Bluegrass Plains Solar Project
Site Assessment Report

April 2024

PRESENTED TO

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PRESENTED BY

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ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
AC	Alternating Current
BMP	Best Management Practice
DC	Direct Current
EKPC	East Kentucky Power Cooperative
KPDES	Kentucky Pollutant Discharge Elimination System
KRS	Kentucky Revised Statutes
kV	Kilovolt
LDP	Land Disturbance Permit
MW	Megawatt
NSR	Noise Sensitive Receptor
O&M	Operations and Maintenance
POI	Point of Interconnection
PSC	Public Service Commission
PV	Photovoltaic
SAR	Site Assessment Report
SWPPP	Stormwater Pollution Prevention Plan
US	United States

1.0 INTRODUCTION

East Kentucky Power Cooperative (EKPC) (the Applicant) plans to construct and operate the Bluegrass Plains Solar Project (the Project), a solar photovoltaic power generation facility which will consists of an up to 40-megawatt (MW) ground-mounted solar photovoltaic system and related interconnection and ancillary facilities located in Fayette County, Kentucky.

1.1 APPLICABLE STATUTES

This Site Assessment Report (SAR), as specified in the Kentucky Revised Statues (KRS) 278.708, has been prepared for the Applicant as part of their application requesting a site compatibility certificate pursuant to KRS 278.216(1)-(2) from the Kentucky Public Service Commission (PSC).

The requirements of the SAR as outlined in KRS 278.708(3)-(4) are listed below:

(3) A completed site assessment report shall include:

(a) A description of the proposed facility that shall include a proposed site development plan that describes:

1. Surrounding land uses for residential, commercial, agricultural, and recreational purposes;

2. The legal boundaries of the proposed site;

3. Proposed access control to the site;

4. The location of facility buildings, transmission lines, and other structures;

5. Location and use of access ways, internal roads, and railways;

6. Existing or proposed utilities to service the facility;

7. Compliance with applicable setback requirements as provided under KRS 278.704(2), (3), (4), or (5); and

8. Evaluation of the noise levels expected to be produced by the facility;

(b) An evaluation of the compatibility of the facility with scenic surroundings;

(c) The potential changes in property values and land use resulting from the siting, construction, and operation of the proposed facility for property owners adjacent to the facility;

(d) Evaluation of anticipated peak and average noise levels associated with the facility's construction and operation at the property boundary; and

(e) The impact of the facility's operation on road and rail traffic to and within the facility, including anticipated levels of fugitive dust created by the traffic and any anticipated degradation of roads and lands in the vicinity of the facility.

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

2.0 FACILITY DESCRIPTION (KRS 278.708(3)(a))

The proposed Project is located on approximately 386± acres of agricultural land on contiguous parcels in Fayette County, Kentucky between US Highway 60 (Winchester Road) along the property's southern border and Interstate 64 (I-64) along the property's northern border. The Project will include one (1) access road and gate from US 60 and a network of internal roads and gates. The access road and internal roads will be approximately 20 feet in width. Project components will include photovoltaic (PV) solar modules mounted on single axis tracker systems supported by steel posts. Panels will move to track the sun over the course of the day. Other components of the PV system include inverters, medium voltage transformers, junction boxes, DC and AC electrical collection systems, and collection lines. The Project components will connect to the existing EKPC-owned substation located adjacent to the Project's southwest boundary line. A preliminary Site Plan showing the location of proposed panels, inverters, access and internal roads, and fence lines is included in **Appendix A**.

2.1 SURROUNDING LAND USE (KRS 278.708(3)(a)(1))

The adjoining land use is primarily a mix of agricultural and residential properties. The table below shows a breakdown of the surrounding land use as described in the Property Value Impact Study, included as **Appendix B.**

Table 2-1. Surrounding Land Use Breakdown

Zoning Classification	Percent of Adjoining Acres	Percent of Adjoining Parcels
Agricultural/Residential	50.52	13.89
Residential	32.31	80.56
Agricultural	15.19	2.78
Utility	1.98	2.78

2.2 SITE LEGAL BOUNDARIES (KRS 278.708(3)(a)(2))

A description of the Project's legal boundaries is included as **Appendix C**.

2.3 SITE ACCESS CONTROL (KRS 278.708(3)(a)(3))

Access to the site will be provided via one (1) gated access road off US 60. The entire Project will be surrounded by security fence. The location of the proposed access road and security fence are shown on the Site Plan in **Appendix A.**

2.4 SITE PLAN (KRS 278.708(3)(a)(4))

The Site Plan included in **Appendix A** shows the proposed facility layout, including property lines, access road, internal roads, fence lines, vegetative buffers, and limits of disturbance. Existing features, such as adjacent roads, tree lines, utilities, easements, waterbodies, wetlands, and historical features are also shown on the Site Plan.

The proposed structures for the Project include PV panels and inverters, which cover the majority of the site. Solar panels will be installed on single-axis ground-mounted racking systems using steel piles driven approximately 5-10 feet into the ground. The height of the PV panels will reach approximately 15 feet from the ground at maximum tilt. Inverters will be installed on concrete pads surrounded by gravel. Collection lines will be installed in a below-ground trench and/or attached to the racking system. The Project will likely also include the installation of a small operations and maintenance (O&M) building, the location of which will be determined during construction. In addition to existing utility easements, the location of proposed structures will be determined by the legal setbacks, as discussed in Section 2.7.

The point of interconnection (POI) between the proposed Project and the existing transmission system will be the existing Avon Substation owned by EKPC, located adjacent to the southwest boundary of the site. Several transmission lines connect to the substation, some of which run through the Project site. Collection lines will run from the racking system and inverters to the POI.

2.5 SITE ACCESS / INTERNAL ROADS / RAILWAYS (KRS 278.708(3)(a)(5))

As previously stated, access to the site will be provided by one (1) gated access road off US 60. The access point will be used both during construction and during operations after construction is complete. Internal gravel roads 20 feet in width will be installed during the construction phase to deliver equipment and materials to various areas of the site. The gravel roads will be maintained throughout construction and be used for O&M purposes when construction is complete.

The entire site will be fenced for security and appropriate signage will be placed to warn potential trespassers of electrical risk. The location of proposed access point, internal roads, and fencing are shown on the Site Plan in **Appendix A**. There are no existing or proposed railways in the area that will be used or affected by the construction or operation of the Project. A discussion on railways is also provided in the Traffic Study included as **Appendix E**.

2.6 SITE UTILITIES (KRS 278.708(3)(a)(6))

Electric service during construction will be provided by EKPC using the existing transmission and/or distribution service that transverses the Project site. It is anticipated that any electric service needed at the site after construction is complete (for O&M) will be provided either by the electricity generated at the site (during daytime operations) or by the EKPC transmission/distribution service (during nighttime operations).

Water service, for O&M workers and dust suppression, will be provided by a metered service connection to the Kentucky American Water main which runs adjacent to the south property boundary along US 60. Portable toilets will be installed during construction; if long-term sanitary waste disposal is required, a septic system and associated leach field will be installed at the site.

2.7 SETBACK REQUIREMENTS (KRS 278.708(3)(a)(7))

The Project will not include installation of exhaust stacks or wind turbines, and coal will not be used as a fuel source. However, the Applicant will be requesting a deviation from the setback requirements in KRS 278.704(2-5) which includes the following setback requirements:

- 1,000-ft setbacks from property boundary of any adjoining property owner – applies to exhaust stacks, and solar or wind generation
- 2,000-ft setbacks from any residential neighborhood, school, hospital, or nursing home facility – applies to all proposed structures or facilities used for generation of electricity

According to the Fayette County Property Value Administrator, there is one adjoining property with a property class of "Residential," and two areas that would be considered residential neighborhoods near the south and southwest property boundary. The Applicant proposes the following setbacks from residential structures and neighborhoods:

- 300-ft setback from all residential structures – applies to fencing and PV panels
- 450-ft setback from all residential structures – applies to central inverters
- 300-ft setback from all residential neighborhoods – applies to fencing, PV panels, and central inverters

There are no schools, hospitals, or nursing home facilities in the vicinity of the Project.

In addition, the Project proposes to use the following setbacks for all fencing, PV panels, and associated equipment:

- 50-ft setbacks from streams
- 25-ft setbacks from floodplains
- 25-ft setbacks from "side" and "rear" yards and adjacent properties
- 50-ft setback from road right-of-way
- 50-ft setback from historical features (e.g., cemetery)

Finally, a 15-ft vegetative buffer will be installed where sufficient tree screening does not previously exist. All setbacks, including vegetative buffers, are shown in the Site Plan in **Appendix A**.

2.8 NOISE LEVEL EVALUATION (KRS 278.708(3)(a)(8))

Peak and average noise levels expected to be produced by the facility during construction and operation were studied and are presented in the Acoustic Study included as **Appendix D**. A summary is included in Section 5.0.

3.0 SITE COMPATIBILITY WITH SCENIC SURROUNDINGS (KRS 278.708(3)(b))

The Project is located between US 60 and I-64 on generally low-rolling, open terrain with steeper areas near streams and wetlands that will not be part of the buildable area. Large portions of the site are not visible from surrounding roads or residential properties, and most of the site boundaries have existing vegetation (trees and/or brush) that ranges from 5 feet to 40 feet in height. Existing tree lines along the site boundaries will remain; where tree screening is scant or composed of deciduous species, a 15-ft vegetative buffer will be installed to provide visual screening throughout the year.

As noted in the Property Value Impact Study attached as **Appendix B**, "solar farms using fixed or tracking panels are a passive use of the land that is in keeping with a rural/residential area…solar farms are comparable to large greenhouses… [the use of which] is well received in residential/rural areas." The PV panels for the proposed Project will be less than 15 feet high at their highest tilt, which is lower than a typical single-story residential dwelling. As stated in the Property Value Impact Study, "Were the subject property developed with single family housing, that development would have a much greater visual impact on the surrounding area given that a two-story home with attic could be three to four times as high as these proposed panels."

The Project is located on a property that has historically been used for agricultural purposes; primarily corn and/or hay production. The surrounding vicinity contains scattered rural residencies, the closest of which is approximately 315 feet from the nearest proposed panel. The buildable area for the Project will maintain a 300-foot buffer from all residential homes. Anti-glare PV panels will be used for the Project to minimize glare impacts to vehicles travelling on US 60 and I-64.

The Project will be visible to the public along US 60 and I-64, and also at the intersection of US 60 and Combs Ferry Road. Figures 1-5 show the viewpoints from or to the Project site near US 60 and Combs Ferry Road. See Figure 6 for the location of these viewpoints in relation to the Project site.

Figure 1. Near Access Point #1 Looking East at US 60

Figure 2. Near Access Point #1 Looking West at US 60

Figure 3. Intersection of US 60 and Combs Ferry Road, Looking East at US 60

Figure 4. Intersection of US 60 and Combs Ferry Road, Looking West at US 60

Figure 5. Looking North at Project Site from Combs Ferry Road

Figure 6. Photo Location Map

4.0 PROPERTY VALUE IMPACT STUDY (KRS 278.708(3)(c))

The Property Value Impact Study, performed by Kirkland Appraisals, LLC, is included as **Appendix B**. The study used a Matched Pair Analysis, comparing sales of properties adjoining existing solar farms with those of similar properties that do not adjoin an existing solar farm to determine the potential impact of the proposed Project on adjoining property values. The study concluded that the Project would not negatively impact adjoining property values. The study did note that the only category of impact would be appearance, which is addressed through setbacks and landscaping buffers shown on the Site Plan in **Appendix A**.

5.0 ACOUSTIC STUDY (KRS 278.708(3)(d))

The Acoustic Study, performed by Tetra Tech, is included as **Appendix D**. The study modeled the peak and average anticipated noise levels to determine the impact of the Project on noise sensitive receptors (NSRs, e.g., residences) during construction and operation phases. The model used full octave band sound frequencies algorithms that account for site-specific ground, topography, and propagation under standardized meteorological conditions.

Results of the acoustic modeling study showed that noise generated by the Project during construction and operation would have a minimal effect on NSRs in the vicinity. Noise generated during the construction phase by standard construction equipment would be periodically audible at off-site locations; however, it would be intermittent and temporary. Noise generated by equipment used during the Project's operational phase such as inverters, tracking motors, transformers, and the existing substation are not expected to adversely affect the surrounding community. Sound levels decrease with distance from the Project site, and over time as the Project moves from construction phase to operation phase.

6.0 TRAFFIC AND DUST STUDY (KRS 278.708(3)(e))

The Traffic Study, performed by Tetra Tech, is included as **Appendix E**. The Traffic Study used existing traffic volume data to establish historical daily traffic volumes in the vicinity of the Project area and estimated additional traffic volume during construction and post-construction phases. This data was used to determine the impact of the facility's operation on road and rail traffic in the Project vicinity. Results of the Traffic Study showed that traffic will minimally increase during the peak construction phase, a period of approximately two to three months, particularly during the weekday morning and evening peak hours, when construction workers are entering and leaving the site. The site will only be accessible from US 60, which has ample capacity to support the Project's peak construction operations. During the operational phase, Project-related traffic levels will significantly decrease with only occasional routine inspection and maintenance of the solar panels and associated equipment. A sight distance evaluation of the proposed access driveway showed that it exceeded American Association of State Highway and Transportation Officials (AASHTO) criteria.

Dust levels at the Project site are expected to be minimal and will reach peak levels during the two- to three-month peak construction phase. Dust levels will be monitored, especially during dry weather conditions, and will be mitigated by maintaining clean construction vehicles and the application of water, if required. Prior to construction, the selected contractor will apply for a general Kentucky Pollutant Discharge Elimination System (KPDES) Permit from the Kentucky Division of Water which will require the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP will provide best management practices (BMP) for erosion control, as well as dust mitigation, and a framework for regular inspections and maintenance of construction entrances and access roads.

BMPs to reduce fugitive dust include, but are not limited to the following practices:

- Phasing construction activities to minimize the total area unstabilized at any given time, thereby reducing dust production due to air movement
- Watering construction roads as needed
- Retaining existing trees, shrubs, and ground cover as long as possible during construction, and applying seed and mulch immediately following fence and/or equipment installation
- Covering soil stockpiles and open-top trucks with plastic sheeting or tarps to prevent soil particles from dispersing to the air
- Washing construction vehicles and equipment prior to leaving the site
- Maintaining gravel roads by applying gravel and compacting as needed based on routine inspection.

Access roads will be maintained after construction is completed and are not expected to generate significant fugitive dust.

7.0 MITIGATION MEASURES (KRS 278.708(3))

Potential impacts to the environment and surrounding community of Fayette County will be avoided or minimized by actions taken during the design, construction, operation, and decommissioning phases of the Project. Mitigation measures are detailed in the following sections.

7.1 MITIGATION MEASURES DURING DESIGN

While there are no existing setback or zoning requirements for solar facilities as established by the Fayette County Planning and Zoning Ordinance, the Project will adhere to Project-specific setbacks from environmental features such as streams, wetlands, and floodplains, as well as road right-of-ways and adjacent property lines. In addition, no solar panels will be installed within a 300-ft radius of any residential structure.

Wherever possible, the Project will retain tree cover to maintain compatibility with scenic surroundings, particularly at the site boundaries to mitigate viewshed impacts. A 15-ft vegetative buffer will be installed at property lines where existing tree or shrub cover is scant to provide screening of the project from nearby residential structures. A detailed Landscaping Plan will be developed as Project design progresses.

The Applicant has completed a wetland survey which will also be submitted to the PSC, and any wetlands or jurisdictional waterways delineated by the survey will be protected and avoided during the design and construction phase. The placement of fencing and solar equipment will be modified as necessary to minimize impacts to existing wetlands and may differ slightly from the preliminary site layout presented in **Appendix A**. In addition, the Applicant will complete a threatened and endangered species assessment, which will identify the presence of any endangered species common to the area such as the Indiana, Gray, and Northern Long-eared Bat. Appropriate mitigation measures will be taken to minimize endangered species impacts if necessary.

Roadway degradation is not expected; however, the Applicant will document public roadway conditions prior to the beginning of construction. Once construction is completed, a post-construction review of public roadway conditions will be completed, and any degradation that has occurred due to construction activity will be mitigated.

7.2 MITIGATION MEASURES DURING CONSTRUCTION

Prior to construction, the Applicant or selected contractor will obtain all required federal, state, and local regulatory permits including a Land Disturbance Permit (LDP) from the Lexington-Fayette Urban County Government, and a

general KPDES Permit from the Kentucky Division of Water to manage erosion and stormwater runoff associated with construction activities. The general KPDES Permit requires the development and implementation of a SWPPP, which will identify specific BMPs to be installed prior to earth moving activities, such as silt fencing, sediment basins, rock check dams, and construction entrances. Stormwater management structures will be installed prior to installation of solar equipment to control runoff during the construction phase. Fugitive dust will be controlled using various mitigation measures listed in Section 6.0.

Scheduled construction work will be limited to weekdays during daylight hours, unless schedule recovery or weather delays dictate otherwise, to mitigate potential noise impacts to surrounding noise sensitive receptors. An informational sign will be installed at the proposed site entrance which will include contact information to allow for feedback from the public. Any public concerns will be addressed and responded to in a timely manner. The entire site perimeter will be fenced to deter vandalism and warn potential trespassers of electrical risk.

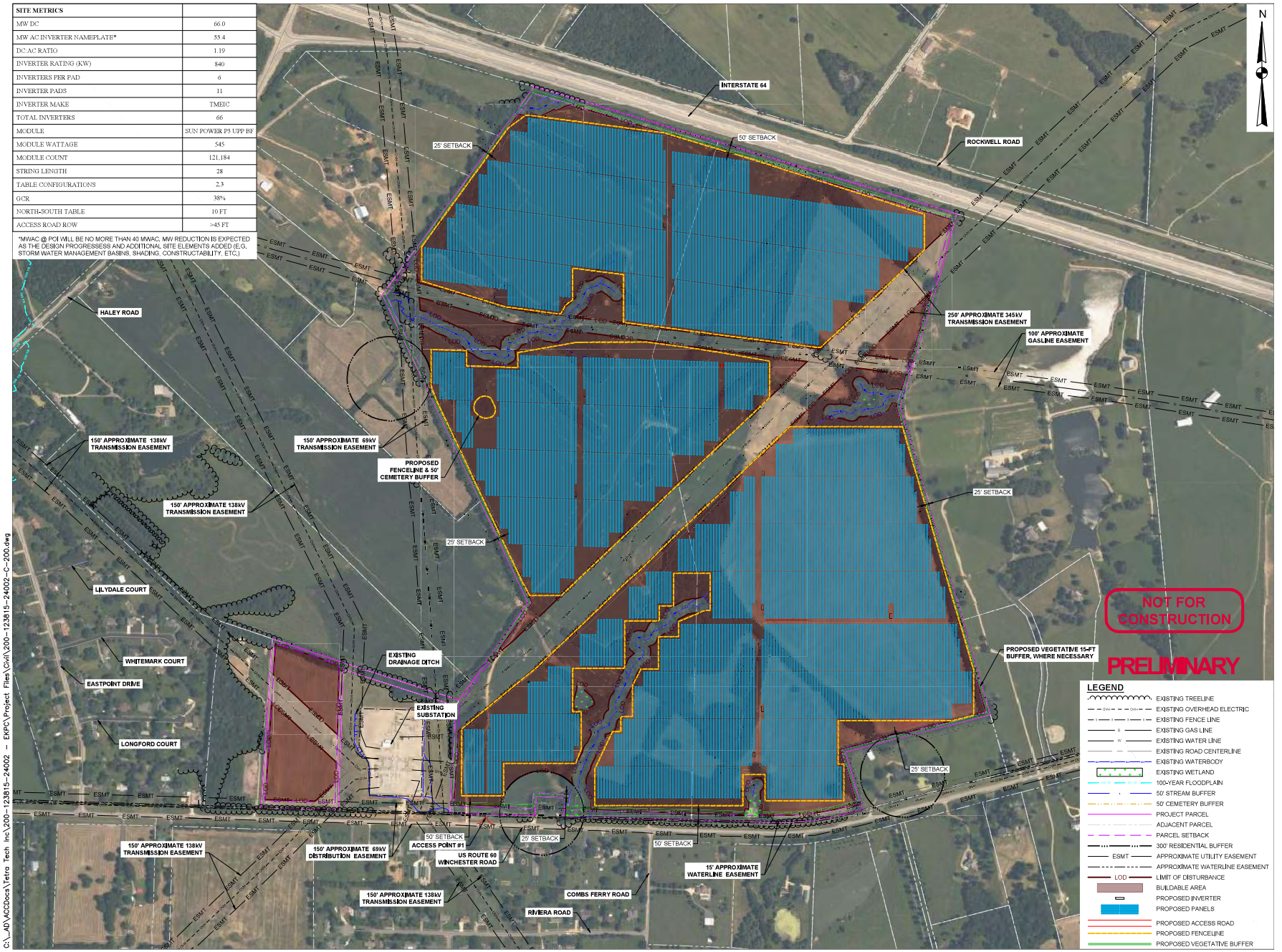
7.3 MITIGATION MEASURES DURING OPERATIONS

After completion of construction, installed vegetation, including vegetative buffers and grass cover, will be evaluated to ensure proper growth, and will be maintained in accordance with the O&M Plan. Vegetation will be supplemented if necessary. An Emergency Response Plan will be developed with input from local emergency responders to protect site workers and the surrounding community. A Decommissioning Plan will also be prepared to ensure that the project area is restored to its pre-operational condition once the Project has reached the end of its operational phase.

APPENDIX A: PRELIMINARY SITE DEVELOPMENT PLAN

SITE METRICS	
MW DC	66.0
MW AC INVERTER NAMEPLATE*	55.4
DC:AC RATIO	1.19
INVERTER RATING (KW)	840
INVERTERS PER PAD	6
INVERTER PADS	11
INVERTER MAKE	TMEIC
TOTAL INVERTERS	66
MODULE	SUN POWER P5 UPP BF
MODULE WATTAGE	545
MODULE COUNT	121,184
STRING LENGTH	28
TABLE CONFIGURATIONS	2.3
GCR	38%
NORTH-SOUTH TABLE	10 FT
ACCESS ROAD ROW	>45 FT

*MWAC @ POI WILL BE NO MORE THAN 40 MWAC. MW REDUCTION IS EXPECTED AS THE DESIGN PROGRESSESS AND ADDITIONAL SITE ELEMENTS ADDED (E.G. STORM WATER MANAGEMENT BASINS, SHADING, CONSTRUCTABILITY, ETC.)



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EAST KENTUCKY POWER COOPERATIVE

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STAMP:

COMMONWEALTH OF KENTUCKY
RICHARD B. LEMASTER
19309
LICENSED
PROFESSIONAL ENGINEER

BLUEGRASS PLAINS SOLAR PROJECT

EKPC
FAYETTE COUNTY
KENTUCKY

PROJECT NUMBERS:
200-123815-24002

SHEET TITLE:
SITE PLAN OVERALL SHEET

SHEET SIZE: ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

NO.	REVISION	DATE	INIT.
A	SUBMITTAL	01-19-24	DAM
B	RE-SUBMITTAL	03-11-24	DAM
C	RE-SUBMITTAL	04-03-24	DAM

Kentucky811
Know what's below. 811 before you dig.

DATE:	04/03/2024
DRAWN BY:	JZ
ENGINEER:	AED
APPROVED BY:	DAM

PROJECT PHASE:
INITIAL SITE PLAN

SCALE:
1" = 300'

SHEET NO.:
C-200

APPENDIX B: PROPERTY VALUE IMPACT STUDY

Kirkland Appraisals, LLC

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rkirkland2@gmail.com
www.kirklandappraisals.com

January 17, 2024

Ms. Lucy Pacholik
Tetra Tech
Representing East Kentucky Power Cooperative (EKPC)
424 Lewis Hargett Circle, Suite 110
Lexington, KY 40503

RE: Bluegrass Plains Solar, off Winchester Road, near Lexington, Fayette County, KY

Ms. Pacholik

At your request, I have considered the impact of a 40 MW solar farm proposed to be constructed on a 315-acre portion of a 388-acre assemblage of land off Winchester Road, near Lexington, Fayette County, Kentucky. Specifically, I have been asked to give my professional opinion on whether the proposed solar farm will have any impact on adjoining property value and whether "the location and character of the use, if developed according to the plan as submitted and approved, will be in harmony with the area in which it is to be located."

To form an opinion on these issues, I have researched and visited existing and proposed solar farms in Kentucky as well as other states, researched articles through the Appraisal Institute and other studies, and discussed the likely impact with other real estate professionals. I have not been asked to assign any value to any specific property.

This letter is a limited report of a real property appraisal consulting assignment. My client is Tetra Tech, representing East Kentucky Power Coopoerative (EKPC) represented to me by Ms. Lucy Pacholik. My findings support the Kentucky Siting Board Application. The effective date of this consultation is January 17, 2024.

While based in NC, I am also a Kentucky State Certified General Appraiser #5522.

Conclusion

The adjoining properties are well set back from the proposed solar panels and supplemental vegetation is proposed to enhance the areas where the existing trees do not currently provide a proper screen. The closest non-participating home will be 300 feet from the nearest panel and the average distance will be 922 feet.

The matched pair analysis shows no impact on home values due to abutting or adjoining a solar farm as well as no impact to abutting or adjacent vacant residential or agricultural land where the solar farm is properly screened and buffered. The criteria that typically correlates with downward adjustments on property values such as noise, odor, and traffic all indicate that a solar farm is a compatible use for rural/residential transition areas and that it would function in a harmonious manner with this area.

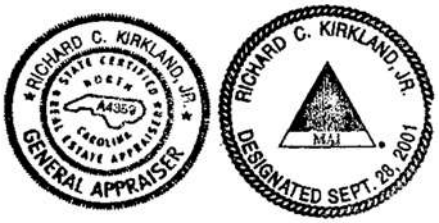
Data from the university studies, broker commentary, and other appraisal studies support a finding of no impact on property value adjoining a solar farm with proper setbacks and landscaped buffers.

Very similar solar farms in very similar areas have been found by hundreds of towns and counties not to have a substantial negative effect to abutting or adjoining properties, and many of those findings of no impact have been upheld by appellate courts. Similar solar farms have been approved with adjoining agricultural uses, schools, churches, and residential developments.

Based on the data and analysis in this report, it is my professional opinion that the solar farm proposed at the subject property will have no impact on the value of adjoining or abutting properties and that the proposed use is in harmony with the area in which it is located. I note that some of the positive implications of a solar farm that have been expressed by people living next to solar farms include protection from future development of residential developments or other more intrusive uses, reduced dust, odor and chemicals from former farming operations, protection from light pollution at night, it is quiet, and there is minimal traffic.

If you have any questions please contact me.

Sincerely,



Richard C. Kirkland, Jr., MAI
NC Certified General Appraiser A4359
KY Certified General Appraiser #5522

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I. Proposed Project and Adjoining Uses

Proposed Use Description

This 40 MW solar farm is proposed to be constructed on a 315-acre portion of a 388-acre assemblage of land off Winchester Road, near Lexington, Fayette County, Kentucky.

Adjoining Properties

I have considered adjoining uses and included a map to identify each parcel's location. Based on the current site plan the closest adjoining home will be 300 feet from the closest solar panel and the average distance to adjoining homes will be 922 feet to the nearest solar panel.

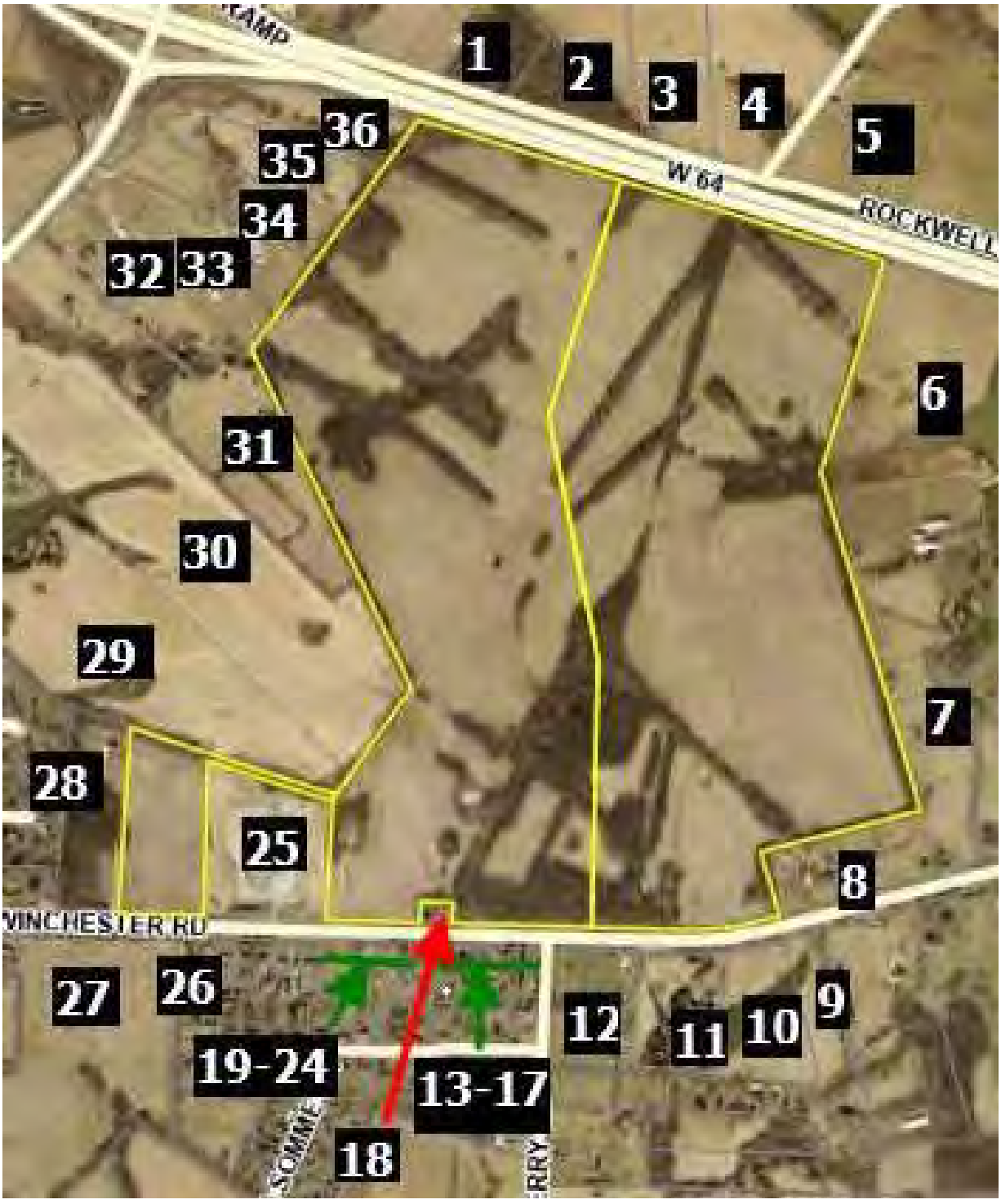
Adjoining land is primarily a mix of residential and agricultural uses, which is very typical of solar farm sites.

The breakdown of those uses by acreage and number of parcels is summarized below.

Adjoining Use Breakdown

	Acreage	**Parcels**
Residential	32.31%	80.56%
Agricultural	15.19%	2.78%
Agri/Res	50.52%	13.89%
Utility	1.98%	2.78%
Total	**100.00%**	**100.00%**

GIS Aerial Map



Proposed Site Layout

Areas in Red and White have no panels, with the areas in blue stripes representing solar panels.

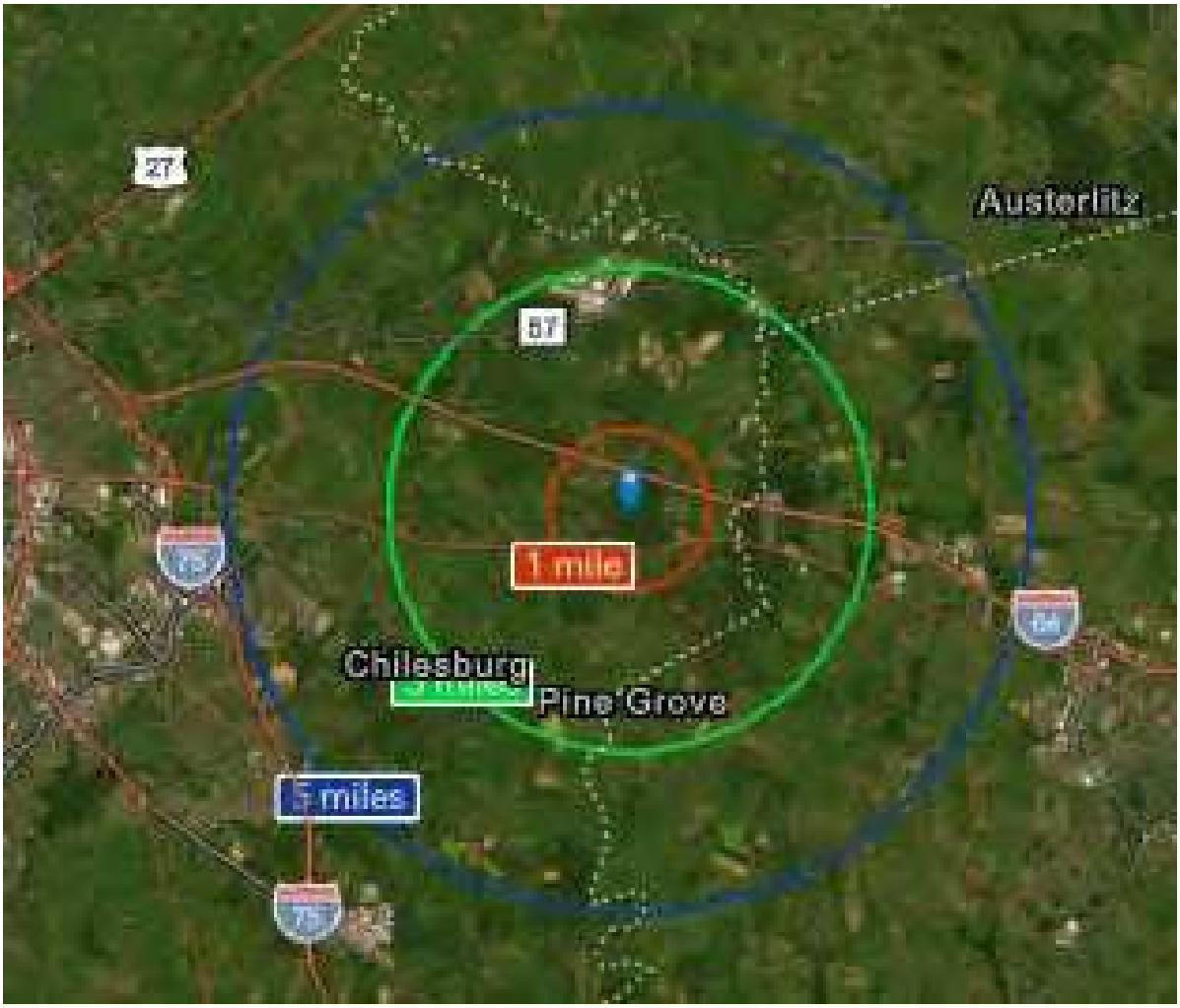
The chart on the following page shows the adjoining parcels. In that chart, N/A indicates that there is no adjoining home to which to measure. Linear feet of adjacency listed in red means that the property is across a right of way from the subject property. Linear feet of adjacency of 1 foot is assigned where properties meet at a corner.

Surrounding Uses

			GIS Data		Adjoin	Adjoin	Distance (ft)	L.F
#	MAP ID	Owner	Acres	Present Use	Acres	Parcels	Home/Panel	Adjacent
1	20114010	Short	11.22	Residential	1.72%	2.78%	N/A	530
2	19978070	Buchanan	20.25	Residential	3.11%	2.78%	N/A	1060
3	19978080	Buchanan	20.00	Residential	3.07%	2.78%	N/A	345
4	19978090	Buchanan	20.00	Residential	3.07%	2.78%	N/A	330
5	22487400	Pelphrey	63.62	Agri/Res	9.76%	2.78%	830	900
6	38089940	Joanna	106.00	Agri/Res	16.27%	2.78%	690	3035
7	38089930	Joanna	10.00	Residential	1.53%	2.78%	940	700
8	22780501	Harrison	10.60	Residential	1.63%	2.78%	330	1450
9	19337010	Grimes	10.00	Residential	1.53%	2.78%	1,370	1
10	19334530	Grimes	10.00	Residential	1.53%	2.78%	N/A	380
11	19334520	Hobbs	10.00	Residential	1.53%	2.78%	540	550
12	19334630	Justice	10.00	Residential	1.53%	2.78%	510	570
13	21915925	Peacher	1.28	Residential	0.20%	2.78%	300	170
14	20770700	Weiss	1.05	Residential	0.16%	2.78%	300	110
15	20223025	Marchildon	1.05	Residential	0.16%	2.78%	300	130
16	22926400	Hicks	1.05	Residential	0.16%	2.78%	315	140
17	21229700	Clark	1.26	Residential	0.19%	2.78%	385	60
18	26846350	Smith	0.98	Residential	0.15%	2.78%	330	470
19	26610800	Jones	1.05	Residential	0.16%	2.78%	495	1
20	26717700	Browning	1.05	Residential	0.16%	2.78%	590	125
21	27087400	Kendrick	1.05	Residential	0.16%	2.78%	700	135
22	20442200	Marshall	1.26	Residential	0.19%	2.78%	825	150
23	20442100	Marshall	1.52	Residential	0.23%	2.78%	N/A	185
24	20442000	Whitlock	1.68	Residential	0.26%	2.78%	1,160	1
25	94021130	East KY	12.92	Utility	1.98%	2.78%	N/A	2600
26	24308900	Pence	2.16	Residential	0.33%	2.78%	1,860	170
27	22329100	Bank	99.00	Agricultural	15.19%	2.78%	N/A	390
28	20113970	Wilson	11.00	Residential	1.69%	2.78%	2,050	1220
29	19966590	Walker	69.89	Agri/Res	10.73%	2.78%	2,435	1535
30	19966580	GSS	68.26	Agri/Res	10.48%	2.78%	3,070	1500
31	19976950	Craig	21.38	Agri/Res	3.28%	2.78%	785	1625
32	21952000	Thomsen	10.00	Residential	1.53%	2.78%	N/A	310
33	38059240	Booth	10.00	Residential	1.53%	2.78%	1,500	355
34	38059250	Booth	10.00	Residential	1.53%	2.78%	N/A	340
35	38059260	Helton	10.00	Residential	1.53%	2.78%	450	360
36	38059270	Helton	11.00	Residential	1.69%	2.78%	N/A	430
		Total	**651.580**		**100.00%**	**100.00%**	922	

II. Demographics

I have pulled the following demographics for a 1-mile, 3-mile and 5-mile radius around the proposed solar farm project.



Housing Profile

40509
40509, Lexington, Kentucky
Ring: 1 mile radius

Prepared by Esri
Latitude: 38.07402
Longitude: -84.21500

Population		Households	
2020 Total Population	154	2023 Median Household Income	$106,935
2023 Total Population	135	2028 Median Household Income	$124,672
2028 Total Population	147	2023-2028 Annual Rate	3.12%
2023-2028 Annual Rate	1.72%		

	Census 2020		2023		2028	
Housing Units by Occupancy Status and Tenure	Number	Percent	Number	Percent	Number	Percent
Total Housing Units	65	100.0%	65	100.0%	68	100.0%
Occupied	55	84.6%	57	87.7%	62	91.2%
Owner	44	67.7%	44	67.7%	44	64.7%
Renter	11	16.9%	13	20.0%	18	26.5%
Vacant	4	6.2%	8	12.3%	6	8.8%

	2023		2028	
Owner Occupied Housing Units by Value	Number	Percent	Number	Percent
Total	44	100.0%	45	100.0%
<$50,000	0	0.0%	0	0.0%
$50,000-$99,999	0	0.0%	0	0.0%
$100,000-$149,999	0	0.0%	0	0.0%
$150,000-$199,999	1	2.3%	0	0.0%
$200,000-$249,999	4	9.1%	2	4.4%
$250,000-$299,999	5	11.4%	3	6.7%
$300,000-$399,999	7	15.9%	7	15.6%
$400,000-$499,999	3	6.8%	4	8.9%
$500,000-$749,999	8	18.2%	10	22.2%
$750,000-$999,999	15	34.1%	18	40.0%
$1,000,000-$1,499,999	1	2.3%	1	2.2%
$1,500,000-$1,999,999	0	0.0%	0	0.0%
$2,000,000+	0	0.0%	0	0.0%
Median Value	$562,500		$662,500	
Average Value	$582,386		$639,444	

Census 2020 Housing Units	Number	Percent
Total	65	100.0%
Housing Units In Urbanized Areas	3	4.6%
Rural Housing Units	62	95.4%

Census 2020 Owner Occupied Housing Units by Mortgage Status	Number	Percent
Total	44	100.0%
Owned with a Mortgage/Loan	27	61.4%
Owned Free and Clear	17	38.6%

Data Note: Persons of Hispanic Origin may be of any race.
Source: Esri forecasts for 2023 and 2028. U.S. Census Bureau 2020 decennial Census data.

January 12, 2024

Housing Profile

40509
40509, Lexington, Kentucky
Ring: 3 mile radius

Prepared by Esri
Latitude: 38.07407
Longitude: -84.21500

Population		Households	
2020 Total Population	2,067	2023 Median Household Income	$69,441
2023 Total Population	2,086	2028 Median Household Income	$81,446
2028 Total Population	2,155	2023-2028 Annual Rate	3.24%
2023-2028 Annual Rate	0.65%		

	Census 2020		2023		2028	
Housing Units by Occupancy Status and Tenure	Number	Percent	Number	Percent	Number	Percent
Total Housing Units	917	100.0%	924	100.0%	945	100.0%
Occupied	867	94.5%	870	94.2%	902	95.4%
Owner	620	67.6%	617	66.8%	620	65.6%
Renter	247	26.9%	253	27.4%	282	29.8%
Vacant	56	6.1%	54	5.8%	43	4.6%

	2023		2028	
Owner Occupied Housing Units by Value	Number	Percent	Number	Percent
Total	619	100.0%	621	100.0%
<$50,000	59	9.5%	34	5.5%
$50,000-$99,999	17	2.7%	8	1.3%
$100,000-$149,999	78	12.6%	46	7.4%
$150,000-$199,999	72	11.6%	64	10.3%
$200,000-$249,999	65	10.5%	67	10.8%
$250,000-$299,999	65	10.5%	82	13.2%
$300,000-$399,999	57	9.2%	68	11.0%
$400,000-$499,999	33	5.3%	42	6.8%
$500,000-$749,999	60	9.7%	85	13.7%
$750,000-$999,999	93	15.0%	112	18.0%
$1,000,000-$1,499,999	15	2.4%	11	1.8%
$1,500,000-$1,999,999	2	0.3%	1	0.2%
$2,000,000+	3	0.5%	1	0.2%
Median Value	$264,231		$313,971	
Average Value	$388,166		$430,918	

Census 2020 Housing Units	Number	Percent
Total	917	100.0%
Housing Units In Urbanized Areas	101	11.0%
Rural Housing Units	816	89.0%

Census 2020 Owner Occupied Housing Units by Mortgage Status	Number	Percent
Total	619	100.0%
Owned with a Mortgage/Loan	355	57.4%
Owned Free and Clear	264	42.6%

Data Note: Persons of Hispanic Origin may be of any race.
Source: Esri forecasts for 2023 and 2028. U.S. Census Bureau 2020 decennial Census data.

January 12, 2024

Housing Profile

40509
40509, Lexington, Kentucky
Ring: 5 mile radius

Prepared by Esri
Latitude: 38.07402
Longitude: -84.21500

Population		Households	
2020 Total Population	11,779	2023 Median Household Income	$100,170
2023 Total Population	12,397	2028 Median Household Income	$109,351
2028 Total Population	13,207	2023-2028 Annual Rate	1.77%
2023-2028 Annual Rate	1.27%		

	Census 2020		2023		2028	
Housing Units by Occupancy Status and Tenure	Number	Percent	Number	Percent	Number	Percent
Total Housing Units	4,765	100.0%	5,033	100.0%	5,225	100.0%
Occupied	4,488	94.2%	4,704	93.5%	5,014	96.0%
Owner	3,467	72.8%	3,798	75.5%	4,020	76.9%
Renter	1,021	21.4%	906	18.0%	994	19.0%
Vacant	311	6.5%	329	6.5%	211	4.0%

	2023		2028	
Owner Occupied Housing Units by Value	Number	Percent	Number	Percent
Total	3,797	100.0%	4,019	100.0%
<$50,000	123	3.2%	67	1.7%
$50,000-$99,999	44	1.2%	18	0.4%
$100,000-$149,999	159	4.2%	83	2.1%
$150,000-$199,999	300	7.9%	201	5.0%
$200,000-$249,999	408	10.7%	304	7.6%
$250,000-$299,999	637	16.8%	642	16.0%
$300,000-$399,999	1,184	31.2%	1,515	37.7%
$400,000-$499,999	337	8.9%	465	11.6%
$500,000-$749,999	299	7.9%	387	9.6%
$750,000-$999,999	245	6.5%	296	7.4%
$1,000,000-$1,499,999	49	1.3%	36	0.9%
$1,500,000-$1,999,999	4	0.1%	1	0.0%
$2,000,000+	8	0.2%	4	0.1%
Median Value	$319,215		$345,842	
Average Value	$368,521		$395,534	

Census 2020 Housing Units	Number	Percent
Total	4,765	100.0%
Housing Units In Urbanized Areas	3,007	63.1%
Rural Housing Units	1,758	36.9%

Census 2020 Owner Occupied Housing Units by Mortgage Status	Number	Percent
Total	3,467	100.0%
Owned with a Mortgage/Loan	2,542	73.3%
Owned Free and Clear	925	26.7%

Data Note: Persons of Hispanic Origin may be of any race.
Source: Esri forecasts for 2023 and 2028. U.S. Census Bureau 2020 decennial Census data.

January 12, 2024

III. Methodology and Discussion of Issues

Standards and Methodology

I conducted this analysis using the standards and practices established by the Appraisal Institute and that conform to the Uniform Standards of Professional Appraisal Practice. The analyses and methodologies contained in this report are accepted by all major lending institutions, and they are used in Kentucky and across the country as the industry standard by certified appraisers conducting appraisals, market analyses, or impact studies and are considered adequate to form an opinion of the impact of a land use on neighboring properties. These standards and practices have also been accepted by the courts at the trial and appellate levels and by federal courts throughout the country as adequate to reach conclusions about the likely impact a use will have on adjoining or abutting properties.

The aforementioned standards compare property uses in the same market and generally within the same calendar year so that fluctuating markets do not alter study results. Although these standards do not require a linear study that examines adjoining property values before and after a new use (e.g. a solar farm) is developed, some of these studies do in fact employ this type of analysis. Comparative studies, as used in this report, are considered an industry standard.

The type of analysis employed is a Matched Pair Analysis or Paired Sales Analysis. This methodology is outlined in **The Appraisal of Real Estate**, Twelfth Edition by the Appraisal Institute pages 438-439. It is further detailed in **Real Estate Damages**, Third Edition, pages 33-36 by Randall Bell PhD, MAI. Paired sales analysis is used to support adjustments in appraisal work for factors ranging from the impact of having a garage, golf course view, or additional bedrooms. It is an appropriate methodology for addressing the question of impact of an adjoining solar farm. The paired sales analysis is based on the theory that when two properties are in all other respects equivalent, a single difference can be measured to indicate the difference in price between them. Dr. Bell describes it as comparing a test area to control areas. In the example provided by Dr. Bell he shows five paired sales in the test area compared to 1 to 3 sales in the control areas to determine a difference. I have used 3 sales in the control areas in my analysis for each sale developed into a matched pair.

Determining what is an External Obsolescence

An external obsolescence is a use of property that, because of its characteristics, might have a negative impact on the value of adjacent or nearby properties because of identifiable impacts. Determining whether a use would be considered an external obsolescence requires a study that isolates that use, eliminates any other causing factors, and then studies the sales of nearby versus distant comparable properties. The presence of one or a combination of key factors does not mean the use will be an external obsolescence, but a combination of these factors tend to be present when market data reflects that a use is an external obsolescence.

