such materials, supplies and equipment that Interconnection Customer has not already paid. Title to all Transmission Owner Interconnection Facilities constructed by Interconnection Customer under this Section 3.5 shall be transferred to the Interconnected Transmission Owner in accordance with Section 5.5 of this Appendix 2.

3.6 Suspension of Work Upon Default:

Upon the occurrence of a Default by Interconnection Customer as defined in Section 13 of this Appendix 2, the Transmission Provider or the Interconnected Transmission Owner may by written notice to Interconnection Customer suspend further work associated with the construction and installation of the Transmission Owner Interconnection Facilities that the Interconnected Transmission Owner is responsible for constructing. Such suspension shall not constitute a waiver of any termination rights under this Interconnection Construction Service Agreement. In the event of a suspension by Transmission Provider or Interconnected Transmission Owner, the Interconnection Customer shall be responsible for the Costs incurred in connection with any suspension hereunder in accordance with Section 14.3 of this Appendix 2.

3.7 Construction Reports:

Each Constructing Entity shall issue reports to each other Construction Party on a monthly basis, and at such other times as reasonably requested, regarding the status of the construction and installation of the Interconnection Facilities. Each Construction Party shall promptly identify, and shall notify each other Construction Party of, any event that the Construction Party reasonably expects may delay completion, or may significantly increase the cost, of the Interconnection Facilities. Should a Construction Party report such an event, Transmission Provider shall, within fifteen days of such notification, convene a technical meeting of the Construction Parties to evaluate schedule alternatives.

3.8 Inspection and Testing of Completed Facilities

3.8.1 Coordination:

Interconnection Customer and the Interconnected Transmission Owner shall coordinate the timing and schedule of all inspection and testing of the Interconnection Facilities.

3.8.2 Inspection and Testing:

Each Constructing Entity shall cause inspection and testing of the Interconnection Facilities that it constructs in accordance with the provisions of this section. The Construction Parties acknowledge and agree that inspection and testing of facilities may be undertaken as facilities are completed and need not await completion of all of the facilities that a Constructing Entity is building.

3.8.2.1 Of Interconnection Customer-Built Facilities:

Upon the completion of the construction and installation, but prior to energization, of any Interconnection Facilities constructed by the Interconnection Customer and related portions of the Customer Facility, the Interconnection Customer shall have the same inspected and/or tested by an authorized electric inspection agency or qualified third party reasonably acceptable to the Interconnected Transmission Owner to assess whether the facilities substantially comply with Applicable Standards. Said inspection and testing shall be held on a mutually agreed-upon date, and the Interconnected Transmission Owner and Transmission Provider shall have the right to attend and observe, and to obtain the written results of, such testing.

3.8.2.2 Of Interconnected Transmission Owner-Built Facilities:

Upon the completion of the construction and installation, but prior to energization, of any Interconnection Facilities constructed by the Interconnected Transmission Owner, the Interconnected Transmission Owner shall have the same inspected and/or tested by qualified personnel or a qualified contractor to assess whether the facilities substantially comply with Applicable Standards. Subject to Applicable Laws and Regulations, said inspection and testing shall be held on a mutually agreed-upon date, and the Interconnection Customer and Transmission Provider shall have the right to attend and observe, and to obtain the written results of, such testing.

3.8.3 Review of Inspection and Testing by Interconnected Transmission Owner:

In the event that the written report, or the observation of either Constructing Entity or Transmission Provider, of the inspection and/or testing pursuant to Section 3.8.2 of this Appendix 2 reasonably leads the Transmission Provider or Interconnected Transmission Owner to believe that the inspection and/or testing of some or all of the Interconnection Facilities built by the Interconnection Customer was inadequate or otherwise deficient, the Interconnected Transmission Owner may, within 20 days after its receipt of the results of inspection or testing and upon reasonable notice to the Interconnection Customer, perform its own inspection and/or testing of such Interconnection Facilities to determine whether the facilities are acceptable for energization, which determination shall not be unreasonably delayed, withheld or conditioned.

3.8.4 Notification and Correction of Defects

3.8.4.1 If the Interconnected Transmission Owner, based on inspection or testing pursuant to Section 3.8.2 or 3.8.3 of this Appendix 2, identifies any defects or failures to comply with Applicable Standards in the Interconnection Facilities constructed by the Interconnection Customer, the Interconnected Transmission Owner shall notify the Interconnection Customer and Transmission Provider of any identified defects or failures within 20 days after the Interconnected Transmission Owner's receipt of the results of such inspection or testing. The Interconnection Customer shall take appropriate actions to correct any such defects or failure at its sole cost and expense, and shall obtain the Interconnected Transmission Owner's acceptance of the corrections, which acceptance shall not be unreasonably delayed, withheld or conditioned. Such acceptance does not modify and shall not limit the Interconnection Customer's indemnification obligations set forth in Appendix 2, section 3.2.3.2(e).

3.8.4.2 In the event that inspection and/or testing of any Transmission Owner Interconnection Facilities built by the Interconnected Transmission Owner identifies any defects or failures to comply with Applicable Standards in such facilities, Interconnected Transmission Owner shall take appropriate action to correct any such defects or failures within 20 days after it learns thereof. In the event that such a defect or failure cannot reasonably be corrected within such 20-day period, Interconnected Transmission Owner shall commence the necessary correction within that time and shall thereafter diligently pursue it to completion.

3.8.5 Notification of Results:

Within 10 days after satisfactory inspection and/or testing of Interconnection Facilities built by the Interconnection Customer (including, if applicable, inspection and/or testing after correction of defects or failures), the Interconnected Transmission Owner shall confirm in writing to the Interconnection Customer and Transmission Provider that the successfully inspected and tested facilities are acceptable for energization.

3.9 Energization of Completed Facilities

(A) Unless otherwise provided in the Schedule of Work, energization of the Interconnection Facilities related to interconnection of a Generation Interconnection Customer and, when applicable as determined by Transmission Provider, of the Interconnection Facilities related to interconnection of a Transmission Interconnection Customer, shall occur in two stages. Stage One energization shall consist of energization of the Customer Interconnection Facilities and of the Transmission Owner Attachment Facilities and will occur prior to initial energization of the Customer Facility. Stage Two energization shall consist of (1) initial synchronization to the Transmission System of any completed generator(s) at the Customer Facility of a Generation Interconnection Customer, or of applicable facilities, as determined by the Transmission Provider, associated with Merchant Transmission Facilities of a Transmission Interconnection Customer, and (2) energization of the remainder of the Transmission Owner Interconnection Facilities. Stage Two energization shall be completed prior to Initial Operation of the Customer Facility.

(B) In the case of Interconnection Facilities related to interconnection of a Transmission Interconnection Customer for which the Transmission Provider determines that two-stage energization is inapplicable, energization shall occur in a single stage, consisting of energization of the Interconnection Facilities and the Customer Facility. Such a single-stage energization shall be regarded as Stage Two energization for the purposes of the remaining provisions of this Section 3.9 and of Section 5.5 of this Appendix 2.

3.9.1

Stage One energization of the Interconnection Facilities may not occur prior to the satisfaction of the following additional conditions:

(a) The Interconnection Customer shall have delivered to the Interconnected Transmission Owner and Transmission Provider a writing transferring to the Interconnected Transmission Owner and Transmission Provider operational control over any Transmission Owner Attachment Facilities that Interconnection Customer has constructed; and

(b) The Interconnection Customer shall have provided a mark-up of construction drawings to the Interconnected Transmission Owner to show the “as-built” condition of all Transmission Owner Attachment Facilities that Interconnection Customer has constructed.

3.9.2 As soon as practicable after the satisfaction of the conditions for Stage One energization specified in Sections 3.8 and 3.9.1 of this Appendix 2, the Interconnected Transmission Owner and the Interconnection Customer shall coordinate and undertake the Stage One energization of facilities.

3.9.3 Stage Two energization of the Interconnection Facilities may not occur prior to the satisfaction of the following additional conditions:

(a) The Interconnection Customer shall have delivered to the Interconnected Transmission Owner and Transmission Provider a writing transferring to the Interconnected Transmission Owner and Transmission Provider operational control over any Transmission Owner Interconnection Facilities that Interconnection Customer has constructed and operational control of which it has not previously transferred pursuant to Section 3.9.1 of this Appendix 2; and

(b) The Interconnection Customer shall have provided a mark-up of construction drawings to the Interconnected Transmission Owner to show the “as-built” condition of all Transmission Owner Interconnection Facilities that Interconnection Customer has constructed and which were not included in the Stage One energization, but are included in the Stage Two energization.

(c) Telemetry systems shall be operational and shall be providing Transmission Provider and the Interconnected Transmission Owner with telemetered data as specified pursuant to Section 8.5.2 of Appendix 2 to the Interconnection Service Agreement.

3.9.4 As soon as practicable after the satisfaction of the conditions for Stage Two energization specified in Sections 3.8 and 3.9.3 of this Appendix 2, the Interconnected Transmission Owner and the Interconnection Customer shall coordinate and undertake the Stage Two energization of facilities.

3.9.5 To the extent defects in any Interconnection Facilities are identified during the energization process, the energization will not be deemed successful. In that event, the Constructing Entity shall take action to correct such defects in any Interconnection Facilities that it built as promptly as practical after the defects are identified. The affected Constructing Entity shall so notify the other Construction Parties when it has corrected any such defects, and the Constructing Entities shall recommence efforts, within 10 days thereafter, to energize the appropriate Interconnection Facilities in accordance with Section 3.9; provided that the Interconnected Transmission Owner may, in the reasonable exercise of its discretion and with the approval of Transmission Provider, require that further inspection and testing be performed in accordance with Section 3.8 of this Appendix 2.

3.10 Interconnected Transmission Owner's Acceptance of Facilities Constructed by Interconnection Customer:

Within five days after determining that Interconnection Facilities have been successfully energized, the Interconnected Transmission Owner shall issue a written notice to the Interconnection Customer accepting the Interconnection Facilities built by the Interconnection Customer that were successfully energized. Such acceptance shall not be construed as confirming, endorsing or providing a warranty by the Interconnected Transmission Owner as to the design, installation, construction, fitness, safety, durability or reliability of any Interconnection Facilities built by the Interconnection Customer, or their compliance with Applicable Standards.

4 Transmission Outages

4.1 Outages; Coordination:

The Construction Parties acknowledge and agree that certain outages of transmission facilities owned by the Interconnected Transmission Owner, as more specifically detailed in the Scope of Work, may be necessary in order to complete the process of constructing and installing all Interconnection Facilities. The Construction Parties further acknowledge and agree that any such outages shall be coordinated by and through the Transmission Provider.

5 Land Rights; Transfer of Title

5.1 Grant of Easements and Other Land Rights:

Interconnection Customer at its sole cost and expense, shall grant such easements and other land rights to the Interconnected Transmission Owner over the Site at such times and in such a manner as the Interconnected Transmission Owner may reasonably require to perform its obligations under this Appendix 2 and/or to perform its operation and maintenance obligations under the Interconnection Service Agreement.

5.2 Construction of Facilities on Interconnection Customer Property:

To the extent that the Interconnected Transmission Owner is required to construct and install any Transmission Owner Interconnection Facilities on land owned by the Interconnection Customer, the Interconnection Customer, at its sole cost and expense, shall legally transfer to the Interconnected Transmission Owner all easements and other land rights required pursuant to Section 5.1 above prior to the commencement of such construction and installation.

5.3 Third Parties:

If any of the easements and other land rights described in Section 5.1 above must be obtained from a third party, the Interconnected Transmission Owner's obligation for completing its construction responsibilities in accordance with the Schedule of Work, to the extent of the facilities that it is responsible for constructing for which such easements and land rights are necessary, shall be subject to Interconnection Customer's acquisition of such easements and other land rights at such

times and in such manner as the Interconnected Transmission Owner may reasonably require to perform its obligations under this Appendix 2, and/or to perform its operation and maintenance obligations under the Interconnection Service Agreement, provided, however, that upon Interconnection Customer's request, the Interconnected Transmission Owner shall assist the Interconnection Customer in acquiring such land rights with efforts similar in nature and extent to those that the Interconnected Transmission Owner typically undertakes in acquiring land rights for construction of facilities on its own behalf. The terms of easements and land rights acquired by Interconnection Customer shall not unreasonably impede the Interconnected Transmission Owner's timely completion of construction of the affected facilities.

5.4 Documentation:

Interconnection Customer shall prepare, execute and file such documentation as the Interconnected Transmission Owner may reasonably require to memorialize any easements and other land rights granted pursuant to this Section 5. Documentation of such easements and other land rights, and any associated filings, shall be in a form acceptable to the Interconnected Transmission Owner.

5.5 Transfer of Title to Certain Facilities Constructed By Interconnection Customer:

Within thirty (30) days after the Interconnection Customer's receipt of notice of acceptance under Section 3.10 of this Appendix 2 following Stage Two energization of the Interconnection Facilities, the Interconnection Customer shall deliver to the Interconnected Transmission Owner, for the Interconnected Transmission Owner's review and approval, all of the documents and filings necessary to transfer to the Interconnected Transmission Owner title to any Transmission Owner Interconnection Facilities constructed by the Interconnection Customer, and to convey to the Interconnected Transmission Owner any easements and other land rights to be granted by Interconnection Customer in accordance with Section 5.1 above that have not then already been conveyed. The Interconnected Transmission Owner shall review and approve such documentation, such approval not to be unreasonably withheld, delayed, or conditioned. Within 30 days after its receipt of the Interconnected Transmission Owner's written notice of approval of the documentation, the Interconnection Customer, in coordination and consultation with the Interconnected Transmission Owner, shall make any necessary filings at the FERC or other governmental agencies for regulatory approval of the transfer of title. Within twenty (20) days after the issuance of the last order granting a necessary regulatory approval becomes final (i.e., is no longer subject to rehearing), the Interconnection Customer shall execute all necessary documentation and shall make all necessary filings to record and perfect the Interconnected Transmission Owner's title in such facilities and in the easements and other land rights to be conveyed to the Interconnected Transmission Owner. Prior to such transfer to the Interconnected Transmission Owner of title to the Transmission Owner Interconnection Facilities built by the Interconnection Customer, the risk of loss or damages to, or in connection with, such facilities shall remain with the Interconnection Customer. Transfer of title to facilities under this section shall not affect the Interconnection Customer's receipt or use of the interconnection rights related to Network Upgrades and/or Local Upgrades for which it otherwise may be eligible as provided in Subpart C of Part VI of the Tariff.

5.6 Liens:

The Interconnection Customer shall take all reasonable steps to ensure that, at the time of transfer of title in the Transmission Owner Interconnection Facilities built by the Interconnection Customer to the Interconnected Transmission Owner, those facilities shall be free and clear of any and all liens and encumbrances, including mechanics' liens. To the extent that the Interconnection Customer cannot reasonably clear a lien or encumbrance prior to the time for transferring title to the Interconnected Transmission Owner, Interconnection Customer shall nevertheless convey title subject to the lien or encumbrance and shall indemnify, defend and hold harmless the Interconnected Transmission Owner against any and all claims, costs, damages, liabilities and expenses (including without limitation reasonable attorneys' fees) which may be brought or imposed against or incurred by Interconnected Transmission Owner by reason of any such lien or encumbrance or its discharge.

6 Warranties

6.1 Interconnection Customer Warranty:

The Interconnection Customer shall warrant that its work (or the work of any subcontractor that it retains) in constructing and installing the Transmission Owner Interconnection Facilities that it builds is free from defects in workmanship and design and shall conform to the requirements of this Interconnection Construction Service Agreement for one (1) year (the "Interconnection Customer Warranty Period") commencing upon the date title is transferred to Interconnected Transmission Owner in accordance with Section 5.5 of this Appendix 2. The Interconnection Customer shall, at its sole expense and promptly after notification by the Interconnected Transmission Owner, correct or replace defective work in accordance with Applicable Technical Requirements and Standards, during the Interconnection Customer Warranty Period. The warranty period for such corrected or replaced work shall be the unused portion of the Interconnection Customer Warranty Period remaining as of the date of notice of the defect. The Interconnection Customer Warranty Period shall resume upon acceptance of such corrected or replaced work. All Costs incurred by Interconnected Transmission Owner as a result of such defective work shall be reimbursed to the Interconnected Transmission Owner by the Interconnection Customer on demand; provided that the Interconnected Transmission Owner submits the demand to the Interconnection Customer within the Interconnection Customer Warranty Period and provides reasonable documentation of the claimed costs. The Interconnected Transmission Owner's acceptance, inspection and testing, or a third party's inspection or testing, of such facilities pursuant to Section 3.8 of this Appendix 2 shall not be construed to limit in any way the warranty obligations of the Interconnection Customer, and this provision does not modify and shall not limit the Interconnection Customer's indemnification obligations set forth in Appendix 2, section 3.2.3.2(e).

6.2 Manufacturer Warranties:

Prior to the transfer to the Interconnected Transmission Owner of title to the Transmission Owner Interconnection Facilities built by the Interconnection Customer, the Interconnection Customer shall produce documentation satisfactory to the Interconnected Transmission Owner evidencing the transfer to the Interconnected Transmission Owner of all manufacturer warranties for

equipment and/or materials purchased by the Interconnection Customer for use and/or installation as part of the Transmission Owner Interconnection Facilities built by the Interconnection Customer.

7 [Reserved.]

8 [Reserved.]

9 Security, Billing And Payments

The following provisions shall apply with respect to charges for the Costs of the Interconnected Transmission Owner for which the Interconnection Customer is responsible.

9.1 Adjustments to Security:

The Security provided by Interconnection Customer at or before execution of the Interconnection Service Agreement (a) shall be reduced as portions of the work are completed, and/or (b) shall be increased or decreased as required to reflect adjustments to Interconnection Customer's cost responsibility, as determined in accordance with Section 217, to correspond with changes in the Scope of Work developed in accordance with Transmission Provider's scope change process for interconnection projects set forth in the PJM Manuals.

9.2 Invoice:

The Interconnected Transmission Owner shall provide Transmission Provider a quarterly statement of the Interconnected Transmission Owner's scheduled expenditures during the next three months for, as applicable, (a) the design, engineering and construction of, and/or for other charges related to, construction of the Interconnection Facilities for which the Interconnected Transmission Owner is responsible under this Interconnection Construction Service Agreement, or (b) in the event that the Interconnection Customer exercises the Option to Build pursuant to Section 3.2.3.1 of this Appendix 2, Interconnected Transmission Owner's oversight costs (i.e. costs incurred by the Interconnected Transmission Owner when engaging in oversight activities to satisfy itself that the Interconnection Customer is complying with the Interconnected Transmission Owner's standards and specifications for the construction of facilities) associated with the Interconnection Customer's building Transmission Owner Attachment Facilities and Direct Connection Network Upgrades, including but not limited to Costs for tie-in work and Cancellation Costs. Interconnected Transmission Owner's oversight costs shall be consistent with Tariff, Attachment P, Appendix 2, section 3.2.3.2(a)(12). Transmission Provider shall bill Interconnection Customer on behalf of the Interconnected Transmission Owner, for the Interconnected Transmission Owner's expected Costs during the subsequent three months. Interconnection Customer shall pay each bill within twenty (20) days after receipt thereof. Upon receipt of each of Interconnection Customer's payments of such bills, Transmission Provider shall reimburse the Interconnected Transmission Owner. Interconnection Customer may request that the Transmission Provider provide a quarterly cost reconciliation. Such a quarterly cost reconciliation will have a one-quarter lag, e.g., reconciliation of costs for the first calendar quarter of work will be provided at the start of the third calendar quarter of work, provided, however, that

Section 9.3 of this Appendix 2 shall govern the timing of the final cost reconciliation upon completion of the work.

9.3 Final Invoice:

Within 120 days after the Interconnected Transmission Owner completes construction and installation of the Interconnection Facilities for which the Interconnected Transmission Owner is responsible under this Interconnection Construction Service Agreement, Transmission Provider shall provide Interconnection Customer with an accounting of, and the appropriate Construction Party shall make any payment to the other that is necessary to resolve, any difference between (a) Interconnection Customer's responsibility under the Tariff for the actual Cost of such facilities, and (b) Interconnection Customer's previous aggregate payments to Transmission Provider for the Costs of such facilities. Notwithstanding the foregoing, however, Transmission Provider shall not be obligated to make any payment to either the Interconnection Customer or the Interconnected Transmission Owner that the preceding sentence requires it to make unless and until the Transmission Provider has received the payment that it is required to refund from the Construction Party owing the payment.

9.4 Disputes:

In the event of a billing dispute between any of the Construction Parties, Transmission Provider and the Interconnected Transmission Owner shall continue to perform their respective obligations pursuant to this Interconnection Construction Service Agreement so long as (a) Interconnection Customer continues to make all payments not in dispute, and (b) the Security held by the Transmission Provider while the dispute is pending exceeds the amount in dispute, or (c) Interconnection Customer pays to Transmission Provider or into an independent escrow account the portion of the invoice in dispute, pending resolution of such dispute. If Interconnection Customer fails to meet any of these requirements, then Transmission Provider shall so inform the other Construction Parties and Transmission Provider or the Interconnected Transmission Owner may provide notice to Interconnection Customer of a Breach pursuant to Section 13 of this Appendix 2.

9.5 Interest:

Interest on any unpaid, delinquent amounts shall be calculated in accordance with the methodology specified for interest on refunds in the FERC's regulations at 18 C.F.R. Section 35.19a(a)(2)(iii) and shall apply from the due date of the bill to the date of payment.

9.6 No Waiver:

Payment of an invoice shall not relieve Interconnection Customer from any other responsibilities or obligations it has under this Interconnection Construction Service Agreement, nor shall such payment constitute a waiver of any claims arising hereunder.

10 Assignment

10.1 Assignment with Prior Consent:

Except as provided in Section 10.2 below, no Construction Party shall assign its rights or delegate its duties, or any part of such rights or duties, under the Interconnection Construction Service Agreement without the written consent of the other Construction Parties, which consent shall not be unreasonably withheld, conditioned or delayed. Any such assignment or delegation made without such written consent shall be null and void. A Construction Party may make an assignment in connection with the sale, merger, or transfer of a substantial portion or all of its properties, including the Interconnection Facilities which it will own upon completion of construction and the transfer of title required by Section 5 of this Appendix 2, so long as the assignee in such a sale, merger, or transfer assumes in writing all rights, duties and obligations arising under this Interconnection Construction Service Agreement. In addition, the Interconnected Transmission Owner shall be entitled, subject to Applicable Laws and Regulations, to assign the Interconnection Construction Service Agreement to any Affiliate or successor that owns and operates all or a substantial portion of the Interconnected Transmission Owner's transmission facilities.

10.2 Assignment Without Prior Consent

10.2.1 Assignment to Owners:

Interconnection Customer may assign the Interconnection Construction Service Agreement without the Interconnected Transmission Owner's or Transmission Provider's prior consent to any Affiliate or person that purchases or otherwise acquires, directly or indirectly, all or substantially all of the Customer Facility and the Customer Interconnection Facilities, provided that prior to the effective date of any such assignment, the assignee shall demonstrate that, as of the effective date of the assignment, the assignee has the technical competence to comply with the requirements of this Appendix 2 and assumes in a writing provided to the Interconnected Transmission Owner and Transmission Provider all rights, duties, and obligations of Interconnection Customer arising under this Appendix 2. However, any assignment described herein shall not relieve or discharge the Interconnection Customer from any of its obligations hereunder absent the written consent of the Interconnected Transmission Owner, such consent not to be unreasonably withheld, conditioned or delayed.

10.2.2 Assignment to Lenders:

Interconnection Customer may, without the consent of the Transmission Provider or the Interconnected Transmission Owner, assign the Interconnection Construction Service Agreement to any Project Finance Entity(ies), provided that such assignment shall not alter or diminish Interconnection Customer's duties and obligations under this Interconnection Construction Service Agreement. If Interconnection Customer provides the Interconnected Transmission Owner with notice of an assignment to any Project Finance Entity(ies) and identifies such Project Finance Entities as contacts for notice purposes pursuant to Section 20 of this Appendix 2, the Transmission Provider or Interconnected Transmission Owner shall provide notice and reasonable opportunity for such entity(ies) to cure any Breach under this Appendix 2 in accordance with this Appendix 2. Transmission Provider or Interconnected Transmission Owner shall, if requested by such lenders, provide such customary and reasonable documents, including consents to assignment, as may be

reasonably requested with respect to the assignment and status of the Interconnection Construction Service Agreement, provided that such documents do not alter or diminish the rights of the Transmission Provider or Interconnected Transmission Owner under this Appendix 2, except with respect to providing notice of Breach to a Project Finance Entity. Upon presentation of the Transmission Provider's and/or the Interconnected Transmission Owner's invoice therefor, Interconnection Customer shall pay the Transmission Provider and/or the Interconnected Transmission Owner's reasonable documented cost of providing such documents and certificates. Any assignment described herein shall not relieve or discharge the Interconnection Customer from any of its obligations hereunder absent the written consent of the Interconnected Transmission Owner and Transmission Provider.

10.3 Successors and Assigns:

This Interconnection Construction Service Agreement and all of its provisions are binding upon, and inure to the benefit of, the Construction Parties and their respective successors and permitted assigns.

11 Insurance

11.1 Required Coverages For Generation Resources Of More Than 20 Megawatts or Merchant Transmission Facilities:

Each Constructing Entity shall maintain, at its own expense, insurance as described in paragraphs (a) through (e) below. All insurance shall be procured from insurance companies rated "A-," VII or better by AM Best and authorized to do business in a state or states in which the Interconnection Facilities will be located. Failure to maintain required insurance shall be a Breach of the Interconnection Construction Service Agreement.

(a) Workers Compensation Insurance with statutory limits, as required by the state and/or jurisdiction in which the work is to be performed, and employer's liability insurance with limits of not less than one million dollars (\$1,000,000).

(b) Commercial General Liability Insurance and/or Excess Liability Insurance covering liability arising out of premises, operations, personal injury, advertising, products and completed operations coverage, independent contractors coverage, liability assumed under an insured contract, coverage for pollution to the extent normally available and punitive damages to the extent allowable under applicable law, with limits of not less than one million dollars (\$1,000,000) per occurrence/one million dollars (\$1,000,000) general aggregate/one million dollars (\$1,000,000) products and completed operations aggregate.

(c) Business/Commercial Automobile Liability Insurance for coverage of owned and non-owned and hired vehicles, trailers or semi-trailers designed for travel on public roads, with a minimum, combined single limit of not less than one million dollars (\$1,000,000) each accident for bodily injury, including death, and property damage.

(d) Excess and/or Umbrella Liability Insurance with a limit of liability of twenty million dollars (\$20,000,000) per occurrence. These limits apply in excess of the employer's liability, commercial general liability and business/commercial automobile liability coverages described above. This requirement can be met alone or via a combination of primary, excess and/or umbrella insurance.

(e) Professional Liability, including Contractors Legal Liability, providing errors, omissions and/or malpractice coverage. Coverage shall be provided for the Constructing Entity's duties, responsibilities and performance outlined in this Interconnection Construction Service Agreement, with limits of liability as follows:

\$10,000,000 each occurrence
\$10,000,000 aggregate

An Interconnected Entity may meet the Professional Liability Insurance requirements by requiring third-party contractors, designers, or engineers, or other parties that are responsible for design work associated with the transmission facilities or Interconnection Facilities necessary for the interconnection to procure professional liability insurance in the amounts and upon the terms prescribed by this section 11.1(e), and providing evidence of such insurance to the other Interconnected Entity. Such insurance shall be procured from companies rated "A-," VII or better by AM Best and authorized to do business in a state or states in which the Interconnection Facilities are located. Nothing in this section relieves the Interconnected Entity from complying with the insurance requirements. In the event that the policies of the designers, engineers, or other parties used to satisfy the Interconnected Entity's insurance obligations under this section become invalid for any reason, including but not limited to, (i) the policy(ies) lapsing or otherwise terminating or expiring; (ii) the coverage limits of such policy(ies) are decreased; or (iii) the policy(ies) do not comply with the terms and conditions of the Tariff; Interconnected Entity shall be required to procure insurance sufficient to meet the requirements of this section, such that there is no lapse in insurance coverage. Notwithstanding the foregoing, in the event an Interconnected Entity will not design or construct or cause to design or construct any new transmission facilities or Interconnection Facilities, Transmission Provider, in its discretion, may waive the requirement that an Interconnected Entity maintain the Professional Liability Insurance pursuant to this section.

11.1A. Required Coverages For Generation Resources Of 20 Megawatts Or Less:

Each Constructing Entity shall maintain the types of insurance as described in section 11.1 paragraphs (a) through (e) above in an amount sufficient to insure against all reasonably foreseeable direct liabilities given the size and nature of the generating equipment being interconnected, the interconnection itself, and the characteristics of the system to which the interconnection is made. Additional insurance may be required by the Interconnection Customer, as a function of owning and operating a Generating Facility. All insurance shall be procured from insurance companies rated "A-," VII or better by AM Best and authorized to do business in a state or states in which the Interconnection Facilities are located. Failure to maintain required insurance shall be a Breach of the Interconnection Construction Service Agreement.

11.2 Additional Insureds:

The Commercial General Liability, Business/Commercial Automobile Liability and Excess and/or Umbrella Liability policies procured by each Constructing Entity (the “Insuring Constructing Entity”) shall include each other Construction Party (the “Insured Construction Party”), its officers, agents and employees as additional insureds, providing all standard coverages and covering liability of the Insured Construction Party arising out of bodily injury and/or property damage (including loss of use) in any way connected with the operations, performance, or lack of performance under this Interconnection Construction Service Agreement.

11.3 Other Required Terms:

The above-mentioned insurance policies (except workers’ compensation) shall provide the following:

(a) Each policy shall contain provisions that specify that it is primary and non contributory for any liability arising out of that party’s negligence and shall apply to such extent without consideration for other policies separately carried and shall state that each insured is provided coverage as though a separate policy had been issued to each, except the insurer’s liability shall not be increased beyond the amount for which the insurer would have been liable had only one insured been covered. Each Insuring Constructing Entity shall be responsible for its respective deductibles or retentions.

(b) If any coverage is written on a Claims First Made Basis, continuous coverage shall be maintained or an extended discovery period will be exercised for a period of not less than two (2) years after termination of the Interconnection Construction Service Agreement.

(c) Provide for a waiver of all rights of subrogation which the Insuring Constructing Entity’s insurance carrier might exercise against the Insured Construction Party.

11.3A No Limitation of Liability:

The requirements contained herein as to the types and limits of all insurance to be maintained by the Constructing Entities are not intended to and shall not in any manner, limit or qualify the liabilities and obligations assumed by the Construction Parties under the Interconnection Construction Service Agreement.

11.4 Self-Insurance:

Notwithstanding the foregoing, each Constructing Entity may self-insure to meet the minimum insurance requirements of this Section 11 to the extent it maintains a self-insurance program; provided that such Constructing Entity’s senior secured debt is rated at investment grade or better by Standard & Poor’s and its self-insurance program meets the minimum insurance requirements of this Section 11. For any period of time that a Constructing Entity’s senior secured debt is unrated by Standard & Poor’s or is rated at less than investment grade by Standard & Poor’s, it shall comply with the insurance requirements applicable to it under this Section 11. In the event that a Constructing Entity is permitted to self-insure pursuant to this section, it shall notify the

other Construction Parties that it meets the requirements to self-insure and that its self-insurance program meets the minimum insurance requirements in a manner consistent with that specified in Section 11.5.

11.5 Notices; Certificates of Insurance:

Prior to the commencement of work pursuant to this Agreement, the Constructing Entities agree to furnish each other Construction Party with certificates of insurance evidencing the insurance coverage obtained in accordance with this Section 11. All certificates of insurance shall indicate that the certificate holder is included as an additional insured under the Commercial General Liability, Business/Commercial Automobile Liability and Excess and/or Umbrella Liability coverages, and that this insurance is primary with a waiver of subrogation in favor of the other Interconnected Entities. All policies of insurance shall provide for thirty days prior written notice of cancellation or material adverse change. If the policies of insurance do not or cannot be endorsed to provide thirty days prior written notice of cancellation or material adverse change, each Construction Entity shall provide the other Construction Entities with thirty days prior written notice of cancellation or material adverse change to any of the insurance required in this agreement.

11.6 Subcontractor Insurance:

In accord with Good Utility Practice, each Constructing Entity shall require each of its subcontractors to maintain and provide evidence of insurance coverage of types, and in amounts, commensurate with the risks associated with the services provided by the subcontractor. Bonding of contractors or subcontractors shall be at the hiring Constructing Entity's discretion, but regardless of bonding, the hiring principal shall be responsible for the performance or non-performance of any contractor or subcontractor it hires.

11.7 Reporting Incidents:

The Construction Parties shall report to each other in writing as soon as practical all accidents or occurrences resulting in injuries to any person, including death, and any property damage arising out of the Interconnection Construction Service Agreement.

12 Indemnity

12.1 Indemnity:

Each Constructing Entity shall indemnify and hold harmless the other Construction Parties, and the other Construction Parties' officers, shareholders, stakeholders, members, managers, representatives, directors, agents and employees, and Affiliates, from and against any and all loss, liability, damage, cost or expense to third parties, including damage and liability for bodily injury to or death of persons, or damage to property of persons (including reasonable attorneys' fees and expenses, litigation costs, consultant fees, investigation fees, sums paid in settlements of claims, penalties or fines imposed under Applicable Laws and Regulations, and any such fees and expenses incurred in enforcing this indemnity or collecting any sums due hereunder) (collectively, "Loss") to the extent arising out of, in connection with or resulting from (i) the indemnifying

Constructing Entity's breach of any of the representations or warranties made in, or failure of the indemnifying Constructing Entity or any of its subcontractors to perform any of its obligations under, this Appendix 2, or (ii) the negligence or willful misconduct of the indemnifying Constructing Entity or its contractors; provided, however, that neither Constructing Entity shall have any indemnification obligations under this Section 12.1 in respect of any Loss to the extent the Loss results from the negligence or willful misconduct of the Construction Party seeking indemnity.

12.2 Indemnity Procedures:

Promptly after receipt by a Person entitled to indemnity ("Indemnified Person") of any claim or notice of the commencement of any action or administrative or legal proceeding or investigation as to which the indemnity provided for in Section 12.1 above may apply, the Indemnified Person shall notify the indemnifying Constructing Entity of such fact. Any failure of or delay in such notification shall not affect a Constructing Entity's indemnification obligation unless such failure or delay is materially prejudicial to the indemnifying Constructing Entity. The Indemnified Person shall cooperate with the indemnifying Constructing Entity with respect to the matter for which indemnification is claimed. The indemnifying Constructing Entity shall have the right to assume the defense thereof with counsel designated by such indemnifying Constructing Entity and reasonably satisfactory to the Indemnified Person. If the defendants in any such action include one or more Indemnified Persons and the indemnifying Constructing Entity and if the Indemnified Person reasonably concludes that there may be legal defenses available to it and/or other Indemnified Persons which are different from or additional to those available to the indemnifying Constructing Entity, the Indemnified Person shall have the right to select separate counsel to assert such legal defenses and to otherwise participate in the defense of such action on its own behalf. In such instances, the indemnifying Constructing Entity shall only be required to pay the fees and expenses of one additional attorney to represent an Indemnified Person or Indemnified Persons having such differing or additional legal defenses. The Indemnified Person shall be entitled, at its expense, to participate in any action, suit or proceeding, the defense of which has been assumed by the indemnifying Constructing Entity. Notwithstanding the foregoing, the indemnifying Constructing Entity (i) shall not be entitled to assume and control the defense of any such action, suit or proceedings if and to the extent that, in the opinion of the Indemnified Person and its counsel, such action, suit or proceeding involves the potential imposition of criminal liability on the Indemnified Person, or there exists a conflict or adversity of interest between the Indemnified Person and the indemnifying Constructing Entity, in such event the indemnifying Constructing Entity shall pay the reasonable expenses of the Indemnified Person, and (ii) shall not settle or consent to the entry of any judgment in any action, suit or proceeding without the consent of the Indemnified Person, which shall not be unreasonably withheld, conditioned or delayed.

12.3 Indemnified Person:

If an Indemnified Person is entitled to indemnification under this Section 12 as a result of a claim by a third party, and the indemnifying Constructing Entity fails, after notice and reasonable opportunity to proceed under Section 12.2, to assume the defense of such claim, such Indemnified Person may at the expense of the indemnifying Constructing Entity contest, settle or consent to the entry of any judgment with respect to, or pay in full, such claim.

12.4 Amount Owing:

If an indemnifying Constructing Entity is obligated to indemnify and hold any Indemnified Person harmless under this Section 12, the amount owing to the Indemnified Person shall be the amount of such Indemnified Person's actual Loss, net of any insurance or other recovery.

12.5 Limitation on Damages:

Except as otherwise provided in this Section 12, the liability of a Construction Party under this Appendix 2 shall be limited to direct actual damages, and all other damages at law are waived. Under no circumstances shall any Construction Party or its Affiliates, directors, officers, employees and agents, or any of them, be liable to another Construction Party, whether in tort, contract or other basis in law or equity for any special, indirect, punitive, exemplary or consequential damages, including lost profits. The limitations on damages specified in this Section 12.5 are without regard to the cause or causes related thereto, including the negligence of any Construction Party, whether such negligence be sole, joint or concurrent, or active or passive. This limitation on damages shall not affect any Construction Party's rights to obtain equitable relief as otherwise provided in this Appendix 2. The provisions of this Section 12.5 shall survive the termination or expiration of the Interconnection Construction Service Agreement.

12.6 Limitation of Liability in Event of Breach:

A Construction Party ("Breaching Party") shall have no liability hereunder to any other Construction Party, and each other Construction Party hereby releases the Breaching Party, for all claims or damages it incurs that are associated with any interruption in the availability of the Customer Facility, the Interconnection Facilities, Transmission System or Construction Service or damages to a Construction Party's facilities, except to the extent such interruption or damage is caused by the Breaching Party's gross negligence or willful misconduct in the performance of its obligations under this Interconnection Construction Service Agreement.

12.7 Limited Liability in Emergency Conditions:

Except as otherwise provided in the Tariff or the Operating Agreement, no Construction Party shall be liable to any other Construction Party for any action that it takes in responding to an Emergency Condition, so long as such action is made in good faith, is consistent with Good Utility Practice and is not contrary to the directives of the Transmission Provider or the Interconnected Transmission Owner with respect to such Emergency Condition. Notwithstanding the above, Interconnection Customer shall be liable in the event that it fails to comply with any instructions of Transmission Provider or the Interconnected Transmission Owner related to an Emergency Condition.

13 Breach, Cure And Default

13.1 Breach:

A Breach of the Interconnection Construction Service Agreement shall include:

- (a) The failure to pay any amount when due;
- (b) The failure to comply with any material term or condition of this Interconnection Construction Service Agreement including but not limited to any material breach of a representation, warranty or covenant (other than in Sections 13.1(a) and (c)-(e) hereof) made in this Appendix 2;
- (c) Assignment of the Interconnection Construction Service Agreement in a manner inconsistent with the terms of this Appendix 2;
- (d) Failure of a Constructing Entity to provide access rights, or a Constructing Entity's attempt to revoke or terminate access rights, that are provided under this Appendix 2; or
- (e) Failure of any Construction Party to provide information or data required to be provided to another Construction Party under this Appendix 2 for such other Construction Party to satisfy its obligations under this Interconnection Construction Service Agreement.

13.2 Notice of Breach:

A Construction Party not in Breach of this Interconnection Construction Service Agreement shall give written notice of an event of Breach to the Breaching Construction Party, to the third Construction Party, and to any other persons that the Breaching Construction Party identifies in writing to the other Construction Parties in advance. Such notice shall set forth, in reasonable detail, the nature of the Breach, and where known and applicable, the steps necessary to cure such Breach. In the event of a Breach by Interconnection Customer, Transmission Provider and the Interconnected Transmission Owner agree to provide notice of such Breach, at the same time and in the same manner as its or their notice to Interconnection Customer, to any Project Finance Entity, provided that the Interconnection Customer has provided Transmission Provider and the Interconnected Transmission Owner with notice of an assignment to such Project Finance Entity(ies) and has identified such Project Finance Entities as contacts for notice purposes pursuant to Section 20 of this Appendix 2.

13.3 Cure and Default:

A Construction Party that commits a Breach and does not take steps to cure the Breach pursuant to this Section 13.3 is in Default of this Interconnection Construction Service Agreement.

13.3.1 Cure of Breach:

The Breaching Construction Party (a) may cure the Breach within thirty days from the receipt of such notice; or, (b) if the Breach cannot be cured within thirty days, may commence in good faith all steps that are reasonable and appropriate to cure the Breach within such thirty day time period and thereafter diligently pursue such action to completion.

13.4 Right to Compel Performance:

Upon the occurrence of an event of Default, a non-Defaulting Construction Party shall be entitled to (a) commence an action to require the Defaulting Construction Party to remedy such Default and specifically perform its duties and obligations hereunder in accordance with the terms and conditions hereof, (b) withhold payments, (c) suspend performance hereunder, and (d) exercise such other rights and remedies as it may have in equity or at law.

13.5 Remedies Cumulative:

Subject to Section 19.1 of this Appendix 2, no remedy conferred by any provision of this Appendix 2 is intended to be exclusive of any other remedy and each and every remedy shall be cumulative and shall be in addition to every other remedy given hereunder or now or hereafter existing at law or in equity or by statute or otherwise. The election of any one or more remedies shall not constitute a waiver of the right to pursue other available remedies.

14 Termination

14.1 Termination

14.1.1 Upon Completion of Construction:

This Interconnection Construction Service Agreement shall terminate upon the later of the following: (i) completion of construction of all Interconnection Facilities; (ii) transfer of title under Section 5 of this Appendix 2; (iii) final payment of all Costs due and owing under this Interconnection Construction Service Agreement; and (iv) the delivery to the Interconnected Transmission Owner of final “as-built” drawings of any Interconnection Facilities built by the Interconnection Customer.

14.1.2 Upon Default By Either Constructing Entity:

Either Constructing Entity may terminate its obligations hereunder in the event of a Default by the other Constructing Entity as defined in Section 13.3 of this Appendix 2.

14.1.3 By Interconnection Customer:

Subject to its payment of Cancellation Costs as explained in Section 14.3 below, the Interconnection Customer may be relieved of its obligations hereunder upon sixty (60) days written notice to Transmission Provider and the Interconnected Transmission Owner.

14.2 [Reserved.]

14.3 Cancellation By Interconnection Customer

14.3.1 Applicability:

The following provisions shall survive and shall apply in the event that Interconnection Customer terminates the Interconnection Construction Service Agreement pursuant to this Section 14.1.3.

14.3.1.1 Cancellation Cost Responsibility:

Upon the cancellation of the Interconnection Construction Service Agreement by the Interconnection Customer, the Interconnection Customer shall be liable to pay to the Interconnected Transmission Owner or Transmission Provider all Cancellation Costs in connection with Construction Service for the Interconnection Customer pursuant to this Interconnection Construction Service Agreement, including Section 14.3.1.2 of this Appendix 2. In the event the Interconnected Transmission Owner incurs Cancellation Costs, it shall provide the Transmission Provider, with a copy to the Interconnection Customer, with a written demand for payment and with reasonable documentation of such Cancellation Costs. The Interconnection Customer shall pay the Transmission Provider each bill for Cancellation Costs within thirty (30) days after, as applicable, the Interconnected Transmission Owner's or Transmission Provider's presentation to the Interconnection Customer of written demand therefor, provided that such demand includes reasonable documentation of the Cancellation Costs that the invoicing party seeks to collect. Upon receipt of each of Interconnection Customer's payments of such bills of the Interconnected Transmission Owner, Transmission Provider shall reimburse the Interconnected Transmission Owner for Cancellation Costs incurred by the latter.

14.3.1.2 Disposition of Facilities Upon Cancellation:

Upon cancellation of the Interconnection Construction Service Agreement by an Interconnection Customer, Transmission Provider, after consulting with the Interconnected Transmission Owner, may, at the sole cost and expense of the Interconnection Customer, authorize the Interconnected Transmission Owner to (a) cancel supplier and contractor orders and agreements entered into by the Interconnected Transmission Owner to design, construct, install, operate, maintain and own the Transmission Owner Interconnection Facilities, provided, however, that Interconnection Customer shall have the right to choose to take delivery of any equipment ordered by the Interconnected Transmission Owner for which Transmission Provider otherwise would authorize cancellation of the purchase order; or (b) remove any Transmission Owner Interconnection Facilities built by the Interconnected Transmission Owner or any Transmission Owner Interconnection Facilities (only after title to the subject facilities has been transferred to the Interconnected Transmission Owner) built by the Interconnection Customer; or (c) partially or entirely complete the Transmission Owner Interconnection Facilities as necessary to preserve the integrity or reliability of the Transmission System, provided that Interconnection Customer shall be entitled to receive any rights associated with such facilities and upgrades as determined in accordance with Part VI of the Tariff; or (d) undo any of the changes to the Transmission System that were made pursuant to this Interconnection Construction Service Agreement. To the extent that the Interconnection Customer has fully paid for equipment that is unused upon cancellation or which is removed pursuant to subsection (b) above, the Interconnection Customer shall have the right to take back title to such equipment; alternatively, in the event that the Interconnection Customer does not wish to take back title, the Interconnected Transmission Owner may elect to pay the Interconnection Customer a mutually agreed amount to acquire and own such equipment.

14.3.2 Termination Upon Default:

In the event that Interconnection Customer exercises its right to terminate under Section 14.1.2 of this Appendix 2, and notwithstanding any other provision of this Interconnection Construction Service Agreement, the Interconnection Customer shall be liable for payment of the Interconnected Transmission Owner's Costs incurred up to the date of Interconnection Customer's notice of termination pursuant to Section 14.1.2 and the costs of completion of some or all of the Transmission Owner Interconnection Facilities or specific unfinished portions thereof, and/or removal of any or all of such facilities which have been installed, to the extent that Transmission Provider determines such completion or removal to be required for the Transmission Provider and/or Interconnected Transmission Owner to perform their respective obligations under Part VI of the Tariff or this Interconnection Construction Service Agreement, provided, however, that Interconnection Customer's payment of such costs shall be without prejudice to any remedies that otherwise may be available to it under this Appendix 2 for the Default of the Interconnected Transmission Owner.

