

Glover Creek Solar, LLC
Kentucky State Board on Electric
Generation and Transmission Application

Application Documents

Case No. 2020-00043

March 2020



**APPLICATION OF GLOVER CREEK SOLAR, LLC
FOR A CONSTRUCTION CERTIFICATE TO CONSTRUCT A
MERCHANT ELECTRIC GENERATING FACILITY
METCALFE COUNTY, KENTUCKY
CASE NO. 2020-00043**

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1. Applicant Information

REQUIREMENT: per KRS 278.706 (2)(a); *The name, address, and telephone number of the person proposing to construct and own the merchant electric generating facility*

COMPLIANCE: Please see below for the requested information.

- Name: Glover Creek Solar, LLC
Attn: Carson Harkrader
- Address: 400 W Main St
Suite 503
Durham, NC 27701
- Phone: (919) 682-6822

2. Description of Proposed Site

REQUIREMENT: per KRS 278.706 (2)(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*

COMPLIANCE: The proposed Glover Creek Solar Facility (the Project) will be a 55 megawatt alternating current (MWac) photovoltaic electricity generation facility. The project is to be located in Metcalfe County, at approximately 7449 Randolph-Summer Shade Road, Summer Shade, KY 42166. The power generated by the project will be sold on the open market through the existing transmission line that crosses the property.

The project will cover approximately 400 acres which has historically been used as pasture and crop land. The equipment onsite will consist of crystalline solar panels, an energy storage system, inverters, substation transformer, and an associated wiring and balance of system.

The racking system, which is used to fix the solar panels to the ground, has a small footprint that does not use any concrete, and the panels are not considered impervious as rainwater can travel over and around the panels, making this a low impact development. A fence meeting the national electrical code requirements, typically a six-foot fence with three strings of barbed wire at the top, will enclose the facility. Where there are potential visual impacts created by the facility, a 15' wide vegetative buffer will be planted as shown on the attached site plan map. The buffer will consist of two staggered rows of evergreen shrubs at least three feet in height at time of planting.

A map showing residential structures, schools, and public and private parks with regards to the proposed project are located in Attachment A.

3. Public Notice Evidence

REQUIREMENT: per KRS 278.706 (2)(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*

COMPLIANCE: A sample letter that was send out to landowners whose property borders the proposed site, followed by the list of addresses and names of those landowners who were sent notices on March 3, 2020 is contained in Attachment B. Two copies of this notice were mailed to each landowner, one via regular US Mail and one via Certified mail; see Attachment B for certified mail receipts.

Also contained in Attachment B is the affidavit of publication of the notice published in the Edmonton Herald-News on March 5, 2020, which is the newspaper of general circulation in Metcalfe County, as well as a scanned copy of that notice.

4. Compliance with Local Ordinances and Regulations

REQUIREMENT: per KRS 278.706 (2)(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 as provided under KRS 278.704(3)*

COMPLIANCE: The Project lies in Metcalfe County. The county has not enacted any zoning ordinances or setback requirements for the location of the Project. There are no setback requirements established by a planning and zoning commission for the location of the project. Glover Creek Solar, LLC, certifies that the Project will be in compliance with all local ordinances and regulations concerning noise control, with any applicable local planning and zoning ordinances. A statement certifying these facts is submitted as Attachment J.

5. Setback Requirements

REQUIREMENT: per KRS 278.706 (2)(e); *If the facility is not proposed to be located on a site of a former coal processing plant and the facility will use on-site waste coal as a fuel source or in an area where a planning and zoning commission has established a setback requirement pursuant to KRS 278.704(3), a statement that the exhaust stack of the proposed facility and any wind turbine is at least one thousand (1,000) feet from the property boundary of any adjoining property owner and all proposed structures or facilities used for generation of electricity are two thousand (2,000) feet from any residential neighborhood, school, hospital, or nursing home facility, unless facilities capable of generating ten megawatts (10MW) or more currently exist on the site. If the facility is proposed to be located on a site of a former coal processing plant and the facility will use on-site waste coal as a fuel source, a statement that the proposed site is compatible with the setback requirements provided under KRS 278.704(5). If the facility is proposed to be located in a jurisdiction that has established setback requirements pursuant to KRS 278.704(3), a statement that the proposed site is in compliance with those established setback requirements:*

COMPLIANCE: Glover Creek Solar is not proposed to be located on the site of a former coal processing plant, nor will it use any waste coal as a fuel source. The Project site does not have any existing electricity generating facilities on-site. Metcalfe County has no established setback requirements for this location, nor has a planning unit enacted any setback requirements for this location, per the information provided in Section 4.

The Project will not include any exhaust stacks or wind turbines as part of the facility, therefore there is no established setback requirements from the property boundary of any adjoining property owner to the energy generating facilities.

There are residential neighborhoods (as defined by KRS 278.700 (6)) within two thousand (2,000) of the Project's facilities. Pursuant to KRS 278.704 (4), Glover Creek Solar will be moving the Siting Board for a deviation from this setback requirement. See Attachment A for a map showing the residential neighborhoods in relation to the project.

6. Public Notice Report

REQUIREMENT: per KRS 278.706 (2)(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*

COMPLIANCE: Glover Creek Solar, LLC, through its parent Carolina Solar Energy III, LLC (collectively, “**Carolina Solar Energy**”), has made a substantial effort to engage the public in numerous ways regarding the Glover Creek solar power project in Metcalfe County (the “**Glover Creek Project**”).

A public meeting was held at 6:00pm on December 12, 2019 to inform the public about the Project and receive comments from the public. This meeting was held at the Metcalfe County Government Center, which is located in central Edmonton. A notice announcing the public meeting was printed in the Edmonton Herald-News on November 21, 2019. The Project also mailed letters to all adjoining landowners notifying them of the public meeting. The affidavit of publication for this notice is located in Attachment C, and a copy of the letter sent to neighboring landowners is in Attachment C. Also in Attachment C are images from the public meeting and copies of the newspaper notice.

In addition to the public meeting, the Project held a neighborhood dinner at 6:00pm on December 11, 2019 at the Edmonton City Grill. The Project invited all the neighboring landowners, as well as various local officials, include Judge-Executive of Metcalfe County Harold Stilts to the dinner. The dinner was attended by 1 neighbor and landowners involved in the project. Attendees were shown and invited to inspect enlarged satellite images showing the exact location of the proposed solar array and the proposed Project layout. In addition, displays and handout materials were available on other topics including environmental health & safety

of photovoltaics, specifics regarding the battery energy storage system, and the impact of solar projects on property values (these maps, layouts and handouts were also available for review at the public meeting described above). Experts who were present at the dinner, and available to answer questions from neighbors included:

- Carson Harkrader, CEO of Carolina Solar Energy, made welcome and introductory comments.
- Mark Burton, electrical and energy storage engineer for the Project.

The meeting also afforded attendees the opportunity for informal conversations with representatives of Carolina Solar Energy about questions and concerns.

The following is a brief description of other public involvement activities, in addition to the public meeting and neighborhood dinner, undertaken prior to the submission of this Application. Carolina Solar Energy will continue these efforts and will participate in any public notice, comment and hearings which may be initiated as part of ongoing permitting activities.

- On numerous occasions from September, 2019, through March, 2020, representatives of Carolina Solar Energy have met in Edmonton, KY, with **Harold Stilts, Metcalfe County Judge-Executive**, and discussed the Glover Creek Project.
- On October 28, 2019, Solomon Van Meter, Community Representative for Carolina Solar Energy, met with the Director and faculty members of the **Conn Center for Renewable Energy Research at the J.B. Speed School of Engineering, University of Louisville**, to discuss various solar projects, including the Glover Creek Project.
- On October 29, 2019, Carolina Solar Energy co-hosted a day-long Utility Scale Solar *Workshop for Public Officials* at the Marion County Public Library, Lebanon, KY (announcement/agenda attached). The workshop was attended by approximately thirty (30) public officials from various Kentucky counties in which solar power generation projects have been proposed, including **Harold Stilts, Metcalfe County Judge-Executive, and Kenny Scott, Metcalfe County Fiscal Court Magistrate**. The workshop featured formal presentations on topics including environmental health & safety, property values, land leasing, and economic benefits to hosting counties, as well as informal meetings between representatives of Carolina Solar Energy and these Metcalfe County officials.
- On December 11, 2019, Carolina Solar Energy hosted a dinner and informational session at the City Grill in Edmonton, KY, for **landowners participating in the project and adjoining the project area**. The meeting featured formal presentations by Carson Harkrader, CEO of Carolina Solar Energy, and a solar power and energy storage engineer. Neighbors were also shown and invited to inspect enlarged satellite images showing the exact location of the proposed solar array. In addition, displays and

handout materials were available on other topics including environmental health & safety of photovoltaics and the impact of solar power projects on property values. The meeting also afforded neighbors the opportunity for informal conversations with representatives of Carolina Solar Energy about questions and concerns.

- On December 12, 2019, representatives Carolina Solar Energy, including Carson Harkrader, CEO, met with **Susan Davis and Edwin Durant, adjoining landowners**, and discussed concerns about the vegetative screening and potential environmental impacts of the Glover Creek Project.
- On December 12, 2019, Carolina Solar Energy hosted an **open community meeting** at the Metcalfe County Government Center. The meeting was advertised in the Edmonton Herald-News and announced at a meeting of the Metcalfe County Fiscal Court. The meeting featured formal presentations by Carson Harkrader, CEO of Carolina Solar Energy, and Chris Jones, Manager of Project Development for Carolina Solar Energy. Attendees were shown and invited to inspect enlarged satellite images showing the exact location of the proposed solar array. In addition, displays and handout materials were available on other topics including environmental health & safety of photovoltaics and the impact of solar power projects on property values. The meeting also afforded attendees the opportunity for informal conversations with representatives of Carolina Solar Energy about questions and concerns.
- On January 8, 2020, Solomon Van Meter, Community Representative for Carolina Solar Energy, met with **Barry Gilley, County Attorney of Metcalfe County**, regarding the Glover Creek Project and the Industrial Revenue Bond Inducement Resolution before the Metcalfe County Fiscal Court.
- On January 14, 2020, Carolina Solar Energy, by its attorney, made an appearance at the **Metcalfe County Fiscal Court meeting** at which the Industrial Revenue Bond Inducement Resolution for the Glover Creek Project was considered and voted on.
- On February 12, 2020, representatives of Carolina Solar Energy, including Carson Harkrader, CEO, met in Frankfort, KY, with **various members of the Kentucky Legislature, including Sen. David P. Givens (Senate District 9), and Rep. Bart Rowland (House District 21)**, whose districts include the Glover Creek Project, and discussed the project.
- On February 24, 2020, Solomon Van Meter, Community Representative for Carolina Solar Energy, gave a presentation to the **Board of Directors of the Edmonton-Metcalfe County Industrial Development Authority**, which included **Doug Smith, Mayor of Edmonton**, and **Harold Stilts, Judge-Executive of Metcalfe County**, about the Glover Creek Project.
- On February 24, 2020, Solomon Van Meter, Community Representative for Carolina Solar Energy, gave a presentation to **members of the Summer Shade Volunteer Fire**

Department and other local fire departments in the response area of the Glover Creek Project, and discussed the project.

7. Efforts to locate near Existing Electric Generation

REQUIREMENT: per KRS 278.706 (2)(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;*

COMPLIANCE: It is rare for utility-scale solar projects to be co-located with existing electricity generating infrastructure, such as a coal or natural gas fired power plant. As a result of Applicant's efforts, this project is located on land with existing transmission lines.

The project will interconnect to an on-site, existing transmission line owned by Eastern Kentucky Power Cooperative (EKPC). At the project's expense, EKPC will build a new tap line to interconnect the Project. Information on EKPC and PJM's studies of the interconnection cost and infrastructure are included in the System Impact Study, Attachment E.

Efforts were made to site the Project where there is existing electricity transmission infrastructure. The proposed interconnection is to on-site, existing infrastructure owned by Eastern Kentucky Power Cooperative (EKPC) to be used for the sale and distribution of energy created by the Project.

8. Proof of Service to County and Municipality Officials

REQUIREMENT: per KRS 278.706 (2)(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;*

COMPLIANCE: As indicated in the Certificate of Service, a copy of the Siting Board application for Turkey Creek Solar, LLC was electronically transmitted to the Judge-Executive of Metcalfe County, Harold Stilts on the day this application was filed. On inquiry by Turkey Creek, this individual indicated that they would accept an electronic copy of the application at this time.

9. Effect on Kentucky Electricity Generation System

REQUIREMENT: per KRS 278.706 (2)(i); *An analysis of the proposed facility's projected effect on the electricity transmission system in Kentucky;*

COMPLIANCE: The Project is within the Pennsylvania, Jersey, Maryland Power Pool (PJM) territory. PJM is the Regional Transmission Organization for 13 states including parts of Kentucky, and is therefore managing the interconnection of the project in coordination with Eastern Kentucky Power Cooperative (EKPC), who owns the transmission infrastructure to which the project is proposing to interconnect.

The interconnection study process for PJM involves three study phases; Feasibility Study, System Impact Study, and Facilities Study. A kickoff call with PJM and EKPC was held on April 10, 2019 to begin the three-step study process to the Summer Shade – Patton Rd Jct 69kV transmission line.

The Feasibility Study was completed first. The Feasibility Study Report was issued in July of 2019, and can be found in Attachment D.

A second Feasibility Study was completed in January 2020, to increase the total size of the Project. This Feasibility Study can be found in Attachment E.

The System Impact Study determines potential impacts to the regional electric grid and the need for any network upgrades to mitigate potential impacts. The System Impact Study Report for the Project was issued in February 2020 and can be found in Attachment F.

The third and final step, the Facilities Study, is currently underway and expected to be issued in September 2020. This Facilities Study will be for the total 55 MWac.

10. Effect on Local and Regional Economies

REQUIREMENT: per KRS 278.706 (2)(j); *An analysis of the proposed facility's economic impact on the affected region and the state;*

COMPLIANCE: See the report in Attachment G for a full report on the impact of the Project on local and regional economies. On page 4 of that report, it states:

“The proposed facility will generate lasting and significant positive economic and fiscal impacts on the entire affected region and the state, both immediate impacts during the construction phase and impacts that present over time during the operational phase. The impacts include the creation of hundreds of construction jobs, meaningful expansion of the local tax base, and the benefits of having, for decades to come, a long-term employer and corporate citizen in the region that has a strong commitment to investing in the communities it serves. The investment in this facility brings a multiplier effect that magnifies each of these impacts”

11. Record of Environmental Violations

REQUIREMENT: per KRS 278.706 (2)(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;*

COMPLIANCE: Glover Creek Solar, LLC, nor any entity with ownership interest in the Project, has violated any state or federal environmental laws or regulations. There are no pending actions against Glover Creek Solar, LLC, nor any entity with ownership interest in the Project.

12. Site Assessment Report






REQUIREMENT: per KRS 278.706 (2)(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*

COMPLIANCE: The Site Assessment report is being contemporaneously filed herewith; please see the separate document titled “Glover Creek Solar: Site Assessment Report” and labeled as Attachment H.



Glover Creek Solar Context Map



	Glover Creek Solar Project Outline
	Residential Neighborhoods (as defined in KRS 278.700(6))
	Kentucky Structures
	East Kentucky Power Cooperative Transmission Line
	Kentucky State Roadways

2 mile radius

2,000 foot radius

Unincorporated Community of Summer Shade

*There are no schools or parks within 2 miles of the proposed Glover Creek Solar Project



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

NOTICE OF APPLICATION

Glover Creek Solar, LLC, is proposing to construct and operate a 55-megawatt AC solar energy project in Metcalfe County, Kentucky. The proposed Glover Creek Solar Project will be located on approximately 400 acres along Randolph-Summer Shade Rd, outside of Summer Shade, Kentucky.

Glover Creek Solar, LLC is required to file an application for construction and operation of the proposed facility. This application is subject to the approval of the Kentucky State Siting Board on Electric Generation and Transmission Siting, which can be reached at P.O. Box 615, 211 Sower Boulevard, Frankfort, Kentucky 40602-0615, or via phone at (502) 564-3940.

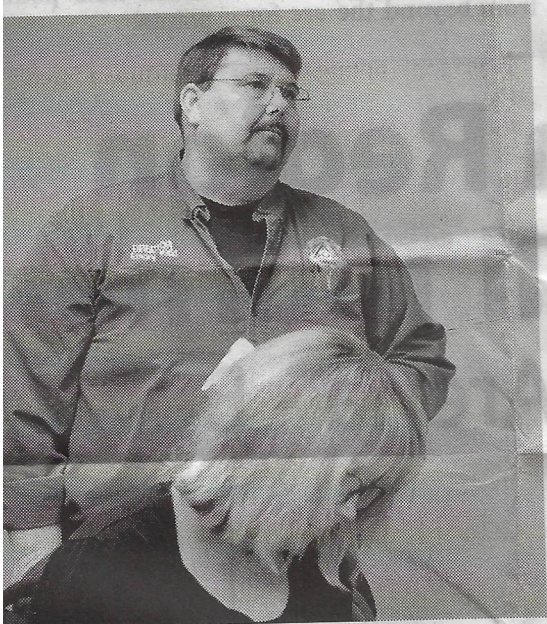
A person who wishes to become a party to a proceeding before the board may, by written motion filed no later than thirty (30) days after the application has been submitted, request leave to intervene.

A party may, upon written motion filed no later than thirty (30) days after an application has been filed, request the board to schedule an evidentiary hearing at the offices of the Public Service Commission, 211 Sower Boulevard, Frankfort, Kentucky

A request for a local public hearing or local public information meeting shall be made by at least three (3) interested persons who reside in the county or municipal corporation in which the pipeline, plant, or transmission line is proposed to be located. The request shall be made in writing and shall be filed within thirty (30) days following the filing of a completed application.

Any questions related to the application or its process may be directed to the Kentucky State Siting Board, which can be reached at P.O. Box 615, 211 Sower Boulevard, Frankfort, Kentucky 40602-0615, or via phone at (502) 564-3940.

om page one



Kidd updating fiscal court on the fence.

estimated cost of new machines is 192.00.

ey added that this ge will eventually be a necessity, be- the parts for the nt machines are nger being manu- red, making them lete sooner rather later.

m not asking for action at this point" ey added. "I am asking that you be e as we move for- l that this expense ming. There are no ions this year, so will save money."

machines in use are between elev- n fifteen years old, were purchased a federal funding, ch is not available at time.

ver fence ough it was not on agenda Emory Kidd present to address court about the need a fence around the er in Summer Shade, ch was mentioned at February 11th Fiscal irt meeting.

priate type of fence.

In other news
A resolution to move forward with the Summer Shade Pedestrian Project funded by the state was unanimously approved; A resolution denoting the current listing of roads on the county road system as provided by BRADD GIS mapping was also unanimously approved.

An Insured Cash Sweep (ICS) Deposit Placement Agreement with Edmon- ton State Bank was ap- proved by fiscal court.

Temporary/seasonal employment was dis- cussed.

"We had some employ- ees listed as contract la- bor, but we cannot call them that," said Judge/ Executive Harold Stilts.

"Contract employees by law cannot be directed in any way, we have to call them seasonal or temporary workers," added County Attorney, Barry Gilley.

Budget transfers and claims were all ap- proved.

U.S. Attorney Russell Coleman appointed to working group

of Presidential commission on law enforcement

United States Attorney's Office, Western District of Kentucky

United States Attorney Russell Coleman will serve on President Donald Trump's Commission on Law Enforcement and the Administration of Justice Law Enforcement Recruitment and Training Working Group. The Working Group will hear from experts and practitioners with firsthand experience within law enforcement about best practices, challenges, and innovative strategies to address and enhance law enforcement operations and processes, including the recruitment and training of law enforcement.

"Our very finest in Kentucky and the nation wear a badge," said U.S. Attorney Russell Coleman. "I am honored to support the President's Law Enforcement Commission through service on this effort to explore the critically important challenges of recruitment, retention, and training of our law enforcement colleagues."

