**I Construction phase activities—Generally, much more information was provided about the operational phase compared with the construction phase. HE is requesting more information about construction, summarized below and detailed in subsequent inquiry categories.**

A. Please provide a detailed description of construction activities, including a schedule and description of activities, peak activity periods, number of commuting workers (average by quarter and peak period), personal and construction vehicle traffic volumes (see detailed question below), construction access points to the site and staging area, local roads, State Routes and highways that will carry construction traffic.

Response: Please see Exhibit C for a summary timeline of the estimated construction schedule. Construction of the Project will begin approximately 12 months before the in-service date, beginning with spot grading and tree cutting. At this beginning stage, areas with stumps will be grubbed and graded in preparation for heavy equipment to drive racking piles on-site. Staging areas will also be graded and prepared with gravel for long term soil stability in high traffic areas. These processes will overlap but will generally take 6-8 weeks. The next step is precise racking pile marking and construction; this process will take approximate 3-4 weeks. Staggered closely behind the piling construction will be equipment pad installation and electrical trenching. These steps will overlap and will begin around the same time as racking installation. Racking will be followed shortly by panel installation. These processes will be closely coordinated for maximum efficiency and will take between 20-24 weeks depending on weather conditions, the number of labor crews used, and labor skill levels. Approximately 8 weeks after the start of panel installation, array stringing and wiring will begin. This process parallels ongoing quality control of the newly installed array. Inverters, transformers, and batteries will also be wired. This process will last approximately 12-16 weeks. Inspections and testing will occur after all equipment is installed leading up to the planned site energization date in late September of 2022.

During the early stages of array construction, the utility interconnection substation will begin its independent construction process, starting with precise grading of an approximately 2-acre area, the pouring of a concrete pad, and the installation of the substation transformer. The substation construction will take place concurrently with the array construction. Coordination with the local utility (EKPC) will determine final scheduling for substation interconnection with EKPC switchyard facilities that will be built on-site next to the Project substation transformer.

Final inspections and final site commissioning will occur leading up to the planned in-service date of December 2022.

See response to Data Request V (below) for detailed information on traffic questions.

WITNESS: Carson Harkrader

**II Site development plan—We need to resolve some conflicting information provided about the site development and to better understand certain elements in that site plan.**

A. The description of the legal boundaries of the proposed site provided on page 129 of the SAR indicate a total site acreage of about 561 acres. However, other parts of the SAR and supporting documents, (the initial summary description of the proposed site, the Kirkland Appraisals report, the POND report and the Phase 1 Environmental Site Assessment Report) include site descriptions of varying size. Please confirm the acreage of the entire project site, as well as the footprint of the solar facility components.

B. How many solar panels will be installed on-site? How many transformers? Please confirm that there will be 13 energy storage systems (co-located with the 13 inverters).

C. The Application states that a 6-foot fence topped with barbed wire will enclose the facility and that the proposed access gate will be locked with a standard keypad or combination lock. Will these measures be taken during construction as well as operations to control access and provide security to the site?

D. Will Big Jack Road (from either SR 90 or SR 640) be the only access point onto the site during construction? During operations? Which entrance (SR 90 or SR 640) will be the primary access point?

E. The SAR on page 4 states that "the property boundary includes an additional entrance not included in the layout. This additional entrance was discovered during the property boundary survey." Please provide a written description and illustration of where that entrance is located. Will that entrance be used by construction vehicles or during operations? If not, how will that entrance be controlled?

F. Preliminary site layout graphics or need for additional maps:

1. Please clearly identify all access points/ entrances/ access roads to the site.

2. Note 5 on the Preliminary Site Layout graphics, pages 315 and 316, indicate a proposed construction staging area - please identify the location of the construction staging area on a map.

3. Please identify the location of each of the 13 inverters/ energy storage systems.

4. Please identify the location of all transformers.

5. Is the existing Summer Shade – Patton Rd Jct 69kv transmission line located in the southernmost utility easement corridor in the graphic? Is that the Eastern KY Power Cooperative transmission line discussed in Vol 1 of the application?

6. What utilities are located in the more northern utility easement corridor?

7. Please explain the differences in the solar array footprints between the two graphics included in the layout on pages 315 and 316. For example, the graphic on page 315 includes solar arrays (in blue) located in the northeast parcel of the property (east of SR 640); the second graphic on page 316 does not include arrays in that area. Please indicate which solar array footprint we should rely upon.

8. Pollinator plantings are identified in the legend on the first graphic, but we could not locate them on the plan. Please locate those plantings on the preferred graphic.

Response:

A. The Project will be located on an assemblage of approximately 561 acres, with the project footprint being approximately 400 acres. See response to 4b.3. for additional information.
B. Solar Panels have become increasingly efficient over time, recently averaging a 3-5% increase in wattage density year over year. Because of this constant push towards efficiency, panels that are purchased in a year or two will be more efficient than panels available today. Additionally, available panel wattage differs between panel manufacturers and it is unknown at this time which manufacturers and sourcing locations will have availability and the most competitive pricing when the Project goes into construction. With those caveats, based on the project size of 55MW we estimate that the Project will require approximately 140,000 solar panels.

   Regarding transformers, there are 2 types of transformers in a typical transmission-interconnected solar facility. Each of the 13 inverters within the project footprint will be co-located with the first type of transformer, which will step up the voltage from the inverter voltage to a higher level of voltage used within the Project electrical system. The second type of transformer is the substation transformer. Glover Creek will have 1 substation transformer located at the substation, which will step the voltage up again to match the voltage on the transmission line.

   Each of the 13 inverter and transformer groupings within the Project site will additionally be co-located with 1 energy storage system. Therefore, in total the Project will have 13 inverters, 14 transformers, and 13 energy storage systems.

   The image below shows a typical configuration of inverter and transformer using string inverters. The white boxes are the string inverters, and the grey box sitting on a pad at the end of the inverter string is the transformer. At Glover Creek, this configuration

will also have an energy storage system housed within 2 or 3 containers, installed on a separate pad adjacent to the inverter and transformer.

C. The fence and security measures will be installed after grading of the site, before the main array installation begins. The security fence must be installed prior to any electrical installation work in order to meet National Electric Code requirements. The substation and temporary laydown area will also have separate security fences installed.

D. During construction the site will be accessed primarily from Randolph Summer Shade Road (SR640) and from Summer Shade Road (SR90). Big Jack Road will serve as the primary access point for the construction and ongoing maintenance of the utility interconnection substation, and a secondary site access point for construction of the rest of the Project.

E. Please see Exhibit D for a corrected version of this page; all entrances are shown on the layout.

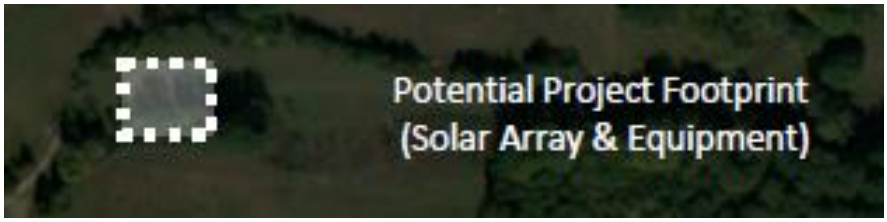
F.

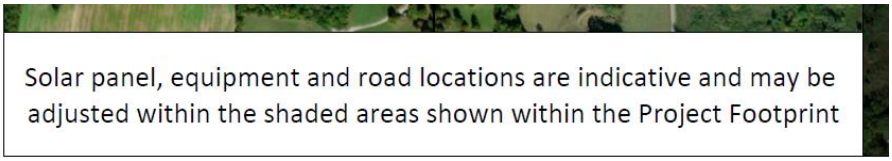
1. Please see attached Exhibit D for an updated site plan that clearly identifies all access points, entrances and access roads.
2. The construction staging area will likely be located near one of the two construction entrances (i.e. the entrance on Randolph Summer Shade Road or the entrance on Summer Shade Road.) Please refer to Exhibit D for the layout with both entrances labeled.
3. Finalizing the location of the inverters and energy storage systems will be part of the final site design process. The choice of racking system manufacturer (for the single

axis tracking racks that will hold the solar panels) will be an important input into that final detailed design step since the racking system used will determine row length and spacing.

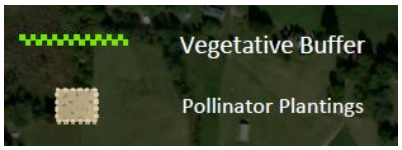
4. As described in the answer to 2b, 13 transformers will be co-located with the inverters, and 1 substation transformer will be located at the project substation.
5. Yes, the existing Summer Shade – Patton Rd Jct 69kv transmission line is located in the southernmost utility easement corridor in the graphic, and this is the East Kentucky Power Cooperative transmission line discussed in Vol 1 of the application.
6. The northern utility corridor shown on the site plan is the EKPC Summer Shade - Barren County 161kV transmission line. The capacity for that transmission line is currently allocated to another solar project in the PJM interconnection queue ahead of Glover Creek, and therefore we were not able to interconnect the Project to that transmission line.
7. We apologize for not including an explanation of these two maps in our initial application. The layout on page 315 is the layout we showed at the Neighborhood Dinner on December 11, 2019 and Public Meeting on December 12, 2019. The layout on page 316 incorporates changes that we made following these meetings, including moving the pollinator planting location as noted in the answer to the next question below, and is the layout which should be relied upon.

   Please note that both layouts show a shaded area 100' set back from the exterior property lines as potential project footprint (see clips of layout map legend and note below). (Note the one exception to this statement is that the layout on page 316 excludes a section of timberland east of the substation location from the potential project footprint. This area was included in the potential project footprint shown to the public in December 2019, but we subsequently determined this area is too topographic to be used.) Therefore, although the map on page 315 showed panels in an area where panels are not shown in the map on page 316, panels may be adjusted within the shaded areas shown on map 316. We therefore consider the two maps to show the same information, other than the relocation of the pollinator plantings and removal of the timberland section mentioned above.



8. We agreed with neighbors of the project that the pollinator plantings would be placed in the setback adjacent to their property. Please reference images from the layout map from page 316 of the Application, copied below.




WITNESS: Carson Harkrader

**III Setback Deviation Request—The Application requests a deviation of the statutory setback provisions. HE will need a full understanding of why that deviation is justified.**

A. The Application states that Glover Creek Solar will apply for a deviation from the existing setback requirements. What is the justification for requesting such a deviation, i.e. loss of generation capacity, cost, etc.? Could the solar panels and other structures be re-configured within the site boundaries to meet the setback requirements? How will the project meet the goals of the indicated statutes required for a deviation?

Response: As described in our Motion for Deviation, filed on April 20, 2020, a portion of the Glover Creek site is located within a 2,000' radius of a cluster of residential homes that meet the classification of a "neighborhood" per Kentucky statute. Carolina Solar Energy made numerous attempts to discuss the project with adjacent landowners in order to add more land to the Project, which would have given us more flexibility in where to place equipment. We were not successful in adding additional land to the project, and therefore we do not have flexibility to move panels outside of the 2,000' radius and maintain the project size. Since the substation and interconnection upgrades are a multi-million dollar fixed cost, it is important to maximize the size of the project as much as possible. We have configured the equipment in the most efficient way possible given site constraints such as streams, floodplain, wetlands and topography.

WITNESS: Carson Harkrader

**IV Property values and land use—Local landowners are often concerned about the effects on their property values during construction and operation. HE requests information about current property values in the area surrounding the site and property value impacts during the construction phase. We also need clarification on certain aspects of the Kirkland report.**

A. Construction phase

1. The Application, including the Kirkland Appraisals report, does not address or discuss potential impacts to property values or adjacent land uses during the construction period (from traffic, noise, dust, etc.). Please provide additional discussion / analyses related to potential impacts to property values or changes in land value impacts resulting from construction activity.

B. Operational phase

1. What are the current property values of the properties adjacent to the project site? Property values of raw land or residential values per square foot of developed property in the general Summer Shade area?

2. How is the area of site influence defined, i.e. what is the distance from a solar facility for which property values might be affected?

3. The Kirkland Appraisals report states on page 1 that it evaluates "a solar farm proposed to be constructed on approximately 322.44 acres out of a parent tract assemblage of 968.20 acres." If the actual footprint of the solar panel structures is larger than 322 acres, then the calculated distance between homes and panels on page 4 of that report may be incorrect. Please resolve this discrepancy.

4. Please resolve the apparent discrepancy related to the yellow shaded area of the graphic included on page 3 of the Kirkland report. That does not appear to be the project boundary (as compared to the legal boundary description provided); however, the discussion following the map addresses the properties surrounding the shaded area.

5. Does the data compiled by Kirkland Appraisals indicate a relationship (positive or negative) in the specific distance between a house and a solar panel (as opposed to simply being adjacent to the solar property?) For example, the closer the home to a panel, the larger the price differential?

6. For the 37 total solar facilities evaluated, 81 matched pair sets were chosen for a summary evaluation – how were those 37 chosen from the available matched pair data?

7. For the Large Solar Farm analysis beginning on page 94 of the Kirkland report, 21 matched pair sets were chosen for that analysis – how were those chosen?

8. Although the average and or median differences in the matched pair sets generally amounts to about +1% difference in property values adjacent and non-adjacent to solar sites, the range of price differentials is actually larger, ie. -10% to +9%. What does that range indicate about potential impacts of solar facility siting on property values?

Response:

A.

1. Please refer to item number 3 in the letter from Rich Kirkland dated May 19, 2020 attached as Exhibit B.

B.

1. Please see Exhibit E for current market value of land and properties nearby the Project.
2. The property value report states that "Matched pairs that I have researched show no impact for distances as close as 125 feet."
3. Please refer to item number 1 in the letter from Rich Kirkland dated May 19, 2020 attached as Exhibit B.
4. The map on page 3 of the Kirkland report is turned 90 degrees from the site plan (i.e. the top of the map is West instead of North). The map and correctly shows the outlines of all of the parcels included in the project. The map additionally includes 1 landowner on the East of Randolph Summer Shade Road who was not eventually part of the project. The reduction in project size from the map shown on page 3 serves to reduce the impact of the project on surrounding properties.
5. The analysis does not show a price differential based on distance to the project. The property value report states that "Matched pairs that I have researched show no impact for distances as close as 125 feet."
6. Please refer to item number 4 in the attached letter from Rich Kirkland dated May 19, 2020 attached as Exhibit B.
7. Please refer to item number 5 in the attached letter from Rich Kirkland dated May 19, 2020 attached as Exhibit B.
8. Please refer to item number 6 in the attached letter from Rich Kirkland dated May 19, 2020 attached as Exhibit B.

WITNESSES: Richard C. Kirkland, Jr., MAI and Carson Harkrader

**V Traffic—Increased traffic from construction and operation can be an issue for local residents. HE is seeking information about construction phase traffic which was not provided in the Application.**

A. Please provide current traffic volume data by vehicle category if available (i.e. cars, trucks by weight class, etc.) for SR 90 in the vicinity of the project area.

B. Construction phase

1. How many worker commuter vehicles are expected to drive to the project site each day during construction - on an average day? On a peak day?

2. Please indicate the hours of the day the workers will arrive and vacate the site.

3. Please provide an approximate percentage breakdown of where the construction workers will commute from each day, if possible.

4. Are all workers anticipated to commute from their homes daily, or will any temporary housing be developed on-site?

5. What types of trucks and other equipment by weight class will access the site daily?

6. Please provide a breakdown of the traffic volume by truck category above on an average day? On a peak day?

7. What is the expected maximum weight of the largest vehicles (including any materials or equipment that the truck is hauling)?

8. Can you provide an approximate breakdown by point of origin for the construction truck traffic?

9. Where will the construction crew, supervisors and others park on-site?

Response:

A. See attached Exhibit F for data on traffic volume collected by the Kentucky Transportation Cabinet. Data points and mapping found at https://maps.kytc.ky.gov/trafficcounts/ and traffic data found at http://datamart.business.transportation.ky.gov/EDSB_SOLUTIONS/CTS/

B.

1. Non-local workers tend to carpool from extended stay, hotel and rental facilities while contracted local workers will commute from home. An estimated average of 50 commuter vehicles will be on site daily with an estimated peak of 75. This number can vary greatly depending on whether skilled or unskilled workers are used (if less skilled workers are used, more workers are needed to build a project on time.) Shuttles are also sometimes used if parking is limited on site.
2. Generally 7:00am - 6:00pm. Extended hours are sometimes required if weather delays the construction schedule.
3. An initial estimate is that construction workers will commute 20% from hotels, rentals and extended stay facilities and 80% from local residences (local workers). This is subject to local workforce skill level and availability.
4. There will not be any temporary housing built as part of the Project. Workers will commute from home and non-local labor or construction site managers will stay in local hotels, rentals and/or extended stay properties.
5. Class 2 & 3 commuter vehicles. Class 9 vehicles.
6. An average of 50 Class 2 & 3 commuter vehicles. An average of 2 Class 9 vehicles per day and a peak of 15 Class 9 vehicles per day. Several individual Class 21 vehicles for specialized equipment and lull delivery (a lull is a forklift with mud tires).
7. The largest vehicle is expected to be a Class 21 Truck used for the delivery of the substation transformer. The expected weight is approximately 60 tons.
8. Construction labor will generally be recruited from within a 60 minute driving radius of the site. Class 9 freight trucks will be from equipment distribution facilities which are not yet determined.
9. Within the designated parking and equipment staging area(s) as determined by site access convenience, soil stability, and topographic consistency.

WITNESS: Carson Harkrader

**VI Dust—Dust especially during the construction phase can be an issue for local residents.**

A. Construction phase

1. Are there any plans for paving (or putting down gravel) for roads associated with the project?

2. Are there any improvement plans for Big Jack Road?

3. What will be the protocol or frequency spraying down dirt roads?

4. Have studies been done to indicate how much dust will be created? Please characterize the level of dust impacts expected during construction.

B. Operational phase

1. Will there be grass or vegetation under and around the panels? Will the site be irrigated to promote vegetation or will that be needed?

Response:

A.
1. Light gravel will be used for access roads between panel sections and equipment pads. A short approximately 20ft wide by 1ft deep gravel road will be constructed for access to the project interconnection substation area
2. Currently, there are no plans to improve Big Jack Road.
3. Spraying of gravel staging areas and high traffic roads is typical on an as needed basis depending on local and seasonal weather variations.
4. Grading will be kept to a minimum, and gravel roads will be maintained to prevent dust during the construction phase.

B. Undisturbed grass will remain under and around panel areas during installation, wherever grading is not required. Grass will be re-planted in graded and high traffic areas for soil stability and erosion control. Typically, irrigation is unnecessary.

WITNESS: Carson Harkrader

**VII Noise—Similar to dust and traffic, noise especially during construction can be an issue for local residents.**

A. Construction phase

1. What is the total anticipated decibel level that will be generated by construction equipment during peak and off-peak times of construction?

2. How much noise will residential properties closest to the project site experience during construction?

B. Operational phase

1. How many motors will be installed on-site?

2. Will all motors, inverters, transformers or other equipment be completely silent at night?

3. Is there a cumulative noise effect for the transformers, inverters, and motors during daytime hours? What is the likely range of that noise?

4. What is the estimated noise level for the "worst-case profile" for the energy storage systems?

5. How far away from the nearest dwelling will the transformers be?

Response:

A.
1. Please refer to the Cumulative Environmental Assessment which was submitted with the Motion for Deviation.
2. Please refer to the Cumulative Environmental Assessment attached to the Motion for Deviation for a summary of noise levels surrounding properties will experience during construction.