14.4 Survival of Rights:

The obligations of the Construction Parties hereunder with respect to payments, Cancellation Costs, warranties, liability and indemnification shall survive termination to the extent necessary to provide for the determination and enforcement of said obligations arising from acts or events that occurred while the Interconnection Construction Service Agreement was in effect. In addition, applicable provisions of this Interconnection Construction Service Agreement will continue in effect after expiration, cancellation or termination to the extent necessary to provide for final billings, payments, and billing adjustments.

15 Force Majeure

15.1 Notice:

A Construction Party that is unable to carry out an obligation imposed on it by this Appendix 2 due to Force Majeure shall notify each other Construction Party in writing or by telephone within a reasonable time after the occurrence of the cause relied on.

15.2 Duration of Force Majeure:

A Construction Party shall not be responsible for any non-performance or considered in Breach or Default under this Appendix 2, for any non-performance, any interruption or failure of service, deficiency in the quality or quantity of service, or any other failure to perform any obligation hereunder to the extent that such failure or deficiency is due to Force Majeure. A Construction Party shall be excused from whatever performance is affected only for the duration of the Force Majeure and while the Construction Party exercises Reasonable Efforts to alleviate such situation. As soon as the non-performing Construction Party is able to resume performance of its obligations excused because of the occurrence of Force Majeure, such Construction Party shall resume performance and give prompt notice thereof to each other Construction Party.

15.3 Obligation to Make Payments:

Any Construction Party's obligation to make payments for services shall not be suspended by Force Majeure.

15.4 Definition of Force Majeure:

For the purposes of this section, an event of force majeure shall mean any cause beyond the control of the affected Interconnection Party or Construction Party, including but not restricted to, acts of God, flood, drought, earthquake, storm, fire, lightning, epidemic, war, riot, civil disturbance or disobedience, labor dispute, labor or material shortage, sabotage, acts of public enemy, explosions, orders, regulations or restrictions imposed by governmental, military, or lawfully established civilian authorities, which, in any of the foregoing cases, by exercise of due diligence such party could not reasonably have been expected to avoid, and which, by the exercise of due diligence, it has been unable to overcome. Force majeure does not include (i) a failure of performance that is due to an affected party's own negligence or intentional wrongdoing; (ii) any removable or remediable causes (other than settlement of a strike or labor dispute) which an affected party fails to remove or remedy within a reasonable time; or (iii) economic hardship of an affected party.

16 Subcontractors

16.1 Use of Subcontractors:

Nothing in this Appendix 2 shall prevent the Construction Parties from utilizing the services of subcontractors as they deem appropriate to perform their respective obligations hereunder, provided, however, that each Construction Party shall require its subcontractors to comply with all applicable terms and conditions of this Appendix 2 in providing such services.

16.2 Responsibility of Principal:

The creation of any subcontract relationship shall not relieve the hiring Construction Party of any of its obligations under this Appendix 2. Each Construction Party shall be fully responsible to each other Construction Party for the acts and/or omissions of any subcontractor it hires as if no subcontract had been made.

16.3 Indemnification by Subcontractors:

To the fullest extent permitted by law, a Construction Party that uses a subcontractor to carry out any of the Construction Party's obligations under this Appendix 2 shall require each of its subcontractors to indemnify, hold harmless and defend each other Construction Party, its representatives and assigns from and against any and all claims and/or liability for damage to property, injury to or death of any person, including the employees of any Construction Party or of any Affiliate of any Construction Party, or any other liability incurred by another Construction Party or any of its Affiliates, including all expenses, legal or otherwise, to the extent caused by any act or omission, negligent or otherwise, by such subcontractor and/or its officers, directors, employees, agents and assigns, that arises out of or is connected with the design, procurement,

construction or installation of the facilities of either Constructing Entity described in this Appendix 2; provided, however, that no Construction Party or Affiliate thereof shall be entitled to indemnity under this Section 16.3 in respect of any injury, loss, or damage to the extent that such loss, injury, or damage results from the negligence or willful misconduct of the Construction Party or Affiliate seeking indemnity.

16.4 Subcontractors Not Beneficiaries:

No subcontractor is intended to be, or shall be deemed to be, a third-party beneficiary of the Interconnection Construction Service Agreement.

17 Confidentiality:

Information is Confidential Information only if it is clearly designated or marked in writing as confidential on the face of the document, or, if the information is conveyed orally or by inspection, if the Construction Party providing the information orally informs the Construction Party receiving the information that the information is confidential. If requested by any Construction Party, the disclosing Construction Party shall provide in writing the basis for asserting that the information referred to in this section warrants confidential treatment, and the requesting Construction Party may disclose such writing to an appropriate Governmental Authority. Any Construction Party shall be responsible for the costs associated with affording confidential treatment to its information.

17.1 Term:

During the term of the Interconnection Construction Service Agreement, and for a period of three (3) years after the expiration or termination of the Interconnection Construction Service Agreement, except as otherwise provided in this Section 17, each Construction Party shall hold in confidence, and shall not disclose to any person, Confidential Information provided to it by any other Construction Party.

17.2 Scope:

Confidential Information shall not include information that the receiving Construction Party can demonstrate: (i) is generally available to the public other than as a result of a disclosure by the receiving Construction Party; (ii) was in the lawful possession of the receiving Construction Party on a non-confidential basis before receiving it from the disclosing Construction Party; (iii) was supplied to the receiving Construction Party without restriction by a third party, who, to the knowledge of the receiving Construction Party, after due inquiry, was under no obligation to the disclosing Construction Party to keep such information confidential; (iv) was independently developed by the receiving Construction Party without reference to Confidential Information of the disclosing Construction Party; (v) is, or becomes, publicly known, through no wrongful act or omission of the receiving Construction Party or breach of this Appendix 2; or (vi) is required, in accordance with Section 17.7 of this Appendix 2, to be disclosed to any Governmental Authority or is otherwise required to be disclosed by law or subpoena, or is necessary in any legal proceeding establishing rights and obligations under this Interconnection Construction Service Agreement.

Information designated as Confidential Information shall no longer be deemed confidential if the Construction Party that designated the information as confidential notifies the other Construction Parties that it no longer is confidential.

17.3 Release of Confidential Information:

No Construction Party shall disclose Confidential Information of another Construction Party to any other person, except to its Affiliates (limited by the Commission's Standard of Conduct requirements), subcontractors, employees, consultants or to parties who may be or considering providing financing to or equity participation in Interconnection Customer on a need-to-know basis in connection with the Interconnection Construction Service Agreement, unless such person has first been advised of the confidentiality provisions of this Section 17 and has agreed to comply with such provisions. Notwithstanding the foregoing, a Construction Party that provides Confidential Information of another Construction Party to any person shall remain primarily responsible for any release of Confidential Information in contravention of this Section 17.

17.4 Rights:

Each Construction Party retains all rights, title, and interest in the Confidential Information that it discloses to any other Construction Party. A Construction Party's disclosure to another Construction Party of Confidential Information shall not be deemed a waiver by either Construction Party or any other person or entity of the right to protect the Confidential Information from public disclosure.

17.5 No Warranties:

By providing Confidential Information, no Construction Party makes any warranties or representations as to its accuracy or completeness. In addition, by supplying Confidential Information, no Construction Party obligates itself to provide any particular information or Confidential Information to any other Construction Party nor to enter into any further agreements or proceed with any other relationship or joint venture.

17.6 Standard of Care:

Each Construction Party shall use at least the same standard of care to protect Confidential Information it receives as the Construction Party uses to protect its own Confidential Information from unauthorized disclosure, publication or dissemination. Each Construction Party may use Confidential Information solely to fulfill its obligations to the other Construction Parties under this Interconnection Construction Service Agreement or to comply with Applicable Laws and Regulations.

17.7 Order of Disclosure:

If a Governmental Authority with the right, power, and apparent authority to do so requests or requires a Construction Party, by subpoena, oral deposition, interrogatories, requests for production of documents, administrative order, or otherwise, to disclose Confidential Information,

that Construction Party shall provide the Construction Party that provided the information with prompt prior notice of such request(s) or requirement(s) so that the providing Construction Party may seek an appropriate protective order, or waive compliance with the terms of this Interconnection Construction Service Agreement. Notwithstanding the absence of a protective order, or agreement, or waiver, the Construction Party subjected to the request or order may disclose such Confidential Information which, in the opinion of its counsel, the Construction Party is legally compelled to disclose. Each Construction Party shall use Reasonable Efforts to obtain reliable assurance that confidential treatment will be accorded any Confidential Information so furnished.

17.8 Termination of Interconnection Construction Service Agreement:

Upon termination of the Interconnection Construction Service Agreement for any reason, each Construction Party shall, within ten (10) calendar days of receipt of a written request from another party, use Reasonable Efforts to destroy, erase, or delete (with such destruction, erasure and deletion certified in writing to the requesting party) or to return to the requesting party, without retaining copies thereof, any and all written or electronic Confidential Information received from the requesting party.

17.9 Remedies:

The Construction Parties agree that monetary damages would be inadequate to compensate a Construction Party for another Construction Party's Breach of its obligations under this Section 17. Each Construction Party accordingly agrees that each other Construction Party shall be entitled to equitable relief, by way of injunction or otherwise, if the first Construction Party breaches or threatens to breach its obligations under this Section 17, which equitable relief shall be granted without bond or proof of damages, and the receiving Construction Party shall not plead in defense that there would be an adequate remedy at law. Such remedy shall not be deemed to be an exclusive remedy for the breach of this Section 17, but shall be in addition to all other remedies available at law or in equity. The Construction Parties further acknowledge and agree that the covenants contained herein are necessary for the protection of legitimate business interests and are reasonable in scope. No Construction Party, however, shall be liable for indirect, incidental, consequential, or punitive damages of any nature or kind resulting from or arising in connection with a Breach of any obligation under this Section 17.

17.10 Disclosure to FERC or its Staff:

Notwithstanding anything in this Section 17 to the contrary, and pursuant to 18 C.F.R. § 1b.20, if FERC or its staff, during the course of an investigation or otherwise, requests information from one of the Construction Parties that is otherwise required to be maintained in confidence pursuant to this Interconnection Construction Service Agreement, the Construction Party, shall provide the requested information to FERC or its staff, within the time provided for in the request for information. In providing the information to FERC or its staff, the Construction Party must, consistent with 18 C.F.R. § 388.122, request that the information be treated as confidential and non-public by FERC and its staff and that the information be withheld from public disclosure. Construction Parties are prohibited from notifying the other Construction Parties to the

Interconnection Construction Service Agreement prior to the release of the Confidential Information to the Commission or its staff. A Construction Party shall notify the other Construction Parties when it is notified by FERC or its staff that a request to release Confidential Information has been received by FERC, at which time any of the Construction Parties may respond before such information would be made public, pursuant to 18 C.F.R. § 388.112.

17.11

Subject to the exception in Section 17.10, no Construction Party shall disclose Confidential Information of another Construction Party to any person not employed or retained by the disclosing Construction Party, except to the extent disclosure is (i) required by law; (ii) reasonably deemed by the disclosing Construction Party to be required in connection with a dispute between or among the Construction Parties, or the defense of litigation or dispute; (iii) otherwise permitted by consent of the Construction Party that provided such Confidential Information, such consent not to be unreasonably withheld; or (iv) necessary to fulfill its obligations under this Interconnection Construction Service Agreement or as a transmission service provider or a Control Area operator including disclosing the Confidential Information to an RTO or ISO or to a regional or national reliability organization. Prior to any disclosures of another Construction Party's Confidential Information under this subparagraph, the disclosing Construction Party shall promptly notify the other Construction Parties in writing and shall assert confidentiality and cooperate with the other Construction Parties in seeking to protect the Confidential Information from public disclosure by confidentiality agreement, protective order or other reasonable measures.

17.12

This provision shall not apply to any information that was or is hereafter in the public domain (except as a result of a Breach of this provision).

17.13 Return or Destruction of Confidential Information:

If any Construction Party provides any Confidential Information to another Construction Party in the course of an audit or inspection, the providing Construction Party may request the other party to return or destroy such Confidential Information after the termination of the audit period and the resolution of all matters relating to that audit. Each Construction Party shall make Reasonable Efforts to comply with any such requests for return or destruction within ten days after receiving the request and shall certify in writing to the requesting Construction Party that it has complied with such request.

18 Information Access And Audit Rights

18.1 Information Access:

Subject to Applicable Laws and Regulations, each Construction Party shall make available to each other Construction Party information necessary (i) to verify the costs incurred by the other Construction Party for which the requesting Construction Party is responsible under this Appendix 2, and (ii) to carry out obligations and responsibilities under this Appendix 2. The Construction

Parties shall not use such information for purposes other than those set forth in this Section 18.1 and to enforce their rights under this Appendix 2.

18.2 Reporting of Non-Force Majeure Events:

Each Construction Party shall notify each other Construction Party when it becomes aware of its inability to comply with the provisions of this Appendix 2 for a reason other than an event of force majeure as defined in Section 15.4 of this Appendix 2. The Construction Parties agree to cooperate with each other and provide necessary information regarding such inability to comply, including, but not limited to, the date, duration, reason for the inability to comply, and corrective actions taken or planned to be taken with respect to such inability to comply. Notwithstanding the foregoing, notification, cooperation or information provided under this Section shall not entitle the receiving Construction Party to allege a cause of action for anticipatory breach of this Appendix 2.

18.3 Audit Rights:

Subject to the requirements of confidentiality under Section 17 of this Appendix 2, each Construction Party shall have the right, during normal business hours, and upon prior reasonable notice to the pertinent Construction Party, to audit at its own expense the other Construction Party's accounts and records pertaining to such Construction Party's performance and/or satisfaction of obligations arising under this Interconnection Construction Service Agreement. Any audit authorized by this Section shall be performed at the offices where such accounts and records are maintained and shall be limited to those portions of such accounts and records that relate to obligations under this Appendix 2. Any request for audit shall be presented to the other Construction Party not later than twenty-four months after the event as to which the audit is sought. Each Construction Party shall preserve all records held by it for the duration of the audit period.

19 Disputes

19.1 Submission:

Any claim or dispute that any Construction Party may have against another Construction Party arising out of this Appendix 2 may be submitted for resolution in accordance with the dispute resolution provisions of Section 12 of the Tariff.

19.2 Rights Under The Federal Power Act:

Nothing in this Section shall restrict the rights of any Construction Party to file a complaint with FERC under relevant provisions of the Federal Power Act.

19.3 Equitable Remedies:

Nothing in this Section shall prevent any Construction Party from pursuing or seeking any equitable remedy available to it under Applicable Laws and Regulations.

20 Notices

20.1 General:

Any notice, demand or request required or permitted to be given by either Construction Party to another and any instrument required or permitted to be tendered or delivered by either Construction Party in writing to another may be so given, tendered or delivered, by recognized national courier, or by depositing the same with the United States Postal Service with postage prepaid, for delivery by certified or registered mail, addressed to the Construction Party, or personally delivered to the Construction Party, at the address specified in the Interconnection Construction Service Agreement. If agreed to in advance by the Construction Parties, notices may be communicated via electronic means, so long as there is e-mail confirmation of delivery.

20.2 Operational Contacts:

Each Construction Party shall designate, and shall provide to each other Construction Party contact information concerning, a representative to be responsible for addressing and resolving operational issues as they arise during the term of the Interconnection Construction Service Agreement.

21 Miscellaneous

21.1 Regulatory Filing:

In the event that this Interconnection Construction Service Agreement contains any terms that deviate materially from the form included in Attachment P or from the standard terms and conditions in this Appendix 2, the Transmission Provider shall file the executed Interconnection Construction Service Agreement on behalf of itself and the Interconnected Transmission Owner with FERC as a service schedule under the Tariff. Interconnection Customer may request that any information so provided be subject to the confidentiality provisions of Section 17 of this Appendix 2. An Interconnection Customer shall have the right, with respect to any Interconnection Construction Service Agreement tendered to it, to request (a) dispute resolution under Section 12 of the Tariff or, if concerning the Regional Transmission Expansion Plan, consistent with Schedule 5 of the Operating Agreement, or (b) that Transmission Provider file the agreement unexecuted with the Commission. With the filing of any unexecuted Interconnection Construction Service Agreement, Transmission Provider may, in its discretion, propose to FERC a resolution of any or all of the issues in dispute between any Construction Parties.

21.2 Waiver:

Any waiver at any time by any Construction Party of its rights with respect to a Breach or Default under this Appendix 2, or with respect to any other matters arising in connection with this Appendix 2, shall not be deemed a waiver or continuing waiver with respect to any other Breach or Default or other matter.

21.3 Amendments and Rights under the Federal Power Act:

Except as set forth in this Section, this Interconnection Construction Service Agreement may be amended, modified, or supplemented only by written agreement of the Construction Parties. Such amendment shall become effective and a part of this Interconnection Construction Service Agreement upon satisfaction of all Applicable Laws and Regulations. Notwithstanding the foregoing, nothing contained in this Interconnection Construction Service Agreement shall be construed as affecting in any way any of the rights of any Construction Party with respect to changes in applicable rates or charges under Section 205 of the Federal Power Act and/or FERC's rules and regulations thereunder, or any of the rights of any Interconnection Party under Section 206 of the Federal Power Act and/or FERC's rules and regulations thereunder. The terms and conditions of this Interconnection Construction Service Agreement and every appendix referred to therein shall be amended, as mutually agreed by the Construction Parties, to comply with changes or alterations made necessary by a valid applicable order of any Governmental Authority having jurisdiction hereof.

21.4 Binding Effect:

This Interconnection Construction Service Agreement, including the rights and obligations incorporated by reference therein from this Interconnection Construction Service Agreement, shall be binding upon, and shall inure to the benefit of, the successors and assigns of the Construction Parties.

21.5 Regulatory Requirements:

Each Construction Party's performance of any obligation under this Interconnection Construction Service Agreement for which such party requires approval or authorization of any Governmental Authority shall be subject to its receipt of such required approval or authorization in the form and substance satisfactory to the receiving Construction Party, or the Construction Party making any required filings with, or providing notice to, such Governmental Authorities, and the expiration of any time period associated therewith. Each Construction Party shall in good faith seek, and shall use Reasonable Efforts to obtain, such required authorizations or approvals as soon as reasonably practicable.

22 Representations and Warranties

22.1 General:

Each Constructing Entity hereby represents, warrants and covenants as follows, with these representations, warranties, and covenants effective as to the Constructing Entity during the full time the Interconnection Construction Service Agreement is effective:

22.1.1 Good Standing:

Such Constructing Entity is duly organized or formed, as applicable, validly existing and in good standing under the laws of its state of organization or formation, and is in good standing under the laws of the respective State(s) in which it is incorporated and operates as stated in the preamble of the Interconnection Construction Service Agreement.

22.1.2 Authority:

Such Constructing Entity has the right, power and authority to enter into the Interconnection Construction Service Agreement, to become a party thereto and to perform its obligations thereunder. The Interconnection Construction Service Agreement is a legal, valid and binding obligation of such Constructing Entity, enforceable against such Constructing Entity in accordance with its terms, except as the enforceability thereof may be limited by applicable bankruptcy, insolvency, reorganization or other similar laws affecting creditors' rights generally and by general equitable principles (regardless of whether enforceability is sought in a proceeding in equity or at law).

22.1.3 No Conflict:

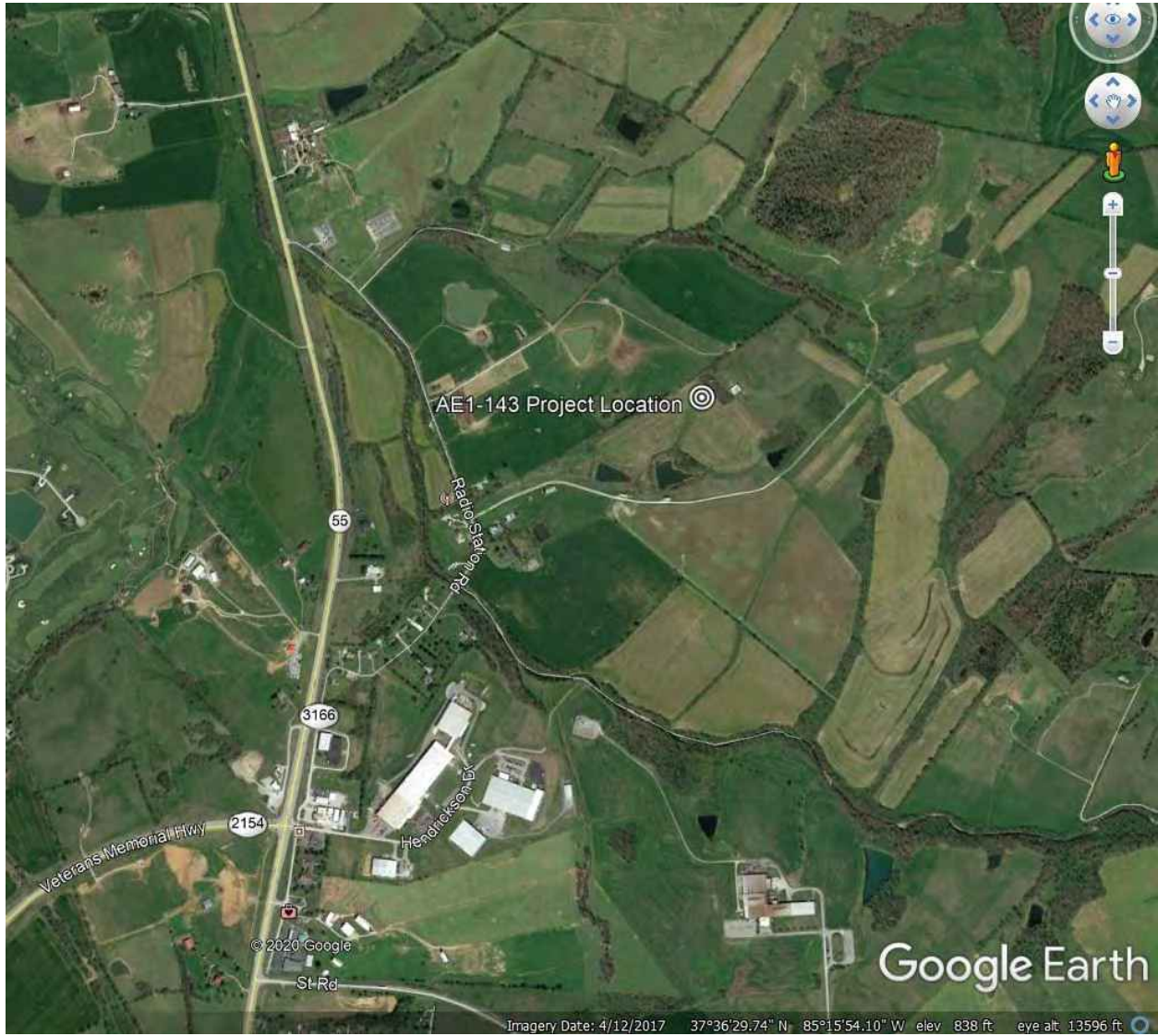
The execution, delivery and performance of the Interconnection Construction Service Agreement does not violate or conflict with the organizational or formation documents, or bylaws or operating agreement, of such Constructing Entity, or any judgment, license, permit, order, material agreement or instrument applicable to or binding upon such Constructing Entity or any of its assets.

22.1.4 Consent and Approval:

Such Constructing Entity has sought or obtained, or, in accordance with the Interconnection Construction Service Agreement will seek or obtain, each consent, approval, authorization, order, or acceptance by any Governmental Authority in connection with the execution, delivery and performance of such Agreement and it will provide to any Governmental Authority notice of any actions under such Agreement that are required by Applicable Laws and Regulations.

SCHEDULE A

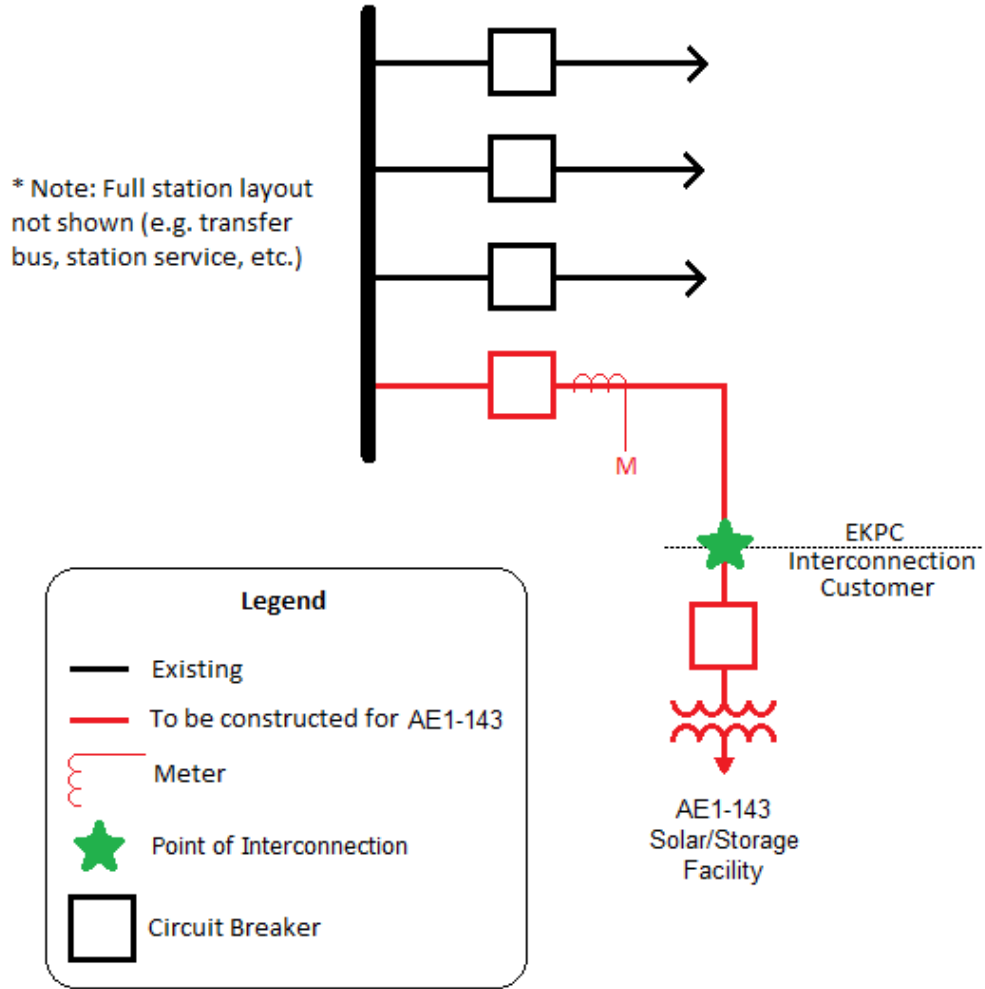
SITE PLAN



SCHEDULE B

SINGLE-LINE DIAGRAM OF INTERCONNECTION FACILITIES

Marion County 161kV



SCHEDULE C

TRANSMISSION OWNER INTERCONNECTION FACILITIES TO BE BUILT BY INTERCONNECTED TRANSMISSION OWNER

Attachment Facility:

A 161 kV isolation switch structure and associated switch, interconnection metering, fiber-optic connection and telecommunications equipment, circuit breaker and associated switches, and relay panel at the existing Marion County 161kV Substation to accept the Interconnection Customer's generator lead line/bus. PJM Network Upgrade Number n6732.

SCHEDULE D

**TRANSMISSION OWNER INTERCONNECTION FACILITIES TO BE BUILT BY
INTERCONNECTION CUSTOMER PURSUANT TO OPTION TO BUILD**

None

SCHEDULE E

[Reserved]

SCHEDULE F

[Reserved]

SCHEDULE G

CUSTOMER INTERCONNECTION FACILITIES

- a) One (1) attachment line between the Marion County 161kV switching station and the Customer Facility;
- b) One (1) 161kV circuit breaker and associated equipment located at the Customer Facility;
- c) One (1) 34.5/161kV generator step-up transformer located at the Customer Facility;
- d) Minimum relay and protective equipment, supervisory control and data acquisition (SCADA) equipment, and telecommunications equipment; and
- e) Necessary metering equipment as specified in Schedule C of the AE1-143 Interconnection Service Agreement.

SCHEDULE H
NEGOTIATED CONTRACT OPTION TERMS

None

SCHEDULE I
SCOPE OF WORK

The Interconnection Customer shall construct and own the following:

- a) One (1) attachment line between the Marion County 161kV switching station and the Customer Facility;
- b) One (1) 161kV circuit breaker and associated equipment located at the Customer Facility;
- c) One (1) 34.5/161kV generator step-up transformer located at the Customer Facility;
- d) Minimum relay and protective equipment, supervisory control and data acquisition (SCADA) equipment, and telecommunications equipment; and
- e) Necessary metering equipment as specified in Schedule C of the AE1-143 Interconnection Service Agreement.

The Interconnected Transmission Owner shall construct and own the following:

Attachment Facility:

A 161 kV isolation switch structure and associated switch, interconnection metering, fiber-optic connection and telecommunications equipment, circuit breaker and associated switches, and relay panel at the existing Marion County 161kV Substation to accept the Interconnection Customer's generator lead line/bus. PJM Network Upgrade Number n6732.

SCHEDULE J
SCHEDULE OF WORK

The schedule of work for the Interconnected Transmission Owner work is:

Activity	Start Month	End Month
Project Kickoff Meeting	0	0
Design (Including Site Grading Design)	1	3
Procure Materials and Equipment	4	9
Site Preparation	9	9
Substation Construction	10	11
Commissioning and Testing	11	12

Month #1 corresponds to the first month after this CSA is effective.

The schedule of work for the Interconnection Customer work is:

By November 30, 2023:

Complete all Customer Interconnection Facilities set forth in Schedule G of this CSA

SCHEDULE K

APPLICABLE TECHNICAL REQUIREMENTS AND STANDARDS

“EKPC Facility Connection Requirements” rev. 11, dated June 30, 2019 shall apply. The “EKPC Facility Connection Requirements” rev. 11, dated June 30, 2019, are available on the PJM website. To the extent that these Applicable Technical Requirements and Standards conflict with the terms and conditions of the Tariff or any other provision of this CSA, the Tariff and/or this CSA shall control.

SCHEDULE L

INTERCONNECTION CUSTOMER'S AGREEMENT TO CONFORM WITH IRS SAFE HARBOR PROVISIONS FOR NON-TAXABLE STATUS

As provided in Section 2.4.1 of Appendix 2 to this CSA and subject to the requirements thereof, Interconnection Customer represents that it meets all qualifications and requirements as set forth in Section 118(a) and 118(b) of the Internal Revenue Code of 1986, as amended and interpreted by Notice 2016-36, 2016-25 I.R.B. (6/20/2016) (the "IRS Notice"). Interconnection Customer agrees to conform with all requirements of the safe harbor provisions specified in the IRS Notice, as they may be amended, as required to confer non-taxable status on some or all of the transfer of property, including money, by Interconnection Customer to Interconnected Transmission Owner with respect to the payment of the Costs of construction and installation of the Transmission Owner Interconnection Facilities specified in this CSA.

Nothing in Interconnection Customer's agreement pursuant to this Schedule L shall change Interconnection Customer's indemnification obligations under Section 2.4.2 of Appendix 2 to the CSA.

SCHEDULE M

SCHEDULE OF NON-STANDARD TERMS AND CONDITIONS

None

SCHEDULE N

INTERCONNECTION REQUIREMENTS FOR ALL WIND, SOLAR AND NON-SYNCHRONOUS GENERATION FACILITIES

A. Voltage Ride Through Requirements

The Customer Facility shall be designed to remain in service (not trip) for voltages and times as specified for the Eastern Interconnection in Attachment 1 of NERC Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low voltage conditions, irrespective of generator size, subject to the permissive trip exceptions established in PRC-024-1 (and successor Reliability Standards).

B. Frequency Ride Through Requirements

The Customer Facility shall be designed to remain in service (not trip) for frequencies and times as specified in Attachment 2 of NERC Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low frequency condition, irrespective of generator size, subject to the permissive trip exceptions established in PRC-024-1 (and successor Reliability Standards).

C. Supervisory Control and Data Acquisition (SCADA) Capability

The wind, solar or non-synchronous generation facility shall provide SCADA capability to transmit data and receive instructions from the Transmission Provider to protect system reliability. The Transmission Provider and the wind, solar or non-synchronous generation facility Interconnection Customer shall determine what SCADA information is essential for the proposed wind, solar or non-synchronous generation facility, taking into account the size of the facility and its characteristics, location, and importance in maintaining generation resource adequacy and transmission system reliability in its area.

D. Meteorological Data Reporting Requirement (Applicable to wind generation facilities only)

The wind generation facility shall, at a minimum, be required to provide the Transmission Provider with site-specific meteorological data including:

- Temperature (degrees Fahrenheit)
- Wind speed (meters/second)
- Wind direction (degrees from True North)
- Atmosphere pressure (hectopascals)
- Forced outage data (wind turbine and MW unavailability)

E. Meteorological Data Reporting Requirement (Applicable to solar generation facilities only)

The solar generation facility shall, at a minimum, be required to provide the Transmission Provider with site-specific meteorological data including:

- Temperature (degrees Fahrenheit)
- Irradiance
- Forced outage data

The Transmission Provider and Interconnection Customer may mutually agree to any additional meteorological data that are required for the development and deployment of a power production forecast. All requirements for meteorological and forced outage data must be commensurate with the power production forecasting employed by the Transmission Provider. Such additional mutually agreed upon requirements for meteorological and forced outage data are set forth below:

NOT APPLICABLE FOR THIS CSA

Exhibit L

LGE/KU Affected System Study Agreement



PPL companies

AE1-143

Affected System Study

June 30, 2020

Study & Preliminary Report Completed By:
Aneden Consulting Inc.

Report Prepared By:
LG&E and KU Transmission Planning

TABLE OF CONTENTS

Executive Summary	1
1.0 Introduction.....	1
1.1 Scope	1
2.0 Project Description.....	2
3.0 Methodology, Criteria, and Assumptions	3
3.1 Methodology.....	3
3.2 Reliability and Impact Criteria	3
3.3 Study System	4
3.4 Dispatch Scenarios	5
3.5 Powerflow Case Modeling Details	5
3.5.1 LG&E/KU Pre Model Development	5
3.5.2 LG&E/KU Post Model Development.....	6
4.0 Powerflow Analysis Results	7
4.1 Contingency Analysis Results	7
4.1.1 2022 Summer Peak Analysis.....	7
4.1.2 2022 Winter Peak Analysis	7
4.1.3 2025 Summer Peak Analysis.....	7
4.1.4 2025 Off-Peak Analysis.....	7
4.1.5 2025 Winter Peak Analysis	7
4.1.6 2030 Summer Peak Analysis.....	7
4.1.7 2030 Off-Peak Analysis.....	7
4.1.8 2030 Winter Peak Analysis	7
5.0 Stability Analysis Results	8
6.0 Conclusions.....	8

LIST OF TABLES

Table ES-1: PJM-AE1-143 Request Details..... 1
 Table 1-1: PJM-AE1-143 Request Details 1
 Table 1-2: Study Models..... 1
 Table 2-1: PJM Identified Overloads..... 2
 Table 3-1: Planning Condition and Event Definitions..... 3
 Table 3-2: Thermal Impact Criteria 4
 Table 3-3: Voltage Impact Criteria 4
 Table 3-4: Areas and Voltages Monitored..... 5
 Table 3-5: Generation Interconnection Projects Added to Pre Cases..... 6
 Table 3-6: Transmission Service Requests Added to Pre Cases..... 6
 Table 6-1: PJM-AE1-143 Request Details 8

LIST OF FIGURES

Figure 2-1: PJM-AE1-143 Single Line Diagram..... 2

APPENDICES

- APPENDIX A: Generation Dispatch Scenarios
- APPENDIX B: Powerflow Model Detailed Analysis
- APPENDIX C: Cost Estimate (For Information)
- APPENDIX D: Extended Single Line Diagram

Executive Summary

Louisville Gas & Electric and Kentucky Utilities (LG&E/KU) contacted Aneden Consulting (Aneden) to perform an Affected System Study (Study) for PJM-AE1-143, an active Generation Interconnection (GI) request in the PJM Interconnection (PJM) system. PJM-AE1-143 is a solar and battery storage generating facility located in Marion County, Kentucky with a point of interconnection (POI) at the East Kentucky Power Cooperative (EKPC) Marion County 161kV Switchyard.

The PJM-AE1-143 project has proposed to interconnect to the PJM control area with a total capability of 96 MW with a PJM recognized capacity of 64.16 MW. This Study has been requested to evaluate the impact of the interconnection of PJM-AE1-143 on the LG&E/KU transmission system. The GI request details are shown in Table ES-1 below.

Table ES-1: PJM-AE1-143 Request Details

Request	Total Capability (MW)	PJM Capacity (MW)	State	Transmission Owner	In-Service Date	Generation Type	Point of Interconnection
PJM-AE1-143	96	64.16	KY	EKPC	06/01/2022	Solar & Battery Storage	Marion County 161kV

Aneden performed a steady state analysis using a set of pre- and post-project study models created using modeling files provided by LG&E/KU:

1. Pre & Post 2022 Summer Peak (Pre_2022S)
2. Pre & Post 2022 Winter Peak (Pre_2022W)
3. Pre & Post 2025 Summer Peak (Pre_2025S)
4. Pre & Post 2025 Off-Peak (Pre_2025OP)
5. Pre & Post 2025 Winter Peak (Pre_2025W)
6. Pre & Post 2030 Summer Peak (Pre_2030S)
7. Pre & Post 2030 Off-Peak (Pre_2030OP)
8. Pre & Post 2030 Winter Peak (Pre_2030W)

The applicable North American Electric Reliability Corporation (NERC) Transmission Planning Standard (TPL-001-4) and LG&E/KU Planning Guidelines were applied to assess system performance under studied P0 Conditions and P1, P2, P3 and P4 Planning Events¹. P2 and P4 events were studied for Extra High Voltage (EHV) level buses where non-consequential load loss and Interruption of Firm Transmission is not allowed. The LG&E/KU Generator Interconnection Study Criteria document was used to determine if the project had an impact on the LG&E/KU system.

The powerflow analysis results showed that the addition of PJM-AE1-143 did not cause any thermal or voltage impacts on the LG&E/KU system that meet the impact criteria. The addition of PJM-AE1-143 did contribute to an overload but it did not meet the impact criteria necessary to require an upgrade. The information on this overload and the resulting cost estimates are shown in Appendix B and C for information only. Additionally, due to the proximity of this GI request

¹ Category P5, P6, and P7 events were not included as part of the analysis within this Study.

to the LG&E and KU transmission system, LG&E and KU will require relay setting change at Lebanon substation. The customer shall coordinate with LG&E/KU at least 60 days in advance of final commissioning of the shared protection system to facilitate the relay settings changes. Final commissioning of the shared protection system must occur in advance of energization of the generator.

1.0 Introduction

Aneden Consulting (Aneden) was retained by the Louisville Gas & Electric and Kentucky Utilities (LG&E/KU) to perform an Affected System Study (Study) for PJM-AE1-143, an active Generation Interconnection (GI) request in the PJM Interconnection (PJM) system. PJM-AE1-143 is a solar and battery storage generating facility located in Marion County, Kentucky with a point of interconnection (POI) at the East Kentucky Power Cooperative (EKPC) Marion County 161kV Switchyard.

The PJM-AE1-143 project has proposed to interconnect to the PJM control area with a total capability of 96 MW with a PJM recognized capacity of 64.16 MW. The GI request details are shown in Table 1-1 below.

Table 1-1: PJM-AE1-143 Request Details

Request	Total Capability (MW)	PJM Capacity (MW)	State	Transmission Owner	In-Service Date	Generation Type	Point of Interconnection
PJM-AE1-143	96	64.16	KY	EKPC	06/01/2022	Solar & Battery Storage	Marion County 161kV

1.1 Scope

The Study methodology, assumptions, and results of the analyses are presented in the following four main sections:

1. Project Description
2. Methodology, Criteria, and Assumptions
3. Powerflow Analysis Results
4. Conclusions

Aneden performed a steady state analysis using a set of pre-project and post-project study models created using modeling files provided by LG&E/KU as shown in Table 1-2.

Table 1-2: Study Models

Model Year/Season	Pre-Project	Post-Project
2022 Summer Peak	Pre_2022S	Post_2022S
2022 Winter Peak	Pre_2022W	Post_2022W
2025 Summer Peak	Pre_2025S	Post_2025S
2025 Off-Peak	Pre_2025OP	Post_2025OP
2025 Winter Peak	Pre_2025W	Post_2025W
2030 Summer Peak	Pre_2030S	Post_2030S
2030 Off-Peak	Pre_2030OP	Post_2030OP
2030 Winter Peak	Pre_2030W	Post_2030W

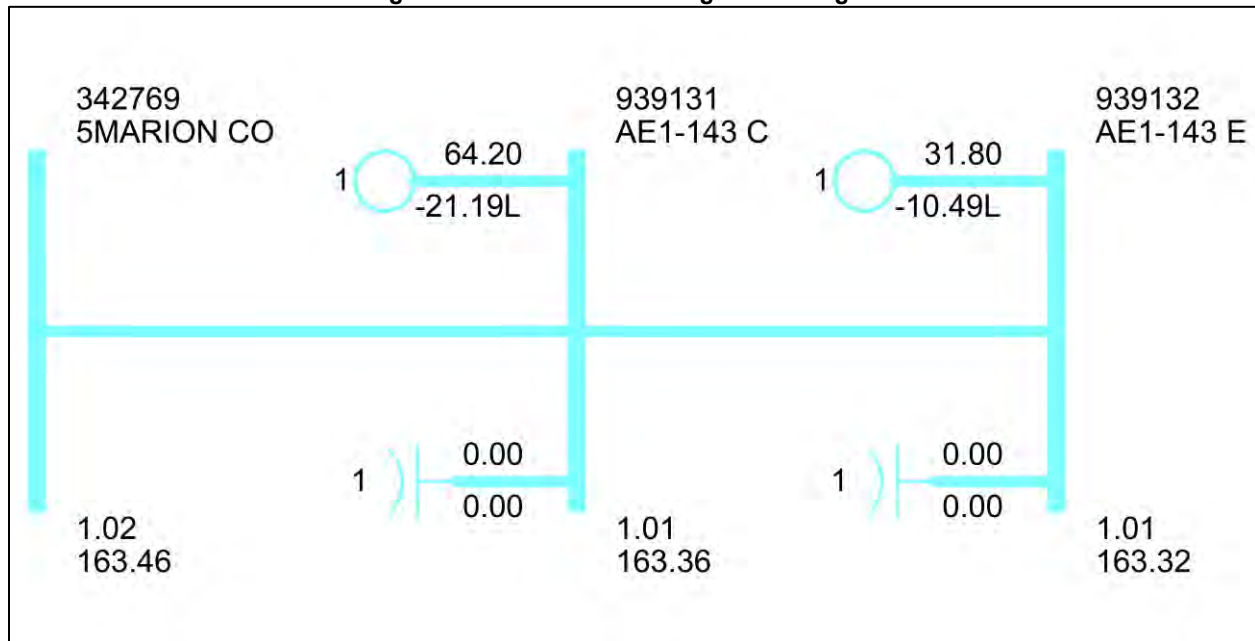
All analyses were performed using the PTI PSS/E version 33 software.

2.0 Project Description

The PJM-AE1-143 request has proposed to interconnect a solar and battery storage generator in Marion County, Kentucky at the EKPC Marion County 161kV Switchyard with a total capability of 96 MW and a PJM recognized capacity of 64.16 MW. The in-service date of PJM-AE1-143 is June 01, 2022.

Figure 2-1 shows the power flow model single line diagram for the requested PJM-AE1-143 configuration. Appendix D has an extended single line diagram showing the surrounding topology. The model data for the PJM-AE1-143 project was provided by PJM.

Figure 2-1: PJM-AE1-143 Single Line Diagram



In August 2019, a GI System Impact Study² was performed by PJM for the PJM-AE1-143 project. The study identified one overload in the LG&E/KU system as shown in Table 2-1. As a result, this Affected System Study was initiated to further investigate the potential impacts of the GI on the LG&E/KU system.

Table 2-1: PJM Identified Overloads

Contingency	Monitored Facility	Power Flow	Pre Project %Loading	Post Project %Loading
Base Case	7TRIMBLE-06CLIFTY 345 kV line	AC	140.52	141.56

² Generation Interconnection Impact Study Report for Queue Project AE1-143, August 2019

3.0 Methodology, Criteria, and Assumptions

The steady state modeling and contingency analyses were performed using the Siemens PTI PSS/E software version 33. A custom program developed by LG&E/KU was used to assist in processing and evaluating the system contingencies as well as generation dispatch scenarios for the P3 analysis. The analysis was performed in accordance with criteria and methodology given in the LG&E/KU Generation Interconnection Study Criteria³ and LG&E/KU Planning Guidelines⁴.

3.1 Methodology

A powerflow analysis was performed in order to determine if the PJM-AE1-143 generator interconnection impact on the LG&E/KU transmission system was within the limits defined in the LG&E/KU Generator Interconnection Study Criteria document. The results of the analysis were evaluated by comparing the loading and voltage levels of the monitored LG&E/KU lines and ties under numerous dispatch and contingency scenarios. The branch loading levels and voltage levels in the cases without the Study GI request (pre cases) were compared to the branch loading levels and voltage levels in the cases with the Study GI request (post cases) to determine if there were new impacts created by the addition of the project.

The applicable NERC Transmission Planning Standard (TPL-001-4) and LG&E/KU Planning Guidelines were applied to assess system performance under studied P0 conditions and P1, P2, P3 and P4⁵ Planning Events, as defined in Table 3-1. P2 and P4 events were studied for Extra High Voltage (EHV) level buses where non-consequential load loss and Interruption of Firm Transmission is not allowed.

Table 3-1: Planning Condition and Event Definitions

Planning Event	Event Definition
P0	System Normal Contingencies, No Contingencies
P1	Single Contingency - Generator, Transmission Circuit, Transformer, Shunt Device or Single Pole of DC Line
P2	Single Contingency - Line Section Loss w/o a fault, Bus Section Fault, Internal Breaker Fault
P3	Multiple Contingency - loss of generator unit followed by a loss of Generator, Transmission Circuit, Transformer, Shunt Device or Single Pole of DC Line
P4	Multiple Contingency caused by stuck breaker attempting clear a fault on transmission element or generator

3.2 Reliability and Impact Criteria

LG&E/KU's Generation Interconnection Study Criteria was applied to identify reliability criteria exceptions caused by the interconnection of AE1-143 and to identify the need for upgrades.