External obsolescence is evaluated by appraisers based on several factors. These factors include but are not limited to:

1) Traffic. Solar Farms are not traffic generators.

2) Odor. Solar farms do not produce odor.

3) Noise. Solar farms generate no noise concerns. A wide range of noise studies that have been completed have found them consistent with agricultural and residential areas. The noise is even less at night.

4) Environmental. Solar farms do not produce toxic or hazardous waste. Grass is maintained underneath the panels so there is minimal impervious surface area.

5) Appearance/Viewshed. This is the one area that potentially applies to solar farms. However, solar farms are generally required to provide significant setbacks and landscaping buffers to address that concern. Furthermore, any consideration of appearance of viewshed impacts has to be considered in comparison with currently allowed uses on that site. For example if a residential subdivision is already an allowed use, the question becomes in what way does the appearance impact adjoining property owners above and beyond the appearance of that allowed subdivision or other similar allowed uses.

6) Other factors. I have observed and studied many solar farms and have never observed any characteristic about such facilities that prevents or impedes neighbors from fully using their homes or farms or businesses for the use intended.

Market Imperfection

Throughout this analysis, I have specifically considered the influence of market imperfection on data analysis. Market imperfection is the term that refers to the fact that unlike a can of soup at the supermarket or in your online shopping cart, real estate cannot be comparison shopped for the best price and purchased at the best price for that same identical product. Real estate products are always similar and never identical. Even two adjacent lots that are identical in almost every way, have a slight difference in location. Once those lots are developed with homes, the number of differences begin to multiply, whether it is size of the home, landscaping, layout, age of interior upfit, quality of interior upfit, quality of maintenance and so on.

Neoclassical economics indicates a perfectly competitive market as having the following: A large number of buyers and sellers (no one person dominates the market), no barriers or transaction costs, homogeneous product, and perfect information about the product and pricing. Real estate is clearly not homogeneous. The number of buyers and sellers for a particular product in a particular location is limited by geography, financing, and the limited time period within a property is listed. There are significant barriers that limit the liquidity in terms of time, costs and financing. Finally, information on real estate is often incomplete or partial – especially at the time that offers are made and prices set, which is prior to appraisals and home inspections. So real estate is very imperfect based on this definition and the impact of this are readily apparent in the real estate market.

What appear to be near-identical homes that are in the same subdivision will often sell with slight variations in price. When multiple appraisers approach the same property, there is often a slight variation among all of those conclusions of value, due to differences in comparables used or analysis of those comparables. This is common and happens all of the time. In fact, within each appraisal, after making adjustments to the comparables, the appraiser will typically have a range of values that are supported that often vary more than +/-5% from the median or average adjusted value.

Based on this understanding of market imperfection, it is important to note that very minor differences in value within an impact study do not necessarily indicate either a negative or positive impact. When the impacts measured fall within that +/-5%, I consider this to be within typical market variation/imperfection. Therefore it may be that there is a negative or positive impact identified if the impact is within that range, but given that it is indistinguishable from what amounts to the background noise or static within the real estate data, I do not consider indications of +/-5% to support a finding of a negative or positive impact.

Impacts greater than that range are however, considered to be strong indications of impacts that fall outside of typical market imperfection. I have used this as a guideline while considering the impacts identified within this report.

Relative Solar Farm Sizes

Solar farms have been increasing in size in recent years. Much of the data collected is from existing, older solar farms of smaller size, but there are numerous examples of sales adjoining 75 to 80 MW facilities that show a similar trend as the smaller solar farms. This is understandable given that the primary concern relative to a solar farm is the appearance or view of the solar farm, which is typically addressed through setbacks and landscaping buffers. The relevance of data from smaller solar farms to larger solar farms is due to the primary question being one of appearance. If the solar farm is properly screened, then little of the solar farm would be seen from adjoining property regardless of how many acres are involved.

Larger solar farms are often set up in sections where any adjoining owner would only be able to see a small section of the project even if there were no landscaping screen. Once a landscaping screen is in place, the primary view is effectively the same whether you are adjoining a 5 MW, 20 MW or 100 MW facility.

I have split out the data for the matched pairs adjoining larger solar farms only to illustrate the similarities later in this report. I note that I have matched pairs adjoining solar farms up to 500 MWs in size showing no impact on property value.

Steps Involved in the Analysis

The paired sales analysis employed in this report follows the following process:

1. Identify sales of property adjoining existing solar farms.
2. Compare those sales to similar property that does not adjoin an existing solar farm.
3. Confirmation of sales are noted in the analysis write ups.
4. Distances from the homes to panels are included as a measure of the setbacks.
5. Topographic differences across the solar farms themselves are likewise noted along with demographic data for comparing similar areas.

There are a number of Sale/Resale comparables included in the write ups, but most of the data shown is for sales of homes after a solar farm has been announced (where noted) or after a solar farm has been constructed.

IV. Research on Solar Farms

A. Appraisal Market Studies

I have also considered a number of impact studies completed by other appraisers as detailed below.

CohnReznick – Property Value Impact Study: Adjacent Property Values Solar Impact Study: A Study of Eight Existing Solar Facilities

Patricia McGarr, MAI, CRE, FRICS, CRA and Andrew R. Lines, MAI with CohnReznick completed an impact study for a proposed solar farm in Cheboygan County, Michigan completed on June 10, 2020. I am familiar with this study as well as a number of similar such studies completed by CohnReznick. I have not included all of these studies but I submit this one as representative of those studies.

This study addresses impacts on value from eight different solar farms in Michigan, Minnesota, Indiana, Illinois, Virginia and North Carolina. These solar farms are 19.6 MW, 100 MW, 11.9 MW, 23 MW, 71 MW, 61 MW, 40 MW, and 19 MW for a range from 11.9 MW to 100 MW with an average of 31 MW and a median of 31.5 MW. They analyzed a total of 24 adjoining property sales in the Test Area and 81 comparable sales in the Control Area over a five-year period.

The conclusion of this study is that there is no evidence of any negative impact on adjoining property values based on sales prices, conditions of sales, overall marketability, potential for new development or rate of appreciation.

Christian P. Kaila & Associates – Property Impact Analysis – Proposed Solar Power Plant Guthrie Road, Stuarts Draft, Augusta County, Virginia

Christian P. Kaila, MAI, SRA and George J. Finley, MAI developed an impact study as referenced above dated June 16, 2020. This was for a proposed 83 MW facility on 886 acres.

Mr. Kaila interviewed appraisers who had conducted studies and reviewed university studies and discussed the comparable impacts of other development that was allowed in the area for a comparative analysis of other impacts that could impact viewshed based on existing allowed uses for the site. He also discussed in detail the various other impacts that could cause a negative impact and how solar farms do not have such characteristics.

Mr. Kaila also interviewed County Planners and Real Estate Assessor's in eight different Virginia counties with none of the assessor's identifying any negative impacts observed for existing solar projects.

Mr. Kaila concludes on a finding of no impact on property values adjoining the indicated solar farm.

Fred Beck, MAI, CCIM – Impact Analysis in Lincoln County, North Carolina, 2013

Mr. Fred Beck, MAI, CCIM completed an impact analysis in 2013 for a proposed solar farm that concluded on a negative impact on value. That report relied on a single cancelled contract for an adjoining parcel where the contracted buyers indicated that the solar farm was the reason for the cancellation. It also relied on the activities of an assessment impact that was applied in a nearby county.

Mr. Beck was interviewed as part of the Christian Kalia study noted above. From that I quote "Mr. Beck concluded on no effect on moderate priced homes, and only a 5% change in his limited research of higher priced homes. His one sale that fell through is hardly a reliable sample

Also noted in the Christian Kalia interview notes is a response from Mr. Beck indicating that in his opinion "the homes were higher priced homes and had full view of the solar farm." Based on a description of screening so that "the solar farm would not be in full view to adjoining property owners. Mr. Beck said in that case, he would not see any drop in property value."

NorthStar Appraisal Company – Impact Analysis for Nichomus Run Solar, Pilesgrove, New Jersey, 2020

Mr. William J. Sapio, MAI with NorthStar Appraisal Company considered a matched pair analysis for the potential impact on adjoining property values to this proposed 150 MW solar farm. Mr. Sapio considered sales activity in a subdivision known as Point of Woods in South Brunswick Township and identified two recent new homes that were constructed and sold adjoining a 13 MW solar farm and compared them to similar homes in that subdivision that did not adjoin the solar farm. These homes sold in the $1,290,450 to $1,336,613 price range and these homes were roughly 200 feet from the closest solar panel.

Based on this analysis, he concluded that the adjoining solar farm had no impact on adjoining property value.

MR Valuation Consulting, LLC – The Kuhl Farm Solar Development and The Fischer Farm Solar Development – New Jersey, 2012

Mr. Mark Pomykacaz, MAI MRICS with MR Valuation Consulting, LLC considered a matched pair analysis for sales near these solar farms. The sales data presented supported a finding of no impact on property value for nearby and adjoining homes and concludes that there is no impact on marketing time and no additional risk involved with owning, building, or selling properties next to the solar farms.

Mary McClinton Clay, MAI – McCracken County Solar Project Value Impact Report, Kentucky, 2021

Ms. Mary Clay, MAI reviewed a report by Kirkland Appraisals in this case and also provided a differing opinion of impact. Having testified opposite Ms. Clay, she has stated that she does not confirm her data and does not use an appropriate method for time adjustments.

The comments throughout this study are heavy in adjectives, avoids stating facts contrary to the conclusion and shows a strong selection bias.

Kevin T. Meeks, MAI – Corcoran Solar Impact Study, Minnesota, 2017

Mr. Kevin Meeks, MAI reviewed a report by Kirkland Appraisals in this case and also provided additional research on the topic with additional paired sales. The sales he considered are well presented and show that they were confirmed by third parties and all of the broker commentary is aligned with the conclusion that the adjoining solar farms considered had no impact on the adjoining home values.

Mr. Meeks also researched a 100 MW project in Chisago County, known as North Star Solar Garden in MN. He interviewed local appraisers and a broker who was actively marketing homes adjoining that solar farm to likewise support a finding of no impact on property value.

John Keefe, Chisago County Assessor, Chisago County Minnesota Assessor's Office, 2017

This study was completed by the Chisago County Minnesota Assessor's Office on property prices adjacent to and in close vicinity of a 1,000-acre North Star solar farm in Minnesota. The study concluded that the North Star solar farm had "no adverse impact" on property values. Mr. Keefe further stated that, "It seems conclusive that valuation has not suffered."

Tim Connelly, MAI – Solar Impact Study of Proposed Solar Facility, New Mexico, 2023

This study is a detailed review of an Impact Study completed by Kirkland Appraisals, LLC for Rancho Viejo Solar. It goes through all of the analysis and confirms the applicability and reliability of the methods and conclusions. Mr. Connelly, MAI concurs that "the proposed solar project will not have a negative impact on market value, marketability, or enjoyment of property in the immediate vicinity of the proposed project."

Donald Fisher, ARA, 2021

Donald Fisher has completed a number of studies on solar farms and was quoted in February 15, 2021 stating, "Most of the locations were in either suburban or rural areas, and all of those studies found either a neutral impact or, ironically, a positive impact, where values on properties after the installation of solar farms went up higher than time trends."

Jennifer N. Pitts, MAI - Study of Residential Market Trends Surrounding Six Utility-Scale Solar Projects in Texas, 2023

This study was completed by Real Property Analytics with Ms. Pitts along with Erin M. Kiella, PhD, and Chris Yost-Bremm, PhD. This analysis considered these solar farms through different stages of the market from announcement of the project, during construction, and after construction. They found no indication of a negative impact on sales price, the ratio of sales price to listing price, or the number of Days on Market. They also researched individual sales and interviewed local brokers who confirmed that market participants were knowledgeable of the solar projects and did not result in a negative impact on sales price or marketing time.

Conclusion of Impact Studies

Of the ten studies noted eight included actual sales data to derive an opinion of no impact on value. The two studies to conclude on a negative impact includes the Fred Beck study based on no actual sales data, and he has since indicated that with landscaping screens he would not conclude on a negative impact. The other study by Mary Clay shows improper adjustments for time, a lack of confirmation of sales comparables, and exclusion of data that does not support her initial position.

I have relied on these studies as additional support for the findings in this impact analysis.

B. Articles

I have also considered a number of articles on this subject as well as conclusions and analysis as noted below.

Farm Journal Guest Editor, March 22, 2021 – Solar's Impact on Rural Property Values

Andy Ames, ASFMRA (American Society of Farm Managers and Rural Appraisers) published this article that includes a discussion of his survey of appraisers and studies on the question of property value related to solar farms. He discusses the university studies that I have cited as well as Patricia McGarr, MAI.

He also discusses the findings of Donald A. Fisher, ARA, who served six years at the Chair of the ASFMRA's National Appraisal Review Committee. He is also the Executive Vice President of the CNY Pomeroy Appraiser and has conducted several market studies on solar farms and property impact. He is quoted in the article as saying, "Most of the locations were in either suburban or rural areas, and all of those studies found either a neutral impact, or ironically, a positive impact, where values on properties after installation of solar farms went up higher than time trends."

Howard Halderman, AFM, President and CEO of Halderman Real Estate and Farm Management attended the ASFMRA solar talk hosted by the Indiana Chapter of the ASFMRA and he concludes that other rural properties would likely see no impact and farmers and landowners shown even consider possible benefits. "In some cases, farmers who rent land to a solar company will insure the viability of their farming operation for a longer time period. This makes them better long-term tenants or land buyers so one can argue that higher rents and land values will follow due to the positive impact the solar leases offer."

More recently in August 2022, Donald Fisher, ARA, MAI and myself led a webinar on this topic for the ASFMRA discussing the issues, the university studies and specific examples of solar farms having no impact on adjoining property values.

National Renewable Energy Laboratory – Top Five Large-Scale Solar Myths, February 3, 2016

Megan Day reports form NREL regarding a number of concerns neighbors often express. Myth #4 regarding property value impacts addresses specifically the numerous studies on wind farms that show no impact on property value and that solar farms have a significantly reduced visual impact from wind farms. She highlights that the appearance can be addressed through mitigation measures to reduce visual impacts of solar farms through vegetative screening. Such mitigations are not available to wind farms given the height of the windmills and again, those studies show no impact on value adjoining wind farms.

North Carolina State University: NC Clean Energy Technology Center White Paper: Balancing Agricultural Productivity with Ground-Based Solar Photovoltaic (PV) Development (Version 2), May 2019

Tommy Cleveland and David Sarkisian wrote a white paper for NCSU NC Clean Energy Technology Center regarding the potential impacts to agricultural productivity from a solar farm use. I have interviewed Tommy Cleveland on numerous occasions and I have also heard him speak on these issues at length as well. He addresses many of the common questions regarding how solar farms work and a detailed explanation of how solar farms do not cause significant impacts on the soils, erosion and other such concerns. This is a heavily researched paper with the references included.

North Carolina State University: NC Clean Energy Technology Center White Paper: Health and Safety Impacts of Solar Photovoltaics, May 2017

Tommy Cleveland wrote a white paper for NCSU NC Clean Energy Technology Center regarding the health and safety impacts to address common questions and concerns related to solar farms. This is a heavily researched white paper addressing questions ranging from EMFs, fire safety, as well as vegetation control and the breakdown of how a solar farm works.

C. Broker Commentary

In the process of working up the matched pairs used later in this report, I have collected comments from brokers who have actually sold homes adjoining solar farms indicating that the solar farm had no impact on the marketing, timing, or sales price for the adjoining homes. I have comments from brokers noted within the solar farm write ups of this report including brokers from Kentucky, Virginia, Tennessee, and North Carolina. I have additional commentary from other states including New Jersey and Michigan that provide the same conclusion.

V. University Studies

I have also considered the following studies completed by four different universities related to solar farms and impacts on property values.

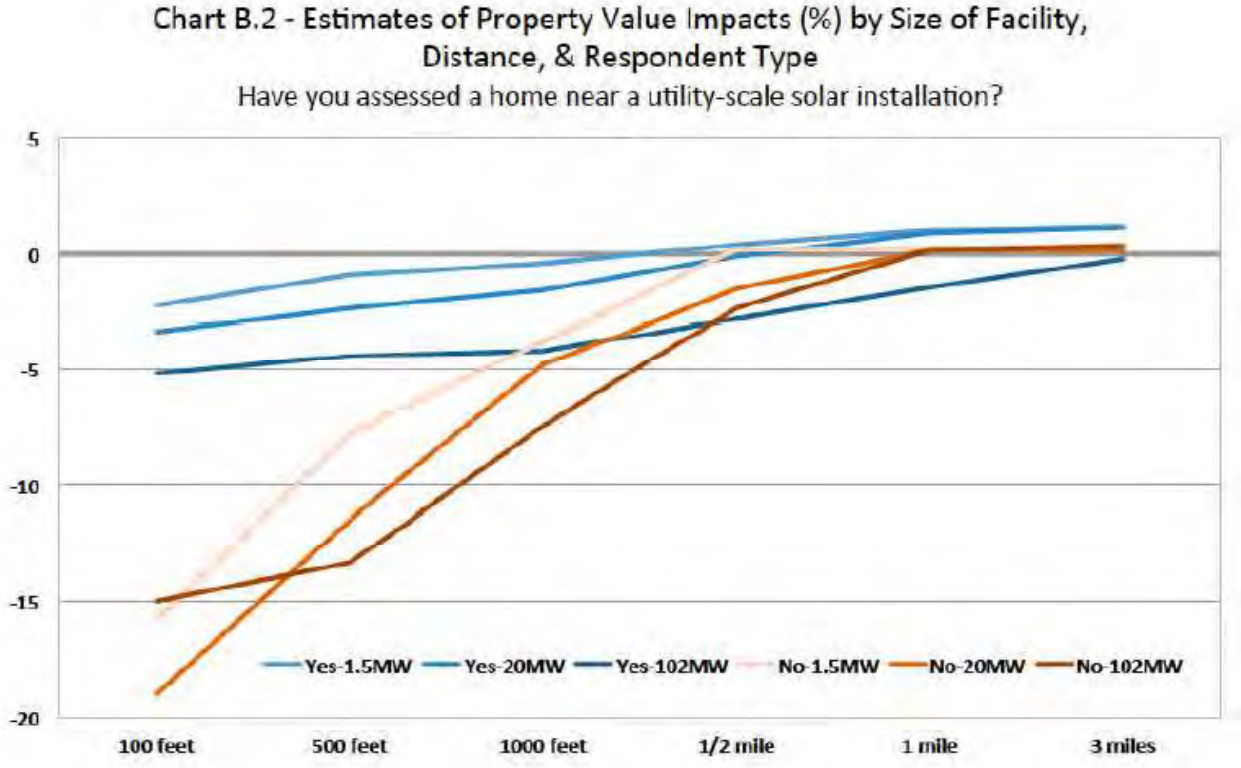
A. University of Texas at Austin, May 2018

An Exploration of Property-Value Impacts Near Utility-Scale Solar Installations

This study considers solar farms from two angles. First it looks at where solar farms are being located and concludes that they are being located primarily in low density residential areas where there are fewer homes than in urban or suburban areas.

The second part is more applicable in that they conducted a survey of appraisers/assessors on their opinions of the possible impacts of proximity to a solar farm. They consider the question in terms of size of the adjoining solar farm and how close the adjoining home is to the solar farm. I am very familiar with this part of the study as I was interviewed by the researchers multiple times as they were developing this. One very important question that they ask within the survey is very illustrative. They asked if the appraiser being surveyed had ever appraised a property next to a solar farm. There is a very noticeable divide in the answers provided by appraisers who have experience appraising property next to a solar farm versus appraisers who self-identify as having no experience or knowledge related to that use.

On Page 16 of that study they have a chart showing the responses from appraisers related to proximity to a facility and size of the facility, but they separate the answers as shown below with appraisers with experience in appraising properties next to a solar farm shown in blue and those inexperienced shown in brown. Even within 100 feet of a 102 MW facility the response from experienced appraisers were -5% at most on impact. While inexperienced appraisers came up with significantly higher impacts. This chart clearly shows that an uninformed response widely diverges from the sales data available on this subject.



Furthermore, the question cited above does not consider any mitigating factors such as landscaping buffers or screens which would presumably reduce the minor impacts noted by experienced appraisers on this subject.

The conclusion of the researchers is shown on Page 23 indicated that "Results from our survey of residential home assessors show that the majority of respondents believe that proximity to a solar installation has either no impact or a positive impact on home values."

This analysis supports the conclusion of this report that the data supports no impact on adjoining property values. The only impact suggested by this study is -5% if a home was within 100 feet of a 100 MW solar farm with little to no landscaping screening. The proposed project has a landscaping screening, is much further setback than 100 feet from adjoining homes, and is less than 100 MW.

B. University of Rhode Island, September 2020

Property Value Impacts of Commercial-Scale Solar Energy in Massachusetts and Rhode Island

The University of Rhode Island published a study entitled **Property Value Impacts of Commercial-Scale Solar Energy in Massachusetts and Rhode Island** on September 29, 2020 with lead researchers being Vasundhara Gaur and Corey Lang. I have read that study and interviewed Mr. Corey Lang related to that study. This study is often cited by opponents of solar farms but the findings of that study have some very specific caveats according to the report itself as well as Mr. Lang from the interview.

While that study does state in the Abstract that they found depreciation of homes within 1-mile of a solar farm, that impact is limited to non-rural locations. On Pages 16-18 of that study under Section 5.3 Heterogeneity in treatment effect they indicate that the impact that they found was limited to non-rural locations with the impact in rural locations effectively being zero. For the study they defined "rural" as a municipality/township with less than 850 population per square mile.

They further tested the robustness of that finding and even in areas up to 2,000 population per square mile they found no statistically significant data to suggest a negative impact. They have not specifically defined a point at which they found negative impacts to begin, as the sensitivity study stopped checking at the 2,000-population per square mile.

Where they did find negative impacts was in high population density areas that was largely a factor of running the study in Massachusetts and Rhode Island which the study specifically cites as being the 2nd and 3rd most population dense states in the USA. Mr. Lang in conversation as well as in recorded presentations has indicated that the impact in these heavily populated areas may reflect a loss in value due to the scarce greenery in those areas and not specifically related to the solar farm itself. In other words, any development of that site might have a similar impact on property value.

Based on this study I have checked the population for the Lexington-Fayette Northeast Division of Fayette County, which has a population of 59,630 population for 2023 based on HomeTownLocator using Census Data and a total area of 78.05 square miles. This indicates a population density of 764 people per square mile which puts this well below the threshold indicated by the Rhode Island Study.

I therefore conclude that the Rhode Island Study supports the indication of no impact on adjoining properties for the proposed solar farm project.

Lexington-Fayette Northeast Division Data & Demographics (As of July 1, 2023)

POPULATION	
Total Population	59,630 (100%)
Population in Households	59,326 (99.5%)
Population in Families	44,606 (74.8%)
Population in Group Quarters[1]	304 (0.5%)
Population Density	764
Diversity Index[2]	61

HOUSING	
Total HU (Housing Units)	26,822 (100%)
Owner Occupied HU	15,110 (56.3%)
Renter Occupied HU	9,541 (35.6%)
Vacant Housing Units	2,171 (8.1%)
Median Home Value	$302,914
Average Home Value	$334,720
Housing Affordability Index[3]	99

INCOME	
Median Household Income	$74,496
Average Household Income	$107,592
% of Income for Mortgage[4]	24%
Per Capita Income	$44,488
Wealth Index[5]	100

HOUSEHOLDS	
Total Households	24,651
Average Household Size	2.41000000000
Family Households	14,459
Average Family Size	3

C. Georgia Institute of Technology, October 2020

Utility-Scale Solar Farms and Agricultural Land Values

This study was completed by Nino Abashidze as Post-Doctoral Research Associate of Health Economics and Analytics Labe (HEAL), School of Economics, Georgia Institute of Technology. This research was started at North Carolina State University and analyzes properties near 451 utility-scale ground-mount solar installations in NC that generate at least 1 MW of electric power. A total of 1,676 land sales within 5-miles of solar farms were considered in the analysis.

This analysis concludes on Page 21 of the study "Although there are no direct effects of solar farms on nearby agricultural land values, we do find evidence that suggests construction of a solar farm may create a small, positive, option -value for land owners that is capitalized into land prices. Specifically, after construction of a nearby solar farm, we find that agricultural land that is also located near transmission infrastructure may increase modestly in value."

This study supports a finding of no impact on adjoining agricultural property values and in some cases could support a modest increase in value.

D. Master's Thesis: ECU by Zachary Dickerson July 2018

A Solar Farm in *My* Backyard? Resident Perspectives of Utility-Scale Solar in Eastern North Carolina

This study was completed as part of a Master of Science in Geography Master's Thesis by Zachary Dickerson in July 2018. This study sets out to address three questions:

1. Are there different aspects that affect resident satisfaction regarding solar farms?

2. Are there variations in satisfaction for residents among different geographic settings, e.g. neighborhoods adjacent to the solar farms or distances from the solar farms?

3. How can insight from both the utility and planning sectors, combined with knowledge gained from residents, fill gaps in communication and policy writing in regard to solar farms?

This was done through survey and interview with adjacent and nearby neighbors of existing solar farms. The positive to neutral comments regarding the solar farms were significantly higher than negative. The researcher specifically indicates on Page 46 "The results show that respondents generally do not believe the solar farms pose a threat to their property values."

The most negative comments regarding the solar farms were about the lack of information about the approval process and the solar farm project prior to construction.

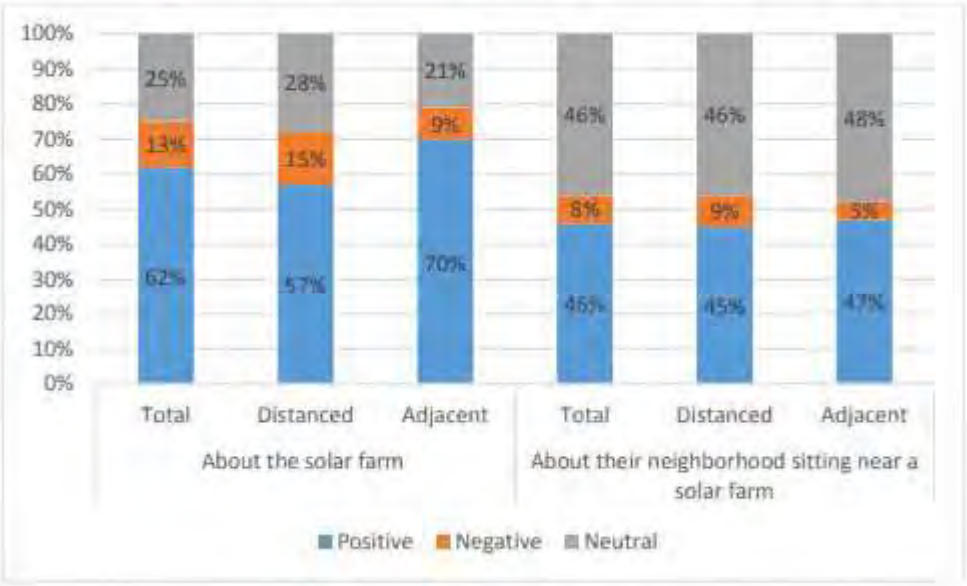
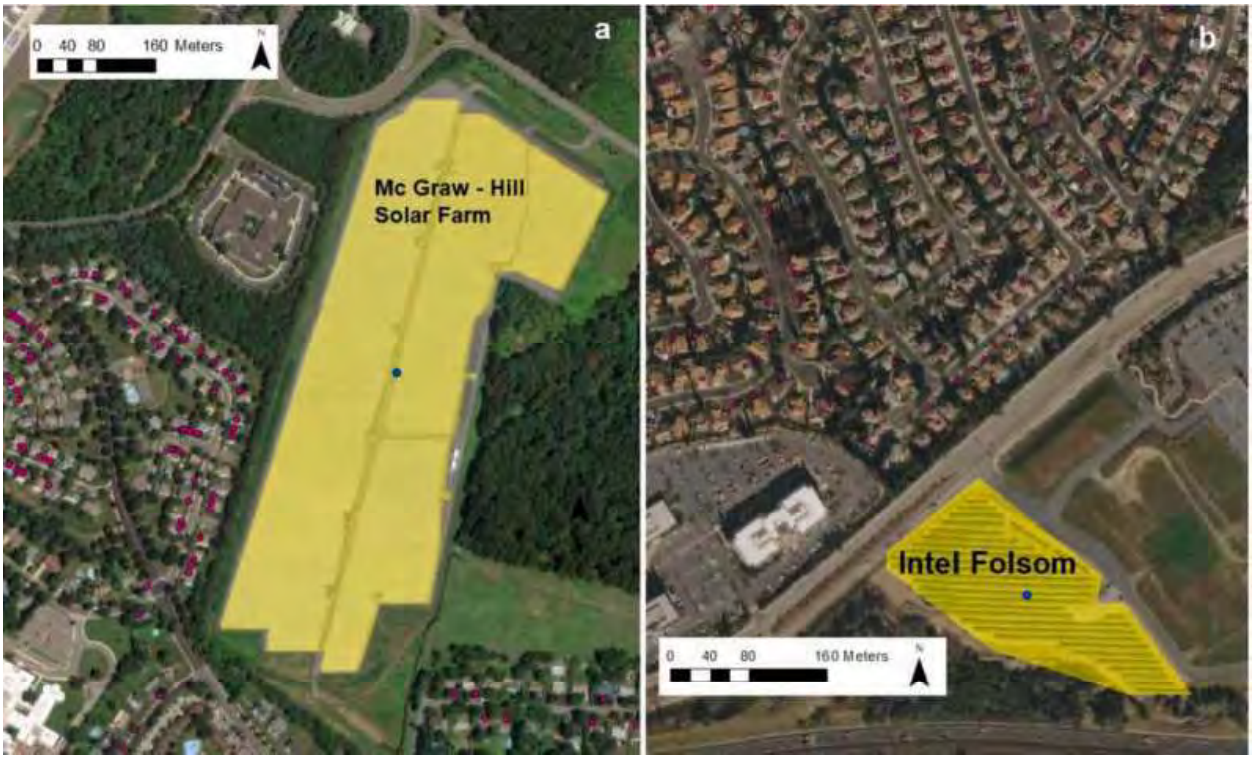


Figure 11: Residents' positive/negative word choices by geographic setting for both questions

E. Lawrence Berkeley National Lab, March 2023

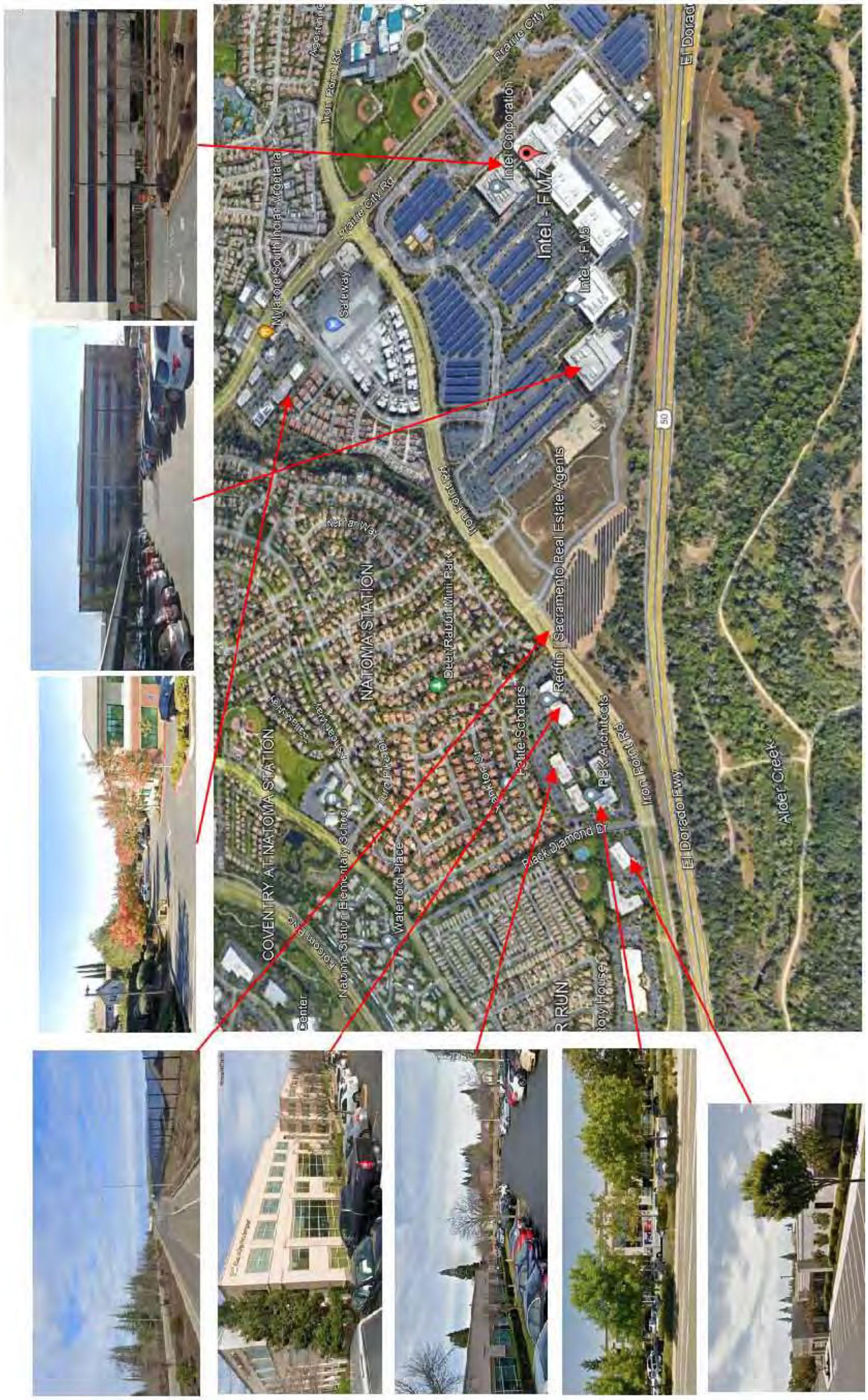
Shedding light on large-scale solar impacts: An analysis of property values and proximity to photovoltaics across six U.S. states

This study was completed by researchers including Salma Elmallah, Ben Hoen, K. Sydny Fujita, Dana Robson, and Eric Brunner. This analysis considers home sales before and after solar farms were installed within a 1-mile radius and compared them to home sales before and after the solar farms at a 2-4-mile radius. The conclusion found a 1.5% impact within 1 mile of a solar farm as compared to homes 2-4 miles from solar farms. This is the largest study of this kind on solar and addresses a number of issues, but also does not address a number of items that could potentially skew these results. First of all, the study found no impact in the three states with the most solar farm activity and only found impacts in smaller sets of data. The data does not in any way discuss actual visibility of solar farms or address existing vegetation screens. This lack of addressing this is highlighted by the fact that they suggest in the abstract that vegetative shading may be needed to address possible impacts. Another notable issue is the fact that they do not address other possible impacts within the radii being considered. This lack of consideration is well illustrated within the study on Figure A.1 where they show satellite images of McGraw Hill Solar Farm in NJ and Intel Folsom in CA. The Folsom image clearly shows large highways separating the solar farm from nearby housing, but with tower office buildings located closer to the housing being considered. In no place do they address the presence of these towers that essentially block those homes from the solar farm in some places. An excerpt of Fig. A.1. is shown below.



For each of these locations, I have panned out a little further on Google Earth to show the areas illustrated to more accurately reflect the general area. For the McGraw Hill Solar Farm you can see there is a large distribution warehouse to the west along with a large offices and other industrial uses. Further to the west is a large/older apartment complex (Princeton Arms). To the east there are more large industrial buildings. However, it is even more notable that 1.67 miles away to the west is Cranbury Golf Club. Given how this analysis was set up, these homes around the industrial buildings are being compared to homes within this country club to help establish impacts from the solar farm. Even considering the idea that each set is compared to itself before and after the solar farm, it is not a reasonable supposition that homes in each area would appreciate at the same rates even if no solar farm was included. Furthermore the site where the solar farm is located an all of the surrounding uses not improved with residential housing to the south is zoned Research Office (RO) which allows for: manufacturing, preparation, processing or fabrication of products, with all activities and product storage taking place within a completely enclosed building, scientific or research laboratories, warehousing, computer centers, pharmaceutical operations, office buildings, industrial office parks among others. Homes adjoining such a district would likely have impacts and influences not seen in areas zoned and surrounded by zoning strictly for residential uses.


East Windsor Township
Windsor Corporate Park
Healthy Kids Pediatric Group
Bouncetek West Windsor Kids Outdoor Toys and More
Muslim Center of Greater Princeton
Performance Dental Group
Windsor Center Dr
EAG Laboratories
Oak Creek Estates Association
Oak Creek Rd
Pebble Rd
Kraitszerks Food Store
Princeton Arms
Arias Constructions NJ
Kent Ln
Derbyshire Dr
Melvin H. Kreps Middle School
Westmoreland Dr
Oak Creek Rd
Scott Rd
Wilmar Dr
Dutch Neck Dental
Taft Ct
Beth El Synagogue
Dutch Neck Rd
Windsor Dermatology
Wiltshire Park
Wiltshire Dr
Wickham Ln
Cherry Brook Ln
Eagle Stream Rd
Patel Brothers
Princeton Nightstown Rd
Google


Intel Corporation
Intel - FM7
Intel - FM6
Safeway
Prairie City Rd
Iron Point Rd
NATOMA STATION
COVENTRY AT NATOMA STATION
Natoma Station Elementary School
Waterford Place
Sacramento Real Estate Agents
Redfin
PBK Architects
Black Diamond Dr
El Dorado Fwy
Alder Creek

On the Intel Folsom map I have shown the images of two of the Intel Campus buildings, but there are roughly 8 such buildings on that site with additional solar panels installed in the parking lot as shown in that image. I included two photos that show the nearby housing having clear and close views of adjoining office parking lots. This illustrates that the homes in that 1-mile radius are significantly more impacted by the adjoining office buildings than a solar farm located distantly that are not within the viewshed of those homes. Also, this solar farm is located on land adjoining the Intel Campus on a tract that is zoned M-1 PD, which is a Light Industrial/Manufacturing zoning. Nearby homes. Furthermore, the street view at the solar farm shows not only the divided four-lane highway that separates the office buildings and homes from the solar farm, but also shows that there is no landscaping buffer at this location. All of these factors are ignored by this study. Below is another image of the Folsom Solar at the corner of Iron Point Road and Intel West Driveway which shows just how close and how unscreened this project is.

Compare that image from the McGraw Hill Street view facing south from County Rte 571. There is a distant view and much of the project is hidden by a mix of berms and landscaping. The analysis makes no distinction between these projects.

The third issue with this study is that it identifies impacts following development in areas where they note that "more adverse home price impacts might be found where LSPVPS (large-scale photovoltaic project) displace green space (consistent with results that show higher property values

near green space." The problem with this statement is that it assumes that the greenspace is somehow guaranteed in these areas, when in fact, they could just as readily be developed as a residential subdivision and have the same impacts. They have made no effort to differentiate loss of greenspace through other development purposes such as schools, subdivisions, or other uses versus the impact of solar farms. In other words, they may have simply identified the impact of all forms of development on property value. This would in fact be consistent with the comments in the Rhode Island study where the researchers noted that the loss of greenspace in the highly urban areas was likely due to the loss of greenspace in particular and not due to the addition of solar panels.

Despite these three shortcomings in the analysis – the lack of differentiating landscape screening, the lack of consideration of other uses within the area that could be impacting property values, and the lack of consideration of alternative development impacts – the study still only found impacts between 0 and 5% with a conclusion of 1.5% within a 1-mile radius. As discussed later in this report, real estate is an imperfect market and real estate transactions typically sell for much wider variability than 5% even where there are no external factors operating on property value.

I therefore conclude that the minor impacts noted in this study support a finding of no impact on property value. Most appraisals show a variation between the highest and lowest comparable sale that is substantially greater than 1.5% and this measured impact for all its flaws would just be lost in the static of normal real estate transactions.

VI. Assessor Surveys

I have completed a survey of assessors in Kentucky, I have excluded responses from assessors with no existing and no pending solar farms in those counties. The breakdown is shown below.

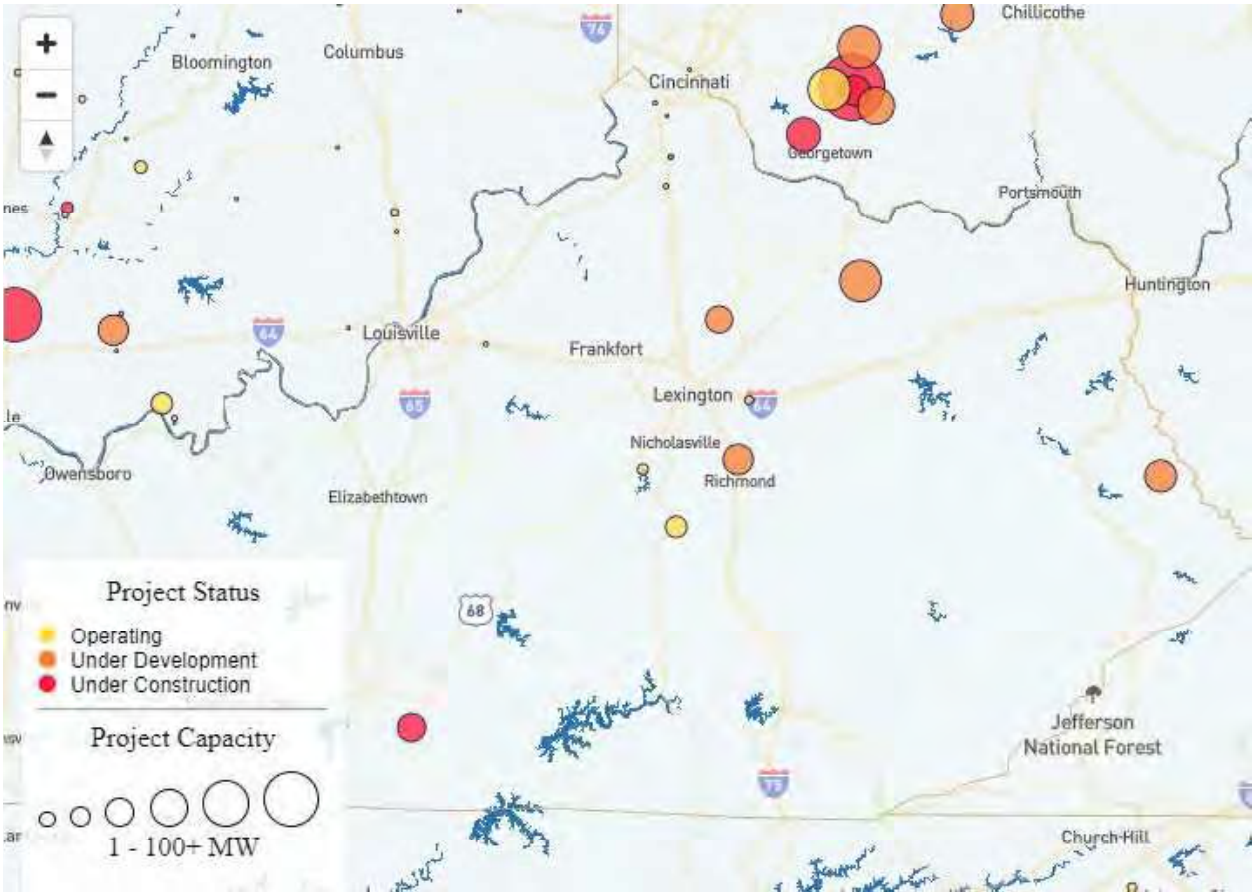
Kentucky Property Valuation Administrator				
		Existing	Proposed	
County	Assessor	Solar	Solar	Impact on Adjacent?
Breckinridge	Dana Bland	0	2	No
Caldwell	Ronald Wood	0	2	No
Christian	Angie Strader	4	n/a	No
Clark	Jada Brady	1	n/a	No response
Green	Sean Curry	0	2	No
Martin	Bobby Hale, Jr.	0	1	No response/hasn't come up yet
Mercer	Jessica Elliott	1	0	No
Russell	Tim Popplewell	0	1	No response/depends on sales after built
Webster	Jeffrey Kelley	0	1	No response/depends on sales after built
Whitley	Ronnie Moses	0	1	No
	Total Responses	10		
	No Impact Responses	6		
	No Response on Impact	4		

I have completed similar surveys in a number of states and I have shown the breakdown of those responses below. I have not had any assessor indicate a negative adjustment due to adjacency to a solar farm in any state. These responses total 188 with 170 definitively indicating no negative adjustments are made to adjoining property values, 18 providing no response to the question, and 0 indicating that they do address a negative impact on adjoining property value.

Summary of Assessor Surveys				
State	**Responses**	**No Impact**	**Yes Impact**	**No Comment**
North Carolina	39	39		
Virginia	16	16		
Indiana	31	31		
Colorado	15	7		8
Georgia	33	33		
Kentucky	10	6		4
Mississippi	4	2		2
New Mexico	5	5		
Ohio	24	20		4
South Carolina	11	11		
Totals	188	170		18

VII. Summary of Solar Projects in Kentucky

I have researched the solar projects in Kentucky. I identified the solar farms through the Solar Energy Industries Association (SEIA) Major Projects List and then excluded the roof mounted facilities. This leaves only six solar farms in Kentucky for analysis at this time. Below is a map pulled from SEIA on Major Projects and it shows projects under development in orange and under construction in red, with yellow dots representing existing solar farms. It was from this map that I have identified a list of existing and under construction solar farms researched in Kentucky.



I have provided a summary of projects below and additional detailed information on the projects on the following pages. I specifically note the similarity in most of the sites in Kentucky in terms of mix of adjoining uses, topography, and distances to adjoining homes to each other as well as to the data identified throughout the southeast.

The number of solar farms currently in Kentucky is low compared to a number of other states and North Carolina in particular. I have looked at solar farms in Kentucky for sales activity, but the small number of sites coupled with the relatively short period of time these solar farms have been in place has not provided as many examples of sales adjoining a solar farm as I am able to pull from other places. I have therefore also considered sales in other states, but I have shown in the summary how the demographics around the solar farms in other locations relate to the demographics around the proposed solar farm to show that generally similar locations are being considered. The similarity of the sites in terms of adjoining uses and surrounding demographics makes it reasonable to compare the lack of significant impacts in other areas would translate into a similar lack of significant impacts at the subject site.

