

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

In the Matter of:

<i>Electronic</i> Application of Golden Solar, LLC	)	
for Certificate of Construction for an	)	
Approximately 100 Megawatt Merchant	)	Case No.
Electric Solar Generating Facility in Golden	)	2020-00243
County, Kentucky	)	

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**Response to Siting Board Staff's Post-Hearing Request for Information**

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Applicant, Golden Solar, LLC, herewith submits responses to the Siting Board Staff's Post-Hearing Request for Information. A signed certification of this Response on behalf of Golden Solar, LLC appears on the following page.

Respectfully submitted,

/s/ Kathryn A. Eckert

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*Counsel for Applicant,  
Golden Solar, LLC*

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

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*Electronic* Application of Golden Solar, LLC     )  
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Approximately 100 Megawatt Merchant     )  
Electric Solar Generating Facility in Golden     )  
County, Kentucky

Case No.  
2020-00243

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**Certification of Response to Information Requests**

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This is to certify that I have supervised the preparation of the response to the Siting Board Staff's Post-Hearing Request for Information to Golden Solar, LLC on behalf of the corporate respondent and that the responses from myself and the other witness(es) are true and accurate to the best of my knowledge, information and belief after reasonable inquiry.

DATE: 1/23/2023

*Courtney Pelissero*  
\_\_\_\_\_  
Courtney Pelissero, Permitting Specialist

**Request**

1. Provide the affected systems studies completed by Midcontinent Independent System Operation, Inc. (MISO) and the Tennessee Valley Authority (TVA).
- 

**Response**

The affected system studies have been provided entirely under seal with a concurrently-filed Petition for Confidential Treatment.

**Request**

2. Provide the most recent site plan.
- 

**Response**

Please see Amended Exhibit J attached to Golden Solar's response to 2 ESB 14 filed November 22, 2022. No updates have been made to the site plan since this filing.

**Request**

3. Provide the number of acres out of the total 1,870 acre project area that will be developed.
- 

**Response**

Based on the preliminary design, there are 1,037.4 acres within the project fence area.

**Request**

4. Provide a chart with the distance between non-participating residences and the solar panels, the inverters, and project substation.
- 

**Response**

A table with distances from non-participating and participating residences to solar panels, inverters, and the project substation based on the preliminary design is attached hereto. The exact distances between project equipment and residences are subject to change with final design; however, Golden commits to placing panels no closer than 200 feet from residences, inverters no closer than 450 feet from residences, and the substation no closer than 1,000 feet from residences, unless the setback is waived by a landowner.<sup>1</sup> Additionally, Golden has requested a deviation from statutorily required setbacks for the residential neighborhood of 1000 feet for the substation, 500 feet for any central inverter, and 300 feet for any panel.<sup>2</sup>

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<sup>1</sup> See Application Exhibit B, Table 1.

<sup>2</sup> See Motion for Deviation from Setback Requirements filed 9/16/22.