B.
1. The racking system will use small motors to turn the panels very slowly and incrementally during the day to track the sun. The number of motors will depend on the type of racking system used and final site design.
2. The solar facility, except for the substation and energy storage system, shuts down at night. The substation transformer will remain energized overnight, but when there is no load going through it then there likely will be no cooling fans or other extra noise, just the normal hum of a substation transformer. The energy storage system needs cooling and will have HVAC noise when it is charging or discharging energy. In a solar project like this, the energy storage system will typically charge during the day

and then discharge in the evening (evening peak when there is a demand for electricity leading to higher electricity prices on the grid is typically approximately 4-9PM.) The energy storage system may also need cooling at night from the air conditioning units if external temperatures are high, and there is heat accumulating inside the battery enclosures.

3. Due to the distance between noise generating sources onsite, and the low level of noise generated at each source point, there will be no cumulative noise effect.
4. The energy storage systems have two components that make noise: the DC electrical inverter, and the air conditioning units that keep the batteries cool. The energy storage inverters are the same technology and same noise profile as the PV inverters on site, and there is 1 energy storage inverter per energy storage unit on site. The HVAC units are typical units which will either sit on the ground next to the energy storage enclosures or will be "wall hung" units like you see in portable classroom buildings. There are two air conditioning units for each energy storage unit.
5. The transformers that are co-located with the inverters throughout the project site will be located at minimum 150' from the external property lines of the parent parcel tracts. Most transformers will be internal to the Project site, and much further than 150' from the external property lines.

WITNESS: Carson Harkrader

**VIII Odor—There can be similar issues related to odor.**

A. Construction phase

1. Will there be any odorous effects generated by the construction of the solar panels? What would the sources of those odors be?

2. Will there be odor impacts from diesel fumes or other sources from construction vehicles for nearby residents?

3. Will any hazardous materials be required in the construction of the solar panels at the project site?

Response:

A.

1. Please refer to the Cumulative Environmental Assessment attached to the Motion for Deviation for a full discussion of odors at site.
2. Please refer to the Cumulative Environmental Assessment attached to the Motion for Deviation for a full discussion of diesel fumes and construction vehicles at site.
3. Please refer to the Cumulative Environmental Assessment within our Motion for Deviation for a full discussion of odors and hazardous materials at site. No solar panels will be constructed on site.

WITNESS: Carson Harkrader

**IX Topography/ Scenery—Visual impacts can be important for some projects, depending on the topography, surrounding land uses, and the nature of the project. Computer generated imaging is an effective way to demonstrate these effects.**

A. Operational phase

1. Will the shrubs be grown outside the fence?

2. Given the assumption that the shrubs planted will grow to 6 feet over the course of 3 years, are there any need to or plans for shielding the view from the 9-foot difference between the tops of the solar panels and the tops of the shrubs?

3. Will there be any glare on either SR 640 or SR 90 as the panels rotate over the course of the day during different times of the year?

4. Are there any computer-generated images of what the solar panels, six-foot fence, and three-foot high shrubs will look like immediately after construction is complete? If yes, HE would like to see those from different viewpoints of the property.

Response:

A.

1. Yes, the vegetative buffer will be planted outside the security fence.
2. The vegetative buffer will continue to grow after 3 years, eventually reaching the tallest height of the panels even during the early morning/late afternoon highest "height".

   The project will use a single-axis tracking racking system. Panels in this type of racking system are typically 10-12' high at the highest point. We have used 15' as the highest height in the Siting Board application to be conservative, and to ensure that the project will not have any concerns regarding meeting the height limitation. Because the panels will track the sun throughout the day, they will start the morning at their highest "height" facing east, transition to a fairly "flat" orientation parallel to the ground in the middle of the day (as depicted in the image below), and then to a western-facing orientation in the afternoon, in order to track the sun and collect more solar energy. Based on this, it is likely that for most of the middle of the day, the panels at their highest point will be close to or below 6' tall.

*This image depicts panels in their mid-day "flat" position.*

3. Please see Exhibit M for glare studies run for two observation points on KY 640 and one observation point on KY 90. Each glare study report has been run once with regular solar panels and a second time with "anti-glare" solar panels, so there is a total of 6 glare studies included in Exhibit M. The northern observation point on KY 640 resulted in "green" low level glare for a few minutes a day in winter mornings at a 10 foot high observation point which would be typical for a tall truck. At a lower level observation point such as a car, glare is reduced. Note that "anti-glare" solar panels are most effective at reducing "yellow" level glare, and as is seen in these reports, do not make much impact on "green" level glare. The reports show no glare impact at the southern observation point on KY 640 or on KY 90.
4. Below is an aerial image of an existing solar project with a newly planted vegetative buffer. We do not have computer generated images of the site.

WITNESS: Carson Harkrader

**X** Public meeting materials—We want to make sure that the information in the Application is consistent with the information provided to the public thus far.

A. Please provide any documents/ maps/ other materials that have been presented to the community/ other groups as part of outreach efforts. For example, during the public meeting and community dinner held in December of 2019; during meetings with public officials; or during other public presentations.

Response: Please see Exhibit A for all material provided to the public during the neighborhood dinner and public meeting held in December 2019.

This also contains all information shared with local government officials, other than materials presented to local governmental officials by Dinsmore regarding the Industrial Revenue Bond.

WITNESS: Carson Harkrader

**XI Other permitting activities—HE wants to make sure information provided by the Applicant is consistent with information provided in other permitting processes.**

A. Please list any other permit applications or information which Glover Creek Solar LLC or Carolina Solar Energy has submitted to any public agency for the Glover Creek Solar Project. For instance, the application notes that will pursue a KPDES permit associated with construction activity and an Approved Jurisdictional Determination from the USACE. Please provide copies of any submittals that address any of the specific topics related to resource topics addressed in this inquiry.

Response: No other permits have been applied for at this time. The Jurisdictional Determination permit from the US Army Corps of Engineers will be applied for soon.

The project has applied for, and received initial approval from the Metcalfe County Fiscal Court for, an Industrial Revenue Bond which includes a PILOT agreement that the Project will pay to Metcalfe County in lieu of property taxes.

WITNESS: Carson Harkrader

**XII Economic impact analysis—This topic is not specifically called for in these applications, but the Board will have an interest in project benefits.**

A. On page 146, the report states that "The Project will make a multi-million dollar capital investment in rural central Kentucky that will have direct, indirect, and induced impacts on a broad range of economic activities in the region". How much money will be spent on purchases of materials, supplies, equipment or other items in Metcalfe County in support of facility construction? In the larger Bowling Green region? Total in Kentucky?

B. How much sales or use tax revenue would be generated for Metcalf County due to construction activity? For the Bowling Green region? For the State?

C. Is the estimate of the 300 direct construction jobs created specific to the Glover Creek Project? The footnote on page 146 indicates that estimates are based on "Silicon Ranch's own projects."

D. What approximate percentage of those construction workers will come from Metcalfe County? The Bowling Green area?

E. Does the Applicant have any estimates of wages specific to Project construction and operational workers as opposed to BLS data?

F. What are region and industry specific income multipliers available from the Bureau of Economic Activity or through IMPLAN that should be applied here?

G. Is it correct that the chosen multipliers appear to be applied twice and are therefore double counting the economic effects of the income and spending of construction workers.

H. How much money will be spent on the purchase of materials / supplies in the local area each year during the operational phase? Metcalf County? Larger Bowling Green area?

Response:

A. In addition to local wages, the main regional purchases associated with the Project will be for construction sub-contracts including the fencing contractor, grading contractor, electrical contractors, and equipment rental. There will also be positive local impacts due to increased volume at local restaurants and gas stations, and demand for rental housing during the construction period. However, the majority of the materials and equipment that make up the solar facility such as the panels, racking system, inverters and transformers will all likely be imported from outside of Kentucky.
B. Please see response to XII. A. above.
C. Please see corrected page attached as Exhibit G.

D. Unfortunately, it is not possible to predict with accuracy at this time where the construction labor for the project will come from (i.e. what percentage of labor will come from Metcalfe County or the Bowling Green area). Availability of local training programs, assessment of local labor availability, appropriate local wage rates, and level of skill of local workers is an important step in the construction process, which has not commenced yet.
E. Please see response to XII. D. above.
F. A report of RIMS II Multipliers from the Bureau of Economic Analysis, US Department of Commerce is attached as Exhibit M. The report shows region and industry specific income multipliers for Metcalfe County, Kentucky.
G. Yes, the chosen multipliers were incorrectly applied twice. A corrected page is attached as Exhibit G.
H. During the operational phase, the main local purchases will be fuel and food for operations staff and local landscaping contractors. These purchases are not expected to be significant on an annual basis.

WITNESS: Carson Harkrader

## XIII Decommissioning

A. The application package indicates that the life of the project will be 40 years. What will happen to the project site after that time? To the facilities / structures on site?

Response: Please see Exhibit L for a decommissioning cost estimate and a short description of decommissioning procedures which are common practices for solar farms. There is also the option to retrofit the Project with modern technology to extend the life of the facility and its operation. Because solar racking systems are installed by being "pushed" into the ground versus anchored in concrete, there is a limited amount of concrete used throughout the Project site. Grading work is also limited as much as possible. These characteristics help facilitate the decommissioning of solar projects such as this one, and the return of the land to its prior use or to the landowner's chosen use at the time of decommissioning.

WITNESS: Carson Harkrader

# Exhibits Included:

# A, B, D, E, F, G, L, M

# Exhibit A1

# Exhibit A2

# Filed separately

# Exhibit B

Exhibit B

**Kirkland Appraisals**

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May 19, 2020

Carson Harkrader
Carolina Solar Energy
400 West Main Street, Suite 503
Durham, NC 27701

**RE: Glover Creek Solar Impact Study, Metcalfe County, KY**

Ms. Harkrader

The purpose of this letter is to address question from the Kentucky Siting Board related to the market impact analysis that I completed on this project on March 4, 2020.

For simplicity, I have the following responses to the questions forwarded to me and this letter should be attached to the original impact analysis.

1 - The first issue to address is the acreage involved in the project. The impact analysis identifies 322.44 acres to be impacted. The updated siteplan identifies approximately 400 acres. I reviewed that map and find no basis for changing the opinion of the original impact analysis. The distance between panels to adjoining homes remain unchanged. The comparable solar farms identified in the original report include numerous projects in a similar size showing no impact which supports this conclusion.

2 - I was asked why I did not include Louisville Gas and Electric Company and Kentucky Utilities Company in Shelby and Mercer counties in the Kentucky research. The short answer is that I looked at projects identified by Solar Energy Industries Association (SEIA) major projects, which does not identify those two projects. The only projects indicated by that map not included are related to the roof mounted L'oreal solar plant in Florence, Kentucky.

But I have since pulled data on both of the solar farms asked about. The E. W. Brown 10 MW solar farm was built in 2014 and adjoins three coal-fired units. Given that research studies that I have previously read regarding fossil fuel power plants including "The Effect of Power Plants on Local Housing Values and Rents" by Lucas W. Davis and published May 2010, it would not be appropriate to use any data from this solar farm due to the influence of the coal fired power plant that could have an impact on up to a one-mile radius. I note that the closest home to a solar panel at this site is 565 feet and the average distance is 1,026 feet. The homes are primarily clustered at the Herrington Lake frontage. Again, no usable data can be derived from this solar farm due to the adjoining coal fired plant.

The Cooperative solar farm in Shelby County is a 0.5 MW facility on 35 acres built in 2020 that is proposed to eventually be 4 MW. This project is too new and there have been no home sales adjoining this facility. The research on Kentucky was completed in November 2019 with an update in March 2020 and no data was pulled on this facility as it was still in construction. Until there are sales of property next to this project, I cannot pull any usable data from this solar farm.

3 - I was asked about impacts during construction. This is not a typical question I get as any development of a site will have a certain amount of construction, whether it is for a

commercial agricultural use such as large scale poultry operations or a new residential subdivision. I defer to the traffic study on traffic impacts. Construction will be temporary and consistent with other development uses of the land and in fact dust from the construction will likely be less than most other construction projects given the minimal grading. I would not anticipate any impacts on property value due to construction on the site. I note that in the matched pairs that I have included there have been a number of home sales that happened after a solar farm was approved but before the solar farm was built showing no impact on property value. Therefore the anticipated construction had no impact as shown by that data.

4- I was asked about the 37 solar farms and the 81 matched pair sets and how I chose those. This is the total of all the usable home and land sales adjoining the 650 solar farms that I have looked at over the last 9 years. Most of the solar farms that I have looked at are only a few years old and have not been in place long enough for home or land sales to occur next to them for me to analyze. There is nothing unusual about this given the relatively rural locations of most of the solar farms where home and land sales occur much less frequently and the number of adjoining homes is relatively small.

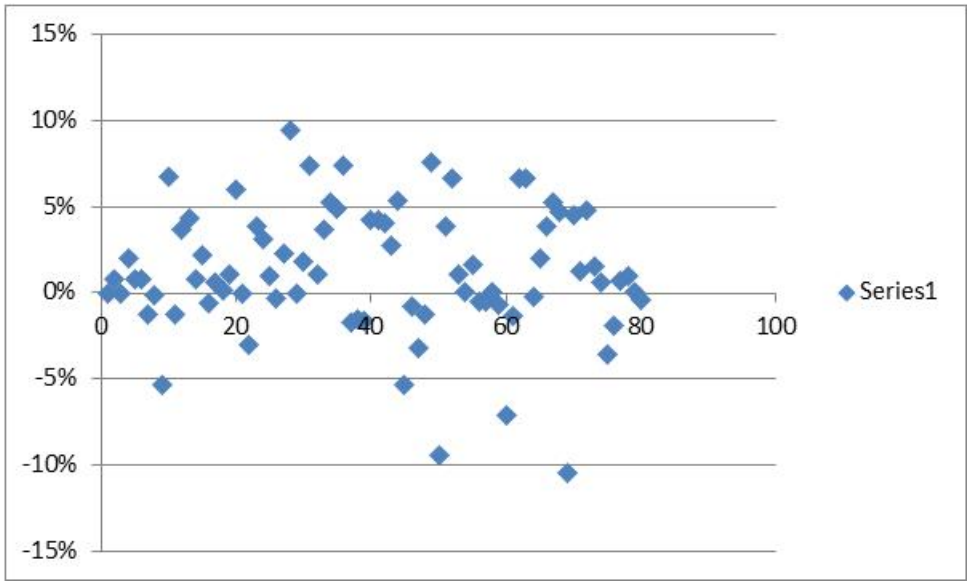
Essentially, I go back through the solar farms that I have looked at roughly once a year to see if there are any new sales. If there is a sale I have to be sure it is not an inhouse sale or to a related family member. A great many of the rural sales that I find are from one family member to another, which makes analysis impossible given that these are not "arm's length" transactions. There are also numerous examples of sales that are "arm's length" but are still not usable due to other factors such as the adjoining coal fired plant noted in Question 2. I have looked at homes that require a driveway crossing a railroad spur, homes in close proximity to large industrial uses, as well as homes adjoining large state parks, or homes that are over 100 years old with multiple renovations. Such sales are not usable as they have multiple factors impacting the value that are tangled together. You can't isolate the impact of the coal fired plant, the industrial building, or the railroad unless you are comparing that sale to a similar property with similar impacts. Matched pair analysis requires that you isolate properties that only have one differential to test for, which is why the type of sales noted above are not appropriate for analysis.

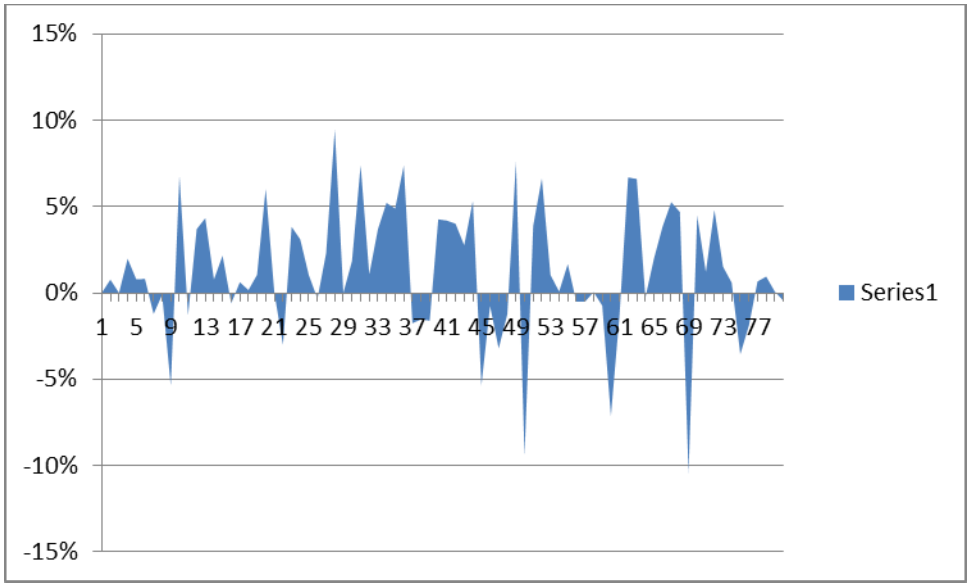
So once I go through all of the sales and eliminate the family transactions and those sales with multiple differentials, I am left with 81 matched pairs to analyze. The only other sales that I have eliminated from the analysis are home sales under $100,000, which there haven't been many such examples, but at that price range it is difficult to identify any impacts through matched pair analysis. As can be seen from a later question, I have not cherry picked the data to include just the sales that support one direction in value, but I have included all of them to see where the data takes me.

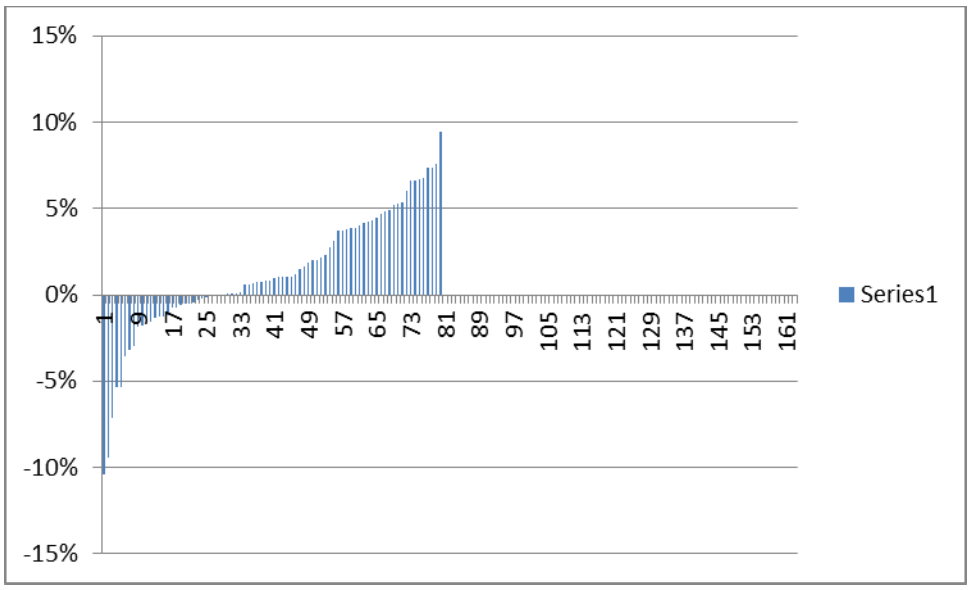
5- I chose the larger solar farms based on approximately 20 MWs and up as outlined on Page 94.

6- I was asked about the spread of measured impacts. The spread shows a -10% to a +9% impact on adjoining properties with an aggregate rate of +1%. This is how data in large groups looks. To put this in context I have provided a couple of charts/graphs to illustrate what the spread is showing. The first is a scatter point that shows the weight of the points clustered right at 0%. There are 5 points showing -5% or greater impacts and 15 showing impacts of +5% or greater. This leaves 62 points between -5% and +5%. I have an area chart following that to show the weight of the area is in the 0 to +5% of the chart. Following that I have reordered all of the adjustments into lowest to highest and that chart shows again the weight of the data in the 0 to +5% impact area with only a small amount in the 0 to -5% range.