Solar #	Name	County	City	Output (MW)	Total Acres	Used Acres	Avg. Dist to home	Closest Home	Adjoining Use by Acre			
									Res	Agri	Agri/Res	Com
610	Bowling Green	Warren	Bowling Green	2	17.36	17.36	720	720	1%	64%	0%	36%
611	Cooperative Solar I	Clarky	Winchester	8.5	181.47	63	2,110	2,040	0%	96%	3%	0%
612	Walton 2	Kenton	Walton	2	58.03	58.03	891	120	21%	0%	60%	19%
613	Crittenden	Grant	Crittenden	2.7	181.7	34.1	1,035	345	22%	27%	51%	0%
617	Glover Creek	Metcalfe	Summer Shade	55	968.2	322.44	1,731	175	6%	25%	69%	0%
618	Turkey Creek	Garrard	Lancaster	50	752.8	297.05	976	240	8%	36%	51%	5%
656	Mount Olive Creek	Russell	Russell Springs	60	526.02	420.82	759	150	24%	28%	47%	0%
657	Horseshoe Bend	Greene	Greensburg	60	585.65	395	1,140	285	8%	51%	41%	0%
658	Flat Run	Taylor	Campbellsville	55	518.94	518.94	540	220	11%	70%	18%	0%
659	Cooperative Shelby	Shelby	Simpsonville	4	35	35	N/A	N/A	6%	11%	32%	52%
660	E.W. Brown	Mercer	Harrodsburg	10	50	50	1,026	565	3%	44%	29%	25%
696	Fleming	Fleming	Elizaville	188	2350	2350	1,036	175	12%	37%	50%	0%
700	Ashwood	Lyon	Fredonia	86	1537.7	1537.7	785	170	4%	46%	23%	27%
720	Fleming 1	Fleming	Flemingburgs	98	764.5	598.6	585	150	3%	48%	49%	0%
722	Henderson KY	Henderson	Henderson	50	1113	725.13	1,395	180	14%	57%	28%	1%
770	Bluebird KY	Harrison	Cynthia	90	1943.2	1345	2,056	350	3%	21%	76%	0%
771	Martin	Martin	Threeforks	100	4122		4,029	1,450	5%	94%	2%	0%
794	Russelville	Logan	Russelville	208	1612	1612	1,058	250	4%	51%	45%	0%
				18								
			Average	62.7	962.1	610.6	1287	446	9%	45%	37%	9%
			Median	55.0	669.2	395.0	1035	240	6%	45%	43%	0%
			High	208.0	4122.0	2350.0	4029	2040	24%	96%	76%	52%
			Low	2.0	17.4	17.4	540	120	0%	0%	0%	0%

610: Bowling Green Solar, Bowling Green, KY

This project was built in 2011 and located on 17.36 acres for a 2 MW project on Scotty's Way with the adjoining uses being primarily industrial. The closest dwelling is 720 feet from the nearest panel.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	0.58%	10.00%
Agricultural	63.89%	30.00%
Industrial	35.53%	60.00%
Total	**100.00%**	**100.00%**

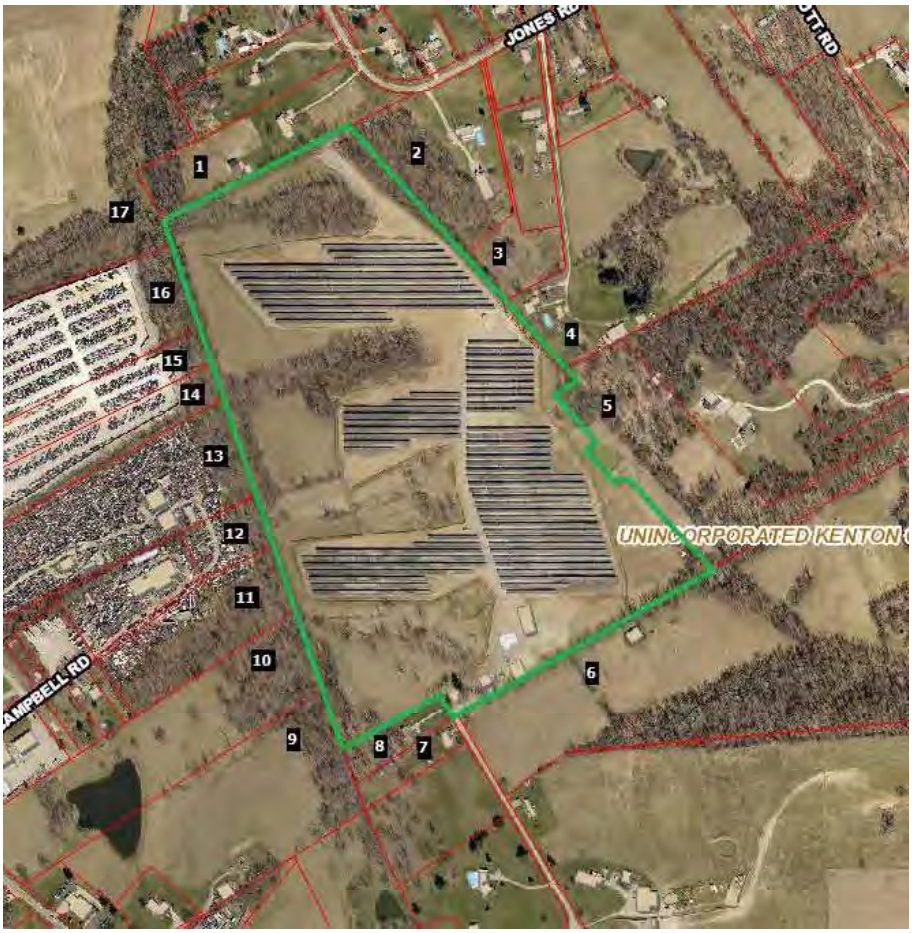
611: Cooperative Solar I, Winchester, KY

This project was built in 2017 on 63 acres of a 181.47-acre parent tract for an 8.5 MW project with the closest home at 2,040 feet from the closest solar panel.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	0.15%	11.11%
Agricultural	96.46%	77.78%
Agri/Res	3.38%	11.11%
Total	**100.00%**	**100.00%**

612: Walton 2 Solar, Walton, KY



This project was built in 2017 on 58.03 acres for a 2 MW project with the closest home 120 feet from the closest panel.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	20.84%	47.06%
Agri/Res	59.92%	17.65%
Commercial	19.25%	35.29%
Total	**100.00%**	**100.00%**

613: Crittenden Solar, Crittenden, KY

This project was built in late 2017 on 34.10 acres out of a 181.70-acre tract for a 2.7 MW project where the closest home is 345 feet from the closest panel.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	1.65%	32.08%
Agricultural	73.39%	39.62%
Agri/Res	23.05%	11.32%
Commercial	0.64%	9.43%
Industrial	0.19%	3.77%
Airport	0.93%	1.89%
Substation	0.15%	1.89%
Total	**100.00%**	**100.00%**

617: Glover Creek Solar, Summer Shade, Metcalfe County, KY

This project was built in 2022 on 322.44 acres out of a 968.20-acre parent tract assemblage for a 55 MW project where the closest home is 175 feet from the closest panel.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	5.78%	37.50%
Agricultural	19.81%	12.50%
Agri/Res	74.41%	50.00%
Total	**100.00%**	**100.00%**

I identified a sale of 194 acres adjoining this solar farm on January 22, 2021 for $430,000, or $2,216 per acre. This land was improved with a dwelling from the early 1900s and while 74 acres were in timber, the timber was reserved. Given the reserved timber and the fact that this sold prior to the construction of the solar farm, it is difficult to analyze this sale for impact.

618: Turkey Creek Solar, Lancaster, Garrard County, KY

This project was built in 2022 on 297.05 acres out of a 752.80-acre parent tract assemblage for a 50 MW project where the closest home is 240 feet from the closest panel. This project was announced in 2019 with approvals in 2020.

I identified a sale at 166 Long Branch Drive, Lancaster that sold on November 25, 2020 after the solar farm was announced for $180,000. The prior sale of the property on February 28, 2019 was for $160,000. Adjusting the earlier sale by the FHFA Home Price Index, the anticipated increase in value was $181,000. This is a difference of 1% which is within typical market deviation and supports a finding of no impact on property value due to the announcement of the solar farm. This home is approximately 250 feet from the nearest solar panel.

I also identified 209 Ashlock Drive that sold on June 14, 2022 near the time construction was to be begin at this solar project. This home sold for $500,000 for a 3,968 s.f. home with 4 BR, 4.5 BA built in 1985 on 3.06 acres. This is a unique home and it is over 1,000 feet to the nearest solar panel. It was purchase out of a larger tract that now includes 5 additional lots and this home adjoins an industrial use to the northwest. All of these factors make it difficult to analyze this sale. I have therefore not attempted to do so as any result would be non-credible given these other factors.

I also identified 1439 Stanford Road that sold on June 27, 2023 for $1,300,000 for this 3,400 historic home on 206 acres. The home is over 1,500 feet from the panels and the site includes acreage zoned for commercial use according to the listing. There are too many unique features to this for a valid paired sales analysis. I have not attempted one for this sale.

656: Mount Olive Creek Solar, Russell Springs, Russell County, KY

This project was built in 2022 on 420.82 acres out of a parent tract assemblage of 526.02 acres for this 60 MW project.

The closest adjoining home is 150 feet from the nearest panel.

I identified a home sale at 2985 Highway 1729 that sold on December 2, 2022 for $150,000. This home is around 1,250 feet from the nearest panel which is located to the northeast and through the intersection of Sano Road and Sulpher Creek Road (Highway 1729). It fronts on the highway and adjoins a church. Given these various issues, it would be difficult to complete a paired sales analysis on this home. However, this home did sell on September 18, 2018 for $110,000 prior to the solar farm construction. Adjusting this purchase price upward by the FHFA Home Price Index for the area, this home would have been expected to appreciate to $158,000. This was within 5% of the anticipated sales price and supports a finding of no impact on property value. Still given the distance to the solar farm and the other factors, I will not rely heavily on this indicator.

657: Horseshoe Bend Solar, Greensburg, Green County, KY

This project was built in 2022 on 395 acres out of a parent tract assemblage of 585.65 acres for this 60 MW project.

A home located at 2814 Highway 218, Greensburg sold on March 17, 2023 for $199,500 for a 3BR, 3 bathroom brick range on 3.75 acres located across the Highway and 1,275 feet from the nearest panel. The home is very well screened by trees and very distant and across a highway from the project. It is not a great candidate for testing for solar farm values. Furthermore it was updated since it was purchased in 2018, which minimizes the potential for a Sale/Resale analysis. All I can say is that the home was purchased in 2018 for $127,000 and sold 5 years later at a significantly higher price, though I don't know how much of that is attributable to the updates.

658: Flat Run Solar, Campbellsville, Taylor County, KY

This project is currently proposed to be located on 518.94 acres for this 55 MW project. The closest dwelling was proposed to be 220 feet from the nearest panel.

Adjoining Use Breakdown

	Acreage	**Parcels**
Residential	11.11%	55.56%
Agricultural	70.45%	37.04%
Agri/Res	18.44%	7.41%
Total	**100.00%**	**100.00%**

659: Cooperative Shelby Solar, Simpsonville, KY

This project was built in 2020 on 35 acres for a 0.5 MW project that is approved for expansion up to 4 MW.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	6.04%	44.44%
Agricultural	10.64%	11.11%
Agri/Res	31.69%	33.33%
Institutional	51.62%	11.11%
Total	**100.00%**	**100.00%**

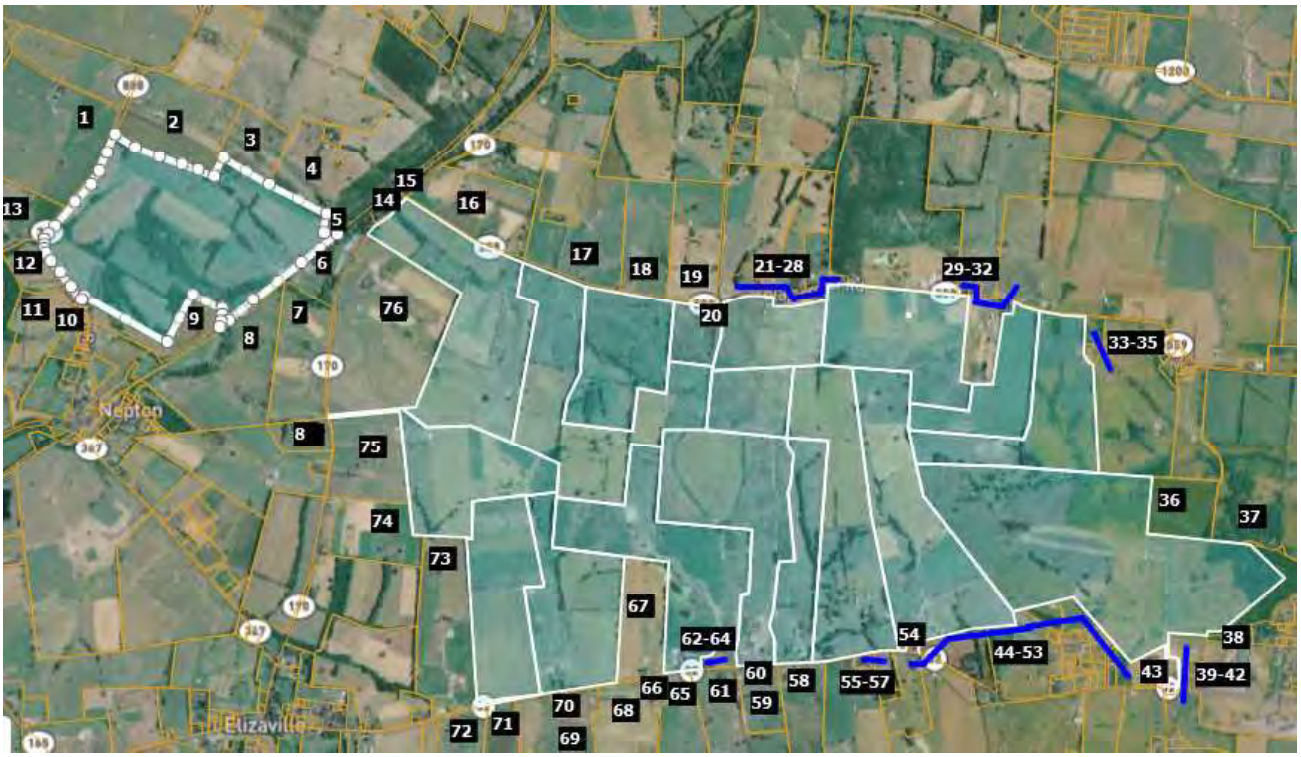
660: E.W. Brown Solar, Harrodsburg, KY

This project was built in 2016 on 50 acres for a 10 MW project. This solar facility adjoins three coal-fired units, which makes analysis of these nearby home sales problematic as it is impossible to extract the impact of the coal plant on the nearby homes especially given the lake frontage of the homes shown.

Adjoining Use Breakdown

	Acreage	**Parcels**
Residential	2.77%	77.27%
Agricultural	43.92%	9.09%
Agri/Res	28.56%	9.09%
Industrial	24.75%	4.55%
Total	**100.00%**	**100.00%**

696: Fleming Solar, Elizaville, Fleming County, KY



This project is proposed for a 188 MW project on a parent tract of 2,350 acres. The closest adjoining home is to be 175 feet from the nearest panel.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	11.80%	48.68%
Agricultural	37.47%	18.42%
Agri/Res	50.22%	30.26%
Religious	0.20%	1.32%
Commercial	0.30%	1.32%
Total	**100.00%**	**100.00%**

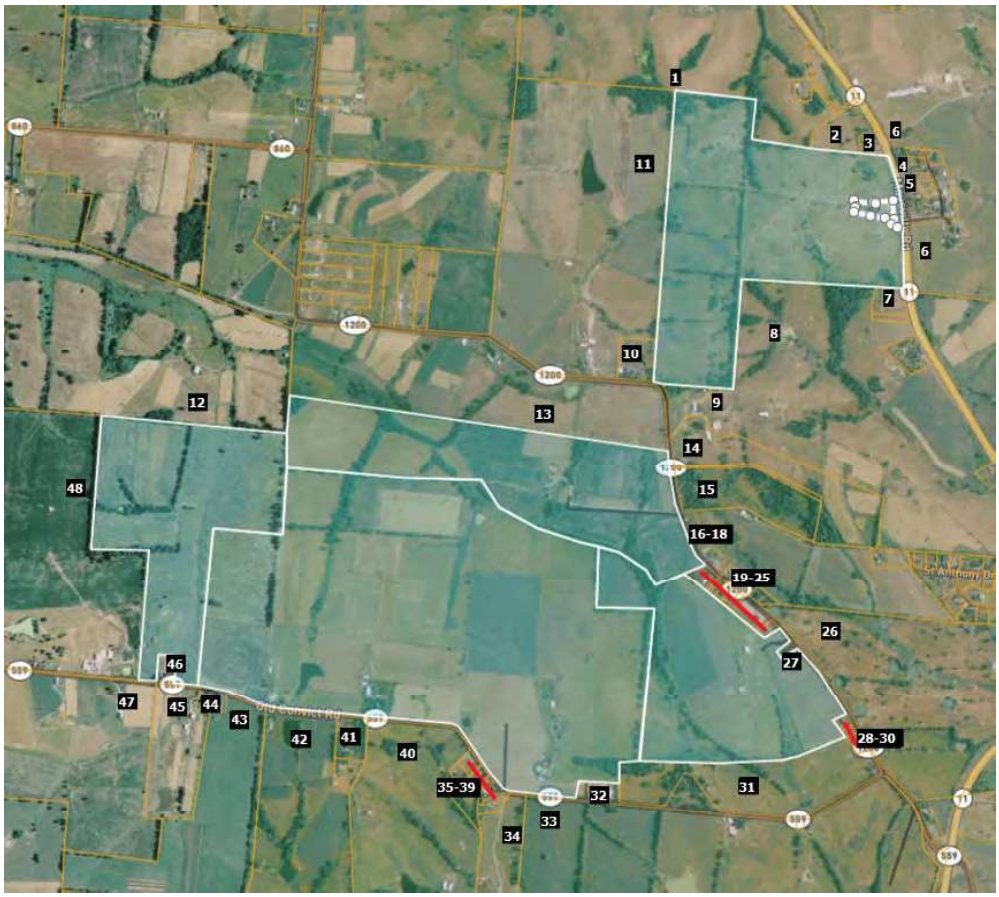
700: Ashwood Solar, Fedonia, Lyon County, KY

This project broke ground in 2023 and is located on 1,537.70 acres for an 86 MW project on Coleman Doles Road near Fredonia. The closest dwelling was proposed to be 170 feet from the nearest panel.

Adjoining Use Breakdown

	Acreage	**Parcels**
Residential	3.70%	54.05%
Agricultural	46.11%	24.32%
Agri/Res	22.99%	18.92%
Correctional	27.20%	2.70%
Total	**100.00%**	**100.00%**

720: Fleming 2 Solar, Flemingsburg, Fleming County, KY

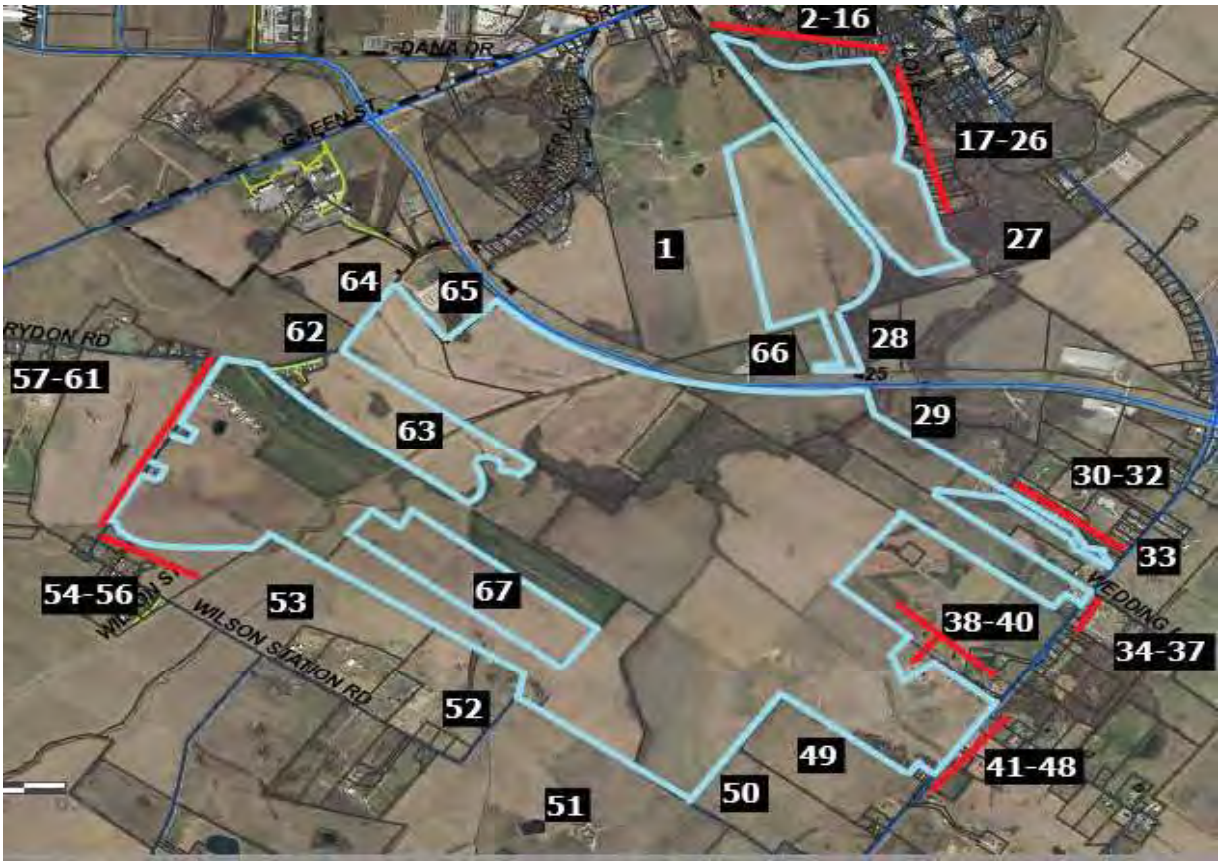


This project is currently proposed to be completed in 2024 and is located on 598.60 acres out of a 764.50-acre assemblage for a 98 MW project on Old Convict Road. The closest dwelling was proposed to be 150 feet from the nearest panel.

Adjoining Use Breakdown

	Acreage	**Parcels**
Residential	2.93%	56.25%
Agricultural	47.56%	20.83%
Agri/Res	49.27%	18.75%
Religious	0.12%	2.08%
Warehouse	0.12%	2.08%
Total	**100.00%**	**100.00%**

722: Henderson County Solar, Henderson, Henderson County, KY

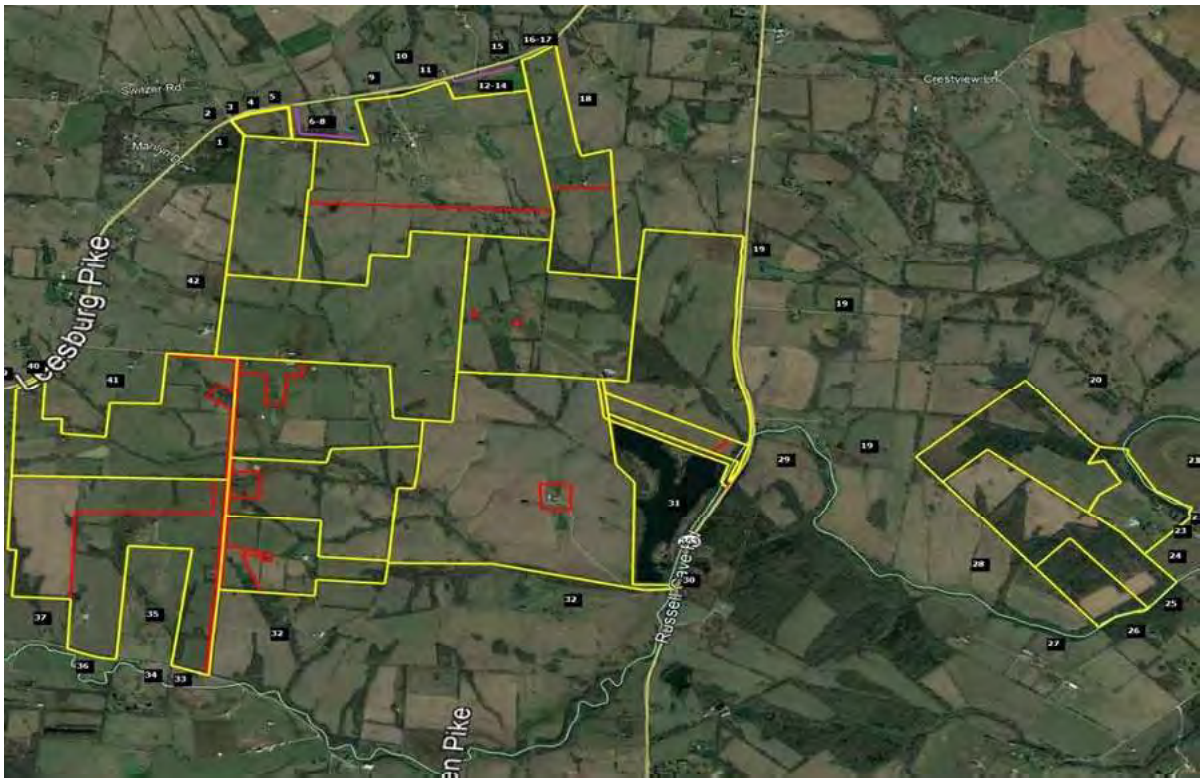


This project is currently proposed to be completed in 2023 and is located on 725.13 acres out of a 1,113.03-acre assemblage for a 50 MW project on Wilson Station Road. The closest dwelling was proposed to be 180 feet from the nearest panel.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	12.77%	71.64%
Agricultural	56.98%	14.93%
Agri/Res	27.96%	7.46%
Religious	0.03%	1.49%
School	1.45%	1.49%
Substation	0.45%	1.49%
Cell Tower	0.35%	1.49%
Total	**100.00%**	**100.00%**

770: Bluebird Solar, Cynthia, Harrison County, KY

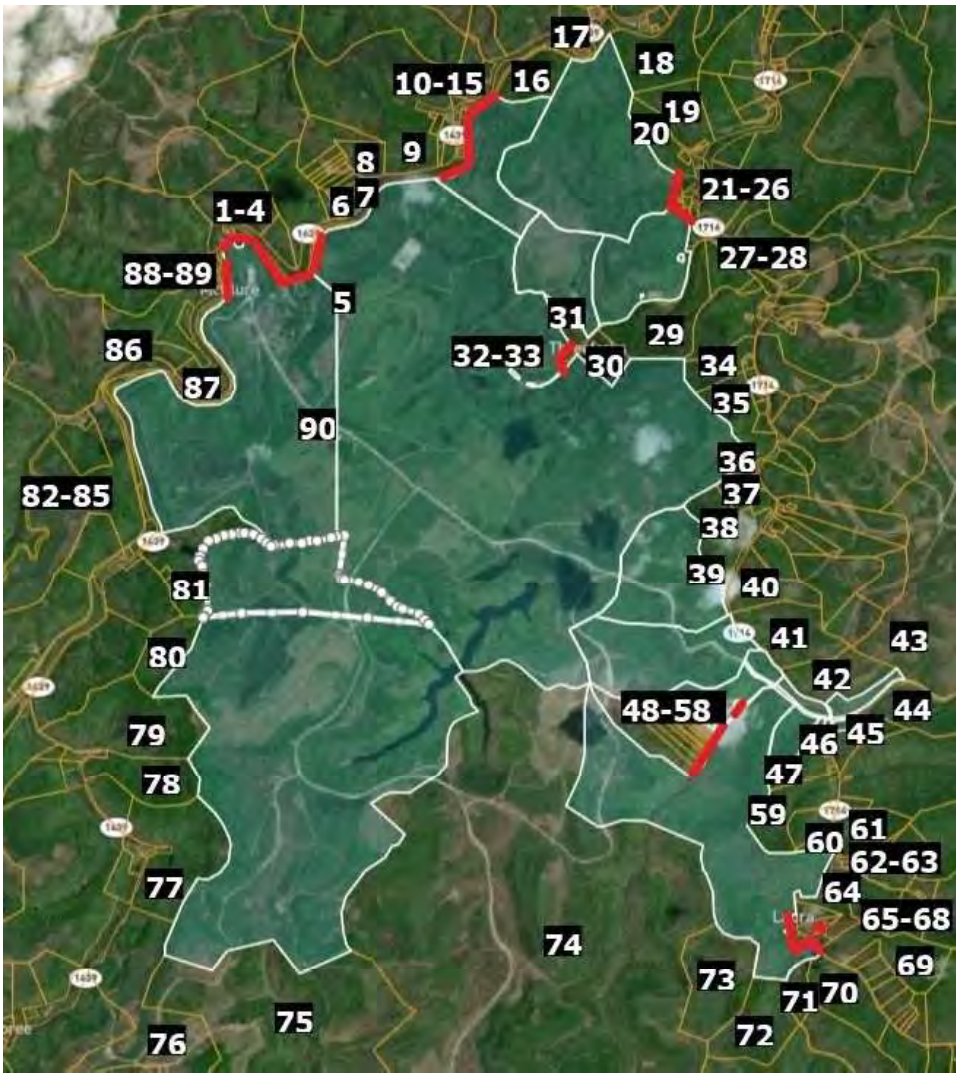


This project is currently proposed to be completed in 2024 and is located on 1,345 acres out of a 1,943.24-acre assemblage for a 90 MW project on Hwy 32 W near Cynthia. The closest dwelling was proposed to be 350 feet from the nearest panel.

Adjoining Use Breakdown

	Acreage	**Parcels**
Residential	3.47%	47.62%
Agricultural	20.51%	26.19%
Agri/Res	76.01%	26.19%
Total	**100.00%**	**100.00%**

771: Martin County Solar, Threeforks, Martin County, KY



This project is under construction on a 2,500-acre assemblage for a 100 MW project. This was the former Martiki Coal Mine land. The closest dwelling was proposed to be 1,450 feet from the nearest panel.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	4.65%	60.44%
Agricultural	93.60%	31.87%
Agri/Res	1.69%	2.20%
Cemetery	0.06%	5.49%
Total	**100.00%**	**100.00%**

794: Logan County Solar, Russelville, Logan County, KY

This project is currently proposed to be completed in 2023 and is located on 1,100 acres for a 173 MW project. The closest dwelling was proposed to be 225 feet from the nearest panel.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	3.54%	45.71%
Agricultural	51.29%	37.14%
Agri/Res	45.05%	14.29%
Religious	0.12%	2.86%
Total	**100.00%**	**100.00%**

I identified a May 17, 2022 sale of 528 Watermelon Road for $275,000 for a home on 1.29 acres with 2,370 s.f. with 3 BR and 2 BR built in 1940 with 2 carport spaces. This homes is 1,460 feet from the nearest panel through an existing wooded patch. The distance and age makes it difficult to compare this home in this area to similar properties for a paired sale analysis. This home last sold on September 12, 2016 for $149,000. Using the FHFA Home Price Index the anticipated

appreciated value as of the date of the most recent sale was expected to be $234,000. This Sale/Resale analysis suggests a 17.5% increase in value due to the solar farm.

I also identified 557 J Montgomery Road that sold on December 8, 2021 for $185,000 for a 4 BR, 2 BA with 2,200 s.f. of living space on 1 acre that was built in 1980. This home has a pool that is noted as needing work, but was otherwise in average condition. I spoke with Dewayne Whittaker the listing agent who indicated that the proposed nearby solar farm had no impact on the sales price or marketing of the home. This home previously sold on May 5, 2016 for $114,000 and also on June 17, 2008 for $125,000. The 2008 sales price was higher than the 2016 due to the crash in the housing market in 2008. Adjusting each of these former sales to a December 2021 value expectation based on the FHFA Home Price Index, I derive expectations of $174,000 from the 2016 sale and $210,000 from the 2008 sale. The Sale/Resale difference from the 2008 sale is considered more reliable as it covers a shorter period of time. It shows a 6% increase in value over the expected value and supports a mild increase in value due to the adjacency to the solar farm. This home is over 1,900 feet to the nearest panel through existing woods. Given the distance involved this is not a strong indicator for properties closer to solar panels.

Similarly, 263 Donald Lane sold on October 3, 2022 for $263,400 for a brick ranch with 4 BR, 2.5 BA with 1,704 s.f. of living area on 5 acres. This home is about 1400 feet from the nearest panel through existing woods. This home previously sold in May 2010 for $141,000. Adjusting this for time using the FHFA HPI, I derive an expected value of $262,000. This is within 1% of the actual closed price and strongly supports a finding of no impact at this distance. It is not a strong indicator for properties closer to panels.

VIII. Market Analysis of the Impact on Value from Solar Farms

I have researched hundreds of solar farms in numerous states to determine the impact of these facilities on the value of adjoining properties. This research has primarily been in North Carolina, but I have also conducted market impact analyses in Virginia, South Carolina, Tennessee, Texas, Oregon, Mississippi, Maryland, New York, California, Missouri, Florida, Montana, Georgia, Kentucky, and New Jersey.

I have derived a breakdown of the adjoining uses to show where solar farms are located. A summary showing the results of compiling that data over hundreds of solar farms is shown later in the Scope of Research section of this report.

I also consider whether the properties adjoining a solar farm in one location have characteristics similar to the properties abutting or adjoining the proposed site so that I can make an assessment of market impact on each proposed site. Notably, in most cases solar farms are placed in areas very similar to the site in question, which is surrounded by low density residential and agricultural uses. In my over 700 studies, I have found a striking repetition of that same typical adjoining property use mix in over 90% of the solar farms I have looked at. Matched pair results in multiple states are strikingly similar, and all indicate that solar farms – which generate very little traffic, and do not generate noise, dust or have other harmful effects – do not negatively impact the value of adjoining or abutting properties.

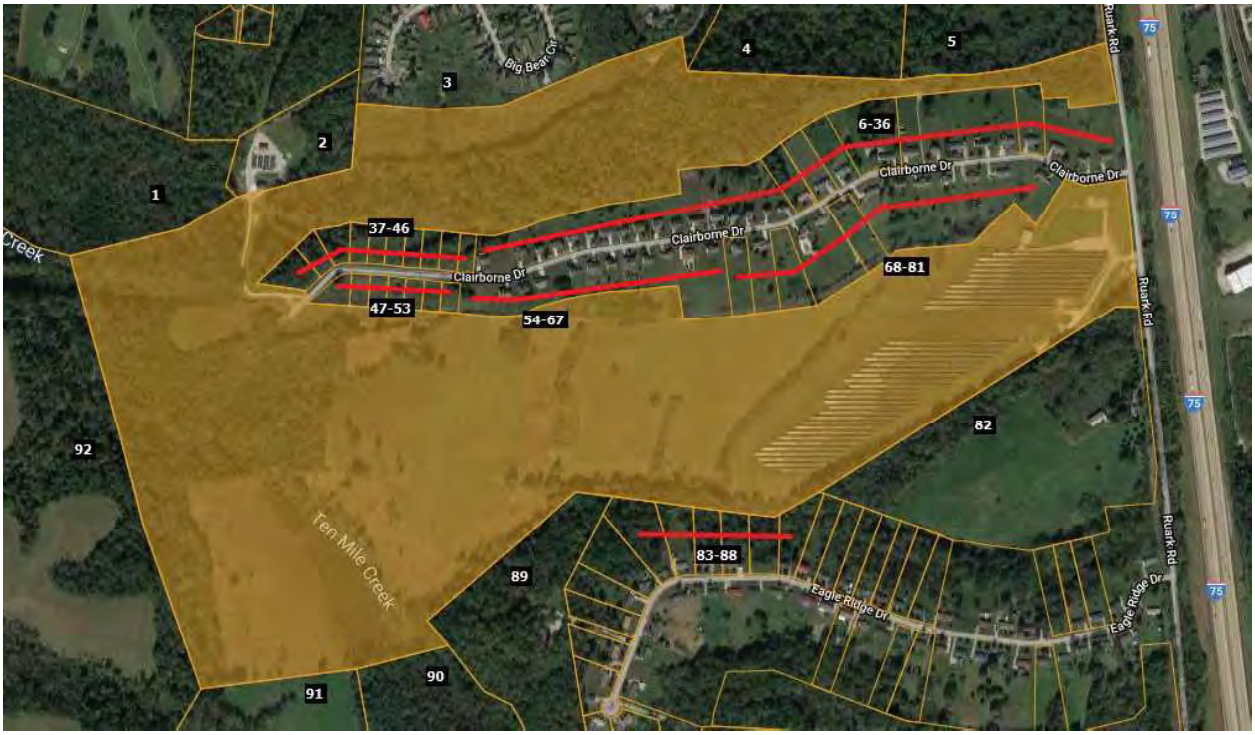
I have previously been asked by the Kentucky Siting Board about how the solar farms and the matched pair sets were chosen. This is the total of all the usable home sales adjoining the 900+ solar farms that I have looked at over the last 15 years. Most of the solar farms that I have looked at are only a few years old and have not been in place long enough for home or land sales to occur next to them for me to analyze. There is nothing unusual about this given the relatively rural locations of most of the solar farms where home and land sales occur much less frequently than they do in urban and suburban areas and the number of adjoining homes is relatively small.

I review the solar farms that I have looked at periodically to see if there are any new sales. If there is a sale I have to be sure it is not an inhouse sale or to a related family member. A great many of the rural sales that I find are from one family member to another, which makes analysis impossible given that these are not "arm's length" transactions. There are also numerous examples of sales that are "arm's length" but are still not usable due to other factors such as adjoining significant negative factors such as a coal fired plant or at a landfill or prison. I have looked at homes that require a driveway crossing a railroad spur, homes in close proximity to large industrial uses, as well as homes adjoining large state parks, or homes that are over 100 years old with multiple renovations. Such sales are not usable as they have multiple factors impacting the value that are tangled together. You can't isolate the impact of the coal fired plant, the industrial building, or the railroad unless you are comparing that sale to a similar property with similar impacts. Matched pair analysis requires that you isolate properties that only have one differential to test for, which is why the type of sales noted above is not appropriate for analysis.

After my review of all sales and elimination of the family transactions and those sales with multiple differentials, I am left with the matched pairs shown in this report to analyze. I do have additional matched pair data in other areas of the United States that were not included in this report due to being states less comparable to Kentucky than those shown. The only other sales that I have eliminated from the analysis are home sales under $100,000, which there haven't been many such examples, but at that price range it is difficult to identify any impacts through matched pair analysis. I have not cherry picked the data to include just the sales that support one direction in value, but I have included all of them both positive and negative with a preponderance of the evidence supporting no impact to mild positive impacts.

A. Kentucky and Adjoining States Data

1. Matched Pair – Crittenden Solar, Crittenden, Grant County, KY



This solar farm was built in December 2017 on a 181.70-acre tract but utilizing only 34.10 acres. This is a 2.7 MW facility with residential subdivisions to the north and south.

I have identified five home sales to the north of this solar farm on Clairborne Drive and one home sale to the south on Eagle Ridge Drive since the completion of this solar farm. The home sale on Eagle Drive is for a $75,000 home and all of the homes along that street are similar in size and price range. According to local broker Steve Glacken with Cutler Real Estate these are the lowest price range/style home in the market. I have not analyzed that sale as it would unlikely provide significant data to other homes in the area.

Mr. Glacken has been selling lots at the west end of Clairborne for new home construction. He indicated in 2020 that the solar farm near the entrance of the development has been a complete non-factor and none of the home sales are showing any concern over the solar farm. Most of the homes are in the $250,000 to $280,000 price range. The vacant residential lots are being marketed for $28,000 to $29,000. The landscaping buffer is considered light, but the rolling terrain allows for distant views of the panels from the adjoining homes along Clairborne Drive.

The first home considered is a bit of an anomaly for this subdivision in that it is the only manufactured home that was allowed in the community. It sold on January 3, 2019. I compared that sale to three other manufactured home sales in the area making minor adjustments as shown on the next page to account for the differences. After all other factors are considered the adjustments show a -1% to +13% impact due to the adjacency of the solar farm. The best indicator is 1250 Cason, which shows a 3% impact. A 3% impact is within the normal static of real estate transactions and therefore not considered indicative of a positive impact on the property, but it strongly supports an indication of no negative impact.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
	Adjoins	250 Claiborne	0.96	1/3/2019	$120,000	2000	2,016	$59.52	3/2	Drive	Manuf	
	Not	1250 Cason	1.40	4/18/2018	$95,000	1994	1,500	$63.33	3/2	2-Det	Manuf	Carport
	Not	410 Reeves	1.02	11/27/2018	$80,000	2000	1,456	$54.95	3/2	Drive	Manuf	
	Not	315 N Fork	1.09	5/4/2019	$107,000	1992	1,792	$59.71	3/2	Drive	Manuf	

Adjustments

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	250 Claiborne								$120,000			373
Not	1250 Cason	$2,081		$2,850	$26,144		-$5,000	-$5,000	$116,075	3%		
Not	410 Reeves	$249		$0	$24,615				$104,865	13%		
Not	315 N Fork	-$1,091		$4,280	$10,700				$120,889	-1%		
											5%	

I also looked at three other home sales on this street as shown below. These are stick-built homes and show a higher price range.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
	Adjoins	300 Claiborne	1.08	9/20/2018	$212,720	2003	1,568	$135.66	3/3	2-Car	Ranch	Brick
	Not	460 Claiborne	0.31	1/3/2019	$229,000	2007	1,446	$158.37	3/2	2-Car	Ranch	Brick
	Not	2160 Sherman	1.46	6/1/2019	$265,000	2005	1,735	$152.74	3/3	2-Car	Ranch	Brick
	Not	215 Lexington	1.00	7/27/2018	$231,200	2000	1,590	$145.41	5/4	2-Car	Ranch	Brick

Adjustments

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	300 Claiborne								$213,000			488
Not	460 Claiborne	-$2,026		-$4,580	$15,457	$5,000			$242,850	-14%		
Not	2160 Sherman	-$5,672		-$2,650	-$20,406				$236,272	-11%		
Not	215 Lexington	$1,072		$3,468	-$2,559	-$5,000			$228,180	-7%		
											-11%	

This set of matched pairs shows a minor negative impact for this property. I was unable to confirm the sales price or conditions of this sale. The best indication of value is based on 215 Lexington, which required the least adjusting and supports a -7% impact.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
	Adjoins	350 Claiborne	1.00	7/20/2018	$245,000	2002	1,688	$145.14	3/3	2-Car	Ranch	Brick
	Not	460 Claiborne	0.31	1/3/2019	$229,000	2007	1,446	$158.37	3/2	2-Car	Ranch	Brick
	Not	2160 Sherman	1.46	6/1/2019	$265,000	2005	1,735	$152.74	3/3	2-Car	R/FBsmt	Brick
	Not	215 Lexington	1.00	7/27/2018	$231,200	2000	1,590	$145.41	5/4	2-Car	Ranch	Brick

Adjustments

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	350 Claiborne								$245,000			720
Not	460 Claiborne	-$3,223		-$5,725	$30,660	$5,000			$255,712	-4%		
Not	2160 Sherman	-$7,057		-$3,975	-$5,743				$248,225	-1%		
Not	215 Lexington	-$136		$2,312	$11,400	-$5,000			$239,776	2%		
											-1%	

The following photograph shows the light landscaping buffer and the distant view of panels that was included as part of the marketing package for this property. The panels are visible somewhat on the left and somewhat through the trees in the center of the photograph. The first photograph is from the home, with the second photograph showing the view near the rear of the lot.

This set of matched pairs shows a no negative impact for this property. The range of adjusted impacts is -4% to +2%. The best indication is -1%, which as described above is within the typical market static and supports no impact on adjoining property value.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
	Adjoins	370 Claiborne	1.06	8/22/2019	$273,000	2005	1,570	$173.89	4/3	2-Car	2-Story	Brick
	Not	2160 Sherman	1.46	6/1/2019	$265,000	2005	1,735	$152.74	3/3	2-Car	R/FBsmt	Brick
	Not	2290 Dry	1.53	5/2/2019	$239,400	1988	1,400	$171.00	3/2.5	2-Car	R/FBsmt	Brick
	Not	125 Lexington	1.20	4/17/2018	$240,000	2001	1,569	$152.96	3/3	2-Car	Split	Brick

Adjustments

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	370 Claiborne								$273,000			930
Not	2160 Sherman	$1,831		$0	-$20,161				$246,670	10%		
Not	2290 Dry	$2,260		$20,349	$23,256	$2,500			$287,765	-5%		
Not	125 Lexington	$9,951		$4,800					$254,751	7%		
											4%	

This set of matched pairs shows a general positive impact for this property. The range of adjusted impacts is -5% to +10%. The best indication is +7%. I typically consider measurements of +/-5% to be within the typical variation in real estate transactions. This indication is higher than that and suggests a positive relationship.

The photograph from the listing shows panels visible between the home and the trampoline shown in the picture.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	330 Claiborne	1.00	12/10/2019	$282,500	2003	1,768	$159.79	3/3	2-Car	Ranch	Brick/pool
Not	895 Osborne	1.70	9/16/2019	$249,900	2002	1,705	$146.57	3/2	2-Car	Ranch	Brick/pool
Not	2160 Sherman	1.46	6/1/2019	$265,000	2005	1,735	$152.74	3/3	2-Car	R/FBsmt	Brick
Not	215 Lexington	1.00	7/27/2018	$231,200	2000	1,590	$145.41	5/4	2-Car	Ranch	Brick

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	330 Claiborne								$282,500			665
Not	895 Osborne	$1,790		$1,250	$7,387	$5,000		$0	$265,327	6%		
Not	2160 Sherman	$4,288		-$2,650	$4,032			$20,000	$290,670	-3%		
Not	215 Lexington	$9,761		$3,468	$20,706	-$5,000		$20,000	$280,135	1%		
											1%	

This set of matched pairs shows a general positive impact for this property. The range of adjusted impacts is -3% to +6%. The best indication is +6%. I typically consider measurements of +/-5% to be within the typical variation in real estate transactions. This indication is higher than that and suggests a positive relationship. The landscaping buffer on these is considered light with a fair visibility of the panels from most of these comparables and only thin landscaping buffers separating the homes from the solar panels.

I also looked at four sales that were during a rapid increase in home values around 2021, which required significant time adjustments based on the FHFA Housing Price Index. Sales in this time frame are less reliable for impact considerations as the peak buyer demand allowed for homes to sell with less worry over typical issues such as repairs.

The home at 250 Claiborne Drive sold with no impact from the solar farm according to the buyer's broker Lisa Ann Lay with Keller Williams Realty Service. As noted earlier, this is the only manufactured home in the community and is a bit of an anomaly. There was an impact on this sale due to an appraisal that came in low likely related to the manufactured nature of the home. Ms. Lay indicated that there was significant back and forth between both brokers and the appraiser to address the low appraisal, but ultimately, the buyers had to pay $20,000 out of pocket to cover the difference in appraised value and the purchase price. The low appraisal was not attributed to the solar farm, but the difficulty in finding comparable sales and likely the manufactured housing.

Adjoining Residential Sales After Solar Farm Built

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	250 Claiborne	1.05	1/5/2022	$210,000	2002	1,592	$131.91	4/2	Drive	Ranch	Manuf
Not	255 Spillman	0.64	3/4/2022	$166,000	1991	1,196	$138.80	3/1	Drive	Ranch	Remodel
Not	546 Waterworks	0.28	4/29/2021	$179,500	2007	1,046	$171.61	4/2	Drive	Ranch	3/4 Fin B
Not	240 Shawnee	1.18	6/7/2021	$180,000	1977	1,352	$133.14	3/2	Gar	Ranch	N/A

Solar	Address	Time	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	250 Claiborne							$210,000			365
Not	255 Spillman	-$379	$9,130	$43,971	$10,000		-$20,000	$208,722	1%		
Not	546 Waterworks	$1,772	-$4,488	$74,958			-$67,313	$184,429	12%		
Not	240 Shawnee	$1,501	$22,500	$25,562		-$10,000		$219,563	-5%		
										3%	

The photograph of the rear view from the listing is shown below.

The home at 260 Claiborne Drive sold with no impact from the solar farm according to the buyer's broker Jim Dalton with Ashcraft Real Estate Services. He noted that there was significant wood rot and a heavy smoker smell about the house, but even that had no impact on the price due to high demand in the market.

Adjoining Residential Sales After Solar Farm Built

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	260 Claiborne	1.00	10/13/2021	$175,000	2001	1,456	$120.19	3/2	Drive	Ranch	N/A
Not	355 Oakwood	0.58	10/27/2020	$186,000	2002	1,088	$170.96	3/2	Gar	Ranch	3/4 Fin B
Not	30 Ellen Kay	0.50	1/30/2020	$183,000	1988	1,950	$93.85	3/2	Gar	2-Story	N/A
Not	546 Waterworks	0.28	4/29/2021	$179,500	2007	1,046	$171.61	4/2	Drive	Ranch	3/4 Fin B

Solar	Address	Time	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	260 Claiborne							$175,000			390
Not	355 Oakwood	$18,339	-$930	$50,329		-$10,000	-$69,750	$173,988	1%		
Not	30 Ellen Kay	$31,974	$11,895	-$37,088		-$10,000		$179,781	-3%		
Not	546 Waterworks	$8,420	-$5,385	$56,287			-$67,313	$171,510	2%		
										0%	

The photograph of the rear view from the listing is shown below.