Golden Solar Data Request  
Tabel A. Distance to Residences

Residence ID	Participation Status	Distance to Nearest Panel (ft)*	Distance to Nearest Inverter (ft)*	Distance to Substation (ft)*	Land Owner
1	Non-Participating	616	1778	10241	
2	Non-Participating	229	1362	10187	
3	Non-Participating	299	1492	9968	
5	Non-Participating	745	2134	9567	
6	Non-Participating	382	1762	9351	
7	Non-Participating	1174	2729	9243	
8	Participating	237	982	8181	
10	Non-Participating	397	1284	8807	
12	Non-Participating	315	1096	8339	
14	Non-Participating	405	1186	8160	
16	Non-Participating	353	1065	5505	
17	Non-Participating	953	1572	5989	
18	Non-Participating	290	1088	5129	
20	Non-Participating	331	1033	2451	
22	Non-Participating	408	1220	2399	
23	Non-Participating	738	1311	3632	
24	Non-Participating	397	624	1828	
26	Non-Participating	1262	1824	2757	
27	Non-Participating	1106	1668	2678	
29	Participating	458	1030	2134	
30	Non-Participating	1017	1591	3740	
32	Non-Participating	1143	1622	4037	
33	Non-Participating	401	1295	2774	
36	Non-Participating	1453	2303	3774	
37	Non-Participating	1130	2041	3521	
38	Non-Participating	1420	2322	3801	
39	Non-Participating	905	1820	3344	
40	Non-Participating	1176	2114	3598	
41	Non-Participating	835	1695	3286	
42	Non-Participating	371	801	2632	
43	Non-Participating	1247	2161	3678	
44	Non-Participating	1046	1922	3490	
46	Non-Participating	973	1818	3425	
47	Non-Participating	907	1726	3369	
48	Non-Participating	798	1554	3278	
49	Non-Participating	866	1621	3344	
51	Participating	265	661	4194	
52	Non-Participating	977	1729	4079	
54	Non-Participating	1345	2116	4423	
55	Non-Participating	945	1722	4303	
59	Non-Participating	688	1409	3859	
60	Non-Participating	999	1938	6964	
62	Non-Participating	231	692	4295	
63	Participating	347	1342	7094	
64	Non-Participating	783	1307	5336	
65	Non-Participating	736	1174	5628	
66	Non-Participating	1276	1724	6075	
67	Non-Participating	693	1865	6701	
68	Participating	775	1141	8344	
69	Non-Participating	1075	1453	8817	
82	Non-Participating	1032	1842	10495	
84	Participating	269	1738	10653	
85	Non-Participating	744	1384	5836	
86	Non-Participating	851	1564	3430	