So given that there are 3 times as many examples of enhancements over 5% to property value over the number of times a negative impact over 5% were identified and that the preponderance of the data falls between -5% and +5%, with most of that being between 0% and +5%, the conclusion of no impact is well established. The range with some higher and some lower is just a function of gathering large samples and not cherry picking the data but showing everything including the outliers.






If you have any further questions please call me any time.

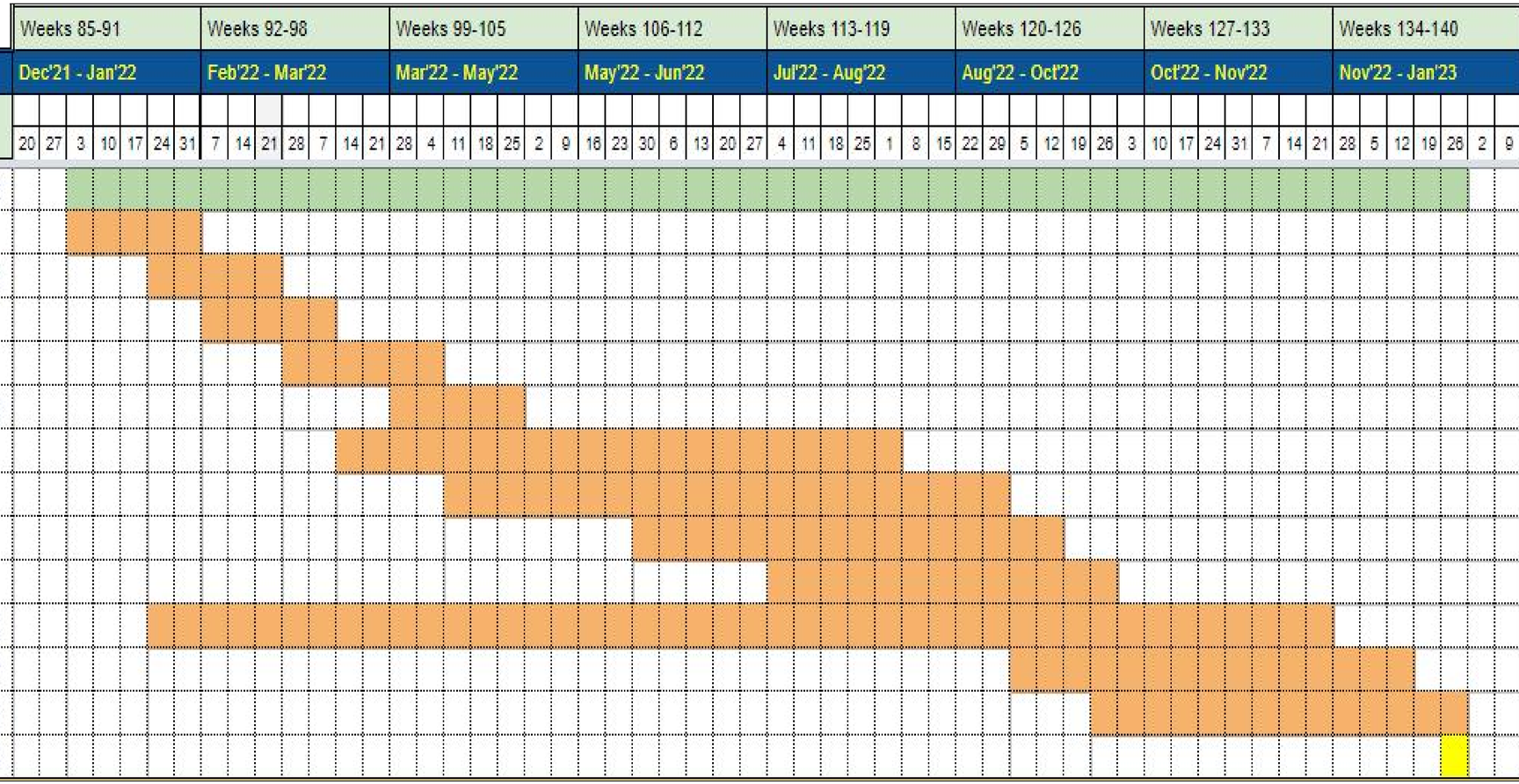
Sincerely,

Richard C. Kirkland, Jr., MAI
Kirkland Appraisals, LLC

# Exhibit C

# Exhibit C

| Task | Start | End |
|---|---|---|
| Solar Construction Timeline | Mon 1/03/22 | Fri 12/30/22 |
| *Tree Cutting and Grubbing* | Mon 1/03/22 | Fri 2/04/22 |
| *Spot grading & staging setup* | Mon 1/24/22 | Thu 2/24/22 |
| *Racking Pile Construction* | Thu 2/10/22 | Fri 3/11/22 |
| *Equipment Pad Installation (Inverter, transform* | Mon 2/28/22 | Fri 4/08/22 |
| *Electrical Trenching* | Mon 3/28/22 | Mon 4/25/22 |
| *Solar Racking Construction* | Mon 3/14/22 | Fri 8/05/22 |
| *Solar Panel Installation* | Mon 4/11/22 | Fri 9/02/22 |
| *Stringing & Wiring Installation* | Wed 6/01/22 | Fri 9/16/22 |
| *Array Quality Control & Inspections* | Mon 7/04/22 | Fri 9/30/22 |
| *Substation Installation* | Mon 1/24/22 | Fri 11/25/22 |
| *Final Inspections & Testing* | Thu 9/08/22 | Fri 12/16/22 |
| *Commissioning & Grid Backfeed* | Fri 9/30/22 | Fri 12/30/22 |
| *In-Service Date* | Fri 12/30/22 | Fri 12/30/22 |




CAROLINA SOLAR ENERGY

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

55 MW Solar Farm
Construction
Timeline Estimate

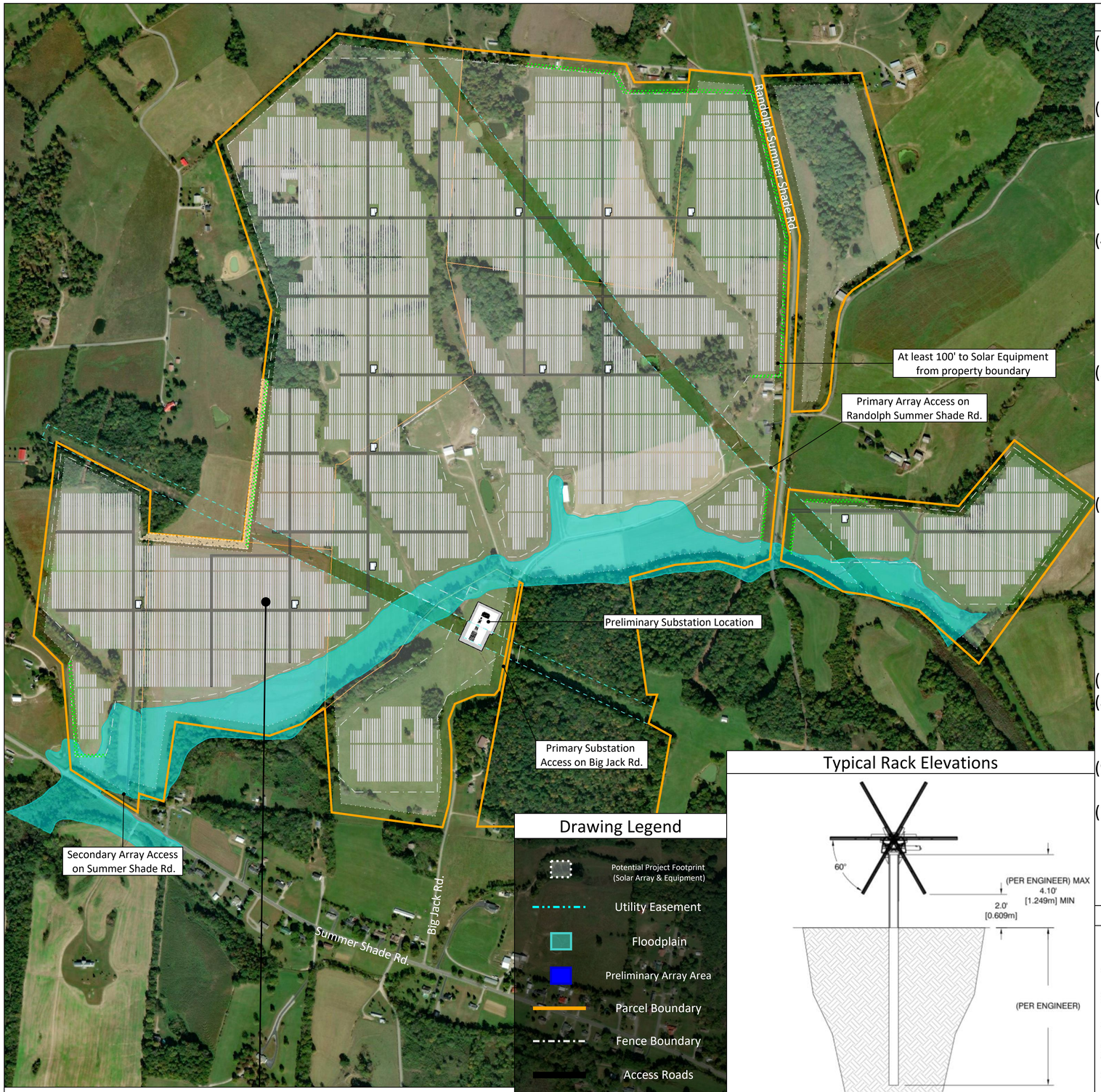
ISSUE
5.20.20

PROJECT
Glover Creek

DRAWN BY
CJ

DESCRIPTION
Timeline Estimate

# Exhibit D




Solar panel, equipment and road locations are indicative and may be adjusted within the shaded areas shown within the Project Footprint

## Drawing Legend

- Potential Project Footprint (Solar Array & Equipment)
- Utility Easement
- Floodplain
- Preliminary Array Area
- Parcel Boundary
- Fence Boundary
- Access Roads
- Vegetative Buffer
- Pollinator Plantings

## Typical Rack Elevations

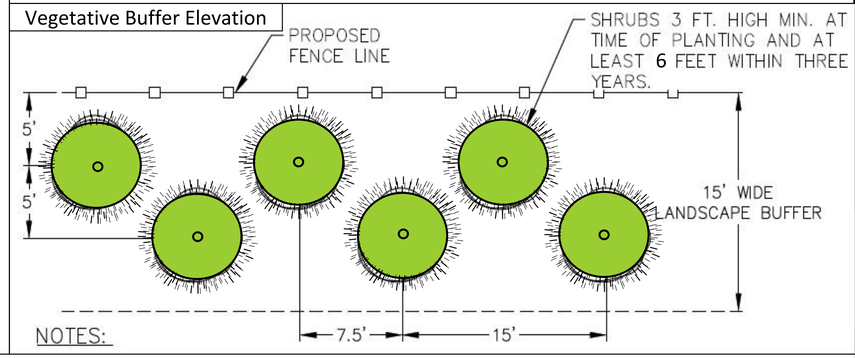



1 TYPICAL PIER HEIGHT
SCALE: N.T.S.

## Standard Notes

(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) The property lines, existing improvements, and topographic data shown hereon are not based on a field survey and have been completed from ArcGIS & Google Earth Imagry. No field evidence of property markers were located with this Exhibit.
(3) Wetlands and Streams are shown representative of a delineation received by Carolina Solar Energy.
(4) Project area will be cleared and grubbed as necessary, retaining pre-development drainage patterns as much as possible. Minor grading will occur around inverter areas to divert surface drainage. Areas subject to rutting during construction will be temporarily stabilized with gravel that will remain after construction. Soil conditions and equipment loads will determine final design.
(5) Proposed construction and temporary laydown yard/construction staging area to be used during site construction. A portion of this area will be covered with gravel to allow delivery of construction materials. Prior to construction, this area will be compacted by a smooth drum or sheepsfoot roller to reduce/prevent rutting. Following construction gravel laydown yard will be removed.
(6) Access aisles shown on this plan indicate construction and maintenance access points for ingress/egress. Prior to construction, these aisles are compacted by a smooth drum or sheepsfoot roller to reduce/prevent rutting. Gravel may be placed in high traffic or poorly draining areas during construction activites to improve access. Soil access aisle will be scarified, aerated, and re-seeded after construction. Access aisles to inverters may require gravel to support delivery equipment loads. Soil conditions and final equipment selection will determine if gravel access aisles will be required to inverter locations
(7) All Right-Of-Ways are public unless noted otherwise.
(8) Utility lines and services shown hereon are approximate per aerial photography or as reported by various responsible parties. Location of underground utilities are not shown. Call appropriate authorities before digging.
(9) No lighting is proposed for the array area. The Interconnection Substation will have some lighting.
(10) 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.

## Vegetative Buffer Elevation




CAROLINA SOLAR ENERGY

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

**Glover Creek Farm**
**55 MWAC**

**ISSUE**
05.26.20
12.02.19
12.05.19

**PROJECT**
Glover Creek

**DRAWN BY**
CJ

**DESCRIPTION**
Array Layout

a

# Exhibit E

# Exhibit E

Property Listings near Glover Creek Solar
Compiled: 5/26/2020

| Type | Listing Price | House Size (sqft) | Acres | Source |
|---|---|---|---|---|
| Residential | $ 72,900.00 | 2,348.00 | 1.19 | https://www.realtor.com/realestateandhomes-detail/1273-Whitlow-Rd_Summer-Shade_KY_42166_M35172-78280?view=qv |
| Residential | $ 179,000.00 | 2,099.00 | 0.63 | https://www.realtor.com/realestateandhomes-detail/8446-Randolph-Summer-Shade-Rd_Summer-Shade_KY_42166_M40602-68864?view=qv |
| Residential | $ 33,500.00 | 672.00 | 2.09 | https://www.realtor.com/realestateandhomes-detail/149-Richardson-Spur-Rd_Summer-Shade_KY_42166_M39609-92701?view=qv |
| Residential | $ 99,500.00 | 1,680.00 | 2.32 | https://www.realtor.com/realestateandhomes-detail/824-Roy-Grider-Rd_Summer-Shade_KY_42166_M35962-07546?view=qv |
| Residential | $ 114,990.00 | 2,079.00 | 1 | https://www.realtor.com/realestateandhomes-detail/450-Pitcock-Rd_Summer-Shade_KY_42166_M35782-45362?view=qv |
| Residential Lot | $ 9,950.00 | n/a | 1.1 | https://www.realtor.com/realestateandhomes-detail/2420-Summer-Shade-Rd_Summer-Shade_KY_42166_M99638-23946?view=qv |
| Residential | $ 80,000.00 | 1,584.00 | 0.42 | https://www.realtor.com/realestateandhomes-detail/9195-Burkesville-Rd_Eighty-Eight_KY_42130_M41277-85613?view=qv |
| Land | $ 249,900.00 | n/a | 100 | https://www.realtor.com/realestateandhomes-detail/3600-Randolph-Summer-Shad-Rd_Summer-Shade_KY_42166_M91645-78817?view=qv |
| Land + House | $ 479,000.00 | No info | 194 | https://www.realtor.com/realestateandhomes-detail/880-Cecil-Branstetter-Rd_Summer-Shade_KY_42166_M96641-68400?view=qv |
| House | $ 75,000.00 | 1,484.00 | 0.76 | https://www.coldwellbanker.com/property/1381-Poplar-Grove-Rd-Summer-Shade-KY-42166/99662863/detail?src=map&hdMlsNumber=20201358&hdMlsSource=KY_SOKMLS |
| Land | $ 34,600.00 | n/a | 12.9 | https://www.coldwellbanker.com/property/498-Sims-Rd-Summer-Shade-KY-42166/99560461/detail?src=map&hdMlsNumber=40702&hdMlsSource=KY_SCKAR |
| Land | $ 3,500.00 | n/a | 9.04 | https://www.realtor.com/realestateandhomes-detail/999-State-Highway-1520_Summer-Shade_KY_42166_M94291-91966?view=qv |
| Land | $ 235,850.00 | n/a | 89 | https://www.landwatch.com/Metcalfe-County-Kentucky-Farms-and-Ranches-for-sale/pid/336888202 |
| Land | $ 80,000.00 | n/a | 52.04 | https://www.landsofamerica.com/property/890-Gordon-Branch-Road-Summer-Shade-Kentucky-42166/7674670/ |
| Land | $ 374,900.00 | n/a | 125 | https://www.zillow.com/homedetails/2400-Randolph-Summer-Shade-Rd-Summer-Shade-KY-42166/2080094494_zpid/ |
| Land | $ 225,000.00 | n/a | 107 | https://www.zillow.com/homedetails/60-Good-Folks-Rd-Summer-Shade-KY-42166/115412281_zpid/ |

*all listings are approximately 3 or less miles from Glover Creek Solar

# Exhibit F

Historical Traffic Volume Summary

Station Details:

| | |
|---|---|
| Sta ID: | 005293 |
| Sta Type: | Full Coverage |
| Map: | MapIt |
| District: | 3 |
| County: | Barren |
| Route: | 005-KY-0090 -000 |
| Route Desc: | BURKESVILLE RD |

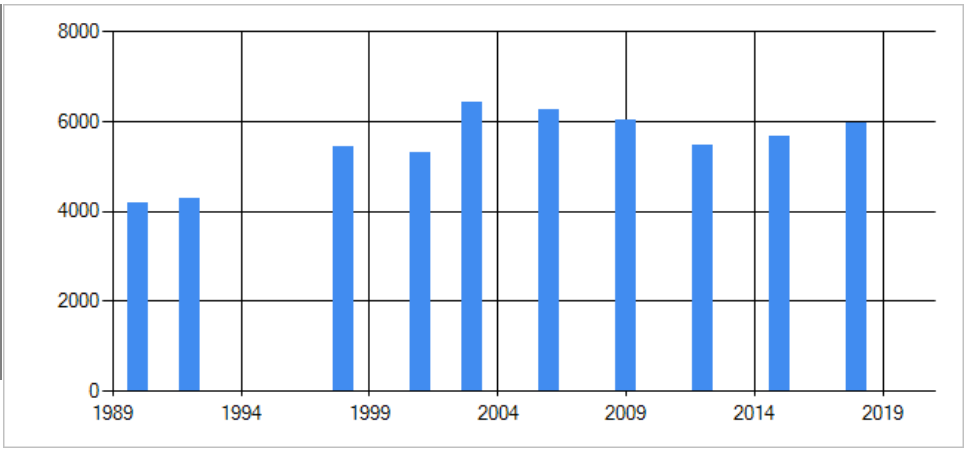
| | |
|---|---|
| Begin MP: | 17.0490 |
| Begin Desc: | KY 1330 |
| End Mp: | 17.9870 |
| End Desc: | KY 839 |
| Impact Year: | |
| Year Added: | |

Newest Count:

| | |
|---|---|
| AADT: | 5960 |
| Year: | 2018 |
| % Single: | 4.8150 |
| % Combo: | 5.3070 |
| K Factor: | 9.40 |
| D Factor: | 57 |

Definitions:
Sta. ID - Three digit county number + station number
MP - milepoint
Impact Year – year of significant change to traffic pattern within station segment
AADT – Annual Average Daily Traffic – the annualized average 24-hour volume of vehicles on a segment of roadway
% Single – single unit truck volume as a percentage of the AADT
% Combo – combination truck volume as a percentage of the AADT
K Factor – peak hour volume as a percentage of the AADT
D Factor – percentage of peak hour volume flowing in the peak direction

| Year | AADT | Year | AADT | Year | AADT |
|---|---|---|---|---|---|
| 2020 | | 2010 | | 2000 | |
| 2019 | | 2009 | 6030 | 1999 | |
| 2018 | 5960 | 2008 | | 1998 | 5450 |
| 2017 | | 2007 | | 1997 | |
| 2016 | | 2006 | 6260 | 1996 | |
| 2015 | 5685 | 2005 | | 1995 | |
| 2014 | | 2004 | | 1994 | |
| 2013 | | 2003 | 6420 | 1993 | |
| 2012 | 5470 | 2002 | | 1992 | 4300 |
| 2011 | | 2001 | 5310 | 1991 | |