These next two were brick and with unfinished basements which made them easier to compare and therefore more reliable. For 300 Claiborne I considered the sale of a home across the street that did not back up to the solar farm and it adjusted to well below the range of the other comparables. I have included it, but would not rely on that which means this next comparable strongly supports a range of 0 to +3% and not up to +19%.

djoining Residential Sales After Solar Farm Built

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	300 Claiborne	0.89	12/18/2021	$290,000	2002	1,568	$184.95	3/3	2-Car	Br Rnch	Bsmt
Not	405 Claiborne	0.41	2/1/2022	$267,750	2004	1,787	$149.83	3/2	2-Car	Br Rnch	Bsmt
Not	39 Pinhook	0.68	3/31/2022	$299,000	1992	1,680	$177.98	3/2	2-Car	Br Rnch	Bsmt
Not	5 Pinhook	0.70	4/7/2022	$309,900	1992	1,680	$184.46	3/2	2-Car	Br Rnch	Bsmt

Solar	Address	Time	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	300 Claiborne							$290,000			570
Not	405 Claiborne	-$3,384	-$2,678	-$26,251				$235,437	19%		
Not	39 Pinhook	-$8,651	$14,950	-$15,947				$289,352	0%		
Not	5 Pinhook	-$9,576	$15,495	-$16,528				$299,291	-3%		
										5%	

The photograph of the rear view from the listing is shown below.

This same home, 300 Claiborne sold again on October 14, 2022 for $332,000, or $42,000 higher or 15% higher than it had just 10 months earlier. The FHFA Home Price Index indicates an 8.3% increase over that time for the overall market, suggesting that this home is actually increasing in value faster than other properties in the area. An updated photo from the 2022 listing is shown below.

The home at 410 Claiborne included an inground pool with significant landscaping around it that was a challenge. Furthermore, two of the comparables had finished basements. I made no adjustment for the pool on those two comparables and considered the two factors to cancel out

Adjoining Residential Sales After Solar Farm Built

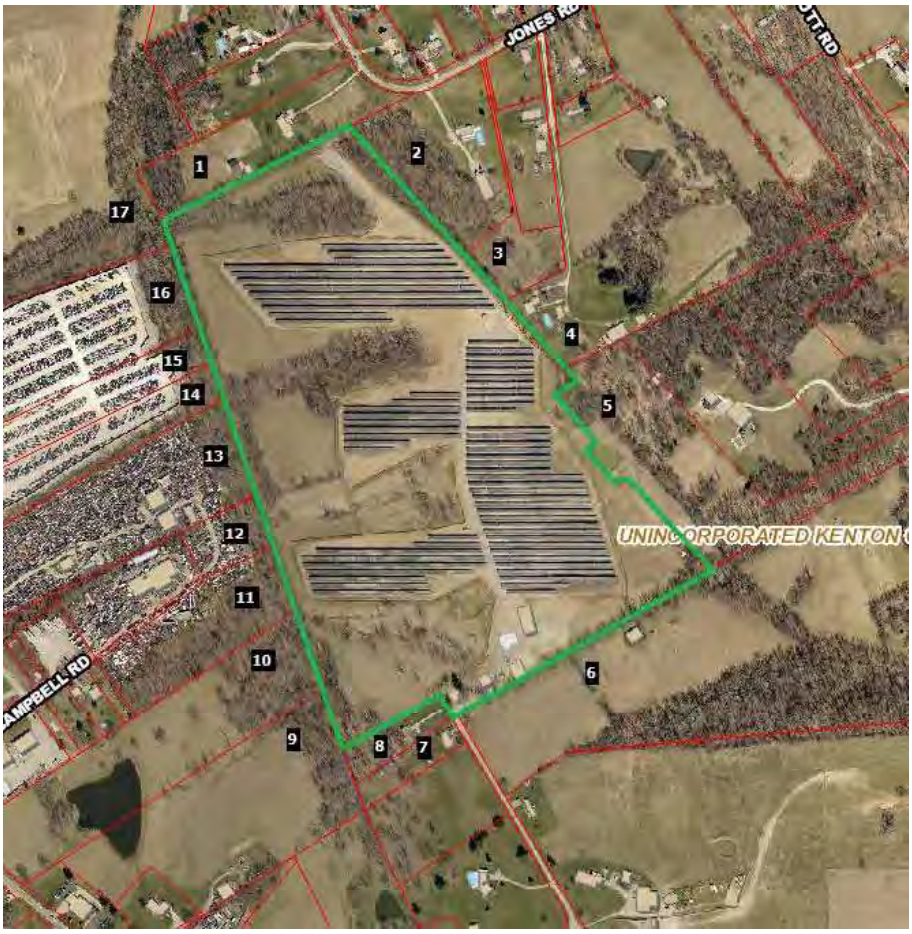
Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	410 Claiborne	0.31	2/10/2021	$275,000	2006	1,595	$172.41	3/2	2-Car	Br Rnch	Bsmt/Pool
Not	114 Austin	1.40	12/23/2020	$248,000	1994	1,650	$150.30	3/2	2-Car	Br Rnch	Bsmt
Not	125 Liza	0.29	6/25/2021	$315,000	2005	1,913	$164.66	4/3	2-Car	Br Rnch	Ktchn Bsmt
Not	130 Hannahs	0.42	2/9/2021	$295,000	2007	1,918	$153.81	3/3	2-Car	Br Rnch	Fin Bsmt

Solar	Address	Time	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	410 Claiborne							$275,000			1080
Not	114 Austin	$3,413	$14,880	-$6,613			$20,000	$279,680	-2%		
Not	125 Liza	-$11,945	$1,575	-$41,890	-$10,000			$252,740	8%		
Not	130 Hannahs	$83	-$1,475	-$39,743	-$10,000			$243,864	11%		
										6%	

The nine matched pairs considered in this analysis includes five that show no impact on value, one that shows a negative impact on value, and three that show a positive impact. The negative indication supported by one matched pair is -7% and the positive impacts are +6% and +7%. The two neutral indications show impacts of -5% to +5%. The average indicated impact is +2% when all nine of these indicators are blended.

Furthermore, the comments of the local real estate brokers strongly support the data that shows no negative impact on value due to the proximity to the solar farm.

2. Matched Pair – Walton 2, Walton, Kenton County, KY

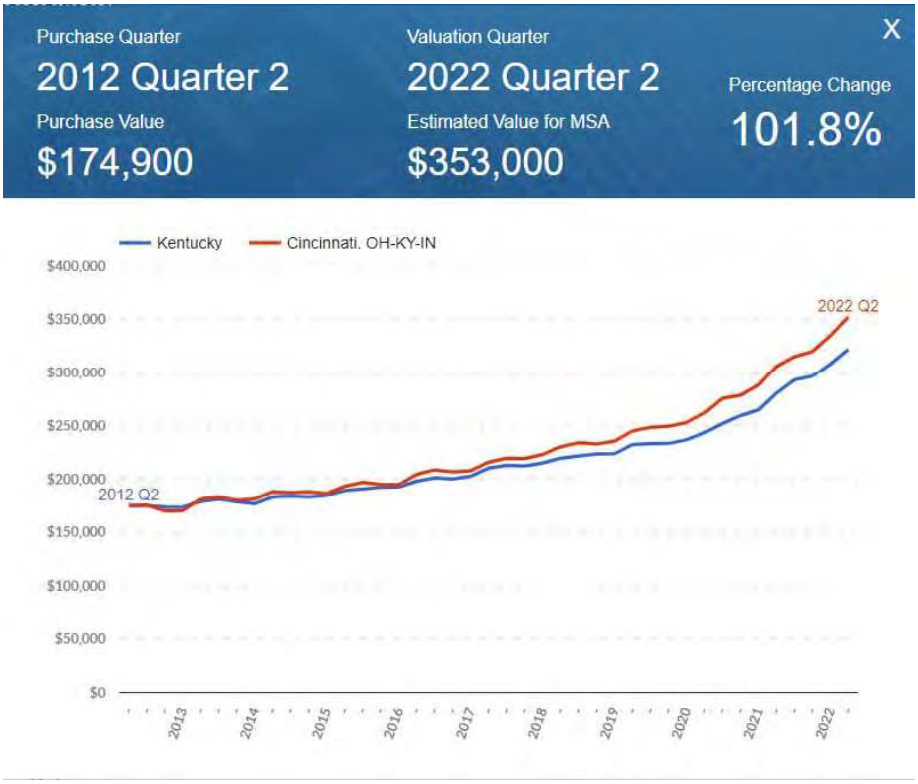


This project was built in 2017 on 58.03 acres for a 2 MW project with the closest home 120 feet from the closest panel.

The home located on Parcel 1 (783 Jones Road, Walton, KY) in the map above sold on May 4, 2022 for $346,000. This home is 410 feet from the nearest solar panel. I have considered a Sale/Resale analysis of this home as it previously sold on May 7, 2012 for $174,900. This analysis compares that 2012 purchase price and uses the FHFA House Price Index Calculator to identify what real estate values in the area have been appreciating at to determine where it was expected to appreciate to. I have then compared that to the actual sales price to determine if there is any impact attributable to the addition of the solar farm.

As can be seen on the calculator form, the expected value for $174,900 home sold in 2nd quarter 2012 would be $353,000 for 2nd quarter 2022. This is within 2% of the actual sales price and supports a finding of no impact on property value.

I have not attempted a paired sales analysis with other sales, as this property also has the nearby recycling and car lot that would be a potential factor in comparing to other sales. But based on aerial imagery, these same car lots were present in 2012 and therefore has no additional impact when comparing this home sale to itself.


Purchase Quarter
2012 Quarter 2
Purchase Value
$174,900
Valuation Quarter
2022 Quarter 2
Estimated Value for MSA
$353,000
Percentage Change
101.8%
X
Kentucky
Cincinnati, OH-KY-IN
$400,000
$350,000
$300,000
$250,000
$200,000
$150,000
$100,000
$50,000
$0
2012 Q2
2022 Q2
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

3. Matched Pair – Mulberry, Selmer, McNairy County, TN

This 16 MW solar farm was built in 2014 on 208.89 acres with the closest home being 480 feet.

This solar farm adjoins two subdivisions with Central Hills having a mix of existing and new construction homes. Lots in this development have been marketed for $15,000 each with discounts offered for multiple lots being used for a single home site. I spoke with the agent with Rhonda Wheeler and Becky Hearnsberger with United County Farm & Home Realty who noted that they have seen no impact on lot or home sales due to the solar farm in this community.

I have included a map below as well as data on recent sales activity on lots that adjoin the solar farm or are near the solar farm in this subdivision both before and after the announced plan for this solar farm facility. I note that using the same method I used to breakdown the adjoining uses at the subject property I show that the predominant adjoining uses are residential and agricultural, which is consistent with the location of most solar farms.

Adjoining Use Breakdown

	Acreage	Parcels
Commercial	3.40%	0.034
Residential	12.84%	79.31%
Agri/Res	10.39%	3.45%
Agricultural	73.37%	13.79%
Total	**100.00%**	**100.00%**

I have run a number of direct matched comparisons on the sales adjoining this solar farm as shown below. These direct matched pairs include some of those shown above as well as additional more recent sales in this community. In each of these I have compared the one sale adjoining the solar farm to multiple similar homes nearby that do not adjoin a solar farm to look for any potential impact from the solar farm.

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
3	Adjoins	491 Dusty	6.86	10/28/2016	$176,000	2009	1,801	$97.72	3/2	2-Gar	Ranch	
	Not	820 Lake Trail	1.00	6/8/2018	$168,000	2013	1,869	$89.89	4/2	2-Gar	Ranch	
	Not	262 Country	1.00	1/17/2018	$145,000	2000	1,860	$77.96	3/2	2-Gar	Ranch	
	Not	35 April	1.15	8/16/2016	$185,000	2016	1,980	$93.43	3/2	2-Gar	Ranch	

Adjoining Sales Adjusted

Parcel	Solar	Address	Time	Site	YB	GLA	Park	Other	Total	% Diff	Distance
3	Adjoins	491 Dusty							$176,000		480
	Not	820 Lake Trail	-$8,324	$12,000	-$3,360	-$4,890			$163,426	7%	
	Not	262 Country	-$5,450	$12,000	$6,525	-$3,680			$154,396	12%	
	Not	35 April	$1,138	$12,000	-$6,475	-$13,380			$178,283	-1%	
									Average	6%	

The best matched pair is 35 April Loop, which required the least adjustment and indicates a -1% increase in value due to the solar farm adjacency.

Adjoining Residential Sales After Solar Farm Built

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
12	Adjoins	57 Cooper	1.20	2/26/2019	$163,000	2011	1,586	$102.77	3/2	2-Gar	1.5 Story	Pool
	Not	191 Amelia	1.00	8/3/2018	$132,000	2005	1,534	$86.05	3/2	Drive	Ranch	
	Not	75 April	0.85	3/17/2017	$134,000	2012	1,588	$84.38	3/2	2-Crprt	Ranch	
	Not	345 Woodland	1.15	12/29/2016	$131,000	2002	1,410	$92.91	3/2	1-Gar	Ranch	

Adjoining Sales Adjusted

Parcel	Solar	Address	Sales Price	Time	Site	YB	GLA	Park	Other	Total	% Diff	Distance
12	Adjoins	57 Cooper	$163,000							$163,000		685
	Not	191 Amelia	$132,000	$2,303		$3,960	$2,685	$10,000	$5,000	$155,947	4%	
	Not	75 April	$134,000	$8,029	$4,000	-$670	-$135	$5,000	$5,000	$155,224	5%	
	Not	345 Woodland	$131,000	$8,710		$5,895	$9,811		$5,000	$160,416	2%	
										Average	4%	

The best matched pair is 191 Amelia, which was most similar in time frame of sale and indicates a +4% increase in value due to the solar farm adjacency.

Adjoining Residential Sales After Solar Farm Built

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
15	Adjoins	297 Country	1.00	9/30/2016	$150,000	2002	1,596	$93.98	3/2	4-Gar	Ranch	
	Not	185 Dusty	1.85	8/17/2015	$126,040	2009	1,463	$86.15	3/2	2-Gar	Ranch	
	Not	53 Glen	1.13	3/9/2017	$126,000	1999	1,475	$85.42	3/2	2-Gar	Ranch	Brick

Adjoining Sales Adjusted

Parcel	Solar	Address	Sales Price	Time	Site	YB	GLA	Park	Other	Total	% Diff	Distance
15	Adjoins	297 Country	$150,000							$150,000		650
	Not	185 Dusty	$126,040	$4,355		-$4,411	$9,167	$10,000		$145,150	3%	
	Not	53 Glen	$126,000	-$1,699		$1,890	$8,269	$10,000		$144,460	4%	
										Average	3%	

The best matched pair is 53 Glen, which was most similar in time frame of sale and required less adjustment. It indicates a +4% increase in value due to the solar farm adjacency.

The average indicated impact from these three sets of matched pairs is +4%, which suggests a mild positive relationship due to adjacency to the solar farm. The landscaping buffer for this project is mostly natural tree growth that was retained as part of the development but much of the trees separating the panels from homes are actually on the lots for the homes themselves. I therefore consider the landscaping buffer to be thin to moderate for these adjoining homes.

I have also looked at several lot sales in this subdivision as shown below.

These are all lots within the same community and the highest prices paid are for lots one parcel off from the existing solar farm. These prices are fairly inconsistent, though they do suggest about a $3,000 loss in the lots adjoining the solar farm. This is an atypical finding and additional details suggest there is more going on in these sales than the data crunching shows. First of all Parcel 4 was purchased by the owner of the adjoining home and therefore an atypical buyer seeking to expand a lot and the site is not being purchased for home development. Moreover, using the SiteToDoBusiness demographic tools, I found that the 1-mile radius around this development is expecting a total population increase over the next 5 years of 3 people. This lack of growing demand for lots is largely explained in that context. Furthermore, the fact that finished home sales as shown above are showing no sign of a negative impact on property value makes this data unreliable and inconsistent with the data shown in sales to an end user. I therefore place little weight on this outlier data.

Parcel	Solar	Address	Acres	Date Sold	Sales Price	4/18/2019 Adj for Time	$/AC	4/18/2019 Adj for Time
4	Adjoins	Shelter	2.05	10/25/2017	$16,000	$16,728	$7,805	$8,160
10	Adjoins	Carter	1.70	8/2/2018	$14,000	$14,306	$8,235	$8,415
11	Adjoins	Cooper	1.28	9/17/2018	$12,000	$12,215	$9,375	$9,543
	Not	75 Dusty	1.67	4/18/2019	$20,000	$20,000	$11,976	$11,976
	Not	Lake Trl	1.47	11/7/2018	$13,000	$13,177	$8,844	$8,964
	Not	Lake Trl	1.67	4/18/2019	$20,000	$20,000	$11,976	$11,976

	Adjoins	Per Acre	Not Adjoins	Per Acre	% DIF/Lot	% DIF/AC
Average	$14,416	$8,706	$17,726	$10,972	19%	21%
Median	$14,306	$8,415	$20,000	$11,976	28%	30%
High	$16,728	$9,543	$20,000	$11,976	16%	20%
Low	$12,215	$8,160	$13,177	$8,964	7%	9%

4. Matched Pair – Grand Ridge Solar, Streator, LaSalle County, IL

This solar farm has a 20 MW output and is located on a 160-acre tract. The project was built in 2012.

I have considered the recent sale of Parcel 13 shown above, which sold in October 2016 after the solar farm was built. I have compared that sale to a number of nearby residential sales not in proximity to the solar farm as shown below. Parcel 13 is 480 feet from the closest solar panel. The landscaping buffer is considered light.

Adjoining Residential Sales After Solar Farm Completed

#	TAX ID	Acres	Date Sold	Sales Price	Built	GBA	$/GBA
13	34-21-237-000	2	Oct-16	$186,000	1997	2,328	$79.90

Not Adjoining Residential Sales After Solar Farm Completed

#	TAX ID	Acres	Date Sold	Sales Price	Built	GBA	$/GBA
712 Columbus Rd	32-39-134-005	1.26	Jun-16	$166,000	1950	2,100	$79.05
504 N 2782 Rd	18-13-115-000	2.68	Oct-12	$154,000	1980	2,800	$55.00
7720 S Dwight Rd	11-09-300-004	1.14	Nov-16	$191,000	1919	2,772	$68.90
701 N 2050th Rd	26-20-105-000	1.97	Aug-13	$200,000	2000	2,200	$90.91
9955 E 1600th St	04-13-200-007	1.98	May-13	$181,858	1991	2,600	$69.95

TAX ID	Date Sold	Adjustments Time	Adjustments Total	$/Sf
34-21-237-000	Oct-16		$186,000	$79.90
32-39-134-005	Jun-16		$166,000	$79.05
18-13-115-000	Oct-12	$12,320	$166,320	$59.40
11-09-300-004	Nov-16		$191,000	$68.90
26-20-105-000	Aug-13	$12,000	$212,000	$96.36
04-13-200-007	May-13	$10,911	$192,769	$74.14

	Adjoins Solar Farm		Not Adjoin Solar Farm	
	Average	Median	Average	Median
Sales Price/SF	$79.90	$79.90	$75.57	$74.14
GBA	2,328	2,328	2,494	2,600

Based on the matched pairs I find no indication of negative impact due to proximity to the solar farm.

The most similar comparable is the home on Columbus that sold for $79.05 per square foot. This is higher than the median rate for all of the comparables. Applying that price per square foot to the subject property square footage indicates a value of $184,000.

There is minimal landscaping separating this solar farm from nearby properties and is therefore considered light.

5. Matched Pair – Portage Solar, Portage, Porter County, IN

This solar farm has a 2 MW output and is located on a portion of a 56-acre tract. The project was built in 2012. As can be seen by the more recent map, Lennar Homes is now developing a new subdivision on the vacant land just west of this solar farm.

I have considered the recent sale of Parcels 5 and 12. Parcel 5 is an undeveloped tract, while Parcel 12 is a residential home. I have compared each to a set of comparable sales to determine if there was any impact due to the adjoining solar farm. This home is 1,320 feet from the closest solar panel. The landscaping buffer is considered light.

Adjoining Residential Sales After Solar Farm Completed

#	TAX ID	Acres	Date Sold	Sales Price	Built	GBA	$/GBA
12	64-06-19-326-007.000-015	1.00	Sep-13	$149,800	1964	1,776	$84.35

Nearby Residential Sales After Solar Farm Completed

#	TAX ID	Acres	Date Sold	Sales Price	Built	GBA	$/GBA
2501 Architect Dr	64-04-32-202-004.000-021	1.31	Nov-15	$191,500	1959	2,064	$92.78
336 E 1050 N	64-07-09-326-003.000-005	1.07	Jan-13	$155,000	1980	1,908	$81.24
2572 Pryor Rd	64-05-14-204-006.000-016	1.00	Jan-16	$216,000	1960	2,348	$91.99

Adjoining Land Sales After Solar Farm Completed

#	TAX ID	Acres	Date Sold	Sales Price	$/AC
5	64-06-19-200-003.000-015	18.70	Feb-14	$149,600	$8,000

Nearby Land Sales After Solar Farm Completed

#	TAX ID	Acres	Date Sold	Sales Price	$/AC
	64-07-22-401-001.000-005	74.35	Jun-17	$520,450	$7,000
	64-15-08-200-010.000-001	15.02	Jan-17	$115,000	$7,658

Residential Sale Adjustment Chart

		Adjustments		
TAX ID	Date Sold	Time	Total	$/Sf
64-06-19-326-007.000-015	Sep-13	$8,988	$158,788	$89.41
64-04-32-202-004.000-021	Nov-15	$3,830	$195,330	$94.64
64-07-09-326-003.000-005	Jan-13	$9,300	$164,300	$86.11
64-05-14-204-006.000-016	Jan-16		$216,000	$91.99

2% adjustment/year
Adjusted to 2017

	Adjoins Solar Farm		Not Adjoin Solar Farm	
	Average	Median	Average	Median
Sales Price/SF	$89.41	$89.41	$90.91	$91.99
GBA	1,776	1,776	2,107	2,064

After adjusting the price per square foot is 2.88% less for the home adjoining the solar farm versus those not adjoining the solar farm. This is within the typical range of variation to be anticipated in any real estate transaction and indicates no impact on property value.

Applying the price per square foot for the 336 E 1050 N sale, which is the most similar to the Parcel 12 sale, the adjusted price at $81.24 per square foot applied to the Parcel 12 square footage yields a value of $144,282.

The landscaping separating this solar farm from the homes is considered light.

Land Sale Adjustment Chart

		Adjustments		
TAX ID	**Date Sold**	**Time**	**Total**	**$/Acre**
64-06-19-200-003.000-015	Feb-14	$8,976	$158,576	$8,480
64-07-22-401-001.000-005	Jun-17		$520,450	$7,000
64-15-08-200-010.000-001	Jan-17		$115,000	$7,658

2% adjustment/year
Adjusted to 2017

	Adjoins Solar Farm		**Not Adjoin Solar Farm**	
	Average	**Median**	**Average**	**Median**
Sales Price/Ac	$8,480	$8,480	$7,329	$7,329
Acres	18.70	18.70	44.68	44.68

After adjusting the price per acre is higher for the property adjoining the solar farm, but the average and median size considered is higher which suggests a slight discount. This set of matched pair supports no indication of negative impact due to the adjoining solar farm.

Alternatively, adjusting the 2017 sales back to 2014 I derive an indicated price per acre for the comparables at $6,580 per acre to $7,198 per acre, which I compare to the unadjusted subject property sale at $8,000 per acre.

6. Matched Pair – Dominion Indy III, Indianapolis, Marion County, IN

This solar farm has an 8.6 MW output and is located on a portion of a 134-acre tract. The project was built in 2013.

There are a number of homes on small lots located along the northern boundary and I have considered several sales of these homes. I have compared those homes to a set of nearby not adjoining home sales as shown below. The adjoining homes that sold range from 380 to 420 feet from the nearest solar panel, with an average of 400 feet. The landscaping buffer is considered light.

Adjoining Residential Sales After Solar Farm Completed

#	TAX ID	Acres	Date Sold	Sales Price	Built	GBA	$/GBA
2	2013249	0.38	12/9/2015	$140,000	2006	2,412	$58.04
4	2013251	0.23	9/6/2017	$160,000	2006	2,412	$66.33
5	2013252	0.23	5/10/2017	$147,000	2009	2,028	$72.49
11	2013258	0.23	12/9/2015	$131,750	2011	2,190	$60.16
13	2013260	0.23	3/4/2015	$127,000	2005	2,080	$61.06
14	2013261	0.23	2/3/2014	$120,000	2010	2,136	$56.18

Nearby Not Adjoining Residential Sales After Solar Farm Completed

#	TAX ID	Acres	Date Sold	Sales Price	Built	GBA	$/GBA
5836 Sable Dr	2013277	0.14	Jun-16	$141,000	2005	2,280	$61.84
5928 Mosaic Pl	2013845	0.17	Sep-15	$145,000	2007	2,280	$63.60
5904 Minden Dr	2012912	0.16	May-16	$130,000	2004	2,252	$57.73
5910 Mosaic Pl	2000178	0.15	Aug-16	$146,000	2009	2,360	$61.86
5723 Minden Dr	2012866	0.26	Nov-16	$139,900	2005	2,492	$56.14

		Adjustments		
TAX ID	Date Sold	Time	Total	$/Sf
2013249	12/9/2015	$5,600	$145,600	$60.36
2013251	9/6/2017		$160,000	$66.33
2013252	5/10/2017		$147,000	$72.49
2013258	12/9/2015	$5,270	$137,020	$62.57
2013260	3/4/2015	$5,080	$132,080	$63.50
2013261	2/3/2014	$7,200	$127,200	$59.55
2013277	6/1/2016	$2,820	$143,820	$63.08
2013845	9/1/2015	$5,800	$150,800	$66.14
2012912	5/1/2016	$2,600	$132,600	$58.88
2000178	8/1/2016	$2,920	$148,920	$63.10
2012866	11/1/2016	$2,798	$142,698	$57.26

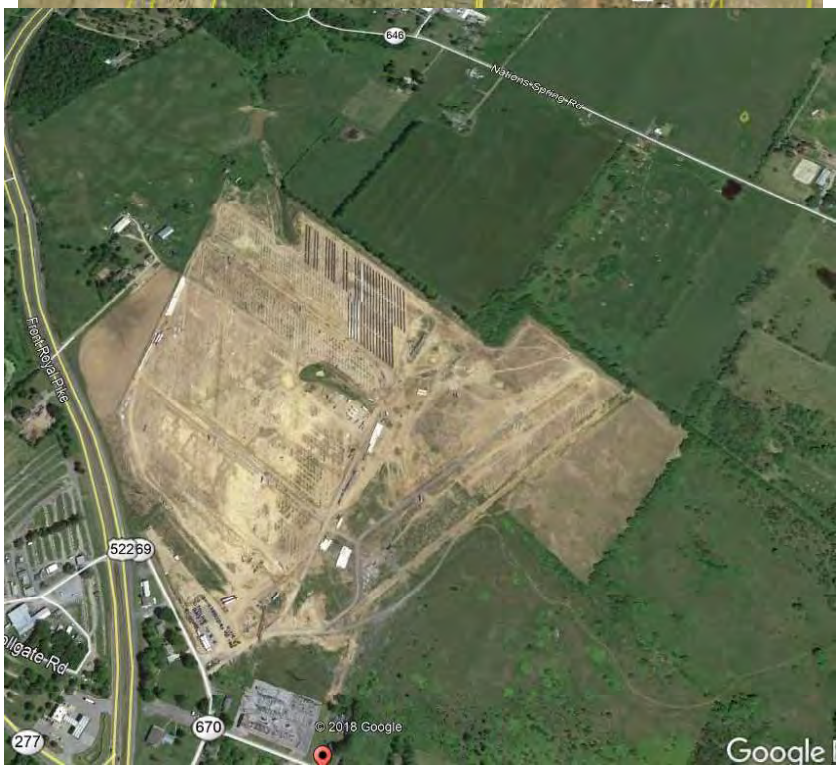
2% adjustment/year
Adjusted to 2017

	Adjoins Solar Farm		Not Adjoin Solar Farm	
	Average	Median	Average	Median
Sales Price/SF	$64.13	$63.03	$61.69	$63.08
GBA	2,210	2,163	2,333	2,280

This set of homes provides very strong indication of no impact due to the adjacency to the solar farm and includes a large selection of homes both adjoining and not adjoining in the analysis.

The landscaping screen is considered light in relation to the homes considered above.

7. Matched Pair – Clarke County Solar, Double Tollgate Road, White Post, Clarke County, VA



This project is a 20 MW facility located on a 234-acre tract that was built in 2017.

I have considered a recent sale or Parcel 3. The home on this parcel is 1,230 feet from the closest panel as measured in the second map from Google Earth, which shows the solar farm under construction.

I've compared this home sale to a number of similar rural homes on similar parcels as shown below. I have used multiple sales that bracket the subject property in terms of sale date, year built, gross living area, bedrooms and bathrooms. Bracketing the parameters insures that all factors are well balanced out in the adjustments. The trend for these sales shows a positive value for the adjacency to the solar farm.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	833 Nations Spr	5.13	1/9/2017	$295,000	1979	1,392	$211.93	3/2	Det Gar	Ranch	Unfin bsmt
Not	85 Ashby	5.09	9/11/2017	$315,000	1982	2,333	$135.02	3/2	2 Gar	Ranch	
Not	541 Old Kitchen	5.07	9/9/2018	$370,000	1986	3,157	$117.20	4/4	2 Gar	2 story	
Not	4174 Rockland	5.06	1/2/2017	$300,000	1990	1,688	$177.73	3/2	3 Gar	2 story	
Not	400 Sugar Hill	1.00	6/7/2018	$180,000	1975	1,008	$178.57	3/1	Drive	Ranch	

Adjoining Residential Sales After Solar Farm Approved					Adjoining Sales Adjusted								
Solar	Address	Acres	Date Sold	Sales Price	Time	Acres	YB	GLA	BR/BA	Park	Other	Total	% Diff
Adjoins	833 Nations Spr	5.13	1/9/2017	$295,000								$295,000	
Not	85 Ashby	5.09	9/11/2017	$315,000	-$6,300		-$6,615	-$38,116		-$7,000	$15,000	$271,969	8%
Not	541 Old Kitchen	5.07	9/9/2018	$370,000	-$18,500		-$18,130	-$62,057		-$7,000	$15,000	$279,313	5%
Not	4174 Rockland	5.06	1/2/2017	$300,000			-$23,100	-$15,782		-$12,000	$15,000	$264,118	10%
Not	400 Sugar Hill	1.00	6/7/2018	$180,000	-$9,000	$43,000	$5,040	$20,571	$10,000	$3,000	$15,000	$267,611	9%
											Average		8%

The landscaping screen is primarily a newly planted buffer with a row of existing trees being maintained near the northern boundary and considered light.

8. Matched Pair – Walker-Correctional Solar, Barham Road, Barhamsville, New Kent County, VA

This project was built in 2017 and located on 484.65 acres for a 20 MW with the closest home at 110 feet from the closest solar panel with an average distance of 500 feet.

I considered the recent sale identified on the map above as Parcel 19, which is directly across the street and based on the map shown on the following page is 250 feet from the closest panel. A limited buffering remains along the road with natural growth being encouraged, but currently the

panels are visible from the road. Alex Uminski, SRA with MGMiller Valuations in Richmond VA confirmed this sale with the buying and selling broker. The selling broker indicated that the solar farm was not a negative influence on this sale and in fact the buyer noticed the solar farm and then discovered the listing. The privacy being afforded by the solar farm was considered a benefit by the buyer. I used a matched pair analysis with a similar sale nearby as shown below and found no negative impact on the sales price. Property actually closed for more than the asking price. The landscaping buffer is considered light.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	5241 Barham	2.65	10/18/2018	$264,000	2007	1,660	$159.04	3/2	Drive	Ranch	Modular
Not	17950 New Kent	5.00	9/5/2018	$290,000	1987	1,756	$165.15	3/2.5	3 Gar	Ranch	
Not	9252 Ordinary	4.00	6/13/2019	$277,000	2001	1,610	$172.05	3/2	1.5-Gar	Ranch	
Not	2416 W Miller	1.04	9/24/2018	$299,000	1999	1,864	$160.41	3/2.5	Gar	Ranch	

Adjoining Sales Adjusted

Solar	Address	Time	Ac/Loc	YB	GLA	BR/BA	Park	Other	Total	% Diff	Dist
Adjoins	5241 Barham								$264,000		250
Not	17950 New Kent		-$8,000	$29,000	-$4,756	-$5,000	-$20,000	-$15,000	$266,244	-1%	
Not	9252 Ordinary	-$8,310	-$8,000	$8,310	$2,581		-$10,000	-$15,000	$246,581	7%	
Not	2416 W Miller		$8,000	$11,960	-$9,817	-$5,000	-$10,000	-$15,000	$279,143	-6%	
								Average Diff		0%	

I also spoke with Patrick W. McCrerey of Virginia Estates who was marketing a property that sold at 5300 Barham Road adjoining the Walker-Correctional Solar Farm. He indicated that this property was unique with a home built in 1882 and heavily renovated and updated on 16.02 acres. The solar farm was through the woods and couldn't be seen by this property and it had no impact on marketing this property. This home sold on April 26, 2017 for $358,000. I did not set up any matched pairs for this property as it was such a unique property that any such comparison would be difficult to rely on. The broker's comments do support the assertion that the adjoining solar farm had no impact on value. The home in this case was 510 feet from the closest panel.

9. Matched Pair – Sappony Solar, Stony Creek, Sussex County, VA

This project is a 30 MW facility located on a 322.68-acre tract that was built in the fourth quarter of 2017.

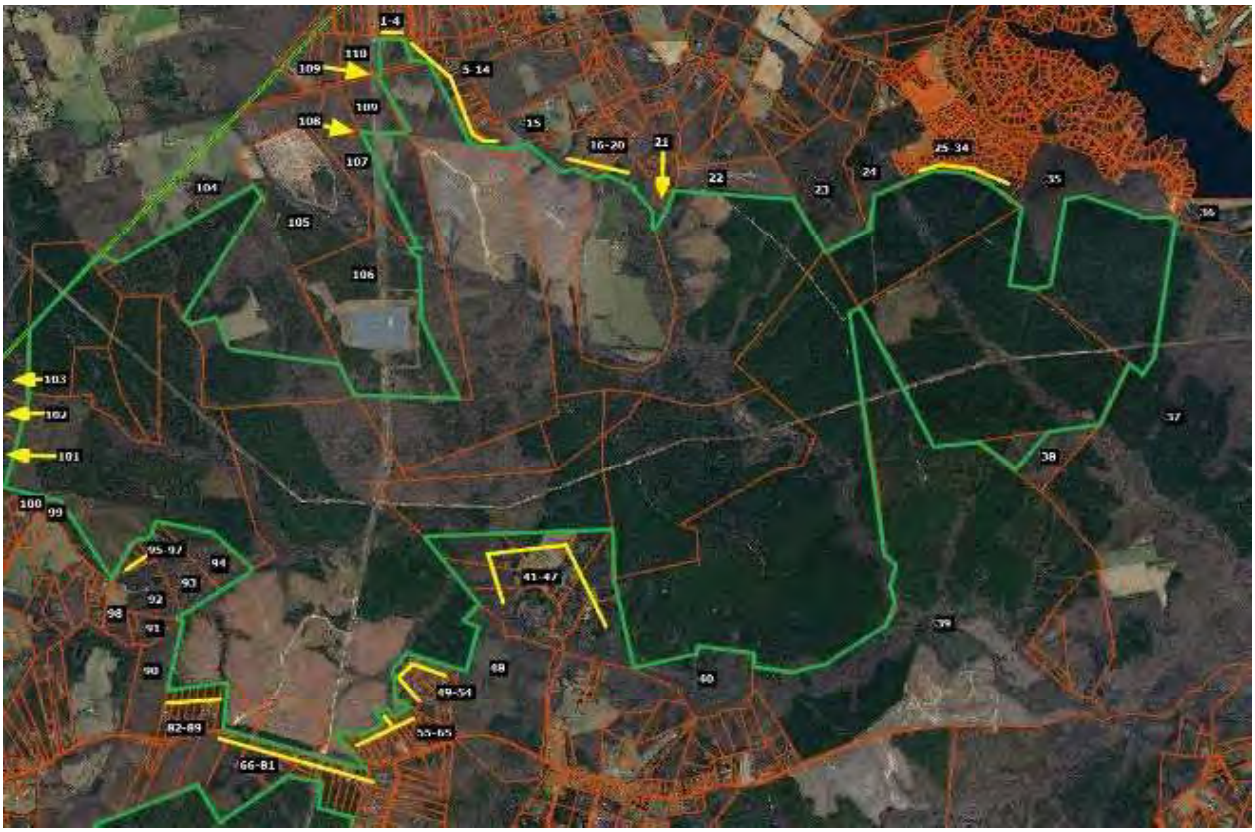
I have considered the 2018 sale of Parcel 17 as shown below. From Parcel 17 the retained trees and setbacks are a light to medium landscaped buffer.

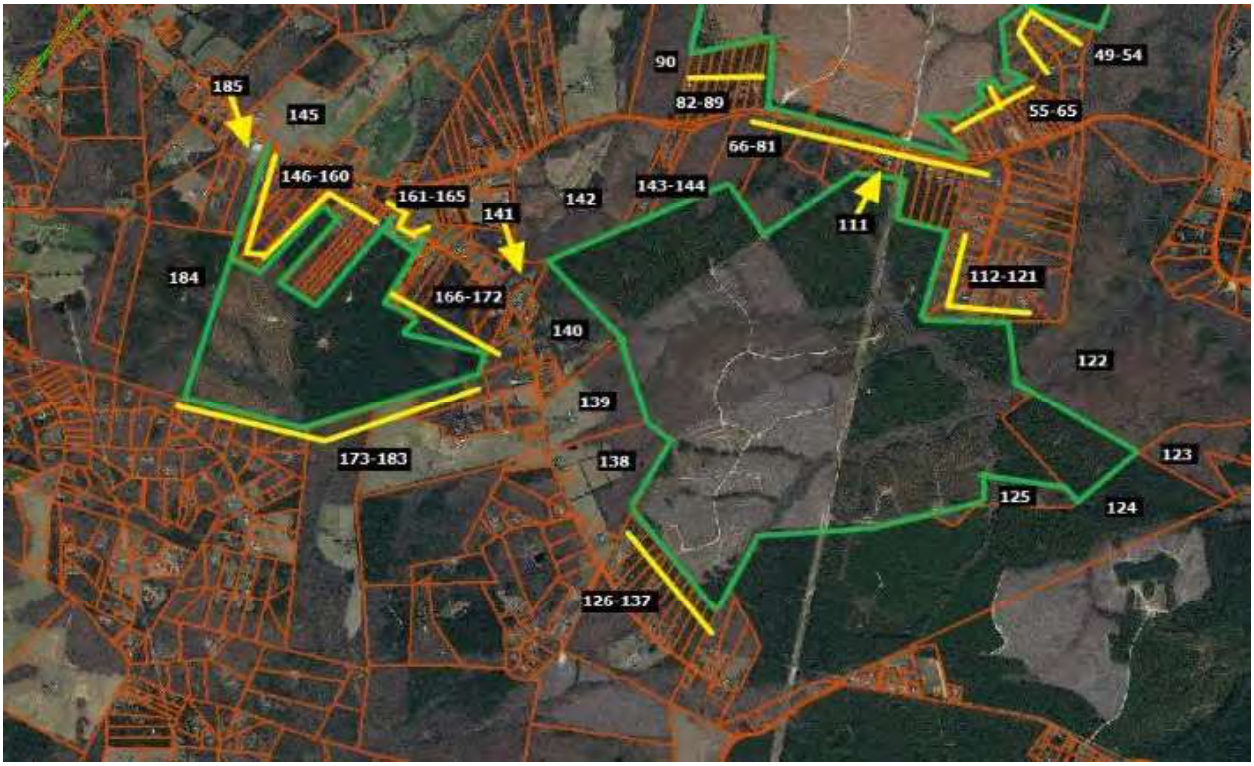
Adjoining Residential Sales After Solar Farm Approved

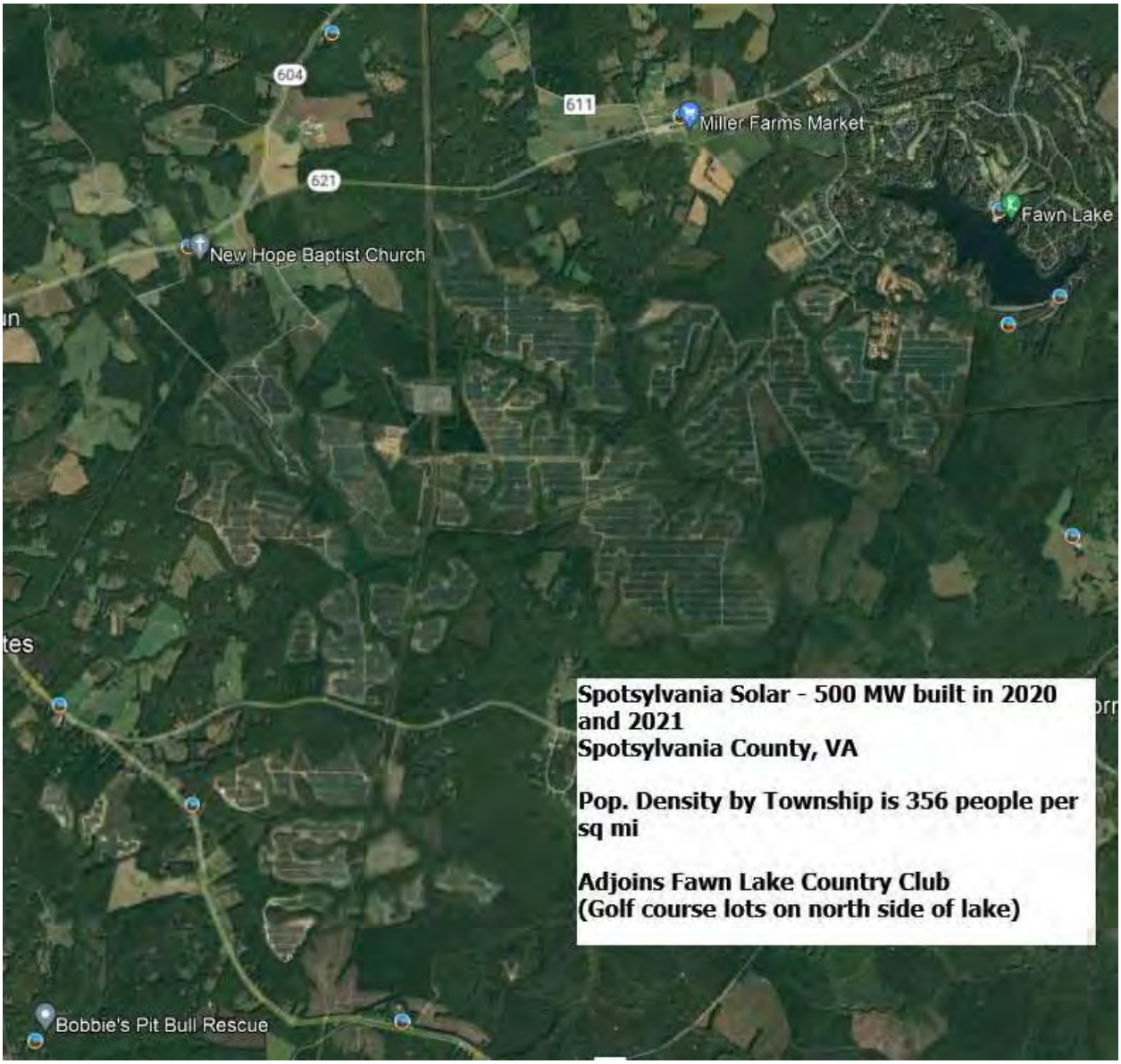
Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
	Adjoins	12511 Palestine	6.00	7/31/2018	$128,400	2013	1,900	$67.58	4/2.5	Open	Manuf	
	Not	15698 Concord	3.92	7/31/2018	$150,000	2010	2,310	$64.94	4/2	Open	Manuf	Fence
	Not	23209 Sussex	1.03	7/7/2020	$95,000	2005	1,675	$56.72	3/2	Det Crpt	Manuf	
	Not	6494 Rocky Br	4.07	11/8/2018	$100,000	2004	1,405	$71.17	3/2	Open	Manuf	

Adjoining Sales Adjusted									Avg	
Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	Distance
							$128,400			1425
$0		$2,250	-$21,299	$5,000			$135,951	-6%		
-$5,660	$13,000	$3,800	$10,209	$5,000	$1,500		$122,849	4%		
-$843		$4,500	$28,185				$131,842	-3%		
									-1%	

10. Matched Pair – Spotsylvania Solar, Paytes, Spotsylvania County, VA







This solar farm is being built in four phases with the area known as Site C having completed construction in November 2020 after the entire project was approved in April 2019. Site C, also known as Pleinmont 1 Solar, includes 99.6 MW located in the southeast corner of the project and shown on the maps above with adjoining parcels 111 through 144. The entire Spotsylvania project totals 617 MW on 3500 acres out of a parent tract assemblage of 6,412 acres.

I have identified three adjoining home sales that occurred during construction and development of the site in 2020.

The first is located on the north side of Site A on Orange Plank Road. The second is located on Nottoway Lane just north of Caparthin Road on the south side of Site A and east of Site C. The third is located on Post Oak Road for a home that backs up to Site C that sold in September 2020 near the completion of construction for Site C.

Spotsylvania Solar Farm

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	12901 Orng Plnk	5.20	8/27/2020	$319,900	1984	1,714	$186.64	3/2	Drive	1.5	Un Bsmt
Not	8353 Gold Dale	3.00	1/27/2021	$415,000	2004	2,064	$201.07	3/2	3 Gar	Ranch	
Not	6488 Southfork	7.26	9/9/2020	$375,000	2017	1,680	$223.21	3/2	2 Gar	1.5	Barn/Patio
Not	12717 Flintlock	0.47	12/2/2020	$290,000	1990	1,592	$182.16	3/2.5	Det Gar	Ranch	

Adjoining Sales Adjusted

Address	Time	Ac/Loc	YB	GLA	BR/BA	Park	Other	Total	% Diff	Dist
12901 Orng Plnk								$319,900		1270
8353 Gold Dale	-$5,219	$20,000	-$41,500	-$56,298		-$20,000		$311,983	2%	
6488 Southfork	-$401	-$20,000	-$61,875	$6,071		-$15,000		$283,796	11%	
12717 Flintlock	-$2,312	$40,000	-$8,700	$17,779	-$5,000	-$5,000		$326,767	-2%	
							Average Diff		4%	

I contacted Keith Snider to confirm this sale. This is considered to have a medium landscaping screen.

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	9641 Nottoway	11.00	5/12/2020	$449,900	2004	3,186	$141.21	4/2.5	Garage	2-Story	Un Bsmt
Not	26123 Lafayette	1.00	8/3/2020	$390,000	2006	3,142	$124.12	3/3.5	Gar/DtG	2-Story	
Not	11626 Forest	5.00	8/10/2020	$489,900	2017	3,350	$146.24	4/3.5	2 Gar	2-Story	
Not	10304 Pny Brnch	6.00	7/27/2020	$485,000	1998	3,076	$157.67	4/4	2Gar/Dt2	Ranch	Fn Bsmt

Adjoining Sales Adjusted

Address	Time	Ac/Loc	YB	GLA	BR/BA	Park	Other	Total	% Diff	Dist
9641 Nottoway								$449,900		1950
26123 Lafayette	-$2,661	$45,000	-$3,900	$4,369	-$10,000	-$5,000		$417,809	7%	
11626 Forest	-$3,624		-$31,844	-$19,187		-$5,000		$430,246	4%	
10304 Pny Brnch	-$3,030		$14,550	$13,875	-$15,000	-$15,000	-$10,000	$470,396	-5%	
							Average Diff		2%	

I contacted Annette Roberts with ReMax about this transaction. This is considered to have a medium landscaping screen.