The Working Group meeting will focus on the issues affecting officer recruitment, retention, and training. The group will evaluate how to improve and increase the enlistment, retention, and train-

mentations to submit to the Commission. The Commission meeting will include topic-specific panel presentations, during which the President's Law Enforcement Commission will hear from a number of witnesses, participating in topic-specific panel discussions, who will share information about officer safety, health, and wellness needs, challenges, lessons learned, best practices, successful programs, and other information that directly address the police of-

ficer safety, health, and wellness focus area.

On October 28, 2019, President Donald J. Trump signed Executive Order No. 13896, authorizing and designating the Attorney General to create such a Commission that would explore modern issues affecting law enforcement that most impact the ability of American policing to reduce crime. Attorney General William P. Barr announced the estab-

See **COLEMAN**, Page 11

NOTICE OF APPLICATION

Glover Creek Solar, LLC, is proposing to construct and operate a 55-megawatt AC solar energy project located at 7449 Randolph-Summer Shade Road, Summer Shade, Metcalfe County, Kentucky. The proposed Glover Creek Solar Project will consist of approximately 400 acres of solar photovoltaic panels and associated racking, 13 inverters, battery energy storage system which will be co-located at each inverter, and a project substation transformer.

Glover Creek Solar, LLC is required to file an application for construction and operation of the proposed facility. This application is subject to the approval of the Kentucky State Siting Board on Electric Generation and Transmission Siting, which can be reached at P.O. Box 615, 211 Sower Boulevard, Frankfort, Kentucky 40602-0615, or via phone at (502) 564-3940.

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A request for a local public hearing or local public information meeting shall be made by at least three (3) interested persons who reside in the county or municipal corporation in which the pipeline, plant, or transmission line is proposed to be located. The request shall be made in writing and shall be filed within thirty (30) days following the filing of a completed application.

Any questions related to the application or its process may be directed to the Kentucky State Siting Board, which can be reached at P.O. Box 615, 211 Sower Boulevard, Frank-

AFFIDAVIT

This is to certify that the 4 day of March,
2020 an ad for Glover Creek Solar LLC

was published in the regular edition of the Edmonton
Herald News, a newspaper published for general
circulation in the City of Edmonton, Metcalfe
County and adjoining counties.

Dam Wright

COMMONWEALTH OF KENTUCKY

County of Hart

The foregoing was subscribed and sworn to before me by _____
Dam Wright on this 4 day of March
_____ in _____.

Leslie Logan

Notary Public, Kentucky, State-At-Large

My commission expires: 02-09-23

Parcel ID	First Name	Last Name	Address	Locale
016-00-00-021.00	DELBERT	VIBBERT	1573 PITCOCK RD	SUMMER SHADE, KY 42166
017-00-00-003.00	BETTY P	MILLER	92 PITCOCK RD	SUMMER SHADE, KY 42166
017-00-00-003.02	CASH & JOHANNA FUGATE	BURROUGHS KENNY & CINDY & BARRY	PO BOX 73	SUMMER SHADE, KY 42166
017-00-00-003.04	JEFF & JOSHUA	PITCOCK	94 PITCOCK RD	SUMMER SHADE, KY 42166
017-00-00-003.05	SUSAN DAVIS & EDWIN	DURANT	684 PITCOCK RD	SUMMER SHADE, KY 42166
017-00-00-004.00	SUSAN DURANT	c/o BEETS FAMILY TRUST	684 PITCOCK RD	SUMMER SHADE, KY 42166
017-00-00-004.01	JAMES	SHAW	1056 PITCOCK RD	SUMMER SHADE, KY 42166
017-00-00-008.02	RYAN BENJAMIN & DIANNA SUE	WHITLOW	380 PEDIGO LANE	SUMMER SHADE, KY 42166
017-00-00-008.03	MATTHEW THOMAS & ALLISON PAIGE	WHITLOW	125 PEDIGO LANE	SUMMER SHADE, KY 42166
017-00-00-011.01	GLEN DOUGLAS & PAULINE ANN FRYE	PERKINS	44 JIM PAIGE RD	SUMMER SHADE, KY 42166
017-00-00-011.04	PAULINE	FRYE	29 JIM PAGE RD	SUMMER SHADE, KY 42166
017-00-00-011.06	ANDERSON WENDELL L ESTATE		5700 PINETREE DR	FT PIERCE, FL 34982
017-00-00-011.07	JULIE	COOP	1524 SUMMER SHADE RD	SUMMER SHADE, KY 42166
017-00-00-022.00	DICKERSON LUMBER CO		PO BOX 125	SUMMER SHADE, KY 42166
017-00-00-023.00	KEITH V & MARY R	SPEARS	1285 SUMMER SHADE RD	SUMMER SHADE, KY 42166
017-00-00-026.01	JAMES B	ATWELL	222 BIG JACK RD	SUMMER SHADE, KY 42166
017-00-00-028.00	GABE & KELLI	BROWN	1750 SUMMER SHADE RD	SUMMER SHADE, KY 42166
029-00-00-013.01	HOMESTEADER LLC		100 W 3RD ST	PARK CITY, KY 42160
029-00-00-013.02	BROWN GABREAL LEE & KELLI RENA BLYTHE		1750 SUMMER SHADE RD	SUMMER SHADE, KY 42166
029-00-00-016.00	BRANSTETTER TRUST SS X1 DANNY H BRANSTETTER TRUSTEE Donald and Mary	Sandidge	PO BOX 135 47 Nunnally Rd	SUMMER SHADE, KY 42166



400 West Main, Suite 503 Durham, NC 27701
919-682-6822 www.carolinasolarenergy.com

[Name]
[Address 1]
[Address 2]

CERTIFIED MAIL, RETURN RECEIPT REQUESTED
With copy to Regular US Mail

Re: Glover Creek Solar Notice of Application

Dear [Name],

This letter is to inform you that Glover Creek Solar, LLC is proposing to construct and operate a 55-megawatt solar photovoltaic facility adjacent to your property in Metcalfe County. The Glover Creek Solar Project is proposed to be located at 7449 Randolph-Summer Shade Rd, Summer Shade, KY. The proposed facility and its applicants previously hosted a public meeting about the project on December 12th, 2019 at the Metcalfe County Government Building at 201 N. Main Street Edmonton, KY.

The solar technology used is photovoltaic, and the solar panels sit on racks that are up to 15 feet tall that rotate once per day on a North-South axis to track the sun throughout the day. The facility will contain solar panels, inverters, a battery energy storage system, a project substation transformer, and an associated balance of wiring system. The Glover Creek Solar Project will be sited on approximately 400 acres of land.

Glover Creek Solar, LLC is required to file an application for construction and operation of the proposed facility. This application is subject to the approval of the Kentucky State Siting Board on Electric Generation and Transmission Siting, which can be reached at P.O. Box 615, 211 Sower Boulevard, Frankfort, Kentucky 40602-0615, or via phone at (502) 564-3940.

A person who wishes to become a party to a proceeding before the board may, by written motion filed no later than thirty (30) days after the application has been submitted, request leave to intervene.

A party may, upon written motion filed no later than thirty (30) days after an application has been filed, request the board to schedule an evidentiary hearing at the offices of the Public Service Commission, 211 Sower Boulevard, Frankfort, Kentucky 40602-0615.

A request for a local public hearing or local public information meeting shall be made by at least three (3) interested persons who reside in the county or municipal corporation in which the plant is proposed to be located. The request shall be made in writing and shall be filed within thirty (30) days following the filing of a completed application.

Any questions related to the application or its process may be directed to the Kentucky State Siting Board, referenced above.

Sincerely,

Carson Harkrader
CEO



400 West Main, Suite 503 Durham, NC 27701
919-682-6822 www.carolinasolarenergy.com

[Name]
[Address 1]
[Address 2]

CERTIFIED MAIL, RETURN RECEIPT REQUESTED

With copy to Regular US Mail

Re: Glover Creek Solar Notice of Application

Dear [Name],

This letter is to inform you that Glover Creek Solar, LLC is proposing to construct and operate a 55-megawatt solar photovoltaic facility adjacent to your property in Metcalfe County. The Glover Creek Solar Project is proposed to be located at 7449 Randolph-Summer Shade Rd, Summer Shade, KY. The proposed facility and its applicants previously hosted a public meeting about the project on December 12th, 2019 at the Metcalfe County Government Building at 201 N. Main Street Edmonton, KY.

The solar technology used is photovoltaic, and the solar panels sit on racks that are up to 15 feet tall that rotate once per day on a North-South axis to track the sun throughout the day. The facility will contain solar panels, inverters, a battery energy storage system, a project substation transformer, and an associated balance of wiring system. The Glover Creek Solar Project will be sited on approximately 400 acres of land.

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Any questions related to the application or its process may be directed to the Kentucky State Siting Board, referenced above.

Sincerely,

Carson Harkrader
CEO

7019 2280 0001 0518 0244

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SUMMER SHADE, KY 42166

Certified Mail Fee	\$3.55
Extra Services & Fees (check box, add fee as appropriate)	\$2.85
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

0701 75
DURHAM MPO
MAR - 3 2020
Postmark Here
27701-9998
03/03/2020

Postage	\$0.55
Total Postage and Fees	\$6.95

Sent To *Teff and Joshua Pitcock*
Street and Apt. No., or PO Box No. *99 Pitcock Rd*
City, State, ZIP+4® *Summer Shade, KY 42166*

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 2280 0001 0518 0220

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SUMMER SHADE, KY 42166

Certified Mail Fee	\$3.55
Extra Services & Fees (check box, add fee as appropriate)	\$2.85
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

0701 75
DURHAM MPO
MAR - 3 2020
Postmark Here
27701-9998
03/03/2020

Postage	\$0.55
Total Postage and Fees	\$6.95

Sent To *Betty Miller*
Street and Apt. No., or PO Box No. *92 Pitcock Rd*
City, State, ZIP+4® *Summer Shade, KY 42166*

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 2280 0001 0518 0213

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SUMMER SHADE, KY 42166

Certified Mail Fee	\$3.55
Extra Services & Fees (check box, add fee as appropriate)	\$2.85
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

0701 75
DURHAM MPO
MAR - 3 2020
Postmark Here
27701-9998
03/03/2020

Postage	\$0.55
Total Postage and Fees	\$6.95

Sent To *Delbert & Verbera*
Street and Apt. No., or PO Box No. *1573 Pitcock Rd*
City, State, ZIP+4® *Summer Shade, KY 42166*

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 2280 0001 0518 2057

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SUMMER SHADE, KY 42166

Certified Mail Fee	\$3.55
Extra Services & Fees (check box, add fee as appropriate)	\$2.85
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

0701 75
DURHAM MPO
MAR - 3 2020
Postmark Here
27701-9998
03/03/2020

Postage	\$0.55
Total Postage and Fees	\$6.95

Sent To *Susan Parry & Edna Dewart*
Street and Apt. No., or PO Box No. *684 Pitcock Rd*
City, State, ZIP+4® *Summer Shade, KY 42166*

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 2280 0001 0518 2071

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SUMMER SHADE, KY 42166

Certified Mail Fee	\$3.55
Extra Services & Fees (check box, add fee as appropriate)	\$2.85
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

0701 75
DURHAM MPO
MAR - 3 2020
Postmark Here
27701-9998
03/03/2020

Postage	\$0.55
Total Postage and Fees	\$6.95

Sent To *James Shaw*
Street and Apt. No., or PO Box No. *1056 Pitcock Rd*
City, State, ZIP+4® *Summer Shade, KY 42166*

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 2280 0001 0518 2064

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SUMMER SHADE, KY 42166

Certified Mail Fee	\$3.55
Extra Services & Fees (check box, add fee as appropriate)	\$2.85
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

0701 75
DURHAM MPO
MAR - 3 2020
Postmark Here
27701-9998
03/03/2020

Postage	\$0.55
Total Postage and Fees	\$6.95

Sent To *Susan Dewart c/o Beets Family Trust*
Street and Apt. No., or PO Box No. *684 Pitcock Rd*
City, State, ZIP+4® *Summer Shade, KY 42166*

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 2280 0001 0518 2102

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SUMMER SHADE, KY 42166

OFFICIAL USE

Certified Mail Fee	\$3.55	0701
\$		75
Extra Services & Fees (check box, add fee as appropriate)	\$2.85	
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
Postage	\$0.55	
Total Postage and Fees	\$6.95	03/03/2020

Sent To *Glen Douglas Perky & Pauline Fyre*
 Street and Apt. No., or PO Box No. *44 Jim Paige Rd*
 City, State, ZIP+4® *Summer Shade, KY 42166*

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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SUMMER SHADE, KY 42166

OFFICIAL USE

Certified Mail Fee	\$3.55	0701
\$		75
Extra Services & Fees (check box, add fee as appropriate)	\$2.85	
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
Postage	\$0.55	
Total Postage and Fees	\$6.95	03/03/2020

Sent To *Matthew & Allison Whitlow*
 Street and Apt. No., or PO Box No. *125 Pedigo Ln*
 City, State, ZIP+4® *Summer Shade, KY 42166*

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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SUMMER SHADE, KY 42166

OFFICIAL USE

Certified Mail Fee	\$3.55	0701
\$		75
Extra Services & Fees (check box, add fee as appropriate)	\$2.85	
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
Postage	\$0.55	
Total Postage and Fees	\$6.95	03/03/2020

Sent To *Ryan & Dianna Whitlow*
 Street and Apt. No., or PO Box No. *380 Pedigo Ln*
 City, State, ZIP+4® *Summer Shade, KY 42166*

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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FORT PIERCE, FL 34982

OFFICIAL USE

Certified Mail Fee	\$3.55	0701
\$		75
Extra Services & Fees (check box, add fee as appropriate)	\$2.85	
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
Postage	\$0.55	
Total Postage and Fees	\$6.95	03/03/2020

Sent To *Anderson Wendell Estate*
 Street and Apt. No., or PO Box No. *5700 Pinetree Dr*
 City, State, ZIP+4® *Ft Pierce, FL 34982*

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 2280 0001 0518 2149

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SUMMER SHADE, KY 42166

OFFICIAL USE

Certified Mail Fee	\$3.55	0701
\$		75
Extra Services & Fees (check box, add fee as appropriate)	\$2.85	
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
Postage	\$0.55	
Total Postage and Fees	\$6.95	03/03/2020

Sent To *Dickson Lumber Co*
 Street and Apt. No., or PO Box No. *PO Box 125*
 City, State, ZIP+4® *Summer Shade, KY 42166*

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 2280 0001 0518 2132

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SUMMER SHADE, KY 42166

OFFICIAL USE

Certified Mail Fee	\$3.55	0701
\$		75
Extra Services & Fees (check box, add fee as appropriate)	\$2.85	
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
Postage	\$0.55	
Total Postage and Fees	\$6.95	03/03/2020

Sent To *Jalie Coop*
 Street and Apt. No., or PO Box No. *1524 Summer Shade Rd*
 City, State, ZIP+4® *Summer Shade, KY 42166*

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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SUMMER SHADE, KY 42166

OFFICIAL USE

Certified Mail Fee	\$3.55
Extra Services & Fees (check box, add fee as appropriate)	\$2.85
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage	\$0.55
Total Postage and Fees	\$6.95



Sent To *Gabe & Kelli Brown*
 Street and Apt. No., or PO Box No. *1750 Summer Shade Rd*
 City, State, ZIP+4® *Summer Shade, KY 42166*

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 2280 0001 0518 2163

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OFFICIAL USE

Certified Mail Fee	\$3.55
Extra Services & Fees (check box, add fee as appropriate)	\$2.85
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage	\$0.55
Total Postage and Fees	\$6.95



Sent To *James Atwell*
 Street and Apt. No., or PO Box No. *222 Big Jack Rd*
 City, State, ZIP+4® *Summer Shade, KY 42166*

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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SUMMER SHADE, KY 42166

OFFICIAL USE

Certified Mail Fee	\$3.55
Extra Services & Fees (check box, add fee as appropriate)	\$2.85
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage	\$0.55
Total Postage and Fees	\$6.95



Sent To *Kate & Mary Spears*
 Street and Apt. No., or PO Box No. *1285 Summer Shade Rd*
 City, State, ZIP+4® *Summer Shade, KY 42166*

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SUMMER SHADE, KY 42166

OFFICIAL USE

Certified Mail Fee	\$3.55
Extra Services & Fees (check box, add fee as appropriate)	\$2.85
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage	\$0.70
Total Postage and Fees	\$7.10



Sent To *Danny Branstetter*
 Street and Apt. No., or PO Box No. *PO Box 135*
 City, State, ZIP+4® *Summer Shade, KY 42166*

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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PARK CITY, KY 42160

OFFICIAL USE

Certified Mail Fee	\$3.55
Extra Services & Fees (check box, add fee as appropriate)	\$2.85
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage	\$0.70
Total Postage and Fees	\$7.10



Sent To *Home stender LLC*
 Street and Apt. No., or PO Box No. *100 W 3rd St*
 City, State, ZIP+4® *Park City, KY 42160*

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 2280 0001 0518 2187

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SUMMER SHADE, KY 42166

OFFICIAL USE

Certified Mail Fee	\$3.55
Extra Services & Fees (check box, add fee as appropriate)	\$2.85
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage	\$0.70
Total Postage and Fees	\$7.10



Sent To *Cabreal Brown & Kelli Blythe*
 Street and Apt. No., or PO Box No. *1750 Summer Shade Rd*
 City, State, ZIP+4® *Summer Shade, KY 42166*

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 2280 0001 0518 2217

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SUMMER SHADE, KY 42166

Certified Mail Fee	\$3.55
Extra Services & Fees (check box, add fee as appropriate)	\$2.85
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.55
Total Postage and Fees	\$6.95



Sent To *Donald + Mary Sandridge*
 Street and Apt. No., or PO Box No. *47 Nunnally Rd*
 City, State, ZIP+4® *Summer Shade, KY 42166*
 PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

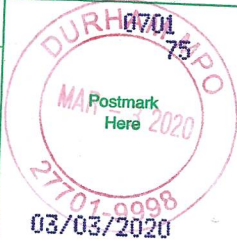
7019 2280 0001 0518 2118

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SUMMER SHADE, KY 42166

Certified Mail Fee	\$3.55
Extra Services & Fees (check box, add fee as appropriate)	\$2.85
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.55
Total Postage and Fees	\$6.95



Sent To *Pauline Foye*
 Street and Apt. No., or PO Box No. *29 Jim Page Rd*
 City, State, ZIP+4® *Summer Shade, KY 42166*
 PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

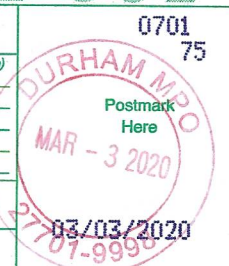
7019 2280 0001 0518 0237

U.S. Postal Service™
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For delivery information, visit our website at www.usps.com®.

SUMMER SHADE, KY 42166

Certified Mail Fee	\$3.55
Extra Services & Fees (check box, add fee as appropriate)	\$2.85
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.55
Total Postage and Fees	\$6.95



Sent To *Cash + Johanna Foye + Burroughs*
 Street and Apt. No., or PO Box No. *PO Box 73*
 City, State, ZIP+4® *Summer Shade, KY 42166*
 PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

NOTICE OF PUBLIC MEETING

Glover Creek Solar, LLC, is proposing to construct and operate a solar energy project in Metcalfe County, Kentucky. The proposed Glover Creek Solar Project will be located on approximately 320 acres off of Randolph-Summer Shade Road, near the community of Summer Shade in Metcalfe County, Kentucky. A public meeting to inform the community about the project will take place on Thursday, December 12, 2019 at 6PM at the Metcalfe County Government Building at 201 N. Main Street Edmonton, KY 42129.

The proposed photovoltaic solar project will consist of solar panels with an approximate maximum height of 15 feet, inverters, an energy storage system, associated wiring and balance of system, and a substation. The power generated by the project will be linked to the electric transmission grid via the existing transmission easement that crosses the property. The project will install a visual vegetative buffer along the perimeter of the project that will be comprised of two staggered rows of native, evergreen plantings.

Anyone with questions about the December 12th public meeting or the Glover Creek Solar Project may request information by emailing tcaron@carolinasolarenergy.com or calling (919) 682-6822.

