

Flat Run Solar, LLC  
Kentucky State Board on Electric  
Generation and Transmission Application

Application Documents

Case No. 2020-00272

April 2021



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# 1. Applicant Information

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

COMPLIANCE: Please see below for the requested information.

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

## 2. Description of Proposed Site

REQUIREMENT: per KRS 278.706(2)(b); *A full description of the proposed site, including a map showing the distance of the proposed site from residential neighborhoods, the nearest residential structures, schools, and public and private parks that are located within a two (2) mile radius of the proposed facility*

COMPLIANCE: The proposed Flat Run Solar Facility (the Project) will be a 55-megawatt alternating current (MWac) photovoltaic electricity generation facility. The Project is to be located in Taylor County, near the unincorporated community of Saloma. The power generated by the Project will be sold on the open market through an existing transmission line that crosses the property.

A map showing the location of residential structures, schools, and public and private parks in relation to the proposed project is located in Attachment A. There are no schools, public or private parks within 2 miles of the Project's radius, and there are 3 residential neighborhoods (per KRS 278.701(6)) within 2,000 feet of the Project's radius.

The Project will be built on up to 450 acres which has historically been used as pasture and crop land. The equipment onsite will consist of crystalline solar panels, racking, inverters, transformers, a DC-coupled energy storage system, one substation transformer, and associated wiring and balance of system.

The racking system used to fix the solar panels to the ground has a small footprint that does not use concrete, and the panels are generally not considered impervious as rainwater can travel over and around the panels, making this a low impact development. The panels and racking are no more than 15 feet high at the highest point. The racks will be placed directly onto grass. Gravel will be placed on the access roads throughout the site, and will not be placed under the solar panels.

A video showing the process for solar pile installation onto grass can be found at: <https://www.youtube.com/watch?v=5bE9XexB4yM>. This video is representative of the pile driving installation method that will be used at Flat Run. Note that the configuration of the racks and panels on the piles will be somewhat different at Flat Run than the technology shown in this video. The video shows fixed-tilt racks, whereas Flat Run will use single axis tracking racks which will rotate slowly to track the sun's path from East to West one time throughout each day. Also, at Flat Run no members of the public will be inside the security fence; this video shows an industry demonstration event where members of the public were able to walk near the installation to view the process.

A fence meeting the National Electric Safety Code requirements, typically a six-foot fence with three strings of barbed wire at the top, will enclose the facility and will be installed before the

start of construction. The Project will comply with the NESC and American National Standards Institute (ANSI) Z535 Safety Sign Standards for Electric Utility Power Plants and Substations to guide the placement of safety signage around the facility.

Applicant proposes sections of vegetative buffers to help screen the view of the facility from sections of the roads surrounding the Project that do not have existing vegetation to block the view of the Project. The vegetative buffer will consist of two staggered rows of evergreen shrubs that have a mature height of approximately 15 feet. The rows will be spaced approximately 15 feet apart, and the shrubs will be at least three feet in height at time of planting. See the site plan, Attachment A of the Site Assessment Report, for the proposed location of the vegetative buffers. Please also see Attachment B of this application for reference images of vegetative buffers installed at operating solar facilities. The images depict vegetative buffers, security fencing, and solar panels similar to the configuration proposed at Flat Run.

At least 2 acres of native pollinator species will be planted on the Project site, likely within the setback area as marked on the site plan map in Attachment A of the Site Assessment Report. Pollinating insects are in decline across the US, and pollinator plantings at solar facilities like Flat Run can support healthy local populations of pollinators.<sup>1</sup> Healthy pollinator populations are essential for certain agricultural crops including soybeans, and the US Department of Agriculture estimates that 35 percent of the world's food crops depend on animal pollinators to reproduce.<sup>2</sup>

There are 2 types of inverters commonly used on solar facilities; central inverters and string inverters. Central inverters are typically located towards the interior of the solar farm, and there is usually 1 central inverter per few dozen rows of solar panels. String inverters are smaller units that are typically attached to the end of each row of solar panels. At the time of this application the Project has not committed to using one or the other technology, and will make this decision prior to construction. If central inverters are used, there will be approximately 13 central inverters in the facility.

The energy storage systems are typically housed in a structure similar to a shipping container. HVAC systems are used to cool the energy storage equipment, and are housed on the outside of the energy storage system structure. There will be approximately 13 energy storage container areas in the facility. The energy storage units are typically located in central locations throughout the site, co-located with central inverters, if central inverters are used.

The site plan and information about the equipment that will be used in the Project were presented to the public through various means throughout the Project's public outreach efforts, as described in Section 6 of this Siting Board Application.

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<sup>1</sup> <https://www.scientificamerican.com/article/solar-farms-shine-a-ray-of-hope-on-bees-and-butterflies/>

<sup>2</sup> <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/pollinate/>

### 3. Public Notice Evidence

REQUIREMENT: per KRS 278.706(2)(c); *Evidence of public notice that shall include the location of the proposed site and a general description of the project, state that the proposed construction is subject to approval by the board, and provide the telephone number and address of the Public Service Commission. Public notice shall be given within thirty (30) days immediately preceding the application filing to:*

- 1. Landowners whose property borders the proposed site; and*
- 2. The general public in a newspaper of general circulation in the county or municipality in which the facility is proposed to be located*

COMPLIANCE: A sample of the notice of application letter that was sent to landowners whose property borders the proposed site, followed by the list of addresses and names of those landowners who were sent notices on March 12, 2021 is contained in Attachment C. Two copies of this notice were mailed to each landowner; one via regular US Mail and one via USPS Certified Mail. Please see Attachment C for certified mail receipts.

Also contained in Attachment C is the affidavit of publication of the notice published in the Central Kentucky News-Journal on March 11, 2021, which is the newspaper of general circulation in Taylor County, as well as a copy of that notice.

A map of the adjacent neighbors, along with a list of each adjacent parcel's ownership, is included in Attachment B to the Site Assessment Report.

## 4. Compliance with Local Ordinances and Regulations

REQUIREMENT: per KRS 278.706(2)(d); *A statement certifying that the proposed plant will be in compliance with all local ordinances and regulations concerning noise control and with any local planning and zoning ordinances. The statement shall also disclose setback requirements established by the planning and zoning commission as provided under KRS 278.704(3)*

COMPLIANCE: The Project lies entirely in Taylor County. There are no setback requirements established by a planning and zoning commission for the location of the project, and no noise ordinance that applies to the Project. A letter from Taylor County Judge Executive Barry Smith confirming the lack of planning and zoning and noise ordinance is submitted as Attachment D.

Applicant certifies that the Project will follow any applicable local ordinances and regulations concerning noise control, and with any applicable local planning and zoning ordinances. A statement certifying these facts is included in Attachment E.

## 5. Setback Requirements

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

COMPLIANCE: Flat Run Solar is not proposed to be located on the site of a former coal processing plant, nor will it use any waste coal as a fuel source. The Project site does not have any existing electricity generating facilities on-site. Taylor County does not have established setback requirements for this location, nor has a planning unit enacted any setback requirements for this location, per the information provided in Section 4 above.

The Project will not include any exhaust stacks or wind turbines as part of the facility, therefore there is no established 1,000 foot setback requirements from the property boundary of any adjoining property owner to the energy generating facilities.

There are three residential neighborhoods (as defined by KRS 278.700(6)) within two thousand (2,000) feet of the Project. Pursuant to KRS 278.704(4), Flat Run Solar will be moving the Siting Board for a deviation from this setback requirement. See Attachment A for a map showing the residential neighborhoods in relation to the Project. More information about the neighborhoods will be provided in Applicant's motion for deviation.



## 6. Public Notice Report

REQUIREMENT: per KRS 278.706(2)(f); *A complete report of the applicant's public involvement program activities undertaken prior to the filing of the application, including:*

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

COMPLIANCE: Flat Run Solar, LLC, through its parent Carolina Solar Energy III, LLC (collectively, “Carolina Solar Energy”), has made a substantial effort to engage the public in numerous ways regarding the Project.

Representatives of Carolina Solar Energy first reached out to Taylor County Judge/Executive Barry Smith in September 2019, and met in person to introduce Carolina Solar Energy and to let him know about the location of the Project. Ron McMahan, Executive Director of the Taylor County Economic Development Authority, attended an introduction to solar energy facilities presented by solar companies including Carolina Solar Energy, which took place in Marion County in October of 2019; Judge/Executive Smith was not able to attend this meeting. Attachment F outlines our additional community engagement to date.

In addition to our public outreach and notices, a detailed article about the Project ran in the Central Kentucky News-Journal on September 24, 2020. The article is provided in Attachment G and includes a large color image of the site layout map.

Due to the COVID-19 pandemic and in compliance with Kentucky Governor Andy Beshear’s Executive Order, dated March 18, 2020, and subsequent executive orders, the public meeting for the Project was held virtually. The Project filed a Motion for Approval of Form of Public Meeting with the Siting Board, dated August 25, 2020, setting forth a plan to hold the public meeting online. The Siting Board issued an order dated August 28, 2020, approving a virtual public meeting and setting forth additional requirements for the public meeting.

The public meeting was held via Zoom at 5:30pm CDT on September 17, 2020, with an in-person screening option. The meeting consisted of a prerecorded video describing the project and solar technology, followed by a question and answer period where attendees, both virtual and in person, could ask questions to the panel, who all attended virtually via Zoom. The physical portion of the meeting was held at the Lake Cumberland Area Development District Kentucky Career Center-Campbellsville, 1311-C East Broadway, Campbellsville, KY 42718.

At the public meeting there were no concerns raised by neighbors or by the community about the Project, and as of the date of this application, Flat Run has not received complaints or concerns from neighbors of the Projector by the community outside of the public meeting.

In addition to holding the public meeting, Carolina Solar Energy displayed a large 24x36" printed copy of the layout map of the solar project on an easel at the entrance to the Taylor County Courthouse for the 3 business days prior to the public meeting, together with a copy of the public notice about the public meeting providing instructions on how to register and attend.

A notice announcing the public meeting was printed in the Central Kentucky News-Journal on September 3, 2020. The Project also mailed letters, dated June 26, 2020, to all adjoining landowners notifying them of the virtual meeting, and providing instructions on how to reserve a spot at the physical screening of the public meeting.

Attachment H provides the affidavit of publication for this notice, a copy of the newspaper notice, and a copy of the letter sent to neighboring landowners.

The prerecorded video shown at the public meeting included presentations from four representatives of Carolina Solar Energy and experts in solar energy, as well as a drone flyover video of a similarly-sized utility scale solar project, with verbal explanation of each component of the project. The video is available on the Carolina Solar Energy website for the Project, <https://www.carolinasolarenergy.com/projects-in-development-source/flat-run>, and the letters advising adjacent neighbors of the public meeting included a website link to the page that includes the video and other information about the project, including the site plan, real estate impact report, and a fact sheet.

The representatives of Carolina Solar Energy and experts in solar energy who were in the video and also present remotely at the Zoom video conference are listed below, with a description of the topics each person covered:

- Carson Harkrader, CEO of Carolina Solar Energy, made welcome and introductory comments about the project and presentation, explained why this solar project is being proposed in Taylor County, and discussed local benefits such as real estate taxes and construction jobs.

- Christopher Jones, Project Manager, discussed the components that make up a solar farm, showed a single solar panel from all angles, discussed the site plan, and narrated the drone flyover of an existing solar project.
- Chris Sandifer, a professional engineer who has decades of experience working for both utilities and solar companies interconnecting solar projects and other energy projects, made statements related to solar technology and health and safety concerns around solar farms.
- Rich Kirkland, licensed real estate appraiser registered in Kentucky, discussed his research on utility scale solar and neighboring residential property values.

After the public meeting held on September 17, 2020, Carolina Solar Energy signed a new lease agreement for up to 25 acres with one additional landowner whose property was not included in the site layout shown at the public meeting. This new landowner's parcel is shown on the map attached as Attachment I, which includes parcel lines showing the surrounding properties. A copy of the site layout map that was presented at the public meeting and displayed in the Fiscal Court entrance in September 2020, which did not include the new parcel, is attached as Attachment J.

As is shown on Attachment I, the new parcel does not add any new neighboring parcels to the Project because it is bound to the West and North by a Tennessee Gas facility that was already a neighbor of the Project, and to the South and East by other parcels that are part of the Project. The new parcel effectively filled in a "donut hole" between the Tennessee Gas facility and the prior project footprint.

As the only adjoining neighbor to the new parcel, Applicant requested confirmation from Tennessee Gas that the addition of the new parcel was acceptable to them and that they were satisfied by the notice they received of the Project prior to the public meeting. A letter from Tennessee Gas confirming this is attached as Attachment K.

## 7. Efforts to locate near Existing Electric Generation

REQUIREMENT: per KRS 278.706(2)(g); *A summary of the efforts made by the applicant to locate the proposed facility on a site where existing electric generating facilities are located;*

COMPLIANCE: It is rare for utility-scale solar projects to be co-located with existing electricity generating infrastructure, such as a coal or natural gas fired power plant. Efforts were made to site the Project where there is existing electricity transmission infrastructure.

The project will interconnect to an on-site, existing transmission line owned by East Kentucky Power Cooperative (EKPC). At the project's expense, EKPC will build a new tap line to interconnect the Project.

## 8. Proof of Service to County and Municipality Officials

REQUIREMENT: per KRS 278.706(2)(h); *Proof of service of a copy of the application upon the chief executive officer of each county and municipal corporation in which the proposed facility is to be located, and upon the chief officer of each public agency charged with the duty of planning land use in the jurisdiction in which the facility is proposed to be located;*

COMPLIANCE: A copy of the Siting Board application for Flat Run Solar, LLC was electronically transmitted to the Judge/Executive of Taylor County, Barry Smith, on the date of electronic filing of this application. On inquiry by Flat Run, Judge Smith indicated that he would accept an electronic copy of the application, with a paper copy mailed to him separately after the electronic application.

## 9. Effect on Kentucky Electricity Generation System

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

COMPLIANCE: The Project will inject renewable electricity generated by the sun into the electricity transmission system in Kentucky. This project also includes an option for a dc-coupled energy storage system, which if implemented, is designed to store excess electricity generated by the solar panels during the day, in order to supply it to the grid at other times. The energy storage system will also likely assist with providing capacity resources and other auxiliary services to the transmission grid such as frequency regulation. The dc-coupled energy storage system is included within the Project's interconnection applications, but can be removed without penalty if it is not considered economically feasible.

The Project is located within the territory of PJM Interconnection LLC (PJM). PJM is the Regional Transmission Organization for 13 states including parts of Kentucky, and is managing the interconnection of the Project in coordination with East Kentucky Power Cooperative (EKPC), which owns the transmission infrastructure to which the project is proposing to interconnect. The interconnection study process in PJM involves three study phases: Feasibility Study, System Impact Study, and Facilities Study.

Flat Run Solar, LLC made an interconnection application to PJM in August 2019 to interconnect the project on the Green County – Saloma 161kV transmission line. Following the application, a kickoff call with PJM and EKPC was held to begin the three-step study process.

The Feasibility Study was completed in January of 2020, and the Feasibility Study Report can be found in Attachment L.

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

The third and final step, the Facilities Study, is currently underway and expected to be issued in mid-2021.

During the System Impact Study, the Project was flagged for the potential to impact the adjoining LG&E/KU transmission system. The Project signed an affected system study agreement with LG&E/KU, which has completed an affected systems study, and has determined that the Project does not require any upgrades or further studies to LG&E/KU facilities. PJM has confirmed that there are no other utilities that have the potential to be affected by the Project or that require affected systems studies.

A key purpose of PJM, EKPC and LG&E/KU's study process is to estimate the costs of any required upgrades, both at the Project site as well as elsewhere within the PJM transmission system, including other utilities outside of PJM, which the Project would create or contribute to, and to allocate such costs to the Project. The Project will be required to pay for any identified costs in order to interconnect and deliver electricity into the PJM and EKPC transmission system. In addition, Applicant has paid PJM and LG&E/KU for the costs of the study process.

## 10. Effect on Local and Regional Economies

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

COMPLIANCE: See Attachment N for a report on the projected impact of the Project on local and regional economies, written by Paul A. Coomes, Ph.D, an Emeritus Professor of Economics from the University of Louisville.

On page 1 of the report, it states:

“There are two primary impacts expected from the project. First, there will be a one-time spike in construction and linked jobs as the site is constructed over approximately one year. Second, there will be four decades of new tax (PILOT) payments to local jurisdictions in Taylor County due to the increased value of real estate and the new tangible property installed at the site. Using company estimates of construction jobs and payroll, I estimate that there will be a total of 199 new jobs in the County in year one, with new payroll of \$9.89 million. And, the PILOT agreement will result in \$1.32 million in payments to County jurisdictions over the next forty years.”

In addition to the economic impacts described in Professor Coomes’ report, the Project will sell electricity and green credits on the open market, likely entering into a long-term power purchase agreement (PPA) with a company that has made a commitment to source renewable energy. At the time of this application, Flat Run is under exclusive negotiations with a company with operations in Kentucky for a long-term PPA for the electricity and renewable energy credits that will be generated by the Project. The PPA negotiations with the off-taker are moving towards final approval and execution by both parties.

A number of Kentucky-based companies and large Kentucky employers have made commitments to source renewable energy to power their Kentucky operations. Projects such as Flat Run will allow these companies to meet their objectives locally, keeping the tax revenue and jobs created by the new renewable energy projects in-state.



## 11. Record of Environmental Violations

REQUIREMENT: per KRS 278.706(2)(k); *A detailed listing of all violations by it, or any person with an ownership interest, of federal or state environmental laws, rules, or administrative regulations, whether judicial or administrative, where violations have resulted in criminal convictions or civil or administrative fines exceeding five thousand dollars (\$5,000). The status of any pending action, whether judicial or administrative, shall also be submitted;*

COMPLIANCE: Neither Flat Run Solar, LLC, nor any entity with ownership interest in the Project, has violated any state or federal environmental laws or regulations. There are no pending actions against Flat Run Solar, LLC, nor any entity with ownership interest in the Project.

