## COMMONWEALTH OF KENTUCKY BEFORE THE KENTUCKY STATE BOARD ON ELECTRIC GENERATION AND TRANSMISSION SITING

#### IN THE MATTER OF:

THE ELECTRONIC APPLICATION OF HENDERSON	)	
COUNTY SOLAR LLC FOR A CERTIFICATE TO	)	
CONSTRUCT AN APPROXIMATELY 50 MEGAWATT	)	CASE NO.
MERCHANT SOLAR ELECTRIC GENERATING	)	2020-00391
FACILITY IN HENDERSON COUNTY, KENTUCKY	)	
PURSUANT TO KRS 278.700, ET SEQ.,	)	
AND 807 KAR 5:110	)	

#### HENDERSON COUNTY SOLAR LLC'S APPLICATION FOR A CERTIFICATE TO CONSTRUCT A MERCHANT GENERATING FACILITY

Comes now Henderson County Solar LLC ("Henderson County Solar"), by counsel, pursuant to KRS 278.700, et seq., and 807 KAR 5:100, et seq., and other applicable law, and does hereby submit its application for a certificate to construct an approximately 50 megawatt ("MW") merchant solar electric generating facility in Henderson County, Kentucky (the "Henderson County Solar Project" or "Project"). In support of this Application, Henderson County Solar states as follows:

1. Henderson County Solar is a Delaware limited liability company, formed on March 28, 2017. It is jointly owned by Community Energy Solar, LLC (CES) and Community Energy, Inc. (CEI). CEI is an affiliate of CES and serves as the Managing Member of Henderson County Solar. The principal offices for Henderson County Solar, CES, and CEI are located at Three Radnor Corporate Center, Suite 300, 100 Matsonford Rd., Radnor, Pennsylvania 19087. The principal contact for Henderson County Solar is Chris Killenberg, Regional Development Director, Community Energy Solar, LLC, P.O. Box 17236, Chapel Hill, North Carolina 27516, telephone

- (919) 360-9792, email: <a href="mailto:chris.killenberg@communityenergyinc.com">chris.killenberg@communityenergyinc.com</a>. Community Energy is an industry leader in renewable energy development for more than 20 years, completing many of the first utility-scale wind and solar projects in the United States. Since its inception, Community Energy has developed and financed more than 2,000 MW of renewable energy power projects, including 1,300 MW of solar power.
- 2. Henderson County Solar was granted authority to conduct business in Kentucky evidenced by a Certificate of Authority issued by the Commonwealth of Kentucky, Office of the Secretary of State, on March 30, 2017. A copy of this Certificate of Authority is provided as Exhibit 1 Attachment, page 1 of 1.
- 3. The Henderson County Solar Project is a 50 MW ground mounted solar photovoltaic electric generating facility comprising approximately 541 acres of land in Henderson County, Kentucky, located immediately southwest of the City of Henderson, Kentucky. The Project includes approximately 130,000 photovoltaic solar panels, associated ground-mounted racking, 72 inverters, and a main transformer that will connect to the 69kV bus at Substation No. 7 owned by Henderson Municipal Power & Light (HMP&L). The power generated by the facility will be sold to HMP&L under a 20-year power purchase agreement.
- 4. Pursuant to KRS 278.706 and 807 KAR 5:100, Section 1., because the manufacturer's nameplate rated electric generating capacity is 52.56 MW, Henderson County Solar has submitted its application fee of Fifty-Two Thousand Five Hundred Sixty Dollars (\$52,560) to be deposited into the Kentucky Public Service Commission's "siting fund" created pursuant to KRS 278.716.
- Henderson County Solar, by and through its attorneys, has the ability to receive electronic transmissions in this matter at the electronic mail addresses listed below.

- 6. Greater detail about the Project and compliance with all information required by KRS 278.700, et seq., and 807 KAR 5:100, et seq., to support a complete Application and granting of a Construction Certificate are provided in the Application Exhibits, which are specifically incorporated herein. Reference is made to the attached Table of Contents for a description of each statutory filing requirement and related compliance information.
- 7. The Henderson Solar Project complies with all provisions of KRS 278.700 KRS 278.716 and 807 KAR 5:100 807 KAR 5:110, and the Siting Board should so find and grant Henderson County Solar a Construction Certificate to construct the Project.

WHEREFORE, on the basis of the foregoing, Henderson County Solar respectfully requests that the Siting Board:

- 1. Accept this Application for filing as administratively complete;
- Grant a Construction Certificate for Henderson County Solar to construct the Henderson County Solar Project; and,
- Afford Henderson County Solar all other due and proper relief to which it may by entitled.

Done this 25th day of June, 2021.

Respectfully Submitted,

Mark David Goss David S. Samford L. Allyson Honaker GOSS SAMFORD, PLLC

2365 Harrodsburg Rd., Suite B-325

Lexington, Kentucky 40504 Telephone: (859) 368-7740 mdgoss@gosssamfordlaw.com

david@gosssamfordlaw.com allyson@gosssamfordlaw.com

Counsel for Henderson County Solar LLC

#### CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of this Application has been served via electronic mail to Brad Schneider, County Judge-Executive at <a href="mailto:bschneider@hendersonky.us">bschneider@hendersonky.us</a>, and by United States first-class mail at Henderson County Courthouse, 20 North Main Street, Henderson, Kentucky 42420-3199, and to David Dixon, Chairman, Henderson City-County Planning Commission at <a href="mailto:ddixon7757@gmail.com">ddixon7757@gmail.com</a>, and by United States first-class mail at 1990 Barrett Court, Suite C, Henderson, Kentucky 42420, this 25th day of June, 2021.

Counsel for Henderson County Solar LLC

### Kentucky State Board on Electric Generation and Transmission Siting Henderson County Solar, LLC – Case No. 2020-00391 Application – Exhibits Table of Contents

Filing Requirement	Description	Witness	Tab
KRS 278.706(2)(a)	The name, address, and telephone number of the person proposing to construct and own the merchant electric generating facility.	Chris Killenberg	1
KRS 278.706(2)(b)	A full description of the proposed site, including a map showing the distance of the proposed site from residential neighborhoods, the nearest residential structures, schools, and public and private parks that are located within a two (2) mile radius of the proposed facility.	Chris Killenberg	2
KRS 278.706(2)(c)	Evidence of public notice.	Chris Killenberg	3
KRS 278.706(2)(d)	A statement certifying that the proposed plant will be in compliance with all local ordinances and regulations concerning noise control and with any local planning and zoning ordinances.	Chris Killenberg	4
KRS 278,706(2)(e)	Statements regarding location on the site of a former coal processing facility, use of on-site waste coal as a fuel source and compliance with local setback requirements.	Chris Killenberg	5
KRS 278.706(2)(f)	Summary of public involvement efforts.	Chris Killenberg	6
KRS 278,706(2)(g)	A summary of the efforts made by the applicant to locate the proposed facility on a site where existing electric generating facilities are located.	Chris Killenberg	7
KRS 278.706(2)(h)	Proof of service of a copy of the application upon local officials.	Chris Killenberg	8

KRS 278.706(2)(i)	An analysis of the proposed facility's projected effect on the electricity transmission system in Kentucky.	Chris Killenberg	9
KRS 278.706(2)(j)	An analysis of the proposed facility's economic impact on the affected region and the state.	Chris Killenberg	10
KRS 278.706(2)(k)	Summary of environmental violations.	Chris Killenberg	11
KSR 278.706(2)(l)	Site Assessment Report.	Chris Killenberg	12
KRS 224.10-280	Cumulative Environmental Assessment.	Chris Killenberg	13
KRS 278.706	Additional Information	Chris Killenberg	14

Kentucky State Board on Electric Generation and Transmission Siting Henderson County Solar, LLC – Case No. 2020-00391

> Application – Exhibit 1 Volume 1, Tab 1

Filing Requirement: KRS 278.706(2)(a)

The name, address, and telephone number of the person proposing to construct and own

the merchant electric generating facility.

**Respondent: Chris Killenberg** 

The Applicant is Henderson County Solar LLC, with an address of Three Radnor Corporate

Center, Suite 300, 100 Matsonford Rd., Radnor, Pennsylvania 19087. Henderson County Solar

LLC's telephone number is (866) 946-3143. On March 30, 2017 the Kentucky Secretary of State

issued a Certificate of Authority for Henderson County Solar LLC to transact business in the

Commonwealth. A copy of this document is provided as Exhibit 1 Attachment.

Henderson County Solar LLC is jointly owned by Community Energy Solar, LLC (CES)

and Community Energy, Inc. (CEI). CEI is an affiliate of CES and serves as the Managing

Member of Henderson County Solar. CEI and CES have an address of Three Radnor Corporate

Center, Suite 300, 100 Matsonford Rd., Radnor, Pennsylvania 19087.

The principal contact for the Applicant is Chris Killenberg, Regional Development

Director, Community Energy Solar, LLC, P.O. Box 17236, Chapel Hill, North Carolina 27516.

Mr. Killenberg can be reached by telephone at (919) 360-9792, and by email at

chris.killenberg@communityenergyinc.com.

Case No. 2020-00391 Application - Exhibit 1 Includes Attachment (1 page)

# EXHIBIT 1 ATTACHMENT

## Commonwealth of Kentucky Alison Lundergan Grimes, Secretary of St

Page 1 of 1 L902

0981180.06

Alison Lundergan Grimes

Secretary of State

Received and Filed

3/30/2017 11:44:57 AM

Fee receipt: \$90.00

Alison Lundergan Grimes Secretary of State P. O. Box 718 Frankfort, KY 40602-0718 (502) 564-3490 http://www.sos.ky.gov

## Certificate of Authority Foreign Business Entity

**FBE** 

Pursuant to the provisions of KRS Chapter 14A and KRS Chapter 275 the undersigned hereby applies for authority to transact business in Kentucky on behalf of the entity named below and, for that purpose, submits the following statements:

- 1. The entity is a **profit** limited liability company.
- 2. The name of the entity is **Henderson County Solar LLC**.
- 3. The name of the entity to be used in Kentucky is **Henderson County Solar LLC**.
- 4. The state or country under whose law the entity is organized is **Delaware**.
- 5. The date of organization is 3/28/2017.
- 6. The mailing address of the entity's principal office is 3 Radnor Corporate Ctr Ste 300, Radnor, PA 19087.
- 7. The street address of the entity's registered office in Kentucky is **306 W Main St Ste 512**, **Frankfort**, **KY 40601** and the name of the registered agent in that office is **CT Corporation System**.
- 8. The names and business addresses of the entity's representatives:

Eric Blank

3 Radnor Corporate Ctr Ste 300, Radnor, PA 19087

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

Signature of Authorized Representative: **Megan Argo** 

I, **CT Corporation System**, consent to serve as the Registered Agent on behalf of the business entity.

Signature of Registered Agent or individual signing on behalf of the company serving as Registered Agent:

Leslie Martin

### Kentucky State Board on Electric Generation and Transmission Siting Henderson County Solar, LLC – Case No. 2020-00391 Application – Exhibit 2 Volume 1, Tab 2

#### Filing Requirement: KRS 278.706(2)(b)

A full description of the proposed site, including a map showing the distance of the proposed site from residential neighborhoods, the nearest residential structures, schools, and public and private parks that are located within a two (2) mile radius of the proposed facility.

**Respondent: Chris Killenberg** 

#### Description of the Proposed Site

The proposed site for the 50-megawatt Henderson County Solar project (the "Project") is approximately 541 acres of land across three locations in central Henderson County, Kentucky. The Northern section of the site is located along Lover's Lane, just outside the city limits of Henderson, Kentucky. Coordinates for the Northern section of the site are: 37°47'51.22"N latitude and 87°37'32.21"W longitude. The Central section of the site is located along Hwy 425/Henderson Bypass, Henderson, Kentucky. Coordinates for the Central section of the site are: 37°47'13.58"N latitude and 87°38'14.62"W longitude. The Southern section of the site is located along Wilson Station Road, Henderson, Kentucky. Coordinates for the Southern section of the site are: 37°46'42.58"N latitude and 87°37'56.22"W longitude. The sections of the project site will be electrically connected by underground medium voltage cables.

Once completed, the proposed facility will cover approximately 400 acres of the project site. The facility will include approximately 130,000 solar panels on a ground-mounted racking system. The entire facility will be surrounded by a security fence. Existing natural vegetative buffers along the periphery of the site will be retained. Along the periphery of the site that is nearest to neighboring residential structures, existing natural buffers will be augmented with a double-row of evergreen plantings.

Access to the Northern section of the proposed facility will be from Lover's Lane. Access to the Central section of the proposed facility will be from Hwy 425/Henderson Bypass and Old Corydon Road. Access to the Southern section of the proposed facility will be from Wilson Station Road.

#### Distance from Residential Neighborhoods

KRS 278.700 defines "Residential Neighborhood" as a populated area of five (5) or more acres containing at least one (1) residential structure per acre.

Case No. 2020-00391 Application - Exhibit 2 Includes Attachment (4 pages) There are twenty (20) Residential Neighborhoods within a two (2) mile radius of the proposed Project site. The location of these Residential Neighborhoods, and distances from the proposed Project site are:

J		
1.	Camelot Drive	3713 feet
2.	Posey Chapel Road	5073 feet
3.	Posey Chapel Road/US 41A	1499 feet
4.	US 41A, south of Wedding Lane	1592 feet
5.	US 41A, north of Wedding Lane	2466 feet
6.	Factory Street	4566 feet
7.	Old Corydon Rd, south of Hwy 425	203 feet
8.	Old Corydon Rd/Hwy 425	845 feet
9.	Old Corydon Rd, north of Hwy 425	394 feet
10.	Old Corydon Rd/US 60	276 feet
11.	Collier Road	Adjacent
12.	Gibson Street	461 feet
13.	Springfield Drive	1116 feet
14.	South Wye Drive	2002 feet
15.	US 41A	2022 feet
16.	Old Madisonville Rd	4577 feet
17.	Old Madisonville Rd/Hwy 1299	6419 feet
18.	ora maaison moraling 1200	0417 1000
	Old Madisonville Rd/Gregory Dr	7702 feet
19.	•	
	Old Madisonville Rd/Gregory Dr	7702 feet

#### Nearest Residential Structures

The nearest residential structures and distances from the <u>Northern</u> section of the proposed Project site are:

1.	2190 Collier Road	493 feet
2.	2152 Collier Road	568 feet
3.	2150 Collier Road	572 feet
4.	2148 Collier Road	576 feet
5.	2144 Collier Road	575 feet
6.	2142 Collier Road	597 feet
7.	2138 Collier Road	623 feet
8.	577 Lover's Lane	568 feet
9.	580 Lover's Lane	750 feet
10.	648 Lover's Lane	487 feet
11.	654 Lover's Lane	342 feet
12.	904 Lover's Lane	202 feet
13.	910 Lover's Lane	212 feet
14.	914 Lover's Lane	217 feet
15.	1008 Lover's Lane	219 feet
16.	1018 Lover's Lane	240 feet
17.	1022 Lover's Lane	319 feet

#### 18. 1026 Lover's Lane 205 feet

The nearest residential structures and distances from the <u>Central</u> section of the proposed Project site are:

1.	6668 Old Corydon Road	578 feet
2.	2038 Old Corydon Road	743 feet
3.	5914 Hwy 425	876 feet

The nearest residential structures and distances from the <u>Southern</u> section of the proposed Project site are:

1.	5914 Hwy 425	797 feet
2.	5580 US 41A	927 feet
3.	5590 US 41A	1409 feet
4.	6356 US 41A	1104 feet
5.	6360 US 41A	1075 feet
6.	3119 Wilson Station Road	1583 feet
7.	2521 Wilson Station Road	713 feet
8.	2489 Wilson Station Road	1338 feet

#### **Nearest Schools**

Henderson Community College (HCC) is located within two (2) miles of the proposed Project site. The distance from HCC to the Central section of the proposed Project site is 1644 feet.

#### Nearest Public Parks

The City of Henderson's Dr. William L. Newman Recreational Complex ("Newman Park") is located within two (2) miles of the proposed Project site. The distance from Newman Park to the Northern section of the proposed Project site is 5995 feet.

#### Cemeteries

Two cemeteries are located within two (2) miles of the proposed Project site. The distance from Fairmont Cemetery to the Northern section of the proposed Project site is 3537 feet. The distance from St. Louis Cemetery to the Northern section of the proposed Project site is 8817 feet.

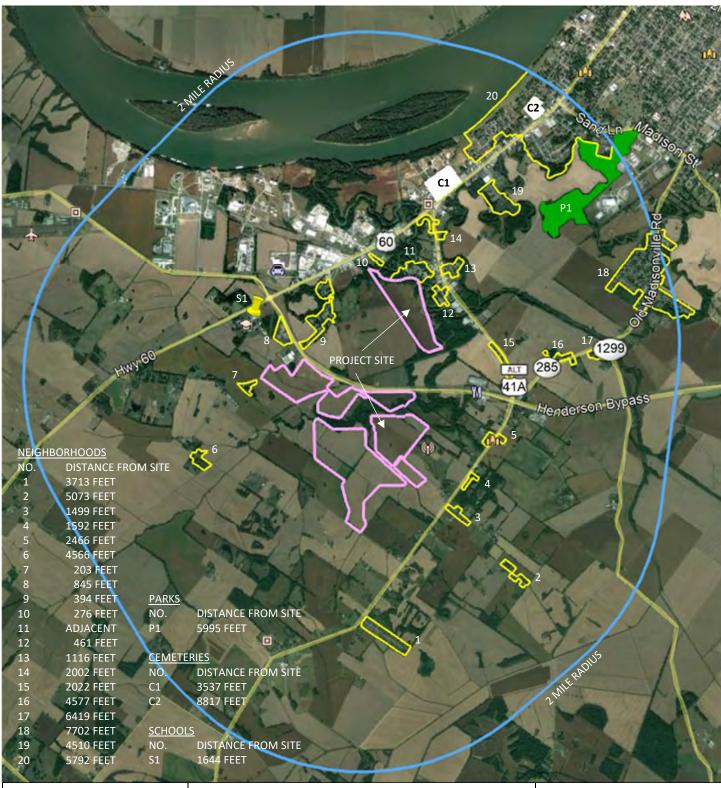
#### Nearest Private Parks

There are no known <u>private</u> parks within two (2) miles of the proposed Project site.

A map showing the distance of the proposed site from residential neighborhoods, schools, and public and private parks that are located within a two (2) mile radius of the proposed facility is attached as Exhibit 2 Attachment page 1 of 4.

Maps for the three sections of the project site showing its distance from the nearest residential structures are attached as Exhibit 2 Attachment pages 2 through 4 of 4.	

# EXHIBIT 2 ATTACHMENT





3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123

#### HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT HENDERSON COUNTY, KY

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HENDERSON, KY
LAT: 37.79N LONG: -87.63W
DATE: 6.14.2021

MAP SHOWING THE DISTANCE OF THE PROPOSED SITE FROM RESIDENTIAL NEIGHBORHOODS, SCHOOLS, AND PUBLIC AND PRIVATE PARKS THAT ARE LOCATED WITHIN A TWO (2) MILE RADIUS OF THE PROPOSED FACILITY





3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123 HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT
CENTRAL SECTION
HENDERSON COUNTY, KY



HWY 425, HENDERSON, KY
LAT: 37.79N LONG: -87.64W
DATE: 6.15.2021

MAP SHOWING THE DISTANCE OF THE PROPOSED CENTRAL SECTION OF THE PROJECT SITE FROM THE NEAREST RESIDENTIAL STRUCTURES





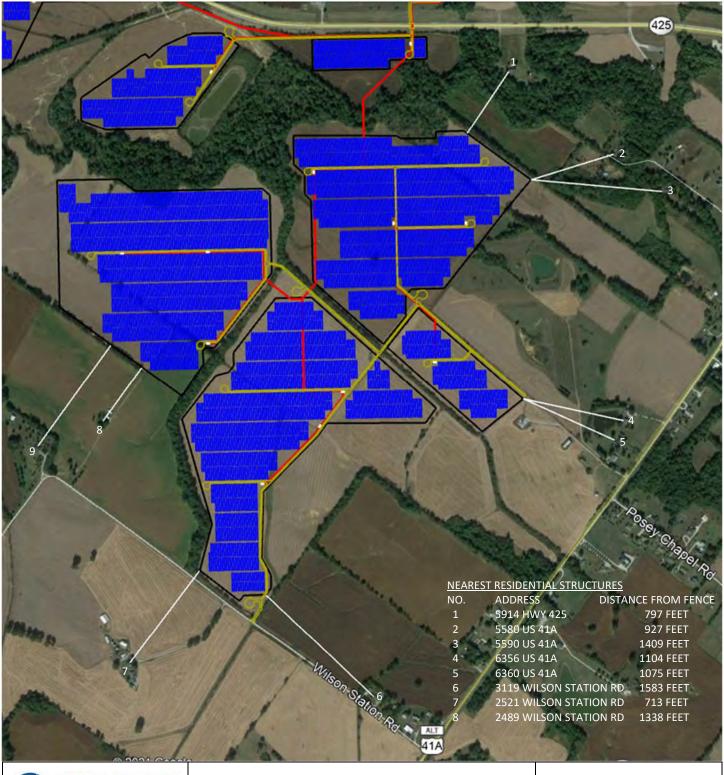
3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123

#### HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT NORTHERN SECTION HENDERSON COUNTY, KY



LOVER'S LANE, HENDERSON, KY
LAT: 37.80N LONG: -87.63W
DATE: 6.15.2021

MAP SHOWING THE DISTANCE OF THE PROPOSED NORTHERN SECTION OF THE PROJECT SITE FROM THE NEAREST RESIDENTIAL STRUCTURES





3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123

#### HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT SOUTHERN SECTION HENDERSON COUNTY, KY



WILSON STA	TION RD, HENDERSON, KY
LAT: 37.78N	LONG: -87.63W
DATE: 6.15.2	.021

MAP SHOWING THE DISTANCE OF THE PROPOSED SOUTHERN SECTION OF THE PROJECT SITE FROM THE NEAREST RESIDENTIAL STRUCTURES Kentucky State Board on Electric Generation and Transmission Siting Henderson County Solar, LLC – Case No. 2020-00391

> **Application – Exhibit 3** Volume 1, Tab 3

Filing Requirement: KRS 278.706(2)(c)

Evidence of public notice that shall include the location of the proposed site and a general description of the project, state that the proposed construction is subject to approval by the board, and provide the telephone number and address of the Public Service Commission. Public notice shall be given within thirty (30) days

immediately preceding the application filing to: 1. Landowners whose property borders the proposed site; and 2. The general public in a newspaper of general

circulation in the county or municipality in which the facility is proposed to be

located.

**Respondent: Chris Killenberg** 

**LANDOWNER NOTICE**: The notice required by KRS 278.706(2)(c) to all individuals

owning property adjacent to the proposed Henderson County Solar Project was provided by a letter

dated and posted in the United States mail, on June 14, 2021, a date that is within thirty days

immediately preceding the Application's filing. A sample of this letter and a list by name and

address of all individuals to whom this letter was mailed are attached as Exhibit 3 Attachment

pages 1-4 of 6.

**GENERAL PUBLIC NOTICE**: The notice required by KRS 278.706(2)(c) to the general

public was provided on June 10, 2021, a date that is within thirty days immediately preceding the

Application's filing, by publication in the *The Gleaner* newspaper, a daily newspaper of general

circulation, printed and published in Henderson, Henderson County, Kentucky. The Affidavit of

Publication, including the text of the notice, is attached as Exhibit 3 Attachment pages 5-6 of 6.

Case No. 2020-00391 **Application - Exhibit 3** 

*Includes Attachment (6 pages)* 

# EXHIBIT 3 ATTACHMENT



June 14, 2021

[Name]
[Address]
[City, State, Zip]

Re: Henderson County Solar LLC project in Henderson, Kentucky Notice of Application before Kentucky State Board on Electric Generation and Transmission Siting

Dear [Name],

We are again writing to inform you of a solar energy project which is being developed on 541 acres of land adjacent to your property, near the city of Henderson, KY. One section is on the south side of Hwy 425 (Henderson Bypass), and one section is on the west side of Lovers Lane.

The project details have now been finalized and we intend to formally submit it to the Kentucky State Board on Electric Generation and Transmission ("Siting Board") in the coming days for review and approval to issue a construction certificate. The Siting Board's contact information is: c/o Kentucky Public Service Commission, P.O. Box 615, 211 Sower Boulevard, Frankfort, Kentucky, 40602-0615, telephone (502) 564-3940. Assuming the Siting Board issues its approval, construction on the project will begin in 2022 and operations will commence in 2023.

We previously held a virtual public informational meeting describing the project and have responded to questions and requests for additional information from landowners and the public-at-large. Should you wish to learn more about the project and review the presentation given at this public meeting, please visit <a href="https://www.communityenergyinc.com/hendersoncountysolar">https://www.communityenergyinc.com/hendersoncountysolar</a>.

You will find attached a copy of the public notice which we are placing in The Gleaner discussing the upcoming filing for approval of a construction certificate with the Siting Board. If you have any questions about the project or would like to learn more, please contact Chris Killenberg, Regional Development Director, by email at <a href="mailto:chris.killenberg@communityenergyinc.com">communityenergyinc.com</a> or by telephone at (919) 360-9792.

Sincerely Yours,

Henderson County Solar LLC

By: Community Energy Inc, LLC

Its Managing Member

Joel Thomas

**Executive Vice President** 

**Enclosure: Public Notice** 

#### NOTICE OF APPLICATION

Henderson County Solar LLC is proposing to develop and construct an approximately 50-megawatt ground mounted solar photovoltaic electric generating facility on approximately 541 acres to be located along Hwy 425 (Henderson Bypass) and Lover's Lane in Henderson County, Kentucky. The proposed Henderson County Solar project will consist of solar photovoltaic panels and associated racking, inverters, substation transformer and other necessary equipment to support the project.

Henderson County Solar LLC is required to file an application for approval to construct and operate the proposed facility. This application is subject to the approval of the Kentucky State Board on Electric Generation and Transmission Siting, having the following contact information: P.O. Box 615, 211 Sower Blvd., Frankfort, Kentucky 40602-0615, or by telephone at (502) 564-3940.

Any person wishing to become a party to a proceeding before the Siting Board may, by written motion filed no later than thirty (30) days after the application has been submitted, request leave to intervene.

A party may, upon written motion filed no later than thirty (30) days after an application has been filed, request the Siting Board to schedule an evidentiary hearing at the offices of the Kentucky Public Service Commission, P.O. Box 615, 211 Sower Blvd., Frankfort, Kentucky 40602-0615.

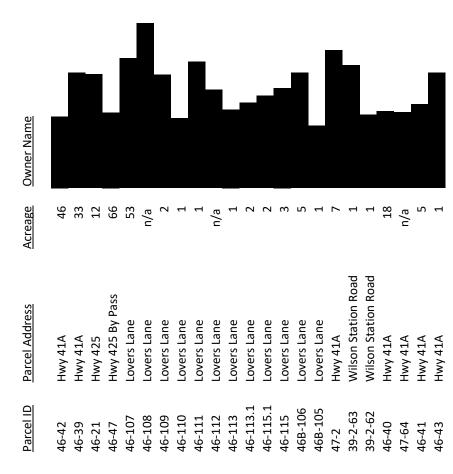
A request that the Siting Board conduct a local public hearing or local public information meeting shall be made by at least three (3) interested persons who reside in the county or municipal corporation in which the facility is proposed to be constructed to consider the application for a construction certificate. The request shall be made in writing and shall be filed no later than thirty (30) days after a complete application is filed.

Any questions related to the application or other aspects of the approval process may be directed to the Kentucky State Board on Electric Generation and Transmission Siting, P.O. Box 615, 211 Sower Blvd., Frankfort, Kentucky 40602-0615, or by telephone at (502) 564-3940.

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Henderson County Solar - Adjac

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City	Henderson	Henderson	Henderson	Evansville	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Corydon	Corydon	Morganfield	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Hondorson							
<u>Street</u>	2138 Collier Road	2142 Collier Road	2144 Collier Road	2148 Collier Road	2148 Collier Road	2152 Collier Road	2190 Collier Road	438 Old Corydon Road	P.O. Box 8	8360 Hwy 1078 N.	17 Johnson Place	6402 Old Corydon Road	2260 S. Green Street	6200 Hwy 351	10336 Old Us Hwy 60W	PO Box 614	PO Box 256	225 S. Water Street	1013 Factory Street	2013 Wilson Station Road	635 Bob Hite Road	2489 Wilson Station Road	2816 Wilson Station Road	6975 Hwy 41A	7064 Hwy 41A	6926 Hwy 41A	6887 Hwy 41A	6975 Hwy 41A	6663 Hwy 41A	6657 Hwy 41A	6643 Hwy 41A	4034 Posey Chapel Road	4331 Posey Chapel Road	2829 Tippecanoe Trail	0.100 11,00,71
Owner Name																																			
<u>Acreage</u>	n/a	3	6.9	197	55	20	20	134	2	58	92	52	2	7	16	13	200	20	51	n/a	4	133	П	3	4	П	∞	9	0						
Parcel Address	Collier Road	Old Corydon Road	Hwy 60	Old Corydon Road	Old Corydon Road	Old Corydon Road	Hwy 60	Hwy 60W	Old Corydon Road	Old Corydon Road	Old Corydon Road	Wilson Station Road	Wilson Station Road	Wilson Station Road	Wilson Station Road	Wilson Station Road	Wilson Station Road	Hwy 41A	Posey Chapel Road	Posey Chapel Road	Hwy 41A	Lym, 71 A													
<u>Parcel ID</u>	46B-67	46B-68	46B-69	46B-70	46B-72	46B-73	46B-75	46D-13	46-84	46-19	46-10	39-2-66.1	39-1-5	39-2-69	39-2-65.1	39-2-65	39-2-33	39-2-51	39-2-61	39-2-60	39-2-57	39-2-55.1	47-12	47-10	47-5	47-4	47-32.12	47-32	47-34	47-32.17	47-32.16	47-32.5	47-56	47-3.1	17-1

<u>Street</u>	City	State	Zip
8120 Pritchett Crooks Road	Corydon	≿	42406
10699 Hwy 60W	Henderson	≿	42420
118 Passage Way	Lancaster	≿	40444
2323 S. Green Street	Henderson	≿	42420
3986 Hwy 41A	Henderson	ζ	42420
3986 US Hwy 41A	Henderson	Ϋ́	42420
1022 Lovers Lane	Henderson	Ϋ́	42420
1018 Lovers Lane	Henderson	Ϋ́	42420
1008 Lovers Lane	Henderson	₹	42420
914 Lovers Lane	Henderson	≿	42420
910 Lovers Lane	Henderson	≿	42420
9477 State Route 141 S	Morganfield	Ϋ́	42437
654 Lovers Lane	Henderson	₹	42420
7523 Railroad Street	Henderson	Ϋ́	42420
826 Lamont Lane	Henderson	Ϋ́	42420
577 Lovers Lane	Henderson	₹	42420
6360 Hwy 41A	Henderson	≿	42420
1825 Wilson Station Road	Corydon	Ϋ́	42406
1881 Wilson Station Road	Corydon	₹	42406
7621 Smith Denton Road	Robards	≿	42452
5871 Hwy 41A	Henderson	₹	42420
5864 Hwy 41A	Henderson	₹	42420
5888 Hwy 41A	Henderson	≿	42420





COMMUNITY ENERGY

P.O. BOX 17236

**CHAPEL HILL, NC 275167236** 

#### Affidavit of Publication

### PROOF OF PUBLICATION OF LEGAL ADVERTISEMENT

Account Number: 9193026646

#### STATE OF WISCONSIN BROWN COUNTY

RE: COMMUNITY ENERGY COMMUNITY ENERGY AD: 0004773412

PO:

Publication Cost: \$99.34

# of Affidavits2

This is not an invoice

I, being sworn, am an employee of the Evansville Courier Press, publisher of **THE GLEANER**, a newspaper publishe and having general circulation in the city of Henderson, Kentucky, in said county and state and that the legal advertisement, of which the attached is a true copy, was printed in its issues of:

EC-Gleaner June 10, 2021 - Thursday

ned registral

Date

Jaiamondodo

Notary Public

Notary is Resident of Brown County, State of Wisconsin

My Commission expires: August 06, 2021

TARA MONDLOCH Notary Public State of Wisconsin NOTICE OF APPLICATION
Henderson County Solar LLC is proposing to develop and construct an approximately 50 megawatic electric generating facility on approximately 541 acres to be located along Hwy 425 (Henderson Bypass) and Lover's Lane in Henderson County, Kentucky The proposed Henderson County Solar project will consist of solar photovoltaic panels and associated racking, inverters, substation transformer and other necessary equipment to support the project. Henderson County Solar LLC is required to file an application for approval to construct and operate the proposed facility. This application is subject to the approval of the Kentucky State Board on Electric Generation and Transmission String, having the following contact information: P.O. Box 615, 211 Sower Blvd., Frankfort, Kentucky 40602-0615, or by telephone at (502) 564-3940.

Any person wishing to become a party to a proceeding before the Sting Board may, by written motion filed no later than thirty (30) days after the application has been submitted, request leave to intervene. NOTICE OF APPLICATION

days after the application has been submitted, request leave to intervene. A party may, upon written motion filed no later than thirty (30) days after an application has been filed, request the Siting Board to schedule an evidentiary hearing at the offices of the Kentucky Public Service Commission, P.O. Box 615, 211 Sower Blvd., Frankfort, Kentucky 40602-0615.

A request that the Siting Board conduct a local public hearing or local public information meeting shall be made by at least three (3) interested persons who reside in the county or municipal corporation in which the facility is proposed to be constructed to consider the application for a construction certificate. The request shall be made in writing and shall be filed no later than thirty (30) days after a complete application is filed. Any questions related to the application or other aspects of the ap-

filed.

Any questions related to the application or other aspects of the approval process may be directed to the Kentucky State Board on Electric Generation and Transmission Siting, P.O. Box 615, 211 Sower Blvd., Franklort, Kentucky 40602-0615, or by telephone at (502) 564-3940.

Kentucky State Board on Electric Generation and Transmission Siting Henderson County Solar, LLC – Case No. 2020-00391 Application – Exhibit 4

Volume 1, Tab 4

Filing Requirement: KRS 278.706(2)(d)

A statement certifying that the proposed plant will be in compliance with all local ordinances and regulations concerning noise control and with any local planning and zoning ordinances. The statement shall also disclose setback requirements established by the planning and zoning commission as provided under KRS 278.704(3).

**Respondent: Chris Killenberg** 

The Proposed Project complies with the Henderson County Zoning Ordinance, Article

XXX 'Solar Energy System Regulations', a copy of which is provided in Exhibit 5 pages

1 through 4 of 13. Pursuant to Section 30.01, the Proposed Project is a Level 3 Solar

Energy System ("Level 3 SES") defined as any system that does not satisfy the parameters

for a Level 1 Solar Energy System (a roof-mounted system, or a ground-mounted system

whose footprint is not more than 50% of the primary structure on the parcel) or a Level 2

Solar Energy System (a ground-mounted system in an agricultural zone not more than 1/2

acre in size). Setback requirements for a Level 3 SES are: 1) All equipment shall be at

least twenty-five (25) feet from the perimeter property lines of the project area; 2) No

interior property line setbacks shall be required if the project spans multiple contiguous

properties; 3) All equipment shall be located at least one hundred (100) feet from any

residential structure and; the maximum height of any individual component will be 25 feet

measured from the ground level of the component.

Henderson County Solar certifies that the Project will be in compliance with all local ordinances and regulations, if any, concerning noise control and with Henderson County Zoning Ordinance Article XXX, and all other applicable local planning and zoning ordinances. A statement from Joel Thomas, Executive Vice President of Community Energy, Inc, which is the Managing Member of Henderson County Solar, certifying these facts is attached as Exhibit 4 Attachment.

# EXHIBIT 4 ATTACHMENT

### Kentucky State Board on Electric Generation and Transmission Siting Henderson County Solar, LLC – Case No. 2020-00391

#### CERTIFICATION REQUIRED BY KRS 278.706(2)(d)

Comes the undersigned, Joel Thomas, and states as follows:

- That my name is Joel Thomas, and I am Executive Vice President of Community Energy Solar, LLC, which is the Managing Member of Henderson County Solar LLC, the Applicant herein.
- That I am over the age of 18 years of age and am a resident of the State of Pennsylvania.
- That I have conducted an inquiry into the facts contained in this Statement and believe them to be true to the best of my knowledge and belief.
- 4. That the proposed facility as planned and to be constructed in Henderson County, Kentucky, will be in compliance with any and all local ordinances and regulations concerning noise control, and will further be in compliance with any and all local ordinances and regulations relating to planning and zoning as provided in KRS 278.704(3).
- 5. Under Article XXX: Henderson County Solar Energy System Regulations, Section 30.01<sup>1</sup>, the Proposed Project is a Level 3 Solar Energy System ("Level 3 SES") defined as any system that does not satisfy the parameters for a Level 1 or Level 2 Solar Energy System. Section 30.02 c. provides setback requirements for a Level 3 SES as follows: 1) All equipment

A complete copy of Article XXX: Henderson County Solar Energy System Regulations is provided in Exhibit 5.

shall be at least twenty-five (25) feet from the perimeter property lines of the project area; (2) No interior property line setbacks shall be required if the project spans multiple contiguous properties; (3) All equipment shall be located at least one-hundred (100) feet from any residential structure, and; the maximum height of any individual component will be 25 feet measured from the local ground level of the component. The regulation contains other non-setback requirements for Level 3 SES projects. Henderson County Solar will comply with all such requirements.

Signed this 20th day of June, 2021.

Joel Thomas

### Kentucky State Board on Electric Generation and Transmission Siting Henderson County Solar, LLC – Case No. 2020-00391 Application – Exhibit 5 Volume 1, Tab 5

Filing Requirement: KRS 278.706(2)(e)

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

#### **Respondent: Chris Killenberg**

The Henderson County Solar Project is not proposed to be located on the site of a former coal processing plant, nor will it utilize waste coal as a fuel source. The project site also does not have any existing electricity generating facilities. Because the proposed Project is a ground mounted solar photovoltaic electric generating facility it will not contain any exhaust stacks or wind turbines, rendering the 1,000/2,000 setback requirements contained in KRS 278.706(2)(e) for such structures inapplicable to this Application.

The proposed Project complies with the Setback Requirements contained in Henderson County Zoning Ordinance, Article XXX 'Solar Energy System Regulations', Section 30.02 c, which reads as follows: 1) All equipment shall be at least twenty-five (25) feet from the

Case No. 2020-00391 Application - Exhibit 5 Includes Attachment (13 pages) perimeter property lines of the project area; 2) No interior property line setbacks shall be

required if the project spans multiple contiguous properties; 3) All equipment shall be

located at least one hundred (100) feet from any residential structure and; the maximum

height of any induvial component will be 25 feet measured from the local ground level of

the component. A copy of the Solar Energy System Regulations is provided as Exhibit 5

Attachment pages 1 through 4 of 13.

For additional reference to the relative proximity of the proposed Project to adjoining

property boundaries, residences, and other buildings and structures, see the Site Plan

provided on pages 5 through 13 of Exhibit 5 Attachment.

# EXHIBIT 5 ATTACHMENT

## ARTICLE XXX: HENDERSON COUNTY SOLAR ENERGY SYSTEM REGULATIONS

#### Section 30.01. Design Standards

The components and subsystems required to convert solar energy into electric energy suitable for use. The area of the system includes all the land inside the perimeter of the system, which extends to any fencing. For the purposes of these zoning regulations, solar energy systems are divided into three (3) classes.

- a. Level 1 Solar Energy System. A roof mounted system on any code compliant structure or any ground mounted system on an area of up to fifty (50) percent of the footprint of the primary structure on the parcel but not more than one (1) acre and not more than twenty-five (25) feet tall or any building integrated system (i.e. shingle, hanging solar, canopy, etc.)
- b. Level 2 Solar Energy System. Any ground mounted system not included in a Level 1 SES and meets the following area restrictions:
  - 1. In an agricultural zone the area of the SES shall not exceed one half (1/2) acre in size and shall require a building permit issued by the Henderson County Codes Department. In areas exceeding one half (1/2) acre, a Site Plan shall be required by the Henderson City-County Planning Commission.
  - 2. In an industrial zone the SES shall not exceed ten (10) acres in size.
  - 3. In an Industrial Zone, an SES of any size shall require a site plan approved by the Henderson City-County Planning Commission.
- (c) Level 3 Solar Energy System. Any system that does not satisfy the parameters for a Level 1 or Level 2 SES.

#### Section 30.02. Requirements

Solar Energy Systems (SES) shall comply with the following criteria:

- a. The height of any ground mounted SES shall not exceed twenty-five (25) feet as measured from the highest natural grade below each solar panel (excludes utility poles, substations and antennas constructed for the project).
- b. Setback requirements for Level 1 and Level 2 SES shall be in compliance with the zoning classification for the parcel.
- c. Setback requirements for Level 3 SES shall be as follows: (1) All equipment shall be at least twenty-five (25) feet from the perimeter property lines of the project area; (2) No interior property line setbacks shall be required if the project spans multiple contiguous properties,; (3) All equipment shall be located

at least one hundred (100) feet from any residential structure and; the maximum height of any individual component will be 25 feet measured from the local ground level of the component.

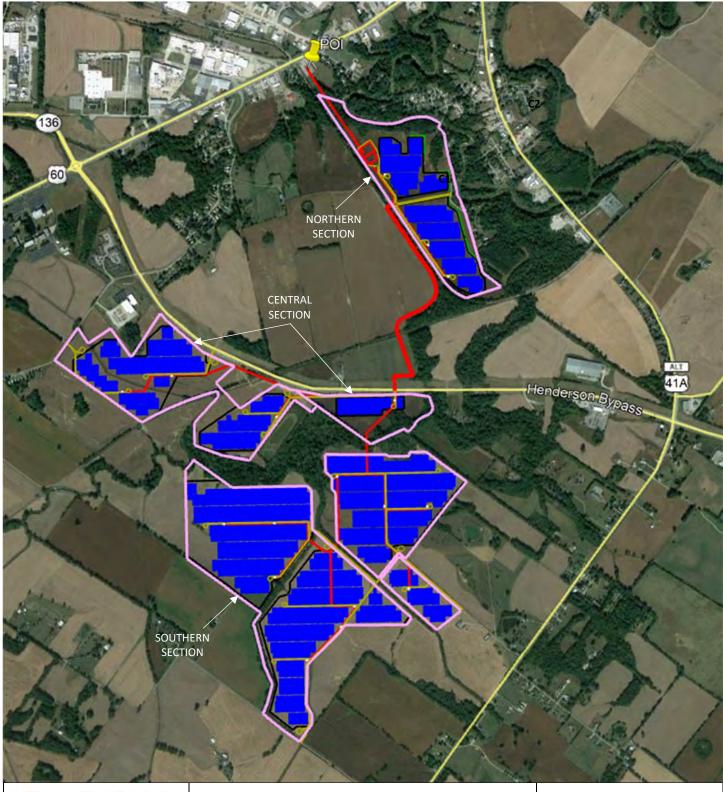
- d. All Level 3 SES shall be screened with a seven (7) foot tall fence and, to the extent reasonably practicable, a visual buffer that provides reasonable screening to reduce the view of the SES from residential dwelling units on adjacent lots (including those lots located across a public right of way). A vegetation screening plan to reduce the view of the SES from residential dwelling units on adjacent lots will be submitted for approval of the Henderson City-County Planning Commission. The existing natural tree growth and natural land forms along the SES perimeter may create a sufficient buffer and shall be preserved when reasonably practicable. When no alternative vegetation screening plan is approved by the Henderson City-County Planning Commission, a double row of staggered evergreen trees will be planted 15' on center from adjacent non participating residential dwellings including the outdoor living space immediately near residential dwellings. Parcel boundaries with no proximity to residential dwellings shall not require screening. The proposed evergreen trees shall be placed on the exterior of security fencing. The use of barbed wire or sharp pointed fences shall be prohibited in or along any boundary adjoining residential properties.
- e. There shall be no signs permitted except those displaying emergency information, owner contact information, warning or safety instructions or signs that are required by a federal, state or local agency. Such signs shall not exceed 5 square feet in area.
- f. Excessive lighting shall be prohibited except that required by federal or state regulations.
- g. Decommissioning of Level 3 SES shall be as follows:
  - 1. The developer shall post a Surety Bond, or other form of Security acceptable to the County, for the abandonment of the site and in the event the Commission must remove the facility. Abandonment shall be when the SES ceases to transfer energy on a continuous basis for twelve (12) months. The surety bond or other form or security, shall be one (1) percent of the total project cost re-calculated every 5 years during the project life.
  - 2. A decommissioning plan shall be submitted at the time of application by the developer responsible for decommissioning and must include the following: (1) Defined conditions upon which the decommissioning will be initiated. i.e. there has been no power production for 12 months, the land lease has ended, or succession of use of abandoned facility, etc.; (2) Removal of all non-utility owned equipment, conduit, structures, fencing, roads, and foundations to the depth of three (3) feet; (3) Restoration of the property to substantially similar physical condition that existed immediately prior to construction of the SES; (4) The time frame for completion of decommissioning activities; (5) the party currently responsible for decommissioning, and; (6) Plans for updating the decommissioning plan.

The components and subsystems required to convert solar energy into electric energy suitable for use. The area of the system includes all the land inside the perimeter of the system, which extends to any fencing. For the purposes of these zoning regulations, solar energy systems are divided into three (3) classes.

A. Level 1 Solar Energy System. A roof mounted system on any code compliant structure.

- 1. Level 1 Solar Energy System are prohibited in Riverfront-1 and Riverfront-3 zones.
- 2. Level 1 Solar Energy Systems, other than solar shingles, are allowed in Riverfront- 2, Riverfront-4, Central Business District, Gateway Zone, and Henderson Innovative Planning District only if the SES is enclosed or screened to ensure that such features are not visible from street level and are compatible to the architectural style of the building.
- 3. Level 1 Solar Energy Systems which are solar shingles if visible from the street are a conditional use in Riverfront-2, Riverfront-4, Central Business District, Gateway Zone, and Henderson Innovative Planning District and must match the existing façade and architecture of the building.
- 4. Level 1 Solar Energy Systems are allowable in all other zones other than those listed in subsections (1) and (2) above.
- B. Level 2 Solar Energy System. Any ground mounted system not included in a Level 1 SES and meets the following area restrictions and requirements:
  - 1. Level 2 Solar Energy Systems are only allowed in Agricultural Zone and Light Industrial (M-1) and Heavy Industrial (M-2) zones.
  - 2. In an Agricultural zone the area of the SES shall not exceed one half (1/2) acre in size and shall require a building permit issued by the Henderson City Codes Department.
  - 3. In an Industrial zone the SES shall not exceed ten (10) acres in size.
  - 4. The height of any ground mounted SES shall not exceed twenty-five (25) feet as measured from the highest natural grade below each solar panel (excludes utility poles and antennas constructed for the project).
  - 5. Setback requirements for Level 1 and Level 2 SES shall be in compliance with the zoning classification for the parcel.
  - 6. There shall be no signs permitted on Level 2 SES except those displaying emergency information, owner contact information, warning or safety instructions or signs that are required by a federal, state or local agency. Such signs shall not exceed 5 square feet in area.
  - 7. In an Industrial Zone, a Level 2 SES shall require a site plan approved by the Henderson City-County Planning Commission and a building permit by the Henderson City Codes Department.
  - 8. Lighting on Level 2 SES shall be prohibited except that required by federal or state regulations.
- C. Level 3 Solar Energy System. Any ground mounted system that is greater than the one half (1/2) acre in size for agricultural zone or exceeds the ten acres in size for an industrial zone satisfy the parameters for a Level 2 SES and must meet the following restrictions and requirements.

- 1. Level 3 SES are only allowed in Agricultural Zone and Light Industrial (M-1) and Heavy Industrial (M-2) zones.
- 2. The height of any ground mounted Level 3 SES shall not exceed twenty-five (25) feet as measured from the highest natural grade below each solar panel (excludes utility poles and antennas constructed for the project).
- 3. Setback requirements for Level 3 SES shall be as follows: (1) All equipment shall be at least fifty (50) feet from the perimeter property lines of the project area; (2) No interior property line setbacks shall be required if the project spans multiple contiguous properties; (3) All equipment shall be located at least one hundred (100) feet from any residential structure and; the maximum height of any individual component will be 25 feet measured from the local ground level of the component.
- 4. All Level 3 SES shall be screened with an 8' tall fence and a double row of staggered evergreens (minimum 8' height at planting) planted 15' on center from any public right-of-way or adjacent residential use. The evergreens shall be located outside of the fence. The use of barbed wire or sharp pointed fences shall be prohibited in or along any boundary adjoining residential properties.
- 5. There shall be no signs permitted on Level 3 SES except those displaying emergency information, owner contact information, warning or safety instructions or signs that are required by a federal, state or local agency. Such signs shall not exceed 5 square feet in area.
- 6. Level 3 SES shall require a site plan approved by the Henderson City-County Planning Commission and a building permit by the Henderson City Codes Department.
- 7. Lighting on Level 3 SES shall be prohibited except that required by federal or state regulations.
- D. Decommissioning of Level 3 SES shall be as follows:
  - 1. The developer shall post a Surety Bond with the Henderson City-County Planning Commission for the abandonment of the site and in the event the Commission must remove the facility. Abandonment shall be when the SES ceases to transfer energy on a continuous basis for twelve (12) months. The surety bond shall be one (1) percent of the total cost of the installed SES.
  - 2. A decommissioning plan shall be submitted at the time of application by the party responsible for decommissioning and the land owner and must include the following: (1) Defined conditions upon which the decommissioning will be initiated. i.e. there has been no power production for 12 months, the land lease has ended, or succession of use of abandoned facility, etc.; (2) Removal of all non-utility owned equipment, conduit, structures, fencing, roads, and foundations; (3) Restoration of the property to its original condition prior to development of the SES; (4) The time frame for completion of decommissioning activities; (5) the party currently responsible for decommissioning, and; (6) Plans for updating the decommissioning plan.





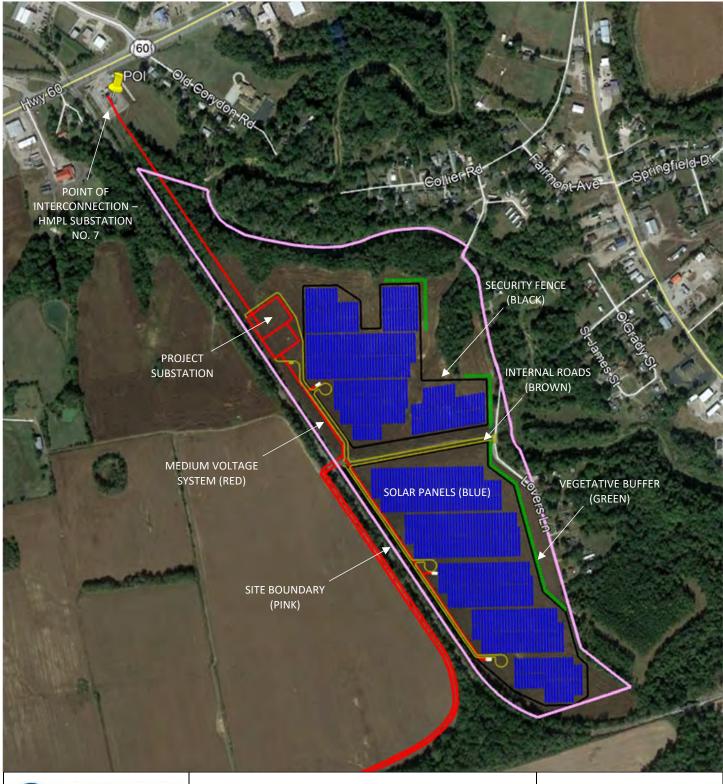
3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123

### HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT HENDERSON COUNTY, KY

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HENDERSON, KY
LAT: 37.79N LONG: -87.63W
DATE: 6.18.2021

SITE PLAN OVERVIEW





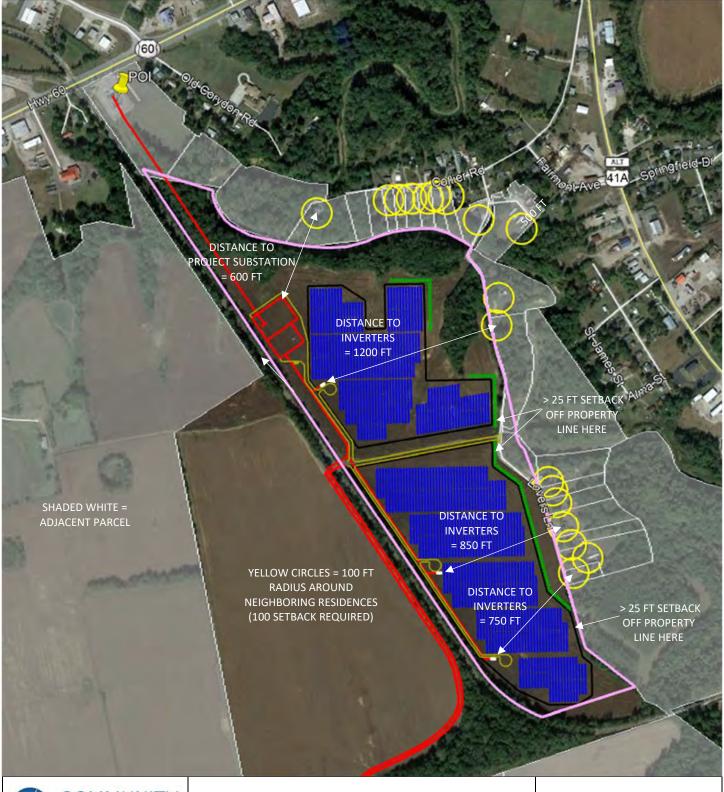
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### HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT HENDERSON COUNTY, KY



LOVER'S LANE, HENDERSON, KY
LAT: 37.80 LONG: -87.63
DATE: 6.18.2021

SITE PLAN NORTHERN SECTION





3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123

### HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT HENDERSON COUNTY, KY



LOVER'S LANE, HENDERSON, KY
LAT: 37.80 LONG: -87.63
DATE: 6.18.2021

SITE PLAN NORTHERN SECTION SETBACKS





3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123

### HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT HENDERSON COUNTY, KY

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HWY 425, HENDERSON, KY	
LAT: 37.79N LONG: -87.64W	
DATE: 6.18.2021	

SITE PLAN CENTRAL SECTION





3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123

### HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT HENDERSON COUNTY, KY

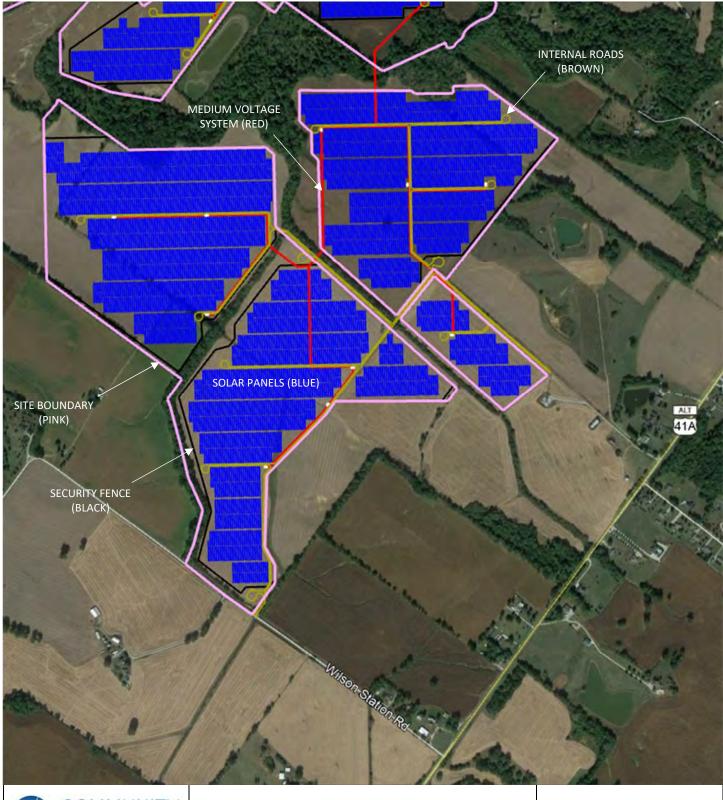
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HWY 425, HENDERSON, KY

LAT: 37.79N LONG: -87.64W

DATE: 6.18.2021

SITE PLAN
CENTRAL SECTION
SETBACKS



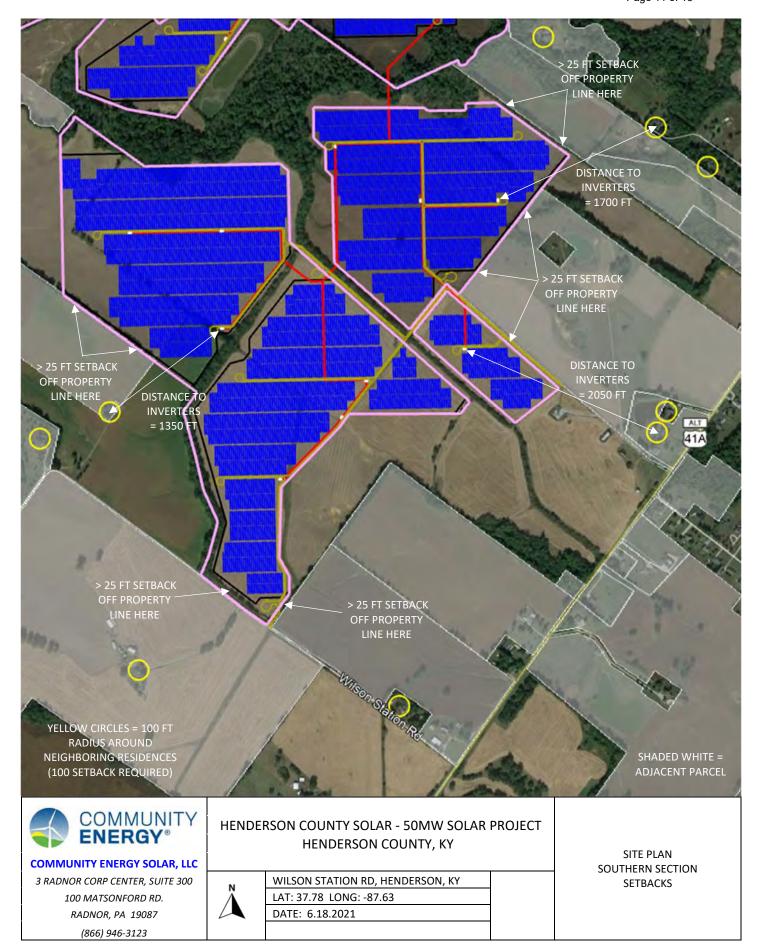


3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123 HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT HENDERSON COUNTY, KY



WILSON STATION RD, HENDERSON, KY	
LAT: 37.78 LONG: -87.63	
DATE: 6.18.2021	

SITE PLAN
SOUTHERN SECTION







3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123 HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT HENDERSON COUNTY, KY

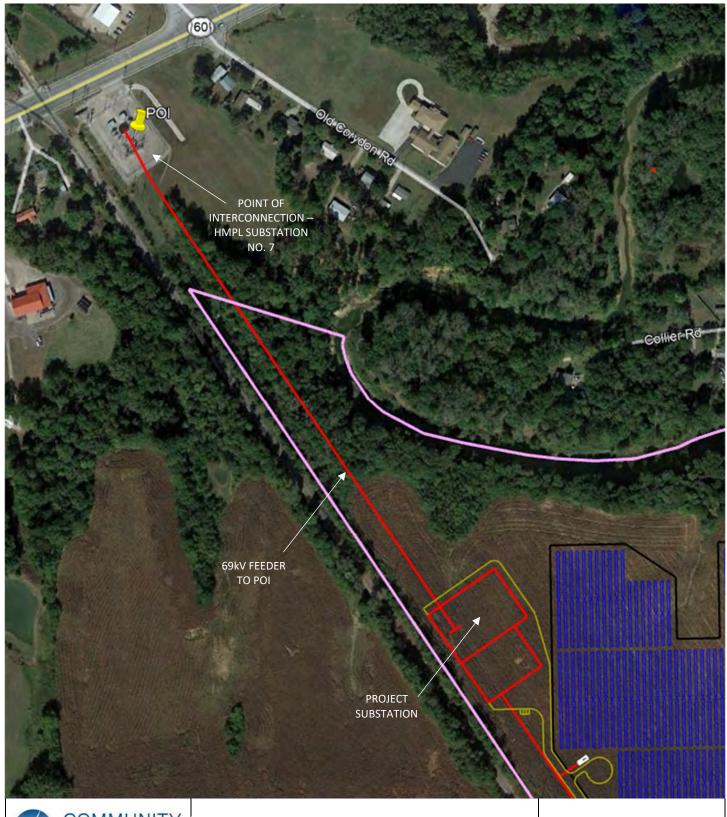


HENDERSON, KY

LAT: 37.79N LONG: -87.63W

DATE: 6.18.2021

SITE PLAN UTILITY EASEMENT





3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123

### HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT HENDERSON COUNTY, KY

Ν	1

US HWY 60, HENDERSON, KY
LAT: 37.80 LONG: -87.63
DATE: 6.18.2021

SITE PLAN
POINT OF INTERCONNECTION

### Kentucky State Board on Electric Generation and Transmission Siting Henderson County Solar, LLC – Case No. 2020-00391 Application – Exhibit 6 Volume 1, Tab 6

Filing Requirement: KRS 278.706(2)(f)

A complete report of the applicant's public involvement program activities undertaken prior to the filing of the application, including: 1. The scheduling and conducting of a public meeting in the county or counties in which the proposed facility will be constructed at least ninety (90) days prior to the filing of an application, for the purpose of informing the public of the project being considered and receiving comment on it; 2. Evidence that notice of the time, subject, and location of the meeting was published in the newspaper of general circulation in the county, and that individual notice was mailed to all owners of property adjoining the proposed project at least two (2) weeks prior to the meeting; and 3. Any use of media coverage, direct mailing, fliers, newsletters, additional public meetings, establishment of a community advisory group, and any other efforts to obtain local involvement in the siting process

**Respondent: Chris Killenberg** 

Pursuant to the Order of the Kentucky State Board on Electric Generation and Transmission Siting in Case No. 2020-00391 dated December 15, 2020, the Applicant conducted the following Public Involvement Activities which fulfilled the statutory requirement for a public meeting in the county in which the proposed facility will be constructed at least ninety (90) days prior to the filing of the application, for the purpose of informing the public of the project and receiving comment:

### Project Website

On January 20, 2021, the Applicant launched a Project Website, accessible to the public, containing the following key information:

- An introduction of Community Energy, Inc., and a link to obtaining more information about the company;
- A PowerPoint presentation providing general information about the Henderson County Solar Project;
- The date, time, and location of In-Person Office Hours for dissemination of relevant information to the public regarding the solar project;
- The date, time, and other details of a subsequent Virtual Public Information Meeting;
- A map showing the solar project area, facility layout, aerial imagery, and parcel information for all participating properties in Henderson County;
- Information pertaining to state and county permitting processes;

- Contact information and instructions for submitting questions and comments regarding the solar project;
- A summary of frequently asked questions and responses; and
- Instructions on how to request more information, including paper copies of the PowerPoint presentation.

The address of the Project Website is:

https://www.communityenergyinc.com/hendersoncountysolar

A screen shot of the website, the frequently asked questions and PowerPoint presentation are attached as Exhibit 6 Attachment 6.1.

### In-Person Office Hours

On January 20, 2021, the Applicant published notice on the Project Website, and sent letters to fifty-eight (58) adjacent landowners and nine (9) current and former public officials serving the Henderson County area, providing information about specific hours for in-person discussion opportunities in the Henderson County area, for the purpose of providing any member of the public an opportunity to ask questions about the solar project and obtain further information.

On Wednesday February 3, 2021, from 7:00am – 9:00pm Central Time (CT) and on Thursday February 4, 2021, from 7:00am – 9:00pm CT the Applicant conducted the In-Person Office Hours at the Ramada Inn, 2044 US-41 North, Henderson, KY 42420.

Seven (7) interested parties attended the In-Person Office Hours:

- On Wednesday, February 3, 2021, Chris Killenberg, representing the Applicant, met with David Hatchett, an area landowner. An overview of the proposed project was provided, and questions were answered. Of particular interest to Mr. Hatchett was the possibility of the development of a solar farm on Mr. Hatchett's land.
- On Wednesday, February 3, 2021, Chris Killenberg, representing the Applicant, met with Steve Graves, an owner and resident of land adjacent to the proposed project site. An overview of the proposed project was provided, and questions were answered. Mr. Graves stated that he is in favor of the solar project. He has no problem with the long-distance view of the solar farm from his home.
- On Wednesday, February 3, 2021, Chris Killenberg, representing the Applicant, met with John and Nancy Roberts, owners of land adjacent to the proposed project site. An overview of the proposed project was provided, and questions were answered. Mr. Roberts stated that he wished the Applicant could have used some of his land for the project. Mr. Roberts farms a field adjacent to the proposed project site. He expressed concerns about access to his field, and proposed coordination around gates and keys. Otherwise, Mr. Roberts stated he is in favor of the project.

- On Wednesday, February 3, 2021, Chris Killenberg, representing the Applicant, met with Chuck Stinnett, Business Editor for *The Gleaner*, Henderson's daily newspaper, and Executive Director of Henderson Leadership Initiative, a non-profit organization that works to identify and develop new leaders in the Henderson, Kentucky community. An overview of the proposed project was provided, and questions were answered. Mr. Stinnett subsequently published a news article in *The Gleaner* which is summarized below.
- On Wednesday, February 3, 2021, Chris Killenberg, representing the Applicant, met with William and Maureen Sword, owners of land adjacent to the proposed project site. An overview of the proposed project was provided, and questions were answered. The Sword's land had recently been for sale; they inquired as to whether the Applicant had an interest in buying the land for the project. The Swords also inquired on behalf of family members about project-related work opportunities.
- On Thursday, February 4, 2021, Chris Killenberg, representing the Applicant, met with William and Jo Robinson, owners and residents of land adjacent to the proposed project site. An overview of the proposed project was provided, and questions were answered. Mr. Robinson's primary concern was the location of gates to a project access point across from his property. The Robinsons have had problems with people parking offroad in their area and creating a nuisance. The management and possible correction of local drainage problems was also discussed.
- On Thursday, February 4, 2021, Chris Killenberg, representing the Applicant, met with Tammy Willett, an owner and resident of land adjacent to the proposed project site. An overview of the proposed project was provided, and questions were answered. Mrs. Willett expressed concern that, though her property is separated from the proposed project site by a creek and woodland, the project may be visible from her home during winter, when the leaves are down. The Applicant agreed to install additional vegetative screening along the periphery of the project site closest to Mrs. Willett's home.

### Virtual Public Information Meeting

On January 20, 2021, the Applicant published notice on the Project Website, and sent letters to all adjacent landowners, providing information about a live presentation of the solar project with a question-and-answer session, accessible to the public either by the internet or by telephone.

On January 20, 2021, the Applicant published notice in *The Gleaner*, providing information about a live presentation of the solar project with a question-and-answer session, accessible to the public either by the internet or by telephone.

On Thursday February 11, 2021, from 7:00pm - 8:30pm Central Time (CT) the Applicant conducted a Virtual Public Information Meeting featuring a presentation of the Proposed Project

from Henderson County Solar representatives, and providing an opportunity for the public to ask any questions related to the project. The meeting was conducted on a web-based platform accessible to the public and capable of hosting up to 1,000 participants, and the meeting was also accessible by telephone. The individuals who represented Henderson County Solar at the public meeting, and who were available to answer questions from attendees included:

- Chris Killenberg, Regional Development Director, Community Energy Solar, LLC
- Rich C Kirkland, Jr., MAI, Kirkland Appraisals, LLC

Thirteen (13) interested parties attended the Virtual Public Information Meeting. Of these attendees, five (5) attendees are landowners and family of landowners leasing land for the project, two (2) attendees are attorneys representing landowners leasing land for the project, two (2) attendees are members of the local media, one (1) attendee is a local resident and state representative, and three (3) attendees appear to be from the general public. A recording of the Virtual Public Information Meeting is accessible via the Project Website at <a href="https://www.communityenergyinc.com/hendersoncountysolar">https://www.communityenergyinc.com/hendersoncountysolar</a>.

### Notices

Notice of the time, subject, and location of the In-Person Office Hours held on February 3 and 4, 2021, and the Virtual Public Information Meeting conducted on February 11, 2021, as well as the web address of the project website, was mailed to all owners of property adjoining the proposed project on January 20, 2021, and was published in *The Gleaner* on January 20, 2021.

A copy of the template notice that was mailed to all fifty-eight (58) adjacent landowners on January 20, 2021, along with a list of all adjacent landowners and addresses to which the notice was sent, is provided in Exhibit 6 Attachment 6.2.

The Affidavit of Publication, including the text of the notice that was published in *The Gleaner*, is provided in Exhibit 6 Attachment 6.3.

### Media Coverage

On January 26, 2021, *The Gleaner* published an article titled "Solar farm details are brought to light." The article reported the planned location of the Applicant's proposed facility, and other general information about the project. The article also listed the dates and times for the In-Person Office Hours and Virtual Public Meeting and outlined the county and state approval processes.

On February 14, 2021, *The Gleaner* published an article titled "Tri-State residents worry about solar farms." The article reported details of planned solar projects in southwestern Indiana and western Kentucky. It also reported a number of concerns expressed by members of the public, including the worry that fields of industrial-looking solar panels could affect property values, questions about safety, the effects on local infrastructure, and whether or not solar projects should

Case No. 2020-00391

Application - Exhibit 6

Includes six Attachments

(6.1 – 47 pages; 6.2 - 5 pages; 6.3 – 2 pages; 6.4 - 16 pages; 6.5 – 1 page; 6.6 – 1 page)

receive tax breaks. The Applicant's proposed project was listed among the solar developments in the region, but no comments were made about the Applicant's project specifically.

On February 16, 2021, *The Gleaner* included in its 'PUBLIC NOTICE' section three re-zoning requests for parcels involved in, or related to, the development of the Applicant's proposed solar farm.

On March 30, 2021, the online version of *The Gleaner* included in its 'PUBLIC NOTICE' section the Applicant's submission of a Solar Site Plan for review and approval.

On April 3, 2021, the online version of *The Gleaner* published a guest column titled "The case of the displaced yard signs." The column described potential vandalism against pro-solar yard signs posted in Henderson County. The Applicant's proposed project was not mentioned specifically.

On May 23, 2021, the online version of *The Gleaner* published an article describing the ongoing transition of power generation in Kentucky from coal to natural gas and solar. References were made to the location and off-taker of the Applicant's proposed project, but no additional comments were made about the Applicant's project specifically.

On June 8, 2021, the online version of *The Gleaner* published an article titled "Giant solar farm near Robards gets OK from state board." The article reported the approval by the Siting Board of a large solar project in southern Henderson County. Reference was made to the location of the Applicant's proposed project, including a map of the project site, but no additional comments were made about the Applicant's project specifically.

A copy of the articles published in *The Gleaner* that reference the Applicant's proposed project is provided in Exhibit 6 Attachment 6.4.

### Follow-Up to Adjacent Landowner Mailing

On January 20, 2021, the Applicant mailed to fifty-eight (58) adjacent landowners a package which included a site map, details about the project, the project website address, and details about opportunities to participate in the In-Person Office Hours and Virtual Public Information Meeting.

Between January 20th and February 3rd, 2021, Chris Amsbary, representing the Applicant, endeavored to contact the subset of eighteen (18) landowners who own or reside in residences adjacent to the proposed project site (as opposed to owners of undeveloped land) to answer their questions and encourage them to attend the planned In-Person Office Hours and/or the Virtual Public Information Meeting. Of these 18 landowners: six (6) landowners were reached by phone and had a conversation with Chris Amsbary; eight (8) landowners were not reached by phone, but multiple voicemails were left by Chris Amsbary; four (4) landowners could not be reached due to non-working or out-of-date phone numbers.

A summary of the conversations between Chris Amsbary and the six (6) adjacent and residing landowners is as follows:

- Tammy Willett expressed concerns about her potential view of the proposed solar farm and made an appointment to attend the In-Person Office Hours (see notes above).
- William and Jo Robinson expressed interest in the project and concerns about a few specific issues related to one of the project's access points. They made an appointment to attend the In-Person Office Hours (see notes above).
- Pam Williams inquired about the possibility of selling her property to the project.
- Margaret Fidler explained that she and her husband now live out-of-town long-term. A package of information was sent to them.
- William Sword inquired about the potential inclusion of their land in the project, and potential work opportunities related to the project. He made an appointment to attend the In-Person Office Hours (see notes above).
- David Hatchett inquired about the potential inclusion of his land in the project and made an appointment to attend the In-Person Office Hours (see notes above).

A list of the eighteen (18) adjacent residing landowners who the Applicant contacted subsequent to the mailing of the notice, or attempted to contact, is provided in Exhibit 6 Attachment 6.5.

### Private Meetings or Conversations with Adjacent Landowners

Cassius Bentley Jr. Trust (Charlotte Warren)

- On July 24, 2019, Chris Killenberg, representing the Applicant, met in person with Charlotte Warren, representative for the Cassius Bentley Jr. Trust, which owns a 55-acre parcel of land adjacent to the proposed project site. The nature of the meeting was to discuss the possibility of leasing a portion of the Bentley Trust's land for inclusion in the proposed project. Mrs. Warren ultimately decided not to pursue a lease with the Applicant, but expressed support for the proposed project.
- On September 30, 2019, Chris Killenberg, representing the Applicant, contacted Charlotte Warren to inquire about the possibility of an easement across the Bentley Trust's land, in favor of the proposed project. Mrs. Warren expressed a willingness to discuss such an easement. The Applicant ultimately decided not to pursue the easement.

Mona Lou Koehler Trust (Sue and Steve Chandler)

• On October 29, 2019, Chris Killenberg, representing the Applicant, met in person with Sue and Steve Chandler, family representatives for the Mona Lou Koehler Trust, along with Elyon Davis, representative for Independence Bank. The nature of the meeting was to discuss the possibility of an easement across the Koehler Trust's land in favor of the proposed project. The Koehler Trust ultimately executed an Easement Option with the Applicant, but the easement was not included in the final site plan.

Stagg Industrial Development Corp. (Rita Stagg)

• On October 30, 2019, Chris Killenberg, representing the Applicant, met in person with Rita Stagg, owner of Stagg Industrial Development, which owns a 128-acre parcel of land adjacent to the proposed project site. The nature of the meeting was to discuss the possibility of an easement across Mrs. Stagg's land in favor of the project. Over the course of subsequent interactions by phone and email, Mrs. Stagg decided she did not want to participate in the project.

### Outreach to Public Officials

On January 20, 2021, the Applicant published notice on the Project Website, and sent letters to nine (9) current and former public officials serving the Henderson County area, providing information about specific hours for in-person discussion opportunities in the Henderson County area for the purpose of providing an opportunity to ask questions about the solar project and obtain further information.

The list of the nine (9) current and former Henderson County officials who received the January 20, 2021, letter from the Applicant is provided in Exhibit 6 Attachment 6.6.

In addition, private meetings or conversations between the Applicant and Public Officials included:

Jonathan Dixon, Kentucky State Representative, District 11

In February 2019, Chris Killenberg, representing the Applicant, met with Jonathan Dixon, currently Kentucky State Representative for District 11 (includes parts of Daviess and Henderson counties) to inquire about the possibility of leasing land owned by Mr. Dixon's family for the proposed project. Over the ensuing months, Mr. Killenberg had multiple interactions with Mr. Dixon with regard to the proposed project. In July 2019, Mr. Dixon's family executed a Site Control Agreement for approximately 135 acres to be evaluated for inclusion in the proposed project. The Applicant ultimately decided not include the Dixon's land in the final site plan.

Brian Bishop, Executive Director, Henderson County Planning Commission

- In February 2019, Chris Killenberg, representing the Applicant, met with Brian Bishop, Executive Director of the Henderson County Planning Commission, to introduce the proposed solar project and to explore the possibility of the adoption of a solar ordinance in Henderson County. Over the ensuing months, the Applicant had multiple interactions with Mr. Bishop, culminating in Henderson County's adoption of a solar ordinance in December 2019.
- Between April 2020 and April 2021, Chris Killenberg, representing the Applicant, had multiple interactions with Mr. Bishop in regard to the preparation for, and presentation of, the Applicant's application for a Site Plan Review (county permit) by the Henderson City-County Planning Commission.

Brad Schneider, Judge-Executive, Henderson County

• In July 2019, Chris Killenberg, representing the Applicant, met with Brad Schneider, Judge-Executive of Henderson County, to introduce the proposed solar project. Judge Schneider expressed his interest in, and support for, the proposed project; highlighted Henderson County's desire to be business-friendly; and stated that he looked forward to working with the Applicant to "help make it happen."

Missy Vanderpool, Executive Director, Henderson Economic Development Whitney Risley, Director, Henderson Economic Development

• In February 2020, Chris Killenberg, representing the Applicant, met with Missy Vanderpool, Executive Director of Henderson Economic Development (HED) and Whitney Risley, Director of Existing Industry and Workforce Development for HED, to introduce the project and discuss the possibility of an easement across land owned by one of the project's participating landowners, but subject to a purchase option held by HED. Over the ensuing months, the Applicant had multiple interactions with Ms. Vanderpool and Ms. Risley, culminating in HED's execution of a Consent Agreement facilitating a key easement for the proposed project.

### Attendance at Public Meetings

- On February 11, 2021, Chris Killenberg, representing the Applicant, attended by teleconference a Preliminary Meeting of the Henderson City-County Planning Commission staff to discuss the Applicant's request for a rezoning of two parcels included in the proposed project's site plan.
- On March 2, 2021, Chris Killenberg, representing the Applicant, attended by Zoom link the regular meeting of the Henderson City-County Planning Commission to present the Applicant's request for a rezoning of two parcels included in the proposed project's site plan. The rezoning was approved at that meeting.
- On March 23, 2021, Chris Killenberg, representing the Applicant, attended by Zoom link a meeting of the Land Development Committee of the Henderson City-County Planning Commission ("LDC"), seeking the LDC's recommendation of the Applicant's proposed project Site Plan to the Henderson City-County Planning Commission.
- On April 6, 2021, Chris Killenberg, representing the Applicant, attended by Zoom link the regular meeting of the Henderson City-County Planning Commission to present the Applicant's Site Plan for review and approval. The Site Plan was approved at that meeting.

### EXHIBIT 6 ATTACHMENT 6.1



### **Henderson County Solar**



**Henderson's Clean Energy Future** 



In July 2020, Community Energy and Henderson Municipal Power & Light (HMP&L) announced an agreement for the supply of 50 megawatts of new solar power to HMP&L customers. Through a 20-year Power Purchase Agreement, HMP&L will purchase 100% of the output of a new solar farm under development by Community Energy in Henderson County, Kentucky. This facility is expected to produce 117 million kilowatt-hours of low-cost solar energy per year, starting in 2023. The solar project will provide approximately 20% of HMP&L's total electricity demand.

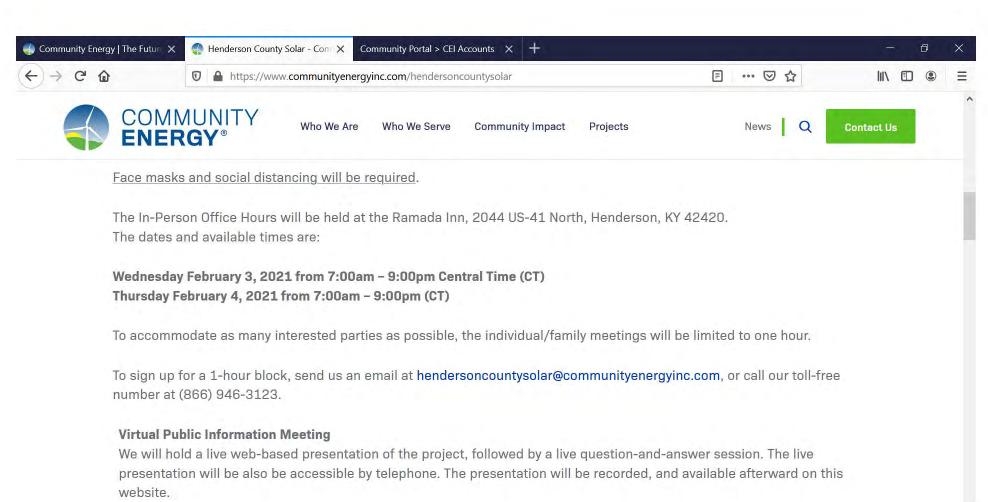
### You're Invited

### Information Meetings — February 2021

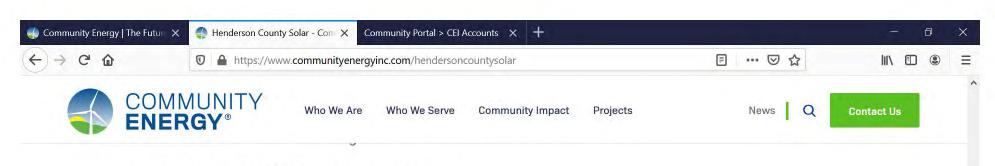
Community Energy is conducting two public information events designed to provide an opportunity for you to learn about the project, ask questions, and provide comments.

### In-Person Office Hours

We're hosting in-person "office hours" in Henderson to provide interested parties with a one-on-one opportunity to seek more information. These meetings will be held in a large conference room, limited to one individual or one family at a time.



23 new notifications



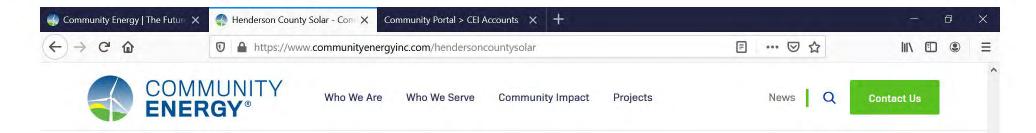
### Thursday February 11, 2021 from 7:00pm - 8:30pm CT

You can join the Virtual Public Information Meeting via web link at: https://www.bigmarker.com/community-energy/Henderson-County-Solar (Please access the link in advance, to sign up for the meeting.)

Or, you can call-in (toll free) at: (888) 241-9901 (Enter ID Number 176938 and Passcode Number 5709)

### **About the Project**

The proposed 'Henderson County Solar' project is a 50 MW solar farm to be located along Hwy 425 (Henderson Bypass) and Lover's Lane in Henderson County, Kentucky. The project site includes approximately 541 acres of land. The solar farm will sell 100% of the electricity it generates to Henderson Municipal Power & Light (HMP&L). This facility is expected to produce 117 million kilowatt-hours of electricity per year – roughly 20% of HMP&L's demand.



### **About the Project**

The proposed 'Henderson County Solar' project is a 50 MW solar farm to be located along Hwy 425 (Henderson Bypass) and Lover's Lane in Henderson County, Kentucky. The project site includes approximately 541 acres of land. The solar farm will sell 100% of the electricity it generates to Henderson Municipal Power & Light (HMP&L). This facility is expected to produce 117 million kilowatt-hours of electricity per year – roughly 20% of HMP&L's demand.

Already, environmental studies have been conducted to help design and position the solar farm in a way that avoids impacts to wetlands, wildlife, and cultural resources. The proposed system layout will also exceed the setbacks required by Henderson County's solar ordinance. In addition to being a low-cost and reliable supplier of renewable power to HMP&L, Henderson County Solar seeks to be a good neighbor and a contributing member of the business community. 'Henderson County Solar' is scheduled to begin operations in 2023.

For a PowerPoint presentation of the project, click this link: Henderson County Solar PowerPoint

For maps of the project site, click this link: Henderson County Solar Maps



### **Project Benefits**

Solar farms do more than generate clean, low-cost electricity. They also generate economic growth. The Henderson County Solar project will impact the local economy in multiple ways:

- o Construction Jobs for local workers: 150+ jobs during the 6-9 month construction of the project.
- o Construction Contracts for local businesses: Electrical, Site Work, Landscape, etc.
- o Local Economic Stimulus during construction: Hotels, Restaurants, Shops, Entertainment, etc.
- Long-term Tax Revenue: The solar farm will pay substantial taxes over 20+ years, without increased pressure on community services such as roads, schools, libraries, and first responders.
- o Full-Time Operations and Maintenance Jobs: 2-3 full-time equivalent 0&M jobs.

### **County Permitting Process**

Community Energy will seek a *Conditional Use Permit* from the Henderson City-County Planning Commission in early 2021. Public notices announcing related meetings and public hearings will published in *The Gleaner*.



The purpose of the Conditional Use permitting process will be to confirm that the proposed solar farm adheres to the Henderson County Zoning Ordinance applicable to Solar Energy Systems.

For a copy of Henderson County's solar ordinance, click this link: Henderson County Solar Ordinance

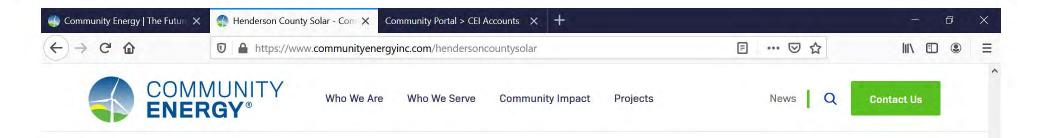
### **State Permitting Process**

Community Energy will seek a *Construction Certificate* for the Henderson County Solar project from the Kentucky State Board on Electric Generation and Transmission Siting (the "Siting Board") in 2021. Public notices announcing related meetings and public hearings will be published on this website, and in *The Gleaner*.

The Siting Board will review the proposed solar farm, with a focus on three areas:

- Environmental impacts such as visibility and noise
- Economic impacts
- Impact on the electric transmission grid

For more information about the Siting Board process, click this link: Guide to KY Siting Board Process



### **About Community Energy**

Community Energy has been a leading renewable energy developer for 20 years, developing many of the first and largest wind and solar projects in the United States. This includes over 1,300 MW of solar farms similar to our proposed Henderson County Solar project. Community Energy is headquartered in Radnor, Pennsylvania with offices in Boulder, Colorado, and Chapel Hill, North Carolina.

For more information about Community Energy, please visit https://www.communityenergyinc.com

### **Frequently Asked Questions (FAQs)**

For a list of Frequently Asked Questions, click this link: Solar FAQs

To submit new questions about the proposed solar farm, please send an email to hendersoncountysolar@communityenergyinc.com or mail your questions to P.O. Box 17236, Chapel Hill, NC 27516



### **Contact Information**

For more information about the Henderson County Solar project, please contact us:

Email: HendersonCountySolar@CommunityEnergyInc.com

Toll Free Number: (866) 946-3123





### Henderson County Solar

## Presentation Outline

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## Description

- Why Henderson County?
  - What is a Solar Farm?

## **Project Site**

- **Project Site**
- **Project Layout** 0
- **Environmental Studies** 0
- Impact Studies 0

### **Permits**

- County Permitting
  - State Permitting

### **Operations**

- Construction
- Operations and Maintenance 0
  - Output 0
- Community Benefits

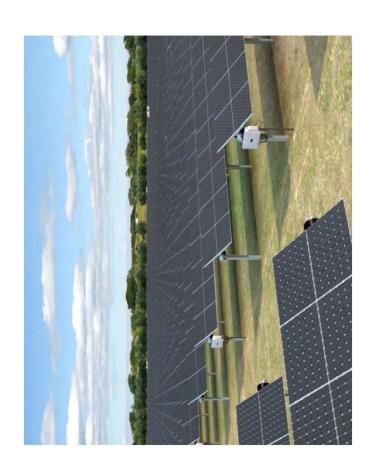
### Summary

# About Henderson County Solar



Henderson County Solar is a proposed:

- 50 megawatt (50MW) solar farm
- Located on a 541-acre project site just outside the city limits of the City of Henderson
- Selling 100% of its output to Henderson Municipal Power & Light (HMP&L)
- Under development by Community Energy



# About Community Energy



- In business for 21 years
- A leader in the development of renewable energy projects (especially in new markets)
- Headquarters in Radnor, PA
- Additional offices in Colorado and North Carolina
- Successful, experienced, and trusted





## Why Henderson County?

Last year, Henderson Municipal Power & Light conducted a competitive bid process, seeking to buy solar power under a longterm fixed-price contract.

Community Energy's proposal for a solar farm in Henderson County was selected.

The result will be low-cost locally-produced solar power.





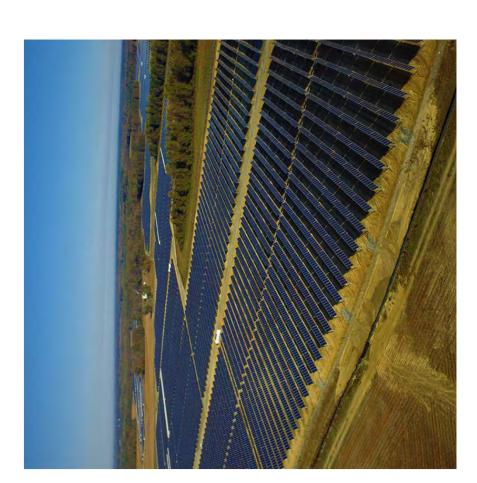
## What is a 'Solar Farm'?

A 'solar farm' is essentially a power plant that converts sunlight to electricity.

The basic building block of a solar farm is a solar panel.

Solar panels are rectangular, about 3 ft wide and 5 ft tall. They're black or dark blue, with glass on top.

A solar farm is just a whole lot of solar panels, bolted to a racking system, and placed in a field.



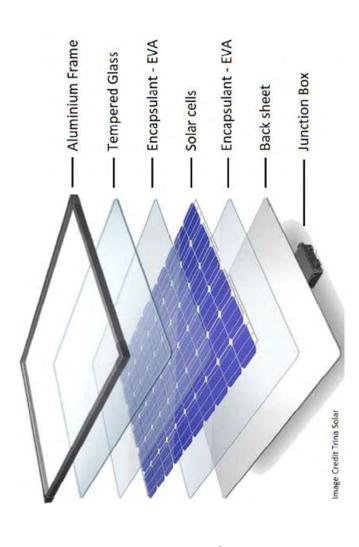


## Solar Panels

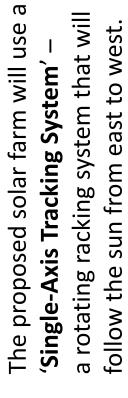
Solar panels are made of simple materials, including:

- Aluminum (+/- 85%)
  Aluminum (+/- 8%)
  Silicon (+/- 6%)
  Wiring (+/- 1%)
  Wiring is typically made of copper, silver, and zinc

The proposed solar farm will use 130,000 solar panels.



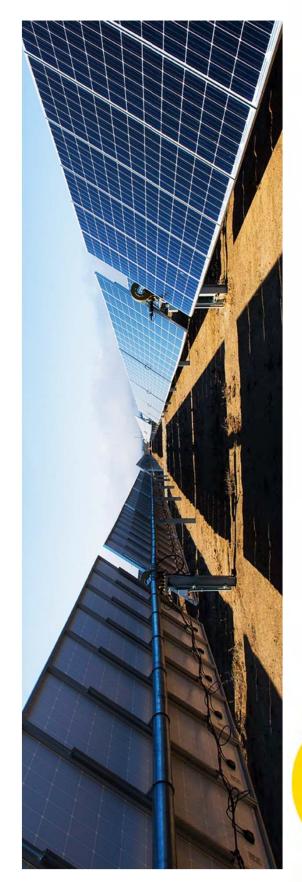
## Racking



First, a post is driven into the ground

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- Then, the racking system is bolted to the posts
- Then, the solar panels are attached to the racks



## Inverters

COMMUNITY



An 'Inverter' changes the power from 'DC' power to 'AC' power (the same as you use in your home).

Inverter stations will be located throughout the solar farm.





## **Transformers**

Solar panels produce low-voltage electricity.

Transformers are used to increase the voltage to a usable level.

"Step-up Transformers" within the solar farm increase the voltage to a level similar to the typical voltage in the power lines that run along roads.

A "Main Transformer" at the project substation increases the voltage again, to the level in the transmission line.



## Substation

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To gather all the electricity the solar farm will produce, a project substation will be built.

The substation will be a square area, roughly 150 ft x 150 ft, surrounded by a security fence, with electrical equipment inside.

A power line will connect the project substation to a nearby HMP&L substation.



The location of the connection to HMP&L is called the 'Point of Interconnection.'

## Security Fence



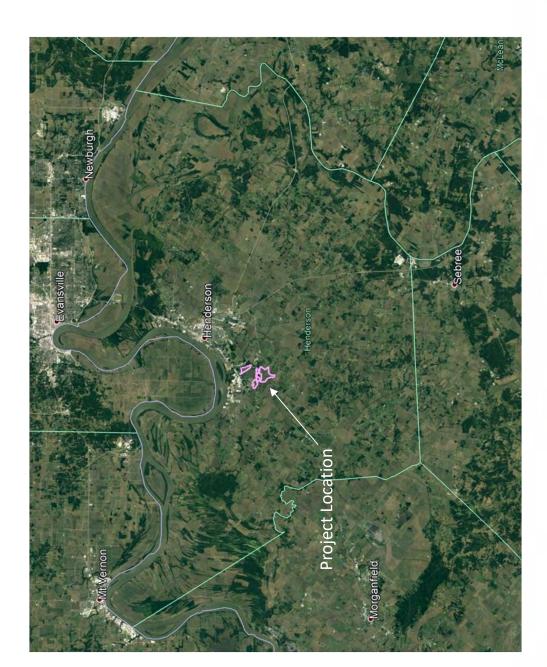


The solar farm will be built in multiple sections. Each section of the solar farm will be surrounded by a seven-foot tall security fence.



## Project Location

The project will be located in central Henderson County, just outside the city limits of the City of Henderson.

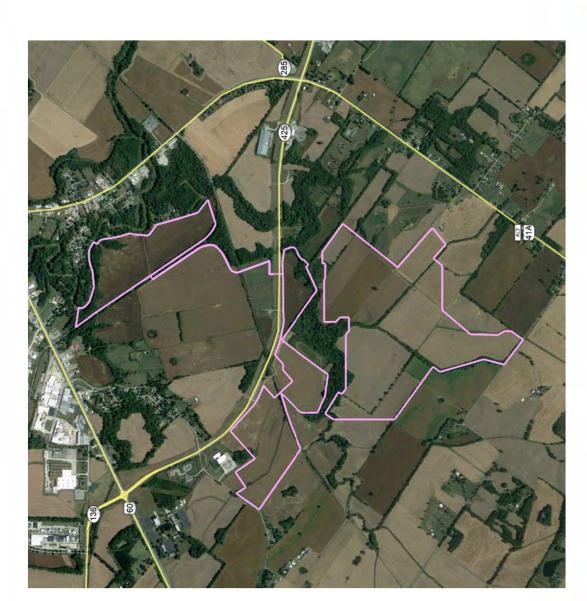


## Project Site

COMMUNITENERGY

The project site will consist of three sections totaling approximately 541 acres of land: two sections south of Hwy 425 (Henderson Bypass) and one section west of Lover's Lane.

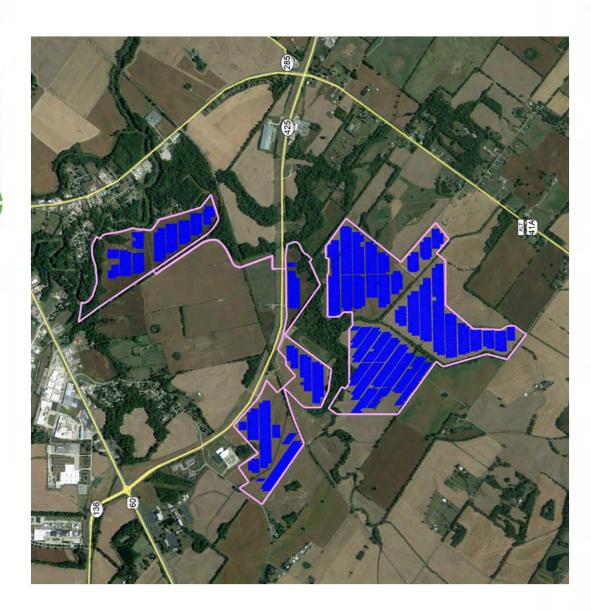
Most of the project site is currently open land used for row-cropping.





## Project Layout

The solar panels and other equipment will be laid out to avoid sensitive environmental areas, and will adhere to setbacks and other provisions of Henderson County's Solar Ordinance.

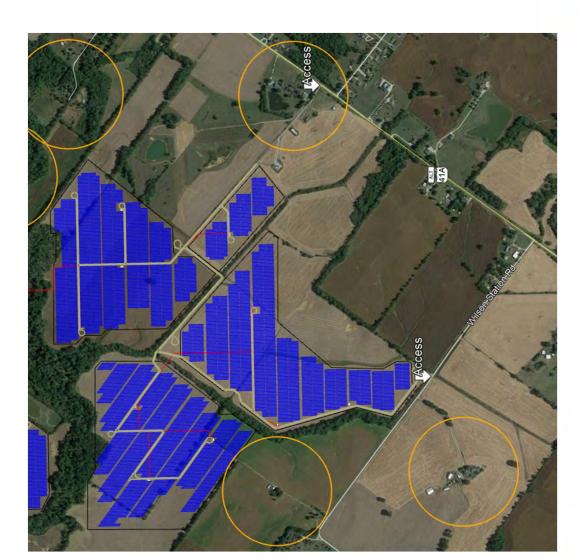


## COMMUNITY ENERGY®

# Project Layout - South Section

This close-up of the South Section of the solar farm illustrates the setbacks from neighboring houses.
The orange circles have a radius of 750 feet.

The existing natural vegetation between the solar farm and neighboring houses will be retained as a visual screen.



## CONFIDENTIAL

# Project Layout - Center Section



This close-up of the Center Section of the solar farm illustrates the setbacks from neighboring houses. The orange circles have a radius of 750 feet.



## COMMUNITY

# Project Layout - North Section

This close-up of the North Section of the solar farm illustrates the setbacks from neighboring houses. The orange circles have a radius of 750 feet. The pink circle have a radius of 200 feet.

Where the solar farm abuts Lover's Lane, a double offsetting row of evergreens will be planted as a visual screen.



# Interconnection Studies

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The HMP&L transmission system is part of a regional transmission network managed by the 'Midcontinent Independent System Operator' (MISO).

MISO will study the proposed solar farm, to determine whether the point of interconnection (the HMP&L substation) can absorb this additional power, or if the substation or HMP&L's "grid" need to be upgraded.

Any required upgrades will be paid for by the project.







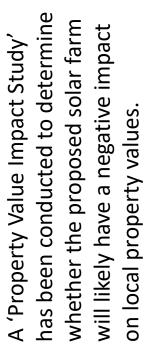
# **Environmental Studies**

Multiple environmental studies have already been conducted:

- Wetlands and streams eligible for protection have been identified. Any required setbacks or buffers will be observed.
- Cultural resources eligible for protection have been identified. Any required setbacks or buffers will be observed.
- Threatened and endangered wildlife habitat has been identified (bats). Any required avoidance will be observed.



## Impact Study



The most common areas for impact on adjoining property values are, in order of importance:

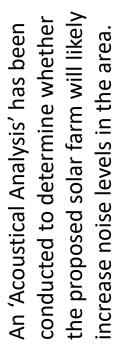
- 1. Hazardous materials
- 2. Odor
- 3. Noise
- 4. Traffic
- 5. Stigma
- 6. Appearance

The Study reported no hazardous materials or odors associated with solar farms.

COMMUNITY

- The Study reported no instances of audible sounds at the periphery of the solar farms it inspected.
- The Study estimated that the anticipated 2-3 fulltime workers at the solar farm would not significantly impact traffic.
- The Study reported no negative stigma against solar farms as a neighboring use.
- Based on the enhanced setbacks and buffers from neighboring residences, the Study anticipated no negative visual impact from the solar farm.
- The Study concluded that the proposed solar farm would not likely have negative impact on local property values.

## Acoustical Analysis



The study concluded that the enhanced setback distances between the solar farm and neighboring residences are anticipated to diminish sounds from the solar farm to a level below 45 decibels — lower than the sound level of a quiet urban area at night.



Table 1. Sound Levels of Common Activities/Situations.