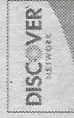
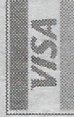
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NOTICE OF PUBLIC MEETING

Glover Creek Solar, LLC, is proposing to construct and operate a solar energy project in Metcalfe County, Kentucky. The proposed Glover Creek Solar Project will be located on approximately 320 acres off of Randolph-Summer Shade Road, near the community of Summer Shade in Metcalfe County, Kentucky. A public meeting to inform the community about the project will take place on Thursday, December 12, 2019 at 6PM at the Metcalfe County Government Building at 201 N. Main Street Edmonon, KY 42129.

The proposed photovoltaic solar project will consist of solar panels with an approximate maximum height of 15 feet, inverters, an energy storage system, associated wiring and balance of system, and a substation. The power generated by the project will be linked to the electric transmission grid via the existing transmission easement that crosses the property. The project will install a visual vegetative buffer along the perimeter of the project that will be comprised of two staggered rows of native, evergreen plantings.

Anyone with questions about the December 12th public meeting or the Glover Creek Solar Project may request information by emailing tearon@carolinasolarenergy.com or calling (919) 682-6822.

METCALFE COUNTY EMERGENCY PLANNING COMMITTEE

Pursuant to Section 324, Title III of the Federal Superfund Amendment and Reauthorization Act (SARA) of 1986 (PL 99-499), the following information is provided in compliance with the Community Right-to-Know requirements* of the SARA Law, and the open meeting and open records provisions of Kentucky Revised Statutes. Members of the public may contact the Metcalfe County Emergency Planning

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This is to certify that the 20 day of November
2019 an ad for Glover Creek Solar LLC

was published in the regular edition of the Edmonton Herald
News, a newspaper published for general
circulation in the City of Edmonton, Metcalfe
County and adjoining counties.

Dan Wright

COMMONWEALTH OF KENTUCKY

County of Hart

The foregoing was subscribed and sworn to before me by _____
Dan Wright on this 25 day of February
in 2020.

Leslie Logsdon

Notary Public, Kentucky, State-At-Large

My commission expires: 02-09-23

Parcel ID	First Name	Last Name	Address	Locale
016-00-00-021.00	DELBERT	VIBBERT	1573 PITCOCK RD	SUMMER SHADE, KY 42166
017-00-00-003.00	BETTY P	MILLER	92 PITCOCK RD	SUMMER SHADE, KY 42166
017-00-00-003.02	CASH & JOHANNA FUGATE	BURROUGHS KENNY & CINDY & BARRY	PO BOX 73	SUMMER SHADE, KY 42166
017-00-00-003.04	JEFF & JOSHUA	PITCOCK	94 PITCOCK RD	SUMMER SHADE, KY 42166
017-00-00-003.05	SUSAN DAVIS & EDWIN	DURANT	684 PITCOCK RD	SUMMER SHADE, KY 42166
017-00-00-004.00	SUSAN DURANT	c/o BEETS FAMILY TRUST	684 PITCOCK RD	SUMMER SHADE, KY 42166
017-00-00-004.01	JAMES	SHAW	1056 PITCOCK RD	SUMMER SHADE, KY 42166
017-00-00-008.02	RYAN BENJAMIN & DIANNA SUE	WHITLOW	380 PEDIGO LANE	SUMMER SHADE, KY 42166
017-00-00-008.03	MATTHEW THOMAS & ALLISON PAIGE	WHITLOW	125 PEDIGO LANE	SUMMER SHADE, KY 42166
017-00-00-011.01	GLEN DOUGLAS & PAULINE ANN FRYE	PERKINS	44 JIM PAIGE RD	SUMMER SHADE, KY 42166
017-00-00-011.04	PAULINE	FRYE	29 JIM PAGE RD	SUMMER SHADE, KY 42166
017-00-00-011.06	ANDERSON WENDELL L ESTATE		5700 PINETREE DR	FT PIERCE, FL 34982
017-00-00-011.07	JULIE	COOP	1524 SUMMER SHADE RD	SUMMER SHADE, KY 42166
017-00-00-022.00	DICKERSON LUMBER CO		PO BOX 125	SUMMER SHADE, KY 42166
017-00-00-023.00	KEITH V & MARY R	SPEARS	1285 SUMMER SHADE RD	SUMMER SHADE, KY 42166
017-00-00-026.01	JAMES B	ATWELL	222 BIG JACK RD	SUMMER SHADE, KY 42166
017-00-00-028.00	GABE & KELLI	BROWN	1750 SUMMER SHADE RD	SUMMER SHADE, KY 42166
029-00-00-013.01	HOMESTEADER LLC		100 W 3RD ST	PARK CITY, KY 42160
029-00-00-013.02	BROWN GABREAL LEE & KELLI RENA BLYTHE		1750 SUMMER SHADE RD	SUMMER SHADE, KY 42166
029-00-00-016.00	BRANSTETTER TRUST SS X1 DANNY H BRANSTETTER TRUSTEE Donald and Mary	Sandidge	PO BOX 135 47 Nunnally Rd	SUMMER SHADE, KY 42166



400 West Main, Suite 503 Durham, NC 27701
919-682-6822 www.carolinasolarenergy.com

[Name]
[Address 1]
[Address 2]

Re: Glover Creek Solar Farm Neighborhood Dinner Invitation

Dear [Name],

I'm writing to invite you to a neighborhood dinner at 6:00pm on Wednesday, December 11th, at the Edmonton City Grill at 300 N Main St, Edmonton, KY 42129. My colleagues and I would like to meet and discuss a solar farm planned along Randolph-Summer Shade Rd, outside of Summer Shade, KY.

The neighborhood dinner is for the landowners involved in the project and the adjacent landowners of the parcels that make up the proposed solar farm. Please RSVP by December 5th so that we can inform the restaurant of the total number of guests. The event will last about an hour and there will be time for questions. To RSVP, please call our office at 919-682-6822, or email tcaron@carolinasolarenergy.com.

There will be a separate community meeting for the general public the following day, December 12th, 2019, at 6:00pm at the Metcalfe County Government Building at 201 N. Main Street Edmonton, KY 42129. You are welcome to attend this meeting if you cannot make the neighborhood dinner or wish to attend both meetings; no RSVP required for the community meeting.

Both events will have drawings of the solar farm layout and model solar equipment available for viewing. A fact sheet for Glover Creek Solar is provided on the back of this letter.

We look forward to seeing you!

Sincerely,

Carson Harkrader
CEO

Attached: Glover Creek Solar Fact Sheet (on reverse)
Public Notice of Community Meeting



400 West Main, Suite 503 Durham, NC 27701
919-682-6822 www.carolinasolarenergy.com

Glover Creek Solar Fact Sheet

Glover Creek Solar is a new proposed solar energy facility planned along Randolph-Summer Shade Rd, outside of Summer Shade, KY. This 56MW facility will generate enough electricity to power approximately 14,000 homes.

The solar technology used is photovoltaic, and the solar panels sit on racks that are up to 15 feet tall that rotate once per day on a North-South axis to track the sun throughout the day. An energy storage system will be connected to the facility. There is no noise or emissions from the panels or the tracking system. The solar farm will be set back from property lines and a dense vegetative buffer will screen the facility from sight. The footprint of the facility is approximately 320 acres. Grass will be maintained under the panels with minimal amounts of concrete or gravel used throughout the facility.

The solar farm will pay significant county taxes over the course of the project lifetime, with little to no expenditure from the county. The project will generate hundreds of construction jobs for approximately 1 year, as well as a handful of long-term maintenance and landscaping positions. The solar farm will not impact local electricity rates.

Glover Creek Solar will include a strip of native pollinator plantings in sections of the vegetative buffer. Info on the positive impacts of pollinators on nearby agricultural land will be available at the meeting.

Real estate appraisers have completed many matched-pair analyses on homes adjacent to solar farms. These matched-pair analyses compare the value of homes before and after the construction of a solar farm, and show that the construction of a solar farm has no discernable impact on the sales price of surrounding homes. A professional report from a Kentucky licensed appraiser detailing this analysis for Glover Creek Solar will be available at the meetings, and copies are available on request.

Glover Creek Solar

Public Meeting Images (December 12, 2019)



Chris Jones, Project Manager at Carolina Solar Energy, presenting to community members about solar technology (Metcalf County Judge-Executive Harold Stilts, bottom right)



Groups of community members and company representatives mingling over site plans

Glover Creek Solar

Neighborhood Dinner Images (December 11, 2019)



Groups of adjacent neighbors and company representatives mingling



Generation Interconnection

Feasibility Study Report

for

Queue Project AE2-071

PATTON RD-SUMMER SHADE 69 KV

21 MW Capacity / 35 MW Energy

July, 2019

1 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. Cost allocation rules for network upgrades can be found in PJM Manual 14A, Attachment B. 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 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.

PJM utilizes manufacturer models to ensure the performance of turbines is properly captured during the simulations performed for stability verification and, where applicable, for compliance with low voltage ride through requirements. Turbine manufacturers provide such models to their customers. The list of manufacturer models PJM has already validated is contained in Attachment B of Manual 14G. Manufacturer models may be updated from time to time, for various reasons such as to reflect changes to the control systems or to more accurately represent the capabilities turbines and controls which are currently available in the field. Additionally, as new turbine models are developed, turbine manufacturers provide such new models which must be used in the conduct of these studies. PJM needs adequate time to evaluate the new models in order to reduce delays to the System Impact Study process timeline for the Interconnection Customer as well as other Interconnection Customers in the study group. Therefore, PJM will require that any Interconnection Customer with a new manufacturer model must supply that model to PJM, along with a \$10,000 fully refundable deposit, no later than three (3) months prior to the starting date of the System Impact Study (See Section 4.3 for starting dates) for the Interconnection Request which shall specify the use of the new model. The Interconnection Customer will be required to submit a completed dynamic model study request form (Attachment B-1 of Manual 14G) in order to document the request for the study.

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.

2 General

The Interconnection Customer (IC), has proposed a Solar generating facility located in Metcalfe, Kentucky. The installed facilities will have a total capability of 35 MW with 21 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is 12/31/2021. This study does not imply a TO commitment to this in-service date.

Queue Number	AE2-071
Project Name	PATTON RD-SUMMER SHADE 69 KV
Interconnection Customer	Carolina Solar Energy III, LLC
State	None
County	Metcalfe
Transmission Owner	EKPC
MFO	35
MWE	35
MWC	21
Fuel	Solar
Basecase Study Year	2022

2.1 Point of Interconnection

AE2-071 will interconnect with the EKPC transmission system tapping the Patton Rd. to Summer Shade 69kV line.

2.2 Cost Summary

The AE2-071 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	\$250,000
Direct Connection Network Upgrade	\$5,650,000
Non Direct Connection Network Upgrades	\$100,000
Total Costs	\$6,000,000

In addition, the AE2-071 project may be responsible for a contribution to the following costs

Description	Total Cost
System Upgrades	\$785,000

Cost allocations for these upgrades will be provided in the System Impact Study Report.

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 69 kV switch structure at the point of demarcation.	\$250,000
Total Attachment Facility Costs	\$250,000

5 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
Build 69 kV switching station at 161 kV standards near Eighty Eight, KY including associated transmission line work. Estimated Time to Construct: 24 months	\$5,650,000
Total Direct Connection Facility Costs	\$5,650,000

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
Relaying Upgrades at the remote end substations	\$100,000
Total Non-Direct Connection Facility Costs	\$100,000

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.

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 Sections 24.1 and 24.2.

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 Option-1 Network Impacts

The Queue Project AE2-071 was evaluated as a 35.0 MW (Capacity 21.0 MW) injection tapping the Patton Rd. to Summer Shade 69kV line in the EKPC area. Project AE2-071 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE2-071 was studied with a commercial probability of 0.53. 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
2155211	341059	2BARREN CO	EKPC	341651	2HORSECAVE J	EKPC	1	EKPC_P4-2_SSHAD S11-1004	breaker	90.0	159.96	161.48	DC	3.03
2155212	341059	2BARREN CO	EKPC	341651	2HORSECAVE J	EKPC	1	EKPC_P4-2_SSHAD S11-1044	breaker	90.0	154.77	156.29	DC	3.03
2155616	341059	2BARREN CO	EKPC	341651	2HORSECAVE J	EKPC	1	EKPC_P1-2_BARR-SUMSH161-B	single	90.0	116.32	118.26	DC	1.75
2155403	342322	2SUMM SHADE	EKPC	341431	2EDM-JBGAL J	EKPC	1	EKPC_P4-2_GREEN W45-1014	breaker	46.0	105.87	108.22	DC	2.4
2155431	342718	5SCOOPER2	EKPC	324141	5ELIHU	LGEE	1	EKPC_P4-5_LAURL S50-1024	breaker	277.0	103.7	105.19	DC	4.12
2155982	342718	5SCOOPER2	EKPC	324141	5ELIHU	LGEE	1	EKPC_P7-1_LAURL 161 DBL	tower	277.0	103.74	105.22	DC	4.12

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
2155615	341059	2BARREN CO	EKPC	341651	2HORSECAVE J	EKPC	1	EKPC_P1-2_BARR-SUMSH161-B	operation	90.0	152.86	154.32	DC	2.92
2155805	342718	5COOPER2	EKPC	324141	5ELIHU	LGEE	1	EKPC_P1-2_LAUR-L DAM161	operation	277.0	103.55	105.04	DC	4.13
2155725	940050	AE1-247 TAP	EKPC	342814	5SUMM SHADE	EKPC	1	Base Case	operation	186.0	115.33	115.81	DC	2.0

15 System Reinforcements

ID	Index	Facility	Upgrade Description	Cost
2155403	2	2SUMM SHADE 69.0 kV - 2EDM-JBGAL J 69.0 kV Ckt 1	r0004 (506) : Increase MOT of Summershade-Edm. JB Galloway Jct 69kV line section 266 MCM conductor to 212F (~7.9 miles) Project Type : FAC Cost : \$525,000 Time Estimate : 12.0 Months	\$525,000
2155616,2155211, 2155212	1	2BARREN CO 69.0 kV - 2HORSECAVE J 69.0 kV Ckt 1	r0001 (503) : Uprate CT associated with Barren Co-Horsecave Jct 69kV line section to minimum 166 MVA Summer LTE Project Type : FAC Cost : \$0 Time Estimate : 6.0 Months r0002 (504) : Upgrade jumpers associated with Barren Co 69kV bus to 2-500 MCM 37 CU conductor Project Type : FAC Cost : \$10,000 Time Estimate : 6.0 Months r0003 (505) : Increase MOT of Barren Co-Horsecave Jct 69kV line section 795 MCM conductor to 302F (~3.88 miles) Project Type : FAC Cost : \$250,000 Time Estimate : 6.0 Months	\$260,000
2155431,2155982	3	5COOPER2 161.0 kV - 5ELIHU 161.0 kV Ckt 1	r0006 (508) : No Violation. EKPC emergency rating 298 MVA. Project Type : FAC Cost : \$0 Time Estimate : N/A Months NonPJMArea (635) : The external (i.e. Non-PJM) Transmission Owner, LGEE, will not evaluate this violation until the impact study phase. Project Type : FAC Cost : \$0 Time Estimate : N/A Months	\$0
			TOTAL COST	\$785,000

16 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.

16.1 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
2155211	341059	2BARREN CO	EKPC	341651	2HORSECAVE J	EKPC	1	EKPC_P4-2_SSHAD S11-1004	breaker	90.0	159.96	161.48	DC	3.03

Bus #	Bus	MW Impact
940041	AE1-246 C O1	24.92
940042	AE1-246 E O1	12.13
940051	AE1-247 C O1	42.33
940052	AE1-247 E O1	20.96
940831	AE2-071 C O1	1.82
940832	AE2-071 E O1	1.21
BLUEG	BLUEG	0.97
CANNELTON	CANNELTON	0.16
CBM-N	CBM-N	0.01
CBM-S1	CBM-S1	0.9
CBM-S2	CBM-S2	0.28
CBM-W2	CBM-W2	3.07
CPL	CPL	0.09
EDWARDS	EDWARDS	0.0
ELMERSMITH	ELMERSMITH	0.31
G-007A	G-007A	0.03
GIBSON	GIBSON	0.04
MEC	MEC	0.29
NEWTON	NEWTON	0.02
NYISO	NYISO	0.03
TILTON	TILTON	0.04
TRIMBLE	TRIMBLE	0.1
VFT	VFT	0.08

16.2 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
2155403	342322	2SUMM SHADE	EKPC	341431	2EDM-JBGAL J	EKPC	1	EKPC_P4-2_GREEN W45-1014	breaker	46.0	105.87	108.22	DC	2.4

Bus #	Bus	MW Impact
940831	AE2-071 C O1	1.44
940832	AE2-071 E O1	0.96
BLUEG	BLUEG	0.78
CANNELTON	CANNELTON	0.07
CBM-N	CBM-N	0.0
CBM-S1	CBM-S1	0.71
CBM-S2	CBM-S2	0.22
CBM-W1	CBM-W1	0.08
CBM-W2	CBM-W2	3.14
CPLE	CPLE	0.07
ELMERSMITH	ELMERSMITH	0.1
G-007A	G-007A	0.02
GIBSON	GIBSON	0.02
MEC	MEC	0.33
NYISO	NYISO	0.02
TILTON	TILTON	0.02
TRIMBLE	TRIMBLE	0.08
VFT	VFT	0.05
WEC	WEC	0.01

16.3 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
2155982	342718	5COOPER2	EKPC	324141	5ELIHU	LGEE	1	EKPC_P7-1_LAURL 161 DBL	tower	277.0	103.74	105.22	DC	4.12

Bus #	Bus	MW Impact
342900	1COOPER1 G	7.85
342903	1COOPER2 G	15.28
342945	1LAUREL 1G	4.75
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	15.37
940052	AE1-247 E O1	7.61
940831	AE2-071 C O1	2.47
940832	AE2-071 E O1	1.65
CARR	CARR	0.06
CBM-S1	CBM-S1	3.76
CBM-S2	CBM-S2	0.41
CBM-W1	CBM-W1	1.15
CBM-W2	CBM-W2	18.72
CIN	CIN	0.55
CPLE	CPLE	0.08
G-007	G-007	0.17
IPL	IPL	0.22
MEC	MEC	2.26
O-066	O-066	1.09
RENSELAER	RENSELAER	0.05
TRIMBLE	TRIMBLE	0.02
WEC	WEC	0.15

Affected Systems

17 Affected Systems

17.1 LG&E

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

17.2 MISO

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

17.3 TVA

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

17.4 Duke Energy Progress

Duke Energy Progress Impacts to be determined during later study phases (as applicable).