Historical Traffic Volume Summary

Station Details:

| | |
|---|---|
| Sta ID: | 085296 |
| Sta Type: | Full Coverage |
| Map: | MapIt |
| District: | 3 |
| County: | Metcalfe |
| Route: | 085-KY-0090 -000 |
| Route Desc: | SUMMER SHADE RD |

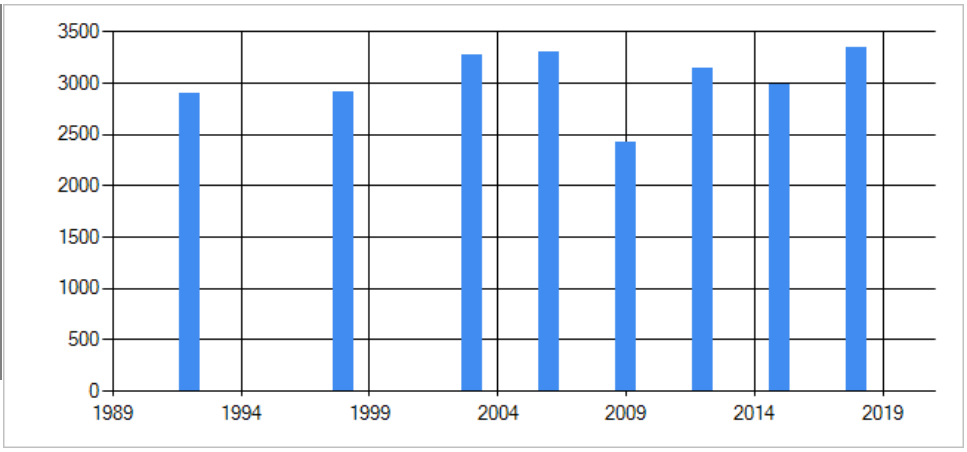
| | |
|---|---|
| Begin MP: | 4.7690 |
| Begin Desc: | KY 163 |
| End Mp: | 5.5540 |
| End Desc: | LONE STAR RIDGE ROAD |
| Impact Year: | |
| Year Added: | |

Newest Count:

| | |
|---|---|
| AADT: | 3351 |
| Year: | 2018 |
| % Single: | 4.8150 |
| % Combo: | 5.3070 |
| K Factor: | 8.50 |
| D Factor: | 57 |

Definitions:
Sta. ID - Three digit county number + station number
MP - milepoint
Impact Year – year of significant change to traffic pattern within station segment
AADT – Annual Average Daily Traffic – the annualized average 24-hour volume of vehicles on a segment of roadway
% Single – single unit truck volume as a percentage of the AADT
% Combo – combination truck volume as a percentage of the AADT
K Factor – peak hour volume as a percentage of the AADT
D Factor – percentage of peak hour volume flowing in the peak direction

| Year | AADT | Year | AADT | Year | AADT |
|---|---|---|---|---|---|
| 2020 | | 2010 | | 2000 | |
| 2019 | | 2009 | 2430 | 1999 | |
| 2018 | 3351 | 2008 | | 1998 | 2920 |
| 2017 | | 2007 | | 1997 | |
| 2016 | | 2006 | 3310 | 1996 | |
| 2015 | 2992 | 2005 | | 1995 | |
| 2014 | | 2004 | | 1994 | |
| 2013 | | 2003 | 3280 | 1993 | |
| 2012 | 3150 | 2002 | | 1992 | 2900 |
| 2011 | | 2001 | | 1991 | |



Historical Traffic Volume Summary

Station Details:

| | |
|---|---|
| Sta ID: | 085296 |
| Sta Type: | Full Coverage |
| Map: | MapIt |
| District: | 3 |
| County: | Metcalfe |
| Route: | 085-KY-0090 -000 |
| Route Desc: | SUMMER SHADE RD |

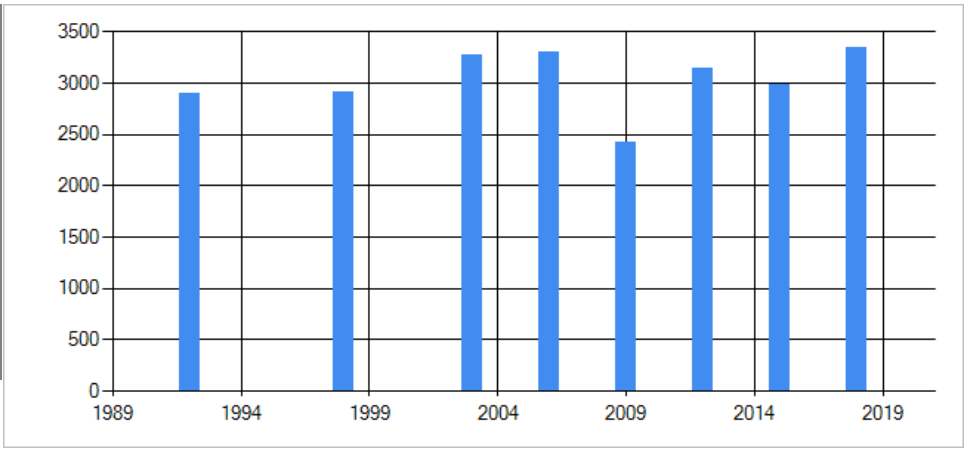
| | |
|---|---|
| Begin MP: | 4.7690 |
| Begin Desc: | KY 163 |
| End Mp: | 5.5540 |
| End Desc: | LONE STAR RIDGE ROAD |
| Impact Year: | |
| Year Added: | |

Newest Count:

| | |
|---|---|
| AADT: | 3351 |
| Year: | 2018 |
| % Single: | 4.8150 |
| % Combo: | 5.3070 |
| K Factor: | 8.50 |
| D Factor: | 57 |

Definitions:
Sta. ID - Three digit county number + station number
MP - milepoint
Impact Year – year of significant change to traffic pattern within station segment
AADT – Annual Average Daily Traffic – the annualized average 24-hour volume of vehicles on a segment of roadway
% Single – single unit truck volume as a percentage of the AADT
% Combo – combination truck volume as a percentage of the AADT
K Factor – peak hour volume as a percentage of the AADT
D Factor – percentage of peak hour volume flowing in the peak direction

| Year | AADT | Year | AADT | Year | AADT |
|---|---|---|---|---|---|
| 2020 | | 2010 | | 2000 | |
| 2019 | | 2009 | 2430 | 1999 | |
| 2018 | 3351 | 2008 | | 1998 | 2920 |
| 2017 | | 2007 | | 1997 | |
| 2016 | | 2006 | 3310 | 1996 | |
| 2015 | 2992 | 2005 | | 1995 | |
| 2014 | | 2004 | | 1994 | |
| 2013 | | 2003 | 3280 | 1993 | |
| 2012 | 3150 | 2002 | | 1992 | 2900 |
| 2011 | | 2001 | | 1991 | |



Historical Traffic Volume Summary

Station Details:

| | |
|---|---|
| Sta ID: | 085502 |
| Sta Type: | Full Coverage |
| Map: | MapIt |
| District: | 3 |
| County: | Metcalfe |
| Route: | 085-KY-0640 -000 |
| Route Desc: | RANDOLPH SUMMER SHADE RD |

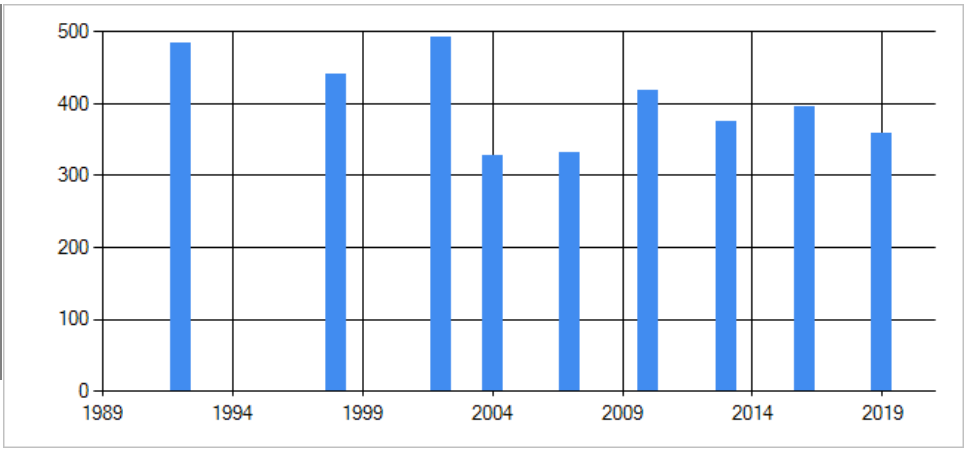
| | |
|---|---|
| Begin MP: | 0 |
| Begin Desc: | KY 90 AT SUMMER SHADE |
| End Mp: | 1.6170 |
| End Desc: | PEDIGO LANE |
| Impact Year: | |
| Year Added: | |

Newest Count:

| | |
|---|---|
| AADT: | 358 |
| Year: | 2019 |
| % Single: | |
| % Combo: | |
| K Factor: | 13.40 |
| D Factor: | 58 |

Definitions:
Sta. ID - Three digit county number + station number
MP - milepoint
Impact Year – year of significant change to traffic pattern within station segment
AADT – Annual Average Daily Traffic – the annualized average 24-hour volume of vehicles on a segment of roadway
% Single – single unit truck volume as a percentage of the AADT
% Combo – combination truck volume as a percentage of the AADT
K Factor – peak hour volume as a percentage of the AADT
D Factor – percentage of peak hour volume flowing in the peak direction

| Year | AADT | Year | AADT | Year | AADT |
|---|---|---|---|---|---|
| 2020 | | 2010 | 419 | 2000 | |
| 2019 | 358 | 2009 | | 1999 | |
| 2018 | | 2008 | | 1998 | 442 |
| 2017 | | 2007 | 331 | 1997 | |
| 2016 | 395 | 2006 | | 1996 | |
| 2015 | | 2005 | | 1995 | |
| 2014 | | 2004 | 327 | 1994 | |
| 2013 | 375 | 2003 | | 1993 | |
| 2012 | | 2002 | 493 | 1992 | 484 |
| 2011 | | 2001 | | 1991 | |



# Exhibit G

Exhibit G

**Section 4(2)(j)**

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

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

**Economic Impact: Capital Investment**

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

**Economic Impact: Construction Phase**

Construction of the facility is anticipated to create approximately 450 jobs -- 300 direct and 150 indirect and induced[1], the vast majority of which will be filled by local craft and contract workers. In addition to these skilled labor positions, there will be at least 30 highly paid construction management positions, including a project manager, assistant project manager, eight project engineers, two safety managers, and various support engineers, construction superintendents, and construction managers. These 450 jobs translate to a projected injection of approximately $15M[2] in new wages into the local economy, which will support local businesses, and a labor income multiplier impact of an additional $7.5M.[3] The **total construction phase economic impact of the facility (exclusive of the capital investment and tax revenues) is projected to be at least $22.5M**.

---

[1] Based on studies of direct, indirect, and induced job creation associated with similar projects using the IMPLAN platform and databases

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

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

# Exhibit L

Exhibit L

SOLAR FARM: Glover Creek Solar
SITE ADDRESS: Metcalfe County, KY
PREPARED FOR: Carolina Solar Energy
PROJECT NUMBER: 115025.15
DATE: 3-Dec-19

**Ballentine Associates, P.A.**
221 Providence Road
Chapel Hill, NC 27514
(919) 929-0481

## PRELIMINARY OPINION OF PROBABLE COST FOR SOLAR FARM DECOMMISSIONING

**Assumtions:** System Size Conversion Factor: 11

55.0 MW AC
-- Tracker Racking 71.5 MW DC
-- Poly Modules 400 W 1.30 DC/AC Ratio
-- Dual Inverters
Summary:

| ITEM | QUANTITY | UNIT | SALVAGE UNIT COST | TOTAL SALVAGE VALUE | REMOVAL UNIT COST | TOTAL COST TO REMOVE/RESTORE | NET GAIN/LOSS | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| Wire (Copper) | 436,351 | LB | $2.66 | $1,158,854.73 | $0.20 | $87,270.17 | $1,071,584.56 | See Note 1 |
| Wire (Aluminum) | 11,967 | LB | $0.81 | $9,711.23 | $0.20 | $2,393.47 | $7,317.76 | See Note 1 |
| Racking System | 8,317,100 | LB | $0.13 | $1,052,549.15 | $0.08 | $665,368.00 | $387,181.15 | See Note 2 |
| Solar Modules ( Crystalline) | 178,750 | EA | $4.00 | $715,000.00 | $2.00 | $357,500.00 | $357,500.00 | See Note 3* |
| Inverters | 20,615 | LB of Metal | $0.91 | $18,684.80 | $2,250.00 | $22,500.00 | -$3,815.20 | See Note 4 |
| Transformers | 25,000 | kVA | $5.00 | $125,000.00 | $5,000.00 | $50,000.00 | $75,000.00 | See Note 5 |
| Concrete Pad | 10 | EA | $0.00 | $0.00 | $1,500.00 | $15,000.00 | -$15,000.00 | See Note 6 |
| 6' Chain Link Fencing | 258,000 | LB | $0.04 | $10,320.00 | $3.50 | $210,000.00 | -$199,680.00 | See Note 7 |
| Substation | 0 | EA | $17,000.00 | $0.00 | $85,000.00 | $0.00 | $0.00 | See Note 8 |
| Battery Storage System | 5 | EA | $2,000.00 | $10,000.00 | $15,000.00 | $75,000.00 | -$65,000.00 | See Note 9 |
| Land Restoration | 450 | AC | $0.00 | $0.00 | $500.00 | $225,000.00 | -$224,500.00 | See Note 10 |
| Erosion Control | 450 | AC | $0.00 | $0.00 | $2,000.00 | $900,000.00 | -$900,000.00 | See Note 11 |
| **TOTAL** | | | | **$3,100,119.91** | | **$2,610,031.64** | **$490,588.27** | |

**Notes:**

**1. Wire** Excavate to cable depth at one end of trench. Use tractor or other equipment to remove all wiring and conduits in common trench.

| | Length | LBs/1000 FT | Total LBs |
|---|---|---|---|
| MV - 1/0 AWG (Copper) | 29,260 | 363.013 | 10,622 |
| MV - 1/3 (AL) | 29,260 | 409 | 11,967 |
| AC output (Copper) | 73,590 | 99.181 | 7,299 |
| DC output (Copper) | 6,325,000 | 66.155 | 418,430 |
| Total Copper | | | **436,351** |
| Total Aluminium | | | **11,967** |
| Cost to Remove: | $0.20 | per pound | |

**2. Racking System** Racking frame: Cut legs and cross beams to appropriate size and transport to staging area. Racking Posts: Remove via post-puller and transport to staging area. Haul all removed pieces of racking system to recycle center via flatbed.

| | | |
|---|---|---|
| Racks: | 2530 | |
| Posts (10' W6x9) per rack: | 13 | |
| Total Posts: | 32,890 | |
| Total post weight (LBS): | **2,960,100** | |
| Total Racking Weight (LBS): | **5,357,000** | |
| Total Structure Weight: | **8,317,100** | |
| Cost to Remove Racking System: | $0.10 | per pound |

# Exhibit L

**3. Solar Modules**

Hand remove modules and place on pallets. Transport pallets to Module recycle center. Assumed salvage value for crystalline modules.

| | | |
|---|---|---|
| Cost to Remove Modules: | $2.00 | Per module |
| Salvage Value : | $0.01 | Per Watt |

**4. Inverters**

Removal by crane onto flatbed with no dissasembly. Haul to recycle center.

| | | Total LBS | $/LB |
|---|---|---|---|
| Number of Inverters: | 10 | 41,230 | |
| Weight Per Inverter (LBS): | 4123 | | |
| % Steel: | 20% | 8,246 | $0.13 |
| % Aluminum: | 20% | 8,246 | $0.81 |
| % Copper: | 10% | 4,123 | $2.66 |
| Total: | | **20,615** | $0.91 |
| Cost to Remove Inverters | $2,250 | Each | |

**5. Transformers**

Removal by crane onto flatbed with no dissasembly. Haul to recycle center. Oil removal performed by recycle center.

| | | |
|---|---|---|
| Total Transformers: | 10 | |
| Transformer: | 2,500 | kVA |
| Total kVA: | 25,000 | |
| Value: | $5/kVA | |
| Cost to Remove Transformer: | $5,000 | |

**6. Concrete Pad**

Assumed (1) 100 SF precast pad per transfomer and battery system. Remove precast concrete pad via excavator onto flatbed. Haul to recycle center. Assumed $45 fee per load at recycle center.

| | |
|---|---|
| Cost to remove pad: | $1,500 |

**7. Chain Link Fencing**

Assumed 1 post per 10 LF. Assumed post weight of 3 lbs. Machine roll fence fabric, remove posts via post-puller. Transport removed fencing matierials to recycle center.

| | | | |
|---|---|---|---|
| Fencing: | | Post weight = | 18000 lbs |
| Total LF on Project: | 60,000 | Fence Weight = | 240000 lbs |
| **Total Weight:** | **258,000** | lbs | |
| Cost to remove fencing: | $3.50 | LF | |

**8. Substation & Substation Equipment**

Remove equipment via crane onto flatbed. Haul to recycle center. Remove substation fencing via fence-roller and remove posts via post-puller. Haul to recycle center. Assumed salvage value.

| | |
|---|---|
| Cost to Remove: | $85,000 |
| Salvage Value: | 20% of Cost to Remove |

**9. Battery Storage System**

Assumed 40' containerized system. Load battery system onto flat-bed via crane. Haul to recycle center. Assumed salvage value.

| | | |
|---|---|---|
| Cost to Remove: | $15,000 | EA |
| Salvage Value: | $2,000 | EA |

**10. Land Restoration**

Includes: removal of gravel access drives via skid-steer and haul off site; Re-seeding of disturbed areas via atv drill-seeder at 5lbs per acre, stablized with

| | | |
|---|---|---|
| Cost to restore: | $500 | Acre |

**11. Erosion Control**

Install perimeter erosion control measures (assumes sediment basins will not be required) before decommissioning begins and remove erosion control measures following decommissioning. Includes erosion control permitting.

| | | |
|---|---|---|
| Cost : | $2,000 | Acre |

Exhibit L

**Scrap Metal Unit Pricing**

# NON-FERROUS

Trading summary | Current year summary | Price graph | Average prices | Useful links

Data valid for 2 December 2019

## LME OFFICIAL PRICES, US$ PER TONNE

| CONTRACT | ALUMINIUM ALLOY | ALUMINIUM | COPPER |
|---|---|---|---|
| Cash Buyer | 1310.00 | 1789.00 | 5855.00 |

## LME ALUMINIUM

Trading summary | Current year summary | Price graph | Average prices | Contract specs | Useful links

LME ALUMINIUM HISTORICAL PRICE GRAPH

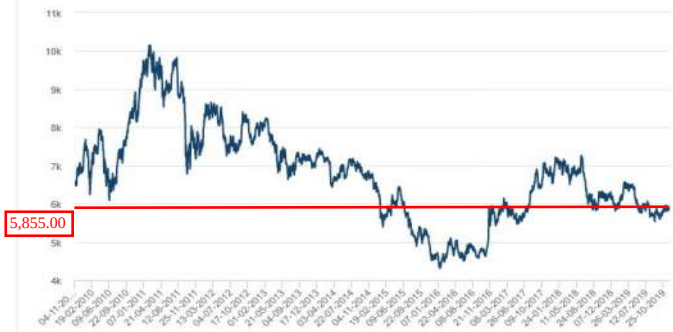

SHOW HISTORICAL DATA FOR

Date From 04-Nov-2009 Date To 02-Dec-2019

## LME COPPER

Trading summary | Current year summary | Price graph | Average prices | Contract specs | Useful links

LME COPPER HISTORICAL PRICE GRAPH




SHOW HISTORICAL DATA FOR

Date From 04-Nov-2009 Date To 02-Dec-2019

## LME STEEL SCRAP

Trading summary | Current year summary | Price graph | Average prices | Contract specs | Monthly overview

Data valid for 2 December 2019

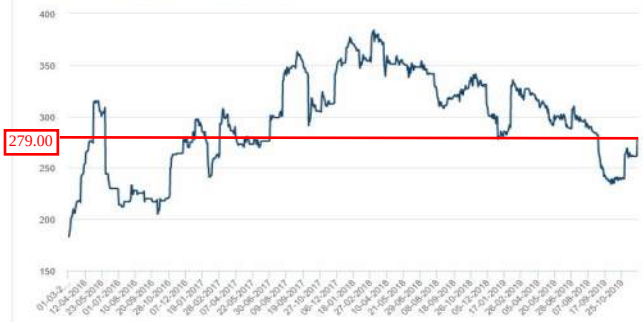
LME CLOSING PRICES, US$ PER TONNE

| CONTRACT | PRICE |
|---|---|
| Month 1 | 279.00 |

## LME STEEL SCRAP

Trading summary | Current year summary | Price graph | Average prices | Contract specs | Monthly overview

HISTORICAL PRICE GRAPH




Date From 04-Nov-2009 Date To 02-Dec-2019

1 Tonne = 2204.62 LBs

Price Conversion:

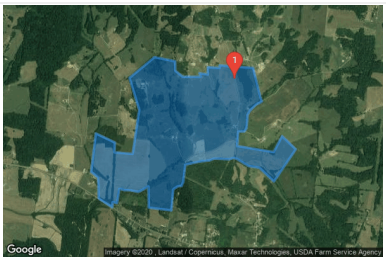
| Metal | $/LB |
|---|---|
| Aluminium: | 0.81 |
| Copper: | 2.66 |
| Steel: | 0.13 |

# Exhibit M

ForgeSolar

# Site Configuration: Glover Creek OP on N KY 640

Project site configuration details and results.