## 12. Site Assessment Report

REQUIREMENT: per KRS 278.706(2)(l); *A site assessment report as specified in KRS 278.708. The applicant may submit and the board may accept documentation of compliance with the National Environmental Policy Act (NEPA) rather than a site assessment report*







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

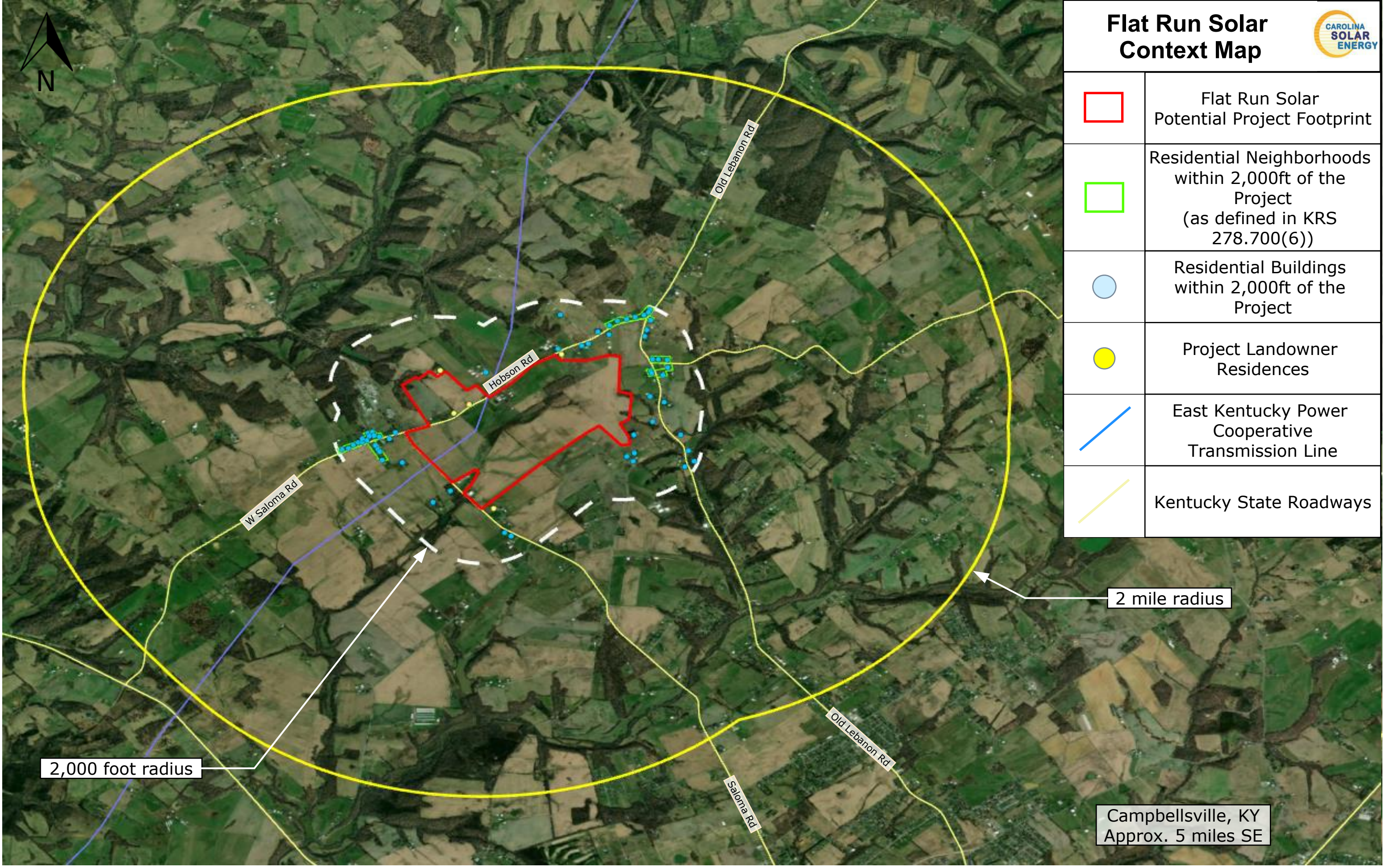
Attachment A  
Context Map



# Flat Run Solar Context Map



	Flat Run Solar Potential Project Footprint
	Residential Neighborhoods within 2,000ft of the Project (as defined in KRS 278.700(6))
	Residential Buildings within 2,000ft of the Project
	Project Landowner Residences
	East Kentucky Power Cooperative Transmission Line
	Kentucky State Roadways



2 mile radius

2,000 foot radius

Campbellsville, KY  
Approx. 5 miles SE

## Attachment B

### Vegetative Buffer Example Photos

Image 1: A Solar Farm in Western NC. Buffer shown in a single row of 3-4ft tall evergreen trees.



Image 2: Solar Farm in Rutherford County, outside of Forest City, NC. Buffer shown is a single row of 3-6ft evergreen trees. Image from Google Streetview.



Image 3: Solar Farm in Franklin County, outside of Louisburg, NC. Image shown without a vegetative buffer from approximately 150ft from solar panels.





Image 4: Solar Farm in Orange County, outside of Mebane, NC. Buffer shown is an alternating row of evergreen trees approximately 6-7ft tall. Image from Google Streetview.



Image 5: Solar Farm in Orange County, outside of Mebane, NC. Buffer shown is mature, 9-12ft evergreen trees in alternating rows. This image was taken in January 2021 from the same solar project as Image 4, however the trees have grown larger.



Image 6: Solar Farm in Johnson County, outside of Selma, NC. Buffer shown is mature, 10-12ft evergreen bushes. Image from Google Streetview.



Attachment C  
Proof of Notice of Application

## NOTICE OF APPLICATION

Flat Run Solar, LLC, is proposing to construct and operate a 55-megawatt AC solar energy project located in Taylor County, Kentucky at approximately 5347 Saloma Rd, Campbellsville, KY 42718. The proposed Flat Run Solar Project will consist of up to 450 acres of solar photovoltaic panels and associated racking, inverters, energy storage system, and a project substation transformer.

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

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

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

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

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

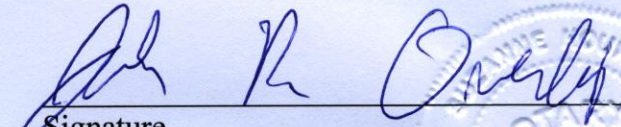


# CENTRAL KENTUCKY NEWS-JOURNAL

P.O. Box 1138 ♦ Campbellsville, Kentucky 42719 ♦ (270) 465-8111 ♦ www.cknj.com ♦ publisher@cknj.com ♦ Published Mondays, Thursdays

## Affidavit of Insertion

Before me, a notary public, personally appeared John Overby, general manager/editor, who certifies that any and all advertising material for Carolina Solar Energy – Notice of Application re: Flat Run Solar LLC – appeared in the Central Kentucky News-Journal datelined Thursday, March 11, 2021.

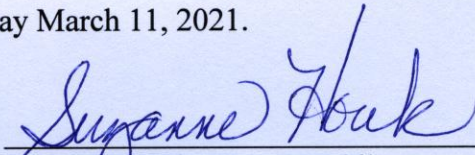
  
Signature

GM - Editor  
Title



State of Kentucky  
County of Taylor

Sworn to and subscribed before me on this day March 11, 2021.

  
Suzanne Houk, Notary Public

My commission expires January 14, 2025.

Commission Number KYNP21170



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

Name  
Add1  
Add2

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

**Re: Flat Run Solar Notice of Application**

Dear name,

This letter is to inform you that Flat Run Solar, LLC is proposing to construct and operate a solar photovoltaic facility adjacent to property you own in Taylor County. The Flat Run Solar Project is proposed to be located at approximately 5347 Saloma Rd, Campbellsville, KY 42718. The proposed facility and its applicants previously hosted a virtual public meeting about the project on September 17<sup>th</sup>, 2020, with a physical showing occurring at the Lake Cumberland Area Development District Kentucky Career Center-Campbellsville.

The solar technology used is photovoltaic, and the solar panels sit on racks that are up to 15 feet tall that rotate once per day on a North-South axis to track the sun throughout the day. The 55-megawatt facility will contain solar panels, inverters, a battery energy storage system, a project substation transformer, and an associated balance of wiring system. The Flat Run Solar Project will be sited on approximately 450 acres of land.

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

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

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





400 West Main, Suite 503 Durham, NC 27701  
919-682-6822 [www.carolinasolarenergy.com](http://www.carolinasolarenergy.com)

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

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

Sincerely,

A handwritten signature in black ink, appearing to read "Carson Harkrader", with a long horizontal flourish extending to the right.

Carson Harkrader  
CEO



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

Name  
Add1  
Add2

**CERTIFIED MAIL, RETURN RECEIPT REQUESTED**

With copy to Regular US Mail

**Re: Flat Run Solar Notice of Application**

Dear name,

This letter is to inform you that Flat Run Solar, LLC is proposing to construct and operate a solar photovoltaic facility adjacent to property you own in Taylor County. The Flat Run Solar Project is proposed to be located at approximately 5347 Saloma Rd, Campbellsville, KY 42718. The proposed facility and its applicants previously hosted a virtual public meeting about the project on September 17<sup>th</sup>, 2020, with a physical showing occurring at the Lake Cumberland Area Development District Kentucky Career Center-Campbellsville.

The solar technology used is photovoltaic, and the solar panels sit on racks that are up to 15 feet tall that rotate once per day on a North-South axis to track the sun throughout the day. The 55-megawatt facility will contain solar panels, inverters, a battery energy storage system, a project substation transformer, and an associated balance of wiring system. The Flat Run Solar Project will be sited on approximately 450 acres of land.

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

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

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



400 West Main, Suite 503 Durham, NC 27701  
919-682-6822 [www.carolinasolarenergy.com](http://www.carolinasolarenergy.com)

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

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

Sincerely,

A handwritten signature in black ink, appearing to read "Carson Harkrader", with a long horizontal flourish extending to the right.

Carson Harkrader  
CEO

7019 2280 0001 0518 4174

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

0707  
25

Postmark  
Here

Postage	\$0.55
Total Postage and Fees	\$7.00

03/12/2021

Sent To: Mary Virginia Price  
Street: \_\_\_\_\_  
City, S: 1118 Hobson Rd  
PS Fo: Campbellsville Ky 42718

Instructions

7019 2280 0001 0518 4013

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Postmark  
Here

Postage	\$0.55
Total Postage and Fees	\$7.00

03/12/2021

Sent To: Ricky Dale Shreve  
Street: \_\_\_\_\_  
City, S: 2041 West Saloma Rd  
PS: Campbellsville, Ky 42718

Instructions

7019 2280 0001 0518 4037

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Postage	\$0.55
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03/12/2021

Sent To: David & Deronda Eastridge  
Street: \_\_\_\_\_  
City: 221 Hobson Rd  
PS: Campbellsville Ky 42718

Instructions

7019 2280 0001 0518 3986

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Postage	\$0.55
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03/12/2021

Sent To: Jeffrey & Kimberly Deener  
Street: \_\_\_\_\_  
City, S: 139 Sanders Rd  
PS Fo: Campbellsville Ky 42718

Instructions

7019 2280 0001 0518 3993

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Postmark  
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Postage	\$0.55
Total Postage and Fees	\$7.00

03/12/2021

Sent To: Richard Gabehart  
Street: \_\_\_\_\_  
City: 150 Crawley Rd  
PS: Campbellsville Ky 42718

Instructions

7019 2280 0001 0518 4006

# U.S. Postal Service™ CERTIFIED MAIL® RECEIPT

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Postmark  
Here

Postage	\$0.55
Total Postage and Fees	\$7.00

03/12/2021

Sent To: Family Farm Inc Schuhmann  
Street: \_\_\_\_\_  
City, S: 201 Southside  
PS F: Campbellsville Ky 42718

Instructions

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Postmark  
Here

Postage	\$0.55
Total Postage and Fees	\$7.00

03/12/2021

Sent To **Billie Jo Akridge**  
 Street \_\_\_\_\_  
 5175 Saloma Rd \_\_\_\_\_  
 City, State \_\_\_\_\_  
 PS Form 3800 Instructions

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Postmark  
Here

Postage	\$0.55
Total Postage and Fees	\$7.00

03/12/2021

Sent To **Danny & Pam Huber**  
 Street \_\_\_\_\_  
 104 Landon Lane \_\_\_\_\_  
 City, State \_\_\_\_\_  
 PS Form 3800 Instructions

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Postmark  
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Postage	\$0.55
Total Postage and Fees	\$7.00

03/12/2021

Sent To **Colby & Gloria Deener**  
 Street \_\_\_\_\_  
 508 Hobson Rd \_\_\_\_\_  
 City, State \_\_\_\_\_  
 PS Form 3800 Instructions

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Postage	\$0.55
Total Postage and Fees	\$7.00

03/12/2021

Sent To **Hollis Brockman**  
 Street \_\_\_\_\_  
 5565 Old Lebanon Rd \_\_\_\_\_  
 City, State \_\_\_\_\_  
 PS Form 3800 Instructions

7019 2280 0001 0518 4129

7019 2280 0001 0518 3979

7019 2280 0001 0518 3962

7019 2280 0001 0518 4136

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Postage	\$0.55
<b>Total Postage and Fees</b>	<b>\$7.00</b>

03/12/2021

Sent Keith Edward Jr & Nancy Franklin

Street 758 Chestnut Grove Rd

City, Campbellsville Ky 42718

PS F Instructions

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Campbellsville, KY 42719

Certified Mail Fee	\$3.60
Extra Services & Fees (check box, add fee as appropriate)	\$2.85
<input checked="" type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
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Postmark  
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Postage	\$0.55
<b>Total Postage and Fees</b>	<b>\$7.00</b>

03/12/2021

Sent Hugh & Mary Ann Garrett

Street P O Box 113

City, Campbellsville Ky 42719

PS F Instructions

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Postage	\$0.55
<b>Total Postage and Fees</b>	<b>\$7.00</b>

03/12/2021

Sent Tennessee Gas Pipeline Company LLC

Street 1380 Hobson Rd

City, Campbellsville Ky 42718

PS F Instructions

7019 2280 0001 0518 4143

7019 2280 0001 0518 4150

7019 2280 0001 0518 4167

7019 2280 0001 0518 4174

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Postage	\$0.55
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03/12/2021

Sent To: Mary Virginia Price  
Street: \_\_\_\_\_  
City, S: 1118 Hobson Rd  
PS Fo: Campbellsville Ky 42718

Instructions

7019 2280 0001 0518 4013

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Postage	\$0.55
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03/12/2021

Sent To: Ricky Dale Shreve  
Street: \_\_\_\_\_  
City, S: 2041 West Saloma Rd  
PS: Campbellsville, Ky 42718

Instructions

7019 2280 0001 0518 4037

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Postage	\$0.55
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03/12/2021

Sent To: David & Deronda Eastridge  
Street: \_\_\_\_\_  
City: 221 Hobson Rd  
PS: Campbellsville Ky 42718

Instructions

7019 2280 0001 0518 3986

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Postage	\$0.55
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03/12/2021

Sent To: Jeffrey & Kimberly Deener  
Street: \_\_\_\_\_  
City, S: 139 Sanders Rd  
PS Fo: Campbellsville Ky 42718

Instructions

7019 2280 0001 0518 3993

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Postage	\$0.55
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03/12/2021

Sent To: Richard Gabehart  
Street: \_\_\_\_\_  
City: 150 Crawley Rd  
PS: Campbellsville Ky 42718

Instructions

7019 2280 0001 0518 4006

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Street: \_\_\_\_\_  
City, S: 201 Southside  
PS F: Campbellsville Ky 42718

Instructions

## Attachment D

Letter from Taylor County Judge Executive  
Barry Smith



**Barry Smith**  
County Judge/Executive  
tcjudgeexec@taylorcounty.us

**Magistrates:**

James Jones - 1st Dist.  
John D. Gaines - 2nd Dist.  
Tommy Corbin - 3rd Dist.



**Melissa W. Williams**  
County Treasurer  
treasurer@taylorcounty.us

**Magistrates:**

Zuel Yarberry - 4th Dist.  
Derrick Bright - 5th Dist.  
Richard A. Phillips - 6th Dist.

**OFFICE OF THE JUDGE/EXECUTIVE**

203 N. Court St., Suite 4  
Campbellsville, Kentucky 42718  
270-465-7729 • Fax: 270-789-3675  
[www.taylorcounty.us](http://www.taylorcounty.us)

March 23, 2021

Horseshoe Bend Solar, LLC  
c/o Carolina Solar Energy  
400 W. Main Street, Suite 503  
Durham, NC 27701

RE: Taylor County Solar Project

Dear Mr. Harkrader:

This is to confirm that Taylor County has no planning and zoning ordinance or jurisdiction. We have no noise ordinance applicable to the proposed Horseshoe Bend Solar project to be located here in Taylor County.

Sincerely,

Barry Smith  
Taylor County Judge Executive



Equal Opportunity Employer M/E/D

Attachment E  
Certificate of Compliance

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

**FLAT RUN SOLAR, LLC  
CASE NO. 2020-00272**

**STATEMENT REGARDING CERTIFICATION REQUIRED BY KRS 728.706(2)(d)**

Comes the undersigned and states as follows:

1. That my name is Carson Harkrader and I am the CEO of Carolina Solar Energy III, LLC, the Manager of Flat Run Solar, LLC, the Applicant herein;
2. That I am over 18 years of age and I am a resident of the State of North Carolina;
3. That I have conducted an inquiry into the facts contained in this Statement and believe them to be true to the best of my knowledge;
4. That the proposed facility as planned will be in compliance with any and all local ordinances and regulations concerning noise control, and will also be in compliance with any and all applicable local planning and zoning ordinances as provided in KRS 278.704(3);
5. There are no setback requirements established by the planning and zoning commission for land located in Taylor County, including Flat Run Solar's project area.