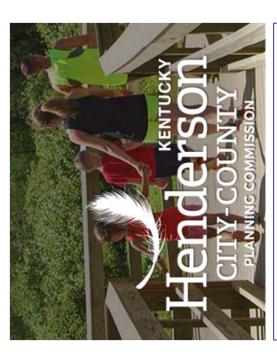
Activity/Event	dBA
Lowest audible sound to person with average hearing	0
Quiet rural, nighttime	25
Crickets, distant frogs	30
Birds, distant dog bark	40
Quiet urban, nighttime	45
Large business office	09
Normal speech at 3 feet	02-09
Noisy urban area, daytime	75
Food blender at 3 feet	85
Gas lawn mower at 3 feet	100
Jet flyover at 1,000 feet	110



## County Permitting

The proposed solar farm will seek a **Conditional Use Permit** from Henderson County. To secure the permit, we will demonstrate that the project adheres to the key provisions of Henderson County's Solar Ordinance, which include:

- All equipment shall be at least 25 feet from the perimeter property lines of the project area, and at least one 100 feet from any residential structure.
- The solar farm shall be screened with a 7-foot tall fence and a visual buffer that provides reasonable screening to reduce the view of the solar farm.



For more information, contact:

Brian Bishop Executive Director

Henderson County Planning Commission

bbishop@hendersonplanning.org

(270) 831-1289

## State Permitting

Construction Certificate from the Kentucky Henderson County Solar will be seeking a **Public Service Commission** 

The Construction Certificate will be issued by the Kentucky State Board on Electric Generation and Transmission Siting (the "Siting Board").

The Siting Board review focuses on three areas:

- Environmental matters such as noise and visual impacts
- **Economic impacts**
- Impact of the proposed facility on Kentucky's electric transmission grid





# Kentucky Public Service Commission



Kentucky State Board on **Electric Generation and** Commonwealth of Kentucky Transmission Siting



# Siting Board Members

The Siting Board will be composed of seven (7) members:

# The (3) members of the Public Service Commission

- Chairman (Michael J. Schmitt)
- Vice Chairman (Kent A. Chandler)
- Commissioner (Talina R. Mathews)

# Two (2) members of state government

- The Secretary of the Kentucky Cabinet for Energy and Environment (Rebecca Goodman), or her designee
- The Secretary of the Kentucky Cabinet for Economic Development (Larry Hayes, Interim Secretary), or his designee 0

# Two (2) members of local government

- The Chairman of the Henderson County Planning Commission (David Dixon)
- A resident of the County (appointed by the Governor)



## Siting Board Process

approximately nine (9) months The Siting Board review takes

Key steps include:

- **Public Meeting**
- February 11, 2021
- Application
- o May 14, 2021
- **Evidentiary Hearing**
- Optional TBD
- Optional TBD **Local Hearing**
- Decision
- Anticipated Q4 2021
- Appeal
- o If filed within 30 days of decision

For more information on the Siting Board:

https://psc.ky.gov/Home/EGTSB

To see Public Service Commission filings related to this project: https://psc.ky.gov/PSC\_WebNet/ViewCaseFil ings.aspx?Case=2020-00391

Case No. 2020-00391

## Construction

COMMUNITY

## If the Construction Certificate is approved:

- Construction will start in 2022
- Construction period will be 6-9 months
- Approximately 150 construction jobs
  - Mostly no experience required
- Hiring of local trades

- Electric Surveying Earthmoving

  - Fencing Landscaping



## CONFIDENTIAL

# Operations and Maintenance

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Typical operations and maintenance duties include:

- Preventive Maintenance
- Repair
- Mowing

Henderson County Solar will require 2-3 full-time employees for operations and maintenance.





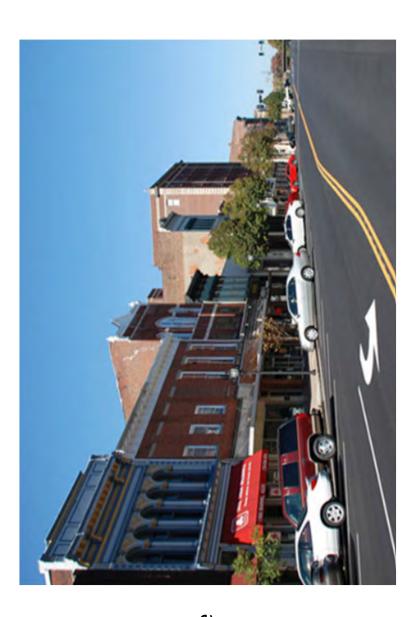
## Output



100% of the solar power produced by the Henderson County Solar project will be delivered and sold to HMP&L

The solar farm will produce 117 million kilowatt-hours of electricity per year

This is roughly equivalent to 20% of HMP&L's total demand





## **Economic Benefits**

Solar farms do more than generate clean, low-cost electricity. They also generate economic growth. The Henderson County Solar project will impact the local economy in multiple ways:

- Construction Jobs for local workers: 150+ jobs during the 6-9 month construction of the project
- Construction Contracts for local businesses: Electrical, Site Work, Landscape, etc.
- Local Spending during construction: Hotels, Restaurants, Shops, Entertainment, etc.
- Long-term Tax Revenue: The solar farm will pay substantial taxes over 30 years, without increased pressure on community services such as roads, schools, libraries, and first responders.
- **Full-Time Jobs**: 2-3 full-time operations and maintenance jobs

## Summary

COMMUNITY

In a single hour, the amount of solar power that strikes the Earth is more than the entire world consumes in a year.

Henderson County Solar proposes to capture some of that solar power, convert it to usable electricity, and deliver it to the local community at a competitive price.

We seek to develop a solar project that is respectful of our neighbors, and delivers multiple benefits to the greater Henderson County community.

We invite your questions, comments, and feedback.



## Contact Info



For more information, or to receive a printed version of this presentation:

hendersoncountysolar@communityenergyinc.com Email us at

or call us at (866) 946-3123



## Thank you



## Henderson County Solar Frequently Asked Questions

## **Describe the Project**

Henderson County Solar is a proposed 50-megawatt (50 MW) solar farm to be located in Henderson County, Kentucky, just outside the City of Henderson. The project site will consist of two separate sections totaling approximately 541 acres of land: one section south of Hwy 425 (Henderson Bypass) and one section west of Lover's Lane.

The proposed solar farm will sell 100% of its output to Henderson Municipal Power & Light (HMP&L). It is expected to produce 117 million kilowatt-hours of electricity per year - roughly 20% of HMP&L's total demand.

The solar farm will include approximately 130,000 solar panels, ground-mounted on a racking system that will rotate to follow the sun. Dispersed throughout the solar farm will be electrical equipment that will gather the electricity we generate and feed power lines that will connect to a nearby HMP&L substation.

'Henderson County Solar' is scheduled to be begin construction in 2022 and begin operating in 2023.

## Who are Community Energy and Henderson County Solar LLC?

Community Energy is one of the leading renewable energy development companies in the U.S. We've been in business for 21 years, developing many of the first and largest wind and solar projects in the country. This includes over 1,300 megawatts of solar farms similar to our proposed Henderson County Solar project. Community Energy is headquartered in Radnor, Pennsylvania with additional offices in Boulder, Colorado, and Chapel Hill, North Carolina.

In our role as a solar developer, we identify good markets for solar power, we find appropriate sites for solar projects, then we obtain the necessary leases, studies, permits, surveys, etc. to create a "shovel-ready" solar project. In parallel, we line up an investor who will finance the project and become the long-term owner-operator.

For each of the projects we develop, we create a separate project company that holds all of the assets of the project. For this project, we created Henderson County Solar LLC. Today, Community Energy owns 100% of Henderson County Solar LLC. Once the project is shovel-ready, an investor will become the new owner. But Henderson County Solar LLC, and all its rights and responsibilities, will endure that transition.

## Why Henderson County?

Last year, HMP&L conducted a competitive bid process, seeking to buy solar power under a long-term fixed-price contract. Community Energy proposed a local solar farm, connected directly to HMP&L's transmission system, and delivering power at a highly competitive price. The result will be low-cost locally-produced solar power.

## Are you leasing or buying the land?

Henderson County Solar LLC has entered into a number of long-term leases and easement agreements with local landowners. Our leases allow for 30 years of operation.

## Will you remove the equipment and restore the land at the end of the project?

Yes. Our leases require us to remove our equipment and restore the land at the end of the lease. In addition, our leases require us to establish and maintain resources that will pay for the cost of removal, net of any salvage value. Henderson County, through its solar ordinance, also requires us to post a security bond to fund the removal of the system.

## What permits will the project require?

The project will seek a *Conditional Use Permit* (CUP) from Henderson County. This permit will be subject to approval by the Henderson City-County Planning Commission. The Planning Commission will determine whether the project adheres to Henderson County's solar ordinance which establishes setbacks, visual screening, and other requirements. We will seek the CUP in the spring of 2021. Details and related meetings will be published on the project website.

The project will also seek a *Construction Certificate* from the Kentucky State Board on Electric Generation and Transmission Siting (the "Siting Board"). The Siting Board is organized by the Kentucky Public Service Commission.

The Siting Board will be composed of seven (7) members: the three (3) members of the Public Service Commission, two (2) members of state government (the Secretary of the Kentucky Cabinet for Energy and Environment or her designee, and the Secretary of the Kentucky Cabinet for Economic Development or his designee) and two (2) members of local government (the Chairman of the Planning Commission, and a resident of Henderson County appointed by the Governor).

Over the course of a roughly nine-month period, the Siting Board will review the proposed project, with a focus on three areas: 1) environmental matters such as noise and visual impacts, 2) economic impacts, and 3) the impact of the proposed facility on Kentucky's electric transmission grid.

More information can be found at https://psc.ky.gov/Home/EGTSB

Just prior to construction, the project will also seek a number of permits including erosion control, stormwater, and driveway permits from the state, and a building permit from Henderson County. These permits will be driven by the construction plans for the solar farm, which will likely be finalized in mid-2022.

## How will the project impact the environment?

As part of the development process, we have already conducted multiple studies to identify sensitive features of our proposed project site. These include:

- A delineation of any wetlands and streams
- An assessment of the cultural resources on site (archeological and architectural)
- An identification of any threatened and endangered wildlife habitat on site

By identifying these resources at the front end, we can design our facility in a way that avoids any impacts. That's our plan; stay away from any sensitive features on the site.

The construction of the solar farm is also "low impact." Unlike housing or commercial development, a solar farm does not require brick-and-mortar buildings or paved parking lots. The "foundation" of a solar farm is a steel post, driven into the ground. The racking system is bolted to the posts, and the solar panels are bolted to the racking system. When the project is at its end, this process is reversed, and the site can easily be returned to open land.

Underneath the solar panels, we will plant a slow and low-growing grass to manage any runoff or erosion. The land will essentially lay fallow for the 30-year project period.

During operations, there will be no emissions of any kind. To the contrary, the electricity we will produce will offset emissions at "traditional" power plants. We believe our local environmental impact will be neutral, while our broader environmental impact will be positive.

## Do the solar panels contain hazardous materials?

There are no hazardous materials in modern solar photovoltaic panels. The panels we use are the same as those installed on rooftops of houses. They are solid state, much like a semiconductor, and contain no liquids. If a panel is damaged, there is nothing to spill onto the ground. There are no special requirements for disposal of solar panels. There are now tens of thousands of acres of ground-mounted solar projects in the U.S, with no track record of any release of hazardous materials from those panels.

## How about project security?

No part of the solar farm will be accessible to the public. In compliance with Henderson County's solar ordinance, the equipment will be surrounded by a 7-foot-high security fence, typically a chain link fence.

Within the solar farm, all solar equipment will be grounded and touch-safe, fully compliant with all applicable codes and accessible only to qualified personnel, with the exception of guided

tours. When the amperage or voltage accumulates to a dangerous level, those wires will be buried in conduit underground. Any wires outside of our security fence will either be buried or placed on poles to the same standard of safety required by the local utility.

Prior to commencing operations, we will provide an orientation to local first responders to educate them about the project, the equipment, access, and procedures in case of unexpected events. Contact information for our monitoring and response center will be posted on the project fence to ensure the public can easily contact project representatives.

## Will the solar farm be an eyesore?

Solar farms are tidy and low-profile. To diminish the effect on the viewscape, we're planning to set our equipment back at least 200 feet from any neighboring house or public road (twice the required distance). Where existing natural vegetation around the perimeter of the site provides a visual screen, we will maintain that vegetative buffer. Where a natural buffer does not exist, we plan to install a double offset row of evergreen plantings that will grow to at least 7 feet in height. We will also reach out to any nearby landowners with a potential view of the solar farm, to collaborate on any additional measures we can take. Our goal is to be a good neighbor and to work in good faith to address any concerns.

## Will the solar farm be noisy, or cause glare, or heat?

The solar farm will not be noisy. There are only a few pieces of solar equipment that make any sound. These are electrical devices equipped with cooling fans. These pieces of equipment will generally be located toward the middle of the solar farm, such that you cannot hear them from the periphery. Our analysis estimates that any sound emanating from the solar farm will be at a level no higher than that of a "quiet urban nighttime."

The solar farm typically will not produce regular, significant glare. Solar panels are designed to absorb light, not reflect it, and are treated with an anti-reflection coating. Nevertheless, sometimes the sun can hit the solar panels at just the right angle to create glare. This is an infrequent and momentary occurrence, and typically does not have a significant adverse effect on neighboring houses.

Solar farms do not produce enough heat to be noticeable to adjacent properties.

## What positive benefits can the solar farm bring?

The proposed solar farm will generate a number of positive benefits:

**Jobs** – There will be about 150 jobs created during the 6-9 month construction period. Most of these jobs don't require experience or a specific skill set, so they're accessible to a wide range of workers. Once operational, the solar farm will require 2-3 full-time employees. These will likely be local hires.

**Contracts** – Typically, a number of contracts are awarded to certain local trades during construction. This includes electrical work, earthmoving, fencing, landscaping, and security.

**Local Spending** – During the construction period, a significant amount of local spending will occur. This will be for items such as gas, food, lodging, clothes, entertainment, tools, and other sundries.

**Taxes** – The solar farm will pay hundreds of thousands of dollars of taxes on land that is currently paying less than \$10,000 a year. Unlike residential or commercial development, this tax revenue will not be offset by an increase in County expenses for schools, water, sewer, etc.

**Low-cost electricity** – Henderson County Solar will sell 100% of its output to HMP&L at a price that was the result of a highly-competitive bid process. This is not expensive "green" energy. It's simply electricity, provided at a price competitive with any other source, and locked-in under a long-term contract.

## **Additional Questions**

Do you have additional questions? Email them to us at hendersoncountysolar@communityenergyinc.com or call us at (866) 946-3123.

## EXHIBIT 6 ATTACHMENT 6.2



January 20, 2021

[Name] [Address] [City, ST Zip]

Subject: Henderson County Solar Farm

Dear [Name],

Community Energy is developing a large-scale solar farm to be located in Henderson County, near the City of Henderson. We are writing today to invite you, as a landowner of property near the proposed project site, to participate in a series of public information events. These events are designed to provide an opportunity for you to learn about the project, ask questions, and provide comments.

The proposed 541-acre project site will have two sections: one section on the south side of Hwy 425 (Henderson Bypass), and one section on the west side of Lover's Lane. Please see the enclosed map. The solar farm will have a capacity of 50 megawatts and will sell 100% of the electricity it generates to Henderson Municipal Power & Light (HMP&L). This facility is expected to produce 117 million kilowatthours of electricity per year – approximately 20% of HMP&L's total demand. 'Henderson County Solar' is scheduled to start construction in 2022 and begin operations in 2023.

Community Energy is one of the leading renewable energy development companies in the U.S. We've been in business for 21 years, developing many of the first and largest wind and solar projects in the country. This includes over 1,300 megawatts of solar farms similar to our proposed Henderson County Solar project. Community Energy is headquartered in Radnor, Pennsylvania with offices in Boulder, Colorado, and Chapel Hill, North Carolina.

We look forward to the opportunity to speak with you, to introduce the project, and to answer any questions you may have.

Sincerely,

Chris Killenberg
Regional Development Director
<a href="mailto:chris.killenberg@communityenergyinc.com">chris.killenberg@communityenergyinc.com</a>

Chris Amsbary
Project Developer
chris.amsbary@communityenergyinc.com

Christene Tashjian
Assistant Project Developer
christene.tashjain@communityenergyinc.com

## **Henderson County Solar - Information and Public Participation**

In compliance with restrictions on public gatherings related to the COVID-19 crisis, the presentation of information about the project and the gathering of public comment will be facilitated by a combination of online resources, one-on-one conversations, and a virtual public meeting. Details are as follows:

## Website

We've created a website where you will find maps of the project, a PowerPoint presentation describing the project, a list of Frequently Asked Questions and responses, a schedule of upcoming live events, contact information, and instructions for submitting questions and comments. The website can be accessed at:

www.communityenergyinc.com/hendersoncountysolar

## **In-Person Office Hours**

We're hosting in-person "office hours" in Henderson to provide interested parties with a one-on-one opportunity to seek more information. These meetings will be held in a large conference room, limited to one individual or one family at a time. Face masks and social distancing will be required. The In-Person Office Hours will be held at the Ramada Inn, 2044 US-41 North, Henderson, KY 42420. The dates and available times are:

- Wednesday February 3, 2021 from 7:00am 9:00pm Central Time (CT)
- Thursday February 4, 2021 from 7:00am 9:00pm CT

To accommodate as many interested parties as possible, the individual/family meetings will be limited to one hour. To sign up for a 1-hour block, please send us an email at <a href="mailto:hendersoncountysolar@communityenergyinc.com">hendersoncountysolar@communityenergyinc.com</a>, or call our toll-free number at (866) 946-3123.

## **Virtual Public Information Meeting**

We will hold a live web-based presentation of the project, followed by a live question-and-answer session. The presentation will be also be accessible by telephone. The presentation will be recorded, and available afterward on the website.

The Virtual Public Information Meeting will be held on:

• Thursday February 11, 2021 from 7:00pm – 8:30pm CT

You can join the Virtual Public Information Meeting via web link at:

www.bigmarker.com/community-energy/Henderson-County-Solar (Please access the link in advance, to sign up for the meeting)

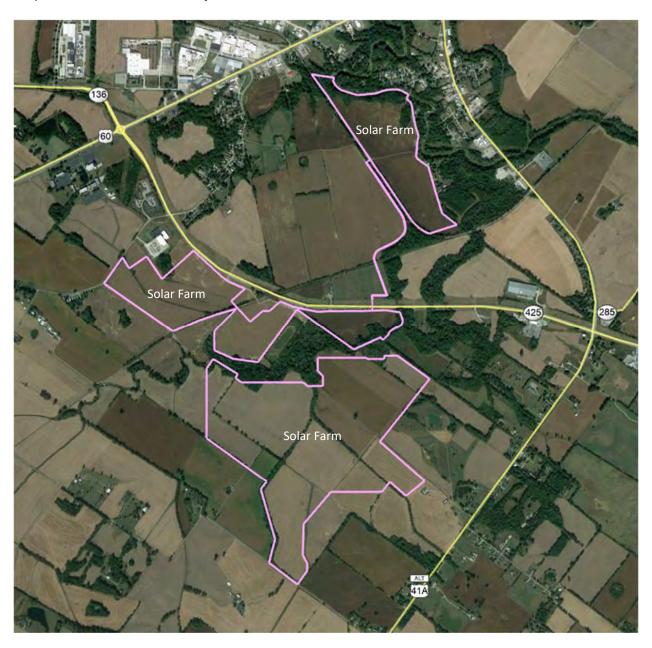
Or, you can call-in (toll free) at:

(888) 241-9901 (Enter ID Number 176938 and Passcode Number 5709)

We encourage you to access the information provided, and attend the events if you're able. Please also feel free to contact us directly at <a href="hendersoncountysolar@communityenergyinc.com">hendersoncountysolar@communityenergyinc.com</a>, or call our toll-free number at (866) 946-3123. We look forward to speaking with you.

**Henderson County Solar** 

Proposed 50MW Solar Farm Project Site



Henderson County Solar - Adjacent Landowner Mailing List 1-19-21

Zip	42420	42420	42420	42420	42420	42420	42420	42420	42419	42420	47714	42420	42420	42420	42420	42419	42419	42420	42406	42406	42437	42420	42420	42420	42420	42420	42420	42420	42420	42420	42420	42420
State	≿	≿	≿	≿	≿	≿	≿	≿	≿	≿	Z	₹	≿	₹	≿	≿	≿	≿	≿	≿	≿	≿	≿	≿	≿	≿	₹	≿	≿	≿	≿	≿
City	Henderson	Henderson	Henderson	Evansville	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Corydon	Corydon	Morganfield	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson							
<u>Street</u>	2138 Collier Road	2142 Collier Road	2144 Collier Road	2148 Collier Road	2148 Collier Road	2152 Collier Road	2190 Collier Road	438 Old Corydon Road	P.O. Box 8	8360 Hwy 1078 N.	17 Johnson Place	6402 Old Corydon Road	2260 S. Green Street	6200 Hwy 351	10336 Old Us Hwy 60W	PO Box 614	PO Box 256	225 S. Water Street	1013 Factory Street	2013 Wilson Station Road	635 Bob Hite Road	2489 Wilson Station Road	2816 Wilson Station Road	6975 Hwy 41A	7064 Hwy 41A	6926 Hwy 41A	6887 Hwy 41A	6975 Hwy 41A	6663 Hwy 41A	6657 Hwy 41A	6643 Hwy 41A	4034 Posey Chapel Road
Landowner																																
Acreage	n/a	33	6.9	197	22	20	20	134	2	28	92	52	2	7	16	13	200	20	51	n/a	4	133	1	8	4	Н						
Parcel Address	Collier Road	Old Corydon Road	Hwy 60	Old Corydon Road	Old Corydon Road	Old Corydon Road	Hwy 60	Hwy 60W	Old Corydon Road	Old Corydon Road	Old Corydon Road	Wilson Station Road	Wilson Station Road	Wilson Station Road	Wilson Station Road	Wilson Station Road	Wilson Station Road	Hwy 41A	Posey Chapel Road													
<u>Parcel ID</u>	46B-67	46B-68	46B-69	46B-70	46B-72	46B-73	46B-75	46D-13	46-84	46-19	46-10	39-2-66.1	39-1-5	39-2-69	39-2-65.1	39-2-65	39-2-33	39-2-51	39-2-61	39-2-60	39-2-57	39-2-55.1	47-12	47-10	47-5	47-4	47-32.12	47-32	47-34	47-32.17	47-32.16	47-32.5

<u>diZ</u> <u>S</u> :	42420	42420	42420	42406	42420	40444	42420	42420	42420	42420	42420	42420	42420	42420	42437	42420	42420	42420	42420	42420	42406	42406	42452	42420	42420	42420
State	₹	₹	₹	≨	₹	≨	₹	₹	₹	₹	≨	₹	≤	≨	≨	≨	≨	₹	≨	≨	₹	≨	≨	₹	₹	₹
City	Henderson	Henderson	Henderson	Corydon	Henderson	Lancaster	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Henderson	Morganfield	Henderson	Henderson	Henderson	Henderson	Henderson	Corydon	Corydon	Robards	Henderson	Henderson	Henderson
<u>Street</u>	4331 Posey Chapel Road	2829 Tippecanoe Trail	9489 Hwy 41A	8120 Pritchett Crooks Road	10699 Hwy 60W	118 Passage Way	2323 S. Green Street	3986 Hwy 41A	3986 US Hwy 41A	1022 Lovers Lane	1018 Lovers Lane	1008 Lovers Lane	914 Lovers Lane	910 Lovers Lane	9477 State Route 141 S	654 Lovers Lane	7523 Railroad Street	826 Lamont Lane	577 Lovers Lane	6360 Hwy 41A	1825 Wilson Station Road	1881 Wilson Station Road	7621 Smith Denton Road	5871 Hwy 41A	5864 Hwy 41A	5888 Hwy 41A
<u>Landowner</u>																										
Acreage	∞	9	81	46	33	12	99	53	n/a	2	Н	⊣	n/a	⊣	2	2	3	2	Н	7	Н	Н	18	n/a	2	П
Parcel Address	Posey Chapel Road	Hwy 41A	Hwy 41A	Hwy 41A	Hwy 41A	Hwy 425	Hwy 425 By Pass	Lovers Lane	Lovers Lane	Lovers Lane	Lovers Lane	Lovers Lane	Lovers Lane	Lovers Lane	Lovers Lane	Lovers Lane	Lovers Lane	Lovers Lane	Lovers Lane	Hwy 41A	Wilson Station Road	Wilson Station Road	Hwy 41A	Hwy 41A	Hwy 41A	Hwy 41A
<u>Parcel ID</u>	47-56	47-3.1	47-1	46-42	46-39	46-21	46-47	46-107	46-108	46-109	46-110	46-111	46-112	46-113	46-113.1	46-115.1	46-115	46B-106	46B-105	47-2	39-2-63	39-2-62	46-40	47-64	46-41	46-43

# EXHIBIT 6 ATTACHMENT 6.3



**COMMUNITY ENERGY** 

P.O. BOX 17236

**CHAPEL HILL, NC 275167236** 

# Affidavit of Publication

# PROOF OF PUBLICATION OF LEGAL ADVERTISEMENT

Account Number: 9193026646

# STATE OF WISCONSIN BROWN COUNTY

RE: COMMUNITY ENERGY COMMUNITY ENERGY

AD: 0004557761

PO:

Publication Cost: \$88.02

# of Affidavits1

This is not an invoice

I, being sworn, am an employee of the Evansville Courier Press, publisher of **THE GLEANER**, a newspaper publishe and having general circulation in the city of Henderson, Kentucky, in said county and state and that the legal advertisement, of which the attached is a true copy, was printed in its issues of:

EC-Gleaner January 20, 2021 - Wednesday

ined D

-laram moderal

Date

\_\_Notary Public

Notary is Resident of Brown County, State of Wisconsin

My Commission expires: August 06, 2021

TARA MONDLOCH Notary Public State of Wiscensin

#### NOTICE OF PUBLIC MEETING

Henderson County Solar LLC, a subsidiary of Community Energy, is proposing to develop and construct an approximately 50-megawatt solar electric generating facility to be located along Hwy 425 (Henderson Bypass) and Lover's Lane in Henderson County, Kentucky. The public is invited to learn more about the project through a project website, In-Person Office Hours, and a Virtual Public Information Meeting.

The project website includes maps of the project, a PowerPoint presentation describing the project, a list of Frequently Asked Questions and responses, a schedule of upcoming live events, contact information, and instructions for submitting questions and comments. The website can be accessed at: www.communityenergyinc.com/hen dersoncountysolar

dersoncountysolar

In-Person Office Hours will be conducted to provide interested parties with a one-on-one opportunity to seek more information. These meetings will be restricted to individuals or single family units, and will comply with any social distancing and public gathering requirements in effect at that time. The In-Person Office Hours will be held at the Ramada Inn, 2044 US-41 North, Henderson, KY 42420 on Wednesday February 3, 2021 from 7:00am – 9:00pm Central Time (CT) and on Thursday February 4, 2021 from 7:00am – 9:00pm CT. To sign up, please send an email to hender soncountysolar@communityenergyinc.com, or call our toll-free number at (866) 946-3123.

A Virtual Public Information Meeting will be held to provide a live presentation of the project, followed by a live question-and-answer session. The Virtual Public Information Meeting will be accessible via the internet and also by telephone. The presentation will be recorded, and available afterward on the website. The Virtual Public Meeting will be held on Thursday February 11, 2021 from 7:00pm – 8:30pm CT. To register for this event, please see the Virtual Public Information Meeting information on the website, send an email to hendersoncountysolar@communityenergyinc.com or call our toll-free number at (865) 946-3123.

# EXHIBIT 6 ATTACHMENT 6.4



# Kentucky basketball needs more players to step up

SPORTS, 1B

# The Gleaner

TUESDAY, JANUARY 26, 2021 | THE GLEANER



PART OF THE USA TODAY NETWORK



This map shows the planned location of a 514-acre solar farm to be located along the Kentucky 425/South Bypass just outside the Henderson city limits. Most of the solar panels (marked in blue) will be located on the south side of Kentucky 425, with the remainder to be erected on the west side of Lover's Lane.

MAP AND PHOTO COURTESY OF COMMUNITY ENERGY INC.

# Solar farm details are brought to light

As details emerge, public will be allowed to weigh in

**Chuck Stinnett** Special to Henderson Gleaner USA TODAY NETWORK

Details concerning a second large solar energy farm planned in Henderson County are emerging, and the public will have opportunities in early February to ask questions about the project during a series of informational meetings.

Community Energy Inc. last July announced an agreement to develop a solar farm that would provide up to 50 megawatts (MW) of electricity for 20 years to Henderson Municipal Power & Light.

Now, Community is disclosing details of the solar farm from which that power will be generated.

The Pennsylvania-based company's website indicates the Henderson County Solar project would be located on 541 acres along the Kentucky 425/South Bypass and nearby Lover's Lane just outside the city limits of Henderson.

That solar farm is in addition to the 1,680-acre Unbridled Solar Project on the Henderson-Webster county line south of Robards that is planned by Unbridled Solar LLC to serve Big Rivers Electric Corp.

The Henderson County Solar project would consist of 130,000 solar panels measuring about three feet wide and five feet tall each and bolted to a racking system that would allow the panels to track the sun from east to west during the day.

Most of the panels would be located on tracts located south of Kentucky 425 stretching from near the Kenergy Corp. headquarters and Old Corydon Road southwesterly toward U.S. 41-Alternate, extending as far south as Wilson Station Road at one point.

The remaining panels would be situated on a tract on the west side of Lover's Lane north of Kentucky 425. Most of the land currently is used for raising row



The sprawling Amazon Solar Farm Virginia-Southhampton, developed by Community Energy Inc., produces up to 100 megawatts of power for Amazon Web Services data centers in Virginia.

crops such corn and soybeans.

Community Energy said new and existing trees would shield the solar farm from homes in the area. The solar farm would be surrounded by a seven-foottall security fence.

The company said the solar farm — being developed as Henderson County Solar LLC — would comply with the Henderson County solar energy zoning ordinance that mandates that solar energy panels must be situated 25 feet from any property lines and at least 100 feet from any homes.

Maps provided by Community Energy indicate that along Lover's Lane, the panels would be 200 or

See SOLAR FARM, Page 5A

# New COVID-19 cases plummet in Kentucky

But state still ranks 9th for fastest spread of coronavirus

Mike Stucka USA TODAY NETWORK

Kentucky reported far fewer coronavirus cases in the week ending Sunday, adding 19,464 new cases. That's down 15.6% from the previous week's toll of 23,050 new cases of the virus that causes COVID-19.

Kentucky ranked No. 9 among the states where coronavirus was spreading the fastest on a per-person basis, a USA TODAY Network analysis of Johns Hopkins University data shows. In the latest week the United States added 1,190,227 reported cases of coronavirus, a decrease of -22% from the week before. Across the country, one state had more cases in the latest week than they did in the week before.

Across Kentucky, cases fell in 86 counties, with the best declines in Jefferson, Oldham and Morgan counties.

The share of Kentucky test results that came back positive was 19.5% in the latest week, compared with 25.6% in the week before, a USA TODAY Network analysis of COVID Tracking Project data shows. In the latest week, 102,323 tests were administered; a week earlier, that figure was 89,942. Experts say it is important to look at the share of tests that come back positive, not just case counts, to get a better idea of whether the rate of new infections is changing or if differences in testing are playing a role.

The World Health Organization says places should be conducting enough tests to have fewer than 5% coming back positive. Places where the percentage is higher could struggle to complete contact tracing soon enough to prevent spread of the virus.

Within Kentucky, the worst weekly outbreaks on a per-person basis were in Oldham, Campbell and Hancock counties. Adding the most new cases overall were Jefferson County, with 3,021 cases; Fayette County, with 1,396 cases; and Kenton County, with 825. Weekly case counts rose in 33 counties from the previous week. The worst increases from the prior week's pace were in Bullitt, Campbell and Franklin counties.

In Kentucky, 294 people were reported dead of COVID-19 in the week ending Sunday. In the week before that, 226 people were reported dead.

A total of 346,138 people in Kentucky have tested positive for the coronavirus since the pandemic began, and 3,421 people have died from the disease, Johns Hopkins University data shows. In the United States 25,127,000 people have tested positive and 419,214 people have died.

# 'It's not fair and it's not ethical'

Students, faculty picket planned University of Evansville cuts

**Michael Doyle** Evansville Courier & Press USA TODAY NETWORK

EVANSVILLE, Ind. — Horns blared from passing cars Sunday afternoon in support of the University of Evansville students, graduates, faculty and others who lined up around sidewalks near campus to protest planned cuts to the school's academic programs.

Kate Myers, one of the protest's organizers with the student organization "Fighting Aces" and a senior at UE, said her major, ethics and social change, would be eliminated by the proposed cuts.

"I don't think (the university administration) has treated us very well," she said. "This administration keeps telling us to trust them but so far we don't haven't seen much reason or evidence to trust them at all. It's not fair and it's not ethical."

Myers was standing near the corner of Weinbach and Lincoln, holding a flag left over from her march-

See PICKET, Page 5A



Forecast, 7A



# **Solar farm**

Continued from Page 1A

more feet from neighboring homes, though the company said it intends to plant a double row of evergreens along a portion of the road to provide a visual

For the portion of the solar farm that would lie south of Kentucky 425, maps indicate that panels would be 750 feet or farther from most neighboring homes.

The county ordinance also states that solar energy systems can be no more than 25 feet tall (not counting substations, utility poles or antennas).

The solar panels would generate lowvoltage DC power, like a car battery. Seventy-two inverters at the solar farm would change the power to AC power used in homes, businesses and industries, while transformers would increase the voltage to levels similar to that of distribution power lines that run along roads and high-voltage transmission lines. The solar farm's substation would connect with a HMP&L substation on U.S. 60-West.

Community Energy said 100 percent of the solar power would be sold to HMP&L. The solar farm would generate up to 50 MW of electricity during time of peak solar generation, such as on clear, sunny days.

The solar farm is estimated to produce 117 million kilowatt-hours of electricity per year, or roughly 20 percent of HMP&L's total demand for power.

The company said its electricity would be "low-cost," though it declined to disclose the price. HMP&L for years has been a provider of power that is less expensive than most other utilities.

"The cost of solar has come down to the point where it is cost competitive" with other sources of electricity, according to Chris Killenberg, a regional development director for Community Energy. He is overseeing the Henderson County Solar project as well as two more solar farm projects in Meade and McCracken counties that would provide power to Big Rivers.

"It used to be that we had to find legislatures that required green energy or a customer willing to pay more" to use solar energy, Killenberg said. "That is no longer the case. Solar is now competitive. It's cheaper because the solar equipment is being more mass-produced." And he said that after developing dozens of solar farms around the country, his company has become more cost-efficient.

"The cost to build a solar farm is onefifth the cost when I started doing this eight years ago," and the solar panels can retain 75 percent of their original efficiency even after 30 years, when the original cost of construction will have long since been recovered, he said.

HMP&L General Manager Chris Heimgartner also declined to reveal the price his utility will pay Community for solar power, saying it was proprietary business information.

Asked if it will be cheaper than the cost of power from the city's nowclosed coal-fired Station Two power plant near Sebree, Heimgartner said: 'Yes. Emphatically yes."

"I'm not doing this because I'm a green fanatic," he said. "I'm doing this because it's the best deal for our customers. From a cost perspective, it's great ...

"It's a really good deal for our customers," he said. "If we had been able to wait - which we couldn't - another four or five years, it would be even cheaper" as costs continue to plummet.

Two years ago, HMP&L received more than 30 proposals for energy supply from more than 20 companies, selecting Community Energy's as the best offer, he said.

In addition to solar power, HMP&L requested bids for "solar plus storage" a solar farm that would generate electricity during the day and store some of it in large batteries so it could be used during the night — but the costs weren't competitive.

But he said, in a few years, "We can go big again, maybe when solar storage will be feasible," by exploring another solar

In an email message, Killenberg said Community Energy is serving as the developer of the Henderson County Solar project while another entity would serve as a future investor. He said the investor, which isn't yet known, would become the owner and would either operate the solar farm or hire an operations and maintenance contractor.

More information

Community Energy has scheduled three opportunities for people to seek more information in a safe manner during ongoing COVID-19 pandemic.

 Individuals and families can schedule in-person meetings with a company representative in a large conference room at the Ramada Inn on U.S. 41-North between 7 a.m. and 9 p.m. on Wednesday, Feb. 3, and Thursday, Feb.

Such meetings will be limited to one hour for each individual or family, and face masks and social distancing will be required.

To sign up for a one-hour block, send HendersonCountySolar @CommunityEnergyInc.com or call toll-free (866) 946-3123. Individuals may request a particular day and time, though the company might have to arrange another time if that slot is already

• A live web-based presentation on the project, followed by a live questionand-answer session, will be offered from 7-8:30 p.m. on Thursday, Feb. 11.

It can be viewed at www.big marker.com/community-energy/ Henderson-County-Solar; interested parties should visit the site in advance to sign up for the meeting.

Alternatively, people can participate in the meeting by calling (888) 241-9901 and entering ID Number 176938 and Passcode Number 5709.

The presentation will be recorded and available afterward on the Henderson County Solar website (see below).

 Information is also available at www.CommunityEnergyInc.com/ HendersonCountySolar. Links to relevant maps and a PDF version of a PowerPoint presentation on the Henderson County Solar project are available there.

And information and a printed version of the 33-page PowerPoint presentation is available by contacting Community Energy at HendersonCounty Solar@CommunityEnergyInc.com (866) 946-3123.

# **Government permits**

Meanwhile, Community Energy said it will be seeking two kinds of approvals from local and state government:

• The Henderson City-County Planning Commission will review the company's plans to verify compliance with county zoning ordinances.

If they do comply and the property is zoned agricultural, the commission would merely need to approve the company's site plan, City-County Planner Brian Bishop said Thursday. If the property has a different zoning designation, a rezoning to agricultural would be necessary because county zoning regulations permit solar farms of no more than 10 acres on land not zoned agricultural, he said.

No such applications have been filed yet with the planning commission, according to Bishop.

A county building permit would also be required.

• A construction certificate must be sought from the Kentucky State Board on Electric Generation and Transmission Siting, which is associated with the Kentucky Public Service Commission.

Community Energy said it intends to submit a formal application to the siting board on May 14.

The Henderson County Solar filings with the state siting board can be viewed at psc.ky.gov/PSC\_WebNet/ ViewCaseFilings.aspx?Case=2020-00391 or tinyurl.com/4u96v6d6.

If the project clears those steps, Community said construction of the solar farm would begin in 2022 and take six to nine months to complete. It said the work would involve approximately 150 local construction workers in trades such as electric, surveying, earthmoving, fencing and landscaping.

Once completed, the solar farm would employ two or three full-time employees performing operational and maintenance duties. Operations are expected to begin in 2023.

Community Energy is based in Radnor, Pennsylvania (with additional offices in Colorado and North Carolina) and says it has been in business for 21 years. It says it has developed and financed 2,000 MW of renewable energy projects across the country, including more than 80 solar farms that generate 1,300 MW of power.

HMP&L is a municipal electric utility that was established in 1896. HMP&L has approximately 12,000 customer meters with an annual peak demand of 106 megawatts and annual energy requirements of approximately 600,000 megawatt-hours.

# **Picket**

Continued from Page 1A

ing band days in high school. She said she was frustrated by the lack of information from the administration.

The administration talks a lot about taking this university into the future," she said. "But what we're doing is making the future. In a time of political upheaval people in this major are committed to social justice and making the world a better place."

Meyer said her group has been asking for a release of the school's audited financials so they can understand what cuts are financially justified. She said so far the university has been dismissive of those requests.

'They act like if they gave us that information we wouldn't understand it," she said. "But we are college-educated students; we're not dummies. We want to see that data for ourselves," she said.

As a side effect of the need to social distance, the protesters covered a lot of real estate, about 50 yards from the corner of Weinbach and Lincoln, down Lincoln about two blocks. Passing cars honked and their passengers waved or yelled in support, often for the entirety of that distance.

Jamie Durbin, a 2018 graduate who majored in biology and is now in medical school, said having a well-rounded education with liberal arts components has made her a better person and potentially a better doctor.

"I feel like I'll be able to related to patients more in a way that I had not been able to with a different kind of education," she said. "I feel it's very important for students here in the future to have the same opportunity I did. It's a gift that this school gives its students, and to me, it would be a tragedy if that were taken away."

Al Kaiser, a professor and department head for archaeology and art history, said he was frustrated because the information the university has released does not support the cuts they plan to make, in his view. The art history part of his department would be one of the programs affected by the cuts.

"Some of the programs they're proposing cutting are actually making money right now. So it doesn't make a lot of sense to me."

Kaiser said as a department head he has talked to both current students and prospective students who are now wor-



Dr. Cris Hochwender of the University of Evansville Biology department, from right, waves at vehicles and people passing by with his wife Dr. Kristina **Hochwender of the English** department and other protesters in **Evansville Sunday.** 

SAM OWENS/COURIER & PRESS

ried about the stability of the university. "It's certainly making recruiting new students a lot more difficult," he said. "I've seen that firsthand."

One of the themes several people talked about was the need for soft sciences they say are ever more important in a changing society in a time of political upheaval. Those disciplines impart skills such as critical thinking, they say, that college students with a more narrow curriculum may not get the opportunity to learn.

"The university has proposed having a critical thinking course," Myers said. "But we believe that critical thinking is best learned through a discipline. It's not something that can be taught just in one class."

Jeremiah Angel, a freshman student in the music program, said his first year at the university had been everything he hoped it would be. As a lifelong Evansville resident who grew up around the university's music programs, Angel said UE has an advantage that bigger schools do not have when it comes to close bonds between students and faculty.

"It has been wonderful," he said. "Both in terms of my musical knowledge and my growth as a person. I've been so lucky to be able to come here. If these cuts take place it will be in my junior year and it would be really frustrating to see that happen."

Myers echoed Angel's sentiment that UE student and faculty form close, almost familial relationships.

"For 167 years this university has been always been rooted in liberal arts," Myers said. "It's known as being a warm place where you are treated like family. People come here because of the bond between faculty and students. And this is just not how you treat your family."



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# Hamlin seeks historic win in Daytona 500

SPORTS, 1B

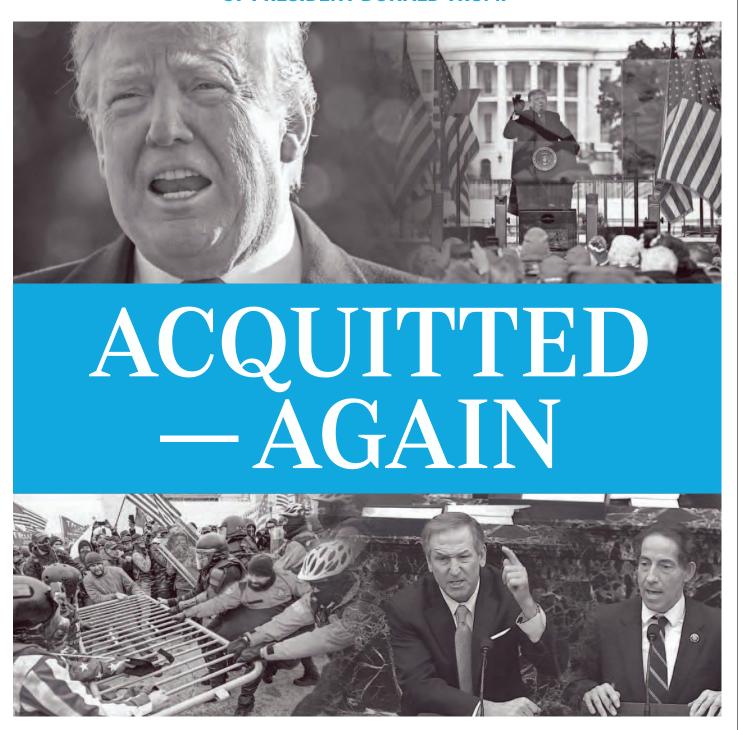
# The Gleaner

SUNDAY, FEBRUARY 14, 2021 | THE GLEANER



PART OF THE USA TODAY NETWORK

# THE SECOND IMPEACHMENT TRIAL OF PRESIDENT DONALD TRUMP



# Former president 'not guilty' of inciting riot

Lisa Mascaro, Eric Tucker and Mary Clare Jalonick | ASSOCIATED PRESS

Former President
Donald Trump, top,
was acquitted during
his second impeachment trial. He had
been accused of inciting rioters, bottom
left, on Jan. 6 in
Washington. Trump's
lawyer, Michael van
der Veen, and House
manager Rep. Jamie
Raskin, bottom right,
make closing arguments Saturday. AP

WASHINGTON – The Senate has acquitted former President Donald Trump of inciting the Jan.6 attack on the U.S. Capitol, bringing his trial to a close and giving him a historic second victory in the court of impeachment.

Trump was the first president to be impeached twice, with a majority of Republican senators defending his actions. The Senate voted 57-43 on Saturday afternoon that Trump is "not guilty" of incitement. Two- thirds of the Senate, or 67 votes, was needed for conviction.

House Democrats presented the case that Trump caused the violent attack by repeating for months the false claims that the election was stolen from him, and then calling on his supporters to "fight like hell" just before they assaulted the Capitol. Democrats argued that Trump had "obvious intent" as he egged

See TRIAL, Page 3A

SATURDAY'S U.S. SENATE VOTE

**57** 

43 NOT GUILTY

67 VOTES REQUIRED TO CONVICT

# Tri-State residents worry about solar farms

Mark Wilson

Evansville Courier & Press USA TODAY NETWORK

EVANSVILLE – While plans have not yet been filed for a proposed 300-megawatt solar farm at the southwest-ern-most tip of Indiana in Posey County, residents there are organizing in opposition.

The 3,000-acre spread of solar panels will be 20 minutes west of Evansville, the largest city in the Tri-State. Until recently, coal reigned king in this region of Indiana, Kentucky and Illinois and provided an abundance of cheap fuel for power plants.

Among residents' concerns is the

worry that fields of industrial-looking solar panels instead of corn and soybeans around their rural homes could affect property values.

Others have raised questions about safety, the effects on local infrastructure and whether or not the solar project should receive tax breaks.

Large-scale solar farms like the one

Large-scale solar farms like the one proposed for Posey County are increasingly likely in the Tri-State and across the Midwest, according to industry experts. Similar developments are already being planned for Henderson County, Kentucky, as well as Vanderburgh, Gibson, Pike and Knox

See SOLAR FARMS, Page 4A

# State urges people to take broadband speed test

**Chuck Stinnett** 

Special to Henderson Gleaner

Some folks in the Henderson area have swell broadband internet at home, with more than enough speed to stream "Ted Lasso" from Apple TV, download large software updates or send big photos to friends.

But many households, especially in rural areas, can barely send email, let alone surf Facebook or engage in remote learning.

You probably know whether you have adequate internet service. But state and federal officials who are directing money to extend broadband underserved areas might not.

See SPEED TEST, Page 8A

# ETFCU PAID MORE THAN \$8,200,000 -in - CHECKING 2020 BENEFITS Vertical CHECKING 3.30% + FREE ATMS ANYWHERE CHECKING CHECKING



Weather

Continued from Page 1A

counties in Southwestern Indiana.

# Solar's stake in renewable energy game

Renewable energy sources account for most of the new power generation planned in 2021, and solar energy is leading the pack, according to the U.S. Energy Information Administration's (EIA) latest inventory of electricity generation.

Solar will account for 39 percent of new power generation this year, the most of any renewable energy source, according to the EIA. An additional 15.4 gigawatts of utility-scale solar capacity is expected to be added to the electric grid, setting a new record for the growth of solar power.

At its current growth rate, solar power will make up nearly half of the renewable energy generated by 2050, while all renewable sources are expected to contribute about 42 percent of the country's electricity by then.

Decreasing construction costs for solar power and increasing demand for renewable energy are driving a nationwide growth in solar power installations, according to industry experts.

Utilities seeking to replace aging, coal-burning power plants with cleaner, more diverse energy generation portfolios are embracing renewable power sources such as solar and wind.

Environmental and consumer advocates say solar power will help utilities keep customer rates lower while cutting out health-threatening pollutants and the greenhouse gas emissions contributing to global climate change.

However, some property owners and residents who live near proposed solar farms have a differing outlook on the projects. In areas where solar farms have been proposed, many residents remain concerned about how it will affect their quality of life.

# **Posey County backlash**

Lease payments for agricultural land needed to construct solar power projects are often touted as additional income for profit-strapped farmers.

Posey County farmer Alan Brenner sees it differently. As property owners have signed leases for the proposed 3,000-acre, 300-megawatt solar Posey Solar Project, Brenner and other farmers who lease some of the ground they plant are facing reduced incomes.

"They have already leased some of the land I farm. Most farmers don't own everything they farm," he said.

Like his father before him, Brenner, 65, wants to pass on the family farm to his children. Brenner said he has been working the land since 1976, when as a kid he began helping his father farm.

He worries, too, about the effect a large solar development will have on wildlife and the quality of the rural life he loves.

"This kind of peacefulness is going away in this country," Brenner mused.

While Brenner said he has no intention of "selling out," other properties have snapped at the opportunity.

That's how some residents in rural Marrs Township in southeast Posey County, such as homeowner Misty Bishop, may find themselves facing the hard decision to either stay and look at a changed landscape or relocate.

"I don't want to look out and see solar panels on three sides 100 feet from my property," she said. "It's beautiful out here. It's just farmland."

Bishop and her family moved from Evansville's West Side to their home on Lower Mount Vernon Road 14 years ago. She operates a hair salon there, too.

The old farmhouse with its wraparound porch is her dream home, she said. Her sons attend nearby Marrs Elementary School, which she said would also be affected by the development.

Bishop said she worries the solar panels will be a safety hazard. She and other neighbors have organized to attend public meetings and oppose the project with a petition and website.

Among their concerns are how the project will affect property values, safety and quality of life.

"Almost every single person in our area is opposed to it," she said.

Bishop said her family will likely move if the solar project moves forward. "If we can find a buyer," she said.

Longtime Marrs Township resident Jerry Chastain said he would like to see solar farms located in more remote or industrial areas, where they will have fewer potential impacts to residents. Like other residents, he said he has been frustrated by a lack of detailed information about the project.

Residents have questions, Chastain said, including about everything from whether or not the solar panels will be



The 50-megawatt solar farm, which is comprised of approximately 150,000 panels spread across 300 acres, is nearly complete near Troy, Ind., in Perry County.

SAM OWENS/COURIER & PRESS

screened from view, to fire safety, impact on area roads, the effect on property values and tax abatement.

"Nobody here is opposed to solar power," he said.

An application to phase in the development's taxes over 10 years has been filed but contains few concrete details about the project itself. There will be a public hearing on it at the Posey County Council meeting on March 9.

## Land and sun

Renewable energy developers say Southern Indiana has everything needed for attracting large-scale solar proiects.

"There is more sun in the southern part of the state, and that equals more generation. There is abundant land, and there is transmission infrastructure," said Jarrod Pitts, a project developer for Tenaska.

The Omaha, Nebraska-based company Pitts works for is partnering with Arevon Energy Management to develop the Posey Solar Project.

The partnership is developing five of the six solar farms currently on the drawing board in Southwestern Indiana. The projects will generate a combined total of more than 1,000 megawatts of electricity. Most are slated to be operational in 2023, although the RATTS 1 solar farm near Petersburgh, Indiana, will be operational next year.

Including their name, location, output and cost, they are:

- Posey Solar Project, Posey County, 300 megawatts, \$225 million
- RATTS 1, Pike County, 150 megawatts, \$128 million
- Gibson County Solar, Gibson Coun-
- ty, 280 megawatts, \$215 million
   Elliott Solar Project, Gibson County, 200 megawatts, \$170 million
- RATTS 2, Knox County, 150 megawatts, \$128 million.

Among their customers will be NIP-SCO (Northern Indiana Public Service Co.) and Indiana Municipal Power Association, a group of municipally-owned electric utilities.

Others, such as Posey Solar, will either be uploaded to the electric grid for sale on the regional market or to customers who have not yet signed purchase agreements, Pitts said.

Pitts cites a "significant increase" in renewable energy demand from Indiana utilities as one of the reasons Arevon-Tenaska has been attracted to the Hoosier state, along with those utilities' preferences for energy generation projects within the state.

"Nationally, we are seeing a continued increase in demand for renewables from utilities or companies that want it," Pitts said. "Cost is continuing to come down while at the same time across the United States that economic tipping point has been reached where renewables are the lowest cost source for energy."

In far eastern Spencer County, a 50-megawatt project by California-based Orion Renewable Energy Group is nearly complete. The Troy Solar project will supply its power to CenterPoint Energy (formerly Vectren).

Orion also is continuing work to develop its proposed 70- to-80-megawatt Crescent City Solar project near U.S. 41 and Baseline Road in Vanderburgh County, said Orion Director of Development Justin Wolf.

"It's only been in the last five years that solar has really gained its legs as far as utility of scale. I'd say solar is slowly migrating to the Heartland," Wolf said. "Solar and wind are very competitive — less expensive than gas and coal."

While wind power is very specific about where it can be located, Wolf said part of solar's appeal is that it can be located closer to the cities and regional wholesale markets where there is demand for power.

However, large-scale solar projects require large tracts of land.

"You can put about five acres per

megawatt," Wolf said. "Generally, it's about one-third solar panels and two-thirds open ground."

Sean Gallagher, vice president of state and regulatory affairs for the Solar Energy Industries Association, said land use is part of the balancing act that must be considered when evaluating large-scale solar developments.

"There are trade-offs in anything you do. You don't have coal ash waste ponds but there is a lot of land use," Gallagher said

Two solar projects are slated for Henderson County.

Pennsylvania-based Community Energy Inc. has an agreement to develop a solar farm that would provide up to 50 megawatts (MW) of electricity for 20 years to Henderson Municipal Power & Light.

Henderson County Solar would be located on 541 acres along the Kentucky 425/South Bypass and nearby Lover's Lane just outside the city of Henderson. Its 130,000 solar panels will be bolted to a racking system that would allow the panels to track the sun from east to west during the day.

A second, 1,680-acre solar farm is planned to serve Big Rivers Electric Corp. The Unbridled Solar Project will be on the Henderson-Webster county line south of Robards.

# Infrastructure and capacity

The Tri-State region has long been known for its abundance of coal.

"It's why we saw power generation flourish in our market over time, because that was where the coal mines were," said Greg Wathen, president/CEO of the Economic Development Coalition of Southwest Indiana.

The existence of substations and power lines bringing that coal-generated electricity to customers is one of the main reasons Southwestern Indiana is now attractive to solar power, he said.

"It's all interconnected to the (power) grid. You already have this massive grid in place for coal. That same infrastructure can support solar," Wathen said. "There are hundreds of miles of transmission lines that now can be utilized for for renewables instead of putting it in the middle of nowhere where you are without that infrastructure."

Settling on a specific location for a solar farm can be a thorny issue.

"The real challenge is siting. To say I want it to be near no one, that's interesting because you have to connect it," Wathen said. "Infrastructure matters in all this."

# **Environmental impacts**

The Tri-State's abundance of coal also led to a large concentration of power plants in the region, particularly in Southwest Indiana, where it powered manufacturing and economic development in decades past.

What was once billed a source of cheap electricity had another side.

Pollution.

That same concentration of power plants and factories became a concentration of "super polluters" pumping millions of pounds of toxic air emissions into the Ohio River Valley's skies and the lungs of residents.

Renewable energy resources such as solar power not only reduce pollution but also mitigate power plants' contributions to climate change, say environmental advocates such as Wendy Bredhold, senior campaign representative for Sierra Club's Beyond Coal Campaign in Indiana and Kentucky.

"This is a good development in terms of our health," Bredhold said. "We have to transition away from fossil fuels, and we have a few utilities in Indiana who are doing pretty well at that."

These large solar installations don't produce greenhouse gas emissions that contribute to climate change or put out pollution, but they aren't entirely without environmental impacts.

Just like other types of power plants, solar farms do affect their surroundings. When land is cleared for solar projects it may have long-term effects on the habitats that support native plants and wildlife, according to the EIA.

While the photovoltaic (PV) panels used on solar farms are mostly glass, they can contain lead, cadmium and other toxic chemicals, according to the EIA. Use and disposal of these materials is regulated by U.S. environmental laws.

# **Indiana utilities**

How are Indiana's five investorowned utility companies progressing in the trend toward renewable energy such as solar and wind?

A recent Sierra Club report graded utilities on their plans to retire coal plants, stop building new natural gas plants and invest in renewable energy.

NIPSCO received an "A" for its plan to stop using coal entirely by 2028, replacing it with renewable energy sources and without building new natural gas plants.

Closer to home, CenterPoint Energy (formerly Vectren), received a "B" for its approach.

Solar power is one of the sources CenterPoint will rely on to supplant 700 megawatts of electricity from coal-fired generating units slated for closure.

The utility company has said it intends to retire its coal-burning power plants and has set October 2023 as its date to close its A.B. Brown Generating Station in Posey County. It's part of a strategy to reduce its carbon emissions 70 percent by 2035.

"Renewable power has become more cost-competitive and, when coupled with other resources such as natural gas, provides for cleaner, reliable power," said Natalie Hedde, CenterPoint spokeswoman. "Implementing a cleaner energy future will allow CenterPoint and its customers to achieve carbon reduction goals, better serve our communities and neighbors in need, and provide the business and economic development tools needed to keep our region moving forward."

Even more than environmental benefits, utilities are finding that solar and other renewable energy sources are cost-efficient.

"Utilities like NIPSCO and Vectren that have done these all-source request for proposals are finding that clean energy is the most affordable energy for their customers, and that's why they got an A and B respectively from our report on climate commitments. It is a winwin," Bredhold said.

# How it works

The cost of solar power, both with and without battery storage, has come down 45 percent in the last five years and 80 percent in the past 10 years, Gallagher said.

Also, nationally, large corporations such as Google, Amazon and Microsoft have made clear they want their power to come from clean energy sources, Gallagher said. It's a trend that is beginning to filter down to smaller corporations.

Energy in sunlight can be converted into electricity in two ways, according to a new Congressional Research Service report. The first is by using solar photovoltaic (PV) cells — solar panels that absorb light to create direct current electricity. Technology called an inverter is then used to convert the direct current to an alternating current for distribution on the power grid.

Most solar energy generation, 96% in 2018, comes from PV systems, according to the report.

A second, more costly form of solar generation, is concentrated solar power (CSP) which uses the sun's energy to produce heat for electricity generation.

Solar power accounted for 43 percent of the new electrical generation capacity added in the United States from January-September 2020, according to the SEIA. The industry association is forecasting solar generation by utilities to grow 8.6 gigawatts by 2025 as more utilities announce carbon reduction and renewable energy goals.

That's nearly 27 million new solar panels, according to the U.S. Office of Energy Efficiency & Renewable Energy.

# THEGLEANER.COM | TUESDAY, FEBRUARY 16, 2021 | 5B

basket - camel - front - fiddle - of itself "Take care of the future" my grandfather advised, "and the past will take care OF ITSELF."

SCRAMLETS ANSWERS 2/16/21

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# **Public Notices**

# **PUBLIC NOTICE**

The Henderson City-County Planning Commission will hold a Regular Public Hearing Meeting via video teleconference being broadcast live on Facebook https ://www.facebook.com/Henderso nPlanning/live/ on Tuesday, nPlanning/live/ on Tuesday, March 2, 2021 at 6:00 P.M., in the Henderson City-County Me-dia Facility Room, Suite #F. At this time, the following items will be heard:

The City of Henderson's Board The City of Henderson's Board of Commissioners, are requesting that the Planning Commission consider amendments to Article X – Signs and Outdoor Advertising Displays of the Code of Ordinances of the City of Henderson, Kentucky for the following sections:

•Sec. 10.03. - Definitions and interpretation.

<u>•Sec. 10.06.</u> - Design, construc-

tion, and maintenance.

•Sec. 10.08. - Signs in the public right-of-way.

•Sec. 10.09. - Signs exempt from

right-of-way.
•Sec. 10.09. - Signs exempt from regulation under this article.
•Sec. 10.11. - Billboards. (See exhibit "A".)
•Sec. 10.12. - Temporary signs.
•Sec. 10.21. - Penalties for violation

•Delete Appendix #3

Submitted by,

Brian Bishop Executive Director Henderson City-County Planning

#### PUBLIC NOTICE

The Henderson City-County Planning Commission will hold a Regular Public Hearing Meeting via video teleconference being broadcast live on Facebook https://www.facebook.com/HendersonPlanning/live/on Tuesday, March 2, 2021 at 6:00 P.M., in the Henderson City-County Media Facility Room, Suite #F. At this time, the following items will be heard:
Tract 1-A Jack Tillman Division

Tract 1-A Jack Tillman Division
Agricultural Division – Submitted
by Carolyn Whitmore Estate, Laveta Daniel Executrix for the proper-

by Carolyn Wnittmore Estate, Laveta Daniel Executrix for the property located in Henderson County at 9260 Hwy 416 West, (PID# 61-31). Applicants are requesting approval for a 1-A Tract Division for approximately 10.115 acres, leaving +42.8 acres left in the Estate.

REZONING #1114- Submitted by Tommy D. Tapp for the property located in Henderson County (PID# 39-2-66), adjacent to 6402 Old Corydon Road, and containing approximately 77.284 acres. Applicant is requesting a zoning change/Map Amendment from Single Family Residential District (R-1) to Agricultural District (AG) for a Solar Farm.

REZONING #1115- Submitted by Tommy D. Tapp for the property located in Henderson County (PID# 39-2-66), adjacent to 6402 Old Corydon Road, and containing approximately 428 acres Applicant is 39-2-66), adjacent to 8402 Old Coryonomy odon Road, and containing approximately 4.428 acres. Applicant is requesting a zoning change/Map Amendment from Single Family Residential District (R-1) to Rural Residential District (RR) to create a

Lot #1 Minor Subdivision.

REZONING #1116- Submitted by REZONING #1116- Submitted by Jeffrey & Beth Francis for the property located in Henderson County at 893 Lover's Lane (PID# 46-19-2), and containing approximately 95.3 acres. Applicants are requesting a zoning change/Map Amendment from Heavy Industrial District (M-2) to Agricultural District (M-2) to Agricultural District (AG) for a Solar Farm.

Submitted by, Brian Bishop Executive Director Henderson City-County Planning er & Press, February 16, 2021)

INVITATION TO BID

Bid Reference No. 21-09

ADVERTISEMENT FOR BIDS RE: BORAX DRIVE EXTENSION CONSTRUCTION

The City of Henderson in conjunction with the Kentucky Transportation Cabinet is accepting competitive sealed bids for the Borax Drive Extension Project until Thursday, April 8, 2021 at 2 pm (CST). All bids shall be in a sealed envelope, mailed or delivered to: Office of Director of Finance, 222 First Street, or P.O. Box 716, Henderson, Kentucky 42419. All bid envelopes shall be clearly marked "Borax Drive Extension Project" in the bottom left cor-ner of the envelope. The bids will be opened in a public forum at 2 pm (CST).

A complete bid package (including Plans and Specifications) may be obtained at Maco-Evansville Blue, 600 Court Street, Evansville Indiana 47708, begin-ning February 16, 2021 upon payment of a non-refundable bid package price of \$50.00 plus tax for each set.

A mandatory pre-bid conference be held for this project on March 2, 2021 at 10:00 am in the 3rd floor Assembly Room at Henderson Municipal Center, 222 First Street, Henderson, Kentucky. Note: Based on current health safety concerns a video teleconference may be held in

# 

lieu of a public meeting.

Bidders and DBE subcontractors must be prequalified with the Kentucky Transportation Cabi-net and possess a Certificate of net and possess a CETHICAGE of Eligibility at time of bid open-ing. A DBE goal of 6% has been established for this project. All other subcontractors must be prequalified when accepting subcontracts.

Prevailing wages apply to this project. A 5% Bid Bond is required with the contractors bid. The successful bidder will be required to provide a provider as provided. quired to provide a payment and performance bond in the amount of 100% of the bid. The City reserves the right to reject any and all bids and accept the Lowest Responsive and Respon-sible Bidder. No BIDDER may withdraw his/her bid within 60 days after the actual date of the opening thereof.

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The bids are being solicited pursuant to KRS 45A.365. (The Gleaner, Feb. 16, 2021)

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# CROSSWORD by Eugene Sheffer

# **ACROSS**

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- "-Were a Boy" (song by Beyoncé)
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Carpets

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41 Baby carriage

43 Delany or Carvey

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Today's Cryptoquip Clue: Q equals T

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# CLASSIFIEDS

 SCRAMLETS ANSWERS 3/30/21 growth - chewy - ditch - hidden - weigh you down If you want to learn to fly, you must first give



•HENDERSON COUNTY SOLAR SITE PLAN – Submitted by Community Energy Solar, LLC and Chris Killenberg, Regional Development Director for the properties located in Henderson County on Wilson Station Road; Hwy-41A; Hwy 425;



and Old Corydon Road. Applicants are requesting Site Plan approval for a Solar Farm.

Submitted by, Brian Bishop Executive Director Henderson City-County Planning Commission

Exhibit 6 Attachment 6.4 Page 7 of 16

# The case of the displaced yard signs

In our already splintered America, the last thing we needed was something else to divide us, but that is what we got. Solar power has come to our rural neighborhood. Or rather, solar power wants to come to our neighborhood.

Some of us in the neighborhood want solar power and some of us do not. More precisely, some of us want it and some of us want very much not to have it. Gathering evidence to learn the truth rather than to Signs have appeared up and down our road, most opposing the massive solar farm but others supporting it.

My wife and I take a two-mile walk each morning along our country roads, so we walk by many signs. On a recent walk, I noticed that the signs opposing solar power were all standing where they had been placed, but more than half of the pro-solar signs were lying on the ground. It appeared that there was some mischief at work.

But then I remembered the strong winds we'd had. Perhaps it was the wind that knocked the signs down. But why, reason countered, would it knock down only the pro-solar signs and leave the rest standing?

I could imagine teenage boys from families that rail against solar-paneled farm fields driving down the road late at night, plucking up the opposition's signs. That would explain why more than half of the prosolar signs were down while all the anti-solar signs remained standing. I was sure I had found the solution to the mystery. But, as in almost every Agatha Christie novel I have ever read, there was something I had overlooked. Upon closer inspection, I noticed that the wire-framed base on one of the prosolar signs was squared at the bottom. That is, rather than two wire stakes pushed deeply into the ground, the wire was bent at 90-degree angles to form others and, most importantly, a willingness to act on a box-like bottom.

I have never seen a yard sign constructed like this. My guess is that a provider attached the signboard to the wrong end of the frame, placing it over the wire stakes that were meant to be pushed into the ground. That would explain why only these signs were upended by the strong winds of the past week.

therefore of great importance. But it is possible to gather only the evidence that reinforces a view already held and disregard all the rest. This has certainly happened in America's politics and in its response to the pandemic. The fact that search engines like Google prioritize results based on previous searches only exacerbates the problem.

reinforce a position requires humility, which is why pride militates against real learning and therefore against truth. Humility is the key to learning, which may explain why children are so much better at it than adults.

It is not only politics and pandemics that require careful, humble thinking. So do relationships. Relationships are often derailed by assumptions that become convictions based on faulty evidence. How many friendships have floundered and marriages failed because one person looked, and, of course, found, evidence to support a flawed conclusion.

This is also true in matters of faith. I have spent my adult life studying the Bible. After decades of insight and even delight, one of the most important things I have learned is that there is much more to learn. Professor N.T. Wright, one of the world's best-known biblical scholars, routinely tells his students, "Ten percent of what I am about to tell you is wrong. I just don't know which ten percent that is."

That kind of attitude – treasuring what we have learned yet eager to learn more – is crucial. Research conducted by the Canadian Bible Society reveals that, for many people, Bible reading only reinforces already-held positions. Something more is needed: an inquiring mind, a humble attitude, conversations with what one learns.

Looper is the pastor of Lockwood Community Church. His blog, "The Way Home," is at shaynelooper.com.



B: Sports

Exhibit 6 Attachment 6.4 Page 8 of 16

This may or may not be the solution to the mystery. There could easily be other details I have overlooked. This is always the situation, not only in the case of the displaced yard signs but in all of life's mysteries.

**Shayne Looper** 

Guest columnist

Evidence gathering is

-

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Saturday, 04/03/2021 Page .B06

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2 of 2

Exhibit 6 Attachment 6.4 Page 9 of 16

# Coal

Continued from Page 1A

United Mine Workers operation in Kentucky — and its Dodge Hill complex in southern Union County, putting 650 people out of work.

For the second time, Grounds lost his job to a mine closure.

He found work at Riveredge Mine at Rhino Resource Partners' Pennyrile complex along the Green River in McLean County. But production halted at Riveredge in early September 2019; Rhino blamed tumbling coal prices. Rhino announced it would, at a loss, sell the Pennyrile assets to coal powerhouse Alliance Resource Partners.

"No future coal production is planned at the Pennyrile complex as a result of this sale," Rhino said at the time.

With that, Mike Grounds had been forced out of work by the closure of a Western Kentucky mine for a third time.

# Coal's struggle continues

Today, little hope glimmers for the region's coal industry.

By this summer, the three commissioners of the Kentucky Public Service Commission could make a decision that would drive another nail in the proverbial coffin of Western Kentucky coal — and the U.S. coal industry generally.

In March, power producer Big Rivers Electric Corp. filed an application with the state regulators, asking permission to convert its 40-plus-year-old Green power plant near Sebree from coal to natural gas, which would end Green's consumption of about 1.5 million tons of Western Kentucky coal each year.

In its application to the PSC, Big Rivers said it "must cease coal-fired generation at Green Station by June 1, 2022, in order to meet the October 31, 2023, deadline for the closure of the Green Station ash pond."

began running into millions of dollars annually at each of those power plants. Some required newer technology or different systems, such as for handling ash waste left behind from the burning of coal.

Power companies began closing coal-fired power plants. Demand for coal tumbled, and production of coal in Western Kentucky plummeted from 40.9 million tons in 2013 to 23.6 million tons in 2017, according to the Kentucky Energy and Environment Cabinet. That was a drop of more than 42%.

Simultaneously, the cost of generating power from other sources fell. Underground fracking sent the price of cleaner-burning natural gas plunging. The average "citygate" price of natural gas delivered by a transmission pipeline to a gas utility in Kentucky fell from a peak of \$10.14 per thousand cubic feet in 2008 to just \$2.81 last year — a mere one cent more than the record low a quarter-century earlier.

Likewise, the cost of solar photovoltaic hardware — solar cells — and therefore the cost of solar power has plummeted. In 2011, the cost of producing solar energy at large, utility-company scale averaged 28 cents per kilowatt-hour (kWh) — four times more than the average cost of electricity in Kentucky.

That same year, the U.S. Department of Energy launched the SunShot Initiative with a goal of reducing the cost of utility-scale solar production by 75 percent in nine years without the aid of subsidies. That would have meant reducing the price of solar power to 6 cents/kWh by 2020.

The industry achieved it three years early, in 2017.

That means wholesale solar power — when available — is cheaper than Kentucky's average retail power price of 8.6 cents/kWh. And where does most of the Bluegrass State's power come from?

Coal. But perhaps only for now. Advocates for solar power now have a goal of working to cut its cost in half, to 3 cents/kWh, by 2030.

# Closing coal plants

One by one, electric utilities that embraced coal as the smart choice a generation or two ago have begun shutting down or converting their Western Kentucky

1 of 5 6/9/2021, 10:32 AM

Exhibit 6 Attachment 6.4 Page 10 of 16

The Green ash pond must be closed because it doesn't comply with federal Coal Combustion Residual environmental regulations that require the closure of any ash ponds whose bottom is within five feet of groundwater.

With the closure of its ash pond looming, Big Rivers CEO Bob Berry said the generation and transmission co-op was left with three choices: convert Green to natural gas; install a dry bottom ash system that wouldn't require ash slurry to be emptied into an ash pond; or retire the power plant altogether. It told the PSC that converting the plant to natural gas is the least expensive option.

"It's really just economics," Berry said in an interview. "We need generation. We need capacity.

"We could go out onto the market and buy capacity," but he said Big Rivers could buy only one year of power at a time from the open market.

"You can imagine the risk and volatility that would expose our members to," Berry said. (Big Rivers provides power to three rural electric distribution coops: Henderson-based Kenergy Corp., Jackson Purchase Energy Cooperative in Paducah and Meade County RECC.) The conversion of Green to natural gas will mean further reductions of emissions of carbon dioxide by Big Rivers. Closures of coal plants reduced its CO2 emissions by 71% from 2010 to 2020, which Berry said far exceeds that of other major electric companies in the region. Conversion of Green to gas could increase that to 77% by 2030.

However, a changeover at Green would mean a drop in employment. It requires 130 employees to operate as a coal plant; if converted to natural gas, it will require only 30, Berry said.

Big Rivers has asked the PSC to rule on its request by June 29 to give it time to obtain final environmental permits and begin conversion work.

# The power of economics

King Coal for decades has been pummeled by environmental and miner health regulations, eroding public support, concerns regarding climate change and other threats.

But increasingly, the future of coal is threatened by

HMP& L shut down its 58-year-old Station One power plant on the Ohio River just north of Downtown Henderson in 2008, citing mounting costs and an inability to comply with environmental

coal plants for a variety of reasons.

regulations.

TVA shuttered two coal-fired units of its enormous Paradise Fossil Plant in 2017, replacing them with a natural gas combined cycle plant. TVA retired the third and final coal unit at Paradise in February 2020.

Owensboro Municipal Utilities in 2019 closed one of the two coal-fired generating units at its 55-year-old Elmer Smith Station on the city's east side; the second unit was retired in early 2020.

"It doesn't make sense to invest in 50-year-old units," Kevin Frizzell, OMU's general manager, was quoted as saying last year. "We've studied this since 2012. It was difficult internally. We've generated with coal since 1900. A lot of us worked in the plant. It's a painful thing. But ultimately we have to do what's best for our customers."

Nationally, generation of electricity from burning natural gas to drive generators doubled from 2002 through 2020, according to the federal Energy Information Administration. Last year, natural gasfired power plants accounted for 40 percent of the nation's electricity, more than twice as much as coalfired generating stations. (Both nuclear and renewable power slightly exceeded coal-based power.)

# Let the sun shine

Meanwhile, the seemingly impossible came true when solar power became economical on power-company scale. That means huge solar farms are coming to Western Kentucky.

In May 2020, Big Rivers signed power purchase agreements to acquire power from three solar farms planned in Western Kentucky, including up to 160 megawatts from the 1,680-acre Unbridled Solar Project planned on the Henderson-Webster county line near Robards as well as a total of 100 MW from a pair of solar farms planned in Meade and McCracken counties. Those deals were in part to satisfy a demand by Nucor Corp. that a set portion of

Exhibit 6 Attachment 6.4 Page 11 of 16

something for which neither "Friends of Coal" license plates nor former President Trump's praise for plant it is constructing in Meade County come from "clean, beautiful coal" can make much difference: economics.

Simply put, the cost of cleaner-burning fuels such as natural gas and renewable energy such as solar power 2023 will begin purchasing up to 50 MW of power has dropped so precipitously than even in a traditional coal state such as Kentucky, the burning of be development just south of town. That will supply bituminous coal to generate electricity isn't necessarily the most economical way to go.

It wasn't always so.

Proximity to seemingly inexhaustible seams of coal in Western Kentucky as well as rivers that provide ample water for generating steam used to be the reason that Kentucky consumers and industries enjoyed some of the cheapest electricity in the country.

In 1896, Henderson turned to coal-fired generators to provide electricity for street lights, homes and businesses, and for years Henderson Municipal Power & Light provided some of the cheapest power in the U.S.

Ready access to coal and water were also the foundation for power generation by the Tennessee Valley Authority, Kentucky Utilities Co., Owensboro Municipal Utilities and Louisville Gas & Electric. Those and power companies in other states kept the region's many coal mines humming in the 1960s and 1970s.

Coal production in Western Kentucky peaked at a staggering 60 million tons in 1975, when vast surface mines in Muhlenberg County briefly made it Kentucky's biggest coal-producing county.

But outrage over coal companies that abandoned strip mines, leaving behind moonscapes, as well as growing environmental concerns began gnawing away at enthusiasm and demand for coal.

The federal Surface Mine Control and Reclamation Act was passed in 1977, requiring reclamation of surface mines so that their site resembled their premining condition. Later legislation was passed to limit emissions of sulfur dioxide (which was blamed for causing acid rain) and nitrogen oxides (a contributor to smog), which often required installing the electricity it will buy for the 400-employee steel solar energy.

Two months later, in July, an agreement was reached in which Henderson Municipal Power & Light in from the 541-acre Henderson County Solar project to about 20% of HMP& L's future power requirements.

The Kentucky Coal Association didn't return messages seeking comment for this story. However, the KCA and other coal proponents have insisted that coal is more reliable, because while solar generation declines on cloudy days (and stops altogether at night) and wind power depends on the wind blowing, coal plants can stockpile days, weeks, even months of coal.

An industry website, TheCoalTruth.com, goes so far to declare: "Because solar and wind are unreliable and require constant backup, they are far more expensive than coal and other 'reliables." But power companies and state regulators think otherwise.

The Kentucky PSC, which states that its mission is in part to ensure "safe and reliable service at a reasonable price to the customers of (Kentucky) utilities," in September 2020 ruled "that the (Big Rivers) Solar Contracts are reasonable and needed, at least in part, to satisfy the Nucor Contract."

# See COAL, Page 5A



A solar array in front of the Kenergy Corp. headquarters at the corner of Old Corydon Road

Exhibit 6 Attachment 6.4 Page 12 of 16

expensive pollution controls. Then came demands for reducing the spewing of fine dust called particulate that did nothing to benefit human lungs.

and the Kentucky 425 South Bypass in Henderson generates power for the rural electric co-op and serves as an educational tool it can use with

Now there is pressure to reduce carbon emissions that are blamed for climate change.

But in recent years, economics is proving an even more irresistible force than regulations in wreaking havoc on Western Kentucky coal.

Coal-fired power plants built in the 1960s and 1970s began aging. The cost of repairs and maintenance

and the Kentucky 425 South Bypass in Henderson generates power for the rural electric co-op and serves as an educational tool it can use with students, member-customers and the public. A proposed 1,700-acre solar farm south of Henderson could generate vastly more electricity for Big Rivers in the future. CHUCK STINNETT

## Coal

# Continued from Page 3A

Meanwhile, in an interview with The Gleaner last January, HMP& L General Manager Chris Heimgartner said buying power from the planned Henderson County Solar project will be "emphatically" cheaper than what it cost to operate the Station Two coal plant.

"I'm not doing this because I'm a green fanatic," Heimgartner said. "I'm doing this because it's the best deal for our customers. From a cost perspective, it's great ..."

# Coal in decline

All of this has the coal industry in Western Kentucky and beyond in a freefall. Ten years ago, seven coal mines operated in Henderson, Union and Webster counties as the industry enjoyed a brief upsurge in demand. But the rally was short-lived.

In 2 012, struggling Patriot Coal closed its Freedom and Patriot mines in eastern Henderson County. Patriot closed its Highland and Dodge Hill mines in Union County two years later.

In 2015, Alliance Resource Partners L.P. announced the closure of its Onton Mine near Sebree, which it had purchased just three years earlier.

Then, after a half-century of operation, Alliance's Dotiki Mine near Providence ceased operations in mid-August 1999. Alliance cited weak market

what I wanted," Grounds said of that work, so he worked for a time running an injection molding machine at the Vibracoustic auto parts plant at Morganfield. "It was hot work," he said.

Now, he works in facility maintenance for the City of Henderson, making repairs to buildings, converting downtown street lights to LED bulbs and related work.

"Coal mining made me a nice living," Grounds said. "I was able to provide for my family. My regret was not being able to work up to retirement age."

# The last one standing

Henderson County Judge-Executive Brad Schneider, who was a vocal supporter of coal during his years as president of the Henderson Chamber of Commerce and CEO of the former Kyndle organization, said cheap natural gas is the biggest threat to coal.

"More than renewables, it's the price of natural gas which has really caused the decline of coal use," he said in an interview.

Still, Schneider said, "I think for the foreseeable future, there's a role for coal to play, especially for power companies with large industrial loads. Coal is one of most reliable and abundant sources for power and among the least expensive."

But the body blows that have struck coal are undeniable.

"We've already felt the impact of it here when

Exhibit 6 Attachment 6.4 Page 13 of 16

conditions and a decision to focus on its lower-cost mines in the Illinois Basin.

Today, neither Henderson nor Webster counties have an operating mine. The only coal production continuing in the Tri-county is at Alliance's big River View Mine in Union County, which produced 9.4 million tons last year, accounting for more than half the coal mined in Western Kentucky in 2020.

The shutdowns a ren't restricted to the Tri-county. Mines in Hopkins, Muhlenberg and other portions of Western Kentucky have closed as well.

Production in the Western Kentucky coalfield fell from the peak of nearly 56 million tons in 1975 to just under 16 million tons in 2020, according to the Kentucky Energy and Environment Cabinet.

Mining employment in the region tumbled from still hiring. It's so efficient and 15,764 in 1979 to 1,617 during the first quarter of this of the very last ones standing." year, according to state figures.

Mike Grounds was among those impacted. At age 62, with the closure of the Riveredge mine in McLean County in 2019, he was effectively out of work as a coal miner.

Grounds discovered that his skill set as a skilled maintenance worker underground "don't translate well from mining to manufacturing."

He worked for a while as a fork truck operator at Toyota's assembly plant at Princeton, Indiana, until the pandemic shut down the operation for seven weeks. "It wasn't Patriot's two mines closed" in Henderson County, Schneider said. "It cost us a lot of jobs" as well as access to coal severance taxes.

"Coal is not going to go away entirely," Schneider said. "River View is still the largest producer, I think, of coal in Kentucky."

The Union County mine's 2020 production of 9.4 million tons of coal dwarfed that of other mines, though that was down from its peak of 11.3 million tons in 2019.

"It's a coal factory, no doubt," Grounds marveled.

"Alliance has been very savvy about using overseas markets to fill the gap," Schneider said.

"I think it's still at fairly high capacity," he said. "It's still hiring. It's so efficient and modern, it will be one of the very last ones standing."

So this corner of the Western Kentucky coal industry has that one thing going for it: If it is down to one coal mine, at least it's the biggest and the best.

"I hope that industry can hang on in Western Kentucky," Schneider said. "Their pay scales have always been among the best. That makes the slow demise all the harder to bear.

"I think there is still a role for coal in our midst," he said.

"I still have a lot of positive hope for coal in our future."

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Sunday, 05/23/2021 Page .A03

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Exhibit 6 Attachment 6.4 Page 14 of 16

# Giant solar farm near Robards gets OK from state board

**Chuck Stinnett** Special to Henderson Gleaner USA TODAY NETWORK

ROBARDS, Ky. — A solar energy farm proposed on the Henderson-Webster county line between Robards and Sebree that would be one of the largest in Kentucky has gotten the green light from state regulators.

The Kentucky Electric Generation and Transmission Siting Board last Friday approved, with modifications and conditions, an application from Unbridled Solar LLC to construct a 160-megawatt (MW) solar facility on 1,680 acres. The project includes a three-milelong, 161-kilovolt transmission line.

The site consists of 1,140 acres in southern Henderson County — including 419 acres of the Four Star Industrial Park — and 540 acres in northern Webster County.

The irregularly shaped Unbridled Solar site will lie just south of Kentucky 416, west and southwest of Robards, and will straddle Kentucky 283 and Knoblick Road.

Solar panels measuring four to seven feet long and two to four feet wide would cover most of the Unbridled site, according to the company's December

application to the Siting Board. They would be mounted on racks standing approximately 20 feet tall. Motors

# See SOLAR, Page 3A



A map provided by Community Energy Inc. shows the planned location of a 514-acre solar farm to be located along the Kentucky 425/South Bypass just outside the Henderson city limits. Most of the solar panels, marked in blue, will be located on the south side of Kentucky 425, with the remainder to be erected on the west side of Lover's Lane.

COURTESY OF COMMUNITY ENERGY INC.

#### Solar

Continued from Page 1A

would rotate the panels to track the sun over the course of the day.

Big Rivers Electric Corp. in May 2020 signed a 20year power purchase agreement to purchase Unbridled Power's electricity beginning in early 2024. Big Rivers provides power to three rural electric cooperatives: Henderson-based Kenergy Corp., Jackson Purchase Energy Corp. of Paducah and Meade County RECC in Brandenburg.

The nonprofit generation and transmission

mitigation measures and conditions, including:

h Adhering to the vegetation screening plan and ensuring vegetative buffers are successfully established;

h Placing high-voltage warning signs along the perimeter

of the site and at all entrances and controlling access to the site during construction and operation;

h Applying best-management practices to control dust;

h Developing a traffic management plan to minimize

1 of 3

Exhibit 6 Attachment 6.4 Page 15 of 16

cooperative has said that new industries, including the \$1.35-billion, 400-employee Nucor steel plate mill being built near Brandenburg, increasingly are demanding that renewable energy make up a portion of their power supply.

Unbridled Solar would be just a bit smaller than the AEUG Fleming Solar project proposed in Fleming County. AEUG Fleming would produce up to 188 MW on a 1,857-acre site in northeastern Kentucky.

Unbridled Solar is one of two large solar projects planned in Henderson County. Community Energy Inc. is in the process of developing a 541-acre solar array along the Kentucky 425/South Bypass and Lovers Lane just south of Henderson. It will provide up to 50 MW of electricity to Henderson Municipal Power and Light for 20 years.

If the Unbridled Solar project is any indication, there is little public resistance to development of big solar energy farms here.

According to a news release from the Kentucky Public Service Commission, which provides the staff for the state Siting Board, Unbridled Solar notified 63 landowners whose property borders the proposed facility. It said there were no intervention requests or requests for a public meeting or local public hearing. A formal evidentiary hearing was conducted on April 8, 2021.

Unbridled Solar estimates that around 130 positions, mostly craft workers and contractors, will be employed during the construction phase of the project. The operations phase will require five employees. Based on the review of the evidence provided in the case, the Siting Board has determined the solar project will have a positive economic impact in the region.

Henderson County has local planning and zoning and enacted an ordinance that contains solar facility setback requirements, screening and vegetative buffers, height restrictions, and requirements for decommissioning. The Henderson County Planning Commission approved Unbridled Solar's site plan on May 4.

The Siting Board conditioned its approval upon the full implementation of

impacts and ensure safety and compliance with state and local road permits, truck weight and other requirements;

h Remaining in contact with nearby residents to ensure noise levels are not unduly high and notifying residents of homes within 500 feet in advance of any pile-driving activity;

h Establishing a regular construction schedule, with hours between 8 a.m. and 6 p.m. Monday through Saturday;

h Implementing a customer resolution program to address any complaints from surrounding properties; and

h Determining, in coordination with landowners leasing land to Unbridled Solar for the transmission, whether mitigation measures are needed to reduce visual impact.

Unbridled Solar is a subsidiary of National Grid Renewables Development LLC, based in Bloomington, Minnesota.

The state Siting Board consists of the three members of the PSC, the secretary of Kentucky Energy and Environmental Cabinet or a designee, the secretary of the Kentucky Economic Development Cabinet or a designee and two local members appointed by the governor to serve for a specific case. The chairman of the PSC serves as chairman of the Siting Board. The local members in this case were Henderson County Judge/Executive Brad Schneider and Thomas P. Glover of Webster County.

Details on the Unbridled Solar case before the Siting Board are available at psc.ky.gov/Case/ViewCase-Filings/2020-00242.

Big Rivers has also signed agreements to purchase 100 MW of solar power from a pair of solar arrays planned in McCracken and Meade counties.

The Siting Board, created in 2002 by the Kentucky General Assembly, reviews applications for the construction of electric generating facilities of 10 MW or greater proposed by merchant generators. Merchant generators sell the electricity they produce in the wholesale market at rates not regulated by the PSC.

A: Main

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# EXHIBIT 6 ATTACHMENT 6.5

Henderson County Solar - Adjacent Landowner Follow-Up List 1-20-21

Landowner																		
Acreage	n/a	n/a	n/a	n/a	n/a	200	12	2	⊣	⊣	n/a	$\vdash$	2	2	33	7	18	
Parcel Address	Collier Road	Wilson Station Road	Hwy 425	Lovers Lane	Hwy 41A	Hwy 41A	8249 Wathen Lane											
<u>Parcel ID</u>	46B-69	46B-70	46B-72	46B-73	46B-75	47-12	46-21	46-109	46-110	46-111	46-112	46-113	46-113.1	46-115.1	46-115	47-2	46-40	

<u>Street</u>	City	State	Zip
2144 Collier Road	Henderson	≿	42420
2148 Collier Road	Henderson	≿	42420
2148 Collier Road	Henderson	≿	42420
2152 Collier Road	Henderson	≿	42420
2190 Collier Road	Henderson	₹	42420
2816 Wilson Station Road	Henderson	≿	42420
118 Passage Way	Lancaster	≿	40444
1022 Lovers Lane	Henderson	≿	42420
1018 Lovers Lane	Henderson	≿	42420
1008 Lovers Lane	Henderson	≿	42420
914 Lovers Lane	Henderson	≿	42420
910 Lovers Lane	Henderson	≿	42420
9477 State Route 141 S	Morganfield	≿	42437
654 Lovers Lane	Henderson	≿	42420
7523 Railroad Street	Henderson	≿	42420
6360 Hwy 41A	Henderson	≿	42420
7621 Smith Denton Road	Robards	≿	42452

# EXHIBIT 6 ATTACHMENT 6.6

Henderson County Sc	Henderson County Solar - Public Official Mailing List 1-19-21	Street	City	State	Zip
Public Official	<u>Position</u>				
Brad Schneider	Judge Executive, Henderson County Fiscal Court	20 N. Main Street	Henderson	≿	42420
Tim Southard	Magistrate: District 3, Henderson County Fiscal Court	20 N. Main Street	Henderson	≿	42420
Brian Bishop	Executive Director, Henderson City-County Planning Commission	1990 Barrett Court, Suite C	Henderson	≿	42420
David Dixon	Chairman, Henderson City-County Planning Commission	1990 Barrett Court, Suite C	Henderson	≿	42420
Missy Vanderpool	Executive Director, Henderson Economic Development	307 N. Elm Street	Henderson	≿	42420
Whitney Risley	Director of Existing & Workforce Development, Henderson Economic Development	207 N. Elm Street	Henderson	≿	42420
Robby Mills	State Senator	702 Capital Avenue, Annex Rm 203	Frankfort	≿	40601
Jonathan Dixon	State Representative	702 Capital Avenue, Annex Rm 413	Frankfort	≿	40601
Scott Foreman	Fire Chief	332 Washington Street	Henderson	≿	42420

# Kentucky State Board on Electric Generation and Transmission Siting Henderson County Solar, LLC – Case No. 2020-00391 Application – Exhibit 7 Volume 1, Tab 7

Filing Requirement: KRS 278.706(2)(g)

A summary of the efforts made by the applicant to locate the proposed facility on a site where existing electric generating facilities are located.

**Respondent: Chris Killenberg** 

Henderson County Solar investigated the feasibility of locating the proposed facility on a site where existing electric generating facilities were located. However, no such suitable location in Henderson County was identified.

# Kentucky State Board on Electric Generation and Transmission Siting Henderson County Solar, LLC – Case No. 2020-00391 Application – Exhibit 8 Volume 1, Tab 8

Filing Requirement: KRS 278.706(2)(h)

Proof of service of a copy of the application upon the chief executive officer of each county and municipal corporation in which the proposed facility is to be located, and upon the chief officer of each public agency charged with the duty of planning land use in the jurisdiction in which the facility is proposed to be located.

**Respondent: Chris Killenberg** 

As shown in the Application's Certificate of Service, a copy of the Application was both electronically transmitted and mailed by regular U.S. mail to Brad Schneider, Henderson County, Kentucky, County Judge-Executive, and to David Dixon, Chairman, Henderson County, Kentucky, City-County Planning Commission, on the date of the Application's electronic filing with the Kentucky State Board on Electric Generation and Transmission Siting via the Kentucky Public Service Commission's website.

# Kentucky State Board on Electric Generation and Transmission Siting Henderson County Solar, LLC – Case No. 2020-00391 Application – Exhibit 9 Volume 1, Tab 9

Filing Requirement: KRS 278.706(2)(i)

An analysis of the proposed facility's projected effect on the electricity transmission system in Kentucky.

**Respondent: Chris Killenberg** 

The Applicant believes that the proposed facility's effect on the electricity transmission system of Kentucky will be minimal. Further, the Applicant anticipates that any costs related to upgrades to the electricity transmission system of Kentucky, directly related to the proposed facility and required for its interconnection and operation, will be borne by the Applicant.

The information supporting the expectation of minimal effects on the electricity transmission system, and the steps underway to confirm such effects, are as follows:

- The Applicant proposes to interconnect the proposed 50 MW-ac solar electric generating facility to the 69kV bus at Substation No. 7, owned and operated by Henderson Municipal Power & Light (HMP&L), and managed by the Midcontinent Independent System Operator (MISO), the regional transmission system operator governing HMP&L's transmission system. The Applicant first contacted HMP&L in the fall of 2018 to gauge HMP&L's interest in the addition of solar power to HMP&L's energy supply. In the course of ensuing discussions, the Applicant was provided hourly load data for HMP&L's transmission system for the years 2013-2017. An analysis of this load data indicates that the output from a solar electric generating facility up to 68 MW-ac in size would be fully consumed within HMP&L's system, without any excess production that would need to be exported through MISO. Accordingly, the Applicant anticipates that the output from a solar electric generating facility 50 MW-ac in size would comfortably fit within HMP&L's hourly load profile and would be 100% consumed locally, without the need to export any power onto the MISO system. This would avoid any export-related system upgrades on the MISO system outside of HMP&L.
- On August 12, 2019, HMP&L released a Request For Proposals For Solar And Solar + Storage Resources ("Solar RFP"). In the course of communications between the Applicant and GDS Associates, HMP&L's designated manager of the Solar RFP, the Applicant was provided a one-line diagram of the HMP&L transmission system. This one-line diagram indicates that the MVA rating of the 69kV equipment at HMP&L's Substation No. 7 is sufficient for the acceptance of 50 MW-ac injection at that point of interconnection. The one-line diagram also indicates that the size of the conductors connecting HMP&L's Substation No. 7 with other parts of HMP&L's transmission system is sufficient for the

Case No. 2020-00391 Application - Exhibit 9 transmission of 50 MW-ac of energy within HMP&L's system. Accordingly, the Applicant anticipates that the output from a solar electric generating facility 50 MW-ac in size would comfortably fit within the electrical rating limits of HMP&L's transmission infrastructure. This would avoid any "internal" transmission-related system upgrades on the HMP&L system.

• In June 2020, the Applicant submitted an Interconnection Request for a 50MW Generating Facility ("IR") to MISO. In that IR, the Applicant identified the 69kV bus at HMP&L's Substation No. 7 as the primary POI. MISO validated the IR and assigned the proposed Project interconnection queue number J1604.

The initial MISO IR dated June 15, 2020, with banking information redacted, is attached as Exhibit 9 Attachment 9.1.

- In March 2021, the Applicant participated in a Scoping Call with MISO to review the IR. No changes to the IR were made at that time. The Applicant subsequently signed the initial MISO study agreements, and the proposed Project is included for study in MISO's Definitive Planning Phase for IRs received in 2020 ("DPP 2020 Cycle"). The first study results are expected in September 2021. At that time, the Applicant will receive information from MISO regarding any potential system upgrades required to accommodate the proposed generation capacity of 50 MW. The Applicant will share those study results with the Siting Board once received.
- In April 2021, in order to provide additional information regarding the proposed facility's projected effect on the HMP&L and MISO transmission systems, the Applicant engaged a third-party engineering consultant to determine the ability of each system to accommodate the injection of up to 50 MW from the proposed Project at the 69kV bus at HMP&L Substation No. 7. The consultant, Electric Power Engineers ("EPE") performed load flow calculations using the MISO 2025 Summer Peak model, updated by including higher-queued generation projects in the model. Export potential was calculated for the Project's proposed point of interconnection, based on thermal overloads under system-intact conditions (N-0) and contingency conditions (N-1). The scope of the EPE study was designed to mirror the anticipated scope of MISO's study.

EPE's analysis indicates that the 69kV bus at HMP&L's Substation No. 7, and HMP&L's 69kV transmission system, will likely be able to accept injection of the full 50 MW without the need of any HMP&L transmission upgrades. However, the MISO system outside of HMP&L's system appears to be overloaded due to prior-queued interconnection requests. Though neither the Applicant nor HMP&L anticipate the export of any generation onto the MISO transmission system, the potential assignment of cost responsibility for MISO-related system upgrades to the proposed Project is unknown at this time. The first MISO study results are expected in September 2021. The Applicant will share those study results with the Siting Board once received.

The Transmission Analysis performed by EPE is attached as Exhibit 9 Attachment 9.2.
Cara No. 2020 00201

# EXHIBIT 9 ATTACHMENT 9.1

Facility Information		
Project Name	Henderson County Solar	
PROJECT TYPE		
Interconnection Request	Proposed new Generating	Facility
Interconnection Service Type	Network Resource Interco	nnection Service
FACILITY LOCATION		
Address	6298 Hwy 425	
City	Henderson	
State	KY	
Zip Code	42420	
Latitude	37.787833	
Longitude	-87.629542	
State		KY
County		Henderson
Study Group		Central
	view	Gential
Site Map	view	
INSTALLED GENERATING FACILITY CAPACITY		
Summer (MW)	51.12	
Summer (MVAR)	16.87	
Winter (MW)	51.12	
Winter (MVAR)	16.87	
NET OUTPUT AS MEASURED AT POI		
Summer (MW)	50	
Summer (MVAR)	16.5	
Winter (MW)	50	
Winter (MVAR)	16.5	
Deposit Calculations	Summer	
Summer (MW)	0.09	
Summer (MVAR)	0.45	
Winter (MW)	0.09	
Winter (MVAR)	0.45	
POINT OF INTERCONNECTION		
Type of Interconnection	Substation	
Substation	HMPL Substation #7	
County	Henderson	
Zip Code	42420	
Latitude	37.804808	
Longitude	-87.633164	

# **Contact Information**

# CONTACT INFORMATION

Copy Info From:	
First Name	Chris
LastName	Killenberg
Title	Regional Development Director
Company	Community Energy Solar, LLC
Address	151 E. Rosemary St.
Address2	Suite 202
City	Chapel Hill
State	NC
Zip Code	27514
Phone	(919) 360-9792

chris.killenberg@communityenergyinc.com

(919) 967-7063

# AGENT INFORMATION

Alt Phone Email

Designated Agent No

## APPLICANT COMPANY

Copy Info From:	
Company	Henderson County Solar LLC
Parent Company	Community Energy Solar, LLC
Agent (Developer)	Chris Killenberg
Address 1	151 E. Rosemary St.
Address 2	Suite 202
City	Chapel Hill
State	NC
Zip Code	27514
Phone	(919) 967-7063

# Documentation and Legal Information

# STATE OR FEDERAL TAX FORM

W-9 Form	view
----------	------

## **OPERATING AGREEMENTS**

Operating Agreements 1	view
Operating Agreements 2	view
Operating Agreements 3	view
Operating Agreements 4	view
Operating Agreement 5	view

## SITE CONTROL

Site Control	Will be provided
Site Control Date	2021-01-20

## **Facility Data**

#### **EQUIPMENT DESCRIPTION**

50MW solar generation project consisting of 12 -TMEIC PVU-L0840GR Solar Ware Ninja inverters connected to a step up collection substation with 2-34.5kV UG feeders. The solar plant will interconnect to the local 69kV bus at Henderson Municipal Power and Light Substation #7 via a 2000amp, 69kV breaker and a 33/44/55MVA, 69kV/34.5kV main transformer. There is also a proposed 10MVAR Cap Bank on the 34.5kV bus.

Commercial Operation Date 2023-10-31

Synchronization Date 2023-09-30

Interconnection Facilities required In-Service Date 2023-08-31

#### **FUEL SOURCE**

Fuel Source Solar

Configuration of Fuel Source N/A

Generator Type Photovoltaic

# **Application Summary**

TermsAndConditions I agree to the terms and conditions.

## Section A

#### A. UNIT RATINGS

Number of Generator Types 1 Total Generator Rated Output (MW) 50 Rated MVA 53.37 Number of Generating Units 1 Individual Generator Rated Output (MW) 4.26 Individual Generator Rated MVA 4.548 TMEIC PVU-L0800GR Manufacturer & Model KnowYear No Nominal Terminal Voltage (kV) 0.63 Minimum Short Circuit Ratio 1.25 Rated Power Factor 0.95 Voltage Regulation Minimum 0.95 Voltage Regulation Maximum 0.95 Power Factor Regulation Minimum 0.95 Power Factor Regulation Maximum 0.95 Minimum state of charge (p.u.)

# A-1. GENERATOR SHORT CIRCUIT INFORMATION

Maximum state of charge (p.u.)