Created **Dec. 12, 2019 12:24 p.m.**
Updated **May 29, 2020 10:56 a.m.**
DNI **varies** and peaks at **1,000.0 W/m^2**
Analyze every **1** minute(s)
**0.5** ocular transmission coefficient
**0.002 m** pupil diameter
**0.017 m** eye focal length
**9.3 mrad** sun subtended angle
Timezone **UTC0**
Site Configuration ID: 34236.6289

## Summary of Results

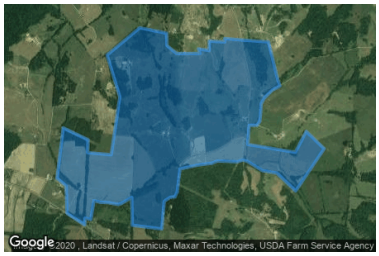
Glare with potential for temporary after-image predicted

| PV Name | Tilt | Orientation | "Green" Glare | "Yellow" Glare | Energy Produced |
|---|---|---|---|---|---|
| | deg | deg | min | min | kWh |
| PV array 1 | SA tracking | SA tracking | 203,346 | 58,260 | - |

## Component Data

### PV Array(s)

**Name**: PV array 1
**Axis tracking**: Single-axis rotation
**Tracking axis orientation**: 180.0 deg
**Tracking axis tilt**: 0.0 deg
**Tracking axis panel offset**: 0.0 deg
**Maximum tracking angle**: 60.0 deg
**Resting angle**: 60.0 deg
**Rated power**: -
**Panel material**: Smooth glass without AR coating
**Vary reflectivity with sun position?** Yes
**Correlate slope error with surface type?** Yes
**Slope error**: 6.55 mrad
**Approx. area**: 24,397,160 sq-ft




| Vertex | Latitude | Longitude | Ground elevation | Height above ground | Total elevation |
|---|---|---|---|---|---|
| | deg | deg | ft | ft | ft |
| 1 | 36.892608 | -85.724803 | 803.59 | 0.00 | 803.59 |
| 2 | 36.894839 | -85.724889 | 831.03 | 0.00 | 831.03 |
| 3 | 36.895456 | -85.725833 | 828.65 | 0.00 | 828.65 |
| 4 | 36.899643 | -85.725189 | 843.11 | 0.00 | 843.11 |
| 5 | 36.898648 | -85.722614 | 858.13 | 0.00 | 858.13 |
| 6 | 36.897584 | -85.722657 | 830.67 | 0.00 | 830.67 |
| 7 | 36.897413 | -85.720211 | 843.11 | 0.00 | 843.11 |
| 8 | 36.902217 | -85.719310 | 869.58 | 0.00 | 869.58 |
| 9 | 36.905683 | -85.720640 | 920.17 | 0.00 | 920.17 |
| 10 | 36.907948 | -85.717250 | 890.00 | 0.00 | 890.00 |
| 11 | 36.907502 | -85.714460 | 902.06 | 0.00 | 902.06 |
| 12 | 36.906473 | -85.714417 | 876.70 | 0.00 | 876.70 |
| 13 | 36.905821 | -85.713430 | 879.04 | 0.00 | 879.04 |
| 14 | 36.905823 | -85.710984 | 902.25 | 0.00 | 902.25 |
| 15 | 36.906201 | -85.711156 | 903.70 | 0.00 | 903.70 |
| 16 | 36.906064 | -85.710040 | 882.80 | 0.00 | 882.80 |
| 17 | 36.906853 | -85.710018 | 884.81 | 0.00 | 884.81 |
| 18 | 36.906767 | -85.708431 | 896.09 | 0.00 | 896.09 |
| 19 | 36.907059 | -85.708409 | 897.82 | 0.00 | 897.82 |
| 20 | 36.906939 | -85.706650 | 898.77 | 0.00 | 898.77 |
| 21 | 36.906776 | -85.703881 | 898.94 | 0.00 | 898.94 |
| 22 | 36.903627 | -85.702905 | 872.87 | 0.00 | 872.87 |
| 23 | 36.903123 | -85.702683 | 863.98 | 0.00 | 863.98 |
| 24 | 36.902763 | -85.703498 | 858.41 | 0.00 | 858.41 |
| 25 | 36.902145 | -85.704270 | 853.66 | 0.00 | 853.66 |
| 26 | 36.901647 | -85.704635 | 849.47 | 0.00 | 849.47 |
| 27 | 36.900755 | -85.704700 | 845.67 | 0.00 | 845.67 |
| 28 | 36.900172 | -85.704785 | 845.42 | 0.00 | 845.42 |
| 29 | 36.899863 | -85.705064 | 843.36 | 0.00 | 843.36 |
| 30 | 36.899846 | -85.705880 | 840.57 | 0.00 | 840.57 |
| 31 | 36.898267 | -85.706030 | 831.44 | 0.00 | 831.44 |
| 32 | 36.897615 | -85.701095 | 861.91 | 0.00 | 861.91 |
| 33 | 36.899348 | -85.699957 | 853.45 | 0.00 | 853.45 |
| 34 | 36.897907 | -85.698091 | 879.85 | 0.00 | 879.85 |
| 35 | 36.894406 | -85.701052 | 866.89 | 0.00 | 866.89 |
| 36 | 36.895882 | -85.703004 | 847.96 | 0.00 | 847.96 |
| 37 | 36.896088 | -85.704506 | 843.32 | 0.00 | 843.32 |
| 38 | 36.896860 | -85.706073 | 827.34 | 0.00 | 827.34 |
| 39 | 36.896963 | -85.706523 | 828.52 | 0.00 | 828.52 |
| 40 | 36.896826 | -85.707146 | 826.93 | 0.00 | 826.93 |
| 41 | 36.896894 | -85.709163 | 822.89 | 0.00 | 822.89 |
| 42 | 36.896705 | -85.709785 | 822.58 | 0.00 | 822.58 |
| 43 | 36.896517 | -85.711437 | 818.78 | 0.00 | 818.78 |
| 44 | 36.896225 | -85.713068 | 817.21 | 0.00 | 817.21 |
| 45 | 36.894337 | -85.713347 | 853.84 | 0.00 | 853.84 |
| 46 | 36.893925 | -85.713583 | 846.02 | 0.00 | 846.02 |
| 47 | 36.893874 | -85.714098 | 846.62 | 0.00 | 846.62 |
| 48 | 36.893548 | -85.714699 | 853.64 | 0.00 | 853.64 |
| 49 | 36.891248 | -85.714956 | 862.92 | 0.00 | 862.92 |
| 50 | 36.891557 | -85.718025 | 862.31 | 0.00 | 862.31 |
| 51 | 36.893874 | -85.718068 | 824.87 | 0.00 | 824.87 |
| 52 | 36.893359 | -85.719162 | 802.38 | 0.00 | 802.38 |
| 53 | 36.893273 | -85.719484 | 802.60 | 0.00 | 802.60 |
| 54 | 36.893428 | -85.720450 | 803.06 | 0.00 | 803.06 |
| 55 | 36.893462 | -85.721308 | 803.09 | 0.00 | 803.09 |
| 56 | 36.893599 | -85.721994 | 801.06 | 0.00 | 801.06 |
| 57 | 36.892038 | -85.722316 | 801.86 | 0.00 | 801.86 |

| | | | | | |
|---|---|---|---|---|---|
| 58 | 36.892141 | -85.722917 | 798.20 | 0.00 | 798.20 |
| 59 | 36.891592 | -85.722960 | 805.47 | 0.00 | 805.47 |
| 60 | 36.892398 | -85.724526 | 807.84 | 0.00 | 807.84 |
| 61 | 36.892563 | -85.724801 | 805.92 | 0.00 | 805.92 |

## Discrete Observation Receptors

| Number | Latitude | Longitude | Ground elevation | Height above ground | Total Elevation |
|---|---|---|---|---|---|
| | deg | deg | ft | ft | ft |
| OP 1 | 36.905534 | -85.706364 | 897.15 | 10.00 | 907.15 |

# PV Array Results

## Summary of PV Glare Analysis PV configuration and predicted glare

| PV Name | Tilt | Orientation | "Green" Glare | "Yellow" Glare | Energy Produced | Data File |
|---|---|---|---|---|---|---|
| | deg | deg | min | min | kWh | |
| PV array 1 | SA tracking | SA tracking | 203,346 | 58,260 | - | - |

*Click the name of the PV array to scroll to its results*

## PV & Receptor Analysis Results detailed results for each PV array and receptor

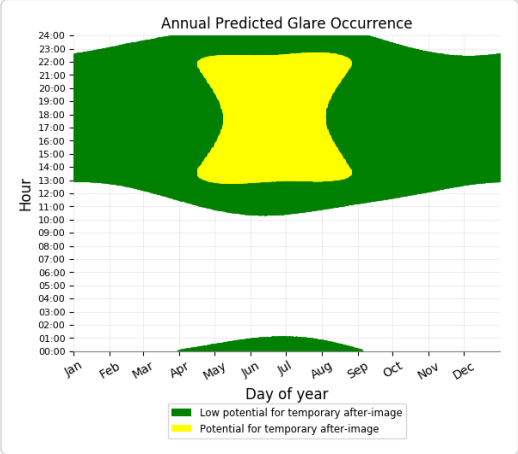
### PV array 1 potential temporary after-image

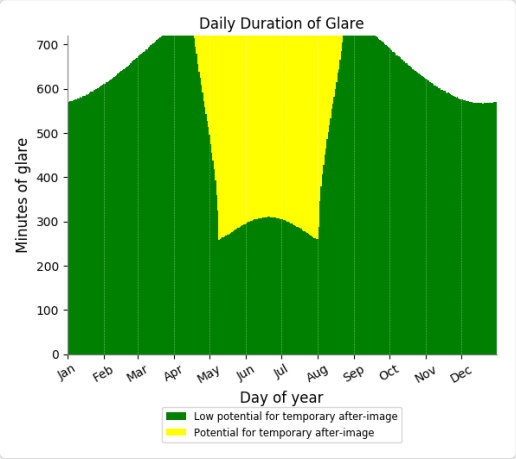
| Component | Green glare (min) | Yellow glare (min) |
|---|---|---|
| OP: OP 1 | 203346 | 58260 |

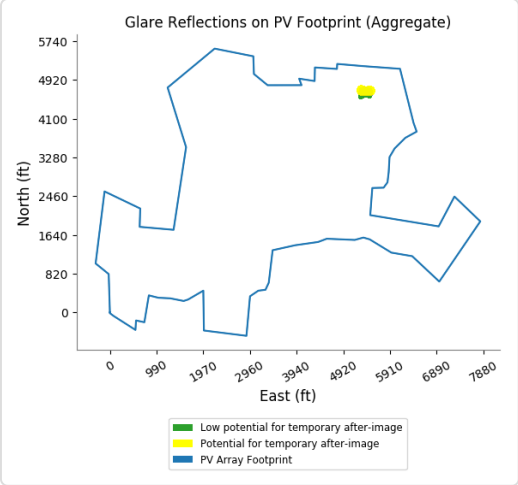
## PV array 1 - OP Receptor (OP 1)

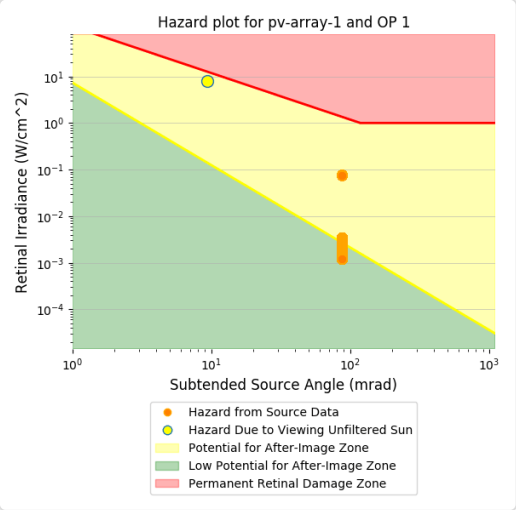
PV array is expected to produce the following glare for receptors at this location:

- 203,346 minutes of "green" glare with low potential to cause temporary after-image.
- 58,260 minutes of "yellow" glare with potential to cause temporary after-image.



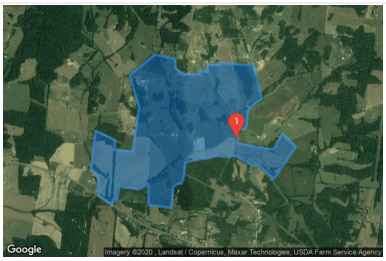
## Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

ForgeSolar

# Site Configuration: Glover Creek OP on S KY 640

Project site configuration details and results.




Created **Dec. 12, 2019 12:24 p.m.**
Updated **May 29, 2020 11:02 a.m.**
DNI **varies** and peaks at **1,000.0 W/m^2**
Analyze every **1** minute(s)
**0.5** ocular transmission coefficient
**0.002 m** pupil diameter
**0.017 m** eye focal length
**9.3 mrad** sun subtended angle
Timezone **UTC0**
Site Configuration ID: 34236.6289

## Summary of Results

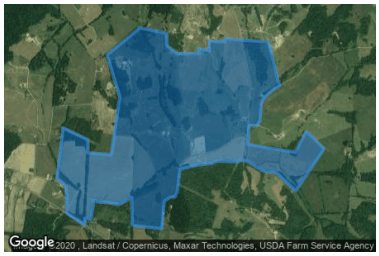
Glare with potential for temporary after-image predicted

| PV Name | Tilt | Orientation | "Green" Glare | "Yellow" Glare | Energy Produced |
|---|---|---|---|---|---|
| | deg | deg | min | min | kWh |
| PV array 1 | SA tracking | SA tracking | 70,412 | 65,008 | - |

## Component Data

### PV Array(s)

**Name**: PV array 1
**Axis tracking**: Single-axis rotation
**Tracking axis orientation**: 180.0 deg
**Tracking axis tilt**: 60.0 deg
**Tracking axis panel offset**: 0.0 deg
**Maximum tracking angle**: 60.0 deg
**Resting angle**: 60.0 deg
**Rated power**: -
**Panel material**: Smooth glass without AR coating
**Vary reflectivity with sun position?** Yes
**Correlate slope error with surface type?** Yes
**Slope error**: 6.55 mrad
**Approx. area**: 24,397,160 sq-ft




| Vertex | Latitude | Longitude | Ground elevation | Height above ground | Total elevation |
|---|---|---|---|---|---|
| | deg | deg | ft | ft | ft |
| 1 | 36.892608 | -85.724803 | 803.59 | 0.00 | 803.59 |
| 2 | 36.894839 | -85.724889 | 831.03 | 0.00 | 831.03 |
| 3 | 36.895456 | -85.725833 | 828.65 | 0.00 | 828.65 |
| 4 | 36.899643 | -85.725189 | 843.11 | 0.00 | 843.11 |
| 5 | 36.898648 | -85.722614 | 858.13 | 0.00 | 858.13 |
| 6 | 36.897584 | -85.722657 | 830.67 | 0.00 | 830.67 |
| 7 | 36.897413 | -85.720211 | 843.11 | 0.00 | 843.11 |
| 8 | 36.902217 | -85.719310 | 869.58 | 0.00 | 869.58 |
| 9 | 36.905683 | -85.720640 | 920.17 | 0.00 | 920.17 |
| 10 | 36.907948 | -85.717250 | 890.00 | 0.00 | 890.00 |
| 11 | 36.907502 | -85.714460 | 902.06 | 0.00 | 902.06 |
| 12 | 36.906473 | -85.714417 | 876.70 | 0.00 | 876.70 |
| 13 | 36.905821 | -85.713430 | 879.04 | 0.00 | 879.04 |
| 14 | 36.905823 | -85.710984 | 902.25 | 0.00 | 902.25 |
| 15 | 36.906201 | -85.711156 | 903.70 | 0.00 | 903.70 |
| 16 | 36.906064 | -85.710040 | 882.80 | 0.00 | 882.80 |
| 17 | 36.906853 | -85.710018 | 884.81 | 0.00 | 884.81 |
| 18 | 36.906767 | -85.708431 | 896.09 | 0.00 | 896.09 |
| 19 | 36.907059 | -85.708409 | 897.82 | 0.00 | 897.82 |
| 20 | 36.906939 | -85.706650 | 898.77 | 0.00 | 898.77 |
| 21 | 36.906776 | -85.703881 | 898.94 | 0.00 | 898.94 |
| 22 | 36.903627 | -85.702905 | 872.87 | 0.00 | 872.87 |
| 23 | 36.903123 | -85.702683 | 863.98 | 0.00 | 863.98 |
| 24 | 36.902763 | -85.703498 | 858.41 | 0.00 | 858.41 |
| 25 | 36.902145 | -85.704270 | 853.66 | 0.00 | 853.66 |
| 26 | 36.901647 | -85.704635 | 849.47 | 0.00 | 849.47 |
| 27 | 36.900755 | -85.704700 | 845.67 | 0.00 | 845.67 |
| 28 | 36.900172 | -85.704785 | 845.42 | 0.00 | 845.42 |
| 29 | 36.899863 | -85.705064 | 843.36 | 0.00 | 843.36 |
| 30 | 36.899846 | -85.705880 | 840.57 | 0.00 | 840.57 |
| 31 | 36.898267 | -85.706030 | 831.44 | 0.00 | 831.44 |
| 32 | 36.897615 | -85.701095 | 861.91 | 0.00 | 861.91 |
| 33 | 36.899348 | -85.699957 | 853.45 | 0.00 | 853.45 |
| 34 | 36.897907 | -85.698091 | 879.85 | 0.00 | 879.85 |
| 35 | 36.894406 | -85.701052 | 866.89 | 0.00 | 866.89 |
| 36 | 36.895882 | -85.703004 | 847.96 | 0.00 | 847.96 |
| 37 | 36.896088 | -85.704506 | 843.32 | 0.00 | 843.32 |
| 38 | 36.896860 | -85.706073 | 827.34 | 0.00 | 827.34 |
| 39 | 36.896963 | -85.706523 | 828.52 | 0.00 | 828.52 |
| 40 | 36.896826 | -85.707146 | 826.93 | 0.00 | 826.93 |
| 41 | 36.896894 | -85.709163 | 822.89 | 0.00 | 822.89 |
| 42 | 36.896705 | -85.709785 | 822.58 | 0.00 | 822.58 |
| 43 | 36.896517 | -85.711437 | 818.78 | 0.00 | 818.78 |
| 44 | 36.896225 | -85.713068 | 817.21 | 0.00 | 817.21 |
| 45 | 36.894337 | -85.713347 | 853.84 | 0.00 | 853.84 |
| 46 | 36.893925 | -85.713583 | 846.02 | 0.00 | 846.02 |
| 47 | 36.893874 | -85.714098 | 846.62 | 0.00 | 846.62 |
| 48 | 36.893548 | -85.714699 | 853.64 | 0.00 | 853.64 |
| 49 | 36.891248 | -85.714956 | 862.92 | 0.00 | 862.92 |
| 50 | 36.891557 | -85.718025 | 862.31 | 0.00 | 862.31 |
| 51 | 36.893874 | -85.718068 | 824.87 | 0.00 | 824.87 |
| 52 | 36.893359 | -85.719162 | 802.38 | 0.00 | 802.38 |
| 53 | 36.893273 | -85.719484 | 802.60 | 0.00 | 802.60 |
| 54 | 36.893428 | -85.720450 | 803.06 | 0.00 | 803.06 |
| 55 | 36.893462 | -85.721308 | 803.09 | 0.00 | 803.09 |
| 56 | 36.893599 | -85.721994 | 801.06 | 0.00 | 801.06 |
| 57 | 36.892038 | -85.722316 | 801.86 | 0.00 | 801.86 |

| | | | | | |
|---|---|---|---|---|---|
| 58 | 36.892141 | -85.722917 | 798.20 | 0.00 | 798.20 |
| 59 | 36.891592 | -85.722960 | 805.47 | 0.00 | 805.47 |
| 60 | 36.892398 | -85.724526 | 807.84 | 0.00 | 807.84 |
| 61 | 36.892563 | -85.724801 | 805.92 | 0.00 | 805.92 |