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	13353 Post Oak	5.20	9/21/2020	$300,000	1992	2,400	$125.00	4/3	Drive	2-Story	Fn Bsmt
Not	9609 Logan Hgt	5.86	7/4/2019	$330,000	2004	2,352	$140.31	3/2	2Gar	2-Story	
Not	12810 Catharpian	6.18	1/30/2020	$280,000	2008	2,240	$125.00	4/2.5	Drive	2-Story	Bsmt/Nd Pnt
Not	10725 Rbrt Lee	5.01	10/26/2020	$295,000	1995	2,166	$136.20	4/3	Gar	2-Story	Fn Bsmt

Adjoining Sales Adjusted

Address	Time	Ac/Loc	YB	GLA	BR/BA	Park	Other	Total	% Diff	Dist
13353 Post Oak								$300,000		1171
9609 Logan Hgt	$12,070		-$19,800	$5,388		-$15,000	$15,000	$327,658	-9%	
12810 Catharpian	$5,408		-$22,400	$16,000	$5,000		$15,000	$299,008	0%	
10725 Rbrt Lee	-$849		-$4,425	$25,496		-$10,000		$305,222	-2%	
							Average Diff		-4%	

I contacted Joy Pearson with CTI Real Estate about this transaction. This is considered to have a heavy landscaping screen.

All three of these homes are well set back from the solar panels at distances over 1,000 feet and are well screened from the project. All three show no indication of any impact on property value.

There are a couple of recent lot sales located along Southview Court that have sold since the solar farm was approved. The most recent lot sales include 11700 Southview Court that sold on December 29, 2021 for $140,000 for a 0.76-acre lot. This property was on the market for less than 2 months before closing within 6% of the asking price. This lot sold earlier in September 2019 for $55,000 based on a liquidation sale from NTS to an investor.

A similar 0.68-acre lot at 11507 Stonewood Court within the same subdivision located away from the solar farm sold on March 9, 2021 for $109,000. This lot sold for 18% over the asking price within 1 month of listing suggesting that this was priced too low. Adjusting this lot value upward by 12% for very strong growth in the market over 2021, the adjusted indicated value is $122,080 for this lot. This is still showing a 15% premium for the lot backing up to the solar farm.

The lot at 11009 Southview Court sold on August 5, 2019 for $65,000, which is significantly lower than the more recent sales. This lot was sold by NTS the original developer of this subdivision, who was in the process of liquidating lots in this subdivision with multiple lot sales in this time period throughout the subdivision being sold at discounted prices. The home was later improved by the buyer with a home built in 2020 with 2,430 square feet ranch, 3.5 bathrooms, with a full basement, and a current assessed value of $492,300.

I spoke with Chris Kalia, MAI, Mark Doherty, local real estate investor, and Alex Doherty, broker, who are all three familiar with this subdivision and activity in this neighborhood. All three indicated that there was a deep sell off of lots in the neighborhood by NTS at discounted prices under $100,000 each. Those lots since that time are being sold for up to $140,000. The prices paid for the lots below $100,000 were liquidation values and not indicative of market value. Homes are being built in the neighborhood on those lots with home prices ranging from $600,000 to $800,000 with no sign of impact on pricing due to the solar farm according to all three sources.

Fawn Lake Lot Sales

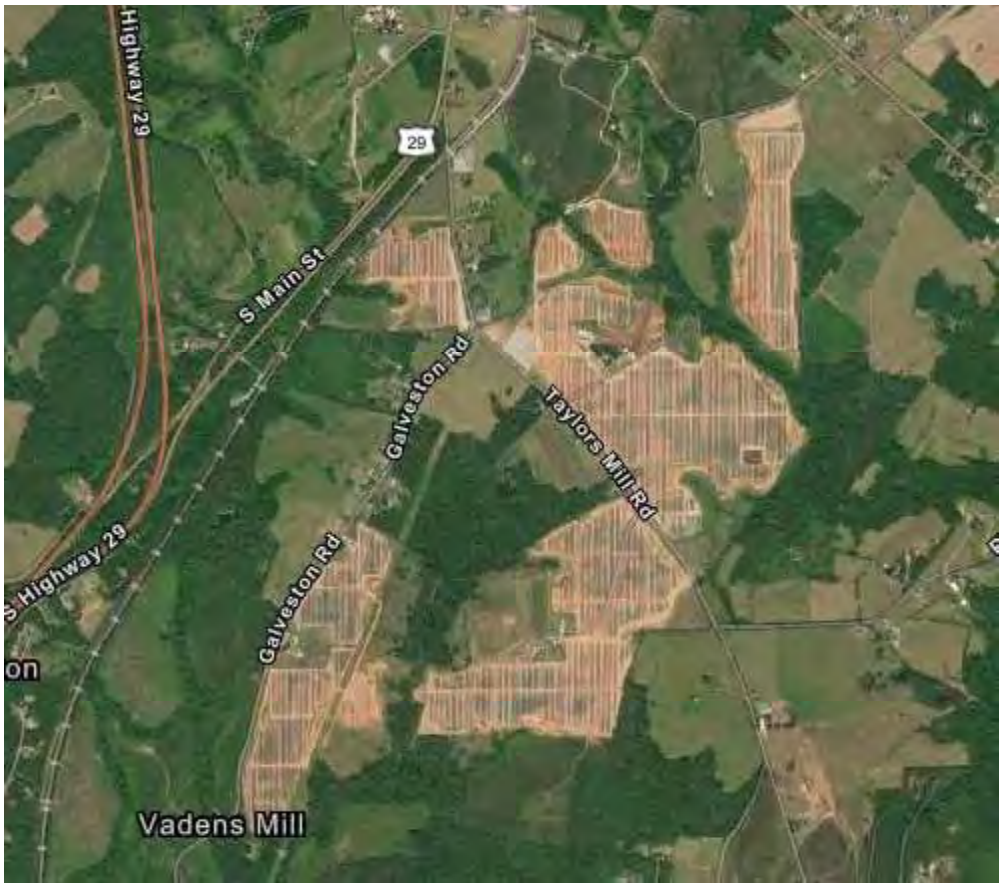
Parcel	Solar?	Address	Acres	Sale Date	Sale Price	Ad. For Time	% Diff
A	Adjoins	11700 Southview Ct	0.76	12/29/2021	$140,000		
1	1 parcel away	11603 Southview Ct	0.44	3/31/2022	$140,000	$141,960	-1.4%
2	Not adjoin	11507 Stonewood Ct	0.68	3/9/2021	$109,000	$118,374	15.4%
3	Not adjoin	11312 Westgate Wy	0.83	10/15/2020	$125,000	$142,000	-1.4%
4	Not adjoin	11409 Darkstone Pl	0.589	9/23/2021	$118,000	$118,000	15.7%

Average	7.1%
Median	7.0%

Least Adjusted	15.7%
2nd Least Adjusted (Parcel 1 off solar farm)	-1.4%

Time Adjustments are based on the FHFA Housing Price Index

11. Matched Pair – Whitehorn Solar, Gretna, Pittsylvania County, VA



This project was built in 2021 for a solar project with 50 MW. Adjoining uses are residential and agricultural. There was a sale located at 1120 Taylors Mill Road that sold on December 20, 2021, which is about the time the solar farm was completed. This sold for $224,000 for 2.02 acres with a 2,079 s.f. mobile home on it that was built in 2010. The property was listed for $224,000 and sold for that same price within two months (went under contract almost exactly 30 days from listing). This sales price works out to $108 per square foot. This home is 255 feet from the nearest panel.

I have compared this sale to an August 20, 2020 sale at 1000 Long Branch Drive that included 5.10 acres with a 1,980 s.f. mobile home that was built in 1993 and sold for $162,000, or $81.82 per square foot. Adjusting this upward for significant growth between this sale date and December 2021 relied on data provided by the FHFA House Pricing Index, which indicates that for homes in the Roanoke, VA MSA would be expected to appreciate from $162,000 to $191,000 over that period of time. Using $191,000 as the effective value as of the date of comparison, the indicated value of this sale works out to $96.46 per square foot. Adjusting this upward by 17% for the difference in year built, but downward by 5% for the much larger lot size at this comparable, I derive an adjusted indication of value of $213,920, or $108 per square foot.

This indicates no impact on value attributable to the new solar farm located across from the home on Taylors Mill Road.

12. Matched Pair – Altavista Solar, Altavista, Campbell County, VA

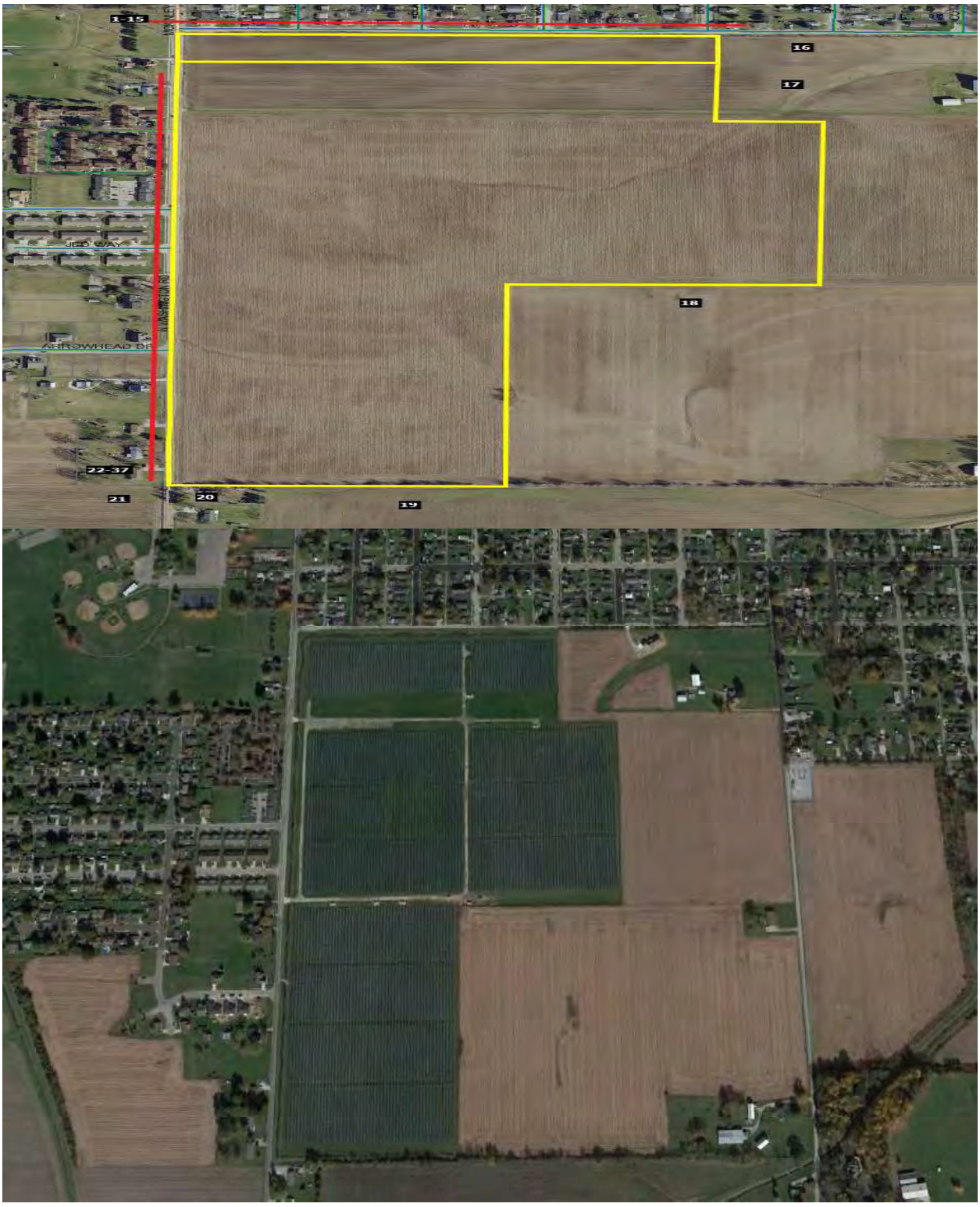
This project was mostly built in 2021 with final construction finished in 2022. This is an 80 MW facility on 720 acres just north of Roanoke River and west of Altavista. Adjoining uses are residential and agricultural.

I have done a Sale/Resale analysis of 3211 Leesville Road which is approximately 540 feet from the nearest solar panel. There was an existing row of trees between this home and the panels that was supplemented with additional screening for a narrow landscaped buffer between the home and the solar panels.

This home sold in December 2018 for $72,500 for this 1,451 s.f. home built in 1940 with a number of additional outbuildings on 3.35 acres. This was before any announcement of a solar farm. This home sold again on March 28, 2022 for $124,048 after the solar farm was constructed. This shows a 71% increase in value on this property since 2018. There was significant growth in the market between these dates and to accurately reflect that I have considered the FHFA House Price Index that is specific for the Lynchburg area of Virginia (the closest regional category), which shows an expected increase in home values over that same time period of 33.8%, which would suggest a normal growth in value up to $97,000. The home sold for significantly more than this which certainly does not support a finding of a negative impact and in fact suggests a significant positive impact. However, I was not able to discuss this sale with the broker and it is possible that the home also was renovated between 2018 and 2022, which may account for that additional increase in value. Still give that the home increased in value so significantly over the initial amount there is no sign of any negative impact due to the solar farm adjacency.

Similarly, I looked at 3026 Bishop Creek Road that is approximately 600 feet from the nearest solar panel. This home sold on July 16, 2019 for $120,000, which was before construction of the solar farm. This home sold again on February 23, 2022 for $150,000. This shows a 25% increase in value over that time period. Using the same FHFA House Price Index Calculator, the expected increase in value was 29.2% for an indicated expected value of $155,000. This is within 3% of the actual closed price, which supports a finding of no impact from the solar farm. This home has a dense wooded area between it and the adjoining solar farm.

13. Matched Pair – DG Amp Piqua, Piqua, Miami County, OH



This project is located on the southeast corner of Manier Street and N Washington Road, Piqua, OH. There are a number of nearby homes to the north, south and west of this solar farm.

I considered one adjoining sale and one nearby sale (one parcel off) that happened since the project was built in 2019. I did not consider the sale of a home located at Parcel 20 that happened in that time period as that property was marketed with damaged floors in the kitchen and bathroom, rusted baseboard heaters and generally was sold in an As-Is condition that makes it difficult to compare to move-in ready homes. I also did not consider some sales to the north that sold for prices significantly under $100,000. The homes in that community includes a wide range of smaller, older homes that have been selling for prices ranging from $25,000 to $80,000. I have not been tracking home sales under $100,000 as homes in that price range are less susceptible to external factors.

The adjoining sale at 6060 N Washington is a brick range fronting on a main road. I did not adjust the comparables for that factor despite the subdivision exposure on those comparables was superior. I considered the difference in lot size to be balancing factors. If I adjusted further for that main road frontage, then it would actually show a positive impact for adjoining the solar farm.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
22	Adjoins	6060 N Washington	0.80	10/30/2019	$119,500	1961	1,404	$85.11	3/1	2 Gar	Br Rnch	Updates
	Not	1523 Amesbury	0.25	5/7/2020	$119,900	1973	1,316	$91.11	3/2	Gar	Br Rnch	Updates
	Not	1609 Haverhill	0.17	10/17/2019	$114,900	1974	1,531	$75.05	3/1	Gar	Br Rnch	Updates
	Not	1511 Sweetbriar	0.17	8/6/2020	$123,000	1972	1,373	$89.58	4/2	Gar	Br Rnch	Updates

Adjoining Sales Adjusted									Avg	
Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	Distance
							$119,500			155
-$1,920		-$7,194	$6,414	-$5,000	$7,500	$0	$119,700	0%		
$126		-$7,469	-$7,625		$7,500	$0	$107,432	10%		
-$2,913		-$6,765	$2,222	-$5,000	$7,500	$0	$118,044	1%		
									4%	

I also considered a home fronting on Plymouth Avenue which is one lot to the west of the solar farm with a rear view towards the solar farm. After adjustments this set of matched pairs shows no impact on the value of the property due to proximity to the solar farm.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
	Nearby	1011 Plymouth	0.21	2/24/2020	$113,000	1973	1,373	$82.30	4/2	Gar	1.5 Stry	Fnce/Shd
	Not	1630 Haverhill	0.32	8/18/2019	$94,900	1973	1,373	$69.12	4/2	Gar	1.5 Stry	N/A
	Not	1720 Williams	0.17	12/4/2019	$119,900	1968	1,682	$71.28	4/1	2Gar	1.5 Br	Fnce/Shd
	Not	1710 Cambridge	0.17	1/22/2018	$116,000	1968	1,648	$70.39	4/2	Det 2	1.5 Br	Fnce/Shd

Adjoining Sales Adjusted									Avg	
Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	Distance
							$113,000			585
$1,519		$0	$0			$10,000	$106,419	6%		
$829		$2,998	-$17,621	$5,000			$111,105	2%		
$7,459		$2,900	-$15,485				$110,873	2%		
									3%	

I considered a home located at 6010 N Washington that sold on August 3, 2021. This property was sold with significant upgrades that made it more challenging to compare, but I focused on similar older brick ranches with updates in the analysis. The comparables suggest an enhancement to this property due to proximity from the solar farm, but it is more likely that the upgrades at the subject were superior. Still this strongly supports a finding of no impact on the value of the property due to proximity to the solar farm.

Adjoining Residential Sales After Solar Farm Built

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
24	Adjoins	6010 N Washington	0.80	8/3/2021	$176,900	1961	1,448	$122.17	4/2	2 Gar	Br Ranch	Updates
	Not	1244 Severs	0.19	10/29/2021	$149,900	1962	1,392	$107.69	3/2	Gar	Br Ranch	Updates
	Not	1515 Amesbury	0.19	5/5/2022	$156,500	1973	1,275	$122.75	3/2	2 Gar	Br Ranch	Updates
	Not	1834 Wilshire	0.21	12/3/2021	$168,900	1979	1,265	$133.52	3/2	2 Gar	Br Ranch	Updates

Adjoining Sales Adjusted

Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
							$176,900			155
-$1,099		-$750	$4,221		$7,000		$159,273	10%		
-$3,627		-$9,390	$16,988				$160,471	9%		
-$1,736		-$14,357	$19,547				$172,354	3%		
									7%	

I considered a home located at 6240 N Washington that sold on October 15, 2021. The paired sale located at 532 Wilson included a sunroom that I did not adjust for. The -4% impact from that sale is related to that property having a superior sunroom and not related to proximity to the solar farm. The other two comparables strongly support that assertion as well as a finding of no impact on the value of the property due to proximity to the solar farm.

Adjoining Residential Sales After Solar Farm Built

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
	Adjoins	6240 N Washington	1.40	10/15/2021	$155,000	1962	1,582	$97.98	2/1	Det 3	Ranch	
	Not	1408 Brooks	0.13	8/20/2021	$105,000	1957	1,344	$78.13	3/1	Drive	Ranch	
	Not	532 Wilson	0.14	7/29/2021	$159,900	1948	1,710	$93.51	3/2	Det Gar	Ranch	Sunroom
	Not	424 Pinewood	0.17	5/20/2022	$151,000	1960	1,548	$97.55	4/2	Gar	Ranch	

Adjoining Sales Adjusted

Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
							$155,000			160
$496		$2,625	$13,016		$15,000		$136,136	12%		
$1,051		$11,193	-$9,575	-$10,000	$8,000		$160,569	-4%		
-$2,761		-$2,265	$2,653	-$10,000	$7,000		$145,627	6%		
									5%	

Based on these four matched pairs, the data at this solar farm supports a finding of no impact on property value due to the proximity of the solar farm for homes as close as 155 feet.

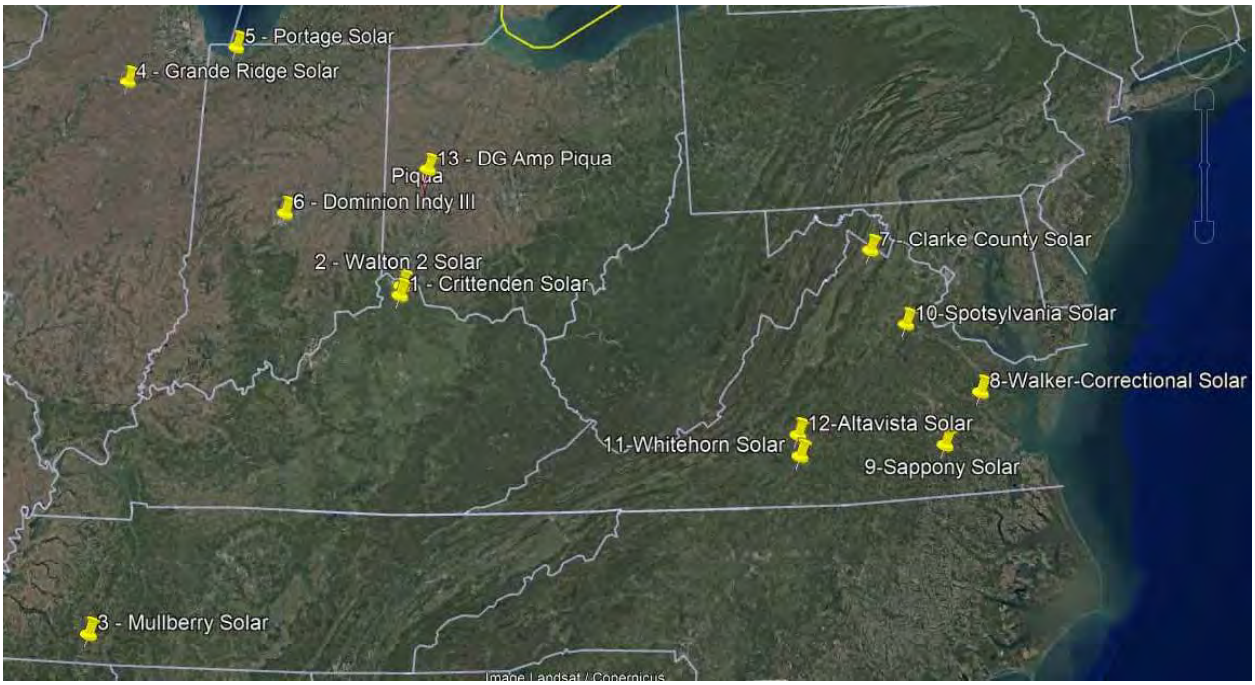
I also identified three new construction home sales on Arrowhead Drive that sold in 2022. I have reached out to the builder regarding those homes, but these homes sold between $250,000 and $275,000 each and were located within 350 feet of the solar farm. These sales show that the presence of the solar farm is not inhibiting new home construction in proximity to the solar farm.

Conclusion

The solar farm matched pairs shown above have similar characteristics to each other in terms of population, but with several outliers showing solar farms in far more urban areas. The median income for the population within 1 mile of a solar farm among this subset of matched pairs is $61,115 with a median housing unit value of $186,463. Most of the comparables are under $300,000 in the home price, with $483,333 being the high end of the set, though I have matched pairs in other states over $1,600,000 in price adjoining large solar farms. The predominate adjoining uses are residential and agricultural. These figures are in line with the larger set of solar farms that I have looked at with the predominant adjoining uses being residential and agricultural and similar to the solar farm breakdown shown for Kentucky and adjoining states as well as the proposed subject property.

Based on the similarity of adjoining uses and demographic data between these sites and the subject property, I consider it reasonable to compare these sites to the subject property.

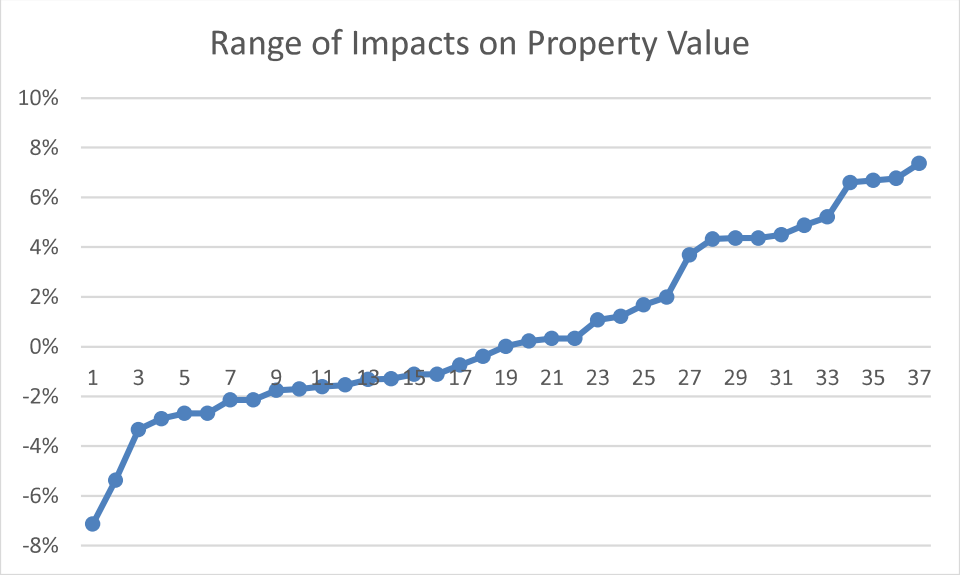
Matched Pair Summary							Adj. Uses By Acreage				1 mile Radius (2010-2022 Data)			
	Name	City	State	Acres	MW	Topo Shift	Res	Ag	Ag/Res	Com/Ind	Population	Med. Income	Avg. Housing Unit	Veg. Buffer
1	Crittenden	Crittenden	KY	34	2.70	40	22%	51%	27%	0%	1,419	$60,198	$178,643	Light
2	Walton 2	Walton	KY	58	2.00	90	21%	0%	60%	19%	880	$81,709	$277,717	Light
3	Mulberry	Selmer	TN	160	5.00	60	13%	73%	10%	3%	467	$40,936	$171,746	Lt to Med
4	Grand Ridge	Streator	IL	160	20.00	1	8%	87%	5%	0%	96	$70,158	$187,037	Light
5	Portage	Portage	IN	56	2.00	0	19%	81%	0%	0%	6,642	$65,695	$186,463	Light
6	Dominion	Indianapolis	IN	134	8.60	20	3%	97%	0%	0%	3,774	$61,115	$167,515	Light
7	Clarke Cnty	White Post	VA	234	20.00	70	14%	39%	46%	1%	578	$81,022	$374,453	Light
8	Walker	Barhamsville	VA	485	20.00	N/A	12%	68%	20%	0%	203	$80,773	$320,076	Light
9	Sappony	Stony Crk	VA	322	20.00	N/A	2%	98%	0%	0%	74	$51,410	$155,208	Medium
10	Spotyslvania	Paytes	VA	3,500	500.00	160	37%	52%	11%	0%	74	$120,861	$483,333	Med to Hvy
11	Whitehorn	Gretna	VA	N/A	50.00	N/A	N/A	N/A	N/A	N/A	166	$43,179	$168,750	None to Lt
12	Altavista	Altavista	VA	720	80.00	N/A	N/A	N/A	N/A	N/A	7	$50,000	$341,667	Light
13	DG Amp Piqua	Piqua	OH	86	12.60	2	26%	16%	58%	0%	6,735	$38,919	$96,555	
	Average			496	57.15	49	16%	60%	22%	2%	1,624	$65,075	$239,166	
	Median			160	20.00	40	14%	68%	11%	0%	467	$61,115	$186,463	
	High			3,500	500.00	160	37%	98%	60%	19%	6,735	$120,861	$483,333	
	Low			34	2.00	0	2%	0%	0%	0%	7	$38,919	$96,555	



These are very similar to the demographics shown around these comparable solar farms.

On the following page is a summary of the 37 matched pairs for all of the solar farms noted above. They show a pattern of results from -7% to +7% with a median of 0% and an average of +1%.

As can be seen in the chart of those results below, most of the data points are between -5% and +5%. This variability is common with real estate and consistent with market imperfection. I therefore conclude that these results strongly support an indication of no impact on property value due to the adjacent solar farm.



Residential Dwelling Matched Pairs Adjoining Solar Farms

Pair	Solar Farm	City	State	Area	MW	Approx Distance	Tax ID/Address	Date	Sale Price	Adj. Sale Price	% Diff	Veg. Buffer
1	Clarke Cnty	White Post	VA	Rural	20	1230	833 Nations Spr	Jan-17	$295,000			Light
							6801 Middle	Dec-17	$249,999	$296,157	0%	
2	Walker	Barhamsville	VA	Rural	20	250	5241 Barham	Oct-18	$264,000			Light
							9252 Ordinary	Jun-19	$277,000	$246,581	7%	
3	Clarke Cnty	White Post	VA	Rural	20	1230	833 Nations Spr	Aug-19	$385,000			Light
							2393 Old Chapel	Aug-20	$330,000	$389,286	-1%	
4	Sappony	Stony Creek	VA	Rural	20	1425	12511 Palestine	Jul-18	$128,400			Medium
							6494 Rocky Branch	Nov-18	$100,000	$131,842	-3%	
5	Spotsylvania	Paytes	VA	Rural	617	1270	12901 Orange Plnk	Aug-20	$319,900			Medium
							12717 Flintlock	Dec-20	$290,000	$326,767	-2%	
6	Spotsylvania	Paytes	VA	Rural	617	1950	9641 Nottoway	May-20	$449,900			Medium
							11626 Forest	Aug-20	$489,900	$430,246	4%	
7	Spotsylvania	Paytes	VA	Rural	617	1171	13353 Post Oak	Sep-20	$300,000			Heavy
							12810 Catharpin	Jan-20	$280,000	$299,008	0%	
8	Crittenden	Crittenden	KY	Suburban	2.7	373	250 Claiborne	Jan-19	$120,000			Light
							315 N Fork	May-19	$107,000	$120,889	-1%	
9	Crittenden	Crittenden	KY	Suburban	2.7	488	300 Claiborne	Sep-18	$213,000			Light
							1795 Bay Valley	Dec-17	$231,200	$228,180	-7%	
10	Crittenden	Crittenden	KY	Suburban	2.7	720	350 Claiborne	Jul-18	$245,000			Light
							2160 Sherman	Jun-19	$265,000	$248,225	-1%	
11	Crittenden	Crittenden	KY	Suburban	2.7	930	370 Claiborne	Aug-19	$273,000			Light
							125 Lexington	Apr-18	$240,000	$254,751	7%	
12	Crittenden	Crittenden	KY	Suburban	2.7	665	330 Claiborne	Dec-19	$282,500			Light
							2160 Sherman	Jun-19	$265,000	$290,680	-3%	
13	Crittenden	Crittenden	KY	Suburban	2.7	390	260 Claiborne	Oct-21	$175,000			Light
							546 Waterworks	Apr-21	$179,500	$171,510	2%	
14	Crittenden	Crittenden	KY	Suburban	2.7	570	300 Claiborne	Dec-21	$290,000			Light
							39 Pinhook	Mar-22	$299,000	$289,352	0%	
15	Crittenden	Crittenden	KY	Suburban	2.7	1080	410 Claiborne	Feb-21	$275,000			Light
							114 Austin	Dec-20	$248,000	$279,680	-2%	
16	White House	Louisa	VA	Rural	20	1400	127 Walnut	Mar-20	$240,000			Light
							126 Woodger	Apr-19	$240,000	$239,967	0%	
17	Whitehorn	Gretna	VA	Rural	50	255	1120 Taylors Mill	Dec-21	$224,000			Light
							1000 Long Branch	Aug-20	$162,000	$213,920	5%	
18	Mulberry	Selmer	TN	Rural	5	400	0900A011	Jul-14	$130,000			Light
							099CA043	Feb-15	$148,900	$136,988	-5%	
19	Mulberry	Selmer	TN	Rural	5	400	099CA002	Jul-15	$130,000			Light
							0990NA040	Mar-15	$120,000	$121,200	7%	
20	Mulberry	Selmer	TN	Rural	5	480	491 Dusty	Oct-16	$176,000			Light
							35 April	Aug-16	$185,000	$178,283	-1%	
21	Mulberry	Selmer	TN	Rural	5	650	297 Country	Sep-16	$150,000			Medium
							53 Glen	Mar-17	$126,000	$144,460	4%	
22	Mulberry	Selmer	TN	Rural	5	685	57 Cooper	Feb-19	$163,000			Medium
							191 Amelia	Aug-18	$132,000	$155,947	4%	
23	Dominion	Indianapolis	IN	Rural	8.6	400	2013249 (Tax ID)	Dec-15	$140,000			Light
							5723 Minden	Nov-16	$139,900	$132,700	5%	
24	Dominion	Indianapolis	IN	Rural	8.6	400	2013251 (Tax ID)	Sep-17	$160,000			Light
							5910 Mosaic	Aug-16	$146,000	$152,190	5%	
25	Dominion	Indianapolis	IN	Rural	8.6	400	2013252 (Tax ID)	May-17	$147,000			Light
							5836 Sable	Jun-16	$141,000	$136,165	7%	
26	Dominion	Indianapolis	IN	Rural	8.6	400	2013258 (Tax ID)	Dec-15	$131,750			Light
							5904 Minden	May-16	$130,000	$134,068	-2%	
27	Dominion	Indianapolis	IN	Rural	8.6	400	2013260 (Tax ID)	Mar-15	$127,000			Light
							5904 Minden	May-16	$130,000	$128,957	-2%	
28	Dominion	Indianapolis	IN	Rural	8.6	400	2013261 (Tax ID)	Feb-14	$120,000			Light
							5904 Minden	May-16	$130,000	$121,930	-2%	
29	Grand Ridge	Streator	IL	Rural	20	480	1497 E 21st	Oct-16	$186,000			Light
							712 Columbus	Jun-16	$166,000	$184,000	1%	
30	Clarke Cnty	White Post	VA	Rural	20	1230	833 Nations Spr	Aug-19	$385,000			Light
							2393 Old Chapel	Aug-20	$330,000	$389,286	-1%	
31	Sappony	Stony Creek	VA	Rural	20	1425	12511 Palestine	Jul-18	$128,400			Medium
							6494 Rocky Branch	Nov-18	$100,000	$131,842	-3%	

Pair	Solar Farm	City	State	Area	MW	Approx Distance	Tax ID/Address	Date	Sale Price	Adj. Sale Price	% Diff	Veg. Buffer
32	DG Amp	Piqua	OH	Suburban	12.6	155	6060 N Washington	Oct-19	$119,500			Light
							1511 Sweetbriar	Aug-20	$123,000	$118,044	1%	
33	DG Amp	Piqua	OH	Suburban	12.6	585	1011 Plymouth	Feb-20	$113,000			Light
							1720 Williams	Dec-19	$119,900	$111,105	2%	
34	Spotsylvania	Paytes	VA	Rural	617	1270	12901 Orange Plnk	Aug-20	$319,900			Medium
							12717 Flintlock	Dec-20	$290,000	$326,767	-2%	
35	Spotsylvania	Paytes	VA	Rural	617	1950	9641 Nottoway	May-20	$449,900			Medium
							11626 Forest	Aug-20	$489,900	$430,246	4%	
36	Spotsylvania	Paytes	VA	Rural	617	1171	13353 Post Oak	Sep-20	$300,000			Heavy
							12810 Catharpin	Jan-20	$280,000	$299,008	0%	
37	Altavista	Altavista	VA	Rural	80	600	3026 Bishop Crk	Feb-22	$150,000			Heavy
							3026 Bishop Crk	Jul-19	$120,000	$155,000	-3%	

	MW	Avg. Distance
Average	111.23	791
Median	8.60	600
High	617.00	1,950
Low	2.70	155

	Indicated Impact
Average	1%
Median	0%
High	7%
Low	-7%

B. Southeastern USA Data – Over 5 MW

Conclusion – SouthEast Over 5 MW

Southeast USA Over 5 MW
Matched Pair Summary

							Adj. Uses By Acreage				1 mile Radius (2010-2022 Data)			
	Name	City	State	Acres	MW	Topo Shift	Res	Ag	Ag/Res	Com/Ind	Pop.	Med. Income	Avg. Housing Unit	Veg. Buffer
1	AM Best	Goldsboro	NC	38	5.00	2	38%	0%	23%	39%	1,523	$37,358	$148,375	Light
2	Mulberry	Selmer	TN	160	5.00	60	13%	73%	10%	3%	467	$40,936	$171,746	Lt to Med
3	Leonard	Hughesville	MD	47	5.00	20	18%	75%	0%	6%	525	$106,550	$350,000	Light
4	Gastonia SC	Gastonia	NC	35	5.00	48	33%	0%	23%	44%	4,689	$35,057	$126,562	Light
5	Summit	Moyock	NC	2,034	80.00	4	4%	0%	94%	2%	382	$79,114	$281,731	Light
6	Tracy	Bailey	NC	50	5.00	10	29%	0%	71%	0%	312	$43,940	$99,219	Heavy
7	Manatee	Parrish	FL	1,180	75.00	20	2%	97%	1%	0%	48	$75,000	$291,667	Heavy
8	McBride	Midland	NC	627	75.00	140	12%	10%	78%	0%	398	$63,678	$256,306	Lt to Med
9	Mariposa	Stanley	NC	36	5.00	96	48%	0%	52%	0%	1,716	$36,439	$137,884	Light
10	Clarke Cnty	White Post	VA	234	20.00	70	14%	39%	46%	1%	578	$81,022	$374,453	Light
11	Candace	Princeton	NC	54	5.00	22	76%	24%	0%	0%	448	$51,002	$107,171	Medium
12	Walker	Barhamsville	VA	485	20.00	N/A	12%	68%	20%	0%	203	$80,773	$320,076	Light
13	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	$58,688	$183,435	Light
14	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	$60,037	$276,347	Light
15	Sunfish	Willow Spring	NC	50	6.40	30	35%	35%	30%	0%	1,515	$63,652	$253,138	Light
16	Sappony	Stony Crk	VA	322	20.00	N/A	2%	98%	0%	0%	74	$51,410	$155,208	Light
17	Camden Dam	Camden	NC	50	5.00	0	17%	72%	11%	0%	403	$84,426	$230,288	Light
18	Grandy	Grandy	NC	121	20.00	10	55%	24%	0%	21%	949	$50,355	$231,408	Light
19	Champion	Pelion	SC	100	10.00	N/A	4%	70%	8%	18%	1,336	$46,867	$171,939	Light
20	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	$36,737	$143,320	Lt to Med
21	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	$90,909	$403,571	Light
22	Spotyslvania	Paytes	VA	3,500	617.00	160	37%	52%	11%	0%	74	$120,861	$483,333	Md to Hvy
23	Whitehorn	Gretna	VA	N/A	50.00	N/A	N/A	N/A	N/A	N/A	166	$43,179	$168,750	None to Lt
24	Altavista	Altavista	VA	720	80.00	N/A	N/A	N/A	N/A	N/A	7	$50,000	$341,667	Light
	Average			506	58.83	36	25%	47%	22%	6%	883	$62,000	$237,816	
	Median			234	20.00	20	18%	56%	11%	0%	458	$55,049	$230,848	
	High			3,500	617.00	160	76%	98%	94%	44%	4,689	$120,861	$483,333	
	Low			35	5.00	0	2%	0%	0%	0%	7	$35,057	$99,219	

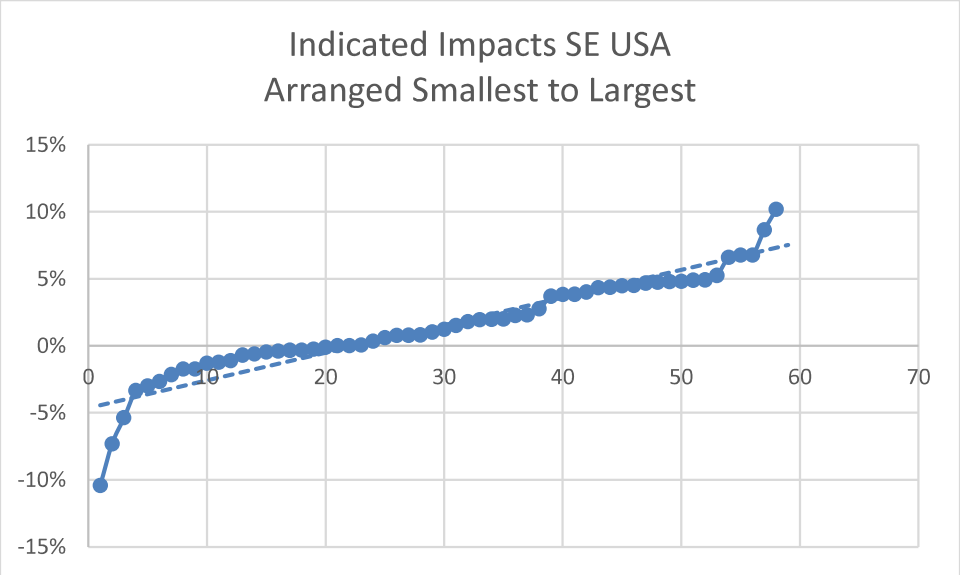
The solar farm matched pairs pulled from the solar farms shown above have similar characteristics to each other in terms of population, but with several outliers showing solar farms in more urban areas. The median income for the population within 1 mile of a solar farm is $55,049 with a median housing unit value of $230,848. Most of the comparables are under $300,000 in the home price, with $483,333 being the high end of the set, though I have matched pairs in multiple states over $1,600,000 adjoining solar farms. The adjoining uses show that residential and agricultural uses are the predominant adjoining uses. These figures are in line with the larger set of solar farms that I have looked at with the predominant adjoining uses being residential and agricultural and similar to the solar farm breakdown shown for Virginia and adjoining states as well as the proposed subject property.

Based on the similarity of adjoining uses and demographic data between these sites and the subject property, I consider it reasonable to compare these sites to the subject property.

I have pulled 59 matched pairs from the above referenced solar farms to provide the following summary of home sale matched pairs and land sales next to solar farms. The summary shows that the range of differences is from -10% to +10% with an average of +1% and median of +1%.

While the range is seemingly wide, the graph below clearly shows that the vast majority of the data falls between -5% and +5% and most of those are clearly in the 0 to +5% range. As noted earlier in this report, real estate is an imperfect market and this 5% variability is typical in real estate. This data strongly supports an indication of no impact on adjoining residential uses to a solar farm.

I therefore conclude that these matched pairs support a finding of no impact on value at the subject property for the proposed project, which as proposed will include a landscaped buffer to screen adjoining residential properties.


Indicated Impacts SE USA
Arranged Smallest to Largest
15%
10%
5%
0%
-5%
-10%
-15%
0
10
20
30
40
50
60
70

C. Summary of National Data on Solar Farms

I have worked in over 20 states related to solar farms and I have been tracking matched pairs in most of those states. On the following pages I provide a brief summary of those findings showing 38 solar farms over 5 MW studied with each one providing matched pair data supporting the findings of this report.

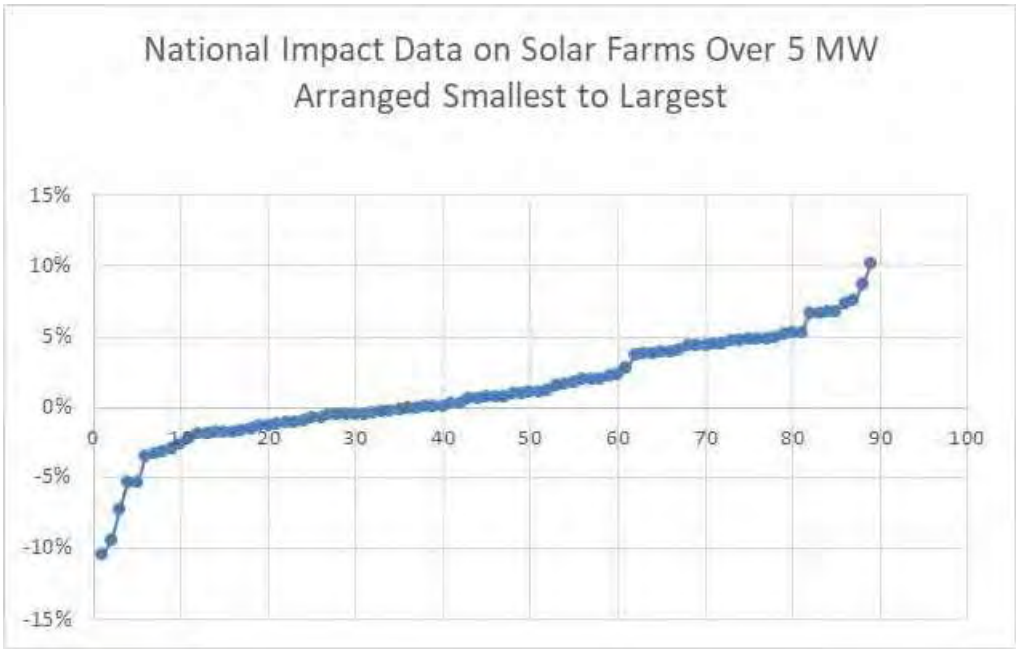
The solar farms summary is shown below with a summary of the matched pair data shown on the following page.

Matched Pair Summary							**Adj. Uses By Acreage**				**1 mile Radius (2020 Data)**			
	Name	**City**	**State**	**Acres**	**MW**	**Topo Shift**	**Res**	**Ag**	**Ag/Res**	**Com/Ind**	**Population**	**Med. Income**	**Avg. Housing Unit**	**Veg. Buffer**
1	AM Best	Goldsboro	NC	38	5.00	2	38%	0%	23%	39%	1,523	$37,358	$148,375	Light
2	Mulberry	Selmer	TN	160	5.00	60	13%	73%	10%	3%	467	$40,936	$171,746	Lt to Med
3	Leonard	Hughesville	MD	47	5.00	20	18%	75%	0%	6%	525	$106,550	$350,000	Light
4	Gastonia SC	Gastonia	NC	35	5.00	48	33%	0%	23%	44%	4,689	$35,057	$126,562	Light
5	Summit	Moyock	NC	2,034	80.00	4	4%	0%	94%	2%	382	$79,114	$281,731	Light
6	Tracy	Bailey	NC	50	5.00	10	29%	0%	71%	0%	312	$43,940	$99,219	Heavy
7	Manatee	Parrish	FL	1,180	75.00	20	2%	97%	1%	0%	48	$75,000	$291,667	Heavy
8	McBride	Midland	NC	627	75.00	140	12%	10%	78%	0%	398	$63,678	$256,306	Lt to Med
9	Grand Ridge	Streator	IL	160	20.00	1	8%	87%	5%	0%	96	$70,158	$187,037	Light
10	Dominion	Indianapolis	IN	134	8.60	20	3%	97%	0%	0%	3,774	$61,115	$167,515	Light
11	Mariposa	Stanley	NC	36	5.00	96	48%	0%	52%	0%	1,716	$36,439	$137,884	Light
12	Clarke Cnty	White Post	VA	234	20.00	70	14%	39%	46%	1%	578	$81,022	$374,453	Light
13	Flemington	Flemington	NJ	120	9.36	N/A	13%	50%	28%	8%	3,477	$105,714	$444,696	Lt to Med
14	Frenchtown	Frenchtown	NJ	139	7.90	N/A	37%	35%	29%	0%	457	$111,562	$515,399	Light
15	McGraw	East Windsor	NJ	95	14.00	N/A	27%	44%	0%	29%	7,684	$78,417	$362,428	Light
16	Tinton Falls	Tinton Falls	NJ	100	16.00	N/A	98%	0%	0%	2%	4,667	$92,346	$343,492	Light
17	Simon	Social Circle	GA	237	30.00	71	1%	63%	36%	0%	203	$76,155	$269,922	Medium
18	Candace	Princeton	NC	54	5.00	22	76%	24%	0%	0%	448	$51,002	$107,171	Medium
19	Walker	Barhamsville	VA	485	20.00	N/A	12%	68%	20%	0%	203	$80,773	$320,076	Light
20	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	$58,688	$183,435	Light
21	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	$60,037	$276,347	Light
22	Demille	Lapeer	MI	160	28.40	10	10%	68%	0%	22%	2,010	$47,208	$187,214	Light
23	Turrill	Lapeer	MI	230	19.60	10	75%	59%	0%	25%	2,390	$46,839	$110,361	Light
24	Sunfish	Willow Spring	NC	50	6.40	30	35%	35%	30%	0%	1,515	$63,652	$253,138	Light
25	Picture Rocks	Tucson	AZ	182	20.00	N/A	6%	88%	6%	0%	102	$81,081	$280,172	None
26	Avra Valley	Tucson	AZ	246	25.00	N/A	3%	94%	3%	0%	85	$80,997	$292,308	None
27	Sappony	Stony Crk	VA	322	20.00	N/A	2%	98%	0%	0%	74	$51,410	$155,208	Medium
28	Camden Dam	Camden	NC	50	5.00	0	17%	72%	11%	0%	403	$84,426	$230,288	Light
29	Grandy	Grandy	NC	121	20.00	10	55%	24%	0%	21%	949	$50,355	$231,408	Light
30	Champion	Pelion	SC	100	10.00	N/A	4%	70%	8%	18%	1,336	$46,867	$171,939	Light
31	Eddy II	Eddy	TX	93	10.00	N/A	15%	25%	58%	2%	551	$59,627	$139,088	Light
32	Somerset	Somerset	TX	128	10.60	N/A	5%	95%	0%	0%	1,293	$41,574	$135,490	Light
33	DG Amp Piqua	Piqua	OH	86	12.60	2	26%	16%	58%	0%	6,735	$38,919	$96,555	Light
34	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	$36,737	$143,320	Lt to Med
35	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	$90,909	$403,571	Light
36	Spotyslvania	Paytes	VA	3,500	500.00	160	37%	52%	11%	0%	74	$120,861	$483,333	Med to Hvy
37	Whitehorn	Gretna	VA	N/A	50.00	N/A	N/A	N/A	N/A	N/A	166	$43,179	$168,750	None to Lt
38	Altavista	Altavista	VA	720	80.00	N/A	N/A	N/A	N/A	N/A	7	$50,000	$341,667	Light
39	Hattiesburg	Hattiesburg	MS	400	50.00	N/A	10%	85%	5%	0%	1,065	$28,545	$129,921	Med
	Average			372	40.43	32	24%	53%	19%	6%	1,431	$64,314	$240,236	
	Median			160	20.00	10	15%	59%	6%	0%	551	$60,037	$230,288	
	High			3,500	500.00	160	98%	98%	94%	44%	7,684	$120,861	$515,399	
	Low			35	5.00	0	1%	0%	0%	0%	7	$28,545	$96,555	

From these 39 solar farms, I have derived 89 matched pairs. The matched pairs show no negative impact at distances as close as 105 feet between a solar panel and the nearest point on a home. The range of impacts is -10% to +10% with an average and median of +1%.