Туре

Connection

Positive sequence sub transient reactance X1 (p.u.)	0.8
Negative sequence reactance X2 (p.u.)	0.8
Zero sequence reactance X0 (p.u.)	999999
Generator Grounding	Grounded through Impedance

Induction

Delta

		Exhibit 9 Attachment 9.1
Impedance R (p.u.)	10	Page 4 of 7
Impedance X (p.u.)	10	
A-2. MAIN GENERATOR STEP-UP (GSU) TRANSF	ORMER	
Number of Transformers	1	
Self Cooled Capacity (kVA)		33000
Maximum Nameplate Capacity (kVA)		55000
Generator Side Voltage (kV)		34.5
System Side Voltage Ratio (kV)		69
GSUTertiary		Yes
Tertiary Voltage Ratio (kV)		13.8
Low Winding Connections		Wye
High Winding Connections		Wye
Tertiary Winding Connections		Delta
Fixed Taps	Yes	
Present Tap Setting	С	
Positive Z1	7	
Positive Z1 (on self-cooled kVA rating) (X/R)	30	
Zero Z0 (on self-cooled kVA rating) (%)	5.6	
Zero Z0 (on self-cooled kVA rating) (X/R)	30	
A-3. PAD MOUNT TRANSFORMER		
Num Of Transformers	12	
Self Cooled Capacity (kVA)		4750
Maximum Nameplate Capacity (kVA)		4750
Generator Side Voltage (kV)		0.63
System Side Voltage Ratio (kV)		34.5
PMTertiary		No
Low Voltage Winding		Wye
High Voltage Winding		Delta
Fixed Taps	Yes	
Present Tap	B - 1.025	
Positive Z1 (%)	5.5	
Positive Z1 (X/R)	10	
Zero Z0 Percent (%)	100	
Zero Z0 (X/R)	10	
A-4. TIE LINE INFORMATION		
Nominal Voltage (kV)		69
Name of Line Termination Point 1		Henderson County Solar Collection Station
Name of Line Termination Point 2		HMPL Substation #7
Line Length (miles)		0.38
Line Conductor (kcm)		477 KCMIL
Phase Config		Vertical
Summer line ratings in amperes		640
Positive sequence resistance (R) for entire length (in p.u)		0.0017
Positive sequence reactance (X) for entire length (in p.u.)		0.0022
Zero Resistance (R0) for entire length (in	p.u)	0.0037
Zero Reactance (X0) for entire length (in	p.u.)	0.0053
Line Charging (B/2) (in p.u.)		0.00005

# SYSTEM EQUIVALENCE IMPEDANCE DATA FOR WIND/PHOTOVOLTAIC PLANTS

Nominal Voltage (kV)	34.5
Summer Line ratings in amperes	1673
Positive Resistance (R) for entire length (in p.u)	0.01
Positive Reactance (X) for entire length (in p.u.)	0.0083
Zero Resistance (R0) for entire length (in p.u.)	0.049
Zero Reactance (X0) for entire length (in p.u.)	0.0036
LineCharging (B/2) (in p.u.)	0.0029

## A-5. DYNAMIC MODELING INFORMATION

Generator Model	view
Excitation System Model	view
Turbine-Governor Model	view
Power System Stabilizer Model	view
Reactive Line Drop Compensation Model	view

# A-6. ONE-LINE & MODEL INFORMATION

One Line Diagram	view
PSS/E file	view

#### Section B

#### SYNCHRONOUS GENERATOR INFORMATION

Number of Generator Units

Generator Reactive Capability Curves view

Plot of Generator Terminal Voltage view

#### **B-1. EXCITATION SYSTEM INFORMATION**

Number of Excitation Systems

Excitation System Diagram view

#### **B-2. TURBINE GOVERNOR INFORMATION**

Number of Generator Models

#### **B-3. INDUCTION GENERATOR INFORMATION**

Motoring Power (kW)

Neutral Grounding Resistor

Heating Time Constant (I22t or K)

Rotor Resistance

Stator Resistance

Rotor Reactance

Stator Reactance

Magnetizing Reactance

Short Circuit Reactance

Exciting Current

Temperature Rise

Frame Size

Design Letter

Reactive Power (No Load)

Reactive Power (Full Load)

Total Rotating Inertia (H) (Per Unit on KVA Base)

#### Section C

What type of Non-Synchronous Generator do you

have?

Type 4

#### C-2. INVERTER-BASED PARAMATERS (E.G. SOLAR, STORAGE TYPE 4 WIND TURBINES)

Number of inverters	12
Manufacturer	TMEIC
Model	Solar Ware Ninja
Model Number	PVU-L0840GR
Version	Unknown at this point
List of set points	Over/under voltage & frequency
Maximum design fault contribution current	5500
Harmonics	Meet IEEE 519
Start-up requirements	None
PSCAD	view

#### Non Disclosure

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energyinc.com
nc.com
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# EXHIBIT 9 ATTACHMENT 9.2

# Community Energy Solar LLC

# J1604 HENDERSON COUNTY SOLAR PROJECT TRANSMISSION ANALYSIS

The seal on this document Authorized by Hugo E. Mena, P.E. On April 09, 2021



Registration # 3386



#### **Table of Contents**

Executive Summary	3
Introduction	3
Findings and Conclusion	4
Transmission Export Analysis Results	5
Export Potential	
Generation Dispatch	6
Assumptions	7

### Community Energy Solar LLC J1604 Henderson County Solar Project Transmission Analysis

#### **Executive Summary**

#### Introduction

Community Energy Solar LLC (Community) requested Electric Power Engineers, Inc. (EPE) to perform a transmission export analysis study for their proposed Henderson County Solar project (J1604), located in Kentucky state within the service territory of the Midcontinent Independent Systems Operator (MISO). The purpose of this study is to determine the ability of the transmission grid to allow the injection of up to 50 MW from the project under study when interconnecting to the 69 kV HMPL Substation #7.

Load flow calculations were run on a linearized model to approximate the Available Transfer Capability (ATC) from the Point of Interconnection (POI) studied in this report using the MISO 2025 Summer peak (SUM) model. The base case model was updated by modeling higher queued generation projects as described in the section titled "Generation Dispatch".

Export potential was calculated for the POI under study, based on thermal overloads under system-intact (N-0) and contingency (N-1) conditions. An N-0 condition is the condition where there are no transmission elements out of service. A contingency condition is the loss of transmission elements (lines or transformers) on the grid due to planned or forced outages. Please refer to the section titled "Assumptions" for more details on the assumptions adopted in this study.

Results of this study are a snapshot in time and largely depend on the generation dispatch and transmission system configuration. Any change in the assumptions underlying this study may greatly impact the findings in this report.

# Community Energy Solar LLC J1604 Henderson County Solar Project Transmission Analysis

#### **Findings and Conclusion**

This analysis aimed to identify the thermal limitations of exporting power up to 50 MW from the POI under study. Table 1 below summarizes the first export MW capacity available without any transmission upgrades. For detailed results, please refer to the section titled "Transmission Export Analysis Results".

Table 1 - First Available Export Capacity

Project Number	Project Name	Point of Interconnection	First Export Capacity (NRIS¹ & ERIS²)
J1604	Henderson County Solar	69 kV HMPL Substation #7	0 MW <sup>3</sup> 72 MW

#### Notes:

- 1- Assuming a request for Network Resource Interconnection Service (NRIS), a thermal limitation was assumed to be triggered for any facility shown to exceed 100% of its rated capacity when the Transfer Distribution Factor (TDF) for this facility is greater than 5% under both N-0 and N-1 conditions.
- 2- Assuming a request for Energy Resource Interconnection Service (ERIS), a thermal limitation was assumed to be triggered for any facility shown to exceed 100% of its rated capacity when the TDF for this facility is greater than 5% under N-0 conditions and greater than 20% under N-1 conditions.
- 3- Pre-existing thermal limitations overloading prior to the addition of the proposed project. It is to be noted that these base case thermal overloads are mainly triggered by the generation re-dispatch to higher generation level. Although the proposed project under study is not triggering these limitations, it may be further contributing to their overloads.

The results of this analysis showed several thermal limitations overloading in the base case model prior to the interconnection of the proposed project, as listed in Table 2 and Table 3, assuming an NRIS or ERIS request. These thermal base case limitations are mainly triggered by the generation re-dispatch of other queued projects to higher generation level. Although the project under study is not triggering these limitations, it may be further contributing to their overloads and thus may experience curtailment before these limitations are mitigated. Beyond the pre-existing thermal overloads, interconnecting to the 69 kV HMPL Substation #7 will allow the Henderson County Solar project to export the full desired 50 MW assuming an NRIS or ERIS request without the need of any transmission upgrades.

#### **Transmission Export Analysis Results**

Load-flow calculations were run on a linearized model to approximate the ATC from the POI under study using the latest MISO 2025 summer peak model, per the assumptions detailed in the section titled "Assumptions".

#### **Export Potential**

Table 2 and Table 3 summarize the available export potential from the POI under study under N-0 and N-1 contingency conditions, respectively.

When the first export level is below 50 MW, the next limitations for up to the targeted size are also tabulated. The upgrade of a listed limiting element may allow the next export limitation to be reached.

Table 2 - Interconnection Results - N-0 Conditions (NRIS & ERIS)

		System-Intact Conditions		
POI	Export Capacity	Limiting Element	Shift Factor	
69 kV HMPL Substation #7	$0 MW^{1}$	The 161 kV J1632 POI – Barkley line, 265 MVA	13.15%	
69 KV HIVIPL Substation #/	72 MW	The 69 kV J1604 SUB – HMPL Substation #7 line, 76.5 MVA	100%	

Note<sup>1</sup>: Pre-existing thermal limitations overloading prior to the addition of the proposed project. It is to be noted that these base case thermal overloads are mainly triggered by the generation re-dispatch to higher generation level. Although the proposed project under study is not triggering these limitations, it may be further contributing to their overloads.

Table 3 - Interconnection Results - N-1 Contingency Conditions (NRIS & ERIS)

	Single Contingency Conditions			
POI Export Capacity		Limiting Element	Limiting Contingency	Shift Factor
	$0~MW^{1}$	The 161 kV J1632 POI – Barkley line, 289 MVA	The 345 kV Wilson – Reid EHV line	21.83%
	$0~MW^{1}$	The 69 kV HANSON2 – ONTON JT line, 40 MVA <sup>2</sup>	The 345 kV Wilson – Reid EHV line	7.36%
69 kV HMPL	$0~MW^{~1}$	The 69 kV HANSON2 – POPLARGRVTAP line, 52 MVA <sup>2</sup>	The 345 kV Wilson – Reid EHV line	7.36%
Substation #7	$0~MW^{~1}$	The 69 kV SACRMNTO – POPLARGRVTAP line, 52 MVA <sup>2</sup>	The 345 kV Wilson – Reid EHV line	7.36%
	72 MW	The 69 kV J1604 SUB – HMPL Substation #7 line, 76.5 MVA	Base Case	100%

#### Notes:

- 1- Pre-existing thermal limitations overloading prior to the addition of the proposed project. It is to be noted that these base case thermal overloads are mainly triggered by the generation re-dispatch to higher generation level. Although the proposed project under study is not triggering these limitations, it may be further contributing to their overloads.
- 2- Transmission element overloading assuming an NRIS request only.

The results of the load-flow analysis for the POI under study are embedded in Table 4.

ATC Results

ATC Results

ATC - J1604 Project - 69 kV HMPL Substatio

#### Community Energy Solar LLC J1604 Henderson County Solar Project Transmission Analysis

#### **Generation Dispatch**

The MISO 2025 summer peak case was re-dispatched to account for the existing and proposed generation projects at higher dispatch level than what was modeled initially in the base case as follows:

- The nearby active planned generation projects not modeled in the case were redispatched at 100% of their nameplate capacity.
- All other existing generators were left as dispatched by MISO in the base case.

Since typically the impact of a generator on the loading of lines is reduced for elements remote from the project under consideration, and in order to capture the worst-case scenario, EPE redispatched higher queued generation projects that are nearest (electrically close) to the project under study.

Please refer to the spreadsheet embedded in Table 5 below for the list of generation projects modeled in this analysis as per the methodology described above.

**Table 5 – Generation Projects Generation Projects** Generation Dispatch List\_J1604 Henderson

## Community Energy Solar LLC J1604 Henderson County Solar Project Transmission Analysis

#### **Assumptions**

- This study used the MISO 2025 summer peak model available from MISO.
- The calculations in this report evaluated the ATC on a linearized model under N-0 and N-1 conditions, using the PowerWorld Simulator program.
- Export limits were based on thermal overloads above 100% of Rating A of each transmission element rated at 60 kV or higher for N-0 conditions, and on thermal overloads above 100% of Rating B for N-1 conditions. Rating A is the limit on equipment rating and Rating B is the conductor rating for most transmission elements.
- Single-line contingencies defined for the base case model used for this analysis by MISO were evaluated. Additionally, all single lines and transformers in the nearby vicinity of the POI under study were added.
- Thermal overloads were monitored for every transmission element in MISO.
- An overloaded line was considered to be restrictive for an NRIS request only if the power transfer from the project interconnection point affects power-flow change on that element by 5% under both N-0 and N-1 conditions. An overloaded line was considered to be restrictive for an ERIS request only if the power transfer from the project interconnection point affects power-flow change on that element by 5% under N-0 and by 20% under N-1 conditions. This is measured by the Power Transfer Distribution Factor (PTDF) or Line Outage Distribution Factor (OTDF) values available from PowerWorld.
- Setup-up transformers are ignored as limiting constraints.
- The calculations underlying this report are a snapshot in time, and are based on the load-flow model available from MISO. Any changes in the configuration of the transmission system, or in the load or generation dispatched in the model will have an effect on the results of this study, and new load-flow calculations will have to be run for the new configuration.



#### Hugo E. Mena, P.E.

#### **Summary of Qualifications**

Hugo Mena is an electrical engineer with over 12 years of extensive experience in renewable energy integration, grid code development and grid compliance of renewables projects, as well as experienced in the design of wind, solar and energy storage systems. Throughout his career, he has worked with renewable energy developers supporting generation interconnections, project grid compliance as well as experience supporting in the construction, commission, and testing of generation projects. During his professional career, Hugo has also contributed to regulatory work related to power systems planning and operation, renewable energy, energy storage, microgrids and metering in Latin America and the Middle East. Furthermore, Mr. Mena has been the Chair & Vice-Chair of the Emerging's Technologies Working Group at the Electric Reliability Council of Texas (ERCOT) where he worked with stakeholders to improve the current grid codes to allow for the integration of renewables and energy storage systems at the distribution level.

Mr. Mena is a Professional Engineer in 17+ different states in the Unites States.

#### Employment History (Most recent first, in reverse chronological order)

VP of Business Development, Electric Power Engineers, Inc., Austin, TX, USA, Jan 2016 – Present Chief Operating Officer, Electric Power Engineers, Inc., Austin, TX, USA, Jan 2014 – Jan 2016 Chief Engineer, Electric Power Engineers, Inc., Austin, TX, USA, Jan 2010 – Jan 2014 Power Systems Engineer, Electric Power Engineers, Inc., Austin, TX, USA, Jan 2009 – Jan 2010

- Significant experience as part of successful markets that integrated renewables, and deep understanding of the mechanisms through applying them as part of consulting to clients integrating resources in these markets
- Extensive experience developing grid codes as well a grid compliance testing and commissioning procedures for the integration of renewable energy projects in international markets
- Experience is training and capacity building in Transmission & Distribution code implementation in Jordan as well as the Caribbean
- Worked within the ERCOT Market Participants on protocols revisions through being involved in workgroups and meetings, and chairing some of those workgroups
- Provided electrical engineering design on renewable energy projects during development, detailed design, construction, and commissioning
- Provide Owner's Engineer support for designing and commissioning generation projects in different grid markets
- Complete substations and main power transformers specification documents and Request for Proposals (RFPs), bid evaluation and recommendation for generation projects
- Working with several grid operators and generation projects on SCADA and communications requirements for the successful interconnection of generation projects
- Experience with the distributed energy market regulations that are taking place in ERCOT, CAISO, and other markets through represented clients in accompanying the regulation development to ensure that these regulations are fair and healthy to project their project development efforts
- Review of generation specifications and capabilities to determine generator compliance with different grid markets
- Conduct short circuit studies of generation projects using Aspen, ETAP, and Powerworld



- Design solar plant layout based on project location and size; analyze solar placement technologies to determine the most feasible for the specific project as well as design DC and AC collection systems for utility-scale solar power plants
- Design of wind generation facilities and other renewable energy generation projects, ranging from 1 MW to 800 MW
- Review and provide comments on transmission provider's system impact studies for the interconnection of generation projects
- Provide expertise and feedback to clients regarding renewable energy project operation and transmission expansion
- Provided expertise for day to day renewable energy project operational question and transmission expansion questions for clients
- Performed thermal resistivity analysis to design and size the underground distribution system of different wind projects using geotechnical report about the type of soil in different projects

#### Manufacturing Engineer II, Applied Materials, Inc., Austin, TX, USA, Oct 2007 – Jan 2009

- Implemented and maintained methods, operation sequences and processes in the fabrication of parts, components, sub-assemblies, and final assemblies.
- Determined time standards and made recommendations for tooling and process requirements.
- Interfaced between operations and design engineering to implement most feasible designs and solutions.
- Worked with test engineers on the design and development of text fixtures and test recipes.
- Gathered operational and test data and evaluated results to determine corrective actions.
- Used Statistical Process Control (SPC) to analyze all test data to take corrective actions to improve manufacturing process.
- Determined root cause analysis for issues that arise during assembly and/or test of systems and provide failure analysis report as required.
- Worked with Synexis design team on robot bearing issues related to VHP vacuum robots bearing issues.
- Worked closely with supplier to address all SPS submitted and implement corrective action.
- Worked in an ISO 9001 and 14001 certified and OHSAS 18001 certified manufacturing environment.

#### **Education and Training**

- M.S. in Electrical Engineering, Power Electronics, Texas A&M University College Station, TX
- B.S. in Electrical Engineering, Power Systems, Texas A&M University College Station, TX
- Business Management Certificate for Engineers, Texas A&M University College Station, TX

#### Languages

- English Fluent
- Spanish Fluent



# References (You may not include any references from your current company)

Client Name & Location	Year	Detailed Description of the Work Performed or Advisory Services Provided Relevant to the SOW
A USAID-funded activity implemented by Deloitte  ESCB Project for NEPCO regarding large-scale renewable power projects interconnecting to the transmission grid (Task Order No. AID-278-TO-13-00003)	2015-2016	Lead the development of the NEPCO Intermittent Renewable Resources (IRR) Testing, Commissioning and Certification Procedures as well as supported the testing and commissioning of the first wind project to interconnect to the NEPCO transmission grid. This project was a 117 MW wind project using Vestas turbines. Contributed to the development of the NEPCO Intermittent Renewable Resources Operating Protocols as well as worked with the NEPCO team to identify any SCADA requirements for future renewable projects integrating to the NEPCO grid.
Escalante 240 MW PV Solar Project  Enterprise 80 MW PV Solar Project	2015-2016	Engineer of record for the completion of the system studies for two (2) proposed solar projects in Utah, namely 80 MW Enterprise PV project and 240 MW Escalante PV project. These studies listed below were run, separately for each project, based on detailed project's design model in ETAP and PSCAD software. The studies were written to demonstrate and provided recommendations for the proposed electrical system design and the selected protective equipment to accommodate the projects sizes as well as to meet the applicable IEEE requirements as well as the transmission provider's requirements.  • Load flow Study  • Short Circuit Analysis  • Power Factor Analysis  • Prower Factor Analysis  • Insulation Coordination Study  • Harmonic Analysis  • Protection Coordination Study  • Arc Flash Hazard Analysis
Spinning Spur I, II and III engineering support (322 MW,	2015	Lead the engineering team providing support services for the Spinning Spur I, II and III projects to guide EDF Renewable Energy in their endeavors to develop wind projects in Texas. The engineering services covered are as follows:



160.95 MW and 194		Completed a project reactive power compensation compliance review	
MW)		Completed the necessary documentation to register and interconnect the wind	
		plant to the transmission network	
		Complete the wind plant model	
		Supported the client in the completion of a commissioning plan	
		Provided on site assistance to conduct a reactive power test	
		Provided on site assistance to conduct a primary frequency response test	
		Provided on site assistance to conduct an AVR test procedure and test support	
Distribution Studies	2015	Lead the reviewed of the interconnection studies completed by the distribution	
Review and		provider for 11 generating projects interconnecting at the distribution level. I was the	
Distribution Transfer		main lead engineer providing the Client with a summary of all the assumptions as well	
Switch Scheme		as the findings and conclusions of the studies. Additionally, I represented the client in	
Support		meetings and discussions with the distribution provider.	
		During this work, I provided support in evaluating the use of a Transfer Trip Scheme to	
		mitigate any islanding risk for eight (8) to nine (9) distribution projects. This included	
		detailed investigation and recommendations of the type of equipment, wiring	
		configuration and trip scheme operation as well as any necessary tools and scopes the	
		Client may need to procure for an adequate anti-islanding solution.	

#### Kentucky State Board on Electric Generation and Transmission Siting Henderson County Solar, LLC – Case No. 2020-00391 Application – Exhibit 10 Volume 1, Tab 10

Filing Requirement: KRS 278.706(2)(j)

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

**Respondent: Chris Killenberg** 

The proposed facility has been analyzed to determine its economic impact on the affected region (Henderson County) and state as a whole (Kentucky). The areas of economic impact include:

- Direct Impacts
  - Wages paid to workers employed during the construction and operation of the Project
- Indirect Impacts
  - o Purchases of materials and supplies associated with the construction and operation of the Project
- Induced Impacts
  - Purchases of goods and services made by workers spending a portion of their Project-related wages at local businesses
- Local Occupational License Taxes
- State Income Taxes
- State Sales Taxes
- Output
  - o The value of goods and services produced
- Real Property Taxes
- Tangible Property Taxes

#### Direct, Indirect, and Induced Impacts

To estimate the Direct, Indirect, and Induced Impacts of the proposed Project on the economies of the affected region and state, the Applicant commissioned an economic impact study which was conducted by the Center for Business and Economic Research (CBER) at the Gatton College of Business and Economics at the University of Kentucky.

CBER utilized the Impact Analysis for Planning (IMPLAN) model to estimate temporary economic impacts during the construction of the proposed Project (the "Construction Phase") and long-term economic impacts during operation of the proposed Project (the "Operation Phase").

During the Construction Phase of the Project, the Applicant anticipates employing approximately 150 full-time equivalent workers for a 6-9 month construction period.

CBER estimates the economic impact of the Construction Phase on Henderson County to be:

Direct Impacts	\$5,707,000
Indirect Impacts	\$ 575,000
Induced Impacts	\$ 482,000
Total Impacts	\$6,764,000

CBER estimates the additional economic impacts on the State of Kentucky (outside of Henderson County) during the Construction Phase to be:

Direct Impacts	\$ 0
Indirect Impacts	\$ 191,000
Induced Impacts	\$ 293,000
Total Impacts	\$ 484,000

In total, the economic impact on the State of Kentucky (including Henderson County) during the **Construction Phase** is estimated to be:

Direct Impacts	\$5,707,000
Indirect Impacts	\$ 766,000
Induced Impacts	\$ 775,000
Total Impacts	\$7,248,000

During the Operation Phase of the Project, the Applicant anticipates employing 2-3 full-time equivalent workers. The length of the Operation Phase is anticipated to be at least 30 years. Accordingly, CBER estimated the economic impact for both the first year of operation, and as the net present value of 30 years of operation. CBER's Henderson County estimates have been netted against the economic activity that will be displaced by a conversion of the site from its current agricultural use to its proposed solar electricity generation use.

CBER estimates the net economic impact of the Operation Phase on Henderson County to be:

	Year 1	30-year (NPV)
Direct Impacts	\$130,000 - \$188,000	\$2,908,000 - \$4,209,000
Indirect Impacts	\$155,000 - \$231,000	\$3,469,000 - \$5,163,000
Induced Impacts	\$ 25,000 - \$ 38,000	\$ 570,000 - \$ 849,000
less	(\$85,000)	(1,910,000)
Total Impacts	\$225,000 - \$371,000	\$5,038,000 - \$8,311,000

CBER estimates the additional economic impacts on the State of Kentucky (outside of Henderson County) during the Operation Phase to be:

	Year 1	30-year (NPV)
Direct Impacts	\$ 0	\$
Indirect Impacts	\$ 37,000 - \$ 55,000	\$ 829,000 - \$1,232,000
Induced Impacts	\$ 21,000 - \$ 31,000	\$ 470,000 - \$ 694,000
Total Impacts	\$ 58,000 - \$ 87,000	\$1,299,000 - \$1,946,000

In total, the net economic impact on the State of Kentucky (including Henderson County) during the **Operation Phase** is estimated to be:

	Year 1	30-year (NPV)
Direct Impacts	\$130,000 - \$188,000	\$2,908,000 - \$4,209,000
Indirect Impacts	\$192,000 - \$286,000	\$4,298,000 - \$6,395,000
Induced Impacts	\$ 46,000 - \$ 69,000	\$1,040,000 - \$1,543,000
less	(\$85,000)	(1,910,000)
Total Impacts	\$283,000 - \$458,000	\$6,337,000 - \$10,237,000

#### Occupational License Taxes, State Income Tax, State Sales Tax

During the Construction Phase, CBER estimates the following Project-related taxes will be collected:

Henderson County	
Occupational License Tax	\$ 67,640
State of Kentucky	
State Income Tax	\$304,000
State Sales Tax	\$217,000

During the **Operation Phase**, CBER estimates the following Project-related taxes will be collected:

	Year 1	30-year (NPV)
Henderson County Occupational License Tax	\$ 2,250 - \$ 3,710	\$ 50,000 - \$ 83,000
State of Kentucky		
State Income Tax	\$12,000 - \$19,000	\$266,000 - \$431,000
State Sales Tax	\$ 8,000 - \$14,000	\$190,000 - \$308,000

#### Output

CBER also calculated a comparison of output from the proposed Project site under its current use versus the proposed use. Output refers to the value of goods and services produced.

Under its current agricultural use, using historical crop price data for Henderson County, output from the proposed Project site is estimated to be \$279,226 per year.

Case No. 2020-00391 Application - Exhibit 10 Under the proposed use for solar electricity generation, using an estimate of power prices based on federal data, output from the proposed Project site is estimated to be approximately \$3.5 million per year.

A copy of the economic impact study conducted by CBER is attached as Exhibit 10 Attachment 10.1.

#### **Property Taxes**

The Applicant estimates that the proposed Project will result in a significant increase in property tax revenue related to the change of use of the proposed Project site from its current agricultural use to the proposed use for solar electricity generation. The change of use will affect both Real Property Taxes and Tangible Property Taxes.

Real Property Taxes are calculated based on the assessed value of the underlying land. The Applicant anticipates that Henderson County will reassess the land underlying the proposed Project site at a higher value than its current assessed value as agricultural land.

Tangible Property Taxes are calculated based on the value of any machinery, personal property, or improvements that are located on the underlying land. This includes all of the fixed assets related to the proposed facility.

To determine the proper calculation of the Real Property Taxes and Tangible Property Taxes that will be paid by the proposed Project over its 30-year operating period, the Applicant referenced the 'Solar Farm Assessment Recommended Guidelines' published by the Kentucky Department of Revenue (KYDOR). The Applicant also consulted with Mike Grim, JD, Tax Partner, State & Local Tax Services Team Leader, MCM CPAs & Advisors, Louisville, KY.

Based on the information provided by KYDOR and the methodology reviewed by MCM CPAs, the Applicant estimates the following property taxes will be levied on the proposed Project:

	Year 1	30-year (NPV)
Real Property Taxes	\$ 33,489	\$ 984,961
Tangible Property Taxes	\$232,582	\$3,162,885
Total Property Taxes	\$266,071	\$4,147,846

By comparison, the Applicant estimates the following property taxes would be levied on the underlying land if it were to remain in its current agricultural use:

	Est. 2021 Taxes	Est. 30-year (NPV)
Real Property Taxes	\$ 5,639	\$ 165,840
Tangible Property Taxes	\$ 0	<u>\$</u>
Total Property Taxes	\$ 5,639	\$ 165,840

Accordingly, the Applicant estimates the following **net increase in property tax revenue** as a result of the proposed Project:

	Year 1	30-year (NPV)
Real Property Taxes	\$ 27,850	\$ 819,121
Tangible Property Taxes	<u>\$232,582</u>	<u>\$3,162,885</u>
Total Property Taxes	\$260,432	\$3,982,006

Detailed property tax calculations are attached as Exhibit 10 Attachment 10.2.

# EXHIBIT 10 ATTACHMENT 10.1



#### Economic Impact of a 50 MW Solar Project in Henderson County, Kentucky

Prepared by
Center for Business and Economic Research
Gatton College of Business and Economics
University of Kentucky

June 23, 2021

Center for Business and Economic Research Gatton College of Business and Economics University of Kentucky

Michael W. Clark

Dr. Michael Clark, Director

Dr. Bethany Paris, Senior Economic Analyst Brian Redding, Graduate Research Assistant

#### **Henderson County Solar Project**

Community Energy Solar, LLC has proposed building a 50 MW photovoltaic system in Henderson County, Kentucky. The Henderson County Solar Project (the "Project") is expected to include the installation of solar panels on 541 acres and will consist of two phases: the Construction Phase and the Operation Phase.

The Construction Phase is estimated to last approximately 6 to 9 months. This phase will involve preparing the site, installing equipment, and connecting the panels to the grid. Community Energy anticipates the hiring of 150 full-time equivalent workers for the Construction Phase.

The Operation Phase will consist of regular operations, maintenance, and upkeep of the solar panels, other equipment, and site over a 30-year period. Community Energy anticipates the hiring of 2-3 full-time equivalent workers for the Operation Phase.

The proposed Project will affect the state and local economies by bringing new employment, spending, and taxes to the area. The Construction Phase will provide a temporary increase in economic activity as contractors and workers are hired to construct the facility. While the economic impact will be concentrated in the construction sector, other sectors will also be affected as contractors purchase supplies and materials from businesses in the area and workers spend a portion of their incomes at local businesses. The Operation Phase will provide a long-term increase in economic activity. During the Operation Phase, the project will employ workers to operate and maintain the facility. Spending related to operations will also affect several business sectors in the area.

#### **Economic Impact**

The following analysis examines the economic impact of the Construction Phase and the Operation Phase on the economies of two geographic areas: Henderson County and the State of Kentucky.

It is important to note that only new spending related to the project that **occurs in the area** will affect the economies of these two areas. Much of the total expenditures for this project are expected to be spent outside of these areas. These expenditures include the actual solar panels and other major equipment. Because this equipment is typically manufactured outside of Kentucky, spending on the equipment is not expected to directly affect the economies of Henderson County or the State of Kentucky. However, spending on the construction and operation of the solar project does have direct, indirect, and induced impacts on the state and local economies.

The direct impact refers to the employment and wages associated with the project. For the Construction Phase, the direct impact occurs primarily in the construction sector but may also include spending on professional business services such as engineering and equipment testing if these activities occur in the area. The direct impact for the Operation Phase includes employees and services hired to operate and maintain the facility.

The indirect impact refers to employment and wages that occur at businesses that provide inputs to support the facility's construction and operations. For the Construction Phase this would typically be materials and supplies that the construction crews need to complete their work. For the Operation Phase, this would include various supplies and tools needed to maintain the site.

The induced impact refers to employment and wages related to the provision of goods and services purchased by the workers employed directly and indirectly by the project. As workers are paid, they will spend a portion of their incomes at local businesses such as restaurants, retail establishments, and health care providers. These impacts can occur across a wide range of sectors.

These three types of impacts are typically measured using models of the local economy. For this analysis, impacts were estimated using the IMPLAN model, which is widely used for this type of analysis. For this analysis, an IMPLAN model was designed to simulate the economies of Henderson County and Kentucky.

An additional area of economic impact is employment-related taxes. Henderson County will collect a 1% occupational license tax on wages and salaries paid for Project-related work occurring in the county. The State of Kentucky will collect state income taxes on labor income associated with the Project. The effective income tax rate is estimated to be 4.2%. In addition, to the extent any Project-related income is spent on taxable goods and services, that spending will be subject to a 6% Kentucky state sales tax.

The Project will also pay real property taxes and business personal property taxes to the county and state. An estimate of these taxes was not included in the scope of this analysis.

Finally, an estimate can be made of the output associated with the proposed Project. Output refers to the total amount of goods and services produced.

#### **Analysis**

#### Construction Phase

During the Construction Phase of the Project, Community Energy anticipates employing approximately 150 full-time equivalent workers for a 6 to 9 month construction period. Community Energy anticipates that most of the construction workers and contractors will be hired from within the county or surrounding counties. However, approximately 20% of the labor will consist of specialty workers who come from outside the area. While these workers are working on the project in Henderson County, they will contribute to the county's total employment and wages. In addition, their wages would likely be subject to state income taxes and local occupational license fees. However, because they live outside the region, their wages will have a smaller induced impact on the local economy as most of their income will be spent in their home communities.

Including the direct, indirect, and induced impacts modeled by IMPLAN, the Construction Phase is estimated to increase employment in the Henderson County area by 176 jobs and increase labor income by approximately \$6.8 million. An additional 9 jobs and approximately \$484,000 in labor income would be created elsewhere in the State of Kentucky. See Table 1.

Table 1: Economic Impact of Construction Phase (6-9 months)

	Henderson County	,
Impact	Resulting Employment	Labor Income
Direct	150	\$5,707,000
Indirect	13	\$575,000
Induced	13	\$482,000
Total	176	\$6,764,000

	State of Kentucky (outside of Henderson County area)	
Impact	Resulting Employment	Labor Income
Indirect	3	\$191,000
Induced	6	\$293,000
Total	9	\$484,000

During the Construction Phase, Henderson County is estimated to collect \$67,640 in occupational license taxes on Project-related wages. The State of Kentucky is estimated to collect \$304,000 in state income taxes on Project-related labor income. The State of Kentucky is also estimated to collect \$217,000 in sales taxes on Project-driven expenditures. See Table 2.

Table 2: Tax Revenue during the Construction Phase (6-9 months)

Henderson County	y
Tax	Amount
Occupational License Tax	\$67,640
Total	\$67,640

State of Kent	ucky
Tax	Amount
State Income Tax	\$304,000
State Sales Tax	\$217,000
Total	\$521,000

In summary, the economic impact of the **Construction Phase** of the proposed Project on Henderson County is expected to total approximately **\$6.8 million** in direct, indirect, and induced impacts on labor income and contribute \$67,640 in county taxes. The economic impact on the State of Kentucky (including Henderson County) is expected to total approximately **\$7.2 million** in direct, indirect, and induced impacts on labor income, and generate \$521,000 in state taxes.

#### Operation Phase

During the Operation Phase of the Project, Community Energy anticipates employing 2 to 3 full-time workers. Including the direct, indirect, and induced impacts modeled by IMPLAN, the Operation Phase is expected to generate area employment of 5.0 to 7.5 jobs, and labor income of \$310,000 to \$456,000 per year. Over the 30-year life of the Project, the present value of this labor income would total between \$6.9 million to \$10.2 million (present value). This assumes a discount rate of 2%.

The estimates described above provide the <u>gross</u> economic impacts associated with the Project. However, these figures need to be adjusted to account for the loss of economic impacts that would have occurred if the land remained in its current use. The proposed site is currently being used for agricultural production, providing income for landowners and farm workers. If the solar project is developed, the economic impacts would shift from agricultural production to solar generation. The <u>net</u> economic impact to the area is, therefore, the difference between the level of economic activity associated with agricultural production and the level of economic activity associated with solar energy production.

Including the direct, indirect, and induced impacts, the reduced farm activity at the proposed Project site would reduce area labor income by \$85,000 per year. Over the 30-year life of the Project, this would result in reduced area labor income of \$1.9 million (present value). Accordingly, the <u>net</u> combined direct, indirect, and induced impacts of the proposed Project on the Henderson County area during the Operation Phase is estimated to be \$225,000 to \$371,000 per year, or \$5.0 million to \$8.3 million over 30 years (present value). Additional indirect, and induced impacts would be felt elsewhere in Kentucky during the Operation Phase. These additional impacts are estimated to be \$58,000 to \$87,000 per year, or \$1.3 million to \$1.9 million over 30 years (present value). See Table 3.

Table 3: Net Economic Impact of Operation Phase (30 years)

Henderson County			
	Resulting		Present Value
Impact	Employment	Labor Income/yr	Labor Income/30 yrs
Direct	2.0 to 3.0	\$130,000 to \$188,000	\$2,908,000 to \$4,209,000
Indirect	2.3 to 3.5	\$155,000 to \$231,000	\$3,469,000 to \$5,163,000
Induced	0.7 to 1.0	\$25,000 to \$38,000	\$570,000 to \$849,000
Subtotal	5.0 to 7.5	\$310,000 to \$456,000	\$6,948,000 to \$10,221,000
less		(\$85,000)	(\$1,910,000)
Total		\$225,000 to \$371,000	\$5,038,000 to \$8,311,000

State of Kentucky (outside of Henderson County area)					
	Resulting				
Impact	Employment	Labor Income	Labor Income/30 yrs		
Indirect	0.4 to 0.6	\$37,000 to \$55,000	\$829,000 to \$1,232,000		
Induced	0.5 to 0.6	\$21,000 to \$31,000	\$470,000 to \$694,000		
Total	0.9 to 1.3	\$58,000 to \$87,000	\$1,299,000 to \$1,946,000		

During the Operation Phase, Henderson County is estimated to collect \$2,250 to \$3,710 in occupational license taxes per year on Project-related wages; \$50,000 to \$83,000 over 30 years (present value). The State of Kentucky is estimated to collect state income taxes in the amount of approximately \$12,000 to \$19,000 per year; \$266,000 to \$431,000 over 30 years (present value). The State of Kentucky is estimated to collect state sales tax in the amount of approximately \$8,000 to \$14,000 per year; \$190,000 to \$308,000 over 30 years (present value). See Table 4.

Table 4: Tax Revenue during the Operation Phase (30 years)

Henderson County					
Tax	Amount/year	Amount/30 yrs			
Occupational License Tax	\$2,250 to \$3,710	\$50,000 to \$83,000			
Total	\$2,250 to \$3,710	\$50,000 to \$83,000			

State of Kentucky					
Tax	Amount				
State Income Tax	\$12,000 to \$19,000	\$266,000 to \$431,000			
State Sales Tax	\$8,000 to \$14,000	\$190,000 to \$308,000			
Total	\$20,000 to \$33,000	\$456,000 to \$738,000			

In summary, the net economic impact of the **Operation Phase** of the proposed Project on Henderson County, comprised of direct, indirect, and induced impacts on labor income is expected to total approximately \$225,000 to \$371,000 per year; \$5.0 million to \$8.3 million over 30 years (present value). This increase in labor income would increase county taxes by \$2,250 to \$3,710 per year; \$50,000 to \$83,000 over 30 years (present value). The net economic impact on the State of Kentucky (including Henderson County), comprised of direct, indirect, and induced impacts is expected to total approximately \$283,000 to \$458,000 per year; \$6.3 million to \$10.3 million over 30 years (present value). This would increase state taxes by \$20,000 to \$33,000 per year; \$456,000 to \$738,000 over 30 years (present value).

#### **Property Tax**

The project would affect state and local property taxes in two main ways. First, the 541 acres would be assessed at its commercial value rather than agricultural value. Second, the project would add a considerable amount of equipment that would be subject to state and local tangible property taxes. An analysis conducted by Community Energy provides estimates of the property tax associated with the project and is provided separately.

#### Comparison of Output

Output refers to the total amount of goods and services produced. If the project site were to remain in agricultural production, output would be measured in the value of the crops produced. Based on the data from the 2017 Census of Agriculture, sales of agricultural commodities from

farms located in Henderson County average \$598 per acre. Currently, 467 acres of the proposed Project site is under cultivation. The estimated output of the site if it remained in agricultural use would be \$279,226 per year.

For the proposed Project, output would be measured in the value of the electricity that will be produced. Community Energy estimates total electricity production in Year 1 of the Operation Phase to be 117,000 megawatt-hours (MWh). In January, the EIA reported that average wholesale prices for the ERCOT region were \$38 per MWh in 2019 and \$22 per MWh in 2020.<sup>2</sup> Electricity prices can be volatile and vary somewhat across regions. However, assuming a price of \$30 per MWh, the proposed project could potentially generate approximately \$3.5 million in output per year. The value of the output will vary depending on actual generation and the prices charged. By comparison, total output of the Project site if it were to remain in agricultural use was \$279,226 per year.

The <u>net</u> output of the proposed Project could be lower if the Project effectively offsets electricity that would otherwise be generated in the county or the state. There is a certain level of demand for electricity. Without the Project, this demand might otherwise be met by keeping existing generating units online longer, developing other new sources of generation, or by purchasing electricity from the wholesale market. Community Energy anticipates that the electricity generated by the Project will offset electricity that Henderson Municipal Power and Light would otherwise purchase from the wholesale market. This electricity would likely be generated by power generators outside the state, and the Project would be unlikely to reduce electricity generation in Henderson County or Kentucky.

#### **Conclusions**

The Project proposed by Community Energy Solar, LLC is estimated to increase employment, labor income, tax collections, and output in Henderson County and Kentucky. During the 6 to 9 month Construction Phase of the Project, the range of economic impact is estimated to be \$6.8 million to \$7.2 million. During the 30-year Operation Phase of the Project, the range of net economic impact is estimated to be \$6.2 million to \$10.3 million. In addition, Output from the proposed Project site is estimated to increase from \$279,226 per year to potentially \$3.5 million per year assuming a wholesale price of \$30 per MWh.

<sup>&</sup>lt;sup>1</sup> Sales estimates from the 2017 Census of Agriculture were adjusted for inflation using the Consumer Price Index for all Urban Consumers (CPI). The CPI was used because crop prices have been volatile. For example, average soybean prices for 2020 were lower than in 2017. However, prices during the first three months of 2021 were significantly higher. Should crop prices increase faster than general prices levels, estimates of the lost agricultural output could understate the true output lost. Likewise, should crop prices increase slower than general price levels, the estimate could overstate the value of lost agricultural output. In either case, it appears likely the labor income and output associated with the solar project would exceed the losses from reduced agricultural production in Henderson County.

<sup>&</sup>lt;sup>2</sup> United States. Energy Information Administration. Wholesale U.S. electricity prices were generally lower and less volatile in 2020 than 2019.

#### Michael W. Clark

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#### January 2021

#### **Experience:**

July 2020 - Present Director, Center for Business and Economic Research, University of Kentucky, Lexington, Kentucky July 2019 – June 2020 Interim Director, Center for Business and Economic Research, University of Kentucky, Lexington, Kentucky August 2016 – June 2019 Associate Director, Center for Business and Economic Research, University of Kentucky, Lexington, Kentucky Chief Economist. November 2002 – July 2016 Legislative Research Commission, Frankfort, Kentucky July 1996 – November 2002 Economist, Legislative Research Commission, Frankfort, Kentucky October 1994 – June 1996 Financial Analyst, Forecasting and Research Department, Kentucky Utilities, Lexington, Kentucky

#### **Other Experience:**

2012 - 2013 VERA Institute of Justice, Cost-Benefit Methods Working Group

Teaching • Cost Benefit Analysis (2017-2020)

- Capstone Advisor for MPA Students (2011)
- Decision Analysis (2009-2010)
- Public Financial Management (2009), co-taught

Education: Ph.D., Economics, University of Kentucky, 1996

Dissertation: "Search and Employer-Employee Match Formation"

Concentration: Labor Economics, Economic Theory, Industrial Organization

M.S., Economics, University of Kentucky, 1993

B.S., Management and Marketing, University of Kentucky, 1991

#### Reports, Briefs, and Publications:

Childress, Michael, & Michael Clark. "Communicating with Policymakers in a Pandemic." *Communicating Science in Times of Crisis: Coronavirus*, Forthcoming.

Clark, Michael. "Why did Kentucky's Unemployment Rate Fall?" Kentucky Center for Statistics. *Kentucky Labor Force Update*. October 2020.

Clark, Michael, Jenny Minier, Charles Courtemanche, Bethany Paris, and Michael Childress. "The Effects of Opioids on Kentucky's Workforce." Prepared for the Kentucky Department of Public Health, September 2019.

Clark, Michael, Jenny Minier, Charles Courtemanche, Bethany Paris, and Michael Childress. "The Effects of Smoking on Kentucky's Workforce." Prepared for the Kentucky Department of Public Health, September 2019.

Clark, Michael, Jenny Minier, Charles Courtemanche, Bethany Paris, and Michael Childress. "The Economic Impact of Diabetes in Kentucky." Prepared for the Kentucky Department of Public Health, June 2019.

Clark, Michael, and Kenneth Tester. "An Evaluation of How Repealing West Virginia's Prevailing Wage Law Affected the Cost of Public Construction" Prepared for the West Virginia Chapter of the Associated Builders and Contractors, August 2018.

Bollinger, Christopher, and Michael Clark. "County Attorney Child Support Enforcement Funding Formula." October 2017. Prepared for the Kentucky Department of Income Support.

Bollinger, Christopher, William Hoyt, Michael Clark, and Xiaozhou Ding "The Economics of Land Use Policies in Lexington, Kentucky." March 2017. Prepared for the Lexington-Bluegrass Association of REALTORS.

Clark, Michael, and Meredith Shores "Comparison of Salaries Paid to State Executive Branch Supervisory and Nonsupervisory Employees and to School Administrators and Teachers." September 2015.

Clark, Michael, Tosha Fraley and Bethany Paris. "How Kentucky's Prevailing Wage Laws Affect Public Construction." Legislative Research Commission, December 2014.

Hall, Christopher, Michael Clark, Tosha Fraley, and Jean Ann Myatt. "Kentucky Department of Fish and Wildlife Resources." Legislative Research Commission, August 2013.

Roenker, Jonathan, Michael Clark, and Jean Ann Myatt. "Economic Contribution of the Kentucky Coal Industry." Legislative Research Commission, August 2012.

Nutt, Perry. Michael Clark, Rick Graycarek, Christopher Hall, and Jonathan Roenker. "The Kentucky Thoroughbred Breeding Industry and State Programs That Assist the Equine Industry." Legislative Research Commission, November 2011.

Spurlock, Emily, Michael Clark, Rick Graycarek. "How School Construction Could Affect Employment in Kentucky." Legislative Research Commission, September 2011.

Roenker, Jonathan, Emily Spurlock, and Michael Clark. "The Impact of Industrial Revenue Bonds on Property Taxes and School Funding." Legislative Research Commission, November 2010.

Clark, Michael, Lisa Cave, and Christopher Hall. "The Costs of College and High School Textbooks in Kentucky." Legislative Research Commission, August 2008.

Kennedy, Colleen, Rhia Rhrib, Michael Clark and Greg Hager "Drug Courts." Legislative Research Commission, September 2007.

Clark, Michael, Colleen Kennedy and Jon Roenker "Pollution Cap and Trade Programs in Kentucky." Legislative Research Commission, May 2007.

Clark, Michael, Greg Hager and Nadezda Nikolova. "School Size and Student Outcomes in Kentucky's Public Schools." Legislative Research Commission, June 2006.

Boardman, Barry, Michael Clark, Kara Daniels, Greg Hager, Dan Jacovitch, Erin McNees, John Perry, Jon Roenker, and Ginny Wilson "An Analysis of the Commonwealth Accountability Testing System." Legislative Research Commission, July 2005.

Clark, Michael. "The Effects of Prevailing Wage Laws: A Comparison of Individual Workers' Wages Earned On and Off Prevailing Wage Construction Projects." *Journal of Labor Research*, 26:4 (2005): 725-737.

Perry, John, and Michael Clark. "Who is Your New Kentucky Neighbor and Where Did Your Old One Go?" University of Kentucky, Center for Business and Economic Research, Kentucky Annual Economic Report 2004, January 2004.

Nutt, Perry, Michael Clark, Lynn Aubrey, and Tanya Monsanto. "The Competitiveness of Kentucky's Coal Industry." Legislative Research Commission, January 2004.

Clark, Michael, and Judy Fritz. "The Cost of Medical Malpractice Insurance and Its Effect on Health Care." Legislative Research Commission, June 2003.

Nutt, Nutt, Michael Clark, Lynn Aubrey, Barry Boardman, Kevin Mason, and Greg Hager "The Costs, Benefits, and Monitoring of Kentucky's Enterprise Zones." Legislative Research Commission, December 2002, with.

Wilson, Ginny, Michael Clark, Greg Hager, Cindy Upton, Betty Davis, Barry Boardman, and Tom Hewlett. "An Analysis of Kentucky's Prevailing Wage Laws and Procedures." Legislative Research Commission, December 2001. Received the 2002 National Legislative Program Evaluation Society's Excellence in Research Methods Award.

Clark, Michael. "Status of the Health Insurance Market in Kentucky, 1998." Legislative Research Commission, January 2000.

Wilson, Ginny, and Michael Clark. "Market Responses to Kentucky Health Insurance Reforms." Center for Business and Economic Research, Kentucky Annual Economic Report 1999.

Wilson, Ginny, and Michael Clark. "Status of the Health Insurance Market in Kentucky." Legislative Research Commission, January 1998.

Wilson, Ginny, Dan Jacovitch, and Michael Clark. "Number and Characteristics of the Individually Insured, Small-Group Insured, and Uninsured in Kentucky." March 1997.

#### **Presentations:**

"The COVID-19 Recession: How has the Pandemic Affected Kentucky's Economy" Lexington Employee Benefits Council, December 2020.

"How COVID-19 Screwed Up Everything: The Challenges of Economic Forecasting During the Pandemic" Panel participant, 2020 Kentucky Economics Association Conference, October 2020.

"The COVID-19 Recession" Rotary Club of Louisville, October 2020.

"The COVID-19 Recession: How has the Pandemic Affected Kentucky's Economy" Kentucky Chamber of Commerce, October 2020.

"The COVID-19 Recession: How has the Pandemic Affected Kentucky's Economy" University of Kentucky Market Cancer Center Affiliate Network, 2020 Cancer Care Conference September 2020.

"Kentucky's Economy and Budget" Prichard Committee's Lunch & Learn, September 2020.

"Kentucky's Economy" Commerce Lexington, Bluegrass Region's 2020 Federal Policy Forum, September 2020

"Understanding Kentucky's Unemployment Data" Kentucky Workforce Investment Board, August 2020.

"Economics in the Time of COVID-19" Panel participant, University of Kentucky Alumni Association, Great Teachers on Great Challenges, June 2020.

"The Economic Impact of COVID-19" UK Market Cancer Center Affiliate Network COVID-19 Web Series, May 2020.

Forecasting Local Tax Revenues in the COVID-19 Era. Panel participant, Kentucky City/County Management Association, April 2020.

Trade Policy Forecast for 2020, Panel participant, World Trade Center Kentucky, January 2020.

"LFUCG Occupational License Tax Forecast FY 2020 & 2021" Lexington/Fayette Urban County Government; Budget, Finance, and Economic Development Committee, January 2020.

"Understanding Kentucky's Employment Statistics." Kentucky Center for Education and Workforce Statistics Data Conference, September 2019.

"LFUCG Occupational License Tax Forecast FY 2019 & 2020" Lexington/Fayette Urban County Government; Budget, Finance, and Economic Development Committee, April 2019.

"Kentucky's Motor Fuel Taxes" Kentucky Association of Counties Conference, November 2018.

"Kentucky Labor Force Participation" Kentucky Center for Education and Workforce Statistics Data Conference, August 2017.

"Cost-Benefit Analysis and Justice Policy: An Introduction for Budget and Finance Staff" webinar sponsored by the VERA Institute of Justice, July 2012.

"Overview of Medicaid" to the Medicaid Cost Containment Taskforce, August 2010

"Summary of Proposed Economic Stimulus" to the Senate and House Appropriations and Revenue Committees, January 2009.

"Potential Revenue from Expanded Gaming in Kentucky" to the House Special Subcommittee on Expanded Gambling, January 2008.

"Avoiding Bias in Policy Research" to the National Conference of State Legislatures, Research and Committee Staff Section Fall Seminar, September 2007.

"Comparison of State and Local Tax Burdens and Government Benefits for Low-Income Families" to Subcommittee on Tax Policy Issues, November 2001.

#### **External Funding:**

"Lexington Economic Trends" Lexington/Fayette Urban County Government, Jan 2021, \$4,200.

"LFUCG Occupational License Tax Forecast FY 2020 & 2021" Lexington/Fayette Urban County Government, Jan 2021, \$10,000.

"Kentucky Quarterly Economic Newsletter" Kentucky Chamber of Commerce, Dec 2020, \$15,000.

"Labor Force Statistics Analysis and Consulting" Kentucky Education and Workforce Development Cabinet, July 2020-June 2022, \$256,000.

"LFUCG Occupational License Tax Forecast FY 2019 & 2020" Lexington/Fayette Urban County Government, April 2019, \$10,000.

"The Importance of Access to Health for Rural Economic Development." National Institute of Food and Agriculture, with Alison F. Davis, Jennifer L. Hunter, Jenny Minier, Ernie Scott, and Christina R. Studts, 2019-2022, \$499,725.

"Health Care Provider Tax Model" Balanced Health Kentucky, 2018, \$11,800.

"Evaluation of the Workforce and Fiscal Impacts of Health Conditions and Treatment Programs in Kentucky" Kentucky Department for Public Health, September 2018-June 2019, \$134,000.

"Labor Force Statistics Analysis and Consulting" Kentucky Education and Workforce Development Cabinet, July 2019-June 2021, \$247,000.

"Analyze the Impact of Repealing West Virginia's Prevailing Wage Law on the Cost of Public Construction" Associated Builders and Contractors, Inc. West Virginia Chapter, December 2017-June 2018, \$21,000.

"Estimate Fiscal Impacts of Changes to Kentucky's Health Care Provider Tax" Kentucky Hospital Association, \$55,000.

"Funding Formula to Distribute Child Support Enforcement Funds" Department of Income Support, \$51,000.

"Labor Force Statistics Analysis and Consulting" Kentucky Education and Workforce Development Cabinet, March 2016-June 2018, \$209,000.

"The Economic Impacts of Land Use Policies in Lexington, Kentucky" Lexington-Bluegrass Association of REALTORS, May 2016 – December 2016, \$65,000.

#### BETHANY L. PARIS

#### **EDUCATION**

University of Kentucky, Lexington, KY

Doctor of Philosophy, Public Policy and Administration, Martin School of Public Policy and Administration (August 2013)

Master of Public Administration, Martin School of Public Policy and Administration (December 2012)

#### University of Kentucky, Lexington, KY

Bachelor of Arts Communication, College of Communication and Information Studies (December 2005)

Concentration: Health Care Communication

Minor: Biological Sciences

#### **EXPERIENCE**

#### Economic Analyst

Center for Business and Economic Research (CBER), University of Kentucky

July 2015 to Present

- Grants and budget management for CBER; reconciling monthly ledgers against account balances.
- Managing student schedules in conjunction with meeting project deadlines for grants based projects.
- Coordinating marketing for CBER with the College of Business and Economics (e.g. website, news, press releases, etc.).
- Generate original research studies on grant based projects for dissemination on the CBER website and University.

#### Data and Analytics Advisor

Monitoring and Evaluation Unit, Nuru International, Palo Alto, CA (Telecommute)

August 2014 to June 2015

- Research and recommend appropriate evaluation design, data collection, and analytical methods to measure program
  impact for all programs in both Kenya and Ethiopia.
- Collaborate on quarterly and annual impact reports that align with the Nuru brand and are accessible to a broader audience.
- Collaborate with the M&E team on design of an integrated impact measurement system in Ethiopia.
- Conduct due-diligence on potential technical partners and support the negotiation process and partnership agreements for the Salesforce centralized database system.
- Lead M&E team members in developing clearly documented and replicable procedures for collecting quality data and summarizing for program monitoring.
- · Lead and promote regular and systematic data driven feedback loops between M&E and programs using monitoring data.

#### Staff Economist

Legislative Research Commission, Kentucky General Assembly, Frankfort, KY
March 2014 to August 2014

- Provided economic analysis and research support to all members of the General Assembly for the long and short legislative sessions
- During the interim, assisted the Chief Economist and staff in assembling supplemental reports for committee review on topics such as prevailing wage law, unemployment, educational attainment, etc.

#### Visiting Professor

Martin School of Public Policy and Administration, University of Kentucky Lexington, KY

August 2013 to May 2014

- Provided instruction in the accelerated and regular MPA programs in Public Program Evaluation (PA 622 Fall II quarter and Spring 2014 Semester), Decision Analysis (PA 623 Fall II quarter), and Cost Benefit Analysis (PA 680 Spring Semester) for the 2013-2014 academic year.
- Served as a consulting faculty advisor and Stata Lab instructor for the capstone projects during the Spring 2014 semester (Chair of two committees; reviewed six total capstone papers).
- Served as Chair of the Communications Committee for the Martin School.

#### Graduate Research Assistant

Martin School of Public Policy and Administration, University of Kentucky Lexington, KY

August 2011 to August 2013

- Supported faculty members in assembling information and basic empirical analysis for the NASPAA self-study and
  accreditation process, which included qualitative surveys of faculty members, budget analysis of the department, and
  compilation of all materials for submission during the self-study year.
- Assisted in the coordination of a NSF grant application, including management of the budget assembly and analysis of all
  grant partners across multiple colleges/departments in the University under the supervision of Dr. Eugenia F. Toma.
- Managed the Martin School's website re-launch during the summer of 2013.
- Provided team support for Commonwealth Council on Developmental Disabilities (CCDD), researching the background of best practices and created a comprehensive review of literature.
- Taught interactive lab course for Master's students in applied statistics using Stata.

#### Intern

United Nations Conference on Trade and Development (ALDC Division) Geneva, Switzerland

May 2012 to August 2012

- Assisted in the execution of a research project on migration, brain circulation, and diaspora networks of the Least Developed Countries (LDCs), by carrying out statistical data collection, tabulation, and regression analysis in Stata for presentation in the LDC Report (2012).
- Performed regression analysis, directly applying the methodology of gravity modeling to the migration data set compiled for the ALDC division.
- Collected qualitative and bibliographic information on the situation and education of migrants from LDCs in destination countries.
- Formulated and drafted conclusions based on statistical, bibliographic, and qualitative searches performed.
- Performed research on the economic and societal role played by skilled returnees in LDCs.

#### Graduate Research Assistant

Creative and Technical Services, College of Arts and Sciences, University of Kentucky Office of Funding and Recruitment, The Graduate School, University of Kentucky Lexington, KY

August 2008 to August 2011

- Assisted faculty and students with information technology issues, including trouble shooting computer issues, web migration, and Blackboard support.
- Conducted bibliographic research on the best practices of residential learning communities, university budgeting
  practices and management.
- Supervised student workers and purchased equipment for the technical services team.
- Maintained website and assisted in the migration to a Sharepoint interface.
- Provided support to GS staff in the assembly and dissemination of material for annual faculty and student awards.
- Assisted the Dean and Associate Provost in the planning of University Commencement Events, including student registration, event coordination, and venue management.
- Performed analysis and management of National Research Commission (NRC) data regarding the national ranking of University of Kentucky graduate programs for the Dean of the Graduate School (Jeannine Blackwell).

#### PUBLICATIONS AND PRESENTATIONS

- Paris, B.L. (2013). Institutional Lending Models, Mission Drift, and Microfinance Institutions. (Doctoral Dissertation). <a href="http://uknowledge.uky.edu/msppa">http://uknowledge.uky.edu/msppa</a> etds/9/
- Clark, M., T. Fraley, and B. Paris (December 2014) "How Kentucky's Prevailing Wage Laws Affect Public Construction." Legislative Research Commission.
- Bollinger, C.R. and B.L. Paris (2015). "Crime and Punishment and Education." Issue Brief on Topics Affecting Kentucky's Ecconomy. http://uknowledge.ukv.edu/cber\_issuebriefs/17/
- Paris, B.L. Forthcoming (Nov. 2016). "Mission Statements and Non-Profit Management: A Mixed Methods Analysis of Mission Drift in Microfinance Institutions." Association for Research on Nonprofit Organizations and Volunteer Action (ARNOVA).

# **Brian Redding**

Lexington, KY
Tel: (616) 970-2417
Email: bredding899@gmail.com

#### **EDUCATION**

# University of Kentucky, Lexington, KY

Ph.D. in Economics – expected May 2023

- Teaching Assistant:
  - Providing instruction to students during office hours, classroom recitation

#### Central Michigan University, Mt. Pleasant, MI

Master of Arts in Economics – May 2018

- Graduate Assistant:
  - Assisted with faculty research project on history of state and local laws

# Thomas M. Cooley Law School, Lansing, MI

Juris Doctor, cum laude

- Thomas M. Cooley Law Review, Associate Editor
- Certificates of Merit: Evidence and Labor Law

# Grand Valley State University, Allendale, MI

Bachelor of Arts in Economics

• Minor in Russian

#### **EXPERIENCE**

# State Representative Bob Constan, Lansing, MI

Legislative Assistant, May 2009 – December 2012

- Researched and wrote legal memoranda on various issues of state law
- Performed administrative and clerical duties
- Communicated with and assisted constituents
- Collaborated with state agencies and private entities
- Assisted in political campaign management

# Private Practice Attorney, Michigan (State Bar P#73203)

Solo Practice, January 2013 – August 2016

- Represented indigent criminal defendants in Ingham County
- Created complete estate plans, including wills, trusts, powers of attorney
- Drafted contracts for small businesses, including sales agreements and transfer of ownership

# EXHIBIT 10 ATTACHMENT 10.2

# **Chris Killenberg**

From: Mike Grim < Mike.Grim@mcmcpa.com>
Sent: Monday, May 17, 2021 10:37 AM

To: Chris Killenberg

**Subject:** RE: Henderson County Solar - Tangible and Real Property Taxes

Chris:

Sorry for the delay, the past two weeks was real property appeal and tangible personal property tax filing deadlines. I reviewed the tax rate, methodologies, etc. and I agree with you analysis.

Best regards, Mike

Mike Grim, JD

Tax Partner, State & Local Tax Services Team Leader

Phone: 502.882.4510 Fax: 502.749.1930

From: Chris Killenberg <chris.killenberg@communityenergyinc.com>

**Sent:** Thursday, May 13, 2021 10:27 PM **To:** Mike Grim < Mike.Grim@mcmcpa.com>

Subject: Henderson County Solar - Tangible and Real Property Taxes

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Mike,

Can you please review and confirm our calculations of the tangible and real property taxes that will be levied on our Henderson County Solar project?

Our methodology was as follows:

# **Tangible Personal Property Taxes**

- 1. Downloaded the 2020 Tax Rate Worksheet from Henderson County's PVA site (attached), and summed the applicable tangible personal property tax rates (highlighted in yellow), which total 107.0358 (1.070358%)
- 2. Utilized the KY DOR Guidelines (attached) to determine the tax rates that apply to each category of solar equipment (e.g. state rate only, or state + local rates)
- 3. Calculated the weighted tangible property tax rate applicable to the solar equipment (see sheet 1 of the Property Tax Calculator, titled 'KY Solar Farm Categories').
- 4. Applied the weighted tangible property tax rate to the estimated total assessed value of the solar equipment (net of depreciation) to calculate the estimated tangible property tax for each year over 30 years (see sheet 2 of the Property Tax Calculator, column I).

Real Property Taxes (we pay all real property taxes on the land we lease)

- 1. Utilizing the 2020 Tax Rate Worksheet downloaded from Henderson County's PVA site, summed the applicable real property tax rates (highlighted in green), which totals 103.169 (1.03169%)
- 2. Utilizing the Tax Cards for the parcels underlying the project site (attached), determined the current average Net Taxable Value per acre for those parcels, which is \$1,126 per acre (see Current Taxes spreadsheet, attached)
- 3. Multiplied the current average Net Taxable Value per acre of \$1,126 by the 541 acres of the project site to calculate the current land value of the project site (see sheet 2 of the Property Tax Calculator, column B)
- 4. Multiplied the real property tax rate by the current land value to estimate the real property taxes currently collected on the project site (see sheet 2 of the Property Tax Calculator, column B)
- 5. Estimated that the 541 acres comprising the project site will be reassessed after the change of use from ag to solar, at a value of \$6,000 per acre (this falls at the low end of what we've seen across the southeast).
- 6. Multiplied the real property tax rate by the estimated land value to estimate the real property taxes to be collected on the project site once it is converted to solar (see sheet 2 of the Property Tax Calculator, column E)

Please let me know if you have any questions.

Thanks,

Chris

Chris Killenberg | Regional Development Director

Community Energy P.O. Box 17236 Chapel Hill, North Carolina 27516 M: 919.360.9792

chris.killenberg@communityenergyinc.com



# HENDERSON COUNTY 2020 County Tax Rate Worksheet

TAX JURISDICTION	2019 3REAL ESTATE	2019 TANG PERSONAL	2019 MERCH INVENT	2019 DOC WATER	2019 PERSONAL AIR	2019 INVENT IN TRANSIT	2020 REAL ESTATE	2020 TANG PERSONAL	2020 MERCH INVENT	2020 DOC WATER	2020 PERSONAL AIR	2020 INVENT IN TRANSIT
COUNTY-EXTENSION SERVICES	3.2690	4.4958	4.4958	0.0000	0.0000	0.0000	3.2690	4.4958	4.4958	0.0000	0.0000	0.0000
COUNTY-HEALTH	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000
COUNTY-LIBRARY	10.7000	14.4500	14.4500	14.4500	0.0000	14.4500	11.1000	15.1400	15.1400	15.1400	0.0000	15.1400
COUNTY-FISCAL COURT-GENERAL	12.8000	18.4000	18.4000	0.0000	0.0000	0.0000	12.8000	18.4000	18.4000	0.0000	0.0000	0.0000
SCHOOL-HENDERSON COUNTY-GENERAL	62.4000	62.4000	62.4000	62.4000	0.0000	0.0000	64.0000	64.0000	64.0000	64.0000	0.0000	0.0000
SPECIAL-BEAVER DAM DITCH	10.0000	0.0000	0.0000	0.0000	0.0000	0.0000	10.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SPECIAL-CANOE DITCH	7.0000	0.0000	0.0000	0.0000	0.0000	0.0000	7.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SPECIAL-CORYDON SEWER	8.5000	8.5000	0.0000	8.5000	8.5000	8.5000	8.5000	8.5000	0.0000	8.5000	8.5000	8.5000
SPECIAL-EAST FORK DITCH	10.0000	0.0000	0.0000	0.0000	0.0000	0.0000	10.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SPECIAL-ELAM FLAT DITCH	10.0000	0.0000	0.0000	0.0000	0.0000	0.0000	10.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SPECIAL-GRASSY POND WATERSHED	8.9800	0.0000	0.0000	0.0000	0.0000	0.0000	8.9800	0.0000	0.0000	0.0000	0.0000	0.0000
SPECIAL-ISOM POND DITCH	6.0000	0.0000	0.0000	0.0000	0.0000	0.0000	6.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SPECIAL-LICK CREEK DITCH	10.0000	0.0000	0.0000	0.0000	0.0000	0.0000	10.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SPECIAL-POND CREEK WATERSHED FLOODPLAIN	7.5000	0.0000	0.0000	0.0000	0.0000	0.0000	7.5000	0.0000	0.0000	0.0000	0.0000	0.0000
SPECIAL-SLOVER FLAT DITCH	8.0000	0.0000	0.0000	0.0000	0.0000	0.0000	8.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SPECIAL-SOUTH FORK DITCH	2.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CITY-CORYDON	11.1000	15.2600	15.2600	15.2600	15.2600	15.2600	8.8000	15.5500	15.5500	15.5500	15.5500	15.5500
CITY-HENDERSON	49.0000	81.3000	39.2700	39.2700	0.0000	0.0000	49.0000	81.3000	39.2700	39.2700	0.0000	0.0000
CITY-ROBARDS	2.0000	2.0000	2.0000	0.0000	0.0000	0.0000	2.0000	2.0000	2.0000	0.0000	0.0000	0.0000

Name/Title(please print): Renesa Abner		Address: 20 N. Main	Street
Phone/Fax:(270 826-3906	( <b>270 826-9677</b>	Address:	
Authorizing Signature:		Email:	Date Signed:

#### **Solar Farm Assessment Recommended Guidelines**



All commercial solar farms would be classified as public service companies (PSC), titled as an Electric Power Company, subject to central taxation by the DOR as directed by KRS 136.120.

Solar farms should only start filing the form 61A200 after the farm goes online and begins selling electricity to customers. Prior to being operational, the land would be picked up by the PVA as real estate and any construction work in progress on the solar farm would be filed on the tangible personal property return, form 62A500.

The main criteria used to differentiate a public service company from all other types of solar operating systems:

- The PSC owner has a business profit motivation.
- The primary intent of the PSC owner is to sell the majority of electric power directly to other electric companies (KU, LGE, TVA, KY Power, RECC's, etc.) via the grid.
- The primary intent of the PSC owner is to sell the majority of electric power directly to consumers (industrial plants, commercial businesses, homeowners, etc.) via the grid.
- The PSC owner's intent is not to use the electricity for their personal home use, farming use, and/or private business use.
- The PSC owner's intent is not to gain energy credits on their personal and/or business electric bill.

For public service companies, the solar electric equipment would 22 be classified as follows:

#### Manufacturing machinery, 15¢ per \$100 state rate only

- Solar Panel
- Inverters & Converters, Transformers, Trackers, Batteries
- Mounting racks, stands, frames & hardware
- DC meters, junction/combiner boxes, solar strings, breakers, control switches, regulators
- DC Above Ground & Underground Cables & Connectors

# Tangible personal, 45¢ per \$100 state rate & full local rates

- Above ground transmission power lines/wires/poles and related equipment
- AC switchgears, Meters, Breakers, Control Switches, Regulators
- AC Above Ground & Underground Cables & Connectors
- Security Systems, Communication Equipment
- Computer systems, monitor & control systems and SCADA systems

#### Real property, 12.2¢ per \$100 state rate & full local rates

- Land used for the Solar Panels
- Right-of-ways, Conduits, Buildings, Shelters, Huts, Fencing Solar farms will need to file a form 61A200 with the Department of Revenue every year. The deadline is April 30 of each year. Extensions may be granted for 30 days if the extension is requested in writing before April 30 and includes a report detailing any increases or decreases in property of \$50,000 or more in any taxing jurisdiction (KRS 136.130). Incomplete extension requests will be denied and a penalty may apply. No extension will be granted beyond May 30.

In addition to form 61A200, electric power companies are also required to file Schedules A, B, C, D, D1, I, J, K, K2, L, N1 – N3, R, S, U, CI, Z. These can all be found with the form 61A200 on the Department of Revenue website, https://revenue.ky.gov.

If a property owner has solar panels on a residence or business, the panels may or may not add a significant contributory value to the property. The PVA should estimate the cost information or obtain the cost information from the property owner, and determine a value to be added to the assessment.

Any questions regarding solar farms should be directed to Robert Carbin with the Public Service Branch, 502-564-7148.



Kentucky Department of Revenue Office of Property Valuation Division of State Valuation 502-564-8175 \* SOURCE: Solar Farm Assessment Recommended Guidelines\_2\_April 2020. Kentucky Department of Revenue Office of Property Valuation Division of State Valuation

 Labor and Indirects
 0.31

 Indirects
 \$0.093

 Materials
 \$0.501

Total EPC w/out Indirects \$0.811

CATEGORY	State (cents/\$100)	Local (cents/\$)	Total (cents/\$)	Percentage	\$/Wattdc	Direct Labor	% Age	Indirects	Total:	Weighted Rate
1) Solar Panels – Manufacturing machinery, 15¢ per \$100 state rate only	15		15	0.15%	\$0.260	\$0.020	51.90%	\$0.048	\$0.328	0.0607%
2) Inverters & Converters – Manufacturing machinery, 15¢ per \$100 state rate only	15		15	0.15%	\$0.035	\$0.012	6.99%	\$0.006	\$0.053	0.0099%
3) Transformers – Manufacturing machinery, 15¢ per \$100 state rate only	15		15	0.15%	\$0.025	\$0.023	4.99%	\$0.005	\$0.053	0.0097%
4) Trackers – Machinery, 15¢ per \$100 state rate only	15		15	0.15%	\$0.105	\$0.040	20.96%	\$0.019	\$0.164	0.0304%
5) Batteries – Tangible personal, 45¢ per \$100 state rate & full local rates	45	107.0358	152.0358	1.52%						
6) Mounting Racks, Stands, Frames, & Hardware – Manufacturing machinery, 15¢ per \$100 state rate only	15		15	0.15%	\$0.013	\$0.016	2.59%	\$0.002	\$0.031	0.0058%
7) Wiring, Cable, Poles, Power Lines – Tangible personal, 45¢ per \$100 state rate & full local rates	45	107.0358	152.0358	1.52%	\$0.060	\$0.100	11.98%	\$0.011	\$0.171	0.3208%
8) Meters, Breakers, Control Switches – Tangible personal, 45¢ per \$100 state rate & full local rates	45	107.0358	152.0358	1.52%	\$0.003	\$0.006	0.60%	\$0.001	\$0.010	0.0179%
9) Land used for the Solar Panels – Real property, 12.2¢ per \$100 state rate & full local rates	12.2	103.169	115.369	1.15%						
10) Right-of-ways, Conduits, Buildings, Shelters, Huts, Fencing – Real property, 12.2 ¢ per \$100 state rate & full local rates	12.2	103.169	115.369	1.15%						
TOTAL					\$0.310	\$0.217		\$0.093	\$0.811	0.4553%

#### **Henderson County Solar**

Site Area (Acres) 541 Current Assessment (\$/Acre) \$1,126 Solar Assessment (\$/Acre) \$6,000 **Yearly Land Appreciation Rate** 2% Real Property Tax Rate 1.03169% Solar Equipment (Watt-ac) 50,000,000 Solar Equipment (Watt-dc) 65,000,000 Equipment Cost (\$/Watt-dc) \$0.811 \$0.00 **Tangible Property Tax Abatement** Weighted Tangible Property Tax Rate 0.4553%

		Real Prop	erty Tax		Tangible Property Tax				Total Tax
		Estimated Real Property	1	Estimated Real Property		KY Depreciation	Assessed Value of Solar		
Year	<b>Current Land Value</b>	Tax (Current)	Solar Land Value	Tax (Solar)	Original Value of Solar Equipment	(Class VI -18 yr life)	Equipment	Tangible Property Tax	<b>Total Property Tax</b>
1	\$609,166	\$6,285	\$3,246,000	\$33,489	\$52,715,000	96.90%	\$51,080,835	\$232,582	\$266,071
2	\$621,349	\$6,410	\$3,310,920	\$34,158	\$52,715,000	95.70%	\$50,448,255	\$229,702	\$263,861
3	\$633,776	\$6,539	\$3,377,138	\$34,842	\$52,715,000	94.40%	\$49,762,960	\$226,582	\$261,423
4	\$646,452	\$6,669	\$3,444,681	\$35,538	\$52,715,000	92.90%	\$48,972,235	\$222,981	\$258,520
5	\$659,381	\$6,803	\$3,513,575	\$36,249	\$52,715,000	89.60%	\$47,232,640	\$215,061	\$251,310
6	\$672,568	\$6,939	\$3,583,846	\$36,974	\$52,715,000	84.70%	\$44,649,605	\$203,300	\$240,274
7	\$686,020	\$7,078	\$3,655,523	\$37,714	\$52,715,000	82.30%	\$43,384,445	\$197,539	\$235,253
8	\$699,740	\$7,219	\$3,728,634	\$38,468	\$52,715,000	78.90%	\$41,592,135	\$189,378	\$227,846
9	\$713,735	\$7,364	\$3,803,206	\$39,237	\$52,715,000	75.50%	\$39,799,825	\$181,217	\$220,455
10	\$728,010	\$7,511	\$3,879,270	\$40,022	\$52,715,000	74.20%	\$39,114,530	\$178,097	\$218,119
11	\$742,570	\$7,661	\$3,956,856	\$40,822	\$52,715,000	71.30%	\$37,585,795	\$171,136	\$211,959
12	\$757,421	\$7,814	\$4,035,993	\$41,639	\$52,715,000	65.00%	\$34,264,750	\$156,015	\$197,654
13	\$772,570	\$7,971	\$4,116,713	\$42,472	\$52,715,000	64.50%	\$34,001,175	\$154,815	\$197,287
14	\$788,021	\$8,130	\$4,199,047	\$43,321	\$52,715,000	61.90%	\$32,630,585	\$148,574	\$191,895
15	\$803,782	\$8,293	\$4,283,028	\$44,188	\$52,715,000	60.70%	\$31,998,005	\$145,694	\$189,882
16	\$819,857	\$8,458	\$4,368,689	\$45,071	\$52,715,000	58.20%	\$30,680,130	\$139,693	\$184,765
17	\$836,254	\$8,628	\$4,456,062	\$45,973	\$52,715,000	56.90%	\$29,994,835	\$136,573	\$182,546
18	\$852,979	\$8,800	\$4,545,184	\$46,892	\$52,715,000	52.10%	\$27,464,515	\$125,052	\$171,944
19	\$870,039	\$8,976	\$4,636,087	\$47,830	\$52,715,000	47.00%	\$24,776,050	\$112,811	\$160,641
20	\$887,440	\$9,156	\$4,728,809	\$48,787	\$52,715,000	41.20%	\$21,718,580	\$98,890	\$147,676
21	\$905,189	\$9,339	\$4,823,385	\$49,762	\$52,715,000	36.00%	\$18,977,400	\$86,408	\$136,171
22	\$923,292	\$9,526	\$4,919,853	\$50,758	\$52,715,000	30.30%	\$15,972,645	\$72,727	\$123,485
23	\$941,758	\$9,716	\$5,018,250	\$51,773	\$52,715,000	24.30%	\$12,809,745	\$58,326	\$110,098
24	\$960,593	\$9,910	\$5,118,615	\$52,808	\$52,715,000	18.50%	\$9,752,275	\$44,404	\$97,213
25	\$979,805	\$10,109	\$5,220,987	\$53,864	\$52,715,000	12.50%	\$6,589,375	\$30,003	\$83,867
26	\$999,401	\$10,311	\$5,325,407	\$54,942	\$52,715,000	10.00%	\$5,271,500	\$24,002	\$78,944
27	\$1,019,389	\$10,517	\$5,431,915	\$56,041	\$52,715,000	10.00%	\$5,271,500	\$24,002	\$80,043
28	\$1,039,777	\$10,727	\$5,540,554	\$57,161	\$52,715,000	10.00%	\$5,271,500	\$24,002	\$81,164
29	\$1,060,573	\$10,942	\$5,651,365	\$58,305	\$52,715,000	10.00%	\$5,271,500	\$24,002	\$82,307
30	\$1,081,784	\$11,161	\$5,764,392	\$59,471	\$52,715,000	10.00%	\$5,271,500	\$24,002	\$83,473
NPV (2%)		\$184,844		\$984,961				\$3,162,885	\$4,147,845

# Henderson County Solar - Current Real Property Taxation

		l	and Value	Tax Rate	Es	st. Taxes	Total	Es	t. Taxes	Leased	Est.	Taxes on
Parcel	Owner		(2021)	(2020)	(	(2021)	Acres	р	er Acre	Acres	Leas	sed Acres
46-42	Crooks	\$	60,600	1.03169%	\$	625	46.29	\$	13.51	11.60	\$	157
39-2-53	Dossett	\$	85,300	1.03169%	\$	880	77.90	\$	11.30	6.91	\$	78
46-19.2	Francis	\$	232,800	1.03169%	\$	2,402	212.59	\$	11.30	124.46	\$	1,406
47-3	McCollom	\$	367,700	1.03169%	\$	3,794	390.73	\$	9.71	246.78	\$	2,396
39-2-66	Тарр	\$	150,600	1.03169%	\$	1,554	149.60	\$	10.39	121.00	\$	1,257
39-2-64	Thomas	\$	244,800	1.03169%	\$	2,526	219.55	\$	11.50	30.00	\$	345
	TOTAL		1,141,800			11,780	1,096.66			540.75	\$	5,639

Exhibit 10 Attachment 10.2 Page 8 of 22

# **QPublic.net** Henderson County, KY PVA

#### Summary

 Parcel Number
 46-42

 Account Number
 43694

 Location Address
 HWY 41 A 5876

 Description
 FARM - 46.29 AC

(Note: Not to be used on legal documents)

Class Farm
Tax District 00 County
2018 Rate Per Hundred 1.0837

View Map



#### Owner

Primary Owner CROOKS DEBRA JEAN 8120 PRITCHETT CROOKS RD CORYDON, KY 42406

#### **Land Characteristics**

Condition	Average	Topography	Level
Plat Book/Page	3	Drainage	
Subdivision		Flood Hazard	
Lot		Zoning	
Block		Electric	Yes
Acres	46.29	Water	Yes
Front	0	Gas	No
Depth	0	Sewer	No
Lot Size	0x0	Road	2 Lane
Lot Sq Ft	0	Sidewalks	No
Shape	Flongated Denth	Information Source	

#### Valuation

	2021 Working	2020 Certified	2019 Certified
+ Land Value	\$60,600	\$60,600	\$60,600
+ Improvement Value	\$100,000	\$100,000	\$100,000
+ Ag Improvement Value	\$0	\$0	\$0
= Total Taxable Value	\$160,600	\$160,600	\$160,600
- Exemption Value	\$0	\$0	\$0
= Net Taxable Value	\$160,600	\$160,600	\$160,600
+ Land FCV	\$277,400	\$277,400	\$277,400
+ Improvement FCV	\$100,000	\$100,000	\$100,000
+ Ag Improvement FCV	\$0	\$0	\$0
= Total FCV	\$377,400	\$377,400	\$377,400
Exemption			
Farm Acres	46.29	46.29	46.29
Fire Protection Acres	10.00	10.00	10.00

#### Special Assessments

VFD	Min/Timber	Unmined Coal	
107	0	0	

#### Taxes

	2019	2018	2017	2016
Tax	\$1,763.58	\$1,686.87	\$1,258.46	\$1,147.22

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#### Improvement Information

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			Page 9 of
Building Number	1	Kitchens	1
Description	SINGLE FAMILY	Dining Rooms	1
Residence Type	Single Family	Living Rooms	1
Comm Type		Family Rooms	1
Mobile Home Type	2070	Bedrooms	3
Year Built	1972	Full Baths	1
Effective Age	0	Half Baths	0
Ave. Wall Height	0	Other Rooms	0
Structure	1 Story	Total Rooms	0 7
Number of Stories	1	Living Sq Ft	1,882
Exterior	Brick Veneer	Fireplaces/Water	0/1
Foundation	Concrete Block	Supplemental Heat	
Construction Type	Wood Frame	Mobile Home Model	
Construction Quality	Average/Standard	Mobile Home Manufacturer	
Building Condition	Average/Good	MH Skirt Foundation	
Roof Type	Gable	Heat	Yes
Roof Cover	Comp.Shingles	Heat Source	Bottled Gas
Roof Pitch	Medium	Heat Type	Forced Air
Basement Type	None	Air Conditioning	Yes
Basement Finish		AC/Type	Central
Basement Size		Special Improvements	No
Basement Sq Ft	0	Fire Alarm	No
Garage/Carport	Garage	Sprinklers	No
Garage Size	2 Car	Porch/Deck	Open
Garage Type	Attached	Porch Sq Ft	28
Garage Exterior	Wood	Deck Sq Ft	0
Width	30	Concrete Sq Ft	Ö
Length	24	Farm Bldg Type	9
Garage Sq Ft	720	Value	\$100,000,00
Pool	None	Driveway	Gravel
Pool Size	0	Fence	0
Tennis Courts	None	1 cited	

# Sale Information

Sale Date <b>♦</b>	Sale Price 🕏	Sale Type 🕏	Book-Page <b>♦</b>	Grantee	Grantor \$	
11/21/2017	\$0	S-Other	048-0001	CROOKS DEBRA JEAN	SHAW ANNA JEAN EST	
10/1/1967	\$0	<b>B-Close Relative Sale</b>	232-621	SHAW ANNA JEAN	SHAW WALTER A	

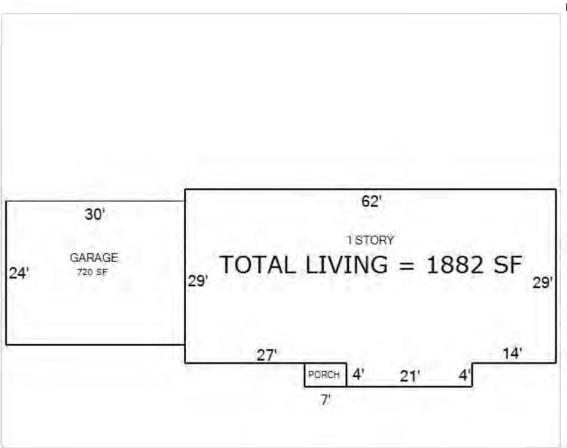
# **Photos**



# Sketches

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Exhibit 10 Attachment 10.2 Page 10 of 22



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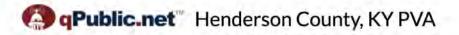
Last Data Upload: 4/16/2021, 6:31:15 PM

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Exhibit 10 Attachment 10.2 Page 11 of 22



#### Summary

Parcel Number 39-2-53 Account Number 4965

Location Address WILSON STATION RD 2517

Description FARM - 77.9 AC

(Note: Not to be used on legal documents)

Class Farm
Tax District 00 County
2018 Rate Per Hundred 1.0837

#### View Map

#### Owner

Primary Owner
DOSSETT DAVID V ETAL

225 S WATER ST

HENDERSON, KY 42420-3532

#### **Land Characteristics**

Condition	Average	Topography	
Plat Book/Page		Drainage	
Subdivision		Flood Hazard	
Lot		Zoning	
Block		Electric	Yes
Acres	77.90	Water	Yes
Front	0	Gas	No
Depth	0	Sewer	No
Lot Size	0x0	Road	
Lot Sq Ft	0	Sidewalks	No
Shape		Information Source	

#### Valuation

		2021 Working	2020 Certified	2019 Certified
+ 1	and Value	\$85,300	\$69,000	\$69,000
+ 1	mprovement Value	\$0	\$0	\$0
+ 4	Ag Improvement Value	\$0	\$0	\$0
= 7	Total Taxable Value	\$85,300	\$69,000	\$69,000
- E	Exemption Value	\$0	\$0	\$0
= 1	Net Taxable Value	\$85,300	\$69,000	\$69,000
+ 1	and FCV	\$467,000	\$467,000	\$467,000
+ 1	mprovement FCV	\$0	\$0	\$0
+ 1	Ag Improvement FCV	\$0	\$0	\$0
= 1	Total FCV	\$467,000	\$467,000	\$467,000
E	Exemption			
F	Farm Acres	78.00	78.00	78.00
F	Fire Protection Acres	0.00	0.00	0.00

#### **Special Assessments**

VFD	Min/Timber	Unmined Coal	
107	0	0	

#### Taxes

	2019	2018	2017	2016
Tax	\$733.95	\$735.33	\$718.77	\$531.02

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#### Sale Information

Sale Date 🗢	Sale Price <b>‡</b>	Sale Type <b>‡</b>	Book-Page <b>‡</b>	Grantee \$	Grantor \$
4/1/1997	\$0		468-0054	DOSSETT DAVID V ETAL	DOSSETT VERNON ET AL
1/1/1983	\$160,000		335-0763	DOSSETT VERNON ET AL	CARRELL FRANK ESTATE

No data available for the following modules: Improvement Information, Photos, Sketches.

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Exhibit 10 Attachment 10.2 Page 12 of 22

The Henderson County Property Valuation Administrator's Office makes every effort to produce the most accurate information possible. No warranties, expressed or implied, are provided for the data herein, its use or interpretation. The assessment information is from the last certified taxroll. All data is subject to change before the next certified taxroll.

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Schneider

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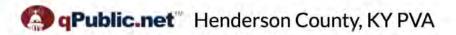
<u>User Privacy Policy</u> <u>GDPR Privacy Notice</u>

Last Data Upload: 4/16/2021, 6:31:15 PM

Version 2.3.117

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# Summary

Parcel Number 46-19.2 **Account Number** 41120

HWY 425 (ADJ TO 6300) **Location Address** Description FARM - 212.5887 AC

(Note: Not to be used on legal documents)

Class Farm 00 County Tax District 2018 Rate Per Hundred 1.0837

#### View Map

#### Owner

**Primary Owner** FRANCIS BETH ANN & JEFF 9592 CORYDON GENEVA RD HENDERSON, KY 42420

#### **Land Characteristics**

Condition	Average	Topography	Rolling
Plat Book/Page	010-0144	Drainage	
Subdivision	AG & MARY PRITCHETT	Flood Hazard	
Lot	PARCELS 2 &3 &REMAINDER	Zoning	
Block		Electric	Yes
Acres	212.59	Water	No
Front	0	Gas	No
Depth	0	Sewer	No
Lot Size	Ox0	Road	2 Lane
Lot Sq Ft	0	Sidewalks	No
Shape	Irregular	Information Source	Plat

#### Valuation

		2021 Working	2020 Certified	2019 Certified
+ Land Value		\$232,800	\$232,800	\$232,800
+ Improvement Va	ue	\$0	\$0	\$0
+ Ag Improvement	Value	\$0	\$0	\$0
= Total Taxable Va	ue	\$232,800	\$232,800	\$232,800
- Exemption Value		\$0	\$0	\$0
<ul> <li>Net Taxable Value</li> </ul>	e	\$232,800	\$232,800	\$232,800
+ Land FCV		\$1,169,200	\$1,169,200	\$1,169,200
+ Improvement FC	V	\$0	\$0	\$0
+ Ag Improvement	FCV	\$0	\$0	\$0
= Total FCV		\$1,169,200	\$1,169,200	\$1,169,200
Exemption				
Farm Acres		212.59	212.59	212.59
Fire Protection A	cres	0.00	0.00	0.00

# **Special Assessments**

VFD	Min/Timber	Unmined Coal	
107	0	0	

#### **Taxes**

	2019	2018	2017
Tax	\$2,531.27	\$2,062.76	\$2,017.55

The taxes cited reflect the Henderson County tax bill, but do not reflect taxes for City of Henderson, City of Corydon, City of Robards, or Pond Creek Water Shed if applicable. These taxing districts issue their own tax bills. Use the 'Tax Estimator' to estimate total taxes based on the taxing district, Contact PVA office if there are questions.

#### Improvement Information

4/19/2021, 1:10 PM 1 of 2

Exhibit 10 Attachment 10.2 Page 14 of 22 **Building Number** Kitchens 0 SEE NOTES Description **Dining Rooms** 0 Residence Type Living Rooms 0 Comm Type 0 **Family Rooms** Mobile Home Type Bedrooms 0 Year Built 0 **Full Baths** 0 Effective Age 0 Half Baths 0 Ave. Wall Height 0 Other Rooms 0 Structure **Total Rooms** 0 **Number of Stories** 0 Living Sq Ft 0 Exterior Fireplaces/Water 0/0 Foundation Supplemental Heat Construction Type Mobile Home Model Construction Quality Mobile Home Manufacturer **Building Condition MH Skirt Foundation** Roof Type Heat No Roof Cover **Heat Source Roof Pitch** Heat Type **Basement Type** Air Conditioning No **Basement Finish** AC/Type **Basement Size** Special Improvements No Basement Sq Ft 0 Fire Alarm Garage/Carport Sprinklers No Garage Size Porch/Deck **Garage Type** Porch Sq Ft 0 **Garage Exterior** Deck Sq Ft 0 Width 0 Concrete Sq Ft 0 Length 0 Farm Bldg Type

Building Notes: WAS ASSESSED W/PARCEL 46-19 FOR 2017 - PURCHASE OPTION IN DEED BOOK 625/197 - MEMORANDUM OF AMENDED OPTION AGREEMENT IN DEED 626/853.

Value

Fence

Driveway

#### Sale Information

Garage Sq Ft

Pool

**Pool Size** 

Sale Date 🗢	Sale Price +	Sale Type 🗢	Book-Page <b>‡</b>	Grantee \$	Grantor \$	
8/29/2016	\$0	A-Partial Sale	619-0080	FRANCIS BETH ANN & JEFF	PRITCHETT AARON G & MARY	

No data available for the following modules: Photos, Sketches.

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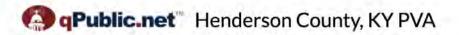
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Gravel

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#### Summary

Parcel Number 47-3 Account Number 25372

Location Address HWY 41 A 6454 Description FARM - 390.70 AC

(Note: Not to be used on legal documents)

Class Farm

Class Farm
Tax District 00 County
2018 Rate Per Hundred 1.0837

#### View Map

#### Owner

Primary Owner SUTTON MARGARET ELIZABETH METAL & CHARLES R MCCOLLOM III 2829 TIPPECANOE TRAIL HENDERSON, KY 42420-

#### Land Characteristics

Condition	Average	Topography	Rolling
Plat Book/Page	6,7,7,4	Drainage	
Subdivision		Flood Hazard	
Lot		Zoning	
Block		Electric	Yes
Acres	390.73	Water	No
Front	0	Gas	No
Depth	0	Sewer	No
Lot Size	0x0	Road	2 Lane
Lot Sq Ft	0	Sidewalks	No
Shape	Irregular	Information Source	

#### Valuation

	2021 Working	2020 Certified	2019 Certified
+ Land Value	\$367,700	\$367,700	\$342,700
+ Improvement Value	\$0	\$0	\$0
+ Ag Improvement Value	\$0	\$0	\$10,000
= Total Taxable Value	\$367,700	\$367,700	\$352,700
- Exemption Value	\$0	\$0	\$0
= Net Taxable Value	\$367,700	\$367,700	\$352,700
+ Land FCV	\$2,300,000	\$2,300,000	\$2,300,000
+ Improvement FCV	\$0	\$0	\$0
+ Ag Improvement FCV	\$0	\$0	\$10,000
= Total FCV	\$2,300,000	\$2,300,000	\$2,310,000
Exemption			
Farm Acres	390.73	390.73	390.73
Fire Protection Acres	5.00	5.00	5.00

#### Special Assessments

A COLOR OF A STATE OF THE STATE			
VFD	Min/Timber	Unmined Coal	
107	0	0	

#### Taxes

	2019	2018	2017	2016
Tax	\$3,806.79	\$3,813.84	\$3,729.19	\$3,481.37

The taxes cited reflect the Henderson County tax bill, but do not reflect taxes for City of Henderson, City of Corydon, City of Robards, or Pond Creek Water Shed if applicable. These taxing districts issue their own tax bills. Use the 'Tax Estimator' to estimate total taxes based on the taxing district. Contact PVA office if there are questions.

#### Improvement Information

1 of 2 4/19/2021, 1:25 PM

			Exhibit 10 Attachment 10.2
			Page 16 of 22
Building Number	1	100	
Description	SEE NOTES	Kitchens	0
Residence Type	724	Dining Rooms	0
Comm Type		Living Rooms	0
Mobile Home Type		Family Rooms	0
Year Built	0	Bedrooms	0
Effective Age	0	Full Baths	0
Ave. Wall Height	0	Half Baths	0
Structure	•	Other Rooms	.0
Number of Stories	0	Total Rooms	0
Exterior		Living Sq Ft	0
Foundation		Fireplaces/Water	0/0
Construction Type		Supplemental Heat	
Construction Quality		Mobile Home Model	
Building Condition		Mobile Home Manufacturer	
Roof Type		MH Skirt Foundation	
		Heat	No
Roof Cover		Heat Source	
Roof Pitch		Heat Type	
Basement Type		Air Conditioning	No
Basement Finish		AC/Type	
Basement Size		Special Improvements	No
Basement Sq Ft	0	Fire Alarm	No
Garage/Carport		Sprinklers	No.
Garage Size		Porch/Deck	7,0
Garage Type		Porch Sq Ft	0
Garage Exterior		Deck Sq Ft	0
Width	0	Concrete Sq Ft	9
Length	0	Farm Bldg Type	· ·
Garage Sq Ft	0	Value	\$0.00
Pool		Driveway	None
Pool Size	0	Fence	
Tennis Courts		rence	0

Building Notes: GRAIN BIN - POOR CONDITION - SALVAGE VALUE ONLY BARN 40\*100 D/M/W/POOR CONDITION - SALVAGE VALUE ONLY BARN 35\*45 C/CB/M - POOR CONDITION - SALVAGE VALUE ONLY SOLD .74 TO HAGAN '72; 5.76 AC LEASED TOWER SITE (SEE 47-3.1) NEW SOIL SURVEY

#### Sale Information

Sale Date 🗢	Sale Price \$	Sale Type <b>‡</b>	Book-Page <b>‡</b>	Grantee \$	Grantor \$
10/1/2017	\$0	B-Close Relative Sale	628-0324	SUTTON MARGARET ELIZABETH M ETAL	SUTTON MARGARET ELIZABETH M ETAL
9/29/2016	\$352,700		619-0792	SUTTON MARGARET ELIZABETH M ETAL	MCCOLLOM MARGARET K
11/20/2015	\$0	B-Close Relative Sale	614-0069	SUTTON MARGARET ELIZABETH M ETAL	HEIRS OF LUCY F POSEY MARSHAL & W J
1/1/2002	\$1.	B-Close Relative Sale	512-400	SUTTON MARGARET EM ET AL	MCCOLLOM MARGARET K
11/1/2000	\$0		500-802	SUTTON MARGARET EM ET AL	
1/1/1999	\$0		482-828	SUTTON MARGARET EM ET AL	

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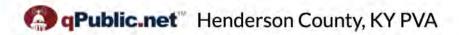
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#### Summary

39-2-66 Parcel Number **Account Number** 17820

OLD CORYDON RD 6376 **Location Address** Description FARM - 149.60 AC

(Note: Not to be used on legal documents)

Class Farm

00 County Tax District 2018 Rate Per Hundred 1.0837

#### View Map

#### Owner

**Primary Owner** TAPP TOMMY D POBOX614

HENDERSON, KY 42419-0614

#### **Land Characteristics**

Condition	Average	Topography	Rolling
Plat Book/Page	011-0082	Drainage	
Subdivision		Flood Hazard	
Lot	1	Zoning	
Block		Electric	No
Acres	149.60	Water	No
Front	0	Gas	No
Depth	0	Sewer	No
Lot Size	OxO	Road	2 Lane
Lot Sq Ft	0	Sidewalks	No
Shape	Irregular	Information Source	

#### Valuation

		2021 Working	2020 Certified	2019 Certified
+ La	and Value	\$150,600	\$121,900	\$121,900
+ 111	nprovement Value	\$0	\$0	\$0
+ A	g Improvement Value	\$0	\$0	\$0
= To	otal Taxable Value	\$150,600	\$121,900	\$121,900
- E	xemption Value	\$0	\$0	\$0
= N	et Taxable Value	\$150,600	\$121,900	\$121,900
+ La	and FCV	\$972,000	\$972,000	\$972,000
+ Im	nprovement FCV	\$0	\$0	\$0
+ A	g Improvement FCV	\$0	\$0	\$0
= To	otal FCV	\$972,000	\$972,000	\$972,000
E	xemption			
Fa	arm Acres	149.60	149.60	149.60
Fi	ire Protection Acres	0.00	0.00	0.00

# **Special Assessments**

VFD	Min/Timber	Unmined Coal	
107	0	0	

#### Taxes

	2019	2018	2017	2016
Tax	\$1,296.64	\$1,299.08	\$1,269.82	\$1,020.57

The taxes cited reflect the Henderson County tax bill, but do not reflect taxes for City of Henderson, City of Corydon, City of Robards, or Pond Creek Water Shed if applicable. These taxing districts issue their own tax bills. Use the 'Tax Estimator' to estimate total taxes based on the taxing district, Contact PVA office if there are questions.