## Discrete Observation Receptors

| Number | Latitude | Longitude | Ground elevation | Height above ground | Total Elevation |
|---|---|---|---|---|---|
| | deg | deg | ft | ft | ft |
| OP 1 | 36.898607 | -85.706108 | 834.53 | 0.00 | 834.53 |

# PV Array Results

## Summary of PV Glare Analysis PV configuration and predicted glare

| PV Name | Tilt | Orientation | "Green" Glare | "Yellow" Glare | Energy Produced | Data File |
|---|---|---|---|---|---|---|
| | deg | deg | min | min | kWh | |
| PV array 1 | SA tracking | SA tracking | 70,412 | 65,008 | - | - |

*Click the name of the PV array to scroll to its results*

## PV & Receptor Analysis Results detailed results for each PV array and receptor

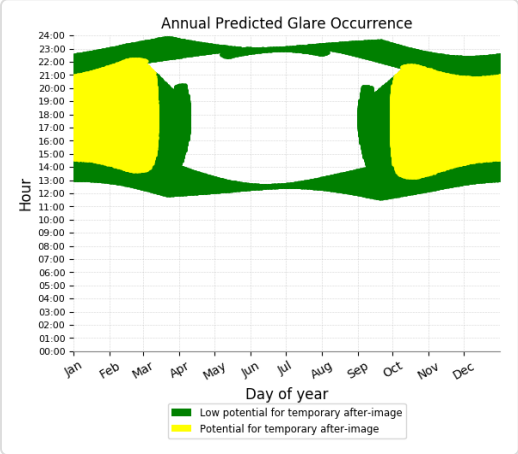
### PV array 1 potential temporary after-image

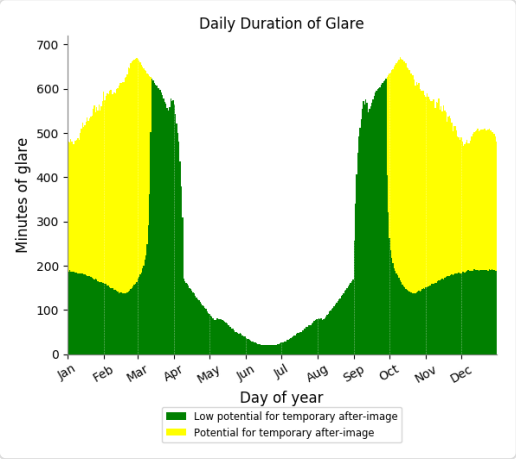
| Component | Green glare (min) | Yellow glare (min) |
|---|---|---|
| OP: OP 1 | 70412 | 65008 |

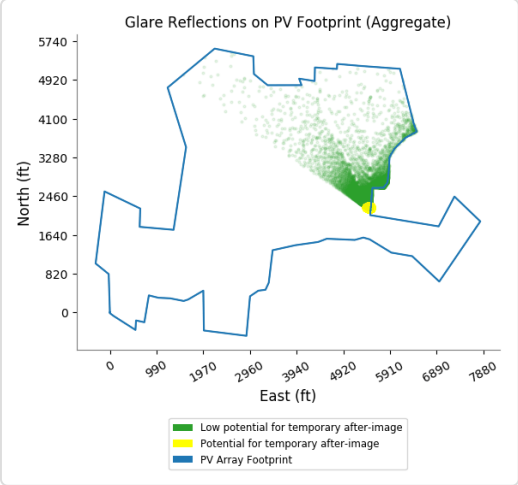
## PV array 1 - OP Receptor (OP 1)

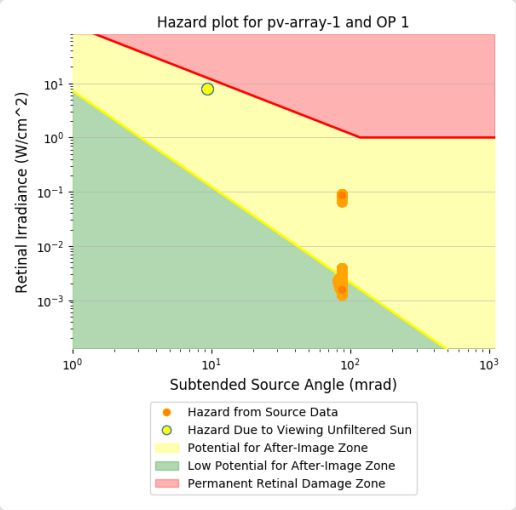
PV array is expected to produce the following glare for receptors at this location:

- 70,412 minutes of "green" glare with low potential to cause temporary after-image.
- 65,008 minutes of "yellow" glare with potential to cause temporary after-image.



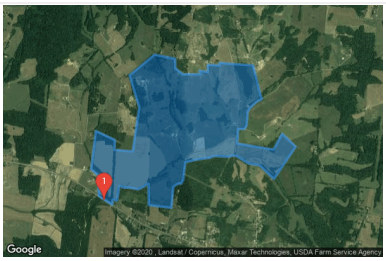
## Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

ForgeSolar

# Site Configuration: Glover Creek OP on KY 90

Project site configuration details and results.




Created **Dec. 12, 2019 12:24 p.m.**
Updated **May 29, 2020 11:09 a.m.**
DNI **varies** and peaks at **1,000.0 W/m^2**
Analyze every **1** minute(s)
**0.5** ocular transmission coefficient
**0.002 m** pupil diameter
**0.017 m** eye focal length
**9.3 mrad** sun subtended angle
Timezone **UTC0**
Site Configuration ID: 34236.6289

## Summary of Results

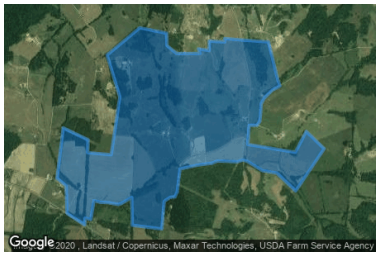
Glare with potential for temporary after-image predicted

| PV Name | Tilt | Orientation | "Green" Glare | "Yellow" Glare | Energy Produced |
|---|---|---|---|---|---|
| | deg | deg | min | min | kWh |
| PV array 1 | SA tracking | SA tracking | 69,600 | 63,938 | - |

## Component Data

### PV Array(s)

**Name**: PV array 1
**Axis tracking**: Single-axis rotation
**Tracking axis orientation**: 180.0 deg
**Tracking axis tilt**: 60.0 deg
**Tracking axis panel offset**: 0.0 deg
**Maximum tracking angle**: 60.0 deg
**Resting angle**: 60.0 deg
**Rated power**: -
**Panel material**: Smooth glass without AR coating
**Vary reflectivity with sun position?** Yes
**Correlate slope error with surface type?** Yes
**Slope error**: 6.55 mrad
**Approx. area**: 24,397,160 sq-ft




| Vertex | Latitude | Longitude | Ground elevation | Height above ground | Total elevation |
|---|---|---|---|---|---|
| | deg | deg | ft | ft | ft |
| 1 | 36.892608 | -85.724803 | 803.59 | 0.00 | 803.59 |
| 2 | 36.894839 | -85.724889 | 831.03 | 0.00 | 831.03 |
| 3 | 36.895456 | -85.725833 | 828.65 | 0.00 | 828.65 |
| 4 | 36.899643 | -85.725189 | 843.11 | 0.00 | 843.11 |
| 5 | 36.898648 | -85.722614 | 858.13 | 0.00 | 858.13 |
| 6 | 36.897584 | -85.722657 | 830.67 | 0.00 | 830.67 |
| 7 | 36.897413 | -85.720211 | 843.11 | 0.00 | 843.11 |
| 8 | 36.902217 | -85.719310 | 869.58 | 0.00 | 869.58 |
| 9 | 36.905683 | -85.720640 | 920.17 | 0.00 | 920.17 |
| 10 | 36.907948 | -85.717250 | 890.00 | 0.00 | 890.00 |
| 11 | 36.907502 | -85.714460 | 902.06 | 0.00 | 902.06 |
| 12 | 36.906473 | -85.714417 | 876.70 | 0.00 | 876.70 |
| 13 | 36.905821 | -85.713430 | 879.04 | 0.00 | 879.04 |
| 14 | 36.905823 | -85.710984 | 902.25 | 0.00 | 902.25 |
| 15 | 36.906201 | -85.711156 | 903.70 | 0.00 | 903.70 |
| 16 | 36.906064 | -85.710040 | 882.80 | 0.00 | 882.80 |
| 17 | 36.906853 | -85.710018 | 884.81 | 0.00 | 884.81 |
| 18 | 36.906767 | -85.708431 | 896.09 | 0.00 | 896.09 |
| 19 | 36.907059 | -85.708409 | 897.82 | 0.00 | 897.82 |
| 20 | 36.906939 | -85.706650 | 898.77 | 0.00 | 898.77 |
| 21 | 36.906776 | -85.703881 | 898.94 | 0.00 | 898.94 |
| 22 | 36.903627 | -85.702905 | 872.87 | 0.00 | 872.87 |
| 23 | 36.903123 | -85.702683 | 863.98 | 0.00 | 863.98 |
| 24 | 36.902763 | -85.703498 | 858.41 | 0.00 | 858.41 |
| 25 | 36.902145 | -85.704270 | 853.66 | 0.00 | 853.66 |
| 26 | 36.901647 | -85.704635 | 849.47 | 0.00 | 849.47 |
| 27 | 36.900755 | -85.704700 | 845.67 | 0.00 | 845.67 |
| 28 | 36.900172 | -85.704785 | 845.42 | 0.00 | 845.42 |
| 29 | 36.899863 | -85.705064 | 843.36 | 0.00 | 843.36 |
| 30 | 36.899846 | -85.705880 | 840.57 | 0.00 | 840.57 |
| 31 | 36.898267 | -85.706030 | 831.44 | 0.00 | 831.44 |
| 32 | 36.897615 | -85.701095 | 861.91 | 0.00 | 861.91 |
| 33 | 36.899348 | -85.699957 | 853.45 | 0.00 | 853.45 |
| 34 | 36.897907 | -85.698091 | 879.85 | 0.00 | 879.85 |
| 35 | 36.894406 | -85.701052 | 866.89 | 0.00 | 866.89 |
| 36 | 36.895882 | -85.703004 | 847.96 | 0.00 | 847.96 |
| 37 | 36.896088 | -85.704506 | 843.32 | 0.00 | 843.32 |
| 38 | 36.896860 | -85.706073 | 827.34 | 0.00 | 827.34 |
| 39 | 36.896963 | -85.706523 | 828.52 | 0.00 | 828.52 |
| 40 | 36.896826 | -85.707146 | 826.93 | 0.00 | 826.93 |
| 41 | 36.896894 | -85.709163 | 822.89 | 0.00 | 822.89 |
| 42 | 36.896705 | -85.709785 | 822.58 | 0.00 | 822.58 |
| 43 | 36.896517 | -85.711437 | 818.78 | 0.00 | 818.78 |
| 44 | 36.896225 | -85.713068 | 817.21 | 0.00 | 817.21 |
| 45 | 36.894337 | -85.713347 | 853.84 | 0.00 | 853.84 |
| 46 | 36.893925 | -85.713583 | 846.02 | 0.00 | 846.02 |
| 47 | 36.893874 | -85.714098 | 846.62 | 0.00 | 846.62 |
| 48 | 36.893548 | -85.714699 | 853.64 | 0.00 | 853.64 |
| 49 | 36.891248 | -85.714956 | 862.92 | 0.00 | 862.92 |
| 50 | 36.891557 | -85.718025 | 862.31 | 0.00 | 862.31 |
| 51 | 36.893874 | -85.718068 | 824.87 | 0.00 | 824.87 |
| 52 | 36.893359 | -85.719162 | 802.38 | 0.00 | 802.38 |
| 53 | 36.893273 | -85.719484 | 802.60 | 0.00 | 802.60 |
| 54 | 36.893428 | -85.720450 | 803.06 | 0.00 | 803.06 |
| 55 | 36.893462 | -85.721308 | 803.09 | 0.00 | 803.09 |
| 56 | 36.893599 | -85.721994 | 801.06 | 0.00 | 801.06 |
| 57 | 36.892038 | -85.722316 | 801.86 | 0.00 | 801.86 |

| | | | | | |
|---|---|---|---|---|---|
| 58 | 36.892141 | -85.722917 | 798.20 | 0.00 | 798.20 |
| 59 | 36.891592 | -85.722960 | 805.47 | 0.00 | 805.47 |
| 60 | 36.892398 | -85.724526 | 807.84 | 0.00 | 807.84 |
| 61 | 36.892563 | -85.724801 | 805.92 | 0.00 | 805.92 |

## Discrete Observation Receptors

| Number | Latitude | Longitude | Ground elevation | Height above ground | Total Elevation |
|---|---|---|---|---|---|
| | deg | deg | ft | ft | ft |
| OP 1 | 36.892124 | -85.724009 | 806.54 | 10.00 | 816.54 |

# PV Array Results

## Summary of PV Glare Analysis PV configuration and predicted glare

| PV Name | Tilt | Orientation | "Green" Glare | "Yellow" Glare | Energy Produced | Data File |
|---|---|---|---|---|---|---|
| | deg | deg | min | min | kWh | |
| PV array 1 | SA tracking | SA tracking | 69,600 | 63,938 | - | - |

*Click the name of the PV array to scroll to its results*

## PV & Receptor Analysis Results detailed results for each PV array and receptor

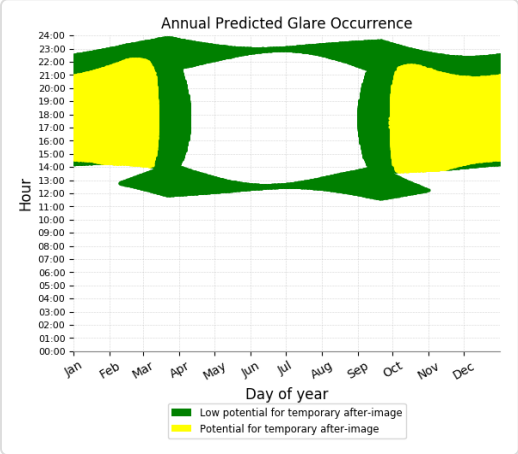
### PV array 1 potential temporary after-image

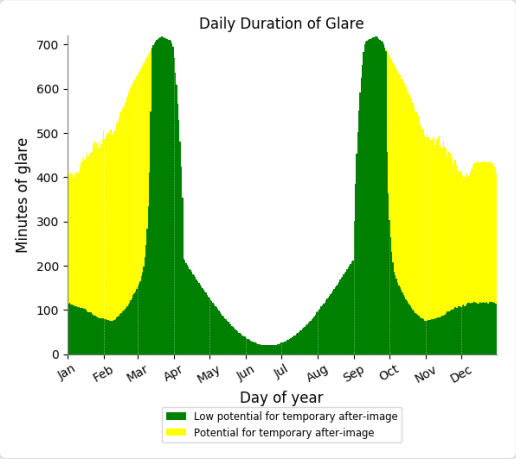
| Component | Green glare (min) | Yellow glare (min) |
|---|---|---|
| OP: OP 1 | 69600 | 63938 |

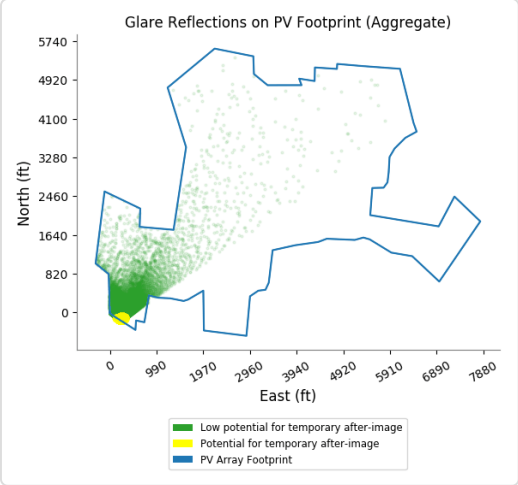
## PV array 1 - OP Receptor (OP 1)

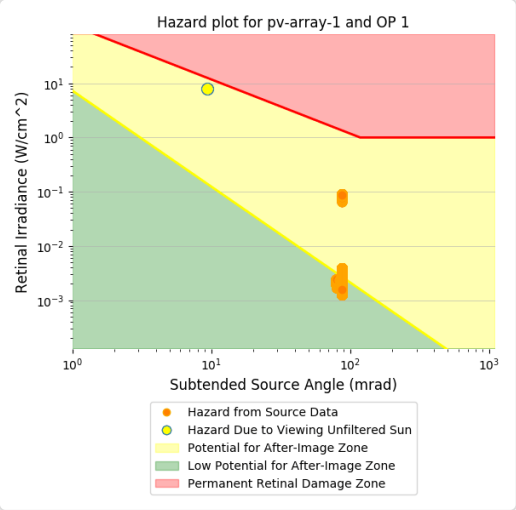
PV array is expected to produce the following glare for receptors at this location:

- 69,600 minutes of "green" glare with low potential to cause temporary after-image.
- 63,938 minutes of "yellow" glare with potential to cause temporary after-image.