Signed this 30th day of March 2021.



---

CARSON HARKRADER

Attachment F  
Public Involvement Activities

**Flat Run Solar Project (Taylor County, KY)**  
**Public Involvement Activities (KRS 278.706(2)(f))**

Flat Run Solar, LLC, through its parent Carolina Solar Energy III, LLC (collectively, “**Carolina Solar**”), has made a substantial effort to engage the public in numerous ways regarding its solar project in Taylor County (the “**Flat Run Project**”). The following is a brief summary of the public involvement activities undertaken prior to the submission of this Application. Carolina Solar will continue these efforts and will participate in any public notice, comment and hearings which may be initiated as part of ongoing permitting activities.

- On numerous occasions from September, 2019, through the date of this Application, Solomon Van Meter, Community Representative for Carolina Solar, has spoken with and met in Campbellsville, KY, with **Barry Smith, Taylor County Judge Executive**, regarding various aspects of the Flat Run Project.
- On October 28, 2019, Solomon Van Meter, Community Representative for Carolina Solar, met with the Director and faculty members of the **Conn Center for Renewable Energy Research at the J.B. Speed School of Engineering, University of Louisville**, to discuss various solar projects, including the Flat Run Project.
- On October 29, 2019, Carolina Solar co-hosted a day-long **Utility Scale Solar Workshop for Public Officials** at the Marion County Public Library, Lebanon, KY (announcement/agenda attached). The workshop was attended by approximately thirty (30) public officials from various Kentucky counties in which solar power generation projects have been proposed, including **Ron McMahan, Executive Director of the Taylor County Economic Development Authority. Barry Smith, Taylor County Judge-Executive**, was not able to attend the meeting but was invited. The workshop featured presentations on topics including environmental health & safety, property values, land leasing, and economic benefits to hosting counties, as well as informal meetings between representatives of Carolina Solar and attendees.
- On February 12 & 13, 2020, representatives of Carolina Solar, including Carson Harkrader, CEO, met in Frankfort, KY, with **various members of the Kentucky Legislature, including Sen. Max Wise (Senate District 16)**, whose district includes the Flat Run Project, and discussed the project.
- On February 24, 2020, Solomon Van Meter, Community Representative for Carolina Solar, met in Greensburg, KY, with **Jordan Turner, Principal of the Green County Area Technical Center** to discuss workforce development and the Flat Run Project, as well as other projects. (The Green County Area Technical Center serves Taylor County High School and Campbellsville High School.)

- In May 2020, at the outset of the COVID-19 pandemic, Carolina Solar contacted **Kathy England, Director of the Taylor County Senior Center** and made a contribution to assist with the food pantry operated by the center.
- On June 6, 2020, Solomon Van Meter, Community Representative for Carolina Solar, met with **Ricky Dale Shreve, a landowner adjacent to the project**, to discuss the Flat Run Project.
- On July 10, 2020, Solomon Van Meter, Community Representative for Carolina Solar, met in Campbellsville, KY, with **several officers in the Campbellsville Police Department and the Kentucky State Police, including Scott Curry, Matt Weddle, Charlie Houk and Ryan Jewell** to discuss the Flat Run Project, as well as other projects.
- On July 30, 2020, Solomon Van Meter, Community Representative for Carolina Solar, met with **Darryl McGaha, Executive Director of the Lake Cumberland Area Development District**, to discuss the Flat Run Project.
- On September 2, 2020, Solomon Van Meter, Community Representative for Carolina Solar, spoke with **Magistrate James Jones and Magistrate Richard Phillips of the Taylor County Fiscal Court** whose magisterial districts each include a portion of the Flat Run Project, about the project.
- On September 9, 2020, representatives of Carolina Solar, including Carson Harkrader, CEO, met virtually with **members of the Kentucky Agriculture Commissioner's staff (Tim Hughes, Gus Hebert and Keith Rogers)**, regarding the Flat Run Project and other projects.
- For the three business days prior to the September 17, 2020 public meeting, a **large (24 x 36 inch) printed map of the site layout** was displayed in the entrance to the Taylor County Courthouse in Campbellsville, along with information about the upcoming public meeting.
- On September 17, 2020, Carolina Solar hosted an **open public meeting** about the Flat Run Project. The meeting was advertised in the Greensburg Record Herald on September 3, 2020. The meeting took place on Zoom.com and was also projected onto a screen for in-person attendees at the Campbellsville office of the Lake Cumberland Area Development District. The meeting featured formal presentations by Carson Harkrader, CEO of Carolina Solar, Chris Jones, Manager of Project Development of Carolina Solar, a consulting electrical engineer, and a real estate valuation expert. Attendees were shown and invited to inspect enlarged satellite images showing the exact location of the proposed solar array. The meeting afforded attendees the opportunity to ask questions of the presenters. The video presentation shown at the public meeting can be viewed on the Carolina Solar website, at [www.carolinasolarenergy.com/projects-in-development-source/flat-run](http://www.carolinasolarenergy.com/projects-in-development-source/flat-run)

Attachment G  
Local Newspaper Article

# Energy company hosts virtual town hall

'Flat Run' solar farm on track for construction in 2023

JOHN L. MOORE  
reporter@cknj.com

Carolina Solar Energy held a virtual meeting last week to answer questions from the public about its plan for a solar farm in Taylor County.

The company, based in Durham, North Carolina, has been negotiating with landowners in the county to secure the rights to roughly 450 acres of land five miles northwest of the city of Campbellsville, with the top-left corner of the development starting at the intersection of Saloma Road and Hobson Road and the top-right corner ending at a property line several hundred feet away from Old Lebanon Road.

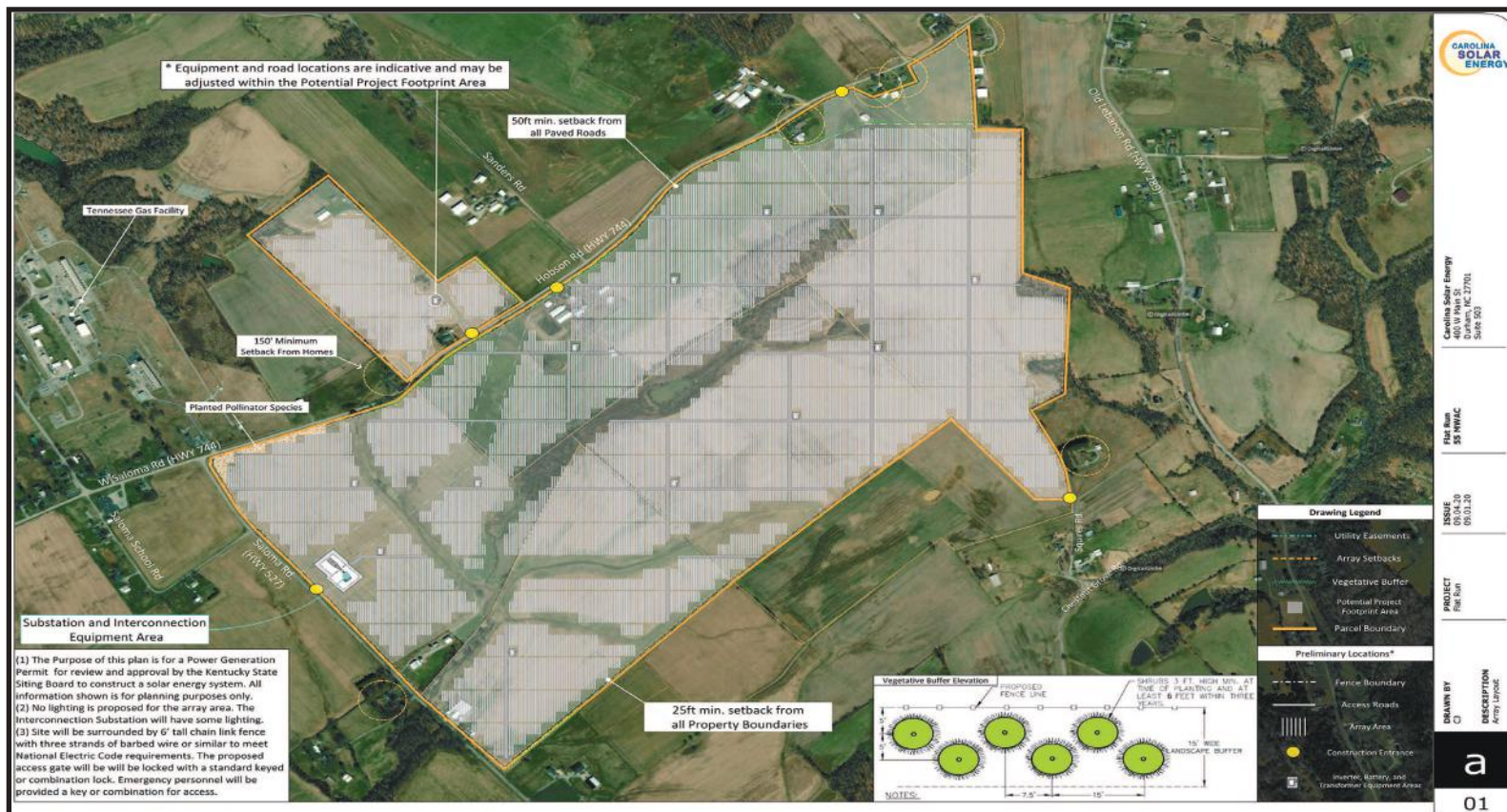
The company is calling the Taylor County development "Flat Run" because the majority of the land it intends to place the panels on is flat, which is ideal for solar energy production.

"We've been working on this project for a little over a year, and typically, around this stage of development, we would have a neighborhood dinner, where we would invite all of the neighbors and landowners adjacent to the project out to a local restaurant to get to know us, look over the site plans and ask questions," said Carson Harkrader, CEO of Carolina Solar Energy, during a pre-recorded video presentation played for attendees at the meeting's start. "But we aren't able to come to Kentucky right now, so we're making this video instead."

## Why Taylor County?

"The reason we are developing this project in Taylor County is that the East Kentucky Power Cooperative, which runs the transmission lines in this area, is part of what's known as the 'PJM Interconnection region,' which includes several other states like Virginia, Indiana and North Carolina," Harkrader explained.

EKPC is headquartered in Winchester, while PJM Interconnection, LLC, has its headquarters in Valley Forge, Pennsylvania, and has been in operation since 1927. It currently has more than a thousand member companies, including PPL Corpora-



tion, which owns Kentucky Utilities.

"Within the PJM Interconnection region, companies can buy and sell energy directly via private contract. There are many large businesses in this region, several on the Fortune 500, who have corporate mandates to procure renewable electricity to meet their company's electricity needs, and so those companies want to sign contracts directly with solar farms like this one to meet those corporate mandates."

PPL is among the many power companies seeking to reduce the greenhouse gas emissions that contribute to global climate change, with a corporate mandate to reduce its emissions by 80% by the year 2050.

While researchers and scientists are developing techniques for capturing emissions from fossil fuels like coal and natural gas in order to continue using them for power generation, renewable resources like sunlight are a safer, more reliable bet to reduce emissions in the short-term, meaning energy from solar farms is in high demand.

To be able to use energy from a solar farm, it has to be located in the region where the energy is going to be used, and it must be located near transmission lines that can carry the power. As such, Carolina Solar Energy has been in search of possible solar farm sites throughout the region, expanding its scope beyond North Carolina, where it currently has more than 40 solar farms in operation with two more planned.

The Flat Run project in Taylor County is just one of several solar farms the company intends to place in Kentucky.

The "Horseshoe Bend" project in Green County and the "Mount Olive Creek" project in Russell County are set to be completed in 2023, which is when Taylor County's solar farm is set to be completed, while "Glover Creek" and "Turkey Creek" are set to be completed in Summer Shade and Lancaster respectively in 2022.

## How will it work?

The stretch of land will have a 15-foot security fence surrounding the property, and within will sit rows of large solar panels which take in natural sunlight and convert it to electricity.

The panels are separated into clusters to allow maintenance workers to move through them, and are fastened onto racks that pivot to point towards the sun as it moves across the sky throughout the day in order to increase the amount of power they put out.

Once the solar panels have converted the light into electricity, it is delivered through wires to a piece of equipment called an inverter, which ensures the electricity being sent over local transmission lines is the proper voltage and converts it from direct current (DC) power to alternating current (AC) power, which is then used to power homes and businesses.

Several smaller inverter boxes will be installed near clusters of solar panels throughout the

acreage, and a substation will be located off of West Saloma Road so that utility workers can access it for maintenance purposes.

The panels are expected to generate 55 megawatts of energy per day, enough to power approximately 13,750 homes.

Carolina Solar Energy plans to maintain the solar farm until the panels reach their maximum lifespan of 40 years, at which point they intends to pack all of their equipment up, recycle as much of the spent solar panel materials as they can and then return the land to its prior use.

Chris Sandifer, a career electrical engineer from Duke Energy who now works with Carolina Solar Energy, stated during the video presentation that much of the material used in the solar panels could be recycled and the metal mounting racks would not harm the environment upon which they rest.

## Community impact

Aside from the benefits that come naturally from reducing carbon emissions, the main benefit of having a solar farm in Taylor County over the course of the next 40 years is property tax revenue.

Carolina Solar Energy will pay taxes on the property its solar panels sit on for as many years as the solar farm is still there, which directly benefits the county, especially the Taylor County School District and the Taylor County Sheriff's Office.

Harkrader stated that, typically, within the first

20 years of a solar farm's operation, it contributes a total of nearly \$1 million in property taxes to the county in which it is located.

In addition, the eight to 12 months of construction work has the potential to provide a hundred or so jobs to construction workers and sub-contractors, which they hope to be able to hire locally, and once the project is finished the company expects a handful of opportunities to be created for maintenance workers and landscapers.

"Obviously, it's better if workers are located in the community," said Harkrader. "Training is provided."

She also pointed out that any workers who come in from surrounding counties would be spending their money shopping, dining, renting hotel rooms and getting gas in Taylor County, which could prove to benefit local businesses.

Carolina Solar Energy also addressed some of the potential concerns that they've heard voiced from communities in the past. They company will be planting trees in key locations around the perimeter of the project area so that home owners should have less of an 'eyesore,' if that's something they're worried about, and they claim the noise is quiet enough and the nearby homes are far away enough that the sound should blend in with the usual background noise if it isn't too quiet to hear.

The company also hired Richard C. Kirkland Jr., of Kirkland Appraisals, LLC, head-

quartered in Raleigh, North Carolina, to review the impact of the solar farm on nearby property values. Kirkland is a certified general appraiser in the state of Kentucky who has studied the impact of solar farms on property values for several years, and he has found that there is no noticeable impact on home values when a solar farm is built adjacent to them.

He goes on to suggest that rather than having a negative impact on nearby residential properties, some homeowners actually prefer having a solar farm as their neighbor compared to other houses or a farm, which can generate noise from frequent traffic or loud occupants, create light pollution, kick up dust and, in some cases, result in odors, all of which are factors which could make a property less interesting to potential buyers.

Ultimately, Harkrader said her company's goal is to be a good neighbor, which is why they have spent the last year working with local stakeholders to get the project to a point where they felt confident discussing it publicly.

She encouraged anyone with questions or concerns to reach out to the company by leaving a message at 919-682-6822 — they're working from home due to COVID-19, but check their voicemail daily — or emailing info@carolinarsolarenergy.com.

A page on the company's website dedicated to the Flat Run project can be found online at bit.ly/3mJOet2.

# Durrett resigns as city engineer

Former city employee recently appointed as LaRue County Judge-Executive by Gov. Beshear

JOHN L. MOORE  
reporter@cknj.com

Blake Durrett, formerly Campbellsville's city engineer, was named judge-executive of LaRue County last week.

Josh Pedigo, director of public works, told the CKNJ in an interview that Durrett had actually left the city in a pretty good position — so much so that there are no immediate plans to fill this position.

"We had all of that stormwater stuff going on ... but that kind of dropped off when the city council passed that new ordinance a couple months ago, the one that made it so any project less than an acre doesn't have to have a permit to do the construction," Pedigo said.

That change decreased the city's workload dramatically, to the point there are only three or four construction projects left that need to work with the city to ensure their compliance with stormwater regulations.

"What we're looking for

is probably just a stormwater person. I don't know if we'll hire a city engineer, per se, maybe just someone part-time, or contracting it out as needed."

Campbellsville Municipal Water and Sewer already works with Monarch Engineering on relatively frequent projects like water line and sewer line extensions, which Pedigo says costs the city "pretty much nothing" because Monarch considers them "everyday things" given how little work goes into their planning.

Besides his work for the water company, Pedigo said Durrett had already completed all of the work he needed to do for planning the sports complex.

"That's pretty much a done deal; those guys out there know what they're supposed to finish and there's a deadline for them to finish by, so he would pretty much just go out there and make sure they were working."

Aside from designing and managing construction projects, Pedigo said Durrett's biggest job was

handling paperwork.

The sidewalk project currently underway on Lebanon Avenue was another thing Durrett had a hand in planning, but he left before he could file the paperwork necessary to prove the grant money the city used for the project was being used in a way that matches the terms of the grant.

Pedigo said that was hardly an issue, as he'd already been meaning to take over much of the routine paperwork that Durrett had to file to lessen his workload a little bit.

While the city may have a good handle on all of its projects so soon after his departure, Pedigo made it clear that was in large part thanks to all of the heavy lifting Durrett had already done.

One big example that stuck out to Pedigo was when the water company started installing flow monitors to keep track of water pressure in Miller Park.

Durrett was assisting them with finding trends in the data, and there was a ton to go through.

"You have 30 days' worth of numbers collected over the course of 24 hours in a day, and it's

a lot to decipher, but then we went with Wauford Engineering and they got sent all of the data that he'd helped with at that point," Pedigo said.

"He was a big asset to the city, and he helped out a lot. I'm not an engineer, so I don't know some of the stuff he knew, but he would answer any of the ques-

tions I or anyone else would bring him. It was a surprise to find out he was leaving, but I'm happy for him, I hope it works out for him and he's definitely missed."