#### Improvement Information

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			Exhibit 10 Attachmen Page 18	
Building Number	1	im i	. age .e	
Description	SEE NOTES	Kitchens		0
Residence Type		Dining Rooms		0
Comm Type		Living Rooms		0
Mobile Home Type		Family Rooms		0
Year Built	0	Bedrooms		0
Effective Age	0	Full Baths		0
Ave. Wall Height	0	Half Baths		0
Structure		Other Rooms		0
Number of Stories	0	Total Rooms		0
Exterior		Living Sq Ft		0
Foundation		Fireplaces/Water		0/0
Construction Type		Supplemental Heat		
Construction Quality		Mobile Home Model		
Building Condition		Mobile Home Manufacturer		
Roof Type		MH Skirt Foundation		7.0
Roof Cover		Heat		No
Roof Pitch		Heat Source		
Basement Type		Heat Type		
Basement Finish		Air Conditioning		No
Basement Size		AC/Type		
Basement Sq Ft	0	Special Improvements		No
Garage/Carport		Fire Alarm		No
Garage Size		Sprinklers		No
Garage Type		Porch/Deck		
Garage Exterior		Porch Sq Ft		0
Width	0	Deck Sq Ft		0
Length	o	Concrete Sq Ft		0
Garage Sq Ft	0	Farm Bldg Type		
Pool		Value		\$0.00
Pool Size	0	Driveway		None
Tennis Courts		Fence		0
Building Notes: SOLD 0.260 AC TO WABUCK DEVELOR	MENT OF PARCEL	39-2-66.2 FOR 2010		

#### Sale Information

Sale Date =	Sale Price	Sale Type <b>‡</b>	Book-Page <b>♦</b>	Grantee \$	Grantor
3/1/1980	\$0	B-Close Relative Sale	319-0504	TAPP TOMMY D	TAPPT J & SUE

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# 

#### Summary

Parcel Number 39-2-64 Account Number 37696

Location Address WILSON STATION RD 1773

Description FARM - 219.55 AC

(Note: Not to be used on legal documents)

Class Farm

Tax District 00 County 2018 Rate Per Hundred 1.0837

View Map



#### Owner

Primary Owner THOMAS GARY H 5883 POSEY CHAPEL RD HENDERSON, KY 42420-

#### **Land Characteristics**

Condition	Average	Topography	Rolling
Plat Book/Page		Drainage	111110
Subdivision		Flood Hazard	
Lot		Zoning	
Block		Electric	Yes
Acres	219.55	Water	Yes
Front	0	Gas	No
Depth	0	Sewer	No
Lot Size	0x0	Road	2 Lane
Lot Sq Ft	0	Sidewalks	No
Shape	Irregular	Information Source	Deed

#### Valuation

	2021 Working	2020 Certified	2019 Certified
+ Land Value	\$244,800	\$205,100	\$205,100
+ Improvement Value	\$80,000	\$80,000	\$80,000
+ Ag Improvement Value	\$96,000	\$96,000	\$96,000
= Total Taxable Value	\$420,800	\$381,100	\$381,100
- Exemption Value	\$0	\$0	\$0
= Net Taxable Value	\$420,800	\$381,100	\$381,100
+ Land FCV	\$1,326,000	\$1,326,000	\$1,326,000
+ Improvement FCV	\$80,000	\$80,000	\$80,000
+ Ag Improvement FCV	\$96,000	\$96,000	\$96,000
= Total FCV	\$1,502,000	\$1,502,000	\$1,502,000
Exemption			
Farm Acres	219.55	219.55	219.55
Fire Protection Acres	5.00	5.00	5.00

#### Special Assessments

VFD	Min/Timber	Unmined Coal	
107	0	0	

# Taxes

	2019	2018	2017	2016
Tax	\$4.108.87	\$4.116.49	\$4.025.03	\$3,099,39

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#### Improvement Information

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			Page 20 of
Building Number	1	Kitchens	1
Description	SINGLE FAMILY	Dining Rooms	1
Residence Type	Single Family	Living Rooms	1
Comm Type		Family Rooms	0
Mobile Home Type		Bedrooms	3
Year Built	1925	Full Baths	2
Effective Age	0	Half Baths	0
Ave. Wall Height	0	Other Rooms	0
Structure	1 Story	Total Rooms	6
Number of Stories	1	A T T T T T T T T T T T T T T T T T T T	2,418
Exterior	Vinyl	Living Sq Ft Fireplaces/Water	2,418 1/1
Foundation	Concrete Block		1/1
Construction Type	Wood Frame	Supplemental Heat Mobile Home Model	
Construction Quality	Average/Standard	Mobile Home Manufacturer	
<b>Building Condition</b>	Average	MH Skirt Foundation	
Roof Type	Gable		Yes
Roof Cover	Comp.Shingles	Heat Heat Source	Bottled Gas
Roof Pitch	Medium		Forced Air
Basement Type	Sunken	Heat Type	
Basement Finish	Unfinished	Air Conditioning	Yes
Basement Size	Other	AC/Type	Central
Basement Sq Ft	448	Special Improvements	No
Garage/Carport	Garage	Fire Alarm	No
Garage Size	2 Car	Sprinklers	No
Garage Type	Detached	Porch/Deck	Open
Garage Exterior	Wood	Porch Sq Ft	210
Width	24	Deck Sq Ft	192
Length	42	Concrete Sq Ft	0
Garage Sq Ft	1056	Farm Bldg Type	- Carb Sell Sec.
Pool	None	Value	\$80,000.00
Pool Size	0	Driveway	Paved/Asphalt
Tennis Courts	None	Fence	0
P. W.H. ALL COLUMN PROPERTY.	101 00000000000000000000000000000000000		

Building Notes: POLE BLDG 50' X 60' = 3,000 SF C/M/M \$ 12000 BARN 70' X 70' = 4,900 SF D/W/M \$5,000; POLE BLDG 66' X 96' = 6,336 SF \$ 15000 BARN 48' X 48' = 2,304 SF D/W/M \$3,000: 2 GRAIN BINS 14,500 BU EACH \$ 10000 GRAIN BIN 20,000 BU \$10,000; GRAIN BIN 50,000 BU \$

#### Sale Information

Sale Date <b>♦</b>	Sale Price <b>♦</b>	Sale Type <b>♦</b>	Book-Page <b>♦</b>	Grantee	Grantor \$
9/3/2014	\$0	B-Close Relative Sale	605-0725	THOMAS GARY H	THOMAS HERMAN M & MARY RUTH
12/19/2002	\$1	B-Close Relative Sale	519-0565	THOMAS HERMAN M & MARY RUTH	THOMAS HERMAN M & MARY RUTH
6/12/1974	\$28,925		272-0631	THOMAS HERMAN M & MARY RUTH	SHEAD JAMES THOMAS

#### **Photos**









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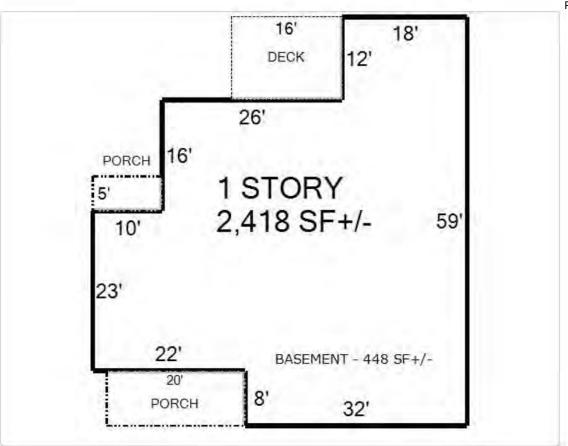
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Sketches

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# Kentucky State Board on Electric Generation and Transmission Siting Henderson County Solar, LLC – Case No. 2020-00391 Application – Exhibit 11 Volume 1, Tab 11

Filing Requirement: KRS 278.706(2)(k)

A detailed listing of all violations by it, or any person with an ownership interest, of federal or state environmental laws, rules, or administrative regulations, whether judicial or administrative, where violations have resulted in criminal convictions or civil or administrative fines exceeding five thousand dollars (\$5,000). The status of any pending action, whether judicial or administrative.

**Respondent: Chris Killenberg** 

Neither Henderson County Solar LLC, nor any person or entity with an ownership interest in Henderson County Solar LLC, has violated any state or federal environmental laws or regulations. There are no known actions, whether judicial or administrative, pending against Henderson County Solar LLC, nor any person or entity with an ownership interest in Henderson County Solar LLC.

# Kentucky State Board on Electric Generation and Transmission Siting Henderson County Solar, LLC – Case No. 2020-00391 Application – Exhibit 12 Volume 1, Tab 12

# Filing Requirement: KRS 278.706(2)(1)

A site assessment report as specified in KRS 278.708, to be prepared by the applicant or designee.

- (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.

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.

#### **Respondent: Chris Killenberg**

Applicant has prepared and hereby submits the required site assessment report by specific compliance with each element of KRS 278.708(3)(a)-(e) and KRS 278.708(4).

Case No. 2020-00391 Application - Exhibit 12

Includes seven Attachments

KRS 278.708(3)(a): A completed site assessment report shall include:

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

# Description of the Proposed Facility

The proposed facility (the "Project") is a 50-megawatt alternating current (50MWac) photovoltaic electricity generation facility to be located in central Henderson County, Kentucky. The Northern section of the site is located along Lover's Lane, just outside the city limits of Henderson, Kentucky. The Central section of the site is located along Hwy 425/Henderson Bypass, Henderson, Kentucky. The Southern section of the site is located along Wilson Station Road, Henderson, Kentucky. The sections of the project site will be electrically connected by underground medium-voltage cables.

The Project will be situated on up to 541 acres of land, 467 acres of which are currently in agricultural use for the production of row crops. The Applicant has secured the Project site under long-term leases and utility easements.

The Project will consist of crystalline solar panels, affixed to a ground-mounted single-axis tracking system. The electricity produced will be converted from direct current (DC) to alternating current (AC) by use of inverters located throughout the Project site. The voltage of the electricity produced will be regulated by transformers located throughout the project site. The entire facility will be surrounded by a security fence.

All the electricity produced by the Project will be gathered at a project substation prior to delivery to the local transmission system. The Project will interconnect to the 69kV bus at Substation No.7, which is owned and operated by Henderson Municipal Power & Light ("HMP&L"). The Applicant has signed a long-term contract to sell 100% of the electricity generated by the Project to HMP&L.

A Site Plan for the proposed facility is provided as Exhibit 12 Attachment 12.1.

(a) 1. Surrounding land uses for residential, commercial, agricultural, and recreational purposes

#### Surrounding Land Uses

The current uses of the land surrounding the proposed Project site are agricultural, residential, commercial, and recreational.

The majority of the land surrounding the proposed Project site is currently in agricultural production. This includes the cultivation of corn, soybeans, and wheat.

Case No. 2020-00391 Application - Exhibit 12

Includes seven Attachments

The 2<sup>nd</sup> most-common use of land surrounding the proposed Project site is residential.

There are four surrounding commercial uses: a substation, a cell tower, the offices of Kenergy (a regional electric cooperative), and a driving range.

There is one church adjacent to the site, which for the purpose of this assessment is categorized as a recreational use.

A map indicating the surrounding land uses is provided as Exhibit 12 Attachment 12.2.

# (a) 2. The **legal boundaries** of the proposed site

# Legal Boundaries of the Proposed Project Site

The proposed Project site is located entirely in Henderson County, Kentucky. The legal descriptions of the boundaries of the proposed site are provided as Exhibit 12 Attachment 12.3.

# (a) 3. Proposed access control to the site

#### Site Control

Site Control of the proposed Project site is provided via long-term leases and easement agreements between the Applicant and multiple private individual landowners.

The Northern section of the Project site, comprising approximately 94 acres, is constituted of a portion of a single parcel. The Applicant has secured a lease for this land. The term of the lease includes a 2-year Development Feasibility Term followed by a 30-year Commercial Term with an option to extend the Commercial Term by two additional 5-year periods. The Henderson County Property Valuation Administrator's parcel information for the affected parcel is as follows:

Parcel ID: 46-19.2 Parcel Acreage: 209.07 acres Leased Acreage: 93.99 acres

Parcel Address: 893 Lover's Lane, Henderson, KY 42420 Current Owner: Jeffrey A. Francis and Beth P. Francis

The Central section of the Project site, comprising approximately 150 acres, is constituted of portions of two parcels. The Applicant has secured leases for this land. The term of one of the leases includes a 2-year Development Feasibility Term followed by a 30-year Commercial Term with an option to extend the Commercial Term by two additional 5-year periods. The term of the other lease includes a 2-year Development Feasibility Term followed by a 30-year Commercial

Case No. 2020-00391 Application - Exhibit 12

Includes seven Attachments

Term. The Henderson County Property Valuation Administrator's parcel information for the affected parcels is as follows:

Parcel ID: 46-19.2
Parcel Acreage: 209.07 acres
Leased Acreage: 30.47 acres

Parcel Address: Hwy 425 / Henderson Bypass, Henderson, KY 42420

Current Owner: Jeffrey A. Francis and Beth P. Francis

Parcel ID: 39-2-66 Parcel Acreage: 148.64 acres Leased Acreage: 120 acres

Parcel Address: Old Corydon Rd., Henderson, KY 42420

Current Owner: Tommy D. Tapp

The Southern section of the Project site, comprising approximately 297 acres, is constituted of portions of five parcels. The Applicant has secured leases for this land. The term of each lease includes a 2-year Development Feasibility Term followed by a 30-year Commercial Term with an option to extend the Commercial Term by two additional 5-year periods. The Henderson County Property Valuation Administrator's parcel information for the affected parcels is as follows:

Parcel ID: 39-2-66 Parcel Acreage: 148.64 acres Leased Acreage: 1.001 acres

Parcel Address: Old Corydon Rd., Henderson, KY 42420

Current Owner: Tommy D. Tapp

Parcel ID: 46-42
Parcel Acreage: 46.34 acres
Leased Acreage: 11.596 acres

Parcel Address: 5876 US Hwy 41A, Henderson, KY 42420

Current Owner: Debra Jean Crooks

Parcel ID: 47-3

Parcel Acreage: 389.49 acres Leased Acreage: 246.78 acres

Parcel Address: 6454 US Hwy 41A, Henderson, KY 42420

Current Owner: Charles R. McCollom et al

Parcel ID: 39-2-53 Parcel Acreage: 80.33 acres Leased Acreage: 6.91 acres

Parcel Address: 2517 Wilson Station Rd., Henderson, KY 42420

Case No. 2020-00391 Application - Exhibit 12

Includes seven Attachments

Current Owner: David V. Dossett et al

Parcel ID: 39-2-64
Parcel Acreage: 221.57 acres
Leased Acreage: 30 acres

Parcel Address: 1773 Wilson Station Rd., Henderson, KY 42420

Current Owner: Gary H. Thomas

A utility easement connects the Central section of the Project site with the Northern section of the Project site. The Applicant has secured an easement agreement across the underlying parcel. The term of the easement agreement is for the operating life of the proposed facility. The Henderson County Property Valuation Administrator's parcel information for the affected parcel is:

Parcel ID: 46-19.2 Parcel Acreage: 209.07 acres

Parcel Address: Hwy 425 / Henderson Bypass, Henderson, KY 42420

Current Owner: Jeffrey A. Francis and Beth P. Francis

(a) 4. The location of facility buildings, transmission lines, and other structures

# Facility Buildings

The proposed Project will not require the construction/maintenance of any facility buildings. A storage container may be placed on site for the storage of tools and/or spare parts. No office trailer or brick-and-mortar buildings are required.

#### **Transmission Lines**

The Project will connect to the 69kV bus at Henderson Municipal Power & Light's Substation No. 7 via an overhead circuit running from the project substation to Substation No. 7. No additional transmission lines will be installed.

#### Other Structures

No permanent structures will be constructed as part the Project.

(a) 5. Location and use of access ways, internal roads, and railways

#### Site Access Ways

There are five (5) proposed access points to the Project site from a public roadway.

Case No. 2020-00391 Application - Exhibit 12

*Includes seven Attachments* 

The Northern section of the project site will be accessed via the west side of Lover's Lane, at a point approximately 1900 feet south of the intersection of Lover's Lane and Collier Road.

The Central section of the project site will be accessed at three (3) locations:

- The south side of Hwy 425 / Henderson Bypass, at a point approximately 1 mile west of the intersection of Hwy 425 / Henderson Bypass and US Hwy 41A.
- The south side of Hwy 425 / Henderson Bypass, at a point approximately 1950 feet east of the intersection of Hwy 425 / Henderson Bypass and Old Corydon Road.
- The east side of Old Corydon Road, at a point approximately 1900 feet south of the intersection of Old Corydon Road and Hwy 425 / Henderson Bypass.

The Southern section of the project site will be accessed via the north side of Wilson Station Road, at a point approximately 2300 feet west of the intersection of Wilson Station Road and US Hwy 41A.

#### **Internal Roads**

A network of internal roads will be constructed on the Project site. These will be permeable compacted gravel roads. Internal roads needed to access major electrical equipment such as inverters and transformers will be all-weather in design. All internal roads that conclude in a "dead end" will include a turnaround sufficient in radius to accommodate delivery trucks, fire trucks, and other work or emergency vehicles.

#### Railways

A CSX rail line runs through the proposed Project site, between the Northern section of the site and the Southern section of the site. No vehicular rail crossing will be required, as the two sections of the proposed Project site can be accessed at other locations via public roadways (see above). The Applicant will secure a crossing agreement from CSX for the purpose of installing an underground power line below and perpendicular to the railway.

## (a) 6. Existing or proposed utilities to service the facility

#### **Existing Utilities**

The proposed Project will require a minor amount of electricity during operation for starting equipment, providing communications and security, and for general back-up. The proposed Project site is located within the retail service territory of Kenergy. A Kenergy 3-phase circuit runs along Old Corydon Road at the western periphery of the Project site, along US Hwy 41A at the eastern periphery of the site, and at a point along Hwy 425 / Henderson Bypass at the middle of the Project site. The Applicant anticipates contracting for station service from Kenergy, utilizing existing facilities.

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Includes seven Attachments

# Proposed Utilities

No new utilities are proposed.

(a) 8. Compliance with applicable setback requirements as provided under KRS 278.704(2), (3), (4), or (5)

# **Project Setback Requirements**

KRS 278.704(3) reads:

"If the merchant electric generating facility is proposed to be located in a county or a municipality with planning and zoning, then setback requirements from a property boundary, residential neighborhood, school, hospital, or nursing home facility may be established by the planning and zoning commission. Any setback established by a planning and zoning commission for a facility in an area over which it has jurisdiction shall:

- (a) Have primacy over the setback requirement in subsections (2) and (5) of this section; and
- (b) Not be subject to modification or waiver by the board through a request for deviation by the applicant, as provided in subsection (4) of this section."

The proposed Project is to be located in Henderson County, Kentucky. In December, 2020, the Henderson County Fiscal Court adopted a new ordinance: Article XXX 'Solar Energy System Regulations' (the "Solar Ordinance").

Pursuant to Section 30.01 of the Solar Ordinance, the Proposed Project is a Level 3 Solar Energy System ("Level 3 SES") defined as any system that does not satisfy the parameters for a Level 1 Solar Energy System (a roof-mounted system, or a ground-mounted system whose footprint is not more than 50% of the primary structure on the parcel) or a Level 2 Solar Energy System (a groundmounted system in an agricultural zone not more than 1/2 acre in size).

Setback requirements for a Level 3 SES are: 1) All equipment shall be at least twenty-five (25) feet from the perimeter property lines of the project area; 2) No interior property line setbacks shall be required if the project spans multiple contiguous properties; 3) All equipment shall be located at least one hundred (100) feet from any residential structure and; the maximum height of any individual component will be 25 feet measured from the ground level of the component.

A copy of the Solar Ordinance is provided as Exhibit 12 Attachment 12.4.

The proposed Site Plan adheres to all provisions of the Solar Ordinance, including the observance of at least a 25-foot setback from all perimeter property lines, and at least a 100-foot setback from any residential structure, nursing home, church, or school.

(a) 8. Evaluation of the **noise levels** expected to be produced by the facility

# Noise Levels Produced by the Facility

An Acoustical Analysis for the proposed Project site was performed by Copperhead Environmental Consulting, Inc., 471 Main St., Paint Lick, KY 40461.

The Acoustical Analysis identified the following sources of sounds that will be produced as a result of the operation and maintenance of the proposed facility:

#### Solar Arrays

- o The proposed solar arrays will feature a single-axis tracking system, which will rotate the arrays during the day, following the sun.
- o The tracking system will be driven by DC motors that produce a humming sound at a level of 78 dBA at a distance of one foot.
- o At the nearest residence, 242 feet away, this sound level will have attenuated to a level of 30.32 dBA.

#### Inverters

- o The proposed facility will utilize multiple inverter stations, distributed throughout the footprint of the project. Inverters change the flow of electricity from direct current (DC) to alternating current (AC).
- O The inverters feature a cooling fan that will result in fan noise at each inverter station at a sound level of 87.78 dBA at a distance of 3.28 feet (1 meter).
- o At the nearest residence, approximately 750 feet away, this sound level will have attenuated to a level of 40.6 dBA.

#### • Main Transformer

- o The proposed project will utilize a main transformer at the project substation located on the Northern section of the Project site.
- o The main transformer will produce a humming sound at a level of 50 dBA at a distance of 3.28 feet (1 meter).
- o At the nearest residence, approximately 600 feet away, this sound level will have attenuated to a level of 4.75 dBA.

#### Mowing

- o It is anticipated that the proposed project site will be mowed 20-30 times per year.
- o Typical riding mowers will produce a sound level of 102 dBA at a distance of 1 foot.

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*Includes seven Attachments* 

o At the nearest residence, when mowing reaches its closest point, this temporary and occasional sound level will have attenuated to a level of 64.64 dBA.

#### Traffic

- o It is anticipated that 2-3 workers will be employed in the operation and maintenance of the proposed facility. Employees are anticipated to use mid-size or full-size pickup trucks for transportation.
- O The sound levels associated with the arrival and departure of employees to and from the proposed project site are expected to be similar to those produced by a typical single-family household.

The Acoustical Analysis estimates ambient sound levels at the proposed Project site to be in the range of 45 to 55 dBA, which is typical for an agricultural, rural-residential, and undeveloped area. This ambient sound level is typically comprised of noise from farm machinery, natural sounds such as from wind and wildlife, and moderate traffic sounds.

The Acoustical Analysis concludes:

"Overall, the Project would result in temporary minor sound impacts during construction and minimal to negligible impacts during operation and maintenance."

A copy of the Acoustical Analysis is provided as Exhibit 12 Attachment 12.5.

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

# Compatibility of the Facility with Scenic Surroundings

Solar farms are an assemblage of equipment, temporarily placed in a field. They are low-profile, generally 10 feet tall or less, and installed without foundations or brick-and-mortar structures. As such, they are more similar to greenhouses or center-pivot irrigation systems than commercial or industrial development.

The proposed project site is a group of farm fields, partially screened by established tree lines and hedgerows. The Project will adhere to the Henderson County Solar Ordinance, which requires that the existing natural tree growth shall be preserved when reasonably practicable. Also, per the Solar Ordinance, where tree lines do not exist, a double row of staggered evergreens will be planted on 15-foot centers.

In addition to preserving and/or installing a visual buffer, the proposed Site Plan would position the solar panels a minimum of 200 feet away from any adjacent residence or public road. The combination of a low-profile construction, the retention of extensive existing natural buffers, the installation of substantial evergreen buffers where needed, and enhanced setbacks, will result in a facility that is visually compatible with its surroundings.

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Other measures of compatibility include sounds, smells, and the general level of activity. The sounds produced by the facility will be minor and will dissipate to ambient levels before reaching any adjacent residences. The facility will not produce any odors or smells. The general level of activity, once operational, will be low. The Applicant anticipates hiring 2-3 full-time employees to monitor and maintain the facility. Across these three measures of sound, smell, and activity, the proposed facility will have an impact on the surroundings very similar to those associated with current agricultural production.

In summary, the proposed facility will be compatible with its 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

# Potential Impact on Adjacent Property Values and Land Use

A Property Value Impact Study for the proposed Project site was performed by Richard C. Kirkland, Jr., MAI, of Kirkland Appraisals, LLC, 9408 Northfield Court, Raleigh, North Carolina 27603. Mr. Kirkland is a Kentucky State Certified General Appraiser.

The Property Value Impact Study utilized matched pair analysis to determine whether there has been an impact to property values resulting from other solar development on abutting or adjoining land. The study methodology included researching and visiting existing and proposed solar farms in Kentucky as well as in other states across the southeast. Mr. Kirkland also researched articles through the Appraisal Institute and discussed the likely impact with other real estate professionals.

# Mr. Kirkland concludes:

"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."

"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."

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Includes seven Attachments

A copy of the Property Value Impact Study is provided as Exhibit 12 Attachment 12.6.

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

#### Peak and Average Noise Levels Associated with Construction And Operation

An Acoustical Analysis for the proposed Project site was performed by Copperhead Environmental Consulting, Inc., 471 Main St., Paint Lick, KY 40461.

The Acoustical Analysis identified the following sources of peak noise levels that will be produced during **construction** of the proposed facility:

#### • Pile Drivers

- o The construction of the solar facility would use equipment typical for site development, including backhoes, generators, pile drivers, and flatbed trucks. The equipment that will produce the greatest sound levels is the pile driver, used to embed steel support posts in the ground.
- o Specialty pile drivers used for solar panel installation (e.g., Vermeer Pile Driver PD 10) produce a sound level of 84 dBA at a distance of 50 feet.
- o At the nearest residence, when construction reaches its closest point, this temporary and occasional sound level will have attenuated to a level of 70.3 dBA.

#### • Concrete Trucks

- The transformer base at the project substation will likely be poured concrete. If so, a concrete pump truck will be needed.
- o A concrete pump truck typically generates a sound level of approximately 82 dBA at a distance of 50 feet.
- o At the nearest residence to the substation, over 600 feet away, the sound level is estimated to peak at a maximum of 60.42 dBA intermittently for a day or two.

#### • Ditch Witch

- O Underground electrical lines will be installed on site. A ditch trencher ("Ditch Witch") will be used to dig trenches for burying these cables.
- o A typical Ditch Witch produces a sound level of 74 dBA at a distance of 50 feet.
- o At the nearest residence, this sound level will have attenuated to a level of 60.3 dBA.

#### • Roadway Sound During Construction

O During construction, a temporary increase in traffic volume associated with travel of construction workers (up to 150 workers), delivery of construction equipment and material, and delivery of solar panel components and equipment is anticipated. Worker commutes with passenger vehicles and trucks would occur daily with two

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*Includes seven Attachments* 

(12.1 - 9 pages, 12.2 - 1 page, 12.3 - 13 pages, 12.4— 4 pages, 12.5 - 91 pages, 12.6 - 120 pages and 12.7 - 21 pages)

traffic peaks (i.e., morning peak and afternoon peak), whereas deliveries of equipment would occur on trailers, flatbeds, or other large vehicles periodically throughout the construction process at various times of day. Based upon the sound levels published by FHWA, the sound contributed by construction vehicles such as flatbed trucks, and light passenger cars and trucks, falls within acceptable ranges because the sound is of short duration.

A noise level of 65 (dBA) is the level most commonly used for noise planning purposes and represents a compromise between community impact and the need for activities such as construction.

With regard to peak construction noise, the Acoustical Analysis concludes:

"Overall, the Project would result in minor temporary sound impacts during construction."

The Acoustical Analysis identified the following source of peak noise that will be produced during operation and maintenance of the proposed facility:

- Mowing
  - o It is anticipated that the proposed project site will be moved 20-30 times per year.
  - o Typical riding mowers will produce a sound level of 102 dBA at a distance of 1
  - o At the nearest residence, when mowing reaches its closest point, this temporary and occasional sound level will have attenuated to a level of 64.64 dBA.

The Acoustical Analysis estimates ambient sound levels at the proposed Project site to be in the range of 45 to 55 dBA, which is typical for an agricultural, rural-residential, and undeveloped area. This ambient sound level is typically comprised of noise from farm machinery, natural sounds such as from wind and wildlife, and moderate traffic sounds.

With regard to peak operation and maintenance noise, the Acoustical Analysis concludes:

"Sound levels resulting from regular operation and maintenance of the Project would be below ambient sound levels at the nearest receptor. Sound levels resulting from occasional mowing along the facility's perimeter would be at or near ambient levels.."

A copy of the Acoustical Analysis is provided as Exhibit 12 Attachment 12.5.

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.

A Traffic Study for the proposed Project site was performed by Tim Choate, PE, PLS of Bacon Farmer Workman Engineering & Testing, Inc., 500 South 17st Street, Paducah, KY 42003. Mr. Choate is a Professional Engineer, licensed in the State of Kentucky.

#### Road Traffic, Dust, and Anticipated Road Degradation

The Traffic Study examined the road network in the area of the proposed Project site, measured current traffic levels on those roads, calculated the potential number and direction of vehicle arrivals and departures from the Project site during construction and operation, and made recommendations for the mitigation of congestion and dust.

With regard to traffic during construction of the proposed facility, the Traffic Study concludes:

"During construction of this facility, traffic is anticipated to increase with morning and evening peaks for daily workers and deliveries being made to the site periodically. All necessary safety precautions, including signing and flagmen, will be taken to best ensure collisions are prevented on the surrounding roads. Other than increased wear, damages to the existing road infrastructure are not anticipated. All affected highway segments are anticipated to continue at an acceptable level of service (LOS) during both the morning and afternoon peaks."

With regard to traffic during operation of the proposed facility, the Traffic Study concludes:

"Operation of the facility is not expected to cause significant impact to the local traffic as the additional expected traffic contributed to the area will be similar to that of a typical single-family home. During the construction and operation of the facility, there will be no adverse effects on traffic operations in and around the project site."

With regard to fugitive dust, the Traffic Study concludes:

"Due to the low-density housing and rural character near the site, and the large size of the site, minor fugitive dust impacts are expected. To reduce potential dust impacts, open-bodied trucks will be covered while in motion. Internal roadways will be constructed from compacted gravel. Due to an increase associated with dust from gravel roads and site use in general, water may be applied to reduce dust generation as needed."

#### Rail Traffic

An existing railway is situated along the western edge of the Northern section of the proposed project site. The proposed solar farm facility will not use the railway for access or delivery of materials. Neither the facility construction nor facility operations anticipate using the existing atgrade rail crossing.

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Includes seven Attachments

(12.1 - 9 pages, 12.2 - 1 page, 12.3 - 13 pages, 12.4— 4 pages, 12.5 - 91 pages, 12.6 - 120 pages and 12.7 - 21 pages)

A copy of the Traffic Study is provided as Exhibit 12 Attachment 12.7.

KRS 278.708(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.

#### Route and Parking Cards; Ride Sharing

In an attempt to reduce construction-related traffic congestion at intersections and along local roads, construction employees may be issued "Route and Parking Cards" indicating the time, route, and the parking area individual workers must follow to enter and leave the sites. Employee ride sharing will also be encouraged in order to reduce the number of vehicles entering and exiting the project sites during a typical construction day.

#### **Construction Hours**

To mitigate the effects of construction noise on the area of the project, the Applicant proposes to limit construction to the hours of 7am CT to 7pm CT, Monday through Saturday. No construction will be conducted on Sundays.

#### Construction "Neighbor Zones"

To mitigate the effect of construction noise on residences closest to the project site, the Applicant proposes to designate certain portions of the site as "Neighbor Zones." Within these Neighbor Zones, construction activities that create a higher level of noise will be limited to the hours of 9am CT to 5pm CT Monday through Friday. This will be particularly helpful to mitigate the impact of the noise associated with driving the posts to which the system is mounted. The restriction of this noisier construction activity within the Neighbor Zones to 9-5/Mon-Fri should help mitigate the effect of this noise, as adjacent residents are more likely to be out of the home during these hours - at work, running errands, etc. The Applicant will communicate the Neighbor Zone plan to affected neighbors in advance of construction and will collaborate with those neighbors on any refinements to this approach.

#### **Inverter Locations**

To mitigate the sound levels associated with the proposed facility's operation, the Applicant plans to strategically position the project's inverters at central locations within the system layout. These inverters require a cooling fan. The cooling fan produces a sound level that is similar to a residential window air-conditioner unit. This sound dissipates over distance. To provide for sufficient dissipation of this sound before it reaches adjacent residences, the Applicant plans to locate the inverter stations at a minimum of 750 feet from the nearest residence. This will assure that, once operational, the proposed facility will be quiet, with facility-generated noise levels at the periphery of the project site at or below ambient levels.

Case No. 2020-00391 Application - Exhibit 12

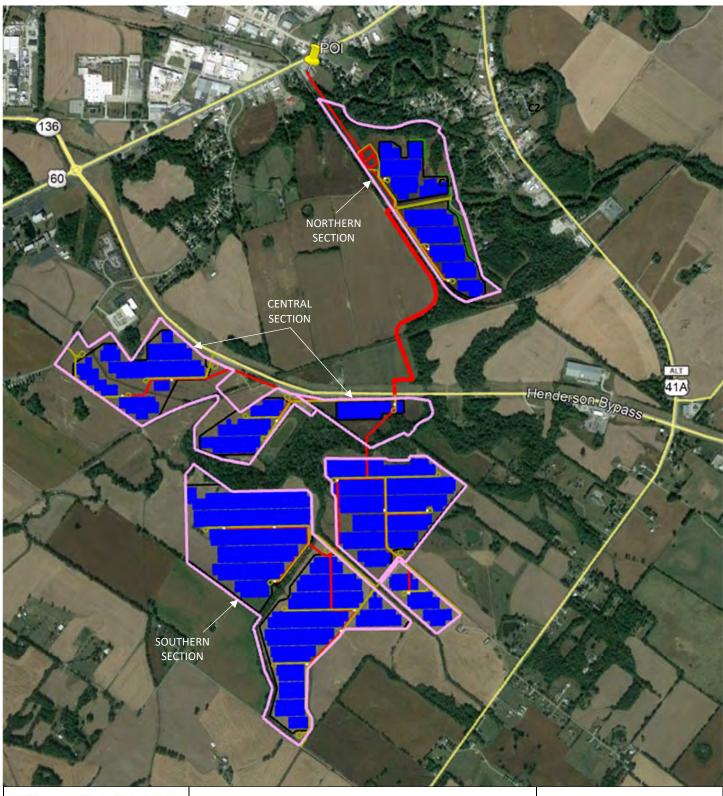
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(12.1 - 9 pages, 12.2 - 1 page, 12.3 - 13 pages, 12.4— 4 pages, 12.5 - 91 pages, 12.6 - 120 pages and 12.7 - 21 pages)

#### **Enhanced Setbacks**

To mitigate the visual impact of the proposed facility, the Applicant plans to enhance the setback distance between the solar panels and adjacent residences. The proposed setback will be a minimum of 200 feet between any solar panel and any adjacent residences.

# EXHIBIT 12 ATTACHMENT 12.1





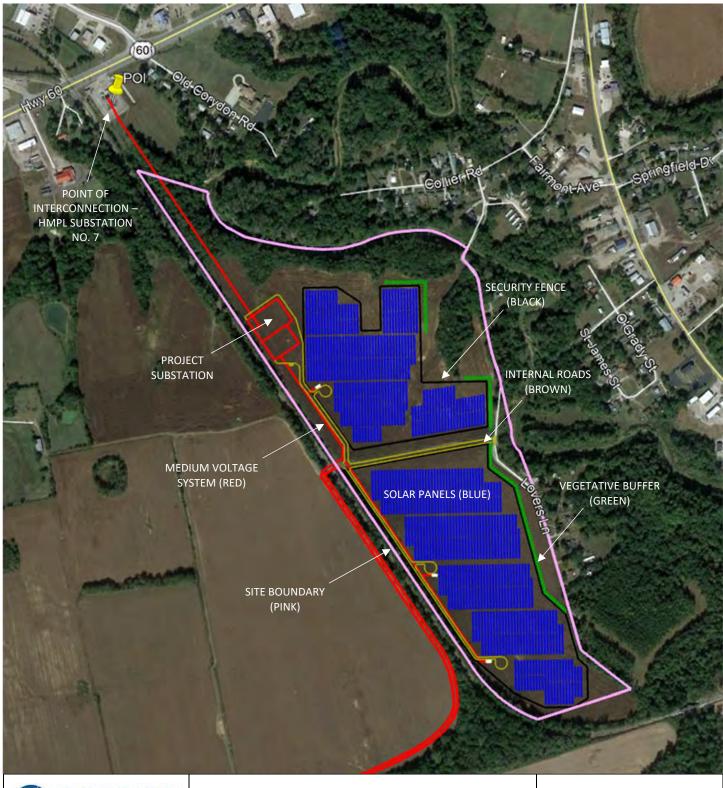
3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123

### HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT HENDERSON COUNTY, KY

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HENDERSON, KY
LAT: 37.79N LONG: -87.63W
DATE: 6.18.2021

SITE PLAN OVERVIEW





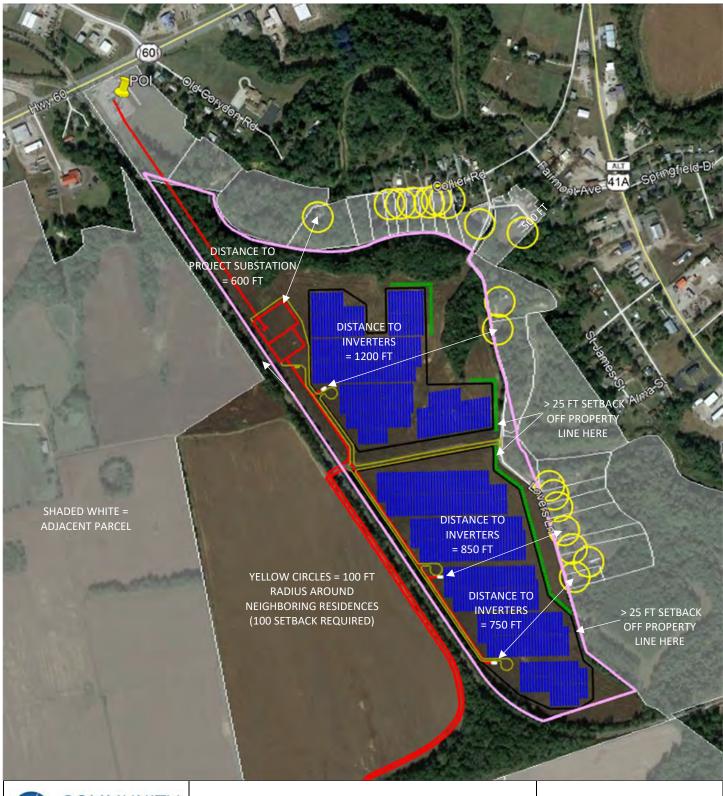
3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123

#### HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT HENDERSON COUNTY, KY



LOVER'S LANE, HENDERSON, KY
LAT: 37.80 LONG: -87.63
DATE: 6.18.2021

SITE PLAN NORTHERN SECTION





3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123

#### HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT HENDERSON COUNTY, KY



LOVER'S LANE, HENDERSON, KY
LAT: 37.80 LONG: -87.63
DATE: 6.18.2021

SITE PLAN NORTHERN SECTION SETBACKS





3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123

### HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT HENDERSON COUNTY, KY

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HWY 425, HENDERSON, KY	
LAT: 37.79N LONG: -87.64W	
DATE: 6.18.2021	

SITE PLAN
CENTRAL SECTION





3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123

### HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT HENDERSON COUNTY, KY

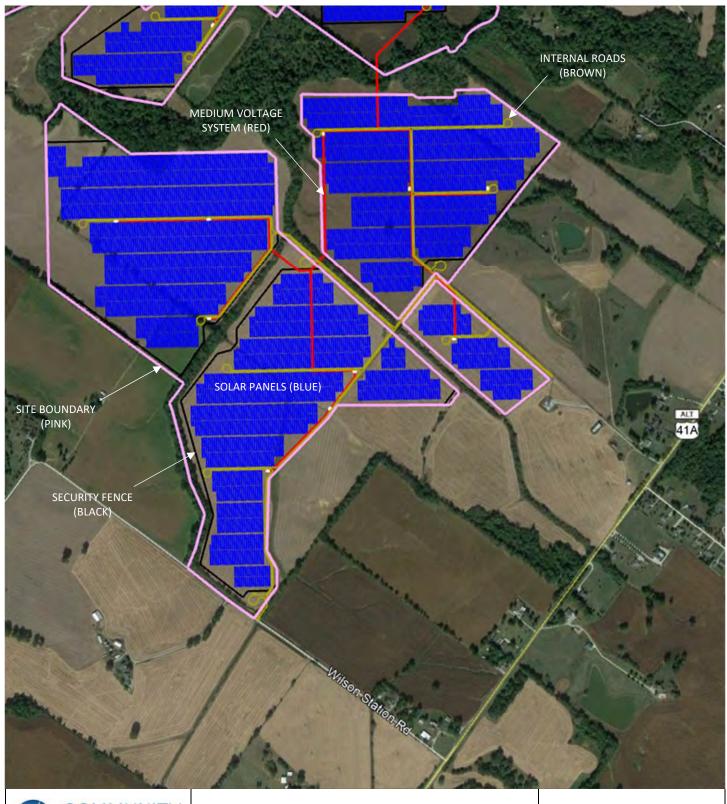
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HWY 425, HENDERSON, KY

LAT: 37.79N LONG: -87.64W

DATE: 6.18.2021

SITE PLAN
CENTRAL SECTION
SETBACKS



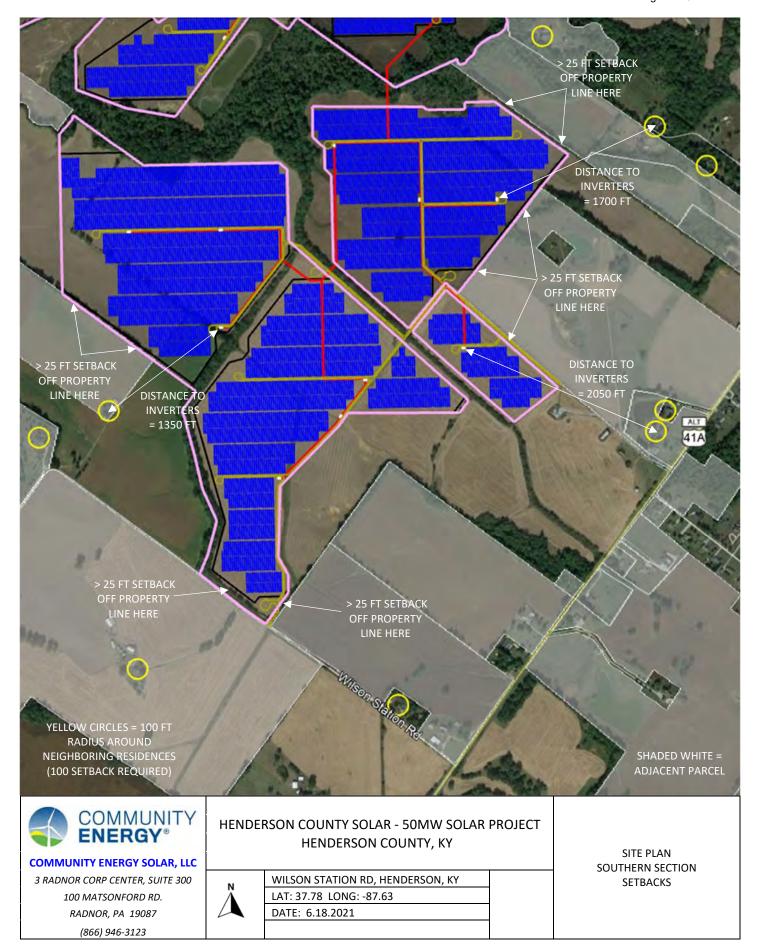


3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123 HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT HENDERSON COUNTY, KY



WILSON STATION RD, HENDERSON, KY
LAT: 37.78 LONG: -87.63
DATE: 6.18.2021

SITE PLAN
SOUTHERN SECTION





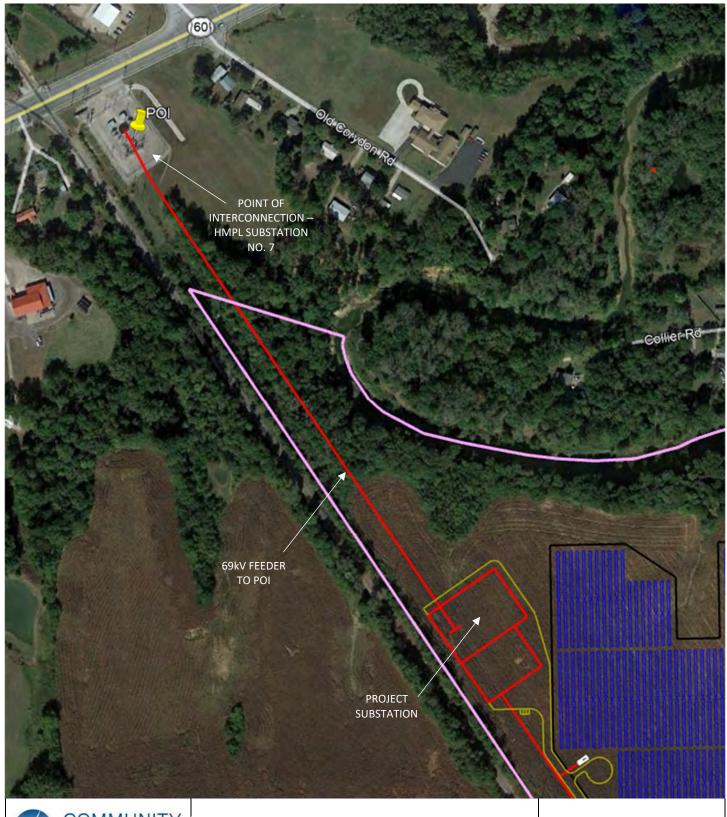


3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123 HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT HENDERSON COUNTY, KY



HENDERSON, KY
LAT: 37.79N LONG: -87.63W
DATE: 6.18.2021

SITE PLAN UTILITY EASEMENT





3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123

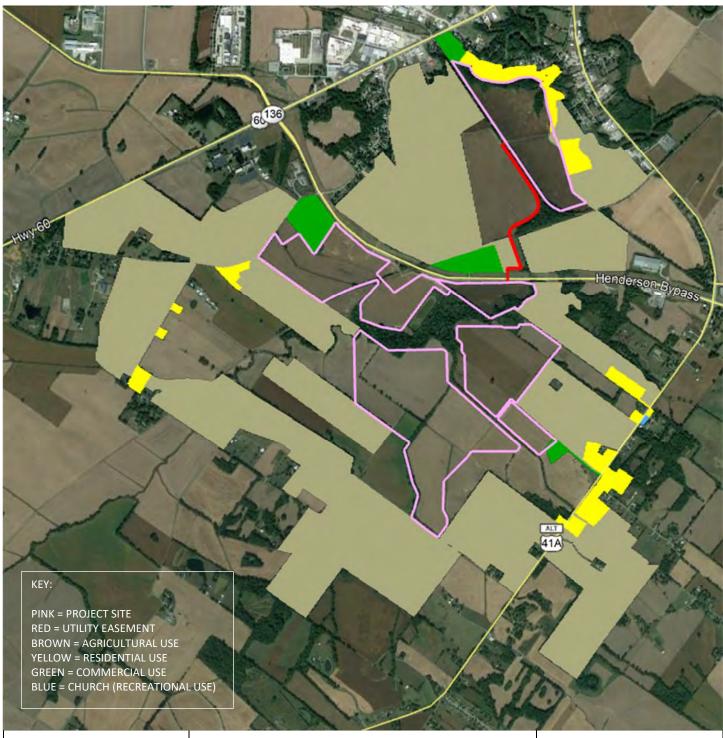
### HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT HENDERSON COUNTY, KY

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US HWY 60, HENDERSON, KY	
LAT: 37.80 LONG: -87.63	
DATE: 6.18.2021	

SITE PLAN
POINT OF INTERCONNECTION

# EXHIBIT 12 ATTACHMENT 12.2





3 RADNOR CORP CENTER, SUITE 300 100 MATSONFORD RD. RADNOR, PA 19087 (866) 946-3123

### HENDERSON COUNTY SOLAR - 50MW SOLAR PROJECT HENDERSON COUNTY, KY

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HENDERSON, KY
LAT: 37.79N LONG: -87.63W
DATE: 6.22.2021

MAP SHOWING THE CURRENT USES OF THE LAND SURROUNDING THE PROPOSED PROJECT SITE

# EXHIBIT 12 ATTACHMENT 12.3

### DESCRIPTION PORTION OF DEBRA JEAN CROOKS PROPERTY HENDERSON COUNTY, KENTUCKY

A certain tract or parcel located approximately 1.6 miles of the intersection of KY Hwy 425 and U.S. Hwy 41-A, southwest of the City of Henderson, and being more particularly described as follows:

To reach the point of beginning, commence at the southwest corner of the Debra Jean Crooks property as described in Deed Book 232 Page 621, said corner being in the northwest right-of-way line of U.S. Hwy 41-A, 40 feet from the centerline of same, and being located North 14 degrees 13 minutes 43 seconds West, 0.55 feet from a 1 inch iron pin, bent with no cap, found, and which corner is the southeast corner of the David Alexander property described in Deed Book 240 Page 514;

thence with said Alexander property, North 53 degrees 03 minutes 25 seconds West, 2658.91 feet to an iron pin set at the northeast corner of said Alexander property, and being a corner to the Margaret & Sharon McCollom property, recorded as Tract 6 of the Marshall Farm in Deed Book 628 Page 324, and being the point of beginning for this description.

Thence from said point of beginning, and with said McCollom property, NORTH 54 DEGREES 17 MINUTES 13 SECONDS WEST, a distance of 1380.20 feet to an iron pin set in said McCollom line, and being located SOUTH 54 DEGREES 17 MINUTES 13 SECONDS EAST, 390.26 feet from a 5/8" iron pin with cap 3685 found in said McCollom line and being a corner to the Beth Ann & Jeff Francis property described as Tract 3 in Deed Book 619 Page 80, and shown in Plat Book 10 Page 147;

thence running through said Crooks property, the following five (5) calls:

- (1) SOUTH 89 DEGREES 23 MINUTES 03 SECONDS EAST, a distance of 375.74 feet to an iron pin set;
- (2) NORTH 01 DEGREES 03 MINUTES 40 SECONDS EAST, a distance of 71.65 feet to an iron pin set;
- (3) NORTH 89 DEGREES 54 MINUTES 29 SECONDS EAST, a distance of 300.87 feet to an iron pin set;
- (4) SOUTH 53 DEGREES 04 MINUTES 26 SECONDS EAST, a distance of 912.14 feet to an iron pin set;
- (5) SOUTH 41 DEGREES 19 MINUTES 33 SECONDS WEST, distance of 433.77 feet to the point of beginning containing 11.596 acres and being subject to all legal written and unwritten easements and rights of way.

This description was prepared from a physical survey conducted under the direction of Dennis E. Branson, KY PLS #2523 of Branson Surveys, inc. on November 4, 2020. All monuments cited hereon as "iron pin set" are 5/8" iron rods 24 inches in length with a plastic cap bearing the number 2532. The basis of bearing for the surveyed described herein is NAD 83, Kentucky State Plane South Zone.

## DESCRIPTION PORTION OF DOSSETT TRACT HENDERSON COUNTY, KENTUCKY

A certain tract or parcel located approximately 1.6 miles of the intersection of KY Hwy 425 and U.S. Hwy 41-A, southwest of the City of Henderson, and being more particularly described as follows:

To reach the point of beginning, commence at a concrete nail set in the centerline of the Wilson Station Road at the intersection of the centerline of a ditch with the centerline of said Wilson Station Road, said intersection being a corner to the Margaret & Sharon McCollom property described as Tract 2 of The Marshall Farm in Deed Book 628 Page 324;

thence with said McCollom property and the center of said ditch, the following seven (7) calls:

- (1) NORTH 23 DEGREES 43 MINUTES 08 SECONDS EAST, a distance of 208.88 feet;
- (2) NORTH 16 DEGREES 07 MINUTES 49 SECONDS EAST, a distance of 245.98 feet;
- (3) NORTH 15 DEGREES 17 MINUTES 05 SECONDS EAST, a distance of 111.48 feet;
- (4) NORTH 23 DEGREES 13 MINUTES 59 SECONDS WEST, a distance of 347.75 feet;
- (5) NORTH 12 DEGREES 18 MINUTES 12 SECONDS WEST, a distance of 335.00 feet;
- (6) NORTH 13 DEGREES 50 MINUTES 33 SECONDS WEST, a distance of 399.56 feet;
- (7) NORTH 20 DEGREES 51 MINUTES 27 SECONDS WEST, a distance of 68.95 feet to a corner to the Dossett property recorded as Carroll Farm Tract 1 in Deed Book 468 Page 54, of which this description is a part, said corner being located North 77 degrees 17 minutes 46 seconds West, 77.29E feet from a reference iron pin set;

thence continuing with said ditch and with the line of said Marshall Farm - Tract 2, NORTH 36 DEGREES 59 MINUTES 13 SECONDS EAST, a distance of 245.43 feet to a point in the line of said Tract 2, and being located North 53 degrees 41 minutes 26 seconds West, 100.00 feet from a reference iron pin set, and being the point of beginning for this description.

Thence from said point of beginning, running through said Dossett's Carroll Farm - Tract 1, of which this description is a part, NORTH 52 DEGREES 57 MINUTES 20 SECONDS WEST, a distance of 520.93 feet to a corner to the Gary Thomas property described as The Home Farm - Tract 5 in Deed Book 605 Page 725;

thence with said Tract 5, and with the remainder of Tract 3 of said Home Farm, NORTH 37 DEGREES 01 MINUTES 19 SECONDS EAST, a distance of 577.96 feet to an iron pin set in the line of the Margaret & Sharon McCollom's Marshall Farm Tract 2 recorded in Deed Book 628 Page 324:

thence with said McCollom Marshall Farm - Tract 2, the following two (2) calls:

- (1) SOUTH 53 DEGREES 04 MINUTES 56 SECONDS EAST, a distance of 67.58 feet;
- (2) SOUTH 53 DEGREES 00 MINUTES 47 SECONDS EAST, a distance of 453.00 feet to a corner to said Tract 2, and being located South 82 degrees 38 minutes 03 seconds West, 50.00 feet from a reference iron pin set;

thence with said McCollom's Marshall Farm - Tract 2, SOUTH 36 DEGREES 59 MINUTES 13 SECONDS WEST, a distance of 578.57 feet to the point of beginning containing 6.914 acres and being subject to all legal written and unwritten easements and rights of way.

This description was prepared from a physical survey conducted under the direction of Dennis E. Branson, KY PLS #2523 of Branson Surveys, inc. on November 4, 2020. All monuments cited hereon as "iron pin set" are 5/8" iron rods 24 inches in length with a plastic cap bearing the number 2532. The basis of bearing for the surveyed described herein is NAD 83, Kentucky State Plane South Zone.

# RECORD DESCRIPTION PARCEL 3 A.G. & MARY PRITCHETT SUBDIVISION HENDERSON COUNTY, KENTUCKY

Being all of the Parcel 3 of the A.G. & Mary Pritchett Subdivision, a consolidation plat of which is of record in Plat Book 10 Page 144, Henderson County Clerk's Office, and to which reference is hereby made for a more particular description of the property hereby conveyed.

# RECORD DESCRIPTION MARY PRITCHETT REMAINDER DEED BOOK 619 PAGE 80 TRACT 3 HENDERSON COUNTY, KENTUCKY

Being all of the Mary Pritchett Remainder, a plat of which is of record in Plat Book 10, pages 147, Henderson County Clerk's Office, and to which reference is hereby made for a more particular description of the property hereby conveyed.

### DESCRIPTION MCCOLLOM LEASE PARCEL "A" HENDERSON COUNTY, KENTUCKY

A certain tract or parcel located approximately 1.6 miles of the intersection of KY Hwy 425 and U.S. Hwy 41-A, southwest of the City of Henderson, and being more particularly described as follows:

Beginning at a concrete nail set in the center of the existing pavement of the Wilson Station Road, said concrete nail being a corner to Jonathon & Garah Wright property recorded in Deed Book 608 Page 863;

thence with the center of the existing pavement of said Wilson Station Road, the following two (2) calls:

- (1) NORTH 53 DEGREES 53 MINUTES 28 SECONDS WEST, a distance of 339.19 feet;
- (2) NORTH 50 DEGREES 35 MINUTES 13 SECONDS WEST, a distance of 486.81 feet to a concrete nail set at the intersection of the center of said pavement and the center of a ditch, and being a corner to the David, Christopher & John Michael Dossett property recorded as the Carroll Farm Tract 2 in Deed Book 468 Page 54;

thence with the center of said ditch and said Dossett property, the following seven (7) calls:

- (1) NORTH 23 DEGREES 43 MINUTES 08 SECONDS EAST, a distance of 208.88 feet;
- (2) NORTH 16 DEGREES 07 MINUTES 49 SECONDS EAST, a distance of 245.98 feet;
- (3) NORTH 15 DEGREES 17 MINUTES 05 SECONDS EAST, a distance of 111.48 feet;
- (4) NORTH 23 DEGREES 13 MINUTES 59 SECONDS WEST, a distance of 347.75 feet;
- (5) NORTH 12 DEGREES 18 MINUTES 12 SECONDS WEST, a distance of 335.00 feet;
- (6) NORTH 13 DEGREES 50 MINUTES 33 SECONDS WEST, a distance of 399.56 feet;
- (7) NORTH 20 DEGREES 51 MINUTES 27 SECONDS WEST, a distance of 68.95 feet to a corner to the Dossett property recorded as Carroll Farm Tract 1 in Deed Book 468 Page 54, said corner being located North 89 degrees 54 minutes 18 seconds West, 50.00 feet from a reference iron pin set;

thence continuing with said ditch and with the line of said Dossett's Carroll Farm - Tract 1, NORTH 36 DEGREES 59 MINUTES 13 SECONDS EAST, a distance of 245.43 feet to a point in the line of said Tract 1, and being located North 52 degrees 57 minutes 20 seconds West, 50.00 feet from a reference iron pin set;

thence continuing with said Tract 1, NORTH 36 DEGREES 59 MINUTES 13 SECONDS EAST, a distance of 578.57 feet, being a corner to said Tract 1, and being located South 82 degrees 38 minutes 03 seconds West, 50.00 feet from a reference iron pin set;

thence continuing with said Tract 1, NORTH 53 DEGREES 00 MINUTES 47 SECONDS WEST, a distance of 453.00 feet to an iron pin set, and being a corner to the Gary Thomas property recorded as the Home Farm - Tract 3 in Deed Book 605 Page 725;

thence with said Tract 3, the following two (2) calls:

- (1) NORTH 53 DEGREES 04 MINUTES 56 SECONDS WEST, a distance of 1507.64 feet to an iron pin set; (2) NORTH 36 DEGREES 25 MINUTES 53 SECONDS EAST, a distance of 945.74 feet to an iron pin set in
- the line of the Tommy Tapp property recorded as Tract 2 in Deed Book 319 Page 504;

thence with said Tapp - Tract 2, SOUTH 53 DEGREES 13 MINUTES 33 SECONDS EAST, a distance of 556.79 feet to an iron pin set at a corner to said Tapp - Tract 2;

thence continuing with said Tapp - Tract 2, NORTH 38 DEGREES 12 MINUTES 06 SECONDS EAST, a distance of 257.73 feet to an iron pin set in the Tapp line;

thence running through the Margaret & Sharon McCollom property recorded in Deed Book 628 Page 324, the following twelve (12) calls:

- (1) DUE EAST, a distance of 928.28 feet to an iron pin set;
- (2) SOUTH 48 DEGREES 27 MINUTES 28 SECONDS EAST, a distance of 106.58 feet to an iron pin set;
- (3) SOUTH 00 DEGREES 17 MINUTES 42 SECONDS EAST, a distance of 713.73 feet to an iron pin set;

- (4) SOUTH 47 DEGREES 19 MINUTES 39 SECONDS EAST, passing an iron pin set on line at a distance of 25.00 feet from the terminus a total distance of 2408.48 feet to a point:
- (5) SOUTH 36 DEGREES 49 MINUTES 42 SECONDS WEST, a distance of 154.56 feet to a point;
- (6) NORTH 88 DEGREES 58 MINUTES 24 SECONDS WEST, passing an iron pin set on line at a distance of 25.00 feet, a total distance of 1119.46 feet to an iron pin set;
- (7) SOUTH 36 DEGREES 34 MINUTES 01 SECONDS WEST, a distance of 166.13 feet to an iron pin set;
- (8) SOUTH 45 DEGREES 38 MINUTES 52 SECONDS WEST, a distance of 833.47 feet to an iron pin set;
- (9) SOUTH 02 DEGREES 43 MINUTES 08 SECONDS WEST, a distance of 710.15 feet to an iron pin set;
- (10) SOUTH 28 DEGREES 01 MINUTES 54 SECONDS EAST, a distance of 207.96 feet to an iron pin set;
- (11) SOUTH 01 DEGREES 14 MINUTES 26 SECONDS WEST, a distance of 172.78 feet to an iron pin set;
- (12) SOUTH 37 DEGREES 19 MINUTES 40 SECONDS WEST, passing an iron pin set on line at a distance of 50.00 feet from the terminus, a total distance of 386.64 feet to the point of beginning containing 157.096 acres and being subject to all legal written and unwritten easements and rights of way.

This description was prepared from a physical survey conducted under the direction of Dennis E. Branson, KY PLS #2523 of Branson Surveys, inc. on November 4, 2020. All monuments cited hereon as "iron pin set" are 5/8" iron rods 24 inches in length with a plastic cap bearing the number 2532. The basis of bearing for the surveyed described herein is NAD 83, Kentucky State Plane South Zone.

## DESCRIPTION MCCOLLOM LEASE PARCEL "B" HENDERSON COUNTY, KENTUCKY

A certain tract or parcel located approximately 1.6 miles of the intersection of KY Hwy 425 and U.S. Hwy 41-A, southwest of the City of Henderson, and being more particularly described as follows:

To reach the point of beginning, commence at a 5/8 inch iron pin found in the northwest right-of-way line of U.S. Hwy 41-a, said iron pin being located 40 feet northwest of the centerline of said Hwy 41-A, and being a corner to the David Alexander property recorded in Deed Book 240 Page 514;

thence with said Alexander property, the following two calls:

- (1) NORTH 63 DEGREES 19 MINUTES 49 SECONDS WEST, a distance of 198.00 feet and
- (2) NORTH 47 DEGREES 59 MINUTES 49 SECONDS WEST, a distance of 2547.50 feet to an iron pin set at the northwest corner of said Alexander property, being a corner of the Margaret & Sharon McCollum property recorded in Deed Book 628 Page 324 and being the point of beginning for this description.

Thence running through said McCollom property, the following nine (9) calls:

- (1) NORTH 47 DEGREES 19 MINUTES 51 SECONDS WEST, a distance of 164.38 feet to an iron pin set;
- (2) SOUTH 39 DEGREES 55 MINUTES 13 SECONDS WEST, a distance of 587.51 feet to an iron pin set;
- (3) NORTH 47 DEGREES 19 MINUTES 39 SECONDS WEST, a distance of 1009.55 feet to an iron pin set;
- (4) NORTH 00 DEGREES 17 MINUTES 42 SECONDS WEST, a distance of 864.41 feet to an iron pin set;
- (5) NORTH 44 DEGREES 40 MINUTES 56 SECONDS WEST, a distance of 92.21 feet to an iron pin set;
- (6) NORTH 01 DEGREES 03 MINUTES 08 SECONDS EAST, a distance of 210.53 feet to an iron pin set;
- (7) NORTH 46 DEGREES 12 MINUTES 14 SECONDS WEST, a distance of 162.28 feet to an iron pin set;
- (8) NORTH 00 DEGREES 44 MINUTES 22 SECONDS EAST, a distance of 306.17 feet to an iron pin set;
- (9) SOUTH 88 DEGREES 41 MINUTES 59 SECONDS EAST, a distance of 1107.17 feet to an iron pin set in the southwest line of the Debra Jean Crooks property as described in Deed Book 232 Page 621;

thence with said Crooks property, SOUTH 54 DEGREES 17 MINUTES 13 SECONDS EAST, passing an iron pin set on line at a distance of 52.90 feet, a total distance of 1433.10 feet to an iron pin set at the northeast corner of said David Alexander property;

thence with said Alexander property, SOUTH 39 DEGREES 15 MINUTES 11 SECONDS WEST, a distance of 1346.10 feet to the point of beginning containing 71.878 acres and being subject to all legal written and unwritten easements and rights of way.

This description was prepared from a physical survey conducted under the direction of Dennis E. Branson, KY PLS #2523 of Branson Surveys, inc. on November 4, 2020. All monuments cited hereon as "iron pin set" are 5/8" iron rods 24 inches in length with a plastic cap bearing the number 2532. The basis of bearing for the surveyed described herein is NAD 83, Kentucky State Plane South Zone.

### DESCRIPTION MCCOLLOM LEASE PARCEL "C" HENDERSON COUNTY, KENTUCKY

A certain tract or parcel located approximately 1.6 miles of the intersection of KY Hwy 425 and U.S. Hwy 41-A, southwest of the City of Henderson, and being more particularly described as follows:

To reach the point of beginning, commence at a 5/8 inch iron pin found in the northwest right-of-way line of U.S. Hwy 41-a, said iron pin being located 40 feet northwest of the centerline of said Hwy 41-A, and being a corner to the David Alexander property recorded in Deed Book 240 Page 514;

thence with said Alexander property, the following two calls:

- (1) NORTH 63 DEGREES 19 MINUTES 49 SECONDS WEST, a distance of 198.00 feet and
- (2) NORTH 47 DEGREES 59 MINUTES 49 SECONDS WEST, a distance of 1173.09 feet to a point in said Alexander line:

thence at right angles and running through the Margaret & Sharon McCollom property recorded in Deed Book 628 Page 324, SOUTH 42 DEGREES 00 MINUTES 11 SECONDS WEST, 50.00 feet to an iron pin set, and being the point of beginning for this description.

Thence from the point of beginning, running through said McCollom property, the following five (5) calls:

- (1) SOUTH 52 DEGREES 33 MINUTES 15 SECONDS WEST, a distance of 561.23 feet to an iron pin set;
- (2) NORTH 47 DEGREES 19 MINUTES 39 SECONDS WEST, a distance of 1364.70 feet to an iron pin set;
- (3) NORTH 39 DEGREES 55 MINUTES 13 SECONDS EAST, a distance of 537.46 feet to an iron pin set;
- (4) SOUTH 47 DEGREES 19 MINUTES 51 SECONDS EAST, a distance of 112.21 feet to a point;
- (5) SOUTH 47 DEGREES 59 MINUTES 49 SECONDS EAST, a distance of 1374.70 feet to the point of beginning containing 17.807 acres and being subject to all legal written and unwritten easements and rights of way.

This description was prepared from a physical survey conducted under the direction of Dennis E. Branson, KY PLS #2523 of Branson Surveys, inc. on November 4, 2020. All monuments cited hereon as "iron pin set" are 5/8" iron rods 24 inches in length with a plastic cap bearing the number 2532. The basis of bearing for the surveyed described herein is NAD 83, Kentucky State Plane South Zone.

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## DESCRIPTION TOMMY TAPP LEASE PARCEL "A" HENDERSON COUNTY, KENTUCKY

A certain tract or parcel located approximately 1.6 miles of the intersection of KY Hwy 425 and U.S. Hwy 41-A, southwest of the City of Henderson, and being more particularly described as follows:

Beginning at a point in the centerline of the Old Corydon Road, said point being in the northeast line of Tommy Tapp property cited as Tract 1 in Deed Book 253 Page 328, and being located North 53 degrees 13 minutes 33 seconds West, 25.50 feet from an iron pin set in said northeast line;

thence with said centerline, the following two (2) calls:

- (1) around a curve to the left, through a central angle of 11 DEGREES 48 MINUTES 30 SECONDS, having a radius of 364.00 feet, an arc distance of 75.02 feet, a chord bearing of NORTH 42 DEGREES 37 MINUTES 28 SECONDS EAST, a distance of 74.89 feet;
- (2) NORTH 36 DEGREES 43 MINUTES 22 SECONDS EAST, a distance of 645.79 feet to a point in the centerline of said road;

thence running through the Tommy Tapp property cited as Tract 2 in Deed Book 319 Page 504, the following two (2) calls:

- (1) SOUTH 32 DEGREES 23 MINUTES 45 SECONDS EAST, passing an iron pin set on line at a distance of 26.73 feet, a total distance of 337.40 feet to an iron pin set;
- (2) NORTH 57 DEGREES 33 MINUTES 12 SECONDS EAST, a distance of 489.39 feet to an iron pin set in the west line of the Henderson-Union Rural Electric Cooperative Corporation property (now Kenergy) recorded in Deed Book 393 Page 19;

thence with said Kenergy property, the following three (3) calls:

- (1) SOUTH 34 DEGREES 17 MINUTES 03 SECONDS EAST, a distance of 606.67 feet to a corner to said Kenergy property, said corner being located South 70 degrees 00 minutes 44 seconds West, 0.51 feet from a 5/8" iron pin (bent) found with no cap;
- (2) SOUTH 76 DEGREES 15 MINUTES 25 SECONDS EAST, a distance of 38.97 feet to a corner to said Kenergy property, said corner being located South 14 degrees 03 minutes 14 seconds East, 0.44 feet from a 5/8 inch iron pin (bent) found with no cap;
- (3) NORTH 34 DEGREES 44 MINUTES 53 SECONDS EAST, a distance of 926.84 feet to an iron pin set in the southwest r/w line of KY Hwy 425;

thence with said southwest r/w line, the following four (4) calls:

- (1) SOUTH 38 DEGREES 11 MINUTES 50 SECONDS EAST, a distance of 151.83 feet to a point in said r/w line:
- (2) SOUTH 48 DEGREES 19 MINUTES 35 SECONDS EAST, a distance of 888.63 feet to a point in said r/w line;
- (3) SOUTH 63 DEGREES 27 MINUTES 41 SECONDS EAST, a distance of 472.55 feet to a point in said r/w line;
- (4) SOUTH 68 DEGREES 51 MINUTES 57 SECONDS EAST, a distance of 156.52 feet to a point in said r/w line;

thence running through the Tommy Tapp property recorded as Tract 1 in Deed Book 319 Page 504, the following three (3) calls:

- (1) SOUTH 49 DEGREES 25 MINUTES 21 SECONDS WEST, a distance of 455.33 feet to an iron pin set;
- (2) SOUTH 41 DEGREES 48 MINUTES 07 SECONDS EAST, a distance of 643.86 feet to an iron pin set;
- (3) NORTH 57 DEGREES 17 MINUTES 52 SECONDS EAST, a distance of 816.12 feet to an iron pin set in said r/w line;

thence continuing with said r/w line, the following two (2) calls:

- (1) SOUTH 66 DEGREES 00 MINUTES 49 SECONDS EAST, a distance of 263.88 feet to a point in said r/w line:
- (2) SOUTH 78 DEGREES 10 MINUTES 54 SECONDS EAST, a distance of 71.95 feet to a point in said r/w line and being a corner to the Beth Ann & Jeff Francis property recorded as Tract 3 in Deed Book 619 Page 80, and a plat of which is recorded in Plat Book 10 Page 147;

thence with said Francis property, SOUTH 53 DEGREES 32 MINUTES 26 SECONDS EAST, a distance of 491.72 feet to an iron pin set in said Francis line, and being a corner to the Margaret & Sharon McCollom property recorded in Deed Book 628 Page 324 as Tract 8 of the Marshal Farm;

thence with said McCollom property, SOUTH 38 DEGREES 12 MINUTES 06 SECONDS WEST, a distance of 150.00 feet to an iron pin set in said McCollom line;

thence running through the Tommy Tapp property recorded as Tract 1 in Deed Book 319 page 504, NORTH 53 DEGREES 47 MINUTES 54 SECONDS WEST, passing the corner of the Tommy Tapp 15 acre tract recorded in Deed Book 549 page 142 at a distance of 50.00 feet, and then running with same a total distance of 391.47 feet to an iron pin set;

thence running through said 15 acre tract, the following two (2) calls:

- (1) SOUTH 37 DEGREES 41 MINUTES 21 SECONDS WEST, a distance of 1319.57 feet to an iron pin set in said 15 acre tract;
- (2) NORTH 87 DEGREES 56 MINUTES 03 SECONDS WEST, leaving said 15 acre tract at a distance of 53.54 feet, and entering the Tommy Tapp property described as Tract 2 in Deed Book 319 Page 504, a total distance of 409.95 feet to an iron pin set in said Tract 2;

thence running through said Tract 2, the following six (6) calls:

- (1) NORTH 57 DEGREES 17 MINUTES 09 SECONDS WEST, a distance of 148.68 feet to an iron pin set;
- (2) SOUTH 86 DEGREES 37 MINUTES 00 SECONDS WEST, a distance of 107.12 feet to an iron pin set;
- (3) NORTH 65 DEGREES 30 MINUTES 33 SECONDS WEST, a distance of 409.02 feet to an iron pin set;
- (4) NORTH 00 DEGREES 21 MINUTES 50 SECONDS EAST, a distance of 405.19 feet to an iron pin set;
- (5) NORTH 43 DEGREES 54 MINUTES 39 SECONDS EAST, a distance of 657.25 feet to an iron pin set;
- (6) NORTH 16 DEGREES 40 MINUTES 54 SECONDS WEST, passing the southeast line of another Tommy Tapp tract recorded in Deed Book 483 Page 102 at a distance of 43.90 feet, and then crossing through same, a total distance of 103.90 feet to an iron pin set in the northwest line thereof;

thence with said northwest line, the following two (2) calls:

- (1)SOUTH 73 DEGREES 19 MINUTES 06 SECONDS WEST, a distance of 289.06 feet to a point in said northwest line;
- (2) around a curve to the left, having a radius of 5681.26 feet, through a central angle of 11 DEGREES 53 MINUTES 05 SECONDS, an arc distance of 1178.44 feet, a chord bearing of SOUTH 67 DEGREES 22 MINUTES 34 SECONDS WEST, a distance of 1176.33 feet to an iron pin set in said northwest line;

thence running through the Tommy Tapp property recorded as Tract 2 in Deed Book 319 Page 504, NORTH 54 DEGREES 17 MINUTES 26 SECONDS WEST, a distance of 1043.72 feet to a point in the line of the Tommy Tapp property recorded as Tract 1 in Deed Book 253 Page 328;

thence with said Tract 1 as recorded in Deed Book 253 Page 328, NORTH 53 DEGREES 13 MINUTES 33 SECONDS WEST, a distance of 912.61 feet to the point of beginning containing 108.869 acres and being subject to all legal written and unwritten easements and rights of way.

This description was prepared from a physical survey conducted under the direction of Dennis E. Branson, KY PLS #2523 of Branson Surveys, inc. on November 4, 2020. All m monuments cited hereon as "iron pin set" are 5/8" iron rods 24 inches in length with a plastic cap bearing the number 2532. The basis of bearing for the surveyed described herein is NAD 83, Kentucky State Plane South Zone.

## DESCRIPTION TOMMY TAPP LEASE PARCEL "B" HENDERSON COUNTY, KENTUCKY

A certain tract or parcel located approximately 1.6 miles of the intersection of KY Hwy 425 and U.S. Hwy 41-A, southwest of the City of Henderson, and being more particularly described as follows:

Beginning at an iron pin set at the northeast corner of the Margaret & Sharon McCollom property cited as a 12.23 acre Tract 4 of the Marshall Farm a deed for which is recorded in Deed Book 628 Page 324;

thence with the northeast line of said Tract 4, NORTH 53 DEGREES 13 MINUTES 33 SECONDS WEST, a distance of 338.31 feet to an iron pin set in said northeast line;

thence running through the Tommy Tapp property recorded as Tract 2 in Deed Book 319 Page 504, DUE EAST, a distance of 430.38 feet to an iron pin set in the northwest line of the Margaret & Sharon McCollom property cited as Tract 8 of the Marshall Farm, a deed to which is recorded in Deed Book 628 Page 324;

thence with said Tract 8, SOUTH 38 DEGREES 12 MINUTES 06 SECONDS WEST, a distance of 257.73 feet to the point of beginning, containing 1.001 acres and being subject to all legal written and unwritten easements and rights of way.

This description was prepared from a physical survey conducted under the direction of Dennis E. Branson, KY PLS #2523 of Branson Surveys, inc. on November 4, 2020. All monuments cited hereon as "iron pin set" are 5/8" iron rods 24 inches in length with a plastic cap bearing the number 2532. The basis of bearing for the surveyed described herein is NAD 83, Kentucky State Plane South Zone.

## DESCRIPTION PORTION OF THOMAS TRACT HENDERSON COUNTY, KENTUCKY

A certain tract or parcel located approximately 1.6 miles of the intersection of KY Hwy 425 and U.S. Hwy 41-A, southwest of the City of Henderson, and being more particularly described as follows:

To reach the point of beginning, commence at a concrete nail set in the centerline of the Wilson Station Road at the intersection of the centerline of a ditch with the centerline of said Wilson Station Road, said intersection being a corner to the Margaret & Sharon McCollom property described as Tract 2 of The Marshall Farm in Deed Book 628 Page 324;

thence with the centerline of said Wilson Station Road, NORTH 52 DEGREES 27 MINUTES 55 SECONDS WEST, 1536.73 feet to a point in the centerline of said road, being a corner to the Davis, Christopher & John Michael Dossett property recorded as Tract 3 of the Carroll Farm in Deed Book 468 Page 54;

thence with said Tract 3, NORTH 37 DEGREES 00 MINUTES 48 SECONDS EAST, 717.46 feet to a corner to said Tract 3;

thence continuing with said Tract 3, NORTH 53 DEGREES 05 MINUTES 43 SECONDS WEST, 85.68 feet to a point in the northeast line of said Tract 1, and being a corner to the Davis, Christopher & John Michael Dossett property recorded as Tract 1 of the Marstall Farm in Deed Book 468 Page 54;

thence with said Tract 1, NORTH 37 DEGREES 01 MINUTES 19 SECONDS EAST, 484.80 feet to a corner to the Davis, Christopher & John Michael Dossett property recorded as Tract 3 of the Marstall Farm in Deed Book 468 Page 54;

thence with said Marstall Farm Tract 3, NORTH 37 DEGREES 01 MINUTES 19 SECONDS EAST, 246.16 feet to the point of beginning for this description.

Thence from said point of beginning and with said Marshall Farm - Tract 3, NORTH 52 DEGREES 57 MINUTES 20 SECONDS WEST, a distance of 1134.79 feet to an iron pin set in said line and being in the southwest line of the Gary Thomas property recorded as The Home Farm - Tract 5 in Deed Book 605 Page 725:

thence running through the Gary Thomas property recorded as The Home Farm - Tracts 5, 3, and 7 in Deed Book 605 Page 725, DUE NORTH, passing an iron pin set on line at a distance of 159.49 feet from the terminus, a total distance of 1601.98 feet to a point in the center of Wilson Creek (a.k.a. Schaeffer's Creek), and being in the line of the Tommy Tapp property recorded as Tract 1 in Deed Book 253 page 328;

thence with the center of said Wilson Creek, the following two (2) calls:

- (1) NORTH 42 DEGREES 23 MINUTES 08 SECONDS EAST, a distance of 193.83 feet;
- (2) NORTH 17 DEGREES 49 MINUTES 08 SECONDS EAST, a distance of 48.48 feet to the northeast corner of the Gary Thomas Home Farm Tract 7, and being in the southwest line of the Tommy Tapp property, recorded as Tract 2 in Deed Book 319 Page 504;

thence with said Tapp property, SOUTH 53 DEGREES 13 MINUTES 33 SECONDS EAST, passing an iron pin set on line at a distance of 90.31 feet, which iron pin is a corner to the Gary Thomas Home Farm - Tract 3, a total distance of 647.41 feet to an iron pin set at a corner to the Margaret & Sharon McCollom property recorded as The Marshall Farm - Tract 4 in Deed Book 628 Page 324;

thence with said McCollom Marshall Farm - Tract 4, SOUTH 36 DEGREES 25 MINUTES 53 SECONDS WEST, a distance of 945.74 feet to an iron pin set at a corner to said Tract 4;

thence with said McCollom property, being Tracts 4,8,& 2 of the Marshall Farm as cited in said Deed Book 628 Page 324, SOUTH 53 DEGREES 04 MINUTES 56 SECONDS EAST, a distance of 1440.06 feet to a

corner to said Davis, Christopher & John Michael Dossett property recorded as Tract 5 of the Carroll Farm in Deed Book 468 Page 54;

thence with said Tract 5, SOUTH 37 DEGREES 01 MINUTES 19 SECONDS WEST, a distance of 334.06 feet to an iron pin set at a corner to Tract 1 of said Carroll Farm in Deed Book 468 Page 54;

thence with said Tract 1, SOUTH 37 DEGREES 01 MINUTES 19 SECONDS WEST, a distance of 243.90 feet to the point of beginning, containing 27.731 acres and being subject to all legal written and unwritten easements and rights of way.

This description was prepared from a physical survey conducted under the direction of Dennis E. Branson, KY PLS #2523 of Branson Surveys, inc. on November 4, 2020. All monuments cited hereon as "iron pin set" are 5/8" iron rods 24 inches in length with a plastic cap bearing the number 2532. The basis of bearing for the surveyed described herein is NAD 83, Kentucky State Plane South Zone.

# EXHIBIT 12 ATTACHMENT 12.4

## ARTICLE XXX: HENDERSON COUNTY SOLAR ENERGY SYSTEM REGULATIONS

#### Section 30.01. Design Standards

The components and subsystems required to convert solar energy into electric energy suitable for use. The area of the system includes all the land inside the perimeter of the system, which extends to any fencing. For the purposes of these zoning regulations, solar energy systems are divided into three (3) classes.

- a. Level 1 Solar Energy System. A roof mounted system on any code compliant structure or any ground mounted system on an area of up to fifty (50) percent of the footprint of the primary structure on the parcel but not more than one (1) acre and not more than twenty-five (25) feet tall or any building integrated system (i.e. shingle, hanging solar, canopy, etc.)
- b. Level 2 Solar Energy System. Any ground mounted system not included in a Level 1 SES and meets the following area restrictions:
  - 1. In an agricultural zone the area of the SES shall not exceed one half (1/2) acre in size and shall require a building permit issued by the Henderson County Codes Department. In areas exceeding one half (1/2) acre, a Site Plan shall be required by the Henderson City-County Planning Commission.
  - 2. In an industrial zone the SES shall not exceed ten (10) acres in size.
  - 3. In an Industrial Zone, an SES of any size shall require a site plan approved by the Henderson City-County Planning Commission.
- (c) Level 3 Solar Energy System. Any system that does not satisfy the parameters for a Level 1 or Level 2 SES.

#### Section 30.02. Requirements

Solar Energy Systems (SES) shall comply with the following criteria:

- a. The height of any ground mounted SES shall not exceed twenty-five (25) feet as measured from the highest natural grade below each solar panel (excludes utility poles, substations and antennas constructed for the project).
- b. Setback requirements for Level 1 and Level 2 SES shall be in compliance with the zoning classification for the parcel.
- c. Setback requirements for Level 3 SES shall be as follows: (1) All equipment shall be at least twenty-five (25) feet from the perimeter property lines of the project area; (2) No interior property line setbacks shall be required if the project spans multiple contiguous properties,; (3) All equipment shall be located

at least one hundred (100) feet from any residential structure and; the maximum height of any individual component will be 25 feet measured from the local ground level of the component.

- d. All Level 3 SES shall be screened with a seven (7) foot tall fence and, to the extent reasonably practicable, a visual buffer that provides reasonable screening to reduce the view of the SES from residential dwelling units on adjacent lots (including those lots located across a public right of way). A vegetation screening plan to reduce the view of the SES from residential dwelling units on adjacent lots will be submitted for approval of the Henderson City-County Planning Commission. The existing natural tree growth and natural land forms along the SES perimeter may create a sufficient buffer and shall be preserved when reasonably practicable. When no alternative vegetation screening plan is approved by the Henderson City-County Planning Commission, a double row of staggered evergreen trees will be planted 15' on center from adjacent non participating residential dwellings including the outdoor living space immediately near residential dwellings. Parcel boundaries with no proximity to residential dwellings shall not require screening. The proposed evergreen trees shall be placed on the exterior of security fencing. The use of barbed wire or sharp pointed fences shall be prohibited in or along any boundary adjoining residential properties.
- e. There shall be no signs permitted except those displaying emergency information, owner contact information, warning or safety instructions or signs that are required by a federal, state or local agency. Such signs shall not exceed 5 square feet in area.
- f. Excessive lighting shall be prohibited except that required by federal or state regulations.
- g. Decommissioning of Level 3 SES shall be as follows:
  - 1. The developer shall post a Surety Bond, or other form of Security acceptable to the County, for the abandonment of the site and in the event the Commission must remove the facility. Abandonment shall be when the SES ceases to transfer energy on a continuous basis for twelve (12) months. The surety bond or other form or security, shall be one (1) percent of the total project cost re-calculated every 5 years during the project life.
  - 2. A decommissioning plan shall be submitted at the time of application by the developer responsible for decommissioning and must include the following: (1) Defined conditions upon which the decommissioning will be initiated. i.e. there has been no power production for 12 months, the land lease has ended, or succession of use of abandoned facility, etc.; (2) Removal of all non-utility owned equipment, conduit, structures, fencing, roads, and foundations to the depth of three (3) feet; (3) Restoration of the property to substantially similar physical condition that existed immediately prior to construction of the SES; (4) The time frame for completion of decommissioning activities; (5) the party currently responsible for decommissioning, and; (6) Plans for updating the decommissioning plan.

The components and subsystems required to convert solar energy into electric energy suitable for use. The area of the system includes all the land inside the perimeter of the system, which extends to any fencing. For the purposes of these zoning regulations, solar energy systems are divided into three (3) classes.

A. Level 1 Solar Energy System. A roof mounted system on any code compliant structure.

- 1. Level 1 Solar Energy System are prohibited in Riverfront-1 and Riverfront-3 zones.
- 2. Level 1 Solar Energy Systems, other than solar shingles, are allowed in Riverfront- 2, Riverfront-4, Central Business District, Gateway Zone, and Henderson Innovative Planning District only if the SES is enclosed or screened to ensure that such features are not visible from street level and are compatible to the architectural style of the building.
- 3. Level 1 Solar Energy Systems which are solar shingles if visible from the street are a conditional use in Riverfront-2, Riverfront-4, Central Business District, Gateway Zone, and Henderson Innovative Planning District and must match the existing façade and architecture of the building.
- 4. Level 1 Solar Energy Systems are allowable in all other zones other than those listed in subsections (1) and (2) above.
- B. Level 2 Solar Energy System. Any ground mounted system not included in a Level 1 SES and meets the following area restrictions and requirements:
  - 1. Level 2 Solar Energy Systems are only allowed in Agricultural Zone and Light Industrial (M-1) and Heavy Industrial (M-2) zones.
  - 2. In an Agricultural zone the area of the SES shall not exceed one half (1/2) acre in size and shall require a building permit issued by the Henderson City Codes Department.
  - 3. In an Industrial zone the SES shall not exceed ten (10) acres in size.
  - 4. The height of any ground mounted SES shall not exceed twenty-five (25) feet as measured from the highest natural grade below each solar panel (excludes utility poles and antennas constructed for the project).
  - 5. Setback requirements for Level 1 and Level 2 SES shall be in compliance with the zoning classification for the parcel.
  - 6. There shall be no signs permitted on Level 2 SES except those displaying emergency information, owner contact information, warning or safety instructions or signs that are required by a federal, state or local agency. Such signs shall not exceed 5 square feet in area.
  - 7. In an Industrial Zone, a Level 2 SES shall require a site plan approved by the Henderson City-County Planning Commission and a building permit by the Henderson City Codes Department.
  - 8. Lighting on Level 2 SES shall be prohibited except that required by federal or state regulations.
- C. Level 3 Solar Energy System. Any ground mounted system that is greater than the one half (1/2) acre in size for agricultural zone or exceeds the ten acres in size for an industrial zone satisfy the parameters for a Level 2 SES and must meet the following restrictions and requirements.

- 1. Level 3 SES are only allowed in Agricultural Zone and Light Industrial (M-1) and Heavy Industrial (M-2) zones.
- 2. The height of any ground mounted Level 3 SES shall not exceed twenty-five (25) feet as measured from the highest natural grade below each solar panel (excludes utility poles and antennas constructed for the project).
- 3. Setback requirements for Level 3 SES shall be as follows: (1) All equipment shall be at least fifty (50) feet from the perimeter property lines of the project area; (2) No interior property line setbacks shall be required if the project spans multiple contiguous properties; (3) All equipment shall be located at least one hundred (100) feet from any residential structure and; the maximum height of any individual component will be 25 feet measured from the local ground level of the component.
- 4. All Level 3 SES shall be screened with an 8' tall fence and a double row of staggered evergreens (minimum 8' height at planting) planted 15' on center from any public right-of-way or adjacent residential use. The evergreens shall be located outside of the fence. The use of barbed wire or sharp pointed fences shall be prohibited in or along any boundary adjoining residential properties.
- 5. There shall be no signs permitted on Level 3 SES except those displaying emergency information, owner contact information, warning or safety instructions or signs that are required by a federal, state or local agency. Such signs shall not exceed 5 square feet in area.
- 6. Level 3 SES shall require a site plan approved by the Henderson City-County Planning Commission and a building permit by the Henderson City Codes Department.
- 7. Lighting on Level 3 SES shall be prohibited except that required by federal or state regulations.
- D. Decommissioning of Level 3 SES shall be as follows:
  - 1. The developer shall post a Surety Bond with the Henderson City-County Planning Commission for the abandonment of the site and in the event the Commission must remove the facility. Abandonment shall be when the SES ceases to transfer energy on a continuous basis for twelve (12) months. The surety bond shall be one (1) percent of the total cost of the installed SES.
  - 2. A decommissioning plan shall be submitted at the time of application by the party responsible for decommissioning and the land owner and must include the following: (1) Defined conditions upon which the decommissioning will be initiated. i.e. there has been no power production for 12 months, the land lease has ended, or succession of use of abandoned facility, etc.; (2) Removal of all non-utility owned equipment, conduit, structures, fencing, roads, and foundations; (3) Restoration of the property to its original condition prior to development of the SES; (4) The time frame for completion of decommissioning activities; (5) the party currently responsible for decommissioning, and; (6) Plans for updating the decommissioning plan.

# EXHIBIT 12 ATTACHMENT 12.5



# Acoustical Analysis Henderson County Solar LLC Project Henderson County, Kentucky



Prepared for:

Henderson County Solar LLC

23 June 2021

COPPERHEAD ENVIRONMENTAL CONSULTING, INC.

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# Acoustical Analysis Henderson County Solar LLC Project Henderson County, Kentucky

# Prepared for

Henderson County Solar LLC C/O Community Energy PO Box 17236 Chapel Hill, NC 27516

By:

Copperhead Environmental Consulting, Inc. PO Box 73 471 Main Street Paint Lick, KY 40461

> Marty Marchaterre Senior Environmental Planner

> > June 23, 2021



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Appendix A: Equipment Specifications

# INTRODUCTION

Henderson County Solar LLC contracted Copperhead Environmental Consulting, Inc. (Copperhead) to conduct an acoustical analysis for the proposed Henderson County Solar LLC Project (Project) near the City of Henderson in Henderson County, Kentucky (Figure 1). The Project Study Area (PSA) consists of approximately 541 acres, and has reference coordinates of 37.781787° N, 86.632383° W. The PSA includes two sections of land south of KY 425 (Henderson Bypass) and another section of land west of Lovers Lane.

The Project is a proposed solar farm that would generate electricity through the use of photovoltaic solar panels. It would include a utility interconnection substation, a storage/maintenance container, inverter boxes, transformers, and overhead and underground electrical conveyance lines.

# **EXISTING LAND USE AND SITE CONDITIONS**

According to the National Land Cover Database (NLCD) for Henderson County, the PSA currently consists of agricultural fields/cultivated crops, pasture, and forest/wooded land (Figure 2). Historically, the PSA has been primarily used for agricultural land use.

The PSA contains no structures. Land uses on adjacent properties include agricultural lands, scattered wood lots, rural residences, and commercial businesses. The terrain is generally level with slopes less than 2 percent. Wilson Creek and tributaries are in and adjacent to the PSA.

# **EXISTING ACOUSTIC CONDITIONS**

# **Nearest Receptor Sites**

Sound-sensitive receptors generally are defined as locations where people reside or where the presence of unwanted sound may adversely affect the existing land use. Typically, sound-sensitive land uses include residences, hospitals, places of worship, libraries, performance spaces, offices, and schools, as well as nature preserves, recreational areas, and parks. Receptors adjacent to the PSA are nearby residences and a commercial facility along Collier Road, Lovers Lane, Old Henderson-Corydon Road, Henderson Bypass (KY 425), US 41A, and Wilson Station Road (Figure 3). The closest three receptors to any Project structure would be two residences on Lovers Lane, approximately 242 feet and 281 feet from the nearest solar panel and approximately 750, and 850 feet respectively feet from the nearest inverter pad; and a residence on Collier Road, approximately 520 feet from the nearest solar panel and approximately 600 feet from the substation.

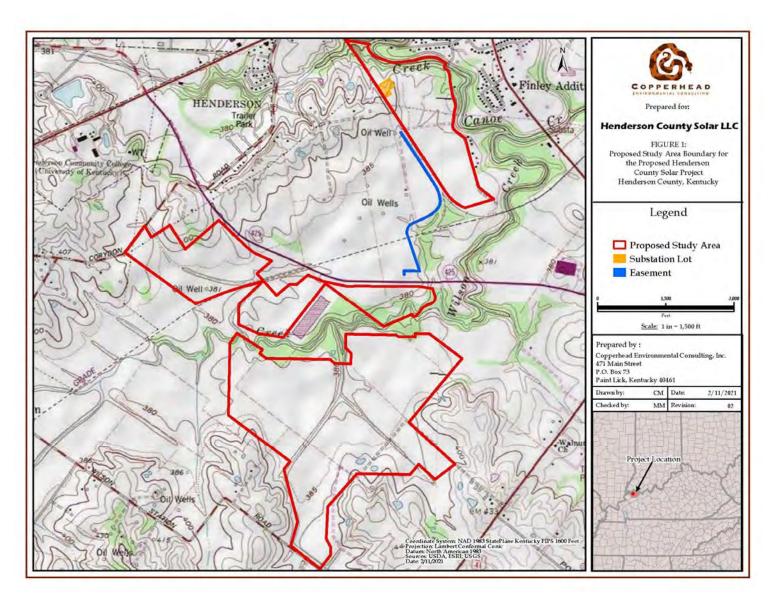


Figure 1. Project location

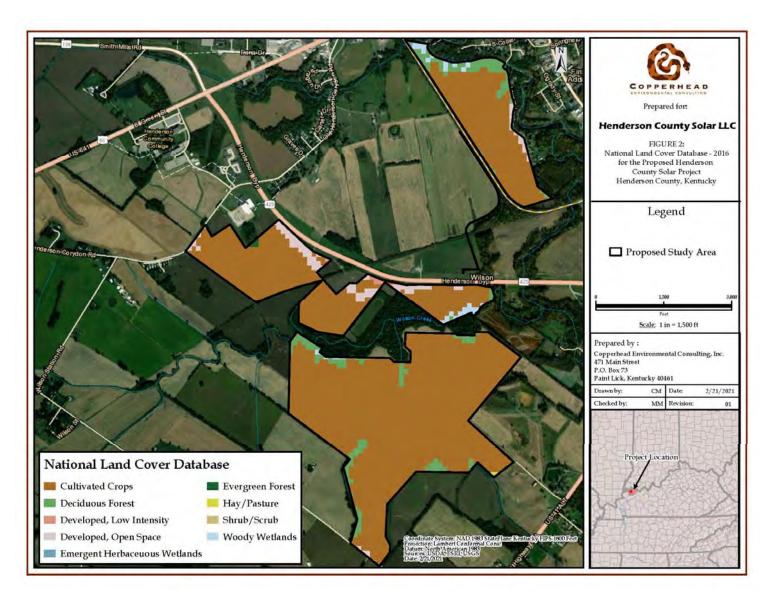
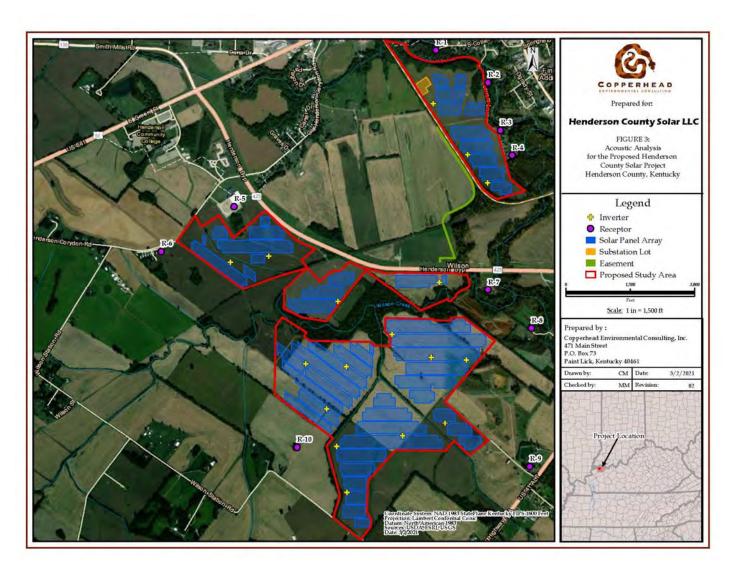


Figure 2. Land Use



**Figure 3. Sensitive Sound Receptors** 



# **Existing Sound from Surrounding Areas**

Noise is generally described as unwanted sound, which can be based either on objective effects (hearing loss, damage to structures, etc.) or subjective judgments (such as community annoyance). Sound is usually represented on a logarithmic scale with a unit called the decibel (dB). Sound on the decibel scale is referred to as sound level. The threshold of human hearing is approximately 0 dB, and the threshold of discomfort or pain is around 120 dB.

Noise levels are computed over a 24-hour period and adjusted for nighttime annoyances to produce the day-night average sound level (Ldn). Ldn is the community noise metric recommended by the US Environmental Protection Agency (USEPA) and has been adopted by most federal agencies (USEPA 1974). A Ldn of 65 A-weighted decibels (dBA) is the level most commonly used for noise planning purposes and represents a compromise between community impact and the need for activities such as construction. The A-weighting network measures sound in a similar fashion to how a person perceives or hears sound, thus achieving a strong correlation with how people perceive acceptable and unacceptable sound levels.

Areas exposed to a Ldn above 65 dBA are generally not considered suitable for residential use. A Ldn of 55 dBA was identified by USEPA as a level below which there is no adverse impact (USEPA 1974). For reference, approximate sound levels (measured in dBA) of common activities/situations are provided in Table 1 (Source: Caltrans 2013).

Table 1. Sound Levels of Common Activities/Situations.

Activity/Event	dBA
Lowest audible sound to person with average hearing	0
Quiet rural, nighttime	25
Crickets, distant frogs	30
Birds, distant dog bark	40
Quiet urban, nighttime	45
Large business office	60
Normal speech at 3 feet	60-70
Noisy urban area, daytime	75
Food blender at 3 feet	85
Gas lawn mower at 3 feet	100
Jet flyover at 1,000 feet	110



Local conditions such as traffic, topography, and winds characteristic of the region can alter background sound conditions. In general, the Ldn sound levels for outdoor quiet rural nighttime range is approximately 30 - 40 dBA (EPA 1974). Sound levels attenuate (or diminish) at a rate of approximately 6 dBA per doubling of distance from an outdoor point source due to the geometric spreading of the sound waves.

# **Existing On-Site Sound**

The PSA is within an agricultural, rural-residential, and undeveloped area of Henderson County. Ambient sound at the PSA consists mainly of agricultural sounds, such as noise from farm machinery; natural sounds, such as from wind and wildlife; and moderate traffic sounds. Sound levels of these types generally range from 45 to 55 dBA (USDOT 2015).

Typical sounds produced from farming and agriculture activities in the PSA include trucks, all-terrain vehicles (ATVs), tractors, and other farming equipment used for raising corn and soybeans (Table 2). The adjacent farms produce sounds similar to those within the PSA. In addition, an electric distribution company, supply company and other companies produce sounds from truck and equipment traffic (Table 3).

Table 2. Typical Sound Levels from Farm Activities.

Activity/Event	dBA
Chicken coop	70
All-terrain vehicle (ATV), push mower	90-100
Tractor/combine (with cab), grain auger	92
Air compressor/shop vacuum/weed eater	95
Pig squealing/power tools	100
Riding mower	102
Tractor (no cab)	105

Source: Great Plains Center for Agricultural Health. 2016.

Existing traffic contributes to sound within the PSA. The PSA is bounded by two-lane roadways that receive local traffic typical of a rural farming community, such as vehicles traveling the Henderson Bypass (i.e., cars, trucks, and tractor trucks with trailering equipment). Based on Kentucky Transportation Cabinet traffic data, the average annual daily traffic (AADT) along the Henderson Bypass (KY 425) is 6,102 vehicles. The vehicle noises typically range from 70 to 80 dBA at approximately 50 feet and peak during normal business hours.



# PROPOSED CONSTRUCTION SOUND CONDITIONS

Construction would occur only during daylight hours, so the Project would not affect ambient noise levels at night. Most of the proposed equipment would not be operating on site for the entire construction period but would be phased in and out according to the progress of the Project.

# **Equipment and Machinery**

Because the proposed site is used primarily for row cropping, the need for extensive tree removal and earthmoving associated with the Project is anticipated to be minimal. The construction of the solar facility would use equipment typical for site development (i.e., backhoes, generators, pile drivers, and flatbed trucks). The solar facility construction is estimated to last 6-9 months. The construction equipment would be spread out over the entire site, with some equipment operating along the perimeter of the site while the rest of the equipment may be located from several hundred to several thousand feet from the perimeter.