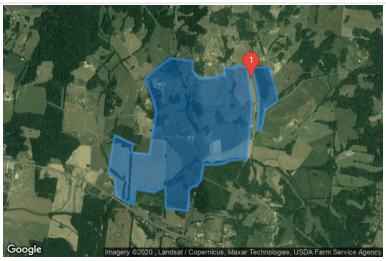
## Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

ForgeSolar

# Site Configuration: parcels w set backs

Project site configuration details and results.




Created **May 29, 2020 4:23 p.m.**
Updated **June 1, 2020 9:42 a.m.**
DNI **varies** and peaks at **1,000.0 W/m^2**
Analyze every **1** minute(s)
**0.5** ocular transmission coefficient
**0.002 m** pupil diameter
**0.017 m** eye focal length
**9.3 mrad** sun subtended angle
Timezone **UTC-6**
Site Configuration ID: 39670.7231

## Summary of Results

Glare with low potential for temporary after-image predicted

| PV Name | Tilt | Orientation | "Green" Glare | "Yellow" Glare | Energy Produced |
|---|---|---|---|---|---|
| | deg | deg | min | min | kWh |
| PV array 1 | SA tracking | SA tracking | 0 | 0 | - |
| PV array 2 | SA tracking | SA tracking | 2,007 | 0 | - |

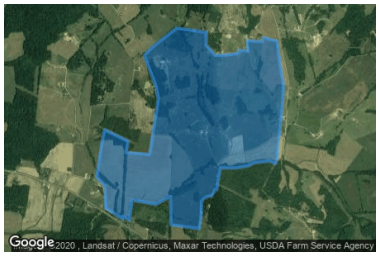
## Component Data

### PV Array(s)

**Name**: PV array 1
**Axis tracking**: Single-axis rotation
**Tracking axis orientation**: 180.0 deg
**Tracking axis tilt**: 0.0 deg
**Tracking axis panel offset**: 0.0 deg
**Maximum tracking angle**: 60.0 deg
**Resting angle**: 60.0 deg
**Rated power**: -
**Panel material**: Smooth glass with AR coating
**Vary reflectivity with sun position?** Yes
**Correlate slope error with surface type?** Yes
**Slope error**: 8.43 mrad
**Approx. area**: 1,243,447 sq-ft


| Vertex | Latitude | Longitude | Ground elevation | Height above ground | Total elevation |
|---|---|---|---|---|---|
| | deg | deg | ft | ft | ft |
| 1 | 36.900527 | -85.705513 | 841.61 | 0.00 | 841.61 |
| 2 | 36.901188 | -85.705445 | 844.47 | 0.00 | 844.47 |
| 3 | 36.901767 | -85.705368 | 845.95 | 0.00 | 845.95 |
| 4 | 36.902684 | -85.705352 | 867.48 | 0.00 | 867.48 |
| 5 | 36.903270 | -85.705345 | 880.63 | 0.00 | 880.63 |
| 6 | 36.903686 | -85.705417 | 894.15 | 0.00 | 894.15 |
| 7 | 36.905290 | -85.705796 | 893.92 | 0.00 | 893.92 |
| 8 | 36.906076 | -85.706002 | 904.70 | 0.00 | 904.70 |
| 9 | 36.906903 | -85.706206 | 890.12 | 0.00 | 890.12 |
| 10 | 36.906757 | -85.703888 | 898.40 | 0.00 | 898.40 |
| 11 | 36.904012 | -85.702998 | 877.81 | 0.00 | 877.81 |
| 12 | 36.903180 | -85.702751 | 867.39 | 0.00 | 867.39 |
| 13 | 36.902622 | -85.703770 | 857.55 | 0.00 | 857.55 |
| 14 | 36.902373 | -85.704307 | 856.14 | 0.00 | 856.14 |
| 15 | 36.902236 | -85.704446 | 854.51 | 0.00 | 854.51 |
| 16 | 36.902004 | -85.704564 | 851.89 | 0.00 | 851.89 |
| 17 | 36.901627 | -85.704650 | 849.43 | 0.00 | 849.43 |
| 18 | 36.901181 | -85.704758 | 848.32 | 0.00 | 848.32 |
| 19 | 36.900769 | -85.704790 | 844.52 | 0.00 | 844.52 |
| 20 | 36.900316 | -85.705082 | 840.67 | 0.00 | 840.67 |
| 21 | 36.900163 | -85.705077 | 840.56 | 0.00 | 840.56 |
| 22 | 36.900083 | -85.705103 | 840.72 | 0.00 | 840.72 |
| 23 | 36.900068 | -85.705188 | 840.43 | 0.00 | 840.43 |
| 24 | 36.900060 | -85.705554 | 838.10 | 0.00 | 838.10 |

**Name**: PV array 2
**Axis tracking**: Single-axis rotation
**Tracking axis orientation**: 180.0 deg
**Tracking axis tilt**: 0.0 deg
**Tracking axis panel offset**: 0.0 deg
**Maximum tracking angle**: 60.0 deg
**Resting angle**: 60.0 deg
**Rated power**: -
**Panel material**: Smooth glass without AR coating
**Vary reflectivity with sun position?** Yes
**Correlate slope error with surface type?** Yes
**Slope error**: 6.55 mrad
**Approx. area**: 20,062,372 sq-ft




| Vertex | Latitude | Longitude | Ground elevation | Height above ground | Total elevation |
|---|---|---|---|---|---|
| | deg | deg | ft | ft | ft |
| 1 | 36.898667 | -85.706764 | 831.33 | 0.00 | 831.33 |
| 2 | 36.899139 | -85.706689 | 835.59 | 0.00 | 835.59 |
| 3 | 36.901232 | -85.706410 | 850.73 | 0.00 | 850.73 |
| 4 | 36.902811 | -85.706281 | 868.94 | 0.00 | 868.94 |
| 5 | 36.903360 | -85.706313 | 880.57 | 0.00 | 880.57 |
| 6 | 36.903617 | -85.706345 | 882.12 | 0.00 | 882.12 |
| 7 | 36.903823 | -85.706431 | 881.55 | 0.00 | 881.55 |
| 8 | 36.904218 | -85.706506 | 888.36 | 0.00 | 888.36 |
| 9 | 36.905910 | -85.706801 | 907.20 | 0.00 | 907.20 |
| 10 | 36.906785 | -85.706949 | 903.22 | 0.00 | 903.22 |
| 11 | 36.907066 | -85.708384 | 897.52 | 0.00 | 897.52 |
| 12 | 36.906723 | -85.708470 | 895.18 | 0.00 | 895.18 |
| 13 | 36.906809 | -85.710036 | 884.61 | 0.00 | 884.61 |
| 14 | 36.905942 | -85.709940 | 881.09 | 0.00 | 881.09 |
| 15 | 36.906011 | -85.710894 | 900.23 | 0.00 | 900.23 |
| 16 | 36.905745 | -85.710980 | 900.96 | 0.00 | 900.96 |
| 17 | 36.905599 | -85.712665 | 891.71 | 0.00 | 891.71 |
| 18 | 36.905599 | -85.713362 | 881.23 | 0.00 | 881.23 |
| 19 | 36.906474 | -85.714306 | 877.81 | 0.00 | 877.81 |
| 20 | 36.907512 | -85.714274 | 904.98 | 0.00 | 904.98 |
| 21 | 36.907864 | -85.717375 | 894.17 | 0.00 | 894.17 |
| 22 | 36.906277 | -85.719885 | 942.95 | 0.00 | 942.95 |
| 23 | 36.905582 | -85.720733 | 921.84 | 0.00 | 921.84 |
| 24 | 36.903051 | -85.719510 | 882.57 | 0.00 | 882.57 |
| 25 | 36.901987 | -85.719263 | 865.50 | 0.00 | 865.50 |
| 26 | 36.897371 | -85.720164 | 841.16 | 0.00 | 841.16 |
| 27 | 36.897526 | -85.722589 | 830.87 | 0.00 | 830.87 |
| 28 | 36.898461 | -85.722396 | 852.67 | 0.00 | 852.67 |
| 29 | 36.899413 | -85.724842 | 841.30 | 0.00 | 841.30 |
| 30 | 36.898349 | -85.725121 | 829.55 | 0.00 | 829.55 |
| 31 | 36.895484 | -85.725657 | 823.49 | 0.00 | 823.49 |
| 32 | 36.894789 | -85.724842 | 830.54 | 0.00 | 830.54 |
| 33 | 36.892895 | -85.724714 | 799.45 | 0.00 | 799.45 |
| 34 | 36.892697 | -85.724311 | 798.44 | 0.00 | 798.44 |
| 35 | 36.892032 | -85.722959 | 799.73 | 0.00 | 799.73 |
| 36 | 36.892238 | -85.722949 | 799.47 | 0.00 | 799.47 |
| 37 | 36.891912 | -85.722262 | 805.34 | 0.00 | 805.34 |
| 38 | 36.893577 | -85.722005 | 801.12 | 0.00 | 801.12 |
| 39 | 36.893216 | -85.719548 | 804.20 | 0.00 | 804.20 |
| 40 | 36.893886 | -85.717992 | 836.38 | 0.00 | 836.38 |
| 41 | 36.891526 | -85.717971 | 863.39 | 0.00 | 863.39 |
| 42 | 36.891191 | -85.715009 | 868.30 | 0.00 | 868.30 |
| 43 | 36.891818 | -85.714902 | 855.28 | 0.00 | 855.28 |
| 44 | 36.892384 | -85.714806 | 862.63 | 0.00 | 862.63 |
| 45 | 36.892787 | -85.714784 | 861.80 | 0.00 | 861.80 |
| 46 | 36.893431 | -85.714784 | 855.61 | 0.00 | 855.61 |
| 47 | 36.893688 | -85.714559 | 851.86 | 0.00 | 851.86 |
| 48 | 36.893860 | -85.714237 | 847.08 | 0.00 | 847.08 |
| 49 | 36.893929 | -85.713733 | 845.93 | 0.00 | 845.93 |
| 50 | 36.894255 | -85.713464 | 844.83 | 0.00 | 844.83 |
| 51 | 36.894452 | -85.713400 | 839.62 | 0.00 | 839.62 |
| 52 | 36.894435 | -85.713207 | 860.47 | 0.00 | 860.47 |
| 53 | 36.896254 | -85.712821 | 830.76 | 0.00 | 830.76 |
| 54 | 36.896228 | -85.711319 | 898.96 | 0.00 | 898.96 |
| 55 | 36.896425 | -85.709892 | 878.92 | 0.00 | 878.92 |
| 56 | 36.896674 | -85.709323 | 864.95 | 0.00 | 864.95 |
| 57 | 36.896820 | -85.707746 | 840.15 | 0.00 | 840.15 |

| | | | | | |
|---|---|---|---|---|---|
| 58 | 36.896606 | -85.707070 | 840.50 | 0.00 | 840.50 |
| 59 | 36.897060 | -85.706931 | 827.07 | 0.00 | 827.07 |

## Discrete Observation Receptors

| Number | Latitude | Longitude | Ground elevation | Height above ground | Total Elevation |
|---|---|---|---|---|---|
| | deg | deg | ft | ft | ft |
| OP 1 | 36.905534 | -85.706364 | 897.15 | 10.00 | 907.15 |

# PV Array Results

## Summary of PV Glare Analysis PV configuration and predicted glare

| PV Name | Tilt | Orientation | "Green" Glare | "Yellow" Glare | Energy Produced | Data File |
|---|---|---|---|---|---|---|
| | deg | deg | min | min | kWh | |
| PV array 1 | SA tracking | SA tracking | 0 | 0 | - | - |
| PV array 2 | SA tracking | SA tracking | 2,007 | 0 | - | - |

*Click the name of the PV array to scroll to its results*

## PV & Receptor Analysis Results detailed results for each PV array and receptor

### PV array 1 no glare found

| Component | Green glare (min) | Yellow glare (min) |
|---|---|---|
| OP: OP 1 | 0 | 0 |

*No glare found*

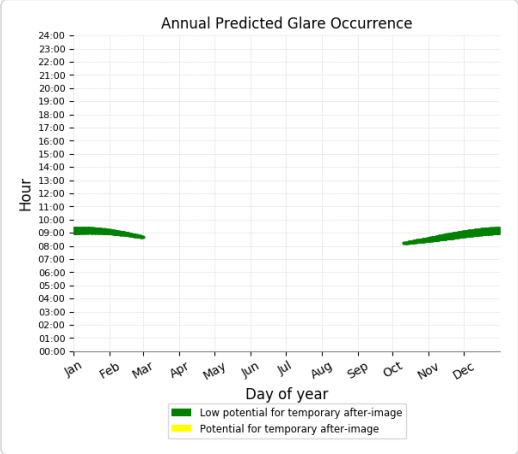
### PV array 2 low potential for temporary after-image

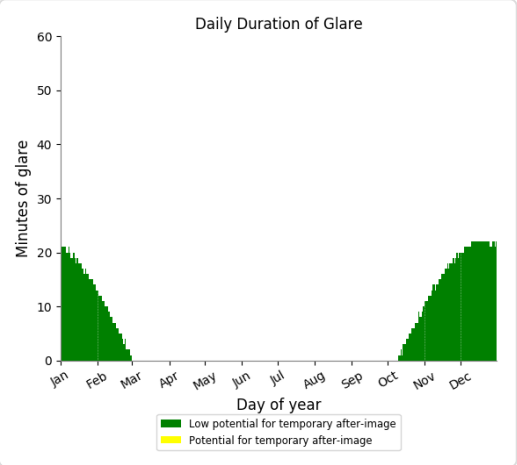
| Component | Green glare (min) | Yellow glare (min) |
|---|---|---|
| OP: OP 1 | 2007 | 0 |

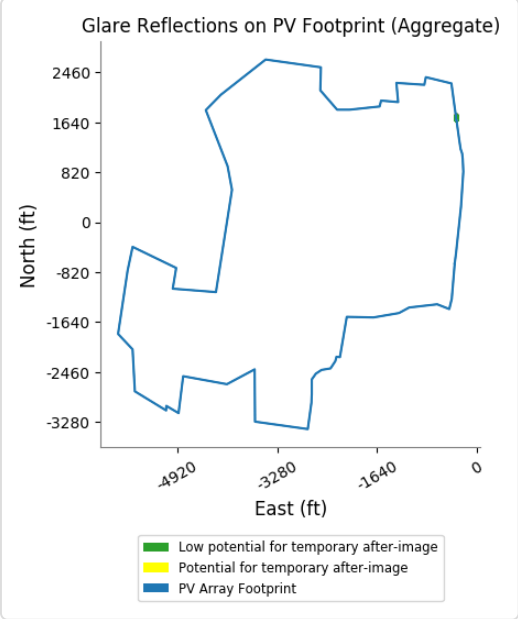
## PV array 2 - OP Receptor (OP 1)

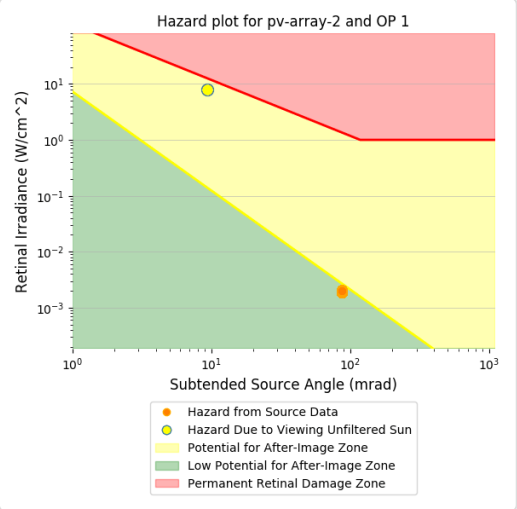
PV array is expected to produce the following glare for receptors at this location:

- 2,007 minutes of "green" glare with low potential to cause temporary after-image.
- 0 minutes of "yellow" glare with potential to cause temporary after-image.



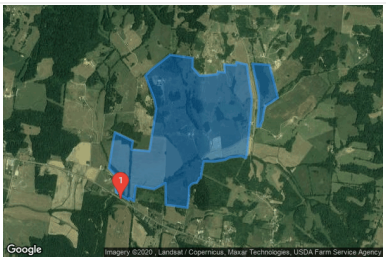
## Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

ForgeSolar

# Site Configuration: parcels w set backs-temp-2

Project site configuration details and results.




Created **June 1, 2020 9:54 a.m.**
Updated **June 1, 2020 9:55 a.m.**
DNI **varies** and peaks at **1,000.0 W/m^2**
Analyze every **1** minute(s)
**0.5** ocular transmission coefficient
**0.002 m** pupil diameter
**0.017 m** eye focal length
**9.3 mrad** sun subtended angle
Timezone **UTC-6**
Site Configuration ID: 39710.7231

## Summary of Results No glare predicted!

| PV Name | Tilt | Orientation | "Green" Glare | "Yellow" Glare | Energy Produced |
|---|---|---|---|---|---|
| | deg | deg | min | min | kWh |
| PV array 1 | SA tracking | SA tracking | 0 | 0 | - |
| PV array 2 | SA tracking | SA tracking | 0 | 0 | - |

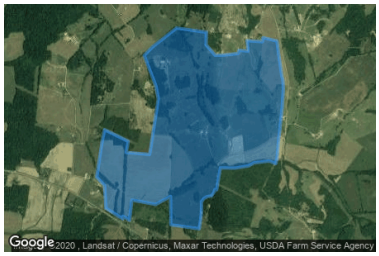
## Component Data

### PV Array(s)

**Name**: PV array 1
**Axis tracking**: Single-axis rotation
**Tracking axis orientation**: 180.0 deg
**Tracking axis tilt**: 0.0 deg
**Tracking axis panel offset**: 0.0 deg
**Maximum tracking angle**: 60.0 deg
**Resting angle**: 60.0 deg
**Rated power**: -
**Panel material**: Smooth glass with AR coating
**Vary reflectivity with sun position?** Yes
**Correlate slope error with surface type?** Yes
**Slope error**: 8.43 mrad
**Approx. area**: 1,243,447 sq-ft


| Vertex | Latitude | Longitude | Ground elevation | Height above ground | Total elevation |
|---|---|---|---|---|---|
| | deg | deg | ft | ft | ft |
| 1 | 36.900527 | -85.705513 | 841.61 | 0.00 | 841.61 |
| 2 | 36.901188 | -85.705445 | 844.47 | 0.00 | 844.47 |
| 3 | 36.901767 | -85.705368 | 845.95 | 0.00 | 845.95 |
| 4 | 36.902684 | -85.705352 | 867.48 | 0.00 | 867.48 |
| 5 | 36.903270 | -85.705345 | 880.63 | 0.00 | 880.63 |
| 6 | 36.903686 | -85.705417 | 894.15 | 0.00 | 894.15 |
| 7 | 36.905290 | -85.705796 | 893.92 | 0.00 | 893.92 |
| 8 | 36.906076 | -85.706002 | 904.70 | 0.00 | 904.70 |
| 9 | 36.906903 | -85.706206 | 890.12 | 0.00 | 890.12 |
| 10 | 36.906757 | -85.703888 | 898.40 | 0.00 | 898.40 |
| 11 | 36.904012 | -85.702998 | 877.81 | 0.00 | 877.81 |
| 12 | 36.903180 | -85.702751 | 867.39 | 0.00 | 867.39 |
| 13 | 36.902622 | -85.703770 | 857.55 | 0.00 | 857.55 |
| 14 | 36.902373 | -85.704307 | 856.14 | 0.00 | 856.14 |
| 15 | 36.902236 | -85.704446 | 854.51 | 0.00 | 854.51 |
| 16 | 36.902004 | -85.704564 | 851.89 | 0.00 | 851.89 |
| 17 | 36.901627 | -85.704650 | 849.43 | 0.00 | 849.43 |
| 18 | 36.901181 | -85.704758 | 848.32 | 0.00 | 848.32 |
| 19 | 36.900769 | -85.704790 | 844.52 | 0.00 | 844.52 |
| 20 | 36.900316 | -85.705082 | 840.67 | 0.00 | 840.67 |
| 21 | 36.900163 | -85.705077 | 840.56 | 0.00 | 840.56 |
| 22 | 36.900083 | -85.705103 | 840.72 | 0.00 | 840.72 |
| 23 | 36.900068 | -85.705188 | 840.43 | 0.00 | 840.43 |
| 24 | 36.900060 | -85.705554 | 838.10 | 0.00 | 838.10 |