³ Generator Interconnection Study Criteria Version 8.0 July 10, 2019

⁴ Transmission System Planning Guidelines September 28, 2018

⁵ Category P5, P6, and P7 events were not included as part of the analysis within this Study

Equipment loadings were monitored to record any criteria exceptions based on their 100% static applicable rating. The criteria requires all transmission elements to either operate within their ratings with no thermal overloads, or if overloaded the Distribution Factor (DF) between the pre and post cases must be within the allowable percentages shown in Table 3-2 and Table 3-3 below. Therefore, all criteria exceptions were recorded for the identification of the transmission system deficiencies.

Thermal impacts were defined as pre contingency overloads greater than 100% of the Rate A with a post project case DF of >5% or post contingency overloads greater than 100% of the Rate B with a post project case DF of >20%. Table 3-2 shows the thermal impact criteria.

Voltage impacts were defined as any new voltage criteria exceptions based on the specific voltage range identified for each bus or voltage criteria exceptions worsened by greater than 1% impact on the monitored bus voltage in the post project case as compared to the pre project case. Table 3-3 shows the voltage impact criteria.

Table 3-2: Thermal Impact Criteria

System Condition	Maximum Allowable Facility Loading	Distribution Factor
Pre-Contingency (N-0)	<=100% of Normal Rating (Rate A)	PTDF: > 5%
Post-Contingency (N-1)	<=100% of Long-Term Emergency (LTE) Rating (Rate B)	OTDF: > 20%

Table 3-3: Voltage Impact Criteria

System	Voltage	Pre-Contingency Voltage (p.u.)		Post-Contingency Voltage (p.u.)		Delta Voltage
		Low	High	Low	High	
LG&E/KU Area 363	69 kV - 499 kV	0.94	1.05	0.90	1.05	1.00%
LG&E/KU Area 363	500 kV	0.94	1.10	0.90	1.10	1.00%

3.3 Study System

The simulated planning events consisted of events in the LG&E/KU system and surrounding areas. Contingency files were provided by LG&E/KU for several sets of planning events – P1 and P3 Planning Events, as well as specific P2 and P4 Planning Events⁶. The LG&E/KU (Area 363) region was monitored for loading and voltage impacts.

P1 and P3 Planning Events were run with monitoring all lines 69 kV and above. Several generator dispatch scenarios provided by LG&E/KU were evaluated in the P1 and P3 analysis. P2 and P4 Planning Events were run with monitoring all lines 138 kV and above as shown in Table 3-4 below.

⁶ P2-1, 2-2, 2-3, 2-4 and P4-1, 4-2, 4-3, 4-5 Planning Events

Table 3-4: Areas and Voltages Monitored

Planning Event	Area and Voltage Range
P1 & P3	Area 363, 69-500 kV
P2 & P4	Area 363, 138-500 kV

3.4 Dispatch Scenarios

LG&E/KU provided several dispatch scenarios to be evaluated. These dispatches were analyzed in combination with each study area contingency during the P3 Planning Event analysis. Appendix A shows the generation dispatch scenarios.

3.5 Powerflow Case Modeling Details

The following section describe the study models selected for the analysis.

3.5.1 LG&E/KU Pre Model Development

The following models were provided by LG&E/KU for this study. PJM-AE1-143 was not included in these models.

- 2022 Summer Peak
- 2022 Winter Peak
- 2025 Summer Peak
- 2025 Off-Peak
- 2025 Winter Peak
- 2030 Summer Peak
- 2030 Off-Peak
- 2030 Winter Peak

The pre-project cases were modified to include all Generation Interconnection (GI) projects that had an executed Large Generator Interconnection Agreement (LGIA) and a completed or pending System Impact Study (SIS) up to the study start date. In addition, all confirmed Transmission Service Request (TSR) projects up to the study start date were included. The GI projects were dispatched according to the LG&E/KU Generator Interconnection Study Criteria which states that prior queue solar portions of projects will generate at 100% in Off-Peak, 80% in Summer, and 0% in Winter. The battery portions were modeled at 100% charging in Off-Peak, 80% charging in Summer, and 100% discharging in Winter. Table 3-5 and Table 3-6 show the projects that were added to the pre-project cases.

Table 3-5: Generation Interconnection Projects Added to Pre Cases

Project #	POI Location	Fuel	Project Size (MW)
GI-2019-001	Lebanon to Danville 138 kV Line	Solar PV	100.0
GI-2019-002	Wickliffe to Grahamville 161 kV Line	Solar PV	120.0
GI-2019-003	Tip Top to Cloverport 138 kV Line	Solar PV & Battery Storage	200.0
Blue solar (added only to 2025 and 2030)	Millersburg to Cynthian 69 kV Line	Solar PV	35.0
Muhlenberg solar (added only to 2025 and 2030)	Green River 138 kV Substation	Solar PV	100.0

Table 3-6: Transmission Service Requests Added to Pre Cases

TSR Name	Location	Request Addition	Winter Load Addition (MW)	Off Peak/Summer Load Addition (MW)
CMWA	CLA 69 kV	Load Bus & Branch	7.5	7.5
Sharkey	Sharkey 138 kV	Load Bus & Branch	27.13	1.43

3.5.2 LG&E/KU Post Model Development

The post-project models were created using the pre-project cases and included model data for the PJM-AE1-143 project provided by PJM. These post-project models had the PJM-AE1-143 project dispatched at 96 MW in the Summer and Off-Peak cases and at 64.2 MW in the Winter cases.

4.0 Powerflow Analysis Results

A powerflow analysis was performed for PJM-AE1-143 to determine any impact the project's interconnection had on the LG&E/KU system. The detailed results showing overloads with a distribution factor of higher than 5% are provided in Appendix B. If a post contingency overload has a distribution factor below 20% it does not meet the impact criteria necessary to require an upgrade. The information on these overloads and the resulting cost estimates shown in Appendix C are for information only.

4.1 Contingency Analysis Results

The results were evaluated by comparing the loading and voltage levels with and without the proposed project interconnection.

4.1.1 2022 Summer Peak Analysis

No thermal or voltage impacts due to the PJM-AE1-143 interconnection were found in the 2022 Summer Peak model.

4.1.2 2022 Winter Peak Analysis

No thermal or voltage impacts due to the PJM-AE1-143 interconnection were found in the 2022 Winter Peak model.

4.1.3 2025 Summer Peak Analysis

No thermal or voltage impacts due to the PJM-AE1-143 interconnection were found in the 2025 Summer Peak model.

4.1.4 2025 Off-Peak Analysis

No thermal or voltage impacts due to the PJM-AE1-143 interconnection were found in the 2025 Off-Peak model.

4.1.5 2025 Winter Peak Analysis

No thermal or voltage impacts due to the PJM-AE1-143 interconnection were found in the 2025 Winter Peak model.

4.1.6 2030 Summer Peak Analysis

No thermal or voltage impacts due to the PJM-AE1-143 interconnection were found in the 2030 Summer Peak model.

4.1.7 2030 Off-Peak Analysis

No thermal or voltage impacts due to the PJM-AE1-143 interconnection were found in the 2030 Off-Peak model.

4.1.8 2030 Winter Peak Analysis

No thermal or voltage impacts due to the PJM-AE1-143 interconnection were found in the 2030 Winter Peak model.

5.0 Stability Analysis Results

A stability analysis was performed for PJM-AE1-143 to determine any impact the project's interconnection had on the LG&E and KU system. TPL-001-4 P1 study was performed on the 2023LL and 2028S base case. No stability violations in LG&E KU transmission were found. Due to the proximity of this GI request to the LG&E and KU system, this request may require a relay distance setting change at Lebanon substation. Customer shall coordinate with LG&E/KU at least 60 days in advance of final commissioning of the shared protection system to facilitate the relay settings changes. Final commissioning of the shared protection system must occur in advance of energization of the generator.

6.0 Conclusions

The Interconnection Customer for PJM-AE1-143 requested an Affected System Study to assess the impact the GI request shown in Table 6-1 on the LG&E/KU system.

Table 6-1: PJM-AE1-143 Request Details

Request	Total Capability (MW)	PJM Capacity (MW)	State	Transmission Owner	In-Service Date	Generation Type	Point of Interconnection
PJM-AE1-143	96	64.16	KY	EKPC	06/01/2022	Solar & Battery Storage	Marion County 161kV

The powerflow analysis was completed to ensure the addition of the project did not cause any impacts on the LG&E/KU system according to the LG&E/KU impact criteria. The results of the analysis were evaluated by comparing the loading and voltage levels of monitored lines with and without the GI request interconnected.

The powerflow analysis results showed that the addition of PJM-AE1-143 did not cause any thermal or voltage impacts on the LG&E/KU system that meet the impact criteria. The addition of PJM-AE1-143 did contribute to an overload but it did not meet the impact criteria necessary to require an upgrade. The information on this overload and the resulting cost estimates are shown in Appendix B and C for information only.

Additionally, due to the proximity of this GI request to the LG&E and KU transmission system, LG&E and KU will require relay setting change at Lebanon substation. The customer shall coordinate with LG&E/KU at least 60 days in advance of final commissioning of the shared protection system to facilitate the relay settings changes. Final commissioning of the shared protection system must occur in advance of energization of the generator.

APPENDICES

PJM-AE1-143
Affected System Study

Date of Submittal

May 12, 2020

APPENDIX A
Generation Dispatch Scenarios

Table A-1: Generator Dispatch Definitions

Dispatch Code	Definition
BR3_MERIT_MISO	Outage of Brown 3, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL).
BR3_MERIT_TVA	Outage of Brown 3, replace with LGEE units greater than 50 MW in merit order and import from TVA.
BR3_MERIT_PJM	Outage of Brown 3, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP).
BR7_MERIT_MISO	Outage of Brown 7, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL).
BR7_MERIT_TVA	Outage of Brown 7, replace with LGEE units greater than 50 MW in merit order and import from TVA.
BR7_MERIT_PJM	Outage of Brown 7, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP).
CR7_MERIT_MISO	Outage of Cane Run 7, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL).
CR7_MERIT_TVA	Outage of Cane Run 7, replace with LGEE units greater than 50 MW in merit order and import from TVA.
CR7_MERIT_PJM	Outage of Cane Run 7, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP).
GH1_MERIT_MISO	Outage of Ghent 1, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL).
GH1_MERIT_TVA	Outage of Ghent 1, replace with LGEE units greater than 50 MW in merit order and import from TVA.
GH1_MERIT_PJM	Outage of Ghent 1, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP).
GH3_MERIT_MISO	Outage of Ghent 3, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL).
GH3_MERIT_TVA	Outage of Ghent 3, replace with LGEE units greater than 50 MW in merit order and import from TVA.
GH3_MERIT_PJM	Outage of Ghent 3, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP).
MC4_MERIT_MISO	Outage of Mill Creek 4, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL).
MC4_MERIT_TVA	Outage of Mill Creek 4, replace with LGEE units greater than 50 MW in merit order and import from TVA.
MC4_MERIT_PJM	Outage of Mill Creek 4, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP).
PR13_MERIT_MISO	Outage of Paddys Run 13, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL).
PR13_MERIT_TVA	Outage of Paddys Run 13, replace with LGEE units greater than 50 MW in merit order and import from TVA.
PR13_MERIT_PJM	Outage of Paddys Run 13, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP).
TC2_MERIT_MISO	Outage of Trimble County 2, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL).
TC2_MERIT_TVA	Outage of Trimble County 2, replace with LGEE units greater than 50 MW in merit order and import from TVA.
TC2_MERIT_PJM	Outage of Trimble County 2, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP).
OHF_MERIT_MISO	Outage of Ohio Falls Hydro 1-4, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL).
OHF_MERIT_TVA	Outage of Ohio Falls Hydro 1-4, replace with LGEE units greater than 50 MW in merit order and import from TVA.
OHF_MERIT_PJM	Outage of Ohio Falls Hydro 1-4, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP).
PP12_MISO	Outage Paducah Power units and replace with import from MISO (XEL)
PP12_TVA	Outage Paducah Power units and replace with import from TVA
PP12_PJM	Outage Paducah Power units and replace with import from PJM (AP)
BG12_PJM	Outage Bluegrass units 1 & 2, replace with import from PJM (AP)
ASHW_MISO	Outage of Ashwood Solar, replace with import from MISO (XEL).
ASHW_TVA	Outage of Ashwood Solar, replace with import from TVA.
ASHW_PJM	Outage of Ashwood Solar, replace with import from PJM (AP).
MPS_NITS	Maximize Paris units , reduce import from MISO (XEL).
MPD_NITS	Maximize Paducah Power units, reduce import from MISO (XEL).
MBG_NITS	Maximize Bluegrass units, reduce import from PJM (AP).
MBR_NITS	Maximize Brown and proportionally decrease generation at the remaining LG&E/KU affiliate generating plants
MMC_NITS	Maximize Mill Creek units and proportionally decrease generation at the remaining LG&E/KU affiliate generating plants.
MCR_NITS	Maximize Cane Run units and proportionally decrease generation at the remaining LG&E/KU affiliate generating plants.
MDX_NITS	Maximize Dix Dam units and proportionally decrease generation at the remaining LG&E/KU affiliate generating plants.
MGH_NITS	Maximize Ghent units and proportionally decrease generation at the remaining LG&E/KU affiliate generating plants.
MHF_NITS	Maximize Haefling units and proportionally decrease generation at the remaining LG&E/KU affiliate generating plants.
MOF_NITS	Maximize Ohio Falls units and proportionally decrease generation at the remaining LG&E/KU affiliate generating plants.
MPR_NITS	Maximize Paddys Run units and proportionally decrease generation at the remaining LG&E/KU affiliate generating plants.
MTC_NITS	Maximize Trimble Co Plant and proportionally decrease generation at the remaining LG&E/KU affiliate generating plants.
MZR_NITS	Maximize Zorn and proportionally decrease generation at the remaining LG&E/KU affiliate generating plants.
CRG2H_N	Outage of AEP's Clinch River 2 (H&L), replacing with import from PJM (AP)
RKG2_N	Outage of AEP's Rockport 1, replacing with import from PJM (AP)
VACITY_SE	Outage of AEP's Virginia City, replacing with import from PJM (DVP)
LAWBG1_N	Outage of AEP's Lawrenceburg 1A/B/C, replacing with import from PJM (AP)
AMG2_N	Outage of AEP's John Amos #2, replacing with import from PJM (AP)
INDDRV_N	Outage of AEP's Industrial Drive, replacing with import from PJM (AP)
WTRG1S_N	Outage of AEP's Waterford 1S, replacing with import from PJM (AP)
V3-007_N	Outage of new PJM unit V3-007 1C, replacing with import from PJM (AP)
EBND2_N	Outage of DEO&K's East Bend 2, replacing with import from PJM (AP)
MFR78_N	Outage of DEO&K's Miami Fort 8, replacing with import from PJM (AP)
MFTGT1_N	Outage of DEO&K's Miami Fort GT1, replacing with import from PJM (AP)
Z1-079_N	Outage of new PJM unit Z1-079 CT & ST, replacing with import from PJM (AP)
KILLEN_N	Outage of Dayton PL Killen 2, replacing with import from PJM (AP)
STUART_N	Outage of Dayton P&L Stuart, replacing with import from PJM (AP)
AB1-169COP_N	Outage of new PJM unit ZAB1-169 C OP #1, replacing with import from PJM (AP)

Table A-1 continued

Dispatch Code	Definition
CPR2_N	Outage of EKPC's Cooper 2, replacing with import from PJM (AP)
JKCT1_N	Outage of EKPC's JK Smith 1, replacing with import from PJM (AP)
JKCT9_N	Outage of EKPC's JK Smith 9, replacing with import from PJM (AP)
LAUREL_N	Outage of EKPC's Laurel Lake, replacing with import from PJM (AP)
SPLK1_N	Outage of EKPC's Spurlock 1, replacing with import from PJM (AP)
SPLK2_N	Outage of EKPC's Spurlock 2, replacing with import from PJM (AP)
CLIFTY_N	Outage of OVEC's Clifty 7, replacing with import from PJM (AP)
KYGER_N	Outage of OVEC's Kyger 6, replacing with import from PJM (AP)
MERMOM_W	Outage of HE's Merom 2, replacing with import from MISO (XEL)
GIB2_W	Outage of DEI's Gibson 2, replacing with import from MISO (XEL)
GALL2_W	Outage of DEI's Gallagher 2, replacing with import from MISO (XEL)
GALL4_W	Outage of DEI's Gallagher 4, replacing with import from MISO (XEL)
MADSN_W	Outage of DEI's Madison 1-8, replacing with import from MISO (XEL)
WHTLD_W	Outage of DEI's Wheatland #3 & #4, replacing with import from MISO (XEL)
CUL_G3_W	Outage of SIGE's FB Culley #3, replacing with import from MISO (XEL)
ABB_G2_W	Outage of SIGE's AB Brown #2, replacing with import from MISO (XEL)
CANNELTON_W	Outage of SIGE's Cannelton Hydro units, replacing with import from MISO (XEL)
PETERSBURG_W	Outage of IPL's Petersburg #4, replacing with import from MISO (XEL)
GREEN1_W	Outage of BREC's Green 1, replacing with import from MISO (XEL)
WILSON_W	Outage of BREC's Wilson, replacing with import from MISO (XEL)
REID_W	Outage of BREC's Reid CT C, replacing with import from MISO (XEL)
SKILLMAN_W	Outage of BREC's Skillman #1, replacing with import from MISO (XEL)
SMITH_G_W	Outage of BREC's Smithland Hydro 1-3, replacing with import from MISO (XEL)
MARION_W	Outage of SIPC's Marion Generation Unit 1, replacing with import from MISO (XEL)
JOPPA4_W	Outage of EEI's Joppa 4, replacing with import from MISO (XEL)
JOPPA45_W	Outage of EEI's Joppa G 4&5, replacing with import from MISO (XEL)
JOPPA2_W	Outage of EEI's Joppa 2, replacing with import from MISO (XEL)
SHAWNEE2_S	Outage of TVA's Shawnee 2, replacing with units in TVA and import from SOCO
SHAWNEE9_S	Outage of TVA's Shawnee 9, replacing with units in TVA and import from SOCO
CUMBR_L_S	Outage of TVA's Cumberland Fossil 1HL U1 & U2, replacing with units in TVA and import from SOCO
SEQ1_S	Outage of TVA's Sequoyah 1, replacing with units in TVA and import from SOCO
SEQ2_S	Outage of TVA's Sequoyah 2, replacing with units in TVA and import from SOCO
WBNP1_S	Outage of TVA's Watts Bar 1, replacing with units in TVA and import from SOCO
BULLRUN1_S	Outage of TVA's Bull Run F 1 L, replacing with units in TVA and import from SOCO
GALLATIN1_S	Outage of TVA's Gallatin 1, replacing with units in TVA and import from SOCO
WOLFCR1_S	Outage of TVA's Wolf Creek, replacing with units in TVA and import from SOCO
NORRIS1_S	Outage of TVA's Norris, replacing with units in TVA and import from SOCO
DOUGLAS_S	Outage of TVA's Douglas Hydro #1 & #2, replacing with units in TVA and import from SOCO
J_SEVIER_S	Outage of TVA's John Sevier C3 & S4, replacing with units in TVA and import from SOCO
PARADISCT3S1_S	Outage of TVA's Paradise CT 3, replacing with units in TVA and import from SOCO
BARKLEY_S	Outage of TVA's Barkley Hydro #3 & #4, replacing with units in TVA and import from SOCO
CHEROKEE_S	Outage of TVA's Cherokee Hydro #1 & #2, replacing with units in TVA and import from SOCO
KY_HYDRO_S	Outage of TVA's Kentucky Hydro #4 & #5, replacing with units in TVA and import from SOCO
MARSHALL_S	Outage of TVA's Marshall Turbine 1-4, replacing with units in TVA and import from SOCO
CR7_PR_MERIT_MISO_2U	Two unit outage - Cane Run 7 and Paddys Run 13, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL)
CR7_PR_MERIT_TVA_2U	Two unit outage - Cane Run 7 and Paddys Run 13, replace with LGEE units greater than 50 MW in merit order and import from TVA
CR7_PR_MERIT_PJM_2U	Two unit outage - Cane Run 7 and Paddys Run 13, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP)
CR7_BR3_MERIT_MISO_2U	Two unit outage - Cane Run 7 and Brown 3, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL)
CR7_BR3_MERIT_TVA_2U	Two unit outage - Cane Run 7 and Brown 3, replace with LGEE units greater than 50 MW in merit order and import from TVA
CR7_BR3_MERIT_PJM_2U	Two unit outage - Cane Run 7 and Brown 3, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP)
Gh1_3_MERIT_MISO_2U	Two unit outage - Ghent 1 and Ghent 3, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL)
Gh1_3_MERIT_TVA_2U	Two unit outage - Ghent 1 and Ghent 3, replace with LGEE units greater than 50 MW in merit order and import from TVA
Gh1_3_MERIT_PJM_2U	Two unit outage - Ghent 1 and Ghent 3, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP)
Gh4_3_MERIT_MISO_2U	Two unit outage - Ghent 3 and Ghent 4, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL)
Gh4_3_MERIT_TVA_2U	Two unit outage - Ghent 3 and Ghent 4, replace with LGEE units greater than 50 MW in merit order and import from TVA
Gh4_3_MERIT_PJM_2U	Two unit outage - Ghent 3 and Ghent 4, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP)
Br3_Gh3_MERIT_MISO_2U	Two unit outage - Brown 3 and Ghent 3, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL)
Br3_Gh3_MERIT_TVA_2U	Two unit outage - Brown 3 and Ghent 3, replace with LGEE units greater than 50 MW in merit order and import from TVA
Br3_Gh3_MERIT_PJM_2U	Two unit outage - Brown 3 and Ghent 3, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP)
Br3_Br6_MERIT_MISO_2U	Two unit outage - Brown 3 and Brown 6, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL)
Br3_Br6_MERIT_TVA_2U	Two unit outage - Brown 3 and Brown 6, replace with LGEE units greater than 50 MW in merit order and import from TVA
Br3_Br6_MERIT_PJM_2U	Two unit outage - Brown 3 and Brown 6, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP)

Table A-1 continued

Dispatch Code	Definition
Br7_Br6_MERIT_MISO_2U	Two unit outage - Brown 7 and Brown 6, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL)
Br7_Br6_MERIT_TVA_2U	Two unit outage - Brown 7 and Brown 6, replace with LGEE units greater than 50 MW in merit order and import from TVA
Br7_Br6_MERIT_PJM_2U	Two unit outage - Brown 7 and Brown 6, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP)
MC4_MC3_MERIT_MISO_2U	Two unit outage - Mill Creek 4 and Mill Creek 3, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL)
MC4_MC3_MERIT_TVA_2U	Two unit outage - Mill Creek 4 and Mill Creek 3, replace with LGEE units greater than 50 MW in merit order and import from TVA
MC4_MC3_MERIT_PJM_2U	Two unit outage - Mill Creek 4 and Mill Creek 3, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP)
TC2_TC1_MERIT_MISO_2U	Two unit outage - Trimble Co 2 and Trimble Co 1, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL)
TC2_TC1_MERIT_TVA_2U	Two unit outage - Trimble Co 2 and Trimble Co 1, replace with LGEE units greater than 50 MW in merit order and import from TVA
TC2_TC1_MERIT_PJM_2U	Two unit outage - Trimble Co 2 and Trimble Co 1, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP)
CR7_TC2_MERIT_MISO_2U	Two unit outage - Cane Run 7 and Trimble Co 2, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL)
CR7_TC2_MERIT_TVA_2U	Two unit outage - Cane Run 7 and Trimble Co 2, replace with LGEE units greater than 50 MW in merit order and import from TVA
CR7_TC2_MERIT_PJM_2U	Two unit outage - Cane Run 7 and Trimble Co 2, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP)
CR7_MC4_MERIT_MISO_2U	Two unit outage - Cane Run 7 and Mill Creek 4, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL)
CR7_MC4_MERIT_TVA_2U	Two unit outage - Cane Run 7 and Mill Creek 4, replace with LGEE units greater than 50 MW in merit order and import from TVA
CR7_MC4_MERIT_PJM_2U	Two unit outage - Cane Run 7 and Mill Creek 4, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP)
MC4_TC2_MERIT_MISO_2U	Two unit outage - Trimble Co 2 and Mill Creek 4, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL)
MC4_TC2_MERIT_TVA_2U	Two unit outage - Trimble Co 2 and Mill Creek 4, replace with LGEE units greater than 50 MW in merit order and import from TVA
MC4_TC2_MERIT_PJM_2U	Two unit outage - Trimble Co 2 and Mill Creek 4, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP)
Br3_Gh1_MERIT_MISO_2U	Two unit outage - Brown 3 and Ghent 1, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL)
Br3_Gh1_MERIT_TVA_2U	Two unit outage - Brown 3 and Ghent 1, replace with LGEE units greater than 50 MW in merit order and import from TVA
Br3_Gh1_MERIT_PJM_2U	Two unit outage - Brown 3 and Ghent 1, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP)
TC2_GH3_MERIT_MISO_2U	Two unit outage - Trimble Co 2 and Ghent 3, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL)
TC2_GH3_MERIT_TVA_2U	Two unit outage - Trimble Co 2 and Ghent 3, replace with LGEE units greater than 50 MW in merit order and import from TVA
TC2_GH3_MERIT_PJM_2U	Two unit outage - Trimble Co 2 and Ghent 3, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP)
TC2_MERIT_MISO_BG12_PJM_2U	Two unit outage - Trimble Co 2, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL) and an outage of Bluegrass 1 & 2, import from PJM (AP)
TC2_MERIT_TVA_BG12_PJM_2U	Two unit outage - Trimble Co 2, replace with LGEE units greater than 50 MW in merit order and import from TVA and an outage of Bluegrass 1 & 2, import from PJM (AP)
TC2_MERIT_PJM_BG12_PJM_2U	Two unit outage - Trimble Co 2, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP) and an outage of Bluegrass 1 & 2, import from PJM (AP)
MC4_MERIT_MISO_BG12_PJM_2U	Two unit outage - Mill Creek 4, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL) and an outage of Bluegrass 1 & 2, import from PJM (AP)
MC4_MERIT_TVA_BG12_PJM_2U	Two unit outage - Mill Creek 4, replace with LGEE units greater than 50 MW in merit order and import from TVA and an outage of Bluegrass 1 & 2, import from PJM (AP)
MC4_MERIT_PJM_BG12_PJM_2U	Two unit outage - Mill Creek 4, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP) and an outage of Bluegrass 1 & 2, import from PJM (AP)
CR7_MERIT_MISO_BG12_PJM_2U	Two unit outage - Cane Run 7, replace with LGEE units greater than 50 MW in merit order and import from MISO (XEL) and an outage of Bluegrass 1 & 2, import from PJM (AP)
CR7_MERIT_TVA_BG12_PJM_2U	Two unit outage - Cane Run 7, replace with LGEE units greater than 50 MW in merit order and import from TVA and an outage of Bluegrass 1 & 2, import from PJM (AP)
CR7_MERIT_PJM_BG12_PJM_2U	Two unit outage - Cane Run 7, replace with LGEE units greater than 50 MW in merit order and import from PJM (AP) and an outage of Bluegrass 1 & 2, import from PJM (AP)
BG12_BG3_PJM_2U	Two unit outage - Bluegrass 1&2 and Bluegrass 3, replace with import from PJM (AP)

APPENDIX B

Powerflow Model Detailed Analysis

2022 Summer Peak Analysis

No 2022 Summer Peak system intact or contingency voltage constraints, impacted by the GI request, were found.

No 2022 Summer Peak system intact thermal constraints with a distribution factor (DF) higher than 5% or contingency thermal constraints with a distribution factor higher than 20%, impacted by the GI request, were found.

There was a new contingency thermal constraint with a distribution factor higher than 5%. The worst 2022 Summer Peak scenario result is shown in Table B-1, and the full set of results are shown in Table B-4 below. This information is presented for information only.

Table B-1: 2022S Worst Overload with a DF Over 5%

Monitored Facility	Rating (MVA)	Dispatch	Contingency	PRE %Loading (%MVA)	POST %Loading (%MVA)	DF (%)
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	mbr_nits	OPEN [2E BARDSTOWN69.000] [2OWENS IL J 69.000] CKT 1	91.69	104.08	6.32

2022 Winter Peak Analysis

No 2022 Winter Peak system intact or contingency voltage constraints, impacted by the GI request, were found.

No 2022 Winter Peak system intact thermal constraints with a distribution factor (DF) higher than 5% or contingency thermal constraints with a distribution factor higher than 20%, impacted by the GI request, were found.

2025 Summer Peak Analysis

No 2025 Summer Peak system intact or contingency voltage constraints, impacted by the GI request, were found.

No 2025 Summer Peak system intact thermal constraints with a distribution factor (DF) higher than 5% or contingency thermal constraints with a distribution factor higher than 20%, impacted by the GI request, were found.

There was a new contingency thermal constraint with a distribution factor higher than 5%. The worst 2025 Summer Peak scenario result is shown in Table B-2, and the full set of results are shown in Table B-4 below. This information is presented for information only.

Table B-2: 2025S Worst Overload with a DF Over 5%

Monitored Facility	Rating (MVA)	Dispatch	Contingency	PRE %Loading (%MVA)	POST %Loading (%MVA)	DF (%)
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	mbr_nits	OPEN [2E BARDSTOWN69.000] [2OWENS IL J 69.000] CKT 1	91.14	103.45	6.28

2025 Off-Peak Analysis

No 2025 Off-Peak system intact or contingency voltage constraints, impacted by the GI request, were found.

No 2025 Off-Peak system intact thermal constraints with a distribution factor (DF) higher than 5% or contingency thermal constraints with a distribution factor higher than 20%, impacted by the GI request, were found.

2025 Winter Peak Analysis

No 2025 Winter Peak system intact or contingency voltage constraints, impacted by the GI request, were found.

No 2025 Winter Peak system intact thermal constraints with a distribution factor (DF) higher than 5% or contingency thermal constraints with a distribution factor higher than 20%, impacted by the GI request, were found.

2030 Summer Peak Analysis

No 2030 Summer Peak system intact or contingency voltage constraints, impacted by the GI request, were found.

No 2030 Summer Peak system intact thermal constraints with a distribution factor (DF) higher than 5% or contingency thermal constraints with a distribution factor higher than 20%, impacted by the GI request, were found.

There was a new contingency thermal constraint with a distribution factor higher than 5%. The worst 2030 Summer Peak scenario result is shown in Table B-3, and the full set of results are shown in Table B-4 below. This information is presented for information only.

Table B-3: 2030S Worst Overload with a DF Over 5%

Monitored Facility	Rating (MVA)	Dispatch	Contingency	PRE %Loading (%MVA)	POST %Loading (%MVA)	DF (%)
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	br3_merit_miso	OPEN [2E BARDSTOWN69.000] [2OWENS IL J 69.000] CKT 1	94.88	107.67	6.53

2030 Off-Peak Analysis

No 2030 Off-Peak system intact or contingency voltage constraints, impacted by the GI request, were found.

No 2030 Off-Peak system intact thermal constraints with a distribution factor (DF) higher than 5% or contingency thermal constraints with a distribution factor higher than 20%, impacted by the GI request, were found.

2030 Winter Peak Analysis

No 2030 Winter Peak system intact or contingency voltage constraints, impacted by the GI request, were found.

No 2030 Winter Peak system intact thermal constraints with a distribution factor (DF) higher than 5% or contingency thermal constraints with a distribution factor higher than 20%, impacted by the GI request, were found.

Table B-4: P3 Thermal Overloads with DF Over 5%

Monitored Facility	Rate (MVA)	Dispatch	Contingency Name	%Loading (%MVA)						DF (%)		
				POST 2022S	PRE 2022S	POST 2025S	PRE 2025S	POST 2030S	PRE 2030S	2022S	2025S	2030S
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	ab1-169cop_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.69	105.35	93.12	105.53	93.43	6.28	6.24	6.18
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	abb_g2_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.08	91.80	102.94	90.76	103.12	91.04	6.27	6.22	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	amg2_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.08	91.80	102.94	90.73	103.14	91.06	6.27	6.23	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	ashw_miso	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.69	102.61	90.43	102.80	90.73	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	ashw_pjm	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.69	102.53	90.35	102.73	90.67	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	ashw_tva	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.69	102.88	90.67	103.06	90.98	6.28	6.23	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	barkley_s	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.08	91.78	102.92	90.73	103.10	91.04	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	Base Dispatch	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.69	102.80	90.61	103.00	90.94	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	bg12_pjm	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.78	92.47	103.63	91.43	103.82	91.73	6.28	6.23	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	br3_merit_miso	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.53	92.51	103.65	91.41	107.67	94.88	6.14	6.25	6.53
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	br3_merit_pjm	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.53	92.51	103.65	91.41	107.67	94.88	6.14	6.25	6.53
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	br3_merit_tva	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.53	92.51	103.65	91.41	107.67	94.88	6.14	6.25	6.53
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	br7_merit_miso	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.69	102.80	90.61	103.00	90.94	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	br7_merit_pjm	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.69	102.80	90.61	103.00	90.94	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	br7_merit_tva	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.69	102.80	90.61	103.00	90.94	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	bullrun1_s	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.14	91.84	102.80	90.61	103.00	90.94	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	cannelton_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.04	91.76	102.86	90.67	103.06	91.00	6.27	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	cherokee_s	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.06	91.78	102.90	90.71	103.10	91.04	6.27	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	clifty_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.33	92.04	103.14	90.96	103.35	91.27	6.27	6.22	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	cr7_merit_miso	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	102.84	90.47	101.88	89.63	102.06	89.94	6.31	6.25	6.19
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	cr7_merit_pjm	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	102.84	90.47	101.88	89.63	102.06	89.94	6.31	6.25	6.19
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	cr7_merit_tva	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	102.84	90.47	101.88	89.63	102.06	89.94	6.31	6.25	6.19
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	crq2h_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.69	102.80	90.61	103.00	90.94	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	cul_g3_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.20	91.92	103.04	90.84	103.22	91.14	6.27	6.23	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	cumbr1_s	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.06	91.78	102.90	90.71	103.08	91.00	6.27	6.22	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	douglas_s	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.06	91.78	102.90	90.69	103.10	91.04	6.27	6.23	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	ebnd2_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	105.04	92.73	103.86	91.63	104.04	91.94	6.28	6.24	6.18
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	gall2_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.29	92.00	102.80	90.61	103.00	90.94	6.27	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	gall4_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.33	92.02	102.80	90.61	103.00	90.94	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	gallatin1_s	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.24	90.98	102.08	89.92	102.31	90.24	6.26	6.21	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	gh1_merit_miso	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	105.02	92.65	104.45	92.27	104.71	92.65	6.31	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	gh1_merit_pjm	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	105.02	92.65	104.45	92.27	104.71	92.65	6.31	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	gh1_merit_tva	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	105.02	92.65	104.45	92.27	104.71	92.65	6.31	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	gh3_merit_miso	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.90	92.53	104.33	92.10	104.55	92.47	6.31	6.24	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	gh3_merit_pjm	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.90	92.53	104.33	92.10	104.55	92.47	6.31	6.24	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	gh3_merit_tva	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.90	92.53	104.33	92.10	104.55	92.47	6.31	6.24	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	gib2_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.63	92.31	103.47	91.24	103.63	91.53	6.29	6.24	6.18
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	green1_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.96	91.67	102.86	90.67	103.00	90.94	6.27	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	indrvn_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.69	102.80	90.61	103.00	90.94	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	l_sevier_s	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	105.02	92.73	103.86	91.65	104.08	92.00	6.27	6.23	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	lkt1_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.49	92.20	103.29	91.08	103.55	91.49	6.27	6.23	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	lkt9_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.94	92.71	103.71	91.57	103.94	91.92	6.24	6.20	6.14
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	joppa2_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.57	91.29	102.41	90.22	102.61	90.57	6.27	6.22	6.15
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	joppa4_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.57	91.29	102.41	90.22	102.61	90.55	6.27	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	joppag45_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.82	91.51	102.65	90.45	102.86	90.78	6.28	6.23	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	killen_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.69	102.80	90.61	103.00	90.94	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	ky_hydro_s	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.06	91.78	102.88	90.71	103.14	91.06	6.27	6.21	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	kyger_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.10	91.80	102.92	90.71	103.10	91.04	6.28	6.23	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	laurel_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.69	102.80	90.61	103.00	90.94	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	lawbg1_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.92	92.61	103.73	91.53	103.92	91.84	6.28	6.23	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	madsn_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	105.55	93.24	104.35	92.14	104.55	92.45	6.28	6.23	6.18
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	marion_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.86	91.57	102.65	90.47	102.86	90.80	6.27	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	marshall_s	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.39	92.10	103.22	91.04	103.43	91.37	6.27	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	mbg_nits	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.69	102.80	90.61	103.00	90.94	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	mbr_nits	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.08	91.69	103.45	91.14	103.49	91.29	6.32	6.28	6.23
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	mc4_merit_miso	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.33	90.96	102.80	90.61	103.06	91.04	6.31	6.22	6.14

Table B-4 Continued

Monitored Facility	Rate (MVA)	Dispatch	Contingency Name	%Loading (%MVA)						DF (%)		
				POST 2022S	PRE 2022S	POST 2025S	PRE 2025S	POST 2030S	PRE 2030S	2022S	2025S	2030S
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	mc4_merit_pjm	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.33	90.96	102.80	90.61	103.06	91.04	6.31	6.22	6.14
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	mc4_merit_tva	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.33	90.96	102.80	90.61	103.06	91.04	6.31	6.22	6.14
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	mermom_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.53	92.22	103.35	91.14	103.53	91.45	6.28	6.23	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	mfrt8_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.88	92.57	103.69	91.49	103.88	91.80	6.28	6.23	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	mftg1_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.08	91.80	102.80	90.61	103.00	90.94	6.27	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	mhf_nits	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.69	91.41	102.55	90.35	102.73	90.65	6.27	6.23	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	mpd_nits	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.06	91.76	102.96	90.78	103.18	91.10	6.28	6.22	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	mpr_nits	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.37	92.10	103.20	91.00	103.39	91.33	6.26	6.23	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	mps_nits	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.86	91.57	102.69	90.49	103.00	90.94	6.27	6.23	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	mtc_nits	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.39	92.08	103.33	91.14	103.59	91.51	6.28	6.22	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	mzr_nits	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.71	102.82	90.63	103.02	90.96	6.27	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	norris1_s	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.96	91.67	102.78	90.59	103.00	90.94	6.27	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	ohf_merit_miso	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.96	91.67	102.78	90.57	102.98	90.92	6.27	6.23	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	ohf_merit_pjm	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.96	91.67	102.78	90.57	102.98	90.92	6.27	6.23	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	ohf_merit_tva	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.96	91.67	102.78	90.57	102.98	90.92	6.27	6.23	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	paradiscl3s1_s	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	102.65	90.39	101.45	89.27	101.65	89.61	6.26	6.22	6.15
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	petersburg_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.67	92.37	103.51	91.31	103.69	91.59	6.28	6.23	6.18
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	pp12_miso	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.76	91.49	102.69	90.51	102.90	90.84	6.26	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	pp12_pjm	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.67	91.39	102.63	90.45	102.88	90.82	6.27	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	pp12_tva	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.08	91.80	102.86	90.67	103.04	90.98	6.27	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	pr13_merit_miso	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.69	102.80	90.61	103.00	90.94	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	pr13_merit_pjm	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.69	102.80	90.61	103.00	90.94	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	pr13_merit_tva	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.69	102.80	90.61	103.00	90.94	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	rei_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.98	91.67	102.80	90.61	103.00	90.92	6.28	6.22	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	rkq2_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.69	92.37	103.53	91.33	103.71	91.61	6.29	6.23	6.18
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	seq1_s	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.69	92.41	103.51	91.31	103.71	91.65	6.27	6.23	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	seq2_s	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.67	92.39	103.49	91.29	103.71	91.63	6.27	6.23	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	shawnee2_s	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.22	91.92	103.04	90.86	103.27	91.18	6.28	6.22	6.17
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	shawnee9_s	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.20	91.90	103.04	90.84	103.22	91.16	6.28	6.23	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	skillman_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.69	102.80	90.61	103.00	90.94	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	smith_g_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.82	91.53	102.63	90.45	102.84	90.78	6.27	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	spik1_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.96	92.71	103.71	91.55	103.92	91.88	6.25	6.21	6.15
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	spik2_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	105.47	93.24	104.18	92.06	104.39	92.35	6.24	6.19	6.15
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	stuart_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.00	91.69	102.80	90.61	103.00	90.94	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	tc2_merit_miso	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.90	91.51	102.90	90.63	103.02	90.86	6.32	6.26	6.21
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	tc2_merit_pjm	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.90	91.51	102.90	90.63	103.02	90.86	6.32	6.26	6.21
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	tc2_merit_tva	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.90	91.51	102.90	90.63	103.02	90.86	6.32	6.26	6.21
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	v3-007_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.02	91.73	102.84	90.65	103.04	90.98	6.27	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	vacity_se	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	103.49	91.22	102.27	90.10	103.00	90.94	6.26	6.21	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	wbnp1_s	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.63	92.33	103.41	91.22	103.63	91.57	6.28	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	whitd_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.24	91.94	103.06	90.86	103.24	91.18	6.28	6.23	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	wilson_w	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	102.49	90.24	101.51	89.35	101.69	89.67	6.25	6.21	6.14
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	wolfr1_s	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	102.84	90.57	101.67	89.51	101.90	89.86	6.26	6.21	6.15
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	wtrg1s_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.14	91.86	102.96	90.78	103.16	91.10	6.27	6.22	6.16
2LEBANON 69.000 TO 2SPRINGFL KU69.000 1	49	z1-079_n	OPEN [ZE BARDSTOWN69.000] [ZOWENS IL J 69.000] CKT 1	104.94	92.63	103.73	91.53	103.92	91.84	6.28	6.23	6.17

APPENDIX C
Cost Estimation (For Information)

There were potential network thermal constraints identified in the steady state analysis as shown in Appendix B. The LG&E/KU non-binding good faith cost estimate for network upgrade facilities is shown in Tables C-1 and C-2. These costs were compiled by LG&E and KU for information only.

Table C-1: LG&E and KU Network Upgrade Facilities Cost

Facility	Contingency	Mitigation	Cost
LEBANON - SPRINGFIELD 69 kV line	BARDSTOWN - OWENS 69 kV Line	Increase the maximum operating temperature of 6.58 miles of 266.8 MCM 26X7 ACSR conductor from 170F to 176/212F and 0.62 miles of 397.5 MCM 26X7 ACSR from 150F to minimum 170F in Lebanon to Springfield 69kV line.	\$307,364

Table C-2: Network Upgrade Facilities Cost Details

Description	Lines
Company Labor	\$10,779
Contract Labor	\$168,769
Materials	\$64,500
Burdens	\$35,374
Contingency	\$27,942
Total	\$307,364

APPENDIX D
Extended Single Line Diagram

The PJM-AE1-143 POI is located 2 buses away from the closest LG&E/KU bus - Lebanon.

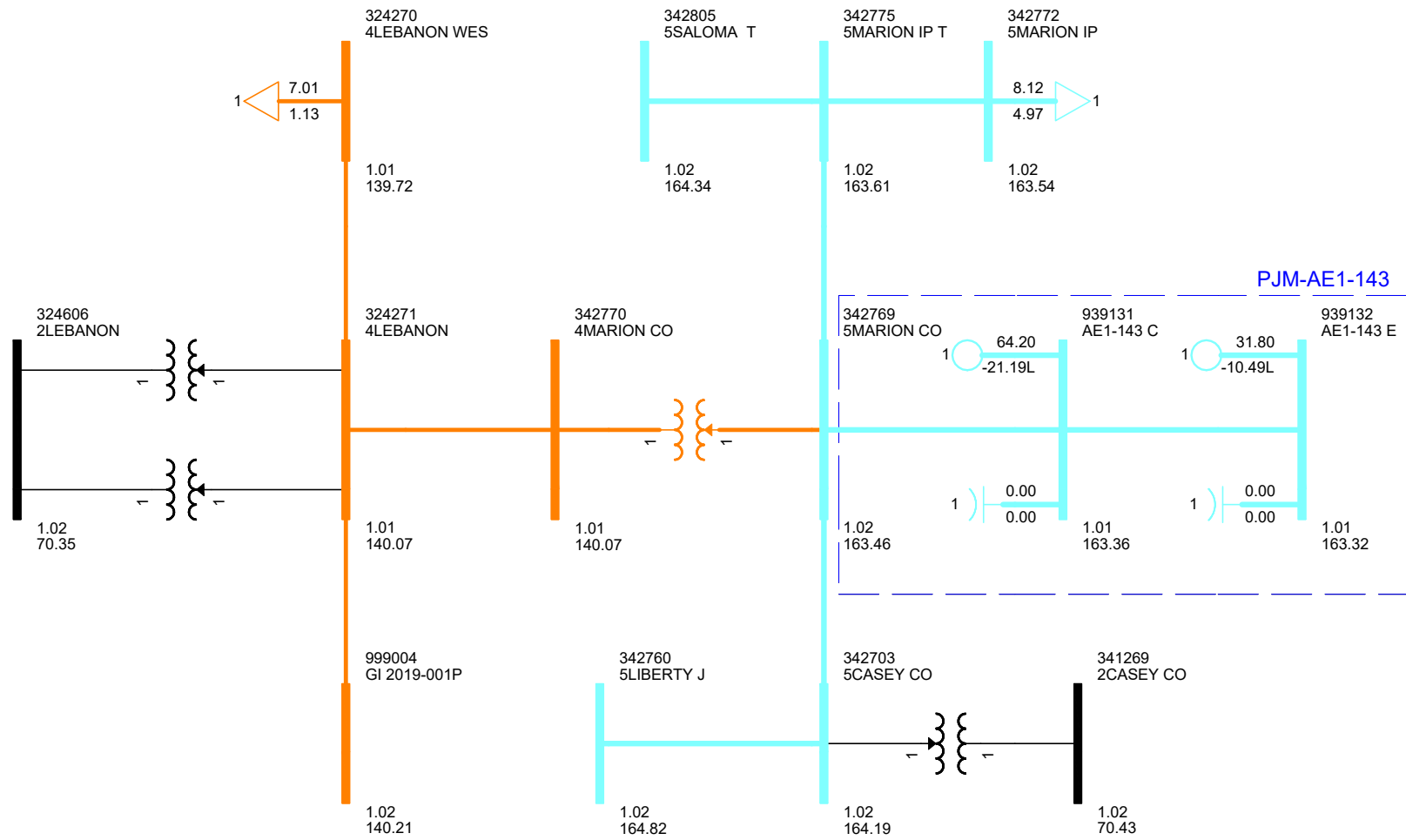


Exhibit M

TVA Affected System Study

(Cover Letter Only - TVA considers report confidential)



Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

April 30, 2020

Northern Bobwhite Solar, LLC
c/o Donna Robichaud, Consultant
7804-C Fairview Road, #257
Charlotte, North Carolina 28226
Email: donna.robichaud@geenexsolar.com

Dear Ms. Robichaud:

Enclosed for your files is the final copy of the Affected System Impact Study Report, dated April 30, 2020, which details that no impacts were identified on the TVA transmission system due to the proposed interconnection of the Northern Bobwhite Solar, LLC project to the EKPC transmission system.