The U.S. Department of Transportation Federal Highway Administration (FHWA) publishes noise levels for typical construction equipment as shown in the table below (FHWA 2006).

Table 3. Sound Levels for Common Construction Equipment.

Equipment Type	Typical Sound Level (dBA) at 50 Feet
Backhoe	80
Chainsaw	85-115
Crane (Mobile)	85
Dozer	85
Dump Truck	84
Generator	81
Grader	85
Front End Loader	80-85
Pickup Truck	55
Pile Driver	90-95
Pneumatic Tool	85
Pump	76



Equipment Type	Typical Sound Level (dBA) at 50 Feet	
Roller	74	
Scraper	89	
Shovel	82	
Spike Driver	77	
Tractor	84	
Truck (Flatbed)	80-90	
Welder/Torch	73	

Source: FHWA Construction Noise Handbook, August 2006. Table based on US EPA Report and measured data.

The most common method of installing the support posts for the solar panels is to drive them into the ground. This pile driving procedure produces a repetitive, metallic impact sound. Individual piles take only a few minutes to be driven into the ground. Pile driving activity is short-lived and will take approximately 30 workdays to complete. Depending on the weather, the duration of pile driving activities would be 6-8 weeks. This would occur at the earlier stages of construction, typically in the second or third month.

Standard construction pile drivers are estimated to produce between 90 to 95 dBA (calculated at a distance of 50 feet) at close range (USDOT 2015). The specialty pile drivers used for solar panel installation produce less noise, and the piles supporting solar panels will be driven primarily into soil. Based on a common type of pile driver used to install solar panel support posts (e.g., Vermeer Pile Driver - PD 10), the anticipated sound level is 84 dBA at 50 feet (Vermeer 2012). The nearest residence is approximately 242 feet from the nearest solar panel array. At this distance, temporary and intermittent construction sound levels would be approximately 70.3 dBA when a pile driver is used to install the piles/posts for the nearest solar panel array tracking system. This sound level is temporary and will decrease within hours as sections of the array are completed and the pile driver moves further away.

Only limited concrete pouring is anticipated for the Project. Base slabs for the inverters and other electrical equipment will be precast and dropped in place. The transformer base at the substation may be poured concrete. During this time period, a concrete pump truck will be needed. A concrete pump truck typically generates a sound of approximately 82 dBA at 50 feet. At the nearest receptor to the substation (approximately 600 feet), the sound level is estimated to be 60.42 dBA intermittently for a day or two.

Underground electrical lines also will be constructed on site. The trenches to hold the cabling will be approximately 3- to 4-feet deep and approximately 2-feet wide. A ditch trencher (ditch witch)



will be used to dig trenches for laying the electrical cables. The anticipated sound level at 50 feet is 74 dBA (Ditch Witch 2021). The nearest residence is approximately 242 feet from the nearest solar array. At this distance, temporary and intermittent sound levels for a ditch trencher would be approximately 60.3 dBA. This sound level is temporary and will decrease within hours as sections of the trench are completed and the trencher moves further away from the residence.

# Assembly of Solar Panel Array and Construction of Facilities

Solar panels will be manufactured off site and shipped to the site ready for installation. Assembly of the solar panel array tracking system, the installation of solar panels, inverters and other electrical equipment associated with the solar facility and substation would likely employ typical manual hand tools and power tools. These assembly operations would occur several hundred feet to thousands of feet inside the property boundary, and would occur on weekdays. Anticipated sound generated by power equipment would be short in duration.

# **Roadway Sound During Construction**

The construction of the proposed solar facility is expected to take 6-9 months for completion. During construction, a temporary increase in traffic volume associated with travel of construction workers (up to 150 workers), delivery of construction equipment and material, delivery of solar panel components and equipment is anticipated. Worker commutes with passenger vehicles and trucks would occur daily with two traffic peaks (i.e., morning peak and afternoon peak), whereas deliveries of equipment would occur on trailers, flatbeds, or other large vehicles periodically throughout the construction process at various times of day. Based upon the sound levels published by FHWA, the sound contributed by construction vehicles such as flatbed trucks, light passenger cars and trucks falls within acceptable ranges because the sound is of short duration.

#### PROPOSED OPERATIONAL SOUND CONDITIONS

Sound power levels for the Project equipment were obtained from vendor/manufacturer data and based on preliminary design.

#### **Solar Panel Array**

The solar panel array associated with the Project includes single-axis tracking panels distributed evenly across the site. Tracking systems involve the panels being driven by small, 24-volt brushless DC motors to track the arc of the sun to maximize each panel's potential for solar absorption. Panels would turn no more than five degrees every 15 minutes and would operate no more than one minute out of every 15-minute period. These tracking motors are a potential source of mechanical sound and are included in this assessment. The tracking motor generates approximately as much sound as a refrigerator.



The sound typically produced by panel tracking motors (NexTracker or equivalent) is approximately 78 dBA at one foot. At 150 feet, it estimated to be approximately 34.48 dBA. At the closest residential receptor, the predicted sound level would be approximately 30.32 dBA.

#### **Inverters**

The solar facility would employ multiple inverter pads across the project site. Each inverter pad would contain up to six inverters. The inverter pads are located not less than 750 feet from any residence. The inverters are expected to be TMEIC Solar Ware Ninja inverters. According to the manufacturer's specifications, the sound emission produced by an inverter is less than 80 dBA at a distance of approximately 3.28 feet. At each inverter pad, the sound emission for multiple inverters is a combined 87.78 dBA using a conservative sound emission estimate of 80 dBA per inverter. The sound produced by an inverter is described as a hum and has roughly the same output as a household air-conditioning unit. At the nearest residential receptor, the predicted sound level from an inverter pad would be approximately 40.6 dbA.

#### Transformer

The main transformer at the substation is anticipated to be a 69kV/34.5kV 40/53/66 MVA transformer. Per National Electronic Manufacturers Association (NEMA) ST-20 standards, it is estimated that the transformer at a substation would generate sound levels of approximately 50 dBA at 3.28 feet (Schneider Electric 2020). The sound from transformer is characterized as a discrete low frequency hum. The sound from transformers is produced by alternating current flux in the core that causes it to vibrate. Sound from the transformer operating at full power would be estimated to be less than 4.75 dBA at the closest residential receptor (approximately 600 feet away).

#### SITE OPERATION AND MAINTENANCE

#### Vehicular Traffic

Project operations are expected to require 2 to 3 workers on site. These workers would drive in and out, Monday through Friday during business hours. In addition, work may be conducted at night up to 50 days a year. While workers are not anticipated onsite on most weekends, it remains a possibility in the event of a component outage that would require timely repair to limit production impact. Employees are anticipated to use mid- or full-sized trucks and would contribute less to traffic noise than a typical single family home.

#### **Maintenance Activities**

Typical maintenance activities would include minor repair and maintenance on the solar panels, tracking systems, electrical wiring, or maintenance/inspections of the inverters/transformer. Grounds maintenance would be performed through an integrated land management approach,



to include biological and mechanical control of vegetation, with herbicide applications as appropriate to control regulated noxious weeds per local, state, and federal regulations. It is anticipated that trimming and mowing would likely be performed approximately 20-30 times per year depending on growth rate, to maintain an approximate height of 10 inches and avoid shading the panels. Mowing would introduce temporary sound levels of up to 64.64 dBA at the nearest residential receptor when mowing is occurring.

In addition to the 2-3 full-time workers, the proposed solar facility would be monitored remotely to identify any security or operational issues. If a problem is discovered during non-working hours, a repair crew or law enforcement personnel would be contacted if an immediate response was warranted.

## CONCLUSION

Henderson County Solar LLC is not aware of any solar-specific United States Standards for sound mitigation during project construction or operation. Common practice is to treat solar projects like any other sources of sound, applying existing laws that govern noise pollution from all sources in the applicable jurisdiction (MAREC 2021).

Direct and indirect sound impacts associated with implementation of the Project would primarily occur during construction. Construction equipment, such as delivery trucks, backhoes, pile drivers, chain saws, bush hogs, or other equipment for clearing, produce maximum sound levels at 50 feet of approximately 84 to 85 dBA. This type of equipment may be used for approximately 6-9 months in the PSA primarily during daylight hours, between sunrise and sunset. Most of the proposed equipment would not be operating on site for the entire construction period but would be phased in and out according to the progress of the Project.

The activities likely to produce the greatest sound levels for an extended time period would be pile driving during the construction of the solar panel arrays. Standard solar pile drivers are estimated to produce 84 dBA at a distance of 50 feet (Vermeer 20121). The posts supporting solar panels are anticipated to be driven into silty loam and silty clay soils; based on current knowledge, rock drilling is not anticipated. Pile driving for the closest solar panel array may temporarily generate sound levels of 70.3 dBA at the nearest residential receptor. Construction sounds at a solar project (which are comparable to other common construction activities that require pile driving) are rarely limited in an absolute way due to their temporary and intermittent nature (MAREC 2021).

Sound would be generated on the PSA during construction; however, due to the distance to the nearest receptors, construction would not contribute to a significant sound increase when compared to sound currently occurring on or near the site (i.e., the operation of farming equipment for agricultural activities and crop harvesting as well as moderate traffic on the nearby roads).



Following completion of construction activities, the ambient sound environment would be expected to return to existing levels or below, by eliminating the seasonal use of agricultural equipment. The moving parts of the solar panel arrays would be electric-powered and produce minimal sound. The inverters would produce sound levels of approximately 40.6 dBA at 750 feet, and the Project substation would emit sound levels less than 4.75 dBA at 600 feet. As no sound receptors are within 750 feet of proposed inverter locations or within 600 feet of the Project substation, these effects from the Project are anticipated to be minimal to negligible. No sound is produced at night when no power is being produced. A study of solar power facility acoustics in Massachusetts found that at 150 feet from an inverter pad, sound levels approached background levels (Guldberg 2012).

The periodic mowing of the Project site to manage the height of vegetation surrounding the solar panels would produce sound levels comparable to those of agricultural operations in the PSA. Consequently, the Project would have minimal effects on sound levels as a result of normal continuous operation.

Overall, the Project would result in minor temporary sound impacts during construction. Sound levels resulting from regular operation and maintenance of the Project would be below ambient sound levels at the nearest receptor. Sound levels resulting from occasional mowing along the facility's perimeter would be at or near ambient levels.

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# Appendix A

**Equipment Specifications** 

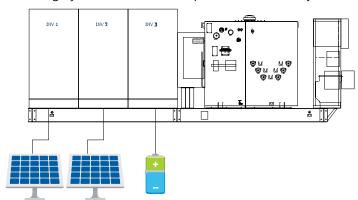
# Solar Ware Ninja™

# TMEIC We drive industry

# Multiple Configurations for Maximum Flexibility

TMEIC's Solar Ware Ninja is the latest evolution of the highly successful Solar Ware family of inverters, joining over 20GW of TMEIC's globally installed photovoltaic inverters. Continuing the legacy of high efficiency, cutting-edge features, and unmatched reliability, the new Ninja modular inverter system is the culmination of input from utilities, developers, and technicians.

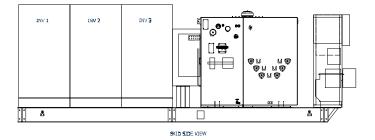
The Ninja is a global product, performing the duties of both generation and energy storage. The modular system introduces multiple layers of flexibility to allow designers an almost unlimited number of options for every project. The advanced controls system is packed with features to meet not only today's smart inverter requirements, but also new requirements as they are introduced. Like the award-winning Samurai series of inverters, the Ninja utilizes the same highly reliable IGBT based power conversion system.

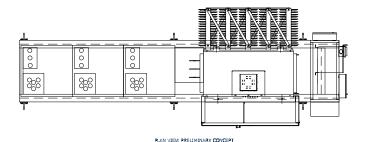


# **Customizable Block**

Up to 6 Ninja units on the same skid. Able to combine PV and ESS inverters in the same lineup. A skid controller will manage output of the Ninja power station.

- Fully Modular design means:
  - Completely independent inverters for increased availability
  - Individual MPPT for greater energy yield
  - Latest generation of Smart Inverter controls platform
  - Multiple output options with various MPPT ranges
- DC Zone monitoring is standard
- UL or IEC certified global design
- PV or Energy Storage (bi-directional)
- Outdoor rated enclosure





### TMEIC is Bankable

- Stable, with multi billion \$USD revenue
- Diversified, with decades of power electronics experience in a variety of heavy industries, including metals, oil & gas, mining, and container cranes industries
- Manufacturing in the US and several other locations

### **TMEIC** is Reliable

- Over 20GW of PV and ESS inverters globally
- Own exclusive use of Mitsubishi Electric's 3 level NPS technology
- Industry leading fleet availability

## **TMEIC** is Support

- Award winning service
- 24/7 US based hot line
- Over 30 years PV inverter manufacturing and R&D experience
- Comprehensive customer training programs
- Authorized Service Provider program available

PV-PCS			ESS-PCS	Page 20 of 91					
Туре		PVU-L0800GR PVU-L0840GR PVU-L0880GR PVU-L0920GR		BSU-L0640GR	BSU-L0800GR	BSU-L0840GR			
	Rated Power@25°C	800kW	840kW	880kW	920kW	640kW	800kW	840kW	
	Rated Power@50°C	730kW	765kW	800kW	840kW	570kW	730kW	765kW	
	Rated Voltage	600V +10%, -12%	630V +10%, -12%	660V +10%, -12%	690V +10%, -12%	480VAC	600VAC	630VAC	
	Rated Frequency		50Hz / 60Hz (+0.5Hz, -0.7Hz)						
Output	Rated Power Factor	>0.99							
side (AC)	Reactive Capability	±421 kVAR	±442 kVAR	±464 kVAR	±485 kVAR	-512to +640 kVAR	-640 to +800 kVAR	-672 to +840 kVAR	
	Rated Current	702 Arms @50 °C							
	Maxium Current	770 Arms @25 °C							
	Maximum Efficiency		98.9% *Tentative						
	CEC Efficiency	98.5% *Tentative							
Immunt alala	Maximum Voltage				1500 Vdc				
Input side (DC)	MPPT Operation Range	875-1300VDC	915-1300VDC	960-1300VDC	1005–1300VDC	<b>710</b> -1300VDC	875-1300VDC	915-1300VDC	
Ingress Protection Ratings		IP54 / NEMA3R							
Environ.	Installation	Outdoor							
Conditions	Ambient Temperature Range	-25° to 50°C							
	Maximum Altitude	>2000 m power derating (Max. 4000m)							
	Input (DC) Side	DC Protection: Fuses Ground Fault, DC Reverse Current, Over Voltage, Over Current							
Protective Functions	Grid (AC) Side	AC Protection: MCCB and Fuse, Anti-islanding, Over/Under Voltage, Over/Under Frequency, Over Current							
Turictions	Grid Assistance	Reactive/Active Power Control, Power Factor Control, Fault Ride Through (optional)							
Harmonic D	istortion of AC Current	≦ 3% THD (at rated power) ≦ 5% THD (at rated power)				oower)			
Communica	tion	Modbus/TCP							
Fault Analys	sis	Fault Event Log, Waveform Acquisition via memory card							
Compliance		UL1741, UL174SA / IEEE1547 / NEC2017 / IEC62109-1,2 / IEC61000-6-2,4 / IEC61727, IEC62116 / IEC61400, BDEW / IEC61683 / IEC60068							
Cooling Method		Forced Air Cooling							
Number of Inputs		Standard 6 inputs for PV (maximum 8 per inverter) 1 per Inverter							
Standard Control Power Supply		Control Power Supply from Inverter output and Capacitor backup circuit (3 sec. compensation)							
Weight		<1000kgs *Tentative							
Dimensions (H x W x D)		1100 X 1100 X 1900 mm (L x W x H)							
Floor Space		1875.5 sq. in. (1.21 m²)							
Color	Cabinet: Sand White #Dic583								

Note: Standard configuration not limited configuration. Contact TMEIC for detailed information.

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# Sound Level Report – Ninja With Production Vent Hoods

Inverter Model: PVU-0840GR Inverters Tested: PVU-0840GR

Project: Sound Level Report

Location: TMEIC UL Lab - Roanoke

2060 Cook Drive, Salem, VA 24153

Dates of tests:

Report By:

Last revision:

January 27, 2020

Bryan Hardman
28 JAN 2020

Tested By: Bryan Hardman, Bryan Young

# Overview:

The Sound Level of the Model PVU-0840GR with production vent hoods is to be verified.

Testing conducted according to methods detailed in ISO 3744 – 2010.

# Results:

The installation of the vent hoods reduced the sound level to below 80dB @ 1 meter.



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# **Unit Tested (Equipment Under Test, or EUT):**

# Fig. 1:





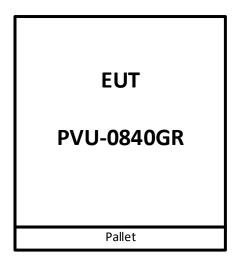
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# Set-Up

In order to reduce ambient sounds as much as practical, the EUT was set-up in a warehouse. The dimensions of the surroundings:

•	Warehouse floor to ceiling:	8.24 meters
•	EUT Left side to closest wall:	8.0 meters
•	EUT Front side to closest object (Guardian) :	3.34 meters
•	EUT Right side to closest object (bags of limestone):	4.89 meters
•	EUT Rear side to closest object (Inverter in storage):	3.75 meters

- EUT dimensions:
  - o 1.1 meter wide
  - o 1.2 meter deep.
- EUT on a pallet:
  - o 0.14 meter high



The EUT was situated in the warehouse as shown in Fig. 2 below.

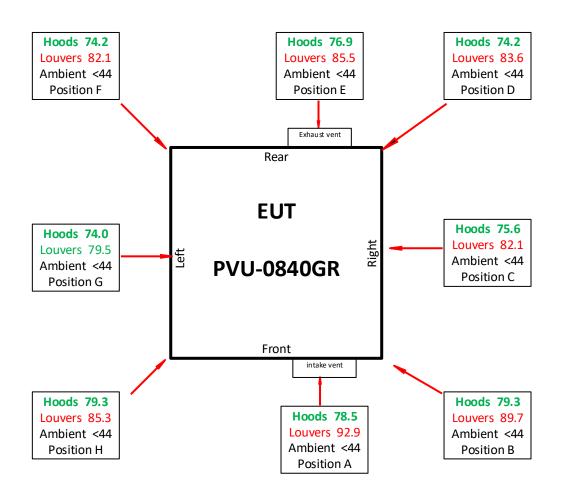
- Each of the 8 positions was located 1 meter from the EUT surface.
- Sound meter situated on a tripod and set 1.14 meter from the floor in order to adjust the location to 1 meter above the bottom of the EUT.

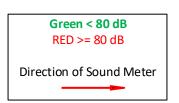


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# Set-Up

Fig. 2:







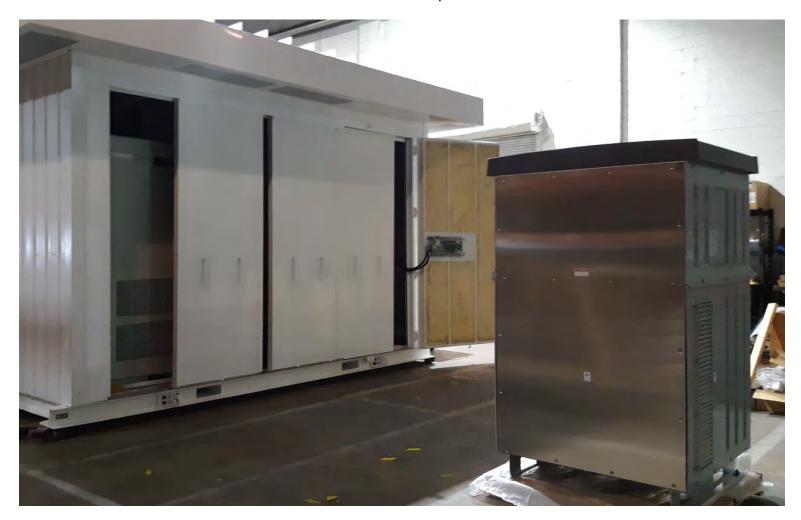
# **Set-up Photos:**

# Front of EUT in place





# Rear of EUT in place









Rear with Louvers





Front with vent hood



Rear with vent hood









Sound Meter calibration

DC power supply for fans



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# **Test Method**

# **Sound Data-Logger settings:**

The Sound Meter also performs data logging in csv format. The settings for data logging are:

A-weighted measurement type.

Sampling rate = 2 seconds.

Averaging set to Slow.

# **Procedure**

Immediately after datalogging, the Sound Level Meter reading is verified with a Calibrator (94dB @ 1000 Hz).

Sound Level data logged in this method:

- Log data at Location A for 2 minutes.
- Pause data logging.
- Move Sound Meter to Location B.
- Log data for 2 minutes.
- Continue in this manner for all 8 Locations.

## **Operating Mode:**

- EUT fans running
  - o data was logged from each location
  - Ambient measurements were >15dB below operating measurements and are not material to the measurements according to ISO 3744 – 2010.

<sup>\*</sup>Data collected with an Extech Sound Level Meter, Model SDL600. Calibrator is Extech Model ND9.



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# **Data Summary:**

Two-minute data collection averaged into a single value.

Location	with Louvers	With Vent Ducts on Input and Output
Α	92.9	78.5
В	89.7	79.3
С	82.1	75.6
D	83.6	74.2
E	85.5	76.9
F	82.1	74.2
G	79.5	74.0
Н	85.3	79.3
Average	85.1	76.5

# Data:

Raw data files are on file but not provided in this Report.



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# Sound Level Report – Ninja Effectiveness of Hoods

Inverter Model: PVU-0840GR

Inverters Tested: PVU-0840GR; 4 per skid, 5 skids

Project: Sound Level Report

Location: In-Situ

Dates of tests: August 25, and September 1, 2020

Report By: Bryan Hardman
Last revision: 11 September 2020

Tested By: Bryan Hardman

# Overview:

The effectiveness of the sound reducing hoods for the Ninja Inverter was to be verified by In Situ testing.

The Sound Level of the Model PVU-0840GR inverters, configured in 4 units per skid was to be measured first with factory louvers installed, then measured again with retro-fitted factory Sound reducing hoods installed.

Testing was conducted according to the methods detailed in ISO 3744 – 2010, only modified to accommodate In-Situ testing at 1 meter.

# **Results:**

The installation of the vent hoods reduced the sound level as detailed in this Report.



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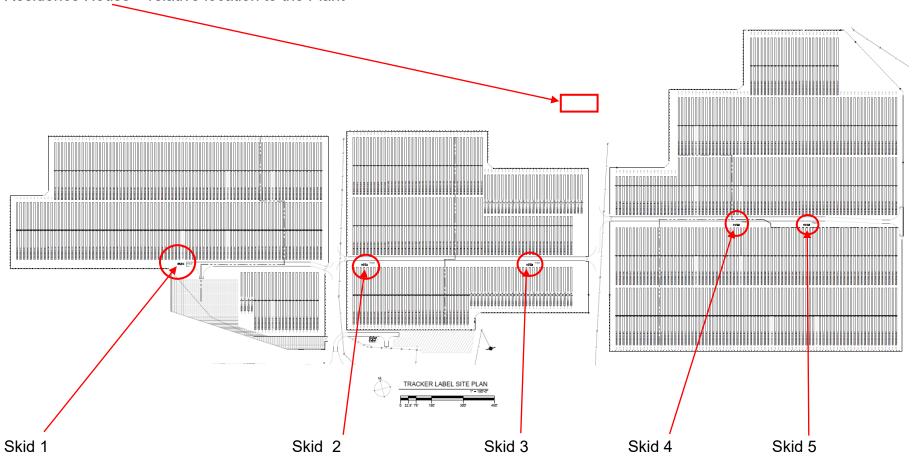
# **Summary of Findings**

Location	Before (with Louvers)	After (with Hoods)
Skid 1	93.2	83.0
Skid 2	95.0	83.3
Skid 3	93.4	83.6
Skid 4	92.5	84.6
Skid 5	92.7	84.6
Residence	49.8	47.1



# **General Site Layout**

Residence House – relative location to the Plant





# Skid configuration (typical of all 5) with Factory installed Louvers

# Fig. 1:





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## Skid configuration (typical of all 5) with Sound Reducing Hoods installed (retrofitted)

Fig. 2:





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## Set-Up

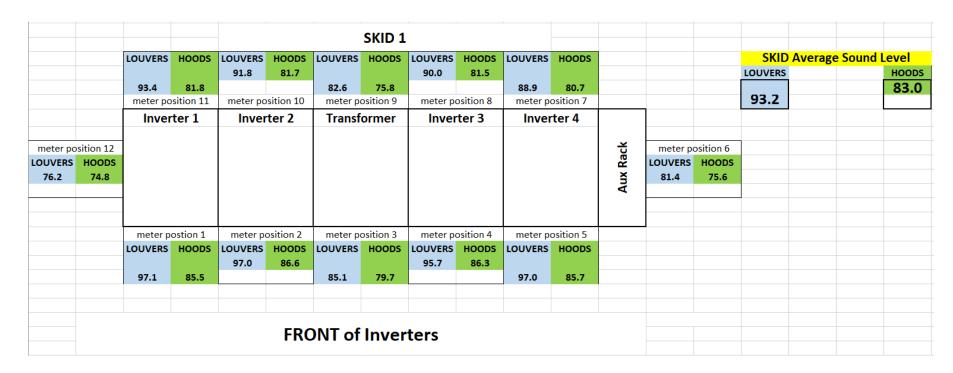
All measurements were made In-Situ. The Sound Meter was positioned 1 meter high and 1 meter from the Intake or Exhaust of each unit, or the end of skid or Transformer.

Fig. 3



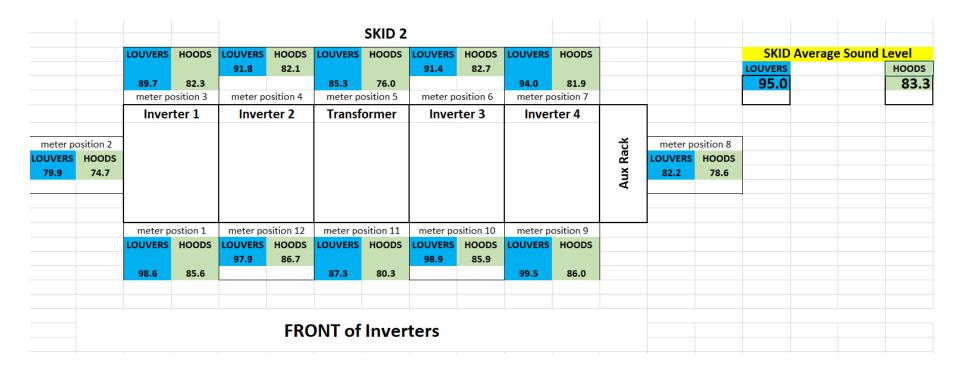


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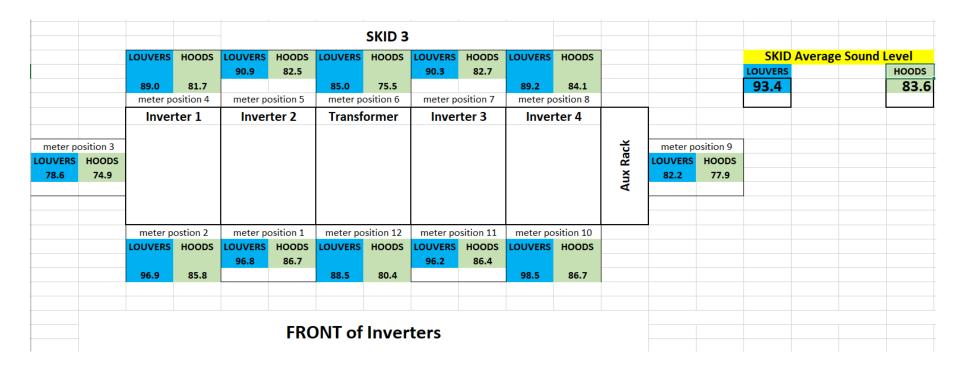


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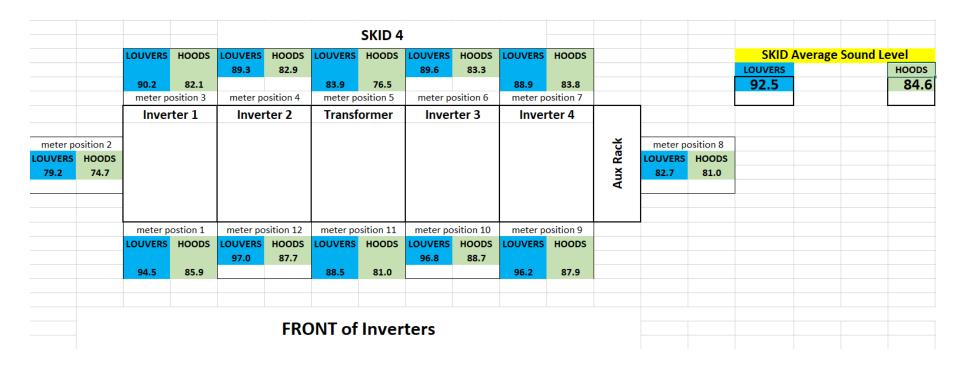


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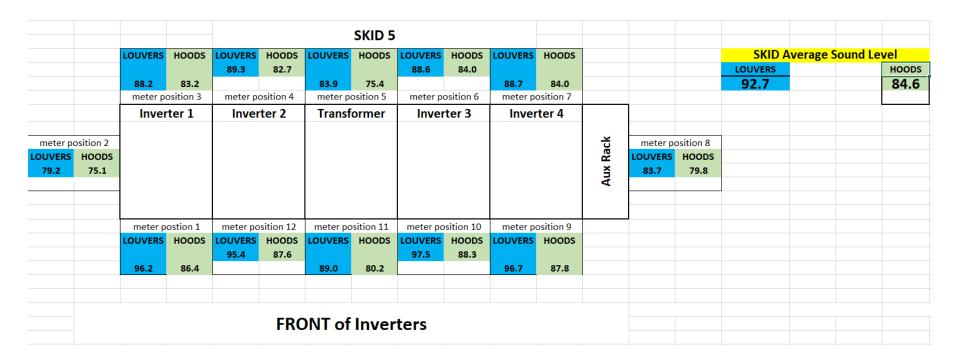


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### **General position of testing close to Residence House:**



Position 1 At property flag facing SW, toward skid 3

Position 2 In road to house – facing SW, toward skid 3

Position 3 At fence facing SE, toward skid 4



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### **Data - Residence House:**

### **Overall sound level at Residence House**

With Louvers	With Hoods
49.8 dB	47.1 dB

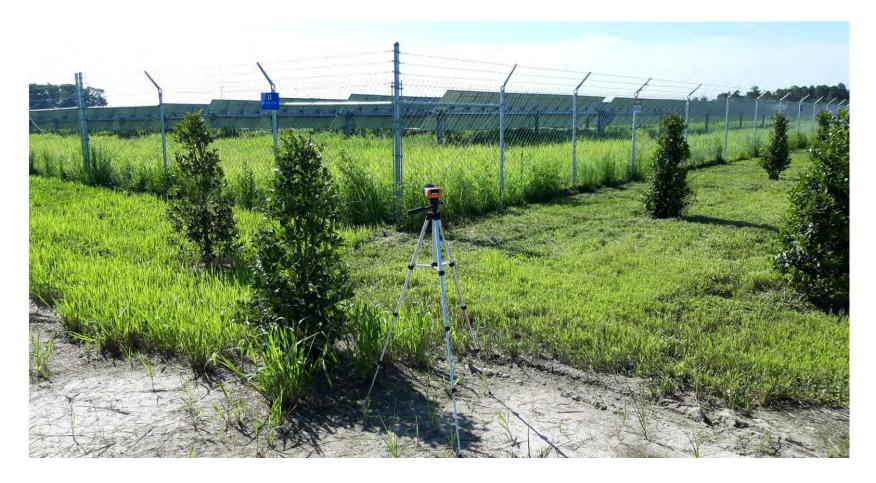
### Sound level at each location by Residence House

Location	With Louvers	With Hoods
Position 1 At property line flag – facing SW toward Skids 2 and 3	49.4	47.0
Position 2 In road to property – facing SW toward Skids 2 and 3	49.3	47.6
Position 3 At property line fence – facing SE toward Skids 4 and 5	50.5	46.6



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## **Set-up of Sound Meter facing SE toward Skids 4 and 5:**





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### **Test Method**

### **Sound Data-Logger settings:**

The Sound Meter also performs data logging in csv format. The settings for data logging are:

A-weighted measurement type.

Sampling rate = 2 seconds.

Averaging set to Slow.

### **Procedure**

Immediately prior to datalogging, the Sound Level Meter reading is verified with a Calibrator (94dB @ 1000 Hz).

Sound Level data logged in this method:

- Log data at first position for 2 minutes.
- · Pause data logging.
- Move Sound Meter to second position.
- Log data for 2 minutes.
- Continue in this manner for all positions.

### **Operating Mode:**

All inverters were operating at full Rated Output.



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### **Data Summary Method:**

Method for a single Skid (or the Residence House):

- Data is recorded at each Position for 2 minutes, at a rate of one sample every 2 seconds.
- The first 55 recorded values at each measurement Position is then Averaged into a single value.
- Each of these Position values are entered into Equation 12 from ISO 3744 2010:

### Equation (12):

$$\overline{L'_{p(ST)}} = 10 \text{ lg} \left[ \frac{1}{N_{M}} \sum_{i=1}^{N_{M}} 10^{0,1 \, L'_{pi(ST)}} \right] dB$$

where

 $L'_{pi(ST)}$  is the frequency-band or A-weighted time-averaged sound pressure level measured at the *i*th microphone position or *i*th microphone traverse with the noise source under test (ST) in operation, in decibels;

 $N_{
m M}$  is the number of microphone positions or individual microphone traverses.

 The result is the Averaged Sound Level for each Skid (or Residence House).



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## **Appendix A – Test Equipment:**



- Extech Sound Level Meter, Model SDL600.
- Calibrator Extech Model ND9.



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### **Appendix B – Calibration Certificate for Sound Meter:**





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### DATA SHEET

CUSTOMER: TMEIC

ID#: 343282

WORK ORDER #: 2020006567

MANUFACTURER: Extech

MODEL: SDL600

**DESCRIPTION:** Sound Level Meter

SERIAL NO: 343282

Reviewed	Ву:	Brian	Hood

Date: 7/20/2020

Function/Range	Nominal	Minimum	As Found	Maximum	As Left
dB/Auto	94	92.6	95.1	95.4	93.9
Mode - Slow	114	112.6	115.2	115.4	114.2
Weighting - A				17.00	1,17-4

Manufacturer's Specified Accuracy: ±1.4 dB
All readings are within specifications unless otherwise indicated in
Unless otherwise indicated, As Left reading is As Found.
Adjusted to improve.

ID# 343282 - Extech SDL600

### **NEMA Standards Publication TR 1-2013 (R2019)**

Transformers, Step Voltage Regulators and Reactors

Published by:

National Electrical Manufacturers Association 1300 North 17<sup>th</sup> Street, Suite 900 Rosslyn, VA 22209

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#### **FOREWORD**

This foreword is not part of NEMA TR1-2013 Transformers, Step Voltage Regulators, and Reactors.

The Standards appearing in this publication have been developed by the Transformer Section and have been approved for publication by the National Electrical Manufacturers Association. They are used by the electrical industry to promote production economies and to assist users in the proper selection of transformers.

The Transformer Section is working actively with the IEEE Committee, C57 on Transformers, Regulators, and Reactors, in the development, correlation, and maintenance of national Standards for transformers. This Committee operates under the procedures both the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE).

It is the policy of the NEMA Transformer Section to remove material from the NEMA Standards publication as it is adopted and published in the IEEE C57 series Standards. The NEMA Standards publication for Transformers, Regulators, and Reactors references these and other American National Standards applying to transformers and is intended to supplement without duplication both the American National and IEEE Standards.

The NEMA Standards publication for transformers, regulators, and reactors contains a provision for the following:

- a. IEEE and American National Standards adopted by reference and applicable exceptions approved by NEMA if any.
- b. NEMA Official Standards Proposals—These are official drafts of proposed Standards developed within NEMA or in cooperation with other interested organizations, for consideration by ANSI and IEEE. They have a maximum life of ten years, during which time they must be revised as American National Standards, IEEE Standards, or adopted as NEMA Standards, or rescinded.
- Manufacturing Standards—These are NEMA Standards which are primarily of interest to the manufacturers of transformers and which are not yet included in an American National or IEEE Standards.
- d. Standards Which Are Controversial—These are NEMA Standards, on which there is a difference of opinion within Committee C57. The NEMA version will be included in the NEMA Standards publication until such time as the differences between ANSI, IEEE, and NEMA are resolved.

NEMA Standards publications are subject to periodic review and take into consideration user input. They are being revised constantly to meet changing economic conditions and technical progress. Users should secure the latest editions. Proposed or recommended revisions should be submitted to:

Megan Hayes, Technical Director, Operations National Electrical Manufacturers Association 1700 13<sup>th</sup> Street, Suite 900 Rosslyn, VA 22209 NEMA TR 1-2013 (R2019) Page ii

This Standards publication was developed by the Transformer Products Section of the National Electrical Manufacturers Association. Section Approval of the Standard does not necessarily imply that all section members voted for its approval or participated in its development. At the time it was approved, the Section was composed of the following members:

ABB, Inc.

**Eaton Power Systems** 

Emerson Federal Pacific

Hammond Power Solutions, Inc.

**Hubbell Acme** 

Jinpan International USA MGM Transformer Company Mitsubishi Electric Power Products

PDI - ONYX Power Inc.

R.E. Uptegraff Schneider Electric Siemens Industry SPX Transformers VanTran Industries WEG Electric Corp.

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### Scope

This Standards publication applies to single phase and polyphase power and distribution transformers (including step-voltage regulators and reactors). This Standard excludes dry type transformers covered by NEMA ST20. This publication provides a reference list of applicable ANSI and IEEE C57 Standards.

In addition, this publication includes certain NEMA Standard test methods, test codes, properties, etc. of liquid-immersed transformers, step-voltage regulators, and reactors that are not IEEE Standards.



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### Part 0 General

The following IEEE and 10 CFR Standards are applicable references and should be inserted in this part:

IEEE Std. C57.12.00-2010	IEEE Standard for General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers
IEEE Std. C57.12.01	IEEE Standard General Requirements for Dry-Type Distribution and Power Transformers including those with Solid-Cast and/or Resin-Encapsulated windings
IEEE Std. C57.12.10	IEEE Standard Requirement for Liquid-Immersed Power Transformers
IEEE Std. C57.12.70	IEEE Standard for Standard Terminal Markings and Connections for Distribution and Power Transformers
IEEE Std. C57.12.90	Distribution and Power Transformers
IEEE Std. C57.12.90	IEEE Standard Test Code for Liquid-immersed Distribution, Power & Regulating Transformers
IEEE Std. C57.19.00	IEEE Standard Test Code for Dry-Type Distribution and Power Transformers
IEEE Std. C57.19.01	IEEE Standard General Requirements and Test Procedure for Power Apparatus Bushings
National I	IEEE Standard Performance Characteristics & Dimensions for Outdoor Apparatus Bushings
10 CFR 429	IEEE Guide for Loading Mineral-oil-immersed Transformers and Step-Voltage Regulators
10 CFR 431	Part 429-Certification, Compliance, and Enforcement for Consumer Products and Commercial and Industrial Equipment
	Part 431- Energy Efficiency Program for Certain Commercial and Industrial Equipment

The NEMA Standards TR 1-0.01 through TR 1-0.03 on the following pages (see Part 0, Pages 2-3) also generally apply to transformers.

### 0.01 Preferred Voltage Ratings

Preferred system voltages and corresponding transformer voltage ratings are given in the American National Standard for Electric Power Systems and Equipment-Voltage Ratings (60 Hz); C84.1. It is recommended that these ratings be used as a guide in the purchase and operation of transformers.

### 0.02 Preferred Forced-Air and Forced-Liquid Ratings

Preferred forced-air and forced-liquid ratings are given in section 4 Table 1 of IEEE Std. C57.12.00-2010. It is recommended that these ratings be used as a guide in the purchase and operation of transformers.

#### 0.03 Audible Sound Levels

Transformers shall be so designed that the average sound level will not exceed the values given in Tables 0-1 through 0-2 when measured at the factory in accordance with the conditions outlined in IEEE Std. C57.12.90.

The guaranteed sound levels should continue to be per Tables 1 through 2 until such time as enough data on measured noise power levels becomes available.

Sound pressure levels are established and published in this document. Sound power may be calculated from sound pressure using the method described in C57.12.90.

Rectifier, railway, furnace, grounding, mobile, and mobile unit substation transformers are not covered by the tables. The tables do not apply during operation "of" on load tap changers in power transformers and step-voltage regulators.

For audible sound levels of dry-type transformers 15000-Volt nominal system voltage and below the tables listed in the IEEE C57.12.01 Standard are applicable references.

National Electrical Manufacturers Association

Table 1 **Audible Sound Levels for Oil-Immersed Power Transformers** 

Average								Equivalent	Two-Win	ding Ratin	g*							
Sound Level tt.	350 kV BIL and Below			450, 550, 650 kV BIL		750 and 825 kV BIL		900 and 1050 kV BIL		1175 kV BIL		-	1300 kV BIL. and Above		Above			
Decibels	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
57	700																	
58	1000																	
59				700														
60	1500			1000														
61	2000																	
62	2500			1500														<del>                                     </del>
63	3000			2000														
64	4000			2500														
65	5000			3000														
66	6000			4000			3000											
67	7500	6250▲▲		5000	3750▲▲		4000	3125▲ ▲										
68	10000	7500		6000	5000		5000	3750										
69	12500	9375		7500	6250		6000	5000										
70	15000	12500		10000	7500		7500	6250					(8					
71	20000	16667		12500	9375		10000	7500										
72	25000	20000	20800	15000	12500		12500	9375				7 -						
73	30000	26667	25000	20000	16667		15000	12500		12500								
74	40000	33333	33333	25000	20000	20800	20000	16667		15000			12500					
75	50000	40000	41687	30000	26667	25000	25000	20000	20800	20000	16667		15000			12500		
76	60000	53333	50000	40000	33333	33333	30000	26667	25000	25000	20000	20800	20000	16667		15000		
77	80000	66687	66667	50000	40000	41667	40000	33333	33333	30000	26667	25000	25000	20000	20800	20000	16667	
78	100000	80000	83333	60000	53333	50000	50000	40000	41667	40000	33333	33333	30000	26667	25000	25000	20000	20800
79		106667	100000	80000	66667	66667	60000	53333	50000	50000	40000	41667	40000	33333	33333	30000	26667	25000
80		133333	133333	100000	60000	83333	80000	66667	66667	60000	53333	50000	50000	40000	41667	40000	33333	33333
81			166667		106667	100000	100000	80000	83333	80000	66667	66667	60000	53333	50000	50000	40000	41667
82			200000		133333	133333		106867	100000	100000	80000	83333	80000	66667	66667	60000	53333	50000
83			250000			166667		133333	133333		10686	100000	100000	80000	83333	80000	66667	68667
84			300000			200000			166667		13333	133333		106667	100000	100000	80000	83333
85		1	400000			250000			200000			166667		133333	133333		106667	100000
86						300000			250000			200000			166667		133333	133333
87						400000			300000			250000			200000			168667
88		1							400000			300000			250000			200000
89		1						1				400000			300000			250000
90		1									<del>                                     </del>				400000			300000
91																		400000

Column 1 • Class\*ONAN. ONWN and OFWF Rating\*

Column 2 • Class\* ONAF and ODAF First stage Auxiliary Cooling"t Column 3 • Straight OFAF Ratings, ONAF \* and ODAF \* Second stage Auxiliary Cooling"t Classes of cooling, see section 5.1 IEEE Std. C57.12-2010

<sup>&</sup>quot;First- and second stage auxiliary cooling, see section 4 Table 1 of IEEE Std. C57-12-2010 f For column 2 and 3 ratings, the sound levels are with the auxiliary cooling equipment in operation. tf For intermediate kVA ratings, use the average sound level of the next larger kVA rating.

▲ The equivalent two-winding 55°C or 65°C rating is defined as one-half the sum of the kVA rating of all windings

▲ Sixtv-seven decibels for all kVA ratings equal to this or smaller.

Table 2
Audible Sound Levels for Liquid-Immersed
Network Transformers and Step-Voltage Regulators

Equivalent Two-Winding kVA	Average Sound Level Decibels
0-50	48
51-100	51
101-300	55
301-500	56
501-750	57
751-1000	58
1001-1500	60
1501-2000	61
2001-2500	62
2501-3000	63



# Part 1 Power Transformers

The IEEE Std. C57.12.10 is an applicable reference Standard for power transformers and should be inserted in this Part 1.

The IEEE Std. C57.91 is an applicable reference Standard and should be inserted in this Part 1.

The following other parts of this edition of NEMA TR 1 shall also apply for power transformers.

- a. Part 0 General
- b. Part 9 Terminology
- c. Part 10 Test Code



# Part 2 Substation And Distribution Step-Voltage Regulators

The following IEEE Standards are applicable references for substation and distribution step-voltage regulators and should be inserted in this Part 2:

IEEE Std. C57.15	IEEE Standard Requirements, Terminology, and Test Code for Step- Voltage Regulators
IEEE Std. C37.90-1	IEEE Standard for Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus
IEEE Std. C37.90.2	IEEE Standard for Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers
IEEE Std. C37.90.3	IEEE Standard Electrostatic Discharge Tests for Protective Relays
IEEE Std. C57.12.31	IEEE Standard for Pole-Mounted EquipmentEnclosure Integrity
IEEE Std C57.91	IEEE Guide for Loading Mineral-Oil-Immersed Transformers and Step-Voltage Regulators
IEEE Std. C57.98	IEEE Guide for Transformer Impulse Tests
IEEE Std. C57.131	IEEE Standard Requirements for Tap Changers

# Part 3 Distribution Transformers

The following IEEE Standards are applicable references for distribution transformers and should be inserted in this Part 3:

IEEE Std. C57.12.20	IEEE Standard for Overhead-Type Distribution Transformers, 500 kVA and Smaller: High Voltage, 34500 Volts, and Below; Low Voltage, 7970/13800Y Volts, and Below
IEEE Std. C57.12.23	IEEE Standard for Submersible Single-Phase Transformers: 167 kVA and Smaller, High-Voltage 25000 V and Below; Low-Voltage 600 V and Below
IEEE Std. C57.12.24	IEEE Standard for Submersible, Three-Phase Transformers, 3750 kVA and Smaller: High Voltage, 34500 GrdY/19920 Volts, and Below; Low Voltage, 600 Volts, and Below
IEEE Std. C57.12.29™	IEEE Standard for Pad-Mounted Equipment-Enclosure Integrity for Coastal Environments
IEEE Std. C57.12.30™	IEEE Standard for Pole-Mounted Equipment-Enclosure Integrity for Coastal Environments
IEEE Std. C57.12.31™	IEEE Standard for Pole-Mounted Equipment-Enclosure Integrity
IEEE Std. C57.12.32™ (	IEEE Standard for Submersible Equipment- Enclosure Integrity
IEEE Std. C57.12.34™	IEEE Standard for Requirements for Pad-Mounted, Compartmental-Type, Self-Cooled, Three-Phase Distribution Transformers, 5 MVA and Smaller; High Voltage, 34.5 kV Nominal System Voltage and Below; Low Voltage, 15 kV Nominal System Voltage and Below.
IEEE Std. C57.12.35™	IEEE Standard for Bar Coding for Distribution Transformers and Step-Voltage Regulators
IEEE Std. C57.12.36™	IEEE Standard Requirements for Liquid-Immersed Distribution Substation Transformers
IEEE Std. C57.12.38™	IEEE Standard for Pad-Mounted-Type, Self-Cooled, Single-Phase Distribution Transformers; High Voltage, 34 500 GrdY/19 920 V and below, Low Voltage, 240/120 V; 167 kVA and smaller
IEEE Std. C57.105™	IEEE Guide for Application of Transformer Connections in Three-Phase Distribution Systems

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The following other parts of this edition of NEMA TR 1 shall apply for distribution transformers:

- a. Part 0 General
- b. Part 9 Terminology
- c. Part 10 Test Code

### 3.01 Design Test for Enclosure Security of Padmounted Compartmental Transformers

The following IEEE Standards provide a means for evaluating the security of enclosures for transformers.

IEEE Std. C57.12.28™	IEEE Standard for Pad-Mounted Equipment - Enclosure Integrity
IEEE Std. C57.12.34™	IEEE Standard for Requirements for Pad-Mounted, Compartmental- Type, Self-Cooled, Three-Phase Distribution Transformers, 5 MVA and Smaller; High Voltage, 34.5 kV Nominal System Voltage and Below; Low Voltage, 15 kV Nominal System Voltage and Below.
IEEE Std. C57.12.38™	IEEE Standard for Pad-Mounted-Type, Self-Cooled, Single-Phase Distribution Transformers; High Voltage, 34 500 GrdY/19 920 V and Below, Low Voltage, 240/120 V; 167 kVA and Smaller



# Part 4 Secondary Network Transformers

The American National Standard Requirements for C57.12.40 *Secondary Network Transformers, Subway and Vault Types (Liquid Immersed)*, (with the exception of paragraphs 5.5.4 and 11.5.2 on finishes) is an applicable reference for secondary network transformers and should be inserted in this Part 4.

The following other parts of this edition of NEMA TR 1 shall also apply for secondary network transformers.

- a. Part 0 Generalb. Part 9 Terminology
- c. Part 10 Test Code



# Part 5 Dry-Type Transformers

The following IEEE/NEMA Standards are applicable references for dry-type transformers and should be inserted in this Part 5:

IEEE Std. C57.12.01	IEEE Standard General Requirements for Dry-Type Distribution and Power Transformers Including Those with Solid Cast and/or Resin-Encapsulated Windings
IEEE Std. C57.12.91	IEEE Standard Test Code for Dry-Type Distribution and Power Transformers
IEEE Std. C57.12.50	Requirements for Ventilated Dry-Type Distribution Transformers, 1 to 500 kVA, Single-Phase; and 15 to 500 kVA, Three-Phase; With High-Voltage 601-34500 Volts, Low-Voltage 120-600 Volts
IEEE Std. C57.12.51	IEEE Standard for Ventilated Dry-Type Power Transformers, 501 kVA and Larger, Three-Phase, With High-Voltage 601-34500 Volts, Low-Voltage 208Y/120V to 4160V-General Requirements
IEEE Std. C57.12.52	IEEE Standard for Sealed Dry-Type Power Transformers, 501 kVA and Larger, Three-Phase, With High-Voltage 601-34500 Volts, Low-Voltage 208Y/120V to 4160V-General Requirements
IEEE Std. C57.94	IEEE Recommended Practices for Installation, Application, Operation and Maintenance of Dry-Type General Purpose Distribution and Power Transformers
IEEE Std. C57.96	Guide for Loading Dry-Type Distribution and Power Transformers
NEMA ST 20	Dry Type Transformers for General Applications

# Part 6 Substation Transformers

The following other parts of this edition of NEMA TR 1 shall also apply for substation transformers.

- a. Part 0 General
- b. Part 9 Terminology
- c. Part 10 Test Code



# Part 7 Arc Furnace Transformers

The following other parts of this edition of NEMA TR 1 shall also apply for arc furnace transformers.

- a. Part 0 General
- b. Part 9 Terminology
- c. Part 10 Test Code



# Part 8 Shunt Reactors

The IEEE Std. C57.21 is an applicable reference and should be inserted in this Part 8.

To facilitate safe and effective operation and consistency of reporting for all shunt reactor transformers, it is recommended that the information listed this IEEE Standard be included in the test report for every shunt reactor transformer.



### Part 9

### **Terminology**

The ANSI/IEEE Std. C57.12.80- is an applicable reference for terminology and should be inserted in this Part 9.



### Part 10 Test Code

The following IEEE Standards are applicable references for transformer test codes and should be inserted in this Part 10:

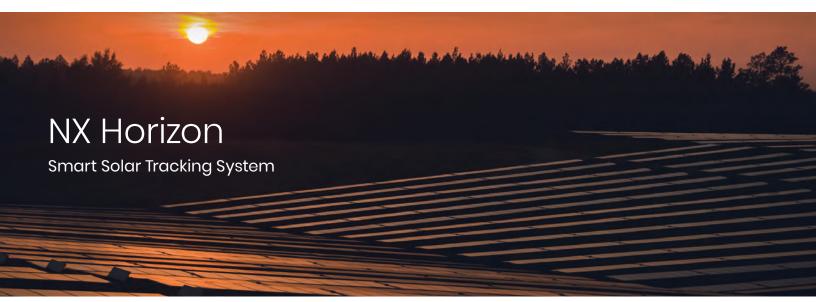
IEEE Std. C57.12.90™	IEEE Standard Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers
IEEE Std. C57.12.91	IEEE Standard Test Code for Dry-Type Distribution and Power Transformers
IEEE Std. C57.13™	IEEE Standard Requirements for Instrument Transformers
IEEE Std. C57.98™	IEEE Guide for Transformer Impulse Tests

To facilitate safe and effective operation and consistency of reporting for all power and distribution transformers, it is recommended that the information listed in the IEEE Std. C57.12.00-2010, section 8.7 be included in the test report for every transformer.

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Serving as the backbone on over 35 gigawatts of solar power plants around the world, the NX Horizon™ smart solar tracker system combines best-in-class hardware and software to help EPCs and asset owners maximize performance and minimize operational costs.

### Flexible and Resilient by Design

With its self-aligning module rails and vibration-proof fasteners, NX Horizon can be easily and rapidly installed. The self-powered, decentralized architecture allows each row to be commissioned in advance of site power, and is designed to withstand high winds and other adverse weather conditions. On a recent 838 megawatt project in Villanueva, Mexico, these design features allowed for the project to go online nine months ahead of schedule.

### TrueCapture and Bifacial Enabled

Incorporating the most promising innovations in utility scale solar, NX Horizon with TrueCapture™ smart control system can add additional energy production by up to six percent. Further unlocking the advantages of independent-row architecture and the data collected from thousands of sensors across its built-in wireless network, the software continuously optimizes the tracking algorithm of each row in response to site terrain and changing weather conditions. NX Horizon can also be paired with bifacial PV module technology, which can provide even more energy harvest and performance. With bifacial technology, NX Horizon outperforms conventional tracking systems with over 1% more annual energy.

### Quality and Reliability from Day One

Quality and reliability are designed and tested into every NX Horizon component and system across our supply chain and manufacturing operations. Nextracker is the leader in dynamic wind analysis and safety stowing, delivering major benefits in uptime and long-term durability NX Horizon is certified to UL 2703 and UL 3703 standards, underscoring Nextracker's commitment to safety, reliability and quality.

### Features and Benefits

### **5 years** in a row

Global Market Share Leader (2015-18)

### **35** GW

Delivered on 5 Continents

### **Best-in Class**

Software Ecosystem and Global Services

### **Up to 6%**

Using TrueCapture Smart Control System

GENERAL AND MECHANICAL					
Tracking type	Horizontal single-axis, independent row.				
String voltage	1,500 V <sub>DC</sub> or1,000 V <sub>DC</sub>				
Typical row size	78-90 modules, depending on module string length.				
Drive type	Non-backdriving, high accuracy slew gear.				
Motor type	24 V brushless DC motor				
Array height	Rotation axis elevation 1.3 to 1.8 m / 4'3" to 5'10"				
Ground coverage ratio (GCR)	Configurable. Typical range 28-50%.				
Modules supported	Mounting options available for virtually all utility-scale crystalline modules, First Solar Series 6 and First Solar Series 4.				
Bifacial features	High-rise mounting rails, bearing + driveline gaps and round torque tube.				
Tracking range of motion	Options for ±60° or ±50°				
Operating temperature range	SELF POWERED: -30°C to 55°C (-22°F to 131°F) AC POWERED: -40°C to 55°C (-40°F to 131°F)				
Module configuration	1 in portrait. 3 x 1,500 V or 4 x 1,000 V strings per standard tracker. Partial length trackers available.				
Module attachment	Self-grounding, electric tool-actuated fasteners.				
Materials	Galvanized steel				
Allowable wind speed	Configurable up to 225 kph (140 mph) 3-second gust				
Wind protection	Intelligent wind stowing with symmetric dampers for maximum array stability in all wind conditions				
Foundations	Standard W6 section foundation posts				

Solar tracking method	Astronomical algorithm with backtracking. TrueCapture™ upgrades available for terrain adaptive backtracking and diffuse tracking mode			
Control electronics	NX tracker controller with inbuilt inclinometer and backup battery			
Communications	Zigbee wireless communications to all tracker rows and weather stations via network control units (NCUs)			
Nighttime stow	Yes			
Power supply	SELF POWERED: NX provided 30 or 60W Smart Panel AC POWERED: Customer-provided 120-240 VAC circut			

**ELECTRONICS AND CONTROLS** 

INSTALLATION, OPERATIONS AND SERVICE				
PE stamped structural calculations and drawings	Included			
Onsite training and system commissioning	Included			
Installation requirements	Simple assembly using swaged fasteners and bolted connections. No field cutting, drilling or welding.			
Monitoring	NX Data Hub™ centralized data aggregation and monitoring			
Module cleaning compatibility	Compatible with NX qualified cleaning systems			
Warranty	10-year structural, 5-year drive and control components.			
Codes and standards	UL 3703 / UL 2703 / IEC 62817			



# MARTY MARCHATERRE Page 74 of 91 SENIOR ENVIRONMENTAL PLANNER

### Regulatory Expertise

- NEPA
- CWA
- RCRA
- NHPA
- ESA
- CAA

### Industry/Agency Clientele

- Solar
- Pipelines
- Utilities/Traditional Energy Sources
- US Air Force
- National Guard
- US Fish and Wildlife Service
- Forest Service
- Nuclear Regulatory Commission
- Corresponding State Agencies
- FHWA & State DOTs
- FRA
- FTA
- TVA
- Academic Institutions & NGOs

### Qualifications/Registrations

- Virginia Bar Association, Environmental Law Section
- District of Columbia Bar Association, Environmental, Energy and Natural Resources Section
- Lexington Environmental Commission
- Lexington Community Land Trust
- Town Branch Trail, Inc.
- Paint Lick Watershed Alliance

### **Trainings**

- NEPA and the Transportation Decision-Making Process
- Public Involvement in Transportation Decision-Making
- Conducting Quality Cumulative Impact Analysis
- Context Sensitive Design
- Land Use Planning
- Environmental Justice
- Watershed-Based Planning
- ODOT Noise Analysis
- Federal Energy Regulatory Commission Environmental Review and Compliance for Natural Gas Facilities
- Regulatory Issues and Renewable Energy Facilities



### Qualifications and Background

Mr. Marchaterre has significant environmental, regulatory, and permitting experience, and has overseen development of NEPA environmental documentation and supporting studies. He has been involved in more than 80 EISs, EAs, and CEs. Mr. Marchaterre has managed permitting, quality studies, noise analyses, socioeconomic baseline studies, land use analyses, conservation and historic preservation analyses, community impact assessments, Phase hazardous materials site assessments, biological assessments, wetlands delineations, environmental justice, cumulative impacts, and public involvement activities. For the U.S. Environmental Protection Agency, he provided support to the National Environmental Justice Advisory Committee for two years.

### Education

- **J.D. 1988**, College of William and Mary, Williamsburg, Virginia
- **B.A.** History and Political Science, 1985, Williams College, Williamstown, Massachusetts
- Williams-Mystic American Maritime Program, 1985

### Selected Project Experience

### **Tennessee Valley Authority**

### Wilson Dam Bridge Deck Refurbishment EA. Tennessee Valley Authority, Alabama.

Project manager for an environmental assessment analyzing the potential impacts resulting from refurbishment of the Wilson Dam bridge Deck spanning Pickwick Reservoir and connecting Colbert and Lauderdale counties, Alabama. Authored multiple resource sections and coordinated directly with TVA NEPA and project management team.

### Kingston Fossil Plant Wastewater Treatment Facility EA. Tennessee Valley Authority, Tennessee.

Assistant Project Manager for an environmental assessment addressing installation of new wet flue gas desulfurization wastewater treatment facilities and modification of existing processes at Kingston Fossil Plant to enhance wastewater quality. Authoring resource sections and responsible for senior-level NEPA support and QA/QC.

### Natural Resource Plan Supplemental EIS. Tennessee Valley Authority, Tennessee.

Assistant Project Manager for a supplemental EIS analyzing the implementation of a revised Natural Resource Plan covering 293,000 acres of TVA reservoir land. TVA manages 154 natural areas and conducts specific management activities compatible with the goals for each area. Providing technical review of draft resource sections, working with subject matter experts, and reviewing drafts of the Supplemental EIS.

Riverton Development Project EA. Tennessee Valley Authority, TN. Assistant project manager for an EA analyzing issuance of a shoreline construction permit associated with the proposed Riverton mixed-use development in Chattanooga, Tennessee. The permit would be issued under Section 26(a) of the TVA Act to allow Riverton to install floating residential boat docks and place riprap along the shoreline of the Nickajack Reservoir. Key issues included floodplain alteration, cultural and tribal resources, potential impacts on the NRHP-listed Chickamauga Dam Reservation, and conversion of a natural setting to one with mixed residential and commercial uses.

Chickamauga Law Enforcement Training Center Easement EA. Tennessee Valley Authority, TN. Assistant project manager for an EA analyzing issuance of an easement and land use permit for development of a law enforcement training center on TVA land near Chattanooga, Tennessee. Key issues include avoidance of cultural resources and federally listed species, potential impacts on the NRHP-listed Chickamauga Dam Reservation, and impacts on transportation and noise. Required close coordination with TVA archaeologist and botanist.

Clean Water Act Section 401 Permitting Tool for TVA Natural Resources Group, Tennessee. Assistant project manager responsible for developing a new tool to ensure TVA Section 26(a) permitting is consistent with state requirements for Clean Water Act Section 401 water quality certifications and U.S. Army Corps of Engineers Section 404 permits. Required clear and accurate identification of differing permitting processes across seven states (Alabama, Georgia, Kentucky, Mississippi, North Carolina, Tennessee, and Virginia) and three Corps districts (Nashville, Savannah, and Memphis).

### TVA Programmatic EIS for Closure of Ash Impoundments in Alabama, Kentucky, and Tennessee.

For TVA, helped prepare the EIS for the closure of ash impoundments as a result of new US EPA coal combustion residuals requirements and TVA's goal to close wet ash storage facilities. The EIS evaluated the potential effects of multiple closure alternatives. Prepared scoping report and participated in five public meetings held at different power plants. Supported public involvement and developed materials and posters for the public meetings. Drafted text for the programmatic component as well as the site-specific analysis for closing ten ash impoundments at six different fossil fuel plants. Prepared comment response document and Record of Decision.

### TVA Multiple Reservoir Land Management Plan EIS, Alabama, Kentucky and Tennessee.

For TVA, helped prepare the EIS for multiple reservoir land management plans (RLMPs) for 138,000 acres of TVA-managed public land on eight reservoirs. The updated RLMPs are needed to consider changes to land uses over time, to make land planning decisions on these eight reservoirs consistent with the TVA Land Policy and the Comprehensive Valleywide Land Plan and to incorporate TVA's goals for managing natural resources on public lands. Developed air quality, recreation, and cultural resource sections of the EIS, as well as provided technical review.

### EA/FONSI, Ash Dewatering Facility at Shawnee Fossil Plant, Tennessee Valley Authority, McCracken County, Kentucky.

Supported development of EA/FONSI for a bottom ash dewatering facility to help TVA convert from wet ash storage to dry storage. Evaluated project affects to parks and nearby wildlife management areas and water use. Potential visual impacts on historic resources were a concern.

### EIS for TVA Bull Run Fossil Plant Landfill, TN.

EIS Author and Technical Reviewer for preparation of an EIS to address the storage of coal combustion residuals (ash) generated at Bull Run Fossil Plant. Helped prepare draft sections of the EIS including hazardous materials and cultural resources components, as well as provided technical review of draft documents.

### TVA Muscle Shoals Reservation EA, Colbert County, AL.

Supported the environmental assessment on the proposed relocation and realignment of essential operations at the Muscle Shoals Reservation. The EA evaluated three alternatives: 1) no action; 2) construct a new facility on a Greenfield site; or 3) modify an existing facility on the Reservation to house the relocated essential operations. Developed text for the EA and provided technical review.

#### Solar

Site Characterization Study for Solar Energy Development. Confidential Client. Breckinridge County, Kentucky. Assistant Project Manager for a site characterization study analyzing a property in Breckinridge County, Kentucky, for possible development as a solar energy generating facility. The study included a desktop review of federal and state data pertaining to sensitive resources such as listed species, wetlands or other surface waters, prime farmland, karst topography, and public and protected lands. Copperhead staff then performed a one-day field verification to characterize vegetative communities, possible bat habitat, and the presence of jurisdictional waters. A summary report was provided to the client which outlined potential environmental concerns and presented a permitting matrix delineated by issuing agency, trigger, and timeline.

# Site Characterization Study for a Proposed Solar Energy Project. Confidential Client. Kentucky. Managed a site characterization study to identify potential environmental constraints associated with land cover/use, soils, wetlands and watercourses, farmland, threatened and endangered species, and other considerations. The study included a desktop assessment using publicly available databases and a field reconnaissance survey of the subject property.

Biological Assessment for Indiana Bats, Northern Long-eared Bats, and Bog Turtle. Confidential Client, New York. Managing the development of a biological assessment with adverse effects to bat habitat. Consultation with United States Fish and Wildlife to develop mitigation alternatives.

Site Characterization Study, Wetland Delineations, Phase I ESA, and Cultural Resources Overview for a Proposed Solar Project. Confidential Client. Kentucky. Managed site characterization studies, aquatic resources delineation, Phase I ESA, and cultural resources overview for solar project on an approximately

### COPPERHEAD

800-acre parcel in Garrard County, KY. The study included a desktop review of federal and state data pertaining to sensitive resources such as listed species, wetlands or other surface waters, prime farmland, karst topography, and public and protected lands. A wetland delineation identified and demarcated aquatic features that may be jurisdictional waters of the U.S. or isolated waters of the state.

Site Characterization Study, Wetland Delineations, Phase I ESA, and Cultural Resources Overview for a Proposed Solar Project. Confidential Client. Kentucky. Managed site characterization studies, aquatic resources delineation, Phase I ESA, and cultural resources overview for solar project on an approximately 800-acre parcel in Metcalfe County, KY. The study included a desktop review of federal and state data pertaining to sensitive resources such as listed species, wetlands or other surface waters, prime farmland, karst topography, and public and protected lands. A wetland delineation identified and demarcated aquatic features that may be jurisdictional waters of the U.S. or isolated waters of the state.

Three Solar Projects - Site Characterization Study, Wetland Delineations, Phase I ESA, and Cultural Resources Overview. Confidential Client. Kentucky. Managed desktop review and field studies to support development of site characterization studies, wetland delineations, Phase I ESAs, acoustical analyses, and cultural resource overviews. A site reconnaissance identified potential habitat for federally listed and state-listed at-risk species and identified areas of potential concern, such as cemeteries..

Acoustic Analysis for Multiple Solar Projects. Confidential Clients. Kentucky. Managed acoustical analyses for multiple projects. Described existing sound levels from the project site and surrounding areas as well as potential impacts from construction, operation, and maintenance activities. Provided a report of the findings of the acoustical analysis. The report will contain a summary of the project, describe existing sound conditions, identify potential sensitive receptors (e.g., residences), and evaluate potential construction and operation sound levels.

Critical Issues Analysis (CIA) for a Solar Facility. Confidential Client. Tennessee. Assistant project manager for development of a CIA. The CIA's goal is to gain a better understanding of the environmental issues that could potentially affect project development. Some of the resource areas Copperhead collected information on include vegetation communities and general wildlife, threatened and endangered species, migratory birds nests, soil types, and historic and cultural resources. The wetland/stream mapping's goal is to estimate how much of the Project Area may be wetlands as opposed to uplands and to identify anticipated buffer setbacks. The information gathered helps to inform Copperhead and the client about what regulations will need to be adhered to and what permits will need to be acquired.

Critical Issues Analysis (CIA) for a Solar Facility. Confidential Client. Mississippi. Assistant project manager for development of a CIA. The CIA's goal is to gain a better understanding of the environmental issues that could potentially affect project development. Some of the resource areas Copperhead collected information on include vegetation communities and general wildlife, threatened and endangered species, migratory birds nests, soil types, and historic and cultural resources. The wetland/stream mapping's goal is to estimate how much of the Project Area may be wetlands as opposed to uplands and to identify anticipated buffer setbacks. The information gathered helps to inform Copperhead and the client about what regulations will need to be adhered to and what permits will need to be acquired.

**Multiple Studies for Solar Facility. Confidential Client. Kentucky**. Project manager for a site characterization study, a wetlands delineation, an Approved Jurisdictional Determination (JD) from the US Army Corps of Engineers (USACE) Louisville District, a Phase I Environmental Site Assessment (ESA), cultural resource assessments, a threatened and endangered species habitat assessment, a preliminary geotechnical site characterization, and prepare an acoustical analysis.

#### COPPERHEAD ENVIRONMENTAL CONSULTING

Bat Conservation Plans for Solar Projects. Confidential Client. Virginia. Technical reviewer for multiple bat conservation plans to reduce potential impacts from solar projects on bat roosting, foraging, and commuting habitat.

### **Transportation**

Threatened and Endangered Species Habitat Assessments and Surveys, Bridging Kentucky Program, Kentucky Transportation Cabinet. Project Manager. Throughout Kentucky, Copperhead as subconsultant is tasked with providing environmental services including coordination for Threatened and Endangered Species (TES), assessment of potential habitat, preparation of biological assessments, programmatic agreement comments, and NEPA permit assistance (including Section 401/404 and U.S. Coast Guard Section 10) for the program to rehabilitate or replace over 1,000 bridges in the next six years. Screened over 400 bridges for environmental concerns and potential TES habitat. Conducting habitat assessments, mussel and fish surveys, and preparing permits, biological assessments, and no effect documentation.

### EA/FONSI, US 68, Bourbon-Nicholas Counties, Kentucky. Item No. 7-310.00.

Prepared an EA and individual Section 4(f) evaluation as well as baseline studies for this 13.3-mile project. Section 106 issues were a critical component due to over 50 historic sites and 2 historic districts. Seventeen alternates were considered to avoid or minimize impacts to historic sites and prime farmland. Section 401/404 and floodplain construction permits and stream mitigation required due to 10,000 feet of channel change. Developed a public involvement plan and participated in public meetings, a public hearing, and Section 106 consulting party meetings.

### EA/FONSI, East Nicholasville Bypass, Jessamine County, Kentucky.

Prepared an EA and managed the development of the FONSI for this 7-mile project. Managed the historic and archaeological studies of several farm sites. Due to potential impacts to a historic site, avoidance alternates were developed. Prepared socioeconomic, traffic noise and hazardous materials/underground storage tank studies and oversaw the other environmental base studies and addenda. Helped address concerns about economic impacts of developing the bypass and visual/noise concerns for residents. Supported citizen advisory committee meetings, public information meetings and the public hearing. Participated in the biological assessment for running buffalo clover, Indiana bat and gray bat.

#### EA/FONSI, US 60 Tennessee River Crossing, McCracken-Livingston Counties, Kentucky.

Managed preparation of the EA and Section 4(f) evaluation for the replacement of the historic George Rogers Clark Memorial Bridge and approaches. Oversaw minimization and mitigation efforts for wetlands, floodplains, historic bridge, and relocations.

#### EA/FONSI, US 119 (Partridge to Whitesburg), KYTC, Letcher County, Kentucky.

Project Manager. Managed preparation of two EAs and baseline studies for two connecting projects (14.8 miles in length). Managed public involvement activities (Pine Mountain Crossing Task Force, public meetings, and public hearings), and oversaw minimization and mitigation efforts for wetland, stream, floodplain, historic and relocation impacts. Due to numerous crossings of the Poor Fork of the Cumberland River and potential impacts to the Bad Branch Nature Preserve, Pine Mountain Wildlife Management Area, and a historic site, this project evaluated Section 4(f) impacts, numerous alternates, the potential impacts of 20 bridges, a 4.2-mile tunnel, and several waste areas. Managed the biological assessment for the Indiana bat, gray bat, and blackside dace. Participated in the Section 401 and 404 permitting process for wetland and stream impacts.



### Categorical Exclusion 2, Town Branch Trail Phase 6, Fayette County, Kentucky. Item No. 7-7310.00.

Project Manager for Town Branch Trail Phase 6 Categorical Exclusion. Conducted environmental studies and prepared environmental documents for the multi-use trail between McConnell Springs Drive on Old Frankfort Pike to Oliver Lewis Way. Participated in project and public meetings on the proposed trail and developed Section 4(f) evaluation of potential impacts on historic James McConnell House as well as dry laid retaining walls along Town Branch.

### Mitigation Support. Newtown Pike Extension, Fayette County. Kentucky. Item No. 7-593.00.

For the Community Land Trust, providing environmental justice advocacy for a low-income, minority neighborhood concerning EIS commitments and mitigation due to the Newtown Pike Extension. Reviewed environmental justice commitments, oversaw streetscape design work, examined traffic calming measures and plans for adjacent park, bike lanes, and bus transit facilities.

### Categorical Exclusion and Programmatic Section 4(f), US 25 (Williamstown), Grant County, Kentucky. Item No. 6-1049.00.

Prepared the CE and Programmatic Section 4(f) evaluation concerning a bridge replacement / road improvement project. Historic sites, traffic noise, a senior citizen home, mobile home park relocation, business relocations, a railroad line, and park access were concerns. Worked with KY Department of Local Government to avoid Section 6(f) impacts due to a new park access.

### Environmental Documentation for All Aboard Florida High Speed Rail, Florida.

For All Aboard Florida, developed technical baseline documents and provided technical review of methodology, existing environment, and environmental consequences sections for an approximately 128-mile section of a high-speed rail project from West Palm Beach to Miami, Florida. Involved in cultural resources, transportation, public utilities, and aesthetic components. Reviewed cultural resource report prepared by a subconsultant. Potential impacts to historic districts and resources were a concern. For All Aboard Florida, helped to review the DEIS prepared by a Third Party for Federal Railroad Administration.

### Heartland Parkway Planning Study, Adair, Green, Taylor, Marion, Nelson, and Washington Counties, Kentucky.

Managed the environmental evaluation of the 68-mile corridor scoping study. Helped identify project needs and potential environmental concerns (historic battlefield, parks, conservation areas, endangered species, and cave/karst terrain). Identified the regional needs for improving/supporting economic development, tourism, higher education, and the agricultural sector. Participated in extensive public involvement activities. Managed the archaeological overview and Phase I archaeological survey for the 23-mile design project in Taylor and Adair Counties.

#### Environmental Assessment, KY 313, Hardin and Meade Counties, Kentucky.

Prepared an EA and FONSI for this 14-mile project. Managed the preparation of environmental baseline studies. Prepared a purpose and need statement to help justify the project. Helped evaluate potential cave and karst impacts. Managed the biological field studies that captured a federally endangered gray bat in the project area and helped evaluate mitigation options. Supported public meetings and the public hearing and coordinated with federal and state resource agencies.

#### Environmental Assessment, KY 40 (Inez to Warfield), Martin County, Kentucky.

Responsible for the EA for this 8.5-mile project. Relocations, strip mines, cemeteries, a historic site, and stream channel changes were environmental concerns. A separate waste disposal area and industrial development site were later evaluated. Managed review of environmental impacts of the roadway segment crossing into West Virginia. Supported KYTC in coordinating with the West Virginia Department of Highways and other West Virginia resource agencies. Supported the historic consultant in

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evaluating methods to minimize potential indirect visual impacts of the proposed roadway and bridge on a historic site. Participated in stream mitigation and permitting activities.

Categorical Exclusion and Programmatic Section 4(f), US 25 (Williamstown), Grant County, Kentucky. Prepared the CE and Programmatic Section 4(f) and managed the environmental studies concerning a bridge replacement and road improvement project. Historic sites, traffic noise, a senior citizen home, a mobile home park, business relocations, a railroad line, and a park were issues. Worked with the KY Department of Local Government to avoid a Section 6(f) impact during the development of new access to a park.

Environmental Assessment/US 68 (Columbia to Greensburg), Green and Adair Counties, Kentucky. Prepared an EA for this 16-mile project. Managed the preparation of environmental overviews and baseline environmental studies, including wetlands, noise, air quality, Phase I ESA, socioeconomic, and threatened and endangered speices. Oversaw the development of a cultural historic overview and survey and an archaeological overview, an archaeological high probability study, and a Phase I archaeological survey. Supported the citizen advisory committee, public meetings, and a Section 106 consulting party meeting. Aided the roadway designers in developing alternates to avoid impacts to a historic farm and in evaluating a land bridge over a historic railroad tunnel rather than imploding the tunnel. Worked with the cultural historian to analyze the potential indirect visual and vibration impacts of the land bridge on the tunnel.

### Environmental Assessment for the Leslie, Knott, Letcher Perry County Community Action Council for Intermodal Transit Facility and Parking Structure, Hindman, Kentucky.

Managed the EA and environmental studies to secure federal funding for the rehabilitation of a 46-year old former jail building to be an intermodal transit facility and creation of a street level 150-space parking structure. Potential floodplain impacts, environmental justice concerns, archaeological sites, and historic viewshed effects were evaluated. Worked closely with Community Action Council and design firm to avoid and minimize impacts.

### Documented CEs and EAs for Transit Projects, Christian, Clay, Franklin, Jefferson, and Knott Counties, Kentucky.

Managed successful preparation of Documented CEs and EAs for transit facilities, maintenance facilities, bus wash, and parking structures with the KYTC Office of Transportation Delivery. For a proposed City of Frankfort Transit bus wash/maintenance facility, a documented CE was completed within one month to meet a funding deadline. Mr. Marchaterre participated in all aspects of this project including desktop environmental analysis, site reconnaissance, agency coordination, and report preparation.

Environmental Studies and Categorical Exclusion for Clays Mill Road, Fayette County, Kentucky. Project Manager responsible for the categorical exclusion and supporting studies for a 3.7-mile project in Lexington, KY. Prepared the HazMat/UST baseline study and assisted with the traffic noise modeling. Managed the sampling of streams, fish and macroinvertebrates to determine water quality. Groundwater in the project area is hydrologically sensitive due to the karst topography. Participated in citizen advisory committee and public meetings.

Environmental Assessment for Memphis Regional Intermodal Facility, Private Client, Rossville, TN. Technical Reviewer and Author for a complex EA for a 650-acre intermodal facility. Conducted technical review of EA and baseline studies including Stream Assessment Report, Ecology Study Report, Noise Assessment Report, Cultural Resources, and Phase I archaeological Survey, and Viewshed Analysis. The intermodal facility will improve freight transportation capacity in the region and used Tiger Grant funds. FHWA is the lead federal agency with TDOT as lead state agency. Twenty-one out of 29 federal, state, and local agencies requested to participate in the NEPA process. To adequately involve the public, both a

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public information meeting and a public hearing were conducted in the local area. Completed the NEPA process in approximately one year, fastest for TDOT.

### Federal Railroad Administration Categorical Exclusion for TIGER Grant for Railroad Bridge Replacement, IN.

Prepared Categorical Exclusion for historic bridge replacement partially funded from a TIGER grant. Categorical Exclusion was prepared for a private railroad for submission to the Federal Railroad Administration. A Memorandum of Agreement was developed between the US Army Corps of Engineers, State Historic Preservation Office, and the railroad to document the replacement of the historic bridge.

### 140-Mile Virginia Rail Expansion (VRE) Project, Virginia.

Managed cultural resources and environmental constraints analysis for proposed 140-mile expansion project. Oversaw archival and field studies to identify historic and ecological resources within areas of potential effect. Identified NEPA categorical exclusions that could apply to sections of the project area to speed the permitting process.

### Third Party Review of Tier I EIS Process for Empire Corridor High Speed Rail Corridor, New York.

For a private railroad company, reviewed Tier I EIS process for the 463-mile Empire Corridor for High Speed Rail from New York City to Niagara Falls. Provided recommendations and position paper on Draft Tier I EIS process and opportunities for the railroad company to participate in the NEPA process both formally and informally. Evaluated potential impacts to railroad operations of an additional track for high speed rail.

### Third Party Review of Tier II EIS for Southeast High-Speed Rail Corridor, Richmond, VA to Raleigh, NC.

For a private railroad company, reviewed Draft Tier II EIS for the Southeast High-Speed Rail Corridor and provided recommendations and comments on Draft Tier II EIS document and potential impacts to railroad operations.

### Environmental Studies and Categorical Exclusion for KY 32, Kentucky Transportation Cabinet, Lawrence County, Kentucky.

Project Manager for the environmental studies for KY 32 in Lawrence County, KY. Prepared a Categorical Exclusion and Programmatic Section 4(f) evaluation for minor impacts to two historic sites. Identified potential onsite mitigation opportunities for approximately 3,000 feet of stream channel changes. Historic sites, a cemetery, and residential relocations were concerns.

### Third Party Review of Tier I EIS for Atlanta BeltLine Project, GA.

For a private freight railroad company, reviewed Draft Tier I EIS for the proposed Atlanta Beltline Project for potential impacts to railroad operations. Concerns exist that a new transit line, trails, crossings, and designation of the railway line as a historic district would affect existing and future expansions of freight operations and safety. Prepared comments on the Draft Tier I EIS document. Participated in public involvement process, such as attending public meetings and workgroup meetings.

### EA / FONSI, US 60 Bypass, Daviess County, Kentucky. Item No. 2-287.00.

Managed preparation of an EA and FONSI as well as baseline studies for this 5.2-mile project. A Citizen Advisory Committee met five times to express area citizen and business views. Wetland, stream, and archaeological site impacts were concerns.



### Categorical Exclusion for I-75/I-71 Auxiliary Lanes, Boone County, Kentucky.

For Kentucky Transportation Cabinet, prepared a Categorical Exclusion 3 for adding auxiliary lanes for I-71/I-75 in Boone County. Conducted ecological, air, noise, hazardous materials, and socioeconomic studies. Conducted noise studies and supported preparation of noise analysis. Noise analyses, noise abatement modeling, and noise barrier public meetings were critical to success of project. Noise barriers were determined to be appropriate mitigation for project.

### I-69 Strategic Corridor Planning Study (Eddyville to Henderson), Lyon, Caldwell, Hopkins, Webster, and Henderson Counties, Kentucky.

Managed and helped prepare the environmental component for evaluating the 80-mile corridor for an I-69 segment. Identified potential environmental concerns (relocations, environmental justice, conservation areas, and endangered species). Managed aquatic / terrestrial, socioeconomic, hazardous materials / underground storage tank, and air and traffic noise analysis. Identified the regional needs for improving / supporting economic development.

### Third Party Review of Socioeconomic Study for I-66 Project (London to Somerset), Pulaski County, Kentucky.

Provided a third-party review for the KYTC for the I-66 socioeconomic study. Evaluated economic and community impacts, potential residential and commercial relocations, environmental justice concerns, land use changes, and farmland impacts for a 40-mile highway project. Identified gaps in the socioeconomic analysis and provided recommendations on how to improve the study. Information from the revised study was incorporated into the EIS.

### Technical Reviewer for Bus Maintenance Facility Categorical Exclusion (CE), Transit Authority of River City (TARC), Jefferson County, Kentucky.

Provides quality assurance/quality control for ongoing projects by TARC. For a bus maintenance facility annex on a former Louisville & Nashville Railroad site, analyzed traffic information, bus emission reductions, land use, historic resources, environmental justice concerns, and the potential for hazardous materials/UST contamination. Determined that a CE was appropriate and prepared the documentation which was quickly approved by the FTA.

### Environmental Assessment, KY 55 (Heartland Parkway), Adair and Taylor Counties, Kentucky. Item No. 4-124.00.

Technical reviewer for preparation of EA for this 23-mile project. Managed cultural resource studies (archaeological and historic architectural surveys), Section 106 consultation, and Section 4(f) evaluation. Identified sensitive areas such as Tebbs Bend Civil War Battlefield area, Native American mounds, and potential historic sites.

#### East Market Street Streetscape Categorical Exclusion, Louisville, Kentucky.

For Louisville Downtown Development and Louisville Metro, prepared a categorical exclusion for the East Market Streetscape project. Potential impacts to historic structures in several historic districts were potential concerns that were addressed with coordination with the Kentucky Heritage Council.

### Statewide Programmatic Agreement for Historic Timber Railroad Bridges, Georgia.

For a private client, worked with United States Army Corps of Engineers and State Historic Preservation Office to develop a statewide programmatic agreement for the replacement and repair of historic timber railroad bridges throughout Georgia. The programmatic agreement covered more than 300 bridges across the state.

#### United States Fish and Wildlife

### Multi-State NiSource Habitat Conservation Plan Environmental Impact Statement, United States Fish and Wildlife Service and United States Forest Service, 14 States.

Supported development of an EIS for a habitat conservation plan and incidental take permit to cover 15,000 miles of pipeline in 14 states for the USFWS, USFS, FERC, USACE, and NPS. The EIS addressed unique subject matter and legal and regulatory concerns due to the large area covered and 43 threatened and endangered species considered. The Project crossed Kentucky, Louisiana, Mississippi, Tennessee, Virginia and West Virginia. Supported technical reviews, socioeconomic analysis, cumulative impacts, consultation, and participated in public involvement activities.

### **Department of Defense**

### Environmental Assessment for an Army Aviation Support Facility, Boone National Guard Center, Frankfort, Kentucky.

For the Kentucky Army National Guard, prepared an environmental assessment for a 30-acre proposed replacement site for the army aviation support facility which included maintenance facilities and a wash station. Evaluated potential noise impacts of helicopters taking off and landing at the facility and the cumulative noise impacts due to adjacent airport. Adjusted EA analysis to constantly changing project location. The site was in a karst area so potential impacts from subsidence and groundwater contamination were considered.

### Environmental Assessment for Multi-Purpose Machine Gun Range, Indiana Army National Guard, Camp Atterbury, Indiana.

At the Camp Atterbury Joint Maneuver Training Center in Indiana (approximately 33,100 acres), Preparing an environmental assessment for a multipurpose machine gun range. Assessed potential environmental impacts, including cumulative impacts, of short-range site plans and long-range plans for developing and managing the installation. Reviewed existing site studies and worked closely with facility staff to analyze plans and potential effects. Worked closely with client and design team to minimize impacts to forested wetlands, streams, and floodplains. Evaluated socioeconomic and land use impacts from creation of new training areas on the facility and nearby communities. Coordinated with federal and state resource agencies.

Environmental Assessment and Public Involvement, Muscatatuck Urban Training Center, Indiana. At the Muscatatuck Urban Training Center, supported the development of an environmental assessment for a new urban warfare and homeland security training center. Responsible for preparing portions of the Affected Environment and Environmental Impact sections for the EA. The Muscatatuck Urban Training Center (MUTC) would provide a new center for required urban assault and homeland security training at the former Muscatatuck State Development Center in Butlerville, Indiana. The MUTC would provide an urban training center to serve the wartime mission and combat readiness goals of military units as well as civilian homeland security and natural disaster response training needs. Natural resources on the proposed site include Pleasant Run, North Vernon Muscatatuck River, the Brush Creek Reservoir, and forested and non-forested lands. Preservation of historic structures was a significant concern. Prepared outreach materials and participated in public meetings.

### Statewide Integrated Wildland Fire Management Plans (IWFMPs), Indiana, Kentucky, North Carolina, and West Virginia.

For the National Guard, managed preparation of statewide IWFMPs for training sites in multiple states. The IWFMPs developed programs to reduce wildfire potential; protect and enhance natural and cultural resources; preserve infrastructure and facilities; and promote safety. The IWFMPs examined the historical role of fire within and in the vicinity of installations; identified current ignition and fuel sources; and addressed fire training requirements and safety considerations including unexploded ordinance (UXO) and live fire areas. The IWFMPs recommended wildland fire prevention and

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suppression measures, as well as prescribed burn management and site-specific burn plans. EAs were prepared for each IWFMP.

# Integrated Natural Resources Management Plans (INRMPs) at Wendell H. Ford Regional Training Center (WHFRTC), Disney Training Center (DTC), and Hidden Valley Training Site (HVTS) and an Environmental Assessment (EA) for Training Operations at WHFRTC, Kentucky.

Managed two Environmental Assessments, three INRMPs, three Forest Management Plans (FMPs), and a state-wide Integrated Wildland Fire Management Plan (IWFMP) for three training sites. Worked closely with the KYARNG, the U.S. Fish and Wildlife Service (USFWS), and the Kentucky Department of Fish and Wildlife Resources (KDFWR) as well as other federal, state, and local agencies with an interest in the management of natural resources. Also, evaluated approximately 3,000 acres of new maneuver training areas added to the Training Center for potential impacts to the environment of planned training activities.

### NEPA and Planning Support to West Virginia Army National Guard, West Virginia.

Project Manager for environmental assessments for the West Virginia Army National Guard related to training areas, firing ranges, urban training centers, demolition ranges, readiness centers/armories, and army aviation facilities. Managed preparation of environmental assessments, land use plans, integrated natural resource management plans, forest management plans and endangered species management plans.

### Indiana Bat Programmatic Biological Assessment, Camp Atterbury Joint Maneuver Training Center, Indiana Army National Guard, Edinburgh, Indiana.

Oversaw the preparation of a programmatic Biological Assessment (BA) and associated formal consultation process with the US Fish & Wildlife Services regarding effects on Indiana Bats with respect to future routine training and land management activities and upcoming development projects at the approximately 33,132-acre Camp Atterbury Joint Maneuver Training Center. The BA was prepared in close coordination with the USFWS Bloomington Field Office. The programmatic BA will streamline the consultation process and reduce administrative costs for the INARNG and USFWS.

### Programmatic Biological Assessment for the Indiana Bat, Northern Long-eared Bat, and Gray Bat, U.S. Air Force Arnold Air Force Base, Tennessee.

Managed development of a programmatic biological assessment of routine training, land management, and Elk River Dam operations at the 39,000-acre Arnold Air Force Base in Tennessee. Potential adverse effects could result from timber management, prescribed fire, tree clearing during summer roadside maintenance activities, hazardous tree removal, range operations, wildfires, or emergency repairs/inspections at the dam. The proposed action may affect, and is likely to adversely affect Indiana bats, northern long-eared bats, and gray bats that use habitat within/near the Arnold Air Force Base.

Training Site Master Plan, Camp Dawson, West Virginia. Managed preparation of a conceptual master plan for the Camp Dawson Cantonment Area and the Volkstone Training Area. The conceptual master plan assisted in setting strategic goals for the mission and vision of the base, and is the starting point for a more detailed Training Facility Master Plan (TFMP) that is underway. The TFMP provides a foundation for the future development of Camp Dawson. Helped identify current conditions, facility and site constraints, and opportunities for enhanced opportunities.

### Design, Mitigation, and Geotechnical Services for Modified Record Firing Range, Camp Dawson, West Virginia.

Managed some of the design components of the modified record firing range. Provided technical review of the EA. Helped evaluate alternatives to minimize impacts to stream and wetlands. Managed development of erosion and sedimentation controls and coordination with state and Federal agencies on

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mitigation and permitting issues. Oversaw optimization of target elevations to minimize required earthwork and geotechnical evaluations of the access road and range control facilities locations.

### EA/FONSI for Armed Forces Reserve Center (AFRC), Buckhannon, West Virginia.

Managing the EA for the Buckhannon AFRC. Conducted a site visit and record search to evaluate potential environmental constraints, such as 100-year floodplains along Brushy Fork Creek. Developed a pdEA that evaluates environmental impacts on a 49-acre site and potential mitigation options for the proposed AFRC. The AFRC will replace a 48-year old armory and provide needed training facilities.

### Environmental Assessment and Phase I Environmental Site Assessment for Armed Forces Reserve Center, Elkins, West Virginia.

Managed the preparation of a Phase I Site Assessment and an environmental assessment for an armed forces reserve center on a 112-acre site. The site was a former farm and strip mine site. The Phase I ESA did not identify any evidence of spills or contamination at the site based on a review of historic records, field reconnaissance, and a review of Federal and state databases. Cultural resources, wetlands, and roadway access were concerns.

Ripley Joint Armed Forces Reserve Center (JAFRC) Planning Charrette, Ripley, West Virginia. Managed a three-day planning charrette for the proposed Ripley JAFRC. The purpose of the planning charrette was to conduct a fact-finding mission and to have discussions on the project details with key installation stake holders and to review the 1391 construction cost estimate. The planning report outlined the findings of the charrette and outlined next steps for the project.

### Briery Mountain Range Development Plan EA, Camp Dawson, West Virginia.

Managed the EA for three proposed Briery Mountain Training Area ranges which include a Live Fire Breach Facility (LFBF), Hand Grenade Familiarization Range, and an Urban Assault Course (UAC). Coordinated with WVARNG to evaluate potential constraints, such as stream impacts, and to avoid and minimize environmental impacts.

#### Water Resources Management Plan, Camp Dawson, West Virginia.

Project Manager. Managed the preparation of a water resources management plan for the West Virginia Army National Guard for Camp Dawson (approximately 3,797 acres). Assessed current availability of data regarding Camp Dawson water resources including the Cheat River, streams and numerous tributaries. Conducted site visits and recommended management goals for surface water, wetlands, floodplains, and groundwater resources.

### Environmental Assessment for Integrated Natural Resources Management Plan (INRMP) Updates, Marseilles Training Area (MTA), Illinois.

Managed EA for 2,850-acre MTA INRMP. Worked closely with Illinois Army National Guard and Illinois Department of Natural Resources, joint owners of the MTA. The EA evaluated potential environmental impacts of the plans for managing land, forest, aquatic and terrestrial habitat, special areas, fish and wildlife, rare species, pest control, and fire. The project allowed the ILARNG to remain in compliance with Army policy and other federal, state, and local laws and regulations, and to provide for no net loss in the capability of lands to support the military mission. Also, evaluated training plan for the construction and operation of ranges and other training facilities. Covered 15 proposed projects including range expansions, new ranges, live-fire breach facility, anti-tank range, grenade launcher range relocation, live fire shoot house, training support facility development projects, and training area maintenance projects.

#### COPPERHEAD ENVIRONMENTAL CONSULTING

Integrated Natural Resource Management Plans (INRMPs), Environmental Assessments and an Endangered Species Management Plan (ESMP), Camp Crowder and Camp Clark Training Sites, MOARNG, Newton and Vernon Counties, Missouri.

Assistant Project Manager. Responsible for preparing two INRMPs and EAs for Camp Crowder and Camp Clark, which are comprised of 4,300 acres and 1,287 acres, respectively. Management Plans revised in this INRMP included land use, forest, aquatic and terrestrial species, special natural areas, fish and wildlife, rare species, pests, and fire.

### Joint Land Use Study (JLUS), Camp Atterbury and Muscatatuck Urban Training Center (MUTC) | Bartholomew, Brown, Jennings, and Johnson Counties, Indiana.

Author and Technical Reviewer. Helped prepare the Camp Atterbury and MUTC JLUS, which is a cooperative land use planning effort by communities and military installations to jointly ensure future compatible development. The JLUS involved four south-central Indiana counties; several cities/towns, such as Columbus, Edinburgh, and North Vernon; economic development and regulatory agencies; and the two military installations. After extensive public involvement activities, the JLUS identified compatible land use and growth management guidelines and recommendations, which are now being implemented.

#### Recreation

### Environmental Assessment for Sports Park, Elizabethtown, Kentucky.

For the City of Elizabethtown, conducted environmental studies and prepared permit applications for a proposed 200-acre sports complex that includes soccer fields, baseball fields, basketball courts, tennis courts, and hiking trails. Worked with the designer to minimize impacts to environmental resources by shifting trails and parking areas. Managed wetlands delineations, archaeological surveys, Phase I environmental site assessment, and a threatened and endangered species habitat survey. Worked with the USFWS on mitigation for potential impacts to the federally endangered Indiana bat.

Noise Studies for World Shooting and Recreational Complex, Sparta, Illinois – For the Illinois Department of Natural Resources, managed the preparation of noise studies for the development of a 1,600 acre shooting complex in Sparta, Illinois. Environmental assessment was prepared on an expedited schedule so that the Grand American Trapshooting Championships could be held at the complex opening. Evaluated potential noise impacts on adjacent property owners and recommended use of berms to minimize impacts. The site includes 120 trap shooting fields covering 3.5 miles, 24 skeet fields, 2 courses for sporting clays, and archery fields.

**Town Branch Trail Environmental Education Sign Project** – Using a Kentucky Fish and Wildlife Resources grant, prepared environmental education signs and booklet on fourteen topics associated with Town Branch Creek and its environmental context. The role of water in the environment is a main focus of the project, along with raising awareness about human impacts on ecosystems and ways to reduce those impacts. An exhibit and outreach materials were developed. The environmental sign project exhibit was on display at the state wildlife center for two months. The exhibit has also been displayed at libraries, schools, and the Children's science center. Environmental education signs have been fabricated and placed along the completed sections of the Town Branch Trail.

**Environmental Studies for Isaac Murphy Park Development, Lexington, KY.** Provided technical oversight of the environmental and cultural resource studies for the Isaac Murphy Memorial Art Garden Project in downtown Lexington. Participated in public archaeology events to promote park and understanding of neighbourhood history. Due to minority and low-income neighbourhoods, environmental justice was a concern.

#### COPPERHEAD ENVIRONMENTAL CONSULTING

Southwest Jefferson County Greenways, Louisville Metro Parks Department, Louisville. Supported Louisville Metro Parks Department develop a master plan to create greenways in southwest Jefferson County which will include shared use trails. The study area covers approximately 97 square miles or a quarter of Jefferson County. Identified ways to include cultural resources into the planning process such as historic properties to be destinations or waypoints for the education and benefit of trail users or archaeological sites to avoid. Provided technical review of draft documents and outreach materials.

### Pipelines 206-Mile Lobos CO2 Pipeline Project, Kinder Morgan, New Mexico and Arizona.

Assistant ecological team lead supporting wetland and waters of the U.S. delineation, threatened and endangered species studies, and vegetation / habitat assessments in support of permitting for a proposed 206-mile CO2 pipeline to be used in enhanced oil recovery process. Technical reviewer of draft Bureau of Land Management (BLM) plan of development and supporting ecological and cultural documents. Agency coordination includes the BLM, USACE, USFWS, Native American Nations, and state and local regulatory agencies from Arizona and New Mexico.

### Cortez Loop Pipeline Extension, Kinder Morgan, New Mexico.

Assistant ecological team lead for 40-mile pipeline extension, four new pump stations and other associated facilities. Ecological, paleontological resources, and cultural resource studies were undertaken for this proposed pipeline extension. Access roads and potential compressor stations and temporary storage areas were evaluated. Agency coordination included the Bureau of Land Management, United States Army Corps of Engineers, United States Fish and Wildlife Service, and state and local regulatory agencies.

### Supplemental Environmental Assessment for Relocation of a Petroleum Products Pipeline, CSX Transportation, Virginia.

Project manager for developing a supplemental environmental assessment for relocation of a 24-inch petroleum product pipeline due to the addition of 11 miles of a third railroad track. Approximately 3.0 miles of horizontal directional drilling occurred to reduce potential construction impacts to utilities, roads, water bodies and wetlands. Permitting, endangered species and floodplain issues were concerns, and required coordination with local, state, and federal regulatory agencies.

### Sparrows Point Liquified Natural Gas (LNG) Terminal and Pipeline Project, Maryland and Pennsylvania.

Technical reviewer of cultural resource sections for FERC EIS for LNG facility and 88-mile pipeline. Acted as the third-party consultant to FERC for the preparation of National Environmental Policy Act (NEPA) compliant documents (the Draft Environmental Impact Statement [DEIS] and the Final EIS) for the LNG facility and related pipelines. The terminal is proposed for Sparrows Point, southeast of Baltimore in Baltimore County, MD and will can unload LNG ships, storing up to 480,000 cubic meters of LNG, vaporizing the LNG, and sending out the natural gas.

#### Environmental Documentation for Water Pipeline, Bowling Green, Kentucky.

Project Manager for environmental studies and documentation for a 10-mile water pipeline for the Transpark Industrial Development. Oversaw cultural resources, wetlands, socioeconomic, hazardous materials, karst, and threatened and endangered species investigations. Cumulative impacts were an issue because of potential impacts of future industrial growth in the area and karst terrain. Permitting and mitigation were concerns due to potential impacts to Mammoth Caves National Park. Public involvement was a key component due to citizen advocacy groups.

#### **Dams and Levees**

### NRCS Upper Walnut Creek FRD No. 6 and FRD No. 21, Butler County, Kansas.

NEPA Manager for two dam rehabilitation projects, prepared environmental assessments. The projects purposes are to rehabilitate FRD 6 and FRD 21 to meet safety and performance standards for high hazard dams and provide flood water protection to downstream areas. The EAs included the NRCS environmental evaluation worksheet and discussions of threatened and endangered species, wetlands, environmental justice, economic and social conditions, and cultural resources.