**Name**: PV array 2
**Axis tracking**: Single-axis rotation
**Tracking axis orientation**: 180.0 deg
**Tracking axis tilt**: 0.0 deg
**Tracking axis panel offset**: 0.0 deg
**Maximum tracking angle**: 60.0 deg
**Resting angle**: 60.0 deg
**Rated power**: -
**Panel material**: Smooth glass without AR coating
**Vary reflectivity with sun position?** Yes
**Correlate slope error with surface type?** Yes
**Slope error**: 6.55 mrad
**Approx. area**: 20,062,372 sq-ft




| Vertex | Latitude | Longitude | Ground elevation | Height above ground | Total elevation |
|---|---|---|---|---|---|
| | deg | deg | ft | ft | ft |
| 1 | 36.898667 | -85.706764 | 831.33 | 0.00 | 831.33 |
| 2 | 36.899139 | -85.706689 | 835.59 | 0.00 | 835.59 |
| 3 | 36.901232 | -85.706410 | 850.73 | 0.00 | 850.73 |
| 4 | 36.902811 | -85.706281 | 868.94 | 0.00 | 868.94 |
| 5 | 36.903360 | -85.706313 | 880.57 | 0.00 | 880.57 |
| 6 | 36.903617 | -85.706345 | 882.12 | 0.00 | 882.12 |
| 7 | 36.903823 | -85.706431 | 881.55 | 0.00 | 881.55 |
| 8 | 36.904218 | -85.706506 | 888.36 | 0.00 | 888.36 |
| 9 | 36.905910 | -85.706801 | 907.20 | 0.00 | 907.20 |
| 10 | 36.906785 | -85.706949 | 903.22 | 0.00 | 903.22 |
| 11 | 36.907066 | -85.708384 | 897.52 | 0.00 | 897.52 |
| 12 | 36.906723 | -85.708470 | 895.18 | 0.00 | 895.18 |
| 13 | 36.906809 | -85.710036 | 884.61 | 0.00 | 884.61 |
| 14 | 36.905942 | -85.709940 | 881.09 | 0.00 | 881.09 |
| 15 | 36.906011 | -85.710894 | 900.23 | 0.00 | 900.23 |
| 16 | 36.905745 | -85.710980 | 900.96 | 0.00 | 900.96 |
| 17 | 36.905599 | -85.712665 | 891.71 | 0.00 | 891.71 |
| 18 | 36.905599 | -85.713362 | 881.23 | 0.00 | 881.23 |
| 19 | 36.906474 | -85.714306 | 877.81 | 0.00 | 877.81 |
| 20 | 36.907512 | -85.714274 | 904.98 | 0.00 | 904.98 |
| 21 | 36.907864 | -85.717375 | 894.17 | 0.00 | 894.17 |
| 22 | 36.906277 | -85.719885 | 942.95 | 0.00 | 942.95 |
| 23 | 36.905582 | -85.720733 | 921.84 | 0.00 | 921.84 |
| 24 | 36.903051 | -85.719510 | 882.57 | 0.00 | 882.57 |
| 25 | 36.901987 | -85.719263 | 865.50 | 0.00 | 865.50 |
| 26 | 36.897371 | -85.720164 | 841.16 | 0.00 | 841.16 |
| 27 | 36.897526 | -85.722589 | 830.87 | 0.00 | 830.87 |
| 28 | 36.898461 | -85.722396 | 852.67 | 0.00 | 852.67 |
| 29 | 36.899413 | -85.724842 | 841.30 | 0.00 | 841.30 |
| 30 | 36.898349 | -85.725121 | 829.55 | 0.00 | 829.55 |
| 31 | 36.895484 | -85.725657 | 823.49 | 0.00 | 823.49 |
| 32 | 36.894789 | -85.724842 | 830.54 | 0.00 | 830.54 |
| 33 | 36.892895 | -85.724714 | 799.45 | 0.00 | 799.45 |
| 34 | 36.892697 | -85.724311 | 798.44 | 0.00 | 798.44 |
| 35 | 36.892032 | -85.722959 | 799.73 | 0.00 | 799.73 |
| 36 | 36.892238 | -85.722949 | 799.47 | 0.00 | 799.47 |
| 37 | 36.891912 | -85.722262 | 805.34 | 0.00 | 805.34 |
| 38 | 36.893577 | -85.722005 | 801.12 | 0.00 | 801.12 |
| 39 | 36.893216 | -85.719548 | 804.20 | 0.00 | 804.20 |
| 40 | 36.893886 | -85.717992 | 836.38 | 0.00 | 836.38 |
| 41 | 36.891526 | -85.717971 | 863.39 | 0.00 | 863.39 |
| 42 | 36.891191 | -85.715009 | 868.30 | 0.00 | 868.30 |
| 43 | 36.891818 | -85.714902 | 855.28 | 0.00 | 855.28 |
| 44 | 36.892384 | -85.714806 | 862.63 | 0.00 | 862.63 |
| 45 | 36.892787 | -85.714784 | 861.80 | 0.00 | 861.80 |
| 46 | 36.893431 | -85.714784 | 855.61 | 0.00 | 855.61 |
| 47 | 36.893688 | -85.714559 | 851.86 | 0.00 | 851.86 |
| 48 | 36.893860 | -85.714237 | 847.08 | 0.00 | 847.08 |
| 49 | 36.893929 | -85.713733 | 845.93 | 0.00 | 845.93 |
| 50 | 36.894255 | -85.713464 | 844.83 | 0.00 | 844.83 |
| 51 | 36.894452 | -85.713400 | 839.62 | 0.00 | 839.62 |
| 52 | 36.894435 | -85.713207 | 860.47 | 0.00 | 860.47 |
| 53 | 36.896254 | -85.712821 | 830.76 | 0.00 | 830.76 |
| 54 | 36.896228 | -85.711319 | 898.96 | 0.00 | 898.96 |
| 55 | 36.896425 | -85.709892 | 878.92 | 0.00 | 878.92 |
| 56 | 36.896674 | -85.709323 | 864.95 | 0.00 | 864.95 |
| 57 | 36.896820 | -85.707746 | 840.15 | 0.00 | 840.15 |

| | | | | | |
|---|---|---|---|---|---|
| 58 | 36.896606 | -85.707070 | 840.50 | 0.00 | 840.50 |
| 59 | 36.897060 | -85.706931 | 827.07 | 0.00 | 827.07 |

## Discrete Observation Receptors

| Number | Latitude | Longitude | Ground elevation | Height above ground | Total Elevation |
|---|---|---|---|---|---|
| | deg | deg | ft | ft | ft |
| OP 1 | 36.892124 | -85.724009 | 806.54 | 10.00 | 816.54 |

# PV Array Results

## Summary of PV Glare Analysis PV configuration and predicted glare

| PV Name | Tilt | Orientation | "Green" Glare | "Yellow" Glare | Energy Produced | Data File |
|---|---|---|---|---|---|---|
| | deg | deg | min | min | kWh | |
| PV array 1 | SA tracking | SA tracking | 0 | 0 | - | - |
| PV array 2 | SA tracking | SA tracking | 0 | 0 | - | - |

*Click the name of the PV array to scroll to its results*

## PV & Receptor Analysis Results detailed results for each PV array and receptor

### PV array 1 no glare found

| Component | Green glare (min) | Yellow glare (min) |
|---|---|---|
| OP: OP 1 | 0 | 0 |

*No glare found*

### PV array 2 no glare found

| Component | Green glare (min) | Yellow glare (min) |
|---|---|---|
| OP: OP 1 | 0 | 0 |

*No glare found*

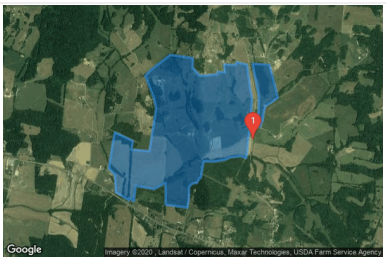
## Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

ForgeSolar

# Site Configuration: parcels w set backs-temp-2

Project site configuration details and results.




Created **June 1, 2020 9:50 a.m.**
Updated **June 1, 2020 9:51 a.m.**
DNI **varies** and peaks at **1,000.0 W/m^2**
Analyze every **1** minute(s)
**0.5** ocular transmission coefficient
**0.002 m** pupil diameter
**0.017 m** eye focal length
**9.3 mrad** sun subtended angle
Timezone **UTC-6**
Site Configuration ID: 39709.7231

## Summary of Results No glare predicted!

| PV Name | Tilt | Orientation | "Green" Glare | "Yellow" Glare | Energy Produced |
|---|---|---|---|---|---|
| | deg | deg | min | min | kWh |
| PV array 1 | SA tracking | SA tracking | 0 | 0 | - |
| PV array 2 | SA tracking | SA tracking | 0 | 0 | - |

## Component Data

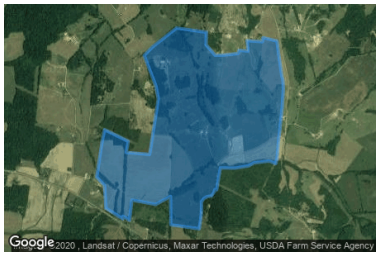
### PV Array(s)

**Name**: PV array 1
**Axis tracking**: Single-axis rotation
**Tracking axis orientation**: 180.0 deg
**Tracking axis tilt**: 0.0 deg
**Tracking axis panel offset**: 0.0 deg
**Maximum tracking angle**: 60.0 deg
**Resting angle**: 60.0 deg
**Rated power**: -
**Panel material**: Smooth glass with AR coating
**Vary reflectivity with sun position?** Yes
**Correlate slope error with surface type?** Yes
**Slope error**: 8.43 mrad
**Approx. area**: 1,243,447 sq-ft


| Vertex | Latitude | Longitude | Ground elevation | Height above ground | Total elevation |
|---|---|---|---|---|---|
| | deg | deg | ft | ft | ft |
| 1 | 36.900527 | -85.705513 | 841.61 | 0.00 | 841.61 |
| 2 | 36.901188 | -85.705445 | 844.47 | 0.00 | 844.47 |
| 3 | 36.901767 | -85.705368 | 845.95 | 0.00 | 845.95 |
| 4 | 36.902684 | -85.705352 | 867.48 | 0.00 | 867.48 |
| 5 | 36.903270 | -85.705345 | 880.63 | 0.00 | 880.63 |
| 6 | 36.903686 | -85.705417 | 894.15 | 0.00 | 894.15 |
| 7 | 36.905290 | -85.705796 | 893.92 | 0.00 | 893.92 |
| 8 | 36.906076 | -85.706002 | 904.70 | 0.00 | 904.70 |
| 9 | 36.906903 | -85.706206 | 890.12 | 0.00 | 890.12 |
| 10 | 36.906757 | -85.703888 | 898.40 | 0.00 | 898.40 |
| 11 | 36.904012 | -85.702998 | 877.81 | 0.00 | 877.81 |
| 12 | 36.903180 | -85.702751 | 867.39 | 0.00 | 867.39 |
| 13 | 36.902622 | -85.703770 | 857.55 | 0.00 | 857.55 |
| 14 | 36.902373 | -85.704307 | 856.14 | 0.00 | 856.14 |
| 15 | 36.902236 | -85.704446 | 854.51 | 0.00 | 854.51 |
| 16 | 36.902004 | -85.704564 | 851.89 | 0.00 | 851.89 |
| 17 | 36.901627 | -85.704650 | 849.43 | 0.00 | 849.43 |
| 18 | 36.901181 | -85.704758 | 848.32 | 0.00 | 848.32 |
| 19 | 36.900769 | -85.704790 | 844.52 | 0.00 | 844.52 |
| 20 | 36.900316 | -85.705082 | 840.67 | 0.00 | 840.67 |
| 21 | 36.900163 | -85.705077 | 840.56 | 0.00 | 840.56 |
| 22 | 36.900083 | -85.705103 | 840.72 | 0.00 | 840.72 |
| 23 | 36.900068 | -85.705188 | 840.43 | 0.00 | 840.43 |
| 24 | 36.900060 | -85.705554 | 838.10 | 0.00 | 838.10 |

# Exhibit M

**Name**: PV array 2
**Axis tracking**: Single-axis rotation
**Tracking axis orientation**: 180.0 deg
**Tracking axis tilt**: 0.0 deg
**Tracking axis panel offset**: 0.0 deg
**Maximum tracking angle**: 60.0 deg
**Resting angle**: 60.0 deg
**Rated power**: -
**Panel material**: Smooth glass without AR coating
**Vary reflectivity with sun position?** Yes
**Correlate slope error with surface type?** Yes
**Slope error**: 6.55 mrad
**Approx. area**: 20,062,372 sq-ft




| Vertex | Latitude | Longitude | Ground elevation | Height above ground | Total elevation |
|---|---|---|---|---|---|
| | deg | deg | ft | ft | ft |
| 1 | 36.898667 | -85.706764 | 831.33 | 0.00 | 831.33 |
| 2 | 36.899139 | -85.706689 | 835.59 | 0.00 | 835.59 |
| 3 | 36.901232 | -85.706410 | 850.73 | 0.00 | 850.73 |
| 4 | 36.902811 | -85.706281 | 868.94 | 0.00 | 868.94 |
| 5 | 36.903360 | -85.706313 | 880.57 | 0.00 | 880.57 |
| 6 | 36.903617 | -85.706345 | 882.12 | 0.00 | 882.12 |
| 7 | 36.903823 | -85.706431 | 881.55 | 0.00 | 881.55 |
| 8 | 36.904218 | -85.706506 | 888.36 | 0.00 | 888.36 |
| 9 | 36.905910 | -85.706801 | 907.20 | 0.00 | 907.20 |
| 10 | 36.906785 | -85.706949 | 903.22 | 0.00 | 903.22 |
| 11 | 36.907066 | -85.708384 | 897.52 | 0.00 | 897.52 |
| 12 | 36.906723 | -85.708470 | 895.18 | 0.00 | 895.18 |
| 13 | 36.906809 | -85.710036 | 884.61 | 0.00 | 884.61 |
| 14 | 36.905942 | -85.709940 | 881.09 | 0.00 | 881.09 |
| 15 | 36.906011 | -85.710894 | 900.23 | 0.00 | 900.23 |
| 16 | 36.905745 | -85.710980 | 900.96 | 0.00 | 900.96 |
| 17 | 36.905599 | -85.712665 | 891.71 | 0.00 | 891.71 |
| 18 | 36.905599 | -85.713362 | 881.23 | 0.00 | 881.23 |
| 19 | 36.906474 | -85.714306 | 877.81 | 0.00 | 877.81 |
| 20 | 36.907512 | -85.714274 | 904.98 | 0.00 | 904.98 |
| 21 | 36.907864 | -85.717375 | 894.17 | 0.00 | 894.17 |
| 22 | 36.906277 | -85.719885 | 942.95 | 0.00 | 942.95 |
| 23 | 36.905582 | -85.720733 | 921.84 | 0.00 | 921.84 |
| 24 | 36.903051 | -85.719510 | 882.57 | 0.00 | 882.57 |
| 25 | 36.901987 | -85.719263 | 865.50 | 0.00 | 865.50 |
| 26 | 36.897371 | -85.720164 | 841.16 | 0.00 | 841.16 |
| 27 | 36.897526 | -85.722589 | 830.87 | 0.00 | 830.87 |
| 28 | 36.898461 | -85.722396 | 852.67 | 0.00 | 852.67 |
| 29 | 36.899413 | -85.724842 | 841.30 | 0.00 | 841.30 |
| 30 | 36.898349 | -85.725121 | 829.55 | 0.00 | 829.55 |
| 31 | 36.895484 | -85.725657 | 823.49 | 0.00 | 823.49 |
| 32 | 36.894789 | -85.724842 | 830.54 | 0.00 | 830.54 |
| 33 | 36.892895 | -85.724714 | 799.45 | 0.00 | 799.45 |
| 34 | 36.892697 | -85.724311 | 798.44 | 0.00 | 798.44 |
| 35 | 36.892032 | -85.722959 | 799.73 | 0.00 | 799.73 |
| 36 | 36.892238 | -85.722949 | 799.47 | 0.00 | 799.47 |
| 37 | 36.891912 | -85.722262 | 805.34 | 0.00 | 805.34 |
| 38 | 36.893577 | -85.722005 | 801.12 | 0.00 | 801.12 |
| 39 | 36.893216 | -85.719548 | 804.20 | 0.00 | 804.20 |
| 40 | 36.893886 | -85.717992 | 836.38 | 0.00 | 836.38 |
| 41 | 36.891526 | -85.717971 | 863.39 | 0.00 | 863.39 |
| 42 | 36.891191 | -85.715009 | 868.30 | 0.00 | 868.30 |
| 43 | 36.891818 | -85.714902 | 855.28 | 0.00 | 855.28 |
| 44 | 36.892384 | -85.714806 | 862.63 | 0.00 | 862.63 |
| 45 | 36.892787 | -85.714784 | 861.80 | 0.00 | 861.80 |
| 46 | 36.893431 | -85.714784 | 855.61 | 0.00 | 855.61 |
| 47 | 36.893688 | -85.714559 | 851.86 | 0.00 | 851.86 |
| 48 | 36.893860 | -85.714237 | 847.08 | 0.00 | 847.08 |
| 49 | 36.893929 | -85.713733 | 845.93 | 0.00 | 845.93 |
| 50 | 36.894255 | -85.713464 | 844.83 | 0.00 | 844.83 |
| 51 | 36.894452 | -85.713400 | 839.62 | 0.00 | 839.62 |
| 52 | 36.894435 | -85.713207 | 860.47 | 0.00 | 860.47 |
| 53 | 36.896254 | -85.712821 | 830.76 | 0.00 | 830.76 |
| 54 | 36.896228 | -85.711319 | 898.96 | 0.00 | 898.96 |
| 55 | 36.896425 | -85.709892 | 878.92 | 0.00 | 878.92 |
| 56 | 36.896674 | -85.709323 | 864.95 | 0.00 | 864.95 |
| 57 | 36.896820 | -85.707746 | 840.15 | 0.00 | 840.15 |

| | | | | | |
|---|---|---|---|---|---|
| 58 | 36.896606 | -85.707070 | 840.50 | 0.00 | 840.50 |
| 59 | 36.897060 | -85.706931 | 827.07 | 0.00 | 827.07 |

## Discrete Observation Receptors

| Number | Latitude | Longitude | Ground elevation | Height above ground | Total Elevation |
|---|---|---|---|---|---|
| | deg | deg | ft | ft | ft |
| OP 1 | 36.898607 | -85.706110 | 834.53 | 10.00 | 844.53 |

# PV Array Results

## Summary of PV Glare Analysis PV configuration and predicted glare

| PV Name | Tilt | Orientation | "Green" Glare | "Yellow" Glare | Energy Produced | Data File |
|---|---|---|---|---|---|---|
| | deg | deg | min | min | kWh | |
| PV array 1 | SA tracking | SA tracking | 0 | 0 | - | - |
| PV array 2 | SA tracking | SA tracking | 0 | 0 | - | - |

*Click the name of the PV array to scroll to its results*

## PV & Receptor Analysis Results detailed results for each PV array and receptor

### PV array 1 no glare found

| Component | Green glare (min) | Yellow glare (min) |
|---|---|---|
| OP: OP 1 | 0 | 0 |

*No glare found*

### PV array 2 no glare found

| Component | Green glare (min) | Yellow glare (min) |
|---|---|---|
| OP: OP 1 | 0 | 0 |

*No glare found*

## Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.