If you have any questions, please contact me at 423-751-2376.

Sincerely,

A handwritten signature in blue ink that reads "W. Chris Methvin".

W. Chris Methvin
Senior Program Manager
Stakeholder Services & Contracts

Enclosure

cc (Enclosure):

Heather L. Burnette
Brian M. Scott
Josh W. Lewey

D. Darrin Church
ECM

Exhibit N
Economic Analysis

**ECONOMIC ASSESSMENT
NORTHERN BOBWHITE SOLAR, LLC PROJECT
MARION COUNTY, KENTUCKY**

December 2020



Smith Management Group
a division of ALL4

**1405 Mercer Road
Lexington, KY 40511
859-231-8936**

**ECONOMIC ASSESSMENT
NORTHERN BOBWHITE SOLAR, LLC PROJECT
MARION COUNTY, KENTUCKY**

DECEMBER 2020

Prepared for:

NORTHERN BOBWHITE SOLAR LLC

TABLE OF CONTENTS

1.	Introduction	1
1.1.	Project Description.....	1
1.2.	Assessment Objectives.....	1
2.	Background and Assumptions	2
2.1.	Economic Model	2
2.2.	Project Assumptions	2
3.	Assessment	4
4.	Government Revenue.....	5
5.	Conclusion	6

APPENDICES

Appendix A- Memorandum of the Inducement Resolution for IRB Agreement

Appendix B - A Letter of Support from the Marion County Judge Executive

1. Introduction

1.1. Project Description

Northern Bobwhite Solar LLC (“Bobwhite”) is developing a solar facility (“the Project”). The proposed Project will be a 96-megawatt alternating current (“MWac”) photovoltaic (“PV”) electric generating facility. Bobwhite will be submitting an application (“Application”) to the Kentucky State Board on Electric Generation Siting (“the Board”) seeking a certification of construction. The proposed Project is to be in unincorporated Marion County, KY, north of the City of Lebanon, KY and east of Highway 55 at approximate coordinates 37°36’56.80” N, -85°13’45.57” W. The Project will be situated on up to 1300 acres, which has historically been used for agriculture and farming. Project components will include PV solar panels and the associated ground-mounted racking structure, access roads, inverters, medium voltage transformers, buried electrical collection cabling, a step-up substation, a short 161-kilovolt (“kV”) transmission line, security fencing, laydown areas, and an operations and maintenance (“O&M”) building. The preliminary site development plan for the Project is in Appendix A of the Application. The final site plan will be submitted to the Board prior to construction.

The project will consist of a construction phase lasting approximately 12-18 months. This will include site grading and construction of the solar panel arrays. Upon completion of the construction phase, ongoing operations of the project will last for approximately 35 years. The solar panels are self-sufficient in operation and will only require periodic maintenance and repair activities as well as regular groundskeeping.

1.2. Assessment Objectives

This economic assessment is required by the Board to show the anticipated impact the Project will have on the local and state economies. The solar energy industry is just beginning to develop in Kentucky and the first merchant solar power facility has not yet been constructed. Therefore, the economic assessment is based on known economic factors and with project specific information as available.

2. Background and Assumptions

2.1. Economic Model

This assessment uses the IMPLAN MODEL. In 1976, the federal government created a linear programming model IMPLAN (short for “impact analysis for planning”). IMPLAN estimated the economic effects of those resource outputs on local communities. In 1985, the responsibility for developing IMPLAN data sets shifted to the University of Minnesota. As demand grew for regional models, IMPLAN (then Minnesota IMPLAN Group) was established as an independent corporation for the purpose of developing and selling all future iterations of the IMPLAN database and software. Bobwhite used the current web-based version of IMPLAN (<https://implan.com/>) to model impacts to the Marion County local economy using Marion County and Kentucky datasets. The current economic data set uses 2018 data with calculated dollars for 2020. Note there are no 2018 economic statistics for Kentucky for the construction of a solar farm. IMPLAN outputs were predicted from other construction of power and communication facilities in Kentucky and locally in Marion County using site specific information where available.

Marion County Statistics- IMPLAN Model Year 2018

<i>Gross Region Product</i>	\$868,003,789
<i>Total Personal Income</i>	\$688,552,879
<i>Total Employment</i>	11,809
<i>Number of Industries</i>	188
<i>Average Household Income</i>	\$91,741
<i>Total Population</i>	19,404
<i>Land Area (square miles)</i>	346.7

2.2. Project Assumptions

Bobwhite anticipates capital construction costs of \$125 million. A portion of the Project’s spending will be within Marion and possibly surrounding counties. Project related activities and wages will provide investment in these local communities. IMPLAN projects approximately a 1.1 multiplier of benefit for each dollar spent in the construction of a power and communication facility (a surrogate for the solar industry for this assessment). The Project is estimated to provide approximately 400 full-time equivalent (“FTE”) construction jobs over a 12 to 18-month period. Bobwhite anticipates 50 to 100 local hires. Local contractors may be used for equipment rental, fencing, site work, and landscaping. Permanent positions supported during the operation of the facility include facility maintenance of the solar farm and landscaping/grounds-keeping. The Project anticipates having approximately two permanent positions for on-going O&M of the facility. Most of the

local economic impact will be during construction with ongoing beneficial impacts from local and state taxes over the course of the Project.

The construction workforce will include electricians, solar panel installers, heavy equipment operators, fencing installers, and other general laborers. A small portion of the labor force will be on-site managers and foremen. Hourly rates for solar installers range between \$13 and \$24 per hour depending on experience and geographical location¹. A conservative average salary for all positions of \$16.35 per hour or \$34,000 per year was used for the model.

¹ payscale.com research

3. Assessment

The IMPLAN model predicts direct, indirect and induced impacts. However, since the material (solar panels, invertors, and other electrical equipment) will be manufactured out of state, only the direct impacts are being used in the overall assessment. The indirect and induced values may be overstated since not all material will be sourced locally as is the case for other types of construction materials

IMPLAN predicts that the local employment increase of 400 FTEs will generate an increase of \$20,206,000 in labor income and \$41,085,700 in value added impacts to the local community. Value added from only local hires would be less (approximately \$10,200,000, or a quarter of the overall impact).

IMPACT	EMPLOYMENT	LABOR INCOME	VALUE ADDED
1 - DIRECT	400.00	\$20,205,950.77	\$41,085,722.41
2 - INDIRECT	132.79	\$4,294,634.24	\$6,669,555.48
3 - INDUCED	81.45	\$2,782,993.81	\$5,169,922.34
	614.23	\$27,283,578.82	\$52,925,200.24

4. Government Revenue

Local and State government will see a direct increase in tax revenue during construction from payroll. In addition, Bobwhite has secured an Inducement Resolution for Industrial Revenue Bond (“IRB”) with the Fiscal Court of Marion County consistent with state regulations to promote economic development and solar energy projects. A copy of the Memorandum of the IRB Agreement is included in Appendix A. The Inducement Resolution for the IRB includes a form for the beneficial payments in lieu of taxes (“PILOT”) agreement to the local school system of approximately \$400,000 over the lifetime of the Project and another approximately \$6 million in taxes. The PILOT agreement will be executed when the IRB is issued. A letter of support from the Marion County Judge Executive is also provided in Appendix B.

5. Conclusion

Bobwhite is proposing to develop a 96 MWac photovoltaic electric generating facility. The proposed Project is to be in unincorporated Marion County, north of the City of Lebanon. The County Judge Executive supports the Project and Bobwhite has secured an Inducement Resolution for an IRB with the Fiscal Court of Marion County to promote economic development and solar energy in Marion County.

The construction of the Project will provide an estimated 400 full-time equivalent jobs during construction, which is approximately a 3% increase in employment for Marion County. A subset of the construction labor force will be comprised of members of the local community, injecting additional revenue and spending into the area's economy. The increased employment will bring additional dollars to the wider community as workers spend dollars locally for gasoline, food, transportation, and accommodations for out of area workers. IMPLAN models a 1.1 multiplier effect for local dollars spent during construction.

The project is anticipated to generate an additional \$10 million in local labor income, provide approximately \$400,000 to the school system and generate approximately \$6 million in local taxes over the lifetime of the Project.

Appendix A
Memorandum of Industrial Revenue Bond
Agreement

RESOLUTION NO. 20200903

A RESOLUTION OF THE FISCAL COURT OF THE COUNTY OF MARION, KENTUCKY, GIVING PRELIMINARY APPROVAL OF AN INDUSTRIAL REVENUE BOND FINANCING FOR NORTHERN BOBWHITE SOLAR LLC, AND ANY AFFILIATES OR ASSIGNEES THEREOF; AUTHORIZING INITIATION OF THE ACQUISITION, CONSTRUCTION, EQUIPPING, AND INSTALLATION OF AN INDUSTRIAL PROJECT; AGREEING TO UNDERTAKE THE ISSUANCE OF ONE OR MORE SERIES OF INDUSTRIAL REVENUE BONDS AT THE APPROPRIATE TIME OR TIMES; AUTHORIZING THE EXECUTION AND DELIVERY OF A MEMORANDUM OF AGREEMENT AND PAYMENT IN LIEU OF TAXES AGREEMENT IN CONNECTION WITH THE ISSUANCE OF THE BONDS; AND TAKING OTHER PRELIMINARY ACTIONS

WHEREAS, the Fiscal Court of the County of Marion, Kentucky (the "*Issuer*"), has determined that the Issuer may assist Northern Bobwhite Solar LLC, a Kentucky limited liability company, its affiliates and assigns (collectively, the "*Company*"), by pursuing the acquisition, construction, equipping, and installation of an industrial project of the Company consisting of the facilities and properties, including any franchise as that term is used in KRS 136.115 to 136.180 (the "*Franchise*"), described in EXHIBIT A attached hereto (collectively, the "*Project*") and by entering into, at the appropriate time, a lease agreement with the Company (the "*Lease Agreement*") pertaining to the Project, all pursuant to the authority of Sections 103.200 to 103.285, inclusive, of the Kentucky Revised Statutes, as amended (the "*Act*"), and in furtherance of the purposes of the Act and the ensuing public benefit to the residents of the Issuer and its environs, the Lease Agreement to be upon terms and conditions as the Act may require and as the Issuer may deem acceptable; and

WHEREAS, the Company has represented to the Issuer that the acquisition, construction, equipping, and installation of the Project, if acquired, constructed, equipped, and installed, will result in new job opportunities within the environs of the Issuer; and

WHEREAS, the Issuer is authorized by the Act to issue its industrial revenue bonds for the purpose of defraying the costs of acquiring, constructing, equipping, and installing "industrial building" facilities, which term means all real and personal properties suitable for the Project, including land, buildings, fixtures, equipment and the Franchise; discussions have occurred between representatives of the Company and the Issuer regarding the issuance of industrial revenue bonds by the Issuer to finance the Company's Project; it is the intention of the Issuer, and the Issuer has agreed and hereby agrees with the Company, to issue such industrial revenue bonds upon compliance by the Company with such reasonable conditions and obligations as the Issuer may require and documents incident to such bond issue or issues and upon the agreement of the Company to pay the reasonable costs and expenses of the Issuer related to or arising from such issuance from bond proceeds or other sources; and the Issuer has authorized the Company to proceed with the initiation of the acquisition, construction,

equipping, and installation of the Project, subject to reimbursement of the costs of such acquisition, construction, equipping, and installation from the proceeds of the industrial revenue bonds, as and when issued; and

WHEREAS, based upon the Company's present estimate of the aggregate costs of the Project together with a reasonable allowance for contingencies and incidental costs, the Issuer proposes to issue its industrial revenue bonds in an aggregate stated principal amount up to \$120,000,000, for a term of up to forty (40) years, to pay the costs of the acquisition of the Project (the "*Bonds*"), including costs incident to the authorization, sale, and issuance of the Bonds and other financing costs, with the understanding that such amount may be increased by subsequent official action of the Issuer upon the Company's request; and the Bonds will be payable solely from payments to be made by the Company under the Lease Agreement and will not be payable from any funds or assets of the Issuer whatsoever; and

WHEREAS, the Issuer proposes to enter into the Lease Agreement with the Company at the appropriate time under which the Company will covenant and agree to pay amounts sufficient to provide for the payment of principal of and premium, if any, and interest on the Bonds together with all trustee, paying agent, and servicing agent's fees in connection with the Bonds and any other related charges as the same come due and payable; and

WHEREAS, to evidence the Issuer and the Company's preliminary agreement regarding these matters the parties propose to enter into a Memorandum of Agreement substantially in the form set out in **EXHIBIT B** attached hereto (the "*Memorandum of Agreement*"), and to approve the form of the Payment in Lieu of Taxes Agreement substantially in the form set out in **EXHIBIT C** attached hereto (the "*County PILOT Agreement*").

NOW, THEREFORE, BE IT RESOLVED AND ORDERED BY THE FISCAL COURT OF MARION COUNTY, KENTUCKY, AS FOLLOWS:

Section 1. It is found, determined, and declared that (a) the recitals set forth in the preambles to this Resolution, which are incorporated in this Section 1 by reference, are true and correct; (b) the amount of money necessary to be provided by the Issuer through the issuance of the Bonds for the acquisition, construction, installation, and equipping of the Project, including the Franchise, will be an aggregate amount up to \$120,000,000, the Bonds to have a term of up to forty (40) years; (c) the Company has represented it intends to have sufficient financial resources to acquire, construct, install, and equip the Project and to place it in operation and to continue to operate, maintain, and insure the Project throughout the term of the Bonds, meeting when due the obligations of the Lease Agreement; and (d) sufficient safeguards shall be provided by the Lease Agreement to insure that all money provided by the Issuer from the proceeds of the sale of the Bonds will be expended, by way of direct expenditure or reimbursement, solely and only for the purposes of the Project financed thereby.

Section 2. It is hereby found, determined, and declared that (a) the costs of acquiring, constructing, installing, and equipping the Project, including any Franchise, will be paid out of the proceeds of the Bonds, such proceeds to be supplemented by contributions of the Company

as may be necessary to complete the Company's respective Project; (b) none of the Bonds will be general obligations of the Issuer; (c) neither the Bonds nor the interest thereon shall constitute or give rise to any pecuniary liability whatsoever of the Issuer or any charge against its general credit or taxing power; (d) the Bonds and the payment of interest thereon shall be secured and payable solely by a pledge of amounts to be paid by the Company or otherwise to be available under the Lease Agreement; (e) no part of said costs will be payable out of any general funds, assets, properties, or other contributions of the Issuer; (f) the Issuer shall sell the Bonds only to the Company or an affiliated entity or assignee thereof; and (g) the Company shall pay all reasonable costs and expenses of the Issuer related to the issuance of the Bonds in an amount not to exceed \$1,500.

Section 3. The acquisition, construction, installation, and equipping of the Project may be initiated and undertaken or caused to be initiated and undertaken by the Company forthwith, and the Company is authorized to formulate and develop plans and specifications for the Project and to enter into such contracts and undertakings as may be required for the acquisition, construction, installation, and equipping of the Project. Payments or reimbursements to or on behalf of the Company after the receipt of the proceeds of the sale of the Bonds by the Issuer shall be made as set out in the Lease Agreement.

Section 4. The Company is authorized and directed to take any other legal action necessary and customary in order to satisfy any prerequisites to the issuance of the Bonds. Counsel for the Issuer and its officers and officials are authorized and requested to assist the Company in any appropriate manner.

Section 5. The Memorandum of Agreement attached hereto as **EXHIBIT B** is hereby approved and the County Judge/Executive is hereby authorized to execute the Memorandum of Agreement on the Issuer's behalf. The Company may assign its rights hereunder by assigning the Memorandum of Agreement and providing notice of such assignment to the County Judge/Executive.

Section 6. It is hereby acknowledged and agreed that the form of the County PILOT Agreement attached hereto as **EXHIBIT C** describes the agreement reached between the Issuer and the Company's representatives regarding the Company's obligations to make payments in lieu of taxes while the Bonds are outstanding and that upon the issuance of the Bonds, the Issuer shall direct its County Judge/Executive or its other authorized officials to execute a County PILOT Agreement in the form attached hereto with such changes or revisions as are necessary to reflect the date, par, designation, maturity, and interest rate or rates applicable to the Bonds.

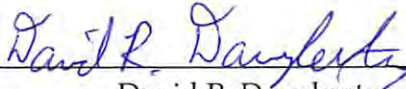
Section 7. No funds of the Issuer shall be expended for the costs of issuance of the Bonds or for the costs of the Project, except such as are derived from Bond proceeds.

Section 8. All resolutions, municipal orders, and other official actions of the Issuer or parts thereof in conflict herewith are, to the extent of such conflict, hereby rescinded.

Section 9. This Resolution shall be in full force and effect from and after its adoption.

[SIGNATURE PAGE TO INDUCEMENT RESOLUTION]

ADOPTED by the Fiscal Court of the County of Marion, Kentucky, at a meeting held on September 3, 2020.



David R. Daugherty
County Judge/Executive

Attest:




Chad Mattingly
County Clerk

CERTIFICATION

I, the undersigned, do hereby certify that I am the duly qualified and acting Clerk of Marion County, Kentucky (the "*Issuer*"), and as such I further certify that the foregoing (with the attached **EXHIBITS A, B, and C**), is a true, correct, and complete copy of a Resolution duly adopted by the Fiscal Court of the Issuer at a meeting properly held on September 3, 2020, signed by the County Judge/Executive and now in full force and effect, all as appears from the official records of the Issuer in my possession and under my control.

IN WITNESS WHEREOF, I have hereunder set my hand as of September 3, 2020.



Chad Mattingly
County Clerk

Appendix B
Letter of Support



David R. Daugherty
County Judge Executive

Marion County Fiscal Court
223 North Spalding Avenue, Room 201
Lebanon, KY 40033

Office Phone: (270) 692-3451

Fax: (270) 692-9487

September 17, 2020

To Whom It May Concern:

Geenex Solar has kept Marion County and its citizens fully informed regarding the development, and eventual construction and operation, of the Northern Bobwhite Solar project. Our county is in support of this solar project and as such, has agreed to issue Industrial Revenue Bonds in consideration of its economic boost to Marion County.

In addition to the increase in the local tax base, the fact that we will be helping produce clean, renewable energy is exciting to the community. We look forward to working with Geenex Solar and their partners for many years.

Sincerely,

A handwritten signature in blue ink that reads "David R. Daugherty".

David R. Daugherty
Marion County Judge Executive

LAND USE COMPATIBILITY AND AIRPORTS

PREFACE

The development of land uses that are not compatible with airports and aircraft noise is a growing concern across the country. In addition to aircraft noise, there are other issues, such as safety and other environmental impacts to land uses around airports which need to be considered when addressing the overall issue of land use compatibility. Although several federal programs include noise standards or guidelines as part of their funding-eligibility and performance criteria, the primary responsibility for integrating airport considerations into the local land use planning process rests with local governments. The objectives of compatible land use planning are to encourage land uses that are generally considered to be incompatible with airports (such as residential, schools, and churches) to locate away from airports and to encourage land uses that are more compatible (such as industrial and commercial uses) to locate around airports. The FAA has been actively supporting programs to minimize noise impacts. These include phase out of noise aircraft, supporting airport noise compatibility programs, funding of mitigation measures in environmental studies.

Interest has been expressed in having the federal government play a much stronger role in airport-related land use compatibility planning. Although the federal government cannot dictate local land use policies, it can play a role in facilitating the coordination between airports, local, county, and regional planning agencies to ensure that compatible land use planning occurs around our nation's airports.

The Federal Aviation Administration's (FAA) Southern Region Airports Division Office has received requests from airport personnel and local governments to provide guidance on how to establish and maintain compatible land uses around airports. The Southern Region Airports Division Office is responsible for planning, building, expanding, and improving airports; finding solutions to airport

congestion; supporting noise-compatibility and noise-reduction programs; minimizing adverse environmental impacts; and ensuring safety and regulatory compliance in the states of Alabama, Georgia, Mississippi, Kentucky, North Carolina, South Carolina, Tennessee, Florida, the U.S. Virgin Islands, and Puerto Rico.

In response to these requests, the FAA Southern Region, established, in 1998, a ***Compatible Land Use Planning Task Force***. The Task Force was charged with identifying how to better coordinate the airport master planning process (and related environmental plans) with the local comprehensive land use planning process. The Task Force determined that a resource guide to assist local governments and airports in identifying and implementing appropriate compatible land use tools (such as, airport overlay zones and aviation easements) would be the best way to prevent or slow down the proliferation of incompatible land uses around airports.

This guide, developed by the Task Force, is provided as a resource to local planners, governments, and other interested parties and should not be construed as FAA regulations or official agency policy. The case studies contained within this guide are included as examples to illustrate specific techniques and strategies of how and where some of the compatible land use tools across the country have been applied and implemented. Inclusion of these examples does not in any way represent official endorsement by the FAA. In some instances, approved Part 150 Noise Compatibility Program measures and Noise Exposure Maps have been included as examples for discussion purposes only.

The Task Force consists of representatives from airport planning staffs, airport planning consultants, city/county planning departments, state aviation departments, and the FAA Regional Environmental Program Manager.

The Task Force members are:

Ms. Jacqueline Sweatt-Essick, Environmental Program Manager, FAA, Airports Division, Southern Region Office, Atlanta, Georgia.

Mr. Rick Alberts, P.E., President, Transportation Solutions, Incorporated, Clearwater, Florida.

Mr. William W. Bowdy, FAICP, Executive Director, Northern Kentucky Area Planning Commission, Fort Mitchell, Kentucky.

Ms. Diane E. Gusky, AICP, Deputy Director, Aeronautics Division, Tennessee Department of Transportation, Nashville, Tennessee.

Mr. Dale Huber, Deputy Director of Aviation, Cincinnati/Northern Kentucky International Airport, Cincinnati, Ohio.

Ms. Suzie Kleymeyer, AICP, Senior Consultant, Landrum & Brown Incorporated, Cincinnati, Ohio.

Ms. Diana Lewis, AAE, Manager, Airport Planning, Broward County Aviation Department, Ft. Lauderdale, Florida.

Mr. Mark Perryman, Director of Environmental Planning, Landrum & Brown Incorporated, Cincinnati, Ohio.

Mr. Raymond R. White, Sr., AICP, Director of DeKalb County Planning, Decatur, Georgia.

EXECUTIVE SUMMARY

The objective of aviation-related land use planning is to guide incompatible land uses away from the airport environs and to encourage compatible land uses to locate around airport facilities.

This compatible land use guide has been prepared for airport managers, local land use planners, developers, and elected or appointed public officials. Its purpose is to provide information on FAA programs and sources of support and to promote an understanding of land use compatibility planning issues around airports that could result in improved compatibility in the airport environs.

While not the only compatibility issue, aircraft noise has been the primary driver of airport land use compatibility conflicts. Since the introduction of turbo jet aircraft in the late 1950s, there has been a constant technical effort to reduce aircraft noise emissions. Although there has been significant reduction in aircraft engine noise, little more can be expected in the field of noise-reduction technology. Consequently the focus must now be on airport-specific noise and land use compatibility planning.

This guide identifies a wide variety of possible land use control methods as they relate to compatible land use planning efforts. This guide also recognizes that state and local governments are responsible for land use planning, zoning and regulation, and presents options or tools that can assist in establishing and maintaining compatible land uses around airports. To assist in those efforts, the Federal Aviation Administration (FAA), local airport sponsors, and state aviation agencies have expended significant funds related to airport planning and land use compatibility planning in the United States. These efforts have taken the form of Airport Master Plans, Noise Compatibility Studies, and land acquisition and sound insulation programs. There are also other land use issues that are of

concern at general aviation facilities. These are also reviewed and discussed in this guide.

Roles and Responsibilities

There are many entities involved in implementing or supporting actions directed toward improved land use compatibility around airports. These entities include the FAA, airlines, cargo carriers, commercial and general aviation airports, state and local governments, system users, and the community at-large. Knowing the interwoven roles and responsibilities for land use compatibility planning and implementation is important to helping understand the responsibilities placed on each entity and individual involved.

Legislation and Regulations Relating to Aircraft Noise and Compatible Land Use Planning

With the advent of jet aircraft and increasing aircraft operations at the nation's airports, it was recognized that aircraft noise could become a major constraint on further development of the commercial aviation network. To address the issues of aircraft noise and land use compatibility, legislation and regulation over the past three decades has focused on:

1. Providing assistance to airport operators to prepare and carry out noise-compatibility programs.
2. Providing funding for noise compatibility planning and projects.
3. Requiring airport operators to ensure that actions are taken to establish and maintain compatible land uses around airports.
4. Establishing a National Noise Policy that phases out noisier (Stage 1 and Stage 2) aircraft while phasing in quieter (Phase 3) aircraft according to a specified time frame.
5. Establishing a commitment by the federal government to fully consider the environmental effects (including noise) of a proposed action such as a new runway or a major runway extension.
6. Establishing mitigation measures, which minimize impacts to water, wetlands, and endangered species and protect the historical and cultural environment.

Funding Sources

There are two primary federal funding sources for compatible land use planning projects: the Airport Improvement Program (AIP) and the Passenger Facility Charge (PFC). Some additional funding sources may also exist at the state and local levels.

Airport and Local Land Use Planning Process

Airport Planning

Airport Planning in the United States is performed at several levels. These planning processes (typically referred to as System Planning) are performed at the national, state, regional, and local levels.

Airport Master Planning

The Airport Master Plan is a document that details the long-term development of an airport. The basic purpose of an Airport Master Plan is to set out a plan for future development designed to meet projected needs given community, environmental, and political considerations. An Airport Master Plan is also a tool to ensure that aviation planning among federal, state, regional and local agencies is coordinated.

Airport Master Planning and Comprehensive Land Use Plans

Aviation is an element of a region's transportation system therefore, the goals of airport development should be established in the framework of an area's comprehensive plan. The Master Plan is a published document, approved through a public hearing process by the governmental agency or authority that owns or operates the airport. The Airport Master Plan should be coordinated with local jurisdictions surrounding the airport to ensure that future airport development plans are taken into consideration in each jurisdiction's local comprehensive land use plan. Local land use planners and airport planners should use it to evaluate new development within an airport's environs.

Aircraft Noise Compatibility Planning

Aircraft noise has been an issue at almost every airport over the last four decades. Technology has improved aircraft performance capabilities and reduced noise emitted by aircraft engines. Continued progress in achieving aircraft noise and land use compatibility is now focused at the airport specific level. One of the best mechanisms available to address aircraft noise compatibility planning is the Federal Aviation Regulation (FAR) Part 150 Noise Compatibility Program.

The FAR Part 150 Program was established under the Aviation Safety and Noise Abatement Act of 1979 and allows airport operators to voluntarily submit noise exposure maps and noise compatibility programs to the FAA for review and approval. A noise compatibility program sets forth the measures that an airport operator "has taken" or "has proposed" for the reduction of existing incompatible land uses and the prevention of additional incompatible land uses within the area covered by noise exposure maps. Typically recommended noise abatement measures fall into three categories:

1. Operational measures such as changes in runway use or changes in flight-track location.
2. Preventive measures such as compatible land use zoning or noise overlay zoning within off-airport noise exposure areas.
3. Remedial measures such as purchase of property or sound insulation of residential property that is exposed to significant aircraft noise.

Local Land Use Planning

Historically land use plans (comprehensive plans) prepared by local governments have only minimally recognized the implications of planning for airports and off-site, airport-related development. Local land use planning, as a method of determining appropriate (and inappropriate) use of properties around airports should be an integral part of the land use policy and regulatory tools used by airports and local land use planners. Very often such land use planning coordination is hampered by the fact that airport facilities can be surrounded by a multitude of individual local governmental jurisdictions, each with their own comprehensive planning process.

Coordination and Implementation of Airport and Local Land Use Planning

Coordination during the early stages of Airport Master Planning and local land use planning is extremely critical for ensuring some level of land use compatibility. This coordination must occur before the creation, adoption, and implementation of both airport and local land use plans. Such coordination requires open dialogue and, at the least, some type of basic understanding of each other's planning processes.

Compatible Land Use Tools and Their Potential Applications

There are many land use planning and regulatory tools available to local governmental organizations. Among them are:

Comprehensive Plans

The preparation and adoption of a comprehensive plan is a critical and effective part of the process of ensuring land use compatibility around airport facilities.

Zoning Regulations

The use of zoning to control development around airport facilities has realized varied degrees of success. If put in place early enough, however, zoning can be an effective tool to help eliminate or reduce land uses that are not compatible with airports.

Subdivision Regulation

Subdivision regulations are usually prepared, adopted and enforced through the actions of a local legislative body and/or a local planning commission.

Subdivision plat review procedures provide an opportunity for jurisdictions to determine how and if a proposed subdivision design could contribute to the incompatibility of noise exposure in the airport environs.

Building Codes

While generally concerned with the functional or structural aspects of buildings or structures, some building codes have special requirements for properties located in high noise exposure areas.

Housing Codes

Housing standards usually relate to the minimum that a home would have to meet in order to be decent, safe, and sanitary. To some extent, and in combination with building codes and performance standards, housing codes may serve as a basis for noise impacts to residential occupants.

Capital Improvement Programming

A capital improvement program is another tool used to assist local governments in realizing the goals, objectives, and recommendations of an adopted comprehensive plan. This programming tool could be used in a cooperative manner to encourage or discourage certain types of land development around airport facilities.

Official Map Regulations

Adoption of map regulations in support of comprehensive plans and capital improvement programs permits these maps to show the location and extent of existing and proposed public facilities and needs. A potential application of such map regulations would be to encourage compatible development in an area designated for a runway in an airport's Master Plan.

Infrastructure Extensions

Provision or extension of basic infrastructure elements such as water, sewer, and roadways can significantly affect the extent and direction of growth and development. Used in conjunction with comprehensive plans and Airport Master Plans can allow for land uses to take place in areas that are compatible with aviation facilities.

Growth Policies

Some communities are developing comprehensive plans using the concept of controlling growth in specific areas. Identification of airports, surrounding affected areas, and Master Plan concepts, as part of growth policies planning is critical for successful growth policies planning.

Transferable Development Rights (TDR) and Purchase of Development Rights (PDR)

Both TDR and PDR involve the relocation of development rights (through transfer or purchase) from one location to another. Either mechanism has the potential to allow airports to either avoid incompatible development or promote compatible development in specific noise-impacted areas.

State Airport Zoning Commission Regulations

State statutes addressing aviation and airports are varied. Planners from all disciplines should be familiar with the laws in their respective states.

Negotiation/Mediation

The negotiation or mediation technique can be an important tool when employed to address land use compatibility conflicts or disputes associated with airport facilities.

Public Education and Awareness Programs

Airports or local planning agencies that expect a reasonable chance of success in their planning efforts must provide for public education and awareness in the planning process.

Information Dissemination

Dissemination of information is a one-way flow of a desired message or philosophy. The type of audience may range from a very narrow one to the community at-large. Among the information dissemination opportunities are brochures, newsletters, paid advertising, newspaper inserts, and Internet Web pages.

Information Exchange

Information exchange is a two-way flow of information. Once the information is disseminated, a dialogue occurs that may be used to enhance the education process and ultimately improve land use compatibility planning and to determine the public's attitude toward or acceptance of the disseminated message. Among the information exchange opportunities are public workshops, public advisory committees, radio/T.V. talk shows, and speaking engagements.

Conclusion

Airport and community planning processes are intertwined. To that extent, the material contained in this guidebook are focused on communication and cooperation, and directed toward the establishment of those common goals that are necessary for the development of compatible land use programs.

I. INTRODUCTION

A. Purpose of This Guide

To assist local units of government and land use planners who have an airport within their jurisdiction (or are affected by the impacts of airport/aircraft operations within their jurisdictions), the FAA Southern Region has pooled the resources of FAA environmental planners; airport planning consultants; state, regional, and local planners; and airport owners to prepare this guide for airport land use compatibility planning. This guide should assist airport managers and planners, local land use planners, developers, and elected and appointed public officials in promoting an understanding of land use compatibility planning issues around airports and in implementing the tools presented.

This guide identifies the importance of airport land use compatibility planning, summarizes the issues involved in achieving compatibility, presents a variety of methods which have been used to attain land use compatibility, and describes the responsibilities involved in implementing land use compatibility measures. It is particularly important to provide this guide for the management of smaller airports that do not have planning staffs. It is also important for every airport manager to understand land use compatibility issues and land use regulations. The guide also provides an overview of airport planning and development so that local land use planners and their elected officials can understand the airport planning process.

Finally, the guide not only presents a discussion of land use compatibility issues, but it also identifies opportunities for coordination of both the airport planning and land use planning processes. It is critical that these two planning processes be integrated/coordinated as much as possible.

Four key issues have been identified for evaluating the types of land uses to be considered compatible around airports:

- The impact of aircraft noise and noise compatibility planning;
- The potential for airspace conflicts from tall structures in the vicinity of an airport;
- The possibility of electronic interference with aviation navigation aids; and
- The potential for interaction between aircraft and wildlife attractants.

A more detailed presentation for each of these factors is provided throughout the remainder of this guide.

B. FAA Actions Related to Land Use Planning

While the FAA can provide assistance and funding to encourage compatible land development around airports, it has no regulatory authority for controlling land uses to protect airport capacity. The FAA recognizes that state and local governments are responsible for land use planning, zoning, and regulation including that necessary to provide land use compatibility with airport operations.

However, pursuant to the Federal Airport and Airway Development Act, as a condition precedent to approval of an FAA-funded airport development project, the airport sponsor must provide the FAA with written assurances that “...appropriate action, including the adoption of zoning laws have been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations including landing and takeoff of aircraft....”

FAA has required the phasing out of noisy Stage 1 and Stage 2 aircraft consequently, the aviation industry has spent substantial monies to meet this requirement. To assist in the compatible land use efforts, the FAA, local airport sponsors, and state aviation agencies have expended significant funds related to airport planning and off-airport noise and land use compatibility planning throughout the United States. Airport master plans have been prepared to identify the near-term and long-range projections for airport activity and the development necessary to meet these activity demands. In addition, noise and land use studies

(FAR Part 150 studies) have been conducted to evaluate ways to minimize the impacts of aircraft noise, and the FAA and airport sponsors have financed major land acquisition and sound insulation programs for noise compatibility purposes. Information concerning the content and methods of implementation of airport master plans and noise compatibility studies and their applicability to off-airport land use planning is covered later in this guide.

C. Importance of Compatible Land Use Planning around Airports

Airports provide significant employment and economic benefits to communities through the movement of people and goods, promotion of tourism and trade, stimulation of business development, and the opportunity for a wide variety of jobs. The flying public and local communities do not readily discern the huge size and scale of economic development that airports provide and stimulate. According to the Airports Council International (ACI), in 1997 more than 1.2 billion people traveled on U.S. air carriers, regional, and commuter airlines through U.S. airports creating more than 5.8 million direct and indirect jobs. The total economic activity from these air carrier airport activities and jobs was nearly \$380 billion.

General aviation airports, those airports without commercial service, also are an important component of the national economy, providing services that commercial service airports cannot or do not provide. In fact, 80 percent of all general aviation aircraft are used for business purposes. A 1995 report entitled “The Economic Impact of Civil Aviation on the U.S. Economy Update ’93,” prepared for the FAA, indicated the following: “The economic role of local and regional general aviation airports, includes the production and sale of general aviation aircraft, avionics and associated equipment and the provision of support services such as flight schools, aircraft maintenance and fixed base operators. In 1993, the annual economic activity to the U. S. economy from general aviation airports was estimated to be over \$18.5 billion.”

Land use decisions that conflict with aviation activity and airport facilities can result in undue constraints being placed on an airport. In order to enable this sector of the economy to continue to expand, to provide for a wide variety of job

opportunities for local citizens, and to meet the needs of the traveling public, it is vitally important that airports operate in an environment that maximizes the compatibility of the airport with off-airport development. Thus, this guide has been prepared to provide the tools necessary for all involved to work together to protect this valuable resource, as well as to promote land use compatibility around airports.

II. ROLES AND RESPONSIBILITIES

This section describes the general roles and responsibilities of those involved in implementing actions to enhance airport and off-airport land use compatibility. The roles and responsibilities listed here are not intended to be all-inclusive but are identified to present the key roles and responsibilities of these entities related to compatible land use planning.

A. Federal Aviation Administration (FAA)

The FAA is responsible for the development of guidance related to federal laws and regulations affecting the aviation industry. This guidance is provided through the establishment of Federal Aviation Regulations (FARs), FAA Orders, and FAA Advisory Circulars (ACs). The FAA also distributes funds to support the development of master plans, noise and land use studies, and environmental studies for airport development projects (which directly relate to the compatibility between the airport and aircraft activity with the local community), and the expansion and safe operation of airports and related aviation facilities.

The FAA is also responsible for the utilization of airspace and control of aircraft flight through its air traffic control facilities; is responsible for the implementation of flight standards (airworthiness of aircraft and noise emissions of aircraft, for example); is responsible for navigation aids and other facilities necessary to provide a safe and efficient air system and is responsible for making sure that airports that receive federal funding are in compliance with grant assurances.

B. Airlines, Cargo Carriers, and General Aviation

In terms of land use compatibility, the airlines and air cargo carriers are required to replace or retrofit aircraft to meet the latest noise requirements. The pilots of all aircraft types, including general aviation aircraft, are responsible for operating their aircraft according to noise abatement procedures established at an airport and within the local airspace.

C. Airport Proprietor/Airport Management

Airport owners and operators are responsible for the development of information to support the compatibility effort. This support includes the preparation of master plans, noise compatibility and land use studies, community involvement programs, and the interaction with local planners and elected officials related to land use compatibility. Airport management is also responsible for the establishment of controls to reduce noise impacts, the development of on-airport facilities in a manner which reduces the interaction with wildlife, and the dissemination of information related to the growth of the airport and its relationship to the local economy.

D. Local Government and Elected Officials

Local land use planners and elected officials are responsible for local land use zoning and control. These entities and individuals are responsible for preparation of comprehensive plans, and reviewing and implementing zoning and land use regulations in a manner that considers the effects related to local airport facilities and aviation activity. These responsibilities include paying particular attention to noise impact mitigation, tall structure location, landfill development, and wildlife interaction with aviation activity in addition to other infrastructure interface considerations.

E. Passengers and Shippers

Passengers and shippers, through ticket and air bill taxes, generate the funds for aviation development and land use compatibility considerations. Portions of these taxes are directly allocated for noise control and planning activities, while others are allocated to the safe and efficient use of the airspace and development of aviation facilities. In addition, passenger facility charges (PFCs) at some airports are also used to fund similar activities at the airports where they are received.

F. Citizens

There is a wide variety of citizens interested in airports and aviation, including those who travel through airports (whether on commercial carriers or general aviation); those who work at airports (whether directly for the airport or indirectly for an aviation-related business); those who are affected by tourism and industry (the airport being the entry and exit point for passengers and cargo); those who have property interests in the vicinity of an airport; and those who are impacted by airport and aircraft activity (particularly aircraft noise). These interests represent a wide variety of viewpoints regarding the role and effect of aviation in the community. The overall role of the citizenry is to understand the issues involving aviation in their community, to protect the benefits of aviation in their community, and to minimize the adverse consequences that can result from aviation activity in their community.

G. Summary

It is important to understand the roles and responsibilities for land use compatibility planning and implementation and the requirements that have been placed on each entity and individual involved. More important, however, is the knowledge that these roles and responsibilities must be interwoven for successful land use compatibility planning to occur.

III. LEGISLATION AND FEDERAL REGULATIONS RELATING TO COMPATIBLE LAND USE PLANNING

In the early 1960s with the advent of jet aircraft, the aircraft noise issue became increasingly apparent. The issue was soon magnified by the rapidly increasing number of aircraft operations in the latter part of the decade. Due to its adverse effect on people, aircraft noise was recognized as a major constraint on the further development of the aviation network, threatening to limit the construction and expansion of airports and access to them. By the mid-1970s, approximately seven million people nationwide were exposed to what is considered a significant level of aircraft noise.

Subsequently, aircraft engine manufacturers and the federal government both initiated extensive research into quieting jet engines. In 1969, Congress gave the FAA the responsibility to regulate aircraft design and equipment for noise-reduction purposes. The FAA then embarked upon a long-term program of controlling aircraft noise at its source. A regulation published in 1969 established noise standards for turbojet aircraft of new design effective December 1, 1969. An amendment to these regulations in 1973 extended the same standards to all new aircraft of older design.

On October 21, 1976, President Ford directed the FAA to publish its noise compliance rule not later than January 1, 1977. Consequently, the U.S. Department of Transportation (DOT) and FAA issued an Aviation Noise Abatement Policy on November 18, 1976. This policy established a general policy on noise control plans and proprietary use restrictions.

In addition to the various federal laws and processes described herein, the following sections include other airport-related regulations that should be considered in local land use planning decisions.

The following paragraphs describe, in detail, the federal legislation and other airport-related regulations that affect airport land use compatibility planning.

A. Aviation Safety and Noise Abatement Act of 1979

In 1979, Congress passed the Aviation Safety and Noise Abatement (ASNA) Act. The Act provides assistance to airport owners to prepare and carry out noise compatibility programs to ensure continued safety in aviation, and for other purposes.

The Aviation Safety and Noise Abatement Act of 1979 required the following actions be taken:

- Establishment of a single system of measuring noise, for which there is a highly reliable relationship between projected noise exposure and surveyed reactions of people to noise, to be uniformly applied in measuring the noise at airports and the areas surrounding airports;
- Establishment of a single system for determining exposure of individuals to noise which results from the operations of an airport and which includes, but is not limited to, noise intensity, duration, frequency, and time of occurrence; and
- Identification of land uses which are normally compatible with various exposures of individuals to noise.

Section 103 of the Act authorized the Secretary of the DOT to make grants for airport noise compatibility planning to minimize noise impacts on communities in and around airports. According to the ASNA, a noise compatibility program identifies measures that an airport owner has taken or has proposed for the reduction of existing incompatible land uses, and the prevention of additional incompatible land uses within the area covered by noise exposure maps.

B. Federal Aviation Regulation Part 150 Noise Compatibility Program

In 1981, the FAA initiated a program (“Part 150”) to fund airport noise compatibility planning and projects. This program provides financial assistance to airport owners to assess noise impacts and to identify and carry out noise-reduction measures.

FAR Part 150 Airport Noise Compatibility Planning was required by the Aviation Safety and Noise Abatement Act of 1979 (ASNA). It was adopted as an interim rule in February 1981. FAR Part 150 establishes requirements for airport owners who choose to submit noise exposure maps and develop noise compatibility planning programs to the FAA for review and approval.

Revisions to Part 150 Airport Noise Compatibility Planning were adopted on December 13, 1984, and became effective on January 18, 1985. Revisions to Part 150 were based, in part, on comments invited and received following passage of the interim rule. As required by the Act, revisions to the regulations established a single system of measuring aircraft noise and a single system for determining the exposure of individuals to noise in the vicinity of airports. The regulations as revised also established a standardized airport noise compatibility planning program including:

- Voluntary development and submission to the FAA of noise exposure maps (NEMs) and noise compatibility programs (NCPs) by airport owners;
- Standard noise measurement methodologies and units;
- Identification of land uses that are normally compatible (or incompatible) with various levels of aircraft noise around airports; and
- The procedures and criteria for preparation and submission of NEMs and NCPs.

The Final Rule included language that stated that Part 150 regulations apply to any “public use airport” as defined by Section 502 (17) of the Airport and Airway

Improvement Act of 1982 (described later in this section). It also noted that although Part 150 specifies requirements that must be met when submitting NEMs and airport NCPs to the FAA, the submission of these maps and programs is completely voluntary. ASNA does not allow the federal government to interfere with or override local government zoning, subdivision building, and health authority.

The program actually got off to a slow start in the late 1980s because many community residents were afraid that once their properties were identified on the maps as being within an airport's noise contours, their property values would decline. However, this perception has changed throughout the 1990s. The FAA continues to work in partnership with airport owners and airport communities in developing and updating FAR Part 150 NCPs. More than 200 airports nationwide participate in the FAA's airport noise compatibility planning program. Since 1981, the FAA has distributed to airports participating in the program more than \$1.2 billion in federal funding to identify and reduce the impact of aircraft noise on local communities. Currently 55 percent of all large, medium, and small hub airports located in the southeast region of the United States have approved NCPs. (The FAR Part 150 Noise Compatibility Program is discussed in detail in Section VI.)

C. Airport and Airway Improvement Act of 1982

On May 13, 1946, President Truman signed the Federal Airport Act of 1946. This Act established a federal airport grants-in-aid program known as the Federal Aid to Airports Program (FAAP). The Act's goal was to promote the development of a civil system of airports nationwide. Funds were appropriated from the general fund of the U.S. Treasury. The Airport and Airway Development Act (AADA) replaced the FAAP in 1970.

As part of the Airport and Airway Development Act, the Secretary of Transportation is authorized to make project grants for airport planning and development to maintain a safe and efficient nationwide system of public-use airports. Upon acceptance of federal funding, an airport owner becomes obligated to operate and maintain the airport to certain standards and comply with several specific assurances and obligations contained in grant agreements. One of the

assurances with which an airport owner must comply involves the establishment and maintenance of compatible land uses around airports. This assurance requires the airport owner to restrict the use of land adjacent to or in the immediate vicinity of the airport to the extent reasonable activities and purposes compatible with normal airport operations, including landings and takeoffs of aircraft.