	MW	Avg. Distance		% Dif
Average	48.43	569	**Average**	1%
Median	16.00	400	**Median**	1%
High	617.00	2,020	**High**	10%
Low	5.00	145	**Low**	-10%

While the range is broad, the two charts below show the data points in range from lowest to highest. There is only 3 data points out of 89 that show a negative impact. The rest support either a finding of no impact or 9 of the data points suggest a positive impact due to adjacency to a solar farm. As discussed earlier in this report, I consider this data to strongly support a finding of no impact on value as most of the findings are within typical market variation and even within that, most are mildly positive findings.



D. Larger Solar Farms

I have also considered larger solar farms to address impacts related to larger projects. Projects have been increasing in size and most of the projects between 100 and 1000 MW are newer with little time for adjoining sales. I have included a breakdown of solar farms with 20 MW to 80 MW facilities with one 500 MW facility.

Matched Pair Summary - @20 MW And Larger							Adj. Uses By Acreage				1 mile Radius (2010-2020 Data)		
	Name	City	State	Acres	MW	Topo Shift	Res	Ag	Ag/Res	Com/Ind	Population	Med. Income	Avg. Housing Unit
1	Summit	Moyock	NC	2,034	80.00	4	4%	0%	94%	2%	382	$79,114	$281,731
2	Manatee	Parrish	FL	1,180	75.00	20	2%	97%	1%	0%	48	$75,000	$291,667
3	McBride	Midland	NC	627	75.00	140	12%	10%	78%	0%	398	$63,678	$256,306
4	Grand Ridge	Streator	IL	160	20.00	1	8%	87%	5%	0%	96	$70,158	$187,037
5	Clarke Cnty	White Post	VA	234	20.00	70	14%	39%	46%	1%	578	$81,022	$374,453
6	Simon	Social Circle	GA	237	30.00	71	1%	63%	36%	0%	203	$76,155	$269,922
7	Walker	Barhamsville	VA	485	20.00	N/A	12%	68%	20%	0%	203	$80,773	$320,076
8	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	$58,688	$183,435
9	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	$60,037	$276,347
10	Demille	Lapeer	MI	160	28.40	10	10%	68%	0%	22%	2,010	$47,208	$187,214
11	Turrill	Lapeer	MI	230	19.60	10	75%	59%	0%	25%	2,390	$46,839	$110,361
12	Picure Rocks	Tucson	AZ	182	20.00	N/A	6%	88%	6%	0%	102	$81,081	$280,172
13	Avra Valley	Tucson	AZ	246	25.00	N/A	3%	94%	3%	0%	85	$80,997	$292,308
14	Sappony	Stony Crk	VA	322	20.00	N/A	2%	98%	0%	0%	74	$51,410	$155,208
15	Grandy	Grandy	NC	121	20.00	10	55%	24%	0%	21%	949	$50,355	$231,408
16	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	$36,737	$143,320
17	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	$90,909	$403,571
18	Spotyslvania	Paytes	VA	3,500	500.00	160	37%	52%	11%	0%	74	$120,861	$483,333
19	Whitehorn	Gretna	VA	N/A	50.00	N/A	N/A	N/A	N/A	N/A	166	$43,179	$168,750
20	Altavista	Altavista	VA	720	80.00	N/A	N/A	N/A	N/A	N/A	7	$50,000	$341,667
	Average			644	69.08		19%	64%	17%	4%	658	$67,210	$261,914
	Median			347	40.00		12%	68%	2%	0%	203	$66,918	$273,135
	High			3,500	500.00		75%	98%	94%	25%	2,446	$120,861	$483,333
	Low			121	19.60		1%	0%	0%	0%	7	$36,737	$110,361

The breakdown of adjoining uses, population density, median income and housing prices for these projects are very similar to those of the larger set. The matched pairs for each of these were considered earlier and support a finding of no negative impact on the adjoining home values.

I have included a breakdown of solar farms with 50 MW to 617 MW facilities adjoining.

Matched Pair Summary - @50 MW And Larger							Adj. Uses By Acreage				1 mile Radius (2010-2020 Data)		
	Name	City	State	Acres	MW	Topo Shift	Res	Ag	Ag/Res	Com/Ind	Population	Med. Income	Avg. Housing Unit
1	Summit	Moyock	NC	2,034	80.00	4	4%	0%	94%	2%	382	$79,114	$281,731
2	Manatee	Parrish	FL	1,180	75.00	20	2%	97%	1%	0%	48	$75,000	$291,667
3	McBride	Midland	NC	627	75.00	140	12%	10%	78%	0%	398	$63,678	$256,306
4	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	$58,688	$183,435
5	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	$60,037	$276,347
6	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	$36,737	$143,320
7	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	$90,909	$403,571
8	Spotyslvania	Paytes	VA	3,500	500.00	160	37%	52%	11%	0%	74	$120,861	$483,333
9	Whitehorn	Gretna	VA	N/A	50.00	N/A	N/A	N/A	N/A	N/A	166	$43,179	$168,750
10	Altavista	Altavista	VA	720	80.00	N/A	N/A	N/A	N/A	N/A	7	$50,000	$341,667
	Average			1,095	115.85		19%	58%	23%	1%	646	$67,820	$283,013
	Median			627	75.00		15%	67%	0%	0%	274	$61,858	$279,039
	High			3,500	500.00		41%	97%	94%	3%	2,446	$120,861	$483,333
	Low			347	50.00		2%	0%	0%	0%	7	$36,737	$143,320

The breakdown of adjoining uses, population density, median income and housing prices for these projects are very similar to those of the larger set. The matched pairs for each of these were considered earlier and support a finding of no negative impact on the adjoining home values.

The data for these larger solar farms is shown in the SE USA and the National data breakdowns with similar landscaping, setbacks and range of impacts that fall mostly in the +/-5% range as can be seen earlier in this report.

On the following page I show a summary of 248 projects ranging in size from 50 MW up to 1,000 MW with an average size of 119.7 MW and a median of 80 MW. The average closest distance for an adjoining home is 365 feet, while the median distance is 220 feet. The closest distance is 50 feet. The mix of adjoining uses is similar with most of the adjoining uses remaining residential or agricultural in nature. This is the list of solar farms that I have researched for possible matched pairs and not a complete list of larger solar farms in those states.

Total Number of Solar Farms Researched Over 50 MW	238								
						Adjoining Use by Acre			
	Output (MW)	**Total Acres**	**Used Acres**	**Avg. Dist to home**	**Closest Home**	**Res**	**Agri**	**Agri/Res**	**Com**
Average	119.7	1521.4	1223.3	1092	365	10%	68%	18%	4%
Median	80.0	987.3	805.5	845	220	7%	72%	12%	0%
High	1000.0	19000.0	9735.4	6835	6810	98%	100%	100%	70%
Low	50.0	3.0	3.0	241	50	0%	0%	0%	0%

IX. Distance Between Homes and Panels

I have measured distances at matched pairs as close as 105 feet between panel and home to show no impact on value. This measurement goes from the closest point on the home to the closest solar panel. This is a strong indication that at this distance there is no impact on adjoining homes.

However, in tracking other approved solar farms across Kentucky, North Carolina and other states, I have found that it is common for there to be homes within 100 to 150 feet of solar panels. Given the visual barriers in the form of privacy fencing or landscaping, there is no sign of negative impact.

I have also tracked a number of locations where solar panels are between 50 and 100 feet of single-family homes. In these cases the landscaping is typically a double row of more mature evergreens at time of planting. There are many examples of solar farms with one or two homes closer than 100-feet, but most of the adjoining homes are further than that distance.

X. Topography

As shown on the summary charts for the solar farms, I have been identifying the topographic shifts across the solar farms considered. Differences in topography can impact visibility of the panels, though typically this results in distant views of panels as opposed to up close views. The topography noted for solar farms showing no impact on adjoining home values range from as much as 160-foot shifts across the project. Given that appearance is the only factor of concern and that distance plus landscape buffering typically addresses up close views, this leaves a number of potentially distant views of panels. I specifically note that in Crittenden in KY there are distant views of panels from the adjoining homes that showed no impact on value.

General rolling terrain with some distant solar panel views are showing no impact on adjoining property value.

XI. Potential Impacts During Construction

I have previously been asked by the Kentucky Siting Board about potential impacts during construction. This is not a typical question I get as any development of a site will have a certain amount of construction, whether it is for a commercial agricultural use such as large-scale poultry operations or a new residential subdivision. Construction will be temporary and consistent with other development uses of the land and in fact dust from the construction will likely be less than most other construction projects given the minimal grading. I would not anticipate any impacts on property value due to construction on the site.

I note that in the matched pairs that I have included there have been a number of home sales that happened after a solar farm was approved but before the solar farm was built showing no impact on property value. Therefore the anticipated construction had no impact as shown by that data.

XII. Scope of Research

I have researched over 1,000 solar farms and sites on which solar farms are existing and proposed in Kentucky, Illinois, Tennessee, North Carolina, Virginia as well as other states to determine what uses are typically found in proximity with a solar farm. The data I have collected and provide in this report strongly supports the assertion that solar farms are having no negative consequences on adjoining agricultural and residential values.

Beyond these references, I have quantified the adjoining uses for a number of solar farm comparables to derive a breakdown of the adjoining uses for each solar farm. The chart below shows the breakdown of adjoining or abutting uses by total acreage.

Percentage By Adjoining Acreage

	Res	Ag	Res/AG	Comm	Ind	Avg Home	Closest Home	All Res Uses	All Comm Uses
Average	19%	53%	20%	2%	6%	887	344	91%	8%
Median	11%	56%	11%	0%	0%	708	218	100%	0%
High	100%	100%	100%	93%	98%	5,210	4,670	100%	98%
Low	0%	0%	0%	0%	0%	90	25	0%	0%

Res = Residential, Ag = Agriculture, Com = Commercial

Total Solar Farms Considered: 705

I have also included a breakdown of each solar farm by number of adjoining parcels to the solar farm rather than based on adjoining acreage. Using both factors provides a more complete picture of the neighboring properties.

Percentage By Number of Parcels Adjoining

	Res	Ag	Res/AG	Comm	Ind	Avg Home	Closest Home	All Res Uses	All Comm Uses
Average	61%	24%	9%	2%	4%	887	344	93%	6%
Median	65%	19%	5%	0%	0%	708	218	100%	0%
High	100%	100%	100%	60%	78%	5,210	4,670	105%	78%
Low	0%	0%	0%	0%	0%	90	25	0%	0%

Res = Residential, Ag = Agriculture, Com = Commercial

Total Solar Farms Considered: 705

Both of the above charts show a marked residential and agricultural adjoining use for most solar farms. Every single solar farm considered included an adjoining residential or residential/agricultural use.

XIII. Specific Factors Related To Impacts on Value

I have completed a number of Impact Studies related to a variety of uses and I have found that the most common areas for impact on adjoining values typically follow a hierarchy with descending levels of potential impact. I will discuss each of these categories and how they relate to a solar farm.

1. Hazardous material
2. Odor
3. Noise
4. Traffic
5. Stigma
6. Appearance

1. Hazardous material

A solar farm presents no potential hazardous waste byproduct as part of normal operation. Any fertilizer, weed control, vehicular traffic, or construction will be significantly less than typically applied in a residential development and especially most agricultural uses.

The various solar farms that I have inspected and identified in the addenda have no known environmental impacts associated with the development and operation.

2. Odor

The various solar farms that I have inspected produced no odor.

3. Noise

Whether discussing passive fixed solar panels, or single-axis trackers, there is no negative impact associated with noise from a solar farm. The transformer has a hum similar to an HVAC that can only be heard in close proximity and the buffers on the property are sufficient to make emitted sounds effectively inaudible from the adjoining properties. A wide variety of noise studies have been conducted on solar farms to illustrate compatibility between solar properties and nearby residential uses. The noise factor is even less at night.

The various solar farms that I have inspected were inaudible from the roadways.

4. Traffic

The solar farm will have no onsite employee's or staff. The site requires only minimal maintenance. Relative to other potential uses of the site (such as a residential subdivision), the additional traffic generated by a solar farm use on this site is insignificant.

5. Stigma

There is no stigma associated with solar farms and solar farms and people generally respond favorably towards such a use. While an individual may express concerns about proximity to a solar farm, there is no specific stigma associated with a solar farm. Stigma generally refers to things such as adult establishments, prisons, rehabilitation facilities, and so forth.

Solar panels have no associated stigma and in smaller collections are found in yards and roofs in many residential communities. Solar farms are adjoining elementary, middle and high schools as well as churches and subdivisions. I note that one of the solar farms in this report not only adjoins

a church, but is actually located on land owned by the church. Solar panels on a roof are often cited as an enhancement to the property in marketing brochures.

I see no basis for an impact from stigma due to a solar farm.

6. Appearance

I note that larger solar farms using fixed or tracking panels are a passive use of the land that is in keeping with a rural/residential area. As shown below, solar farms are comparable to larger greenhouses. This is not surprising given that a greenhouse is essentially another method for collecting passive solar energy. The greenhouse use is well received in residential/rural areas and has a similar visual impact as a solar farm.

The solar panels are all less than 15 feet high, which means that the visual impact of the solar panels will be similar in height to a typical greenhouse and lower than a single-story residential dwelling. Were the subject property developed with single family housing, that development would have a much greater visual impact on the surrounding area given that a two-story home with attic could be three to four times as high as these proposed panels.

Whenever you consider the impact of a proposed project on viewshed or what the adjoining owners may see from their property it is important to distinguish whether or not they have a protected viewshed or not. Enhancements for scenic vistas are often measured when considering properties that adjoin preserved open space and parks. However, adjoining land with a preferred view today conveys no guarantee that the property will continue in the current use. Any consideration of the impact of the appearance requires a consideration of the wide variety of other uses a property already has the right to be put to, which for solar farms often includes subdivision development, agricultural business buildings such as poultry, or large greenhouses and the like.

Dr. Randall Bell, MAI, PhD, and author of the book **Real Estate Damages**, Third Edition, on Page 146 "Views of bodies of water, city lights, natural settings, parks, golf courses, and other amenities are considered desirable features, particularly for residential properties." Dr. Bell continues on Page

147 that "View amenities may or may not be protected by law or regulation. It is sometimes argued that views have value only if they are protected by a view easement, a zoning ordinance, or covenants, conditions, and restrictions (CC&Rs), although such protections are relatively uncommon as a practical matter. The market often assigns significant value to desirable views irrespective of whether or not such views are protected by law."

Dr. Bell concludes that a view enhances adjacent property, even if the adjacent property has no legal right to that view. He then discusses a "borrowed" view where a home may enjoy a good view of vacant land or property beyond with a reasonable expectation that the view might be partly or completely obstructed upon development of the adjoining land. He follows that with "This same concept applies to potentially undesirable views of a new development when the development conforms to applicable zoning and other regulations. Arguing value diminution in such cases is difficult, since the possible development of the offending property should have been known." In other words, if there is an allowable development on the site then arguing value diminution with such a development would be difficult. This further extends to developing the site with alternative uses that are less impactful on the view than currently allowed uses.

This gets back to the point that if a property has development rights and could currently be developed in such a way that removes the viewshed such as a residential subdivision, then a less intrusive use such as a solar farm that is easily screened by landscaping would not have a greater impact on the viewshed of any perceived value adjoining properties claim for viewshed. Essentially, if there are more impactful uses currently allowed, then how can you claim damages for a less impactful use.

7. Conclusion

On the basis of the factors described above, it is my professional opinion that the proposed solar farm will not negatively impact adjoining property values. The only category of impact of note is appearance, which is addressed through setbacks and landscaping buffers. The matched pair data supports that conclusion.

XIV. Conclusion

The matched pair analysis shows no negative impact in home values due to abutting or adjoining a solar farm as well as no impact to abutting or adjacent vacant residential or agricultural land. The proposed setbacks are further than those measured showing no impact for similar price ranges of homes and for areas with similar demographics to the subject area. The criteria that typically correlates with downward adjustments on property values such as noise, odor, and traffic all support a finding of no impact on property value. Similar paired sales showed no impact from adjoining battery storage facilities.

Very similar solar farms in very similar areas have been found by hundreds of towns and counties not to have a substantial injury to abutting or adjoining properties, and many of those findings of no impact have been upheld by appellate courts. Similar solar farms have been approved adjoining agricultural uses, schools, churches, and residential developments.

I have found no difference in the mix of adjoining uses or proximity to adjoining homes based on the size of a solar farm and I have found no significant difference in the matched pair data adjoining larger solar farms versus smaller solar farms. The data in the Southeast is consistent with the larger set of data that I have nationally, as is the more specific data located in and around Kentucky.

Based on the data and analysis in this report, it is my professional opinion that the solar farm proposed at the subject property will have no negative impact on the value of adjoining or abutting property. I note that some of the positive implications of a solar farm that have been expressed by people living next to solar farms include protection from future development of residential developments or other more intrusive uses, reduced dust, odor and chemicals from former farming operations, protection from light pollution at night, it's quiet, and there is no traffic.

XV. Certification

I certify that, to the best of my knowledge and belief:

1. The statements of fact contained in this report are true and correct;

2. The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are my personal, unbiased professional analyses, opinions, and conclusions;

3. I have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved;

4. I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment;

5. My engagement in this assignment was not contingent upon developing or reporting predetermined results;

6. My compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of the appraisal;

7. The reported analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute;

8. My analyses, opinions and conclusions were developed, and this report has been prepared, in conformity with the Uniform Standards of Professional Appraisal Practice.

9. The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives;

10. I have not made a personal inspection of the property that is the subject of this report, and;

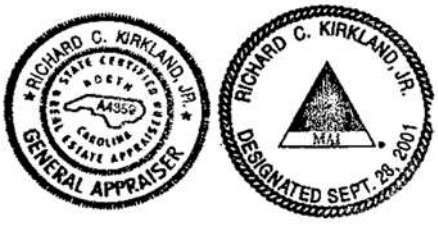
11. No one provided significant real property appraisal assistance to the person signing this certification.

12. As of the date of this report I have completed the continuing education program for Designated Members of the Appraisal Institute;

13. I have not performed services, regarding the property that is the subject of this report within the three-year period immediately preceding acceptance of this assignment.

Disclosure of the contents of this appraisal report is governed by the bylaws and regulations of the Appraisal Institute and the National Association of Realtors.

Neither all nor any part of the contents of this appraisal report shall be disseminated to the public through advertising media, public relations media, news media, or any other public means of communications without the prior written consent and approval of the undersigned.



Richard C. Kirkland, Jr., MAI
State Certified General Appraiser

Kirkland Appraisals, LLC

Richard C. Kirkland, Jr., MAI
9408 Northfield Court
Raleigh, North Carolina 27603
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Professional Experience

Kirkland Appraisals, LLC, Raleigh, N.C. — 2003 – Present
Commercial appraiser

Hester & Company, Raleigh, N.C.
Commercial appraiser — 1996 – 2003

Professional Affiliations

MAI (Member, Appraisal Institute) designation #11796 — 2001
NC State Certified General Appraiser # A4359 — 1999
VA State Certified General Appraiser # 4001017291
SC State Certified General Appraiser # 6209
FL State Certified General Appraiser # RZ3950
GA State Certified General Appraiser # 321885
MI State Certified General Appraiser # 1201076620
PA State Certified General Appraiser # GA004598
OH State Certified General Appraiser # 2021008689
IN State Certified General Appraiser # CG42100052
KY State Certified General Appraiser # 5522

Education

Bachelor of Arts in English, University of North Carolina, Chapel Hill — 1993

Continuing Education

Pennsylvania State Mandated Law for Appraisers	2023
What NOT to Do (NCDOT Course)	2023
The Income Approach – A Scope of Work Decision	2023
Valuation of Residential Solar	2022
Residential Property Measurement and ANSI	2022
Business Practices and Ethics	2022
Uniform Standards of Professional Appraisal Practice Update	2022
Sexual Harassment Prevention Training	2021
Appraisal of Land Subject to Ground Leases	2021
Michigan Appraisal Law	2020
Uniform Standards of Professional Appraisal Practice Update	2020
Uniform Appraisal Standards for Federal Land Acquisitions (Yellow Book)	2019
The Cost Approach	2019
Income Approach Case Studies for Commercial Appraisers	2018
Introduction to Expert Witness Testimony for Appraisers	2018
Appraising Small Apartment Properties	2018
Florida Appraisal Laws and Regulations	2018
Uniform Standards of Professional Appraisal Practice Update	2018
Appraisal of REO and Foreclosure Properties	2017

Appraisal of Self Storage Facilities	2017
Land and Site Valuation	2017
NCDOT Appraisal Principles and Procedures	2017
Uniform Standards of Professional Appraisal Practice Update	2016
Forecasting Revenue	2015
Wind Turbine Effect on Value	2015
Supervisor/Trainee Class	2015
Business Practices and Ethics	2014
Subdivision Valuation	2014
Uniform Standards of Professional Appraisal Practice Update	2014
Introduction to Vineyard and Winery Valuation	2013
Appraising Rural Residential Properties	2012
Uniform Standards of Professional Appraisal Practice Update	2012
Supervisors/Trainees	2011
Rates and Ratios: Making sense of GIMs, OARs, and DCFs	2011
Advanced Internet Search Strategies	2011
Analyzing Distressed Real Estate	2011
Uniform Standards of Professional Appraisal Practice Update	2011
Business Practices and Ethics	2011
Appraisal Curriculum Overview (2 Days – General)	2009
Appraisal Review - General	2009
Uniform Standards of Professional Appraisal Practice Update	2008
Subdivision Valuation: A Comprehensive Guide	2008
Office Building Valuation: A Contemporary Perspective	2008
Valuation of Detrimental Conditions in Real Estate	2007
The Appraisal of Small Subdivisions	2007
Uniform Standards of Professional Appraisal Practice Update	2006
Evaluating Commercial Construction	2005
Conservation Easements	2005
Uniform Standards of Professional Appraisal Practice Update	2004
Condemnation Appraising	2004
Land Valuation Adjustment Procedures	2004
Supporting Capitalization Rates	2004
Uniform Standards of Professional Appraisal Practice, C	2002
Wells and Septic Systems and Wastewater Irrigation Systems	2002
Appraisals 2002	2002
Analyzing Commercial Lease Clauses	2002
Conservation Easements	2000
Preparation for Litigation	2000
Appraisal of Nonconforming Uses	2000
Advanced Applications	2000
Highest and Best Use and Market Analysis	1999
Advanced Sales Comparison and Cost Approaches	1999
Advanced Income Capitalization	1998
Valuation of Detrimental Conditions in Real Estate	1999
Report Writing and Valuation Analysis	1999
Property Tax Values and Appeals	1997
Uniform Standards of Professional Appraisal Practice, A & B	1997
Basic Income Capitalization	1996

APPENDIX C: SITE LEGAL BOUNDARIES

EXHIBIT A

Legal Description

THE FOLLOWING REAL PROPERTY LOCATED IN THE COUNTY OF FAYETTE, COMMONWEALTH OF KENTUCKY:

Being all of Tract 4 as shown on the Final Record Plat of the Augustus Gay Property of record in Plat Cabinet I, Slide 241, in the Fayette County Clerk's Office.

EXHIBIT A-1
Depiction of the Property

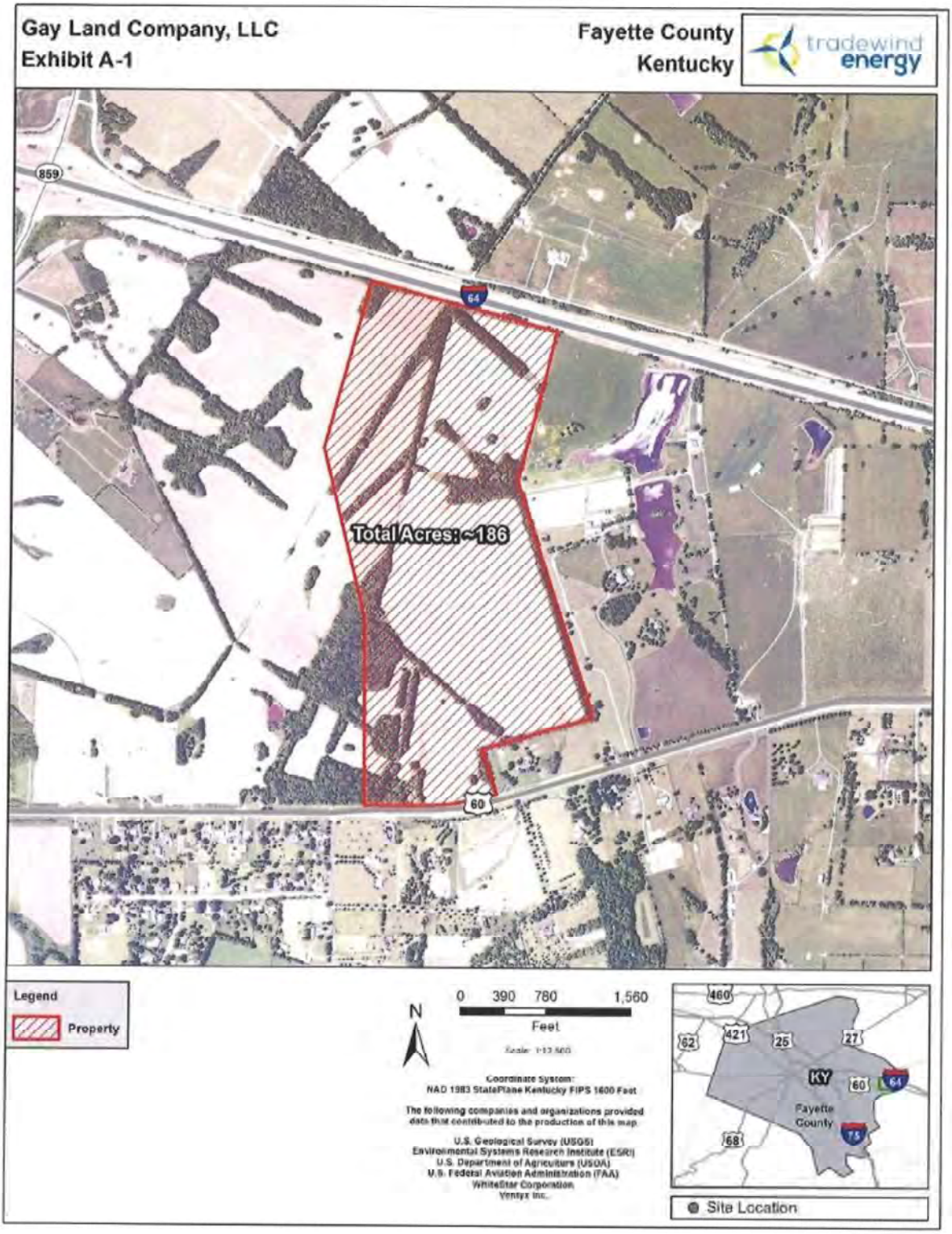


EXHIBIT "A"

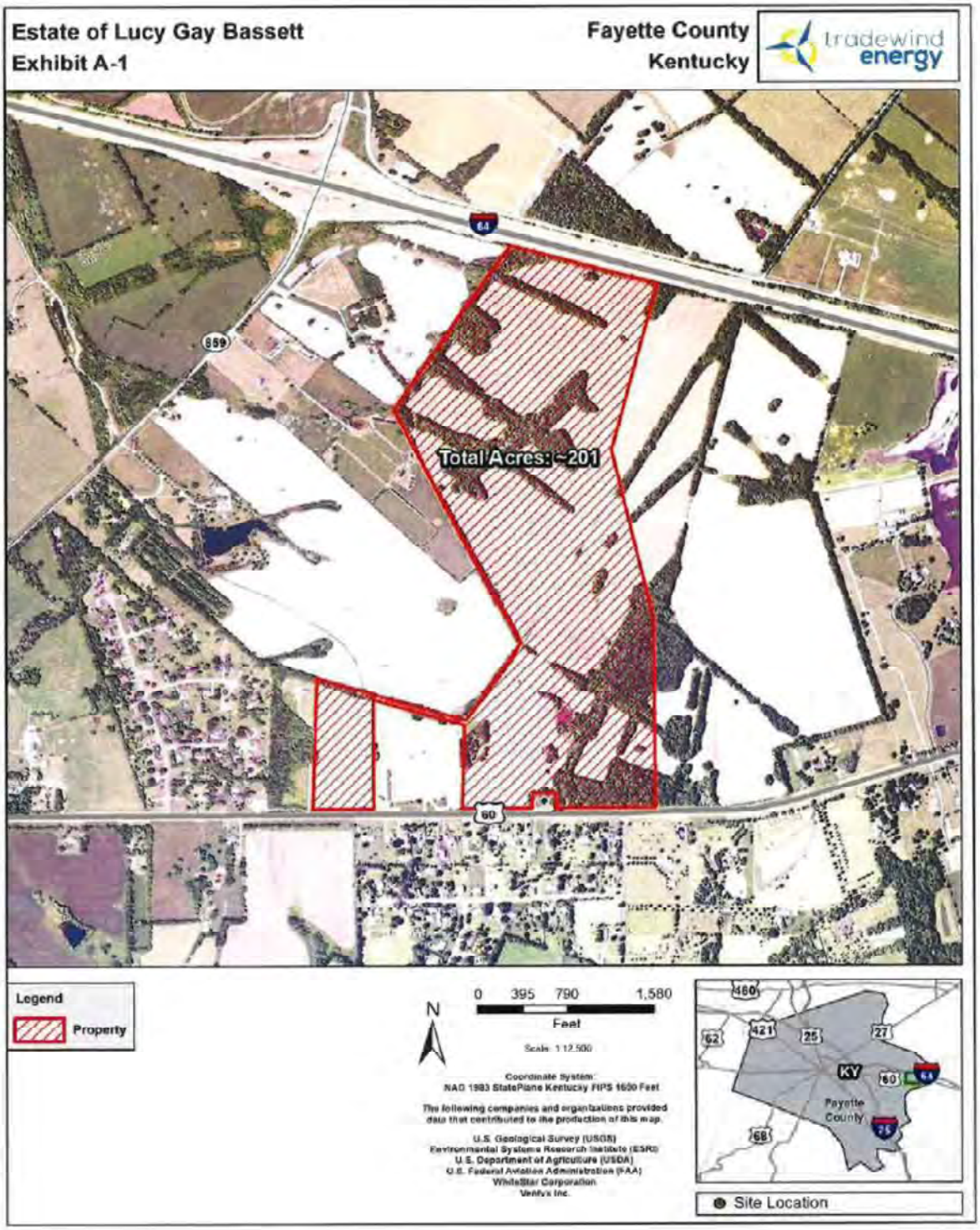
LEGAL DESCRIPTION

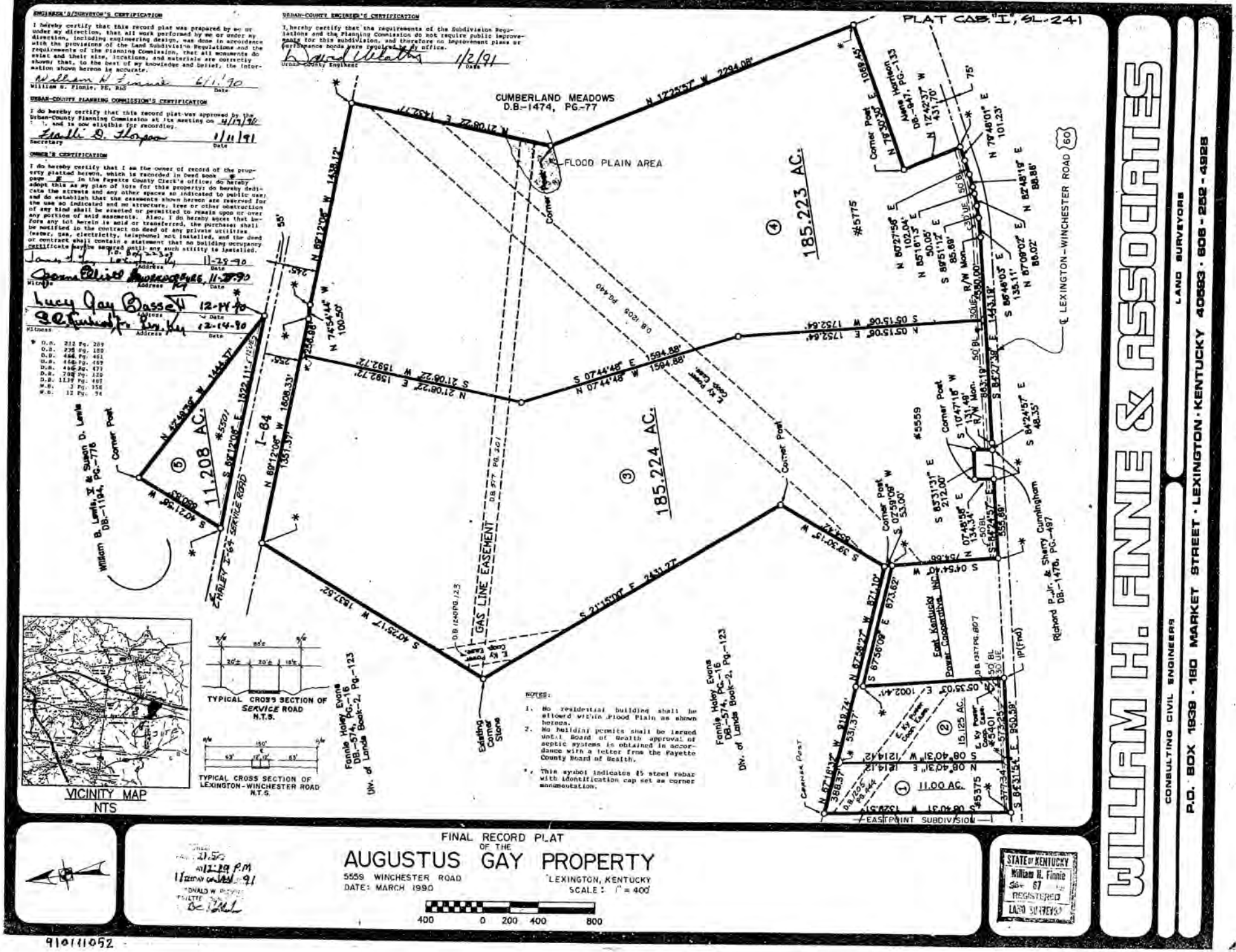
THE FOLLOWING REAL PROPERTY LOCATED IN THE COUNTY OF FAYETTE, COMMONWEALTH OF KENTUCKY:

Being all of Tracts 2 and 3 as shown on the Final Record Plat of the Augustus Gay Property of record in Plat Cabinet I, Slide 241, in Fayette County Clerk's Office.

EXHIBIT "A-1"

DEPICTION OF THE PROPERTY





ENGINEER'S/SURVEYOR'S CERTIFICATION

I hereby certify that this record plat was prepared by me or under my direction, that all work performed by me or under my direction, including engineering design, was done in accordance with the provisions of the Land Subdivision Regulations and the requirements of the Planning Commission, that all monuments do exist and their size, locations, and materials are correctly shown; that, to the best of my knowledge and belief, the information shown hereon is accurate.

William H. Finnie 6/1/90
William H. Finnie, PE, RLS — Date

URBAN-COUNTY PLANNING COMMISSION'S CERTIFICATION

I do hereby certify that this record plat was approved by the Urban-County Planning Commission at its meeting on 4/19/90 and is now eligible for recording.

Secretary — 1/11/91 Date

OWNER'S CERTIFICATION

I do hereby certify that I am the owner of record of the property platted hereon, which is recorded in Deed Book ___ page E in the Fayette County Clerk's office; do hereby adopt this as my plan of lots for this property; do hereby dedicate the streets and any other spaces as indicated to public use; and do establish that the easements shown hereon are reserved for the use as indicated and no structure, tree or other obstruction of any kind shall be erected or permitted to remain upon or over any portion of said easements. Also, I do hereby agree that before any lot herein is sold or transferred, the purchaser shall be notified in the contract or deed of any private utilities (water, gas, electricity, telephone) not installed, and the deed or contract shall contain a statement that no building occupancy certificate may be secured until any such utility is installed.

P.O. Box 22309 Lexington, Ky 11-29-90
Address — Date

Lucy Jay Bassett 12-14-90
Witness — Date

Witness — Date

D.B. 212 Pg. 289
D.B. 295 Pg. 180
D.B. 444 Pg. 461
D.B. 446 Pg. 469
D.B. 486 Pg. 473
D.B. 798 Pg. 130
D.B. 1139 Pg. 407
W.B. 3 Pg. 158
W.B. 12 Pg. 94

URBAN-COUNTY ENGINEER'S CERTIFICATION

I, hereby certify that the requirements of the Subdivision Regulations and the Planning Commission do not require public improvements for this subdivision, and therefore no improvement plans or performance bonds were required by my office.

Urban-County Engineer — 1/2/91 Date

NOTES:

1. No residential building shall be allowed within Flood Plain as shown hereon.
2. No building permits shall be issued until Board of Health approval of septic systems is obtained in accordance with a letter from the Fayette County Board of Health.

*, This symbol indicates 5/8 steel rebar with identification cap set as corner monumentation.

FINAL RECORD PLAT
OF THE
AUGUSTUS GAY PROPERTY

5559 WINCHESTER ROAD — LEXINGTON, KENTUCKY
DATE: MARCH 1990 — SCALE: 1" = 400'

400 0 200 400 800

21.50
at 12:29 P.M.
11th day of JAN 91
DONALD W. BLEVINS
FAYETTE

STATE OF KENTUCKY
William H. Finnie
No. 67
REGISTERED
LAND SURVEYOR

WILLIAM H. FINNIE & ASSOCIATES
CONSULTING CIVIL ENGINEERS — LAND SURVEYORS
P.O. BOX 1838 · 180 MARKET STREET · LEXINGTON · KENTUCKY 40593 · 606 - 252 - 4928

9101111052

BOOK 1584 PAGE 50

DEED OF PARTITION

THIS DEED OF PARTITION, made and entered into this 1st day of MAY, 1991, by and between JAMES G. GAY and ANNE P. GAY, his wife, whose address is 1920 Richmond Road, P.O. Box 22303, Lexington, Kentucky 40522, Parties of the First Part, hereinafter referred to as "First Parties"; LUCY GAY BASSETT and JAMES E. BASSETT, III, her husband, whose address is Lanark Farm, P.O. Box 175, Midway, Kentucky 40347, Parties of the Second Part, hereinafter referred to as "Second Parties"; JAMES G. GAY whose address is 1920 Richmond Road, P.O. Box 22303, Lexington, Kentucky 40522, Party of the Third Part, hereinafter referred to as "Third Party" and LUCY GAY BASSETT, whose address is Lanark Farm, P.O. Box 175, Midway, Kentucky 40347, Party of the Fourth Part, hereinafter referred to as "Fourth Party";

W I T N E S S E T H:

WHEREAS, First Parties and Second Parties each own an undivided one-half (1/2) interest in certain tracts of land known as the Augustus Gay Property, consisting of 407.78 acres, more or less, situted on the Winchester Road (U.S. 60) in Fayette County, Kentucky; and

WHEREAS, all of the parties wish to equally partition said Augustus Gay Property between Third Party and Fourth Party and have caused a subdivision plan thereof, designated as the Final Record Plat of the Augustus Gay Property to be recorded in Plat Cabinet I, Slide 241, Fayette County Clerk's Office, creating five (5) tracts of land; and

WHEREAS, it is the desire and intention of the parties to effectuate a partition and division of said Augustus Gay Property, readily divisible as separate and individual tracts, as more particularly shown on the plat referred to above,

NOW, THEREFORE, for and in consideration of the foregoing premises and for a valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and for the further consideration of the mutual conveyances herein made, the First and Second Parties hereby grant and convey as follows:

(a) unto Third Party, James G. Gay, his heirs and assigns, in fee simple, the following described property:

> Being all of Tracts 1 and 4 as shown on the Final Record Plat of the Augustus Gay Property of record in Plat Cabinet I, Slide 241, Fayette County Clerk's Office.

910503097

MAIL TO:
STITES & HARBISON
2300 LEXINGTON FINANCIAL CENTER
LEXINGTON, KENTUCKY 40507
ATTN: Sidney C. Kinkead

(See Source of Title below.) BOOK 1584 PAGE 51

TO HAVE AND TO HOLD said above described property, together with all improvements thereon, and all appurtenances thereto appertaining, unto Third Party, James G. Gay, his heirs and assigns forever, with covenant of General Warrranty.

(b) Unto Fourth Party, Lucy Gay Bassett, her heirs and assigns, in fee simple, the following described property:

Being all of Tracts 2 and 3 as shown on the Final Record Plat of the Augustus Gay Property of record in Plat Cabinet I, Slide 241, Fayette County Clerk's Office.

(See Source of Title below.)

TO HAVE AND TO HOLD said above described property, together with all improvements thereon, and all appurtenances thereto appertaining, unto Fourth Party, Lucy Gay Bassett, her heirs and assigns forever, with covenant of General Warranty.

(c) Unto Third Party and Fourth Party, James G. Gay and Lucy Gay Bassett, an undivided one-half interest each, as tenants in common, his and her heirs and assigns, in fee simple, in the following described property:

Being all of Tract 5 as shown on the Final Record Plat of the Augustus Gay Property of record in Plat Cabinet I, Slide 241, Fayette County Clerk's Office.

(See Source of Title below.)

TO HAVE AND TO HOLD said above described property, together with all improvements thereon, and all appurtenances thereto appertaining, unto Third Party and Fourth Party, James G. Gay and Lucy Gay Bassett, an undivided one-half interest each, as tenants in common, his and her heirs and assigns forever, with covenant of General Warranty.

This conveyance and the above warranties, are made subject, however, to: all applicable conditions on plats of record, restrictions and easements of record affecting said title; liens for the ad valorem taxes assessed against said properties for the current year which Grantees assume and agree to pay and all applicable building, zoning and health enactments.

Sources of Title:

Tracts 1, 2, 3, 4 and 5 of the Augustus Gay Property being a part of the same property

acquired by First and Second Parties as follows:

(i) Deed dated January 13, 1976 from Augustus Gay, a single man, to Lucy Gay Bassett and James E. Bassett, III, her husband, and James G. Gay and Anne P. Gay, his wife, of record in Deed Book 1139, Page 409, Fayette County Clerk's Office;
(ii) Deed dated December 23, 1975 from Augustus Gay, a single man, to Lucy Gay Bassett and James E. Bassett, III, her husband, and James G. Gay and Anne P. Gay, his wife, of record in Deed Book 1137, Page 63, Fayette County Clerk's Ofice;
(iii) Deed dated August 31, 1965, from Robert E. Rice, Master Commissioner of the Fayette Circuit Court, to Augustus B. Gay for life with remainder to his children (Lucy Gay Bassett and James G. Gay), of record in Deed Book 846, Page 402, Fayette County Clerk's Office; said Augustus B. Gay died on the 3rd day of April, 1983;
(iv) Deed dated July 9, 1949 from Security Trust Company, as Trustee, et al. to Security Trust Company, as Trustee for Augustus Gay, for and during the life of Augustus Gay, with remainder to his children (Lucy Gay Bassett and James G. Gay) of record in Deed Book 466, Page 469, Fayette County Clerk's Office;
(v) Deed dated July 21, 1923 from R. J. Colbert, Master Commissioner of the Fayette Circuit Court to Security Trust Company, as Trustee for Augustus Gay, for and during the life of Augustus Gay with remainder to his children (Lucy Gay Basset and James G. Gay), of record in Deed Book 466, Page 461, Fayette County Clerk's Office; and
(vi) Deed of Partition dated June 17, 1925, to Augustus Gay of record in Deed Book 232, Page 289, Fayette County Clerk's Office. Said Augustus Gay (being the same person as A. B. Gay) devised a part of said property to his children, Lucy Gay Bassett and James G. Gay by his will of record in Will Book 40, Page 658, Woodford County Clerk's Office and Will Book 139, Page 595, Fayette County Clerk's Office.
(vi) Quit-claim Deed dated November 3, 1965, from Harriet M. Harbison, et al. to Augustus B. Gay, for life with remainder to his children (Lucy Gay Bassett and James G. Gay),

of record in Deed Book 853, Page 596, Fayette County Clerk's Office

This conveyance is exempt from the Kentucky Transfer Tax by virtue of KRS 142.050(7)(g).

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands on or as of the day and year first above written.

James G. Gay

Anne P. Gay

Lucy Gay Bassett

James E. Bassett, III

STATE OF KENTUCKY)
) SCT.
COUNTY OF FAYETTE)

The foregoing was acknowledged before me by James G. Gay and Anne P. Gay this 12 day of MAY, 1991.

My Commission Expires: 6-13-92

NOTARY PUBLIC, STATE AT LARGE, KENTUCKY

STATE OF KENTUCKY)
) SCT.
COUNTY OF FAYETTE)

The foregoing was acknowledged before me by Lucy Gay Bassett and James E. Bassett, III this 12 day of MAY, 1991.

My Commission Expires: 6-13-92

NOTARY PUBLIC, STATE AT LARGE, KENTUCKY

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CERTIFICATION OF CONSIDERATION

Being first duly sworn, the undersigned Grantors and Grantees, state that the consideration set forth in the foregoing deed is true and correct and is the full consideration paid for the subject property.

GRANTORS:

James G. Gay

Anne P. Gay

Lucy Gay Bassett

James E. Bassett, III

GRANTEES:

James G. Gay

Lucy Gay Bassett

STATE OF KENTUCKY)
) SCT.
COUNTY OF FAYETTE)

The foregoing was subscribed and sworn to before me by James G. Gay and Anne P. Gay this 1st day of MAY, 1991.

My Commission Expires: 6-13-92

NOTARY PUBLIC, STATE AT LARGE, KENTUCKY

STATE OF KENTUCKY)
) SCT.
COUNTY OF FAYETTE)

The foregoing was subscribed and sworn to before me by Lucy Gay Bassett and James E. Bassett, III this 1st day of MAY, 1991.