17.5 NYISO

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

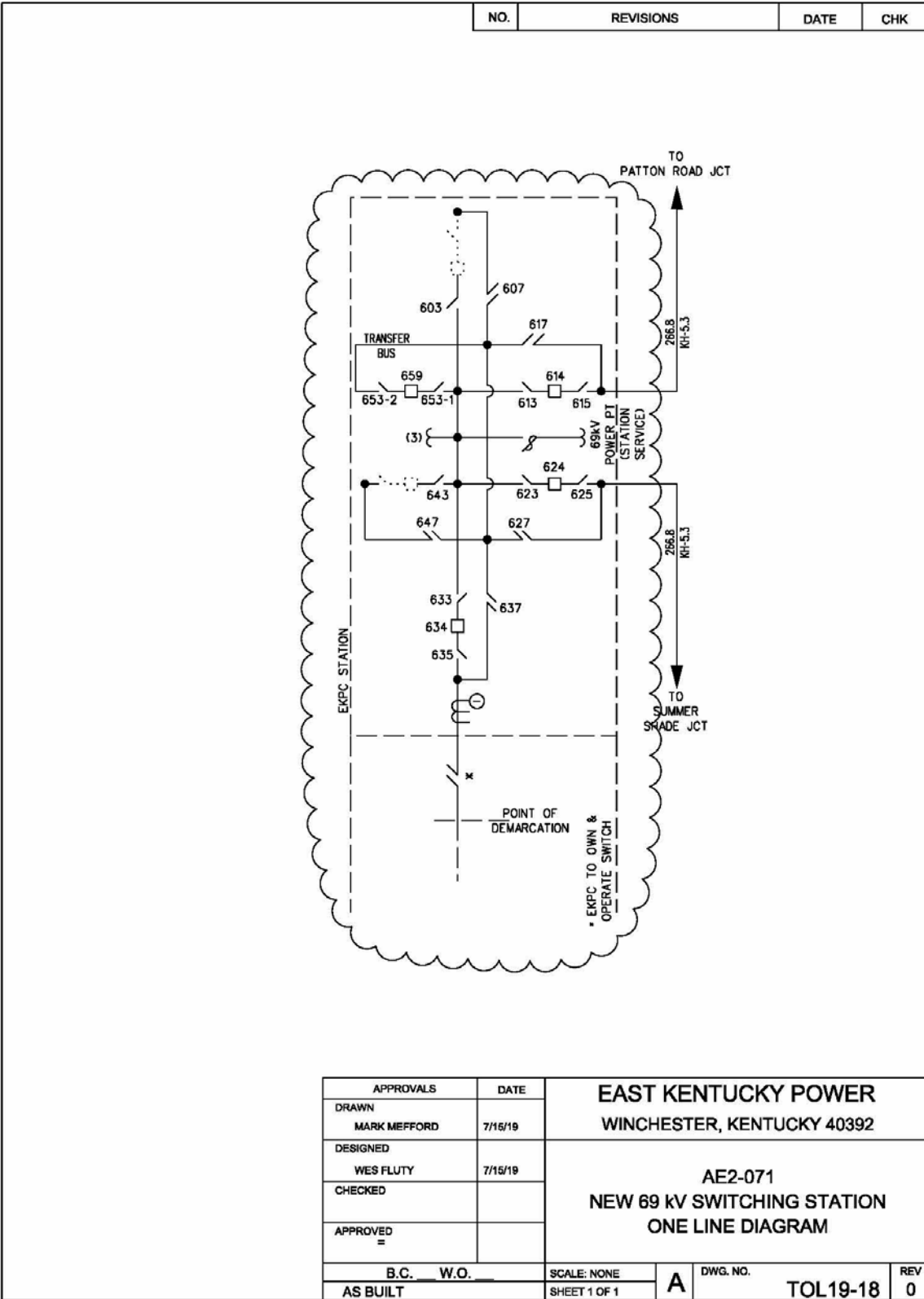
Contingency Name	Contingency Definition
EKPC_P4-2_SSHAD S11-1004	CONTINGENCY 'EKPC_P4-2_SSHAD S11-1004' /* SUMMERSHADE OPEN BRANCH FROM BUS 940050 TO BUS 342814 CKT 1 /* 940050 AE1-247 TAP 161.00 342814 5SUMM SHADE 161.00 OPEN BRANCH FROM BUS 342811 TO BUS 342814 CKT 1 /* 342811 5SUMM SHAD T161.00 342814 5SUMM SHADE 161.00 OPEN BRANCH FROM BUS 342733 TO BUS 342814 CKT 1 /* 342733 5GREEN CO 161.00 342814 5SUMM SHADE 161.00 END
EKPC_P1-2_BARR-SUMSH161-B	CONTINGENCY 'EKPC_P1-2_BARR-SUMSH161-B' /* BARREN CO - SUMMERSHADE OPEN BRANCH FROM BUS 940050 TO BUS 342814 CKT 1 /* 940050 AE1-247 TAP 161.00 342814 5SUMM SHADE 161.00 END
EKPC_P4-2_GREEN W45-1014	CONTINGENCY 'EKPC_P4-2_GREEN W45-1014' /* GREEN CO OPEN BUS 342733 /* 5GREEN CO DROPS BUS OPEN BRANCH FROM BUS 342817 TO BUS 342818 CKT 1 /* 342817 5TAYLOR CO J161.00 342818 5TAYLRCO 161.00 OPEN BRANCH FROM BUS 342805 TO BUS 342817 CKT 1 /* 342805 5SALOMA T 161.00 342817 5TAYLOR CO J161.00 OPEN BRANCH FROM BUS 342802 TO BUS 342805 CKT 1 /* 342802 5SALOMA 161.00 342805 5SALOMA T 161.00 OPEN BRANCH FROM BUS 342775 TO BUS 342805 CKT 1 /* 342775 5MARION IP T161.00 342805 5SALOMA T 161.00 OPEN BRANCH FROM BUS 342772 TO BUS 342775 CKT 1 /* 342772 5MARION IP 161.00 342775 5MARION IP T161.00 OPEN BRANCH FROM BUS 342769 TO BUS 342775 CKT 1 /* 342769 5MARION CO 161.00 342775 5MARION IP T161.00 END
Base Case	
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
EKPC_P4-2_SSHAD S11-1044	CONTINGENCY 'EKPC_P4-2_SSHAD S11-1044' /* SUMMERSHADE OPEN BRANCH FROM BUS 940050 TO BUS 342814 CKT 1 /* 940050 AE1-247 TAP 161.00 342814 5SUMM SHADE 161.00 OPEN BRANCH FROM BUS 342700 TO BUS 342811 CKT 1 /* 342700 5BULLITT CO 161.00 342811 5SUMM SHAD T161.00 OPEN BRANCH FROM BUS 342811 TO BUS 360334 CKT 1 /* 342811 5SUMM SHAD T161.00 360334 5SUMMER SHAD161.00 OPEN BRANCH FROM BUS 342811 TO BUS 342814 CKT 1 /* 342811 5SUMM SHAD T161.00 342814 5SUMM SHADE 161.00 END

Contingency Name	Contingency Definition
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 STYNER 161.00 END
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

Short Circuit

18 Short Circuit

Attachment 1. Single Line Diagram (Primary POI)



Secondary Point of Interconnection:

AE2-071 will interconnect with the EKPC transmission system at the Summer Shade 69kV substation.

Option 2 : Network Impacts

The Queue Project AE2-071 was evaluated as a 35.0 MW (Capacity 21.0 MW) injection at the Summer Shade 69kV substation in the EKPC area. Project AE2-071 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE2-071 was studied with a commercial probability of 0.53. Potential network impacts were as follows:

Summer Peak Load Flow

1 Generation Deliverability

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

None

2 Multiple Facility Contingency

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

None

3 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
2155211	341059	2BARREN CO	EKPC	341651	2HORSECAVE J	EKPC	1	EKPC_P4-2_SSHAD S11-1004	breaker	90.0	159.96	161.05	DC	2.17
2155212	341059	2BARREN CO	EKPC	341651	2HORSECAVE J	EKPC	1	EKPC_P4-2_SSHAD S11-1044	breaker	90.0	154.78	155.87	DC	2.18
2155616	341059	2BARREN CO	EKPC	341651	2HORSECAVE J	EKPC	1	EKPC_P1-2_BARR-SUMSH161-B	single	90.0	116.31	117.69	DC	1.24
2155403	342322	2SUMM SHADE	EKPC	341431	2EDM-JBGAL J	EKPC	1	EKPC_P4-2_GREEN W45-1014	breaker	46.0	105.87	108.65	DC	2.84
2155431	342718	5SCOOPER2	EKPC	324141	5ELIHU	LGEE	1	EKPC_P4-5_LAURL S50-1024	breaker	277.0	103.73	105.29	DC	4.32
2155982	342718	5SCOOPER2	EKPC	324141	5ELIHU	LGEE	1	EKPC_P7-1_LAURL 161 DBL	tower	277.0	103.76	105.32	DC	4.32

4 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
2155615	341059	2BARREN CO	EKPC	341651	2HORSECAVE J	EKPC	1	EKPC_P1-2_BARR-SUMSH161-B	operation	90.0	152.85	153.89	DC	2.06
2155805	342718	5COOPER2	EKPC	324141	5ELIHU	LGEE	1	EKPC_P1-2_LAUR-L DAM161	operation	277.0	103.55	105.11	DC	4.33

5 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.

5.1 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
2155211	341059	2BARREN CO	EKPC	341651	2HORSECAVE J	EKPC	1	EKPC_P4-2_SSHAD S11-1004	breaker	90.0	159.96	161.05	DC	2.17

Bus #	Bus	MW Impact
940041	AE1-246 C O1	24.92
940042	AE1-246 E O1	12.13
940051	AE1-247 C O1	42.33
940052	AE1-247 E O1	20.96
940831	AE2-071 C O2	1.3
940832	AE2-071 E O2	0.87
BLUEG	BLUEG	0.97
CANNELTON	CANNELTON	0.16
CBM-N	CBM-N	0.01
CBM-S1	CBM-S1	0.9
CBM-S2	CBM-S2	0.28
CBM-W2	CBM-W2	3.07
CPL	CPL	0.09
EDWARDS	EDWARDS	0.0
ELMERSMITH	ELMERSMITH	0.31
G-007A	G-007A	0.03
GIBSON	GIBSON	0.04
MEC	MEC	0.29
NEWTON	NEWTON	0.02
NYISO	NYISO	0.03
TILTON	TILTON	0.04
TRIMBLE	TRIMBLE	0.1
VFT	VFT	0.08

5.2 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
2155403	342322	2SUMM SHADE	EKPC	341431	2EDM-JBGAL J	EKPC	1	EKPC_P4-2_GREEN W45-1014	breaker	46.0	105.87	108.65	DC	2.84

Bus #	Bus	MW Impact
940831	AE2-071 C O2	1.7
940832	AE2-071 E O2	1.14
BLUEG	BLUEG	0.78
CANNELTON	CANNELTON	0.07
CBM-N	CBM-N	0.0
CBM-S1	CBM-S1	0.71
CBM-S2	CBM-S2	0.22
CBM-W1	CBM-W1	0.08
CBM-W2	CBM-W2	3.14
CPLE	CPLE	0.07
ELMERSMITH	ELMERSMITH	0.1
G-007A	G-007A	0.02
GIBSON	GIBSON	0.02
MEC	MEC	0.33
NYISO	NYISO	0.02
TILTON	TILTON	0.02
TRIMBLE	TRIMBLE	0.08
VFT	VFT	0.05
WEC	WEC	0.01

5.3 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
2155982	342718	5COOPER2	EKPC	324141	5ELIHU	LGEE	1	EKPC_P7-1_LAURL 161 DBL	tower	277.0	103.76	105.32	DC	4.32

Bus #	Bus	MW Impact
342900	1COOPER1 G	7.85
342903	1COOPER2 G	15.28
342945	1LAUREL 1G	4.75
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	15.37
940052	AE1-247 E O1	7.61
940831	AE2-071 C O2	2.59
940832	AE2-071 E O2	1.73
CARR	CARR	0.06
CBM-S1	CBM-S1	3.76
CBM-S2	CBM-S2	0.41
CBM-W1	CBM-W1	1.15
CBM-W2	CBM-W2	18.7
CIN	CIN	0.55
CPLE	CPLE	0.08
G-007	G-007	0.17
IPL	IPL	0.22
MEC	MEC	2.26
O-066	O-066	1.09
RENSELAER	RENSELAER	0.05
TRIMBLE	TRIMBLE	0.02
WEC	WEC	0.15

Affected Systems

6 Affected Systems

6.1 LG&E

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

6.2 MISO

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

6.3 TVA

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

6.4 Duke Energy Progress

Duke Energy Progress Impacts to be determined during later study phases (as applicable).

6.5 NYISO

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

Contingency Name	Contingency Definition
EKPC_P4-2_SSHAD S11-1004	CONTINGENCY 'EKPC_P4-2_SSHAD S11-1004' /* SUMMERSHADE OPEN BRANCH FROM BUS 940050 TO BUS 342814 CKT 1 /* 940050 AE1-247 TAP 161.00 342814 5SUMM SHADE 161.00 OPEN BRANCH FROM BUS 342811 TO BUS 342814 CKT 1 /* 342811 5SUMM SHAD T161.00 342814 5SUMM SHADE 161.00 OPEN BRANCH FROM BUS 342733 TO BUS 342814 CKT 1 /* 342733 5GREEN CO 161.00 342814 5SUMM SHADE 161.00 END
EKPC_P1-2_BARR-SUMSH161-B	CONTINGENCY 'EKPC_P1-2_BARR-SUMSH161-B' /* BARREN CO - SUMMERSHADE OPEN BRANCH FROM BUS 940050 TO BUS 342814 CKT 1 /* 940050 AE1-247 TAP 161.00 342814 5SUMM SHADE 161.00 END
EKPC_P4-2_GREEN W45-1014	CONTINGENCY 'EKPC_P4-2_GREEN W45-1014' /* GREEN CO OPEN BUS 342733 /* 5GREEN CO DROPS BUS OPEN BRANCH FROM BUS 342817 TO BUS 342818 CKT 1 /* 342817 5TAYLOR CO J161.00 342818 5TAYLRCO 161.00 OPEN BRANCH FROM BUS 342805 TO BUS 342817 CKT 1 /* 342805 5SALOMA T 161.00 342817 5TAYLOR CO J161.00 OPEN BRANCH FROM BUS 342802 TO BUS 342805 CKT 1 /* 342802 5SALOMA 161.00 342805 5SALOMA T 161.00 OPEN BRANCH FROM BUS 342775 TO BUS 342805 CKT 1 /* 342775 5MARION IP T161.00 342805 5SALOMA T 161.00 OPEN BRANCH FROM BUS 342772 TO BUS 342775 CKT 1 /* 342772 5MARION IP 161.00 342775 5MARION IP T161.00 OPEN BRANCH FROM BUS 342769 TO BUS 342775 CKT 1 /* 342769 5MARION CO 161.00 342775 5MARION IP T161.00 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
EKPC_P4-2_SSHAD S11-1044	CONTINGENCY 'EKPC_P4-2_SSHAD S11-1044' /* SUMMERSHADE OPEN BRANCH FROM BUS 940050 TO BUS 342814 CKT 1 /* 940050 AE1-247 TAP 161.00 342814 5SUMM SHADE 161.00 OPEN BRANCH FROM BUS 342700 TO BUS 342811 CKT 1 /* 342700 5BULLITT CO 161.00 342811 5SUMM SHAD T161.00 OPEN BRANCH FROM BUS 342811 TO BUS 360334 CKT 1 /* 342811 5SUMM SHAD T161.00 360334 5SUMMER SHAD161.00 OPEN BRANCH FROM BUS 342811 TO BUS 342814 CKT 1 /* 342811 5SUMM SHAD T161.00 342814 5SUMM SHADE 161.00 END

Contingency Name	Contingency Definition
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 STYNER 161.00 END
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

Short Circuit

7 Short Circuit

None



Generation Interconnection

Feasibility Study Report

for

Queue Project AF1-203

PATTON RD-SUMMER SHADE 69 KV

12 MW Capacity / 20 MW Energy

January, 2020

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1 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. Cost allocation rules for network upgrades can be found in PJM Manual 14A, Attachment B. 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 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.

PJM utilizes manufacturer models to ensure the performance of turbines is properly captured during the simulations performed for stability verification and, where applicable, for compliance with low voltage ride through requirements. Turbine manufacturers provide such models to their customers. The list of manufacturer models PJM has already validated is contained in Attachment B of Manual 14G. Manufacturer models may be updated from time to time, for various reasons such as to reflect changes to the control systems or to more accurately represent the capabilities turbines and controls which are currently available in the field. Additionally, as new turbine models are developed, turbine manufacturers provide such new models which must be used in the conduct of these studies. PJM needs adequate time to evaluate the new models in order to reduce delays to the System Impact Study process timeline for the Interconnection Customer as well as other Interconnection Customers in the study group. Therefore, PJM will require that any Interconnection Customer with a new manufacturer model must supply that model to PJM, along with a \$10,000 fully refundable deposit, no later than three (3) months prior to the starting date of the System Impact Study (See Section 4.3 for starting dates) for the Interconnection Request which shall specify the use of the new model. The Interconnection Customer will be required to submit a completed dynamic model study request form (Attachment B-1 of Manual 14G) in order to document the request for the study.

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.

2 General

The Interconnection Customer (IC), has proposed an uprate (Storage generating facility) to an existing Solar generating facility (AE2-071) located in Metcalfe County, KY. This projects requests an increase to the install capability of 20 uprate MW with 12 of uprate MW of this output being recognized by PJM as Capacity. The installed facilities will have a total capability of 55 MW with 33 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is 12/31/2022. This study does not imply a TO commitment to this in-service date.

Queue Number	AF1-203
Project Name	PATTON RD-SUMMER SHADE 69 KV
State	Kentucky
County	Metcalfe
Transmission Owner	EKPC
MFO	55
MWE	20
MWC	12
Fuel	Solar
Basecase Study Year	2023

2.1 Point of Interconnection

AF1-203 will interconnect with the EKPC transmission system tapping the Patton Rd Jct. to Summer Shade Jct. 69 kV line.

2.2 Cost Summary

The AF1-203 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	\$0
Direct Connection Network Upgrade	\$0
Non Direct Connection Network Upgrades	\$0
Total Costs	\$0

In addition, the AF1-203 project may be responsible for a contribution to the following costs

Description	Total Cost
System Upgrades	\$14,325,000

Cost allocations for these upgrades will be provided in the System Impact Study Report.

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.

No additional TO attachment facilities required beyond those identified for AE2-071.

5 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.

No additional direct connection network upgrades required beyond those identified for AE2-071.

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.

No additional direct connection network upgrades required beyond those identified for AE2-071.

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.

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 Sections 24.1 and 24.2.

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 Revenue Metering and SCADA Requirements

10.1 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.

10.2 EKPC Requirements

[Please enter any TO revenue metering and SCADA Requirements]

11 Network Impacts

The Queue Project AF1-203 was evaluated as a 20.0 MW (Capacity 12.0 MW) injection tapping the Patton Rd Jct. to Summer Shade Jct. 69 kV line in the EKPC area. Project AF1-203 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF1-203 was studied with a commercial probability of 0.53. Potential network impacts were as follows:

Summer Peak Load Flow

12 Generation Deliverability

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

None

13 Multiple Facility Contingency

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

None

14 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	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC D C	MW IMPAC T
41615269	341059	2BARREN CO	69.0	EKPC	341651	2HORSECAV EJ	69.0	EKPC	1	EKPC_P4-2_SSHAD S11-1004	breaker	90.0	203.3	203.97	DC	1.34
41615270	341059	2BARREN CO	69.0	EKPC	341651	2HORSECAV EJ	69.0	EKPC	1	EKPC_P4-2_SSHAD S11-1044	breaker	90.0	197.73	198.41	DC	1.34
41845978	341059	2BARREN CO	69.0	EKPC	341651	2HORSECAV EJ	69.0	EKPC	1	EKPC_P2-2_SUMMSHA DE 161 #2-B	bus	90.0	206.56	207.27	DC	1.42
41845979	341059	2BARREN CO	69.0	EKPC	341651	2HORSECAV EJ	69.0	EKPC	1	EKPC_P2-3_SSHAD S11-1004-C	bus	90.0	203.3	203.97	DC	1.34
41845980	341059	2BARREN CO	69.0	EKPC	341651	2HORSECAV EJ	69.0	EKPC	1	EKPC_P2-3_SSHAD S11-1044-B	bus	90.0	197.73	198.41	DC	1.34
41615728	341158	2BONNIV DIST	69.0	EKPC	341161	2BONNIV EK	69.0	EKPC	1	EKPC_P4-2_SSHAD S11-1004	breaker	98.0	116.91	117.53	DC	1.34
41615729	341158	2BONNIV DIST	69.0	EKPC	341161	2BONNIV EK	69.0	EKPC	1	EKPC_P4-2_SSHAD S11-1044	breaker	98.0	111.8	112.41	DC	1.34
41846252	341158	2BONNIV DIST	69.0	EKPC	341161	2BONNIV EK	69.0	EKPC	1	EKPC_P2-2_SUMMSHA DE 161 #2-B	bus	98.0	119.8	120.45	DC	1.42
41846253	341158	2BONNIV DIST	69.0	EKPC	341161	2BONNIV EK	69.0	EKPC	1	EKPC_P2-3_SSHAD S11-1004-C	bus	98.0	116.91	117.53	DC	1.34
41846254	341158	2BONNIV DIST	69.0	EKPC	341161	2BONNIV EK	69.0	EKPC	1	EKPC_P2-3_SSHAD S11-1044-B	bus	98.0	111.8	112.41	DC	1.34
41615866	341431	2EDM-JBGAL J	69.0	EKPC	341728	2KNOB LICK	69.0	EKPC	1	EKPC_P4-2_GREEN W45-1014	breaker	46.0	104.71	106.25	DC	1.57
41846342	341431	2EDM-JBGAL J	69.0	EKPC	341728	2KNOB LICK	69.0	EKPC	1	EKPC_P2-3_GREEN W45-1014-A	bus	46.0	104.71	106.25	DC	1.57
41846343	341431	2EDM-JBGAL J	69.0	EKPC	341728	2KNOB LICK	69.0	EKPC	1	EKPC_P2-3_GREEN W45-1014	bus	46.0	104.49	106.03	DC	1.57