### NRCS Pine Creek Dam Rehabilitation EA, Oneida, Tennessee.

Technical Reviewer. Supported Pine Creek Dam rehabilitation EA and archaeological and architectural historic surveys. The EA included the NRCS environmental evaluation worksheet and discussions of threatened and endangered species, wetlands, environmental justice, economic and social conditions, and cultural resources. This multi-purpose dam and reservoir project serves as flood control and as the town's primary water supply.

### Environmental Impact Statements (EISs) for Two Flood Damage Reduction Projects (Levisa Fork Watershed Section 202 Program), Floyd and Pike Counties, KY.

For the USACE-Huntington District, Project Manager for the preparation of sections for the structural and nonstructural flood damage reduction measures EISs in Floyd and Pike Counties, KY. Major issues included community impacts, environmental justice, cultural resources and terrestrial and aquatic mitigation. Identified concerns about the potential for residential and business relocation, impacts to property values, loss of community cohesion, the potential for induced flooding, hardships from raising residences, impacts to habitat for the Indiana bat, potential loss of tributary streams, and the potential impact of floodwall construction on the riparian corridor. Extensive agency coordination required.

EIS for Flood Damage Reduction, Pike County, Kentucky, Levisa Fork Watershed Section 202 Program. Supported development of Draft EIS assessing impacts of flood damage reduction alternatives within the Levisa Fork Watershed in Pike County, Kentucky for the USACE, Huntington District. Project alternatives include structural and non-structural components. Reviewed Habitat Assessment Procedure (HEP) analysis for terrestrial impacts and a stream assessment for tributaries. Major issues included community impacts, cultural resources, and terrestrial and aquatic mitigation. Project required extensive coordination with U.S. Fish and Wildlife.

#### Muddy Fork Conservancy District Supplemental EIS, Borden, Indiana.

A Supplemental EIS is being prepared for a new dam to provide additional municipal water supplies, control flooding, and create recreational opportunities. Early steps including reviewing technical and environmental studies to determine data gaps and areas for update. A review of the 1992 FEIS determined that a Supplemental EIS is necessary. Water supply studies were evaluated and revised in coordination with the water utility. The purpose and need section was expanded to include recreational opportunities for the reservoir.

#### **Transmission Lines**

### Herleman to Meredosia Transmission Line, Ameren, Illinois.

Provided environmental planning support for the proposed 48-mile 345-kV overhead electric transmission line which crosses several named streams including the Illinois River. The Herleman to Meredosia line is part of Ameren's 330-mile Illinois Rivers Transmission Line initiative stretching from Palmyra, Missouri to the Illinois/Indiana state line. Supporting the development of a Conservation Plan in accordance with the Illinois Department of Natural Resources (IDNR) requirements for state-listed threatened and endangered species.

### Meredosia to IpavaTransmission Line, Ameren, Illinois.

Provided environmental planning support for the Meredosia to Ipava Transmission Line, Ameren, Illinois. The Meredosia to Ipava line is part of Ameren's 330-mile Illinois Rivers Transmission Line initiative stretching from Palmyra, Missouri to the Illinois/Indiana state line. Supporting the development of a Conservation Plan in accordance with the Illinois Department of Natural Resources (IDNR) requirements for state-listed T&E species.

### Maywood to Herleman Transmission Line, Ameren, Missouri and Illinois.

Provided environmental planning support for a proposed 345-kV electric transmission line crossing of the Mississippi River on federal property near Quincy, Illinois. The Maywood to Herlemen line is part of Ameren's 330-mile Illinois Rivers Transmission Line initiative stretching from Palmyra, Missouri to the Illinois/Indiana state line. Supporting the development of a Conservation Plan in accordance with the Illinois Department of Natural Resources (IDNR) requirements for state-listed threatened and endangered species.

### **United States Nuclear Regulatory Commission**

**Nuclear Reactor Operator Examination and Licensing Study, Multiple States.** For the U.S. Nuclear Regulatory Commission, conducted a study of the reactor operator examination and licensing function. Reviewed information collected from 300 written questionnaires. Conducted personal interviews with reactor operators, senior reactor operators, training managers, and plant technical managers at multiple nuclear power facilities, and NRC regional offices.

### Bell Bend Nuclear Power Plant Third Party EIS for Nuclear Regulatory Commission, Pennsylvania.

As a Senior Planner, prepared Third Party EIS sections for the Nuclear Regulatory Commission on land use, transmission lines, cultural resources, cooling tower, and cumulative impacts for a new reactor at the Bell Bend Nuclear Power Plant. Conducted site visits and interviews to evaluate existing and changes in land use resulting from the addition of a new reactor and changes to transmission lines. Reviewed the Environmental Report and prepared requests for additional information (RAIs) concerning potential data gaps.

Victoria Station Nuclear Power Plant Third Party EIS for Nuclear Regulatory Commission, Texas. Senior planner developing land use, transmission line, cultural resource, and cumulative impact sections of a Third Party EIS for the proposed Victoria Station Nuclear Power Plant Project. Evaluated sections of the ER and prepared RAIs. Evaluated existing and changes in land use resulting from the facility and transmission lines.

#### Environmental Report, Confidential Client, Nuclear License Application Project, Michigan.

Technical reviewer of Socioeconomic sections of the ER for a new medical isotope production facility in the central US. This work is in accordance with the provisions of NUREG 1537 and related laws and regulations and entails the documentation of all socioeconomic baseline characteristics of the project site and vicinity.

#### **Utilities**

Electric Power Industry Waste Reduction Activities – For USEPA's WasteWise program, analyzed waste reduction activities at utility generating stations, distribution and transmission facilities, and recovery and warehouse operations, including PG&E facilities. Worked with the Edison Electric Institute to select utilities to profile for waste reduction and recycling activities. Conducted site visits to power plants in 6 states. Profiled PG&E's waste reduction activities at generating stations and distribution facilities; Investment Recovery and Warehouse locations, Fleet Maintenance; and General Office facilities. Life cycle cost analysis, solid waste consulting, employee and public education activities, and measurement

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criteria were considered. Developed the Waste Reduction Activities of Selected WasteWise Partners: Electric Power Industry report.

**Report to Congress on Fossil Fuel Combustion Waste** – Supported USEPA in developing a Report to Congress on Fossil Fuel Combustion Waste. Worked on the technical studies concerning waste characterization, potential damage cases, risk analysis, and groundwater impacts. Evaluated existing federal and state regulatory requirements and cross media impacts of fossil fuel combustion wastes.

**Guide for Industrial Nonhazardous Waste Management** – For USEPA, helped develop the guide for the management of industrial nonhazardous waste management. The guidance applied to waste managed in surface impoundments, landfills, and land application areas. Worked with the Edison Electric Institute and the Electric Power Research Institute (EPRI) to consider impacts of the guidance on the electric utility industry.

### **United States Housing and Urban Development**

**United States Housing and Urban Development Task Force Report on Lead-Based Paint (LBP) Hazard Reduction and Financing. Washington, D.C.** For the United States Department of Housing and Urban Development and the United States Environmental Protection Agency, provided support to the Task Force concerning the impacts of liability on LBP hazard reduction and victim compensation. Helped to draft a report and recommendations on reducing LBP hazards to children. Evaluated state requirements for LBP hazard reduction, management of lead-based paint contaminated debris, and state liability standards.

**Draft Environmental Assessment for the Museum Plaza High-Rise and Parking Garage, Louisville, Kentucky.** Project manager overseeing environmental studies and preparation of an environmental assessment for the proposed Museum Plaza, a new multi-use development in downtown Louisville. The proposed project would consist of a 1.5-million-square-foot, 62-story building containing residential units, office space, a non-profit contemporary art museum, two hotels, and the University of Louisville Master of Fine Arts program, as well as a portion of the university's graduate business school. Floodplain and cultural resource issues were potential concerns. A Housing and Urban Development (HUD) grant is anticipated to help support this project and the National Environmental Policy Act (NEPA) documentation is being prepared to comply with HUD's requirements under 24 Code of Federal Regulations (CFR) 58.

#### **Other Private Clients**

Assessment of Visual, Auditory, and Lighting Effects of RiverPark Place Development on Cultural Resources, Private Client, Louisville, Kentucky.

On an accelerated schedule for a private developer, managed the assessment of potential visual, auditory, and lighting impacts from the waterfront development project on cultural historic resources. The project covered a one-mile Area of Potential Effect (APE) in Kentucky and Indiana. The development will include two 16-story structures surrounded by four 5-story structures for residential/commercial use. Two historic sites and part of a historic district will be adversely visually impacted by the proposed construction. Two historic sites also will be adversely affected by temporary construction noise and noise associated with increased vehicular or watercraft traffic. Worked with Kentucky Heritage Council to prepare an MOA for the project.

### Environmental Overview and Phase I ESA for a Proposed Commercial Development, Frankfort, KY.

For a private developer, managed the preparation of a Phase I ESA, environmental overview, wetlands delineation, and an archaeological overview of a 100-acre site near I-64. The site contained an auto body shop and farmland that were evaluated for potential recognized environmental conditions. Coordinated with the Kentucky Transportation Cabinet concerning developing a new access point on US127. Held discussions with City of Frankfort planners concerning requirements for site development.

### Jefferson Commons, Outer Loop, Louisville, Kentucky.

For a private client, successfully obtained a Section 404 permit on a fast time schedule and managed the wetlands delineation and Phase I archaeological investigation for a development project along the Outer Loop in Louisville, Kentucky. Due to wetland and stream impacts, credits were obtained from a wetlands bank.

**Fisherman's Energy Atlantic City Windfarm, New Jersey.** Technical reviewer for cultural resource concerns related to National Historic Landmark Lucy the Elephant. Helped evaluate potential visual impacts of offshore wind turbines on listed National Register of Historic Resource. Helped coordinate with New Jersey State Historic Preservation Office (SHPO) on study needed to determine project would not adversely affect historic resources.

Electric Power Research Institute Bat Mitigation Alternative Manual, Nationwide. For the Electric Power Research Institute, developing a manual to evaluate mitigation alternatives, such as habitat enhancements, artificial roosts, conservation areas and banks, in lieu fee programs, and wetland creation for threatened and endangered bat species affected by utility operations, maintenance, and project activities. Evaluated information from government, non-profit, and commercial resources to identify compensatory mitigation alternatives. Analyzed peer-reviewed literature, data from bat working groups, and communications with regulators and other bat experts. The manual will quickly inform utilities about bat mitigation opportunities using graphic summaries, tables, decision trees, and case studies. As part of the project, developed user-friendly bat fact sheets for distribution to utility clients.

# EXHIBIT 12 ATTACHMENT 12.6



Richard C. Kirkland, Jr., MAI 9408 Northfield Court Raleigh, North Carolina 27603 Phone (919) 414-8142 rkirkland2@gmail.com www.kirklandappraisals.com

June 15, 2021

Mr. Joel Thomas, Executive Vice President Community Energy, Inc. 3 Radnor Corp. Center STE 300 Radnor, PA 19087

RE: Henderson County Solar Project - Property Value Impact Study

Mr. Thomas

At your request, I have considered the impact of a solar farm proposed to be constructed on an approximately 541-acre portion of a 1,113.03-acre assemblage of land located near the City of Henderson, Henderson 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 and subject to the limiting conditions attached to this letter. My client is Community Energy, Inc., represented to me by Mr. Joel Thomas. My findings support the Kentucky Siting Board Application. The effective date of this consultation is June 15, 2021.

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 most of the site has good existing landscaping for screening the proposed solar farm. Additional supplemental vegetation is proposed to supplement the areas where the existing trees are insufficient to provide a proper screen.

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.

If you have any further questions please contact me.

Sincerely,

Richard C. Kirkland, Jr., MAI

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Kentucky Certified General Appraiser #5522

### I. Proposed Project and Adjoining Uses

### **Proposed Use Description**

The proposed solar farm is proposed to be constructed on a 541-acre portion of a 1,113.03-acre assemblage of land located between Lover's Lane, Hwy 425, and Wilson Station Road, outside the City of Henderson, Henderson County, Kentucky. Adjoining land is a mix of residential and agricultural uses and a religious facility. Religious facilities are commonly found adjoining solar farms and in fact one of the matched pairs identified later in this report is for a solar farm on land leased from a church with the sanctuary on adjoining land.

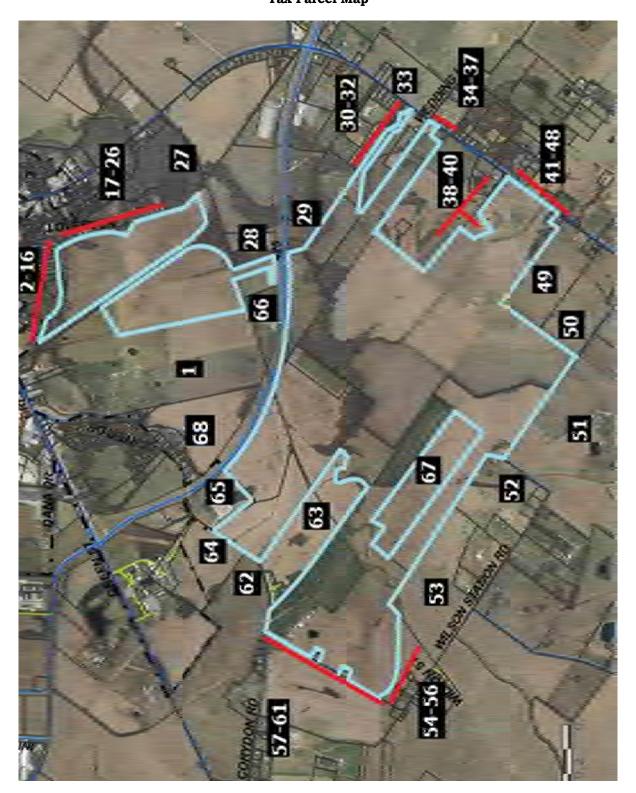
### **Adjoining Properties**

I have considered adjoining uses and included a map to identify each parcel's location. The closest adjoining home will be 240 feet from the closest panel and the average distance to adjoining homes will be 1,408 feet.

The breakdown of those uses by acreage and number of parcels is summarized below. The impact of the one oversized industrial facility is shown in the difference in percentage of adjoining uses by acre and by parcel.

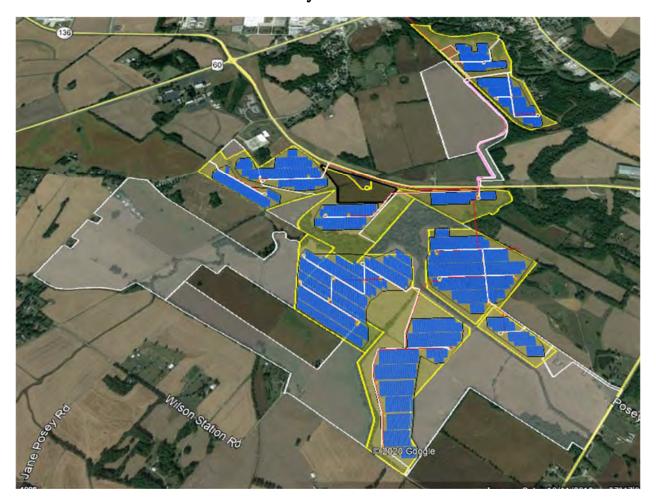
#### Adjoining Use Breakdown

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



Project Boundaries in Yellow

Maximum Potential Layout of Panels Shown in Blue



### Surrounding Uses

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			GIS Data	L	Adjoin	Adjoin	Distance (ft)
#	MAP ID	Owner	Acres	Present Use	Acres	Parcels	Home/Panel
1	46-19	Roberts	196.53	Agricultural	12.05%	1.49%	N/A
2	46-84	Henderson	7.36	Substation	0.45%	1.49%	N/A
3	46D-13.2	Unknown	2.53	Residential	0.16%	1.49%	N/A
4	46-104	Smith	5.53	Residential	0.34%	1.49%	N/A
5	46-105	Smith	2.46	Residential	0.15%	1.49%	510
6	46B-75	Smith	0.92	Residential	0.06%	1.49%	N/A
7	46B-74	Willett	0.76	Residential	0.05%	1.49%	590
8	46B-73	Willett	0.44	Residential	0.03%	1.49%	580
9	46B-72	Speaks	0.44	Residential	0.03%	1.49%	580
10	46B-70	Willett	0.58	Residential	0.04%	1.49%	610
11	46B-69	Puckett	0.59	Residential	0.04%	1.49%	620
12	46B-68	Brown	0.49	Residential	0.03%	1.49%	640
13	46B-67	Yeager	0.62	Residential	0.04%	1.49%	630
14	46B-105	Littrell	1.01	Residential	0.06%	1.49%	590
15	46B-106	Franks	2.80	Residential	0.17%	1.49%	770
16	46-115	Druin	3.03	Residential	0.19%	1.49%	N/A
17	46-115.1	Carter	3.25	Residential	0.20%	1.49%	510
18	46-114	Tapp	9.08	Residential	0.56%	1.49%	700
19	Unknown	Unknown	1.17	Residential	0.07%	1.49%	N/A
20	46-113.1	Madden	1.96	Residential	0.12%	1.49%	350
21	46-113	Madden	0.85	Residential	0.05%	1.49%	380
22	46-112	Blanford	1.04	Residential	0.06%	1.49%	400
23	46-111	Wright	1.99	Residential	0.12%	1.49%	310
24	46-110	Presley	1.10	Residential	0.07%	1.49%	270
25	46-109	Wright	2.75	Residential	0.17%	1.49%	350
26	46-108	Alternate	0.55	Residential	0.03%	1.49%	240
27	46-107	Nunley	47.81	Agricultural	2.93%	1.49%	N/A
28	46-47	Fruit	15.09	Residential	0.93%	1.49%	N/A
29	46-21	Williams	12.04	Residential	0.74%	1.49%	720
30	46-35	Tabor	21.46	Residential	1.32%	1.49%	1,500
31	46-36	Cornelius	3.54	Residential	0.22%	1.49%	1,900
32	46-37	Glick	3.06	Residential	0.19%	1.49%	2,150
33	57-26	Bates	37.13	Agricultural	2.28%	1.49%	N/A
34	46-40	Sword	16.26	Residential	1.00%	1.49%	N/A
35	46-41	Williams	6.91	Residential	0.42%	1.49%	2,450
36	47-64	Robbins	0.53	Residential	0.03%	1.49%	2,570
37	47-63	Walnut	0.54	Religious	0.03%	1.49%	2,460
38	46-43	Dixon	1.52	Residential	0.09%	1.49%	2,220
39	47-1	Alexander	81.00	Agricultural	4.97%	1.49%	N/A
40	47-3.1	Sutton	5.79	Cell Tower	0.35%	1.49%	N/A

			GIS Data		Adjoin	Adjoin	Distance (ft)
#	MAP ID	Owner	Acres	Present Use	Acres	Parcels	Home/Panel
41	47-56	Watson	8.03	Residential	0.49%	1.49%	N/A
42	47-32.5	Golday	1.23	Residential	0.08%	1.49%	1,640
43	47-32.16	Raleigh	4.44	Residential	0.27%	1.49%	2,050
44	47-32.17	Gamblin	2.48	Residential	0.15%	1.49%	2,020
45	47-34	Wood	1.29	Residential	0.08%	1.49%	1,860
46	47-32	Wright	132.87	Agricultural	8.15%	1.49%	N/A
47	47-32.12	Roybal	3.94	Residential	0.24%	1.49%	2,060
48	47-4	Gibson	1.00	Residential	0.06%	1.49%	1,860
49	47-5	Overfield	50.92	Agri/Res	3.12%	1.49%	2,140
50	47-10	Wright	50.38	Agri/Res	3.09%	1.49%	2,180
51	47-12	Robinson	203.42	Agri/Res	12.47%	1.49%	1,350
52	39-2-55.1	Villines	12.81	Residential	0.79%	1.49%	1,370
53	39-2-56	Davis	157.70	Agricultural	9.67%	1.49%	N/A
54	39-2-56	Map shows this se	parate, b	ut tax cards link	this to Parc	el 53 as one	e parcel
55	39-2-57	Davis	17.93	Residential	1.10%	1.49%	N/A
56	39-2-60	Gatewood	2.63	Residential	0.16%	1.49%	4,380
57	39-2-61	Cavanaugh	2.31	Residential	0.14%	1.49%	4,250
58	39-2-33	Koehler	93.83	Agri/Res	5.75%	1.49%	2,100
59	39-2-62	Stone	1.10	Residential	0.07%	1.49%	3,220
60	39-2-63	Graves	1.05	Residential	0.06%	1.49%	2,550
61	39-2-69	Stagg	128.75	Agricultural	7.89%	1.49%	N/A
62	39-2-65.1	Southern	5.69	Residential	0.35%	1.49%	580
63	39-2-65	Tapp	62.27	Agricultural	3.82%	1.49%	N/A
64	39-1-5	College	28.69	Agricultural	1.76%	1.49%	N/A
65	39-2-66.1	Henderson Union	23.60	Industrial	1.45%	1.49%	N/A
66	46-19.1	Roberts	16.00	Residential	0.98%	1.49%	N/A
67	39-2-52	Dossett	57.60	Agri/Res	3.53%	1.49%	760
68	46-10	Cassius	56.82	Agricultural	3.48%	1.49%	N/A

**Total 1631.294 100.00% 100.00%** 1,408

### II. 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 and are silent 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.

#### **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 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.

#### 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.

### III. 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 Michgian, Minnesota, Indina, 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 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. It also was misleading on Mr. Beck's part to report the lower re-assessments since the primary cause of the

re-assesments were based on the County Official, who lived adjacent to the solar farm, appeal to the assessor for reductions with his own home." In that Clay County Case study the noted lack of lot sales after announcement of the solar farm also coincided with the recession in 2008/2009 and lack of lot sales effectively defined that area during that time.

I further note, that I was present at the hearing where Mr. Beck presented these findings and the predominance of his argument before the Lincoln County Board of Commissioner's was based on the one cancelled sale as well as a matched pair analysis of high-end homes adjoining a four-story call center. He hypothesized that a similar impact from that example could be compared to being adjacent solar farm without explaining the significant difference in view, setbacks, landscaping, traffic, light, and noise. Furthermore, Mr. Beck did have matched pairs adjoining a solar farm in his study that he put in the back of his report and then ignored as they showed no impact on property value.

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, NJ, September 16, 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.

#### **Conclusion of Impact Studies**

Of the four studies noted two included actual sales data to derive an opinion of no impact on value. The only study to conclude on a negative impact was 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.

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."

### 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 12 such brokers within 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.

### IV. University Studies

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

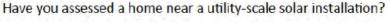
### A. University of Texas at Austin, May 2018 An Exploration of Property-Value Impacts Near Utility-Scale Solar Installations

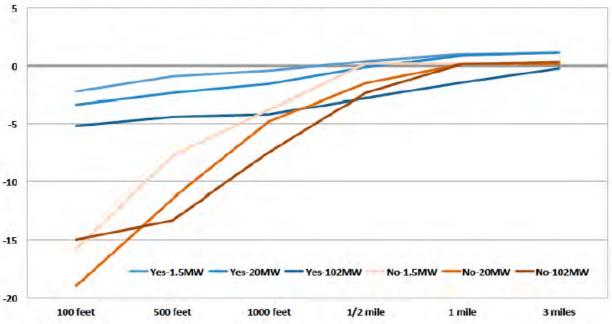
This study considers solar farms from two angles. First it looks at where solar farms are being located and concludes that they are being located primarily in low density residential areas where there are fewer homes than in urban or suburban areas.

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.

Chart B.2 - Estimates of Property Value Impacts (%) by Size of Facility,
Distance, & Respondent Type





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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.

### 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 dataset.

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 2<sup>nd</sup> and 3<sup>rd</sup> 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.

So based on this study I have checked the population for the Corydon Census County District (CCD) as shown below has a population density of 1,288 population 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.

# C. 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.

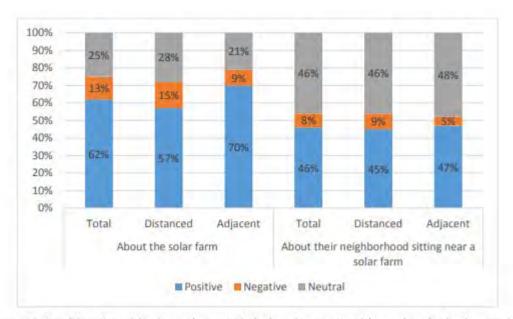


Figure 11: Residents' positive/negative word choices by geographic setting for both questions

# V. Summary of Solar Projects in Kentucky

I have researched the constructed and operating 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.

One of these six solar farms has limited analysis potential: E.W. Brown near Harrodsburg in Mercer County. The E. W. Brown 10 MW solar farm was built in 2014 and adjoins three coal-fired units. Given that research studies that I have read regarding fossil fuel power plants including "The Effect of Power Plants on Local Housing Values and Rents" by Lucas W. Davis and published May 2010, it would not be appropriate to use any data from this solar farm due to the influence of the coal-fired power plant that could have an impact on up to a one-mile radius. I note that the closest home to a solar panel at this site is 565 feet and the average distance is 1,026 feet. The homes are primarily clustered at the Herrington Lake frontage. Recent sales in this area range from \$164,000 to \$212,000 for these waterfront homes. Again, no usable data can be derived from this solar farm due to the adjoining coal fired plant.

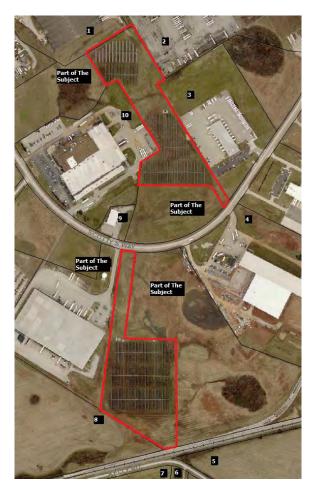
Furthermore, the Cooperative solar farm in Shelby County is a 0.5 MW facility on 35 acres built in 2020 that is proposed to eventually be 4 MW. This project is too new and there have been no home sales adjoining this facility. I also cannot determine how close the nearby homes are to the adjoining solar panels as the aerial imagery does not yet show these panels.

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.

The number of solar farms currently in operation 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.

						Total	Used	Avg. Dist	Closest	Adjoin	ing Use	by Acre			Adjoinin	g Use by	y Numb	er
Parcel #	State	County	City	Name	Output (MW)	Acres	Acres	to home	Home	Res	Agri	Agri/Res	Com		Reside1A	Agricul C	Comm/I	nd %
610	) KY	Warren	Bowling Green	Bowling Green	2	17.36	17.36	720	720	1%	64%	0%	36% <sup>F</sup>	100%	10%	30%	60%	100%
61	1 KY	Clark	Winchester	Cooperative Solar I	8.5	181.47	63	2,110	2,040	0%	96%	3%	0%	100%	22%	78%	0%	100%
612	2 KY	Kenton	Walton	Walton 2	2	58.03	58.03	891	120	21%	0%	60%	19%	100%	65%	0%	35%	100%
613	3 KY	Grant	Crittenden	Crittenden	2.7	181.7	34.1	1,035	345	22%	27%	51%	0% 🔽	100%	96%	4%	0%	100%
617	7 KY	Metcalfe	Summer Shade	Glover Creek		968.2	322.4	1,731	375	6%	25%	69%	0%	100%	83%	17%	0%	100%
618	8 KY	Garrard	Lancaster	Turkey Creek		752.8	297.1	976	240	8%	36%	51%	5%	100%	73%	12%	15%	100%
		Total Num	ber of Solar Farms		6													
				Average	3.80	359.9	132.0	1244	640	9%	41%	39%	10%		58%	24%	18%	
				Median	2.35	181.6	60.5	1006	360	7%	32%	51%	3%		69%	14%	7%	
				High	8.50	968.2	322.4	2110	2040	22%	96%	69%	36%		96%	78%	60%	
				Low	2.00	17.4	17.4	720	120	0%	0%	0%	0%		3%	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.

	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.

	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.

	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.

	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%

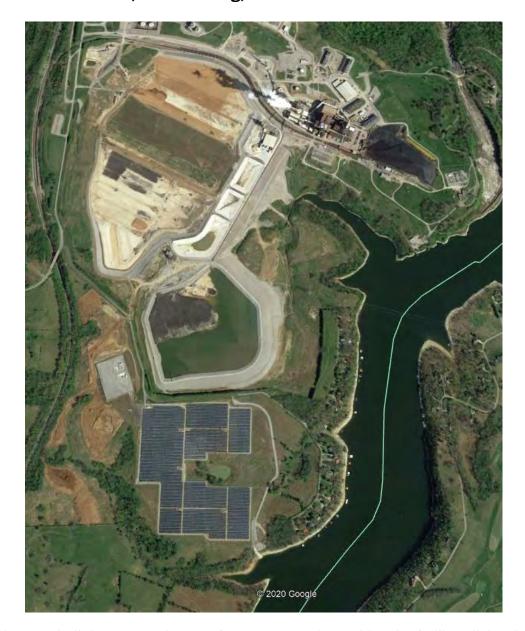
# 659: Cooperative Shelby Solar, Simpsonville, KY



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

	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.

	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%

# VI. 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 and land sales adjoining the 750+ solar farms that I have looked at over the last 10 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

#### Matched Pair - Crittenden Solar, Crittenden, 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 is currently selling lots at the west end of Clairborne for new home construction. He indicated 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.

Adjoin	ing Reside	ential Sales Afte	r Solar Fa	arm Approve	:d							
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	

Adjustm	ents										Avg	
Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% 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.

Adjoin	ing Reside	ential Sales Afte	r Solar Fa	arm Approve	ed							
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

Adjustm	nents										Avg	
Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% 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.

Adjoin	ing Resid	ential Sales Afte	r Solar Fa	arm Approve	ed							
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

Adjustm	ents										Avg	
Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% 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 Sol	lar Farm	Approved
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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

Adjustm	ients										Avg	
Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% 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%		
	_										40/	

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	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		

											Avg	
Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% 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.

The five matched pairs considered in this analysis includes two that show no impact on value, one that shows a negative impact on value, and two 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 -1% and +3%. The average indicated impact is +0% when all five of these indicators are blended.

Furthermore, the comments of the local real estate broker strongly support the data that shows no negative impact on value due to the proximity to the solar farm. This is further supported by the national data that is shown on the following pages.

#### 2. Matched Pair - Mulberry, Selmer, 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	<b>Parcels</b>
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	

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.

Adjoin	Adjoining Residential Sales After Solar Farm Built														
Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA S	\$/GBA	BR/BA	Park	Styl	e Other			
15	Adjoins	297 Count	ry 1.00	9/30/2016	\$150,000	2002	1,596	\$93.98	3/2	4-Gar	Ranc	h			
	Not	185 Dusty	7 1.85	8/17/2015	\$126,040	2009	1,463	\$86.15	3/2	2-Gar	Ranc	h			
	Not	53 Glen	1.13	3/9/2017	\$126,000	1999	1,475	\$85.42	3/2	2-Gar	Ranc	h Brick			
				Adjoining S	ales Adjusted	1									
Parcel	Solar	Address	Sales Price	Time	Site YB	GLA	Parl	k Otl	her To	tal '	% Diff	Distance			
15	Adjoins	297 Country	\$150,000						\$150	0,000		650			
	Not	185 Dusty	\$126,040	\$4,355	-\$4,41	1 \$9,167	\$10,0	00	\$145	5,150	3%				
	Not	53 Glen	\$126,000	-\$1,699	\$1,890	3 \$8,269	\$10,0	00	\$144	1,460	4%				
									Ave	rage	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.

						4/18/2019		4/18/2019
Parcel	Solar	Address	Acres	Date Sold	Sales Price	Adj for Time	\$/AC	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%	

#### Matched Pair - Grand Ridge Solar, Streator, 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 Complete	ea
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najoining residential bales inter botal 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 Resident	tial Sales After So	olar Farm C	ompleted					
#	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	

		Adjustments				
TAX ID	Date Sold	Time	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.

### 4. Matched Pair - Portage Solar, Portage, 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.

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 Sal	les After Solar Farm Comple	eted					
#	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	i					
#	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 Afto	er 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 S	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

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 Fa	arm	Not	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

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 Fa	arm	Not Adjoin Solar F	arm
	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.

#### 5. Matched Pair - Dominion Indy III, Indianapolis, 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 F	Residential Sa	les After Sola	ar Farm Comp	leted					
#	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	7	\$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 S	olar Farm	Not Adjoin Solar Farm				
	Average	Median	Average	Median			
Sales Price/SF	\$64.13	\$63.03	\$61.69	\$63.08			
GRA	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.

# 6. Matched Pair - Clarke County Solar, 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.

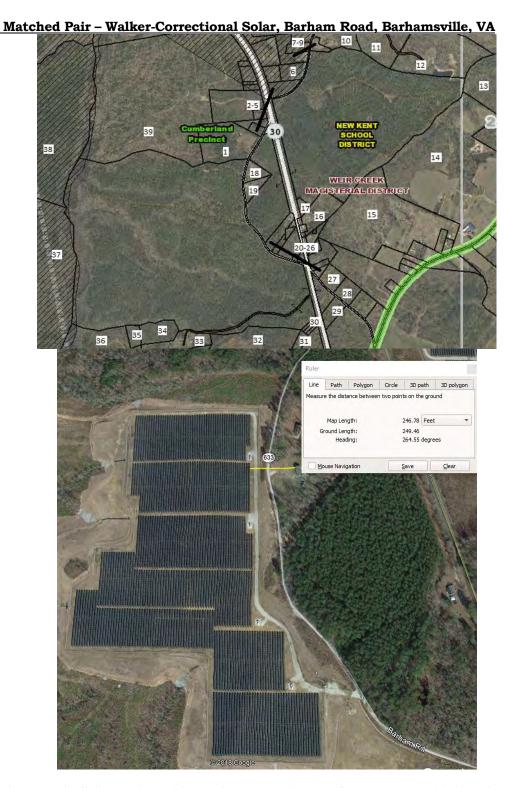
I've compared this home sale to a number of similar rural homes on similar parcels as shown below. I have used multiple sales that bracket the subject property in terms of sale date, year built, gross living area, bedrooms and bathrooms. Bracketing the parameters insures that all factors are well balanced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

Adjoining	Residential Sales A	fter Solar	Farm Approv	ed				
Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	\$/GBA	BR/
Adioins	833 Nations Spr	5.13	1/9/2017	\$295,000	1979	1.392	\$211.93	3/

Solar	Address	Acres	Date Solu	Sales Price	Dulli	GDA	Φ/GDA	DK/DA	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 A	ed	Adjoining	Sales Ad	justed								
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.



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.

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.

### 8. Matched Pair - Sappony Solar, Sussex County, VA

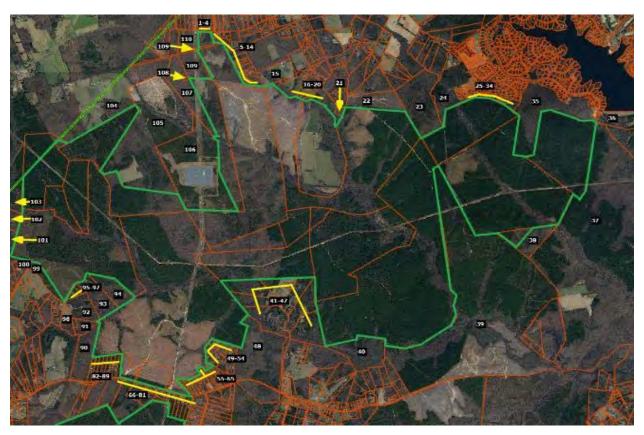


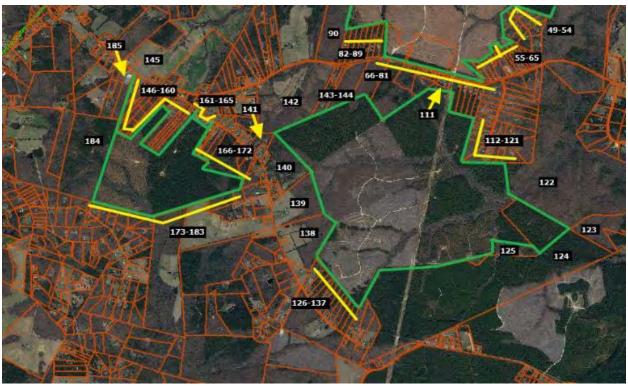
This project is a 30 MW facility located on a 322.68-acre tract that was built in the fourth quarter of 2017.

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.

Adjoin	Adjoining Residential Sales After Solar Farm Approved												
Parcel	Solar	Ad	ldress	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	Manu	
	Not	15698	3 Concord	3.92	7/31/2018	\$150,000	2010	2,310	\$64.94	4/2	Open	Manui	Fence
	Not	2320	9 Sussex	1.03	7/7/2020	\$95,000	2005	1,675	\$56.72	3/2	Det Crpt	Manui	Ī
	Not	6494	Rocky Br	4.07	11/8/2018	\$100,000	2004	1,405	\$71.17	3/2	Open	Manui	Ī
Adjoi	ning Sal	les Ad	justed								Av	g	
Tin	ie S	Site	YB	GLA	BR/BA	A Park	Othe	r 1	<b>otal</b>	% Diff	f % D	iff I	Distance
								\$1	28,400				1425
\$0	)		\$2,250	-\$21,29	99 \$5,000	)		\$1	35,951	-6%			
-\$5,6	560 \$1	3,000	\$3,800	\$10,20	9 \$5,000	\$1,500		\$1	22,849	4%			
-\$84	13		\$4,500	\$28,18	35			\$1	31,842	-3%			
											-19	%	

# 9. Matched Pair - Spotsylvania Solar, Paytes, VA





**Average Diff** 

**Average Diff** 

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 A	djusted									
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%	

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 A	djusted									
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%	

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

Solar	Address	Acres	Date Sold	Sales P	rice Built	GBA	\$/GBA	BR/BA	Park	Style	Other
Adjoins	13353 Post Oak	5.20	9/21/2020	\$300,0	00 1992	2,400	\$125.00	4/3	Drive 2	2-Story	Fn Bsmt
Not	9609 Logan Hgt	5.86	7/4/2019	\$330,0	00 2004	2,352	\$140.31	3/2	2Gar 2	2-Story	
Not	12810 Catharpia	n 6.18	1/30/2020	\$280,0	00 2008	2,240	\$125.00	4/2.5	Drive 2	2-Story Bs	mt/Nd Pnt
Not	10725 Rbrt Lee	5.01	10/26/2020	\$295,0	00 1995	2,166	\$136.20	4/3	Gar 2	2-Story	Fn Bsmt
Adjoinir	Adjoining Sales Adjusted										
Addı	ress Tin	ne	Ac/Loc	YB	GLA	BR/BA	Park	Other	Total	% Diff	Dist
13353 P	ost Oak								\$300,000	)	1171
9609 Log	gan Hgt \$12,	070		-\$19,800	\$5,388		-\$15,000	\$15,000	\$327,658	3 -9%	
12810 Ca	tharpian \$5.4	108		-\$22,400	\$16,000	\$5,000		\$15,000	\$299,008	3 0%	

-\$4,425 \$25,496

10725 Rbrt Lee

-\$849

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

-\$10,000

\$305,222

**Average Diff** 

-2%

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.

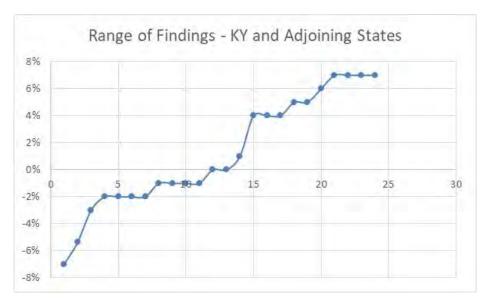
#### Conclusion

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 \$65,695 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 \$1,000,000 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 (2010-2020 Data)				
						Topo						Med.	Avg. Housing	
	Name	City	State	Acres	$\mathbf{M}\mathbf{W}$	Shift	Res	Ag	Ag/Res	Com/Ind	Popl.	Income	Unit	Veg. Buffer
1	Crittenden	Crittenden	KY	34	2.70	40	22%	51%	27%	0%	1,419	\$60,198	\$178,643	Light
2	Mulberry	Selmer	TN	160	5.00	60	13%	73%	10%	3%	467	\$40,936	\$171,746	Lt to Med
3	Grand Ridge	Streator	IL	160	20.00	1	8%	87%	5%	0%	96	\$70,158	\$187,037	Light
4	Portage	Portage	IN	56	2.00	0	19%	81%	0%	0%	6,642	\$65,695	\$186,463	Light
5	Dominion	Indianapolis	IN	134	8.60	20	3%	97%	0%	0%	3,774	\$61,115	\$167,515	Light
6	Walker	Barhamsville	VA	485	20.00	N/A	12%	68%	20%	0%	203	\$80,773	\$320,076	Light
7	Clarke Cnty	White Post	VA	234	20.00	70	14%	39%	46%	1%	578	\$81,022	\$374,453	Light
8	Sappony	Stony Crk	VA	322	20.00	N/A	2%	98%	0%	0%	74	\$51,410	\$155,208	Medium
9	Spotyslvania	Paytes	VA	3,500	617.00	160	37%	52%	11%	0%	74	\$120,861	\$483,333	Med to Hvy
	Average			565	79.48	50	14%	72%	13%	0%	1,481	\$70,241	\$247,164	
	Median			160	20.00	40	13%	73%	10%	0%	467	\$65,695	\$186,463	
	High			3,500	617.00	160	37%	98%	46%	3%	6,642	\$120,861	\$483,333	
	Low			34	2.00	0	2%	39%	0%	0%	74	\$40,936	\$155,208	

On the following page is a summary of the matched pairs for all of the solar farms noted above. They show a pattern of results from -7% to +7%. As can be seen in the chart of those results below, most of the data points are between -2% and +5%. This variability is common with real estate and consistent with market "static." I therefore conclude that these results strongly support an indication of no impact on property value due to the adjacent solar farm.



	J	·	J	Approx				Adj. Sale		Veg.
Pair Solar Farm	City	State	МW	Distance	Tax ID/Address	Date	Sale Price	Price	% Diff	Buffer
1 Crittenden	Crittenden	KY	2.7	373	250 Claiborne	Jan-19	\$120,000			Light
					315 N Fork	May-19	\$107,000	\$120,889	-1%	
2 Crittenden	Crittenden	KY	2.7	488	300 Claiborne	Sep-18	\$213,000			Light
					1795 Bay Valley	Dec-17	\$231,200	\$228,180	-7%	
3 Crittenden	Crittenden	KY	2.7	720	350 Claiborne	Jul-18	\$245,000			Light
					2160 Sherman	Jun-19	\$265,000	\$248,225	-1%	
4 Crittenden	Crittenden	KY	2.7	930	370 Claiborne	Aug-19	\$273,000			Light
					125 Lexington	Apr-18	\$240,000	\$254,751	7%	
5 Mulberry	Selmer	TN	5	400	0900A011	Jul-14	\$130,000			Light
					099CA043	Feb-15	\$148,900	\$136,988	-5%	
6 Mulberry	Selmer	TN	5	400	099CA002	Jul-15	\$130,000			Light
					0990NA040	Mar-15	\$120,000	\$121,200	7%	
7 Mulberry	Selmer	TN	5	480	491 Dusty	Oct-16	\$176,000			Light
					35 April	Aug-16	\$185,000	\$178,283	-1%	
8 Mulberry	Selmer	TN	5	650	297 Country	Sep-16	\$150,000			Medium
					53 Glen	Mar-17	\$126,000	\$144,460	4%	
9 Mulberry	Selmer	TN	5	685	57 Cooper	Feb-19	\$163,000			Medium
					191 Amelia	Aug-18	\$132,000	\$155,947	4%	
10 Grand Ridge	Streator	IL	20	480	1497 E 21st	Oct-16	\$186,000			Light
					712 Columbus	Jun-16	\$166,000	\$184,000	1%	
11 Dominion	Indianapolis	IN	8.6	400	2013249 (Tax ID)	Dec-15	\$140,000			Light
					5723 Minden	Nov-16	\$139,900	\$132,700	5%	
12 Dominion	Indianapolis	IN	8.6	400	2013251 (Tax ID)	Sep-17	\$160,000			Light
					5910 Mosaic	Aug-16	\$146,000	\$152,190	5%	
13 Dominion	Indianapolis	IN	8.6	400	2013252 (Tax ID)	May-17	\$147,000			Light
					5836 Sable	Jun-16	\$141,000	\$136,165	7%	
14 Dominion	Indianapolis	IN	8.6	400	2013258 (Tax ID)	Dec-15	\$131,750			Light
					5904 Minden	May-16	\$130,000	\$134,068	-2%	
15 Dominion	Indianapolis	IN	8.6	400	2013260 (Tax ID)	Mar-15	\$127,000			Light
					5904 Minden	May-16	\$130,000	\$128,957	-2%	
16 Dominion	Indianapolis	IN	8.6	400	2013261 (Tax ID)	Feb-14	\$120,000			Light
					5904 Minden	May-16	\$130,000	\$121,930	-2%	
17 Clarke Cnty	White Post	VA	20	1230	833 Nations Spr	Jan-17	\$295,000			Light
					6801 Middle	Dec-17	\$249,999	\$296,157	0%	
18 Walker	Barhamsville	VA	20	250	5241 Barham	Oct-18	\$264,000			Light
					9252 Ordinary	Jun-19	\$277,000	\$246,581	7%	
19 Clarke Cnty	White Post	VA	20	1230	833 Nations Spr	Aug-19	\$385,000			Light
					2393 Old Chapel	Aug-20	\$330,000	\$389,286	-1%	
20 Sappony	Stony Creek	VA	20	1425	12511 Palestine	Jul-18	\$128,400	****		Medium
	_				6494 Rocky Branch	Nov-18	\$100,000	\$131,842	-3%	
21 Spotsylvania	Paytes	VA	617	1270	12901 Orange Plnk	Aug-20	\$319,900			Medium
00.0	<b>.</b>			10	12717 Flintlock	Dec-20	\$290,000	\$326,767	-2%	
22 Spotsylvania	Paytes	VA	617	1950	9641 Nottoway	May-20	\$449,900	<b></b>		Medium
22.2	<b>.</b>		<del></del>		11626 Forest	Aug-20	\$489,900	\$430,246	4%	
23 Spotsylvania	Paytes	VA	617	1171	13353 Post Oak	Sep-20	\$300,000	dooc cc-		Heavy
					12810 Catharpin	Jan-20	\$280,000	\$299,008	0%	

	Avg.
$\mathbf{M}\mathbf{W}$	Distance
106.72	738
8.60	480
617.00	1,950
5.00	250

	Indicated
	Impact
Average	1%
Median	0%
High	7%
Low	-5%

I have further broken down these results based on the MWs, Landscaping, and distance from panel to show the following range of findings for these different categories.

This breakdown shows no homes between 100-200 feet to the closest solar panel. Solar farms up to 75 MW show homes between 201 and 500 feet with no impact on value. Most of the findings are for homes between 201 and 500 feet.

Light landscaping screens are showing no impact on value at any distances, though solar farms over 75.1 MW only show Medium and Heavy landscaping screens in the 3 examples identified.

MW Range 4.4 to 10									
Landscaping	Light	Light	Light	Medium	Medium	Medium	Heavy	Heavy	Heavy
Distance	100-200	201-500	500+	100-200	201-500	500+	100-200	201-500	500+
#	0	11	2	0	0	2	0	0	0
Average	N/A	1%	N/A	N/A	N/A	4%	N/A	N/A	N/A
Median	N/A	-1%	N/A	N/A	N/A	4%	N/A	N/A	N/A
High	N/A	7%	N/A	N/A	N/A	4%	N/A	N/A	N/A
Low	N/A	-5%	N/A	N/A	N/A	4%	N/A	N/A	N/A
10.1 to 30									
Landscaping	Light	Light	Light	Medium	Medium	Medium	Heavy	Heavy	Heavy
Distance	100-200	201-500	500+	100-200	201-500	500+	100-200	201-500	500+
#	0	2	2	0	0	1	0	0	0
Average	N/A	4%	-1%	N/A	N/A	-3%	N/A	N/A	N/A
Median	N/A	4%	-1%	N/A	N/A	-3%	N/A	N/A	N/A
High	N/A	7%	0%	N/A	N/A	-3%	N/A	N/A	N/A
Low	N/A	1%	-1%	N/A	N/A	-3%	N/A	N/A	N/A
30.1 to 75									
Landscaping	Light	Light	Light	Medium	Medium	Medium	Heavy	Heavy	Heavy
Distance	100-200	201-500	500+	100-200	201-500	500+	100-200	201-500	500+
#	0	0	0	0	0	0	0	0	0
Average	N/A	1%	0%	N/A	N/A	0%	N/A	N/A	N/A
Median	N/A	1%	0%	N/A	N/A	0%	N/A	N/A	N/A
High	N/A	2%	2%	N/A	N/A	9%	N/A	N/A	N/A
Low	N/A	1%	-2%	N/A	N/A	-7%	N/A	N/A	N/A
75.1+									
Landscaping	Light	Light	Light	Medium	Medium	Medium	Heavy	Heavy	Heavy
Distance	100-200	201-500	500+	100-200	201-500	500+	100-200	201-500	500+
#	0	0	0	0	0	2	0	0	1
Average	N/A	N/A	N/A	N/A	N/A	1%	N/A	N/A	0%
Median	N/A	N/A	N/A	N/A	N/A	1%	N/A	N/A	0%
High	N/A	N/A	N/A	N/A	N/A	4%	N/A	N/A	0%
Low	N/A	N/A	N/A	N/A	N/A	-2%	N/A	N/A	0%

#### B. Southeastern USA Data - Over 5 MW

I note that there is necessarily some overlap in the Regional data shown on the following pages and the data presented in Kentucky and the adjoining states. I have reshown the redundant solar farms just for consistency.

#### 1. Matched Pair - AM Best Solar Farm, Goldsboro, NC

This 5 MW solar farm adjoins Spring Garden Subdivision which had new homes and lots available for new construction during the approval and construction of the solar farm. The recent home sales have ranged from \$200,000 to \$250,000. This subdivision sold out the last homes in late 2014. The solar farm is clearly visible particularly along the north end of this street where there is only a thin line of trees separating the solar farm from the single-family homes.

Homes backing up to the solar farm are selling at the same price for the same floor plan as the homes that do not back up to the solar farm in this subdivision. According to the builder, the solar farm has been a complete non-factor. Not only do the sales show no difference in the price paid for the various homes adjoining the solar farm versus not adjoining the solar farm, but there are actually more recent sales along the solar farm than not.



There is no impact on the sellout rate, or time to sell for the homes adjoining the solar farm.

I spoke with a number of owners who adjoin the solar farm and none of them expressed any concern over the solar farm impacting their property value.

The data presented on the following page shows multiple homes that have sold in 2013 and 2014 adjoining the solar farm at prices similar to those not along the solar farm. These series of sales indicate that the solar farm has no impact on the adjoining residential use.

The homes that were marketed at Spring Garden are shown below.



The homes adjoining the solar farm are considered to have a light landscaping screen as it is a narrow row of existing pine trees supplemented with evergreen plantings.

Matched	Pairs
---------	-------

As of Date: 9/3/2014

TAX ID	Owner	Acres	Date Sold	Sales Price	Built	GBA	\$/GBA	Style
3600195570	Helm	0.76	Sep-13	\$250,000	2013	3,292	\$75.94	2 Story
3600195361	Leak	1.49	Sep-13	\$260,000	2013	3,652	\$71.19	2 Story
3600199891	McBrayer	2.24	Jul-14	\$250,000	2014	3,292	\$75.94	2 Story
3600198632	Foresman	1.13	Aug-14	\$253,000	2014	3,400	\$74.41	2 Story
3600196656	Hinson	0.75	Dec-13	\$255,000	2013	3,453	\$73.85	2 Story
	Average	1.27		\$253,600	2013.4	3,418	\$74.27	
	Median	1.13		\$253,000	2013	3,400	\$74.41	

## Adjoining Sales After Solar Farm Announced

TAX ID	Owner	Acres	Date Sold	Sales Price	Built	GBA	\$/GBA	Style
0	Feddersen	1.56	Feb-13	\$247,000	2012	3,427	\$72.07	Ranch
0	Gentry	1.42	Apr-13	\$245,000	2013	3,400	\$72.06	2 Story
	Average	1.49		\$246,000	2012.5	3,414	\$72.07	
	Median	1.49		\$246,000	2012.5	3,414	\$72.07	

# Adjoining Sales Before Solar Farm Announced

TAX ID	Owner	Acres	Date Sold	Sales Price	Built	GBA	\$/GBA Style
3600183905	Carter	1.57	Dec-12	\$240,000	2012	3,347	\$71.71 1.5 Story
3600193097	Kelly	1.61	Sep-12	\$198,000	2012	2,532	\$78.20 2 Story
3600194189	Hadwan	1.55	Nov-12	\$240,000	2012	3,433	\$69.91 1.5 Story
	Average	1.59		\$219,000	2012	2,940	\$74.95
	Median	1.59		\$219,000	2012	2,940	\$74.95

# Nearby Sales After Solar Farm Completed

TAX ID	Owner	Acres	Date Sold	Sales Price	Built	GBA	\$/GBA	Style
3600193710	Barnes	1.12	Oct-13	\$248,000	2013	3,400	\$72.94	2 Story
3601105180	Nackley	0.95	Dec-13	\$253,000	2013	3,400	\$74.41	2 Story
3600192528	Mattheis	1.12	Oct-13	\$238,000	2013	3,194	\$74.51	2 Story
3600198928	Beckman	0.93	Mar-14	\$250,000	2014	3,292	\$75.94	2 Story
3600196965	Hough	0.81	Jun-14	\$224,000	2014	2,434	\$92.03	2 Story
3600193914	Preskitt	0.67	Jun-14	\$242,000	2014	2,825	\$85.66	2 Story
3600194813	Bordner	0.91	Apr-14	\$258,000	2014	3,511	\$73.48	2 Story
3601104147	Shaffer	0.73	Apr-14	\$255,000	2014	3,453	\$73.85	2 Story
	Average	0.91		\$246,000	2013.625	3,189	\$77.85	
	Median	0.92		\$249,000	2014	3,346	\$74.46	

## Nearby Sales Before Solar Farm Announced

TAX ID	Owner	Acres	Date Sold	Sales Price	Built	GBA	\$/GBA Style
3600191437	Thomas	1.12	Sep-12	\$225,000	2012	3,276	\$68.68 2 Story
3600087968	Lilley	1.15	Jan-13	\$238,000	2012	3,421	\$69.57 1.5 Story
3600087654	Burke	1.26	Sep-12	\$240,000	2012	3,543	\$67.74 2 Story
3600088796	Hobbs	0.73	Sep-12	\$228,000	2012	3,254	\$70.07 2 Story
	Average Median	1.07 1.14		\$232,750 \$233,000	2012 2012	3,374 3,349	\$69.01 \$69.13

#### Matched Pair Summary

	Adjoins Sola	r Farm	Nearby Solar Farm			
	Average	Median	Average	Median		
Sales Price	\$253,600	\$253,000	\$246,000	\$249,000		
Year Built	2013	2013	2014	2014		
Size	3,418	3,400	3,189	3,346		
Price/SF	\$74.27	\$74.41	\$77.85	\$74.46		

#### **Percentage Differences**

Median Price	-2%
Median Size	-2%
Median Price/SF	0%

I note that 2308 Granville Drive sold again in November 2015 for \$267,500, or \$7,500 more than when it was purchased new from the builder two years earlier (Tax ID 3600195361, Owner: Leak). The neighborhood is clearly showing appreciation for homes adjoining the solar farm.

The Median Price is the best indicator to follow in any analysis as it avoids outlying samples that would otherwise skew the results. The median sizes and median prices are all consistent throughout the sales both before and after the solar farm whether you look at sites adjoining or nearby to the solar farm. The average size for the homes nearby the solar farm shows a smaller building size and a higher price per square foot. This reflects a common occurrence in real estate where the price per square foot goes up as the size goes down. So even comparing averages the indication is for no impact, but I rely on the median rates as the most reliable indication for any such analysis.

I have also considered four more recent resales of homes in this community as shown on the following page. These comparable sales adjoin the solar farm at distances ranging from 315 to 400 feet. The matched pairs show a range from -9% to +6%. The range of the average difference is -2% to +1% with an average of 0% and a median of +0.5%. These comparable sales support a finding of no impact on property value.

Parcel	_	Address	Acres	rm Approve	Sales Price	Built	GBA	\$/GRA	BR/BA	Park	Style	Other	Distance
raicei	Adjoins	103 Granville Pl	1.42	7/27/2018	\$265,000	2013	3,292	\$80.50	4/3.5	2-Car	2-Story	Other	385
	Not	2219 Granville	1.15	1/8/2018	\$260,000	2013	3,292	\$78.98	4/3.5	2-Car	2-Story		303
	Not	634 Friendly	0.96	7/31/2019	\$267,000	2012	3,053	\$87.45	4/4.5	2-Car	2-Story		
	Not	2403 Granville	0.69	4/23/2019	\$265,000	2013	2,816	\$94.11	5/3.5	2-Car	2-Story		
	NOU	2+05 Granvinc	0.09	4/25/2019	Ψ203,000	2017	2,010	ψ54.11	3/3.3	2-Cai	2-5t01y	A == #	
	Solar	A d d	T:	Cito	VD	CIA	DD/DA	Doul-	Other	Taka1	0/ <b>D:66</b>	Avg % Diff	
	Adjoins	<b>Address</b> 103 Granville Pl	Time	Site	YB	GLA	BR/BA	Park	Other	<b>Total</b> \$265,000	% Diff	-2%	
	Not	2219 Granville	\$4,382		\$1,300	\$0				\$265,682	0%	-2/0	
	Not	634 Friendly	-\$8,303		-\$6,675		-\$10,000			\$258,744	2%		
	Not	2403 Granville	-\$6,029		-\$0,073	\$31,356	-φ10,000			\$289,001	-9%		
	NOU	2403 Granvine	-ψ0,029		-φ1,525	φ31,330				Ψ209,001	-970		
				_	_								
-	_	ential Sales Afte											
Parcel	Solar	Address	Acres		Sales Price	Built	GBA		BR/BA		Style	Other	Distance
	Adjoins	104 Erin	2.24	6/19/2017	\$280,000	2014	3,549	\$78.90	5/3.5	2-Car	2-Story		315
	Not	2219 Granville	1.15	1/8/2018	\$260,000	2012	3,292	\$78.98	4/3.5	2-Car	2-Story		
	Not	634 Friendly	0.96	7/31/2019	\$267,000	2018	3,053	\$87.45	4/4.5	2-Car	2-Story		
	Not	2403 Granville	0.69	4/23/2019	\$265,000	2014	2,816	\$94.11	5/3.5	2-Car	2-Story		
												Avg	
	Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	
	Adjoins	104 Erin								\$280,000		0%	
	Not	2219 Granville	-\$4,448		\$2,600	\$16,238				\$274,390	2%		
	Not	634 Friendly	-\$17,370		-\$5,340	\$34,702	-\$10,000			\$268,992	4%		
	Not	2403 Granville	-\$15,029		\$0	\$48,285				\$298,256	-7%		
•	•	ential Sales Afte											
Parcel	Solar	Address	Acres		Sales Price	Built	GBA		BR/BA	Park	Style	Other	Distance 400
	Adjoins	2312 Granville	0.75	5/1/2018									
	DT /		1 15		\$284,900	2013	3,453	\$82.51	5/3.5	2-Car	2-Story		100
	Not	2219 Granville	1.15	1/8/2018	\$260,000	2012	3,292	\$78.98	4/3.5	2-Car	2-Story		100
	Not	2219 Granville 634 Friendly	0.96	1/8/2018 7/31/2019	\$260,000 \$267,000	2012 2018	3,292 3,053	\$78.98 \$87.45	4/3.5 4/4.5	2-Car 2-Car	2-Story 2-Story		100
		2219 Granville		1/8/2018	\$260,000	2012	3,292	\$78.98	4/3.5	2-Car	2-Story		100
	Not Not	2219 Granville 634 Friendly 2403 Granville	0.96 0.69	1/8/2018 7/31/2019 4/23/2019	\$260,000 \$267,000 \$265,000	2012 2018 2014	3,292 3,053 2,816	\$78.98 \$87.45 \$94.11	4/3.5 4/4.5 5/3.5	2-Car 2-Car 2-Car	2-Story 2-Story 2-Story	Avg	100
	Not Not <b>Solar</b>	2219 Granville 634 Friendly 2403 Granville Address	0.96	1/8/2018 7/31/2019	\$260,000 \$267,000	2012 2018	3,292 3,053	\$78.98 \$87.45	4/3.5 4/4.5	2-Car 2-Car 2-Car	2-Story 2-Story	% Diff	100
	Not Not <b>Solar</b> Adjoins	2219 Granville 634 Friendly 2403 Granville Address 2312 Granville	0.96 0.69 <b>Time</b>	1/8/2018 7/31/2019 4/23/2019	\$260,000 \$267,000 \$265,000 <b>YB</b>	2012 2018 2014 GLA	3,292 3,053 2,816	\$78.98 \$87.45 \$94.11	4/3.5 4/4.5 5/3.5	2-Car 2-Car 2-Car <b>Total</b> \$284,900	2-Story 2-Story 2-Story	_	100
	Not Not <b>Solar</b> Adjoins Not	2219 Granville 634 Friendly 2403 Granville Address 2312 Granville 2219 Granville	0.96 0.69 <b>Time</b> \$2,476	1/8/2018 7/31/2019 4/23/2019	\$260,000 \$267,000 \$265,000 <b>YB</b> \$1,300	2012 2018 2014 <b>GLA</b> \$10,173	3,292 3,053 2,816 BR/BA	\$78.98 \$87.45 \$94.11	4/3.5 4/4.5 5/3.5	2-Car 2-Car 2-Car <b>Total</b> \$284,900 \$273,948	2-Story 2-Story 2-Story % <b>Diff</b> 4%	% Diff	100
	Not Not Solar Adjoins Not Not	2219 Granville 634 Friendly 2403 Granville Address 2312 Granville 2219 Granville 634 Friendly	0.96 0.69 <b>Time</b> \$2,476 -\$10,260	1/8/2018 7/31/2019 4/23/2019	\$260,000 \$267,000 \$265,000 <b>YB</b> \$1,300 -\$6,675	2012 2018 2014 <b>GLA</b> \$10,173 \$27,986	3,292 3,053 2,816	\$78.98 \$87.45 \$94.11	4/3.5 4/4.5 5/3.5	2-Car 2-Car 2-Car <b>Total</b> \$284,900 \$273,948 \$268,051	2-Story 2-Story 2-Story % <b>Diff</b> 4% 6%	% Diff	100
	Not Not <b>Solar</b> Adjoins Not	2219 Granville 634 Friendly 2403 Granville Address 2312 Granville 2219 Granville	0.96 0.69 <b>Time</b> \$2,476	1/8/2018 7/31/2019 4/23/2019	\$260,000 \$267,000 \$265,000 <b>YB</b> \$1,300	2012 2018 2014 <b>GLA</b> \$10,173	3,292 3,053 2,816 BR/BA	\$78.98 \$87.45 \$94.11	4/3.5 4/4.5 5/3.5	2-Car 2-Car 2-Car <b>Total</b> \$284,900 \$273,948	2-Story 2-Story 2-Story % <b>Diff</b> 4%	% Diff	100
	Not Not Solar Adjoins Not Not Not	2219 Granville 634 Friendly 2403 Granville Address 2312 Granville 2219 Granville 634 Friendly 2403 Granville	0.96 0.69 <b>Time</b> \$2,476 -\$10,260 -\$7,972	1/8/2018 7/31/2019 4/23/2019 Site	\$260,000 \$267,000 \$265,000 <b>YB</b> \$1,300 -\$6,675 -\$1,325	2012 2018 2014 <b>GLA</b> \$10,173 \$27,986	3,292 3,053 2,816 BR/BA	\$78.98 \$87.45 \$94.11	4/3.5 4/4.5 5/3.5	2-Car 2-Car 2-Car <b>Total</b> \$284,900 \$273,948 \$268,051	2-Story 2-Story 2-Story % <b>Diff</b> 4% 6%	% Diff	100
-	Not Not  Solar Adjoins Not Not Not	2219 Granville 634 Friendly 2403 Granville  Address 2312 Granville 2219 Granville 634 Friendly 2403 Granville	0.96 0.69 <b>Time</b> \$2,476 -\$10,260 -\$7,972	1/8/2018 7/31/2019 4/23/2019 Site	\$260,000 \$267,000 \$265,000 <b>YB</b> \$1,300 -\$6,675 -\$1,325	2012 2018 2014 <b>GLA</b> \$10,173 \$27,986 \$47,956	3,292 3,053 2,816 BR/BA -\$10,000	\$78.98 \$87.45 \$94.11 <b>Park</b>	4/3.5 4/4.5 5/3.5 Other	2-Car 2-Car 2-Car <b>Total</b> \$284,900 \$273,948 \$268,051 \$303,659	2-Story 2-Story 2-Story % <b>Diff</b> 4% 6% -7%	% <b>Diff</b> 1%	
Adjoin: Parcel	Not Not  Solar Adjoins Not Not Not Solar Solar	2219 Granville 634 Friendly 2403 Granville  Address 2312 Granville 2219 Granville 634 Friendly 2403 Granville ential Sales Afte Address	0.96 0.69 Time \$2,476 -\$10,260 -\$7,972 r Solar Fa Acres	1/8/2018 7/31/2019 4/23/2019 Site	\$260,000 \$267,000 \$265,000 <b>YB</b> \$1,300 -\$6,675 -\$1,325 ed Sales Price	2012 2018 2014 <b>GLA</b> \$10,173 \$27,986 \$47,956	3,292 3,053 2,816 BR/BA -\$10,000	\$78.98 \$87.45 \$94.11 Park	4/3.5 4/4.5 5/3.5 Other	2-Car 2-Car 2-Car <b>Total</b> \$284,900 \$273,948 \$268,051 \$303,659	2-Story 2-Story 2-Story % Diff 4% 6% -7%	% Diff 1%	Distance
-	Not Not  Solar Adjoins Not Not Not Solar Adjoins Adjoins	2219 Granville 634 Friendly 2403 Granville  Address 2312 Granville 2219 Granville 634 Friendly 2403 Granville ential Sales Afte Address 2310 Granville	0.96 0.69 Time \$2,476 -\$10,260 -\$7,972 r Solar Fa Acres 0.76	1/8/2018 7/31/2019 4/23/2019 Site rm Approve Date Sold 5/14/2019	\$260,000 \$267,000 \$265,000 <b>YB</b> \$1,300 -\$6,675 -\$1,325 <b>ed</b> <b>Sales Price</b> \$280,000	2012 2018 2014 <b>GLA</b> \$10,173 \$27,986 \$47,956 <b>Built</b> 2013	3,292 3,053 2,816 BR/BA -\$10,000	\$78.98 \$87.45 \$94.11 Park \$/GBA \$85.05	4/3.5 4/4.5 5/3.5 Other BR/BA 5/3.5	2-Car 2-Car 2-Car <b>Total</b> \$284,900 \$273,948 \$268,051 \$303,659 <b>Park</b> 2-Car	2-Story 2-Story 2-Story % Diff 4% 6% -7% Style 2-Story	% Diff 1%	
-	Not Not  Solar Adjoins Not Not Not Solar Adjoins Adjoins Not	2219 Granville 634 Friendly 2403 Granville  Address 2312 Granville 2219 Granville 634 Friendly 2403 Granville ential Sales Afte Address 2310 Granville 2219 Granville	0.96 0.69 Time \$2,476 -\$10,260 -\$7,972 r Solar Fa Acres 0.76 1.15	1/8/2018 7/31/2019 4/23/2019 Site rm Approve Date Sold 5/14/2019 1/8/2018	\$260,000 \$267,000 \$265,000 <b>YB</b> \$1,300 -\$6,675 -\$1,325 ed <b>Sales Price</b> \$280,000 \$260,000	2012 2018 2014 <b>GLA</b> \$10,173 \$27,986 \$47,956 <b>Built</b> 2013 2012	3,292 3,053 2,816 BR/BA -\$10,000 GBA 3,292 3,292	\$78.98 \$87.45 \$94.11 Park  \$/GBA \$85.05 \$78.98	4/3.5 4/4.5 5/3.5 Other BR/BA 5/3.5 4/3.5	2-Car 2-Car 2-Car <b>Total</b> \$284,900 \$273,948 \$268,051 \$303,659 <b>Park</b> 2-Car 2-Car	2-Story 2-Story 2-Story % Diff 4% 6% -7%  Style 2-Story 2-Story	% Diff 1%	Distance
_	Not Not  Solar Adjoins Not Not Not Adjoins Adjoins Adjoins Not Not	2219 Granville 634 Friendly 2403 Granville  Address 2312 Granville 2219 Granville 634 Friendly 2403 Granville ential Sales Afte Address 2310 Granville 2219 Granville 634 Friendly	0.96 0.69 Time \$2,476 -\$10,260 -\$7,972 r Solar Fa Acres 0.76 1.15 0.96	1/8/2018 7/31/2019 4/23/2019 Site Site Date Sold 5/14/2019 1/8/2018 7/31/2019	\$260,000 \$267,000 \$265,000 <b>YB</b> \$1,300 -\$6,675 -\$1,325 ed <b>Sales Price</b> \$280,000 \$260,000 \$267,000	2012 2018 2014 <b>GLA</b> \$10,173 \$27,986 \$47,956 <b>Built</b> 2013 2012 2018	3,292 3,053 2,816 BR/BA -\$10,000 GBA 3,292 3,292 3,053	\$78.98 \$87.45 \$94.11 Park  \$/GBA \$85.05 \$78.98 \$87.45	4/3.5 4/4.5 5/3.5 Other BR/BA 5/3.5 4/3.5 4/4.5	2-Car 2-Car 2-Car <b>Total</b> \$284,900 \$273,948 \$268,051 \$303,659 <b>Park</b> 2-Car 2-Car 2-Car	2-Story 2-Story 2-Story % Diff 4% 6% -7%  Style 2-Story 2-Story 2-Story	% Diff 1%	Distance
-	Not Not  Solar Adjoins Not Not Not Solar Adjoins Adjoins Not	2219 Granville 634 Friendly 2403 Granville  Address 2312 Granville 2219 Granville 634 Friendly 2403 Granville ential Sales Afte Address 2310 Granville 2219 Granville	0.96 0.69 Time \$2,476 -\$10,260 -\$7,972 r Solar Fa Acres 0.76 1.15	1/8/2018 7/31/2019 4/23/2019 Site rm Approve Date Sold 5/14/2019 1/8/2018	\$260,000 \$267,000 \$265,000 <b>YB</b> \$1,300 -\$6,675 -\$1,325 ed <b>Sales Price</b> \$280,000 \$260,000	2012 2018 2014 <b>GLA</b> \$10,173 \$27,986 \$47,956 <b>Built</b> 2013 2012	3,292 3,053 2,816 BR/BA -\$10,000 GBA 3,292 3,292	\$78.98 \$87.45 \$94.11 Park  \$/GBA \$85.05 \$78.98	4/3.5 4/4.5 5/3.5 Other BR/BA 5/3.5 4/3.5	2-Car 2-Car 2-Car <b>Total</b> \$284,900 \$273,948 \$268,051 \$303,659 <b>Park</b> 2-Car 2-Car	2-Story 2-Story 2-Story % Diff 4% 6% -7%  Style 2-Story 2-Story	% Diff 1%	Distance
-	Not Not  Solar Adjoins Not Not Solar Adjoins Adjoins Not Not Not Not	2219 Granville 634 Friendly 2403 Granville  Address 2312 Granville 2219 Granville 634 Friendly 2403 Granville  ential Sales Afte Address 2310 Granville 2219 Granville 634 Friendly 2403 Granville	0.96 0.69 Time \$2,476 -\$10,260 -\$7,972 r Solar Fa Acres 0.76 1.15 0.96 0.69	1/8/2018 7/31/2019 4/23/2019 Site Site Prm Approve Date Sold 5/14/2019 1/8/2018 7/31/2019 4/23/2019	\$260,000 \$267,000 \$265,000 <b>YB</b> \$1,300 -\$6,675 -\$1,325 <b>Sales Price</b> \$280,000 \$260,000 \$267,000 \$265,000	2012 2018 2014 <b>GLA</b> \$10,173 \$27,986 \$47,956 <b>Built</b> 2013 2012 2018 2014	3,292 3,053 2,816 BR/BA -\$10,000 GBA 3,292 3,292 3,053 2,816	\$78.98 \$87.45 \$94.11 Park  \$/GBA \$85.05 \$78.98 \$87.45 \$94.11	4/3.5 4/4.5 5/3.5 Other BR/BA 5/3.5 4/3.5 4/4.5 5/3.5	2-Car 2-Car 2-Car 2-Car \$284,900 \$273,948 \$268,051 \$303,659 <b>Park</b> 2-Car 2-Car 2-Car 2-Car	2-Story 2-Story 2-Story  % Diff  4% 6% -7%  Style 2-Story 2-Story 2-Story 2-Story	% Diff 1% Other	Distance
_	Not Not  Solar Adjoins Not Not Not  ing Resid Solar Adjoins Not Not  Solar	2219 Granville 634 Friendly 2403 Granville  Address 2312 Granville 2219 Granville 634 Friendly 2403 Granville  ential Sales Afte Address 2310 Granville 2219 Granville 634 Friendly 2403 Granville	0.96 0.69 Time \$2,476 -\$10,260 -\$7,972 r Solar Fa Acres 0.76 1.15 0.96	1/8/2018 7/31/2019 4/23/2019 Site Site Date Sold 5/14/2019 1/8/2018 7/31/2019	\$260,000 \$267,000 \$265,000 <b>YB</b> \$1,300 -\$6,675 -\$1,325 ed <b>Sales Price</b> \$280,000 \$260,000 \$267,000	2012 2018 2014 <b>GLA</b> \$10,173 \$27,986 \$47,956 <b>Built</b> 2013 2012 2018	3,292 3,053 2,816 BR/BA -\$10,000 GBA 3,292 3,292 3,053	\$78.98 \$87.45 \$94.11 Park  \$/GBA \$85.05 \$78.98 \$87.45	4/3.5 4/4.5 5/3.5 Other BR/BA 5/3.5 4/3.5 4/4.5	2-Car 2-Car 2-Car 2-Car \$284,900 \$273,948 \$268,051 \$303,659 Park 2-Car 2-Car 2-Car 2-Car	2-Story 2-Story 2-Story % Diff 4% 6% -7%  Style 2-Story 2-Story 2-Story	% Diff 1% Other  Avg % Diff	Distance
_	Not Not  Solar Adjoins Not Not  Ing Resid Solar Adjoins Not Not  Solar Adjoins	2219 Granville 634 Friendly 2403 Granville  Address 2312 Granville 2219 Granville 634 Friendly 2403 Granville  ential Sales Afte Address 2310 Granville 634 Friendly 2403 Granville 634 Friendly 2403 Granville	0.96 0.69 Time \$2,476 -\$10,260 -\$7,972 r Solar Fa Acres 0.76 1.15 0.96 0.69	1/8/2018 7/31/2019 4/23/2019 Site Site Prm Approve Date Sold 5/14/2019 1/8/2018 7/31/2019 4/23/2019	\$260,000 \$267,000 \$265,000 <b>YB</b> \$1,300 -\$6,675 -\$1,325 <b>ed</b> <b>Sales Price</b> \$280,000 \$260,000 \$267,000 \$265,000	2012 2018 2014 GLA \$10,173 \$27,986 \$47,956 Built 2013 2012 2018 2014	3,292 3,053 2,816 BR/BA -\$10,000 GBA 3,292 3,292 3,053 2,816	\$78.98 \$87.45 \$94.11 Park  \$/GBA \$85.05 \$78.98 \$87.45 \$94.11	4/3.5 4/4.5 5/3.5 Other BR/BA 5/3.5 4/3.5 4/4.5 5/3.5	2-Car 2-Car 2-Car 2-Car \$284,900 \$273,948 \$268,051 \$303,659 Park 2-Car 2-Car 2-Car 2-Car 2-Car	2-Story 2-Story 2-Story % Diff 4% 6% -7%  Style 2-Story 2-Story 2-Story 2-Story % Diff	% Diff 1% Other	Distance
-	Not Not  Solar Adjoins Not Not  ing Resid Solar Adjoins Not Not  Not  Solar Adjoins Not Not Not Not Not	2219 Granville 634 Friendly 2403 Granville  Address 2312 Granville 2219 Granville 634 Friendly 2403 Granville ential Sales Afte Address 2310 Granville 634 Friendly 2403 Granville 634 Friendly 2403 Granville 2219 Granville	0.96 0.69  Time \$2,476 -\$10,260 -\$7,972  r Solar Fa Acres 0.76 1.15 0.96 0.69  Time \$10,758	1/8/2018 7/31/2019 4/23/2019 Site Site Prm Approve Date Sold 5/14/2019 1/8/2018 7/31/2019 4/23/2019	\$260,000 \$267,000 \$265,000 <b>YB</b> \$1,300 -\$6,675 -\$1,325 <b>ed</b> <b>Sales Price</b> \$280,000 \$260,000 \$267,000 \$265,000 <b>YB</b> \$1,300	2012 2018 2014 GLA \$10,173 \$27,986 \$47,956 Built 2013 2012 2018 2014 GLA \$0	3,292 3,053 2,816 BR/BA -\$10,000 GBA 3,292 3,292 3,053 2,816 BR/BA	\$78.98 \$87.45 \$94.11 Park  \$/GBA \$85.05 \$78.98 \$87.45 \$94.11	4/3.5 4/4.5 5/3.5 Other BR/BA 5/3.5 4/3.5 4/4.5 5/3.5	2-Car 2-Car 2-Car 2-Car \$284,900 \$273,948 \$268,051 \$303,659 Park 2-Car 2-Car 2-Car 2-Car 2-Car 2-Car	2-Story 2-Story 2-Story % Diff 4% 6% -7%  Style 2-Story 2-Story 2-Story 2-Story % Diff 3%	% Diff 1% Other  Avg % Diff	Distance
-	Not Not  Solar Adjoins Not Not  Ing Resid Solar Adjoins Not Not  Solar Adjoins	2219 Granville 634 Friendly 2403 Granville  Address 2312 Granville 2219 Granville 634 Friendly 2403 Granville  ential Sales Afte Address 2310 Granville 634 Friendly 2403 Granville 634 Friendly 2403 Granville	0.96 0.69 Time \$2,476 -\$10,260 -\$7,972 r Solar Fa Acres 0.76 1.15 0.96 0.69	1/8/2018 7/31/2019 4/23/2019 Site Site Prm Approve Date Sold 5/14/2019 1/8/2018 7/31/2019 4/23/2019	\$260,000 \$267,000 \$265,000 <b>YB</b> \$1,300 -\$6,675 -\$1,325 <b>ed</b> <b>Sales Price</b> \$280,000 \$260,000 \$267,000 \$265,000	2012 2018 2014 GLA \$10,173 \$27,986 \$47,956 Built 2013 2012 2018 2014 GLA \$0	3,292 3,053 2,816 BR/BA -\$10,000 GBA 3,292 3,292 3,053 2,816	\$78.98 \$87.45 \$94.11 Park  \$/GBA \$85.05 \$78.98 \$87.45 \$94.11	4/3.5 4/4.5 5/3.5 Other BR/BA 5/3.5 4/3.5 4/4.5 5/3.5	2-Car 2-Car 2-Car 2-Car \$284,900 \$273,948 \$268,051 \$303,659 Park 2-Car 2-Car 2-Car 2-Car 2-Car	2-Story 2-Story 2-Story % Diff 4% 6% -7%  Style 2-Story 2-Story 2-Story 2-Story % Diff	% Diff 1% Other  Avg % Diff	Distance

I have also considered the original sales prices in this subdivision relative to the recent resale values as shown in the chart below. This rate of appreciation is right at 2.5% over the last 6 years. Zillow indicates that the average home value within the 27530 zip code as of January 2014 was \$101,300 and as of January 2020 that average is \$118,100. This indicates an average increase in the market of 2.37%. I conclude that the appreciation of the homes adjoining the solar farm are not impacted by the presence of the solar farm based on this data.

	Initial Sale		Second Sale		Year			%	Apprec.
Address	Date	Price	Date	Price	Diff		Apprec.	Apprec.	%/Year
1 103 Granville Pl	4/1/2013	\$245,000	7/27/2018	\$265,000		5.32	\$20,000	8.16%	1.53%
2 105 Erin	7/1/2014	\$250,000	6/19/2017	\$280,000		2.97	\$30,000	12.00%	4.04%
3 2312 Granville	12/1/2013	\$255,000	5/1/2015	\$262,000		1.41	\$7,000	2.75%	1.94%
4 2312 Granville	5/1/2015	\$262,000	5/1/2018	\$284,900		3.00	\$22,900	8.74%	2.91%
5 2310 Granville	8/1/2013	\$250,000	5/14/2019	\$280,000		5.79	\$30,000	12.00%	2.07%
6 2308 Granville	9/1/2013	\$260,000	11/12/2015	\$267,500		2.20	\$7,500	2.88%	1.31%
7 2304 Granville	9/1/2012	\$198,000	6/1/2017	\$225,000		4.75	\$27,000	13.64%	2.87%
8 102 Erin	8/1/2014	\$253,000	11/1/2016	\$270,000		2.25	\$17,000	6.72%	2.98%
								Average	2.46%
								Median	2.47%

# 2. Matched Pair - Mulberry, Selmer, 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	<b>Parcels</b>
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	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	Styl	e Other	
15	Adjoins	297 Count	ry 1.00	9/30/2016	\$150,000	2002	1,596	\$93.98	3/2	4-Gar	Ranc	h	
	Not	185 Dusty	7 1.85	8/17/2015	\$126,040	2009	1,463	\$86.15	3/2	2-Gar	Ranc	h	
	Not	53 Glen	1.13	3/9/2017	\$126,000	1999	1,475	\$85.42	3/2	2-Gar	Ranc	h Brick	
				Adjoining S	ales Adjusted	i							
Parcel	Solar	Address	Sales Price	Time	Site YB	GLA	Pa	rk Otl	ner To	tal	% Diff	Distance	
15	Adjoins	297 Country	\$150,000						\$150	0,000		650	
	Not	185 Dusty	\$126,040	\$4,355	-\$4,41	1 \$9,167	7 \$10,	000	\$145	5,150	3%		
	Not	53 Glen	\$126,000	-\$1,699	\$1,89	0 \$8,269	\$10,	000	\$144	1,460	4%		
									Ave	rage	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.

						4/18/2019		4/18/2019
Parcel	Solar	Address	Acres	Date Sold	Sales Price	Adj for Time	\$/AC	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%	

# 3. Matched Pair - Leonard Road Solar Farm, Hughesville, MD



This 5 MW solar farm is located on 47 acres and mostly adjoins agricultural and residential uses to the west, south and east as shown above. The property also adjoins retail uses and a church. I looked at a 2016 sale of an adjoining home with a positive impact on value adjoining the solar farm of 2.90%. This is within typical market friction and supports an indication of no impact on property value.

I have shown this data below. The landscaping buffer is considered heavy.

#### Leonardtown Road Solar Farm, Hughesville, MD

#### Nearby Residential Sale After Solar Farm Construction

Address	Solar Farm	Acres	Date Sold S	Sales Price*	Built	GBA	\$/GBA	Style	BR/BA	Bsmt	Park	Upgrades	Other
14595 Box Elder Ct	Adjoins	3.00	2/12/2016	\$291,000	1991	2,174	\$133.85	Colonial	5/2.5	No	2 Car Att	N/A	Deck
15313 Bassford Rd	Not	3.32	7/20/2016	\$329,800	1990	2,520	\$130.87	Colonial	3/2.5	Finished	2 Car Att	Custom	Scr Por/Patio

<sup>\*\$9,000</sup> concession deducted from sale price for Box Elder and \$10,200 deducted from Bassford

Adjoining Sales Adju	sted		Adjustmen	ts				
Address	Date Sold	Sales Price	Time	GLA	Bsmt	Upgrades C	ther	Total
14595 Box Elder Ct	2/12/2016	\$291,000						\$291,000
15313 Bassford Rd	7/20/2016	\$329,800	-\$3,400	-\$13,840	-\$10,000	-\$15,000	-\$5,000	\$282,560

Difference Attributable to Location \$8,440 2.90%

This is within typical market friction and supports an indication of no impact on property value.

# 4. Matched Pair - Gastonia SC Solar, Gastonia, NC





This 5 MW project is located on the south side of Neal Hawkins Road just outside of Gastonia. The property identified above as Parcel 4 was listed for sale while this solar farm project was going

through the approval process. The property was put under contract during the permitting process with the permit being approved while the due diligence period was still ongoing. After the permit was approved the property closed with no concerns from the buyer. I spoke with Jennifer Bouvier, the broker listing the property and she indicated that the solar farm had no impact at all on the sales price. She considered some nearby sales to set the price and the closing price was very similar to the asking price within the typical range for the market. The buyer was aware that the solar farm was coming and they had no concerns.

This two-story brick dwelling was sold on March 20, 2017 for \$270,000 for a 3,437 square foot dwelling built in 1934 in average condition on 1.42 acres. The property has four bedrooms and two bathrooms. The landscaping screen is light for this adjoining home due to it being a new planted landscaping buffer.

Adjoining I	Residential Sale	s After So	lar Farm App	roved							
Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	\$/GLA	BR/BA	Park	Style	Other
Adjoins 6	09 Neal Hawkins	1.42	3/20/2017	\$270,000	1934	3,427	\$78.79	4/2	Open	2-Brick	
Not	1418 N Modena	4.81	4/17/2018	\$225,000	1930	2,906	\$77.43	3/3	2-Crprt	2-Brick	
Not 3	363 Dallas Bess	2.90	11/29/2018	\$265,500	1968	2,964	\$89.57	3/3	Open	FinBsmt	
Not 1	.612 Dallas Chry	2.74	9/17/2018	\$245,000	1951	3,443	\$71.16	3/2	Open	2-Brick	Unfin bath
Adjoining	Sales Adjuste	d								Avg	
Addre	ess Tin	ne Sit	е ҮВ	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	Distance
609 Neal H	Hawkins							\$270,000			225
1418 N M	Iodena \$7,3	319	\$2,700	\$32,271		-\$10,000		\$257,290	5%		
363 Dalla	is Bess \$74	16	-\$27,081	\$33,179	-\$10,000		\$53,100	\$262,456	3%		
1612 Dalla	as Chry \$4,1	10	-\$12,495	-\$911			\$10,000	\$235,704	13%		
										7%	

I also considered the newer adjoining home identified as Parcel 5 that sold later in 2017 and it likewise shows no negative impact on property value. This is also considered a light landscaping buffer.

Adjoining Residential Sales After Solar Farm Approved													
Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	\$/GLA	BR/BA	Park	Style			
Adjoins	611 Neal Hawkins	0.78	7/6/2017	\$288,000	1991	2,256	\$127.66	5/3	2-Gar	1.5 Brick			
Not	1211 Still Frst	0.51	7/30/2018	\$280,000	1989	2,249	\$124.50	3/3	2-Gar	Br Rnch			
Not	2867 Colony Wds	0.52	8/14/2018	\$242,000	1990	2,006	\$120.64	3/3	2-Gar	Br Rnch			
Not	1010 Strawberry	1.00	10/4/2018	\$315,000	2002	2,330	\$135.19	3/2.5	2-Gar	1.5 Brick			

Adjoining Sales Adjusted Avg												
Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	Distance	
611 Neal Hawkins								\$288,000			145	
1211 Still Frst	\$1,341		\$2,800	\$697				\$284,838	1%			
2867 Colony Wds	\$7,714		\$1,210	\$24,128				\$275,052	4%			
1010 Strawberry	-\$4,555		-\$17,325	-\$8,003	\$5,000			\$290,116	-1%			
										2%		

# 5. Matched Pair - Summit/Ranchlands Solar, Moyock, NC



\$357,000

\$333,625

\$354,921

-\$5,000 \$340,286

7%

5%

4%

This project is located at 1374 Caritoke Highway, Moyock, NC. This is an 80 MW facility on a parent tract of 2,034 acres. Parcels Number 48 and 53 as shown in the map above were sold in 2016. The project was under construction during the time period of the first of the matched pair sales and the permit was approved well prior to that in 2015.

I looked at multiple sales of adjoining and nearby homes and compared each to multiple comparables to show a range of impacts from -10% up to +11% with an average of +2% and a median of +3%. These ranges are well within typical real estate variation and supports an indication of no impact on property value.

	Adjoinir	ng Residen	tial Sal	es After S	olar Farm A	pproved								
	Solar	Addre		Acres		Sales Price		GBA		BR/BA		Style	Other	Distance
48	Adjoins	129 Pi		4.29	4/15/2016	\$170,000	1985	1,559	\$109.04	3/2	Drive	MFG		1,060
	Not	102 Tin		1.30	4/1/2016	\$175,500	2009	1,352	\$129.81	3/2	Drive	MFG		
	Not	120 Ranc	hland	0.99	10/1/2014	\$170,000	2002	1,501	\$113.26	3/2	Drive	MFG		
													Avg	
	Solar	Addre 129 Pii		Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	
	Adjoins Not	102 Tin		\$276	\$10,000	-\$29,484	\$18,809				\$170,000 \$175,10		-3%	
	Not	102 IIII		\$10,735	\$10,000	-\$29,464 -\$20,230	\$4,598				\$175,10			
	NOL	120 Ranc	manu	\$10,735	\$10,000	-φ2U,23U	<b>Ф</b> 4,396				φ175,100	3 -3%		
Solar	: Ac	ldress	Acres	Date So	old Sales I	Price Built	t GBA	\$/GL	A BR/B	A Par	k Sty	7le	Other	
Adjoin	s 10	5 Pinto	4.99	12/16/2	016 \$206,	000 1978	1,484	\$138.8	1 3/2	Det	G Ran	ıch		
Not	11	1 Spur	1.15	2/1/20	16 \$193,	000 1985	2,013	\$95.88	8 4/2	Gar	r Ran	ıch		
Not	103	Marshall	1.07	3/29/20	)17 \$196,	000 2003	1,620	\$120.9	9 3/2	Driv	re Ran	ıch		
Not	127 F	Ranchland	0.00	6/9/20	15 \$219,	900 1988	1,910	\$115.1	3 3/2	Gar/3	Det Ran	ich		
Adioi	ning Sal	les Adjus	tod.									Avg		
•	iing sa ldress	•		te Yl		DD/D/	D1-	041	<b></b>	-4-1 (	0/ <b>D:cc</b>		D:-4	
	Finto	Time	Si	te Y	B GLA	BR/BA	A Park	Oth		otal ' 06,000	% Diff	% Diff	Distance 980	;
11	1 Spur	\$6,74	7 \$10,	000 -\$6,	755 -\$25,3	59			\$17	7,633	14%			
103	Marshal	1 -\$2,21	2 \$10,	000 -\$24	500 -\$8,2	27	\$5,000	C	\$17	6,212	14%			
127 R	anchlan				995 -\$24,5	523	-\$10,00	00		7,781	4%			
		, , , , , , ,	- 4,		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		7-7,-		7	.,		11%		
												11/0		
Adioin	ina Pesi	dential Sa	les Afts	r Solor Fo	rm Built									
Parcel	•	uentiai sa Addre		Acres		Sales Price	Built	GBA	\$/GBA	BR/BA	Park	Style	Other	Distance
15	Adjoins	318 Green		0.44	9/15/2019	\$357,000	2005	3,460	\$103.18	4/4	2-Car	1.5 Brick		570
	Not	195 St An		0.55	6/17/2018	\$314,000	2002	3,561	\$88.18	5/3	2-Car	2.0 Brick		0.0
	Not	336 Green		0.64	1/13/2019	\$365,000	2006	3,790	\$96.31	6/4	3-Car	2.0 Brick		
	Not	275 Green		0.36	8/15/2019	\$312,000	2003	3,100	\$100.65	5/3	2-Car	2.0 Brick		
													Avg	
	Solar	Addre	ss	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	

\$4,710

-\$1,825

\$3,120

-\$7,125 \$10,000

\$28,986 \$10,000

-\$25,425

Adjoins 318 Green View

195 St Andrews

336 Green View

275 Green View

\$12,040

\$7,536

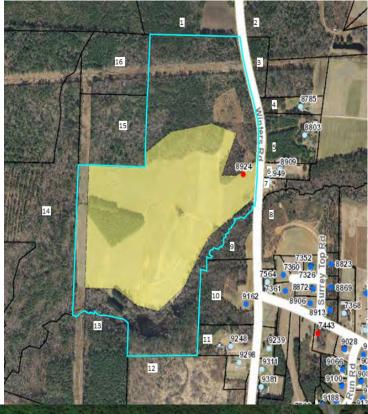
\$815

Not

Not Not

Adjoin	ing Resi	dential Sales Aft	er Solar Fa	ırm Built									
Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	\$/GBA	BR/BA	Park	Style	Other	Distance
29	Adjoins	164 Ranchland	1.01	4/30/2019	\$169,000	1999	2,052	\$82.36	4/2	Gar	MFG		440
	Not	150 Pinto	0.94	3/27/2018	\$168,000	2017	1,920	\$87.50	4/2	Drive	MFG		
	Not	105 Longhorn	1.90	10/10/2017	\$184,500	2002	1,944	\$94.91	3/2	Drive	MFG		
	Not	112 Pinto	1.00	7/27/2018	\$180,000	2002	1,836	\$98.04	3/2	Drive	MFG	Fenced	
												Avg	
	Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	
	Adjoins	164 Ranchland								\$169,000		-10%	
	Not	150 Pinto	\$5,649	***	-\$21,168	\$8,085			\$5,000	\$165,566			
	Not	105 Longhorn	\$8,816	-\$10,000	-\$3,875	\$7,175			\$5,000	\$191,616			
	Not	112 Pinto	\$4,202		-\$3,780	\$14,824			\$5,000	\$200,245	-18%		
Adioin	ing Resi	dential Sales Aft	er Solar Fo	ırm Ruilt									
•	Solar	Address	Acres		Sales Price	Built	GBA	\$/GBA	BR/BA	Park	Style	Other	Distance
I arcci	Adjoins	358 Oxford	10.03	9/16/2019	\$478,000	2008	2,726	\$175.35	3/3	2 Gar	Ranch	Other	635
	Not	276 Summit	10.01	12/20/2017		2006	1,985	\$178.84	3/2	2 Gar	Ranch		
	Not	176 Providence	6.19	5/6/2019	\$425,000	1990	2,549	\$166.73	3/3	4 Gar	Ranch	Brick	
	Not	1601 B Caratoke	12.20	9/26/2019	\$440,000	2016	3,100	\$141.94	4/3.5	5 Gar	Ranch	Pool	
	1100	1001 B caratone	12.20	5/20/2015	φ110,000	2010	0,100	Ψ111.51	1,0.0	o dai	Ranch	1 001	
												Avg	
	<b>Solar</b> Adjoins	Address 358 Oxford	Time	Site	YB	GLA	BR/BA	Park	Other	<b>Total</b> \$478,000	% Diff	<b>% Diff</b> 5%	
	Not	276 Summit	\$18,996		\$3,550	\$106,017	\$10,000			\$493,564	-3%		
	Not	176 Providence	\$4,763		\$38,250	\$23,609		-\$10,000	-\$25,000	\$456,623	4%		
	Not	1601 B Caratoke	-\$371	\$50,000	-\$17,600	-\$42,467	-\$5,000	-\$10,000		\$414,562	13%		
Adjoin	ing Resi	dential Sales Aft	er Solar Fa	ırm Approve	d								
Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	\$/GBA	BR/BA	Park	Style	Other	Distance
	Nearby	343 Oxford	10.01	3/9/2017	\$490,000	2016	3,753	\$130.56	3/3	2 Gar	1.5 Story	Pool	970
	Not	287 Oxford	10.01	9/4/2017	\$600,000	2013	4,341	\$138.22	5/4.5	8-Gar	1.5 Story	Pool	
	Not	301 Oxford	10.00	4/23/2018	\$434,000	2013	3,393	\$127.91	5/3	2 Gar	1.5 Story		
	Not	218 Oxford	10.01	4/4/2017	\$525,000	2006	4,215	\$124.56	4/3	4 Gar	1.5 Story	VG Barn	
												Avg	
	<b>Solar</b> Adjoins	Address 343 Oxford	Time	Site	YB	GLA	BR/BA	Park	Other	<b>Total</b> \$490,000		<b>% Diff</b> 3%	
	Not	287 Oxford	-\$9,051		\$9,000		-\$15,000	-\$25,000		\$494,932			
	Not	301 Oxford	-\$14,995	-\$10,000	\$6,510	\$36,838				\$452,353	8%		
	Not	218 Oxford	-\$1,150		\$26,250	-\$46,036		-\$10,000	-\$10,000	\$484,064	1%		

# 6. Matched Pair - Tracy Solar, Bailey, NC





This project is located in rural Nash County on Winters Road with a 5 MW facility that was built in 2016 on 50 acres. A local builder acquired parcels 9 and 10 following construction as shown below

100011001			ary rarranear	_
Adjoining L	and Sales Aft	er Solar Farm	Completed	

#	Solar Farm	TAX ID	Grantor	Grantee	Address	Acres	Date Sold	Sales Price	\$/AC	Other
9 & 10	Adjoins	316003	Cozart	Kingsmill	9162 Winters	13.22	7/21/2016	\$70,000	\$5,295	
		& 316004								
	Not	6056	Billingsly		427 Young	41	10/21/2016	\$164,000	\$4,000	
	Not	33211	Fulcher	Weikel	10533 Cone	23.46	7/18/2017	\$137,000	\$5,840	Doublewide, structures
	Not	106807	Perry	Gardner	Claude Lewis	11.22	8/10/2017	\$79,000	\$7,041	Gravel drive for sub, cleared
	Not	3437	Vaughan	N/A	11354 Old	18.73	Listing	\$79,900	\$4,266	Small cemetery,wooded
					Lewis Sch					

### Adjoining Sales Adjusted

Time	Acres	Location	Other	<b>Adj \$/Ac</b> \$5,295	% Diff
\$0	\$400	\$0	\$0	\$4,400	17%
-\$292	\$292	\$0	-\$500	\$5,340	-1%
-\$352	\$0	\$0	-\$1,000	\$5,689	-7%
-\$213	\$0	\$0	\$213	\$4,266	19%

#### Average 7%

#### Adjoining Residential Sales After Solar Farm Completed

#	Solar Farm	n	Address	Acres	Date Sold	Sales Price	Built	GLA	\$/GLA	BR/BA	Style	Other
9 & 10	Adjoins	ţs.	9162 Winters	13.22	1/5/2017	\$255,000	2016	1,616	\$157.80	3/2	Ranch	1296 sf wrkshp
	Not	V	7352 Red Fox	0.93	6/30/2016	\$176,000	2010	1,529	\$115.11	3/2	2-story	

# Adjoining Sales Adjusted

Time	Acres	YB	GLA	Style	Other	Total	% Diff
						\$255,000	
\$0	\$44,000	\$7,392	\$5,007	\$5,000	\$15,000	\$252,399	1%

The comparables for the land show either a significant positive relationship or a mild negative relationship to having and adjoining solar farm, but when averaged together they show no negative impact. The wild divergence is due to the difficulty in comping out this tract of land and the wide variety of comparables used. The two comparables that show mild negative influences include a property that was partly developed as a residential subdivision and the other included a doublewide with some value and accessory agricultural structures. The tax assessed value on the improvements were valued at \$60,000. So both of those comparables have some limitations for comparison. The two that show significant enhancement due to adjacency includes a property with a cemetery located in the middle and the other is a tract almost twice as large. Still that larger tract after adjustment provides the best matched pair as it required the least adjustment. I therefore conclude that there is no negative impact due to adjacency to the solar farm shown by this matched pair.

The dwelling that was built on the site was a build-to-suit and was compared to a nearby homesale of a property on a smaller parcel of land. I adjusted for that differenced based on a \$25,000 value for a 1-acre home site versus the \$70,000 purchase price of the larger subject tract. The other adjustments are typical and show no impact due to the adjacency to the solar farm.

The closest solar panel to the home is 780 feet away.

I note that the representative for Kingsmill Homes indicated that the solar farm was never a concern in purchasing the land or selling the home. He also indicated that they had built a number of nearby homes across the street and it had never come up as an issue.

# 7. Matched Pair - Manatee Solar Farm, Parrish, FL



This solar farm is located near Seminole Trail, Parrish, FL. The solar farm has a 74.50 MW output and is located on a 1,180.38 acre tract and was built in 2016. The tract is owned by Florida Power & Light Company.