In 1982, the AADA was replaced by the Airport and Airway Improvement Act (AAIA) of 1982.

In addition to the above assurances there are several other assurances of the Act relating to planning, land use plan consistency, public participation, and safety, including:

Assurance 6: Consistency with Local Plans – A finding of consistency or inconsistency with local plans based upon the results of the intergovernmental review process is required at the time of application.

Assurance 7: Consideration of Local Interests – The non-airport sponsor certifies that fair consideration has been given to the interests of local communities. This does not require the sponsor to receive concurrence from all local communities, only that during project development their interests have been fairly considered in reaching decisions relative to the project.

Assurance 13: Operation and Maintenance – Applies to federally assisted noise compatibility project items and requires a sponsor to operate and maintain certain noise project items.

Assurance 20: Hazard Removal and Mitigation –When funds are allocated for developing new runways, runway safety areas, or to improve existing runways, the airport sponsor must own, acquire, or agree to acquire adequate property interest.

Assurance 29: Airport Layout Plan – Each project for airport development must provide for updating the airport layout plan unless otherwise authorized by the Administrator of the FAA. By this assurance, the airport sponsor (owner/operator) agrees to keep the ALP current at all times.

D. Airport Noise and Capacity Act of 1990 (National Noise Policy)

On November 5, 1990, Congress passed the Airport Noise and Capacity Act (ANCA). This act required the establishment of a National Noise Policy. The emphasis for establishing a National Noise Policy came about due to the magnitude of noise complaints from the public. The opposition to aircraft noise by the public is one of the major obstacles to expanding and increasing capacity at our nation's airports. Resolution of the noise debate is one of the most important issues facing the aviation industry. The lack of a National Noise Policy had created conflict between the airlines, the airport owners, and the communities they serve.

A critical part of the National Noise Policy set by Congress was the requirement to eliminate Stage 2 aircraft operating in the contiguous United States. Aircraft are rated or classified on the level of noise they emit while taking off and landing. Stage 1 aircraft are the noisiest aircraft, such as the original Boeing 707 and Douglas DC-8. Congress banned Stage 1 aircraft in 1987. Stage 2 aircraft include the older Boeing 727, 737, 747 and the McDonnell-Douglas DC-9 and DC-10 (see **Exhibit III-1** depicting Stage 2 jet noise "footprints"). The quietest aircraft are the Stage 3 aircraft, which include the new Boeing 737, 747, 757, and 767, McDonnell-Douglas MD-80 and MD-11, and the European Airbus (see **Exhibit III-2** depicting Stage 3 jet noise "footprints").

The Airport Noise and Capacity Act of 1990 specifically states that after December 31, 1999, no person may operate a civil turbojet airplane weighing more than 75,000 pounds in the contiguous United States unless that airplane meets Stage 3 noise levels. The Act also required that a schedule of phased-in compliance be established. Most of the major U.S. airlines have been replacing the older Stage 2 aircraft with the newer Stage 3 aircraft or retrofitting Stage 2 aircraft to meet Stage 3 aircraft requirements. As of September 1998, Stage 3 airplanes constituted approximately 80 percent of the combined domestic and foreign fleets of large turbojet airplanes operating to and from U.S. airports.

E. Other Applicable Federal Laws and Processes

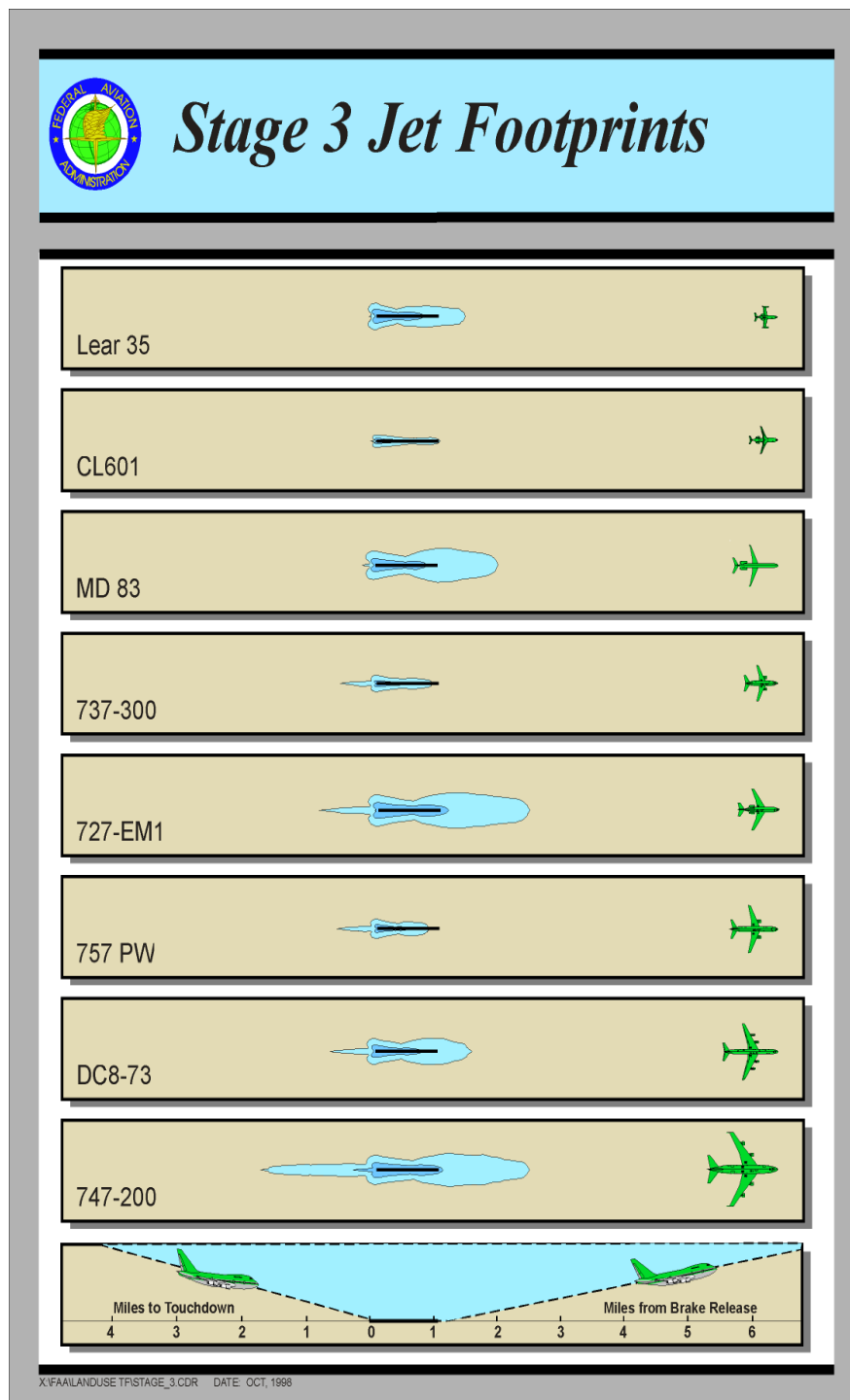
There are several other applicable federal laws and processes that affect land use compatibility planning at and around airports:

National Environmental Policy Act (NEPA) of 1969

This Act established the fundamental commitment of the federal government to fully consider the effects of a proposed action on the human environment. It also set the basic requirements for the contents of a “detailed statement” (of impact) to be prepared for “major federal actions.” The Council on Environmental Quality (CEQ), which was created by NEPA, has developed regulations for the implementation of NEPA, and each federal agency has developed guidelines for the application of this national policy to its specific programs. NEPA applies to every federal approval process. In terms of aviation, this would include, but not be limited to, such actions as approval of an Airport Layout Plan (ALP) revision, construction of a new runway, or a major runway extension.

III. Legislation and Federal Regulations Relating to Compatible
Land Use Planning





NEPA is the basic national charter for protection of the environment. NEPA declares it a national policy to “encourage productive and enjoyable harmony between man and the environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; and to enrich the understanding of the ecological systems and natural resources important to the Nation.” The profound impacts of man’s activities “on the interrelations of all components of the natural environment” are recognized (including urbanization, population growth, industrial expansion, and resource exploitation). The Act specifically declares that “governments, and other public and private organizations, use all practicable means and measures... to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.”

Federal agencies are required to “utilize a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences and environmental design arts in planning and decision-making....” They are also to ensure that “unquantified environmental amenities and values may be given appropriate consideration in decision making along with economic and technical consideration.”

In land use planning, NEPA comes into play when an airport sponsor proposes a project or action that requires federal approval. All actions proposed by an airport sponsor are reviewed to determine whether there are environmental impacts that may result from the action being implemented and if these impacts are significant.

Environmental Assessments (EAs) and Environmental Impact Statements (EISs)

The primary purpose of an Environmental Assessment (EA) or Environmental Impact Statement (EIS) is to ensure that the policies and goals defined in NEPA are incorporated into the ongoing programs and actions of the federal government, in this case the FAA. An EIS/EA is to provide the full and fair disclosure of significant environmental impacts and serves to inform decision-

makers and the public of the reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment. An EIS is more than a disclosure document; it is to be used by federal officials in conjunction with other relevant material to plan actions and make decisions.

NEPA requires that a detailed statement be prepared for every recommendation or proposal for major federal actions which may significantly affect the quality of the human environment. The FAA normally prepares EISs for approval and construction of major projects; for changes in projects that substantially increase size, capacity, or incorporate additional purposes; and for major changes in the operation and/or maintenance of completed projects. EAs are normally prepared for all other FAA actions except for certain minor and/or routine actions that are categorically excluded from NEPA documentation. A Finding of No Significant Impact (FONSI) is prepared by the FAA to accompany an EA when it is determined that an EIS will not be prepared.

An EIS/EA process may result in land use programs that are similar to land use programs resulting from FAR Part 150 Studies, which are discussed in detail in Section VI. In addition, EIS/EAs must consider the broader land use, social, and socioeconomic fabric of the communities surrounding an airport.

Section 404 (b) (1) of the Clean Water Act of 1977

This Act provides for protection of waters (and wetlands) of the United States by ensuring that alternatives to avoid and minimize impacts have been considered. The U.S. Army Corps of Engineers (ACOE) administers the Act with assistance from the U.S. Environmental Protection Agency (EPA). Airport development projects can often involve impacts to wetlands.

Section 401 of the Clean Water Act

This Act ensures that any activity that may result in a discharge of a pollutant into waters of the United States be evaluated for its effects upon water quality and compliance with federal and state effluent limitations and water quality standard requirements of the Act. The Act is administered by the individual states through their Department of Environmental Protection (DEP) or Department of Natural Resources (DNR). Storm water run-off is a concern at airports due to the type of activities (such as refueling and deicing) and the amount of impervious surfaces at an airport.

The Endangered Species Act of 1973

This Act ensures that proposed projects do not jeopardize the continued existence of, or result in the destruction of any designated critical habitat for, threatened or endangered species and is administered by the U.S. Fish and Wildlife Service. Endangered and threatened species often find habitat in and around airports attractive, and therefore, could pose a concern for developing airport projects in those areas.

National Historic Preservation Act of 1969

The National Historic Preservation Act (NHPA) established preservation as a national policy and directs the federal government to provide leadership in preserving, restoring, and maintaining the historic and cultural environment of the Nation. The Act authorizes the Secretary of the Interior to expand and maintain a national register of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, and culture, referred to as the National Register.

Homes or properties that are to be acquired or altered by a proposed airport development project (such as in the case of sound insulation) as part of a land use management program are subject to review and coordination under Section 106 of this Act.

The FAA or its sponsor airports must prepare historic preservation plans for projects under its jurisdiction that discuss survey and evaluation strategies, costs, and schedules, and that establish management objectives for historic properties.

The Clean Air Act Amendments of 1990

In 1970, the Clean Air Act (CAA) was signed into law, and was amended in 1990. The Act is administered by the U.S. EPA and establishes national air quality standards. Aircraft emissions do not significantly contribute to air pollution, however, large commercial airports attract a lot of automobiles which are major contributors to carbon monoxide/ozone.

F. Airport-Related Regulations Relating to Compatible Land Use Planning

The following paragraphs describe, in detail, other airport-related regulations that affect airport land use compatibility planning.

FAA Advisory Circular 150/5200-33, Hazardous Wildlife Attractants on or Near Airports

The unwanted interaction between aircraft and wildlife is a situation that needs to be avoided. Bird strikes during flight and the interaction of terrestrial and avian species with aircraft on the ground is a hazard to aviation. FAA Advisory Circular (AC) 150/5200-33, Hazardous Wildlife Attractants on or Near Airports, provides guidance on locating certain land uses having the potential to attract hazardous wildlife to or in the vicinity of public-use airports such as sanitary landfills and wetland mitigation areas. Specifically the AC identifies land uses of concern in proximity to airports including, wetlands, ponds, stormwater retention facilities, and other similar uses for they offer excellent habitat for avian wildlife. In addition, the location of landfills within the proximity of an airport is also considered a hazard due to its likelihood to attract flocks of birds.

As part of this guide, it is strongly recommended that no new sanitary landfill or wetland mitigation projects should be sited within 10,000 feet of an active air carrier runway end or within 5,000 feet of an active general aviation runway end. The standards, practices, and suggestions contained in this AC are recommended by the FAA for use by the operators and sponsors of all public-use airports. In addition, the standards, practices, and suggestions contained in this AC are recommended by the FAA as guidance for land use planners, operators, and developers of projects, facilities, and activities on or near airports.

Wetlands Mitigation Banking

The concept of wetlands mitigation banking and how the FAA and airport sponsors can use this newly accepted mitigation strategy to more efficiently meet Section 404 permit requirements and environmental responsibilities, including land use planning, is gaining wider acceptance. These programs provide opportunities for the FAA, airports, and local communities and planners to develop common-use wetlands mitigation sites away from airports that have the potential to provide broader public benefits such as public parks, recreation, wildlife refuge, and education areas.

Federal Aviation Regulation Part 77

The construction of tall structures – including buildings, construction cranes, and cell towers – in the vicinity of an airport can be hazardous to the navigation of airplanes. The FAA, through FAR Part 77, established a method of identifying surfaces that should be free from penetration by obstructions in order to maintain sufficient airspace around airports. FAR Part 77, in effect, identifies the maximum height at which a structure would be considered an obstacle at any given point around an airport. The extent of the off-airport coverage needing to be evaluated for tall structure impacts can extend miles from an airport facility.

Tall structure impacts have historically involved the height of buildings and the height of cranes used in construction. However, with the influx of radio antennae and, most recently, towers to support wireless telecommunications and digital television, the need for careful review of siting such facilities has increased. The

location of tall structures within local airspace can significantly affect the ability of FAA's Air Traffic Control to route aircraft into and out of an airport and can also reduce an airport's capacity. This guide presents the criteria for evaluating potential obstructions and summarizes the general processes involved in the review and approval of the location of tall structures around airports.

The FAA airspace process serves several essential notification and coordination functions, beyond simply ensuring that the approaches to an airport are not obstructed by the construction of objects or the construction of other runways. Each person proposing any type of construction or alteration under the provisions of FAR Part 77 is required to notify the FAA by completing FAA Form 7460-1, Notice of Proposed Construction of Alteration. The completed form should be sent to the Air Traffic Division of the FAA regional office having jurisdiction over the area where the construction or alterations would be located.

Aviation electronic navigation aids (such as radar facilities, and instrument landing systems) are necessary to provide for the safe movement of aircraft. Although many of the navigation systems are located on the airport, some systems (or portions of systems) must be located off airport property. Such electronic systems (whether located on-airport or off) have the potential of being interfered with if non-aviation related electronic sources are placed in proximity or if structures are constructed which could block the navigation aid signals. Where off-airport electronic navigation facilities occur, any development proposed to be located near these facilities needs to be reviewed by the FAA to determine if any interference to the use of the navigation aid would occur. In addition, the placement of lights (high mast lighting and stadium lights, for example) near an airport can be a visual distraction to pilots approaching an airport facility. The process that airports and local governments can follow to ensure that potential impacts related to electronic or visual navigation are avoided is included in this guide.

AC 70/7460-2J, Proposed Construction or Alteration of Objects that May Affect the Navigable Airspace

The FAA Form 7460-1 and the accompanying information in a 7460 Notice of Proposed Construction or Alteration package should be sent to the FAA Airports Division for all proposed construction or temporary construction cranes on any Federally Obligated Airport or to the FAA Air Traffic Division for any construction off an airport that meets the notice criteria listed below (see FAR Part 77, Section 77.13-Notice Criteria).

A 7460 form is required for the following reasons:

- 1) So that hazards to aviation are minimized,
- 2) To serve as notification to pilots (NOTAMS) of potential airspace hazards,
- 3) For marking and lighting of structures,
- 4) To depict obstacles on aeronautical charts, and
- 5) To coordinate radio transmissions between the FAA and FCC.

Construction activities at or near airports must be reported via FAA Form 7460-1 at least 30 days before proposed construction or application for building permit, in any of the following situations:

- Construction/alteration including construction cranes more than 200 feet in height above the ground level at its site.
- Construction/alteration including construction cranes of greater height than an imaginary surface extending outward and upward at one of the following slopes:
 - 100-to-1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of each airport (public-use or military) with at least one runway more than 3,200 feet in actual length, excluding heliports.
 - 50-to-1 for a horizontal distance of 10,000 feet from the nearest point of the nearest runway of each airport (public use or military) with its longest runway no more than 3,200 feet in actual length, excluding heliports.

- 25-to-1 for a horizontal distance of 5,000 feet from the nearest point of the nearest landing and take-off area of each heliport (public use or military).
- Highways, railroads, or other traverseway for mobile objects of a height which, if adjusted upward 17 feet for interstate highways, 15 feet for public roadways, 10 feet (or the height of the highest mobile object that would normally traverse the road, whichever is greater) for private roads, 23 feet for a railroad, and for a waterway or any other traverseway not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it, would exceed a standard of the previous paragraphs.
- When requested by the FAA, construction/alteration that would be in an instrument approach area.
- Any construction on public or military airports. If runways or taxiways to be constructed are already shown on an approved Airport Layout Plan (ALP) and no changes are required, the 7460-1 does not need to be submitted. Temporary cranes or other construction equipment over 20 feet in height require submittal of the 7460-1.

The FAA will conduct an aeronautical study and issue a determination to the proponent of the construction/alteration which is also forwarded to the airport operator if determined to be a hazard. A determination does not relieve the proponent of responsibility for compliance with any other local law, ordinances, or regulation, or state or other federal regulations. When evaluating proposals, the FAA will also examine the use of cranes, derricks, and other construction equipment that is used to accomplish the proposal. If construction information is not available at the time the 7460 proposal is submitted, further aeronautical study for the height of construction equipment is necessary.

Because the FAA has no land use control powers, it is important that local planners are aware of the various, critical safety considerations when siting developments around airports.

IV. FUNDING SOURCES FOR COMPATIBLE LAND USE PLANNING

A. Federal Funding Sources

There are two primary sources of federal funding for compatible land use planning projects: the Airport Improvement Program and the Passenger Facility Charge Program, both of which are described below.

Airport Improvement Program (AIP)

This program's primary objective is to help develop public-use airports to meet the current projected growth of civil aviation. Federal aid in the form of grants is funded with the user-supported aviation Trust Fund. The Trust Fund's revenue is generated by several aviation user taxes on items such as airline tickets, airfreight, and aviation fuel.

Eligibility to receive funds under the AIP is contingent upon the type of sponsor and the type of activity for which funds are sought. The different types of sponsor, who are eligible for funds, include:

Planning Agencies

A planning agency means any agency designated by the FAA Administrator which is authorized by the laws of the state or states or political subdivisions concerned to engage in areawide planning for the areas in which the grant assistance is to be used. There are, therefore, two levels of planning agencies:

IV. Funding Sources for Compatible Land Use Planning

- ***State Level:*** Typical state agencies that are authorized by state law to engage in state airport system planning usually include planning offices, aeronautics commissions, and departments of transportation.
- ***Regional/Metropolitan Level:*** Typical planning agencies which are authorized by state or local laws to engage in regional or metropolitan area airport system planning include Metropolitan Planning Organization (MPOs), Councils of Governments (COGs), Regional Planning Commissions (RPCs) and other similarly organized agencies.

Public Agencies Owning Airports

A public agency is defined as a state, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Government of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, and Guam or any agency of them; a municipality or other political subdivisions or a tax-supported organization; or an Indian tribe or pueblo. Public agencies owning airports are eligible to receive grants for airport master planning, noise compatibility planning, and noise program implementation projects and airport development projects.

Public Agencies Not Owning Airports

Public agencies not owning airports are eligible for master planning (including site selection) grants for new airports, acquisition of existing airports, and noise program implementation projects if such projects are included in the noise compatibility program prepared by the local airport sponsor and not disapproved by the FAA.

Private Airport Owners/Operators

A private owner may be an individual, partnership, or corporation that owns or operates a reliever airport or an airport that receives scheduled passenger service of aircraft that annually enplane 2,500 or more passengers. A privately-owned/operated airport is eligible for funding for airport development projects, airport master planning, and noise compatibility planning and noise program implementation projects.

Airport owners can submit preapplications for federal aid and subsequently be issued grants for planning, development, noise planning, paving, lighting, land acquisition, noise compatibility projects such as sound insulation of homes and acquisition of noise-impacted properties, and the purchase of certain safety-related equipment, after meeting the following requirements:

1. The project sponsorship requirements.
2. The project is reasonably consistent with the plans of planning agencies for the development of the area in which the airport is located.
3. Sufficient funds are available for that portion of the project not paid for by the federal government.
4. The project will be completed without undue delay.
5. The airport location is included in the current version of the National Plan of Integrated Airport System (NPIAS). (See Section V, page V-1, for a discussion of the NPIAS.)
6. The project involves more than \$25,000 in AIP funds unless, in the judgment of the FAA it would be in the best interest of the federal government to award a grant of a lesser amount.

Upon acceptance of federal assistance, an airport owner becomes obligated to operate and maintain the airport to certain standards. Acceptance of federal funds requires airport owners to comply with assurances and obligations contained in the grant agreements. One of the assurances with which an airport owner must comply involves compatible land use. This assurance requires the airport owner to take appropriate action, including the adoption of zoning laws to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of

the airport to activities and purposes compatible with normal airport operations, including the landing and take-off of aircraft.

AIP grants have been issued directly to non-airport sponsors, such as cities and counties, for noise mitigation projects that involved sound insulation. The cities of El Segundo and Inglewood, California, which are located near the Los Angeles International Airport received federal funding to implement noise-mitigation projects which were specifically identified and approved in Part 150 Noise Compatibility Studies.

The cities of San Bruno, Pacifica, and Daly and San Mateo County, California, located near the San Francisco International Airport have also received federal funds to implement sound-insulation projects.

In addition to receiving federal funds for sound insulation projects, cities such as Inglewood and Ontario, California, have used federal funds to acquire properties that were not compatible with the airport to convert them into more compatible land uses.

Passenger Facility Charges (PFCs)

The Aviation Safety and Capacity Expansion Act of 1990 grants a commercial service airport the authority to impose a passenger facility charge (PFC) to assist in financing airport capital development upon approval of the Secretary of Transportation. Approval for an airport to impose a PFC does not require the airport sponsor to comply with those assurances and obligations contained in AIP grant agreements.

The purposes of this financing mechanism are to:

- Preserve or enhance the capacity, safety, or security of the national transportation system.
- Reduce noise impacts resulting from an airport that is part of the system.

- Furnish opportunities for enhanced competition between or among air carriers.

PFCs may be used for airport noise compatibility measures such as sound insulation that are eligible for federal financial assistance, even if the measures have not been approved as part of a formal Part 150 Noise Compatibility Program.

B. Other Funding Sources

There are other funding sources available for compatible land use planning that local municipalities and airports may want to consider investigating. Many airport proprietors and state aviation agencies are capable of financing various compatible land use projects.

V. AIRPORT AND LOCAL LAND USE PLANNING PROCESSES

A. Airport Planning

Airport planning in the United States is performed at several levels. Local planning for airport growth cannot be accomplished without consideration of national, state, and regional needs. Limited state and federal funding of airport projects within the national aviation system necessitates prioritization of projects in terms of their impact and importance to the aviation system. In addition, airports are interconnected, because what happens at an individual airport may affect other airports within the system so that coordination of national, state, and local development plans may be required. A brief discussion of various levels of airport planning is provided in this section.

The National Plan of Integrated Airport Systems (NPIAS) is a 10-year plan, which is published biennially by the FAA. The NPIAS lists the public use airports and their developments considered to be in the national interest and eligible for financial assistance for airport planning and development under the Airport and Airway Improvement Act of 1982.

Statewide integrated airport system planning identifies the general location and characteristics of new airports and the general expansion needs of existing airports to meet statewide air transportation goals. State transportation or aviation planning agencies perform this planning with regional and local input.

Regional metropolitan integrated airport systems planning identifies airport needs for large regional metropolitan areas and is prepared by regional/metropolitan

planning agencies. Needs are stated in general terms and incorporated into statewide system plans.

The operators of individual airports prepare airport master plans, usually with the assistance of aviation planning consultants. These plans detail the specific long-range plans of the individual airport within the framework of statewide and regional/metropolitan system plans and for review by the FAA.

B. Airport Master Planning

This section defines and discusses airport master planning, its purposes, the process, and provides an overview of the elements of a typical airport master plan.

What is an Airport Master Plan?

The Airport Master Plan is a document that details the long-term development of an airport. The plan includes the information, analyses, and resulting decisions and policies guiding the future development of an airport, typically over a 20-year planning period. To meet future demands, the need for facilities on the public side and airfield side of an airport must be detailed in advance, based on an established approach for determining need and possible impacts to the community, with a plan for implementation and funding.

Master planning is an ongoing process. An original master plan is required as part of the site selection of a new airport. As use of an airport grows and changes, updates to the original master plan are required to document significant changes in policies or development needs. Through the preparation of a master plan, justification can be established, alternatives reviewed, public comment received, and a policy set for the future so that subsequent land use decisions can be compared against an established plan.

Preparation of an airport master plan is outlined in FAA Advisory Circular (AC) 150/5070-6, *Airport Master Plans*, dated June 1985. State transportation or aviation offices may also provide master plan guidelines to assist airport owners within a given state.

What is the Purpose of an Airport Master Plan?

The basic purpose of an airport master plan is to set out a plan for future development designed to meet projected needs, given community, environmental, and political considerations. The airport manager uses the master plan in decision-making to evaluate future development proposals against the anticipated need. The airport manager; federal and state agencies; and local, regional, and state planners use the plan to evaluate off-site development for potential impacts to future airport development plans. Other objectives of the master planning process include:

- Providing the documentation and analyses to support the reasonableness of the proposed master plan development.
- Presenting future airport development plans for public comment and input.
- Documenting policies and proposed development for use in policy setting, land use compatibility considerations, and debt incurrence.
- Depicting graphically the future airport development and anticipated land uses in the vicinity of the airport.
- Establishing a realistic schedule based on demand and funding availability for implementation of development, including the five-year capital improvement program.
- Establishing the framework for future planning efforts by providing key conditions for monitoring.

Elements of an Airport Master Plan

Although each airport and community that an airport serves are unique, there are standard elements of any airport master planning process. These elements are briefly described in the following paragraphs.

Inventory of Existing Facilities and Airspace – This initial step in the airport master planning process identifies and establishes a database of existing airport facilities, and reviews information about the airport service area, the surrounding communities, and the existing airspace and navigational aids. An historical review of aeronautical activity, development of facilities, and community issues is also included. This inventory of facilities and services establishes a base against which to compare future development.

Forecasts of Anticipated Growth in Activity – Historical information regarding the numbers of operations (take-offs and landings), passengers, based aircraft, and cargo tonnage moved; socioeconomic data; national trends affecting airport growth; and other information are collected for consideration in preparing aviation demand forecasts. The forecast years are typically in five-year increments with a planning horizon of 20 years. The forecasts needed include enplanements, local and itinerant operations, based aircraft, cargo and mail tonnage, and peak-hour characteristics for passengers and operations. Based on the type of airport being studied, forecasts of international and domestic passengers and projections of air carrier and commuter operations may also be required.

Demand/Capacity Analysis – The capacity of various airport facilities discussed in the facility inventory is compared to the future demand for these facilities as supported by the aviation demand forecasts. Airside capacity is determined and compared with aircraft demand forecasts to determine the need for and timing of new runways, runway extensions, taxiways, or additional navigational aids that will increase capacity. Airspace capacity is also examined based on projected aircraft fleet mix, the proposed runway configuration, the locations of other airports in the area, and the types of operations (instrument approaches and visual approaches).

Terminal area capacity needs are determined for terminal areas and gates, curbside, and public and employee automobile parking. Surface access capacity for surface roads into and out of the airport, including terminal areas, cargo areas, and general aviation facilities, must be reviewed to determine what future capacity is available in the roadway system. Demand for other facilities on the airport, such as fuel farms, cargo areas, maintenance areas, and general aviation facilities is also determined. Lastly, revenue-producing non-aviation uses, such as industrial parks, and hotels, may also be reviewed. The need for any of these facilities is balanced against the availability of land to meet future airport needs and consideration of what is the highest and best use of available land. In addition, the timing of the improvements must be considered based on need and available funding.

Alternatives –Because options frequently exist as to how to serve the future needs of an airport’s service area, an analysis of alternatives that can meet the projected growth while achieving community goals is conducted as a critical part of the master planning process. The alternatives analysis results in a recommendation for the most reasonable development approach that maintains an acceptable mix of airport-related land uses, considers airspace and environmental concerns, and remains responsive to community concerns.

Environmental Analysis – Existing and potential environmental impacts, and any possible mitigation of adverse environmental impacts, must be considered during the master planning process. This portion of the master plan, while not to the detail required in an environmental assessment or environmental impact statement as outlined by the National Environmental Policy Act (NEPA), should provide an overview of environmental issues and potential mitigation to be considered with the implementation of the selected airport development plan.

Plan Implementation – A schedule for development and review of available funding is required—with the selection of a preferred alternative for airport development. The financial feasibility of the implementation of the master plan development must be considered, including both capital and ongoing operating costs. Five-, 10-, and 20-year development plans are provided with a more

detailed look at the shorter-term (five-year) projects to be included in the airport capital improvement program.

Airport Layout Plan (ALP) – The existing conditions and the future developments proposed in the airport master plan are graphically depicted in the Airport Layout Plan (ALP) as described in AC150/5300-13, *Airport Design*, Appendix 7, “Airport Layout Plan Components and Preparation.” The ALP is a reference document for use by airport staff, the public, local municipalities having jurisdiction around an airport, and the FAA. It is the one element of the airport master planning effort that must be reviewed and approved by the FAA, although it is frequently conditionally approved subject to receiving environmental determinations on proposed airport projects, such as a new runway.

The ALP is an important planning document for the FAA. To evaluate proposed developments around an airport that may pose a hazard to navigation, the FAA uses the ALP. The FAA also uses the ALP for coordinating other airports’ development plans to avoid airspace conflicts. In addition, the ALP is a record of how FAA design criteria are being met and what criteria must be met for proposed improvements.

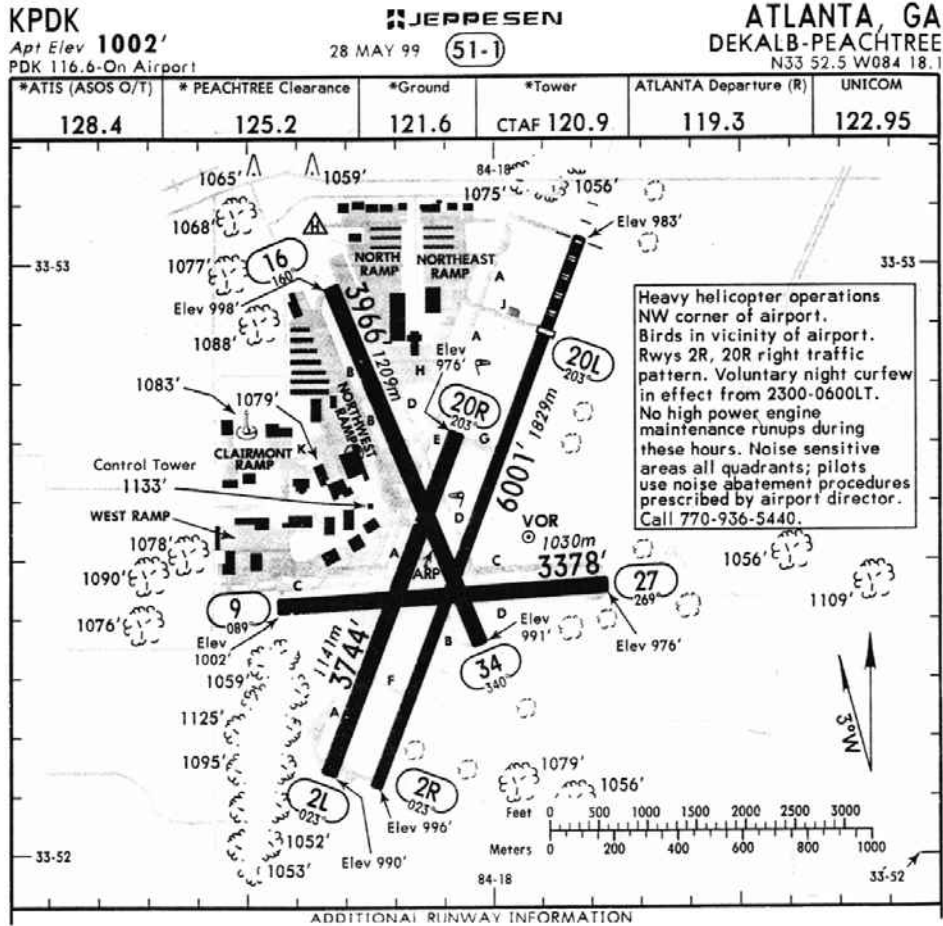
A typical ALP set includes the existing and proposed airport layout plans, airspace drawings, inner approach surface drawings, terminal area drawings, existing and proposed land use drawings, and the airport property map. These elements are briefly described in the following paragraphs:

- ***Airport Layout Plan Drawing*** – This drawing includes the existing and proposed layout of the airport, wind coverage table and wind rose, data tables, building tables, and a list of any approved or proposed modifications to FAA design standards. (**Exhibit V-1** depicts an airport layout plan drawing for DeKalb-Peachtree Airport.)
- ***Airport, Airspace Drawing*** – The FAR Part 77 surfaces are shown on this drawing, including plan views, and approach profile details of the existing and ultimate runway approaches and any penetrations with the dispositions of these obstructions.

- ***Inner-Portion of the Approach Surface Drawing*** – Existing and ultimate plan and profile views of the inner portion of the approach to each runway end out to a 100-foot height are provided on this drawing. In addition, an obstruction table is provided that identifies the approach surface penetration and the proposed disposition of the obstructions.
- ***Terminal Area Drawing*** – This drawing is a larger scale plan view of the aprons, buildings, hangars, parking, and other facilities within the terminal area. This drawing may not be required for small airports where the ALP is at a scale that is large enough to provide these details.
- ***Land Use Drawing*** – The information depicted on this drawing includes the existing and recommended use of all land within the ultimate airport boundary and in the vicinity of the airport.
- ***Airport Property Map*** – This drawing identifies the various tracts of land within the airport boundary and lists how the tracts were acquired. Avigation easement areas outside the airport boundary should also be depicted.

Public Coordination – Public input is very important to the airport planning process. For large or controversial master planning efforts, a task force or committee may be formed by the airport sponsor to provide input during the development of the planning document. The task force can include airport users; tenants; local, state, and federal government agencies; community groups; and private citizens.

V. Airport and Local Land Use Planning Processes



Public meetings or workshops could also be conducted at key points in the development of the master plan. These workshops allow the public, affected local municipalities, and community groups to provide critical input so that potential impacts can be identified and possibly avoided or minimized.

How Are Master Plans and Land Use Compatibility Planning Related?




The airport master planning process provides a means to promote land use compatibility around an airport. Incompatible land uses around an airport can affect the safe and efficient operation of aircraft. Incompatible land uses can include wildlife-attracting land uses such as wetlands and landfills, cell towers and antennae transmitting signals that interfere with radio transmissions and/or navigational aids, lights that may be disorienting to a pilot, and tall structures including towers and construction cranes that may impact an airport's airspace.

Within an airport's noise impact areas, residential and public facilities such as schools, churches, public health facilities, and concert halls are sensitive to high noise levels and can affect the development of the airport. To assist in the assessment of noise compatibility/incompatibility in the airport environs, a land use compatibility table has been developed (see **Exhibit V-2**). Designations in this table, however, do not constitute a federal determination that any use of the land covered by this program is acceptable or unacceptable under federal, state, or local law. The responsibility for determining the acceptable and permissible land uses remain with the local authorities.

The land uses shown on Exhibit V-2 are land uses that are compatible with airport operations. Most commercial and industrial uses, especially those associated with the airport, are good neighbors to airports. Land uses where the airport creates the demand, such as motels, restaurants, warehouses, shipping agencies, aircraft-related industries, and industries that benefit from the access to an airport, are compatible land uses.



Land Use Noise Sensitivity Matrix

	55-65 DNL	65-75 DNL	75+ DNL
 Residential	1-2 Family		
	Multi-Family		
	Mobile Homes		
	Dorms, etc.		
 Institutional	Churches		
	Schools		
	Hospitals		
	Nursing Homes		
	Libraries		
 Recreational	Sports/Play		
	Arts/Instructional		
	Camping		
Commercial	All Uses		
Industrial	All Uses		
Agricultural	All Uses		

PER FAR PART 150	COMPATIBLE	
	INCOMPATIBLE	

X:\FAA\LANDUSE\TFLAND USE MATRIX.CDR DATE: OCT. 1998

Other uses that may be compatible with airports are large parks, conservatory areas, and other open spaces. These land uses are created for public purposes and are opportunities for local government bodies to provide facilities that serve another public purpose to protect airport operations. Forestry service, landscape services, golf courses, and some extractive industries such as mining and excavations are also compatible with airports.

Agriculture is another land use that is compatible with airport operations as long as the use is not a wildlife attractant. Agricultural use of land near an airport permits the owner of the property to efficiently use land while providing an additional benefit to the community for airport protection.

C. Airport Master Planning and Comprehensive Land Use Plans

The master plan is a published document approved by the governmental agency or authority that owns/operates the airport through a public hearing process. The airport master plan should be incorporated into local comprehensive land use plans and used by local land use planners and airport planners to evaluate new development within the airport environs.

Integration of airport master plans and comprehensive land use plans begins during the development of the master plan. Local municipalities within and surrounding the airport boundaries must be contacted to collect demographic data and information on existing land uses in and around airports. The local comprehensive land use plans are also reviewed to determine what types of land uses are planned for the future. Additionally, zoning ordinances should be reviewed to determine what uses are currently permitted around the airport and if there have been any recent changes in zoning. It is important that local land use planners become involved in the review and development plans of the airport's master planning process by providing input on future airport development plans and what potential impacts these plans may have on communities around the airport. Any conflicts or inconsistencies between airport development plans and the local comprehensive plans should be noted in the airport master plan.

The information on future airport expansion and development contained in the airport's master plan should be incorporated in the development of

comprehensive land use plans or their subsequent updates or amendments to ensure land use compatibility in and around airports. During the development of such plans, formal coordination and consultation with the airport staff should occur so that the airport's future plans for expansion can be taken into consideration. Local land use planners should review the airport's master plan to determine how future airport projects could affect existing and projected future land uses around airports.

Other opportunities for coordination and communication between the airport and local planning agencies include the FAA Noise Compatibility planning process (discussed in detail in the next section). These studies provide opportunities for input from the aviation users, local municipalities, communities, private citizens, and the airport on recommended operational measures and land use control measures that could minimize or prohibit the development or continuation of incompatible land uses.

Lastly, the airport master plan is also a tool to ensure that planning among federal, state, regional, and local agencies are coordinated. The incorporation and review of these plans provide for the orderly development of air transportation while protecting the public health, safety, and welfare.

The legal structure of airport ownership will determine its power to regulate or influence land uses around the airport. Municipalities or counties with this regulatory authority need to be made aware of existing and long-term airport development plans and the importance of minimizing incompatible land uses. An airport master plan is a published document to make all the affected agencies aware of existing and long-term airport development plans, and how they can be compatibly integrated into the larger community. The master plan is of major importance to local communities within which, or near where, such facilities are located. Because air travel is a major means of travel for most people as well as the transporting of goods and materials, it is extremely important that airport planners and local land use planners work together toward cooperative land use planning efforts.

D. Aircraft Noise Compatibility Planning

Aircraft noise has created an impact on surrounding land uses since the beginning of aviation, but in the late 1950s it became a major issue with the introduction of turbojet aircraft. Over the last four decades, the number of aircraft operations (particularly jet operations) has increased significantly in response to public demands to expand national air passenger and cargo service. As aviation activity increased, so did the areas of noise exposure. It became apparent that aircraft noise impacts needed to be addressed and the most effective method of reducing aircraft noise impacts was at the source – reducing noise emitted by aircraft engines and improving aircraft climb capabilities.

Over the years, technology advancements have led to the development of new generations of aircraft with substantially reduced noise levels. These advancements, combined with federal legislation to phase-out noisier aircraft weighing 75,000 pounds or greater, have resulted in a quieter aircraft fleet operating throughout the United States. By 2000, or shortly thereafter, all large commercial passenger and cargo aircraft will meet the more stringent federally mandated noise control standards. This noise-reduction technology has also spread to the general aviation industry with new general aviation aircraft entering the fleet being much quieter than those of the past. The positive result has been the continued reduction of areas of high noise exposure around our nation's airports. Research is currently underway to develop Stage 4 noise control standards resulting in further reductions in aircraft noise levels.

To continue to progress in achieving aircraft noise and land use compatibility, the focus must include not only now a national perspective of noise control at the source, to airport-specific noise and land use compatibility planning. This planning involves the local airport's evaluation of aircraft operational procedural changes which could be developed to reduce noise exposure and local government's establishment of effective land use controls within high noise exposure areas. To be effective, the implementation of an aircraft noise control and land use compatibility plan requires close coordination and cooperation between the local airport, the FAA, and state and local entities.

When developing noise compatibility plans, it is helpful for all involved parties to have an understanding of the various noise control measures that have been recommended at other airports throughout the United States and how those

measures were implemented. This understanding can serve as a basis for considering the applicability and ultimate selection and implementation of noise controls as they relate to specific airports. However, measures right for the environs around one airport may not be right at another. Thus, this guide does not recommend specific controls for implementation but, instead, identifies a wide variety of possible noise control methods related to aircraft flight procedures and land use controls, which could be applied for specific airport conditions.

This discussion of FAR Part 150 Noise Compatibility Programs is designed to provide an understanding of the federal process available to airport owners to mitigate the impacts of aircraft noise on surrounding communities. Through this process, airport owners work with the FAA, airport tenants and users, local and regional planning agencies, local units of government, and other interested parties to identify mitigation measures which can be implemented through airport operations, air traffic control measures, and land use planning and regulatory actions. Participation in this program is voluntary for the airport owner.

When an airport owner conducts a Part 150 Noise Compatibility Program planning study, it is advisable to consider a threshold of annual aircraft activity at the airport must be met. This threshold is defined in FAA Order 5050.4A, *Airport Environmental Handbook, October 8, 1985*, paragraph 47 (e)(1):

No noise analysis is needed for proposals involving Design Group I and II airplanes on utility (reference Advisory Circular 150/5300 4B) or transport (reference Advisory Circular 150/5300 12) type airports whose forecast operations in the period covered by the environmental assessment do not exceed 90,000 annual propeller operations or 700 annual jet operations. These numbers of propeller aircraft operations result in cumulative noise levels not exceeding 60 Day/Night Level (DNL¹) more than 5,500 feet from start of takeoff roll or 65 DNL on the runway itself. Jet operations of 700 or less do not produce a 60 DNL contour using this method. Note that the Cessna Citation 500, the Gates Learjet 35A, and any

1

The noise emanating from airport operations rises, falls, and even ceases throughout the day. Various noise descriptors or metrics have been developed to reflect how people are affected by the time-varying noise exposure levels resulting from aircraft operations. The Day-Night Average Sound Level (DNL) metric is currently the standard noise descriptor specified by the Federal government for transportation noise sources. FAA Order 1050.1D, *Policies and Procedures for Considering Environmental Impacts*, and Order 5050.4A, *Airport Environmental Handbook*, require the use of the DNL noise metric in evaluating noise exposure in environmental assessments of Federal actions. Part 150 of the Federal Aviation Regulations (FAR) specifies the use of DNL in noise compatibility studies.

The DNL metric employs the equivalent sound level (Leq), a single numerical noise rating which, over a given period of time, would represent the same noise energy as the time-varying sound level. The DNL metric was derived to account for the greater annoyance caused by sound intrusion at night. It augments the equivalent sound level occurring between 10:00 p.m. and 7:00 a.m. by 10 dB before being combined with the equivalent sound level for the period 7:00 a.m. to 10:00 p.m. The DNL provides a numerical description of the weighted 24-hour cumulative noise energy level using the A-weighted decibel scale, typically over a period of a year. The method of weighting the frequency spectrum, the A-weighted scale, was adopted by the FAA to describe environmental noise because it most closely mimics the receptivity of the human ear.

other jet aircraft producing equivalent or less levels of noise are quieter than many propeller aircraft under 12,500 pounds and therefore may be counted as propeller aircraft rather than jet aircraft.

Generally, when annual operations are below 90,000 propeller operations or below 700 jet operations, the cumulative noise levels of greater than 65 DNL typically would remain within the airport's property line. When this condition occurs, airports often find that conducting a Part 150 study does not provide any appreciable benefit to the community. In cases where the annual aircraft operations are greater than those levels listed above, a Part 150 study may be effective.

One product of a Part 150 Noise Compatibility Program is the noise compatibility plan (NCP) which recommends land use management measures to be implemented by local jurisdictions. During the conduct of a Part 150 Study, each jurisdiction is encouraged to adopt relevant parts of the NCP as an element of their comprehensive plan, or to incorporate NCP recommendations as planning guidelines if a comprehensive plan is to be adopted in the future. Including the recommended land use management measures in a comprehensive plan supports the need for land use compatibility with aircraft operations and the airport. The comprehensive plan is the tool that provides policy makers, land use regulators, developers, airport owners, and the general public with the plan and policies to guide and direct new development or re-development opportunities.