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC/D C	MW IMPAC T
4161555 1	34165 1	2HORSECAV E J	69.0	EKPC	34191 4	2MUNFVILK UT	69.0	EKPC	1	EKPC_P4-2_SSHAD S11-1004	breaker	98.0	133.03	133.65	DC	1.34
4161555 2	34165 1	2HORSECAV E J	69.0	EKPC	34191 4	2MUNFVILK UT	69.0	EKPC	1	EKPC_P4-2_SSHAD S11-1044	breaker	98.0	127.82	128.43	DC	1.34
4184615 8	34165 1	2HORSECAV E J	69.0	EKPC	34191 4	2MUNFVILK UT	69.0	EKPC	1	EKPC_P2-2_SUMMSHA DE 161 #2-B	bus	98.0	135.92	136.57	DC	1.42
4184615 9	34165 1	2HORSECAV E J	69.0	EKPC	34191 4	2MUNFVILK UT	69.0	EKPC	1	EKPC_P2-3_SSHAD S11-1004-C	bus	98.0	133.03	133.65	DC	1.34
4184616 0	34165 1	2HORSECAV E J	69.0	EKPC	34191 4	2MUNFVILK UT	69.0	EKPC	1	EKPC_P2-3_SSHAD S11-1044-B	bus	98.0	127.82	128.43	DC	1.34
4161569 8	34190 8	2MUNFVIL EK	69.0	EKPC	34115 8	2BONNIV DIST	69.0	EKPC	1	EKPC_P4-2_SSHAD S11-1004	breaker	98.0	119.36	119.98	DC	1.34
4161569 9	34190 8	2MUNFVIL EK	69.0	EKPC	34115 8	2BONNIV DIST	69.0	EKPC	1	EKPC_P4-2_SSHAD S11-1044	breaker	98.0	114.14	114.76	DC	1.34
4184623 7	34190 8	2MUNFVIL EK	69.0	EKPC	34115 8	2BONNIV DIST	69.0	EKPC	1	EKPC_P2-2_SUMMSHA DE 161 #2-B	bus	98.0	122.24	122.9	DC	1.42
4184623 8	34190 8	2MUNFVIL EK	69.0	EKPC	34115 8	2BONNIV DIST	69.0	EKPC	1	EKPC_P2-3_SSHAD S11-1004-C	bus	98.0	119.36	119.98	DC	1.34
4184623 9	34190 8	2MUNFVIL EK	69.0	EKPC	34115 8	2BONNIV DIST	69.0	EKPC	1	EKPC_P2-3_SSHAD S11-1044-B	bus	98.0	114.14	114.76	DC	1.34
4161561 8	34191 4	2MUNFVILK UT	69.0	EKPC	34190 8	2MUNFVIL EK	69.0	EKPC	1	EKPC_P4-2_SSHAD S11-1004	breaker	98.0	125.99	126.61	DC	1.34
4161561 9	34191 4	2MUNFVILK UT	69.0	EKPC	34190 8	2MUNFVIL EK	69.0	EKPC	1	EKPC_P4-2_SSHAD S11-1044	breaker	98.0	120.78	121.39	DC	1.34
4184619 2	34191 4	2MUNFVILK UT	69.0	EKPC	34190 8	2MUNFVIL EK	69.0	EKPC	1	EKPC_P2-2_SUMMSHA DE 161 #2-B	bus	98.0	128.88	129.53	DC	1.42
4184619 3	34191 4	2MUNFVILK UT	69.0	EKPC	34190 8	2MUNFVIL EK	69.0	EKPC	1	EKPC_P2-3_SSHAD S11-1004-C	bus	98.0	125.99	126.61	DC	1.34
4184619 4	34191 4	2MUNFVILK UT	69.0	EKPC	34190 8	2MUNFVIL EK	69.0	EKPC	1	EKPC_P2-3_SSHAD S11-1044-B	bus	98.0	120.78	121.39	DC	1.34
4102567 5	34228 6	2SOMERSET	69.0	EKPC	34228 7	2SOMERSET KU	69.0	EKPC	1	EKPC_P7-1_COOP 161 DBL 2	tower	115.0	123.76	124.33	DC	1.45
4102557 5	34228 7	2SOMERSET KU	69.0	EKPC	32453 1	2FERGUSO N SO	69.0	LGEE	1	EKPC_P7-1_COOP 161 DBL 2	tower	105.0	144.49	145.28	DC	1.84
4161555 8	34231 9	2SUMM SHAD J	69.0	EKPC	34232 2	2SUMM SHADE	69.0	EKPC	1	EKPC_P4-2_SSHAD S11-1004	breaker	98.0	116.3	131.45	DC	14.85
4184618 8	34231 9	2SUMM SHAD J	69.0	EKPC	34232 2	2SUMM SHADE	69.0	EKPC	1	EKPC_P2-3_SSHAD S11-1004-C	bus	98.0	116.3	131.45	DC	14.85
4184618 9	34231 9	2SUMM SHAD J	69.0	EKPC	34232 2	2SUMM SHADE	69.0	EKPC	1	EKPC_P2-2_SUMMSHA DE 161 #2-B	bus	98.0	115.33	130.45	DC	14.82
4161571 1	34232 2	2SUMM SHADE	69.0	EKPC	34143 1	2EDM-JBGAL J	69.0	EKPC	1	EKPC_P4-2_GREEN W45-1014	breaker	46.0	117.1	118.64	DC	1.57
4184626 8	34232 2	2SUMM SHADE	69.0	EKPC	34143 1	2EDM-JBGAL J	69.0	EKPC	1	EKPC_P2-3_GREEN W45-1014-A	bus	46.0	117.1	118.64	DC	1.57

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC D C	MW IMPAC T
41846269	342322	2SUMM SHADE	69.0	EKPC	341431	2EDM-JBGAL J	69.0	EKPC	1	EKPC_P2-3_GREEN W45-1014	bus	46.0	116.88	118.42	DC	1.57
41615418	940830	AE2-071 TAP	69.0	EKPC	342319	2SUMM SHAD J	69.0	EKPC	1	EKPC_P4-2_SSHAD S11-1004	breaker	63.0	123.91	149.7	DC	16.25
41846109	940830	AE2-071 TAP	69.0	EKPC	342319	2SUMM SHAD J	69.0	EKPC	1	EKPC_P2-3_SSHAD S11-1004-C	bus	63.0	123.91	149.7	DC	16.25
41846110	940830	AE2-071 TAP	69.0	EKPC	342319	2SUMM SHAD J	69.0	EKPC	1	EKPC_P2-2_SUMMSHA DE 161 #2-B	bus	63.0	123.21	148.98	DC	16.23

15 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	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC D C	MW IMPAC T
41293698	341059	2BARREN CO	69.0	EKPC	341651	2HORSECAV E J	69.0	EKPC	1	EKPC_P1-2_BARR-SUMSH16 1-C	operation	90.0	195.61	196.24	DC	1.28
41293702	341059	2BARREN CO	69.0	EKPC	341651	2HORSECAV E J	69.0	EKPC	1	Base Case	operation	77.0	103.64	104.29	DC	1.12
41294384	341158	2BONNIV DIST	69.0	EKPC	341161	2BONNIV EK	69.0	EKPC	1	EKPC_P1-2_BARR-SUMSH16 1-C	operation	98.0	109.84	110.43	DC	1.28
41294168	341651	2HORSECAV E J	69.0	EKPC	341914	2MUNFVILK U T	69.0	EKPC	1	EKPC_P1-2_BARR-SUMSH16 1-C	operation	98.0	125.96	126.55	DC	1.28
41294344	341908	2MUNFVIL EK	69.0	EKPC	341158	2BONNIV DIST	69.0	EKPC	1	EKPC_P1-2_BARR-SUMSH16 1-C	operation	98.0	112.29	112.88	DC	1.28
41294279	341914	2MUNFVILK U T	69.0	EKPC	341908	2MUNFVIL EK	69.0	EKPC	1	EKPC_P1-2_BARR-SUMSH16 1-C	operation	98.0	118.92	119.51	DC	1.28
41294126	342319	2SUMM SHAD J	69.0	EKPC	342322	2SUMM SHADE	69.0	EKPC	1	EKPC_P1-2_BARR-SUMSH16 1-C	operation	98.0	114.64	129.78	DC	14.84

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC/DC	MW IMPACT
42523239	342757	5LAUREL DAM	161.0	EKPC	342754	5LAUREL CO	161.0	EKPC	1	EKPC_P1-2_COOP-ELIHU161	operation	200.0	99.87	100.11	DC	1.05
42523204	342775	5MARION IPT	161.0	EKPC	342769	5MARION CO	161.0	EKPC	1	Base Case	operation	84.0	101.89	102.88	DC	1.84
41293945	940830	AE2-071 TAP	69.0	EKPC	342319	2SUMM SHAD J	69.0	EKPC	1	EKPC_P1-2_BARR-SUMSH16 1-C	operation	63.0	122.46	148.24	DC	16.24

16 System Reinforcements

ID	Index	Facility	Upgrade Description	Cost
41025675	7	2SOMERSET 69.0 kV - 2SOMERSET KU 69.0 kV Ckt 1	r0080 (82) : Replace the 500 MCM copper jumpers at the Somerset substation using 750 MCM copper or equivalent Project Type : FAC Cost : \$10,000 Time Estimate : 6.0 Months	\$10,000
41615866,41846342, 41846343	3	2EDM-JBGAL J 69.0 kV - 2KNOB LICK 69.0 kV Ckt 1	r0049 (51) : Increase the maximum operating temperature of the 266 MCM ACSR conductor in the Edmonton/JB Galloway Jct-Knob Lick 6 9kV line section to 176 degrees F (5.7 miles) Project Type : FAC Cost : \$310,000 Time Estimate : 12.0 Months	\$310,000
41025575	8	2SOMERSET KU 69.0 kV - 2FERGUSON SO 69.0 kV Ckt 1	r0078 (80) : Replace the 1200A current transformer at Somerset with a 2000A current transformer. Project Type : FAC Cost : \$35,000 Time Estimate : 6.0 Months NonPJM Area: The external (i.e. Non-PJM) Transmission Owner, LGEE, will not evaluate this violation until the impact study phase.	\$35,000
41845980,41615270, 41845979,41615269, 41845978	1	2BARREN CO 69.0 kV - 2HORSECAVE J 69.0 kV Ckt 1	N6197.1 (1) : Upgrade CT associated with Barren Co-Horsecave Jct 69kV line section to minimum 166 MVA Summer LTE Project Type : FAC Cost : \$0 Time Estimate : 6.0 Months N6197.2 (2) : Upgrade jumpers associated with Barren Co 69kV bus to 2-500 MCM 37 CU conductor Project Type : FAC Cost : \$10,000 Time Estimate : 6.0 Months r0022 (24) : Rebuild the Barren County-Horse Cave Junction 69 kV line section using 954 MCM ACSS conductor at 392 degrees F (3.9 miles) Project Type : FAC Cost : \$3,900,000 Time Estimate : 15.0 Months r0023 (25) : Replace the 1200A circuit breaker W59-614 at Barren County with a 2000A circuit breaker Project Type : FAC Cost : \$125,000 Time Estimate : 9.0 Months r0024 (26) : Replace the 1200A disconnect switches W59-613 and W59-615 at Barren County substation and W611-605 at Horse Cave Junction Project Type : FAC Cost : \$300,000 Time Estimate : 12.0 Months	\$4,335,000

ID	Index	Facility	Upgrade Description	Cost
41615711,41846269, 41846268	10	2SUMM SHADE 69.0 kV - 2EDM-JBGAL J 69.0 kV Ckt 1	r0004 (5) : Increase the maximum operating temperature of the Summershade-Edm. JB Galloway Jct 69kV line section 266 MCM conductor to 212F (~7.9 miles) Project Type : FAC Cost : \$525,000 Time Estimate : 12.0 Months	\$525,000
41615728,41615729, 41846254,41846252, 41846253	2	2BONNIV DIST 69.0 kV - 2BONNIV EK 69.0 kV Ckt 1	r0028 (30) : Replace the 556 MCM ACSR conductor (~50 feet) in the line section using 795 MCM ACSR conductor at 212 degrees F Project Type : FAC Cost : \$10,000 Time Estimate : 6.0 Months	\$10,000
41846110,41615418, 41846109	11	AE2-071 TAP 69.0 kV - 2SUMM SHAD J 69.0 kV Ckt 1	r0071 (73) : Rebuild the AE2-071-Summer Shade 69 kV line section using 795 MCM ACSR conductor at 212 degrees F (1.7 miles) Project Type : FAC Cost : \$2,110,000 Time Estimate : 16.0 Months	\$2,110,000
41615558,41846188, 41846189	9	2SUMM SHAD J 69.0 kV - 2SUMM SHADE 69.0 kV Ckt 1	r0065 (67) : Increase the maximum operating temperature of the 556 MCM ACSR conductor in the Summer Shade-Summer Shade Junction 69 kV line section to 302 degrees F (0.2 mile) Project Type : FAC Cost : \$10,000 Time Estimate : 6.0 Months r0066 (68) : Change the current transformer setting at Summer Shade associated with circuit breaker S11-634 from 600A to 800A. Project Type : FAC Cost : \$10,000 Time Estimate : 6.0 Months r0067 (69) : Replace the 500 MCM copper bus and jumpers at the Summer Shade substation using 750 MCM copper or equivalent Project Type : FAC Cost : \$120,000 Time Estimate : 6.0 Months r0068 (70) : Change the Zone 3 relay setting at Summer Shade associated with the line protection to at least 132 MVA LTE rating. Project Type : FAC Cost : \$0 Time Estimate : 6.0 Months	\$140,000
41846193,41846192, 41615618,41615619, 41846194	6	2MUNFVILKU T 69.0 kV - 2MUNFVIL EK 69.0 kV Ckt 1	r0051 (53) : Increase the maximum operating temperature of the 556 MCM ACSR conductor in the Munfordville KU Tap-Munfordville EK 69 kV line section to 302 degrees F (2.0 miles) Project Type : FAC Cost : \$140,000 Time Estimate : 7.0 Months	\$140,000

ID	Index	Facility	Upgrade Description	Cost
41615552,41615551, 41846159,41846158, 41846160	4	2HORSECAVE J 69.0 kV - 2MUNFVILKU T 69.0 kV Ckt 1	<p>r0035 (37) : Increase the maximum operating temperature of the 556 MCM ACSR conductor in the KU Horse Cave Junction-Munfordville KU Tap 69 kV line section to 302 degrees F (6.8 miles) Project Type : FAC Cost : \$460,000 Time Estimate : 9.0 Months</p> <p>r0055 (57) : Rebuild the Horse Cave Junction-Munfordville KU 69 kV line section using 954 MCM ACSR conductor at 212 degrees F (6.8 miles) Project Type : FAC Cost : \$6,160,000 Time Estimate : 20.0 Months</p>	\$6,160,000
41846238,41846237, 41615698,41615699, 41846239	5	2MUNFVIL EK 69.0 kV - 2BONNIV DIST 69.0 kV Ckt 1	<p>r0021 (23) : Increase the maximum operating temperature of the 556 MCM ACSR conductor in the Bonnieville Dist.-Munfordville EK 69 kV line section to 302 degrees F (8.2 miles) Project Type : FAC Cost : \$550,000 Time Estimate : 9.0 Months</p>	\$550,000
			TOTAL COST	\$14,325,000

17 Flow Gate Details

The following indices contain additional information about each flowgate presented in the body of the report. For each index, 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.

17.1 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
41845978	341059	2BARREN CO	EKPC	341651	2HORSECAVE J	EKPC	1	EKPC_P2-2_SUMMSHADE 161 #2-B	bus	90.0	206.56	207.27	DC	1.42

Bus #	Bus	MW Impact
940041	AE1-246 C O1	25.1728
940042	AE1-246 E O1	12.2588
940051	AE1-247 C O1	42.7656
940052	AE1-247 E O1	21.1800
940831	AE2-071 C	1.2718
940832	AE2-071 E	0.8479
944981	AF1-163 C O1 (Withdrawn : 12/11/2019)	23.6755
944982	AF1-163 E O1 (Withdrawn : 12/11/2019)	13.7561
945381	AF1-203 C	0.3852
945382	AF1-203 E	0.2568
NEWTON	NEWTON	0.0118
CPLE	CPLE	0.1039
G-007A	G-007A	0.0384
VFT	VFT	0.1032
CBM-W2	CBM-W2	1.3186
CBM-W1	CBM-W1	0.0125
TVA	TVA	0.6678
CBM-S2	CBM-S2	1.1733
EDWARDS	EDWARDS	0.0028
CBM-S1	CBM-S1	2.7946
TILTON	TILTON	0.0460
MADISON	MADISON	0.3871
MEC	MEC	0.1192
GIBSON	GIBSON	0.1267
BLUEG	BLUEG	0.5139
TRIMBLE	TRIMBLE	0.1519

17.2 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
41846252	341158	2BONNIV DIST	EKPC	341161	2BONNIV EK	EKPC	1	EKPC_P2-2_SUMMSHADE 161 #2-B	bus	98.0	119.8	120.45	DC	1.42

Bus #	Bus	MW Impact
940041	AE1-246 C O1	25.1728
940042	AE1-246 E O1	12.2588
940051	AE1-247 C O1	42.7656
940052	AE1-247 E O1	21.1800
940831	AE2-071 C	1.2718
940832	AE2-071 E	0.8479
944981	AF1-163 C O1 (Withdrawn : 12/11/2019)	23.6755
944982	AF1-163 E O1 (Withdrawn : 12/11/2019)	13.7561
945381	AF1-203 C	0.3852
945382	AF1-203 E	0.2568
NEWTON	NEWTON	0.0118
CPLE	CPLE	0.1039
G-007A	G-007A	0.0384
VFT	VFT	0.1032
CBM-W2	CBM-W2	1.3186
CBM-W1	CBM-W1	0.0125
TVA	TVA	0.6678
CBM-S2	CBM-S2	1.1733
EDWARDS	EDWARDS	0.0028
CBM-S1	CBM-S1	2.7946
TILTON	TILTON	0.0460
MADISON	MADISON	0.3871
MEC	MEC	0.1192
GIBSON	GIBSON	0.1267
BLUEG	BLUEG	0.5139
TRIMBLE	TRIMBLE	0.1519

17.3 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
41846343	341431	2EDM-JBGALJ	EKPC	341728	2KNOB LICK	EKPC	1	EKPC_P2-3_GREEN W45-1014	bus	46.0	104.49	106.03	DC	1.57

Bus #	Bus	MW Impact
940831	AE2-071 C	1.4027
940832	AE2-071 E	0.9351
945381	AF1-203 C	0.4248
945382	AF1-203 E	0.2832
CPLE	CPLE	0.0688
G-007A	G-007A	0.0216
VFT	VFT	0.0581
WEC	WEC	0.0038
CBM-W2	CBM-W2	1.1138
CBM-W1	CBM-W1	0.1877
TVA	TVA	0.4662
CBM-S2	CBM-S2	0.7861
CBM-S1	CBM-S1	1.9426
TILTON	TILTON	0.0151
MADISON	MADISON	0.3165
MEC	MEC	0.1128
GIBSON	GIBSON	0.0497
BLUEG	BLUEG	0.2951
TRIMBLE	TRIMBLE	0.0907

17.4 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
41846158	341651	2HORSECAVE J	EKPC	341914	2MUNFVILKU T	EKPC	1	EKPC_P2- 2_SUMMSHADE 161 #2-B	bus	98.0	135.92	136.57	DC	1.42