\*=Distances based on preliminary design

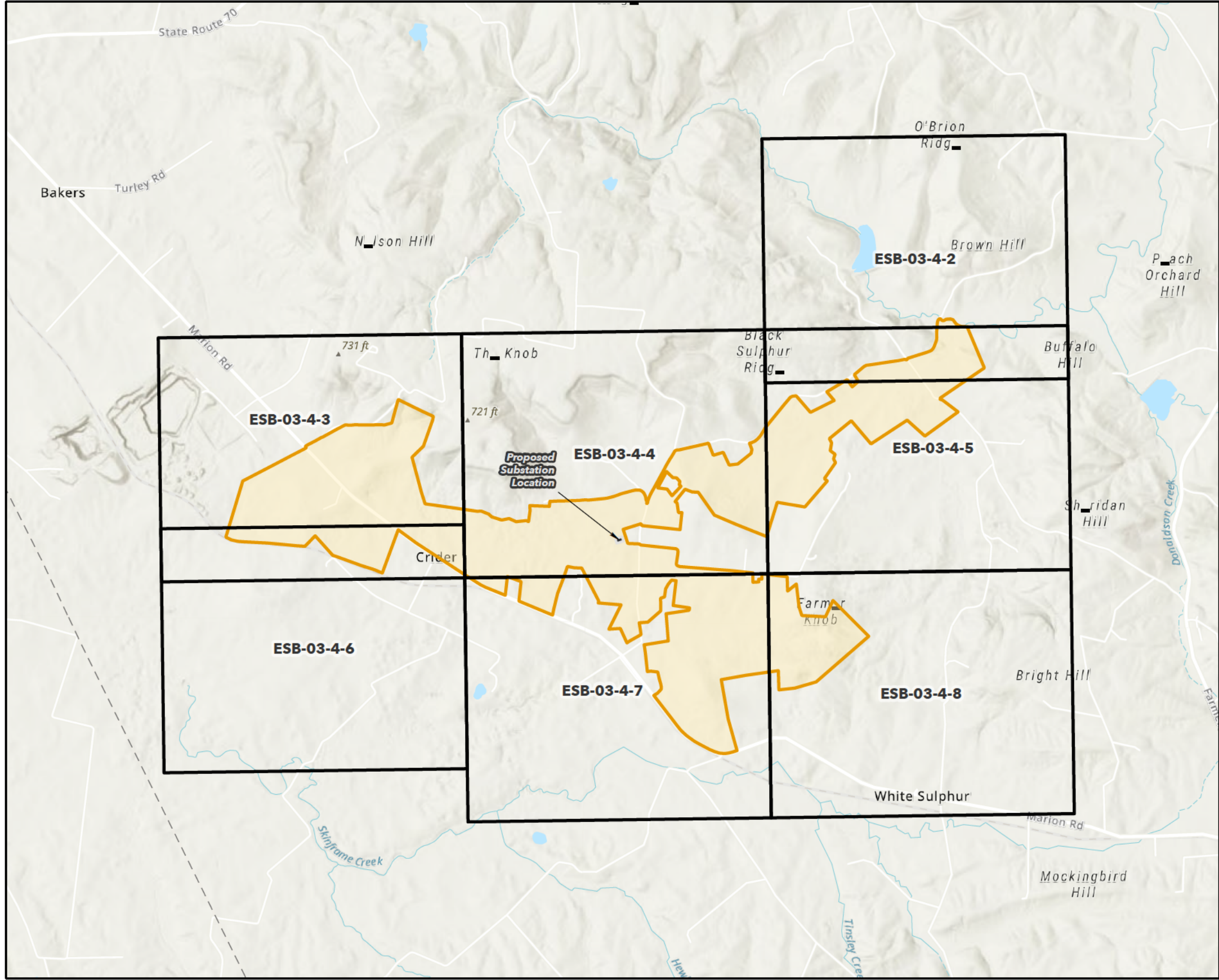





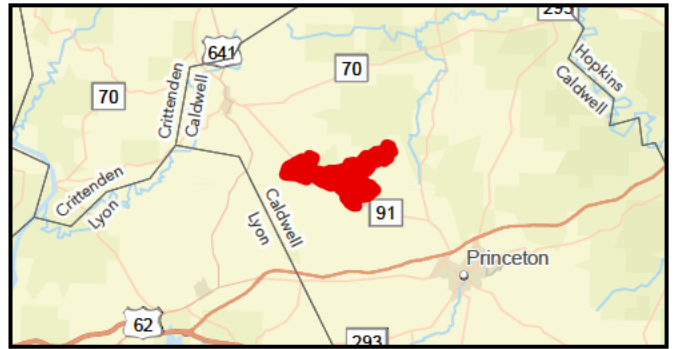
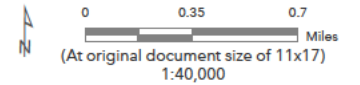
Figure No.  
**ESB-03-4-1**

Title  
**Project Layout Map Key**

Client/Project  
Golden Solar Project

Project Location  
Caldwell County, Kentucky

-  Map Page
-  Project Area
-  Proposed Substation



**Notes**  
 1. Coordinate System: NAD 1983 2011 StatePlane Kentucky FIPS 1600 Ft US  
 2. Background Source: Esri, NASA, NGA, USGS, FEMA, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS



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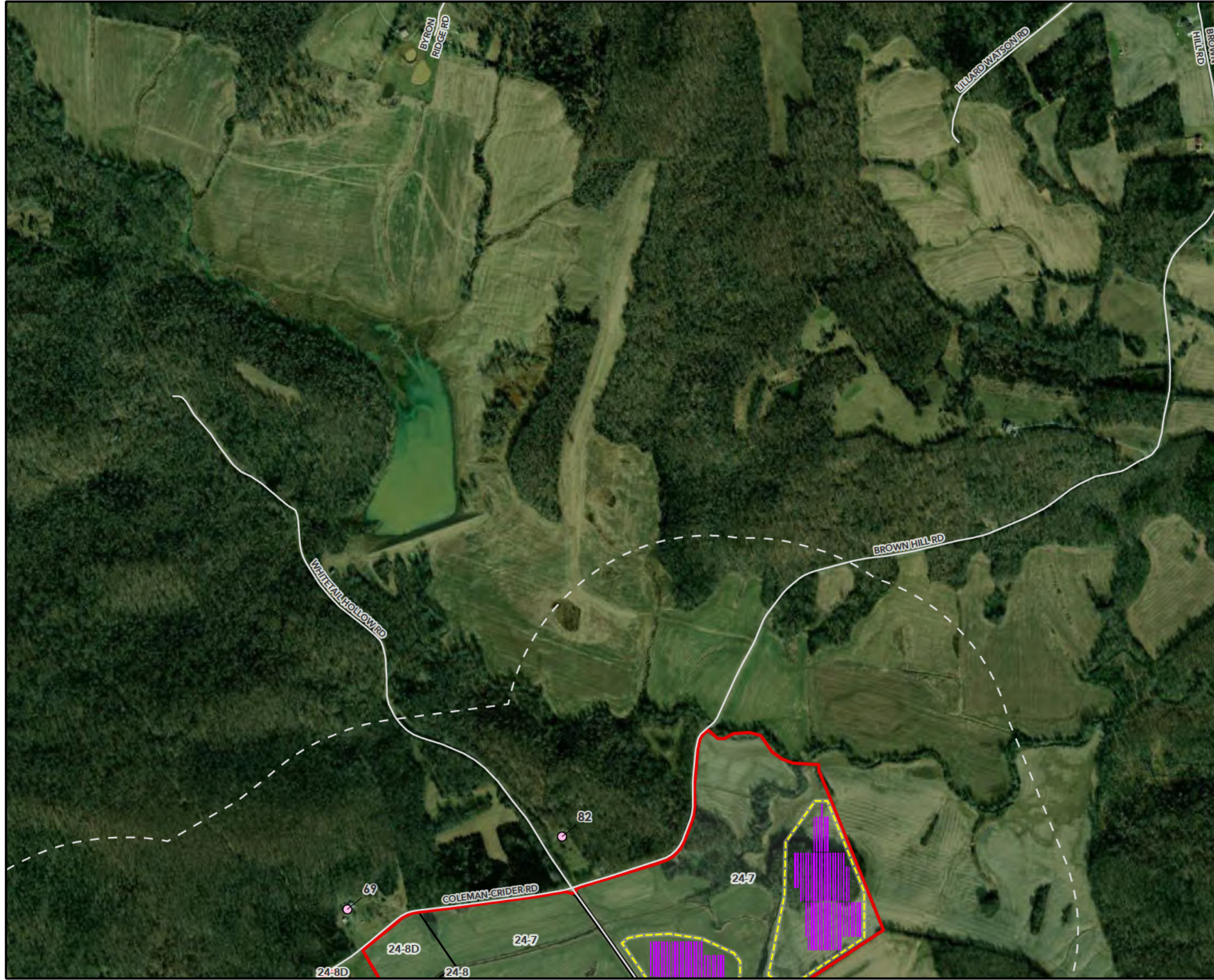


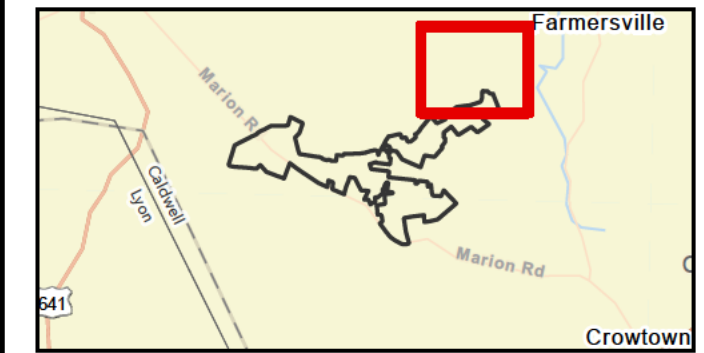
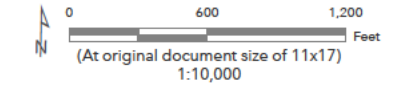
Figure No.  
**ESB-03-4-2**