What is A Part 150 Study?

Part 150 is the abbreviated name for the Airport Noise Compatibility Planning process outlined in Part 150 of the Federal Aviation Regulations (FARs) (see **Exhibit V-2**).² The Part 150 Program was established under the Aviation Safety and Noise Abatement Act of 1979 (ASNA) and allows airport owners to voluntarily submit noise exposure maps and noise compatibility programs to the FAA for review and approval.³

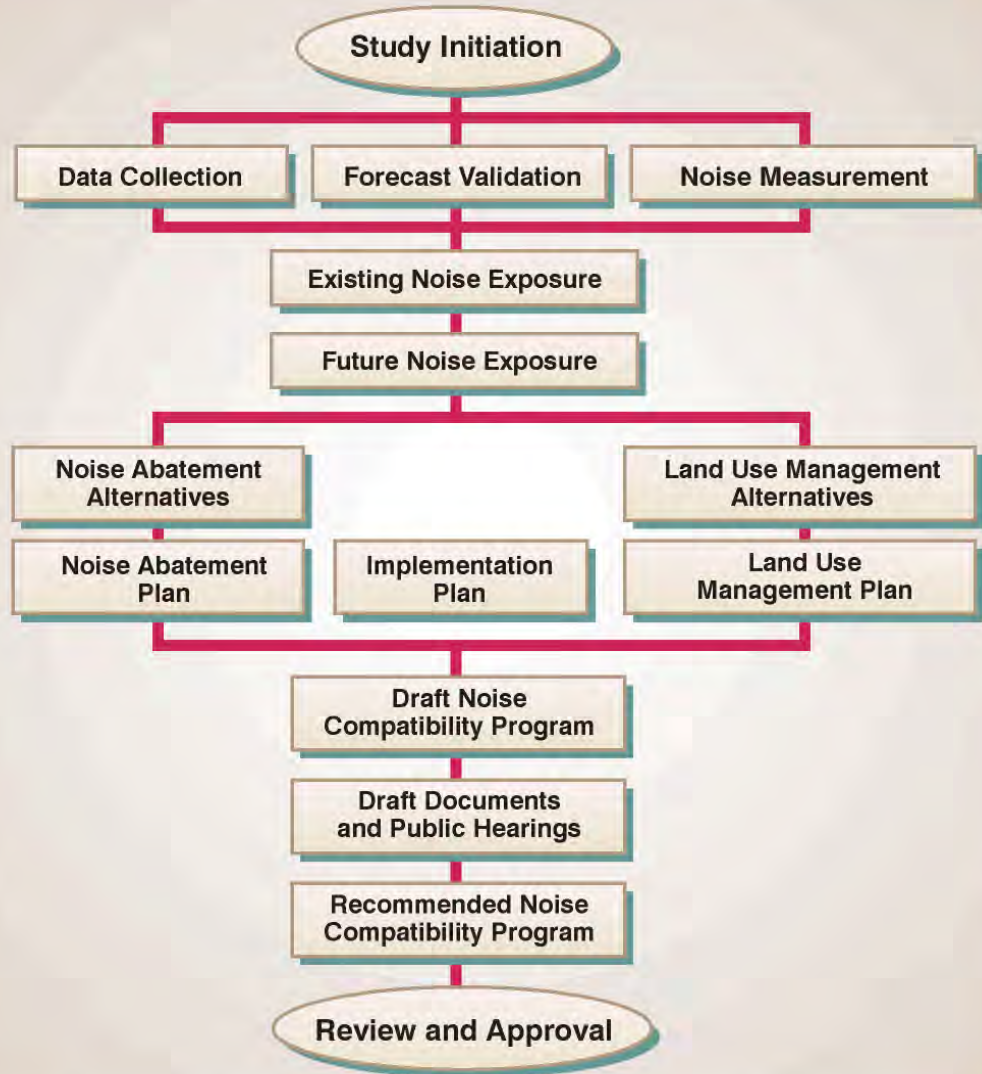
² 14 CFR Part 150, hereinafter referred to as Part 150 or the Part 150 Program.

³ Aviation Safety and Noise Abatement Act of 1979: 49 U.S.C. 47501 through 47509, hereinafter referred to as ASNA.

V. Airport and Local Land Use Planning Processes



Part 150 Process



Landrum & Brown Team

X:\FAAILANDUSE TF150_PROCESS.CDR DATE: 10, 1998

According to the ASNA, a noise compatibility program sets forth the measures that an airport owner “has taken” or “has proposed” for the reduction of existing incompatible land uses and the prevention of additional incompatible land uses within the area covered by noise exposure maps. (**Exhibit V-3**) shows the land use categories which are considered to be compatible/incompatible with aircraft noise levels between 55-65 DNL, 65-75 DNL, and 75 DNL and greater.)

The need for airport noise compatibility planning is an outgrowth of the explosive growth of commercial jet aviation in the 1960s. This was followed in the late 1960s by the growing public awareness of environmental quality and the passage of the National Environmental Policy Act (NEPA). Since that time, aircraft noise has become the single most important barrier to the expansion of airport capacity around the country. Part 150 provides for a standardized planning process that is supported by federal funding for implementation of Part 150 programs.

The ASNA was designed to encourage strong concepts of local initiative and to allow for flexibility. The preparation and submission of noise exposure maps and noise compatibility programs is strictly voluntary and left to the discretion of local airport owners. Airport owners also may choose to submit noise exposure maps without preparing and submitting a noise compatibility program. The types of measures that airport owners may include in a noise compatibility program are not limited by the ASNA, allowing airport owners a lot of flexibility to submit a broad array of measures – including innovative measures – that respond to local needs and circumstances.

The general goals and objectives addressed by a Part 150 Noise Compatibility Study include:

- Reduce the existing and projected noise levels over existing noise-sensitive land uses, where feasible.
- Reduce the number of new noise-sensitive developments near the airport.
- Provide mitigation alternatives that are sensitive to the needs of the community and its stability.
- Maintain consistency with local land use planning policies.
- Mitigate impacts in accordance with federal guidelines, where feasible.

What is the Purpose for Conducting a Part 150?

The purpose for conducting a Part 150 Study at an airport is to develop a balanced, cost-effective, voluntary plan for reducing current noise impacts from an airport's operations, where practical, and to limit additional noise impacts in the future. In some cases, it may not make sense for an airport to conduct a Part 150 Study. Those airports that are completely surrounded by high-density residential development and other incompatible land uses may want to consider modification of existing air traffic operational procedures. Modification of these measures can be evaluated and implemented without preparing a Part 150 Study. The land use measures that are normally recommended in a Part 150 Study would not be effective in reducing or eliminating incompatible land uses around the airport. Also, the level and extent of development sometimes is so high that measures such as sound-proofing or property acquisition are not feasible due to a lack of funding at both the federal and local levels.

On the other hand, an airport that is located in an area where there is still vacant or undeveloped land, may have the opportunity to establish compatible land uses around the airport. Preparing a Part 150 Study in this case could be instrumental in identifying and implementing land use controls which would promote and establish compatible land uses in the vicinity of the airport.

A Part 150 Study is comprised of six major steps:

- 1) ***Identify Noise and Land Use Issues and Problems*** – The first step of the Part 150 Study is the systematic identification of issues and problems concerning airport/aircraft noise and local land use planning efforts. This information is usually provided by airport staff, members of the airport’s public and technical advisory committees, local planners, and other interested parties.⁴ This process plays a vital role in alerting the consultants/airport owners/FAA to any unique noise impacts, on- and off-airport planning issues, community concerns, and/or airport user issues.

- 2) ***Define Current (Existing) and Future (Five-Year) Noise Exposure*** – The second step of the Part 150 Study is to define the levels of noise exposure around the airport, which includes both the existing conditions and forecasts for the future or at a minimum a five-year planning period. The existing conditions noise exposure is based on the airport’s current operating procedures without additional efforts to abate noise. Within the area of noise exposure, the number of residents (population) and noise-sensitive land uses (housing units, schools, churches, nursing homes, hospitals, and libraries) are identified within the 65 DNL or greater noise contour.⁵ (**Exhibit V-4** illustrates how noise contours are generated through the use of the Integrated Noise Model.) The noise metric used in the development of the noise exposure contours is the Day-Night Average Sound Level (DNL) the derivation of which is depicted on **Exhibit V-5**.

⁴ A Planning Advisory Committee (PAC) is usually formed for the purposes of a Part 150 Study to provide a forum in which consensus or general agreement can be sought on the recommended actions proposed in the NCP. (The PAC is generally concerned with overflight issues and recommendations to amend local land use controls.) The PAC is typically composed of citizen representatives from local interest groups and neighborhoods; representatives of local, regional, state, and Federal agencies; and the local business community. In consort with the PAC, a Technical Advisory Committee (TAC) is typically also formed. The TAC is composed of the FAA, the Air Traffic Control Tower (ATCT), airline/cargo operators, airport users and tenants, county planning agencies, and airport staff. The TAC acts as a non-voting advisory body to the airport’s consultants and airport staff on matters pertaining to technical analysis used in formulating NCP noise abatement recommendations.

⁵ Aircraft-related noise exposure is defined through use of noise contours prepared using the Integrated Noise Model (INM) Version 5.01a which is the Federal Aviation Administration (FAA) approved model. (See Exhibit 4.)



How Noise Contours are Generated

User Inputs

Inputs	Source
● Airport Information	▶ ALP, ANMS
● Aircraft Flight Tracks	▶ ANMS
● Fleet Mix	▶ ANMS, Tower, Airport Records, OAG
● Number of Operations	▶ ANMS, Tower, Airport Records, OAG
● Runway Utilization	▶ ANMS
● Time of Day	▶ ANMS
● Aircraft Climb Profiles	▶ ANMS, INM
● Departure Trip Length	▶ ANMS

Integrated Noise Model (INM)

INM Provided Information	Types of Aircraft Noise Considered within INM
● Aircraft Noise Levels	● Arrival
● Aircraft Performance Data	● Departure
	● Flyover
	● Reverse Thrust (Braking)



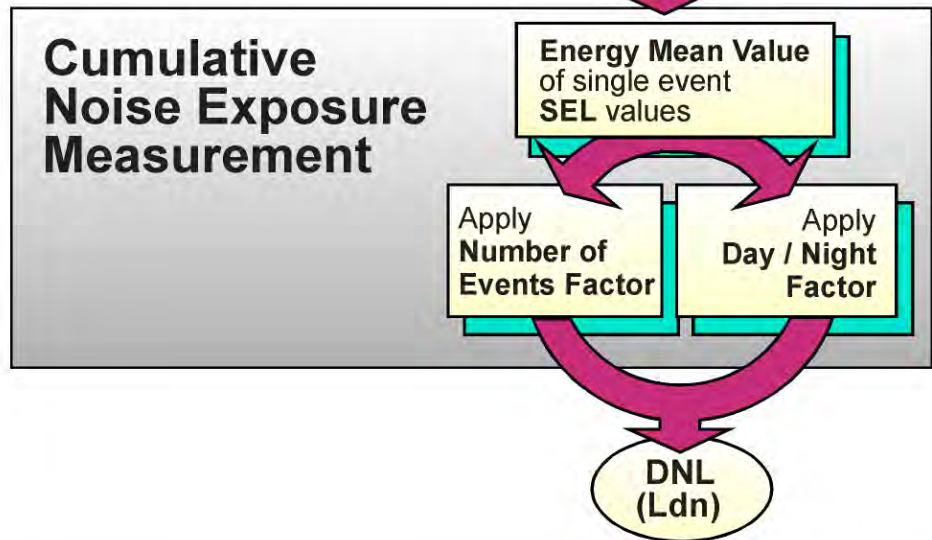
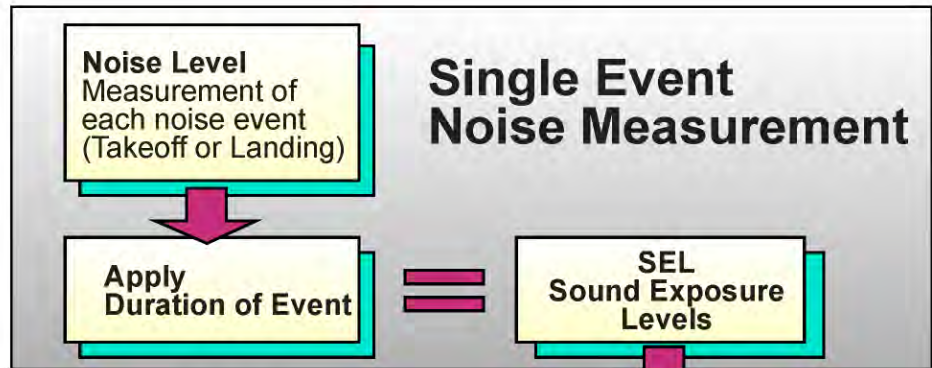
Output

<p>Noise Contours</p>	<p>Tabular Reports</p>	<p>Grid Point Analysis</p>
-----------------------	------------------------	----------------------------





What is DNL (Ldn)?



X:\FAAILANDUSE\TR\WHAT_DNL.CDR DATE: OCT, 1998



Landrum & Brown Team

DNL is the required metric of the FAA and is the recognized industry standard. The products of this step are the Noise Exposure Maps (NEMs): the Existing Conditions NEM and the Future (Five-Year) NEM.

- 3) ***Evaluate Alternative Measures*** – Step three is the evaluation of all feasible options to abate noise and manage the encroachment of incompatible land uses within the airport environs. Measures evaluated are those typically suggested by the planning and technical advisory committees, the public, the airport sponsor, and the airport’s consultants. Each measure is evaluated for its effectiveness in reducing noise, as well as its cost, safety, and implementability.
- 4) ***Develop a Noise Compatibility Plan*** – The fourth step in the Part 150 process is the development of a noise compatibility plan. This plan consists of an optimum combination of preferred noise abatement and land use management measures, as well as a plan for the implementation of these measures.⁶ For planning purposes, the implementation plan also includes the estimated cost to the airport sponsor, the FAA, airport users, and the local units of government, for each of the recommended measures.
- 5) ***Obtain Necessary FAA Approval*** – Step five is the submission of the completed Part 150 Noise Compatibility Program to the FAA for review and approval. The criteria for the approval or disapproval of measures submitted in a Part 150 program are set forth in the ASNA which stipulates that a noise compatibility program will be federally approved if:
 - The program measures do not create an undue burden on interstate or foreign commerce;
 - The program measures are reasonably consistent with the goal of reducing existing incompatible land uses and preventing the introduction of additional incompatible land uses; and
 - The program provides for updating the program in the future through the submission of a revised noise exposure map.
 - Is not unjustly discriminatory.

⁶ The land use management measures consist of both remedial (corrective measures which are typically sound insulation or acquisition) and preventive measures (land use controls which typically amend or update the local zoning ordinance, comprehensive plan, subdivision regulations, and building code).

- Does not derogate safety or adversely affect the safe and efficient use of airspace.
- To the extent practicable, meets both local and national needs of the national air transportation system, considering tradeoffs between economic benefits derived from the airport and the noise impacts.
- Can be implemented in a manner consistent with all of the powers and duties of the Administrator of the FAA.

Failure of the FAA to approve or disapprove a noise compatibility program within 180 days, except for measures relating to flight procedures, is deemed to be an approval under the ASNA.⁷ The ASNA also sets forth the criteria under which grants may be made to carry out noise compatibility projects, consistent with the ASNA's overall deference to local initiative and flexibility.

- 6) ***Develop an Implementation and Monitoring Plan*** – The sixth, and final, step is the development of techniques to monitor the implementation efforts. This process is internal to the airport and could include tracking the progress of the grants applications and funding received, or the implementation status of each recommended measure (such as, how many home-owners have elected to participate in sound insulation, how many homes have been insulated, the number of properties acquired, and the population relocated).

Typical Recommendations Contained in a Noise Compatibility Plan

The typical recommendations resulting from conducting a Part 150 Study can be categorized in two basic areas: *operational noise abatement* and *land use management* measures.

Operational noise abatement measures address aircraft and airport noise at its source and are recommended by the airport sponsor. The FAA's Air Traffic Division evaluates recommended operational noise abatement measures to determine whether they can be implemented safely and if implementation would result in potential environmental impacts. Operational noise abatement measures include:

⁷ FAA approval or disapproval is provided in a written Record of Approval (ROA) to the airport sponsor within the 180-day period.

- **Changes in runway or flight track use** - measures that vary runway or flight track usage (for example, increased/decreased use of a crosswind runway).
- **Changes in flight track location** - measures that relocate aircraft from existing to constructed flight tracks over less populated areas or along corridors that provide greater operating efficiency.
- **Modifications to aircraft performance** - measures that modify the aircraft flight profile (including airspeed, altitude, and power).
- **Improvements or modifications to airport facilities** – measures that require construction-related efforts on the airfield (for example, ground run-up enclosures, blast fences, and berms).

Land use management measures include *preventive* (land use controls) and *remedial* (corrective) techniques. Preventive land use management techniques seek to prevent the introduction of additional noise-sensitive land uses within existing and future airport noise contours. These measures must be implemented by the local jurisdictions. In some cases, the airport sponsor can only recommend that such measures be included in planning and regulatory documents. However, in other cases, the airport sponsor does have legal authority or an active role in influencing changes in land use that are compatible with airports.

Preventive measures (land use controls) include:

- **Compatible Use Zoning** - commercial, industrial, or farmland zoning.
- **Zoning Changes, Residential Density** - large-lot zoning, planned development, multi-family zoning.
- **Noise Overlay Zoning** - special regulations within high-noise areas.
- **Transfer of Development Rights** - zoning framework to authorize private sale of development rights to encourage sparse development in high-noise areas.
- **Environmental Zoning** - environmental protection zoning to support airport land use compatibility (such as, floodplains).
- **Subdivision Regulation Changes** - requires dedication of noise/avigation easements, plat notes.
- **Building Code Changes** - requires sound insulation materials in new construction.
- **Dedicated Noise/Avigation Easements** - requires development permits.

- ***Fair Disclosure Regulations*** - requires seller to notify buyer of aircraft noise.
- ***Comprehensive Planning*** - policies supporting land use compatibility; can involve specific land use plans and policies to guide rezoning, variances, conditional uses, and public projects.
- ***Capital Improvement Programming*** - public investments which support airport land use compatibility.

Remedial (corrective) land use management techniques seek to remedy existing and projected future unavoidable noise impacts in existing areas of incompatible land use. Remedial (corrective) measures include:

- ***Guaranteed Purchase (Fee Simple)*** - outright purchase of property with the intent of removing incompatible use by demolition of structure.
- ***Development Rights Purchase*** - purchase of rights to develop property.
- ***Land Banking*** - acquisition of vacant land for long-term airport facility needs.
- ***Redevelopment*** - acquisition and redevelopment of property.
- ***Purchase Assurance*** - airport acts as buyer of last resort, sound-insulates house, sells property, retains easement.
- ***Sales Assistance*** - airport sound-insulates house, guarantees that the property owner will receive the appraised value (or some increment thereof, regardless of final sales value that is negotiated with a buyer), retains easement.
- ***Sound Attenuation*** - sound insulation of homes, noise-sensitive institutions, retains easement.
- ***Noise/Avigation Easement Purchase*** - purchase of easement only.

Part 150 and Preventive Noise Mitigation Measures (Land Use Controls)

In establishing the airport noise compatibility planning program, which became embodied in FAR Part 150, the ASNA did not change the legal authority of state and local governments to control the uses of land within their jurisdictions. Public controls on the use of land are commonly exercised by zoning. Zoning is a power reserved to the states under the U.S. Constitution. It is an exercise of the police powers of the states that designates the uses permitted on each parcel of land.

This power is usually delegated in state enabling legislation to local levels of government.

Many local land use control authorities (municipalities, counties, etc.) have not adopted zoning ordinances or other controls to prevent incompatible development (primarily residential) within the noise impact areas of airports. An airport's noise impact area, identified within noise contours on a noise exposure map, may extend over a number of different local jurisdictions that individually control land uses. For example, at six airports recently studied, noise contours overlaid portions of anywhere from 2 to 22 different jurisdictions.⁸

The Evaluation of Preventive Measures Implementation

While airport owners have included measures in noise compatibility programs submitted under Part 150 to prevent the development of new incompatible land uses through zoning and other controls under the authorities of appropriate local jurisdictions, success in implementing these measures has been mixed. A study performed under contract to the FAA, completed in January 1994, evaluated 16 airports having approved Part 150 programs for the implementation of land use control measures. This study found that of the 16 airports, six locations had implemented the recommended zoning measures, seven locations had not implemented the recommended zoning measures, and three were in the process of implementation.

Another independent survey looked at 28 airports, 17 of which have FAA-approved Part 150 programs in place. This study found that nine had implemented noise overlay zoning, six had implemented compatible land use zoning, and eight had implemented compatible building code regulations.⁹ When attempting to manage the encroachment of new incompatible land uses near airports, the primary roadblock to implementation seems to be when the airport sponsor's jurisdiction is different than the surrounding jurisdictions where the development is occurring. This is consistent with observations by the FAA and with a previous General Accounting Office report which observed that "the ability of airport owners to solve their noise problems is limited by their lack of control over the

⁸ Charlotte/Douglas International: two jurisdictions (1997); Indianapolis International: three jurisdictions (1998); Rickenbacker International (Columbus, OH): six jurisdictions (1997); Los Angeles International (CA): four jurisdictions (1998); Chicago Midway (IL): eight jurisdictions (1998); and Chicago O'Hare (IL): 22 jurisdictions (1998). Source: Landrum & Brown, 1998.

⁹ Source: Landrum & Brown, May, 1998, *Chicago Midway Airport Noise Abatement Programs at Large Air Carrier Airports*.

land surrounding the airports and the operator's dependence on local communities and states to cooperate in implementing land use control measures," such as zoning for compatible uses.¹⁰

Why Are Preventive Measures Not Implemented?

The FAA's January 1994 study explored factors that contribute to the failure to implement land use controls for noise mitigation purposes. A major factor is the multiplicity of jurisdictions with land use control authority within airport noise impact areas. The greater the number of different jurisdictions, the greater the probability that at least some of them will not implement controls. In some locations, local land use control jurisdictions and airport owners have not developed cooperative relationships. The absence of a cooperative relationship impedes appropriate land use compatibility planning. Further, some local jurisdictions are not fully aware of the effects of aircraft noise and of the desirability of land use controls. Frequent changes in local government administration's can also have an impact on compatible land uses being established around airports. These conditions could be improved through greater efforts by all involved parties to communicate and inform each other about the nature of aviation noise and of the effective preventive and remedial actions available to local jurisdictions to ensure long-term compatible land uses in and around airports.

Some jurisdictions do not perceive land use controls as a priority because the amount of vacant land available for incompatible development within the airport noise impact area is small, perhaps constituting only minor development on dispersed vacant lots, or because the current demand for residential construction near the airport is low to nonexistent. In such areas, land use control changes are not considered to have the ability to change substantially the number of residents affected by noise because development trends are generally market driven. Jurisdictions may also give consideration of aircraft noise impacts a low priority compared to the economic advantages of developing more residential land or the need for additional housing stock within a community. A zoning change from residential to industrial or commercial may not make economic sense to the local

10

[4910 - 13] Department of Transportation, Federal Aviation Administration, 14 CFR Part 150 [Docket No. 28149], *Final Policy on Part 150 Approval of Noise Mitigation Measures: Effect on the Use of Federal Grants for Noise Mitigation Projects*, Action: Notice of Final Policy. Issued in Washington, DC, on March 27, 1998.

jurisdiction if little demand exists for this type of development. Therefore, a zoning change is viewed as limiting development opportunities and diminishing the opportunities for tax revenues.

In some cases, zoning for compatible land use has met with organized public opposition by property owners arguing that the proposed zoning is a threat to private property rights, and that they deserve monetary compensation for any potential property devaluation. Further, basic zoning doctrine demands that the individual land parcels be left with viable economic value, that is, that they be zoned for a use for which there is reasonable demand and economic return. Otherwise, the courts may determine a zoning change for compatibility to be a “taking” of private property for public use under the Fifth Amendment to the U.S. Constitution, requiring just compensation.

One or more of the factors hindering effective land use controls may be of sufficient importance to preclude some jurisdictions from following through on the land use recommendations of an airport’s Part 150 noise compatibility program. When either an airport sponsor’s or a non-airport sponsor’s jurisdiction allows additional incompatible development within the airport’s noise impact area, it can result in noise problems for the people who move into the area. This can, in turn, result in noise problems for the airport owner in the form of inverse condemnation or noise nuisance lawsuits, public opposition to proposals by the airport owner to expand the airport’s capacity, and local political pressure for airport operational and capacity limitations to reduce noise. Some airport owners have taken the position that they will not provide any financial assistance to mitigate aviation noise for new incompatible development. Other airport owners have determined that it is a practical necessity for them to include at least some new residential areas within their noise assistance programs to mitigate noise impacts that they were unable to prevent in the first place. Over a relatively short period of time, the distinctions blur between what is “new” and what is “existing” residential development with respect to airport noise issues.

FAA Policy Concerning Mitigation – (Effective October 1, 1998)

Prior to October 1, 1998, airport owners could include new incompatible land uses, as well as existing incompatible land uses, within their Part 150 noise compatibility programs and recommend that remedial (corrective) noise mitigation measures – usually either property acquisition or sound insulation – be applied to both situations. These measures have been considered to qualify for approval by the FAA under 49 USC 47504 and 14 CFR Part 150. The Part 150 approval enables noise-mitigation measures to be considered for federal funding under the AIP, although it does not guarantee that federal funds will be provided.

Effective October 1, 1998, the FAA will approve under Part 150 only remedial noise mitigation measures for “existing incompatible” development and only preventive noise mitigation measures in areas of “potential new” incompatible development.¹¹ As of the same date, the ability to use AIP grants to carry out such measures was affected to the extent that such remedial measures may not be approved under Part 150. This policy is not retroactive and does not affect Part 150 approvals made before the effective date (October 1, 1998) of the policy or AIP funding consistent with previous approvals. PFC funding will only be affected to the extent that an airport owner chooses to rely on an approved Part 150 program for FAA’s approval to use PFC funds.

“Potential new” incompatible land uses could include:

- Areas currently undergoing residential or other incompatible construction;
- Areas zoned for residential or other incompatible development where construction has not begun; and
- Areas currently compatible but in danger of being developed incompatibly within the timeframe covered by the airport's noise compatibility program.

The purpose of distinguishing between “existing” and “potential new” incompatible development is for airport owners to restrict their consideration of remedial noise mitigation measures to existing incompatible development and to focus preventive noise mitigation measures on potentially new incompatible development.

11

[4910-13] Department of Transportation, Federal Aviation Administration, 14 CFR Part 150 [Docket No. 28149], *Final Policy on Part 150 Approval of Noise Mitigation Measures: Effect on the Use of Federal Grants for Noise Mitigation Projects*, ACTION: Notice of Final Policy. Issued in Washington, DC, on March 27, 1998, John R. Hancock, Acting Assistant Administrator for Policy Planning, and International Aviation.

The most commonly used remedial (corrective) noise mitigation measures are land acquisition and relocation, sound insulation, easement acquisition, purchase assurance, and transaction assistance. The most commonly used preventive (land use controls) noise mitigation measures are comprehensive planning, zoning, subdivision regulations, acquisition of easements or development rights to restrict incompatible development, revised building codes for sound insulation, and real estate disclosure. Acquisition of vacant land may also be a preventive noise mitigation measure with supporting evidence in the airport owner's Part 150 submission. The Part 150 submission must show that acquisition is necessary to prevent new incompatible development, because incompatible development on the vacant land is highly likely and local land use controls will not prevent such development. Often, combinations of these measures are applied to ensure the maximum compatibility.

Airport owners can continue to apply the most commonly used noise-mitigation measures in their noise compatibility programs. Local flexibility to recommend other measures, including innovative measures, under Part 150 would be retained. However, all noise mitigation measures applied to existing incompatible development must clearly be remedial and serve the goal of reducing existing incompatible land uses. Similarly, all noise-mitigation measures applied to potential new incompatible development must clearly be preventive and serve the goal of preventing the introduction of additional incompatible land uses.

Any future FAA determinations issued under Part 150 will be consistent with this policy. The FAA's approval of remedial noise mitigation measures will be limited to existing incompatible development. The FAA's approval of preventive noise mitigation measures will be applied to potential new incompatible development.

The FAA recognizes that there will be undefined areas, which will have to be addressed on a case-by-case basis within these policy guidelines. For example, minor development on vacant lots within an existing residential neighborhood, which clearly is not extensive new incompatible development, may for practical purposes need to be treated with the same remedial measure applied to the rest of the neighborhood. Another example would be a remedial situation in which noise from an airport's operation has significantly increased, resulting in new areas that were compatible with initial conditions becoming incompatible. Airport owners must provide adequate justification in their Part 150 submittals for such exceptions to the policy guidelines.

Funding

The FAA is authorized, but not obligated, to fund Part 150-approved projects via the Airport Improvement Program (AIP) to carry out measures in a noise compatibility program that are not disapproved by the FAA. Such projects also may be funded with local PFC revenue upon the FAA's approval of an application filed by a public agency that owns or operates a commercial service airport, although the use of PFC revenue for such projects does not require an approved noise compatibility program under Part 150. It should be noted that AIP (as well as PFC) funds can continue to be used for projects approved as mitigation measures in an FAA environmental document for airport development. The Final Policy does not affect funding for such projects.

The use of federal AIP funds for noise projects must have Part 150 approval; that is, remedial projects for existing incompatible development and preventive projects for potential new incompatible development when Part 150 approval is a prerequisite for the use of AIP funds. This funding is the consequence of the new Final Policy, which will not permit the approval of remedial mitigation measures for new incompatible development in a Part 150 program.

The Policy will not affect AIP funding for those few types of noise projects, such as the sound insulation of schools and health care facilities, that are eligible for AIP funds without an approved Part 150 program. Additionally, after review and consideration of comments noting that Part 150 approval is not a requirement for using PFC funds, FAA has determined that this policy does not affect the use of PFC funds for noise projects. It would only affect PFC funding to the extent that an airport owner chooses to rely solely on an approved Part 150 program to obtain approval to use PFC funds. That is the airport owner's choice.

The use of the Part 150 program and AIP funds dependent on Part 150 program approval to remedy new incompatible development within the noise contours of an airport after the effective date (October 1, 1998) is precluded. By precluding this option while simultaneously emphasizing the array of preventive noise mitigation measures that may be applied to potential new incompatible development, it is the intent of the FAA to focus airport owners and local governments more clearly on maximizing federal programs to prevent incompatible development around airports, rather than attempting to mitigate noise impacts to such development after the fact.

AIP funding may be available to assist airport owners in addressing prospective new incompatible development that is not being successfully controlled by local jurisdictions, so long as the airport's methods are designed to prevent the incompatible development rather than to mitigate it after development has occurred. This should result in a more cost-effective use of available funds because remedial noise mitigation measures generally cost more for a given unit than preventive measures.

E. Local Land Use Planning

Major metropolitan airports and general aviation airports are of significant importance in any region. The airport usually is a major land user, a significant traffic generator, a major economic center, and a significant employment center. However, it is also usually considered a “NIMBY” (“Not In My Backyard”) type of use. Most citizens want an airport reasonably close for convenience and for the economic benefits it offers, but they don't want it next door (or in “my backyard”). Despite all of its regional benefits, an airport is usually perceived as a noise-creator, a traffic-generator, a potential air traffic hazard, or an air quality concern.

Airports have positive impacts on a community particularly in terms of economic benefits. However, they also can be perceived as having negative impacts on communities. There is great concern on behalf of local governments and their communities on how and where airports are located, plans for expansion of them and how they can be integrated into the larger community with little or no impacts. It is extremely important, as air travel becomes constantly more popular as a preferred alternative for transporting people, goods, and materials, that airport planners and local land use planners work together toward cooperative land use planning efforts.

For many years, and even today, most land use plans (comprehensive plans) prepared by local governments have only minimally recognized the implications of planning for airports and off-site airport related development. In fact, local land use planning as a method of determining appropriate and inappropriate use of properties in and around airports should be an integral and important part of the whole package of land use policy and regulatory tools used by both airport and

local land use planners. Preparation and adoption of local land use plans should serve as the beginning point, setting policy for the following activation of local land use regulatory tools, such as zoning, subdivision regulations, building codes, and aviation easements. This guide includes a few examples of planning studies and negotiations that have recognized this importance and have attempted to foresee how such planning should be integrated – but these examples are unfortunately few in number.

This section of the guide offers some recommendations regarding how local land use planning and land regulatory tools can be used effectively in an attempt to mitigate some of the obvious contentions which are inherent in connection with airport master planning and local land use planning.

An important fact to recognize, as attempts are made to coordinate local land use planning and airport master planning, is that very often such coordination is significantly hampered by the fact that such airport facilities are very often surrounded by, and/or have affect on, numerous individual local government jurisdictions. Each of these jurisdictions normally has final authority to adopt and enforce its own local land regulatory tools. Thus, coordination not only becomes a concern between airport planners and local land use planners, but as well between local land use planners and local elected officials from a variety of jurisdictions.

Land Use Patterns around General Aviation Airports

Although, as noted, most of the foregoing is applicable to both major commercial service airports and general aviation (GA) airports, some additional comments about land use patterns that are specific to GA airports are important to include herein.

Economic Contribution

GA airports provide an indispensable link to regional, state, and national transportation systems. This transportation link contributes to local and regional economies that in turn promote and sustain the GA airports. In 1993, the annual economic activity from GA airports contributed an estimated \$18.5 million to the

national economy (“The Economic Impact of Civil Aviation on the U.S. Economy Update ’93,” prepared for the FAA and Lockheed Martin, by Wilbur Smith Associates, April 1995). In addition to the economic benefits contributed by GA airports, other vital GA activities include emergency medical flights, police and fire support, search and rescue operations, traffic reporting, and agricultural and environmental management operations.

Changing Role in the Economy

During the nation’s airport construction boom of the 1950s and 1960s, most GA airports were constructed with runway lengths of 3,000 to 4,000 feet. The airports were located away from communities, and were generally surrounded by agricultural or industrial land uses. The primary users of the new GA airports, during this period, were recreational flyers.

There were few corporate users at the time. Within the past two decades, however, the role of the GA airport has changed. As evidenced by the increased use of corporate aircraft, GA airports have been transformed from serving weekend flyers to serving as an economic generator for local, regional, and state economies.

GA airports provide a needed service to corporations as they move people and goods through the country and within regions. Realizing the increased time and costs associated with many metropolitan airports, corporate flight operations are using GA airports located in suburban and rural areas. To accommodate the increased frequency by corporate aircraft, the GA airport sponsor is often faced with a need to extend the runway length, or enlarge the ramp and tie-down areas. Moreover, increased frequency of aircraft flights often increases the associated noise impacts to airport neighbors. This expanded role for the GA airport has created land use conflicts within many of our nation's communities.

Incompatible Land Uses

Incompatible land uses around GA airports jeopardize the safety and efficiency of flying activities, and the quality of life of the community's residents.

Incompatible airport land uses include residential development, schools,

community centers and libraries, hospitals, and buildings used for religious services and tall structures, smoke and electrical signal generators landfills and other bird/wildlife attractants.

New housing demands generated by increased population are one of the contributing factors to incompatible land uses around both commercial service and general aviation airports. Communities are often confronted with the need and desire to expand their tax base by increasing residential and business development.

Residential development, particularly high-density development, is not compatible with airport operations due to aircraft noise impacts and for safety reasons. In some cases, the airport sponsor has not purchased or protected sufficient lands around the airport to prohibit the encroachment of incompatible land uses. Conversely, incompatibility may occur because an airport project has expanded in proximity of an existing residential neighborhood. The 3,500-foot runway, constructed in 1960, is now too short to accommodate larger, corporate aircraft: aircraft that are essential to the operation of nearby businesses.

For the community airport to meet the current and future needs of the general aviation airport and thereby continue contributing to the local and regional economies, it is the airport sponsor's responsibility to acquire sufficient land for airport expansion.

The siting of tall towers and other height hazards around an airport also creates an incompatible land use, as discussed in Section III. Towers in the airport airspace can endanger the safety of flight activity, the flying public, and people and property on the ground. The current proliferation of tall telecommunications towers will likely be followed by the rush of telecommunications companies to site digital towers. Siting towers in industrial parks, which are normally compatible uses with airports, tends to complicate the land use compatibility issue.

Sponsor Commitment

The airport sponsor is responsible to the extent reasonable for ensuring that land uses around the airport are compatible with existing and future airport operations. When the airport sponsor is a city and or county government, the government also is responsible for promoting the general welfare of its citizens, which includes the

health and safety of all residents. There are approximately 7,650 publicly owned GA airports in the country, which means there are probably as many local communities and airport owners confronted with the need to balance development pressures while maintaining a safe airport environment. An airport sponsor should initiate coordination efforts with surrounding communities to ensure that existing and future airport development is compatible with the land use plan for the area.

Land Use Controls at General Aviation Airports

Some land use control tools work better at large airports, whereas other tools may be better suited for use at smaller or medium-sized airports. In most instances, the tools described in this section have been successfully implemented at both air carrier and GA airports. A land use compatibility tool that often does not work well at small GA airports, however, is an airport noise compatibility plan generated with noise exposure contours.

FAA Order 5050.4A, Airport Environmental handbook, states in part that “no noise analysis is needed . . . at airports whose forecast operations . . . do not exceed 90,000 annual propeller operations or 700 annual jet operations.” Aircraft noise analyses generally have shown that airports with 700 annual jet operations or 90,000 annual propeller operations do not produce noise exposure contours at significant levels.

For an airport to generate 700 annual jet operations, a jet airplane would land and depart nearly every day during a one-year period. For an airport to generate 90,000 annual propeller operations, a propeller aircraft would land and depart nearly 125 times a day, every day for one year. Although many large GA airports generate this level of activity, most small and medium-sized GA airports do not. Therefore, many GA airport owners are faced with the challenge of ensuring land use compatibility without the benefit of using aircraft noise exposure contours to establish compatibility.

In the absence of aircraft noise exposure contours, airport owners can define Airport Impact Zones and identify appropriate land use zoning for each impact zone. Currently, the California Department of Transportation, Division of Aeronautics and the Washington State Department of Transportation, Aviation

Division provide technical assistance to the GA airports in their respective states to implement Airport Impact Zones as a land use compatibility tool. The specific areas, both on and off airport property, that are included in the impact zones are based on aircraft incident investigation data provided by the National Transportation Safety Board (NTSB).

Exhibit V-6, Airport Impact Zones, defines the dimensions and locations of each zone. Airport Impact Zones would be added or modified based on individual airport conditions and future development projections. Typical Airport Impact Zones include:

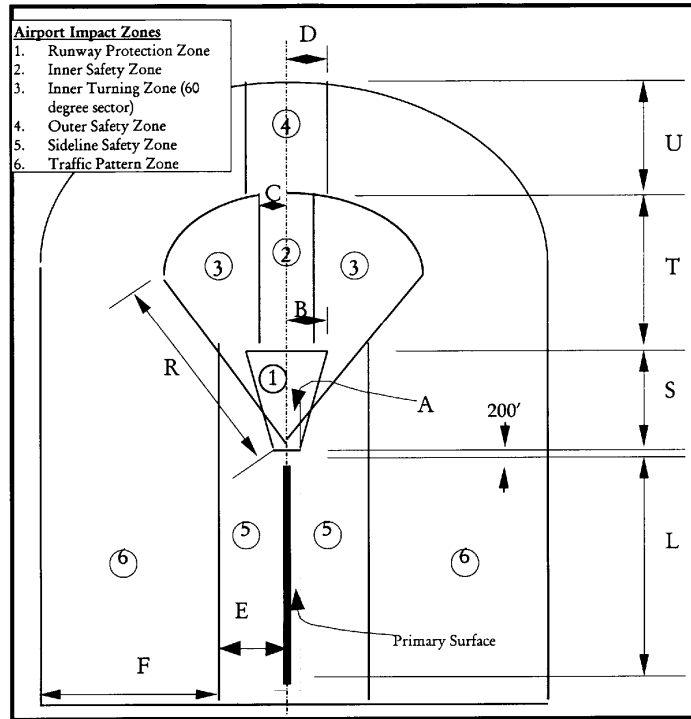
- Airport Impact Zone 1 – Runway Protection Zone
- Airport Impact Zone 2 – Inner Safety Zone
- Airport Impact Zone 3 – Inner Turning Zone (60-degree sector)
- Airport Impact Zone 4 – Outer Safety Zone
- Airport Impact Zone 5 – Sideline Safety Zone
- Airport Impact Zone 6 – Traffic Pattern Zone

The local land use planner, the airport representative, and in some cases, an aviation consulting firm or state aviation personnel, should work together to identify the Airport Impact Zones and establish the appropriate zoning. In locations where the Airport Impact Zones are within multiple jurisdictions, representatives from each jurisdiction would be involved in the planning and implementation process. Appropriate land use zoning would be established to ensure compatibility of land uses and development densities around the airport. Zoning also would control the construction of tall structures in the airport's airspace, electronic interference with the airport's navigation aids, and wildlife attractants around the airport.

Recommended land uses and densities of land development are different depending on the particular Airport Impact Zone. For example, the recommended land use in Zones 1, 2 and 5 would prohibit residential development and allow low-density (less than five people per acre) industrial development. Recommended land uses in Zones 3 and 4 would range from zero to low-density residential development and industrial development ranging from 25 to 40 people per acre. Recommended land uses in Airport Impact Zone 6 would allow low-

density residential development and industrial development accommodating fewer than 100 people per acre.

Airport Impact Zones



Airport Impact Zone Dimension (in Feet)

Dimension	Runway Length Category (L)		
	Runway less than 4,000	Runway 4,000 to 5,999	Runway 6,000 or more
A	125	250	500
B	225	505	875
C	225	500	500
D	225	500	500
E	500	1,000	1,000
F	4,000	5,000	5,000
R (60° Sector)	2,500	4,500	5,000
S	1,000	1,700	2,500
T	1,500	2,800	2,500
U	2,500	3,000	5,000

Data Source: NTSB accident investigations 1984-1991.

Illustration Source: Hodges and Shutt, Institute of Transportation Studies,

V. Airport and Local Land Use Planning Processes

V. Airport and Local Land Use Planning Processes

Once zoning is adopted for Airport Impact Zones, proposals for development in the impact zones would be evaluated by the jurisdictional bodies responsible for land use around the airport.

VI . COORDINATION AND IMPLEMENTATION OF AIRPORT AND LOCAL LAND USE PLANNING

Application and enforcement of land regulatory tools is the final stage of the planning and implementation process, when specific regulations are written and enforced. Variations from such regulatory tools are often only resolved before local legislative bodies, local planning commissions, boards of adjustments, or the courts. All of these processes take time and cost money. Clearly, the early "planning" stages of both airport master planning and local land use planning are extremely critical for ensuring some level of land use compatibility before creation, adoption, and enforcement of such regulatory tools as are described in the following sections of this guide.

It is important to reiterate that the early planning stage must include adequate opportunity for public input. Whether mandated or not, public awareness and public opinion must be sought. People in the community need to be appraised of planning for airport construction/expansion and general land use planning for their communities so that they may make informed personal and total community-related decisions.

Local land use planners and airport master planners need to work together to facilitate such public awareness and opportunity for input. Coordinated public meetings are a sensible way to solicit public input, whenever possible. Timing of seeking public input might be complicated, because it is likely that any local land use planning updates will not automatically coincide with FAR Part 150 hearings, for example. Scheduled meetings over annual periods, between representatives of the airport and local land use planners, should allow cooperation by possibly

using public meetings being held by airport planners or by local land use planners to solicit input from each other, as well as from the general public.

One of the most significant problems that might be encountered is a major decision on the part of airport planners to make critical changes in the short-term part of the 20-year master plan due to some unforeseen change in airport or local community activity or directions. For example, a decision to plan for construction of new runways in different directions than anticipated by the airport's 20-year master plan could have a significant effect on the long- and short-term plans adopted by the local community(ies) which did not anticipate such changes and may run contrary to the local land use plan's recommendations regarding compatible versus incompatible land uses. Or, the local government may be faced with proposals for what they consider very desirable new land development not anticipated by the comprehensive plan. They may be concerned politically and otherwise about the significant value such development may bring to the region but which might not be in conformity with coordinated airport planning. What does either party do when such issues arise?

A practical and useful approach for achieving airport land use compatibility and avoiding conflicts is to form an Airport Advisory Committee (ACC). The ACC should include representatives from the airport/aviation interests and citizen groups. The ACC should meet periodically to review proposed airport development projects and local compatible land use plans.

VII. COMPATIBLE LAND USE TOOLS AND THEIR POTENTIAL APPLICATIONS

The following are brief descriptions of some local land use planning and regulatory tools available for use by most local governments. Potentials for their application in conjunction with airport master planning to affect compatibility are also offered.

A. Comprehensive Plans

Whether required, or simply permitted by state statutes, the preparation and adoption of a comprehensive plan is a critical and effective part of the process of ensuring land use compatibility in and around airports and should be the first step in developing policies/bases for follow-up land regulatory tools.¹² The plan can provide policy-makers, airport owners, land use regulators, developers, and the general citizenry with an understanding of the magnitude of the land use conflict problems and relevant solutions. In some instances, where development has not yet substantially occurred around an airport, the potential exists for the comprehensive land use plan to provide direction to new development. In areas where development has already been allowed to occur close to airport property, or where airport expansions have resulted in originally unforeseen potential conflicts with adjacent and surrounding properties, the plan can provide recommendations for how to mitigate such conflicts.

¹²

Some state statutes mandate that comprehensive plans be prepared by all local governments. Some state statutes require that comprehensive plans be prepared only if the local government wants to adopt and enforce land regulatory tools. Other state laws contain no specific planning-related requirements and each individual local government applies home-rule policies. The result of the two latter processes can be sporadic land use planning and land regulatory measures. At the same time this local land use planning process is taking place, airport planners need to be sharing information about future airport master planning recommendations. Earlier sections of this guide note that the normal planning horizon for airport master plans is 20- years. Locally prepared comprehensive plans normally also have a twenty year horizon. Comparing what airport planners view as future capacities, direction of runways (resulting noise implications) and other on-site facility needs can help significantly as local land use planners are considering adjacent and surrounding future land use patterns.