My Commission Expires: 6-13-92

NOTARY PUBLIC, STATE AT LARGE, KENTUCKY

THIS INSTRUMENT PREPARED BY:
STITES & HARBISON
2300 Lexington Financial Center
250 West Main Street
Lexington, Kentucky 40507

By: Sidney C. Gurkin

BOOK 1584 PAGE 55

ORDERED TO RECORD
PAID $ 15.00 TAX
MAY 3 1 44 PM '91
DONALD W. BLEVINS
FAYETTE COUNTY CLERK
BY D.C.

No Tax

STATE OF KENTUCKY
COUNTY OF FAYETTE SCT.

I, DONALD W. BLEVINS, CLERK OF SAID COUNTY COURT HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT HAS BEEN DULY RECORDED IN DEED BOOK 1584 PAGE 55. IN MY SAID OFFICE.

DONALD W. BLEVINS, CLERK

BY A.T. Dennis D.C.

APPENDIX D: ACOUSTIC STUDY

Acoustic Assessment Report

Bluegrass Plains Solar Project

Fayette County, Kentucky

April 4, 2024

Prepared for

East Kentucky Power Cooperative
4775 Lexington Road
Winchester, KY 40391

Prepared by

Tetra Tech
424 Lewis Hargett Circle
Suite 110
Lexington, KY 40503

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Acronyms and Abbreviations

µPa	microPascal
AC	alternating current
ANSI	American National Standards Institute
Applicant	East Kentucky Power Cooperative
dB	decibel
dBA	A-weighted decibel
dBL	linear decibel
DC	direct current
EKPC	East Kentucky Power Cooperative
Hz	hertz
I-64	Interstate 64
ISO	International Organization for Standardization
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
L_{max}	maximum sound level
L_P	sound pressure level
L_w	sound power
MW	megawatt
NSR	Noise Sensitive Receptor
Project	Bluegrass Plains Solar Project
PV	photovoltaic
Tetra Tech	Tetra Tech, Inc.
EPA	United States Environmental Protection Agency

1.0 INTRODUCTION

East Kentucky Power Cooperative (EKPC) (the Applicant) plans to construct and operate the Bluegrass Plains Solar Project (the Project), a solar photovoltaic power generation facility that will consist of an up to 40-megawatt (MW) ground-mounted solar photovoltaic system and related interconnection and ancillary facilities.

The proposed Project is located on approximately 386 acres of agricultural land on contiguous parcels in Fayette County, Kentucky between US Highway 60 (Winchester Road) along the property's southern border and Interstate 64 (I-64) along the property's northern border. The Project will include a network of internal roads accessed by multiple gates providing openings through the perimeter fence. Access roads will be approximately 20 feet in width. Project components will include photovoltaic (PV) solar modules mounted on single axis tracker systems supported by steel posts. Panels will move to track the sun over the course of the day. Other components of the PV system include inverters, medium voltage transformers, junction boxes, direct current and alternating current (DC and AC) electrical collection systems, and collection lines. The Project components will connect to the existing EKPC-owned substation located adjacent to the Project's southwest boundary line.

Tetra Tech prepared this Acoustic Assessment Report to support Project permitting. The report provides background information on concepts related to environmental sound, including descriptions of the noise metrics used throughout the report; applicable noise criteria; review of existing conditions; predicted noise levels from construction and operation of the Project equipment; and an assessment of the potential offsite noise impacts from construction and operation of the Project. Potential offsite noise impacts will be evaluated relative to the environmental noise guidelines given by the United States Environmental Protection Agency (EPA). The Project and nearby noise sensitive receptors (NSRs; e.g., residences) are shown in Figure 1.

1.1 Acoustical Metrics and Terminology

All sounds originate with a source, whether it is a human voice, motor vehicles on a roadway, or a combustion turbine. Energy is required to produce sound and this sound energy is transmitted through the air in the form of sound waves – tiny, quick oscillations of air pressure just above and just below atmospheric pressure. These oscillations, or sound pressures, impinge on the ear, creating the sound we hear. A sound source is defined by a sound power level (L_W), which is independent of any external factors. By definition, sound power is the rate at which acoustical energy is radiated outward and is expressed in units of watts.

A source sound power level cannot be measured directly. It is calculated from measurements of sound intensity or sound pressure at a given distance from the source outside the acoustic and geometric near-field. A sound pressure level (L_P) is a measure of the sound wave fluctuation at a given receiver location and can be obtained through the use of a microphone or calculated from information about the source sound power level and the surrounding environment. The sound pressure level in decibels (dB) is the logarithm of the ratio of the sound pressure of the source to the reference sound pressure of

20 microPascals (µPa), multiplied by 20[1]. The range of sound pressures that can be detected by a person with normal hearing is very wide, ranging from about 20 µPa for very faint sounds at the threshold of hearing, to nearly 10 million µPa for extremely loud sounds such as a jet during take-off at a distance of 300 feet.

Broadband sound includes sound energy summed across the entire audible frequency spectrum. In addition to broadband sound pressure levels, analysis of the various frequency components of the sound spectrum can be completed to determine tonal characteristics. The unit of frequency is hertz (Hz) measuring the cycles per second of the sound pressure waves. Typically, the frequency analysis examines 11 octave bands ranging from 16 Hz (low) to 16,000 Hz (high). Since the human ear does not perceive every frequency with equal loudness, spectrally-varying sounds are often adjusted with a weighting filter. The A-weighted filter is applied to compensate for the frequency response of the human auditory system and is represented in A-weighted decibel (dBA).

Sound can be measured, modeled, and presented in various formats, with the most common metric being the equivalent sound level (L_{eq}). The equivalent sound level has been shown to provide both an effective and uniform method for comparing time-varying sound levels and is widely used in acoustic assessments of wind energy projects. Community sound levels are also often described in terms of the day-night averaged sound level (L_{dn}), which accounts for the increased potential for annoyance that comes with elevated sound levels at night. In addition, the maximum sound level (L_{max}) can be used to quantify the maximum instantaneous sound pressure level generated by a source and is often used in establishing regulatory noise limits. Estimates of noise sources and outdoor acoustic environments, and the comparison of relative loudness are presented in Table 1. Table 2presents additional reference information on terminology used in the report.

Table 1. Sound Pressure Levels and Relative Loudness of Noise Sources and Acoustic Environments

Noise Source or Activity	Sound Level (dBA)	Subjective Impression
Vacuum cleaner (10 feet)	70	Moderate
Passenger car at 65 miles per hour (25 feet)	65	
Large store air-conditioning unit (20 feet)	60	
Light auto traffic (100 feet)	50	Quiet
Quiet rural residential area with no activity	45	
Bedroom or quiet living room; Bird calls	40	Faint
Typical wilderness area	35	
Quiet library, soft whisper (15 feet)	30	Very quiet
Wilderness with no wind or animal activity	25	Extremely quiet
High-quality recording studio	20	
Acoustic test chamber	10	Just audible
	0	Threshold of hearing

Adapted from: Kurze and Beranek (1988)

[1] The sound pressure level (L_p) in dB corresponding to a sound pressure (p) is given by the following equation:

Lp = 20 log10 (p / pref);

Where:

p = the sound pressure in µPa; and

pref = the reference sound pressure of 20 µPa.

Table 2. Acoustic Terms and Definitions

Term	Definition
Noise	Typically defined as unwanted sound. This word adds the subjective response of humans to the physical phenomenon of sound. It is commonly used when negative effects on people are known to occur.
Sound Pressure Level (L_P)	Pressure fluctuations in a medium. Sound pressure is measured in dB referenced to 20 µPa, the approximate threshold of human perception to sound at 1,000 Hz.
Sound Power Level (L_W)	The total acoustic power of a noise source measured in dB referenced to picowatts (one trillionth of a watt). Noise specifications are provided by equipment manufacturers as sound power as it is independent of the environment in which it is located. A sound level meter does not directly measure sound power.
Equivalent Sound Level (L_{eq})	The L_{eq} is the continuous equivalent sound level, defined as the single sound pressure level that, if constant over the stated measurement period, would contain the same sound energy as the actual monitored sound that is fluctuating in level over the measurement period.
A-Weighted Decibel (dBA)	Environmental sound is typically composed of acoustic energy across all frequencies. To compensate for the auditory frequency response of the human ear, an A-weighting filter is commonly used for describing environmental sound levels. Sound levels that are A-weighted are presented as dBA in this report.
Unweighted Decibels (dBL)	Unweighted sound levels are referred to as linear. Linear decibels are used to determine a sound's tonality and to engineer solutions to reduce or control noise as techniques are different for low and high frequency noise. Sound levels that are linear are presented as dBL in this report.
Propagation and Attenuation	Propagation is the decrease in amplitude of an acoustic signal due to geometric spreading losses with increased distance from the source. Attenuation refers to the decrease in energy as sound propagates through a medium. Sound attenuation factors include air absorption, terrain effects, sound interaction with the ground, diffraction of sound around objects and topographical features, foliage, and meteorological conditions including wind velocity, temperature, humidity, and atmospheric conditions.

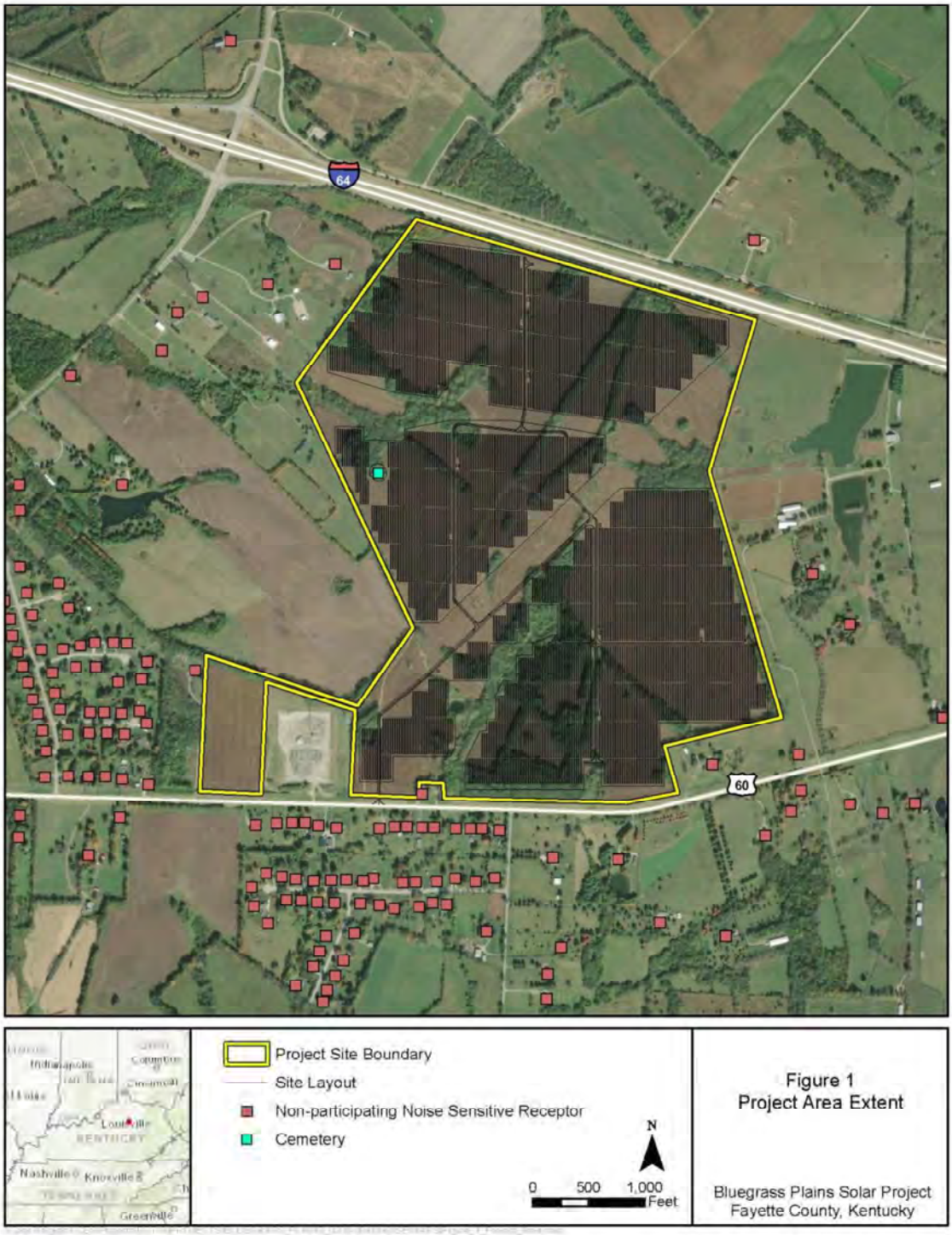

Figure 1. Project Location

2.0 NOISE CRITERIA

A review was conducted of noise regulations applicable to the Project at the federal, state, county, and local levels. There are no federal, state, county, or local environmental noise requirements specific to this Project; however, in the State of Kentucky the EPA environmental noise guidelines have been used to evaluate potential noise impacts associated with solar energy facilities.

2.1 Environmental Protection Agency Environmental Noise Guidelines

While the EPA has no regulation governing environmental noise, the agency has conducted several extensive studies to identify the effects of sound level on public health and welfare. In 1974, the EPA published a landmark document entitled "Information on Levels of Environmental Noise Requisite to Protect the Public Health and Welfare with an Adequate Margin of Safety." This publication remains the authoritative study based on a large sampling of community reaction to noise. The EPA sound level guidelines do not provide an absolute measure of noise impact, but rather a consensus on potential activity interference and annoyance. For outdoor residential areas, the recommended EPA guideline is an L_{dn} of 55 dBA (equivalent to an L_{eq} (1-hour) of 48.6 dBA assuming continuous 24-hour operation). The EPA sound level guidelines also suggest an L_{eq} of 70 dBA (24-hour) limit to avoid adverse effects on health and safety at publicly accessible property lines or work areas. Since these protective levels were derived without concern for technical or economic feasibility and contain a margin of safety to ensure their protective value, they must not be viewed as standards, criteria, regulations, or goals. Rather, they should be viewed as levels below which there is no reason to suspect that the general population will be at risk from any of the identified effects of noise. The EPA criteria limits are summarized in Table 3.

Table 3. Summary of EPA Cause and Effect Noise Levels

Location	Level	Effect
All public accessible areas with prolonged exposure	70 dBA $L_{eq(24)}$	Safety / hearing loss concerns
Outdoor at residential structure and other NSAs where a large amount of time is spent	55 dBA L_{dn}	Protection against annoyance and activity interference
Outdoor areas where limited amounts of time are spent, e.g., park areas, school yards, golf courses, etc.	55 dBA $L_{eq(24)}$	
Indoor residential	45 dBA L_{dn}	
Indoor non-residential	55 dBA $L_{eq(24)}$	

Source: EPA 1974

The application of the EPA noise guidelines is a common compliance approach used to ensure adequate protection of human health and welfare. While the EPA criteria limits cannot be used to infer audibility thresholds, compliance with EPA guidelines would likely result in the reduced probability of dissatisfaction. Inaudibility under all operating conditions is an unrealistic expectation, and one that is not required under any other industrial, commercial, or agricultural activity in the state of Kentucky. Guideline limits identified are absolute and independent of the existing acoustic environment; therefore, no baseline sound survey is required to assess conformity.

3.0 EXISTING ACOUSTIC ENVIRONMENT

Fayette County is generally characterized as a rural agricultural land use area, and existing ambient sound levels are expected to be relatively low, although sound levels may be sporadically elevated in localized areas due to roadway noise or periods of human activity. Background sound levels will thus vary both spatially and temporally depending on proximity to area sound sources, roadways and natural sounds. Principal contributors to the existing acoustic environment likely include motor vehicle traffic, mobile farming equipment, farming activities such as plowing and irrigation, all-terrain vehicles, local roadways, rail movements, periodic aircraft flyovers, and natural sounds such as birds, insects, and leaf or vegetation rustle during elevated wind conditions in areas with established tree stands or established crops. Diurnal effects result in sound levels that are typically quieter during the night than during the daytime, except during periods when evening and nighttime insect noise dominate in warmer seasons.

In areas with elevated background sound levels, sound may be obscured through a mechanism referred to as acoustic masking. Seasonal sounds such as cricket chirping, certain farming activities, as well as wind-generated ambient noise as airflow interacts with foliage and cropland, contribute to this masking effect. The latter is most prevalent in rural and suburban areas with established tree stands. Wintertime defoliate conditions typically have lower background sound levels due to lower wind masking effects and reduced outdoor activities in colder climates. During colder seasons, people typically exhibit lower sensitivities to outdoor sound levels, particularly in this geographical region of the United States, as windows are closed, further enhancing outdoor to indoor transmission losses, and limited time is spent outdoors as compared to more temperate climates.

4.0 PROJECT CONSTRUCTION

Construction of the Project is expected to be typical of other solar power generating facilities in terms of schedule, equipment, and activities.

4.1 Noise Calculation Methodology

Acoustic emission levels for activities associated with Project construction were based on typical ranges of energy equivalent noise levels at construction sites, as documented by the Environmental Protection Agency (EPA 1971) and the EPA's "Construction Noise Control Technology Initiatives" (EPA 1980). The EPA methodology distinguishes between type of construction and construction stage. Using those energy equivalent noise levels as input to a basic propagation model, construction noise levels were calculated at a series of set reference distances.

The basic model assumed spherical wave divergence from a point source located at the closest point of the Project site. Furthermore, the model conservatively assumed that all pieces of construction equipment associated with an activity would operate simultaneously for the duration of that activity. An additional level of conservatism was built into the construction noise model by excluding potential shielding effects due to intervening structures and buildings along the propagation path from the site to receiver locations.

4.1 Projected Noise Levels During Construction

Construction work will not consist of a phased approach. Table 4summarizes the expected equipment to be used during Project construction and also shows the maximum noise level at 50 ft.

Table 4. Project Construction Equipment Noise Levels

Construction Equipment	Maximum (L_{max}) Equipment Noise Level at 50 feet
Air Compressor	81
Backhoe	80
Ballast Tamper	83
Chainsaw	85
Compactor	82
Crane Derrick	88
Crane Mobile	83
Dozer	85
Generator	81
Grader	85
Impact Wrench	85
Jack Hammer	88
Loader	85
Pickup Truck	55
Pile Driver (Impact)	101
Pile Driver (Sonic)	96
Pneumatic Tool	85
Rock Drill	98
Roller	74
Saw	76
Scraper	89
Shovel	82
Tie Cutter	84
Tie Handler	80
Tie Inserter	85
Tractor	84
Truck	88
Welder/Torch	73

Source: FHWA 2017

Pile driving will be the method selected to install the foundations of the solar PV modules. Pile driving can generate high noise levels, as indicated in Table 4. Noise is generated from both the ram striking the pile as well as the operating steam, air, or diesel exhaust as it is exhausted from the cylinder (this is not present with hydraulic impact hammers). The sound pressure level of the impact pile driving unit is estimated to be 101 dBA at 50 feet. Received sound levels associated with pile driving activities were

predicted at NSRs and are given in Table A-1 in Appendix A. Predicted sound levels from pile driving at NSRs are expected to range from approximately 45 to 67 dBA.

Work associated with these phases may overlap. Equipment used for construction includes heavy equipment (e.g., bulldozers, loaders, dump trucks), which involve diesel engines that produce mechanical and exhaust noise with the latter typically the predominant sound source. The construction of the Project may cause short-term, but unavoidable, noise impacts that could be loud enough at times to temporarily interfere with speech communication outdoors and indoors with windows open. Noise levels resulting from the construction activities will vary significantly depending on several factors such as the type and age of equipment, specific equipment manufacturer and model, the operations being performed, and the overall condition of the equipment and exhaust system mufflers.

Project construction will generally occur during the day, Monday through Sunday, with pile driving being restricted to Monday through Friday. Furthermore, all reasonable efforts will be made to minimize the impact of noise resulting from construction activities including implementation of standard noise reduction measures (Section 4.2, below). Due to the infrequent nature of loud construction activities at the site, the limited hours of construction and the implementation of noise mitigation measures, the temporary increase in noise due to construction is considered to be a less than significant impact.

4.2 Construction Noise Mitigation

Construction noise will be temporary in nature and, as such, no long term or significant noise impacts due to construction are anticipated. Regardless, reasonable efforts may be made to minimize the impact of noise resulting from construction activities. Following is a list of recommended best management practices and noise mitigation measures:

- Construction equipment should be well-maintained and vehicles using internal combustion engines equipped with mufflers will be routinely checked to ensure they are in good working order;
- A noise/dust fence will be considered in areas where dust and noise cannot be mitigated by other means;
- Noisy equipment will be located as far from possible from sensitive areas; and
- Property owners adjacent to the Project site will be provided contact information for a representative on the Project team they can communicate with in the event of noise-related issues.

Implementing the listed measures will aid in reducing offsite construction noise impacts. Project construction noise may periodically exceed levels that currently characterize the area. Due to the temporary nature of construction noise, no long-term impacts are anticipated.

5.0 PROJECT OPERATIONAL ACOUSTIC ASSESSMENT

This section describes the model utilized for the assessment, input assumptions used to calculate noise levels due to the Project's normal operation, and the results of the noise impact analysis relative to the applicable noise requirements and guidelines.

5.1 Noise Prediction Model

The Cadna-A® computer noise model was used to calculate sound pressure levels from the operation of the Project. An industry standard, Cadna-A® was developed by DataKustik GmbH to provide an estimate of sound levels at distances from sources of known emission. It is used by acousticians and acoustic engineers due to the capability to accurately describe noise emission and propagation from complex facilities consisting of various equipment types like the Project, and in most cases, yields conservative results of operational noise levels in the surrounding community.

The current ISO standard for outdoor sound propagation, ISO 9613 Part 2, "Attenuation of Sound during Propagation Outdoors," was used within Cadna-A (ISO 1996). The method described in this standard calculates sound attenuation under weather conditions that are favorable for sound propagation, such as for downwind propagation or atmospheric inversion, conditions that are typically considered worst case. The calculation of sound propagation from source to receiver locations consists of full octave band sound frequency algorithms, which incorporate the following physical effects:

- Geometric spreading wave divergence;
- Reflection from surfaces;
- Atmospheric absorption at 10 degrees Celsius and 70 percent relative humidity;
- Screening by topography and obstacles;
- The effects of terrain features including relative elevations of noise sources;
- Sound power levels from stationary and mobile sources;
- The locations of noise-sensitive land use types;
- Intervening objects including buildings and barrier walls to the extent included in the design;
- Ground effects due to areas of pavement and unpaved ground;
- Sound power at multiple frequencies;
- Source directivity factors;
- Multiple noise sources and source type (point, area, and/or line); and
- Averaging predicted sound levels over a given time.

Cadna-A allows for three basic types of sound sources to be introduced into the model: point, line, and area sources. Each noise-radiating element was modeled based on its noise emission pattern. Larger dimensional sources such as the transformers and inverters were modeled as area sources. Off-site topography was obtained using the publicly available U.S. Geological Survey digital elevation data. A default ground attenuation factor of 0.5 was assumed for off-site sound propagation over acoustically "mixed" ground. A ground attenuation factor of 0.0 for a reflective surface was assumed for on-site areas.

5.2 Input to Noise Prediction Model

The Project's general arrangement was reviewed and directly imported into the acoustic model so that on-site equipment could be easily identified; buildings and structures could be added; and sound emission data could be assigned to sources as appropriate. Figure 2 shows the equipment layout based on the Project site layout supplied by the Applicant.

The primary noise sources during operations are the PV inverters. It is expected that all equipment would operate during the daytime period and nighttime period. Reference sound power levels input to Cadna-A were provided by equipment manufacturers based on information contained in reference documents or developed using empirical methods. The source levels used in the predictive modeling are based on estimated sound power levels that are generally deemed to be conservative. The projected operational noise levels are based on Applicant-supplied sound power level data for the major sources of equipment. Table 5 summarizes the equipment sound power level data used as inputs to the acoustic modeling analysis; however, the tracking motors were not incorporated due to their low sound power level. With a sound power level of 53 dBA, at a distance of 10 feet the resultant sound pressure level would be less than 32 dBA. Even though the Project incorporates a multitude of tracking motors, their cumulative sound contribution is not expected to materially affect offsite received sound levels. The reason is due to both the low-level sound emissions of tracking motors and the logarithmic relationship between additive sound sources. Because the decibel scale is a logarithmic scale, two different sound sources combining cannot simply be added together arithmetically. For instance, two sound sources with a sound power level of 50 dBA result in a combined sound power level of 53 dBA, as opposed to 100 dBA.

Table 5. Modeled Octave Band Sound Power Level for Project Equipment

Sound Source	Sound Power Level (L_w) by Octave Band Frequency (Hz) dBA									Broadband Level
	31.5	63	125	250	500	1k	2k	4k	8k	dBA
PV Inverter	102	95	100	94	90	90	90	97	88	100
Tracking Motor	36	36	40	44	48	48	44	40	36	53

5.3 Noise Prediction Model Results

Broadband (dBA) sound pressure levels were calculated for expected normal Project operation assuming that all components identified previously are operating continuously and concurrently at the representative manufacturer-rated sound levels. The sound energy was then summed and weighted to determine the L_{eq} at a point of reception. A sound contour plot displaying broadband (dBA) sound levels (L_{eq}) presented as color-coded isopleths is provided in Figure 2. The sound contours are graphical representations of the cumulative noise associated with full operation of the equipment and show how operational noise will be distributed over the surrounding area. Results from acoustic modeling are projected 5-dBA increments on scaled Project aerial imagery. Results are independent of the existing acoustic environment, representative of Project-generated sound levels only. The sound contour isopleths are plotted at a height of 1.52 m above ground level, about the height of the ears of a standing person. The isopleths are analogous to elevation contours on a topographic map, i.e., the noise contours are continuous lines of equal noise level around some source, or sources, of noise.

Modeling results show that noise levels resulting from Project operations will be below the threshold of 48.6 dBA, which corresponds to the EPA environmental noise guideline of 55 dBA L_{dn}. The highest predicted sound level is 43 dBA at a cemetery located within the Project boundary. It was included as a NSR in the acoustic modeling analysis to be mindful of the significance of a quiet environment. Besides the cemetery, the highest predicted sound level was at a NSR is 40 dBA. Tabulated modeling results are provided in Table A-2 in Appendix A showing the maximum received sound levels at each NSR.

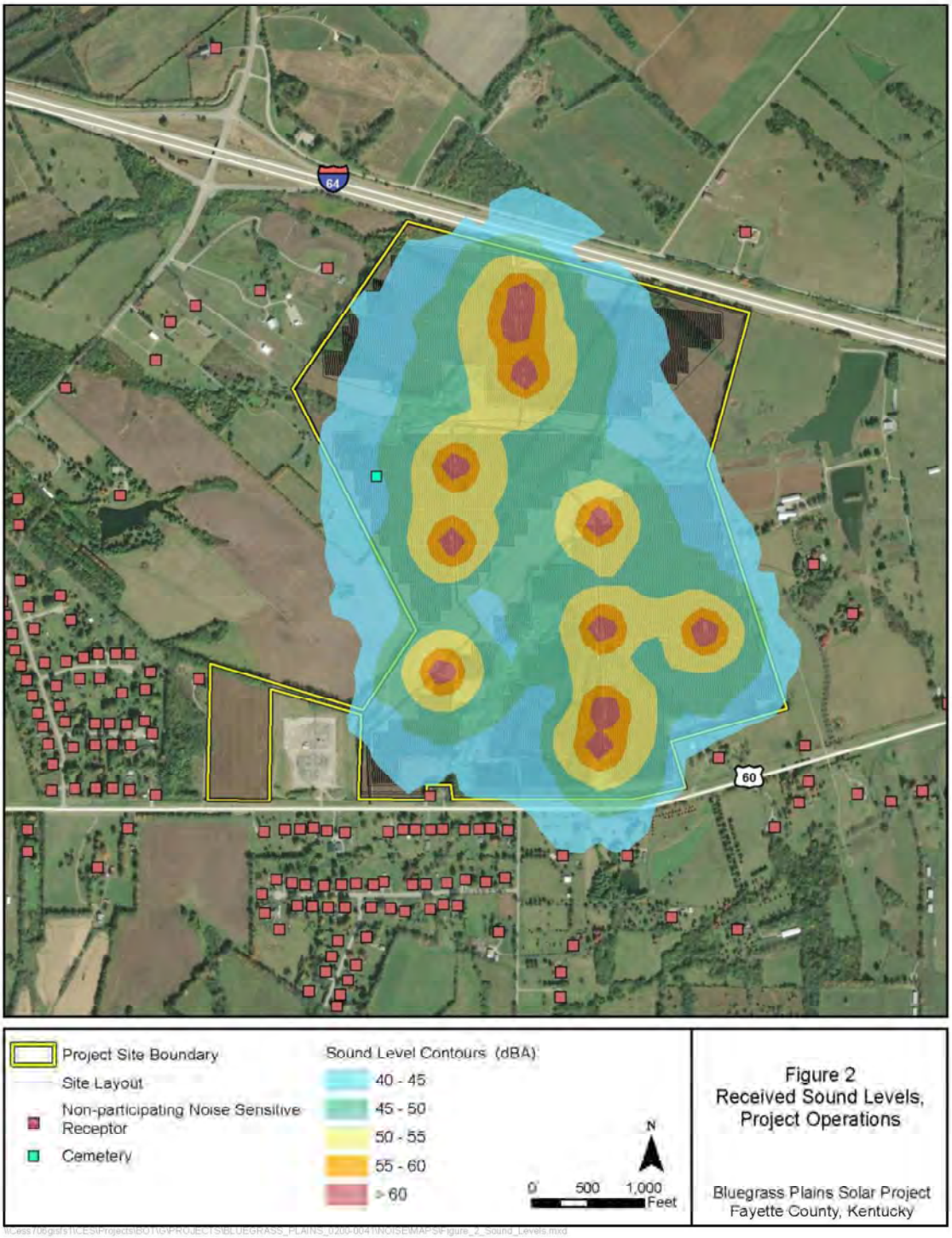

Figure 2. Project Operation, Received Sound Levels

6.0 CONCLUSIONS

Tetra Tech completed a detailed acoustic assessment of the proposed Bluegrass Plains Solar Project, located in Fayette County, Kentucky. The assessment included an evaluation of Project sound contribution to the surrounding area during construction and operation phases.

The construction noise assessment indicated that construction noise will be periodically audible at offsite locations; however, that noise will be temporary and minimized to the extent practicable through implementation of best management practices and noise mitigation measures as identified in section 4.2.

Operational sound levels were modeled and evaluated at NSRs in the Project area. Anticipated Project sound sources consist of the PV inverters. The results, as shown in Table A-2 and the acoustic model contour isopleths, showed there are no potential exceedances of the 55 dBA L_{dn} EPA noise guideline at any of the identified NSRs, which corresponds to 48.6 dBA L_{eq}. The highest predicted sound level is 43 dBA at a cemetery located within the Project boundary. It was included as a NSR in the acoustic modeling analysis to be mindful of the significance of a quiet environment. Besides the cemetery, the highest predicted sound level was at a NSR is 40 dBA. The EPA guideline limits identified are not legally enforceable requirements but serve as useful guidelines to determine the likelihood of adverse community noise impacts. In conclusion, the Project has been designed to operate in compliance with guideline limits. Acoustic modeling results inclusive of a number of conservative assumptions demonstrate compliance with the EPA guideline limits. Overall, sound emissions associated with the Project are expected to remain at a low level, and consistent with other solar energy facilities of similar size and design sited in the State of Kentucky.

7.0 REFERENCES

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APPENDIX A

Acoustic Modeling Results

Table A-1. Pile Driving Acoustic Modeling Results Summary

NSR ID	Status	UTM Coordinates (m)		Received Sound Level, L_{eq} (dBA)
		Easting	Northing	Maximum
1	Non-Participant	734991	4215397	46
2	Non-Participant	735279	4215483	46
3	Non-Participant	735279	4215440	46
4	Non-Participant	735070	4215371	47
5	Non-Participant	734987	4215341	47
6	Non-Participant	734894	4215190	47
7	Non-Participant	734750	4215225	47
8	Non-Participant	734648	4215359	46
9	Non-Participant	734674	4214915	49
10	Non-Participant	734789	4214783	50
11	Non-Participant	734909	4215100	48
12	Non-Participant	734925	4215026	49
13	Non-Participant	735032	4214781	51
14	Non-Participant	734879	4214464	53
15	Non-Participant	733989	4214116	49
16	Non-Participant	733946	4214077	49
17	Non-Participant	733813	4213993	48
18	Non-Participant	734046	4213795	51
19	Non-Participant	733904	4214019	49
20	Non-Participant	734999	4213802	59
21	Non-Participant	735182	4213863	60
22	Non-Participant	734822	4213761	58
23	Non-Participant	734755	4213718	57
24	Non-Participant	734715	4213612	57
25	Non-Participant	736323	4213962	58
26	Non-Participant	737710	4213802	48
27	Non-Participant	737601	4213658	49
28	Non-Participant	734468	4213536	55
29	Non-Participant	733659	4213418	48
30	Non-Participant	733731	4213406	49
31	Non-Participant	733348	4213460	46
32	Non-Participant	733295	4213375	46
33	Non-Participant	733327	4213517	46
34	Non-Participant	733315	4212898	46
35	Non-Participant	733376	4212958	46
36	Non-Participant	733513	4213214	48
37	Non-Participant	734158	4213202	53

Table A-1. Pile Driving Acoustic Modeling Results Summary

NSR ID	Status	UTM Coordinates (m)		Received Sound Level, L_{eq} (dBA)
		Easting	Northing	Maximum
38	Non-Participant	734168	4213149	53
39	Non-Participant	734338	4213233	54
40	Non-Participant	734341	4213164	55
41	Non-Participant	734618	4213242	57
42	Non-Participant	734330	4212822	54
43	Non-Participant	734322	4212867	54
44	Non-Participant	734307	4212915	54
45	Non-Participant	734295	4212954	54
46	Non-Participant	734275	4212990	54
47	Non-Participant	734272	4213047	54
48	Non-Participant	734345	4213011	55
49	Non-Participant	734366	4212940	55
50	Non-Participant	734454	4212969	55
51	Non-Participant	734483	4212902	56
52	Non-Participant	734383	4212879	55
53	Non-Participant	734346	4212779	54
54	Non-Participant	734412	4212786	55
55	Non-Participant	734470	4212789	55
56	Non-Participant	734517	4212802	56
57	Non-Participant	734557	4212810	55
58	Non-Participant	734607	4212811	57
59	Non-Participant	734644	4212810	57
60	Non-Participant	734701	4212762	57
61	Non-Participant	734363	4212739	54
62	Non-Participant	736508	4213055	61
63	Non-Participant	736615	4212921	59
64	Non-Participant	737594	4212954	50
65	Non-Participant	737652	4212988	49
66	Non-Participant	737872	4212674	47
67	Non-Participant	737441	4212512	50
68	Non-Participant	737413	4212394	50
69	Non-Participant	737251	4212564	52
70	Non-Participant	737299	4212606	52
71	Non-Participant	737080	4212502	53
72	Non-Participant	737285	4212442	51
73	Non-Participant	736985	4212515	54
74	Non-Participant	736875	4212674	56

Table A-1. Pile Driving Acoustic Modeling Results Summary

NSR ID	Status	UTM Coordinates (m)		Received Sound Level, L_{eq} (dBA)
		Easting	Northing	Maximum
75	Non-Participant	736485	4212560	59
76	Non-Participant	736628	4212429	57
77	Non-Participant	736720	4212407	56
78	Non-Participant	736806	4212436	55
79	Non-Participant	736908	4212376	54
80	Non-Participant	736469	4212405	58
81	Non-Participant	736495	4212462	58
82	Non-Participant	736250	4212526	60
83	Non-Participant	735462	4212422	67
84	Non-Participant	734831	4212742	59
85	Non-Participant	734686	4212713	57
86	Non-Participant	734623	4212704	57
87	Non-Participant	734562	4212744	56
88	Non-Participant	734507	4212742	56
89	Non-Participant	734444	4212723	55
90	Non-Participant	734377	4212696	54
91	Non-Participant	734392	4212649	54
92	Non-Participant	734407	4212612	54
93	Non-Participant	734421	4212565	54
94	Non-Participant	734433	4212509	54
95	Non-Participant	734431	4212438	54
96	Non-Participant	734494	4212443	54
97	Non-Participant	734489	4212555	55
98	Non-Participant	734467	4212624	55
99	Non-Participant	734451	4212668	55
100	Non-Participant	734549	4212620	56
101	Non-Participant	734588	4212620	56
102	Non-Participant	734635	4212618	56
103	Non-Participant	734684	4212626	57
104	Non-Participant	734704	4212593	57
105	Non-Participant	734646	4212562	56
106	Non-Participant	734597	4212563	56
107	Non-Participant	734549	4212562	55
108	Non-Participant	734550	4212443	55
109	Non-Participant	734597	4212444	55
110	Non-Participant	734643	4212439	60
111	Non-Participant	734715	4212425	61

Table A-1. Pile Driving Acoustic Modeling Results Summary

NSR ID	Status	UTM Coordinates (m)		Received Sound Level, L_{eq} (dBA)
		Easting	Northing	Maximum
112	Non-Participant	734021	4212468	51
113	Non-Participant	733668	4212430	48
114	Non-Participant	733586	4212437	47
115	Non-Participant	733543	4212439	47
116	Non-Participant	733510	4212436	47
117	Non-Participant	733442	4212435	46
118	Non-Participant	733381	4212440	46
119	Non-Participant	733412	4212501	46
120	Non-Participant	733491	4212585	47
121	Non-Participant	733514	4212618	47
122	Non-Participant	733549	4212646	47
123	Non-Participant	733577	4212625	48
124	Non-Participant	733611	4212588	48
125	Non-Participant	733580	4212515	47
126	Non-Participant	733233	4212785	45
127	Non-Participant	733318	4212209	45
128	Non-Participant	733768	4212280	48
129	Non-Participant	734365	4212331	53
130	Non-Participant	734195	4212325	51
131	Non-Participant	734556	4212228	54
132	Non-Participant	734639	4212334	55
133	Non-Participant	734365	4212271	52
134	Non-Participant	735010	4212325	62
135	Non-Participant	735066	4212331	63
136	Non-Participant	735109	4212333	63
137	Non-Participant	735145	4212335	59
138	Non-Participant	735181	4212328	59
139	Non-Participant	735230	4212323	59
140	Non-Participant	735348	4212325	65
141	Non-Participant	735389	4212331	65
142	Non-Participant	735423	4212331	65
143	Non-Participant	735463	4212332	65
144	Non-Participant	735497	4212332	65
145	Non-Participant	735556	4212331	66
146	Non-Participant	735559	4212194	59
147	Non-Participant	735508	4212186	64
148	Non-Participant	735451	4212181	59

Table A-1. Pile Driving Acoustic Modeling Results Summary

NSR ID	Status	UTM Coordinates (m)		Received Sound Level, L_{eq} (dBA)
		Easting	Northing	Maximum
149	Non-Participant	735415	4212180	59
150	Non-Participant	735335	4212188	63
151	Non-Participant	735308	4212181	63
152	Non-Participant	735261	4212183	63
153	Non-Participant	735220	4212180	62
154	Non-Participant	735173	4212177	62
155	Non-Participant	735123	4212181	57
156	Non-Participant	735086	4212185	57
157	Non-Participant	735043	4212194	62
158	Non-Participant	735003	4212155	56
159	Non-Participant	735011	4212102	61
160	Non-Participant	735100	4212123	61
161	Non-Participant	735052	4212058	60
162	Non-Participant	735141	4212121	61
163	Non-Participant	735184	4212118	62
164	Non-Participant	735231	4212118	62
165	Non-Participant	735302	4212119	62
166	Non-Participant	735354	4212116	62
167	Non-Participant	735394	4212108	62
168	Non-Participant	735463	4212114	63
169	Non-Participant	735498	4212126	63
170	Non-Participant	735537	4212123	63
171	Non-Participant	735211	4212027	61
172	Non-Participant	735194	4211985	60
173	Non-Participant	735179	4211944	55
174	Non-Participant	735289	4212038	61
175	Non-Participant	735261	4211961	60
176	Non-Participant	735239	4211919	55
177	Non-Participant	735132	4211889	54
178	Non-Participant	735208	4211848	54
179	Non-Participant	735218	4211880	55
180	Non-Participant	735595	4212332	66
181	Non-Participant	735628	4212334	66
182	Non-Participant	735674	4212330	66
183	Non-Participant	735615	4212189	59
184	Non-Participant	735667	4212199	59
185	Non-Participant	735649	4212052	58

Table A-1. Pile Driving Acoustic Modeling Results Summary

NSR ID	Status	UTM Coordinates (m)		Received Sound Level, L_{eq} (dBA)
		Easting	Northing	Maximum
186	Non-Participant	735819	4211942	56
187	Non-Participant	735853	4212016	57
188	Non-Participant	735824	4212259	60
189	Non-Participant	736001	4212260	60
190	Non-Participant	736121	4212091	57
191	Non-Participant	736301	4212059	56
192	Non-Participant	736402	4212337	58
193	Non-Participant	737279	4212277	51
194	Non-Participant	737542	4212252	49
195	Non-Participant	736369	4211738	53
196	Non-Participant	736114	4211560	52
197	Non-Participant	735989	4211580	53
198	Non-Participant	735940	4211717	54
199	Non-Participant	735817	4211873	56
200	Non-Participant	735783	4211552	52
201	Non-Participant	735756	4211468	52
202	Non-Participant	735556	4211600	58
203	Non-Participant	735251	4210974	52
204	Non-Participant	735755	4211332	51
205	Non-Participant	735751	4211284	50
206	Non-Participant	735820	4210930	47
207	Non-Participant	735254	4210945	52
208	Non-Participant	734974	4210894	46
209	Non-Participant	734974	4210869	46
210	Cemetery/Non-Participant	735315	4213295	67

Table A-2. Operational Acoustic Modeling Results Summary

NSR ID	Status	UTM Coordinates (m)		Received Sound Level, L_{eq} (dBA)
		Easting	Northing	Maximum
1	Non-Participant	734991	4215397	21
2	Non-Participant	735279	4215483	20
3	Non-Participant	735279	4215440	20
4	Non-Participant	735070	4215371	20
5	Non-Participant	734987	4215341	21
6	Non-Participant	734894	4215190	22
7	Non-Participant	734750	4215225	21
8	Non-Participant	734648	4215359	20
9	Non-Participant	734674	4214915	21
10	Non-Participant	734789	4214783	22
11	Non-Participant	734909	4215100	23
12	Non-Participant	734925	4215026	23
13	Non-Participant	735032	4214781	23
14	Non-Participant	734879	4214464	28
15	Non-Participant	733989	4214116	22
16	Non-Participant	733946	4214077	23
17	Non-Participant	733813	4213993	23
18	Non-Participant	734046	4213795	24
19	Non-Participant	733904	4214019	23
20	Non-Participant	734999	4213802	34
21	Non-Participant	735182	4213863	37
22	Non-Participant	734822	4213761	32
23	Non-Participant	734755	4213718	31
24	Non-Participant	734715	4213612	30
25	Non-Participant	736323	4213962	32
26	Non-Participant	737710	4213802	22
27	Non-Participant	737601	4213658	22
28	Non-Participant	734468	4213536	27
29	Non-Participant	733659	4213418	19
30	Non-Participant	733731	4213406	23
31	Non-Participant	733348	4213460	18
32	Non-Participant	733295	4213375	17
33	Non-Participant	733327	4213517	17
34	Non-Participant	733315	4212898	20
35	Non-Participant	733376	4212958	21
36	Non-Participant	733513	4213214	22
37	Non-Participant	734158	4213202	23

Table A-2. Operational Acoustic Modeling Results Summary

NSR ID	Status	UTM Coordinates (m)		Received Sound Level, L_{eq} (dBA)
		Easting	Northing	Maximum
38	Non-Participant	734168	4213149	23
39	Non-Participant	734338	4213233	24
40	Non-Participant	734341	4213164	24
41	Non-Participant	734618	4213242	29
42	Non-Participant	734330	4212822	24
43	Non-Participant	734322	4212867	24
44	Non-Participant	734307	4212915	24
45	Non-Participant	734295	4212954	24
46	Non-Participant	734275	4212990	24
47	Non-Participant	734272	4213047	24
48	Non-Participant	734345	4213011	24
49	Non-Participant	734366	4212940	25
50	Non-Participant	734454	4212969	25
51	Non-Participant	734483	4212902	25
52	Non-Participant	734383	4212879	26
53	Non-Participant	734346	4212779	24
54	Non-Participant	734412	4212786	26
55	Non-Participant	734470	4212789	26
56	Non-Participant	734517	4212802	26
57	Non-Participant	734557	4212810	25
58	Non-Participant	734607	4212811	27
59	Non-Participant	734644	4212810	27
60	Non-Participant	734701	4212762	27
61	Non-Participant	734363	4212739	24
62	Non-Participant	736508	4213055	37
63	Non-Participant	736615	4212921	36
64	Non-Participant	737594	4212954	24
65	Non-Participant	737652	4212988	23
66	Non-Participant	737872	4212674	20
67	Non-Participant	737441	4212512	22
68	Non-Participant	737413	4212394	23
69	Non-Participant	737251	4212564	24
70	Non-Participant	737299	4212606	25
71	Non-Participant	737080	4212502	25
72	Non-Participant	737285	4212442	24
73	Non-Participant	736985	4212515	28
74	Non-Participant	736875	4212674	30

Table A-2. Operational Acoustic Modeling Results Summary

NSR ID	Status	UTM Coordinates (m)		Received Sound Level, L_{eq} (dBA)
		Easting	Northing	Maximum
75	Non-Participant	736485	4212560	36
76	Non-Participant	736628	4212429	32
77	Non-Participant	736720	4212407	29
78	Non-Participant	736806	4212436	28
79	Non-Participant	736908	4212376	28
80	Non-Participant	736469	4212405	35
81	Non-Participant	736495	4212462	35
82	Non-Participant	736250	4212526	37
83	Non-Participant	735462	4212422	39
84	Non-Participant	734831	4212742	31
85	Non-Participant	734686	4212713	27
86	Non-Participant	734623	4212704	26
87	Non-Participant	734562	4212744	26
88	Non-Participant	734507	4212742	26
89	Non-Participant	734444	4212723	26
90	Non-Participant	734377	4212696	25
91	Non-Participant	734392	4212649	26
92	Non-Participant	734407	4212612	26
93	Non-Participant	734421	4212565	26
94	Non-Participant	734433	4212509	25
95	Non-Participant	734431	4212438	25
96	Non-Participant	734494	4212443	25
97	Non-Participant	734489	4212555	26
98	Non-Participant	734467	4212624	26
99	Non-Participant	734451	4212668	26
100	Non-Participant	734549	4212620	26
101	Non-Participant	734588	4212620	26
102	Non-Participant	734635	4212618	27
103	Non-Participant	734684	4212626	27
104	Non-Participant	734704	4212593	27
105	Non-Participant	734646	4212562	27
106	Non-Participant	734597	4212563	26
107	Non-Participant	734549	4212562	26
108	Non-Participant	734550	4212443	25
109	Non-Participant	734597	4212444	26
110	Non-Participant	734643	4212439	28
111	Non-Participant	734715	4212425	29

Table A-2. Operational Acoustic Modeling Results Summary

NSR ID	Status	UTM Coordinates (m)		Received Sound Level, L_{eq} (dBA)
		Easting	Northing	Maximum
112	Non-Participant	734021	4212468	23
113	Non-Participant	733668	4212430	20
114	Non-Participant	733586	4212437	20
115	Non-Participant	733543	4212439	20
116	Non-Participant	733510	4212436	20
117	Non-Participant	733442	4212435	20
118	Non-Participant	733381	4212440	20
119	Non-Participant	733412	4212501	20
120	Non-Participant	733491	4212585	20
121	Non-Participant	733514	4212618	20
122	Non-Participant	733549	4212646	20
123	Non-Participant	733577	4212625	19
124	Non-Participant	733611	4212588	19
125	Non-Participant	733580	4212515	19
126	Non-Participant	733233	4212785	20
127	Non-Participant	733318	4212209	19
128	Non-Participant	733768	4212280	21
129	Non-Participant	734365	4212331	23
130	Non-Participant	734195	4212325	23
131	Non-Participant	734556	4212228	24
132	Non-Participant	734639	4212334	25
133	Non-Participant	734365	4212271	23
134	Non-Participant	735010	4212325	31
135	Non-Participant	735066	4212331	31
136	Non-Participant	735109	4212333	32
137	Non-Participant	735145	4212335	32
138	Non-Participant	735181	4212328	32
139	Non-Participant	735230	4212323	32
140	Non-Participant	735348	4212325	34
141	Non-Participant	735389	4212331	36
142	Non-Participant	735423	4212331	36
143	Non-Participant	735463	4212332	37
144	Non-Participant	735497	4212332	37
145	Non-Participant	735556	4212331	37
146	Non-Participant	735559	4212194	34
147	Non-Participant	735508	4212186	33
148	Non-Participant	735451	4212181	31

Table A-2. Operational Acoustic Modeling Results Summary

NSR ID	Status	UTM Coordinates (m)		Received Sound Level, L_{eq} (dBA)
		Easting	Northing	Maximum
149	Non-Participant	735415	4212180	31
150	Non-Participant	735335	4212188	33
151	Non-Participant	735308	4212181	33
152	Non-Participant	735261	4212183	31
153	Non-Participant	735220	4212180	31
154	Non-Participant	735173	4212177	31
155	Non-Participant	735123	4212181	30
156	Non-Participant	735086	4212185	30
157	Non-Participant	735043	4212194	30
158	Non-Participant	735003	4212155	29
159	Non-Participant	735011	4212102	29
160	Non-Participant	735100	4212123	30
161	Non-Participant	735052	4212058	29
162	Non-Participant	735141	4212121	30
163	Non-Participant	735184	4212118	30
164	Non-Participant	735231	4212118	32
165	Non-Participant	735302	4212119	32
166	Non-Participant	735354	4212116	32
167	Non-Participant	735394	4212108	33
168	Non-Participant	735463	4212114	33
169	Non-Participant	735498	4212126	33
170	Non-Participant	735537	4212123	33
171	Non-Participant	735211	4212027	30
172	Non-Participant	735194	4211985	29
173	Non-Participant	735179	4211944	27
174	Non-Participant	735289	4212038	31
175	Non-Participant	735261	4211961	30
176	Non-Participant	735239	4211919	27
177	Non-Participant	735132	4211889	26
178	Non-Participant	735208	4211848	26
179	Non-Participant	735218	4211880	27
180	Non-Participant	735595	4212332	37
181	Non-Participant	735628	4212334	37
182	Non-Participant	735674	4212330	37
183	Non-Participant	735615	4212189	34
184	Non-Participant	735667	4212199	35
185	Non-Participant	735649	4212052	32

Table A-2. Operational Acoustic Modeling Results Summary

NSR ID	Status	UTM Coordinates (m)		Received Sound Level, L_{eq} (dBA)
		Easting	Northing	Maximum
186	Non-Participant	735819	4211942	30
187	Non-Participant	735853	4212016	34
188	Non-Participant	735824	4212259	40
189	Non-Participant	736001	4212260	40
190	Non-Participant	736121	4212091	35
191	Non-Participant	736301	4212059	31
192	Non-Participant	736402	4212337	34
193	Non-Participant	737279	4212277	25
194	Non-Participant	737542	4212252	21
195	Non-Participant	736369	4211738	29
196	Non-Participant	736114	4211560	28
197	Non-Participant	735989	4211580	29
198	Non-Participant	735940	4211717	30
199	Non-Participant	735817	4211873	29
200	Non-Participant	735783	4211552	26
201	Non-Participant	735756	4211468	26
202	Non-Participant	735556	4211600	27
203	Non-Participant	735251	4210974	22
204	Non-Participant	735755	4211332	25
205	Non-Participant	735751	4211284	25
206	Non-Participant	735820	4210930	20
207	Non-Participant	735254	4210945	22
208	Non-Participant	734974	4210894	18
209	Non-Participant	734974	4210869	18
210	Cemetery/Non-Participant	735315	4213295	43

APPENDIX E: TRAFFIC AND DUST STUDY

Transportation Assessment Report for the Bluegrass Plains Solar Project

Fayette County, Kentucky

April 2024

Prepared for:

East Kentucky Power Cooperative, Inc.