Bus #	Bus	MW Impact
940041	AE1-246 C O1	25.1728
940042	AE1-246 E O1	12.2588
940051	AE1-247 C O1	42.7656
940052	AE1-247 E O1	21.1800
940831	AE2-071 C	1.2718
940832	AE2-071 E	0.8479
944981	AF1-163 C O1 (Withdrawn : 12/11/2019)	23.6755
944982	AF1-163 E O1 (Withdrawn : 12/11/2019)	13.7561
945381	AF1-203 C	0.3852
945382	AF1-203 E	0.2568
NEWTON	NEWTON	0.0118
CPLE	CPLE	0.1039
G-007A	G-007A	0.0384
VFT	VFT	0.1032
CBM-W2	CBM-W2	1.3186
CBM-W1	CBM-W1	0.0125
TVA	TVA	0.6678
CBM-S2	CBM-S2	1.1733
EDWARDS	EDWARDS	0.0028
CBM-S1	CBM-S1	2.7946
TILTON	TILTON	0.0460
MADISON	MADISON	0.3871
MEC	MEC	0.1192
GIBSON	GIBSON	0.1267
BLUEG	BLUEG	0.5139
TRIMBLE	TRIMBLE	0.1519

17.5 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
41846237	341908	2MUNFVIL EK	EKPC	341158	2BONNIV DIST	EKPC	1	EKPC_P2-2_SUMMSHADE 161 #2-B	bus	98.0	122.24	122.9	DC	1.42

Bus #	Bus	MW Impact
940041	AE1-246 C O1	25.1728
940042	AE1-246 E O1	12.2588
940051	AE1-247 C O1	42.7656
940052	AE1-247 E O1	21.1800
940831	AE2-071 C	1.2718
940832	AE2-071 E	0.8479
944981	AF1-163 C O1 (Withdrawn : 12/11/2019)	23.6755
944982	AF1-163 E O1 (Withdrawn : 12/11/2019)	13.7561
945381	AF1-203 C	0.3852
945382	AF1-203 E	0.2568
NEWTON	NEWTON	0.0118
CPLE	CPLE	0.1039
G-007A	G-007A	0.0384
VFT	VFT	0.1032
CBM-W2	CBM-W2	1.3186
CBM-W1	CBM-W1	0.0125
TVA	TVA	0.6678
CBM-S2	CBM-S2	1.1733
EDWARDS	EDWARDS	0.0028
CBM-S1	CBM-S1	2.7946
TILTON	TILTON	0.0460
MADISON	MADISON	0.3871
MEC	MEC	0.1192
GIBSON	GIBSON	0.1267
BLUEG	BLUEG	0.5139
TRIMBLE	TRIMBLE	0.1519

17.6 Index 6

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
41846192	341914	2MUNFVILKUT	EKPC	341908	2MUNFVILEK	EKPC	1	EKPC_P2-2_SUMMSHADE 161 #2-B	bus	98.0	128.88	129.53	DC	1.42

Bus #	Bus	MW Impact
940041	AE1-246 C O1	25.1728
940042	AE1-246 E O1	12.2588
940051	AE1-247 C O1	42.7656
940052	AE1-247 E O1	21.1800
940831	AE2-071 C	1.2718
940832	AE2-071 E	0.8479
944981	AF1-163 C O1 (Withdrawn : 12/11/2019)	23.6755
944982	AF1-163 E O1 (Withdrawn : 12/11/2019)	13.7561
945381	AF1-203 C	0.3852
945382	AF1-203 E	0.2568
NEWTON	NEWTON	0.0118
CPL	CPL	0.1039
G-007A	G-007A	0.0384
VFT	VFT	0.1032
CBM-W2	CBM-W2	1.3186
CBM-W1	CBM-W1	0.0125
TVA	TVA	0.6678
CBM-S2	CBM-S2	1.1733
EDWARDS	EDWARDS	0.0028
CBM-S1	CBM-S1	2.7946
TILTON	TILTON	0.0460
MADISON	MADISON	0.3871
MEC	MEC	0.1192
GIBSON	GIBSON	0.1267
BLUEG	BLUEG	0.5139
TRIMBLE	TRIMBLE	0.1519

17.7 Index 7

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
41025675	342286	2SOMERSET	EKPC	342287	2SOMERSET KU	EKPC	1	EKPC_P7-1_COOP 161 DBL 2	tower	115.0	123.76	124.33	DC	1.45

Bus #	Bus	MW Impact
342900	1COOPER1 G	4.4802
342903	1COOPER2 G	8.6895
939131	AE1-143 C	5.3375
939132	AE1-143 E	2.6438
940041	AE1-246 C O1	4.2392
940042	AE1-246 E O1	2.0644
940051	AE1-247 C O1	7.2019
940052	AE1-247 E O1	3.5668
940831	AE2-071 C	1.2979
940832	AE2-071 E	0.8652
943701	AF1-038 C	6.1942
943702	AF1-038 E	4.1294
943821	AF1-050 C	1.1896
943822	AF1-050 E	0.7931
944151	AF1-083 C O1	1.2604
944152	AF1-083 E O1	0.8403
944511	AF1-116 C	3.1726
944512	AF1-116 E	2.1150
944981	AF1-163 C O1 (Withdrawn : 12/11/2019)	2.1292
944982	AF1-163 E O1 (Withdrawn : 12/11/2019)	1.2371
945381	AF1-203 C	0.3931
945382	AF1-203 E	0.2620
LGEE	LGEE	0.0120
CPL	CPL	0.0304
WEC	WEC	0.0479
LGE-0012019	LGE-0012019	5.0391
CBM-W2	CBM-W2	3.5463
NY	NY	0.0431
CBM-W1	CBM-W1	1.6763
TVA	TVA	1.0696
O-066	O-066	0.5242
CBM-S2	CBM-S2	0.5953
CBM-S1	CBM-S1	5.3335
G-007	G-007	0.0811
MADISON	MADISON	0.7540
MEC	MEC	0.4481

17.8 Index 8

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
41025575	342287	2SOMERSET KU	EKPC	324531	2FERGUSON SO	LGEE	1	EKPC_P7-1_COOP 161 DBL 2	tower	105.0	144.49	145.28	DC	1.84

Bus #	Bus	MW Impact
342900	1COOPER1 G	4.3847
342903	1COOPER2 G	8.5042
939131	AE1-143 C	6.4726
939132	AE1-143 E	3.2061
940041	AE1-246 C O1	5.3429
940042	AE1-246 E O1	2.6019
940051	AE1-247 C O1	9.0769
940052	AE1-247 E O1	4.4954
940831	AE2-071 C	1.6418
940832	AE2-071 E	1.0946
943701	AF1-038 C	8.4535
943702	AF1-038 E	5.6357
943821	AF1-050 C	1.3743
943822	AF1-050 E	0.9162
944151	AF1-083 C O1	1.3582
944152	AF1-083 E O1	0.9055
944511	AF1-116 C	7.2590
944512	AF1-116 E	4.8394
944981	AF1-163 C O1 (Withdrawn : 12/11/2019)	2.6865
944982	AF1-163 E O1 (Withdrawn : 12/11/2019)	1.5610
945381	AF1-203 C	0.4972
945382	AF1-203 E	0.3315
CPLE	CPLE	0.0642
WEC	WEC	0.0617
LGE-0012019	LGE-0012019	5.1436
CBM-W2	CBM-W2	4.6028
NY	NY	0.0442
CBM-W1	CBM-W1	2.1893
TVA	TVA	1.4140
O-066	O-066	0.5174
CBM-S2	CBM-S2	1.0057
CBM-S1	CBM-S1	6.9779
G-007	G-007	0.0801
MADISON	MADISON	0.9919
MEC	MEC	0.5800

17.9 Index 9

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
41846188	342319	2SUMM SHAD J	EKPC	342322	2SUMM SHADE	EKPC	1	EKPC_P2-3_SSHAD S11-1004-C	bus	98.0	116.3	131.45	DC	14.85

Bus #	Bus	MW Impact
940041	AE1-246 C O1	19.4261
940042	AE1-246 E O1	9.4603
940051	AE1-247 C O1	33.0027
940052	AE1-247 E O1	16.3449
940831	AE2-071 C	15.5887
940832	AE2-071 E	10.3925
944981	AF1-163 C O1 (Withdrawn : 12/11/2019)	18.2706
944982	AF1-163 E O1 (Withdrawn : 12/11/2019)	10.6158
945381	AF1-203 C	8.9078
945382	AF1-203 E	5.9386
CPL	CPL	0.0053
WEC	WEC	0.0198
CBM-W2	CBM-W2	1.0893
NY	NY	0.0033
CBM-W1	CBM-W1	0.7131
TVA	TVA	0.1918
O-066	O-066	0.0403
CBM-S2	CBM-S2	0.0867
CHEOAH	CHEOAH	0.0150
CBM-S1	CBM-S1	0.8946
G-007	G-007	0.0062
MADISON	MADISON	0.2258
MEC	MEC	0.1541
CALDERWOOD	CALDERWOOD	0.0159
BLUEG	BLUEG	0.0052
TRIMBLE	TRIMBLE	0.0033

17.10 Index 10

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
41846269	342322	2SUMM SHADE	EKPC	341431	2EDM-JBGAL J	EKPC	1	EKPC_P2-3_GREEN W45-1014	bus	46.0	116.88	118.42	DC	1.57

Bus #	Bus	MW Impact
940831	AE2-071 C	1.4027
940832	AE2-071 E	0.9351
945381	AF1-203 C	0.4248
945382	AF1-203 E	0.2832
CPLE	CPLE	0.0688
G-007A	G-007A	0.0216
VFT	VFT	0.0581
WEC	WEC	0.0038
CBM-W2	CBM-W2	1.1138
CBM-W1	CBM-W1	0.1877
TVA	TVA	0.4662
CBM-S2	CBM-S2	0.7861
CBM-S1	CBM-S1	1.9426
TILTON	TILTON	0.0151
MADISON	MADISON	0.3165
MEC	MEC	0.1128
GIBSON	GIBSON	0.0497
BLUEG	BLUEG	0.2951
TRIMBLE	TRIMBLE	0.0907

17.11 Index 11

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
41846109	940830	AE2-071 TAP	EKPC	342319	2SUMM SHAD J	EKPC	1	EKPC_P2-3_SSHAD S11-1004-C	bus	63.0	123.91	149.7	DC	16.25

Bus #	Bus	MW Impact
940041	AE1-246 C O1	10.7928
940042	AE1-246 E O1	5.2560
940051	AE1-247 C O1	18.3358
940052	AE1-247 E O1	9.0809
940831	AE2-071 C	17.0602
940832	AE2-071 E	11.3735
944981	AF1-163 C O1 (Withdrawn : 12/11/2019)	10.1509
944982	AF1-163 E O1 (Withdrawn : 12/11/2019)	5.8979
945381	AF1-203 C	9.7487
945382	AF1-203 E	6.4991
CPL	CPL	0.0033
WEC	WEC	0.0110
CBM-W2	CBM-W2	0.6061
NY	NY	0.0017
CBM-W1	CBM-W1	0.3878
TVA	TVA	0.1064
O-066	O-066	0.0202
CBM-S2	CBM-S2	0.0462
CHEOAH	CHEOAH	0.0085
CBM-S1	CBM-S1	0.4942
G-007	G-007	0.0031
MADISON	MADISON	0.1250
MEC	MEC	0.0858
CALDERWOOD	CALDERWOOD	0.0089
BLUEG	BLUEG	0.0035
TRIMBLE	TRIMBLE	0.0017

Affected Systems

18 Affected Systems

18.1 LG&E

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

18.2 MISO

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

18.3 TVA

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

18.4 Duke Energy Progress

Duke Energy Progress Impacts to be determined during later study phases (as applicable).

18.5 NYISO

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

19 Contingency Descriptions

Contingency Name	Contingency Definition
EKPC_P4-2_SSHAD S11-1004	CONTINGENCY 'EKPC_P4-2_SSHAD S11-1004' /* SUMMERSHADE OPEN BRANCH FROM BUS 944980 TO BUS 342814 CKT 1 /* 944980 AF1-163 TAP 161.00 342814 5SUMM SHADE 161.00 OPEN BRANCH FROM BUS 361788 TO BUS 342814 CKT 1 /* 361788 5SUM SHAD TP161.00 342814 5SUMM SHADE 161.00 OPEN BRANCH FROM BUS 943820 TO BUS 342814 CKT 1 /* 943820 AF1-050 TAP 161.00 342814 5SUMM SHADE 161.00 END
EKPC_P4-2_GREEN W45-1014	CONTINGENCY 'EKPC_P4-2_GREEN W45-1014' /* GREEN CO OPEN BUS 342733 /* 5GREEN CO DROPS BUS OPEN BRANCH FROM BUS 342817 TO BUS 342818 CKT 1 /* 342817 5TAYLOR CO J161.00 342818 5TAYLR CO 161.00 OPEN BRANCH FROM BUS 944150 TO BUS 342817 CKT 1 /* 944150 AF1-083 TAP 161.00 342817 5TAYLOR CO J161.00 END
EKPC_P2-3_GREEN W45-1014-A	CONTINGENCY 'EKPC_P2-3_GREEN W45-1014-A' /* OPEN BUS 342733 /* 5GREEN CO OPEN BRANCH FROM BUS 342817 TO BUS 342818 CKT 1 /* 342817 5TAYLOR CO J161.00 342818 5TAYLR CO 161.00 OPEN BRANCH FROM BUS 342805 TO BUS 944150 CKT 1 /* 342805 5SALOMA T 161.00 342817 5TAYLOR CO J161.00 END
EKPC_P2-3_GREEN W45-1014	CONTINGENCY 'EKPC_P2-3_GREEN W45-1014' /* OPEN BUS 342733 /* 5GREEN CO OPEN BRANCH FROM BUS 342817 TO BUS 342818 CKT 1 /* 342817 5TAYLOR CO J161.00 342818 5TAYLR CO 161.00 OPEN BRANCH FROM BUS 342805 TO BUS 944150 CKT 1 /* 342805 5SALOMA T 161.00 342817 5TAYLOR CO J161.00 OPEN BRANCH FROM BUS 342802 TO BUS 342805 CKT 1 /* 342802 5SALOMA 161.00 342805 5SALOMA T 161.00 OPEN BRANCH FROM BUS 342775 TO BUS 342805 CKT 1 /* 342775 5MARION IP T161.00 342805 5SALOMA T 161.00 OPEN BRANCH FROM BUS 342772 TO BUS 342775 CKT 1 /* 342772 5MARION IP 161.00 342775 5MARION IP T161.00 OPEN BRANCH FROM BUS 342769 TO BUS 342775 CKT 1 /* 342769 5MARION CO 161.00 342775 5MARION IP T161.00 END
EKPC_P1-2_COOP-ELIHU161	CONTINGENCY 'EKPC_P1-2_COOP-ELIHU161' /* COOPER - KU ELIHU OPEN BRANCH FROM BUS 324141 TO BUS 342718 CKT 1 /* 324141 5ELIHU 161.00 342718 5COOPER2 161.00 END

Contingency Name	Contingency Definition
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
Base Case	
EKPC_P2-3_SSHAD S11-1044-B	CONTINGENCY 'EKPC_P2-3_SSHAD S11-1044-B' /* SUMMERSHADE OPEN BRANCH FROM BUS 944980 TO BUS 342814 CKT 1 /* 940050 AE1-247 TAP 161.00 342814 5SUMM SHADE 161.00 OPEN BRANCH FROM BUS 342700 TO BUS 361788 CKT 1 /* 342700 5BULLITT CO 161.00 361788 5SUM SHAD TP161.00 OPEN BRANCH FROM BUS 361788 TO BUS 360334 CKT 1 /* 361788 5SUM SHAD TP161.00 360334 5SUMMER SHAD161.00 OPEN BRANCH FROM BUS 361788 TO BUS 342814 CKT 1 /* 361788 5SUM SHAD TP161.00 342814 5SUMM SHADE 161.00 END
EKPC_P2-3_SSHAD S11-1004-C	CONTINGENCY 'EKPC_P2-3_SSHAD S11-1004-C' /* SUMMERSHADE OPEN BRANCH FROM BUS 944980 TO BUS 342814 CKT 1 /* AF1-163 TAP 161.00 342814 5SUMM SHADE 161.00 OPEN BRANCH FROM BUS 361788 TO BUS 342814 CKT 1 /* 361788 5SUM SHAD TP161.00 342814 5SUMM SHADE 161.00 OPEN BRANCH FROM BUS 943820 TO BUS 342814 CKT 1 /* 943820 AF1-050 TAP 161.00 342814 5SUMM SHADE 161.00 END
EKPC_P4-2_SSHAD S11-1044	CONTINGENCY 'EKPC_P4-2_SSHAD S11-1044' /* SUMMERSHADE OPEN BRANCH FROM BUS 944980 TO BUS 342814 CKT 1 /* 944980 AF1-163 TAP 161.00 342814 5SUMM SHADE 161.00 OPEN BRANCH FROM BUS 342700 TO BUS 361788 CKT 1 /* 342700 5BULLITT CO 161.00 361788 5SUM SHAD TP161.00 OPEN BRANCH FROM BUS 361788 TO BUS 360334 CKT 1 /* 361788 5SUM SHAD TP161.00 360334 5SUMMER SHAD161.00 OPEN BRANCH FROM BUS 361788 TO BUS 342814 CKT 1 /* 361788 5SUM SHAD TP161.00 342814 5SUMM SHADE 161.00 END
EKPC_P1-2_BARR-SUMSH161-C	CONTINGENCY 'EKPC_P1-2_BARR-SUMSH161-C' /* BARREN CO - SUMMERSHADE OPEN BRANCH FROM BUS 944980 TO BUS 342814 CKT 1 /* 944980 AF1-163 TAP 161.00 342814 5SUMM SHADE 161.00 END
EKPC_P2-2_SUMM SHADE 161 #2-B	CONTINGENCY 'EKPC_P2-2_SUMM SHADE 161 #2-B' /* SUMMERSHADE 161 BUS OPEN BRANCH FROM BUS 943820 TO BUS 342814 CKT 1 /* AF1-050 342814 5SUMM SHADE 161.00 OPEN BRANCH FROM BUS 944980 TO BUS 342814 CKT 1 /* AF1-163 161.00 342814 5SUMM SHADE 161.00 OPEN BUS 361788 /* 361788 5SUM SHAD TP161.00 END

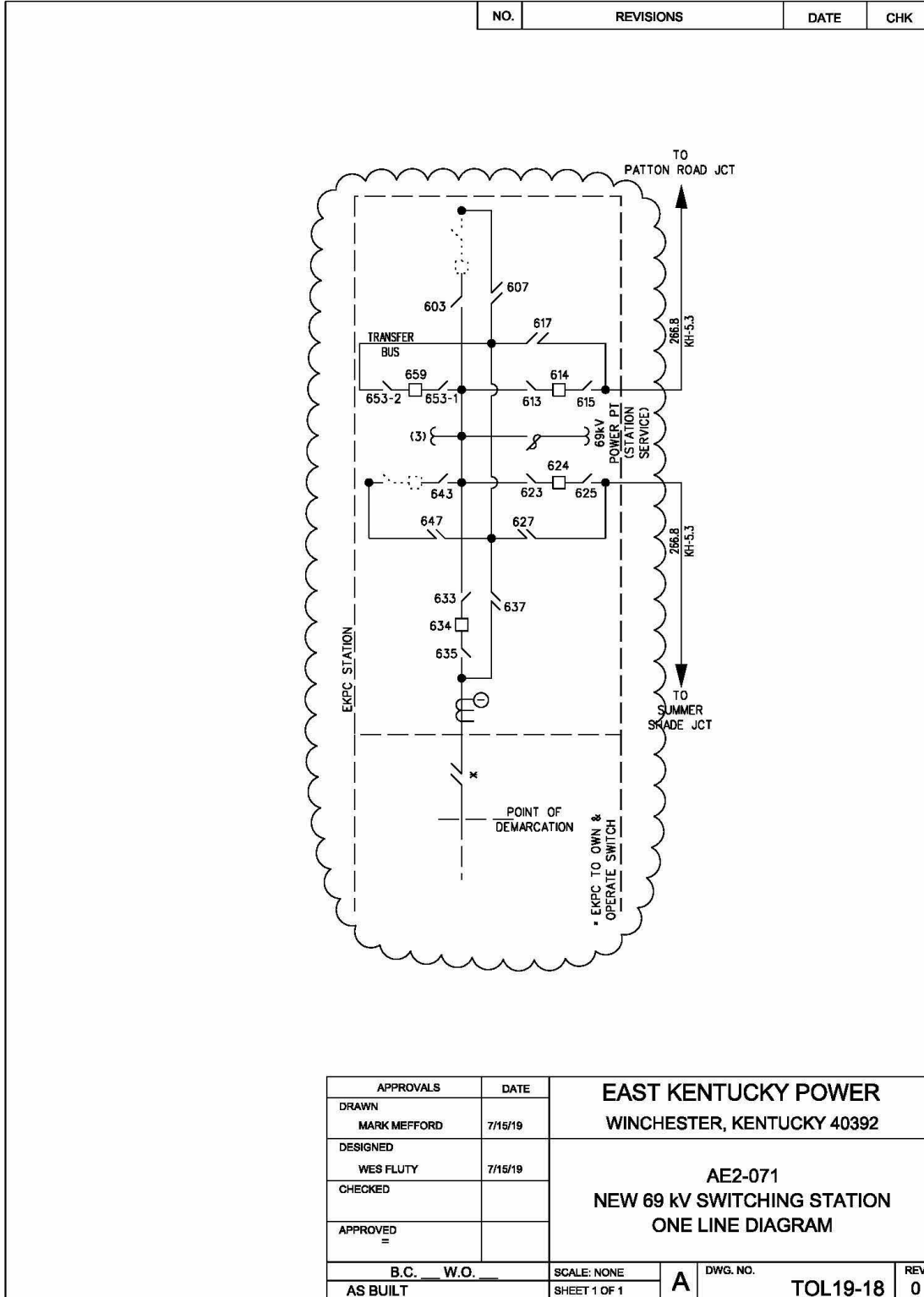
Short Circuit

20 Short Circuit

The following Breakers are overduty

Bus Number	Bus Name	BREAKER	Type	Capacity (Amps)	Duty Percentage Post Queue	Duty Percentage Pre Queue

21 Single Line Diagram





**Generation Interconnection
System Impact Study Report**

for

Queue Project AE2-071

PATTON RD-SUMMER SHADE 69 KV

21 MW Capacity / 35 MW Energy

February 2020

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, 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. Cost allocation rules for network upgrades can be found in PJM Manual 14A, Attachment B. 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 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.