VII. Compatible Land Use Tools and Their Potential Applications

The land use planning element of the comprehensive plan is a very important step in recognizing and analyzing some of the issues of concern in and around airports.

Through establishment of an "existing" land use map, specific properties around the airport can be inventoried, analyzed, and classified. An existing land use map should be created (see Existing Land Use Map Sample, **Exhibit VII-1**), to depict how on-site and off-site properties are currently being used. Depending on the extent of the inventory, some measure of building/property condition may also be inventoried and classified (at some later stage in the planning/mitigation process, a review of the assessor's or property valuation administrator's records may also be obtained to discern current assessed values of all properties involved).

Existing noise exposure contours can then be overlaid onto the existing land use map and other related informational mapping, to discern the degree of noise exposure of properties in and around an airport (see, Existing Land Use Map with Existing Noise Contours Sample, **Exhibit VII-2**). Availability of a mature GIS (Geographic Information System) which contains all planimetric and topographic (hypsography) information, property (cadesteral) information, vegetation cover, and location of all telecommunication/other towers, will allow review and analysis of these many disparate pieces of important information which will be important as land use compatibility alternatives are studied. Otherwise such information will have to be collected and analyzed by hand, a much more time-consuming, but doable process.

VII. Compatible Land Use Tools and Their Potential Applications

VII. Compatible Land Use Tools and Their Potential Applications

Insert **Exhibit VII-2:** Existing Land Use Map with
Existing Noise Contours Sample

VII. Compatible Land Use Tools and Their Potential Applications

A variety of methods is used in performing the local comprehensive planning process – with most recent approaches including a significant public input element. Importantly, the issues of airport and local land use compatibility planning need to be the subject of public awareness efforts in order to receive meaningful public input. Initial and continuing dialogue between airport planners, local land use planning officials, and the public is extremely important.

The comprehensive planning process can then provide short- and long-range policy recommendations regarding how the land areas in and around an airport should be developed, redeveloped, or maintained (i.e., preserved) in the future. Land use policy resulting from this effort should serve as the basis for development of future land use plan goals and objectives, which suggest and support implementation strategies to execute the land use plan, thus realizing the policy goals adopted by the community.

A Future Land Use Plan map should be developed to graphically represent the recommendations of the land use element of the comprehensive plan.¹³ Current and projected noise exposure mapping should be used as the land use plan is being developed (see Land Use Overlay Zones Map, **V-8**) to assist in making decisions about what types of land use should or should not be considered in various areas, or where the trend of most recent development should be redirected or should continue to be encouraged. It is critical to note that the land use plan (and the land use plan maps) should not stand alone; they must be supported by narrative and whatever graphic representations are needed to explain the supporting rationale for recommendations of the plan. The comprehensive plan will normally also contain recommendations regarding various infrastructure issues, other community facilities, housing, and various environmental issues, some of which may have little effect on airport and off-airport concerns but are an integral part of the comprehensive plans for the entire community and region.

Because large commercial airports almost always are facilities of regional concern, their impacts will likely involve a multitude of local governments and special districts, inherently making the issues of land regulation control more difficult to coordinate. A high level of coordination is necessary so when local

¹³ Some local governments prepare and adopt "Policy Plans" which often do not contain a Future land Use Plan "Map" instead identifying recommendations as a series of policies. However, in order to reach the point of developing such policies many of the same steps described herein (including preparation of existing and future land use mapping, with noise overlays, etc.) are constructed as part of the planning process.

land regulatory tools are being put in place, the rationale of the need for such measures will already have been established.

With completion of this process, ensuring that public input has been recorded and thoroughly considered, the local government(s) involved can now begin the process of preparing and adopting various land regulatory measures which are intended to realize the recommendations of the comprehensive plan. In the meantime, airport master planning will automatically be affected by federal regulations. Certain types of studies, discussed in greater detail in previous sections of this guide, will be required and also will require additional public input and coordination with local land use planning efforts. For example, the FAA has published guidelines for land use compatibility in FAR Part 150 which identify what land uses are normally considered compatible (for example, agricultural, commercial, and industrial uses) and those that are normally considered incompatible (such as residential areas, schools, and churches).

B. Zoning Regulations

There are many airport areas within jurisdictions in the United States where zoning, as a land use regulatory control tool, is currently being exercised. The use of zoning to control development in and around airport facilities has realized varied degrees of success. However, if put in place early enough - prior to the setting of the development pattern, and certainly before substantial subdivision of properties – zoning can be an effective tool to help eliminate or reduce incompatible development and land uses around airports.

Traditional zoning techniques will not suffice in all cases to control land use around airports. What may be needed is a combination of procedures (such as zoning overlay requirements or performance requirements). A determination needs to be made as to what specifically should be included in particular sections of the zoning ordinance. Some regulations to consider in the zoning ordinance include controls governing permitted uses, conditional uses, height, bulk, and intensity of developments around an airport. Special exceptions and/or performance standards should be addressed. Taking into account specific state statute limits, some procedures to follow when developing a zoning ordinance for regulation of airport property and off-airport properties are as follows.

Zoning Ordinance Development Considerations

The following steps should be taken when considering development of zoning ordinances. This process may be modified depending on whether a new airport is proposed or expansion of an existing airport is being proposed:

- Review all existing regulatory (i.e., land use and zoning) devices in the jurisdiction(s), if any; construct an existing zoning map if one is not available; ensure that the existing zoning ordinance has been properly adopted and recorded.
- Review existing state enabling legislation and case law affecting planning review and approval actions necessary by state agencies. Then consider zoning with emphasis on the affected community(ies).
- Determine if further analysis can be accomplished in-house, or if a consultant(s) may be required (particularly as it applies to existing/new development around the airport).
- Research and study the contemporary approach to land use and/or zoning control currently being employed in similar jurisdictions around the country.
- Consider a variety of land use controls, such as, but not limited to:
 - Airport Noise Overlay Zones
 - Variance Procedures
 - Special Exceptions
 - Performance Standards
- Ensure that airport-related zoning and all other implementation devices (for example, subdivision regulations) are in agreement with the adopted comprehensive plan.
- Allow for adequate review of all airport zoning and development ordinances by legal counsel, appropriate internal agencies and authorities, any affected special districts, and all affected local government entities.

- Develop and implement a citizens' public participation program, replete with appropriate processes and relevant information. This effort should be designed to elicit meaningful responses from the general public regarding the status of land use planning around the airport.
- Refine specific zoning and land use compatibility strategies to ensure that they are as uniquely oriented to the airport development circumstances of the particular jurisdictions.
- Consult with legal counsel to ensure that required due process is followed as the local planning bodies and legislative authorities review and adopt local zoning ordinances.

Traditional Techniques

Typically, traditional zoning ordinances regulate the type of uses which are permitted or conditionally permitted in each zoning district within the community. The height and bulk of buildings and other structures; various area regulations (such as the size of lots and front, side, and rear yard setbacks); and off-street parking and loading requirements are included in these regulations.

A most important concern as the zoning ordinance and official zoning map are being prepared, is that such decisions should be consistent with the adopted comprehensive plan. Decisions should consider that the long-range land use plan is usually based on a 15 to 20-year forecast. The zoning ordinance regulates land development today with an outlook and objective of realizing long-range plan goals. This consideration is most important in the case of land around an airport where land used by airport facilities and the length and direction of runways today may not be the same in the future. Thus, it is important that long-range airport master planning be coordinated with long-range local comprehensive land use planning. Finally, zoning should be used as a tool to connect both regulatory tools.

Airport Noise Overlay Zones

VII. Compatible Land Use Tools and Their Potential Applications

Airport Noise Overlay Zones (ANOV) or districts, are important considerations for regulating land use around airports throughout the United States. The ANOV is a district made part of the local zoning ordinance. The objective of adopting airport overlay zoning is to promote compatible land uses within zones and to provide noise-attenuating distances around airports. The overlay zones are maintained by establishment of noise contours within which there are restrictions on permitted land uses and limits on building (structure) heights. These limits vary with distance from, and orientation with respect to, the airport. It protects the public health, safety, and welfare from the adverse impacts associated with excessive noise. It acknowledges the unique land use impacts of airports, regulates the siting of noise-sensitive uses, ensures that the heights of structures are compatible with airport operations, and complies with FAA regulations regarding noise and height.

Overlay zoning involves creation of special zoning regulations as a means of addressing specific area conditions or needs not generally covered under other sections of the zoning ordinance. For example, airport noise overlay zones can prohibit noise-sensitive land uses near the airport or require dedication of aviation easements and/or non-suit covenants. Such regulations are supplemental to the requirements of the general zoning district. All development and building permits for properties located within an overlay district, would also have to meet all of the requirements of the specific zoning district in which they are located.

Airport Noise Overlay Zoning is an effective way to promote land use compatibility. The boundaries of an airport noise overlay zone (see **Exhibit VII-3**, Sample Proposed Airport Overlay Zoning) are generally based on noise exposure contours. It is advisable to use post-1995, Future Noise Exposure Maps that are periodically updated and amended.

Adoption of zoning regulations must be undertaken to effectuate the airport noise overlay district. A typical outline for these type regulations is as follows:

Division 151: Airport Compatible Use Overlay District

Sec. 7-401 Scope of Regulation

Sec. 7-402 Applicability

Sec. 7-403 Statement of Purpose and Intent

Sec. 7-404 District Boundaries (Basis)

VII. Compatible Land Use Tools and Their Potential Applications

Sec. 7-404 Establishment of Districts (Zones)

A. Runway Protection Zone

B. Airport Noise Zones

1. Restrictions within Noise Zones

2. Safety and Performance Standards

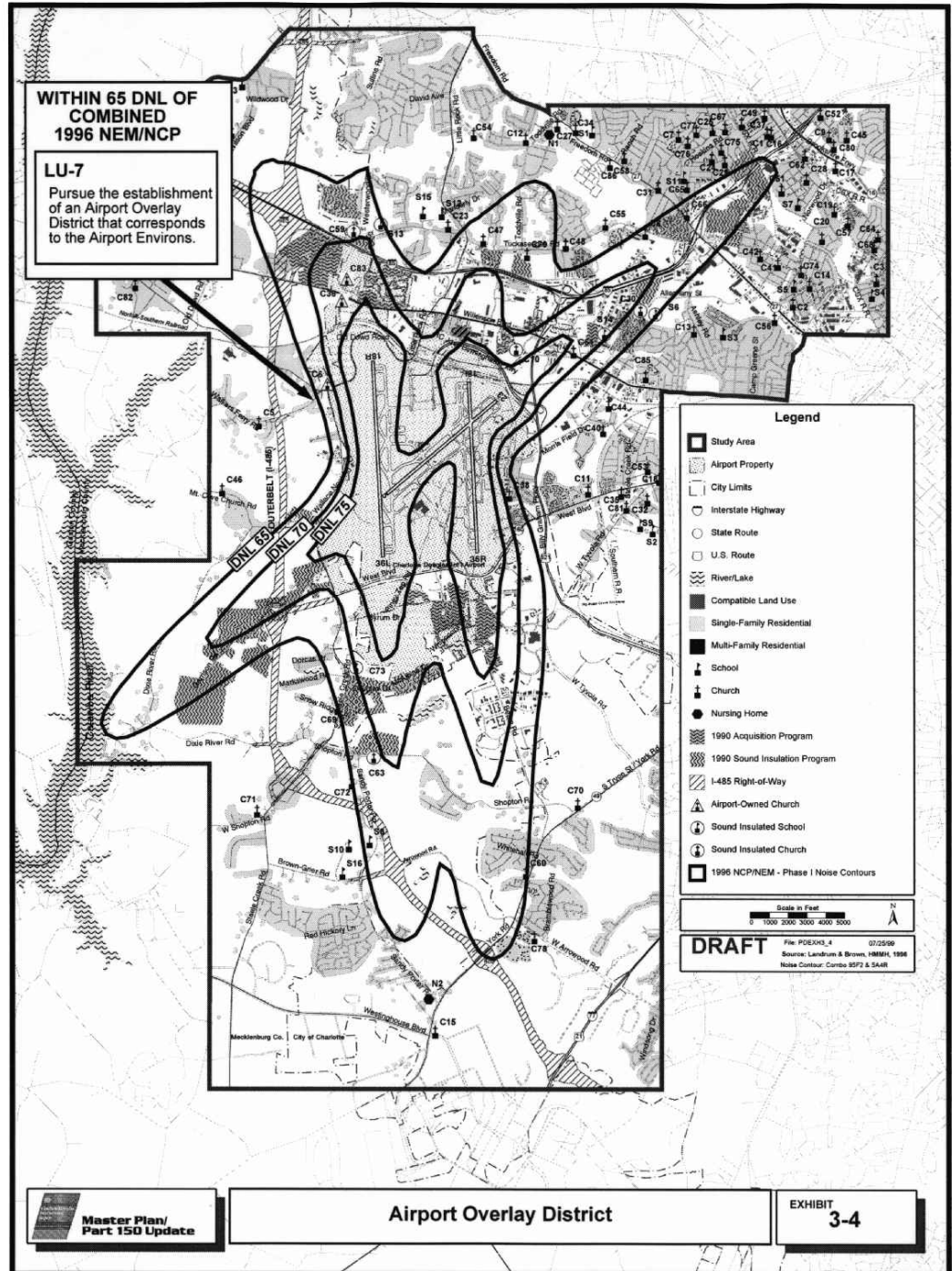
(1) Maximum Number of Persons (per use)

(2) Concentration of Persons per Acre
Standard

(3) Noise Zone Land Use Compatibility

C. Airport Zone Height Limitations

VII. Compatible Land Use Tools and Their Potential Applications



Sec. 7-406 Administration

Sec. 7-407 Permitted Uses

Sec. 7-408 Special Permit Uses

Sec. 7-409 Special Exception Uses

Sec. 7-410 Use Restrictions

Sec. 7-411 Interior Noise Level Standards

Sec. 7-412 Lot Size Requirements

Sec. 7-413 Bulk Regulations

Sec. 7-412 Open Space

Sec. 7-413 Hazard Marking and Lighting

Sec. 7-414 Dimensions of Imaginary Surfaces (Subpart C of the
Fed. Reg. (14 CFR))

Sec. 7-415 Additional Regulations

Variance Procedures

Variations are actions taken on the part of a local jurisdiction to allow for a development proposal, because of practical difficulties, to vary from the strict application or adherence to a provision of the zoning ordinance.

For example, height restrictions on any structure within a defined area around the airport would limit the proposed height of structures to a certain number of feet. Due to extenuating circumstances, a variance may be granted because a "hardship" is claimed by the developer who then may be allowed to exceed the height limitations. Importantly, there should be few, if any, variances justified and approved in the airport noise impact area. Local regulatory jurisdictions should make certain that, by closely reviewing each request for a variance, it is determined that such a deviation to the ordinance is indeed warranted.

A petitioner for a variance must be made to "bear the burden" of showing that a hardship will be suffered, if the strict application of the ordinance to the property is required. Usually, the mere demonstration of a hardship is not enough, and the application must affirmatively show that the public interest will not be endangered by approving a variance.¹⁴ It should be understood that FAA height

¹⁴ Source: National Association of Home Builders, Land Development, Washington, D.C., 1987, 1990

regulations for structures near airports would supersede local variance requirements.

Special Exceptions/Conditional Uses

It is important to understand that state laws involving planning and zoning vary. For example, some states have discarded the term "Special Exception" in favor of the term "Conditional Use," while some states use both with specific varying definitions. For purposes of this description special exceptions/conditional uses are uses which could be allowed in the airport area. These uses are not necessarily similar to all other uses permitted by right in the zoning district, but may be located within the area, under certain conditions.

Such special exception/conditional use requests are normally reviewed and approved/disapproved by the local Board of Adjustments (some state statutes/zoning ordinances refer to this body as the Board of Appeals - it is important to ensure an accurate understanding of state statutes). Some zoning ordinances contain a list of permitted special exceptions/conditional uses and/or some criteria for the Board of Adjustments/Appeals to use as they consider the special exception/conditional use application.

If a community, located near an airport, allows some land use control through the use of special exceptions/conditional uses, that community should make certain that such uses do not create a hazard for the community, the airport, or the user of the subject property.

The board will normally decide each issue on the merits of the application. However, it should be made clear that any such application for a special exception/conditional use should have a specific designation which triggers extraordinary review to allow disapproval of unacceptable uses because of the location of the property in question being near an airport. In addition, for the same reason, appropriate references should be made to other pertinent sections of the zoning ordinance and other applicable regulations that highlight the need to be aware of the special attention to be paid to such requests.

Performance Standards

VII. Compatible Land Use Tools and Their Potential Applications

Some local governments have adopted zoning ordinances based upon a set of performance standards or a combination of traditional zoning techniques and performance standards combined. Instead of the traditional method of listing permitted uses in each zoning district, the performance standards technique incorporates standards defining the amount of noise, vibration, smoke, odor, glare, etc., any given use in the district may emit. The effect of setting such standards is that enforcement of the ordinance reasonably ensures the community will be developed in the fashion desired based upon these criteria, and it is left to the developer of the property to show how the standards will be met.

If a community, located in the vicinity of an airport, has adopted performance standards, cooperative efforts with airport planners could result in such standards being used as a measure of determining the noise level in a given air corridor, for example. FAA policies, discussed elsewhere in this guide, address noise mitigation measures in conjunction with "existing" and "potential new" incompatible development. Early and continuous cooperation between local land use planners and airport planners may make it possible to use performance noise standards, set in the local zoning ordinance, to be developed with a better understanding of the noise standards which must be met by airport planners for compliance with federal regulations.

With knowledge of the limits on noise exposure around the airport, the local government may be able to eliminate or reduce incompatible land development in critical areas around the airport. This elimination or reduction can occur as a result of applying such performance standards in any given zoning district or in areas designated by overlay zoning techniques. In other words, the local land use planner could be able to determine permissible noise levels within any given air corridor, according to the airport master plan and compliance with applicable federal regulations, and ensure that incompatible land uses would not be permitted in these areas.

Related Subdivision Regulation References

Communities that adopt zoning ordinances will usually also adopt subdivision regulations (discussed in the next section). It is important to ensure that appropriate cross-references are made so the regulations of the zoning ordinance are considered and any applicable, related requirements of the subdivision regulations are simultaneously considered, thus eliminating or reducing the potential of inadvertent errors in regulatory decisions. Some communities across the nation have adopted some form of "Development Regulations" which attempt to combine and coordinate all regulatory measures into one document – unfortunately such combined regulations are the exception rather than the rule.

C. Subdivision Regulations

Depending on differing state enabling legislation, subdivision regulations may be prepared, adopted, and enforced through actions of the local legislative body and/or the local planning commission. In Kentucky, for example, all such authority is vested in the local planning commission.

Subdivision regulation (i.e., the division of a lot, tract, or parcel of land into two or more lots, tracts, parcels or other divisions of land for sale or development) works in a similar "regulatory environment" as that of the zoning ordinance when applied around airports.¹⁵ Subdivision plat review procedures provide an opportunity for jurisdictions to determine how a proposed subdivision design could contribute to the incompatibility of noise exposure to residential areas around airports. By making certain that appropriate performance standards (such as controlling the siting of homes relative to noise contour overlays or requiring buffers and open spaces) are provided and recorded on final subdivision plats, proper distances from higher decibel noise exposure levels can be maintained. This is especially important when these performance standards are also made conditions of zoning. In addition, traffic issues around an airport can be reviewed as subdivisions are platted to further protect the health, safety, and welfare of the community. It should be understood that "urban" (and rural) areas grow and expand primarily through the development of new subdivisions and the locating of new structures therein. Thus the subdividing of vacant land, or the re-subdividing of existing tracts, has major influence upon the future area. It establishes street patterns which should exist for many years, and also influences

the type and character of development that will occupy the land. Regulations controlling new subdivisions have been an integral part of comprehensive planning for many years.¹⁵

Subdivision Regulation Development Considerations

The following steps should be taken when considering development of subdivision regulations:

- Review all existing adopted subdivision regulations already in place in all affected communities; identify major variations in requirements, particularly as they apply to residential development.
- Review existing state enabling legislation and case law affecting subdivision regulations with emphasis on application to all affected communities and any review/approval actions necessary by state agencies (such as, water supply, waste water disposal).
- Determine if further and necessary analysis can be accomplished in-house or if a consultant(s) may be required (particularly as it applies to subdivision development around airports).
- Research and study the contemporary approaches to subdivision regulation currently being employed in similar jurisdictions around the country.
- Consult with legal counsel to ensure that required due process is followed as the local planning commission and/or legislative bodies review and adopt subdivision regulations.

Traditional Techniques

¹⁵ "The Subdivision and Site Plan Handbook" Listokin, Walker Center for Urban Policy Research, Rutgers, The State University of New Jersey, 1993.

¹⁶ William H. Claire, AIP, *Fasce, Handbook On Urban Planning*, Van Nostrand Reinhold, Col., 1973, pp. 282 and 283

VII. Compatible Land Use Tools and Their Potential Applications

Subdivision regulations normally contain sections describing procedural requirements, technical requirements for the construction of various items of necessary infrastructure (including streets, water supply facilities, and sanitary and storm-sewerage systems), and sections describing administration and enforcement provisions.

The procedural sections identify the process for submission and action on preliminary and final plats and the recording of final plats. Specific steps of submission are identified and usually include such items as:

- 1) Preapplication Conference;
- 2) Preliminary Plat Submission;
- 3) Grading and/or Erosion and Sedimentation Control Plans;
- 4) Improvement Drawings and Specifications;
- 5) Final Plat Submission; and
- 6) Recording.

The sections addressing technical requirements are inclusive of specific descriptions of what is to be included in preliminary and final plat drawings and attachments; design standards for subdivision layout (such as streets, intersections, easements, lots, blocks, flood protection, and pedestrian ways); and infrastructure improvements (such as stormwater drainage systems, sanitary sewerage systems, water supply facilities, driveways, street lighting, and street signs). This section often will attach standard specifications and construction details for streets, drainage structures, sewage systems, etc.

The sections addressing administration and enforcement will describe costs (fee schedules), how the regulations will be enforced (and by whom), penalties for violations of the regulations, appeals process from the enforcement agent, and appeals from the decision of the adopting body (legislative body/planning commission).

Related Zoning References

Similar comments offered under the heading "Related Subdivision Regulation References," under the discussion of zoning, are applicable under this heading. It is crucial to ensure an understanding of the requirements of local zoning ordinances as the planning commission is reviewing and acting on proposed new subdivision development. Appropriate cross-references should be included to ensure approvals are not granted due to full compliance with subdivision regulation requirements, if some zoning restrictions might be violated which will result in legal problems later as zoning and building permits are sought.

Recording of Restrictive Covenants - Deeds (Avigation Easements)

Officials of airport area communities should know how "restrictive covenants" could be used to provide for the control of land uses in high noise impact areas. Typically, restrictive covenants are "agreements" between private parties (for example, homeowners and homeowners' associations or home buyer and seller) and therefore are enforceable only by the parties involved and remedied in a court of law. Such covenants are "required" to be recorded with deeds and, in some cases, attached to or written on subdivision plats or other development plans that may be required to be recorded through local government ordinances and state courts. The basic disclosure of airport noise situations is handled in some jurisdictions across the country through ordinances that require the seller of a parcel of land to reveal to a purchaser that they are in a "high noise impact zone." Real estate agents should be instructed on these zones and the ordinance requirements.

Often, residents who move into an area may not be aware of an airport's presence or the implications of airport noise. One method of informing the public of an airport's proximity and disclosing the potential for aircraft noise, is to record an "Airport Disclosure Agreement" as well as applicable covenants on subdivision plats and site development plans. The airport disclosure agreement and covenants would require that the owner inform the prospective buyer of the airport's location and noise potential. As a covenant, the subdivision plat would be enforced by private parties just as a contract.

VII. Compatible Land Use Tools and Their Potential Applications

The location of the airport and other relevant land use controls in the airport area would be described in the disclosure agreement and covenants. The covenant also could describe the responsibilities of the airport owner to maintain and enforce a safe environment for airport operations and the public. The airport disclosure agreement would also identify the FAA imaginary surfaces associated with the airport (as well as such controls as aviation easements or noise overlay zones).

A commonly applied deed-restrictive requirement around airports is an "aviation easement" whereby the airport owner/government acquires, through a one-time payment, the right to conduct noise over a property(ies). An easement is a right held by one person to make use of the land of another for a limited purpose. Two general types of easements are possible: easements to allow an entity to cause noise exposure over the land and negative easements to prevent the creation or continuation of unprotected noise-sensitive uses on the property. This easement (covenant) runs with the land and all future owners learn of the easement when they buy the property. The easement is determined by documented noise exposure contours.

Additionally, ownership of such an easement serves as notification that the property is subject to potentially significant aircraft noise. Acquisition of easements does not reduce the noise impacts to people or by and of itself change incompatible land uses to compatible uses. However, the purchase price can and should be dedicated to the sound-proofing and/or use change necessary to achieve compatibility. By way of the easement, the construction and growth of objects that might otherwise penetrate FAA-defined airspace can be controlled.

Easements may be obtained in a number of ways, including purchase, condemnation, and dedication. For each easement acquired, consideration may be given to including a legal description of the noise that may be created over the property, describing classes of uses which may be established or maintained with and without soundproofing, and where applicable, granting an aviation easement. Aviation easements can be purchased when land cannot be acquired. An aviation easement permits the right of flight in the airspace above the subject property. The airport sponsor, through the easement, can obtain the right of flight and related noise from aircraft. The easement covers the airspace between the ground and the elevation that coincides with the height of the approach or

departure surface. Easements can also be transferred by subdivision regulations. As a condition of subdivision approval, the owner of property in a high noise area, or at a location with existing airspace violations, could be required to dedicate to the airport sponsor a noise and aviation easement. The transference is similar to the arrangement for the dedication of street rights-of-way or utility easements.

Easements may also be obtained by condemnation, in a manner similar to full rights condemnation. The cost, while still likely to be less than that of outright acquisition (fee simple) of the land, is likely to be significantly higher than similar rights obtained via negotiation because of the time and court costs involved. Also, the cost of any bad feelings between the parties generated by a condemnation action, while difficult to measure, can be significant.

Construction that is proposed within the aviation easement, depending on the easement language, could also be evaluated by airport officials to determine the potential to penetrate the airport airspace. Communication towers, flag poles, silos, and commercial buildings are structures which would require evaluation before construction. Also controlled in an aviation easement may be natural objects, such as trees, which must be trimmed to a height that would not violate FAA defined airspace.

D. Building Codes

Building Codes are primarily concerned with the functional and structural aspects of buildings/structures. Some states have adopted a statewide uniform building code; others permit each local governing body to adopt their own building code.

Some building codes have special building code requirements for properties located in high noise exposure areas. Property owners are made aware of these requirements through occasional notifications and/or when they apply for building permits. During application for permit issuance, the applicable jurisdiction would identify location of the proposed structure and if the property is located in a noise-impacted area, necessary action would be required ranging from aviation easement consideration to building code sound-insulation or prohibition of construction.

E. Housing Codes

“Unlike building codes which control new structures or the enlargement or alteration of existing structures, the minimum housing standards apply to both new and existing living units.”¹⁷ Housing standards usually include minimum standards for size of sleeping rooms, size of windows, availability of a bathroom and toilets, hot and cold running water, satisfactory heat screens and other protection from insects and rodents, satisfactory disposal of storm water, adequate protection from rain and weather, removal of any unsanitary conditions, and general structural conditions of the unit.

Adoption and enforcement of minimum housing code standards is an important consideration of any jurisdiction in the vicinity of an airport. Such a code is concerned with the health, safety, and welfare of inhabitants who reside in single-, two-, or multi-family units. Code enforcement officials inspect these buildings for code violations and then write the owners, if necessary, to require compliance. It is during these inspections when assessments of airport noise impacts could be determined and proper solutions required.

Building codes, housing codes, and performance standards combined will often serve, in part, as the basis for determining noise impact to occupants.

F. Capital Improvements Programming

A Capital Improvements Program (CIP) is another basic planning tool used to assist in realizing the goals, objectives, and specific recommendations of the adopted comprehensive plan. Normally, such a program will be divided into long- and short-term segments. The long-term CIP lists and prioritizes all public facility improvements recommended in the comprehensive plan for the entire period covered by the plan. The short-term CIP (sometimes referred to as the short-term capital improvements budget) includes those capital improvements (land/facilities) which are programmed to be acquired or constructed within the first five or six years of the planning period covered by the comprehensive plan. This short-term program shows costs of land acquisition (where applicable), necessary capital outlay estimates, projected revenues, and expenditures of the

¹⁷ William H. Clare, *Handbook On Urban Planning*, Van Nostrand Reinhold, Co., New York, NY, 1973, p. 286.

local government(s) involved for the five or six-year period including sources of such revenues for identified capital outlay amounts. Normally, the first year of the short-term capital improvements budget automatically becomes part of the local government(s) operating budget(s). These actions then allow another year to be added to the five or six-year short-term CIP, basically allowing it to be a scheduled, ongoing, annual process.

Depending on the ownership of airport facilities and recommendations of the adopted comprehensive plan, the CIP may be a valuable tool to be used by both airport and local government officials. Combined with the recommendations of the adopted comprehensive plan and the planned extension of basic water and sewer facilities, this programming tool could be used in a cooperative manner to encourage/discourage new compatible/incompatible land development around airport facilities.

In addition, for those states which have adopted Official Map Regulations, this tool could be an even more powerful means of ensuring compatibility as discussed in the following section.

G. Official Map Regulations

Some state enabling laws permit adoption of an "Official Map Regulation" (not to be confused with an "Official Zoning Districts Map"). Adoption of such a regulation is usually predicated on the community having previously adopted a comprehensive plan and a capital improvements program. Common language in such statutes permits this official map to show such items as the location and extent of existing and proposed public streets, watercourses, parks, public schools, and other public facilities needs. Adoption of such a map by the local legislative body is normally permitted only after review and recommendation by the local

VII. Compatible Land Use Tools and Their Potential Applications

planning commission and after conducting a public hearing. The boundaries of only those public facilities (existing or proposed) which are identified as part of the short-term CIP and budget may be identified on the Official Map.

The intended purpose of allowing adoption of an Official Map is to provide authority to the local government to ensure that the value of property within the boundaries of any areas identified on this map will not escalate as a result of new development during the period of the short-term CIP budget. It permits the local government to purchase the land and develop the facility(ies) at the value of the property(ies) at the time of its placement on the Official Map with only normal property value increases. The basic intention of this process is to use taxpayers monies in the most efficient fashion when it is clear that the local government plans to purchase and develop land for some public purpose within the short term (usually identified as five or six years). Such laws will normally contain provisions that allow the local government to ensure fairness in addressing reasonable requests that involve granting building permits for unprofitable land during this five- or six-year period.

The potential for using a combination of the CIP and the Official Map Regulation as a means of identifying land for short-term purchase in areas determined to be airport expansion areas should be considered by the local government(s) involved and by the airport owner, particularly if the airport is publicly owned and operated.

Another potential application could be in a case where an airport's master plan identifies the need for future runways and/or the need for airport property expansions to include other airport-related development, and the long-range community plan, recognizing the airport plan, encourages land uses that are not compatible with the airport in areas expected to be impacted. The community's short-term CIP could include planned public expenditures which are intended to encourage such development in these non-impacted areas. The official map regulation could then be used to identify such planned public directional expenditures (infrastructure extensions) to achieve this objective. The result is that the community and the airport realize goals of both the short- and long-range plans and the taxpaying public benefit by planned expenditures at a lower sales cost than would otherwise be possible. Legal assistance is recommended if this process is considered to ensure that a "taking" is not implied.

H. Infrastructure Extensions

Provision or extension of basic infrastructure elements, such as water supply, waste disposal facilities, and roadways can serve as a major detriment, or conversely, a major generator affecting the extent and direction of growth and development. Obviously, a policy that encourages land to be used in a very low-density and agricultural/rural fashion, by not extending water facilities into such areas, will have the desired effect. On the contrary, extension of basic water service into previously under-served areas will quickly encourage more urban densities and follow-up of extension of sanitary and storm water facilities, and new subdivision and commercial development. Clearly, planned expansion of water and sewerage facilities should be performed in conjunction with long-range land use and transportation planning (the comprehensive plan).

In the case of areas surrounding airport facilities, for example, sound and coordinated land and infrastructure planning can serve as a means of setting development patterns which consider type and intensity of development in light of plans for airport expansions, flight pattern expectations, noise overlay zones, etc. For example, if such basic infrastructure elements are not extended into areas planned for primarily agricultural uses, these areas will not likely develop for any intensive purpose and not pose major problems to airport-related functions. On the contrary, if major water supply and sewerage facilities are extended into these areas because they are planned for industrial development, then controls on height, development intensity, etc. will need to be enforced by one or more of the other land regulatory tools herein described.

The need for a very high degree of cooperation between airport planners, land use planners, water supply agency(ies) and sanitary/storm sewer waste agency(ies) is paramount to the success of this type of planning tool and necessitates a comprehensive plan which incorporates such coordinated planning.

I. Growth Policies

A number of communities across the nation are developing comprehensive plans using the concept of "Urban Growth Boundaries," which attempt to determine where full build-out, or build-out to a given boundary, should be encouraged while simultaneously determining where land development should be maintained in a low-density/rural fashion versus a compact and more urban pattern. The State of Florida, and recently the State of Tennessee, have adopted state planning statutes that contain requirements addressing development dependent on infrastructure availability within limited time periods.

The Tennessee statutes address development issues under three initiatives: "urban growth boundaries," "planned growth areas," and "rural areas." The objectives of these statutes, and similar ones in other parts of the country, are to encourage smart growth and sustainable development concepts that will have the effect of using land for reasonable purposes and preserving our limited resources for future use.

Recognizing that these laws are in existence in at least these two southern region states (and being considered by other states inside and outside the region), it is incumbent on airport planners to ensure they are included as integral partners in mandated community planning. Identification of airport areas and the surrounding affected areas, according to the airport master plan, as part of growth policies planning, will be critical.

Infrastructure extensions will be a major determining factor in such growth management programs. Such planning and implementation requires a very high degree of coordination and cooperation between many diverse parties, including utility companies, city and county elected officials, airport authorities, local planning authorities, various environmental and business-oriented groups, and the general public.

J. Transferable Development Rights (TDR)/Purchase of Development Rights (PDR)

Transfer of Development Rights (TDR) is a relatively new land use and development control technique. It should be considered as another possible planning tool for application on and around airports. Legally, state statutes would have to contain provisions for use of TDR as part of its enabling legislation. A development rights transfer system would have to be adopted by the local government(s), and the comprehensive plan would need to recognize this means of development rights land designation.

The basic concept of TDR is to preserve or retain land in its existing or rural setting in one location by "transferring" the rights to develop the property from a "sending" site to the "receiving" site, where an increase in intensity of use would be permitted.

PDR (Purchase of Development Rights) is another form of this tool in which a local government purchases the property owner's right to develop specific parcels of land for managerial purposes, leaving them all other rights of ownership. The price of the development rights is generally equal to the diminution in the market value of the land resulting from the removal of the development rights, and thus is the difference between the value of the land for agricultural or open space use and its current market value.

TDR could allow airport area jurisdictions to avoid unwanted development in high noise exposure areas or redevelop these areas to less intense use, allowing such limitations to be maintained in perpetuity. The sending property would ideally be rezoned to whatever rights remained on the property. The receiving property might also have to be rezoned so that the type and intensity of use anticipated could be realized. In any case, this process would need close legal scrutiny in light of recent U.S. Supreme Court rulings.

Whatever changes in zoning might be necessary, the changes should conform to the adopted comprehensive plan, which conceivably had anticipated such changes over the time period of the plan. If the proposed changes had not been anticipated

in the plan and therefore were not in conformance, amendments to the plan should be made before making the zoning changes. Thus, losses and gains of development rights would adequately reflect the long-term policy implications (such as land use changes) of the plan.

PDR, or variations of it, could also possibly be used by local governments and airport owners (depending on ownership) to allow continuation of compatible uses and elimination of incompatible uses on specific properties which are within areas where such airport protection techniques need to be applied.

Again, a very high degree of coordination and cooperation between airport owners/planners and local governments/land use planners will be necessary if any of these techniques are to prove useful.

K. State Airport Zoning Commission Regulations

State statutes addressing aviation and airports vary. Both local land use planners and airport planners should be thoroughly familiar with such pertinent statutes. There may be some seemingly contradictory statutes addressing the authority for regulating land development in and around airports. Such potentially questionable language needs to be clarified in order to ensure common understanding and accurate application of state and local laws and regulations. Using Kentucky as an example, **Appendix A** includes critical selected excerpts from the *Kentucky Revised Statutes* as they apply to the creation and functions of an Airport Zoning Commission.

VIII. NEGOTIATION/MEDIATION

The negotiation or mediation technique is an important approach to be employed when addressing land use compatibility conflicts or disputes associated with airports. The purpose of negotiation/mediation is to provide a means by which a local government or community (or another entity) can work with an airport to address difficult situations as an alternative to litigation. This approach can provide clarity for the airport's plans, plan implementation, and other actions that can potentially impact the community.

Typically, airport concerns are technical in nature, and technical people are usually most comfortable working in their fields of special competence. They are often uneasy when faced with a "people problem." Airports are sometimes expanding facilities located in areas where people can be adversely affected by airport operations and encroachment. Susan Carpenter and W.J.D Kennedy, in their book, *Managing Public Disputes* offered ten principles that can help to "focus on productive strategies for resolving differences."¹⁸ These principles are:

- 1) Principle 1: Conflicts Are a Mix of Procedures, Relationships, and Substance.
- 2) Principle 2: To Find a Good Solution, You Have to Understand the Problem.
- 3) Principle 3: Take Time to Plan a Strategy and Follow it Through.
- 4) Principle 4: Progress Demands Positive Working Relationships.
- 5) Principle 5: Negotiation Begins with Constructive Definition of the Problem.
- 6) Principle 6: Parties Should Help Design the Process and Solution.
- 7) Principle 7: Lasting Solutions are Based on Interests, Not Positions.
- 8) Principle 8: The Process Must Be Flexible.
- 9) Principle 9: Think Through What Might Go Wrong.
- 10) Principle 10: Do No Harm.

¹⁸ *Managing Public Disputes*; Jossey-Bass Publishers, San Francisco, 1998; pp.52-65.

Carpenter and Kennedy continue by saying that one must provide the time in negotiation/mediation technique to construct a conflict management program carefully. It was said that to do otherwise is to possibly damage trust among key parties and ultimately destroy working relationships. Therefore, if you cannot devise the program properly “it should not be attempted” at all.¹⁹

Negotiation/mediation technique can resolve airport-related disputes through conflict resolution and collaborative problem-solving. Michael L. Poirier and R. Gregory Bourne suggest including the following basic elements of the pre-negotiation, negotiation, and agreement/implementation processes:²⁰

The basic elements of the pre-negotiation process should include:

- Identify parties with a stake in the airport development dispute.
- Assess the basis of the conflict.
- Select a neutral mediator or facilitator.
- Assess the relationships between the parties.
- Ensure appropriate representation of the parties.
- Facilitate more effective communication.
- Establish an agenda for negotiation.
- Confirm guidelines for the process management.

¹⁹ *Ibid.*

²⁰ Susan G. Robinson, Editor, “Financing Growth: Who Benefits? Who Pays? And How Much?” (1990), Government Finance Officers Association, Chicago, IL. pp. 185-206, Chapter 12: Article, “Resolving Development Disputes Through Conflict Resolution and Collaborative Problem Solving,” by Michael L. Poirier and R. Gregory Bourne.

The basic elements of the negotiation process should include:

- Clarify the issues.
- Jointly assess the existing problems.
- Generate alternatives and develop evaluation criteria.
- Reach agreements in principal.

The basic elements of the agreement/implementation program should include:

- Identify tasks necessary to implement the agreement.
- Establish implementation responsibilities and check posts.
- Specify evaluation and feedback mechanisms.

Elliott and Bourner indicate that “regardless of the scale, techniques that allow for a greater understanding of the issues at conflict, a clearer identification of the underlying interests, improved communication, and greater accommodation of the public good will ultimately provide a better vehicle for resolving the dispute than many traditional or adversarial approaches.”²¹

Airport-related issues can be “barn burning” concerns which are hard to resolve. Interested parties should seek to engage trained negotiators or mediators to assist. Look for these services in the state government or regional planning authorities in your jurisdiction. Also, explore the possibility of local legal professional organizations and their resources.

²¹ *ibid.*

IX. PUBLIC EDUCATION AND AWARENESS PROGRAMS

Airports or local planning agencies that expect a reasonable chance of success in their planning efforts must provide for public education and awareness in the planning process. Both airport and local planning programs (such as master plans, FAR Part 150 studies, and comprehensive plans) include opportunities for public education and awareness. These opportunities include such things as Planning Advisory Committees and Citizens Advisory Committees. The composition of these committees may include elected officials, administrative staff, representatives of public agencies, and citizens. From a functional point of view, these planning and advisory committees should provide an avenue for community input and perspectives as well as feedback to the community. All committee members should solicit information from or provide information to their constituents. Because the opportunities for information exchange may be somewhat limited with these committees, however, both airports and planning agencies may find themselves searching for other forms of information dissemination and exchange.

In order for local land use planners and airport planners to better understand and recognize the critical need for cooperation, serious attempts to integrate some basic cross-over course work at the university level is necessary. Some basic logistical difficulties will certainly arise, because airport master planning and related courses may be offered in various academic school locations (such as schools of engineering, schools of environmental science, schools of aeronautical science, and schools of architecture and planning), but such issues can be overcome with recognition by educators of the important connections which need to be accommodated. The American Collegiate Schools of Planning (ACSP) should be contacted regarding such coordinated academic planning.

In addition, it is important for institutions of continuing education to allow or even encourage airport planners and local land use planners to take advantage of cross-over offerings. New thinking and new technologies being adapted by members of both fields need to be shared so that better communication will occur. The end result of such cooperative efforts will be a higher likelihood that both airport planners and local land use planners will identify many of the same principles for consideration by their respective decision-makers. For example, the American Planning Association is in the process of completing a series of studies addressing the subject of "Growing Smart Airports." These studies are finding that airport planners need to be aware of directions being recommended by the land use planning community so they can enter into meaningful discussion, with a complete understanding the rationale for such directions. Conversely, it is just as important for land use planners to understand new thinking in connection with airport design, the necessary surrounding activity challenges, and the constantly evolving federal regulations within which airport planners must work. Clearly, understanding each other's dynamic thinking as well as the limits within which each planner must work will make cooperation more likely, with more satisfactory results for the communities both interests serve.

Having stated the importance of working together and with the public, the following sections address the real world situations of some of the various regulatory tools available to most land use planners throughout the country. These tools are intended to help cross the bridge from planning for what we want our communities to be in future years, to adoption and enforcement of specific regulatory measures which are intended to help us make day-to-day decisions which will lead toward realization of all the cooperative planning that has been occurring.

The information dissemination and exchange opportunities described in this section do not represent all such opportunities. Others may be created through modifying or combining any of these functions. Most important is the fact that information must be provided to and exchanged with the community if levels of credibility are to be maintained within the planning program.

A. Information Dissemination

Information dissemination is a one way flow of a desired message or philosophy. The type of audience may range from a narrowly targeted audience to the community at large. The following represents a general cross-section of the various types of one-way information dissemination opportunities.

Distribution of Printed Materials

Included in this group are brochures, newsletters, paid advertising, newspaper inserts, and guest or contributory columns to newspapers.

If the message or issues are fairly constant, then brochures could be inventoried and sent to individuals who request specific information or mailed to a targeted group. Brochures provide a constant, standardized base of information or public position on a specific subject.

However, if the message is changing with the issues or the planning program has milestones that need to be publicized, then newsletters or newspaper inserts can be utilized. A zip code sort will allow newsletters to be as target-specific or as general as desired. Newspaper inserts, for example, are as general as the publication circulation.

Contributory guest columns also provide general circulation. Due to the limited amount of space provided, the message must be concise and simple. Also, guest columns do not lend themselves to information that is repetitive in nature.

Use of Audio-Visual Materials

This group is somewhat more limited than printed material in the type of materials and media available. Still there are several distribution methods available.

One opportunity is to produce video message for distribution to public access channels with local cable companies. Press releases with accompanying videotapes can also be used. However, airtime is short, station editing applies, and the message will be displaced by the next day's news. Another type of video is a derivative of the committee structure (explained later under *Information Exchange*). In essence, public committee meetings associated with planning

efforts and planning programs are themselves televised, thereby providing a one-way dissemination of information to the community through public access channels.

Development of an Internet Web Page

Many airports and public planning agencies (or the controlling political body) have web sites. A properly managed web site can utilize all of the printed and audio-visual opportunities mentioned above to make available the appropriate levels of information to interested citizens who have accessing capability. Web pages can also be made interactive, to provide for more of an information exchange, by way of soliciting e-mail or conducting on-line surveys.

B. Information Exchange

Information exchange is a two-way flow of information. The initial flow of information is outward and again contains the desired message or philosophy. Once the information is disseminated, there exists a response mechanism that may be used to determine the public's attitude toward or acceptance of the previously disseminated message.

Workshops and Public Hearings

Both airport and municipal planning agencies, as a vehicle to present status reports or final reports on a planning program, utilize public workshops and hearings. Workshop attendees are urged to provide their opinions or comments on the project in either an oral or written format. Public hearings solicit similar involvement and input, but in a more formal way by receiving either verbal or written testimony on a particular planning project.

Public Advisory Committees

Public advisory committees are sometimes formed to review comment on, or provide input to, planning issues. A flow of information to the committee is, in theory, digested by the committee and also discussed with committee members, neighbors, or constituents. If the committee meetings are televised on a local

public access channel, then the viewing public can also observe the information exchange.

Radio and Television Talk Shows

Local public radio and television stations are usually eager to fill the airwaves with dialogue on significant community issues. If the show has a listener/viewer call-in segment, these shows can be an excellent vehicle for information exchange.

Speaking Engagements

One way to provide for information exchange, on a personal level, is through speaking engagements at various local clubs, social groups, or associations. These groups may include church groups, The Lions Club, civic and homeowners' associations, or local schools. While the message is given to all of the attendees, the personal attention is provided during the post-presentation question and answer period.