I have considered the recent sale of 13670 Highland Road, Wimauma, Florida. This one-story, concrete block home is located just north of the solar farm and separated from the solar farm by a railroad corridor. This home is a 3 BR, 3 BA 1,512 s.f. home with a carport and workshop. The property includes new custom cabinets, granite counter tops, brand new stainless steel appliances, updated bathrooms and new carpet in the bedrooms. The home is sitting on 5 acres. The home was built in 1997.

I have compared this sale to several nearby homesales as part of this matched pair analysis as shown below. The landscaping separating the home from the solar farm is considered heavy.

Solar	TAX ID/Address	Acres	Date Sold	Sales Price	Built	GBA	\$/GBA	BR/BA	Park	Style	Note
Adjoins	13670 Highland	5.00	8/21/2017	\$255,000	1997	1,512	\$168.65	3/3	Carport/Wrkshp	Ranch	Renov.
Not	2901 Arrowsmith	1.91	1/31/2018	\$225,000	1979	1,636	\$137.53	3/2	2 Garage/Wrkshp	Ranch	
Not	602 Butch Cassidy	1.00	5/5/2017	\$220,000	2001	1,560	\$141.03	3/2	N/A	Ranch	Renov.
Not	2908 Wild West	1.23	7/12/2017	\$254,000	2003	1,554	\$163.45	3/2	2 Garage/Wrkshp	Ranch	Renov.
Not	13851 Highland	5.00	9/13/2017	\$240,000	1978	1.636	\$146.70	4/2	3 Garage	Ranch	Renov

		Adjoining	g Sales Ad							
Solar	TAX ID/Address	Time	Acres	YB	GLA	BR/BA	Park	Note	Total	% Diff
Adjoins	13670 Highland								\$255,000	
Not	2901 Arrowsmith	\$2,250	\$10,000	\$28,350	-\$8,527	\$5,000	-\$10,000	\$10,000	\$262,073	-3%
Not	602 Butch Cassidy	-\$2,200	\$10,000	-\$6,160	-\$3,385	\$5,000	\$2,000		\$225,255	12%
Not	2908 Wild West	\$0	\$10,000	-\$10,668	-\$3,432	\$5,000	-\$10,000		\$244,900	4%
Not	13851 Highland	\$0	\$0	\$31,920	-\$9,095	\$3,000	-\$10,000		\$255,825	0%
									Average	3%

The sales prices of the comparables before adjustments range from \$220,000 to \$254,000. After adjustments they range from \$225,255 to \$262,073. The comparables range from no impact to a strong positive impact. The comparables showing -3% and +4% impact on value are considered within a typical range of value and therefore not indicative of any impact on property value.

This set of matched pair data falls in line with the data seen in other states. The closest solar panel to the home at 13670 Highland is 1,180 feet. There is a wooded buffer between these two properties.

I have included a map showing the relative location of these properties below.



# 8. Matched Pair - McBride Place Solar Farm, Midland, NC



This project is located on Mount Pleasant Road, Midland, North Carolina. The property is on 627 acres on an assemblage of 974.59 acres. The solar farm was approved in early 2017 for a 74.9 MW facility.

I have considered the sale of 4380 Joyner Road which adjoins the proposed solar farm near the northwest section. This property was appraised in April of 2017 for a value of \$317,000 with no consideration of any impact due to the solar farm in that figure. The property sold in November

2018 for \$325,000 with the buyer fully aware of the proposed solar farm. The landscaping buffer relative to Joyner Road, Hayden Way, Chanel Court and Kristi Lane is considered medium, while the landscaping for the home at the north end of Chanel Court is considered very light.

I have considered the following matched pairs to the subject property.

						<i>J</i>	1 0					
A	djoining Re	esidential Sale	s After Solar	Farm Approved								
	Solar	Address	Acre	s Date Sold	Sales Price	Built	GBA	\$/GBA	BR/BA	Park	Style	Other
	Adjoins	4380 Joyne	er 12.00	11/22/2017	\$325,000	1979	1,598	\$203.38	3/2	2xGar	Ranch	Outbldg
	Not	3870 Elkwo	od 5.50	8/24/2016	\$250,000	1986	1,551	\$161.19	3/2.5	Det 2xGar	Craft	
	Not	8121 Lower R	ocky 18.00	2/8/2017	\$355,000	1977	1,274	\$278.65	2/2	2xCarprt	Ranch	Eq. Fac.
	Not	13531 Cabar	rus 7.89	5/20/2016	\$267,750	1981	2,300	\$116.41	3/2	2xGar	Ranch	
1	Adjoinin	g Sales Adj	usted									
	Time	Acres	YB	Condition	GLA	BR/BA	P	ark	Other	Total	%	Diff
										\$325,00	0	
	\$7,500	\$52,000	-\$12,250	\$10,000	\$2,273	-\$2,000	\$2	,500	\$7,500	\$317,52	3 :	2%
•	\$7,100	-\$48,000	\$4,970		\$23,156	\$0	\$3	3,000	-\$15,000	\$330,22	6 -	2%
	\$8,033	\$33,000	-\$3,749	\$20,000	-\$35,832	\$0		\$0	\$7,500	\$296,70	2	9%
										Average		3%
										Average	;	3%

The home at 4380 Joyner Road is 275 feet from the closest solar panel.

I also considered the recent sale of a lot at 5800 Kristi Lane that is on the east side of the proposed solar farm. This 4.22-acre lot sold in December 2017 for \$94,000. A home was built on this lot in 2019 with the closest point from home to panel at 689 feet. The home site is heavily wooded and their remains a wooded buffer between the solar panels and the home. I spoke with the broker, Margaret Dabbs, who indicated that the solar farm was considered a positive by both buyer and seller as it insures no subdivision will be happening in that area. Buyers in this market are looking for privacy and seclusion.

The breakdown of recent lot sales on Kristi are shown below with the lowest price paid for the lot with no solar farm exposure, though that lot has exposure to Mt Pleasant Road South. Still the older lot sales have exposure to the solar farm and sold for higher prices than the front lot and adjusting for time would only increase that difference.

Adjoin	ing Lot S	ales After Solar	Farm Built					
Parcel	Solar	Address	Acres	Date Sold	Sales Price	\$/AC	\$/Lot	
	Adjoins	5811 Kristi	3.74	5/1/2018	\$100,000	\$26,738	\$100,000	
	Adjoins	5800 Kristi	4.22	12/1/2017	\$94,000	\$22,275	\$94,000	
	Not	5822 Kristi	3.43	2/24/2020	\$90,000	\$26,239	\$90,000	

The lot at 5811 Kristi Lane sold in May 2018 for \$100,000 for a 3.74-acre lot. The home that was built later in 2018 is 505 feet to the closest solar panel. This home then sold to a homeowner for \$530,000 in April 2020. I have compared this home sale to other properties in the area as shown below.

٠	•		
٠.	7	9	

Adjoining Residential Sales After Solar Farm Built												
Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	\$/GBA	BR/BA	Park	Style	Other	
Adjoins	5811 Kristi	3.74	3/31/2020	\$530,000	2018	3,858	\$137.38	5/3.5	2 Gar	2-story	Cement Ext	
Not	3915 Tania	1.68	12/9/2019	\$495,000	2007	3,919	\$126.31	3/3.5	2 Gar	2-story	3Det Gar	
Not	6782 Manatee	1.33	3/8/2020	\$460,000	1998	3,776	\$121.82	4/2/2h	2 Gar	2-story	Water	
Not	314 Old Hickory	1.24	9/20/2019	\$492,500	2017	3,903	\$126.18	6/4.5	2 Gar	2-story		
											Avg	
Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	
Adjoins	5811 Kristi								\$530,000		5%	
Not	3915 Tania	\$6,285		\$27,225	-\$3,852		-\$20,000		\$504,657	5%		
Not	6782 Manatee	\$1,189		\$46,000	\$4,995	\$5,000			\$517,183	2%		
Not	314 Old Hickory	\$10,680		\$2,463	-\$2,839	-\$10,000			\$492,803	7%		

After adjusting the comparables, I found that the average adjusted value shows a slight increase in value for the subject property adjoining a solar farm. As in the other cases, this is a mild positive impact on value but within the typical range of real estate transactions.

I also looked at 5833 Kristi Lane that sold on 9/14/2020 for \$625,000. This home is 470 feet from the closest panel.

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	\$/GLA	BR/BA	Park	Style	Other
Nearby	5833 Kristi	4.05	9/14/2020	\$625,000	2008	4,373	\$142.92	5/4	3-Car	2-Brick	
Not	4055 Dakeita	4.90	12/30/2020	\$629,000	2005	4,427	\$142.08	4/4	4-Car	2-Brick	4DetGar/Stable
Not	9615 Bales	2.16	6/30/2020	\$620,000	2007	4,139	\$149.79	4/5	3-Car	2-Stone	2DetGar
Not	9522 Bales	1.47	6/18/2020	\$600,000	2007	4,014	\$149.48	4/4.5	3-Car	2-Stone	

Adjoining Sales Adjusted											
Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	Distance
5833 Kristi								\$625,000			470
4055 Dakeita	-\$9,220		\$5,661	-\$6,138		-\$25,000		\$594,303	5%		
9615 Bales	\$6,455		\$1,860	\$28,042	-\$10,000	-\$15,000		\$631,356	-1%		
9522 Bales	\$7,233		\$1,800	\$42,930	-\$5,000			\$646,963	-4%		
										0%	

The average difference is 0% impact and the differences are all within a close range with this set of comparables and supports a finding of no impact on property value.

I have also looked at 4504 Chanel Court. This home sold on January 1, 2020 for \$393,500 for this 3,010 square foot home built in 2004 with 3 bedroooms, 3.5 bathrooms, and a 3-car garage. This home includes a full partially finished basement that significantly complicates comparing this to other sales. This home previously sold on January 23, 2017 for \$399,000. This was during the time that the solar farm was a known factor as the solar farm was approved in early 2017 and public discussions had already commenced. I spoke with Rachelle Killman with Real Estate Realty, LLC the buyer's agent for this transaction and she indicated that the solar farm was not a factor or consideration for the buyer. She noted that you could see the panels sort of through the trees, but it wasn't a concern for the buyer. She was not familiar with the earlier 2017 sale, but indicated that it was likely too high. This again goes back to the partially finished basement issue. The basement has a fireplace, and an installed 3/4 bathroom but otherwise bare studs and concrete floors with different buyers assigning varying value to that partly finished space. I also reached out to Don Gomez with Don Anthony Realty, LLC as he was the listing agent.

I also looked at the recent sale of 4599 Chanel Court. This home is within 310 feet of solar panels but notably does not have a good landscaping screen in place as shown in the photo below. The plantings appear to be less than 3-feet in height and only a narrow, limited screen of existing hardwoods were kept. The photograph is from the listing.

According to Scott David with Better Homes and Gardens Paracle Realty, this property was under contract for \$550,000 contingent on the buyer being able to sell their former home. The former home was apparently overpriced and did not sell and the contract stretched out over 2.5 months. The seller was in a bind as they had a home they were trying to buy contingent on this closing and were about to lose that opportunity. A cash buyer offered them a quick close at \$500,000 and the seller accepted that offer in order to not lose the home they were trying to buy. According to Mr. David, the original contracted buyer and the actual cash buyer never considered the solar farm as a negative. In fact Mr. David noted that the actual buyer saw it as a great opportunity to purchase a home where a new subdivision could not be built behind his house. I therefore conclude that this property supports a finding of no impact on adjoining property, even where the landscaping screen still requires time to grow in for a year-round screen.

I also considered a sale/resale analysis on this property. This same home sold on September 15, 2015 for \$462,000. Adjusting this upward by 5% per year for the five years between these sales dates suggests a value of \$577,500. Comparing that to the \$550,000 contract that suggests a 5% downward impact, which is within a typical market variation. Given that the broker noted no negative impact from the solar farm and the analysis above, I conclude this sale supports a finding of no impact on value.



# 9. Matched Pair - Mariposa Solar, Gaston County, NC



This project is a 5 MW facility located on 35.80 acres out of a parent tract of 87.61 acres at 517 Blacksnake Road, Stanley that was built in 2016.

I have considered a number of recent sales around this facility as shown below.

The first is identified in the map above as Parcel 1, which is 215 Mariposa Road. This is an older dwelling on large acreage with only one bathroom. I've compared it to similar nearby homes as shown below. The landscaping buffer for this home is considered light.

# Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	\$/GBA	BR/BA	Park	Style
Adjoins	215 Mariposa	17.74	12/12/2017	\$249,000	1958	1,551	\$160.54	3/1	Garage	Br/Rnch
Not	249 Mariposa	0.48	3/1/2019	\$153,000	1974	1,792	\$85.38	4/2	Garage	Br/Rnch
Not	110 Airport	0.83	5/10/2016	\$166,000	1962	2,165	\$76.67	3/2	Crprt	Br/Rnch
Not	1249 Blacksnake	5.01	9/20/2018	\$242,500	1980	2,156	\$112.48	3/2	Drive	1.5
Not	1201 Abernathy	27.00	5/3/2018	\$390,000	1970	2,190	\$178.08	3/2	Crprt	Br/Rnch

GLA	BR/BA	Park	Other	<b>Total</b> \$249.000	% Diff	
20,576	-\$10,000			\$229,154	8%	

Average 9%

4%

11%

15%

\$239,026

\$221,961

\$212,533

The average difference after adjusting for all factors is +9% on average, which suggests an enhancement due to the solar farm across the street. Given the large adjustments for acreage and size, I will focus on the low end of the adjusted range at 4%, which is within the typical deviation and therefore suggests no impact on value.

Time

-\$5,583

\$7,927

-\$5,621

-\$4,552

-\$17,136

-\$4,648

-\$37,345

-\$32,760

\$129,450

\$126,825

\$95,475

-\$69 450

-\$2

-\$47,078 -\$10,000

-\$60 705 -\$10 000

-\$68,048 -\$10,000 \$5,000

Adjoining Residential Sales After Solar Farm Approved Adjoining Sales Adjusted Acres Date Sold Sales Price

17.74 12/12/2017 \$249,000

\$153,000

\$166,000

\$242,500

\$390,000

0.48 3/1/2019

0.83 5/10/2016

9/20/2018

5.01

1201 Abernathy 27.00 5/3/2018

Address

215 Mariposa

249 Mariposa

110 Airport

1249 Blacksnake

Adjoins Not

Not

Not

Not

I have also considered Parcel 4 that sold after the solar farm was approved but before it had been constructed in 2016. The landscaping buffer for this parcel is considered light.

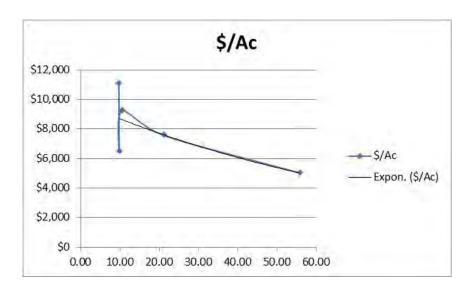
Adjoining Residential Sales After Solar Farm Approved												
Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	\$/GBA	BR/BA	Park	Style	Other	
Adjoins	242 Mariposa	2.91	9/21/2015	\$180,000	1962	1,880	\$95.74	3/2	Carport	Br/Rnch	Det Wrkshop	
Not	249 Mariposa	0.48	3/1/2019	\$153,000	1974	1,792	\$85.38	4/2	Garage	Br/Rnch		
Not	110 Airport	0.83	5/10/2016	\$166,000	1962	2,165	\$76.67	3/2	Crprt	Br/Rnch		
Not	1249 Blacksnake	5.01	9/20/2018	\$242,500	1980	2,156	\$112.48	3/2	Drive	1.5		

Adjoining	g Residential Sale	s After	Solar Farm	Approved	Adjoining	Sales Adjı	ısted						
Solar	Address	Acres	Date Sold	Sales Price	Time	YB	Acres	GLA	BR/BA	Park	Other	Total	% Diff
Adjoins	242 Mariposa	2.91	9/21/2015	\$180,000								\$180,000	
Not	249 Mariposa	0.48	3/1/2019	\$153,000	-\$15,807	-\$12,852	\$18,468	\$7,513		-\$3,000	\$25,000	\$172,322	4%
Not	110 Airport	0.83	5/10/2016	\$166,000	-\$3,165	\$0	\$15,808	-\$28,600			\$25,000	\$175,043	3%
Not	1249 Blacksnake	5.01	9/20/2018	\$242,500	-\$21,825	-\$30,555	-\$15,960	-\$40,942		\$2,000	\$25,000	\$160,218	11%
												Average	6%

The average difference after adjusting for all factors is +6%, which is again suggests a mild increase in value due to the adjoining solar farm use. The median is a 4% adjustment, which is within a standard deviation and suggests no impact on property value.

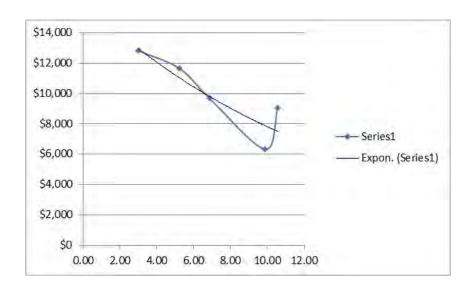
I have also considered the recent sale of Parcel 13 that is located on Blacksnake Road south of the project. I was unable to find good land sales in the same 20-acre range, so I have considered sales of larger and smaller acreage. I adjusted each of those land sales for time. I then applied the price per acre to a trendline to show where the expected price per acre would be for 20 acres. As can be seen in the chart below, this lines up exactly with the purchase of the subject property. I therefore conclude that there is no impact on Parcel 13 due to proximity to the solar farm.

Adjoinin	g Residential Land	l Sales	After Solar	Farm Approv	<b>zed</b>	Adjoining Sal	les Adjusted
Solar	Tax/Street	Acres	Date Sold	Sales Price	\$/Ac	Time	\$/Ac
Adjoins	174339/Blacksnake	21.15	6/29/2018	\$160,000	\$7,565		\$7,565
Not	227852/Abernathy	10.57	5/9/2018	\$97,000	\$9,177	\$38	\$9,215
Not	17443/Legion	9.87	9/7/2018	\$64,000	\$6,484	-\$37	\$6,447
Not	164243/Alexis	9.75	2/1/2019	\$110,000	\$11,282	-\$201	\$11,081
Not	176884/Bowden	55.77	6/13/2018	\$280,000	\$5,021	\$7	\$5,027



Finally, I have considered the recent sale of Parcel 17 that sold as vacant land. I was unable to find good land sales in the same 7 acre range, so I have considered sales of larger and smaller acreage. I adjusted each of those land sales for time. I then applied the price per acre to a trendline to show where the expected price per acre would be for 7 acres. As can be seen in the chart below, this lines up with the trendline running right through the purchase price for the subject property. I therefore conclude that there is no impact on Parcel 13 due to proximity to the solar farm. I note that this property was improved with a 3,196 square foot ranch built in 2018 following the land purchase, which shows that development near the solar farm was unimpeded.

Adjoining	g Residential Land	i Sales	After Solar	Farm Approv	red	Adjoining Sales Adjusted			
Solar	Tax/Street	Acres	Date Sold	Sales Price	\$/Ac	Time	Location	\$/Ac	
Adjoins	227039/Mariposa	6.86	12/6/2017	\$66,500	\$9,694			\$9,694	
Not	227852/Abernathy	10.57	5/9/2018	\$97,000	\$9,177	-\$116		\$9,061	
Not	17443/Legion	9.87	9/7/2018	\$64,000	\$6,484	-\$147		\$6,338	
Not	177322/Robinson	5.23	5/12/2017	\$66,500	\$12,715	\$217	-\$1,272	\$11,661	
Not	203386/Carousel	2.99	7/13/2018	\$43,500	\$14,548	-\$262	-\$1,455	\$12,832	



# 10. Matched Pair - Clarke County Solar, Clarke County, VA



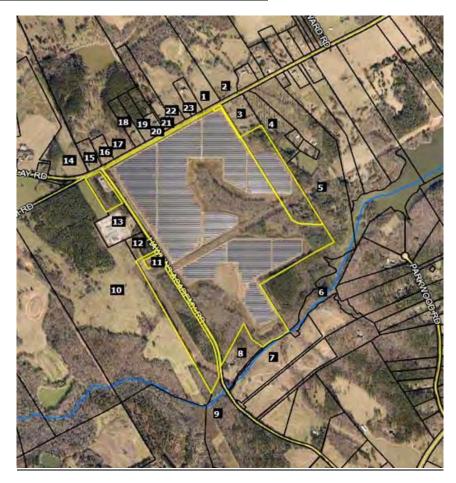
This project is a 20 MW facility located on a 234-acre tract that was built in 2017.

I have considered two recent sales of 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. This home sold in January 2017 for \$295,000 and again in August 2019 for \$385,000. I show each sale below and compare those to similar home sales in each time frame. The significant increase in price between 2017 and 2019 is due to a major kitchen remodel, new roof, and related upgrades as well as improvement in the market in general. The sale and later resale of the home with updates and improvements speaks to pride of ownership and increasing overall value as properties perceived as diminished are less likely to be renovated and sold for profit.

I note that 102 Tilthammer includes a number of barns that I did not attribute any value in the analysis. The market would typically give some value for those barns but even without that adjustment there is an indication of a positive impact on value due to the solar farm. The landscaping buffer from this home is considered light.

Adjoin	ing R	esid	lential	Sales After	r Solar F	arm Approv	ed							
Parcel	Sola	ar	Ad	ldress	Acres	Date Sold	Sales Price	Built	GBA	\$/GLA	BR/BA	Park	Style	Other
3	Adjoi	ins	833 Na	ations Spr	5.13	8/18/2019	\$385,000	1979	1,392	\$276.58	3/2	Det Gar	Ranch	UnBsmt
	No	t	167	Leslie /	5.00	8/19/2020	\$429,000	1980	1,665	\$257.66	3/2	Det2Gar	Ranch	1
	No	t	2393 C	Old Chapel	2.47	8/10/2020	\$330,000	1974	1,500	\$220.00	3/1.5	Det Gar	Ranch	1
	No	t	102 Ti	lthammer	6.70	5/7/2019	\$372,000	1970	1,548	\$240.31	3/1.5	Det Gar	Ranch	UnBsmt
Adjoir	ning	Sal	es Ad	justed								Av	g	
Tin	ıe	5	Site	YB	GLA	BR/BA	N Park	Other	r '	<b>Fotal</b>	% Diff	f % D	iff 1	Distance
									\$3	85,000				1230
-\$13,	268			-\$2,145	-\$56,27	72	-\$5,000	\$50,00	0 \$4	02,315	-4%			
-\$9,9	956	\$2	5,000	\$8,250	-\$19,00	08 \$5,000	)	\$50,00	0 \$3	89,286	-1%			
\$3,2	29			\$16,740	-\$29,99	91 \$5,000	)		\$3	66,978	5%			
. ,				. ,	. ,	. ,				,		0%	6	
Adioin	ing R	esid	lential	Sales After	r Solar F	arm Approv	ed							
Parcel	_			ldress	Acres		Sales Price	Built	GBA	\$/GLA	BR/BA	Park	Style	Other
3	Adjoi	ins	833 Na	ations Spr	5.13	1/9/2017	\$295,000	1979	1,392	\$211.93	3/2	Det Gar	Ranch	
	No	t	6801	l Middle	2.00	12/12/2017	\$249,999	1981	1,584	\$157.83	3/2	Open	Ranch	1
	No	t	4174	Rockland	5.06	1/2/2017	\$300,000	1990	1,688	\$177.73	3/2	2 Gar	2-stor	y
	No	t	400 S	Sugar Hill	1.00	6/7/2018	\$180,000	1975	1,008	\$178.57	3/1	Open	Ranch	1
Adjoi	ning	Sal	es Ad	justed								Av	g	
Tin	ıe	5	Site	YB	GLA	BR/BA	Park	Other		rotal	% Diff	f % D	iff ]	Distance
							4			95,000				1230
-\$7,1		\$2	5,000	-\$2,500	-\$24,24		\$5,000	\$50,00		96,157	0%			
\$17	7			-\$16,500	-\$42,08	35	-\$10,000	\$50,00	0 \$2	81,592	5%			
-\$7,7	797			\$3,600	\$54,85	7 \$10,000	0 \$5,000	\$50,00	0 \$2	95,661	0%			
												19	6	

### 11. Matched Pair - Simon Solar, Social Circle, GA



This 30 MW solar farm is located off Hawkins Academy Road and Social Circle Fairplay Road. I identified three adjoining sales to this tract after development of the solar farm. However, one of those is shown as Parcel 12 in the map above and includes a powerline easement encumbering over a third of the 5 acres and adjoins a large substation as well. It would be difficult to isolate those impacts from any potential solar farm impact and therefore I have excluded that sale. I also excluded the recent sale of Parcel 17, which is a farm with conservation restrictions on it that similarly would require a detailed examination of those conservation restrictions in order to see if there was any impact related to the solar farm. I therefore focused on the recent sale of Parcel 7 and the adjoining parcel to the south of that. They are technically not adjoining due to the access road for the flag-shaped lot to the east. Furthermore, there is an apparent access easement serving the two rear lots that encumber these two parcels which is a further limitation on these sales. This analysis assumes that the access easement does not negatively impact the subject property, though it may.

The landscaping buffer relative to this parcel is considered medium.

Adjoining	Land	Sales	After	Solar	Farm	Annroved
Aujoining	Lanu	Sares	VICEI	SULAL	raim	Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	\$/AC	Туре	Other
7+	Adjoins	4514 Hawkins	36.86	3/31/2016	\$180,000	\$4,883	Pasture	Esmts
	Not	HD Atha	69.95	12/20/2016	\$357,500	\$5,111	Wooded	N/A
	Not	Pannell	66.94	11/8/2016	\$322,851	\$4,823	Mixed	*
	Not	1402 Rov	123.36	9/29/2016	\$479.302	\$3.885	Mixed	**

<sup>\*</sup> Adjoining 1 acre purchased by same buyer in same deed. Allocation assigned on the County Tax Record.

<sup>\*\*</sup> Dwelling built in 1996 with a 2016 tax assessed value of \$75,800 deducted from sales price to reflect land value

Adjoining Sa	ales Adju	sted				Avg
Time	Size	Type	Other	Total/Ac	% Diff	% Diff
				\$4,883		
\$89	\$256			\$5,455	-12%	
-\$90	\$241			\$4,974	-2%	
-\$60	\$389			\$4,214	14%	
						0%

The range of impact identified by these matched pairs are -12% to +14%, with an average of 0% impact due to the solar farm. The best matched pair with the least adjustment supports a -2% impact due to the solar farm. I note again that this analysis considers no impact for the existing access easements that meander through this property and it may be having an impact. Still at -2% impact as the best indication for the solar farm, I consider that to be no impact given that market fluctuations support +/- 5%.

Google Earth

# 12. Matched Pair - Candace Solar, Princeton, NC



This 5 MW solar farm is located at 4839 US 70 Highway just east of Herring Road. This solar farm was completed on October 25, 2016.

I identified three adjoining sales to this tract after development of the solar farm with frontage on US 70. I did not attempt to analyze those sales as they have exposure to an adjacent highway and railroad track. Those homes are therefore problematic for a matched pair analysis unless I have similar homes fronting on a similar corridor.

I did consider a land sale and a home sale on adjoining parcels without those complications.

The lot at 499 Herring Road sold to Paradise Homes of Johnston County of NC, Inc. for \$30,000 in May 2017 and a modular home was placed there and sold to Karen and Jason Toole on September 29, 2017. I considered the lot sale first as shown below and then the home sale that followed. The landscaping buffer relative to this parcel is considered medium.

Adjoin	ing Land	Sales After Sol									
Parcel	Solar	Address	Acres	Date Sold	Sales Price	Other	Time	Site	Other	Total	% Diff
16	Adjoins	499 Herring	2.03	5/1/2017	\$30,000					\$30,000	
	Not	37 Becky	0.87	7/23/2019	\$24,500	Sub/Pwr	-\$1,679	\$4,900		\$27,721	8%
	Not	5858 Bizzell	0.88	8/17/2016	\$18,000		\$390	\$3,600		\$21,990	27%
	Not	488 Herring	2.13	12/20/2016	\$35,000		\$389			\$35,389	-18%
										Average	5%

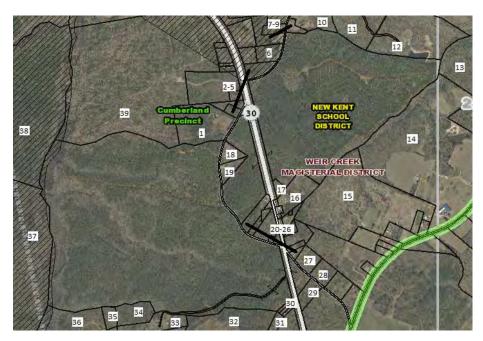
Following the land purchase, the modular home was placed on the site and sold. I have compared this modular home to the following sales to determine if the solar farm had any impact on the purchase price.

Parcel	Solar	Address	Acres	Date So	old S	ales Price	Built	GBA	\$/GBA	BR/BA	Park	Style	Other
16	Adjoins	499 Herring	2.03	9/27/20	017	\$215,000	2017	2,356	\$91.26	4/3	Drive	Modular	
	Not	678 WC	6.32	3/8/20	19	\$226,000	1995	1,848	\$122.29	3/2.5	Det Gar	Mobile	Ag bldgs
	Not	1810 Bay V	8.70	3/26/20	018	\$170,000	2003	2,356	\$72.16	3/2	Drive	Mobile	Ag bldgs
	Not	1795 Bay V	1.78	12/1/20	017	\$194,000	2017	1,982	\$97.88	4/3	Drive	Modular	
Adjoining Residential Sales Af Adjoining Sales Adjusted  Avg													
Aujoini	ing Reside	ntial Sales Af A	djoining	Sales Adju	isted							Avg	
Parcel 16	i <b>ng Reside</b> Solar Adjoins	ntial Sales Af A Address 499 Herring	djoining : Time	Sales Adju Site	YB	GLA	BR/BA	Park	Other	<b>Total</b> \$215,000	% Diff	Avg % Diff	Distance 488
Parcel	Solar	<b>Address</b> 499 Herring	Time	•	YB		·	<b>Park</b> -\$7,500			% <b>Diff</b>	_	
Parcel	<b>Solar</b> Adjoins	<b>Address</b> 499 Herring	<b>Time</b> -\$10,037	Site	<b>YB</b> \$24,860	37,275	·		-\$20,000	\$215,000		_	
Parcel	<b>Solar</b> Adjoins Not	<b>Address</b> 499 Herring 678 WC	<b>Time</b> -\$10,037	<b>Site</b> -\$25,000	<b>YB</b> \$24,860	37,275	·		-\$20,000	\$215,000 \$220,599	-3%	_	

The best comparable is 1795 Bay Valley as it required the least adjustment and was therefore most similar, which shows a 0% impact. This signifies no impact related to the solar farm.

The range of impact identified by these matched pairs ranges are therefore -3% to +26% with an average of +8% for the home and an average of +4% for the lot, though the best indicator for the lot shows a \$5,000 difference in the lot value due to the proximity to the solar farm or a -12% impact.

# 13. Matched Pair - Walker-Correctional Solar, Barham Road, Barhamsville, 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.

Adioining	Residential	Sales	After	Solar	Farm	Annroved
Aujoining	Kesidelitiai	Sales.	AILEI	Solar	rarm	Approveu

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	

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 since it is 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.

# 14. Matched Pair - Innovative Solar 46, Roslin Farm Rd, Hope Mills, NC



This project was built in 2016 and located on 532 acres for a 78.5 MW solar farm with the closest home at 125 feet from the closest solar panel with an average distance of 423 feet.

I considered the recent sale of a home on Roslin Farm Road just north of Running Fox Road as shown below. This sale supports an indication of no impact on property value. The landscaping buffer is considered light.

Distance
435
f

# 15. Matched Pair - Innovative Solar 42, County Line Rd, Fayetteville, NC



This project was built in 2017 and located on 413.99 acres for a 71 MW with the closest home at 135 feet from the closest solar panel with an average distance of 375 feet.

I considered the recent sales identified on the map above as Parcels 2 and 3, which is directly across the street these homes are 330 and 340 feet away. Parcel 2 includes an older home built in 1976, while Parcel 3 is a new home built in 2019. So the presence of the solar farm had no impact on new construction in the area.

The matched pairs for each of these are shown below. The landscaping buffer relative to these parcels is considered light.

Adjoini	ng Residential Sa	les Afte	r Solar Farı	m Approved								
Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	\$/GBA	BR/BA	Park	Style	Other	Distance
Adjoins	2923 County Ln	8.98	2/28/2019	\$385,000	1976	2,905	\$132.53	3/3	2-Car	Ranch	Brick/Pond	340
Not	1928 Shaw Mill	17.00	7/3/2019	\$290,000	1977	3,001	\$96.63	4/4	2-Car	Ranch	Brick/Pond/Renta	al
Not	2109 John McM.	7.78	4/25/2018	\$320,000	1978	2,474	\$129.35	3/2	Det Gar	Ranch	Vinyl/Pool,Stable	<b>;</b>
											Avg	
Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	
Adjoins	2923 County Ln								\$385,000	)	3%	
Not	1928 Shaw Mill	-\$3,055	\$100,000	-\$1,450	-\$7,422	-\$10,00	0		\$368,074	1 4%		
Not	2109 John McM.	\$8,333		-\$3,200	\$39,023	\$10,000	C	\$5,000	\$379,156	5 2%		
Adjoinii Solar	ıg Residential Sa Address	les After Acres		1 Approved Sales Price	Built	GBA	\$/GBA	BR/BA	Park	C41 o	Other	Distance
Adjoins	2935 County Ln	1.19	6/18/2019	\$266,000	2019	2,401	\$110.79	4/3	Gar	Style 2-Story	Other	330
Not	3005 Hemingway	1.17	5/16/2019	\$269,000	2019	2,601	\$103.42	4/3	Gar	2-Story 2-Story		330
Not	7031 Glynn Mill	0.60	5/8/2018	\$255,000	2017	2,423	\$105.24	4/3	Gar	2-Story		
Not	5213 Bree Brdg	0.92	5/7/2019	\$260,000	2018	2,400	\$108.33	4/3	3-Gar	2-Story		
	J							•				
											Avg	
Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	
Adjoins	2935 County Ln								\$266,000		3%	
Not	3005 Hemingway	\$748		\$1,345	-\$16,547				\$254,546	4%		
Not	7031 Glynn Mill	\$8,724		\$2,550	-\$1,852				\$264,422	1%		
Not	5213 Bree Brdg	\$920		\$1,300	\$76			-\$10,000	\$252,296	5%		

Both of these matched pairs adjust to an average of +3% on impact for the adjoining solar farm, meaning there is a slight positive impact due to proximity to the solar farm. This is within the standard +/- of typical real estate transactions, which strongly suggests no impact on property value. I noted specifically that for 2923 County Line Road, the best comparable is 2109 John McMillan as it does not have the additional rental unit on it. I made no adjustment to the other sale for the value of that rental unit, which would have pushed the impact on that comparable downward – meaning there would have been a more significant positive impact.

# 16. Matched Pair - Sunfish Farm, Keenebec Rd, Willow Spring, NC



This project was built in 2015 and located on 49.6 acres (with an inset 11.25 acre parcel) for a 6.4 MW project with the closest home at 135 feet with an average distance of 105 feet.

I considered the 2017 sale identified on the map above, which is 205 feet away from the closest panel. The matched pairs for each of these are shown below followed by a more recent map showing the panels at this site. The average difference in the three comparables and the subject property is +3% after adjusting for differences in the sales date, year built, gross living area, and other minor differences. This data is supported by the comments from the broker Brian Schroepfer with Keller Williams that the solar farm had no impact on the purchase price. The landscaping screen is considered light.

#### Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	\$/GBA	BR/BA	Park	Style
	Adjoins	7513 Glen Willow	0.79	9/1/2017	\$185,000	1989	1,492	\$123.99	3/2	Gar	BR/Rnch
	Not	2968 Tram	0.69	7/17/2017	\$155,000	1984	1,323	\$117.16	3/2	Drive	BR/Rnch
	Not	205 Pine Burr	0.97	12/29/2017	\$191,000	1991	1,593	\$119.90	3/2.5	Drive	BR/Rnch
	Not	1217 Old Honeycutt	1.00	12/15/2017	\$176,000	1978	1,558	\$112.97	3/2.5	2Carprt	VY/Rnch

Adjustm	nents										Avg
Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff
Adjoins	7513 Glen Willow								\$185,000		
Not	2968 Tram	\$601		\$3,875	\$15,840		\$10,000		\$185,316	0%	
Not	205 Pine Burr	-\$1,915		-\$1,910	-\$9,688	-\$5,000			\$172,487	7%	
Not	1217 Old Honeycut	-\$1,557		\$9,680	-\$5,965	-\$5,000		\$5,280	\$178,438	4%	

# 17. Matched Pair - Sappony Solar, 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. This was a 1,900 s.f. manufactured home on a 6.00-acre lot that sold in 2018. I have compared that to three other nearby manufactured homes as shown below. The range of impacts is within typical market variation with an average of -1%, which supports a conclusion of no impact on property value. The landscaping buffer is considered medium.

Adjoin	ing Resi	dential	Sales Afte	r Solar F	arm Approv	ed							
Parcel	Solar	Ad	dress	Acres	Date Sold	Sales Price	Built	GBA	\$/GLA	BR/BA	Park	Styl	e Other
	Adjoins	12511	Palestine	6.00	7/31/2018	\$128,400	2013	1,900	\$67.58	4/2.5	Open	Man	af
	Not	15698	Concord	3.92	7/31/2018	\$150,000	2010	2,310	\$64.94	4/2	Open	Man	uf Fence
	Not	23209	9 Sussex	1.03	7/7/2020	\$95,000	2005	1,675	\$56.72	3/2	Det Crpt	Man	af
	Not	6494	Rocky Br	4.07	11/8/2018	\$100,000	2004	1,405	\$71.17	3/2	Open	Man	af
Adjoi	ning Sa	les Ad	justed								Av	g	
Tin	ie :	Site	YB	GLA	BR/B	A Park	Othe	er 1	otal [	% Dif	f % D	iff	Distance
								\$1	28,400				1425
\$0	)		\$2,250	-\$21,2	99 \$5,000	)		\$1	35,951	-6%			
-\$5,6	560 \$1	3,000	\$3,800	\$10,20	9 \$5,000	\$1,500		\$1	22,849	4%			
-\$84	43		\$4,500	\$28,18	35			\$1	31,842	-3%			
											-19	%	

1%

#### 18. Matched Pair - Camden Dam, Camden, NC



This 5 MW project was built in 2019 and located on a portion of 49.83 acres.

Parcel 1 noted above along with the home on the adjoining parcel to the north of that parcel sold in late 2018 after this solar farm was approved but prior to construction being completed in 2019. I have considered this sale as shown below. The landscaping screen is considered light.

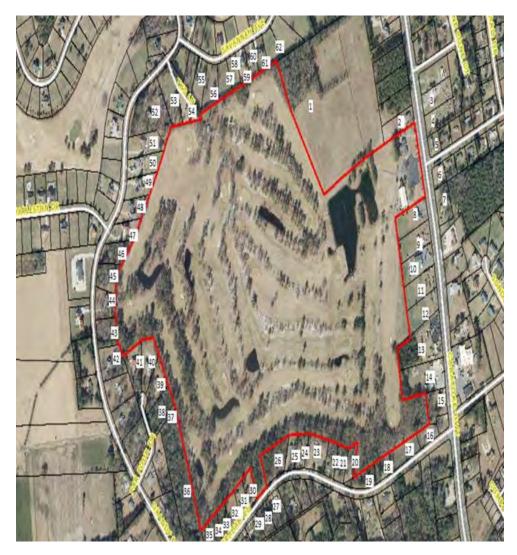
The comparable at 548 Trotman is the most similar and required the least adjustment shows no impact on property value. The other two comparables were adjusted consistently with one showing significant enhancement and another as showing a mild negative. The best indication is the one requiring the least adjustment. The other two sales required significant site adjustments which make them less reliable. The best comparable and the average of these comparables support a finding of no impact on property value.

#### Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	\$/GLA	BR/BA	Park	Style	Other
Adjoins	122 N Mill Dam	12.19	11/29/2018	\$350,000	2005	2,334	\$149.96	3/3.5	3-Gar	Ranch	
Not	548 Trotman	12.10	5/31/2018	\$309,000	2007	1,960	\$157.65	4/2	Det2G	Ranch	Wrkshp
Not	198 Sand Hills	2.00	12/22/2017	\$235,000	2007	2,324	\$101.12	4/3	Open	Ranch	
Not	140 Sleepy Hlw	2.05	8/12/2019	\$330,000	2010	2,643	\$124.86	4/3	1-Gar	1.5 Story	

Adjoining Sales	Adjuste	d								Avg	
Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	Distance
122 N Mill Dam								\$350,000			342
548 Trotman	\$6,163		-\$3,090	\$35,377	\$5,000			\$352,450	-1%		
198 Sand Hills	\$8,808	\$45,000	-\$2,350	\$607		\$30,000		\$317,064	9%		
140 Sleepy Hlw	-\$9,258	\$45,000	-\$8,250	-\$23,149	\$5,000	\$30,000		\$369,343	-6%		

# 19. Matched Pair - Grandy Solar, Grandy, NC



This 20 MW project was built in 2019 and located on a portion of 121 acres.

Parcels 40 and 50 have sold since construction began on this solar farm. I have considered both in matched pair analysis below. I note that the marketing for Parcel 40 (120 Par Four) identified the lack of homes behind the house as a feature in the listing. The marketing for Parcel 50 (269 Grandy) identified the property as "very private." Landscaping for both of these parcels is considered light.

Adjoining	g Reside	ential Sale	s After :	Solar Farm	Approve	1								
Solar	Add	ress	Acres	Date Sol	l Sales I	Price	Built	GBA	\$/G	LA BR/	BA Pa	ark St	yle	Other
Adjoins	120 Pa	ar Four	0.92	8/17/2019	9 \$315,	000	2006	2,188	\$143	.97 4/	3 2-	Gar 1.5	Story	Pool
Not	102 T	`eague	0.69	1/5/2020	\$300,	000	2005	2,177	\$137	.80 3/	2 De	t 3G Ra	nch	
Not	112 Me	adow Lk	0.92	2/28/201	9 \$265,	000	1992	2,301	\$115	.17 3/	2 0	ar 1.5	Story	
Not	116 Ba	arefoot	0.78	9/29/202	\$290,	000	2004	2,192	\$132	.30 4/	3 2-	Gar 2 S	Story	
Adjoinin	g Sales	s Adjuste	d									Avg		
Addr	ess	Time	Site	YB	GLA	BR/B	BA	Park	Other	Total	% Dif	f % Dif	f Di	stance
120 Par	Four									\$315,000				405
102 Te	ague	-\$4,636		\$1,500	\$910	\$10,0	00		\$20,000	\$327,774	-4%			
112 Mea	dow Lk	\$4,937		\$18,550	-\$7,808	\$10,0	00 \$	\$10,000	\$20,000	\$320,679	-2%			
116 Bar	refoot	-\$12,998		\$2,900	-\$318				\$20,000	\$299,584	5%			
		. ,								,		0%		

Style	Other
Ranch	

Adjoining	Residen	tial Sale	s After S	Solar Farm	Approve	1							
Solar	Addr	ess	Acres	Date Sol	d Sales I	Price	Buil	t GB	A \$/G	LA BR/	BA Pa	rk Sty	le Other
Adjoins	269 Gr	andy	0.78	5/7/2019	\$275,	000	2019	9 1,53	5 \$179	.15 3/2	2.5 2-0	ar Ran	ch
Not	307 Gr	andy	1.04	10/8/201	8 \$240,	000	200	2 1,63	4 \$146	.88 3,	′2 Ga	ar 1.5 S	tory
Not	103 Bra	anch	0.95	4/22/202	0 \$230,	000	2000	0 1,53	2 \$150	.13 4/	2-0	ar 1.5 S	tory
Not	103 Spr	ing Lf	1.07	8/14/201	8 \$270,	000	200	2 1,63	5 \$165	.14 3/	2-0	ar Ran	ch Pool
Adjoinin	g Sales .	Adjuste	d									Avg	
Addre	ess	Time	Site	YB	GLA	BR/	'BA	Park	Other	Total	% Diff	% Diff	Distance
269 Gra	andy									\$275,000			477
307 Gra	andy	\$5,550		\$20,400	-\$8,725	\$5,0	000	\$10,000		\$272,225	1%		
103 Bra	nch ·	-\$8,847		\$21,850	\$270					\$243,273	12%		
103 Spri	ng Lf	\$7,871		\$22,950	-\$9,908	\$5,0	000		-\$20,000	\$275,912	0%		
•	-											4%	

Both of these matched pairs support a finding of no impact on value. This is reinforced by the listings for both properties identifying the privacy due to no housing in the rear of the property as part of the marketing for these homes.

# 20. Matched Pair - Champion Solar, Lexington County, SC



This project is a 10 MW facility located on a 366.04-acre tract that was built in 2017.

I have considered the 2020 sale of an adjoining home located off 517 Old Charleston Road. Landscaping is considered light.

Adioining	Residential	Sales After	Solar	Farm	Annroved
Aujoining	Mesiuen tiai	Daies Aitei	SULAL	raim	Approveu

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	\$/GBA	BR/BA	Park	Style	Other
Adjoins	517 Old Charleston	11.05	8/25/2020	\$110,000	1962	925	\$118.92	3/1	Crport	Br Rnch	
Not	133 Buena Vista	2.65	6/21/2020	\$115,000	1979	1,104	\$104.17	2/2	Crport	Br Rnch	
Not	214 Crystal Spr	2.13	6/10/2019	\$102,500	1970	1,025	\$100.00	3/2	Crport	Rnch	
Not	1429 Laurel	2.10	2/21/2019	\$126,000	1960	1,250	\$100.80	2/1.5	Open	Br Rnch	3 Gar/Brn

Adjoining Sales Adj	justed									Avg	
Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	Distance
517 Old Charleston								\$110,000			505
133 Buena Vista	\$410	\$17,000	-\$9,775	-\$14,917	-\$10,000			\$97,718	11%		
214 Crystal Spr	\$2,482	\$18,000	-\$4,100	-\$8,000	-\$10,000		\$10,000	\$110,882	-1%		
1429 Laurel	\$3,804	\$18,000	\$1,260	-\$26,208	-\$5,000	\$5,000	-\$15,000	\$107,856	2%		

4%

#### 21. Matched Pair - Barefoot Bay Solar Farm, Barefoot Bay, FL



This project is located on 504 acres for a 704.5 MW facility. Most of the adjoining uses are medium density residential with some lower density agricultural uses to the southwest. This project was built in 2018. There is a new subdivision under development to the west.

I have considered a number of recent home sales from the Barefoot Bay Golf Course in the Barefoot Bay Recreation District. There are a number of sales of these mobile/manufactured homes along the eastern boundary and the lower northern boundary. I have compared those home sales to other similar homes in the same community but without the exposure to the solar farm. Staying within the same community keeps location and amenity impacts consistent. I did avoid any comparison with home sales with golf course or lakefront views as that would introduce another variable.

The six manufactured/double wide homes shown below were each compared to three similar homes in the same community and are consistently showing no impact on the adjoining property values. Based on the photos from the listings, there is limited but some visibility of the solar farm to the east, but the canal and landscaping between are providing a good visual buffer and actually are commanding a premium over the non-canal homes.

Landscaping for these adjoining homes is considered light, though photographs from the listings show that those homes on Papaya that adjoin the solar farm from east/west have no visibility of the solar farm and is effectively medium density due to the height differential. The homes that adjoin the solar farm from north/south along Papaya have some filtered view of the solar farm through the trees.

413 Papaya

341 Loquat

1119 Pocatella

1367 Barefoot

\$1,631

-\$1,749

-\$1,979

\$9,440

\$4,800

\$9,135

-\$6,777

-\$7,784

\$1,852

2%

690

\$130,000

\$122,294

\$120,267

\$139,507

\$5,000

6%

7%

-7%

Adjoir	ning Resid	iential Sales A	After So	lar Farm A <sub>l</sub>	proved							
Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	\$/GLA	BR/BA	Park	Style	Other
48	Adjoins	343 Papaya	0.09	12/17/2019	\$145,000	1986	1,508	\$96.15	3/2	Crprt	Manuf	Gn/Fc/Upd
	Not	865 Tamarind	0.12	2/4/2019	\$133,900	1995	1,368	\$97.88	2/2	Crprt	Manuf	Green
	Not	515 Papaya	0.09	3/22/2018	\$145,000	2005	1,376	\$105.38	3/2	Crprt	Manuf	Green
	Not	849 Tamarind	0.15	6/26/2019	\$155,000	1997	1,716	\$90.33	3/2	Crprt	Manuf	Grn/Fnce
Adjoir	ning Sales	s Adjusted									Avg	
Ac	ddress	Time	YB	GLA	BR/BA	Park	Other	Tota	<b>al</b> 9	6 Diff	% Diff	Distance
343	Papaya				-			\$145,	000			690
865 ′	Tamarind	\$3,566	-\$6,026	\$10,963				\$142,	403	2%		
515	Papaya	\$7,759 -	\$13,775	\$11,128				\$150,	112	-4%		
849 ′	Tamarind	\$2,273	-\$8,525	-\$15,030			\$5,000	\$138,	717	4%		
											1%	
Adioir	ning Resid	iential Sales A	After So	lar Farm Aı	proved							
•	Solar	Address		-	Sales Price	Built	GBA	\$/GLA	BR/BA	Park	Style	Other
52	Nearby	335 Papaya	0.09	4/17/2018	\$110,000	1987	1,180	\$93.22	2/2	Crprt	Manuf	Green
	Not	865 Tamarind	0.12	2/4/2019	\$133,900	1995	1,368	\$97.88	2/2	Crprt	Manuf	Green
	Not	501 Papaya	0.10	6/15/2018	\$109,000	1986	1,234	\$88.33	2/2	Crprt	Manuf	
	Not	604 Puffin	0.09	10/23/2018	\$110,000	1988	1,320	\$83.33	2/2	Crprt	Manuf	
Adjoir	ning Sales	s Adjusted									Avg	
•	ddress	Time	YB	GLA	BR/BA	Park	Other	Tota	al 9	6 Diff	% Diff	Distance
335	Papaya				-			\$110,	000			710
865 ′	Tamarind	-\$3,306	-\$5,356	-\$14,721			\$0	\$110,	517	0%		
501	Papaya	-\$542	\$545	-\$3,816			\$5,000	\$110,	187	0%		
604	4 Puffin	-\$1,752	-\$550	-\$9,333			\$5,000	\$103,	365	6%		
											2%	

I also identified a new subdivision being developed just to the west of this solar farm called The Lakes at Sebastian Preserve. These are all canal-lot homes that are being built with homes starting at \$271,000 based on the website and closed sales showing up to \$342,000. According to Monique, the onsite broker with Holiday Builders, the solar farm is difficult to see from the lots that back up to that area and she does not anticipate any difficulty in selling those future homes or lots or any impact on the sales price. The closest home that will be built in this development will be approximately 340 feet from the nearest panel.

Based on the closed home prices in Barefoot Bay as well as the broker comments and activity at The Lakes at Sebastian Preserve, the data around this solar farm strongly indicates no negative impact on property value.

# 22. Matched Pair - Miami-Dade Solar Farm, Miami, FL



This project is located on 346.80 acres for a 74.5 MW facility. All of the adjoining uses are agricultural and residential. This project was built in 2019.

I considered the recent sale of Parcel 26 to the south that sold for over \$1.6 million dollars. This home is located on 4.2 acres with additional value in the palm trees according to the listing. The comparables include similar homes nearby that are all actually on larger lots and several include avocado or palm tree income as well. All of the comparables are in similar proximity to the subject and all have similar proximity to the Miami-Dade Executive airport that is located 2.5 miles to the east.

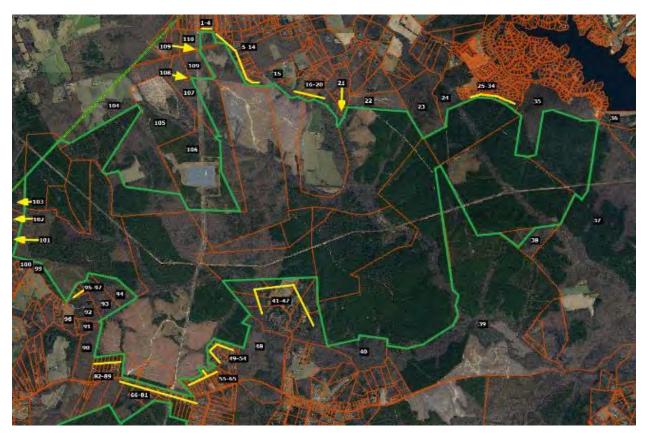
These sales are showing no impact on the value of the property from the adjoining solar farm. The landscaping is considered light.

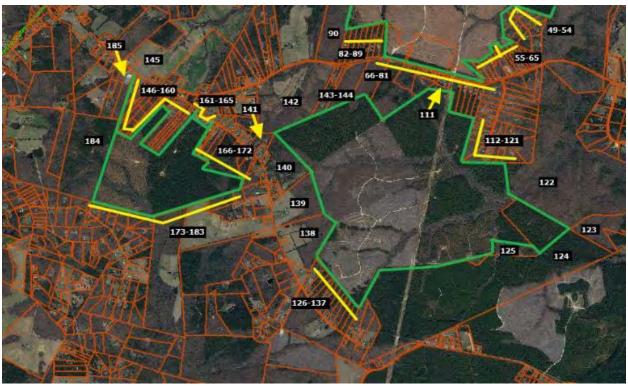
#### Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	\$/GLA	BR/BA	Park	Style	Other
26	Adjoins	13600 SW 182nd	4.20	11/5/2020	\$1,684,000	2008	6,427	\$262.02	5/5.5	3 Gar	CBS Rnch I	Pl/Guest
	Not	18090 SW 158th	5.73	10/8/2020	\$1,050,000	1997	3,792	\$276.90	5/4	3 Gar	CBS Rnch	
	Not	14311 SW 187th	4.70	10/22/2020	\$1,100,000	2005	3,821	\$287.88	6/5	3 Gar	CBS Rnch	Pool
	Not	17950 SW 158th	6.21	10/22/2020	\$1,730,000	2000	6,917	\$250.11	6/5.5	2 Gar	CBS Rnch	Pool

Adjoining Sales Ad	ljusted									Avg	
Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	Distance
13600 SW 182nd								\$1,684,000			1390
18090 SW 158th	\$2,478		\$57,750	\$583,703	\$30,000			\$1,723,930	-2%		
14311 SW 187th	\$1,298		\$16,500	\$600,178	\$10,000			\$1,727,976	-3%		
17950 SW 158th	\$2,041		\$69,200	-\$98,043		\$10,000		\$1,713,199	-2%		
										-2%	

# 23. Matched Pair - Spotsylvania Solar, Paytes, VA





99

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	

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%

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 Brach	6.00	7/27/2020	\$485,000	1008	3.076	\$157.67	4/4	2Gar/Dt2	Ranch	En Remt

#### Adjoining Sales Adjusted

majorming bares in	ajascoa									
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%

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 B	smt/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 A	djusted									
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%	
							Ave	erage Diff	-4%	

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.

#### Conclusion - SouthEast Over 5 MW

Sou	theast USA Ov	er 5 MW												
Mat	ched Pair Sum	ımary				_	Adj. Us	es By	Acreage		1 mile	Radius (2	010-2020 Data)	
						Торо						Med.	Avg. Housing	Veg.
	Name	City	State	Acres	$\mathbf{M}\mathbf{W}$	Shift	Res	Ag	Ag/Res	Com/Ind	Pop.	Income	Unit	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	Simon	Social Circle	GA	237	30.00	71	1%	63%	36%	0%	203	\$76,155	\$269,922	Medium
12	Candace	Princeton	NC	54	5.00	22	76%	24%	0%	0%	448	\$51,002	\$107,171	Medium
13	Walker	Barhamsville	VA	485	20.00	N/A	12%	68%	20%	0%	203	\$80,773	\$320,076	Light
14	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	\$58,688	\$183,435	Light
15	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	\$60,037	\$276,347	Light
16	Sunfish	Willow Spring	NC	50	6.40	30	35%	35%	30%	0%	1,515	\$63,652	\$253,138	Light
17	Sappony	Stony Crk	VA	322	20.00	N/A	2%	98%	0%	0%	74	\$51,410	\$155,208	Light
18	Camden Dam	Camden	NC	50	5.00	0	17%	72%	11%	0%	403	\$84,426	\$230,288	Light
19	Grandy	Grandy	NC	121	20.00	10	55%	24%	0%	21%	949	\$50,355	\$231,408	Light
20	Champion	Pelion	SC	100	10.00	N/A	4%	70%	8%	18%	1,336	\$46,867	\$171,939	Light
21	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	\$36,737	\$143,320	Lt to Med
22	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	\$90,909	\$403,571	Light
23	Spotyslvania	Paytes	VA	3,500	617.00	160	37%	52%	11%	0%	74	\$120,861	\$483,333	Md to Hvy
	Average			485	57.04	38	24%	48%	22%	6%	923	\$63,955	\$237,700	
	Median			234	20.00	20	17%	59%	11%	0%	467	\$60,037	\$231,408	
	High			3,500	617.00	160	76%	98%	94%	44%	4,689	\$120,861	\$483,333	
	Low			35	5.00	0	1%	0%	0%	0%	48	\$35,057	\$99,219	

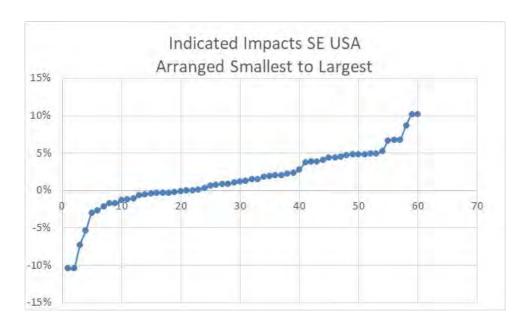
The solar farm matched pairs shown above have similar characteristics to each other in terms of population, but with several outliers showing solar farms in farm more urban areas. The median income for the population within 1 mile of a solar farm is \$60,037 with a median housing unit value of \$231,408. 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 \$1,000,000 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 56 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%. This means that the average and median impact is for a slight positive impact due to adjacency to a solar farm. However, this +1 to rate is within the typical variability I would expect from real estate. I therefore conclude that this data shows no negative or positive impact due to adjacency to a solar farm

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. 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.



# Residential Dwelling Matched Pairs Adjoining Solar Farms

Residential Dwelli	ng matched P	airs Aujoi	ning So					Adi Cala	Vor
Pair Solar Farm 1 AM Best	<b>City</b> Goldsboro	State NC	<b>M W</b> 5	Approx Distance 280	Tax ID/Address 3600195570	Date Sep-13	<b>Sale Price</b> \$250,000	Adj. Sale Price	Veg. % Diff Buffer Light
1 11111 2000	Gorabboro	1.0	Ü	200	3600198928	Mar-14	\$250,000	\$250,000	0%
2 AM Best	Goldsboro	NC	5	280	3600195361	Sep-13	\$260,000	Ψ200,000	Light
2 AW Best	Goldsboro	IVC	3	200	3600194813	Apr-14	\$258,000	\$258,000	1%
3 AM Best	Goldsboro	NC	5	280	3600194813	Jul-14	\$250,000	φ238,000	
5 AM Dest	Goldsboro	NC	5	200				<b>#050.000</b>	Light
4 AM D	0-14-1	NO	_	000	3600198928	Mar-14	\$250,000	\$250,000	0%
4 AM Best	Goldsboro	NC	5	280	3600198632	Aug-14	\$253,000	#2.40.000	Light
F 1115			_	200	3600193710	Oct-13	\$248,000	\$248,000	2%
5 AM Best	Goldsboro	NC	5	280	3600196656	Dec-13	\$255,000		Light
					3601105180	Dec-13	\$253,000	\$253,000	1%
6 AM Best	Goldsboro	NC	5	280	3600182511	Feb-13	\$247,000		Light
					3600183905	Dec-12	\$240,000	\$245,000	1%
7 AM Best	Goldsboro	NC	5	280	3600182784	Apr-13	\$245,000		Light
					3600193710	Oct-13	\$248,000	\$248,000	-1%
8 AM Best	Goldsboro	NC	5	280	3600195361	Nov-15	\$267,500		Light
					3600195361	Sep-13	\$260,000	\$267,800	0%
9 Mulberry	Selmer	TN	5	400	0900A011	Jul-14	\$130,000		Light
					099CA043	Feb-15	\$148,900	\$136,988	-5%
10 Mulberry	Selmer	TN	5	400	099CA002	Jul-15	\$130,000		Light
					0990NA040	Mar-15	\$120,000	\$121,200	7%
11 Mulberry	Selmer	TN	5	480	491 Dusty	Oct-16	\$176,000		Light
					35 April	Aug-16	\$185,000	\$178,283	-1%
12 Mulberry	Selmer	TN	5	650	297 Country	Sep-16	\$150,000		Medium
					53 Glen	Mar-17	\$126,000	\$144,460	4%
13 Mulberry	Selmer	TN	5	685	57 Cooper	Feb-19	\$163,000		Medium
					191 Amelia	Aug-18	\$132,000	\$155,947	4%
14 Leonard Rd	Hughe sville	MD	5.5	230	14595 Box Elder	Feb-16	\$291,000		Light
					15313 Bassford Rd	Jul-16	\$329,800	\$292,760	-1%
15 Neal Hawkins	Gastonia	NC	5	225	609 Neal Hawkins	Mar-17	\$270,000		Light
					1418 N Modena	Apr-18	\$225,000	\$242,520	10%
16 Summit	Moyock	NC	80	1,060	129 Pinto	Apr-16	\$170,000		Light
	,				102 Timber	Apr-16	\$175,500	\$175,101	-3%
17 Summit	Moyock	NC	80	980	105 Pinto	Dec-16	\$206,000		Light
	-3				127 Ranchland	Jun-15	\$219,900	\$198,120	4%
18 Tracy	Bailey	NC	5	780	9162 Winters	Jan-17	\$255,000		Heavy
10 1140)	Darrey	1.0	Ü		7352 Red Fox	Jun-16	\$176,000	\$252,399	1%
19 Manatee	Parrish	FL	75	1180	13670 Highland	Aug-18	\$255,000	<b>\$202</b> ,033	Heavy
15 manatee	rarrion	1.5	70	1100	13851 Highland	Sep-18	\$240,000	\$255,825	0%
20 McBride Place	Midland	NC	75	275	4380 Joyner	Nov-17	\$325,000	Ψ200,020	Medium
20 Weblide Hace	wirdiand	IVC	7.5	210	3870 Elkwood	Aug-16	\$250,000	\$317,523	
21 McBride Place	Midland	NC	75	505	5811 Kristi	Mar-20	\$530,000	φ317,323	Medium
21 WCBITUE FIACE	Midiand	IVC	13	303				<b>\$504.657</b>	5%
00 Marinosa	Stanley	NC	E	1155	3915 Tania	Dec-19	\$495,000 \$249,000	\$504,657	5% Light
22 Mariposa	Stanley	INC	5	1133	215 Mariposa	Dec-17		\$239,026	
00 Maniman	0+1	NO	_	F70	110 Airport	May-16	\$166,000	\$239,020	4%
23 Mariposa	Stanley	NC	5	570	242 Mariposa	Sep-15	\$180,000	d175 042	Light
04.01.1.0.4	1111 to D	774	20	1000	110 Airport	Apr-16	\$166,000	\$175,043	
24 Clarke Cnty	White Post	VA	20	1230	833 Nations Spr	Jan-17	\$295,000	#006 1FF	Light
05.0			_	400	6801 Middle	Dec-17	\$249,999	\$296,157	
25 Candace	Princeton	NC	5	488	499 Herring	Sep-17	\$215,000		Medium
					1795 Bay Valley	Dec-17	\$194,000	\$214,902	
26 Walker	Barhamsville	VA	20	250	5241 Barham	Oct-18	\$264,000		Light
					9252 Ordinary	Jun-19	\$277,000	\$246,581	7%
27 AM Best	Goldsboro	NC	5	385	103 Granville Pl	Jul-18	\$265,000		Light
					2219 Granville	Jan-18	\$260,000	\$265,682	
28 AM Best	Goldsboro	NC	5	315	104 Erin	Jun-17	\$280,000		Light
					2219 Granville	Jan-18	\$265,000	\$274,390	2%
29 AM Best	Goldsboro	NC	5	400	2312 Granville	May-18	\$284,900		Light
					2219 Granville	Jan-18	\$265,000	\$273,948	4%

# Residential Dwelling Matched Pairs Adjoining Solar Farms

Residential Dwelli	ing Matched F	Pairs Adjo	ining So					A41 0-1-		***
Pair Solar Farm	City	State	мw	Approx	Tax ID/Address	Date	Sale Price	Adj. Sale	% Diff	Veg. Buffer
30 AM Best	Goldsboro	NC	5	400	2310 Granville	May-19	\$280,000	riice	/0 <b>D</b> III	Light
					634 Friendly	Jul-19	\$267,000	\$265,291	5%	Ü
31 Summit	Moyock	NC	80	570	318 Green View	Sep-19	\$357,000			Light
	,				336 Green View	Jan-19	\$365,000	\$340,286	5%	Ü
32 Summit	Moyock	NC	80	440	164 Ranchland	Apr-19	\$169,000			Light
	,				105 Longhorn	Oct-17	\$184,500	\$186,616	-10%	Ü
33 Summit	Moyock	NC	80	635	358 Oxford	Sep-19	\$478,000			Light
	, and the second				176 Providence	Sep-19	\$425,000	\$456,623	4%	Ü
34 Summit	Moyock	NC	80	970	343 Oxford	Mar-17	\$490,000			Light
					218 Oxford	Apr-17	\$525,000	\$484,064	1%	
35 Innov 46	Hope Mills	NC	78.5	435	6849 Roslin Farm	Feb-19	\$155,000			Light
	•				109 Bledsoe	Jan-19	\$150,000	\$147,558	5%	Ü
36 Innov 42	Fayetteville	NC	71	340	2923 County Line	Feb-19	\$385,000			Light
					2109 John McMillan	Apr-18	\$320,000	\$379,156	2%	
37 Innov 42	Fayetteville	NC	71	330	2935 County Line	Jun-19	\$266,000			Light
					7031 Glynn Mill	May-18	\$255,000	\$264,422	1%	
38 Sunfish	Willow Sprng	NC	6.4	205	7513 Glen Willow	Sep-17	\$185,000			Light
					205 Pine Burr	Dec-17	\$191,000	\$172,487	7%	_
39 Neal Hawkins	Gastonia	NC	5	145	611 Neal Hawkins	Jun-17	\$288,000			Light
					1211 Still Forrest	Jul-18	\$280,000	\$274,319	5%	
40 Clarke Cnty	White Post	VA	20	1230	833 Nations Spr	Aug-19	\$385,000			Light
-					2393 Old Chapel	Aug-20	\$330,000	\$389,286	-1%	_
41 Sappony	Stony Creek	VA	20	1425	12511 Palestine	Jul-18	\$128,400			Medium
	, and the second				6494 Rocky Branch	Nov-18	\$100,000	\$131,842	-3%	
42 Camden Dam	Camden	NC	5	342	122 N Mill Dam	Nov-18	\$350,000			Light
					548 Trotman	May-18	\$309,000	\$352,450	-1%	Ü
43 Grandy	Grandy	NC	20	405	120 Par Four	Aug-19	\$315,000			Light
•	v				116 Barefoot	Sep-20	\$290,000	\$299,584	5%	Ü
44 Grandy	Grandy	NC	20	477	269 Grandy	May-19	\$275,000			Light
· ·	v				103 Spring Leaf	Aug-18	\$270,000	\$275,912		Ü
45 Champion	Pelion	SC	10	505	517 Old Charleston	Aug-20	\$110,000			Light
					1429 Laurel	Feb-19	\$126,000	\$107,856	2%	
46 Barefoot Bay	Bare foot Bay	FL	74.5	765	465 Papaya	Jul-19	\$155,000			Medium
					1132 Waterway	Jul-20	\$129,000	\$141,618	9%	
47 Barefoot Bay	Bare foot Bay	FL	74.5	750	455 Papaya	Sep-20	\$183,500			Medium
					904 Fir	Sep-20	\$192,500	\$186,697	-2%	
48 Barefoot Bay	Bare foot Bay	FL	74.5	690	419 Papaya	Jul-19	\$127,500			Medium
					865 Tamarind	Feb-19	\$133,900	\$124,613	2%	
49 Barefoot Bay	Bare foot Bay	FL	74.5	690	413 Papaya	Jul-20	\$130,000			Medium
					1367 Barefoot	Jan-21	\$130,500	\$139,507	-7%	
50 Barefoot Bay	Bare foot Bay	FL	74.5	690	343 Papaya	Dec-19	\$145,000			Light
					865 Tamarind	Feb-19	\$133,900	\$142,403	2%	
51 Barefoot Bay	Bare foot Bay	FL	74.5	710	335 Papaya	Apr-18	\$110,000			Light
					865 Tamarind	Feb-19	\$133,900	\$110,517	0%	
52 Miami-Dade	Miami	FL	74.5	1390	13600 SW 182nd	Nov-20	\$1,684,000			Light
					17950 SW 158th	Oct-20	\$1,730,000	\$1,713,199	-2%	
53 Spotsylvania	Paytes	VA	617	1270	12901 Orange Plnk	Aug-20	\$319,900			Medium
					12717 Flintlock	Dec-20	\$290,000	\$326,767	-2%	
54 Spotsylvania	Paytes	VA	617	1950	9641 Nottoway	May-20	\$449,900			Medium
					11626 Forest	Aug-20	\$489,900	\$430,246	4%	
55 Spotsylvania	Paytes	VA	617	1171	13353 Post Oak	Sep-20	\$300,000			Heavy
					12810 Catharpin	Jan-20	\$280,000	\$299,008	0%	
56 McBride Place	Midland	NC	75	470	5833 Kristi	Sep-20	\$625,000			Light
					4055 Dakeita	Dec-20	\$600,000	\$594,303	5%	

	Avg.
МW	Distance
64.91	612
20.00	479
617.00	1,950
5.00	145

I have further broken down these results based on the MWs, Landscaping, and distance from panel to show the following range of findings for these different categories.

Most of the findings are for homes between 201 and 500 feet to the closest solar panel. Most of the findings are for Light landscaping screens.

Light landscaping screens are showing no impact on value at any distances, including for solar farms over 75.1 MW.

MW Range 4.4 to 10									
Landscaping	Light	Light	Light	Medium	Medium	Medium	Heavy	Heavy	Heavy
Distance	100-200	201-500	500+	100-200	201-500	500+	100-200	201-500	500+
#	1	19	2	0	1	2	0	0	1
Average	5%	2%	3%	N/A	0%	4%	N/A	N/A	1%
Median	5%	1%	3%	N/A	0%	4%	N/A	N/A	1%
High	5%	10%	4%	N/A	0%	4%	N/A	N/A	1%
Low	5%	-5%	3%	N/A	0%	4%	N/A	N/A	1%
10.1 to 30									
Landscaping	Light	Light	Light	Medium	Medium	Medium	Heavy	Heavy	Heavy
Distance	100-200	201-500	500+	100-200	201-500	500+	100-200	201-500	500+
#	0	3	2	0	0	1	0	0	0
Average	N/A	4%	-1%	N/A	N/A	-3%	N/A	N/A	N/A
Median	N/A	5%	-1%	N/A	N/A	-3%	N/A	N/A	N/A
High	N/A	7%	0%	N/A	N/A	-3%	N/A	N/A	N/A
Low	N/A	0%	-1%	N/A	N/A	-3%	N/A	N/A	N/A
30.1 to 75									
Landscaping	Light	Light	Light	Medium	Medium	Medium	Heavy	Heavy	Heavy
Distance	100-200	201-500	500+	100-200	201-500	500+	100-200	201-500	500+
#	0	2	3	0	0	4	0	0	0
Average	N/A	1%	0%	N/A	N/A	0%	N/A	N/A	N/A
Median	N/A	1%	0%	N/A	N/A	0%	N/A	N/A	N/A
High	N/A	2%	2%	N/A	N/A	9%	N/A	N/A	N/A
Low	N/A	1%	-2%	N/A	N/A	-7%	N/A	N/A	N/A
75.1+									
Landscaping	Light	Light	Light	Medium	Medium	Medium	Heavy	Heavy	Heavy
Distance	100-200	201-500	500+	100-200	201-500	500+	100-200	201-500	500+
#	0	2	5	0	0	2	0	0	1
Average	N/A	-3%	2%	N/A	N/A	1%	N/A	N/A	0%
Median	N/A	-3%	4%	N/A	N/A	1%	N/A	N/A	0%
High	N/A	5%	5%	N/A	N/A	4%	N/A	N/A	0%
Low	N/A	-10%	-3%	N/A	N/A	-2%	N/A	N/A	0%

# C. Summary of National Data on Solar Farms

I have worked in 19 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 37 solar farms over 5 MW studied with each one providing matched pair data supporting the findings of this report.

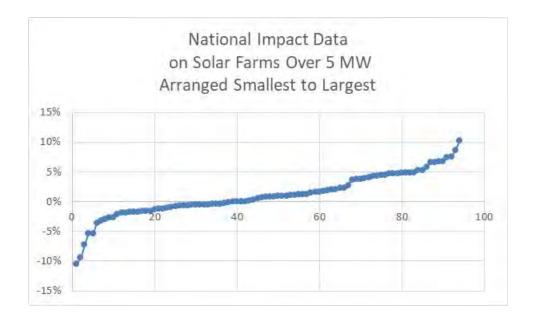
The solar farms summary is shown below with a summary of the matched pair data shown on the following page.

Mat	ched Pair Sum	mary					Adj. Us	es By	Acreage		1 mile Radius (2010-2020 Data)			
						Торо						Med.	Avg. Housing	
	Name	City	State	Acres	$\mathbf{M}\mathbf{W}$	Shift	Res	Ag	Ag/Res	Com/Ind	Popl.	Income	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%		\$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
7	Tracy	Bailey	NC	50	5.00	10	29%	0%	71%	0%	312	\$43,940	\$99,219	Heavy
8	Manatee	Parrish	FL	1,180	75.00	20	2%	97%	1%	0%	48	\$75,000	\$291,667	Heavy
9	McBride	Midland	NC	627	75.00	140	12%	10%	78%	0%	398	\$63,678	\$256,306	Lt to Med
10	Grand Ridge	Streator	IL	160	20.00	1	8%	87%	5%	0%	96	\$70,158	\$187,037	Light
11	Dominion	Indianapolis	IN	134	8.60	20	3%	97%	0%	0%	3,774	\$61,115	\$167,515	Light
12	Mariposa	Stanley	NC	36	5.00	96	48%	0%	52%	0%	1,716	\$36,439	\$137,884	Light
13	Clarke Cnty	White Post	VA	234	20.00	70	14%	39%	46%	1%	578	\$81,022	\$374,453	Light
14	Flemington	Flemington	NJ	120	9.36	N/A	13%	50%	28%	8%	3,477	\$105,714	\$444,696	Lt to Med
15	Frenchtown	Frenchtown	NJ	139	7.90	N/A	37%	35%	29%	0%	457	\$111,562	\$515,399	Light
16	McGraw	East Windsor	NJ	95	14.00	N/A	27%	44%	0%	29%	7,684	\$78,417	\$362,428	Light
17	Tinton Falls	Tinton Falls	NJ	100	16.00	N/A	98%	0%	0%	2%	4,667	\$92,346	\$343,492	Light
18	Simon	Social Circle	GA	237	30.00	71	1%	63%	36%	0%	203	\$76,155	\$269,922	Medium
19	Candace	Princeton	NC	54	5.00	22	76%	24%	0%	0%	448	\$51,002	\$107,171	Medium
20	Walker	Barhamsville	VA	485	20.00	N/A	12%	68%	20%	0%	203	\$80,773	\$320,076	Light
21	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	\$58,688	\$183,435	Light
22	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	\$60,037	\$276,347	Light
23	Demille	Lapeer	MI	160	28.40	10	10%	68%	0%	22%	2,010	\$47,208	\$187,214	Light
24	Turrill	Lapeer	MI	230	19.60	10	75%	59%	0%	25%	2,390	\$46,839	\$110,361	Light
25	Sunfish	Willow Spring	NC	50	6.40	30	35%	35%	30%	0%	1,515	\$63,652	\$253,138	Light
26	Picture Rocks	Tucson	AZ	182	20.00	N/A	6%	88%	6%	0%	102	\$81,081	\$280,172	None
27	Avra Valley	Tucson	AZ	246	25.00	N/A	3%	94%	3%	0%	85	\$80,997	\$292,308	None
28	Sappony	Stony Crk	VA	322	20.00	N/A	2%	98%	0%	0%	74	\$51,410	\$155,208	Medium
29	Camden Dam	Camden	NC	50	5.00	0	17%	72%	11%	0%	403	\$84,426	\$230,288	Light
30	Grandy	Grandy	NC	121	20.00	10	55%	24%	0%	21%	949	\$50,355	\$231,408	Light
31	Champion	Pelion	SC	100	10.00	N/A	4%	70%	8%	18%	1,336	\$46,867	\$171,939	Light
32	Eddy II	Eddy	TX	93	10.00	N/A	15%	25%	58%	2%	551	\$59,627	\$139,088	Light
33	Somerset	Somerset	TX	128	10.60	N/A	5%	95%	0%	0%	1,293	\$41,574	\$135,490	Light
34	DG Amp Piqua	Piqua	OH	86	12.60	2	26%	16%	58%	0%	6,735	\$38,919	\$96,555	Light
45	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	\$36,737	\$143,320	Lt to Med
36	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	\$90,909	\$403,571	Light
37	Spotyslvania	Paytes	VA	3,500	617.00	160	37%	52%	11%	0%	74	\$120,861	\$483,333	Med to Hvy
	Average			362	42.05	32	24%	52%	19%	6%	1,515	\$66,292	\$242,468	
	Median			150	17.80	10	16%	59%	7%	0%	560	\$62,384	\$230,848	
	High			3,500	617.00	160	98%	98%	94%	44%	7,684	\$120,861	\$515,399	
	Low			35	5.00	0	1%	0%	0%	0%	48	\$35,057	\$96,555	

From these 37 solar farms, I have derived 94 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%.

		Avg.		Indicated
	$\mathbf{M}\mathbf{W}$	Distance		Impact
Average	44.80	569	Average	1%
Median	14.00	400	Median	1%
High	617.00	1,950	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 are only 3 data points out of 94 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 617 MW facility.

Matched Pair Summary - @20 MW And Larger					Adj. Uses By Acreage				1 mile					
						Topo						Med.	Avg. Housing	Veg.
	Name	City	State	Acres	$\mathbf{M}\mathbf{W}$	Shift	Res	Ag	Ag/Res	Com/Ind	Popl.	Income	Unit	Buffer
1	Summit	Moyock	NC	2,034	80.00	4	4%	0%	94%	2%	382	\$79,114	\$281,731	Light
2	Manatee	Parrish	FL	1,180	75.00	20	2%	97%	1%	0%	48	\$75,000	\$291,667	Heavy
3	McBride	Midland	NC	627	75.00	140	12%	10%	78%	0%	398	\$63,678	\$256,306	Lt to Med
4	Grand Ridge	Streator	IL	160	20.00	1	8%	87%	5%	0%	96	\$70,158	\$187,037	Light
5	Clarke Cnty	White Post	VA	234	20.00	70	14%	39%	46%	1%	578	\$81,022	\$374,453	Light
6	Simon	Social Circle	GA	237	30.00	71	1%	63%	36%	0%	203	\$76,155	\$269,922	Medium
7	Walker	Barhamsville	VA	485	20.00	N/A	12%	68%	20%	0%	203	\$80,773	\$320,076	Light
8	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	\$58,688	\$183,435	Light
9	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	\$60,037	\$276,347	Light
10	Demille	Lapeer	MI	160	28.40	10	10%	68%	0%	22%	2,010	\$47,208	\$187,214	Light
11	Turrill	Lapeer	MI	230	19.60	10	75%	59%	0%	25%	2,390	\$46,839	\$110,361	Light
12	Picure Rocks	Tucson	AZ	182	20.00	N/A	6%	88%	6%	0%	102	\$81,081	\$280,172	Light
13	Avra Valley	Tucson	AZ	246	25.00	N/A	3%	94%	3%	0%	85	\$80,997	\$292,308	None
14	Sappony	Stony Crk	VA	322	20.00	N/A	2%	98%	0%	0%	74	\$51,410	\$155,208	None
15	Grandy	Grandy	NC	121	20.00	10	55%	24%	0%	21%	949	\$50,355	\$231,408	Medium
16	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	\$36,737	\$143,320	Lt to Med
17	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	\$90,909	\$403,571	Light
18	Spotyslvania	Paytes	VA	3,500	617.00	160	37%	52%	11%	0%	74	\$120,861	\$483,333	Med to Hvy
	Average			640	76.03		19%	64%	17%	4%	721	\$69,501	\$262,659	
	Median			335	29.20		12%	68%	2%	0%	293	\$72,579	\$273,135	
	High			3,500	617.00		75%	98%	94%	25%	2,446	\$120,861	\$483,333	
	Low			121	19.60		1%	0%	0%	0%	48	\$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.

Mat	Matched Pair Summary - @50 MW And Larger					_	Adj. Us	es By A	creage		1 mile			
						Торо						Med.	Avg. Housing	Veg.
	Name	City	State	Acres	$\mathbf{M}\mathbf{W}$	Shift	Res	Ag	Ag/Res	Com/Ind	Popl.	Income	Unit	Buffer
1	Summit	Moyock	NC	2,034	80.00	4	4%	0%	94%	2%	382	\$79,114	\$281,731	Light
2	Manatee	Parrish	FL	1,180	75.00	20	2%	97%	1%	0%	48	\$75,000	\$291,667	Heavy
3	McBride	Midland	NC	627	75.00	140	12%	10%	78%	0%	398	\$63,678	\$256,306	Lt to Med
4	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	\$58,688	\$183,435	Light
5	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	\$60,037	\$276,347	Light
6	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	\$36,737	\$143,320	Lt to Med
7	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	\$90,909	\$403,571	Light
8	Spotyslvania	Paytes	VA	3,500	617.00	160	37%	52%	11%	0%	74	\$120,861	\$483,333	Med to Hvy
	Average			1,142	143.19		19%	58%	23%	1%	786	\$73,128	\$289,964	
	Median			580	75.00		15%	67%	0%	0%	390	\$69,339	\$279,039	
	High			3,500	617.00		41%	97%	94%	3%	2,446	\$120,861	\$483,333	
	Low			347	71.00		2%	0%	0%	0%	48	\$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  $\pm$ -5% range as can be seen earlier in this report.

On the following page I show 81 projects ranging in size from 50 MW up to 1,000 MW with an average size of 111.80 MW and a median of 80 MW. The average closest distance for an adjoining home is 263 feet, while the median distance is 188 feet. The closest distance is 57 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.

				Output	Total	Used	Avg. Dist	Closest	Adioi	ning Us	se by Ac	re
Parcel #	State	City	Name	-			to home		Res	Agri	Ag/R	Com
	NC	Moyock	Summit/Ranchland	80	2034		674	360	4%	94%	0%	2%
133	MS	Hattiesburg	Hattiesburg	50	1129	479.6	650	315	35%	65%	0%	0%
179	SC	Ridgeland	Jasper	140	1600	1000	461	108	2%	85%	13%	0%
211	NC	Enfield	Chestnut	75	1428.1		1,429	210	4%	96%	0%	0%
222	VA	Chase City	Grasshopper	80	946.25				6%	87%	5%	1%
226		Louisa	Belcher	88	1238.1			150	19%	53%	28%	0%
305		Dade City	Mountain View	55	347.12		510	175	32%	39%	21%	8%
319		Jasper	Hamilton	74.9	1268.9	537	3,596	240	5%	67%	28%	0%
336		Parrish	Manatee	74.5	1180.4		1,079	625	2%	50%	1%	47%
337		Arcadia	Citrus	74.5	640				0%	0%	100%	0%
338 353		Port Charlotte Oak Hall	Babcock Amazon East(ern sh	74.5 80	422.61 1000		645	135	0% 8%	0% 75%	100% 17%	0% 0%
364		Stevensburg	Greenwood	100	2266.6	1800	788	200	8%	62%	29%	0%
368		Warsaw	Warsaw	87.5	585.97	499		130	11%	66%	29%	3%
390		Ellerbe	Innovative Solar 34	50	385.24	226		N/A	1%	99%	0%	0%
399		Midland	McBride	74.9	974.59	627	,	140	12%	78%	9%	0%
400		Mulberry	Alafia	51	420.35	021	490	105	7%	90%	3%	0%
406		Clover	Foxhound	91	1311.8		885	185	5%	61%	17%	18%
410		Trenton	Trenton	74.5	480		2,193	775	0%	26%	55%	19%
411		Battleboro	Fern	100		960.71	1,494	220	5%	76%	19%	0%
412	MD	Goldsboro	Cherrywood	202	1722.9	1073.7	429	200	10%	76%	13%	0%
434	NC	Conetoe	Conetoe	80	1389.9	910.6	1,152	120	5%	78%	17%	0%
440	FL	Debary	Debary	74.5	844.63		654	190	3%	27%	0%	70%
441	FL	Hawthorne	Horizon	74.5	684				3%	81%	16%	0%
484	VA	Newsoms	Southampton	100	3243.9		-	-	3%	78%	17%	3%
486	VA	Stuarts Draft	Augusta	125	3197.4	1147	588	165	16%	61%	16%	7%
491		Misenheimer	Misenheimer 2018	80	740.2	687.2	504	130	11%	40%	22%	27%
494		Shacklefords	Walnut	110	1700	1173		165	14%	72%	13%	1%
496		Clover	Piney Creek	80	776.18	422		195	15%	62%	24%	0%
511		Scotland Neck	American Beech	160		1807.8	,	205	2%	58%	38%	3%
514		Reidsville	Williamsburg	80	802.6	507		200	25%	12%	63%	0%
517		Luray	Cape	100	566.53			110	42%	12%	46%	0%
518		Emporia	Fountain Creek	80	798.3	595		300	6%	23%	71%	0%
525 526		Plymouth	Macadamia Broad River	484 50	759.8	4813.5 365	-	275 70	1% 29%	90% 55%	9% 16%	0% 0%
555		Mooresboro Mulberry	Durrance	74.5		324.65		140	3%	97%	0%	0%
560		Yadkinville	Sugar	60	477	357		65	19%	39%	20%	22%
561		Enfield	Halifax 80mw 2019	80		1007.6		190	8%	73%	19%	0%
577		Windsor	Windsor	85	564.1	564.1	572	160	9%	67%	24%	0%
579		Paytes	Spotsylvania	500	6412	3500		100	9%	52%	11%	27%
582		Salisbury	China Grove	65		324.26		85	58%	4%	38%	0%
583		Walnut Cove	Lick Creek	50	1424	185.11	410	65	20%	64%	11%	5%
584	NC	Enfield	Sweetleaf	94	1956.3	1250	968	160	5%	63%	32%	0%
586	VA	Aylett	Sweet Sue	77	1262	576	1,617	680	7%	68%	25%	0%
593	NC	Windsor	Sumac	120	3360.6	1257.9	876	160	4%	90%	6%	0%
599	TN	Somerville	Yum Yum	147	4000	1500	1,862	330	3%	32%	64%	1%
602	GA	Waynesboro	White Oak	76.5	516.7	516.7	2,995	1,790	1%	34%	65%	0%
603		Butler	Butler GA	103		2395.1		255	2%	73%	23%	2%
604		Butler	White Pine	101.2	505.94	505.94	1,044	100	1%	51%	48%	1%
605		Metter	Live Oak	51		417.84		235	4%	72%	23%	0%
606		Hazelhurst	Hazelhurst II	52.5		490.42		105	9%	64%	27%	0%
607		Bainbridge	Decatur Parkway	80	781.5			450	2%	27%	22%	49%
608		Leslie-DeSoto	Americus	1000	9661.2			510	1%	63%	36%	0%
616		Fort White	Fort White	74.5	570.5			220	12%	71%	17%	0%
621		Spring Grove	Loblolly	150	2181.9			110	7%	62%	31%	0%
622		Scottsville	Woodridge	138	2260.9			170	9%	63%	28%	0%
625 628		Middlesex Deerfield	Phobos Carroll Road	80 200	754.52	734 1694.8		57 100	14% 12%	75% 86%	10%	0% 2%
628 633		Emporia	Brunswick	150.2		1387.3		190 240	4%	85%	0% 11%	2% 0%
634		Elkin	Partin	50.2		257.64		155	30%	25%	15%	30%
054	110	PARITI	1 (11111	50	749.4	401.04	943	155	JU /0	43/0	13/0	JU /0

			Output	Total	Used	Avg. Dist	Closest	Adjoir	ning Us	e by Acre	e
Parcel # State	City	Name	(MW)	Acres	Acres	to home	Home	Res	Agri	Ag/R	Com
638 GA	Dry Branch	Twiggs	200	2132.7	2132.7	-	-	10%	55%	35%	0%
639 NC	Hope Mills	Innovative Solar 46	78.5	531.87	531.87	423	125	17%	83%	0%	0%
640 NC	Hope Mills	Innovative Solar 42	71	413.99	413.99	375	135	41%	59%	0%	0%
645 NC	Stanley	Hornet	75	1499.5	858.4	663	110	30%	40%	23%	6%
650 NC	Grifton	Grifton 2	56	681.59	297.6	363	235	1%	99%	0%	0%
651 NC	Grifton	Buckleberry	52.1	367.67	361.67	913	180	5%	54%	41%	0%
657 KY	Greensburg	Horseshoe Bend	60	585.65	395	1,394	63	3%	36%	61%	0%
658 KY	Campbellsville	Flat Run	55	429.76	429.76	408	115	13%	52%	35%	0%
666 FL	Archer	Archer	74.9	636.94	636.94	638	200	43%	57%	0%	0%
667 FL	New Smyrna Be	ε Pioneer Trail	74.5	1202.8	900	1,162	225	14%	61%	21%	4%
668 FL	Lake City	Sunshine Gateway	74.5	904.29	472	1,233	890	11%	80%	8%	0%
669 FL	Florahome	Coral Farms	74.5	666.54	580	1,614	765	19%	75%	7%	0%
672 VA	Appomattox	Spout Spring	60	881.12	673.37	836	335	16%	30%	46%	8%
676 TX	Stamford	Alamo 7	106.4	1663.1	1050	-	-	6%	83%	0%	11%
677 TX	Fort Stockton	RE Roserock	160	1738.2			-	0%	100%	0%	0%
678 TX	Lamesa	Lamesa	102	914.5	655	921	170	4%	41%	11%	44%
679 TX	Lamesa	Ivory	50	706			460	0%	87%	2%	12%
680 TX	Uvalde	Alamo 5	95	830.35	800	925	740	1%	93%	6%	0%
684 NC	Waco	Brookcliff	50	671.03	671.03		150	7%	21%	15%	57%
689 AZ	Arlington	Mesquite	320.8	3774.5	2617	1,670	525	8%	92%	0%	0%
692 AZ	Tucson	Avalon	51	479.21	352	=	-	0%	100%	0%	0%
			81								
		Average	111.80	1422.4					62%		6%
		Median	80.00	914.5	646.0	836	188	7%	64%	17%	0%
		High	1000.00	9661.2	4813.5	5210	1790	58%	100%	100%	70%
		Low	50.00	347.1	185.1	343	57	0%	0%	0%	0%

# VII. 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.

# VIII. 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.

# IX. 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.

# X. Scope of Research

I have researched over 750 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.

							Closest	All Res All Comm		
	Res	Ag	Res/AG	Comm	Ind	Avg Home	Home	Uses	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.

centage By Nu						Closest	All Res All Comm		
	Res	Ag	Res/AG	Comm	Ind	Avg Home	Home	Uses	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.

# XI. 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 even 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 reportedly has a hum similar to an HVAC that can only be heard in close proximity to this transformer and the buffers on the property are sufficient to make emitted sounds inaudible from the adjoining properties. No sound is emitted from the facility 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/Viewshed

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. 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.

#### 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.

# XII. 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 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.

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.



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Professional Experience	
Kirkland Appraisals, LLC, Raleigh, N.C.	2003 – Present
Commercial appraiser	
Hester & Company, Raleigh, N.C.	1006 0002
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	
IL State Certified General Appraiser # 553.002633	
<b>KY State Certified General Appraiser</b> # 5522	
Education	
Bachelor of Arts in English, University of North Carolina, Chapel Hill	1993
Continuing Education	
Florida Appraisal Laws and Regulations	2020
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
THE 14 A 1 A 1 A 1 A 1 A 1 A 1 A 1 A 1 A 1	
Florida Appraisal Laws and Regulations	2018
Uniform Standards of Professional Appraisal Practice Update	2018
Uniform Standards of Professional Appraisal Practice Update Appraisal of REO and Foreclosure Properties	2018 2017
Uniform Standards of Professional Appraisal Practice Update Appraisal of REO and Foreclosure Properties Appraisal of Self Storage Facilities	2018 2017 2017
Uniform Standards of Professional Appraisal Practice Update Appraisal of REO and Foreclosure Properties Appraisal of Self Storage Facilities Land and Site Valuation	2018 2017 2017 2017
Uniform Standards of Professional Appraisal Practice Update Appraisal of REO and Foreclosure Properties Appraisal of Self Storage Facilities Land and Site Valuation NCDOT Appraisal Principles and Procedures	2018 2017 2017 2017 2017
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Uniform Standards of Professional Appraisal Practice Update Appraisal of REO and Foreclosure Properties Appraisal of Self Storage Facilities Land and Site Valuation NCDOT Appraisal Principles and Procedures Uniform Standards of Professional Appraisal Practice Update Forecasting Revenue Wind Turbine Effect on Value Supervisor/Trainee Class Business Practices and Ethics Subdivision Valuation	2018 2017 2017 2017 2017 2016 2015 2015 2015 2014 2014

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

2012

Appraising Rural Residential Properties

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Professional Experience	
Kirkland Appraisals, LLC, Raleigh, N.C.	2003 – Present
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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
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Uniform Standards of Professional Appraisal Practice Update	2012
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Basic Income Capitalization	1996

# EXHIBIT 12 ATTACHMENT 12.7



# TRAFFIC STUDY

Henderson County Solar Farm US 41A & KY 425 Henderson, KY

Submitted to:

**Community Energy** 

c/o: Mr. Chris Killenberg

**Regional Development Director** 

P.O. Box 17236

**Chapel Hill, North Carolina 27516** 

**Submittal Date:** 

May 14, 2021



# 1 INTRODUCTION

Community Energy Solar, LLC ("Community Energy") engaged Bacon Farmer Workman Engineering & Testing, Inc. (BFW) to study and report on the impact of a proposed solar electric generating facility's operation on road and rail traffic to and within the facility, including anticipated levels of fugitive dust created by traffic, and any anticipated degradation of roads and lands in its vicinity.

The proposed solar electric generating facility will be located in central Henderson County, Kentucky, and is to be constructed and operated by Henderson County Solar LLC (the "Project"). The Project would generate electricity employing photovoltaic solar panels. It will be constructed on approximately 541 acres located immediately southwest of the city of Henderson, Kentucky. The Project site is divided into two main sections. The northern section is bordered by Lover's Lane to the east. The southern section is bordered by KY 425 (Henderson Bypass) to the north, US 41A to the east, Wilson Station Rd. to the south, and Old Henderson Corydon Rd. to the west.

Community Energy anticipates a construction period of 6-9 months, involving up to 150 construction workers. Once operational, the project would require 2-3 full-time employees.

This Traffic Study examines existing traffic patterns and road conditions in the vicinity of the Project, anticipated routes and projected traffic considerations related to the introduction of both Project construction and operations workers in the area, potential traffic congestion and mitigation measures, potential dust associated with traffic entering and exiting the project site, and potential impacts on local rail traffic.

### PROPOSED HENDERSON COUNTY SOLAR FARM

# 2 TRAFFIC STUDY

# 2.1 Existing Road Network and Traffic Conditions

The anticipated routes for construction equipment, materials deliveries, and construction and operation crews to access the Henderson County Project sites consist of the existing roads that are adjacent to the sites and the existing local roads that would be used to enter the Henderson County sites. The major roads to be used to access the facility from the south are anticipated to be I-69, KY 425, and US 41A. I-69 and KY 425 would provide access to the facility from Nashville, Elizabethtown, and Paducah. The major roads to be used to access the facility from the north are anticipated to be I-64, I-69, and US 60. I-64 would provide access from St. Louis and Louisville to I-69 north of Evansville, and then to US 60 at Henderson, and then KY 425. A third route expected to give access to the facility would be US 60 running in an east / west direction from Louisville to Owensboro to Henderson. Along US 60 East of Henderson, KY 425 and US 41A would be used to access the facility.

At the US 41A / CR 1348 (Wilson Station Rd.) intersection, CR 1348 (Wilson Station Rd.) will lead to the southern portion of the site. Also, at the US 41A intersections at Fairmont Avenue and Collier Road, access will be provided to the northern portion of the site via Lovers Lane.

Along KY 425, two (2) direct access points are provided into the southern portion of the site. Also on KY 425, Old Henderson Corydon Rd. provides access to the southern portion of the site.

All of the existing Local Roads and City Streets are 1-lane / locally maintained roads connecting with the sites. The Local Site Access Road Information Table below provides further details on each local road that would be used to access the sites.

### **Local Site Access Road Information**

Roadway	Road Classification A	verage Daily Traffic	Year Counted
US 60	Principal Arterial (NHS)	11,568	2015
US 41A	Minor Arterial	3542	2015
KY 425	Principal Arterial (NHS)	6102	2019
CR 1348 Wilson Station Rd	Local Road	Not Available	
Old Henderson Corydon Rd	Local Road	Not Available	
Collier Road	City Street	300 (Assumed)	
Fairmont Avenue	City Street	Not Available	
Lovers Ln.	Local Road	90	2012

# 2.2 Traffic Projections and Intersection Analysis

Although numerous local County and State maintained roads exist near the site area, this study analysis assumed KY 425 would generate the majority of worker and material delivery traffic entering and leaving the site. Assumptions for this resulted in 73% of the traffic coming from the east via I-69 / KY 425, 23% of the traffic coming from the west and north, and 4% coming from the south.

Based on the assumed directional traffic split, and assuming 25% of the 150 construction force workers would be limited to the northern site and 75% of the construction force workers would be distributed to the southern site, the only unsignalized intersection that was considered critical was the US 41A/Collier Rd. intersection. The results are shown below for that intersection.