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## Attachment H

### Public Meeting Notice Documentation



400 West Main, Suite 503 Durham, NC 27701  
919-682-6822 [www.carolinasolarenergy.com](http://www.carolinasolarenergy.com)

Name  
Address 1  
Address 2

September 1, 2020

**Re: Flat Run Solar Project – Invitation to Public Meeting**

Dear \_\_\_\_\_,

I'm writing to invite you to a public meeting that our company is hosting for a solar project we are developing on parcels adjacent to a parcel you own in Taylor County. We are hosting the public meeting to meet the neighbors of the project and members of the public, share information about the solar project, and provide you with an opportunity to ask us questions and share comments. The proposed solar project is located to the East and North of the intersection of Saloma Rd and Hobson Rd, approximately 5 miles Northwest of Campbellsville.

The meeting will be held at 5:30pm Central (6:30pm EDT) on Thursday, September 17, 2020. In order to help us adhere to CDC guidelines on social distancing, attendees are strongly encouraged to attend the meeting remotely via video link, by registering at the link shown on the next page. You will need an email address in order to register and login to the meeting, and you will be able to ask questions verbally or in writing live at the end of the meeting. The meeting will also be broadcast at the meeting room in the Lake Cumberland Area Development District Kentucky Career Center-Campbellsville, 1311-C East Broadway, Campbellsville, KY 42718. A limited number of spaces are available to attend the broadcast in-person, which will be subject to CDC guidelines on the wearing of masks and social distancing. If you would like to attend in person, please sign up by contacting Tyler Caron at the contact information on the next page. All of our presenters will participate remotely.

During the public meeting we will show a video with information on the project, our company, solar energy technology, real estate property values, and health and safety. You can also watch the video any time after September 13<sup>th</sup> by accessing it from our website at <https://www.carolinasolarenergy.com/projects-in-development-source/flat-run>.<sup>1</sup> There you will see a link to watch the video, as well as the layout map and additional information about the project.

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<sup>1</sup> (You can also access the page by visiting [www.carolinasolarenergy.com](http://www.carolinasolarenergy.com), clicking on our "Projects" page, scrolling down to the bottom, and clicking on the Flat Run project.)



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

If you would like to see a map of the solar project in person before the public meeting, a large printed map of the proposed layout will also be posted at the entrance to the Taylor County Courthouse at 203 N Court St, Campbellsville, KY 42718 for the 3 business days prior to the public meeting (September 13-16, 2020).

If you would like to speak with us about the project, please call Project Developer Tyler Caron at (984) 260-8038 or email us at [info@carolinasolarenergy.com](mailto:info@carolinasolarenergy.com).

We look forward to seeing you virtually at the public meeting!

Sincerely,

A handwritten signature in black ink, appearing to read "Carson Harkrader", written in a cursive style.

Carson Harkrader  
CEO

To attend the September 17<sup>th</sup> online Zoom public meeting, please register at:

<http://solar-projects.net/taylorcountysolar>

To attend the September 17<sup>th</sup> in-person broadcast of the public meeting  
at the Lake Cumberland Area Development District Kentucky Career Center-  
Campbellsville (limited spaces available):

Please call Tyler Caron at (984) 260-8038 or email [info@carolinasolarenergy.com](mailto:info@carolinasolarenergy.com).



400 West Main, Suite 503 Durham, NC 27701  
919-682-6822 [www.carolinasolarenergy.com](http://www.carolinasolarenergy.com)

### **Flat Run Solar Fact Sheet**

Flat Run Solar is a new proposed solar energy facility planned to the to the East and North of the intersection of Saloma Rd and Hobson Rd, approximately 5 miles Northwest of Campbellsville. This 55MW facility will generate enough electricity to power approximately 15,000 homes.

The solar technology used is photovoltaic, and the solar panels sit on racks that are up to 15 feet tall that rotate once per day on a North-South axis to track the sun throughout the day. The project will not generate any emissions, and there is no noise audible outside of the project boundary. A battery storage system will be connected to the facility to store electricity generated during the day for delivery to the grid at other times. The solar farm will be set back from property lines and a vegetative buffer will be planted in areas to help screen the facility from sight. The footprint of the facility is approximately 450 acres. Grass will be maintained under the panels with minimal amounts of concrete or gravel used throughout the facility. The facility will be surrounded by a locked security fence.

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

Flat Run Solar will include a strip of native pollinator plantings and pollinator trees in sections of the vegetative buffer.

Real estate appraisers have completed many matched-pair analyses on residential homes adjacent to solar farms. These matched-pair analyses compare the value of homes before and after the construction of a solar farm, and show that the construction of a solar farm has no discernable impact on the sales price of surrounding homes. A report from a Kentucky licensed professional appraiser detailing this analysis for Flat Run Solar is available on our website and on request.

## PUBLIC NOTICE

Flat Run Solar, LLC, is proposing to construct and operate a solar energy project in Taylor County, Kentucky. The proposed Flat Run Solar Project will be located on approximately 450 acres to the East and North of the intersection of Saloma Rd and Hobson Rd, approximately 5 miles Northwest of Campbellsville. A public meeting to inform the community about the project will take place on Thursday, September 17th, 2020 at 5:30PM Central (6:30PM EDT).

In order to comply with current guidelines for social distancing, the public meeting and information about the project will be accessible as follows:

- (1) All representatives and experts from Flat Run Solar, LLC making presentations at the public meeting will do so via a Zoom online meeting.
- (2) Members of the public will be able to view the public meeting live, on-line on Zoom, without cost, by registering with a valid email address at <http://solar-projects.net/taylorcountysolar>. Participants will be able to ask questions either orally or in writing at the end of the presentation.
- (3) Members of the public are strongly encouraged to participate via the online meeting. The public meeting will also be projected for viewing at the Lake Cumberland Area Development District Kentucky Career Center-Campbellsville, 1311-C East Broadway, Campbellsville, KY 42718 at which a representative of Flat Run Solar, LLC will be present and a mechanism will be provided for any in-person attendees to ask questions. In-person attendance at the public meeting will be consistent with guidelines and directives from the CDC and the Office of the Governor in effect at the time of the meeting, including, but not limited to, social distancing and the requirement that masks be properly worn at all times. In order to allow for social distancing, the number of attendees at the in-person meeting will be limited and spaces allocated to the public on a first-come, first-served basis. To sign up for a space at the in-person meeting please email [info@carolinasolarenergy.com](mailto:info@carolinasolarenergy.com) or call (984) 260-8038.
- (4) A large-scale layout map of the proposed project will be available to the public for review in the entrance to the Taylor County Courthouse at 203 N Court St, Campbellsville, KY 42718 for the three business days prior to the public meeting.
- (5) Information about the proposed project, including the layout map, is also available online at <https://www.carolinasolarenergy.com/projects-in-development-source/flat-run>

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

Anyone with questions about the September 17th public meeting for the Flat Run Solar Project may request information by emailing [info@carolinasolarenergy.com](mailto:info@carolinasolarenergy.com) or calling (984) 260-8038.

# Central Kentucky News-Journal CLASSIFIEDS



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## 300 Legals

**The 2019-2020 Taylor County Treasurers Settlement was presented to the Taylor County Fiscal Court at the July 14, 2020 Fiscal Court meeting. The 2019-2020 audit will be available in lieu of the full settlement. A copy is available at the County Treasurers Office during regular business hours for inspection.** Melissa Williams, Taylor County Treasurer

This advertisement was paid for by Taylor County Fiscal Court using taxpayer dollars in the amount of \$33.36.

## 300 Legals

**PUBLIC NOTICE** Flat Run Solar, LLC, is proposing to construct and operate a solar energy project in Taylor County, Kentucky. The proposed Flat Run Solar Project will be located on approximately 450 acres to the East and North of the intersection of Saloma Rd and Hobson Rd., approximately 5 miles Northwest of Campbellsville. A public meeting to inform the community about the project will take place on Thursday, September 17th, 2020 at 5:30PM Central (6:30PM EDT).

In order to comply with current guidelines for social distancing, the public meeting and information about the project will be accessible as follows:

(1) All representatives and experts from Flat Run Solar, LLC making presentations at the public meeting will do so via a Zoom online meeting. (2) Members of the public will be able to view the public meeting live on-line on Zoom, without cost, by registering with a valid email address at <http://solar.projects.net/kycountysolar>. Participants will be able to ask questions either orally or in writing at the end of the presentation. (3) Members of the public are strongly encouraged to participate via the online meeting. The public meeting will also be projected for viewing at the Lake Cumberland Area Development District Kentucky Career Center-Campbellsville, 1311-C East Broadway, Campbellsville, KY 42718 at which a representative of Flat Run Solar, LLC will be present and a mechanism will be provided for any in-person attendees to ask questions. In-person attendance at the public meeting will be consistent with guidelines and directives from the CDC and the Office of the Governor in effect at the time of the meeting, including, but not limited to, social distancing and the requirement that masks be properly worn at all times. In order to allow for social distancing, the number of attendees at the in-person meeting will be limited and spaces allocated to the public on a first-come, first-served basis. To sign up for a space at the in-person meeting please email [info@carolinassolarenergy.com](mailto:info@carolinassolarenergy.com) or call (984) 260-8038.

(4) A large-scale layout map of the proposed project will be available to the public for review in the entrance to the Taylor County Courthouse at 203 N Court St, Campbellsville, KY 42718 for the three business days prior to the public meeting. (5) Information about the proposed project, including the layout map, is also available online at <https://www.carolinassolarenergy.com/projects-in-development-source/flat-run>

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

Anyone with questions about the September 17th public meeting for the Flat Run Solar Project may request information by emailing [info@carolinassolarenergy.com](mailto:info@carolinassolarenergy.com) or calling (984) 260-8038.

## Position Available

The Campbellsville Housing & Redevelopment Authority has the following position(s) available:

## MAINTENANCE/HVAC EMPLOYEES

Accepting applications for a Maintenance Mechanic and HVAC licensed Maintenance employee. Position(s) include benefits package and a wage rate of \$12.00/hr. for Maintenance Mechanic and wage dependent on experience for HVAC licensed employee. Pre-employment drug test required.

**Applications and job descriptions can be picked up at the Campbellsville Housing Authority at 400 Ingram Ave., Campbellsville, KY.**

**Submit application to:** Campbellsville Housing & Redevelopment Authority, Attn: D.H., P.O. Box 597, Campbellsville, KY 42719.

**Applications will be accepted through September 18, 2020.**

The Campbellsville Housing & Redevelopment Authority is a drug free workplace and is an Equal Opportunity Employer.

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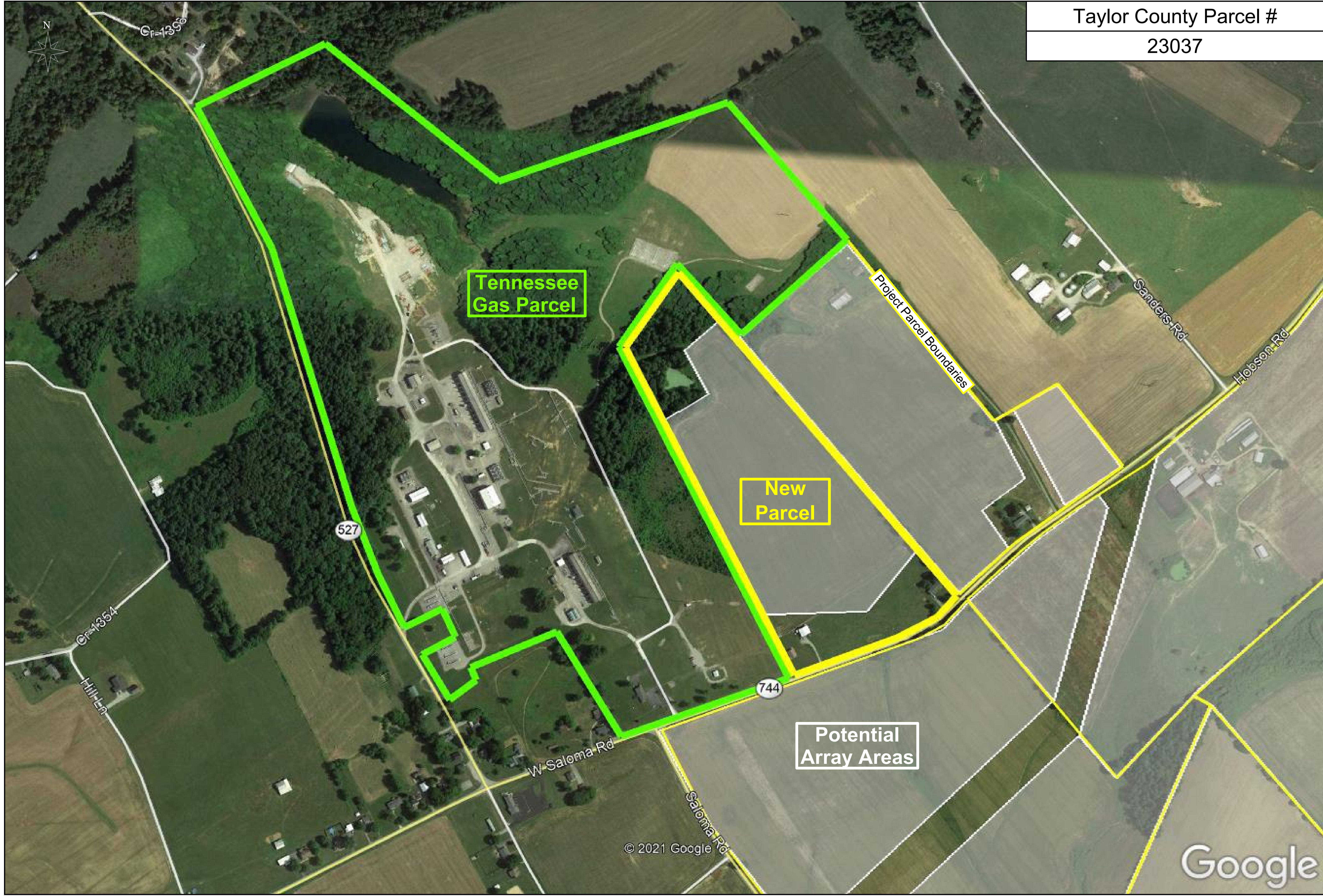
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Attachment I  
Map Showing New Parcel

Taylor County Parcel #

23037



Tennessee Gas Parcel

New Parcel

Potential Array Areas

Project Parcel Boundaries

Carolina Solar Energy  
400 W Main St  
Durham, NC 27701  
Suite 503

Adjacent Property

ISSUE  
03/09/21

PROJECT  
Flat Run

DRAWN BY  
CJ

© 2021 Google

Google

a

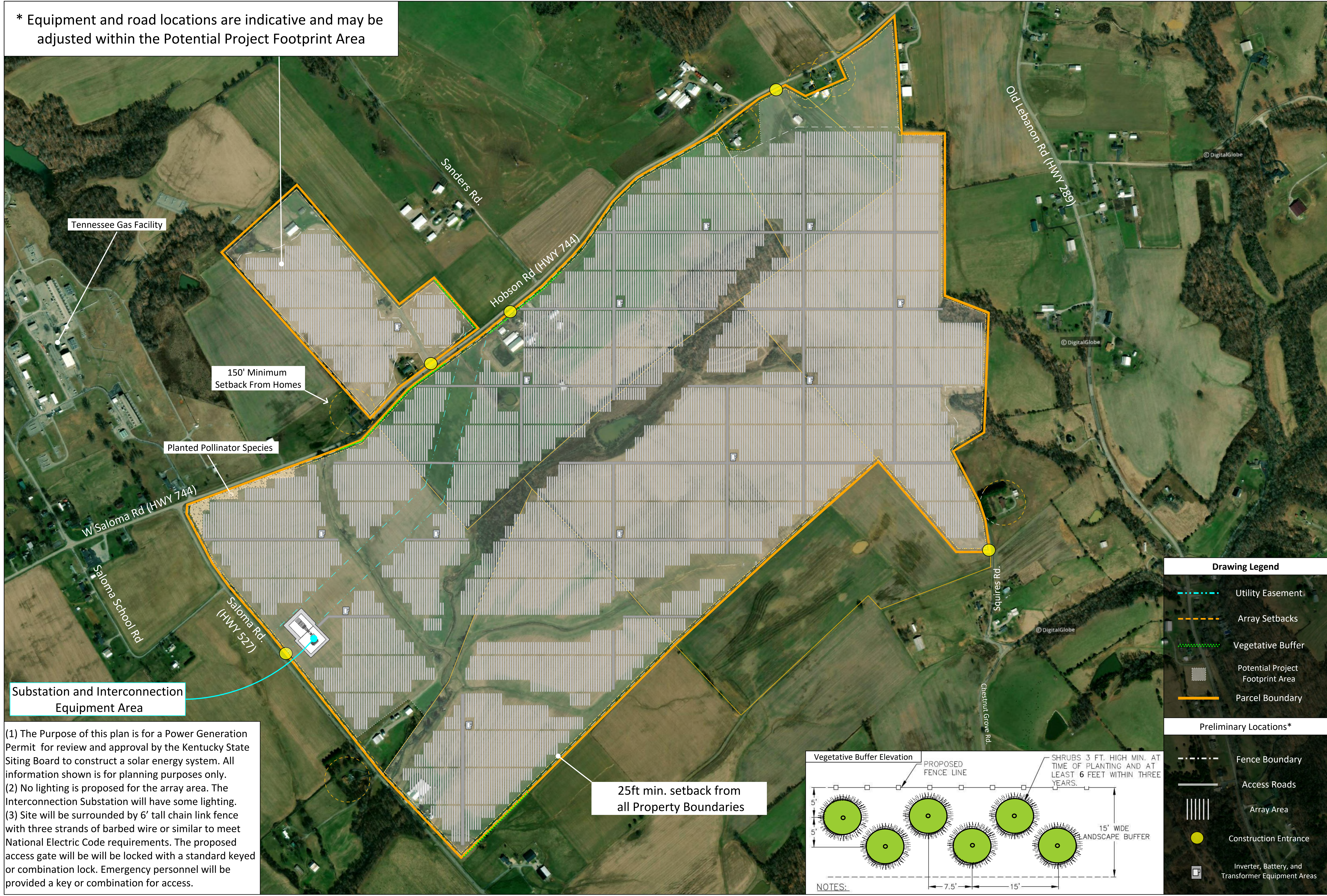
01



## Attachment J

Layout Map Presented at Public Meeting

\* Equipment and road locations are indicative and may be adjusted within the Potential Project Footprint Area