Presentations to Public Officials/Agencies

Occasionally a planning agency may wish to present and receive information to elected officials and public administrators. These public officials can then pass on that information and receive feedback from constituents. The targeted officials are invited to attend a presentation or update on a master plan, comprehensive plan, or some other major planning projects. Attendees are provided with updates, status reports, and as much take-home material as possible. This ensures message consistency throughout the political arena.

X. CONCLUSION

The Task Force members, in preparing this guide, drew upon their planning experience in both community and airport environments. Early on in the process of developing the guide, the Task Force recognized that every airport and every community with an airport is different in its geographical size, population, and political composition, and therefore, understood that its efforts could not result in a concise and universal set of recommendations that would fit all communities and all airports. Instead the group combined its cumulative experience and diverse disciplines to develop information and programs, sources of technical and funding support, potential tools and administrative and legal procedures could be used according to a particular situation for achieving compatible airport land uses.

There is one common ingredient, however, that is necessary to achieve compatible land use around airport facilities. That ingredient is *dialogue*. Without dialogue, there can be no consensus, no plan, and no success.

Understanding that airport and community planning processes are intertwined, the examples and recommendations contained herein are not about winning, for winning implies a separation of these planning processes. Rather, the recommendations are about communication and cooperation, directed toward the establishment of common goals that are necessary for the development of compatible land use programs.

REFERENCES

Aviation Safety and Noise Abatement Act of 1979: 49 U.S.C. 47501 through 47509

Chicago Midway Airport Noise Abatement, Landrum & Brown, Incorporated, May, 1998. 116 pages. (no date on document)

U.S. Department of Transportation, Federal Aviation Administration, "Airport Master Plans," Advisory Circular 150/5070-6A, June 1985, 62 pages.

Florida Department of Transportation, Aviation Office, "Airport Compatible Land Use Guidance for Florida Communities," 1994, 85 pages.

Florida Statutes Chapter 333, "Airport Zoning," dated July 1, 1994, 9 pages.

U.S. Department of Transportation, Federal Aviation Administration, "Proposed Construction of Alteration of Objects that May Affect the Navigable Airspace," Advisory Circular 70/7460-21, January 1, 1996, 11 pages.

U.S. Department of Transportation, Federal Aviation Administration, Federal Aviation Regulation Part 77, "Objects Affecting Navigable Airspace," March 1993

U.S. Department of Transportation, Federal Aviation Administration, "Hazardous Wildlife Attractants on or Near Airports" Advisory Circular 150/5200-33, May 1, 1997

Aviation Safety and Noise Abatement Act of 1979: 49 U.S.C. 47501 through 47509.

Chicago Midway Airport Noise Abatement, Landrum & Brown, Incorporated, May, 1998.

Final Policy on Part 150 Approval of Noise Mitigation Measures: Effect on the Use of Federal Grants for Noise Mitigation Projects, ACTION: Notice of Final Policy. Issued in Washington, DC, on March 27, 1998, John R. Hancock, Acting Assistant Administrator for Policy Planning, and International Aviation. [4910-13] Department of Transportation, Federal Aviation Administration, 14 CFR Part 150 [Docket No. 28149].

14 CFR (Code of Federal Regulations) Part 150 Airport Noise Compatibility Planning, revised as of January 1, 1994, Federal Aviation Administration, Department of Transportation.

Order 5100.38A, Airport Improvement Program (AIP) Handbook, October 24, 1989, Department of Transportation, Federal Aviation Administration.

GLOSSARY

Advisory Circular (AC) – A document published by the Federal Aviation Administration (FAA) giving guidance on aviation issues.

Air Traffic – Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.

Air Traffic Control — Control of the airspace by an appropriate authority to promote the safe, orderly and expeditious movement of terminal air traffic.

Aircraft Operation – An aircraft arrival or departure from an airport with FAA airport traffic control service. There are two types of operations: local and itinerant.

Airport — Any public use airport, including heliports, as defined by the Aviation Safety and Noise Abatement Act of 1979 (ASNA), including: (a) Any airport which is used or to be used for public purposes, under the control of a public agency, the landing area of which is publicly owned; (b) any privately owned reliever airport; and (c) any privately owned airport which is determined by the Secretary to enplane annually 2,500 or more passengers and receive scheduled passenger service of aircraft, which is used or to be used for public purposes.

Airport Hazard – Any structure or object of natural growth located on or near the airport, or any use of land near the airport that obstructs the airspace required for the flight of aircraft in landing or taking off, or is otherwise hazardous to such landing and taking off.

Airport Impact Zones –Defined areas on and off airport property that are zoned to ensure airport compatible land uses. Low-activity airports without significant

aircraft noise exposure contours can benefit by identifying and implementing land use controls in Airport Impact Zones. The Impact Zones generally include the runway protection zone, the FAR Part 77 approach surface and the airport traffic pattern.

Airport Improvement Program (AIP) – The AIP is authorized by the Airport and Airway Improvement Act of 1982 (P.L. 97-248, as amended). The Act’s broad objective is to assist in the development of a nationwide system of public-use airports adequate to meet the current and projected growth of civil aviation. The Act provides funding for airport planning and development projects at airports included in the National Plan of Integrated Airport Systems. The Act also authorizes funds for noise compatibility planning and to carry out noise compatibility programs as set forth in the Aviation Safety and Noise Abatement Act of 1979 (P.L. 96-143).

Airport Layout Plan (ALP) – A scaled drawing of existing and proposed land and facilities necessary for the operation and development of the airport. The ALP shows (1) boundaries and proposed additions to areas owned or controlled by the sponsor, (2) the location and nature of existing and proposed airport facilities and structures and (3) the location on the airport of existing and proposed and non-aviation areas and improvements.

Airport Layout Plan Set - Included in the Airport Layout Plan set are six drawings: (1) Airport Layout Drawing (Plan), (2) Airport Airspace Drawing, (3) Inner Portion of the Approach Surface Drawing, (4) Terminal Area Drawing, (5) Land Use Drawing and (6) Airport Property Map. The drawings depict existing and proposed airport facilities, land uses, approach zones and other defined areas of airspace, and environmental features that may influence airport usage and expansion capabilities.

Airport Manager — The person authorized by the airport sponsor to exercise administrative control of the airport.

Airport Master Plan – A planning document, including appropriate documents and drawings, that describes the development of a specific airport from a

physical, economical, social, environmental and political jurisdictional perspective. The airport layout plan drawing is part of the Master Plan.

Airport Noise Compatibility Program - That program, and all revisions thereto, reflected in documents (and revised documents) developed in accordance with Appendix B of this part, including the measures proposed or taken by the airport owner to reduce existing incompatible land uses and to prevent the introduction of additional incompatible land uses within the area.

Airport Operations – The total number of movements in landings (arrivals) plus takeoffs (departures) from an airport.

Airport Owner – Any person or authority having the operational control of an airport as defined in the ASNA Act.

Airport and Airway Improvement Act of 1982 – This Act authorizes the Secretary of Transportation to make project grants for airport planning and development to maintain a safe and efficient nationwide system of public-use airports.

Airport Noise and Capacity Act of 1990 – This act required the establishment of a National Noise Policy and a requirement to eliminate Stage 2 aircraft weighing 75,000 pounds or greater operating in the contiguous United States by the year 2000.

Airport Reference Code (ARC) – The ARC is a FAA coding system used to relate airport design criteria to the operational and physical characteristics of the airplanes intended to operate at the airport.

Airport Sponsor — A public agency or tax-supported organization such as an airport authority, that is authorized to own and operate the airport, to obtain property interests, to obtain funds, and to legally, financially and otherwise able to meet all applicable requirements of current laws and regulations.

Air Traffic Control Tower (ATCT) – The air traffic control facility located on an airport that is responsible for providing air traffic control services to airborne aircraft near the airport and to aircraft operating on the airport movement area.

Airside – That portion of the airport facility where aircraft movements take place, airline operations areas, and areas that directly serve the aircraft, such as taxiway, runway, maintenance and fueling areas.

Airspace — The space lying above the earth or above a certain area of land or water that is necessary to conduct aviation operations.

Ambient Noise – The total amount of noise in a given place and time, which is usually a composite of sounds from varying sources at varying distances.

Approach Surface – A surface defined by FAR Part 77 “Objects Affecting Navigable Airspace,” that is longitudinally centered on the runway centerline and extends outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based on the type of approach available or planned for that runway end.

ASNA Act — The Aviation Safety and Noise Abatement Act of 1979, as amended (49 U.S.C. 2101 et seq.).

Attainment Area – An area in which the federal or state standards for ambient air quality are being achieved.

Average Sound Level — The level in decibels, of the mean square, A-weighted sound pressure during a specified period, with reference to the square of the standard reference sound pressure of 20 micropascals.

Avigation Easement – A grant of a property interest in land over which a right of unobstructed flight in the airspace is established.

Based Aircraft – An aircraft permanently stationed at an airport by agreement between the aircraft owner and the airport management.

Building Codes – Codes, either local or state, that control the functional and structural aspects of buildings and/or structures. Local ordinances typically require proposed buildings to comply with zoning requirements before building

permits can be issued under the building codes.

Commercial Service Airport — A public airport that has at least 2,500 passenger boardings each year and is receiving scheduled passenger aircraft service.

Compatible Land Use — As defined in FAR Part 150: The use of land (e.g., commercial, industrial, agricultural) that is normally compatible with aircraft and airport operations, or sound insulated lands uses (e.g., sound insulated homes, schools, nursing homes, hospitals, libraries) that would otherwise be considered incompatible with aircraft and airport operations. See Table X, *Land Use Compatibility Guidelines – FAR Part 150*, to review the FAA land use compatibility table.

Comprehensive Plan – Similar to a Master Plan, the comprehensive plan is a governmental entity’s official statement of its plans and policies for long-term development. The plan includes maps, graphics and written proposals, which indicate the general location for streets, parks, schools, public buildings, airports and other physical development of the jurisdiction.

Conditional Zoning – The imposition or exaction of conditions or promises upon the grant of zoning by the zoning authority.

Conformity (Air Quality): No department, agency or instrumentality of the federal government shall engage in, support in any way or provide financial assistance for, license, or permit, or approve, any activity which does not conform to a State Implementation Plan (SIP). There are two types of Air Quality Conformity: *General Conformity* and *Transportation Conformity*:

- **General Conformity** - All federal actions (except those involving highways and transit projects) within nonattainment and maintenance areas that result in a net increase in emissions above specified de minimis levels.
- **Transportation Conformity** - Federally funded or approved highway or transit projects; (and regionally significant non-federal highway and transit projects) within nonattainment and maintenance areas.

Day-Night Average Sound Level (DNL) — A noise measure used to describe the average aircraft noise levels over a 24-hour period, typically an average day over the course of a year. DNL considers aircraft operations occurring between the hours of 10 p.m. and 7 a.m. to be ten decibels louder than operations occurring during the daytime to account for increased annoyance when ambient noise levels are lower and residents are sleeping. DNL may be determined for individual locations or expressed in noise contours. The symbol for DNL is Ldn.

Decibel (dB) – Sound is measured by its pressure or energy in terms of decibels. The decibel scale is logarithmic; when the scale increases by ten, the perceived sound is two times as loud.

Enplanement – A passenger boarding of a commercial flight.

Environmental Assessment (EA) – A concise document that assesses the environmental impacts of a proposed federal action. The EA discusses the need for and environmental impacts of the proposed action and alternative actions. An EA should provide sufficient evidence and analysis for a federal determination whether to prepare an Environmental Impact Statement or a Finding of No Significant Impact.

Environmental Impact Statement (EIS) – A document that provides full and fair discussion of the significant environmental impacts that would occur as a result of a proposed project and informs decision makers and the public of the reasonable alternatives that would avoid or minimize adverse impacts.

Euclidean Zoning – A traditional legislative method or device for controlling land use by establishing districts with set boundaries and providing for specific uniform regulations as to type of permitted land use, height, bulk and lot coverage of structure, setback and similar building restrictions. (Reference from 1929 U.S. Supreme Court landmark decision upholding zoning as a means of land use control in “City of Euclid, Ohio v. Ambler Realty”)

Federal Aviation Administration (FAA) – A federal agency charged with regulating air commerce to promote its safety and development, encouraging and

developing civil aviation, air traffic control and air navigation and promoting the development of a national system of airports.

Federal Aviation Regulations (FAR) — Regulations established and administered by the FAA that govern civil aviation and aviation-related activities.

Federal Aviation Regulations Part 77 “Objects Affecting Navigable Airspace” – Part 77 (a) establishes standards for determining obstructions in navigable airspace; (b) defines the requirements for notice to the FAA Administrator of certain proposed construction or alteration; (c) provides for aeronautical studies of obstructions to air navigation to determine their effect on the safe and efficient use of airspace; (d) provides for public hearings on the hazardous effect of proposed construction or alteration on air navigation; and (e) provides for establishing antenna farm areas.

Federal Grant Assurance – The terms and conditions of accepting Airport Improvement Program (AIP) grants from the Federal Aviation Administration for carrying out the provisions of Title 49, United States Code. The terms and conditions become applicable when the airport sponsor accepts a grant offer from the FAA.

Finding of No Significant Impact (FONSI) – A document briefly explaining the reasons an action will not have a significant effect on the human environment and therefore justifies the decision to not prepare an EIS. A FONSI is issued by the federal agency following the preparation of an EA.

Fixed-Base Operator (FBO) – An airport facility that serves the general aviation community by selling and repairing aircraft and parts, selling fuel, and providing flight and ground-school instruction.

General Aviation (GA) – Refers to all civil aircraft and operations that are not classified as air carrier, commuter or regional. The types of aircraft used in general aviation activities cover a wide spectrum from corporate multi-engine jet aircraft piloted by professional crews to amateur-built single engine piston acrobatic planes, balloons and dirigibles.

General Conformity – All federal actions (except those involving highways and transit projects) within non-attainment and maintenance areas that result in a net increase in emissions above specified *de minimis* levels.

Growth Policy – A local or regional governmental policy intended to influence the rate, amount, type, location and/or quality of future development within the jurisdiction.

Housing Codes – The codes that usually apply to both existing and future living units. The codes include minimum standards of occupancy, and usually govern spatial, ventilation, wiring, plumbing, structural and heating requirements.

Hubbing – A method of airline scheduling that times the arrival and departure of several aircraft in a close time period to allow the transfer of passengers between different flights of the same airline. Several airlines may conduct hubbing operations at an airport.

Incompatible Land Use — The use of land, which is defined in Appendix A, Table 1 of FAR Part 150, which is normally incompatible with the aircraft and airport operations (such as homes, schools, nursing homes, hospitals, and libraries). See Table X, *Land Use Compatibility Guidelines – FAR Part 150*, of this guide to review the FAA land use compatibility table.

Infrastructure – A community's built elements that establish the community's foundation for maintaining existing populations, activities, future growth and development. Infrastructure elements include airports, roads and highways, bridges, water and sewer systems, waste disposal facilities, utilities and telecommunications systems, schools, and governmental and community facilities.

Instrument Approach – A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually.

Instrument Flight Rules (IFR) – Rules governing the procedure for conducting instrument flight. In addition, a term used by pilots and controller to indicate a type of flight plan.

Integrated Noise Model (INM) – FAA’s computer model used by the civilian aviation community for evaluating aircraft noise impacts near airports. The INM uses a standard database of aircraft characteristics and applies them to an airport’s average operational day to produce noise contours.

Itinerant Operation – Any aircraft arrival and/or departure other than a local operation.

Land Use Compatibility –The coexistence of land uses surrounding the airport with airport-related activities.

Land Use Controls - Measures established by state or local government that are designed to carry out land use planning. The controls include among other measures: zoning, subdivision regulations, planned acquisition, easements, covenants or conditions in building codes and capital improvement programs, such as establishment of sewer, water, utilities or their service facilities.

Land Use Management Measures – Land use management techniques that consist of both remedial and preventive measures. Remedial, or corrective, measures typically include sound insulation or land acquisition. Preventive measures typically involve land use controls that amend or update the local zoning ordinance, comprehensive plan, subdivision regulations and building code.

Landside – That part of an airport used for activities other than the movement of aircraft, such as vehicular access roads and parking.

Local Operation – Any operation performed by an aircraft that: (a) operates in the local traffic pattern or within sight of the tower or airport, or (b) is known to be departing for, or arriving from, flight in local practice areas located with a 20-mile radius of the control tower or airport, or (c) executes a simulated instrument approach or low pass at the airport.

Maintenance Area – a geographical area which was once designated as nonattainment but the pollution levels have met the National Ambient Air Quality standards for two consecutive years and has an approved maintenance plan which outlines how the geographical area will continue to meet these standards.

Mediation – The use of a mediator or co-mediators to facilitate open discussion between disputants and assist them to negotiate a mutually agreeable resolution. Mediation is a method of alternative dispute resolution that provides an initial forum to informally settle disputes prior to regulatory intervention on the part of the FAA.

Mitigation – The avoidance, minimization, reduction, elimination, or compensation for adverse environmental effects of a proposed action.

Mitigation Measure – An action taken to alleviate adverse impacts.

National Environmental Policy Act of 1969 (NEPA) – The original legislation establishing the environmental review process.

National Plan of Integrated Airport Systems (NPIAS) – A primary purpose of the NPIAS is to identify the airports that are important to national transportation and, therefore, eligible to receive grants under the Airport Improvement Program (AIP). The NPIAS is composed of all commercial service airports, all reliever airports, and selected general aviation airports.

Nautical Mile – A measure of distance equal to one minute of arc on the earth's surface, which is approximately 6,076 feet.

Navigation Aids (NAVAIDS) – Any facility used by an aircraft for guiding or controlling flight in the air or the landing or take-off of an aircraft.

Noise Abatement Procedures – Changes in runway usage, flight approach and departure routes and procedures, and vehicle movement, such as ground maneuvers or other air traffic procedures that shift aviation impacts away from noise sensitive areas.

Noise Compatibility Plan (NCP) – The NCP consists of an optimum combination of preferred noise abatement and land use management measures, and a plan for the implementation of the measures. For planning purposes, the implementation plan also includes the estimated cost for each of the recommended measures to the airport sponsor, the FAA, airport users, and the local units of government.

Noise Compatibility Program – See “Part 150 Study.”

Noise Exposure Contours – Lines drawn about a noise source indicating constant energy levels of noise exposure. DNL is the measure used to describe community exposure to noise.

Noise Exposure Map (NEM) — The NEM is a scaled map of the airport, its noise contours and surrounding land uses. The NEM depicts the levels of noise exposure around the airport, both for the existing conditions and forecasts for the five-year planning period. The area of noise exposure is designated using the DNL (Day-Night Average Sound Level) noise metric.

Noise Level Reduction (NLR) — The amount of noise level reduction in decibels achieved through incorporation of noise attenuation (between outdoor and indoor levels) in the design and construction of a structure.

Noise-Sensitive Area - Areas where aircraft noise may interfere with existing or planned use of the land. Whether noise interferes with a particular use depends upon the level of noise exposure and the types of activities that are involved. Residential neighborhoods, educational, health, and religious structures and sites, outdoor recreational, cultural and historic sites may be noise sensitive areas.

Nonattainment - Areas that exceeded the national ambient air quality standards for any of six pollutants (ozone, or smog; carbon monoxide; lead; particulate matter; or PM-10; or nitrogen dioxide)

Nonconforming Use – Any pre-existing structure, tree, or use of land that is inconsistent with the provisions of the local land use or airport master plans.

Off-Airport Property – Property that is beyond the boundary of land owned by the airport sponsor.

Official Map – A legally adopted map that conclusively shows the locations and width of proposed streets, public facilities, public areas and drainage rights-of-way.

On-Airport Property – Property that is within the boundary of land owned by the airport sponsor.

Overlay Zone – A mapped zone that imposes a set of requirements in addition to those of the underlying zoning district.

Part 150 Study – Part 150 is the abbreviated name for the airport noise compatibility planning process outlined in Part 150 of the Federal Aviation Regulation (FAR) that allows airport owners to voluntarily submit noise exposure maps and noise compatibility programs to the FAA for review and approval. See Noise Compatibility Plan.

Passenger Facility Charge (PFC) Program – The PFC Program, first authorized by the Aviation Safety and Capacity Expansion Act of 1990 and now codified under Section 40117 of Title 49 U.S.C., provides a source of additional capital to improve, expand and repair the nation’s airport infrastructure. The legislation allows public agencies controlling commercial service airports to charge enplaning passengers using the airport a facility charge. The FAA must approve any facility charges imposed on enplaning passengers.

Performance Standards – Minimum acceptable levels of performance, imposed by zoning, that must be met by each land use.

Primary Runway – The runway used for the majority of airport operations. Large, high-activity airports may operate two or more parallel primary runways.

Public Use Airport – A publicly or privately owned airport that offers the use of its facilities to the public without prior notice or special invitation or clearance.

Reliever Airport – An airport that meets certain FAA criteria and relieves the aeronautical demand on a busier air carrier airport.

Runway Protection Zone (RPZ) – A trapezoidal-shaped area centered about the extended runway centerline that is used to enhance the safety of aircraft operations. It begins 200 feet beyond the end of the runway or area usable for takeoff or landing. The RPZ dimensions are functions of the design aircraft, type of operation and visibility minimums.

Sound Attenuation – Acoustical phenomenon whereby a reduction of sound energy is experienced between the noise source and the receiver. This energy loss can be attributed to atmospheric conditions, terrain, vegetation, constructed features (e.g., sound insulation) and natural features.

Sound Exposure Level (SEL) — A measure of the physical energy of the noise event that takes into account both intensity and duration. By definition SEL values are referenced to a duration of one second. SEL is higher than the average and the maximum noise levels as long as the event is longer than one second is. Sound exposure level is expressed in decibels (dB). People do not hear SEL.

Special Exceptions – Land uses that are not specifically permitted as a matter of right but can be permitted in accordance with performance standards and other local criteria. Also known as “conditional uses.”

Stage 2 Aircraft – Aircraft that meet the noise levels prescribed by FAR Part 36 and are less stringent than noise levels established for the quieter designation Stage 3 aircraft. The Airport Noise and Capacity Act requires the phase-out of all Stage 2 aircraft by December 31, 1999, with case-by-case exceptions through the year 2003.

Stage 3 Aircraft – Aircraft that meet the most stringent noise levels set forth in FAR Part 36.

State Implementation Plan (SIP) – a detailed description of the programs a state will use to carry out its responsibilities under the Clean Air Act. State Implementation Plans are collections of the regulations used by a state to reduce air pollution.

Statute Mile – A measure of distance equal to 5,280 feet.

Subdivision Regulations –

Terminal Area – A general term used to describe airspace in which airport traffic control or approach control service is provided.

Transfer of Development Rights – This involves separate ownership and use of the various "rights" associated with a parcel of real estate. Under this concept, some of the property's development rights are transferred to a remote location where they may be used to intensify allowable development.

Turbojet Aircraft – Aircraft operated by jet engines incorporating a turbine-driven air compressor to take in and compress the air for the combustion of fuel, the gases of combustion (or the heated air) being used both to rotate the turbine and to create a thrust-producing jet.

Turboprop Aircraft – Aircraft in which the main propulsive force is supplied by a gas turbine driven conventional propeller. Additional propulsive force may be supplied from the discharged turbine exhaust gas.

Variance – An authorization for the construction or maintenance of a building or structure, or for the establishment or maintenance of a use of land that is prohibited by a zoning ordinance. A lawful exception from specific zoning ordinance standards and regulations predicated on the practical difficulties and/or unnecessary hardships on the petitioner being required to comply with those regulations and standards from which an exemption or exception is sought.

Visual Approach – An approach to an airport conducted with visual reference to the terrain.

Visual Flight Rules (VFR) – Rules that govern flight procedures in good weather, with conditions usually being at least 1,000-foot ceiling and three miles visibility.

Wetlands Mitigation Banking – involves consolidating fragmented wetland

mitigation projects into one large contiguous site. Units of restored, created, enhanced or preserved wetlands are expressed as "credits" which may be withdrawn to offset "debits" incurred at a project development site.

Yearly Day-Night Average Sound Level (YDNL) — The 365-day average, in decibels, day-night average sound level. The symbol for YDNL is also Ldn.

Zoning – The partitioning of land parcels in a community by ordinance into zones and the establishment of regulations in the ordinance to govern the land use and the location, height, use and land coverages of buildings within each zone. The zoning ordinance usually consists of text and zoning map.

Zoning Ordinance – Primarily a legal document that allows a local government effective and legal regulation of uses of property while protecting and promoting the public interest.

APPENDIX A

Relevant Kentucky Revised Statutes

KRS 183.861 Establishment of Airport Zoning Commission. – There is hereby created and established within the cabinet (Transportation), a commission known as the "Kentucky airport zoning commission" which notwithstanding the provisions of KRS chapters 100 and 147 (Kentucky's basic planning and zoning statutes), shall be empowered to issue such orders, rules and regulations pertaining to use of land within and around all publicly owned airports within the state as will promote the public interest and protect and encourage the proper use of such airports and their facilities.

KRS 183.865 Commission Functions – All of the powers, provisions and duties relating to the zoning and use of land, structures, and air space within and around public airports within the state are hereby conferred upon, delegated to and vested in the commission. The commission shall also exercise all powers, provisions and duties relating to the use of navigable air space within the state. Nothing contained in this chapter shall prevent a governmental unit from acquiring airports, airport facilities, or air navigation facilities, or from taking any action authorized by law for the elimination of any airport hazard, either alone or jointly with the commission.

KRS 183.867. Zoning Jurisdiction – Regulations – Public Files – (1)

The commission shall require that every public airport in the state file with it, from time to time, as required, maps showing the airport and area surrounding such airport used for approach or landing purposes.

The commission shall thereafter designate on such maps, by reference to the regulations or standards promulgated by the federal aviation administration concerning the area required for the safe maneuvering approach and landing of aircraft, the area over which jurisdiction will be assumed for zoning purposes. The commission shall notify any local zoning bodies of the area so designated and may exercise jurisdiction of such area insofar as it pertains to the safe and proper maneuvering of aircraft and the safe and proper use of the airport involved. The local zoning body may retain jurisdiction of zoning in such areas as to all other matters. (2) The commission may adopt such regulations pertaining to the zoning of areas over which jurisdiction is assumed as will provide for the proper and safe use of such area and airport.

KRS 183.868 Factors to be Considered in Zoning. – In addition to considering the regulations or standards promulgated by the FAA in zoning the use of land and structures in areas over which jurisdiction is assumed, the commission shall consider among other things, the safety of airport users and surface persons and property, the character of flying operations conducted at the airport , the nature of the terrain, the height of existing structures and trees above the level of the airport, the views of officials of the FAA as to the safe approaches required for operations at the airport, the future development of the airport including extensions to runways that may be required, the density of dwellings that may safely be permitted in the area, protection of the public investment in the A-1 airport and its facilities, the interest of the public in developing a sound public air transportation system within the state and the views and opinions of those owning land in such area.

KRS 183.870 Maximum Building Height Regulation – The commission shall establish by regulation the maximum height to which any structure may be erected within the navigable airspace of the state. In establishing such maximum heights, the commission shall consider, among other things, the regulations or standards promulgated by the FAA , the terrain involved, the location of the structure in relation to airports, the safety of aircraft, the safety of surface persons and structures, the future development of the area involved, the density of population and dwelling within the area involved, the interest of the public in developing a sound public air transportation system within the state and the interest of the person desiring to erect such structure, except that upon application

to the commission, special permission may be granted to exceed such heights. The commission shall, before issuing any such permit, give consideration to the standards set out herein.

KRS 183.872 Acquisition of Property Rights – In any case in which it is desired to remove, lower or otherwise terminate a nonconforming use; or the approach protection necessary cannot, because of unconstitutional limitations, be provided by zoning regulations; or it appears advisable that the necessary approach protection be provided by acquisition of property rights rather than by zoning regulations, the department, commission, air board or boards, or governmental unit may acquire by purchase, grant, condemnation or otherwise, such air right, easement, or other estate or interest in the property or nonconforming use in question as may be necessary to effectuate the purposes of this chapter.

APPENDIX E

**FEDERAL AVIATION ADMINISTRATION NOTICE CRITERIA
TOOL**



Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference [CFR Title 14 Part 77.9](#).

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the [FAA Co-location Policy](#)
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the [Air Traffic Areas of Responsibility map](#) for Off Airport construction, or contact the [FAA Airports Region / District Office](#) for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

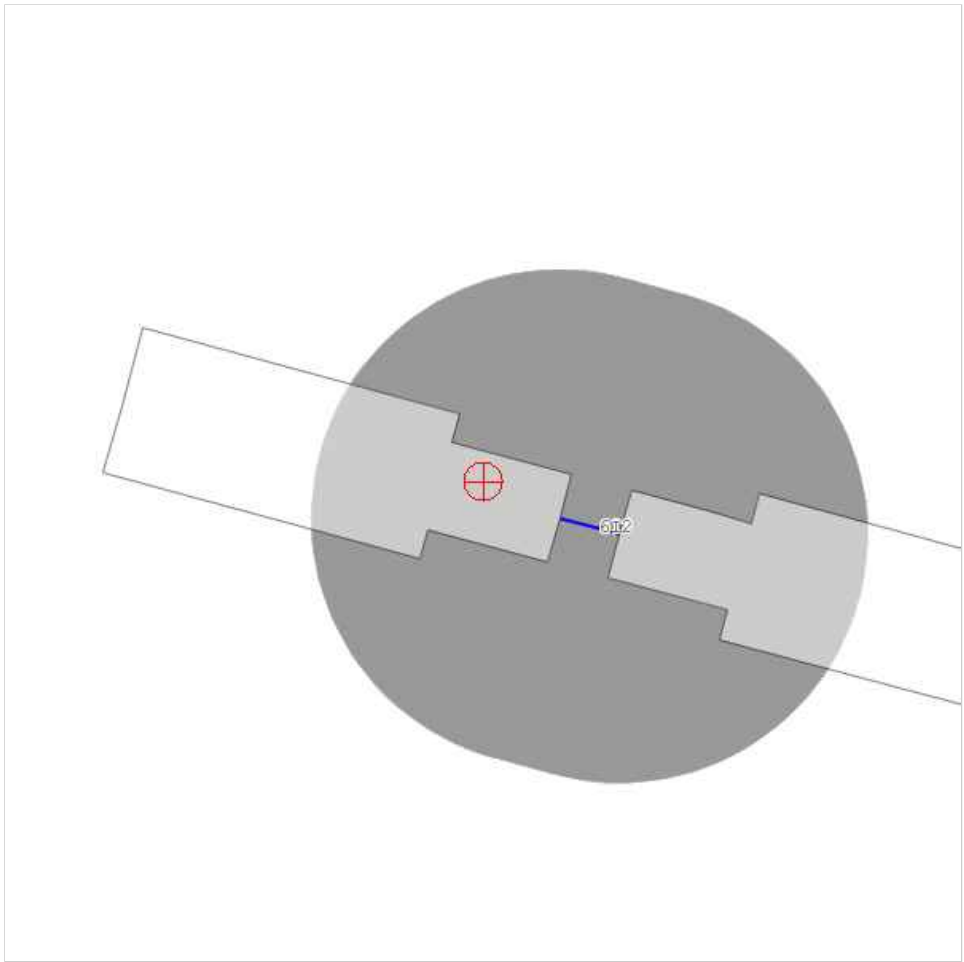
Latitude:	<input type="text" value="37"/> Deg	<input type="text" value="38"/> M	<input type="text" value="35.18"/> S	<input type="button" value="N"/> <input type="button" value="v"/>
Longitude:	<input type="text" value="85"/> Deg	<input type="text" value="16"/> M	<input type="text" value="17.53"/> S	<input type="button" value="W"/> <input type="button" value="v"/>
Horizontal Datum:	<input type="button" value="NAD83"/> <input type="button" value="v"/>			
Site Elevation (SE):	<input type="text" value="815"/> (nearest foot)			
Structure Height :	<input type="text" value="20"/> (nearest foot)			
Traverseway:	<input type="button" value="No Traverseway"/> <input type="button" value="v"/>			
	<small>(Additional height is added to certain structures under 77.9(c)) User can increase the default height adjustment for Traverseway, Private Roadway and Waterway</small>			
Is structure on airport:	<input checked="" type="radio"/> No <input type="radio"/> Yes			

Results

You exceed the following Notice Criteria:

Your proposed structure is in proximity to a navigation facility and may impact the assurance of navigation signal reception. The FAA, in accordance with 77.9, requests that you file.

The FAA requests that you file





Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference [CFR Title 14 Part 77.9](#).

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the [FAA Co-location Policy](#)
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

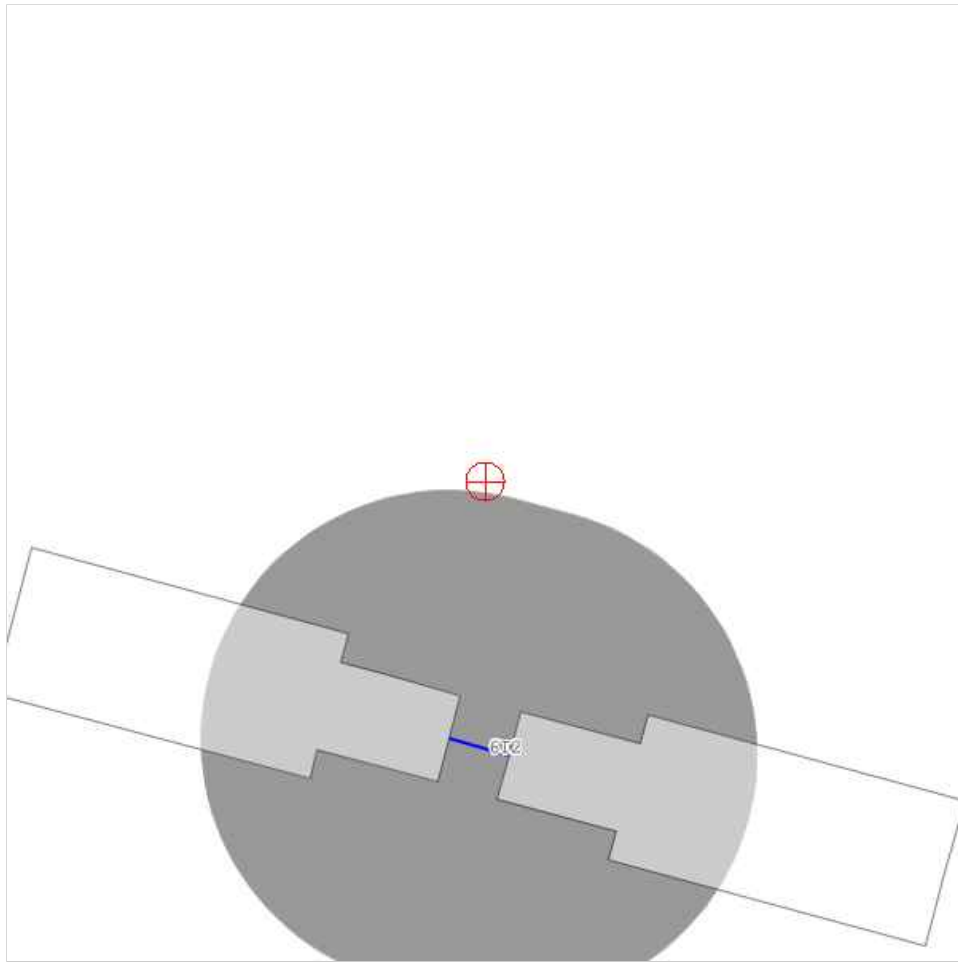
If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the [Air Traffic Areas of Responsibility map](#) for Off Airport construction, or contact the [FAA Airports Region / District Office](#) for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

Latitude:	<input type="text" value="37"/> Deg	<input type="text" value="41"/> M	<input type="text" value="30.90"/> S	<input type="button" value="N"/> <input type="button" value="v"/>
Longitude:	<input type="text" value="85"/> Deg	<input type="text" value="14"/> M	<input type="text" value="24.70"/> S	<input type="button" value="W"/> <input type="button" value="v"/>
Horizontal Datum:	<input type="button" value="NAD83"/> <input type="button" value="v"/>			
Site Elevation (SE):	<input type="text" value="760"/> (nearest foot)			
Structure Height :	<input type="text" value="20"/> (nearest foot)			
Traverseway:	<input type="button" value="No Traverseway"/> <input type="button" value="v"/>			
	<small>(Additional height is added to certain structures under 77.9(c)) User can increase the default height adjustment for Traverseway, Private Roadway and Waterway</small>			
Is structure on airport:	<input checked="" type="radio"/> No <input type="radio"/> Yes			

Results

You do not exceed Notice Criteria.





Notice Criteria Tool

[Notice Criteria Tool - Desk Reference Guide V_2018.2.0](#)

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference [CFR Title 14 Part 77.9](#).

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the [FAA Co-location Policy](#)
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

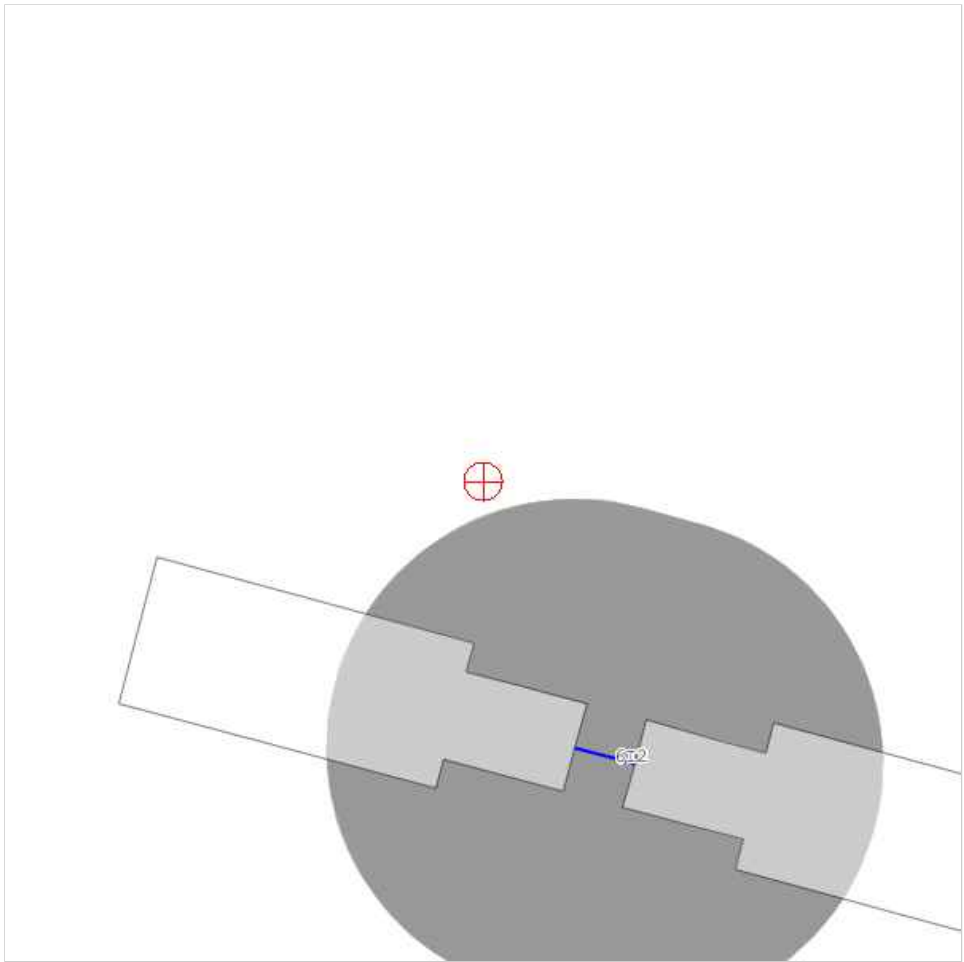
If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the [Air Traffic Areas of Responsibility map](#) for Off Airport construction, or contact the [FAA Airports Region / District Office](#) for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

Latitude:	<input type="text" value="37"/> Deg	<input type="text" value="41"/> M	<input type="text" value="38.04"/> S	<input type="button" value="N"/> <input type="button" value="v"/>
Longitude:	<input type="text" value="85"/> Deg	<input type="text" value="16"/> M	<input type="text" value="32.80"/> S	<input type="button" value="W"/> <input type="button" value="v"/>
Horizontal Datum:	<input type="button" value="NAD83"/> <input type="button" value="v"/>			
Site Elevation (SE):	<input type="text" value="790"/> (nearest foot)			
Structure Height :	<input type="text" value="20"/> (nearest foot)			
Traverseway:	<input type="button" value="No Traverseway"/> <input type="button" value="v"/>			
	<small>(Additional height is added to certain structures under 77.9(c)) User can increase the default height adjustment for Traverseway, Private Roadway and Waterway</small>			
Is structure on airport:	<input checked="" type="radio"/> No <input type="radio"/> Yes			

Results

You do not exceed Notice Criteria.





Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference [CFR Title 14 Part 77.9](#).

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the [FAA Co-location Policy](#)
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

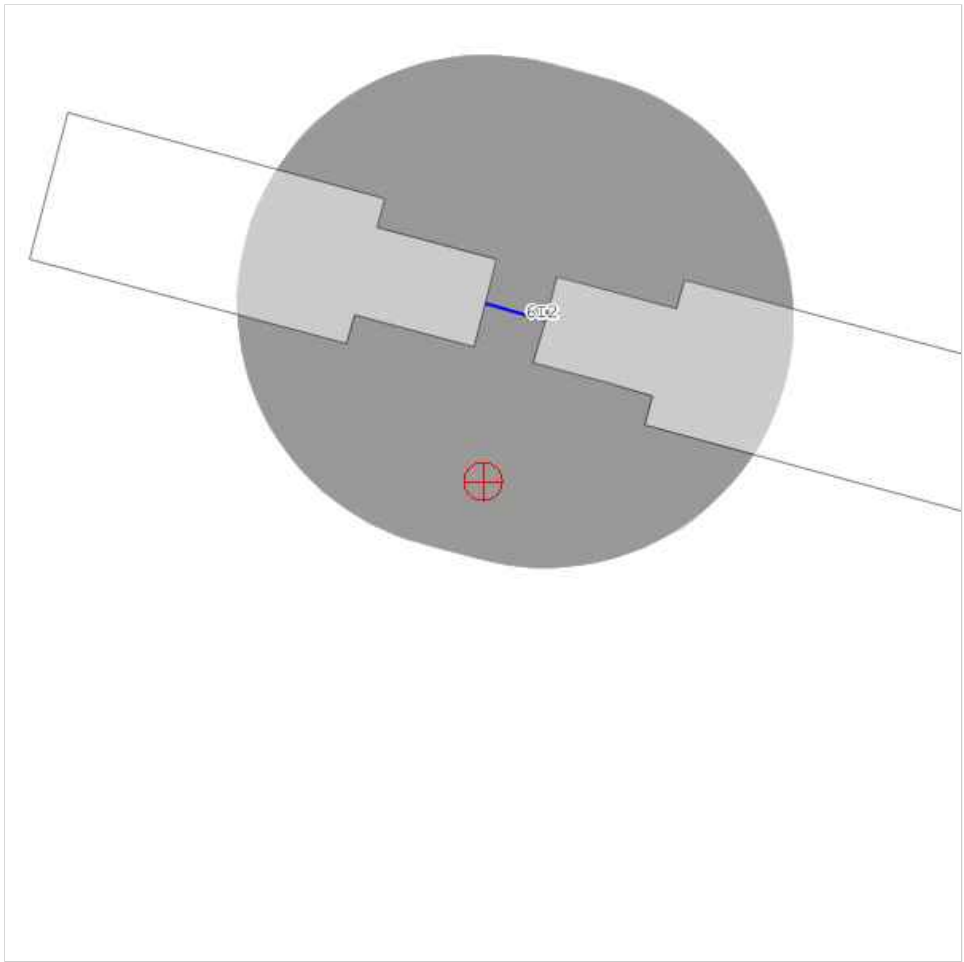
If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the [Air Traffic Areas of Responsibility map](#) for Off Airport construction, or contact the [FAA Airports Region / District Office](#) for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

Latitude:	<input type="text" value="37"/> Deg	<input type="text" value="35"/> M	<input type="text" value="43.98"/> S	<input type="button" value="N"/> <input type="button" value="v"/>
Longitude:	<input type="text" value="85"/> Deg	<input type="text" value="15"/> M	<input type="text" value="03.16"/> S	<input type="button" value="W"/> <input type="button" value="v"/>
Horizontal Datum:	<input type="button" value="NAD83"/> <input type="button" value="v"/>			
Site Elevation (SE):	<input type="text" value="847"/> (nearest foot)			
Structure Height :	<input type="text" value="20"/> (nearest foot)			
Traverseway:	<input type="button" value="No Traverseway"/> <input type="button" value="v"/>			
	<small>(Additional height is added to certain structures under 77.9(c)) User can increase the default height adjustment for Traverseway, Private Roadway and Waterway</small>			
Is structure on airport:	<input checked="" type="radio"/> No <input type="radio"/> Yes			

Results

You do not exceed Notice Criteria.





Notice Criteria Tool

[Notice Criteria Tool - Desk Reference Guide V_2018.2.0](#)

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference [CFR Title 14 Part 77.9](#).

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the [FAA Co-location Policy](#)
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the [Air Traffic Areas of Responsibility map](#) for Off Airport construction, or contact the [FAA Airports Region / District Office](#) for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

Latitude:	<input type="text" value="37"/> Deg	<input type="text" value="35"/> M	<input type="text" value="44.44"/> S	<input type="button" value="N"/> <input type="button" value="v"/>
Longitude:	<input type="text" value="85"/> Deg	<input type="text" value="16"/> M	<input type="text" value="19.09"/> S	<input type="button" value="W"/> <input type="button" value="v"/>
Horizontal Datum:	<input type="button" value="NAD83"/> <input type="button" value="v"/>			
Site Elevation (SE):	<input type="text" value="851"/> (nearest foot)			
Structure Height :	<input type="text" value="20"/> (nearest foot)			
Traverseway:	<input type="button" value="No Traverseway"/> <input type="button" value="v"/>			
	<small>(Additional height is added to certain structures under 77.9(c)) User can increase the default height adjustment for Traverseway, Private Roadway and Waterway</small>			
Is structure on airport:	<input checked="" type="radio"/> No <input type="radio"/> Yes			

Results

You do not exceed Notice Criteria.