INTERSECTION	CURRENT LOS	PEAK-HOUR LOS
US 41A/South Collier Rd. (Existing)	B (PHF 0.75)	B (PHF 0.75)
US 41A/South Collier Rd. (AM)	B (PHF 0.75)	B (PHF 0.75)
US 41A/South Collier Rd. (PM)	B (PHF 0.75)	B (PHF 0.75)

Based on assumed traffic count projections and peak-time intervals, HCS7 software was used for analyzing flow rates, queue lengths, delay, traffic capacity, and determine the Level of Service (LOS) for the intersection. The detailed report below summarizes the results. (see TRAFFIC REPORT below)

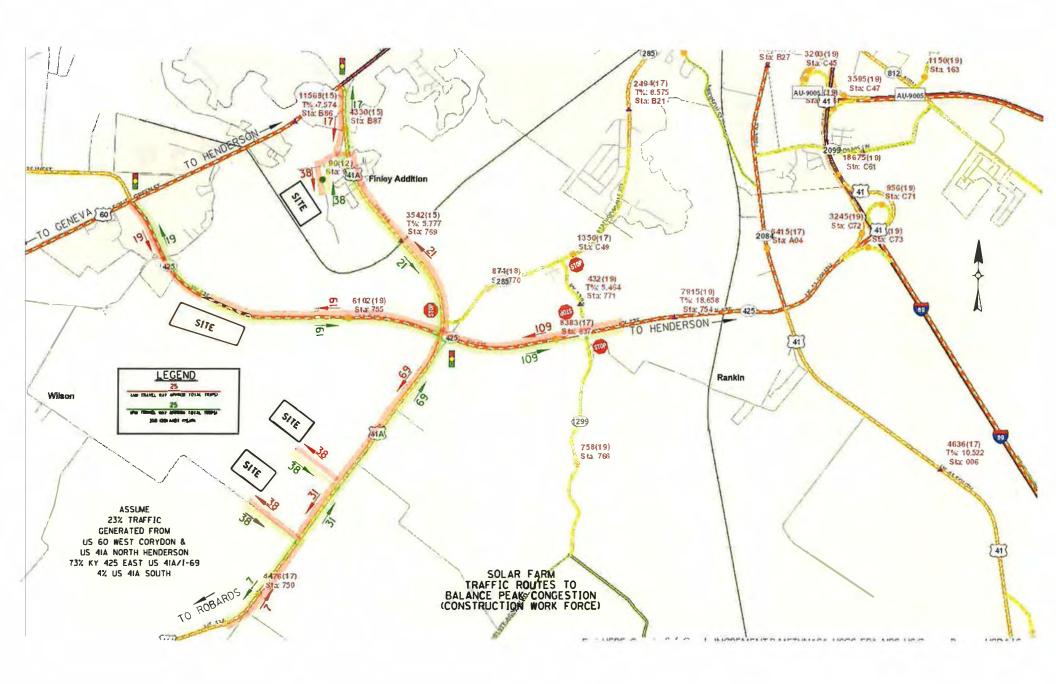
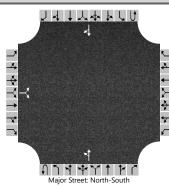


	Exhibit 12 Attachment 12.7 Page 6 of 21							
General Information		Site Information						
Analyst		Intersection	US41A / South Collier Rd					
Agency/Co.	BFW Engineering & Testing	Jurisdiction						
Date Performed	4/26/2021	East/West Street	South Collier Rd					
Analysis Year	2021	North/South Street	US41A					
Time Analyzed	Existing	Peak Hour Factor	0.75					
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25					
Project Description								

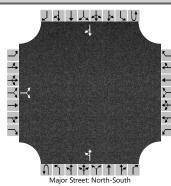
### Lanes



					iviajoi	Street, NO	tii-30utii									
Vehicle Volumes and Adj	ustme	nts														
Approach	Π	Eastb	ound			Westl	oound			North	bound		Southbound			
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		11		4						4	213				213	11
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)			0													
Right Turn Channelized																
Median Type   Storage		Undivided														
Critical and Follow-up He	eadwa	ys														
Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						
Delay, Queue Length, and	d Leve	l of Se	ervice													
Flow Rate, v (veh/h)	П		20							5						
Capacity, c (veh/h)			520							1257						
v/c Ratio			0.04							0.00						
95% Queue Length, Q <sub>95</sub> (veh)			0.1							0.0						
Control Delay (s/veh)			12.2							7.9						
Level of Service (LOS)			В							А						
Approach Delay (s/veh)		12	2.2						0.2							
Approach LOS			В													

	Exhibit 12 Attachment 12.7 Page 7 of 21							
General Information		Site Information						
Analyst		Intersection	US41A / South Collier Rd					
Agency/Co.	BFW Engineering & Testing	Jurisdiction						
Date Performed	4/26/2021	East/West Street	South Collier Rd					
Analysis Year	2021	North/South Street	US41A					
Time Analyzed	AM	Peak Hour Factor	0.75					
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25					
Project Description								

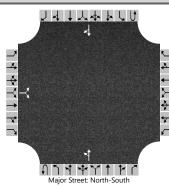
### Lanes



					Majo	Street: Nor	th-South										
Vehicle Volumes and Ad	justme	nts															
Approach	Т	Eastbound Westbound							North	bound			South	bound			
Movement	U	L	Т	R	U	L	Т	R	U	L	T	R	U	L	Т	R	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0	
Configuration			LR							LT						TR	
Volume (veh/h)		11		4						25	213				213	28	
Percent Heavy Vehicles (%)		3		3						3							
Proportion Time Blocked																	
Percent Grade (%)			0														
Right Turn Channelized																	
Median Type   Storage				Undi	vided												
Critical and Follow-up H	eadwa	ys															
Base Critical Headway (sec)		7.1		6.2						4.1							
Critical Headway (sec)		6.43		6.23						4.13							
Base Follow-Up Headway (sec)		3.5		3.3						2.2							
Follow-Up Headway (sec)		3.53		3.33						2.23							
Delay, Queue Length, an	d Leve	l of S	ervice														
Flow Rate, v (veh/h)	T		20							33							
Capacity, c (veh/h)			471							1233							
v/c Ratio			0.04							0.03							
95% Queue Length, Q <sub>95</sub> (veh)			0.1							0.1							
Control Delay (s/veh)			13.0							8.0							
Level of Service (LOS)			В							А							
Approach Delay (s/veh)		13	3.0	-		-	-	-		1	.1	-					
Approach LOS			В														

	Exhibit 12 Attachment 12.7 Page 8 of 21		
General Information		Site Information	
Analyst		Intersection	US41A / South Collier Rd
Agency/Co.	BFW Engineering & Testing	Jurisdiction	
Date Performed	4/26/2021	East/West Street	South Collier Rd
Analysis Year	2021	North/South Street	US41A
Time Analyzed	PM	Peak Hour Factor	0.75
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			

### Lanes



					iviajoi	Street, NO	tii-30utii										
Vehicle Volumes and Adju	ustme	nts															
Approach		Eastb	ound			Westl	oound			North	bound		Southbound				
Movement	U	L	Т	R	U	L	Т	R	U	L	T	R	U	L	Т	R	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0	
Configuration			LR							LT						TR	
Volume (veh/h)		28		25						4	213				213	11	
Percent Heavy Vehicles (%)		3		3						3							
Proportion Time Blocked																	
Percent Grade (%)			0														
Right Turn Channelized																	
Median Type   Storage				Undi	vided												
Critical and Follow-up He	adwa	ys															
Base Critical Headway (sec)		7.1		6.2						4.1							
Critical Headway (sec)		6.43		6.23						4.13							
Base Follow-Up Headway (sec)		3.5		3.3						2.2							
Follow-Up Headway (sec)		3.53		3.33						2.23							
Delay, Queue Length, and	Leve	l of Se	ervice														
Flow Rate, v (veh/h)			71							5							
Capacity, c (veh/h)			568							1257							
v/c Ratio			0.12							0.00							
95% Queue Length, Q <sub>95</sub> (veh)			0.4							0.0							
Control Delay (s/veh)			12.2							7.9							
Level of Service (LOS)			В							А							
Approach Delay (s/veh)		12	2.2				•			0	.2						
Approach LOS			В														

# 2.3 Operational and Maintenance Traffic

Any entrances to the southern portion of the site would likely be off US 41A via CR 1348 (Wilson Station Rd.), KY 425, or off Old Henderson Corydon Road.

Any entrances to the northern portion of the site would likely be off US 41A via Fairmont Ave. or Collier Rd and Lovers Lane.

These roads provide potential direct to the site entrances. These potential access points are identified on EXHIBIT 2.3-1. Traffic is expected to increase during construction, with a morning and afternoon peak due to workers entering and leaving the site as well as deliveries occurring throughout the day.

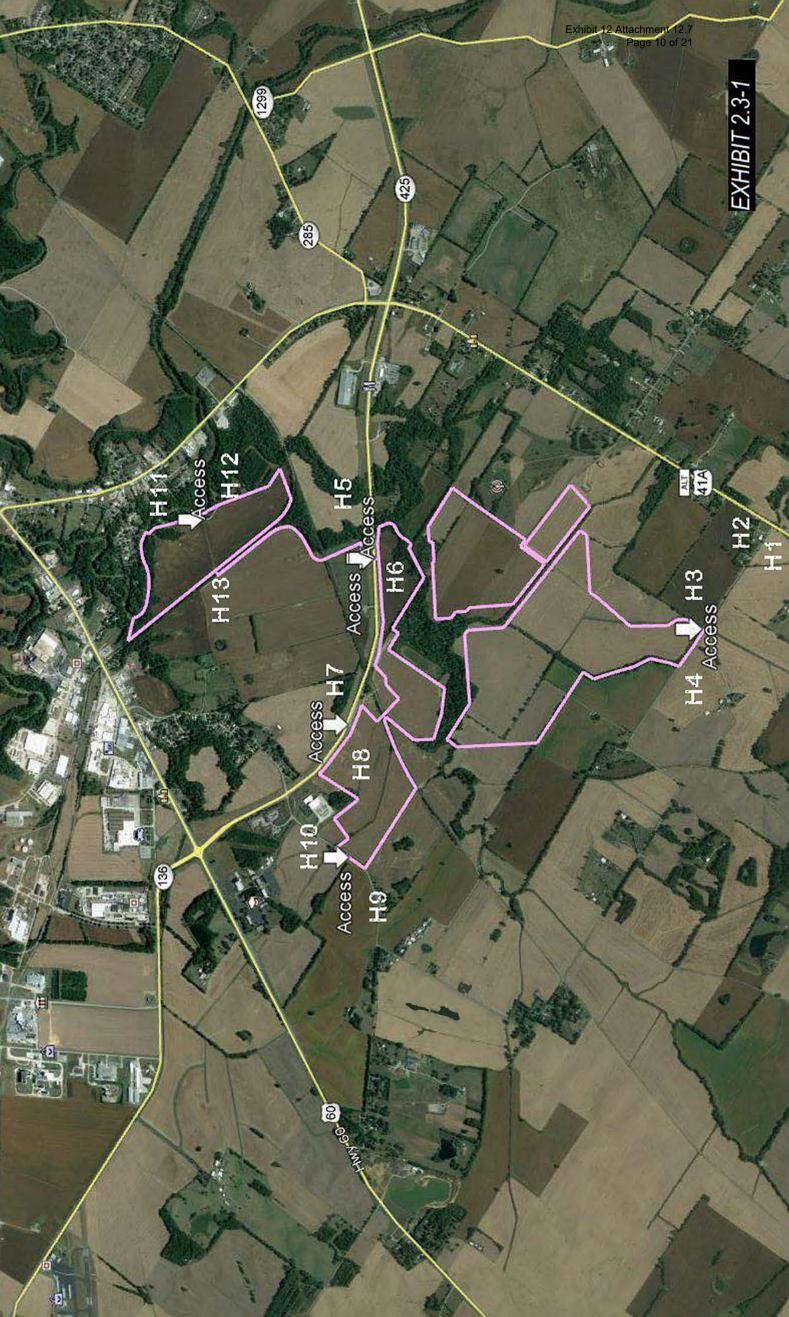
From on-site field observations, the access locations proposed for each of the sites appear to provide an adequate decision time (foot per second) period for the ingress /egress traffic along the local roads.

All of the proposed access intersection locations appear to have unobstructed views allowing sufficient sight-line visibility for on-coming traffic. The existing vertical grades at the proposed access locations appear to allow sufficient gradients for proper deceleration and acceleration along the existing local roads. (See EXHIBIT 2.3-1 Figures 1-13).

The construction of the proposed solar facility is expected to take approximately six to nine months for completion. During construction, a temporary increase in traffic volume associated with travel of construction laborers (150 total at any given time), delivery of construction equipment and material, delivery of solar panel components and equipment is anticipated. Laborer commutes with passenger vehicles and trucks will occur daily with two traffic peaks (i.e., morning peak and afternoon peak), whereas deliveries of equipment will occur on trailers, flatbeds, or other large vehicles periodically throughout the construction process at various times of day. A summary of anticipated construction vehicle trips per day are shown below.

# **Summary of Anticipated Construction Vehicle Trips**

Construction Vehicle Type	Vehicle Trips Per Day (Avg.)
Employee Passenger	150
Heavy-Duty Truck	5
Water Trucks	4



# 2.4 Traffic Congestion Mitigation Consideration

In an attempt to reduce traffic congestion at intersections and along the local roads, authorized solar farm representatives may issue "route and parking cards" indicating the time, route, and the parking area individual workers and deliveries must follow to enter and leave the site. If necessary, the solar farm may implement enforcement measures to ensure workers and deliveries comply with the route cards.

Ride-sharing for employees working during the construction phase will be encouraged in order to reduce the daily traffic count to / from the project site during the morning and afternoon peaks.



Figure 1 US 41A at CR 1348 Wilson Station Rd. (Looking South)



Figure 2 US 41A at CR 1348 Wilson Station Rd. (Looking North)



Figure 3 Access Location on Lt. on CR 1348 Wilson Station Rd. (Looking East)



Figure 4 Access Location on Rt. on CR 1348 Wilson Station Rd. (Looking West)



Figure 5 Eastern-Most Access Location on KY 425 (Looking East)



Figure 6 Eastern-Most Access Location on KY 425 (Looking West)



Figure 7 Western-Most Access Location on KY 425 (Looking East)



Figure 8 Western-Most Access Location on KY 425 (Looking West)



Figure 9 Access Location on Old Henderson Corydon Rd. (Looking South)



Figure 10 Access Location on Old Henderson Corydon Rd. (Looking North)



Figure 11 Access Location on Lovers Ln. (Looking North)



Figure 12 Access on Lovers Ln. (Looking South)



Figure 13 Existing At-Grade RR Crossing on Western Property Boundary off Lovers Ln.

# 2.5 Traffic Safety Precautions

Permanent road or lane closures are not anticipated for the construction of the solar facility. Construction of the facility is not expected to impact roads, but safety precautions including signage, signaling, flagmen, and temporary lane closures may be utilized as needed. For example, during a delivery, flagmen may be used to temporarily stop traffic to allow the delivery driver to turn into the facility safely, with signage used to warn oncoming traffic of the lane closure.

# 2.6 Impact on Road Infrastructure

Construction of the facility is not expected to have any significant impact on the existing road infrastructure other than increased wear due to increased traffic at the possible Access entrances situated on the Local City Streets or County Roads (i.e. CR 1348 (Wilson Station Rd.), Old Henderson Corydon Road (situated off KY 425), Fairmont Ave. and Collier Rd. (situated off US 41A), and Lovers Lane.

The existing 3-span bridge on Lovers Ln. over Canoe Creek does not appear to have a posted weight limit sign. According to the Henderson County Road Department, the bridge is limited to a maximum 18 ton loading. Prior to crossing the bridge with vehicular equipment or transported materials, solar farm representatives will be responsible to obtain weight limit restrictions to advise all solar contractors and site delivery trucks of the restriction and ensure solar farm employees and delivery vehicles do not exceed the limit.

In addition to the Canoe Creek bridge weight restrictions, access to the northern portion of the site via Lovers Lane will require worker and delivery motorists to negotiate the sharp existing horizontal curve situated near the bridge end. To facilitate the maneuver, additional signing, pavement marking(s), pavement surfacing stabilization and / or widening may be needed. During the construction period of the site, the solar farm will be responsible for all cost associated with the widening and maintaining the curve. When no longer needed the solar farm will be responsible to repair and restore the curve to the satisfaction of the City of Henderson Road Department.

Any impact to the existing local roads or bridge due to construction of the facility will be repaired at the expense of the solar farm.

Access drives and internal roads will be constructed or improved as needed to accommodate appropriate vehicles and equipment to construct the proposed solar facility. Internal roads will be compacted gravel, which may result in an increase in airborne dust particles. During construction, water may be applied to the internal road system to reduce dust generation.

# 2.7 Operational and Maintenance Traffic

The facility will be manned during normal business operation with 2-3 people on staff, normal working normal hours, but will change shifts as needed to perform some planned maintenance at night. There will also be an On-Call schedule to respond to any corrective maintenance that is impacting production. It is anticipated that workers making site visits will be in mid-to full-size

trucks, accounting for less vehicle traffic than an average single-family home. During operation, workers are not anticipated to create significant impact on the local traffic and will generally be entering and leaving on normal weekdays during daylight hours.

During construction, an estimated 0.50 acre parking area off Lovers Lane is anticipated for the northern portion of the site, with four (4) additional 0.40 acre parking areas anticipated in the southern portion of the site to provide sufficient space for workers, deliveries, and material staging. One parking area will be near the access point off Wilson Station Rd. and has been identified as a potential parking area for the southern site. The 2<sup>nd</sup> and 3<sup>rd</sup> parking areas into the southern site have been identified off KY 425. A 4th parking area into the southern site has been identified at the access point off Old Henderson Corydon Road. (See EXHIBIT 2.3-1)

An approved surfacing material will be used at each parking area for stabilization and to help minimize soil erosion.

# 2.8 Traffic Summary and Conclusions

CONSTRUCTION: During construction of this facility, traffic is anticipated to increase with morning and evening peaks for daily workers and deliveries being made to the site periodically. All necessary safety precautions, including signing and flagmen, will be taken to best ensure collisions are prevented on the surrounding roads. Other than increased wear, damages to the existing road infrastructure are not anticipated. All affected highway segments are anticipated to continue at an acceptable level of service (LOS) during both the morning and afternoon peaks.

OPERATION: Operation of the facility is not expected to cause significant impact to the local traffic as the additional expected traffic contributed to the area will be similar to that of a typical single-family home.

During the construction and operation of the facility, there will be no adverse effects on traffic operations in and around the project sites.

# 3 FUGITIVE DUST IMPACTS

While state and local area roadways are paved, fugitive dust is anticipated during construction from land disturbance and use of unpaved driveways. Due to the low-density housing and rural character near the site, and the large size of the site, only minor impacts from fugitive dust are expected. To reduce potential dust impacts, open-bodied trucks will be covered while in motion. Internal roadways will be constructed from compacted gravel. Due to an increase associated with dust from gravel roads and site use in general, water may be applied to reduce dust generation as needed. Under the KY Pollutant Discharge Elimination System, water used for dust control during the facility construction is authorized as a non-stormwater discharge activity. The Henderson County facility will apply best management practices (BMP) for dust mitigation.

# 4 IMPACTS TO RAIL

An existing railway is situated along the western edge of the northern-most site. An existing atgrade rail crossing borders the western edge of the site which appears to be used for agricultural purposes. The existing crossing does not have advance crossing signing and does not comply with recommended signing according to the MUTCD.

The solar farm facility will not use the railway for access or delivery of materials. Neither the facility construction nor facility operations anticipate using the existing at-grade rail crossing. An authorized Project representative will be required to ensure no solar farm related vehicular traffic crosses the rail.

# Tim Choate, PE, PLS Transportation Engineer



#### **Professional Practice:**

Mr. Choate has over thirty-five years of experience in the transportation/surveying/civil engineering field. He joined Bacon Farmer Workman Engineering & Testing, Inc. after retiring from the Kentucky Transportation Cabinet in 2011. Tim started his career with the Cabinet as the Design Engineer for District One in Paducah. He served as Branch Manager for Operations for three years and finished his career as Branch Manager for Project Development in the District. Tim held that position for twelve and was responsible for implementing the Highway Plan for District One and managing the planning, design, right of way and utility staff within District One. He served as Project Manager on the majority of the Consultant Projects within District One during his tenure as well as monitoring inhouse design projects. Currently Tim serves as a project manager for the Transportation Department at BFW.

### Skills and Experience:

- Corridor Layout
- Intersection Design
- Transportation Planning
- Traffic Studies
- Roadway Realignment
- Roadway Drainage Improvement
- Federal Aid Highway Program Guidance, FHWA
- Floodplain Management
- Phase II Environmental Site Assessment
- Understanding of Required Permits
- Extensive background in local, state and federal funding process
- Pedestrian and Bicycle Facilities Planning & Design

### **Relevant Project Experience:**

**US 60, Entrance for McCracken County High School, Turning lanes and Traffic Signal Installation, McCracken County, Kentucky:** This project consisted of breaking the control of access at MP 7.9 on US 60 in McCracken County and providing the main entrance to the new campus of McCracken County High School. Anticipated enrollment at this consolidated county school was approximately 2200 students. Unique aspects of this project involved the co-ordination of the relocation of an entrance opposite the proposed school entrance so that the new traffic signal could serve the school as well as a large sports complex and future developments. Traffic on US 60 at this location is approximately 13,000 vehicles per day. The design included dual left lanes into the school. The posted speed on this section of US 60 is 55 mph. Weaving analysis was also performed on the project to transition from dual lefts to a single lane on the school property. Auxiliary right turn lanes were also provided for both entrances/approaches.

**US 62 Widening: Marshall County, Kentucky (KYTC) Project Manager**: The project begins at I-24 (MP 8.810) and extends to MP 10.88 at KY Dam Village State Park. Project included Landscaping, Multi-Use Path, Pavement and Shoulder widening, Upgrading guardrail, Access management of existing entrances, and traffic analysis, Bridge rehabilitation with the upgrade of bridge railings.

Reconstruction US 68/KY 80, Marshall, Trigg: (KYTC), Project Manager. 7.5 miles section included Preliminary Engineering and Environmental, Phase I and Phase II design of reconstruction and widening of existing 2 lane roadway to a 4 lane (40 ft. depressed) roadway with context sensitive design and major bifurcated sections.



# University of Kentucky Bachelor of Science in Civil Engineering, 1985

Murray State University Bachelor of Civil Engineering Technology, 1979

State of Kentucky Professional Engineer #15176

State of Kentucky Professional Land Surveyor #2737

# Kentucky State Board on Electric Generation and Transmission Siting Henderson County Solar, LLC – Case No. 2020-00391 Application – Exhibit 13 Volume 1, Tab 13

Filing Requirement: KRS 224.10-280

No person shall commence to construct a facility to be used for the generation of electricity unless the person:

(a) submits a cumulative environmental assessment to the cabinet

The cumulative environmental assessment shall contain a description, with appropriate analytical support, of:

- (a) For air pollutants:
  - 1. Types and quantities of air pollutants that will be emitted from the facility; and
  - 2. A description of the methods to be used to control those emissions;
- *(b)* For water pollutants:
  - 1. Types and quantities of water pollutants that will be discharged from the facility into the waters of the Commonwealth; and
  - 2. A description of the methods to be used to control those discharges;
- c) For wastes:
  - 1. Types and quantities of wastes that will be generated by the facility; and
  - 2. A description of the methods to be used to manage and dispose of such wastes; and
- (d) For water withdrawal:
  - 1. Identification of the source and volume of anticipated water withdrawal needed to support facility construction and operations; and
- 2. A description of the methods to be used for managing water usage and withdrawal.

**Respondent: Chris Killenberg** 

The Cumulative Environmental Assessment dated June 17, 2021, and prepared by Copperhead Environmental Consulting, Inc., is attached as Exhibit 13 Attachment. This Cumulative Environmental Assessment was tendered to the Kentucky Energy and Environment Cabinet also on June 17, 2021.

# EXHIBIT 13 ATTACHMENT



17 June 2021

Rebecca Goodman Cabinet Secretary Kentucky Energy and Environment Cabinet 300 Sower Blvd Frankfort, KY 40601

# RE: Cumulative Environmental Assessment for Proposed Henderson County Solar LLC Project, Henderson County, Kentucky

Secretary Goodman,

Henderson County Solar LLC ("Henderson County Solar") is submitting the attached cumulative environmental assessment ("CEA") for the proposed Henderson County Solar LLC Project ("Project") in Henderson County, Kentucky. Henderson County Solar is applying for a construction certificate to construct a merchant electric generating facility with the Kentucky State Board on Electric Generation and Transmission Siting ("Siting Board"). The Project will be capable of generating approximately 50 megawatts of electricity from a solar array.

Pursuant KRS 224.10-280, Henderson County Solar is submitting a CEA that analyzes potential air pollutants, water pollutants, wastes, and water withdrawal associated with its proposed solar project. The CEA also will be submitted to the Siting Board.

Please do not hesitate to contact me with any questions or if clarifications are needed.

Sincerely,

Marty Marchaterre

Senior Environmental Planner

(859) 684-9387

mmarchaterre@copperheadconsulting.com

cc: Anthony R. Hatton, Commissioner, Department of Environmental Protection

attachment



# Cumulative Environmental Assessment for Proposed Henderson County Solar LLC Project Henderson County, Kentucky



Prepared for:

Henderson County Solar LLC

Marty Marchaterre Senior Environmental Planner Copperhead Environmental Consulting, Inc.

17 June 2021

COPPERHEAD ENVIRONMENTAL CONSULTING, INC.

P.O. BOX 73 471 MAIN STREET PAINT LICK, KENTUCKY 40461

(859) 925-9012 OFFICE (859) 925-9816 FAX

# Cumulative Environmental Assessment for Proposed Henderson County Solar LLC Project Henderson County, Kentucky

Prepared for

Henderson County Solar LLC C/O Community Energy PO Box 17236 Chapel Hill, NC 27516

By:

Copperhead Environmental Consulting, Inc.
PO Box 73
471 Main Street
Paint Lick, KY 40461

Marty Marchaterre Senior Environmental Planner

17 June 2021



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### Introduction

KRS 224.10-280 provides that no person shall commence to construct a facility to be used for the generation of electricity unless that person submits a cumulative environmental assessment (CEA) to the Kentucky Energy and Environment Cabinet with the permit application. The Henderson County Solar LLC Project (Henderson County Solar or Project) is a proposed solar farm sited on approximately 541 acres in Henderson County, Kentucky that will generate electricity through the use of photovoltaic (PV) solar panels (Figure 1). It will include a utility interconnection substation, storage/maintenance container, inverter boxes, transformers, and overhead and underground electrical conveyance lines.

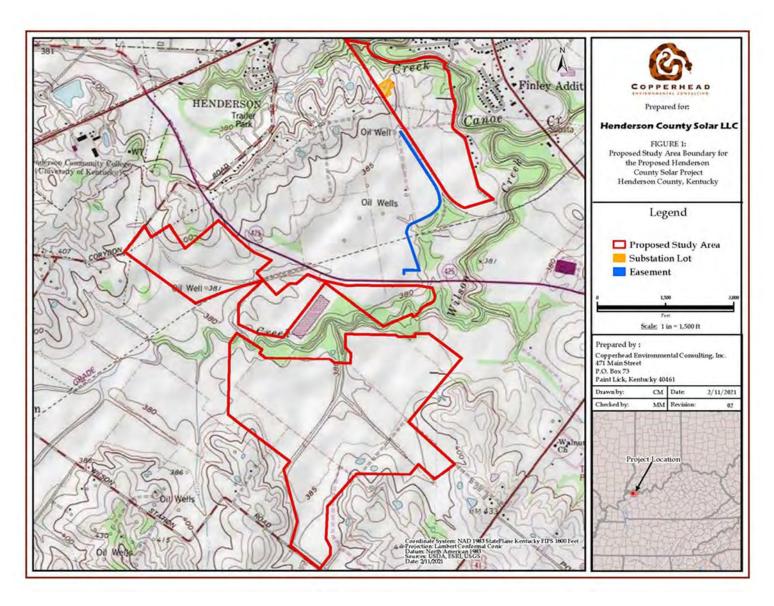
The Project is located near the City of Henderson in Henderson County. It includes two sections of land south of KY 425 (Henderson Bypass) and another section of land west of Lovers Lane. The proposed project site is currently agricultural fields/cultivated row crops, pasture, and forest/wooded areas.

Upon researching the statute and accompanying regulations, Henderson County Solar is unaware of any regulations that have been promulgated regarding CEAs. To comply with KRS 224.10-280, the CEA assessment will evaluate project impacts to four areas:

- 1) Air Pollutants
- 2) Water Pollutants
- 3) Wastes
- 4) Water Withdrawal



<sup>&</sup>lt;sup>1</sup> KRS 224.10-280 Cumulative environmental assessment and fee required before construction of facility for generating electricity -- Conditions imposed by cabinet -- Administrative regulations.



**Figure 1. Project Location** 

### Air Pollutants

The Clean Air Act regulates the emission of air pollutants and, through its implementing regulations, establishes National Ambient Air Quality Standards (NAAQS) for several "criteria" pollutants that are designed to protect the public health and welfare with an ample margin of safety. The criteria pollutants are ozone, particulate matter (PM), carbon monoxide (CO), nitrous oxides (NOx), sulfur dioxide (SO2), and lead.

Specified geographic areas are designated as attainment, nonattainment, or unclassifiable for specific NAAQS. Areas with ambient concentrations of criteria pollutants exceeding the NAAQS are designated as nonattainment areas and new emissions sources in or near these areas are subject to more stringent air permitting requirements.

Henderson and Webster counties in Kentucky are classified as partly a maintenance area for SO2. A maintenance area was previously designated nonattainment but subsequently redesignated to attainment subject to a maintenance plan. The remaining surrounding counties in Kentucky (Daviess, McLean, and Union) are in attainment for all criteria pollutants (EPA 2021). Vanderburgh County in Indiana is in a maintenance area for 8-hour ozone and PM 2.5. Henderson County is also protected by Kentucky Air Quality Regulations found in Title 401, Chapters 50–68 of the Kentucky Administrative Regulations (KAR).

The Project will generate transient air pollutant emissions during construction and operation activities. Air quality impacts will primarily result from the staging and operation of construction vehicles, equipment, supplies, and worker personnel vehicles. The daily workforce for the Project during construction will vary depending on specific construction activities occurring on individual days. It is estimated that the work force will comprise up to 150 workers onsite at any time during the 6- to 9-month construction period. Construction and operation equipment will include, but not be limited to, backhoes, generators, pile drivers, and flatbed trucks.

Combustion of gasoline and diesel fuels by internal combustion engines will generate local emissions of PM, NOx, CO, volatile organic compounds (VOCs), and SO<sub>2</sub>. Emissions associated with these vehicles and equipment are expected to result in minor impacts to air quality because the sizes, number of vehicles, and hours each piece of equipment will operate will be small. For example, combustion emissions from a 200-horsepower diesel truck operating eight hours every day for three months will include less than one ton each of NOx, CO, and PM. Emissions of SO<sub>2</sub> will be negligible because of the ultralow sulfur diesel fuel available on the market.

Tree clearing or vegetative debris is anticipated to be limited as much of the land planned to be used for the Project is open as it is used for cultivated crops. Tree clearing or vegetative debris will either be burned onsite in accordance with Kentucky's Open Burning regulations (401 KAR 63:005) and applicable local regulations, or will be chipped, ground, and composted on-site or managed offsite at a permitted facility.



Construction activities will result in temporary fugitive air pollutant emissions (e.g., small particles suspended in the air or dust). Vehicles and construction equipment traveling over unpaved roads and the construction site will result in the emission of fugitive dust. A large fraction of fugitive emissions from vehicle traffic in unpaved areas will also be deposited near the unpaved areas. To minimize air impacts, the Project will require all contractors to keep construction equipment properly maintained and to use best management practices (BMPs), such as covered loads and wet dust suppression if needed, which can reduce fugitive dust emissions by as much as 95 percent.

Air quality impacts from construction activities will be temporary and will depend on both manmade factors (intensity of activity, control measures, etc.) and natural factors such as wind speed and direction, soil moisture, and other factors. However, even under unusually adverse conditions, these emissions will have, at most, a minor transient impact on off-site air quality and will be well below the applicable ambient air quality standard. The effects to air quality from constructionassociated activities will be temporary and localized. Overall, the potential impacts to air quality from construction-related activities for the Project will be minor.

During operation, the solar panels produce zero emissions, and therefore, the solar facility is not expected to emit any of the following criteria pollutants: PM, CO, SO<sub>2</sub>, NOx, VOCs, or lead. Similarly, the facility is also not expected to emit Hazardous Air Pollutants (HAPs).

The solar facility will only generate air emissions from worker vehicles and equipment for maintenance activities, such as mowers to control growth of vegetation. Project operations are expected to require 2 to 3 workers on site. These workers will drive in and out, Monday through Friday during business hours. Employees are anticipated to use mid- or full-sized trucks. The Project will be monitored offsite 24/7, and maintenance workers will be sent to the site if any changes in production or equipment errors are detected remotely. Inspections will include identifying any physical damage to panels, wiring, inverters, pad mount transformers, and interconnection equipment.

Additionally, grounds maintenance will be performed through an integrated land management approach, to include biological and mechanical control of vegetation, with herbicide applications as appropriate to control regulated noxious weeds per local, state, and federal regulations. It is anticipated that trimming and mowing will likely be performed periodically, approximately 20-30 times per year depending on growth rate, to maintain an approximate height of 10 inches to avoid shading the panels.

It is anticipated that there will also be benefits to air quality because the solar panels produce zero emissions while generating electricity. This benefit to local and regional air quality will occur over the life of the Project. No air quality permit is required for construction or ancillary operation activities.

#### **Water Pollutants**

Surface water

No waterways in or adjacent to the Project are designated as Outstanding State Resource Waters or other Special Use Waters as defined by the Kentucky Division of Water (KDOW). The hydrology within the watershed is influenced by karst geology and drainage for agriculture. The terrain is generally level farms with slopes less than 2%.

Wetlands, ponds, and streams are present within the Project Site. During construction activities, stormwater erosion and sedimentation may affect onsite surface water features (i.e., streams and wetlands). The Project will work with the existing landscape (e.g., slope, drainage, utilization of existing roads) where feasible and minimize or eliminate grading work to the extent possible. Typically, land that has been previously farmed for row crops does not require grading and posts can usually be installed onto these areas of the Project Site without earth disturbance. Any required grading activities will be performed with portable earthmoving equipment and will result in a consistent slope to the local land.

Henderson County Solar expects the Project to result in the discharge of stormwater during construction. Henderson County Solar intends to comply with the KDOW's Construction Storm Water Discharge General Permit for those construction activities that disturb one acre or more. Henderson County Solar will submit a Notice of Intent to KDOW at least seven days prior to the commencement of construction and KDOW will review the notice of intent and provide notification of authorization to discharge. When construction is completed, Henderson County Solar will provide a notice of termination upon completion.

To manage stormwater, use of BMPs, including silt fences, on-site temporary sediment basins, sediment traps, and/or buffer zones (e.g., 25 feet) surrounding jurisdictional streams and wetlands will be implemented. A site-specific stormwater pollution prevention plan (SWPPP) will be prepared and a copy will be kept available on site. These stormwater BMPs will minimize sediment from entering Waters of the Commonwealth and sediment migration off site during construction, prior to achievement of final vegetative stabilization.

Disturbed areas will be seeded after construction using a mixture of certified weed-free, low-growing grass and herbaceous plant seed obtained from a reputable seed dealer. Erosion control measures will be inspected and maintained until vegetation in the disturbed areas has returned to the preconstruction conditions or the Project Site is stable. Water may be used for soil compaction and dust control during construction.

Following the establishment of vegetation on disturbed areas and to minimize potential for water impacts, only USEPA-registered and approved herbicides will be used in accordance with label directions designed in part to restrict applications near receiving waters and to prevent unacceptable aquatic impacts. All herbicides will be applied by Kentucky licensed and certified commercial pesticide applicators. Most vegetation control on solar farms is performed



mechanically (i.e., mowing); however, limited amounts of herbicides are used around posts or in areas that are not able to be mowed.

Approximately 10-15 acres of the Project Site will be used as construction assembly areas (also called staging or laydown areas) for worker assembly, vehicle parking, and material storage during construction. Some of these areas will be staged within the areas proposed for the solar or PV arrays. The laydown areas will be on site for the duration of construction. Temporary construction trailers intended for material storage and office space will be parked on site. Following completion of construction activities, trailers, unused materials, and construction debris will be removed from the Project Site. One or two operations and maintenance storage containers will remain on site during the life of the Project.

The operations and maintenance of the solar facility will have little impact on surface water, and BMPs will be used during any maintenance activities that have the potential to cause runoff of sediment and pollutants. Beneficial indirect impacts to surface water are anticipated due to reduction in fertilizer and pesticide use compared with current agricultural use.

#### Groundwater

Groundwater is water located beneath the ground surface, within soils and subsurface formations known as hydrogeological units, or aquifers (USGS 1995). Aquifers have sufficient permeability to conduct groundwater and to allow economically significant quantities of water to be produced by man-made water wells and natural springs. Kentucky Geological Survey (KGS) water well records indicate groundwater depths ranging from 3 to 10 feet with 4 to 8 feet being more common in Henderson County. Groundwater levels fluctuate with seasonal and cyclical climatic variations in precipitation and may be either higher or lower at other times.

During the geotechnical survey, 14 borings were conducted to 20.5 feet in depth on the Project Site. Groundwater was encountered in 12 of 14 borings. Groundwater was observed at depths ranging from 3 to 8 feet deep on the drilling tools while advancing the boring.

No direct adverse impacts to groundwater will be anticipated as a result of the Project. The PV panels will have a relatively minor effect on groundwater infiltration and surface water runoff because the panels will not include a runoff collection system. Rainwater will drain off the panels to the adjacent vegetated ground.

Henderson County Solar intends to consult with the Groundwater Section of the Watershed Management Branch of the Kentucky Energy and Environment Cabinet in regard to groundwater management practices on the project site. Kentucky Revised Statutes (KRS) 151.110 Water Resources Policy – Duties of Cabinet and Kentucky Administrative Regulations 401 KAR 5:037 identifies groundwater as an important but vulnerable natural resource of the Commonwealth and recognizes the benefit of groundwater protection plans to protect groundwater resources. While a 'solar farm' is not one of the activities specifically identified in the regulations (e.g.,



storing bulk quantities of pesticides or fertilizer, landfills, mining), the Project will explore BMPs for groundwater protection.

Hazardous materials that could potentially contaminate groundwater will be stored on the Project Site during construction. The minimal use of petroleum fuels, lubricants, and hydraulic fluids during construction and by maintenance vehicles will result in the potential for small onsite spills. However, the use of a spill prevention, control and countermeasure (SPCC) plan will reduce leaks and spills and minimize the potential for adverse impacts to groundwater.

Fertilizers and herbicides will be used sparingly and in accordance with the manufacturer's recommendations to avoid contamination of groundwater. Additionally, beneficial indirect impacts to groundwater could result from the change in land use from agricultural uses due to reduction in fertilizer and herbicide use.

No direct adverse impacts are anticipated as a result of project development due to the use of groundwater protection BMPs and a SPCC plan; there will be minor beneficial indirect impacts to groundwater due to the reduction in fertilizer and herbicide use as land use changes from agriculture to solar energy generation.

#### Waste

Waste will be generated during construction and operation of the solar facility and will be handled and disposed of in accordance with local, state, and federal regulations. Construction activities will generate solid waste consisting of construction debris and general trash, including wooden crates, pallets, flattened cardboard module boxes, plastic packaging, and excess electrical wiring. To the extent feasible and practicable, construction waste will be recycled and material that cannot be recycled will be disposed of offsite at a permitted facility to be determined by the designated contractor(s). No waste will be disposed of on the Project Site. Designated construction contractor and subcontractor personnel will be responsible for daily inspection, cleanup, and proper labeling, storage, and disposal of all refuse and debris produced. Disposal containers such as dumpsters or roll-off containers will be obtained from a proper waste disposal contractor and will be located in the on-site staging area or other areas, as appropriate. Records of the amounts generated will be maintained by Henderson County Solar.

During construction of the proposed solar facility, materials will be stored on site in storage tanks, vessels, or other appropriate containers specifically designed for the characteristics of these materials. The storage facilities will include secondary containment in case of tank or vessel failure. Construction-related materials stored on site will primarily be liquids such as used oil, diesel fuel, gasoline, hydraulic fluid, and other lubricants associated with construction equipment. Safety Data Sheets for all applicable materials present on site will be made readily available to on-site personnel.

Construction activities will involve use of machinery (e.g., backhoes, generators, pile drivers, and flatbed trucks) fueled by petroleum products. Fueling of some construction vehicles will occur in



the construction area. Other mobile equipment will return to the on-site laydown areas for refueling. Construction contractors will be responsible for preventing spills by implementing proper storage and handling procedures. Special procedures will be identified to minimize the potential for fuel spills, and spill control kits will be carried on all refueling vehicles for activities such as refueling, vehicle or equipment maintenance procedures, waste removal, and tank cleanout.

Small quantities (less than 55 gallons, 500 pounds or 200 cubic feet) of janitorial supplies, paint, degreasers, herbicides, pesticides, air conditioning fluids (chlorofluorocarbons [CFCs]), gasoline, hydraulic fluid, propane, and welding rods typical of those purchased from retail outlets may also be stored and used at the facility. Due to the small quantities involved and the controlled environment, a spill could be cleaned up without significant environmental consequences.

Facility personnel will be supplied with appropriate personal protective equipment (PPE) and will be properly trained in the use of PPE as well as the handling, use, and cleanup of hazardous materials used at the facility and the procedures to be followed in the event of a leak or spill. Adequate supplies of appropriate cleanup materials will be stored on site.

Waste generation during operation will be minimal and will mainly result from the maintenance and/or replacement of worn or broken equipment and defective or broken electrical materials. All wastes will be managed by designated waste management company(ies) and disposed of in accordance with applicable federal and state requirements to minimize health and safety effects.

Portable chemical toilets will be provided for construction workers during Project development. Sewage will be pumped out by a licensed contractor and the sewage waste will be disposed at the Henderson Wastewater Treatment Plant or other regulated wastewater treatment plant. No adverse effects are anticipated from wastewater treatment and disposal. Due to the size of the facility, no additional or permanent bathroom facilities are anticipated.

Based on a review of Project waste generation activities, no adverse effects from waste are anticipated.

### Water Withdrawal

One residential water supply well was identified adjacent to the Project Site. Aquifers beneath the Project have sufficient permeability to conduct groundwater and to allow economically significant quantities of water to be produced by man-made water wells. Water needed for construction and operation will be brought in, obtained from nearby existing wells, or provided by developing a new water supply well.

Construction-related water use will support site preparation (including dust control) and grading activities. During earthwork for the grading of access roads, foundations, equipment pads, and other components, the primary use of water will be for compaction and dust control. Smaller quantities will be required for preparation of the equipment pads, equipment washing, and other



minor uses. The SWPPP will include requirements for using water to clean equipment and appropriately disposing of this wastewater. The expected water volume needed for construction activities is not expected to adversely affect local or regional water resources.

The internal access roads will not be heavily traveled during normal operation, and consequently, water use for dust control is not expected. Equipment washing and any potential dust control discharges will be handled in accordance with BMPs described in the SWPPP for water-only cleaning.

Operation of solar electricity generating facilities is not water-use intensive. Precipitation in the region is adequate to remove dust and other debris from the PV panels while maintaining energy production; therefore, manual panel washing with water or any other substance is likely not part of regular solar project maintenance. Additionally, rain will contribute to ongoing vegetation management. Some water will be needed for vegetation management, including: during screening vegetation installation and during prolonged times of drought.



# **RESUME**



# MARTY MARCHATERRE SENIOR ENVIRONMENTAL PLANNER

# Regulatory Expertise

- NEPA
- CWA
- RCRA
- NHPA
- ESA
- CAA

### Industry/Agency Clientele

- Solar
- Pipelines
- Utilities/Traditional Energy Sources
- National Guard
- US Fish and Wildlife Service
- Forest Service
- Nuclear Regulatory Commission
- FHWA, FRA, FTA & State DOTs
- Tennessee Valley Authority
- Academic Institutions & NGOs

### Qualifications/Associations

- Virginia Bar Association, Environmental Law Section
- District of Columbia Bar Association, Environmental, Energy and Natural Resources Section
- Lexington Environmental Commission
- Lexington Infrastructure Hearing Board
- Lexington Community Land Trust
- Lexington Stormwater Stakeholder Advisory Group
- Town Branch Trail, Inc.
- Paint Lick Watershed Alliance
- Garrard County Sanitation District
- Kentucky Solar Energy Industry Association

### **Trainings**

- NEPA and the Transportation Decision-Making Process
- Public Involvement in Transportation Decision-Making
- Thinking Beyond the Pavement Context Sensitive Design
- Kentucky Transportation Cabinet (KYTC) Public Involvement Training
- KYTC Citizen Advisory Committee Training
- Environmental Justice
- Ohio DOT Public Involvement
- Native American Consultation
- Section 106 Consultation Process



 Federal Energy Regulatory Commission Environmental Review and Compliance for Natural Gas Facilities

### Qualifications and Background

Marchaterre has significant energy, environmental, and permitting experience, and development overseen of **NEPA** environmental documentation and supporting studies. He has been involved in more than 80 EISs, EAs, and CEs. Mr. Marchaterre has managed air quality studies, noise analyses, socioeconomic baseline studies, land use analyses, cultural resource analyses, community impact assessments, Phase I hazardous materials assessments, biological assessments, wetlands delineations, environmental justice, and public involvement activities. He has prepared public involvement plans, outreach materials, and conducted citizen advisory committee meetings, stakeholder meetings, noise barrier meetings, Section 106 consultation meetings, and participated in numerous public meetings and hearings. For the Environmental Protection Agency, he provided support to the National Environmental Justice Advisory Committee for two years. Mr. Marchaterre has been a guest lecturer at universities and has made regular presentations to civic organizations concerning environmental issues.

### Education

- **J.D. 1988**, College of William and Mary, Williamsburg, Virginia
- B.A. History and Political Science, 1985, Williams College, Williamstown, Massachusetts
- Williams-Mystic American Maritime Program, 1985

### Selected Project Experience

#### Solar

Site Characterization Study for Solar Energy Development. Confidential Client. Breckinridge County, Kentucky. Assistant Project Manager for a site characterization study analyzing a property in Breckinridge County, Kentucky, for possible development as a solar energy generating facility. The study included a desktop review of federal and state data pertaining to sensitive resources such as listed species, wetlands or other surface waters, prime farmland, karst topography, and public and protected lands. Copperhead staff then performed a one-day field verification to characterize vegetative communities, possible bat habitat, and the presence of jurisdictional waters. A summary report was provided to the client which outlined potential environmental concerns and presented a permitting matrix delineated by issuing agency, trigger, and timeline.

Site Characterization Study, Wetland Delineations, Phase I ESA, and Cultural Resources Overview for a Proposed Solar Project. Confidential Client. Kentucky. Managed site characterization studies, aquatic resources delineation, Phase I ESA, and cultural resources overview for solar project on an approximately 800-acre parcel in Garrard County, KY. The study included a desktop review of federal and state data pertaining to sensitive resources such as listed species, wetlands or other surface waters, prime farmland, karst topography, and public and protected lands. A wetland delineation identified and demarcated aquatic features that may be jurisdictional waters of the U.S. or isolated waters of the state. Participated in public involvement activities.

Site Characterization Study, Wetland Delineations, Phase I ESA, and Cultural Resources Overview for a Proposed Solar Project. Confidential Client. Kentucky. Managed site characterization studies, aquatic resources delineation, Phase I ESA, and cultural resources overview for solar project on an approximately 800-acre parcel in Metcalfe County, KY. The study included a desktop review of federal and state data pertaining to sensitive resources such as listed species, wetlands or other surface waters, prime farmland, karst topography, and public and protected lands. A wetland delineation identified and demarcated aquatic features that may be jurisdictional waters of the U.S. or isolated waters of the state.

Three Solar Projects - Site Characterization Study, Wetland Delineations, Phase I ESA, and Cultural Resources Overview. Confidential Client. Kentucky. Managed desktop review and field studies to support development of site characterization studies, wetland delineations, Phase I ESAs, and cultural resource overviews. A site reconnaissance identified potential habitat for federally listed and state-listed at-risk species.

Acoustic Analysis for Multiple Solar Projects. Confidential Clients. Kentucky. Managed acoustical analyses for multiple projects. Described existing sound levels from the project site and surrounding areas as well as potential impacts from construction, operation, and maintenance activites. Provided a report of the findings of the acoustical analysis. The report will contain a summary of the project, describe existing sound conditions, identify potential sensitive receptors (e.g., residences), and evaluate potential construction and operation sound levels.

Critical Issues Analysis (CIA) for a Solar Facility. Confidential Client. Tennessee. Assistant project manager for development of a CIA. The CIA's goal is to gain a better understanding of the environmental issues that could potentially affect project development. Some of the resource areas Copperhead collected information on include vegetation communities and general wildlife, threatened and endangered species, migratory birds nests, soil types, and historic and cultural resources. The wetland/stream mapping's goal is to estimate how much of the Project Area may be wetlands as opposed to uplands and to identify anticipated buffer setbacks. The information gathered helps to inform Copperhead and the client about what regulations will need to be adhered to and what permits will need to be acquired.

Site Characterization Studies for Proposed Solar Energy Projects. Confidential Clients. Kentucky. For multiple solar project sites, managed site characterization studies to identify potential environmental constraints associated with land cover/use, soils, wetlands and watercourses, farmland, threatened and endangered species, and other considerations. The studies included a desktop assessments using publicly available databases and field reconnaissance surveys of the project areas.

Biological Assessment for Indiana Bats, Northern Long-eared Bats, and Bog Turtle at a Proposed Solar Project. Confidential Client, New York. Managing the development of a biological assessment with adverse effects to bat habitat. Ongoing consultation with United States Fish and Wildlife to develop mitigation alternatives.

Critical Issues Analysis (CIA) for a Solar Facility. Confidential Client. Mississippi. Assistant project manager for development of a CIA. The CIA's goal is to gain a better understanding of the environmental issues that could potentially affect project development. Some of the resource areas Copperhead collected information on include vegetation communities and general wildlife, threatened and endangered species, migratory birds nests, soil types, and historic and cultural resources. The wetland/stream mapping's goal is to estimate how much of the Project Area may be wetlands as opposed to uplands and to identify anticipated buffer setbacks. The information gathered helps to inform Copperhead and the client about what regulations will need to be adhered to and what permits will need to be acquired.

### Transportation

Threatened and Endangered Species Habitat Assessments and Surveys, Bridging Kentucky Program, Kentucky Transportation Cabinet. Project Manager. Throughout Kentucky, Copperhead as subconsultant is tasked with providing environmental services including coordination for Threatened and Endangered Species (TES), assessment of potential habitat, preparation of biological assessments, programmatic agreement comments, and NEPA permit assistance (including Section 401/404 and U.S. Coast Guard Section 10) for the program to rehabilitate or replace over 1,000 bridges in the next six years. Screened over 400 bridges for environmental concerns and potential TES habitat. Conducting habitat assessments, mussel and fish surveys, and preparing permits, biological assessments, and no effect documentation. Addressed concerns of stakeholders and nearby residents.

**EA/FONSI, US 68, Bourbon-Nicholas Counties, Kentucky. Item No. 7-310.00.** Prepared an EA and individual Section 4(f) evaluation as well as baseline studies for this 13.3-mile project. Section 106 issues were a critical component due to over 50 historic sites and 2 historic districts. Seventeen alternates were considered to avoid or minimize impacts to historic sites and prime farmland. Section 401/404 and floodplain construction permits and stream mitigation required due to 10,000 feet of channel change. Developed a public involvement plan and participated in public meetings, a public hearing, and Section 106 consulting party meetings.

**EA/FONSI, East Nicholasville Bypass, Jessamine County, Kentucky.** Prepared an EA and managed the development of the FONSI for this 7-mile project. Managed the historic and archaeological studies of several farm sites. Due to potential impacts to a historic site, avoidance alternates were developed. Prepared socioeconomic, traffic noise and hazardous materials/underground storage tank studies and oversaw the other environmental base studies and addenda. Helped address concerns about economic impacts of developing the bypass and visual/noise concerns for residents. Supported citizen advisory committee meetings, public information meetings and the public hearing. Participated in the biological assessment for running buffalo clover, Indiana bat and gray bat.

**EA/FONSI, US 60 Tennessee River Crossing, McCracken-Livingston Counties, Kentucky.** Managed preparation of the EA and Section 4(f) evaluation for the replacement of the historic George Rogers Clark Memorial Bridge and approaches. Oversaw minimization and mitigation efforts for wetlands,

floodplains, historic bridge, and relocations. Participated in public meetings on environmental issues, such as wetlands and cultural resources.

EA/FONSI, US 119 (Partridge to Whitesburg), KYTC, Letcher County, Kentucky. Project Manager. Managed preparation of two EAs and baseline studies for two connecting projects (14.8 miles in length). Managed public involvement activities (Pine Mountain Crossing Task Force, public meetings, and public hearings), and oversaw minimization and mitigation efforts for wetland, stream, floodplain, historic and relocation impacts. Due to numerous crossings of the Poor Fork of the Cumberland River and potential impacts to the Bad Branch Nature Preserve, Pine Mountain Wildlife Management Area, and a historic site, this project evaluated Section 4(f) impacts, numerous alternates, the potential impacts of 20 bridges, a 4.2-mile tunnel, and several waste areas. Managed the biological assessment for the Indiana bat, gray bat, and blackside dace. Participated in the Section 401 and 404 permitting process for wetland and stream impacts.

Environmental Assessment for Memphis Regional Intermodal Facility, Private Client, Rossville, TN. Technical Reviewer and Author for a complex EA for a 650-acre intermodal facility. Conducted technical review of EA and baseline studies including Stream Assessment Report, Ecology Study Report, Noise Assessment Report, Cultural Resources, and Phase I archaeological Survey, and Viewshed Analysis. The intermodal facility will improve freight transportation capacity in the region and used Tiger Grant funds. FHWA is the lead federal agency with TDOT as lead state agency. Twenty-one out of 29 federal, state, and local agencies requested to participate in the NEPA process. To adequately involve the public, both a public information meeting and a public hearing were conducted in the local area. Completed the NEPA process in approximately one year, fastest for TDOT.

Categorical Exclusion 2, Town Branch Trail Phase 6, Fayette County, Kentucky. Item No. 7-7310.00. Project Manager for Town Branch Trail Phase 6 Categorical Exclusion. Conducted environmental studies and prepared environmental documents for the multi-use trail between McConnell Springs Drive on Old Frankfort Pike to Oliver Lewis Way. Participated in project and public meetings on the proposed trail and developed Section 4(f) evaluation of potential impacts on historic James McConnell House as well as dry laid retaining walls along Town Branch.

Mitigation Support. Newtown Pike Extension, Fayette County. Kentucky. Item No. 7-593.00. For the Community Land Trust, providing environmental justice advocacy for a low-income, minority neighborhood concerning EIS commitments and mitigation due to the Newtown Pike Extension. Reviewed environmental justice commitments, oversaw streetscape design work, examined traffic calming measures and plans for adjacent park, bike lanes, and bus transit facilities. Public and stakeholder meetings were key components of project.

Categorical Exclusion and Programmatic Section 4(f), US 25 (Williamstown), Grant County, Kentucky. Item No. 6-1049.00. Prepared the CE and Programmatic Section 4(f) evaluation concerning a bridge replacement / road improvement project. Historic sites, traffic noise, a senior citizen home, mobile home park relocation, business relocations, a railroad line, and park access were concerns. Stakeholder and public meetings were conducted. Worked with KY Department of Local Government to avoid Section 6(f) impacts due to a new park access.

Environmental Documentation for All Aboard Florida High Speed Rail, Florida. For All Aboard Florida, developed technical baseline documents and provided technical review of methodology, existing environment, and environmental consequences sections for an approximately 128-mile section of a high-speed rail project from West Palm Beach to Miami, Florida. Involved in cultural resources, transportation, public utilities, and aesthetic components. Reviewed cultural resource report prepared by a subconsultant. Potential impacts to historic districts and resources were concern raised by the public. For

All Aboard Florida, helped to review the DEIS prepared by a Third Party for Federal Railroad Administration.

Heartland Parkway Planning Study, Adair, Green, Taylor, Marion, Nelson, and Washington Counties, Kentucky. Managed the environmental evaluation of the 68-mile corridor scoping study. Helped identify project needs and potential environmental concerns (historic battlefield, parks, conservation areas, endangered species, and cave/karst terrain). Identified the regional needs for improving/supporting economic development, tourism, higher education, and the agricultural sector. Managed the archaeological overview and Phase I archaeological survey for the 23-mile design project in Taylor and Adair Counties. Participated in extensive public involvement activities including eight public meetings along with separate meetings for local governments.

Environmental Assessment, KY 313, Hardin and Meade Counties, Kentucky. Prepared an EA and FONSI for this 14-mile project. Managed the preparation of environmental baseline studies. Prepared a purpose and need statement to help justify the project. Helped evaluate potential cave and karst impacts. Managed the biological field studies that captured a federally endangered gray bat in the project area and helped evaluate mitigation options. Supported public meetings and the public hearing and coordinated with federal and state resource agencies.

Environmental Assessment, KY 40 (Inez to Warfield), Martin County, Kentucky. Responsible for the EA for this 8.5-mile project. Relocations, strip mines, cemeteries, a historic site, and stream channel changes were environmental concerns. A separate waste disposal area and industrial development site were later evaluated. Managed review of environmental impacts of the roadway segment crossing into West Virginia. Supported KYTC in coordinating with the West Virginia Department of Highways and other West Virginia resource agencies. Supported the historic consultant in evaluating methods to minimize potential indirect visual impacts of the proposed roadway and bridge on a historic site. Supported public and Section 106 consulting party meetings. Participated in stream mitigation and permitting activities.

Categorical Exclusion and Programmatic Section 4(f), US 25 (Williamstown), Grant County, Kentucky. Prepared the CE and Programmatic Section 4(f) and managed the environmental studies concerning a bridge replacement and road improvement project. Historic sites, traffic noise, a senior citizen home, a mobile home park, business relocations, a railroad line, and a park were issues. Worked with the KY Department of Local Government to avoid a Section 6(f) impact during the development of new access to a park.

Environmental Assessment/US 68 (Columbia to Greensburg), Green and Adair Counties, Kentucky. Prepared an EA for this 16-mile project. Managed the preparation of environmental overviews and baseline environmental studies, including wetlands, noise, air quality, Phase I ESA, socioeconomic, and threatened and endangered speices. Oversaw the development of a cultural historic overview and survey and an archaeological overview, an archaeological high probability study, and a Phase I archaeological survey. Supported the citizen advisory committee, public meetings, and a Section 106 consulting party meeting. Aided the roadway designers in developing alternates to avoid impacts to a historic farm and in evaluating a land bridge over a historic railroad tunnel rather than imploding the tunnel. Worked with the cultural historian to analyze the potential indirect visual and vibration impacts of the land bridge on the tunnel.

Environmental Assessment for the Leslie, Knott, Letcher Perry County Community Action Council for Intermodal Transit Facility and Parking Structure, Hindman, Kentucky. Managed the EA and environmental studies to secure federal funding for the rehabilitation of a 46-year old former jail building to be an intermodal transit facility and creation of a street level 150-space parking structure. Potential

floodplain impacts, environmental justice concerns, archaeological sites, and historic viewshed effects were evaluated. Worked closely with Community Action Council and design firm to avoid and minimize impacts. Participated in stakeholder meetings.

Documented CEs and EAs for Transit Projects, Christian, Clay, Franklin, Jefferson, and Knott Counties, Kentucky. Managed successful preparation of Documented CEs and EAs for transit facilities, maintenance facilities, bus wash, and parking structures with the KYTC Office of Transportation Delivery. For a proposed City of Frankfort Transit bus wash/maintenance facility, a documented CE was completed within one month to meet a funding deadline. Mr. Marchaterre participated in all aspects of this project including desktop environmental analysis, site reconnaissance, agency coordination, stakeholder meetings, and report preparation.

Environmental Studies and Categorical Exclusion for Clays Mill Road, Fayette County, Kentucky. Project Manager responsible for the categorical exclusion and supporting studies for a 3.7-mile project in Lexington, KY. Prepared the HazMat/UST baseline study and assisted with the traffic noise modeling. Managed the sampling of streams, fish and macroinvertebrates to determine water quality. Groundwater in the project area is hydrologically sensitive due to the karst topography. Participated in multiple citizen advisory committee and public meetings.

**Federal Railroad Administration Categorical Exclusion for TIGER Grant for Railroad Bridge Replacement, IN.** Prepared Categorical Exclusion for historic bridge replacement partially funded from a TIGER grant. Categorical Exclusion was prepared for a private railroad for submission to the Federal Railroad Administration. A Memorandum of Agreement was developed between the US Army Corps of Engineers, State Historic Preservation Office, and the railroad to document the replacement of the historic bridge.

**140-Mile Virginia Rail Expansion (VRE) Project, Virginia.** Managed cultural resources and environmental constraints analysis for proposed 140-mile expansion project. Oversaw archival and field studies to identify historic and ecological resources within areas of potential effect. Identified NEPA categorical exclusions that could apply to sections of the project area to speed the permitting process.

Third Party Review of Tier I EIS Process for Empire Corridor High Speed Rail Corridor, New York.

For a private railroad company, reviewed Tier I EIS process for the 463-mile Empire Corridor for High Speed Rail from New York City to Niagara Falls. Provided recommendations and position paper on Draft Tier I EIS process and opportunities for the railroad company to participate in the NEPA process both formally and informally. Evaluated potential impacts to railroad operations of an additional track for high speed rail.

Third Party Review of Tier II EIS for Southeast High-Speed Rail Corridor, Richmond, VA to Raleigh, NC. For a private railroad company, reviewed Draft Tier II EIS for the Southeast High-Speed Rail Corridor and provided recommendations and comments on Draft Tier II EIS document and potential impacts to railroad operations.

Environmental Studies and Categorical Exclusion for KY 32, Kentucky Transportation Cabinet, Lawrence County, Kentucky. Project Manager for the environmental studies for KY 32 in Lawrence County, KY. Prepared a Categorical Exclusion and Programmatic Section 4(f) evaluation for minor impacts to two historic sites. Identified potential onsite mitigation opportunities for approximately 3,000 feet of stream channel changes. Historic sites, a cemetery, and residential relocations were concerns.

Third Party Review of Tier I EIS for Atlanta BeltLine Project, GA. For a private freight railroad company, reviewed Draft Tier I EIS for the proposed Atlanta Beltline Project for potential impacts to

railroad operations. Concerns exist that a new transit line, trails, crossings, and designation of the railway line as a historic district would affect existing and future expansions of freight operations and safety. Prepared comments on the Draft Tier I EIS document. Participated in public involvement process, including attending public meetings and regular workgroup meetings.

**EA / FONSI, US 60 Bypass, Daviess County, Kentucky. Item No. 2-287.00.** Managed preparation of an EA and FONSI as well as baseline studies for this 5.2-mile project. A Citizen Advisory Committee met five times to express area citizen and business views. Wetland, stream, and archaeological site impacts were concerns.

Categorical Exclusion for I-75/I-71 Auxiliary Lanes, Boone County, Kentucky. For Kentucky Transportation Cabinet, prepared a Categorical Exclusion 3 for adding auxiliary lanes for I-71/I-75 in Boone County. Conducted ecological, air, noise, hazardous materials, and socioeconomic studies. Noise analyses, noise abatement modeling, and multiple noise barrier public meetings were critical to success of project. Noise walls have been constructed and have received positive public feedback.

I-69 Strategic Corridor Planning Study (Eddyville to Henderson), Lyon, Caldwell, Hopkins, Webster, and Henderson Counties, Kentucky. Managed and helped prepare the environmental component for evaluating the 80-mile corridor for an I-69 segment. Identified potential environmental concerns (relocations, environmental justice, conservation areas, and endangered species). Managed aquatic / terrestrial, socioeconomic, hazardous materials / underground storage tank, and air and traffic noise analysis. Identified the regional needs for improving / supporting economic development through stakeholder meetings and coordination with local government officials and interested parties.

Third Party Review of Socioeconomic Study for I-66 Project (London to Somerset), Pulaski County, Kentucky. Provided a third-party review for the KYTC for the I-66 socioeconomic study. Evaluated economic and community impacts, potential residential and commercial relocations, environmental justice concerns, land use changes, and farmland impacts for a 40-mile highway project. Identified gaps in the socioeconomic analysis and provided recommendations on how to improve the study. Information from the revised study was incorporated into the EIS.

Technical Reviewer for Bus Maintenance Facility Categorical Exclusion (CE), Transit Authority of River City (TARC), Jefferson County, Kentucky. Provides quality assurance/quality control for ongoing projects by TARC. For a bus maintenance facility annex on a former Louisville & Nashville Railroad site, analyzed traffic information, bus emission reductions, land use, historic resources, environmental justice concerns, and the potential for hazardous materials/UST contamination. Determined that a CE was appropriate and prepared the documentation which was quickly approved by the FTA.

Environmental Assessment, KY 55 (Heartland Parkway), Adair and Taylor Counties, Kentucky. Item No. 4-124.00. Technical reviewer for preparation of EA for this 23-mile project. Managed cultural resource studies (archaeological and historic architectural surveys), Section 106 consultation, and Section 4(f) evaluation. Identified sensitive areas such as Tebbs Bend Civil War Battlefield area, Native American mounds, and potential historic sites.

East Market Street Streetscape Categorical Exclusion, Louisville, Kentucky. For Louisville Downtown Development and Louisville Metro, prepared a categorical exclusion for the East Market Streetscape project. Potential impacts to historic structures in several historic districts were potential concerns that were addressed with coordination with the Kentucky Heritage Council. Participated in public involvement activities, including multiple public and stakeholder meetings.

**Statewide Programmatic Agreement for Historic Timber Railroad Bridges, Georgia.** For a private client, worked with United States Army Corps of Engineers and State Historic Preservation Office to develop a statewide programmatic agreement for the replacement and repair of historic timber railroad bridges throughout Georgia. The programmatic agreement covered more than 300 bridges across the state.

Native American Consultation Workgroup, Federal Highway Administration Kentucky Field Office. Participated in a FHWA workgroup to evaluate Native American Consultation on transportation projects. Met with FHWA, Kentucky Heritage Council, Office of State Archaeology, and representatives of Native American tribes over two years.

### **Tennessee Valley Authority**

Wilson Dam Bridge Deck Refurbishment EA. Tennessee Valley Authority, Alabama. Project manager for an environmental assessment analyzing the potential impacts resulting from refurbishment of the Wilson Dam bridge Deck spanning Pickwick Reservoir and connecting Colbert and Lauderdale counties, Alabama. Authored multiple resource sections and coordinated directly with TVA NEPA and project management team. Organized public meeting and responded to public comments on the Draft EA.

Kingston Fossil Plant Wastewater Treatment Facility EA. Tennessee Valley Authority, Tennessee. Assistant Project Manager for an environmental assessment addressing installation of new wet flue gas desulfurization wastewater treatment facilities and modification of existing processes at Kingston Fossil Plant to enhance wastewater quality. Authoring resource sections and responsible for senior-level NEPA support and QA/QC.

**Natural Resource Plan Supplemental EIS. Tennessee Valley Authority, Tennessee.** Assistant Project Manager for a supplemental EIS analyzing the implementation of a revised Natural Resource Plan covering 293,000 acres of TVA reservoir land. TVA manages 154 natural areas and conducts specific management activities compatible with the goals for each area. Providing technical review of draft resource sections, working with subject matter experts, and reviewing drafts of the Supplemental EIS.

Riverton Development Project EA. Tennessee Valley Authority, TN. Assistant project manager for an EA analyzing issuance of a shoreline construction permit associated with the proposed Riverton mixed-use development in Chattanooga, Tennessee. The permit would be issued under Section 26(a) of the TVA Act to allow Riverton to install floating residential boat docks and place riprap along the shoreline of the Nickajack Reservoir. Key issues included floodplain alteration, cultural and tribal resources, potential impacts on the NRHP-listed Chickamauga Dam Reservation, and conversion of a natural setting to one with mixed residential and commercial uses.

Chickamauga Law Enforcement Training Center Easement EA. Tennessee Valley Authority, TN. Assistant project manager for an EA analyzing issuance of an easement and land use permit for development of a law enforcement training center on TVA land near Chattanooga, Tennessee. Key issues include avoidance of cultural resources and federally listed species, potential impacts on the NRHP-listed Chickamauga Dam Reservation, and impacts on transportation and noise. Required close coordination with TVA archaeologist and botanist.

Clean Water Act Section 401 Permitting Tool for TVA Natural Resources Group, Tennessee. Assistant project manager responsible for developing a new tool to ensure TVA Section 26(a) permitting is consistent with state requirements for Clean Water Act Section 401 water quality certifications and U.S. Army Corps of Engineers Section 404 permits. Required clear and accurate identification of differing permitting processes across seven states (Alabama, Georgia, Kentucky, Mississippi, North Carolina, Tennessee, and Virginia) and three Corps districts (Nashville, Savannah, and Memphis).

TVA Programmatic EIS for Closure of Ash Impoundments in Alabama, Kentucky, and Tennessee. For TVA, helped prepare the EIS for the closure of ash impoundments as a result of new US EPA coal combustion residuals requirements and TVA's goal to close wet ash storage facilities. The EIS evaluated the potential effects of multiple closure alternatives. Prepared scoping report and participated in five public meetings held at different power plants. Supported public involvement and developed materials and posters for the public meetings. Drafted text for the programmatic component as well as the site-specific analysis for closing ten ash impoundments at six different fossil fuel plants. To address volume and complexity of comments, prepared standalone comment response document. Developed a public involvement plan and participated in six public meetings with responsibility for environmental issues and concerns.

TVA Multiple Reservoir Land Management Plan EIS, Alabama, Kentucky and Tennessee. For TVA, helped prepare the EIS for multiple reservoir land management plans (RLMPs) for 138,000 acres of TVA-managed public land on eight reservoirs. The updated RLMPs are needed to consider changes to land uses over time, to make land planning decisions on these eight reservoirs consistent with the TVA Land Policy and the Comprehensive Valleywide Land Plan and to incorporate TVA's goals for managing natural resources on public lands. Developed air quality, recreation, and cultural resource sections of the EIS, as well as provided technical review.

**EA/FONSI, Ash Dewatering Facility at Shawnee Fossil Plant, Tennessee Valley Authority, McCracken County, Kentucky.** Supported development of EA/FONSI for a bottom ash dewatering facility to help TVA convert from wet ash storage to dry storage. Evaluated project affects to parks and nearby wildlife management areas and water use. Potential visual impacts on historic resources were a concern.

EIS for TVA Bull Run Fossil Plant Landfill, TN. EIS Author and Technical Reviewer for preparation of an EIS to address the storage of coal combustion residuals (ash) generated at Bull Run Fossil Plant. Helped prepare draft sections of the EIS including hazardous materials and cultural resources components, as well as provided technical review of draft documents. Provided technical assistance to address environmental concerns of adjacent residents related to the proposed landfill.

**TVA Muscle Shoals Reservation EA, Colbert County, AL.** Supported the environmental assessment on the proposed relocation and realignment of essential operations at the Muscle Shoals Reservation. The EA evaluated three alternatives: 1) no action; 2) construct a new facility on a Greenfield site; or 3) modify an existing facility on the Reservation to house the relocated essential operations. Organized the environmental component of the public meetings.

### **United States Fish and Wildlife**

Multi-State NiSource Habitat Conservation Plan Environmental Impact Statement, United States Fish and Wildlife Service and United States Forest Service, 14 States. Supported development of an EIS for a habitat conservation plan and incidental take permit to cover 15,000 miles of pipeline in 14 states for the USFWS, USFS, FERC, USACE, and NPS. The EIS addressed unique subject matter and legal and regulatory concerns due to the large area covered and 43 threatened and endangered species considered. The Project crossed Kentucky, Louisiana, Mississippi, Tennessee, Virginia and West Virginia. Supported technical reviews, socioeconomic analysis, cumulative impacts, consultation, and participated in public involvement activities in Lexington, KY; Columbus, Ohio; Nashville, Tennessee; and Charleston, West Virginia.

### **Department of Defense**

Environmental Assessment for an Army Aviation Support Facility, Boone National Guard Center, Frankfort, Kentucky. For the Kentucky Army National Guard, prepared an environmental assessment for a 30-acre proposed replacement site for the army aviation support facility which included

maintenance facilities and a wash station. Evaluated potential noise impacts of helicopters taking off and landing at the facility and the cumulative noise impacts due to adjacent airport. Adjusted EA analysis to constantly changing project location. The site was in a karst area so potential impacts from subsidence and groundwater contamination were considered. Public meetings were held to obtain public input and identify concerns.

Environmental Assessment for Multi-Purpose Machine Gun Range, Indiana Army National Guard, Camp Atterbury, Indiana. At the Camp Atterbury Joint Maneuver Training Center in Indiana (approximately 33,100 acres), Preparing an environmental assessment for a multipurpose machine gun range. Assessed potential environmental impacts, including cumulative impacts, of short-range site plans and long-range plans for developing and managing the installation. Reviewed existing site studies and worked closely with facility staff to analyze plans and potential effects. Worked closely with client and design team to minimize impacts to forested wetlands, streams, and floodplains. Evaluated socioeconomic and land use impacts from creation of new training areas on the facility and nearby communities. Coordinated with federal and state resource agencies and participated in multiple public meetings.

Environmental Assessment and Public Involvement, Muscatatuck Urban Training Center, Indiana. At the Muscatatuck Urban Training Center, supported the development of an environmental assessment for a new urban warfare and homeland security training center. Responsible for preparing portions of the Affected Environment and Environmental Impact sections for the EA. The Muscatatuck Urban Training Center (MUTC) would provide a new center for required urban assault and homeland security training at the former Muscatatuck State Development Center in Butlerville, Indiana. The MUTC would provide an urban training center to serve the wartime mission and combat readiness goals of military units as well as civilian homeland security and natural disaster response training needs. Natural resources on the proposed site include Pleasant Run, North Vernon Muscatatuck River, the Brush Creek Reservoir, and forested and non-forested lands. Preservation of historic structures was a significant concern. Prepared outreach materials and participated in public meetings.

Statewide Integrated Wildland Fire Management Plans (IWFMPs), Indiana, Kentucky, North Carolina, and West Virginia. For the National Guard, managed preparation of statewide IWFMPs for training sites in multiple states. The IWFMPs developed programs to reduce wildfire potential; protect and enhance natural and cultural resources; preserve infrastructure and facilities; and promote safety. The IWFMPs examined the historical role of fire within and in the vicinity of installations; identified current ignition and fuel sources; and addressed fire training requirements and safety considerations including unexploded ordinance (UXO) and live fire areas. The IWFMPs recommended wildland fire prevention and suppression measures, as well as prescribed burn management and site-specific burn plans. EAs were prepared for each IWFMP. Stakeholder and agency meetings were an integral component of efforts.

Integrated Natural Resources Management Plans (INRMPs) at Wendell H. Ford Regional Training Center (WHFRTC), Disney Training Center (DTC), and Hidden Valley Training Site (HVTS) and an Environmental Assessment (EA) for Training Operations at WHFRTC, Kentucky. Managed two Environmental Assessments, three INRMPs, three Forest Management Plans (FMPs), and a state-wide Integrated Wildland Fire Management Plan (IWFMP) for three training sites. Worked closely with the KYARNG, the U.S. Fish and Wildlife Service (USFWS), and the Kentucky Department of Fish and Wildlife Resources (KDFWR) as well as other federal, state, and local agencies with an interest in the management of natural resources. Also, evaluated approximately 3,000 acres of new maneuver training areas added to the Training Center for potential impacts to the environment of planned training activities. Public and stakeholder meetings were held during development to identify potential concerns.

#### COPPERHEAD ENVIRONMENTAL CONSULTING

NEPA and Planning Support to West Virginia Army National Guard, West Virginia. Project Manager for environmental assessments for the West Virginia Army National Guard related to training areas, firing ranges, urban training centers, demolition ranges, readiness centers/armories, and army aviation facilities. Managed preparation of environmental assessments, land use plans, integrated natural resource management plans, forest management plans and endangered species management plans.

Indiana Bat Programmatic Biological Assessment, Camp Atterbury Joint Maneuver Training Center, Indiana Army National Guard, Edinburgh, Indiana. Oversaw the preparation of a programmatic Biological Assessment (BA) and associated formal consultation process with the US Fish & Wildlife Services regarding effects on Indiana Bats with respect to future routine training and land management activities and upcoming development projects at the approximately 33,132-acre Camp Atterbury Joint Maneuver Training Center. The BA was prepared in close coordination with the USFWS Bloomington Field Office. The programmatic BA will streamline the consultation process and reduce administrative costs for the INARNG and USFWS.

Programmatic Biological Assessment for the Indiana Bat, Northern Long-eared Bat, and Gray Bat, U.S. Air Force Arnold Air Force Base, Tennessee. Managed development of a programmatic biological assessment of routine training, land management, and Elk River Dam operations at the 39,000-acre Arnold Air Force Base in Tennessee. Potential adverse effects could result from timber management, prescribed fire, tree clearing during summer roadside maintenance activities, hazardous tree removal, range operations, wildfires, or emergency repairs/inspections at the dam. The proposed action may affect, and is likely to adversely affect Indiana bats, northern long-eared bats, and gray bats that use habitat within/near the Arnold Air Force Base.

Training Site Master Plan, Camp Dawson, West Virginia. Managed preparation of a conceptual master plan for the Camp Dawson Cantonment Area and the Volkstone Training Area. The conceptual master plan assisted in setting strategic goals for the mission and vision of the base, and is the starting point for a more detailed Training Facility Master Plan (TFMP) that is underway. The TFMP provides a foundation for the future development of Camp Dawson. Helped identify current conditions, facility and site constraints, and opportunities for enhanced opportunities.

**Design, Mitigation, and Geotechnical Services for Modified Record Firing Range, Camp Dawson, West Virginia.** Managed some of the design components of the modified record firing range. Provided technical review of the EA. Helped evaluate alternatives to minimize impacts to stream and wetlands. Managed development of erosion and sedimentation controls and coordination with state and Federal agencies on mitigation and permitting issues. Oversaw optimization of target elevations to minimize required earthwork and geotechnical evaluations of the access road and range control facilities locations.

**EA/FONSI for Armed Forces Reserve Center (AFRC), Buckhannon, West Virginia.** Managing the EA for the Buckhannon AFRC. Conducted a site visit and record search to evaluate potential environmental constraints, such as 100-year floodplains along Brushy Fork Creek. Developed EA that evaluates environmental impacts on a 49-acre site and potential mitigation options for the proposed AFRC. The AFRC will replace a 48-year old armory and provide needed training facilities. Addressed public concerns related to traffic, safety, and light pollution.

Environmental Assessment and Phase I Environmental Site Assessment for Armed Forces Reserve Center, Elkins, West Virginia. Managed the preparation of a Phase I Site Assessment and an environmental assessment for an armed forces reserve center on a 112-acre site. The site was a former farm and strip mine site. The Phase I ESA did not identify any evidence of spills or contamination at the site based on a review of historic records, field reconnaissance, and a review of Federal and state

databases. Cultural resources, wetlands, and roadway access were concerns. Managed public involvement process for the NEPA document.

Ripley Joint Armed Forces Reserve Center (JAFRC) Planning Charrette, Ripley, West Virginia. Managed a three-day planning charrette for the proposed Ripley JAFRC. The purpose of the planning charrette was to conduct a fact-finding mission and to have discussions on the project details with key installation stake holders and to review the 1391 construction cost estimate. The planning report outlined the findings of the charrette and outlined next steps for the project.

Briery Mountain Range Development Plan EA, Camp Dawson, West Virginia. Managed the EA for three proposed Briery Mountain Training Area ranges which include a Live Fire Breach Facility (LFBF), Hand Grenade Familiarization Range, and an Urban Assault Course (UAC). Coordinated with WVARNG to evaluate potential constraints, such as stream impacts, and to avoid and minimize environmental impacts. Managed public involvement and public meetings on proposed project.

Water Resources Management Plan, Camp Dawson, West Virginia. Project Manager. Managed the preparation of a water resources management plan for the West Virginia Army National Guard for Camp Dawson (approximately 3,797 acres). Assessed current availability of data regarding Camp Dawson water resources including the Cheat River, streams and numerous tributaries. Conducted stakeholder meetings, site visits and recommended management goals for surface water, wetlands, floodplains, and groundwater resources.

Environmental Assessment for Integrated Natural Resources Management Plan (INRMP) Updates, Marseilles Training Area (MTA), Illinois. Managed EA for 2,850-acre MTA INRMP. Worked closely with Illinois Army National Guard and Illinois Department of Natural Resources, joint owners of the MTA. The EA evaluated potential environmental impacts of the plans for managing land, forest, aquatic and terrestrial habitat, special areas, fish and wildlife, rare species, pest control, and fire. The project allowed the ILARNG to remain in compliance with Army policy and other federal, state, and local laws and regulations, and to provide for no net loss in the capability of lands to support the military mission. Also, evaluated training plan for the construction and operation of ranges and other training facilities. Covered 15 proposed projects including range expansions, new ranges, live-fire breach facility, anti-tank range, grenade launcher range relocation, live fire shoot house, training support facility development projects, and training area maintenance projects.

Integrated Natural Resource Management Plans (INRMPs), Environmental Assessments and an Endangered Species Management Plan (ESMP), Camp Crowder and Camp Clark Training Sites, MOARNG, Newton and Vernon Counties, Missouri. Assistant Project Manager. Responsible for preparing two INRMPs and EAs for Camp Crowder and Camp Clark, which are comprised of 4,300 acres and 1,287 acres, respectively. Management Plans revised in this INRMP included land use, forest, aquatic and terrestrial species, special natural areas, fish and wildlife, rare species, pests, and fire. Conducted stakeholder meetings.

Joint Land Use Study (JLUS), Camp Atterbury and Muscatatuck Urban Training Center (MUTC) | Bartholomew, Brown, Jennings, and Johnson Counties, Indiana. Author and Technical Reviewer. Helped prepare the Camp Atterbury and MUTC JLUS, which is a cooperative land use planning effort by communities and military installations to jointly ensure future compatible development. The JLUS involved four south-central Indiana counties; several cities/towns, such as Columbus, Edinburgh, and North Vernon; economic development and regulatory agencies; and the two military installations. After extensive public involvement activities, the JLUS identified compatible land use and growth management guidelines and recommendations, which are now being implemented.

#### Recreation

122-Mile Licking River Blue Water Trail Plan, Kentucky. Project Manager to evaluate the existing conditions along the study corridor and prepare trail plan. This Plan will include visual and written components to effectively communicate the opportunities for outdoor recreation and tourism within the study corridor to decisionmakers, interested parties, potential trail users, and the public. The Plan will provide a roadmap for future initiatives in the study corridor by identifying the potential for, but not limited to: water access and use (e.g., kayaking, fishing), connectivity to greenways and public access, conservation and parks, historical and archaeological education, ecological and environmental education and stewardship, and other ideas generated by community input. Project Advisory Team and public meetings occur monthly and stakeholder meetings will be held in five counties this fall.

Environmental Assessment for Sports Park, Elizabethtown, Kentucky. For the City of Elizabethtown, conducted environmental studies and prepared permit applications for a proposed 200-acre sports complex that includes soccer fields, baseball fields, basketball courts, tennis courts, and hiking trails. Worked with the designer to minimize impacts to environmental resources by shifting trails and parking areas. Managed wetlands delineations, archaeological surveys, Phase I environmental site assessment, and a threatened and endangered species habitat survey. Worked with the USFWS on mitigation for potential impacts to the federally endangered Indiana bat.

Noise Studies for World Shooting and Recreational Complex, Sparta, Illinois. For the Illinois Department of Natural Resources, managed the preparation of noise studies for the development of a 1,600-acre shooting complex in Sparta, Illinois. Environmental assessment was prepared on an expedited schedule so that the Grand American Trapshooting Championships could be held at the complex opening. Evaluated potential noise impacts on adjacent property owners and recommended use of berms to minimize impacts. The site includes 120 trap shooting fields covering 3.5 miles, 24 skeet fields, 2 courses for sporting clays, and archery fields. Participated in public and stakeholder meetings to address noise concerns for nearby residents.

Town Branch Trail Environmental Education Sign Project. Using a Kentucky Fish and Wildlife Resources grant, prepared environmental education signs and booklet on fourteen topics associated with Town Branch Creek and its environmental context. The role of water in the environment is a main focus of the project, along with raising awareness about human impacts on ecosystems and ways to reduce those impacts. An exhibit and outreach materials were developed. The environmental sign project exhibit was on display at the state wildlife center for two months. The exhibit has also been displayed at libraries, schools, and the Children's science center. Environmental education signs have been fabricated and placed along the completed sections of the Town Branch Trail.

**Environmental Studies for Isaac Murphy Park Development, Lexington, KY.** Provided technical oversight of the environmental and cultural resource studies for the Isaac Murphy Memorial Art Garden Project in downtown Lexington. Participated in public archaeology events to promote park and understanding of neighbourhood history. Due to minority and low-income neighbourhoods, environmental justice was a concern.

Southwest Jefferson County Greenways, Louisville Metro Parks Department, Louisville. Supported Louisville Metro Parks Department develop a master plan to create greenways in southwest Jefferson County which will include shared use trails. The study area covers approximately 97 square miles or a quarter of Jefferson County. Identified ways to include cultural resources into the planning process such as historic properties to be destinations or waypoints for the education and benefit of trail users or archaeological sites to avoid. Provided technical review of draft documents and outreach materials.

### **Pipelines**

Mountain Valley Pipeline Supplemental Environmental Impact Statement (SEIS), Jefferson National Forest (JNF), Virginia and West Virginia. Managed the SEIS for section of the interstate pipeline crossing the JNF. Due to the controversy with the project, worked closely with Forest Service Office of General Counsel and natural resource staff. NEPA documents prepared on an accelerated schedule and including addressing over 4,000 public comments. Threatened and endangered species concerns were critical to success of project.

**206-Mile Lobos CO2 Pipeline Project, Kinder Morgan, New Mexico and Arizona.** Assistant ecological team lead supporting wetland and waters of the U.S. delineation, threatened and endangered species studies, and vegetation / habitat assessments in support of permitting for a proposed 206-mile CO2 pipeline to be used in enhanced oil recovery process. Technical reviewer of draft Bureau of Land Management (BLM) plan of development and supporting ecological and cultural documents. Agency coordination includes the BLM, USACE, USFWS, Native American Nations, and state and local regulatory agencies from Arizona and New Mexico.

Cortez Loop Pipeline Extension, Kinder Morgan, New Mexico. Assistant ecological team lead for 40-mile pipeline extension, four new pump stations and other associated facilities. Ecological, paleontological resources, and cultural resource studies were undertaken for this proposed pipeline extension. Access roads and potential compressor stations and temporary storage areas were evaluated. Agency coordination included the Bureau of Land Management, United States Army Corps of Engineers, United States Fish and Wildlife Service, and state and local regulatory agencies.

Supplemental Environmental Assessment for Relocation of a Petroleum Products Pipeline, CSX Transportation, Virginia. Project manager for developing a supplemental environmental assessment for relocation of a 24-inch petroleum product pipeline due to the addition of 11 miles of a third railroad track. Approximately 3.0 miles of horizontal directional drilling occurred to reduce potential construction impacts to utilities, roads, water bodies and wetlands. Permitting, endangered species and floodplain issues were concerns, and required coordination with local, state, and federal regulatory agencies.

Sparrows Point Liquified Natural Gas (LNG) Terminal and Pipeline Project, Maryland and Pennsylvania. Technical reviewer of cultural resource sections for FERC EIS for LNG facility and 88-mile pipeline. Acted as the third-party consultant to FERC for the preparation of National Environmental Policy Act (NEPA) compliant documents (the Draft Environmental Impact Statement [DEIS] and the Final EIS) for the LNG facility and related pipelines. The terminal is proposed for Sparrows Point, southeast of Baltimore in Baltimore County, MD and will can unload LNG ships, storing up to 480,000 cubic meters of LNG, vaporizing the LNG, and sending out the natural gas. Addressed public comments on the proposed project.

Environmental Documentation for Water Pipeline, Bowling Green, Kentucky. Project Manager for environmental studies and documentation for a 10-mile water pipeline for the Transpark Industrial Development. Oversaw cultural resources, wetlands, socioeconomic, hazardous materials, karst, and threatened and endangered species investigations. Cumulative impacts were an issue because of potential effects of future industrial growth in the area and karst terrain. Permitting and mitigation were concerns due to potential impacts to Mammoth Caves National Park. Public involvement was a key component to address concerns raised by citizen advocacy groups.

#### **Dams and Levees**

NRCS Upper Walnut Creek FRD No. 6 and FRD No. 21, Butler County, Kansas. NEPA Manager for two dam rehabilitation projects, prepared environmental assessments. The projects purposes are to rehabilitate FRD 6 and FRD 21 to meet safety and performance standards for high hazard dams and

provide flood water protection to downstream areas. The EAs included the NRCS environmental evaluation worksheet and discussions of threatened and endangered species, wetlands, environmental justice, economic and social conditions, and cultural resources. Stakeholder meetings and public meetings were components of both projects.

NRCS Pine Creek Dam Rehabilitation EA, Oneida, Tennessee. Technical Reviewer. Supported Pine Creek Dam rehabilitation EA and archaeological and architectural historic surveys. The EA included the NRCS environmental evaluation worksheet and discussions of threatened and endangered species, wetlands, environmental justice, economic and social conditions, and cultural resources. This multipurpose dam and reservoir project serves as flood control and as the town's primary water supply. Stakeholder and public meetings were held to obtain input on concerns and needs.

Environmental Impact Statements (EISs) for Two Flood Damage Reduction Projects (Levisa Fork Watershed Section 202 Program), Floyd and Pike Counties, KY. For the USACE-Huntington District, Project Manager for the preparation of sections for the structural and nonstructural flood damage reduction measures EISs in Floyd and Pike Counties, KY. Major issues included community impacts, environmental justice, cultural resources and terrestrial and aquatic mitigation. Identified concerns about the potential for residential and business relocation, impacts to property values, loss of community cohesion, the potential for induced flooding, hardships from raising residences, impacts to habitat for the Indiana bat, potential loss of tributary streams, and the potential impact of floodwall construction on the riparian corridor. Extensive agency coordination and public involvement required.

EIS for Flood Damage Reduction, Pike County, Kentucky, Levisa Fork Watershed Section 202 Program. Supported development of Draft EIS assessing impacts of flood damage reduction alternatives within the Levisa Fork Watershed in Pike County, Kentucky for the USACE, Huntington District. Project alternatives include structural and non-structural components. Reviewed Habitat Assessment Procedure (HEP) analysis for terrestrial impacts and a stream assessment for tributaries. Major issues included community impacts, cultural resources, and terrestrial and aquatic mitigation. Project required extensive coordination with U.S. Fish and Wildlife.

**Muddy Fork Conservancy District Supplemental EIS, Borden, Indiana.** A Supplemental EIS is being prepared for a new dam to provide additional municipal water supplies, control flooding, and create recreational opportunities. Early steps including reviewing technical and environmental studies to determine data gaps and areas for update. A review of the 1992 FEIS determined that a Supplemental EIS is necessary. Water supply studies were evaluated and revised in coordination with the water utility. The purpose and need section was expanded to include recreational opportunities for the reservoir. Agency, stakeholder, and public meetings were held to obtain input on concerns and needs.

### **Transmission Lines**

Herleman to Meredosia Transmission Line, Ameren, Illinois. Provided environmental planning support for the proposed 48-mile 345-kV overhead electric transmission line which crosses several named streams including the Illinois River. The Herleman to Meredosia line is part of Ameren's 330-mile Illinois Rivers Transmission Line initiative stretching from Palmyra, Missouri to the Illinois/Indiana state line. Supporting the development of a Conservation Plan in accordance with the Illinois Department of Natural Resources (IDNR) requirements for state-listed threatened and endangered species.

Meredosia to IpavaTransmission Line, Ameren, Illinois. Provided environmental planning support for the Meredosia to Ipava Transmission Line, Ameren, Illinois. The Meredosia to Ipava line is part of Ameren's 330-mile Illinois Rivers Transmission Line initiative stretching from Palmyra, Missouri to the Illinois/Indiana state line. Supporting the development of a Conservation Plan in accordance with the Illinois Department of Natural Resources (IDNR) requirements for state-listed T&E species.

Maywood to Herleman Transmission Line, Ameren, Missouri and Illinois. Provided environmental planning support for a proposed 345-kV electric transmission line crossing of the Mississippi River on federal property near Quincy, Illinois. The Maywood to Herlemen line is part of Ameren's 330-mile Illinois Rivers Transmission Line initiative stretching from Palmyra, Missouri to the Illinois/Indiana state line. Supporting the development of a Conservation Plan in accordance with the Illinois Department of Natural Resources (IDNR) requirements for state-listed threatened and endangered species.

### **United States Nuclear Regulatory Commission**

**Nuclear Reactor Operator Examination and Licensing Study, Multiple States.** For the U.S. Nuclear Regulatory Commission, conducted a study of the reactor operator examination and licensing function. Reviewed information collected from 300 written questionnaires. Conducted personal interviews with reactor operators, senior reactor operators, training managers, and plant technical managers at multiple nuclear power facilities, and NRC regional offices.

### Bell Bend Nuclear Power Plant Third Party EIS for Nuclear Regulatory Commission, Pennsylvania.

As a Senior Planner, prepared Third Party EIS sections for the Nuclear Regulatory Commission on land use, transmission lines, cultural resources, cooling tower, and cumulative impacts for a new reactor at the Bell Bend Nuclear Power Plant. Conducted site visits and interviews to evaluate existing land use and changes in land use resulting from the addition of a new reactor and changes to transmission lines. Reviewed the Environmental Report and prepared requests for additional information (RAIs) concerning potential data gaps. Participated in multiple public, agency, and local government meetings.

Victoria Station Nuclear Power Plant Third Party EIS for Nuclear Regulatory Commission, Texas. Senior planner developing land use, transmission line, cultural resource, and cumulative impact sections of a Third Party EIS for the proposed Victoria Station Nuclear Power Plant Project. Evaluated sections of the ER and prepared RAIs. Evaluated existing and changes in land use resulting from the facility and transmission lines.

**Environmental Report, Confidential Client, Nuclear License Application Project, Michigan.** Technical reviewer of Socioeconomic sections of the ER for a new medical isotope production facility in the central US. This work is in accordance with the provisions of NUREG 1537 and related laws and regulations and entails the documentation of all socioeconomic baseline characteristics of the project site and vicinity.

#### **Utilities**

Electric Power Industry Waste Reduction Activities. For USEPA's WasteWise program, analyzed waste reduction activities at utility generating stations, distribution and transmission facilities, and recovery and warehouse operations, including PG&E facilities. Worked with the Edison Electric Institute to select utilities to profile for waste reduction and recycling activities. Conducted site visits to power plants in 6 states. Profiled PG&E's waste reduction activities at generating stations and distribution facilities; Investment Recovery and Warehouse locations, Fleet Maintenance; and General Office facilities. Life cycle cost analysis, solid waste consulting, employee and public education activities, and measurement criteria were considered. Developed the Waste Reduction Activities of Selected WasteWise Partners: Electric Power Industry report.

**Report to Congress on Fossil Fuel Combustion Waste.** Supported USEPA in developing a Report to Congress on Fossil Fuel Combustion Waste. Worked on the technical studies concerning waste characterization, potential damage cases, risk analysis, and groundwater impacts. Evaluated existing federal and state regulatory requirements and cross media impacts of fossil fuel combustion wastes.

**Guide for Industrial Nonhazardous Waste Management.** For USEPA, helped develop the guide for the management of industrial nonhazardous waste management. The guidance applied to waste managed in surface impoundments, landfills, and land application areas. Worked with the Edison Electric Institute and the Electric Power Research Institute (EPRI) to consider impacts of the guidance on the electric utility industry. Participated in regular stakeholder and public meetings.

### **United States Housing and Urban Development**

**United States Housing and Urban Development Task Force Report on Lead-Based Paint (LBP) Hazard Reduction and Financing. Washington, D.C.** For the United States Department of Housing and Urban Development and the United States Environmental Protection Agency, provided support to the Task Force concerning the impacts of liability on LBP hazard reduction and victim compensation. Helped to draft a report and recommendations on reducing LBP hazards to children. Evaluated state requirements for LBP hazard reduction, management of lead-based paint contaminated debris, and state liability standards. Participated in stakeholder work group.

Draft Environmental Assessment for the Museum Plaza High-Rise and Parking Garage, Louisville, Kentucky. Project manager overseeing environmental studies and preparation of an environmental assessment for the proposed Museum Plaza, a new multi-use development in downtown Louisville. The proposed project would consist of a 1.5-million-square-foot, 62-story building containing residential units, office space, a non-profit contemporary art museum, two hotels, and the University of Louisville Master of Fine Arts program, as well as a portion of the university's graduate business school. Floodplain and cultural resource issues were potential concerns. A Housing and Urban Development (HUD) grant is anticipated to help support this project and the National Environmental Policy Act (NEPA) documentation is being prepared to comply with HUD's requirements under 24 Code of Federal Regulations (CFR) 58.

### Municipalities

**Permitting of Landfills, Municipal Waste Combustors, and Materials Recovery Facilities.** For municipalities, helped in permitting landfills, municipal waste combustors, and materials recovery facilities in seven states (Florida, Indiana, Michigan, New Jersey, New York, North Carolina, and Pennsylvania). Negotiated with state regulators on design, operating, monitoring, and closure and post-closure care permit conditions. Reviewed federal and state regulations and permit conditions for similar facilities. Participated in public meetings/hearings and submitted comments on proposed permits.

Upper Paint Lick Watershed Plan. Kentucky. Project manager. Helped build partnerships with local officials, resource agencies, farmers, private landowners, educational institutions and citizen monitoring programs to characterize the watershed, conduct water quality sampling/analysis and to develop a watershed plan for the Upper Paint Lick Creek area. Supported the creation of a watershed group (Paint Lick Watershed Alliance), developed outreach materials, and created a website. The Alliance hopes to work closely with farmers and residents to identify water quality problems, set goals, identify solutions, assist with the selection of appropriate best management practices (BMPs) and design an implementation program to improve the watershed health. Ideally, this project will champion the farmers as leaders of this water quality improvement effort. The project partners will be crucial to achieving watershed planning success.

**Permitting of a Sludge Incinerator. Pennsylvania.** For a municipality, supported the analysis of permitting requirements for a sludge incinerator. Reviewed the regulatory requirements for a process that would combine sludge and coal dust into briquettes and incinerate the briquettes as fuel. Examined the air, solid waste, and water quality requirements for the sludge incinerator including residuals management.

Small Power Production and Cogeneration Facilities, Municipalities and Corporations. For municipalities, helped in permitting municipal waste combustors and landfills in seven states (Florida, Indiana, Michigan, New Jersey, New York, North Carolina, and Pennsylvania). Provided consulting services to municipalities and several manufacturing facilities considering about qualifying as a small power production or cogeneration facility under Federal Energy Regulatory Commission requirements. Reviewed federal and state regulations and permit conditions for similar facilities. Attended public meetings and submitted comments on proposed permits.

**Environmental Audits. Multiple Counties in Multiple States.** Developed surveys to evaluate the effectiveness of municipal compliance programs and wrote environmental audit reports of facilities and programs. The analysis of the survey results was complemented with on-site interviews to attain a thorough review of environmental procedures. Evaluated alternative waste management practices and drafted revisions to compliance manuals and programs.

**Solid Waste Management Plans.** Helped update solid waste management plans for counties in Florida, Michigan, New Jersey, and Pennsylvania. Reviewed current and future solid waste management programs and evaluated the costs and benefits of alternative best management practices. Interviewed solid waste management authorities, state and local government officials, regulatory personnel, engineers, and concerned citizens.

Appeals of NPDES Permits and Notices of Violations at POTWs. Involved with appeals of NPDES permits, pretreatment requirements, and notices of violations to publicly owned treatment works. These appeals considered the environmental requirements and costs of financing, constructing, and operating facilities to improve water quality management. Helped analyzed corrective action requirements for sewage effluent injection wells at a POTW.

### **Other Private Clients**

Assessment of Visual, Auditory, and Lighting Effects of RiverPark Place Development on Cultural Resources, Private Client, Louisville, Kentucky. On an accelerated schedule for a private developer, managed the assessment of potential visual, auditory, and lighting impacts from the waterfront development project on cultural historic resources. The project covered a one-mile Area of Potential Effect (APE) in Kentucky and Indiana. The development will include two 16-story structures surrounded by four 5-story structures for residential/commercial use. Two historic sites and part of a historic district will be adversely visually impacted by the proposed construction. Two historic sites also will be adversely affected by temporary construction noise and noise associated with increased vehicular or watercraft traffic. Worked with Kentucky Heritage Council to prepare an MOA for the project.

Environmental Overview and Phase I ESA for a Proposed Commercial Development, Frankfort, KY. For a private developer, managed the preparation of a Phase I ESA, environmental overview, wetlands delineation, and an archaeological overview of a 100-acre site near I-64. The site contained an auto body shop and farmland that were evaluated for potential recognized environmental conditions. Coordinated with the Kentucky Transportation Cabinet concerning developing a new access point on US127. Held discussions with City of Frankfort planners concerning requirements for site development.

**Jefferson Commons, Outer Loop, Louisville, Kentucky.** For a private client, successfully obtained a Section 404 permit on a fast time schedule and managed the wetlands delineation and Phase I archaeological investigation for a development project along the Outer Loop in Louisville, Kentucky. Due to wetland and stream impacts, credits were obtained from a wetlands bank.

Fisherman's Energy Atlantic City Windfarm, New Jersey. Technical reviewer for cultural resource concerns related to National Historic Landmark Lucy the Elephant. Helped evaluate potential visual

impacts of offshore wind turbines on listed National Register of Historic Resource. Helped coordinate with New Jersey State Historic Preservation Office (SHPO) on study needed to determine project would not adversely affect historic resources.

Electric Power Research Institute Bat Mitigation Alternative Manual, Nationwide. For the Electric Power Research Institute, developing a manual to evaluate mitigation alternatives, such as habitat enhancements, artificial roosts, conservation areas and banks, in lieu fee programs, and wetland creation for threatened and endangered bat species affected by utility operations, maintenance, and project activities. Evaluated information from government, non-profit, and commercial resources to identify compensatory mitigation alternatives. Analyzed peer-reviewed literature, data from bat working groups, and communications with regulators and other bat experts. The manual will quickly inform utilities about bat mitigation opportunities using graphic summaries, tables, decision trees, and case studies. As part of the project, developed user-friendly bat fact sheets for distribution to utility clients.