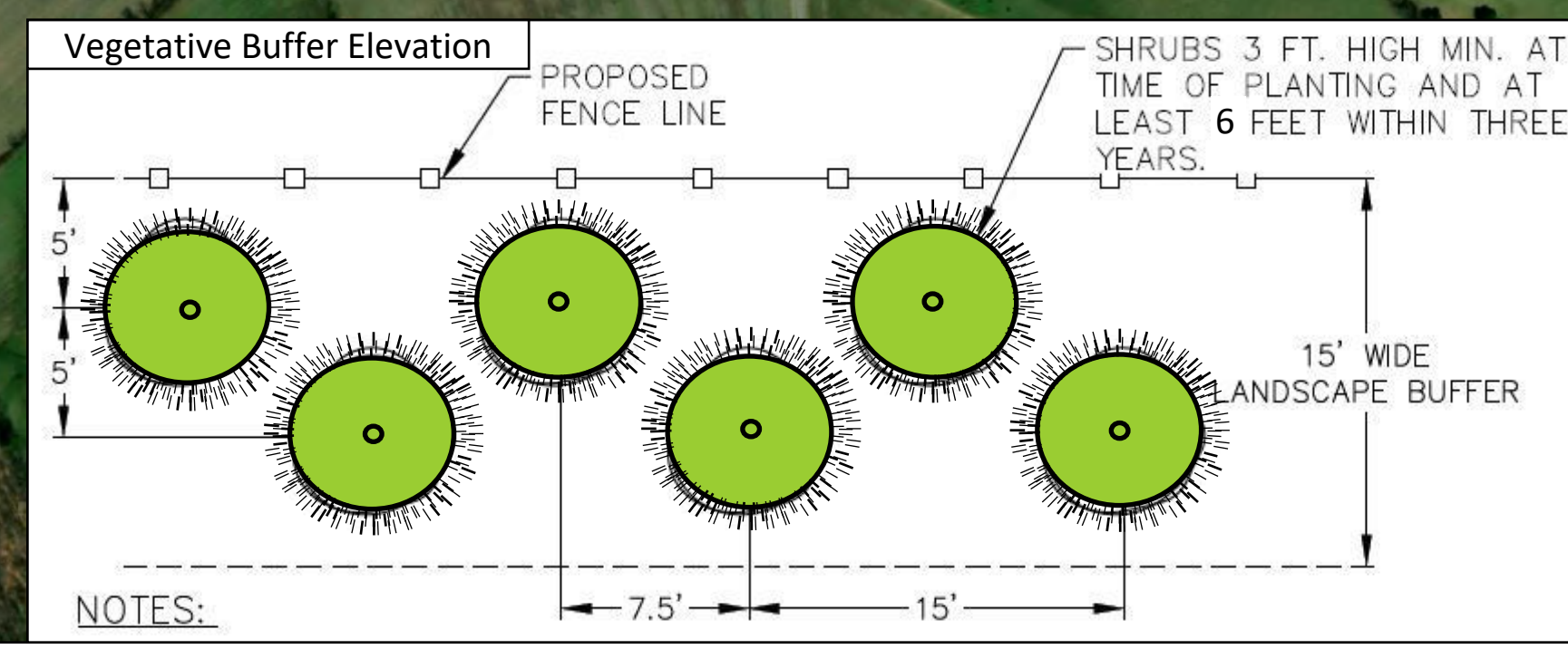


150' Minimum Setback From Homes

Planted Pollinator Species

Substation and Interconnection Equipment Area

25ft min. setback from all Property Boundaries



Drawing Legend	
	Utility Easement
	Array Setbacks
	Vegetative Buffer
	Potential Project Footprint Area
	Parcel Boundary

Preliminary Locations*	
	Fence Boundary
	Access Roads
	Array Area
	Construction Entrance
	Inverter, Battery, and Transformer Equipment Areas

(1) The Purpose of this plan is for a Power Generation Permit for review and approval by the Kentucky State Siting Board to construct a solar energy system. All information shown is for planning purposes only.  
 (2) No lighting is proposed for the array area. The Interconnection Substation will have some lighting.  
 (3) Site will be surrounded by 6' tall chain link fence with three strands of barbed wire or similar to meet National Electric Code requirements. The proposed access gate will be will be locked with a standard keyed or combination lock. Emergency personnel will be provided a key or combination for access.

Attachment K  
Letter from Tennessee Gas



Tennessee Gas Pipeline  
Company, L.L.C.  
a Kinder Morgan company

1380 Hobson Road, Campbellsville, Ky. 42718

March 3, 2021

Carson Harkrader  
Flat Run Solar, LLC  
c/o Carolina Solar Energy  
400 West Main Street, Suite 503  
Durham, NC 27701

Via Email: [charkrader@carolinasolarenergy.com](mailto:charkrader@carolinasolarenergy.com)

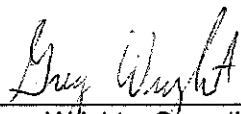
**Re: Flat Run Solar**

Dear Ms. Harkrader:

Thank you for your letter dated February 18, 2021, regarding the Flat Run Solar Project. We received prior notice of the public meeting held on September 17, 2020.

We do not object to your inclusion of the additional parcel identified in the letter and attached map. It has been explained to Tennessee Gas Pipeline that our access road nor pipeline right of way will be fenced off by the Flat Run Solar Project.

Thanks again for keeping us informed about the scope of your project.

 3/3/21  

---

Greg Wright – Operations Supervisor



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

February 18, 2021

Tennessee Gas  
Dee Mann

Dear Dee,

**Re: Flat Run Solar**

Thanks very much for your earlier help with our Turkey Creek project near Lancaster in Garrard County, KY which had a Tennessee Gas transmission line on the property. Your quick response on that project was very helpful!

I'm writing in regards to a different utility scale photovoltaic solar energy facility we call "Flat Run" that my company is planning on parcels to the East and South of the Tennessee Gas facility on West Saloma Road/Hobson Road (HWY 744) in Taylor County, Kentucky. A layout map of the Flat Run project showing the neighboring Tennessee Gas facility is attached to this letter.

We are preparing to apply to the Kentucky Siting Board for a permit that is required to operate Flat Run. Prior to submitting the permit application, we are required to hold a public meeting to provide neighbors of the facility, and the general community, with information about the solar project. We held that public meeting on September 17, 2020. An invitation to the public meeting was mailed to Tennessee Gas Pipeline Company, L.L.C., P.O. Box 2511, Houston, TX 77252-2511.

After the public meeting, a new landowner agreed to lease their land to the solar project. Because this parcel was added to the project after the public meeting, their property was not included in the layout map that we shared at the public meeting. The new landowner's property is located immediately to the East of the Tennessee Gas facility, and is outlined in red on the section of layout map shown on the next page.

I'm writing to seek Tennessee Gas's support for our addition of this new landowner into the solar project area, without holding a new public meeting. In accordance with Kentucky statute, we must wait 90 days after a public meeting to submit our application to the Siting Board, and we are ready to submit our application at the end of this month. A 90-day delay would pose a challenge to the project timeline, and so your help would be very greatly appreciated.

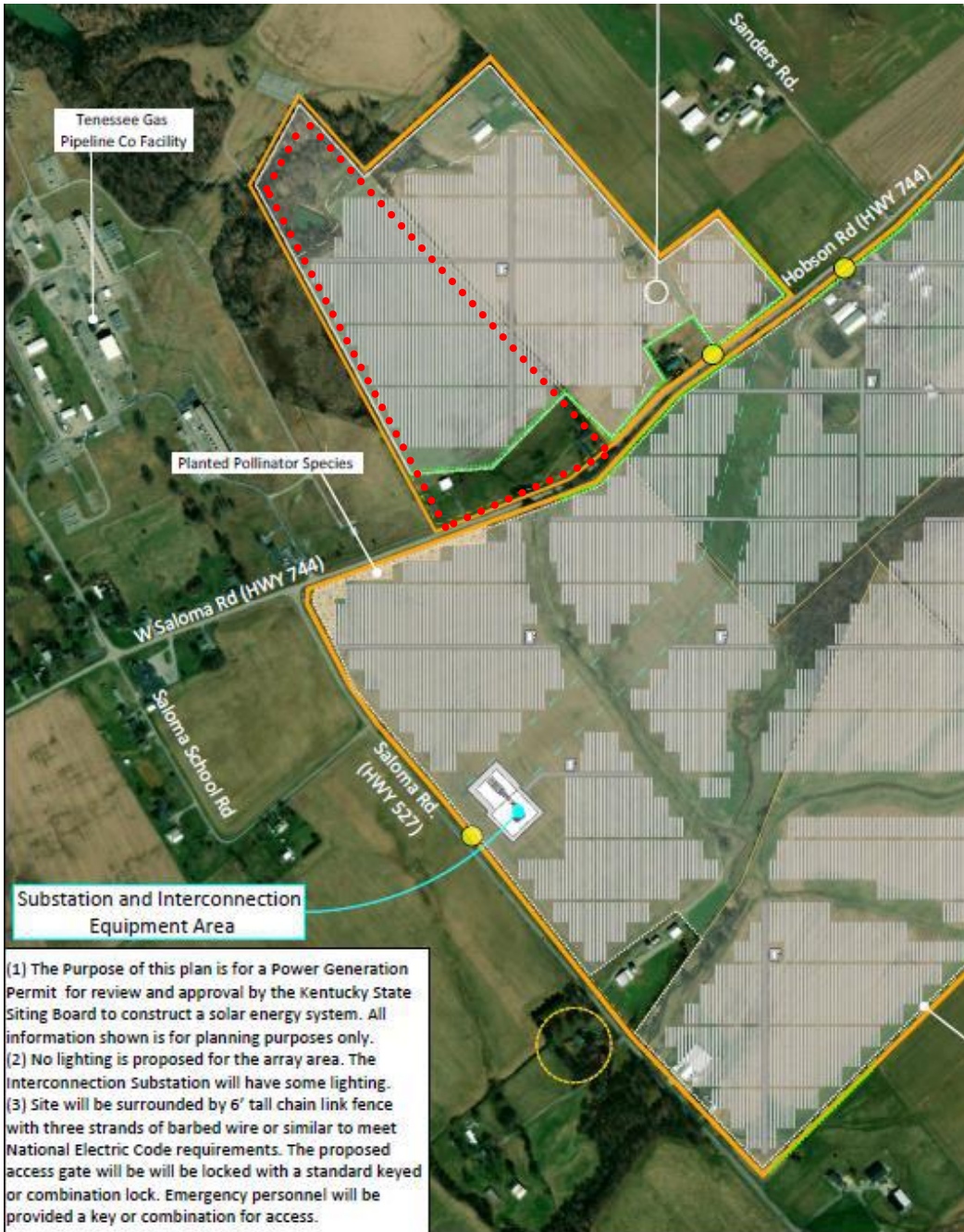
A letter stating that you do not oppose Flat Run Solar, LLC's anticipated application to the Kentucky Siting Board for a solar energy facility, that we have sent you information on this new parcel of land that we propose to include in the project, and that the notice we sent for the public meeting held September 17, 2020 is acceptable notice to Tennessee Gas of the project including the new parcel, will provide us with everything we think we will need. Draft suggested language for your letter is attached.

Again, I would be extremely grateful for your help in this matter. Thank you in advance!

Sincerely,



Carson Harkrader  
CEO



The parcel outlined in red is the new parcel which was not included in the layout map shown at our public meeting on September 17, 2020. The rest of the solar project, aside from the parcel outlined in red, is the same as what was presented in September.

Attachment L  
PJM Interconnection Feasibility Study  
Report



**Generation Interconnection  
Feasibility Study Report  
for  
Queue Project AF1-083  
GREEN COUNTY-SALOMA 161 KV  
33 MW Capacity / 55 MW Energy**

January, 2020



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## 1 Preface

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

In some instances a generator interconnection may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection, may also contribute to the need for the same network reinforcement. Cost allocation rules for network upgrades can be found in PJM Manual 14A, Attachment B. The possibility of sharing the reinforcement costs with other projects may be identified in the feasibility study, but the actual allocation will be deferred until the impact study is performed.

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

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

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

## 2 General

The Interconnection Customer (IC), has proposed a Solar generating facility located in Taylor County, KY. The installed facilities will have a total capability of 55 MW with 33 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is 12/31/2022. This study does not imply a TO commitment to this in-service date.

<b>Queue Number</b>	<b>AF1-083</b>
<b>Project Name</b>	GREEN COUNTY-SALOMA 161 KV
<b>State</b>	KY
<b>County</b>	Taylor
<b>Transmission Owner</b>	EKPC
<b>MFO</b>	55
<b>MWE</b>	55
<b>MWC</b>	33
<b>Fuel</b>	Solar
<b>Basecase Study Year</b>	2023

## 2.1 Point of Interconnection

AF1-083 will interconnect with the EKPC transmission system tapping the Green County to Saloma 161 kV line.

## 2.2 Cost Summary

The AF1-083 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	\$610,000
Direct Connection Network Upgrade	\$5,420,000
Non Direct Connection Network Upgrades	\$2,110,000
<b>Total Costs</b>	<b>\$8,140,000</b>

In addition, the AF1-083 project may be responsible for a contribution to the following costs

Description	Total Cost
System Upgrades	\$670,000

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

### 3 Transmission Owner Scope of Work

#### 4 Attachment Facilities

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

Description	Total Cost
Install necessary equipment (a 161 kV isolation switch structure and associated switch, plus interconnection metering, fiber-optic connection and telecommunications equipment, circuit breaker and associated switches, and relay panel) at the new North Taylor County switching station, to accept the IC generator lead line/bus (Estimated time to implement is 24 months)	\$610,000
<b>Total Attachment Facility Costs</b>	<b>\$610,000</b>

#### 5 Direct Connection Cost Estimate

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

Description	Total Cost
Construct a new 161 kV switching station (North Taylor County Switching) to facilitate connection of the IC solar generation project to the existing Green County-Saloma 161 kV line (Estimated time to implement is 24 months)	\$5,420,000
<b>Total Direct Connection Facility Costs</b>	<b>\$5,420,000</b>

## 6 Non-Direct Connection Cost Estimate

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

Description	Total Cost
Construct facilities to loop the existing Green County-Saloma 161 kV line into the new North Taylor County switching station (Estimated time to implement is 24 months)	\$560,000
Modify relays and/or settings at Green County substation for the existing line to the new North Taylor County switching station (Estimated time to implement is 9 months)	\$70,000
Modify relays and/or settings at Marion County substation for the existing line to the new North Taylor County switching station (Estimated time to implement is 9 months)	\$70,000
Install OPGW on the North Taylor County-Green County 161 kV line (11.5 miles) (Estimated time to implement is 16 months)	\$1,410,000
<b>Total Non-Direct Connection Facility Costs</b>	<b>\$2,110,000</b>

## 7 Incremental Capacity Transfer Rights (ICTRs)

Will be determined at a later study phase

### 1 Interconnection Customer Requirements

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

### 2 Revenue Metering and SCADA Requirements

#### 2.1 PJM Requirements

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

#### 2.2 EKPC Requirements

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

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

### 8 Revenue Metering and SCADA Requirements

#### 8.1 PJM Requirements

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

#### 8.2 EKPC Requirements

[Please enter any TO revenue metering and SCADA Requirements]



## 9 Network Impacts

The Queue Project AF1-083 was evaluated as a 55.0 MW (Capacity 33.0 MW) injection tapping the Green County to Saloma 161 kV line in the EKPC area. Project AF1-083 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF1-083 was studied with a commercial probability of 0.53. Potential network impacts were as follows:

# Summer Peak Load Flow

## 10 Generation Deliverability

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

None

## 11 Multiple Facility Contingency

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

None

## 12 Contribution to Previously Identified Overloads

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
40972325	342286	2SOMERSET	69.0	EKPC	342287	2SOMERSET KU	69.0	EKPC	1	EKPC_P7-1_COOP161 DBL2	tower	115.0	114.37	116.2	DC	4.66
40972225	342287	2SOMERSET KU	69.0	EKPC	324531	2FERGUSON SO	69.0	LGEE	1	EKPC_P7-1_COOP161 DBL2	tower	105.0	126.74	128.9	DC	5.02
40972262	342718	SCOOPER2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P7-1_LAURL161 DBL	tower	277.0	118.22	121.0	DC	7.68
41169579	342718	SCOOPER2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P1-2_LAURL DAM161	single	277.0	108.4	110.07	DC	4.62
41508731	342718	SCOOPER2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P4-5_LAURL S50-1024	breaker	277.0	118.19	120.96	DC	7.68

## 13 Potential Congestion due to Local Energy Deliverability

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

Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection

Request, a subsequent analysis will be performed which shall study all overload conditions associated with the overloaded element(s) identified.