Prepared by:

Tetra Tech, Inc.
424 Lewis Hargett Circle, Suite 110
Lexington, Kentucky 40503

TETRA TECH

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ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ADT	average daily traffic
HCM	Highway Capacity Manual, 7th Edition
HCS7	Highway Capacity Software version 2023
ISD	Intersection Sight Distance
KYTC	Kentucky Transportation Cabinet
MW	megawatts
O&M	operations and maintenance
Project Area	The 386± acres of privately-owned land where the proposed Project is located
Project	Bluegrass Plains Solar Project
SSD	Stopping Sight Distance
vpd	vehicles per day
vph	vehicles per hour

1.0 EXECUTIVE SUMMARY

East Kentucky Power Cooperative, Inc. (EKPC) proposes to construct and operate the Bluegrass Plains Solar Project (Project), a solar photovoltaic power generation facility which will consist of an approximate 40-megawatt (MW) ground-mounted solar photovoltaic system and related interconnection and ancillary facilities located in Fayette County, Kentucky.

Tetra Tech has prepared the following transportation assessment for the Project. The Project area is comprised of approximately 386± acres and currently supports agricultural land. Access to the site parcels is provided via one agricultural access way on Winchester Road which is also known as US Route 60 (US 60). As part of the Project, one driveway will be constructed on the Project roads to provide temporary construction access and permanent operations and maintenance (O&M) access to the site from the public roadway network.

As part of this assessment, Tetra Tech developed vehicle trip generation estimates associated with the Project's anticipated peak construction workforce levels and reviewed them against existing traffic volumes and public transportation in the vicinity of the Project area. An evaluation of roadway capacity was conducted for US 60, which is the primary roadway serving the site. The available sight distances at the proposed site driveway were evaluated to ensure that minimum sight distance criteria as defined by American Association of State Highway and Transportation Officials (AASHTO)[1] is met.

During the peak of construction, the Project is anticipated to generate approximately 178 vehicle trips on a typical weekday day with 75 vehicle trips occurring during the weekday morning and weekday evening commuter peak hours. These estimates conservatively assume that all construction workers would arrive within the same hour and depart within the same hour.

Peak construction activities are currently anticipated to occur for a period of approximately two to three months. US 60 adjacent to the site is anticipated to have ample capacity to accommodate the temporary increase in daily and peak hour traffic during the peak construction activities and, by extension, the duration of construction. A review of available sight distance at the proposed site driveway indicate that adequate sight lines are anticipated to be provided.

2.0 PROJECT DESCRIPTION

The Project calls for the construction of a proposed approximate 40-megawatt solar photovoltaic power generation facility located on Winchester Road (US 60) in Fayette County, Kentucky. The Project area location in the context of the surrounding area roadways is shown in Figure 1. There are no rail lines in the vicinity of the Project site.

The Project parcels currently support agricultural uses and access to the site is currently provided via one agricultural access way on US 60. As part of the Project, one driveway will be constructed on US

[1] *A Policy on Geometric Design of Highways and Streets, 7th Edition* published by the American Association of State Highway and Transportation Officials (2018).

60 to provide temporary construction access and permanent O&M access to the site from the public and private roadway network. The existing structures on-site will be removed as part of this Project.

2.1 Existing Traffic Volumes

Tetra Tech reviewed available Kentucky Transportation Cabinet (KYTC) traffic volume data[2] to establish historical daily traffic volumes in the vicinity of the Project area. The primary roadways leading to the site are State-maintained and include US 60, Kentucky Route 859 (KY 89) and Kentucky Route 1923 (KY 1923). KYTC classifies US 60 as a rural minor arterial roadway, KY 859 as a rural major collector roadway and KY 1923 as a rural local roadway.

Based on the most recent publicly available data from the KYTC Traffic Reporting System, the estimated Annual Average Daily Traffic (AADT) volume on the roadways serving the site in vehicles per day (vpd) are listed below. Traffic volume data that was used to support this assessment is provided in the Attachments.

- US 60 – 7,146 vpd (2021)
- KY 859 – 4,711 vpd (2021)
- KY 1923 – 955 (2020)

2.2 Vehicle Trip Generation

The Project will consist of three phases: construction, O&M, and decommissioning. The highest volume of site-related trips will occur during the peak construction phase of the Project. Therefore, the trip generation for the peak construction phase workforce levels were estimated for this assessment, along with an assessment of post-construction conditions.

Construction. Vehicle trip generation estimates were developed based on anticipated construction operations for the Project. Construction of the proposed solar facility is expected to include grading, panel installation, inspections, and equipment deliveries. It is anticipated that, at peak operations, the site could experience construction workforce levels of up to 75 construction workers at one time. Peak construction activities are currently anticipated to occur for a period of approximately two to three months. Construction hours of operation are assumed to generally be 6 AM to 7 PM with construction workers arriving prior to 6 AM and departing after 7 PM. Since the peak hours of the adjacent street traffic are expected to occur sometime during the peak commuting periods of 7 AM to 9 AM and 4 PM to 6 PM, it is expected that the majority of construction workers would arrive and depart the site outside of the typical weekday morning and weekday evening commuter peak hours of the adjacent street.

However, to present a conservative assessment of potential traffic increases associated with the Project, it is assumed that all construction workers would arrive during the weekday morning peak hour and depart during the weekday evening peak hour. The supporting trip generation calculations and assumptions for the proposed Project's peak construction workforce levels are provided in Appendix B.

[2] Kentucky Transportation Cabinet Traffic Count Database, https://maps.kytc.ky.gov/trafficcounts/ (February 2024)

Fixed route public transportation service is currently provided in Fayette County by the Lexington Transit Authority (Lextran). However, there is currently no service in the site vicinity that could be used by the Project's construction workforce with the closest Lextran bus stop located approximately 6 miles from the Project parcels. Public transportation information is provided in Appendix C. It is anticipated, however, that some construction workers would arrive and depart the site together (carpooling). For purposes of this assessment, it was assumed that 10 percent of the construction workers will carpool to travel to/from the site with two workers per vehicle. Table 1 presents a summary of the trip generation estimates for the proposed Project's peak construction workforce activities.

Table 1 Trip Generation Summary – Peak Construction Period

	Project Trips			
Time Period/ Direction	**Workforce Trips[1]**	**Non-Heavy Vehicle Deliveries[2]**	**Heavy Vehicles[3]**	**Total**
Weekday AM Peak Hour				
Enter	71	1	1	73
Exit	0	1	1	2
Total	**71**	**2**	**2**	**75**
Weekday PM Peak Hour				
Enter	0	1	1	2
Exit	71	1	1	73
Total	**71**	**2**	**2**	**75**
Weekday Daily				
Enter	79	5	5	89
Exit	79	5	5	89
Total	**158**	**10**	**10**	**178**

1) Assumed 75 construction workers per day. Conservatively assumed trips overlap with adjacent street peaks.
2) Assumed 5 deliveries per day distributed evenly throughout day.
3) Assumed 5 deliveries per day distributed evenly throughout day.

As shown in Table 1, the peak construction activity for the proposed solar facility is expected to generate 178 new vehicle trips (89 entering and 89 exiting) on a typical weekday, with approximately 75 new vehicle trips (73 entering and 2 exiting) during the weekday morning peak hour and 75 new vehicle trips (2 entering and 73 exiting) during the weekday evening peak hour. As discussed in more detail in the following section, the adjacent roadways are anticipated to have ample capacity to accommodate the temporary increase in daily and peak hour traffic.

Post-Construction Conditions. Routine post-construction O&M activities at the site are not anticipated to result in a measurable increase in vehicle traffic. The number of maintenance workers traveling to the site is anticipated to be low and impacts to local traffic are not expected: the

proposed solar facility will be unmanned during routine O&M and would only be inspected periodically. Therefore, the site is not expected to result in a noticeable increase to existing traffic under typical O&M conditions. Impacts resulting from decommissioning of the Project are expected to be similar to or less than those experienced during construction.

3.0 Roadway Capacity

Tetra Tech conducted a capacity analysis of the critical roadway serving the site (US 60). The analysis was conducted using Highway Capacity Software (HCS2023) which uses Highway Capacity Manual (HCM) 7th Edition methodology for two lane highways. The analysis provides a level of service (LOS) designation based on the calculated follower density (followers/mile/lane) for the roadway segment analyzed. LOS results are given in letter grade designations from LOS A through LOS F. An LOS of D or better is typically considered acceptable. LOS E and LOS F indicate that a roadway segment may experience significant delays and congestion.

Based on KYTC traffic volume data, US 60 adjacent to the site experiences weekday peak hour flows of approximately 440 vehicles per hour (vph) in the dominant travel direction. Traffic volumes in the vicinity of site have generally experienced negligible growth over the most recent (pre-pandemic) 10 years of data available. Therefore, it was assumed that US 60 would experience negligible growth from existing conditions through the Project's construction period.

While the site can be accessed from either direction on US 60, it was assumed that all of the site trips (73 trips in the dominant travel direction) would be applied to the same roadway segment and travel direction to present a conservative analysis. Furthermore, it is expected that the majority of peak construction trips will occur outside of the peak hours of the adjacent street traffic resulting in a conservative analysis. Only the peak construction period was analyzed as it is the Project phase that is anticipated to have the highest trip generation activity. However, the peak construction phase is only anticipated to occur over a two- to three-month period, with the remaining construction activity anticipated to experience fewer vehicle trips.

The HCS two-lane highway analysis results show that US 60 is expected to operate with minimal delay at LOS C or better operations during the critical weekday peak hours with Project peak construction traffic. This indicates that US 60 in the site vicinity has ample capacity to support the peak construction activity associated with the proposed Bluegrass Plains Solar Project (typically, LOS D or better operations are considered acceptable). The HCS analysis worksheets are provided in Appendix D. The other primary roadways serving the site (KY 859 and KY 1923) experience daily and peak hour traffic volumes less than US 60 and are therefore also anticipated to have ample capacity to support the temporary increase in traffic associate with the Project's peak construction activity.

4.0 Sight Distance Evaluation

Tetra Tech conducted a desktop evaluation of the available sight distance at the proposed site driveway location on US 60 to ensure that safe and efficient access would be provided to the Project area. The available sight distance was determined based on procedures outlined in *A Policy on*

Geometric Design of Highways and Streets, published by the American Association of State Highway and Transportation Officials (AASHTO) using the proposed site driveway location and publicly available contour data. Tetra Tech then compared the available sight distance at the driveway to the minimum required Stopping Sight Distance (SSD) and minimum-recommended (desirable) Intersection Sight Distances (ISD) for the assumed design speeds of the roadways adjacent to the site.

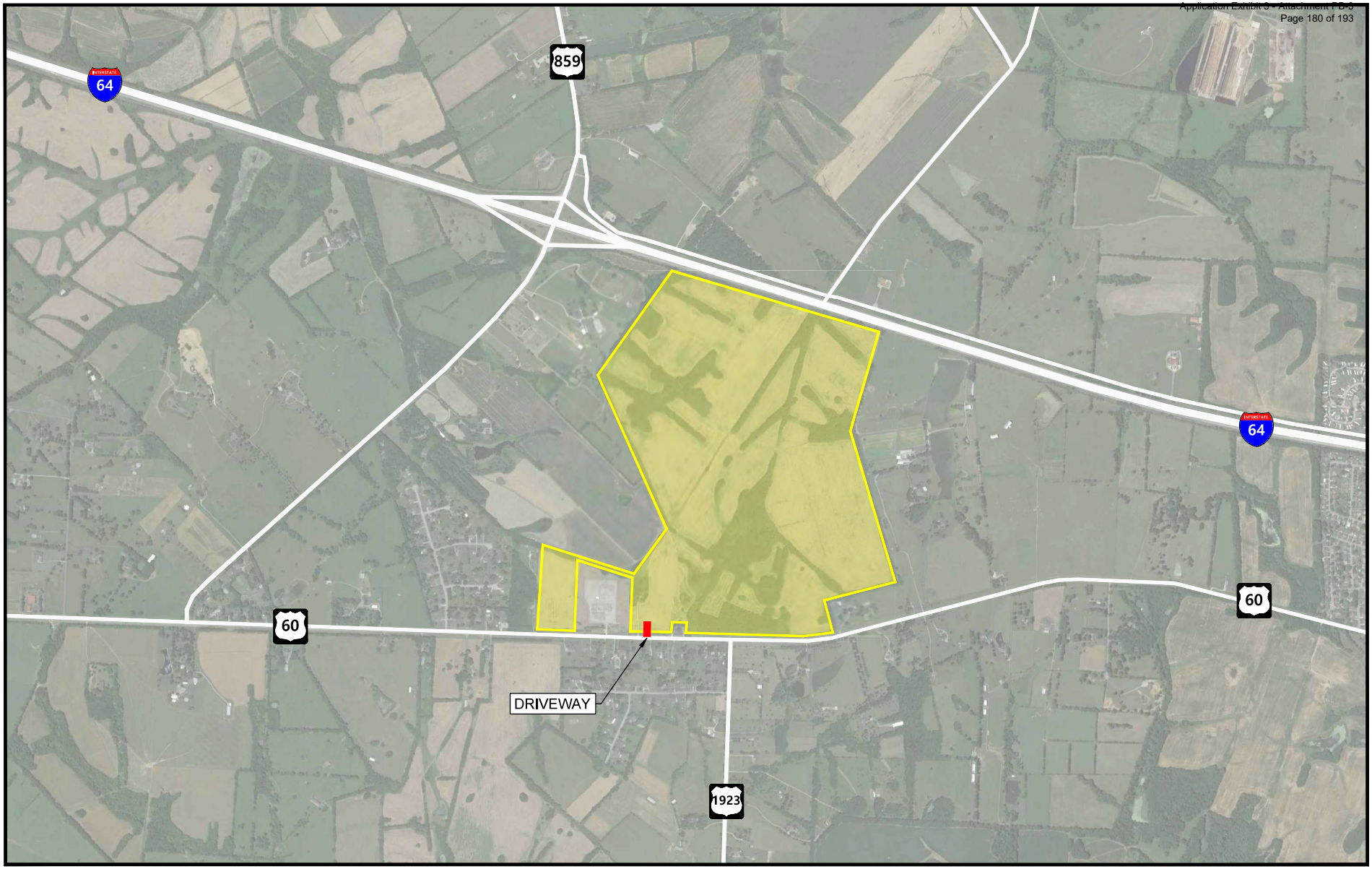
Based on a review of the survey data provided to Tetra Tech, the available sight distances exceed the AASHTO SSD and ISD criteria at the proposed site driveway based on the assumed design speed and assuming the sight triangles will be kept clear of obstructions (e.g., vegetation, fencing, signage, on-site grading, etc.). The stopping sight distance and intersection sight distance calculations, plans and profiles are provided in Appendix E.

5.0 CONCLUSIONS

The peak construction workforce levels for the proposed approximate 40-MW solar photovoltaic power generation facility are expected to generate approximately 75 trips during the weekday morning peak hour and 75 trips during the weekday evening peak hour during peak construction workforce activity. Peak construction activities are currently anticipated to occur for a period of approximately two to three months. The remainder of the construction period is anticipated to generate fewer vehicle trips. These trip generation estimates are conservative as the majority of peak hour trips are likely to occur outside of the typical weekday commuter peak hours of the adjacent street traffic. Capacity analysis of the critical roadway serving the site (US Route 60) indicates ample capacity to support the Project's temporary peak construction operations. The Project will generate even less traffic post construction with only occasional routine inspection and maintenance of the solar panels and supporting equipment.

As part of the Project, one driveway will be constructed US 60 to provide temporary construction access and permanent O&M access to the site from the public and private roadway network. A review of available sight distance at the proposed site driveway indicate that adequate sight lines are anticipated to be provided.

FIGURES



TETRA TECH

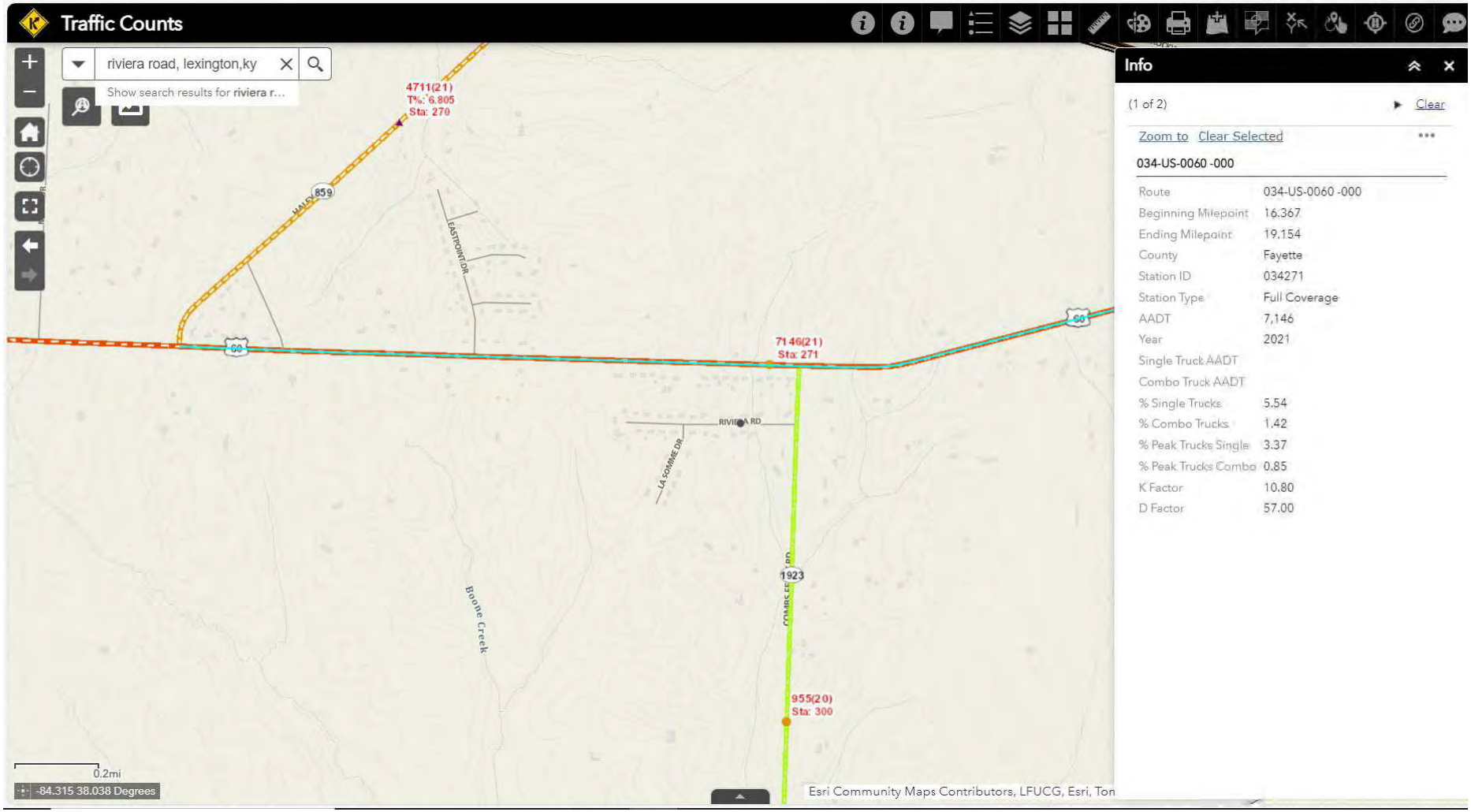
ROADWAYS
PROJECT BOUNDARY
PROJECT DRIVEWAY

Bluegrass Plains Solar
Fayette County, KY

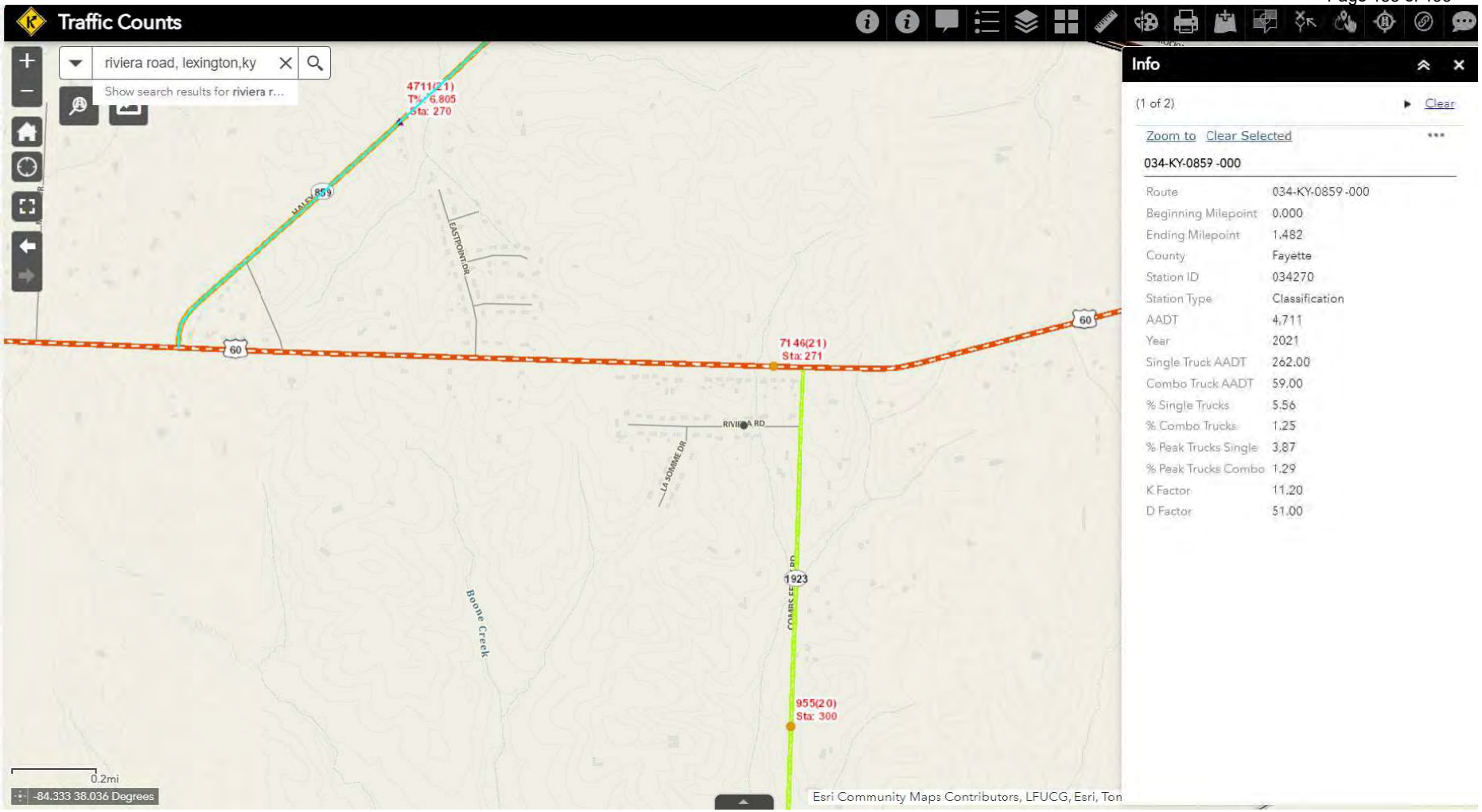
SITE LOCUS

FIGURE
1

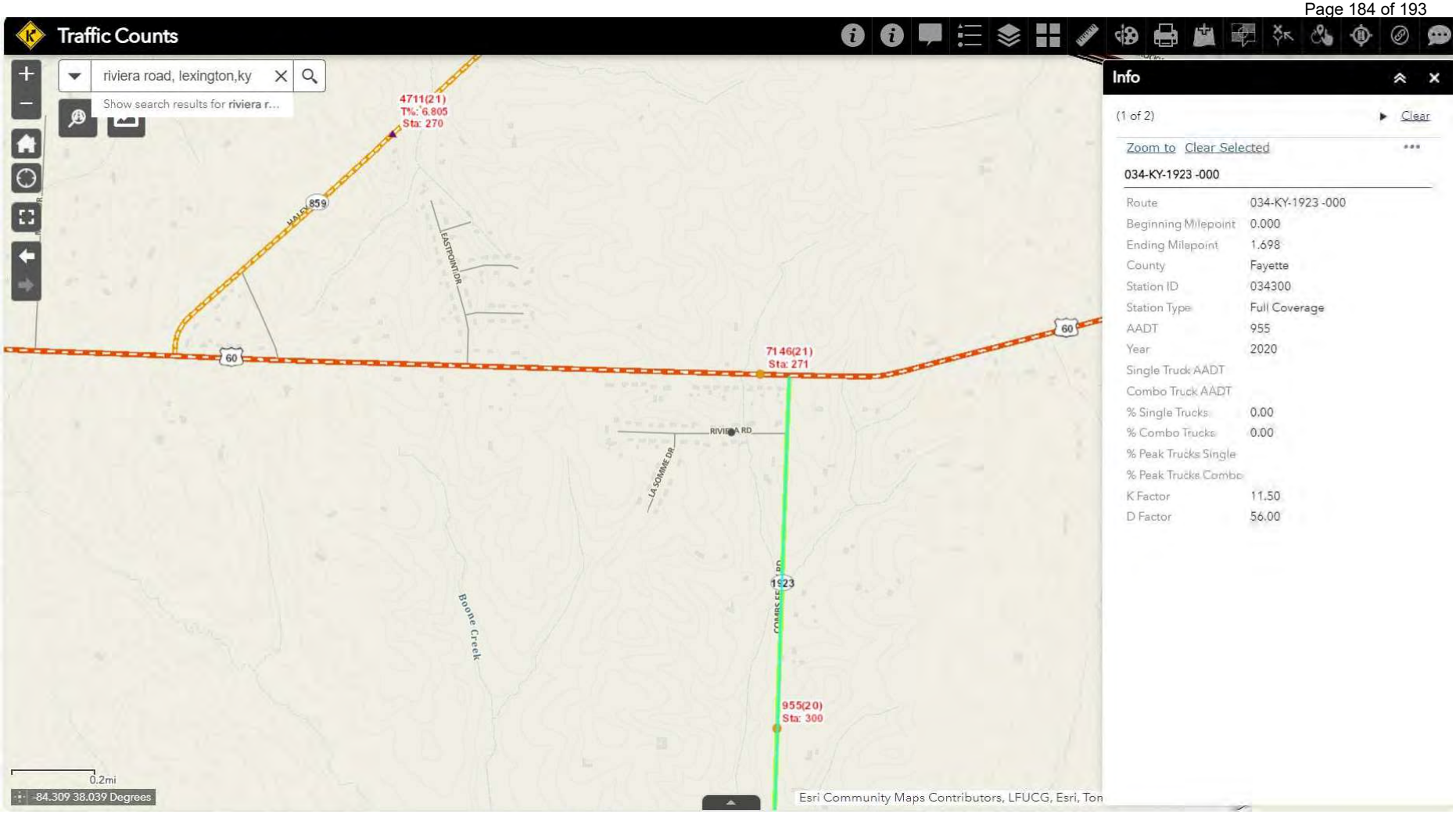
APPENDIX A: KYTC TRAFFIC VOLUME DATA



Source: Kentucky Transportation Cabinet Traffic Volumes database (https://maps.kytc.ky.gov/trafficcounts/)



Source: Kentucky Transportation Cabinet Traffic Volumes database (https://maps.kytc.ky.gov/trafficcounts/)



Source: Kentucky Transportation Cabinet Traffic Volumes database (https://maps.kytc.ky.gov/trafficcounts/)

APPENDIX B: TRIP GENERATION CALCULATIONS

Peak Construction Workforce Trip Generation Calculations and Assumptions

Proposed Bluegrass Plains Solar Facility - Fayette County, KY

	Construction Site Driveway Trips				
	Workforce Trips	Mid-Size Vehicle Deliveries	Semi Tractor Trailer Deliveries	Total	CALCULATIONS
AM Peak Hour:					
Enter	71	1	1	73	(75 workers x 100% arrive x (100% - 10% carpool x 1 vehicle/2 carpool workers)) + (2 Delivery Vehicles arrive) = 73
Exit	0	1	1	2	(75 workers x 0% depart) + (2 Delivery Vehicles depart) = 2
Total	71	2	2	75	
PM Peak Hour:					
Enter	0	1	1	2	(75 workers x 0% arrive) + (2 Delivery Vehicles arrive) = 2
Exit	71	1	1	73	(75 workers x 100% depart x (100% - 10% carpool x 1 vehicle/2 carpool workers)) + (2 Delivery Vehicles depart) = 73
Total	71	2	2	75	
Weekday Daily:					
Enter	79	5	5	89	(75 workers x 100% arrive in AM x (100% - 10% carpool x 1 vehicle/2 carpool workers)) + (75 workers x 10% return from lunch/errands midday) + (10 Delivery Vehicles arrive) = 89
Exit	79	5	5	89	(75 workers x 100% depart in PM x (100% - 10% carpool x 1 vehicle/2 carpool workers)) + (75 workers x 10% leave for lunch/errands midday) + (10 Delivery Vehicles depart) = 89
Total	158	10	10	178	

Construction Assumption	AM Peak Hour	PM Peak Hour	Off-Peak Hours	Notes
# of Peak Workers On-Site at One Time:	75	75	75	Assume 75 workers
% Workers Arriving:	100%	0%	10%	Assumed hours of operation generally between 6am-7pm. Peak Hours of adjacent street traffic assumed to occur between is 7am-9am and 4pm-6pm. Therefore, the majority of construction worker traffic is likely to occur outside of the peak commuting hours of the adjacent street. However, as a conservative measure, assumed 100 percent of workers arrive and depart during the peak hours of the adjacent street traffic. As a conservative measure, assumed half of workforce depart and return once during off-peak times. Assumed none of the workers get picked up/dropped off.
% Workers Departing:	0%	100%	10%	Assumed hours of operation generally between 6am-7pm. Peak Hours of adjacent street traffic assumed to occur between is 7am-9am and 4pm-6pm. Therefore, the majority of construction worker traffic is likely to occur outside of the peak commuting hours of the adjacent street. However, as a conservative measure, assumed 100 percent of workers arrive and depart during the peak hours of the adjacent street traffic. As a conservative measure, assumed half of workforce depart and return once during off-peak times. Assumed none of the workers get picked up/dropped off.
% Carpool[1]:	10.0%	10.0%	0.0%	Assumed 10% carpooling during commuting
Carpool VOR[2]:	2.00	2.00	1.00	Assumed two workers per car during commuting
# Shuttle Trips:	0	0	0	Assumed all workers and deliveries will occur via the construction driveway; no laydown site is proposed
# Semi Truck Deliveries:	1	1	3	Assumed worker hours of operation between 6am and 7pm and assumed 5 deliveries per day and distributed evenly throughout the day.
# Mid-Size Truck Deliveries:	1	1	3	Assumed worker hours of operation between 6am and 7pm and assumed 5 deliveries per day and distributed evenly throughout the day.

[1]Enter % per population - formulas above account for VOR

[2]VOR for carpoolers only

NOTE: Assumed a 40 MW AC facility with approximately 9 months of construction and 2 to 3 months of ramp-up/ramp-down construction activity. Peak construction activity assumed to occur over a 2 to 3 month period.

Source: Tetra Tech

APPENDIX C: PUBLIC TRANSPORTATION INFORMATION

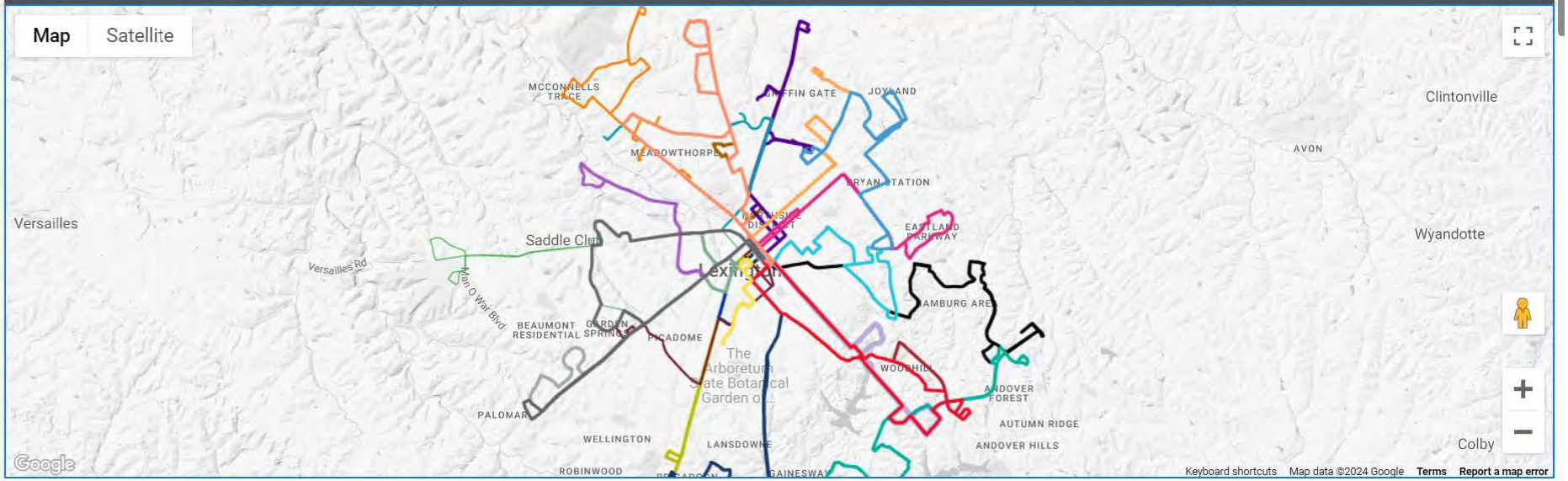
Lextran

CONTACT | TRANSLATE | TRIP PLANNER | BUY A PASS

SCHEDULES & FARES | RIDER GUIDE | ACCESSIBILITY | WORK WITH US | ABOUT LEXTRAN

HOME > SCHEDULES & FARES > BUS ROUTES & SCHEDULES

BUS ROUTES & SCHEDULES



APPENDIX D: HCS WORKSHEETS

HCS Two-Lane Highway Report

Project Information

Analyst	Tetra Tech	Date	February 2024
Agency		Analysis Year	Route 60: Existing plus Project Peak Construction
Jurisdiction	KYTC	Time Analyzed	Weekday Peak Hour
Project Description	Bluegrass Plains Solar Project	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	5280
Lane Width, ft	11	Shoulder Width, ft	1
Speed Limit, mi/h	55	Access Point Density, pts/mi	9.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	558	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.92	Total Trucks, %	5.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.33

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	56.2
Speed Slope Coefficient (m)	3.60532	Speed Power Coefficient (p)	0.41674
PF Slope Coefficient (m)	-1.32738	PF Power Coefficient (p)	0.75101
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	6.0
%Improvement to Percent Followers	0.0	%Improvement to Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	5280	-	-	53.6

Vehicle Results

Average Speed, mi/h	53.6	Percent Followers, %	57.5
Segment Travel Time, minutes	1.12	Follower Density (FD), followers/mi/ln	6.0
Vehicle LOS	C		

Facility Results

T	VMT veh-mi/AP	VHD veh-h/p	Follower Density, followers/ mi/ln	LOS
1	128	0.11	6.0	C

APPENDIX E: SIGHT DISTANCE CALCULATIONS

Location: Driveway 1 on Winchester Road

STOPPING SIGHT DISTANCE:

STOPPING SIGHT DISTANCE FROM WEST

Inputs

V=speed, mph	V=	55	**(Assumed Regulatory Speed Limit based on home density)**
G=percent of grade	G=	-1	**(%)**
t=brake reaction time	t=	2.5	
a=deceleration rate, ft/sec^2	a=	11.2	

Calculations

Brake Reaction Distance	1.47Vt	202	feet
Braking Distance	$V^2/30((a/32.2)+G)$	298.5	feet
Stopping Sight Distance =	$1.47Vt + V^2/30[(a/32.2)+G]$	**505**	**feet**

STOPPING SIGHT DISTANCE FROM EAST

Inputs

V=speed, mph	V=	55	**(Assumed Regulatory Speed Limit based on home density)**
G=percent of grade	G=	1	**(%)**
t=brake reaction time	t=	2.5	
a=deceleration rate, ft/sec^2	a=	11.2	

Calculations

Brake Reaction Distance	1.47Vt	202	feet
Braking Distance	$V^2/30((a/32.2)+G)$	281.8	feet
Stopping Sight Distance =	$1.47Vt + V^2/30[(a/32.2)+G]$	**485**	**feet**

Source: *A Policy on Geometric Design of Highways and Streets, 2018, Seventh Edition,* prepared by AASHTO, p. 3-4 to 3-5.

INTERSECTION SIGHT DISTANCE:

INTERSECTION SIGHT DISTANCE - LEFT FROM MINOR APPROACH - TO THE WEST

Inputs

V= design speed, mph	V=	55	**(Assumed Regulatory Speed Limit based on home density)**
t=time gap for minor road vehicle to enter the major road	t=	7.50	**(choose value based on Table 1)**

Calculations

Int. Sight Distance =	1.47Vt	**610 feet**

Table 1 - Time Gap Factors

Design Vehicle	Time Gap[1], t (sec) for Grades </=3%	Grade of Minor Approach	Number of Additional Lanes to Cross	Adjusted Time Gap, t (sec)
passenger car	7.5	0%	0	7.50
single-unit truck	9.5	0%	0	9.50
combination truck	11.5	0%	0	11.50

INTERSECTION SIGHT DISTANCE - LEFT FROM MINOR APPROACH - TO THE EAST

Inputs

V= design speed, mph	V=	55	**(Assumed Regulatory Speed Limit based on home density)**
t=time gap for minor road vehicle to enter the major road	t=	7.50	**(choose value based on Table 1)**

Calculations

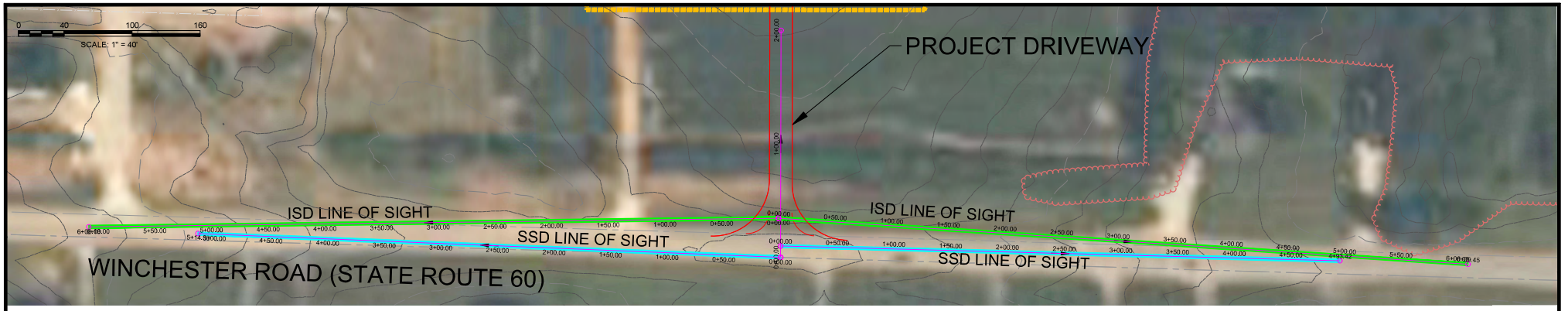
Int. Sight Distance =	1.47Vt	**610 feet**

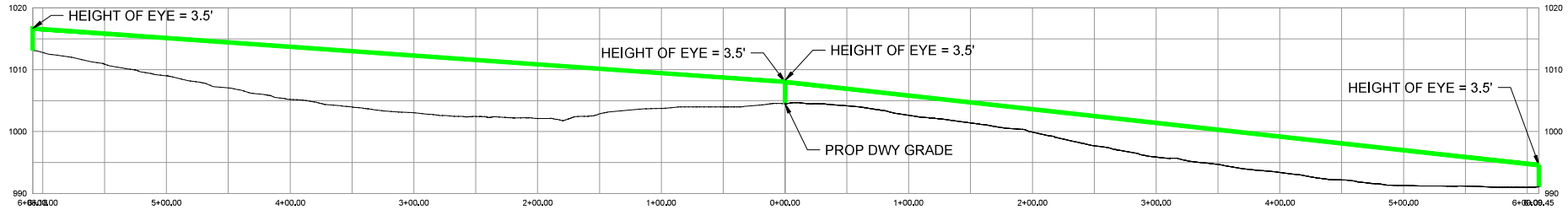
Design Vehicle	Time Gap[1], t (sec) for Grades </=3%	Grade of Minor Approach	Number of Additional Lanes to Cross	Adjusted Time Gap, t (sec)
passenger car	7.5	0%	0	7.50
single-unit truck	9.5	0%	0	9.50
combination truck	11.5	0%	0	11.50

Notes:

1.Time Gap values are applicable for major roads with grades 3 percent or less and no median and a minor street approach with a grade of 3 percent or less. Otherwise, the table values should be adjusted as follows:
*If the minor street has an upward grade of more than 3 percent then add 0.2 sec. to t for each percent grade (including the first 3 percent).
**Increase t by 0.5 seconds (for passenger cars) or 0.7 seconds (for trucks) for every additional lane from the left, in excess of one, to be crossed by the turning vehicle.
***If the major approach is a divided highway with a median not wide enough to store the design vehicle, then the median width should be converted to equivalent lanes.

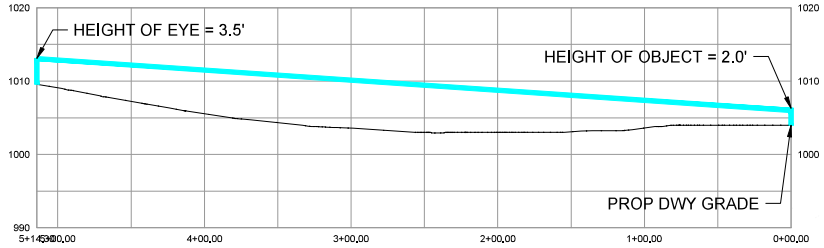
Source: *A Policy on Geometric Design of Highways and Streets, 2018, Seventh Edition,* prepared by AASHTO, p. 9-42 to 9-47.



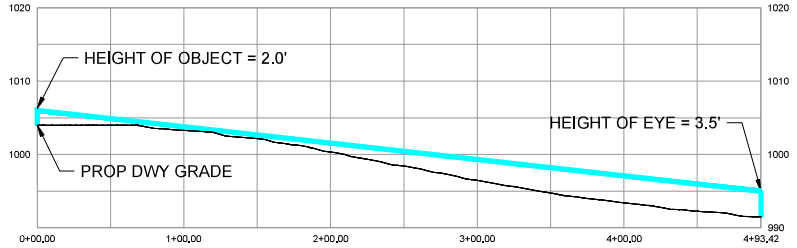


DW1: INTERSECTION SIGHT DISTANCE LEFT PROFILE VIEW
SCALE: H 1"=40' | V 1"=10'

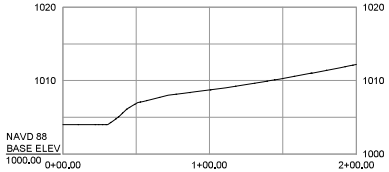
DW1: INTERSECTION SIGHT DISTANCE RIGHT PROFILE VIEW
SCALE: H 1"=40' | V 1"=10'



DW1: STOPPING SIGHT DISTANCE LEFT PROFILE VIEW
SCALE: H 1"=40' | V 1"=10'



DW1: STOPPING SIGHT DISTANCE RIGHT PROFILE VIEW
SCALE: H 1"=40' | V 1"=10'



DW1: PROFILE VIEW
SCALE: H 1"=40' | V 1"=10'

TETRA TECH

Bluegrass Plains Solar
Fayette County, KY

DRIVEWAY ACCESS PLAN AND PROFILE

FIGURE
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