Title  
**Project Layout**

Client/Project  
Golden Solar Project

Project Location  
Caldwell County, Kentucky

- Project Area
- 1500-Ft Buffer
- + Cemeteries
- Residence
- Business
- Church
- Inverters
- Fencing
- Proposed Substation
- Existing Substation
- Solar Panels
- Property Boundary



**Notes**  
 1. Coordinate System: NAD 1983 2011 StatePlane Kentucky FIPS 1600 Ft US  
 2. Background Source: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, Maxar



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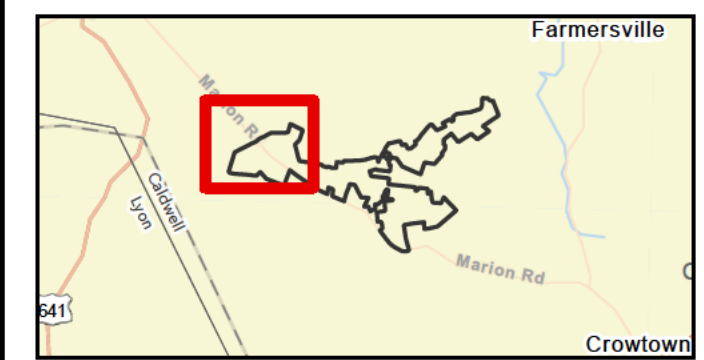
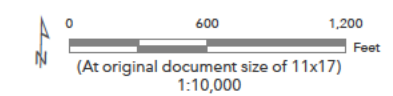
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**ESB-03-4-3**

Title  
**Project Layout**

Client/Project  
Golden Solar Project

Project Location  
Caldwell County, Kentucky

- Project Area
- 1500-Ft Buffer
- + Cemeteries
- Residence
- Business
- Church
- Inverters
- Fencing
- Proposed Substation
- Existing Substation
- Solar Panels
- Property Boundary



**Notes**  
 1. Coordinate System: NAD 1983 2011 StatePlane Kentucky FIPS 1600 Ft US  
 2. Background Source: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, Maxar