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC DC	MW IMPACT
41169577	342718	SCOOPER2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P1-2_LAURL DAM161	operation	277.0	118.02	120.8	DC	7.7
41169580	342718	SCOOPER2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	Base Case	operation	219.0	100.53	103.54	DC	6.6

## 14 System Reinforcements

ID	Index	Facility	Upgrade Description	Cost
40972325	1	2SOMERSET 69.0 kV - 2SOMERSET KU 69.0 kV Ckt 1	r0080 (82) : Replace the 500 MCM copper jumpers at the Somerset substation using 750 MCM copper or equivalent Project Type : FAC Cost : \$10,000 Time Estimate : 6.0 Months	\$10,000
40972225	2	2SOMERSET KU 69.0 kV - 2FERGUSON SO 69.0 kV Ckt 1	r0077 (79) : LGEE violation (non PJM area). EKPC emergency rating is 152 MVA.  The external (i.e. Non-PJM) Transmission Owner, LGEE, will not evaluate this violation until the impact study phase. Project Type : FAC Cost : \$0 Time Estimate : 0.0 Months	\$0
41508731,41169579, 40972262	3	5SCOOPER2 161.0 kV - 5ELIHU 161.0 kV Ckt 1	r0076 (78) : Increase the maximum operating temperature of the 795 MCM ACSR conductor in the Cooper-Elihu 161 kV line section to 275 degrees F (6.7 miles) Project Type : FAC Cost : \$660,000 Time Estimate : 9.0 Months	\$660,000
			<b>TOTAL COST</b>	<b>\$670,000</b>

## 15 Flow Gate Details

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

---

## 15.1 Index 1

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
40972325	342286	2SOMERSET	EKPC	342287	2SOMERSET KU	EKPC	1	EKPC_P7-1_COOP 161 DBL 2	tower	115.0	114.37	116.2	DC	4.66

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

## 15.2 Index 2

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
40972225	342287	2SOMERSET KU	EKPC	324531	2FERGUSON SO	LGEE	1	EKPC_P7-1_COOP 161 DBL 2	tower	105.0	126.74	128.9	DC	5.02

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



### 15.3 Index 3

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
40972262	342718	SCOOPER2	EKPC	324141	SELIHU	LGEE	1	EKPC_P7-1_LAURL 161 DBL	tower	277.0	118.22	121.0	DC	7.68

Bus #	Bus	MW Impact
342900	1COOPER1 G	8.9959
342903	1COOPER2 G	17.5008
342945	1LAUREL 1G	5.4447
939131	AE1-143 C	10.0845
939132	AE1-143 E	4.9951
940041	AE1-246 C O1	9.0965
940042	AE1-246 E O1	4.4299
940051	AE1-247 C O1	15.4539
940052	AE1-247 E O1	7.6537
940831	AE2-071 C	2.5752
940832	AE2-071 E	1.7168
943701	AF1-038 C	6.6859
943702	AF1-038 E	4.4573
943821	AF1-050 C	4.5500
943822	AF1-050 E	3.0334
944151	AF1-083 C O1	4.6078
944152	AF1-083 E O1	3.0719
944511	AF1-116 C	11.3098
944512	AF1-116 E	7.5398
944981	AF1-163 C O1 (Withdrawn : 12/11/2019)	8.6420
944982	AF1-163 E O1 (Withdrawn : 12/11/2019)	5.0212
945381	AF1-203 C	1.4716
945382	AF1-203 E	0.9810
CPL	CPL	0.0886
WEC	WEC	0.0728
LGE-0012019	LGE-0012019	7.9453
CBM-W2	CBM-W2	6.5438
NY	NY	0.0912
CBM-W1	CBM-W1	2.5020
TVA	TVA	2.1098
O-066	O-066	1.0685
CBM-S2	CBM-S2	1.4912
CBM-S1	CBM-S1	10.2410
G-007	G-007	0.1654
MADISON	MADISON	1.5745
MEC	MEC	0.7802

# Affected Systems

## **16 Affected Systems**

### **16.1 LG&E**

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

### **16.2 MISO**

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

### **16.3 TVA**

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

### **16.4 Duke Energy Progress**

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

### **16.5 NYISO**

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

## 17 Contingency Descriptions

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

# Short Circuit

## 18 Short Circuit

The following Breakers are overduty

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

## Secondary Point of Interconnection

## 19 Network Impacts – secondary POI

The Queue Project AF1-083 was evaluated as a 55.0 MW (Capacity 33.0 MW) injection tapping the Green County to Saloma 161 kV line in the EKPC area. Project AF1-083 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF1-083 was studied with a commercial probability of 0.53. Potential network impacts were as follows:



# Summer Peak Load Flow

## 20 Generation Deliverability

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

None

## 21 Multiple Facility Contingency

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

None

## 22 Contribution to Previously Identified Overloads

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
40972325	342286	2SOMERSET	69.0	EKPC	342287	2SOMERSET KU	69.0	EKPC	1	EKPC_P7-1_COOP161 DBL2	tower	115.0	114.37	116.2	DC	4.65
40972225	342287	2SOMERSET KU	69.0	EKPC	324531	2FERGUSON SO	69.0	LGEE	1	EKPC_P7-1_COOP161 DBL2	tower	105.0	126.74	128.9	DC	5.02
40972262	342718	5SCOOPER2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P7-1_LAURL161 DBL	tower	277.0	118.22	120.99	DC	7.66
41169579	342718	5SCOOPER2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P1-2_LAURL DAM161	single	277.0	108.4	110.06	DC	4.61
41508731	342718	5SCOOPER2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P4-5_LAURL S50-1024	breaker	277.0	118.19	120.95	DC	7.66

## 23 Potential Congestion due to Local Energy Deliverability

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

Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection

Request, a subsequent analysis will be performed which shall study all overload conditions associated with the overloaded element(s) identified.

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC DC	MW IMPACT
41169577	342718	SCOOPER2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P1-2_LAURL DAM161	operation	277.0	118.02	120.79	DC	7.68
41169580	342718	SCOOPER2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	Base Case	operation	219.0	100.53	103.54	DC	6.59

## 24 Flow Gate Details

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

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## 24.1 Index 1

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
40972325	342286	2SOMERSET	EKPC	342287	2SOMERSET KU	EKPC	1	EKPC_P7-1_COOP 161 DBL 2	tower	115.0	114.37	116.2	DC	4.65

Bus #	Bus	MW Impact
342900	1COOPER1 G	4.4802
342903	1COOPER2 G	8.6895
939131	AE1-143 C	5.3375
939132	AE1-143 E	2.6438
940041	AE1-246 C O1	4.2392
940042	AE1-246 E O1	2.0644
940051	AE1-247 C O1	7.2019
940052	AE1-247 E O1	3.5668
940831	AE2-071 C	1.2979
940832	AE2-071 E	0.8652
943701	AF1-038 C	6.1942
943702	AF1-038 E	4.1294
943821	AF1-050 C	1.1896
943822	AF1-050 E	0.7931
944151	AF1-083 C O2	1.2571
944152	AF1-083 E O2	0.8381
944511	AF1-116 C	3.1726
944512	AF1-116 E	2.1150
944981	AF1-163 C O2 (Withdrawn : 12/11/2019)	2.1131
944982	AF1-163 E O2 (Withdrawn : 12/11/2019)	1.2278
945381	AF1-203 C	0.3931
945382	AF1-203 E	0.2620
LGEE	LGEE	0.0120
CPL	CPL	0.0304
WEC	WEC	0.0479
LGE-0012019	LGE-0012019	5.0391
CBM-W2	CBM-W2	3.5463
NY	NY	0.0431
CBM-W1	CBM-W1	1.6763
TVA	TVA	1.0696
O-066	O-066	0.5242
CBM-S2	CBM-S2	0.5953
CBM-S1	CBM-S1	5.3335
G-007	G-007	0.0811
MADISON	MADISON	0.7540
MEC	MEC	0.4481

## 24.2 Index 2

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
40972225	342287	2SOMERSET KU	EKPC	324531	2FERGUSON SO	LGEE	1	EKPC_P7-1_COOP 161 DBL 2	tower	105.0	126.74	128.9	DC	5.02

Bus #	Bus	MW Impact
342900	1COOPER1 G	4.3847
342903	1COOPER2 G	8.5042
939131	AE1-143 C	6.4726
939132	AE1-143 E	3.2061
940041	AE1-246 C O1	5.3429
940042	AE1-246 E O1	2.6019
940051	AE1-247 C O1	9.0769
940052	AE1-247 E O1	4.4954
940831	AE2-071 C	1.6418
940832	AE2-071 E	1.0946
943701	AF1-038 C	8.4535
943702	AF1-038 E	5.6357
943821	AF1-050 C	1.3743
943822	AF1-050 E	0.9162
944151	AF1-083 C O2	1.3560
944152	AF1-083 E O2	0.9040
944511	AF1-116 C	7.2590
944512	AF1-116 E	4.8394
944981	AF1-163 C O2 (Withdrawn : 12/11/2019)	2.6633
944982	AF1-163 E O2 (Withdrawn : 12/11/2019)	1.5474
945381	AF1-203 C	0.4972
945382	AF1-203 E	0.3315
CPLE	CPLE	0.0642
WEC	WEC	0.0617
LGE-0012019	LGE-0012019	5.1436
CBM-W2	CBM-W2	4.6028
NY	NY	0.0442
CBM-W1	CBM-W1	2.1893
TVA	TVA	1.4140
O-066	O-066	0.5174
CBM-S2	CBM-S2	1.0057
CBM-S1	CBM-S1	6.9779
G-007	G-007	0.0801
MADISON	MADISON	0.9919
MEC	MEC	0.5800

### 24.3 Index 3

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
41508731	342718	SCOOPER2	EKPC	324141	SELIHU	LGEE	1	EKPC_P4-5_LAURL S50-1024	breaker	277.0	118.19	120.95	DC	7.66

Bus #	Bus	MW Impact
342900	1COOPER1 G	8.9959
342903	1COOPER2 G	17.5008
342945	1LAUREL 1G	5.4447
939131	AE1-143 C	10.0845
939132	AE1-143 E	4.9951
940041	AE1-246 C O1	9.0965
940042	AE1-246 E O1	4.4299
940051	AE1-247 C O1	15.4539
940052	AE1-247 E O1	7.6537
940831	AE2-071 C	2.5752
940832	AE2-071 E	1.7168
943701	AF1-038 C	6.6859
943702	AF1-038 E	4.4573
943821	AF1-050 C	4.5500
943822	AF1-050 E	3.0334
944151	AF1-083 C O2	4.5985
944152	AF1-083 E O2	3.0657
944511	AF1-116 C	11.3098
944512	AF1-116 E	7.5398
944981	AF1-163 C O2 (Withdrawn : 12/11/2019)	8.5554
944982	AF1-163 E O2 (Withdrawn : 12/11/2019)	4.9710
945381	AF1-203 C	1.4716
945382	AF1-203 E	0.9810
CPL	CPL	0.0886
WEC	WEC	0.0728
LGE-0012019	LGE-0012019	7.9453
CBM-W2	CBM-W2	6.5438
NY	NY	0.0912
CBM-W1	CBM-W1	2.5020
TVA	TVA	2.1098
O-066	O-066	1.0685
CBM-S2	CBM-S2	1.4912
CBM-S1	CBM-S1	10.2410
G-007	G-007	0.1654
MADISON	MADISON	1.5745
MEC	MEC	0.7802

# Affected Systems



## **25 Affected Systems**

### **25.1 LG&E**

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

### **25.2 MISO**

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

### **25.3 TVA**

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

### **25.4 Duke Energy Progress**

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

### **25.5 NYISO**

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

## 26 Contingency Descriptions

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

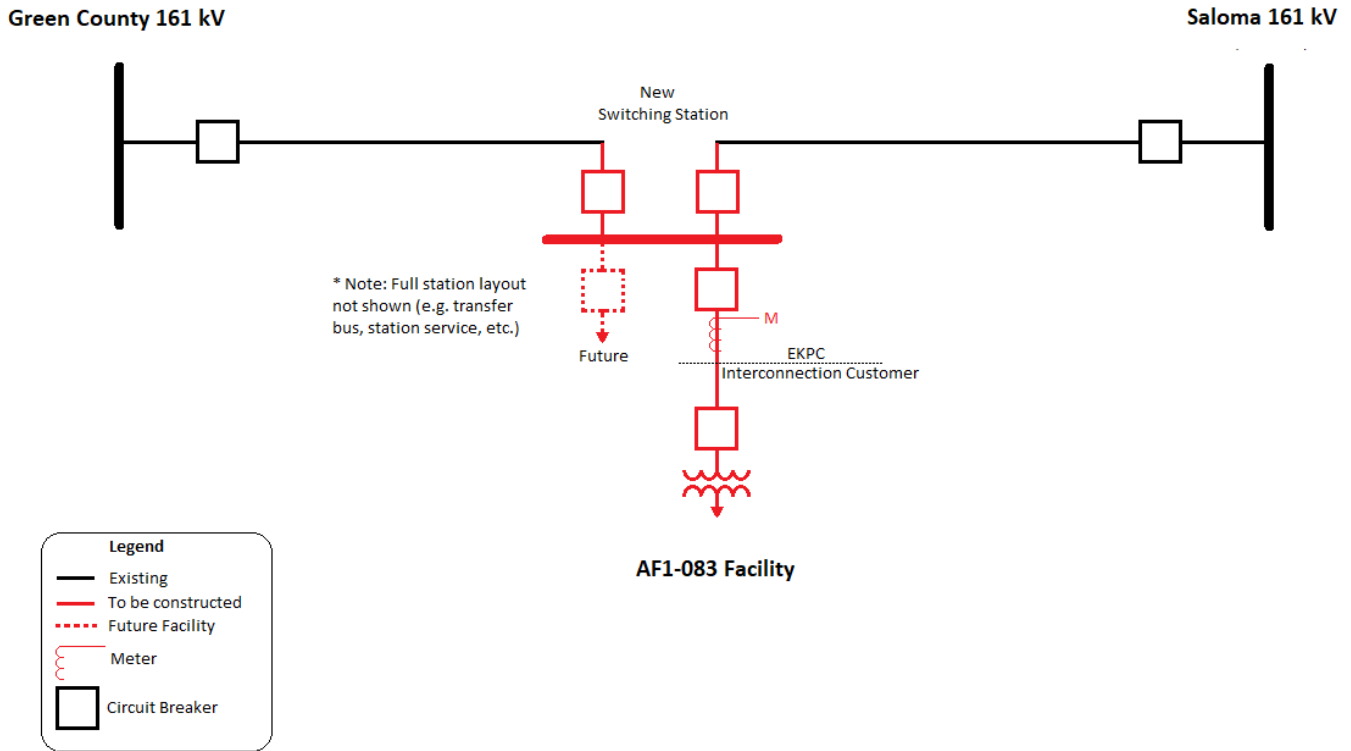
# Short Circuit

## 27 Short Circuit

The following Breakers are overduty

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

## 28 Single Line Diagram



Attachment M  
PJM Interconnection System  
Impact Study Report



**Generation Interconnection  
System Impact Study Report  
for  
Queue Project AF1-083  
GREEN COUNTY-SALOMA 161 KV  
33 MW Capacity / 55 MW Energy**

August, 2020

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## 1 Introduction

This System Impact Study has been prepared in accordance with the PJM Open Access Transmission Tariff, 205, as well as the System Impact Study Agreement between the Interconnection Customer (IC), and PJM Interconnection, LLC (PJM), Transmission Provider (TP). The Interconnected Transmission Owner (ITO) is EKPC.

## 2 Preface

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

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

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

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

### 3 General

The Interconnection Customer (IC), has proposed a Solar; Storage generating facility located in Taylor County, West Virginia. The installed facilities will have a total capability of 55 MW with 33 MW of this output being recognized by PJM as Capacity.

The proposed in-service date for this project is December 31, 2022. This study does not imply a TO commitment to this in-service date.

The objective of this System Impact Study is to determine budgetary cost estimates and approximate construction timelines for identified transmission facilities required to connect the proposed generating facilities to the ITO transmission system. These reinforcements include the Attachment Facilities, Local Upgrades, and Network Upgrades required for maintaining the reliability of the ITO transmission system.

<b>Queue Number</b>	<b>AF1-083</b>
<b>Project Name</b>	<b>GREEN COUNTY-SALOMA 161 KV</b>
<b>State</b>	West Virginia
<b>County</b>	Taylor
<b>Transmission Owner</b>	EKPC
<b>MFO</b>	55
<b>MWE</b>	55
<b>MWC</b>	33
<b>Fuel</b>	Solar; Storage
<b>Basecase Study Year</b>	2023

Any new service customers who can feasibly be commercially operable prior to June 1st of the basecase study year are required to request interim deliverability analysis.

## 4 Point of Interconnection

AF1-083 will interconnect with the EKPC transmission system tapping the Green County to Saloma 161 kV line.

## 5 Cost Summary

The AF1-083 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	\$610,000
Direct Connection Network Upgrade	\$5,420,000
Non Direct Connection Network Upgrades	\$2,110,000
Allocation for New System Upgrades*	\$0
Contribution to Previously Identified Upgrades*	\$0
<b>Total Costs</b>	<b>\$8,140,000</b>

\*As your project progresses through the study process and other projects modify their request or withdraw, then your cost allocation could change.

This cost excludes a Federal Income Tax Gross Up charges. This tax may or may not be charged based on whether this project meets the eligibility requirements of IRS Notice 88-129. If at a future date it is determined that the Federal Income Tax Gross charge is required, the Transmission Owner shall be reimbursed by the Interconnection Customer for such taxes.

Note 1: PJM Open Access Transmission Tariff (OATT) section 217.3A outline cost allocation rules. The rules are further clarified in PJM Manual 14A Attachment B. The allocation of costs for a network upgrade will start with the first Queue project to cause the need for the upgrade. Later queue projects will receive cost allocation contingent on their contribution to the violation and are allocated to the queues that have not closed less than 5 years following the execution of the first Interconnection Service Agreement which identifies the need for this upgrade.

Note 2: For customers with System Reinforcements listed: If your present cost allocation to a System Reinforcement indicates \$0, then please be aware that as changes to the interconnection process occur, such as prior queued projects withdrawing from the queue, reducing in size, etc, the cost responsibilities can change and a cost allocation may be assigned to your project. In addition, although your present cost allocation to a System Reinforcement is presently \$0, your project may need this system reinforcement completed to be deliverable to the PJM system. If your project comes into service prior to completion of the system reinforcement, an interim deliverability study for your project will be required.