An Interconnection Customer 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 General

The Interconnection Customer (IC), has proposed a Solar generating facility located in Metcalfe, Kentucky. The installed facilities will have a total capability of 35 MW with 21 MW of this output being recognized by PJM as Capacity.

The proposed in-service date for this project is 12/31/2021. This study does not imply a TO commitment to this in-service date.

Queue Number	AE2-071
Project Name	PATTON RD-SUMMER SHADE 69 KV
Interconnection Customer	Carolina Solar Energy III, LLC
State	Kentucky
County	Metcalfe
Transmission Owner	EKPC
MFO	35
MWE	35
MWC	21
Fuel	Solar
Basecase Study Year	2022

2.1 Point of Interconnection

AE2-071 will interconnect with the EKPC transmission system tapping the Patton Rd. to Summer Shade 69kV line.

2.2 Cost Summary

The AE2-071 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	\$610,000
Direct Connection Network Upgrade	\$5,420,000
Non Direct Connection Network Upgrades	\$795,000
Allocation for New System Upgrades	\$310,000
Contribution for Previously Identified Upgrades	\$0
Total Costs	\$7,135,000

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 necessary equipment (a 69 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 new Eighty Eight switching station, to accept the IC generator lead line/bus (Estimated time to implement is 24 months)	\$610,000
Total Attachment Facility Costs	\$610,000

5 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
Construct a new 69 kV switching station to 161 kV standards (Eighty Eight Switching) to facilitate connection of the IC solar generation project to the existing Patton Road Junction-Summer Shade 69 kV line (Estimated time to implement is 24 months)	\$5,420,000
Total Direct Connection Facility Costs	\$5,420,000

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
Construct facilities to loop the existing Patton Road Junction-Summer Shade 69 kV line into the new Eighty Eight switching station (Estimated time to implement is 24 months)	\$560,000
Modify relays and/or settings at Summer Shade substation for the existing line to the new Eighty Eight switching station (Estimated time to implement is 9 months)	\$45,000
Modify relays and/or settings at Fox Hollow substation for the existing line to the new Eighty Eight switching station (Estimated time to implement is 9 months)	\$45,000
Install OPGW on the Eighty Eight-Summer Shade 69 kV line (1.7 miles) (Estimated time to implement is 12 months)	\$145,000
Total Non-Direct Connection Facility Costs	\$795,000

7 Incremental Capacity Transfer Rights (ICTRs)

None

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.

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 Sections 24.1 and 24.2.

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 AE2-071 was evaluated as a 35.0 MW (Capacity 21.0 MW) injection tapping the Patton Rd. to Summer Shade 69kV line in the EKPC area. Project AE2-071 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE2-071 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)

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
2155713	342838	7SPURLOK	345.0	EKPC	253077	09STUAR T	345.0	DAY	1	AEP_P1-2_#1027	single	1421.0	99.93	100.05	AC	1.85

12 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	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
2155501	341431	2EDM-JBGAL J	69.0	EKPC	341728	2KNOBLICK	69.0	EKPC	1	EKPC_P4-2_GREEN W45-1014	breaker	46.0	97.6	102.68	AC	2.75

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	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
2155211	341059	2BARRENCO	69.0	EKPC	341651	2HORSECAVE J	69.0	EKPC	1	EKPC_P4-2_SSHAD S11-1004	breaker	90.0	159.45	161.66	AC	2.34
2155212	341059	2BARRENCO	69.0	EKPC	341651	2HORSECAVE J	69.0	EKPC	1	EKPC_P4-2_SSHAD S11-1044	breaker	90.0	154.15	156.37	AC	2.35
2155616	341059	2BARRENCO	69.0	EKPC	341651	2HORSECAVE J	69.0	EKPC	1	EKPC_P1-2_BARR-SUMSH16 1-B	single	90.0	114.86	116.18	AC	1.34
40564759	342286	2SOMERSET	69.0	EKPC	342287	2SOMERSET KU	69.0	EKPC	1	EKPC_P7-1_COOP 161 DBL 2	tower	115.0	100.97	104.6	AC	2.53
2156031	342287	2SOMERSET KU	69.0	EKPC	324531	2FERGUSON SO	69.0	LGEE	1	EKPC_P7-1_COOP 161 DBL 2	tower	105.0	115.05	119.48	AC	3.21
2155431	342718	5SCOOPER2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P4-5_LAURL S50-1024	breaker	277.0	109.96	111.51	AC	4.28
2155982	342718	5SCOOPER2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P7-1_LAURL 161 DBL	tower	277.0	109.96	111.52	AC	4.28

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	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC/D C	MW IMPACT
2155615	341059	2BARRENCO	69.0	EKPC	341651	2HORSECAVEJ	69.0	EKPC	1	EKPC_P1-2_BARR-SUMSH161-B	operation	90.0	152.57	154.68	AC	2.23
19134578	341059	2BARRENCO	69.0	EKPC	341651	2HORSECAVEJ	69.0	EKPC	1	Base Case	operation	77.0	104.87	107.03	AC	1.96
2155805	342718	5SCOOPER2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P1-2_LAUR-LDAM161	operation	277.0	109.73	111.29	AC	4.29

15 Steady-State Voltage Requirements

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

To be evaluated during the Facilities Study Phase

16 Stability and Reactive Power Requirements for Low Voltage Ride Through

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

To be evaluated during the Facilities Study Phase

17 Light Load Analysis

Light Load Studies (applicable to wind, coal, nuclear, and pumped storage projects).

Not required

18 System Reinforcements

ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-071	Upgrade Number
40564759	4	2SOMERSET 69.0 kV - 2SOMERSET KU 69.0 kV Ckt 1	<p>EKPC N6232: Replace the 500 MCM copper jumpers at the Somerset substation using 750 MCM copper or equivalent. Project Type : FAC Cost : \$ 250,000 Time Estimate : 6 Months New Ratings: Rate A: 146 MVA Rate B: 152 MVA Rate C: 154 MVA</p> <p>This constraint is driven by a prior queue. Per PJM cost allocation rules, AE2-071 does not presently receive cost allocation.</p> <p>Note 1: as changes to the interconnection process occur, such as prior queued projects withdrawing from the queue, reducing in size, etc., Queue Project AE2-071 could receive cost allocation.</p> <p>Note 2: Although Queue Project AE2-071, Queue Project AE2-071 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AE2-071 comes into service prior to completion of the upgrade, Queue Project AE2-071 will need an interim study.</p>	\$ 250,000	\$ 0	N6232
2155501	2	2EDM-JBGAL J 69.0 kV - 2KNOB LICK 69.0 kV Ckt 1	<p>EKPC N6494: Increase the maximum operating temperature of the 266 MCM ACSR conductor in the Edmonton/JB Galloway Jct-Knob Lick 6 9kV line section to 176 degrees F (5.7 miles) Project Type : FAC Cost : \$ 310,000 Time Estimate : 12 Months New Ratings: Rate A: 46 MVA Rate B: 50 MVA Rate C: 53 MVA</p>	\$310,000	\$310,000	N6494
2156031	5	2SOMERSET KU 69.0 kV - 2FERGUSON SO 69.0 kV Ckt 1	<p>EKPC No violation. EKPC emergency rating is 152 MVA.</p> <p>LGEE LGEE has been identified as an Affected System. LG&E-end impacts will be determined during the Facilities Study. The customer is required to sign a LG&E Affected System Study Agreement.</p>	\$0	\$0	N/A

ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-071	Upgrade Number
2155616,2155211,2155212	3	2BARREN CO 69.0 kV - 2HORSECAVE J 69.0 kV Ckt 1	<p>EKPC</p> <p>N6197.1: Uprate CT associated with Barren Co-Horsecave Jct 69kV line section to minimum 166 MVA Summer LTE Project Type : FAC Cost : \$ 0 Time Estimate : 6 Months New Ratings: Rate A: 90 MVA Rate B: 115 MVA Rate C: 133 MVA</p> <p>N6197.2: Upgrade jumpers associated with Barren Co 69kV bus to 2-500 MCM 37 CU conductor Project Type : FAC Cost : \$ 10,000 Time Estimate : 6 Months New Ratings: Rate A: 114 MVA Rate B: 127 MVA Rate C: 133 MVA</p> <p>N6197.3: Increase MOT of Barren Co-Horsecave Jct 69kV line section 795 MCM conductor to 302F (~3.88 miles) Project Type : FAC Cost : \$ 250,000 Time Estimate : 6 Months New Ratings: Rate A: 133 MVA Rate B: 163 MVA Rate C: 179 MVA</p> <p>This constraint is driven by a prior queue. Per PJM cost allocation rules, AE2-071 does not presently receive cost allocation.</p> <p>Note 1: as changes to the interconnection process occur, such as prior queued projects withdrawing from the queue, reducing in size, etc, Queue Project AE2-071 could receive cost allocation.</p> <p>Note 2: Although Queue Project AE2-071, Queue Project AE2-071 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AE2-071 comes into service prior to completion of the upgrade, Queue Project AE2-071 will need an interim study.</p>	\$260,000	\$0	N6197.1, N6197.2, N6197.3

ID	Index	Facility	Upgrade Description	Cost	Cost Allocated to AE2-071	Upgrade Number
2155431,2155982	6	5COOPER2 161.0 kV - 5ELIHU 161.0 kV Ckt 1	<p>EKPC N6238: Increase the maximum operating temperature of the 795 MCM ACSR conductor in the Cooper-Elihu 161 kV line section to 275 degrees F (6.7 miles) Project Type : FAC Cost : \$ 660,000 Time Estimate : 9 Months New Ratings: Rate A: 312 MVA Rate B: 371 MVA Rate C: 381 MVA</p> <p>This constraint is driven by a prior queue. Per PJM cost allocation rules, AE2-071 does not presently receive cost allocation.</p> <p>Note 1: as changes to the interconnection process occur, such as prior queued projects withdrawing from the queue, reducing in size, etc., Queue Project AE2-071 could receive cost allocation.</p> <p>Note 2: Although Queue Project AE2-071, Queue Project AE2-071 may need this upgrade in-service to be deliverable to the PJM system. If Queue Project AE2-071 comes into service prior to completion of the upgrade, Queue Project AE2-071 will need an interim study.</p> <p>LGEE LGEE has been identified as an Affected System. LG&E-end impacts will be determined during the Facilities Study. The customer is required to sign a LG&E Affected System Study Agreement.</p>	\$660,000	\$0	N6238
2155713	1	7SPURLOCK 345.0 kV - 09STUART 345.0 kV Ckt 1	<p>EKPC No Violation. EKPC continuous and emergency ratings are both 1792 MVA.</p> <p>DAY No violation. The emergency rating is 1532 MVA SE.</p>	\$0	\$0	N/A
TOTAL COST				\$1,480,000	\$310,000	

19 Flow Gate Details

The following indices 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.

19.1 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
2155713	342838	7SPURLOCK	EKPC	253077	09STUART	DAY	1	AEP_P1-2_#1027	single	1421.0	99.93	100.05	AC	1.85

Bus #	Bus	MW Impact
251968	08ZIMRHP	23.8643
251969	08ZIMRLP	13.0686
251970	08MELDL1	1.3667
251971	08MELDL2	1.3667
251972	08MELDL3	1.3704
342918	1JKCT 1G	3.5851
342921	1JKCT 2G	3.5851
342924	1JKCT 3G	3.5851
342927	1JKCT 4G	2.3792
342930	1JKCT 5G	2.3662
342933	1JKCT 6G	2.3792
342936	1JKCT 7G	2.3792
342939	1JKCT 9G	2.6253
342942	1JKCT 10G	2.6253
342957	1SPURLK1G	17.6669
342960	1SPURLK2G	33.3218
342963	1SPURLK3G	17.5102
342966	1SPURLK4G	17.5102
925981	AC1-074 C O1	14.8400
926061	AC1-085 C O1	-30.9628
926101	AC1-089 C O1	3.7752
926791	AC1-165 C	-3.6957
926951	AC1-182	4.2904
930061	AB1-014 C	-5.5431
932461	AC2-066 C	-3.3259
932551	AC2-075 C	3.5245
936381	AD2-048 C	11.6302
936571	AD2-072 C O1	10.1731
936821	AD2-105 C O1	3.5249
936831	AD2-106 C O1	2.4073
936841	AD2-107 C O1	1.8810
939131	AE1-143 C	6.6101
939141	AE1-144 C O1	30.0830
940041	AE1-246 C O1	5.8731
940051	AE1-247 C O1	9.9777
940531	AE2-038 C O1	20.0679
940831	AE2-071 C	1.5710
941411	AE2-138 C	58.9917
941961	AE2-208	2.0357
941981	AE2-210 C O1	20.3270
942411	AE2-254 C O1	5.0016
942591	AE2-275 C O1	15.1028

Bus #	Bus	MW Impact
942891	AE2-308 C O1	25.3627
943111	AE2-339 C	7.0396
LGEE	LGEE	7.3912
CIN	CIN	10.0230
CPL	CPL	0.5107
IPL	IPL	6.0669
LGE-0012019	LGE-0012019	3.9776
CBM-W2	CBM-W2	82.9309
CBM-W1	CBM-W1	6.0274
WEC	WEC	0.9762
CBM-S2	CBM-S2	2.2550
CARR	CARR	0.4969
CBM-S1	CBM-S1	17.2882
MEC	MEC	10.3211
RENSSELAER	RENSSELAER	0.3925

19.2 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
2155501	341431	2EDM-JBGALJ	EKPC	341728	2KNOB LICK	EKPC	1	EKPC_P4-2_GREEN W45-1014	breaker	46.0	97.6	102.68	AC	2.75

Bus #	Bus	MW Impact
940831	AE2-071 C	1.4030
940832	AE2-071 E	0.9353
CPL	CPL	0.0675
G-007A	G-007A	0.0192
VFT	VFT	0.0516
CBM-W2	CBM-W2	3.1361
CBM-W1	CBM-W1	0.0753
WEC	WEC	0.0066
CBM-S2	CBM-S2	0.2181
CBM-S1	CBM-S1	0.7148
TILTON	TILTON	0.0151
CBM-N	CBM-N	0.0038
BLUEG	BLUEG	0.7766
MEC	MEC	0.3280
CANNELTON	CANNELTON	0.0703
GIBSON	GIBSON	0.0178
TRIMBLE	TRIMBLE	0.0818
NYISO	NYISO	0.0132

19.3 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
2155211	341059	2BARREN CO	EKPC	341651	2HORSECAVE J	EKPC	1	EKPC_P4-2_SSHAD S11-1004	breaker	90.0	159.45	161.66	AC	2.34

Bus #	Bus	MW Impact
940041	AE1-246 C O1	24.9177
940042	AE1-246 E O1	12.1347
940051	AE1-247 C O1	42.3324
940052	AE1-247 E O1	20.9655
940831	AE2-071 C	1.1956
940832	AE2-071 E	0.7971
NEWTON	NEWTON	0.0138
CPLE	CPLE	0.0873
G-007A	G-007A	0.0336
VFT	VFT	0.0903
CBM-W2	CBM-W2	3.0890
CBM-S2	CBM-S2	0.2821
EDWARDS	EDWARDS	0.0042
CBM-S1	CBM-S1	0.9048
TILTON	TILTON	0.0391
CBM-N	CBM-N	0.0076
BLUEG	BLUEG	0.9619
MEC	MEC	0.2957
CANNELTON	CANNELTON	0.1565
GIBSON	GIBSON	0.0420
TRIMBLE	TRIMBLE	0.1002
NYISO	NYISO	0.0330

19.4 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
40564759	342286	2SOMERSET	EKPC	342287	2SOMERSET KU	EKPC	1	EKPC_P7-1_COOP 161 DBL 2	tower	115.0	100.97	104.6	AC	2.53

Bus #	Bus	MW Impact
342900	1COOPER1 G	4.2468
342903	1COOPER2 G	8.2367
939131	AE1-143 C	5.3222
939132	AE1-143 E	2.6362
940041	AE1-246 C O1	4.2138
940042	AE1-246 E O1	2.0521
940051	AE1-247 C O1	7.1587
940052	AE1-247 E O1	3.5454
940831	AE2-071 C	1.2907
940832	AE2-071 E	0.8605
CIN	CIN	0.4116
CPLE	CPLE	0.0278
IPL	IPL	0.1953
G-007	G-007	0.0819
LGE-0012019	LGE-0012019	5.0358
CBM-W2	CBM-W2	10.1630
CBM-W1	CBM-W1	0.7701
WEC	WEC	0.0978
O-066	O-066	0.5249
CBM-S2	CBM-S2	0.1640
CARR	CARR	0.0287
CBM-S1	CBM-S1	1.9610
MEC	MEC	1.2982
RENSSELAER	RENSSELAER	0.0227

19.5 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
2156031	342287	2SOMERSET KU	EKPC	324531	2FERGUSON SO	LGEE	1	EKPC_P7-1_COOP 161 DBL 2	tower	105.0	115.05	119.48	AC	3.21

Bus #	Bus	MW Impact
342900	1COOPER1 G	4.1542
342903	1COOPER2 G	8.0570
939131	AE1-143 C	6.4534
939132	AE1-143 E	3.1965
940041	AE1-246 C O1	5.3230
940042	AE1-246 E O1	2.5922
940051	AE1-247 C O1	9.0431
940052	AE1-247 E O1	4.4787
940831	AE2-071 C	1.6368
940832	AE2-071 E	1.0912
CIN	CIN	0.4949
CPLE	CPLE	0.0609
IPL	IPL	0.2315
G-007	G-007	0.0830
LGE-0012019	LGE-0012019	5.1458
CBM-W2	CBM-W2	13.1812
CBM-W1	CBM-W1	1.0017
WEC	WEC	0.1264
O-066	O-066	0.5317
CBM-S2	CBM-S2	0.2772
CARR	CARR	0.0294
CBM-S1	CBM-S1	2.5696
MEC	MEC	1.6817
RENSSELAER	RENSSELAER	0.0232

19.6 Index 6

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
2155982	342718	SCOOPER2	EKPC	324141	SELIHU	LGEE	1	EKPC_P7-1_LAURL 161 DBL	tower	277.0	109.96	111.52	AC	4.28

Bus #	Bus	MW Impact
342900	1COOPER1 G	8.5360
342903	1COOPER2 G	16.6060
342945	1LAUREL 1G	5.1663
939131	AE1-143 C	10.0672
939132	AE1-143 E	4.9866
940041	AE1-246 C O1	9.0658
940042	AE1-246 E O1	4.4150
940051	AE1-247 C O1	15.4018
940052	AE1-247 E O1	7.6279
940831	AE2-071 C	2.5672
940832	AE2-071 E	1.7115
CIN	CIN	0.5537
CPLE	CPLE	0.0833
IPL	IPL	0.2236
G-007	G-007	0.1680
LGE-0012019	LGE-0012019	7.9596
CBM-W2	CBM-W2	18.7461
CBM-W1	CBM-W1	1.1406
WEC	WEC	0.1470
O-066	O-066	1.0835
CBM-S2	CBM-S2	0.4100
CARR	CARR	0.0603
CBM-S1	CBM-S1	3.7610
MEC	MEC	2.2638
TRIMBLE	TRIMBLE	0.0239
RENSSELAER	RENSSELAER	0.0476

Affected Systems

20 Affected Systems

20.1 LG&E

An LG&E affected system study will be required for AE2-071.