## 6 Transmission Owner Scope of Work

### 6.1 Attachment Facilities

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

Description	Total Cost
Install necessary equipment (a 161 kV isolation switch structure and associated switch, plus interconnection metering, fiber-optic connection and telecommunications equipment, circuit breaker and associated switches, and relay panel) at the new North Taylor County switching station, to accept the IC generator lead line/bus (Estimated time to implement is 24 months)	\$610,000
<b>Total Attachment Facility Costs</b>	<b>\$610,000</b>

### 6.2 Direct Connection Cost Estimate

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

Description	Total Cost
Construct a new 161 kV switching station (North Taylor County Switching) to facilitate connection of the IC solar generation project to the existing Green County-Saloma 161 kV line (Estimated time to implement is 24 months)	\$5,420,000
<b>Total Direct Connection Facility Costs</b>	<b>\$5,420,000</b>

### 6.3 Non-Direct Connection Cost Estimate

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

Description	Total Cost
Construct facilities to loop the existing Green County-Saloma 161 kV line into the new North Taylor County switching station (Estimated time to implement is 24 months)	\$560,000

Description	Total Cost
Modify relays and/or settings at Green County substation for the existing line to the new North Taylor County switching station (Estimated time to implement is 9 months)	\$70,000
Modify relays and/or settings at Marion County substation for the existing line to the new North Taylor County switching station (Estimated time to implement is 9 months)	\$70,000
Install OPGW on the North Taylor County-Green County 161 kV line (11.5 miles) (Estimated time to implement is 16 months)	\$1,410,000
<b>Total Non-Direct Connection Facility Costs</b>	<b>\$2,110,000</b>

## 7 Incremental Capacity Transfer Rights (ICTRs)

None

## 8 Interconnection Customer Requirements

It is understood that the Interconnection Customer is responsible for all costs associated with this interconnection. The costs above are reimbursable to the Interconnected Transmission Owner. The cost of the Interconnection Customer's generating plant and the costs for the line connecting the generating plant to the Interconnected Transmission Owner's Transmission circuit are not included in this report; these are assumed to be the Interconnection Customer's responsibility.

The Generation Interconnection Agreement does not in or by itself establish a requirement for the Interconnected Transmission Owner to provide power for consumption at the developer's facilities. A separate agreement may be reached with the local utility that provides service in the area to ensure that infrastructure is in place to meet this demand and proper metering equipment is installed. It is the responsibility of the developer to contact the local service provider to determine if a local service agreement is required.

Requirement from the PJM Open Access Transmission Tariff:

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

## 9 Revenue Metering and SCADA Requirements

### 9.1 PJM Requirements

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

### 9.2 Meteorological Data Reporting Requirements

The solar generation facility shall provide the Transmission Provider with site-specific meteorological data including:

- Back Panel temperature (Fahrenheit)
- Irradiance (Watts/meter<sup>2</sup>)
- Ambient air temperature (Fahrenheit) – (Accepted, not required)
- Wind speed (meters/second) – (Accepted, not required)
- Wind direction (decimal degrees from true north) – (Accepted, not required)

### 9.3 Interconnected Transmission Owner Requirements

The IC will be required to comply with all Interconnected Transmission Owner's revenue metering requirements for generation interconnection customers located at the following link:

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



## 10 Summer Peak Analysis

The Queue Project AF1-083 was evaluated as a 55.0 MW (Capacity 33.0 MW) injection tapping the Green County to Saloma 161 kV line (specifically the Taylor County Jct – Saloma Tap 161 kV line segment) in the EKPC area. Project AF1-083 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF1-083 was studied with a commercial probability of 100.0 %. Potential network impacts were as follows:

### 10.1 Generation Deliverability

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

None

### 10.2 Multiple Facility Contingency

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

None

### 10.3 Contribution to Previously Identified Overloads

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC/D C	MW IMPAC T
40972325	342286	2SOMERSET	69.0	EKPC	342287	2SOMERSET KU	69.0	EKPC	1	EKPC_P7-1_COOP161 DBL2	tower	115.0	106.59	110.14	AC	4.66
40972225	342287	2SOMERSET KU	69.0	EKPC	324531	2FERGUSON SO	69.0	LGEE	1	EKPC_P7-1_COOP161 DBL2	tower	105.0	117.59	121.74	AC	5.03
40972262	342718	5SCOOPER2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P7-1_LAURL161 DBL	tower	277.0	108.76	111.6	AC	7.68
41169579	342718	5SCOOPER2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P1-2_LAURL DAM161	single	277.0	101.41	103.12	AC	4.62
41508731	342718	5SCOOPER2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P4-5_LAURL S50-1024	breaker	277.0	108.76	111.61	AC	7.68
41508732	342718	5SCOOPER2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P4-5_LAURL S50-1014	breaker	277.0	108.45	111.3	AC	7.69
41781821	342718	5SCOOPER2	161.0	EKPC	324141	5ELIHU	161.0	LGEE	1	EKPC_P2-2_LAURE L CO 161	bus	277.0	108.45	111.3	AC	7.69

## 10.4 Steady-State Voltage Requirements

None

## 10.5 Potential Congestion due to Local Energy Deliverability

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

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

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADIN G %	POST PROJECT LOADIN G %	AC DC	MW IMPACT
41169577	342718	SCOOPER2	161.0	EKPC	324141	SELIHU	161.0	LGEE	1	EKPC_P1 - 2_LAURL DAM161	operation	277.0	108.44	111.3	AC	7.7

## 10.6 System Reinforcements

ID	Idx	Facility	Upgrade Description	Cost	Cost Allocated to AF1-083	Upgrade Number
40972325	4	2SOMERSET 69.0 kV - 2SOMERSET KU 69.0 kV Ckt 1	Upgrade the existing 500 MCM CU bus jumpers to 750 MCM CU. 6 month time estimate. New expected SE rating after the upgrade will be 152 MVA.  This line overload is presently driven by a prior queue cycle.	\$250 K	\$0	N6232
40972225	5	2SOMERSET KU 69.0 kV - 2FERGUSON SO 69.0 kV Ckt 1	EKPC: SE rating is 152 MVA. No EKPC upgrade required.  LG&E: SE rating is 83 MVA. A LG&E affected system study will be required to determine if LG&E upgrades are required on this line. Preliminary upgrade, if determined to be required, is to replace terminal equipment at a cost estimate of \$897.613 K.	\$0	\$0	N/A
41781821,4150 8731,41169579, 40972262,4150 8732	6	5SCOOPER2 161.0 kV - 5ELIHU 161.0 kV Ckt 1	EKPC: EKPC SE rating is 298 MVA. Increase the operating temperature of the 795 MCM ACSR conductor from 212F to 275F (6.7 miles). EKPC's new SE rating would be 371 MVA. Cost estimate \$660K. PJM Network Upgrade N6238.  Note: this EKPC upgrade may be dependent upon whether LG&E determines if an LG&E end upgrade is required on this line since the equipment which limits the overall line rating is LG&E equipment. This will be determined with a LG&E affected system study.  LG&E: LG&E SE rating is 277 MVA. A LG&E affected system study will be required to determine if LG&E upgrades are required on this line. Preliminary upgrade, if determined to be required, is to upgrade the line conductor at a cost estimate of \$28.083 K. New LG&E expected SE rating to be 335 MVA.	\$660 K	\$0	N6238
<b>Total Cost</b>				<b>\$860,000</b>	<b>\$0</b>	

Note : For customers with System Reinforcements listed: If your present cost allocation to a System Reinforcement indicates \$0, then please be aware that as changes to the interconnection process occur, such as prior queued projects withdrawing from the queue, reducing in size, etc, the cost responsibilities can change and a cost allocation may be assigned to your project. In addition, although your present cost allocation to a System Reinforcement is presently \$0, your project may need this system reinforcement completed to be deliverable to the PJM system. If your project comes into service prior to completion of the system reinforcement, an interim deliverability study for your project will be required.

## 10.7 Flow Gate Details

The following indices contain additional information about each facility presented in the body of the report. For each index, a description of the flowgate and its contingency was included for convenience. The intent of the indices is to provide more details on which projects/generators have contributions to the flowgate in question. All New Service Queue Requests, through the end of the Queue under study, that are contributors to a flowgate will be listed in the indices. Please note that there may be contributors that are subsequently queued after the queue under study that are not listed in the indices. Although this information is not used "as is" for cost allocation purposes, it can be used to gage the impact of other projects/generators. It should be noted the project/generator MW contributions presented in the body of the report are Full MW Impact contributions which are also noted in the indices column named "Full MW Impact", whereas the loading percentages reported in the body of the report, take into consideration the PJM Generator Deliverability Test rules such as commercial probability of each project as well as the ramping impact of "Adder" contributions. The MW Impact found and used in the analysis is shown in the indices column named "Gendeliv MW Impact".

**10.7.1 Index 1**

None.

**10.7.2 Index 2**

None.

**10.7.3 Index 3**

None.

10.7.4 Index 4

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
40972325	342286	2SOMERSET	EKPC	342287	2SOMERSET KU	EKPC	1	EKPC_P7- 1_COOP 161 DBL 2	tower	115.0	106.59	110.14	AC	4.66

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
342900	1COOPER1 G	5.6852	50/50	5.6852
342903	1COOPER2 G	11.0266	50/50	11.0266
939131	AE1-143 C	5.3386	Adder	6.28
939132	AE1-143 E	2.6443	Adder	3.11
940041	AE1-246 C O1	4.2405	Adder	4.99
940042	AE1-246 E O1	2.0651	Adder	2.43
940831	AE2-071 C	1.2982	Adder	1.53
940832	AE2-071 E	0.8655	Adder	1.02
943701	AF1-038 C	6.1949	50/50	6.1949
943702	AF1-038 E	4.1299	50/50	4.1299
943821	AF1-050 C	2.2451	Adder	2.64
943822	AF1-050 E	1.4967	Adder	1.76
944151	AF1-083 C O1	2.3786	Adder	2.8
944152	AF1-083 E O1	1.5858	Adder	1.87
944511	AF1-116 C	5.9872	Adder	7.04
944512	AF1-116 E	3.9915	Adder	4.7
945381	AF1-203 C	0.7418	Adder	0.87
945382	AF1-203 E	0.4946	Adder	0.58
WEC	WEC	0.0482	Confirmed LTF	0.0482
LGEE	LGEE	0.0131	Confirmed LTF	0.0131
CPLE	CPLE	0.0318	Confirmed LTF	0.0318
LGE-0012019	LGE-0012019	5.0391	LTF	5.0391
CBM-W2	CBM-W2	3.5872	Confirmed LTF	3.5872
NY	NY	0.0426	Confirmed LTF	0.0426
TVA	TVA	1.0724	Confirmed LTF	1.0724
O-066	O-066	0.5040	Confirmed LTF	0.5040
CBM-S2	CBM-S2	0.6069	Confirmed LTF	0.6069
CBM-S1	CBM-S1	5.3506	Confirmed LTF	5.3506
G-007	G-007	0.0780	Confirmed LTF	0.0780
MADISON	MADISON	0.7560	Confirmed LTF	0.7560
MEC	MEC	0.4513	Confirmed LTF	0.4513
CBM-W1	CBM-W1	1.7014	Confirmed LTF	1.7014

## 10.7.5 Index 5

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
40972225	342287	2SOMERSET	EKPC	324531	2FERGUSON	LGEE	1	EKPC_P7-1_COOP 161 DBL 2	tower	105.0	117.59	121.74	AC	5.03

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
342900	1COOPER1 G	5.5640	50/50	5.5640
342903	1COOPER2 G	10.7915	50/50	10.7915
939131	AE1-143 C	6.4733	50/50	6.4733
939132	AE1-143 E	3.2064	50/50	3.2064
940041	AE1-246 C O1	5.3436	Adder	6.29
940042	AE1-246 E O1	2.6022	Adder	3.06
940831	AE2-071 C	1.6422	Adder	1.93
940832	AE2-071 E	1.0948	Adder	1.29
943701	AF1-038 C	8.4539	50/50	8.4539
943702	AF1-038 E	5.6359	50/50	5.6359
943821	AF1-050 C	2.5937	Adder	3.05
943822	AF1-050 E	1.7291	Adder	2.03
944151	AF1-083 C O1	2.5632	Adder	3.02
944152	AF1-083 E O1	1.7088	Adder	2.01
944511	AF1-116 C	7.2598	50/50	7.2598
944512	AF1-116 E	4.8398	50/50	4.8398
945381	AF1-203 C	0.9384	Adder	1.1
945382	AF1-203 E	0.6256	Adder	0.74
WEC	WEC	0.0621	Confirmed LTF	0.0621
CPLE	CPLE	0.0648	Confirmed LTF	0.0648
LGE-0012019	LGE-0012019	5.1436	LTF	5.1436
CBM-W2	CBM-W2	4.6437	Confirmed LTF	4.6437
NY	NY	0.0431	Confirmed LTF	0.0431
TVA	TVA	1.4154	Confirmed LTF	1.4154
O-066	O-066	0.5107	Confirmed LTF	0.5107
CBM-S2	CBM-S2	1.0115	Confirmed LTF	1.0115
CBM-S1	CBM-S1	6.9864	Confirmed LTF	6.9864
G-007	G-007	0.0790	Confirmed LTF	0.0790
MADISON	MADISON	0.9959	Confirmed LTF	0.9959
MEC	MEC	0.5816	Confirmed LTF	0.5816
CBM-W1	CBM-W1	2.2143	Confirmed LTF	2.2143

10.7.6 Index 6

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC DC	MW IMPACT
41781821	342718	SCOOPER2	EKPC	324141	SELIHU	LGEE	1	EKPC_P2-2_LAUREL CO 161	bus	277.0	108.45	111.3	AC	7.69

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
342900	1COOPER1 G	11.4249	50/50	11.4249
342903	1COOPER2 G	22.2261	50/50	22.2261
342945	1LAUREL 1G	6.9148	50/50	6.9148
939131	AE1-143 C	10.1012	50/50	10.1012
939132	AE1-143 E	5.0034	50/50	5.0034
940041	AE1-246 C O1	9.1151	50/50	9.1151
940042	AE1-246 E O1	4.4389	50/50	4.4389
940831	AE2-071 C	2.5805	50/50	2.5805
940832	AE2-071 E	1.7203	50/50	1.7203
943701	AF1-038 C	6.7007	50/50	6.7007
943702	AF1-038 E	4.4671	50/50	4.4671
943821	AF1-050 C	4.5587	50/50	4.5587
943822	AF1-050 E	3.0391	50/50	3.0391
944151	AF1-083 C O1	4.6160	50/50	4.6160
944152	AF1-083 E O1	3.0774	50/50	3.0774
944511	AF1-116 C	11.3285	50/50	11.3285
944512	AF1-116 E	7.5523	50/50	7.5523
945381	AF1-203 C	1.4746	50/50	1.4746
945382	AF1-203 E	0.9830	50/50	0.9830
WEC	WEC	0.0740	Confirmed LTF	0.0740
CPLE	CPLE	0.0939	Confirmed LTF	0.0939
LGE-0012019	LGE-0012019	7.9596	LTF	7.9596
CBM-W2	CBM-W2	6.6667	Confirmed LTF	6.6667
NY	NY	0.0874	Confirmed LTF	0.0874
TVA	TVA	2.1266	Confirmed LTF	2.1266
O-066	O-066	1.0282	Confirmed LTF	1.0282
CBM-S2	CBM-S2	1.5375	Confirmed LTF	1.5375
CBM-S1	CBM-S1	10.3348	Confirmed LTF	10.3348
G-007	G-007	0.1591	Confirmed LTF	0.1591
MADISON	MADISON	1.5886	Confirmed LTF	1.5886
MEC	MEC	0.7913	Confirmed LTF	0.7913
CBM-W1	CBM-W1	2.5771	Confirmed LTF	2.5771



## 10.8 Queue Dependencies

The Queue Projects below are listed in one or more indices for the overloads identified in your report. These projects contribute to the loading of the overloaded facilities identified in your report. The percent overload of a facility and cost allocation you may have towards a particular reinforcement could vary depending on the action of these earlier projects. The status of each project at the time of the analysis is presented in the table. This list may change as earlier projects withdraw or modify their requests.

Queue Number	Project Name	Status
AE1-143	Marion County 161 kV	Active
AE1-246	Barren County-Summer Shade 161 kV	Active
AE2-071	Patton Rd-Summer Shade 69 kV	Active
AF1-038	Sewellton Jct-Webbs Crossroads 69 kV	Active
AF1-050	Summer Shade - Green County 161 kV	Active
AF1-083	Green County-Saloma 161 kV	Active
AF1-116	Marion County 161 kV	Active
AF1-203	Patton Rd-Summer Shade 69 kV	Active

## 10.9 Contingency Descriptions

Contingency Name	Contingency Definition
<b>EKPC_P2-3_MAR W38-1014</b>	CONTINGENCY 'EKPC_P2-3_MAR W38-1014' /* MARION CO OPEN BRANCH FROM BUS 324280 TO BUS 342769 CKT 1 /* 324280 4MARIONL 138.00 342769 5MARION CO 161.00 OPEN BRANCH FROM BUS 342703 TO BUS 342769 CKT 1 /* 342703 5CASEY CO 161.00 342769 5MARION CO 161.00 OPEN BRANCH FROM BUS 341269 TO BUS 342703 CKT 1 /* 341269 2CASEY CO 69.000 342703 5CASEY CO 161.00 OPEN BRANCH FROM BUS 342703 TO BUS 342760 CKT 1 /* 342703 5CASEY CO 161.00 342760 5LIBERTY J 161.00 END
<b>EKPC_P4-2_MAR W38-1014</b>	CONTINGENCY 'EKPC_P4-2_MAR W38-1014' /* MARION CO OPEN BRANCH FROM BUS 324280 TO BUS 342769 CKT 1 /* 324280 4MARIONL 138.00 342769 5MARION CO 161.00 OPEN BRANCH FROM BUS 342703 TO BUS 342769 CKT 1 /* 342703 5CASEY CO 161.00 342769 5MARION CO 161.00 OPEN BRANCH FROM BUS 341269 TO BUS 342703 CKT 1 /* 341269 2CASEY CO 69.000 342703 5CASEY CO 161.00 OPEN BRANCH FROM BUS 342703 TO BUS 342760 CKT 1 /* 342703 5CASEY CO 161.00 342760 5LIBERTY J 161.00 END
<b>EKPC_P1-2_LAUR-L DAM161</b>	CONTINGENCY 'EKPC_P1-2_LAUR-L DAM161' /* LAUREL CO - LAUREL DAM OPEN BRANCH FROM BUS 342754 TO BUS 342757 CKT 1 /* 342754 5LAUREL CO 161.00 342757 5LAUREL DAM 161.00 END
<b>EKPC_P2-2_LAUREL CO 161</b>	CONTINGENCY 'EKPC_P2-2_LAUREL CO 161' /* LAUREL 161 BUS OPEN BUS 342754 /* 5LAUREL CO END
<b>EKPC_P1-2_COOP-ELIHU161</b>	CONTINGENCY 'EKPC_P1-2_COOP-ELIHU161' /* COOPER - KU ELIHU OPEN BRANCH FROM BUS 324141 TO BUS 342718 CKT 1 /* 324141 5ELIHU 161.00 342718 5COOPER2 161.00 END
<b>EKPC_P7-1_COOP 161 DBL 2</b>	CONTINGENCY 'EKPC_P7-1_COOP 161 DBL 2' /* COOPER - ELIHU 161 & COOPER - LAUREL DAM 161 OPEN BRANCH FROM BUS 324141 TO BUS 342718 CKT 1 /* 324141 5ELIHU 161.00 342718 5COOPER2 161.00 OPEN BRANCH FROM BUS 342718 TO BUS 342757 CKT 1 /* 342718 5COOPER2 161.00 342757 5LAUREL DAM 161.00 END

Contingency Name	Contingency Definition
EKPC_P7-1_LAURL 161 DBL	CONTINGENCY 'EKPC_P7-1_LAURL 161 DBL' /* LAUREL CO - LAUREL DAM 161 & LAUREL CO - TYNER 161 OPEN BRANCH FROM BUS 342754 TO BUS 342757 CKT 1 /* 342754 5LAUREL CO 161.00 342757 5LAUREL DAM 161.00 OPEN BRANCH FROM BUS 342754 TO BUS 342781 CKT 1 /* 342754 5LAUREL CO 161.00 342781 5PITTSBURG 161.00 OPEN BRANCH FROM BUS 342781 TO BUS 342820 CKT 1 /* 342781 5PITTSBURG 161.00 342820 5TYNER 161.00 END
EKPC_P4-5_LAURL S50-1014	CONTINGENCY 'EKPC_P4-5_LAURL S50-1014' /* LAUREL CO OPEN BUS 342754 /* 5LAUREL CO DROPS BUS END
Base Case	
EKPC_P4-5_LAURL S50-1024	CONTINGENCY 'EKPC_P4-5_LAURL S50-1024' /* LAUREL CO OPEN BUS 342754 /* 5LAUREL CO DROPS BUS OPEN BRANCH FROM BUS 324688 TO BUS 342781 CKT 1 /* 324688 2PITTSKU 69.000 342781 5PITTSBURG 161.00 OPEN BRANCH FROM BUS 342781 TO BUS 342820 CKT 1 /* 342781 5PITTSBURG 161.00 342820 5TYNER 161.00 END

## 11 Light Load Analysis

The Queue Project AF1-083 was evaluated as a 26.0 MW injection/withdrawal (battery) tapping the Green County to Saloma 161 kV line (specifically the Taylor County Jct – Saloma Tap 161 kV line segment) in the EKPC area. Project AF1-083 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF1-083 was studied with a commercial probability of 100.0 %. Potential network impacts were as follows:

### 11.1 Generation Deliverability

(Single or N-1 contingencies)

None

### 11.2 Multiple Facility Contingency

(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies)

None

### 11.3 Contribution to Previously Identified Overloads

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

None

### 11.4 Steady-State Voltage Requirements

None

### 11.5 Potential Congestion due to Local Energy Deliverability

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

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

None

## 11.6 System Reinforcements

None

## 12 Short Circuit Analysis

The following Breakers are overdutied

None

## 13 Stability and Reactive Power Requirements for Low Voltage Ride Through

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

To be evaluated during the Facilities Study Phase

## 14 Affected Systems

### 14.1 TVA

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

### 14.2 Duke Energy Progress

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

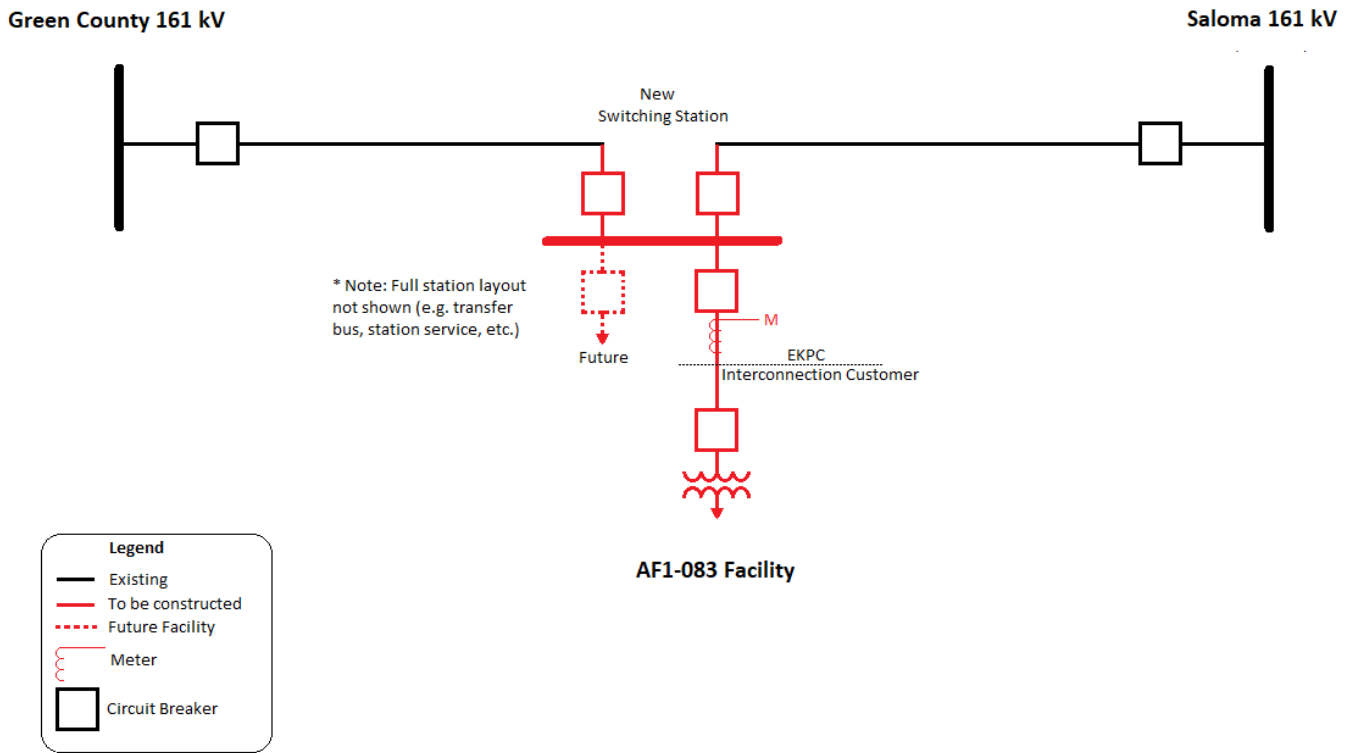
### 14.3 MISO

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

### 14.4 LG&E

An LG&E Affected System Study will be required. PJM has identified several EKPC-LG&E tie line overloads with limiting equipment on the LG&E side. LG&E will need to determine if LG&E upgrades are required.

# 15 Attachment 1: One- Line Diagram



Attachment N  
Economic Report



**Paul A. Coomes, Ph.D.**

*Consulting Economist*

3604 Trail Ridge Road    Louisville KY 40241    502.608.4797    coomes.economics@gmail.com  
*Emeritus Professor of Economics, University of Louisville*

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March 18, 2021

TO:    Carson Harkrader  
      Flat Run Solar, LLC  
      400 W. Main St, Suite 503  
      Durham, NC 27701  
      [www.carolinasolarenergy.com](http://www.carolinasolarenergy.com)

FROM:        Paul Coomes

RE:            Economic and fiscal impact of the Flat Run solar energy project

This note provides estimates of the new economic and fiscal activity expected from the proposed Flat Run solar energy project just northwest of Campbellsville, in Taylor County, Kentucky. Flat Run Solar, LLC is developing the 450 acre site, which will have an electricity generation capacity of 55 megawatts. The company anticipates an investment of approximately \$90-\$120 million. The company and the County government are negotiating a financial agreement in which, if agreed and signed, the company will make annual payments in lieu of taxes (PILOT) to local government jurisdictions. The project is described on the company's website<sup>1</sup>.

There are two primary impacts expected from the project. First, there will be a one-time spike in construction and linked jobs as the site is constructed over approximately one year. Second, there will be four decades of new tax (PILOT) payments to local jurisdictions in Taylor County due to the increased value of real estate and the new tangible property installed at the site. Using company estimates of construction jobs and payroll, I estimate that there will be a total of 199 new jobs in the County in year one, with new payroll of \$9.89 million. And, the PILOT agreement will result in \$1.32 million in payments to County jurisdictions over the next forty years.

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<sup>1</sup> See: [www.carolinasolarenergy.com/projects-in-development-source/flat-run](http://www.carolinasolarenergy.com/projects-in-development-source/flat-run)



Occupations include construction managers, earth grader operators, panel installers, electricians, and fencers. I searched the federal database on hundreds of occupations to learn how much these workers are likely to earn on the project. There is no listing in the Kentucky data for “Solar Photovoltaic Installer”, but the national average annual wage is \$46,850<sup>2</sup>. Good inferences about other relevant occupations can be gleaned from the next table. The construction managers are likely to earn over \$80,000, heavy equipment operators around \$50,000, installers around \$45,000, electricians around \$53,000, and fencers \$30,000. These data suggest that the \$50,000 average pay assumed for construction jobs is reasonable. The average annual pay for all jobs in Green County in 2018 was \$30,427.

Kentucky Wages for Related Occupations, 2019			
Occupation (SOC code)	Employment	Hourly mean wage	Annual mean wage
Construction Managers(119021)	1,770	\$40.18	\$83,570
Operating Engineers and Other Construction Equipment Operators(472073)	4,670	\$24.72	\$51,410
Electricians(472111)	9,880	\$25.69	\$53,440
Fence Erectors(474031)	250	\$14.47	\$30,090
Industrial Engineers(172112)	5,590	\$38.69	\$80,480
Materials Engineers(172131)	260	\$38.36	\$79,790
Mechanical Engineers(172141)	4,180	\$39.57	\$82,300
Heating, Air Conditioning, and Refrigeration Mechanics and Installers(499021)	4,290	\$20.57	\$42,780
Electrical Power-Line Installers and Repairers(499051)	2,680	\$29.95	\$62,300
Telecommunications Line Installers and Repairers(499052)	1,090	\$22.95	\$47,740

Source: US Bureau of Labor Statistics, Occupational Employment Survey, <https://data.bls.gov/oes/#/home>

### Spin-off impacts

The construction phase will have some spin-off effects in Taylor County. I model this using a custom IMPLAN model of the County<sup>3</sup>. The relevant sector for the construction phase is number 52, “Construction of new power and communication structures”, and this can be used to model the initial investment. The likely owner expects construction to last approximately one year and to support up to 150 jobs in the County, with a payroll of \$7.5 million. This is the direct effect.

The model has detailed information about the inter-industry linkages in each regional economy, as well as the expected household spending on retail goods and services due

<sup>2</sup> See [www.bls.gov/ooh/construction-and-extraction/solar-photovoltaic-installers.htm#tab-1](http://www.bls.gov/ooh/construction-and-extraction/solar-photovoltaic-installers.htm#tab-1) , with details in the lookup database <https://data.bls.gov/oes/#/home> , Standard Occupational Code #472231 as of May 2019.

<sup>3</sup> For documentation of IMPLAN modeling, see [www.implan.com/history/](http://www.implan.com/history/) .

to the enhanced employee compensation. When there is new industrial activity in a region, the model can predict how much of the supply chain can be met by local businesses and how much the new payroll will result in additional sales by local businesses. Adding these two effects to the direct effect yields the total effect of a development, and dividing the total effect by the direct effect yields a multiplier. Using the Taylor County multipliers for the relevant construction sector, and the assumed direct construction budget, I project there will be a total of 199 new jobs in the County, and new payroll of \$9.89 million.

There will also be some modest spin-off impacts from ongoing operations. The company expects operations to support only two or three jobs. Unfortunately, for the operations phase, the relevant IMPLAN sector, number 42, “Electric Power Generation – Solar”, is empty of data and results for Taylor County. This is because there is no history of solar electricity generation and therefore no basic economic data to construct industry relationships. A reasonable recourse is to tap the literature on solar project impacts, find comparable places, and use other studies to estimate the likely operational impacts on local economies in Kentucky. For example, the Shugart solar farm in Maryland was studied extensively, and analysts projected that annual operations will support a total of only four jobs in the County (including modest spinoff activity)<sup>4</sup>. Thus, ongoing annual economic impacts are expected to be very small relative to the one-time impacts of construction.

#### **Local tax revenues, IRB, PILOT agreement**

Taylor County levies property taxes on real estate and tangible property. The table below provides the latest tax rates that are applied County-wide. They total about one percent of the assessed value of property. The only other taxing jurisdiction in the County is the City of Campbellsville, but the Flat Run project is outside the City boundary and thus would not be subject to those property taxes. Also, because the project is outside the City, the payroll from construction jobs and any net profits from ongoing operations will not be subject to the City’s occupational license fee and net profits tax, both with a rate of one percent.

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<sup>4</sup> See pages 13-14 of the July 31, 2019 study of the Shugart, Maryland project:  
<https://mde.maryland.gov/programs/Water/WetlandsandWaterways/Documents/Solar/Shugart-Solar-Socio-Economic-Justification-Report-FINAL.pdf>

<b>Taylor County Property Tax Rates, 2019</b>		
in cents per \$100 valuation		
<b>Jurisdiction</b>	<b>Real Estate</b>	<b>Tangible Personal</b>
Extension Services	4.3960	6.4096
Fiscal Court - General	8.2000	9.5000
Health Department	3.2500	3.2500
Hospital	8.3000	9.1000
Library	7.8000	11.4700
County Public Schools	61.2000	61.2000
<b>Total, County-wide</b>	<b>93.1460</b>	<b>100.9296</b>
Source: Kentucky Department of Revenue		

The County and the company are negotiating an Industrial Revenue Bond (IRB) and a Payment in Lieu of Taxes (PILOT) agreement, whereby the company makes annual payments to the County jurisdictions. The draft agreement calls for payments of \$1,000 per megawatt of stated capacity for twenty years, then \$200 per MW for the next twenty years. With a capacity of 55MW, this implies the company will pay \$1.32 million to the County over the next forty years. It should be pointed out that solar projects like this require almost no public services from local government; and because they require so few people to operate do not add students and expenses to the local public school system.

Attachment O  
Site Assessment Report

\*Site Assessment Report Contained in  
Volume 2 of the application

Attachment P  
Flat Run Solar, LLC Certificate of Authority



1102929.06

Bdennis  
ADD

Division of Business Filings  
P.O. Box 718  
Frankfort, KY 40602  
(502) 564-3490  
www.sos.ky.gov

**Certificate of Authority**  
(Foreign Business Entity)

Michael G. Adams  
Kentucky Secretary of State  
Received and Filed:  
7/7/2020 10:02 AM  
Fee Receipt: \$90.00

Pursuant to the provisions of KRS 14A and KRS 271B, 273, 274, 275, 362 and 386 the undersigned hereby applies for authority on behalf of the entity named below and, for that purpose, submits the following statements:

1. The entity is a:
- profit corporation (KRS 271B)
  - business trust (KRS 386)
  - limited partnership (KRS 362)
  - non-profit Co. (KRS 275)
  - nonprofit corporation (KRS 273)
  - limited liability company (KRS 275)
  - ltd cooperative assn. (KRS)
  - cooperative assn. (KRS)
  - professional service corporation (KRS 274)
  - professional limited liability company (KRS 275)
  - statutory trust
  - unincorporated association

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

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

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

5. The date of organization is 8/21/2019 and the period of duration is \_\_\_\_\_  
(If left blank, duration is considered perpetual.)

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

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

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

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

Carson Hartrader 400 W. Main Street Durham NC 27701  
Name Street or P.O. Box City State Zip Code

Name Street or P.O. Box City State Zip Code

Name Street or P.O. Box City State Zip Code

Name Street or P.O. Box City State Zip Code

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

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

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

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

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

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

To complete the following, please shade the box completely.

Please indicate the size of your business:  
 Small (Fewer than 50 employees)  
 Large (50 or more employees)

Please indicate whether any of the following make up more than fifty percent (50%) of your business ownership:  
 Women-Owned  Veteran Owned  Minority Owned

Please indicate which of the following best describes your business:  
 Agriculture  Mining  Services  Construction  
 Wholesale Trade  Retail Trade  Manufacturing  Finance, Insurance, Real Estate  
 Public Administration  Transportation, Communications, Electric, Gas, Sanitary Services  
 Other

Signature of Authorized Representative Carson Hartrader, CEO 6/30/2020  
Printed Name & Title Date

I, James W. Gardiner consent to serve as the registered agent on behalf of the business entity.

Signature of Registered Agent James W. Gardiner 7/1/2020  
Printed Name Title Date