20.2 MISO

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

20.3 TVA

None

20.4 Duke Energy Progress

None

21 Contingency Descriptions

Contingency Name	Contingency Definition
EKPC_P4-2_SSHAD S11-1004	CONTINGENCY 'EKPC_P4-2_SSHAD S11-1004' /* SUMMERSHADE OPEN BRANCH FROM BUS 940050 TO BUS 342814 CKT 1 /* 940050 AE1-247 TAP 161.00 342814 5SUMM SHADE 161.00 OPEN BRANCH FROM BUS 342811 TO BUS 342814 CKT 1 /* 342811 5SUMM SHAD T161.00 342814 5SUMM SHADE 161.00 OPEN BRANCH FROM BUS 342733 TO BUS 342814 CKT 1 /* 342733 5GREEN CO 161.00 342814 5SUMM SHADE 161.00 END
EKPC_P1-2_BARR-SUMSH161-B	CONTINGENCY 'EKPC_P1-2_BARR-SUMSH161-B' /* BARREN CO - SUMMERSHADE OPEN BRANCH FROM BUS 940050 TO BUS 342814 CKT 1 /* 940050 AE1-247 TAP 161.00 342814 5SUMM SHADE 161.00 END
EKPC_P4-2_GREEN W45-1014	CONTINGENCY 'EKPC_P4-2_GREEN W45-1014' /* GREEN CO OPEN BUS 342733 /* 5GREEN CO DROPS BUS OPEN BRANCH FROM BUS 342817 TO BUS 342818 CKT 1 /* 342817 5TAYLOR CO J161.00 342818 5TAYLR CO 161.00 OPEN BRANCH FROM BUS 342805 TO BUS 342817 CKT 1 /* 342805 5SALOMA T 161.00 342817 5TAYLOR CO J161.00 OPEN BRANCH FROM BUS 342802 TO BUS 342805 CKT 1 /* 342802 5SALOMA 161.00 342805 5SALOMA T 161.00 OPEN BRANCH FROM BUS 342775 TO BUS 342805 CKT 1 /* 342775 5MARION IP T161.00 342805 5SALOMA T 161.00 OPEN BRANCH FROM BUS 342772 TO BUS 342775 CKT 1 /* 342772 5MARION IP 161.00 342775 5MARION IP T161.00 OPEN BRANCH FROM BUS 342769 TO BUS 342775 CKT 1 /* 342769 5MARION CO 161.00 342775 5MARION IP T161.00 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
Base Case	
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

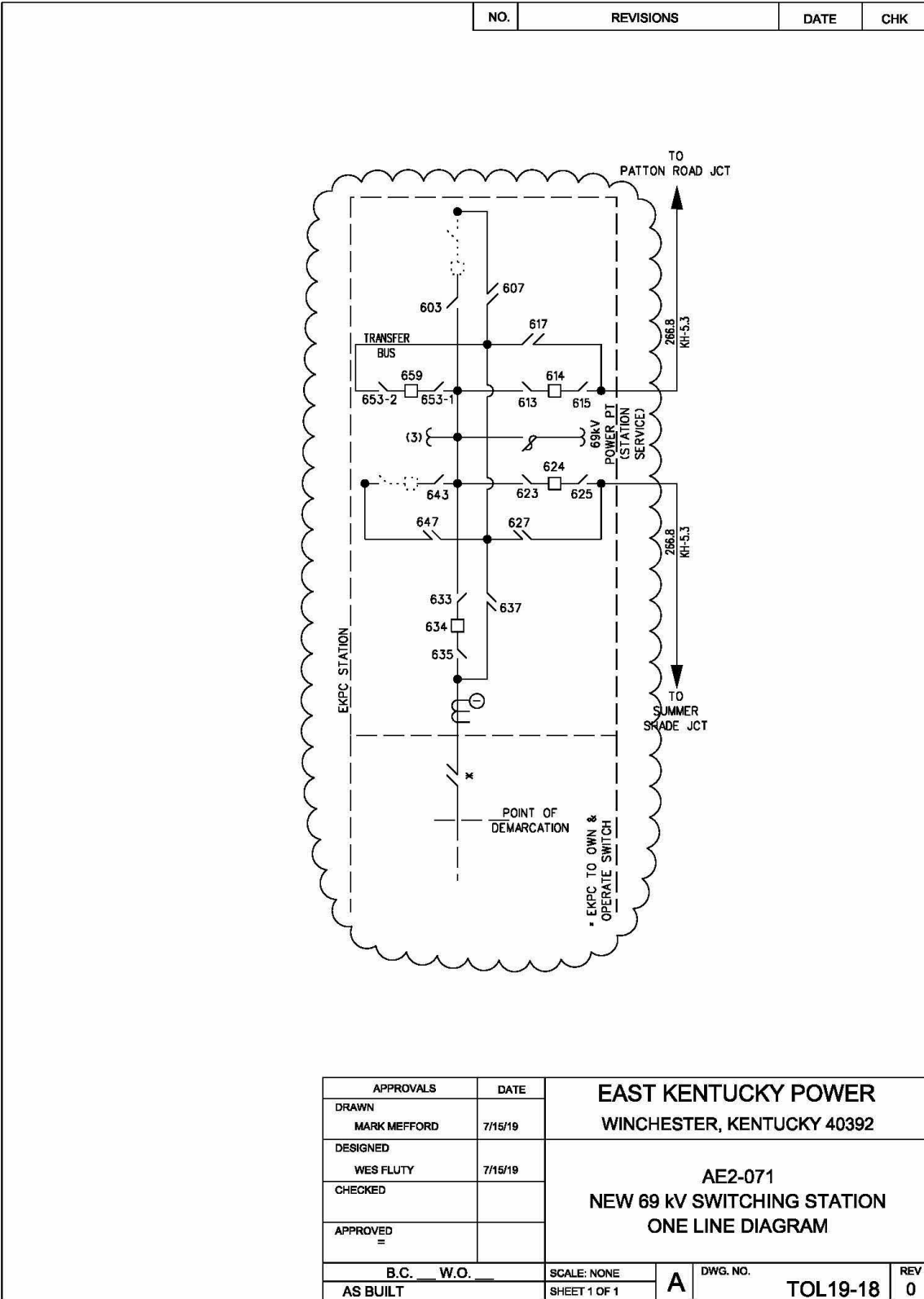
Contingency Name	Contingency Definition
AEP_P1-2_#1027	CONTINGENCY 'AEP_P1-2_#1027' OPEN BRANCH FROM BUS 248000 TO BUS 324114 CKT 1 / 248000 06CLIFTY 345 324114 7TRIMBLE CO 345 1 END
EKPC_P4-2_SSHAD S11-1044	CONTINGENCY 'EKPC_P4-2_SSHAD S11-1044' /* SUMMERSHADE OPEN BRANCH FROM BUS 940050 TO BUS 342814 CKT 1 /* 940050 AE1-247 TAP 161.00 342814 5SUMM SHADE 161.00 OPEN BRANCH FROM BUS 342700 TO BUS 342811 CKT 1 /* 342700 5BULLITT CO 161.00 342811 5SUMM SHAD T161.00 OPEN BRANCH FROM BUS 342811 TO BUS 360334 CKT 1 /* 342811 5SUMM SHAD T161.00 360334 5SUMMER SHAD161.00 OPEN BRANCH FROM BUS 342811 TO BUS 342814 CKT 1 /* 342811 5SUMM SHAD T161.00 342814 5SUMM SHADE 161.00 END
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
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

Short Circuit

22 Short Circuit

None

Attachment 1. Single Line Diagram (Primary POI)



Section 4(2)(j)

An analysis of the proposed facility's economic impact on the affected region and the state

The proposed facility will generate lasting and significant positive economic and fiscal impacts on the entire affected region and the state, both immediate impacts during the construction phase and impacts that present over time during the operational phase. The impacts include the creation of hundreds of construction jobs, meaningful expansion of the local tax base, and the benefits of having, for decades to come, a long-term employer and corporate citizen in the region that has a strong commitment to investing in the communities it serves. The investment in this facility brings a multiplier effect that magnifies each of these impacts. Moreover, the siting of the facility in a rural county that sits on the edge of an economically distressed region ranked among the poorest 10% of counties in the nation further amplifies the facility's positive impacts.

Economic Impact: Capital Investment

The Project will make a multi-million dollar capital investment in rural central Kentucky that will have direct, indirect, and induced impacts on a broad range of economic activities in the region and across the state and thus will have a widespread ripple effect on the economy at large. This injection of capital will lead to increased demand for products and services in the region, greater levels of income, and additional spending that directly benefit many local and regional businesses. This multiplier effect will cycle repeatedly and radiate out from the area where the money was spent, positively affecting broader regions as it spreads throughout the geographical area.

Economic Impact: Construction Phase

Construction of the facility is anticipated to create approximately 450 jobs -- 300 direct and 150 indirect and induced¹, the vast majority of which will be filled by local craft and contract workers. In addition to these skilled labor positions, there will be at least 30 highly paid construction management positions, including a project manager, assistant project manager, eight project engineers, two safety managers, and various support engineers, construction superintendents, and construction managers. These 450 jobs translate to a projected injection of approximately \$15M² in new wages into the local economy, which will support local businesses, and a labor income multiplier impact of an additional \$21.5M.³ The **total construction phase economic impact of the facility (exclusive of the capital investment and tax revenues) is projected to be at least \$36.5M.**

¹ Based on studies of direct, indirect, and induced job creation associated with Silicon Ranch's own projects using the IMPLAN platform and databases

² A conservative estimate based on Bureau of Labor Statistics, Average annual income solar photovoltaic installer: \$42,680, which does not account for higher income positions <https://www.bls.gov/ooh/construction-and-extraction/solar-photovoltaic-installers.htm> and United States Census Bureau, Quick Facts, Metcalfe County, Kentucky median income: \$35,809 <https://www.census.gov/quickfacts/fact/table/metcalfecountykentucky/POP060210>

³ Based on an income multiplier of 1.5. New Mexico State University, Income Multipliers in Economic Impact Analysis, https://aces.nmsu.edu/pubs/_z/Z108/welcome.html A multiplier of 1.5 is a conservative assumption for a depressed region like central Kentucky

Table 1. Economic Impact: Construction Phase

	Number of Jobs	Estimated Income (8 months)	Estimated Multiplier Impact to Economy	Total Construction Phase Economic Impact
Estimated Jobs Direct	300	\$10,000,000 ⁴	\$14,000,000 ⁵	
Estimated Jobs Indirect & Induced	150	\$5,000,000 ⁶	\$7,500,000 ⁷	
Total Economic Impact	450	\$15,000,000	\$21,500,000	\$36,500,000

Workforce Development

Local workers seeking utility-scale solar construction experience will be provided with on-site training in skills necessary for utility-scale solar construction jobs, including pile driving, tracker assembly, and panel installation. These workers will install more than 180,000 solar panels. The **new, high-value jobs and job training** associated with the construction of the solar facility will build an educated, **skilled workforce ready to succeed in the ongoing jobs of the future.**

In addition, during the operational phase, this facility is expected to support three direct, long-term, high value jobs and five indirect and induced jobs every year over the 40 year life of the asset.

Fiscal Impact: Operational Phase

This facility will have a meaningful revenue positive tax impact on Metcalfe County over its lifetime. The Project will pay approximately \$1 million in county property taxes over the first twenty years of operation, with ongoing county tax payments continuing after the first twenty years. These tax revenues will support local schools, infrastructure, and services. These new taxes are especially valuable because solar energy projects require no community services such as schools, roads, water or sewer in return for the taxes they pay.

Boosted Solar Market in Historically Economically Distressed Region

This facility will make an important contribution to the diversification of the economy in the region. In the five-year period between 2014 and 2019, solar employment in the United States increased 44%, five times faster than job growth in the overall economy. This facility will help provide Kentucky with the opportunity to be among the states that are adding solar jobs every year.

Large commercial and industrial organizations with 100% renewable energy goals increasingly make siting decisions based on access to 100% renewable energy. **Corporate commitments to renewable energy not only support local jobs in solar, but also help corporations reduce their bottom line and continue to grow in Kentucky.**

⁴ Bureau of Labor Statistics, Average annual income solar construction \$42,680 <https://www.bls.gov/ooh/construction-and-extraction/solar-photovoltaic-installers.htm>

⁵ Based on an income multiplier of 1.5. New Mexico State University, Income Multipliers in Economic Impact Analysis, https://aces.nmsu.edu/pubs/_z/Z108/welcome.html A multiplier of 1.5 is a conservative assumption for a region like central Kentucky

⁶ United States Census Bureau, Quick Facts, Metcalfe County, Kentucky \$35,809 <https://www.census.gov/quickfacts/fact/table/metcalfecountykentucky/POP060210>

⁷ Based on an income multiplier of 1.5. New Mexico State University, Income Multipliers in Economic Impact Analysis, 1.5 https://aces.nmsu.edu/pubs/_z/Z108/welcome.html

The investment in this facility will build on the work local officials are taking on to bring prosperity and opportunity to Metcalfe County and to the people who live there. At 23.3%,⁸ the 2018 Metcalfe County poverty rate was almost twice as higher as the 2018 national average.⁹

⁸ United States Census Bureau, Quick Facts, Metcalfe County, Kentucky
\$35,809 <https://www.census.gov/quickfacts/fact/table/metcalfecountykentucky/POP060210>

⁹ US Census Bureau, Income and Poverty in the United States: 2018
<https://www.census.gov/library/publications/2019/demo/p60-266.html>

Attachment H

The Site Assessment Report is
located in Volume II
of the Application



COMMONWEALTH OF KENTUCKY
MICHAEL ADAMS, SECRETARY OF STATE

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ADD

Michael G. Adams
Kentucky Secretary of State
Received and Filed:
2/7/2020 6:50 AM
Fee Receipt: \$90.00

Division of Business Filings P.O. Box 718 Frankfort, KY 40602 (502) 564-3490 www.sos.ky.gov	Certificate of Authority (Foreign Business Entity)	FBE
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Pursuant to the provisions of KRS 14A and KRS 271B, 273, 274, 275, 362 and 386 the undersigned hereby applies for authority to transact business in Kentucky on behalf of the entity named below and, for that purpose, submits the following statements:

1. The entity is a:
- | | | |
|--|---|---|
| <input type="checkbox"/> profit corporation (KRS 271B) | <input type="checkbox"/> nonprofit corporation (KRS 273) | <input type="checkbox"/> professional service corporation (KRS 274) |
| <input type="checkbox"/> business trust (KRS 386) | <input checked="" type="checkbox"/> limited liability company (KRS 275) | <input type="checkbox"/> professional limited liability company (KRS 275) |
| <input type="checkbox"/> limited partnership (KRS 362) | <input type="checkbox"/> ltd cooperative assn. (KRS) | <input type="checkbox"/> statutory trust |
| <input type="checkbox"/> non-profit llc (KRS 275) | <input type="checkbox"/> cooperative assn. (KRS) | <input type="checkbox"/> unincorporated association |

2. The name of the entity is Glover Creek Solar, LLC
(The name must be identical to the name on record with the Secretary of State.)

3. The name of the entity to be used in Kentucky is (if applicable): Glover Creek Solar, LLC
(Only provide if "real name" is unavailable for use; otherwise, leave blank.)

4. The state or country under whose law the entity is organized is North Carolina

5. The date of organization is 2/6/2019 and the period of duration is _____
(If left blank, duration is considered perpetual.)

6. The mailing address of the entity's principal office is
400 W. Main Street Durham NC 27701
Street Address City State Zip Code

7. The street address of the entity's registered office in Kentucky is
333 W. Vine Street, Suite 1500 Lexington KY 40507
Street Address (No P.O. Box Numbers) City State Zip Code

and the name of the registered agent at that office is James W. Gardner

8. The names and business addresses of the entity's representatives (secretary, officers and directors, managers, trustees or general partners):

Name	<u>Carson Harkrader</u>	<u>400 W. Main Street</u>	<u>Durham</u>	<u>NC</u>	<u>27701</u>
	<small>Street or P.O. Box</small>	<small>City</small>	<small>State</small>	<small>Zip Code</small>	

Name					
	<small>Street or P.O. Box</small>	<small>City</small>	<small>State</small>	<small>Zip Code</small>	

Name					
	<small>Street or P.O. Box</small>	<small>City</small>	<small>State</small>	<small>Zip Code</small>	

9. If a professional service corporation, all the individual shareholders, not less than one half (1/2) of the directors, and all of the officers other than the secretary and treasurer are licensed in one or more states or territories of the United States or District of Columbia to render a professional service described in the statement of purposes of the corporation.

10. I certify that, as of the date of filing this application, the above-named entity validly exists under the laws of the jurisdiction of its formation.

11. If a limited partnership, it elects to be a limited liability limited partnership. Check the box if applicable:

12. If a limited liability company, check box if manager-managed:

13. This application will be effective upon filing, unless a delayed effective date and/or time is provided. The effective date or the delayed effective date cannot be prior to the date the application is filed. The date and/or time is _____

Please indicate the Kentucky county in which your business operates:
 County: Metcalf

To complete the following, please shade the box completely.

Please indicate the size of your business: <input type="checkbox"/> Small (Fewer than 50 employees) <input type="checkbox"/> Large (50 or more employees)	Please indicate whether any of the following make up more than fifty percent (50%) of your business ownership: <input checked="" type="checkbox"/> Women-Owned <input type="checkbox"/> Veteran Owned <input type="checkbox"/> Minority Owned
---	--

Please indicate which of the following best describes your business:

<input type="checkbox"/> Agriculture	<input type="checkbox"/> Mining	<input type="checkbox"/> Services	<input type="checkbox"/> Construction
<input type="checkbox"/> Wholesale Trade	<input type="checkbox"/> Retail Trade	<input type="checkbox"/> Manufacturing	<input type="checkbox"/> Finance, Insurance, Real Estate
<input type="checkbox"/> Public Administration	<input checked="" type="checkbox"/> Transportation, Communications, Electric, Gas, Sanitary Services		
<input type="checkbox"/> Other			

Signature of Authorized Representative <u>James W. Gardner</u>	Carson Harkrader, CEO	2/3/20
I, <u>James W. Gardner</u> , consent to serve as the registered agent on behalf of the business entity.		
Signature of Registered Agent 	James W. Gardner	Attorney <u>2/3/20</u>
Signature of Registered Agent Printed Name Title Date		

**KENTUCKY STATE BOARD ON ELECTRIC
GENERATION AND TRANSMISSION SITING**

**GLOVER CREEK SOLAR, LLC
CASE NO. 2020-00043**

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

Comes the undersigned and states as follows:

1. That my name is Carson Harkrader and I am the CEO of Carolina Solar Energy III, LLC, the Manager of Glover Creek Solar, LLC, the Applicant herein;
2. That I am over 18 years of age and am a resident of the State of North Carolina;
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 278.704(3).
5. There is no planning and zoning commission for Metcalfe County, where the Glover Creek's project is located.

Signed this 25th day of March 2020.



Carson Harkrader