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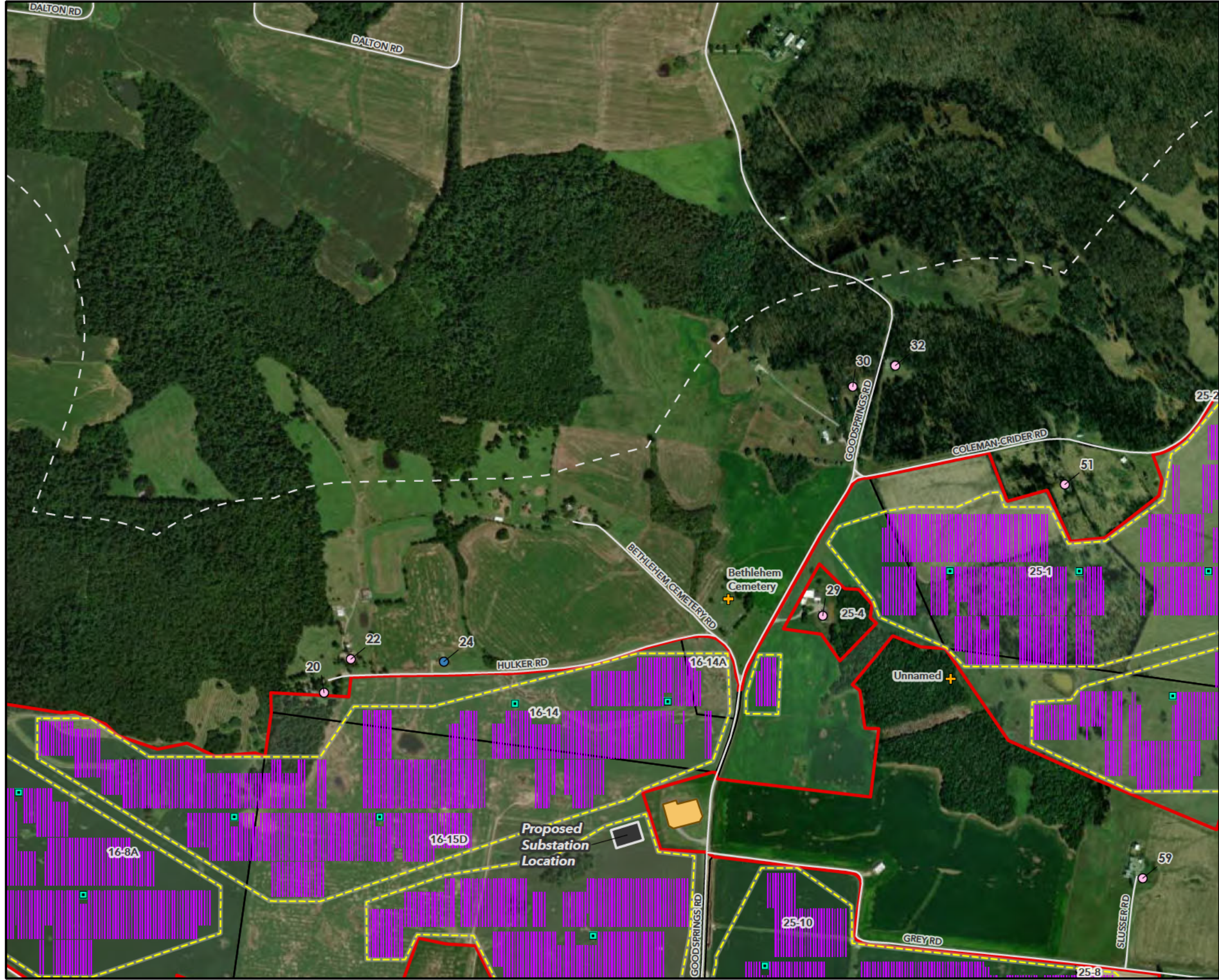


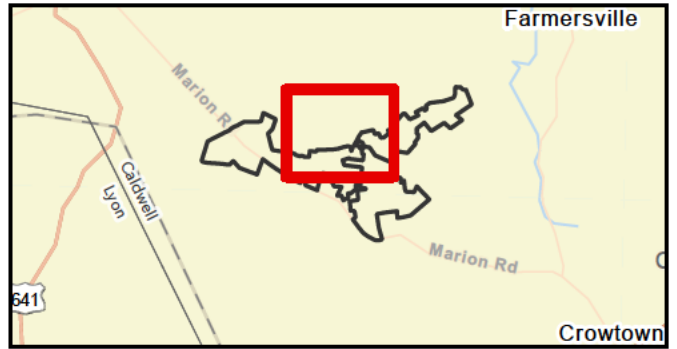
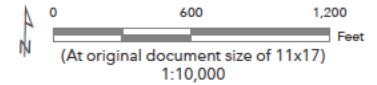
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**ESB-03-4-4**

Title  
**Project Layout**

Client/Project  
Golden Solar Project

Project Location  
Caldwell County, Kentucky

- Project Area
- 1500-Ft Buffer
- + Cemeteries
- Residence
- Business
- Church
- Inverters
- Fencing
- Proposed Substation
- Existing Substation
- Solar Panels
- Property Boundary



Notes  
 1. Coordinate System: NAD 1983 2011 StatePlane Kentucky FIPS 1600 Ft US  
 2. Background Source: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, Maxar



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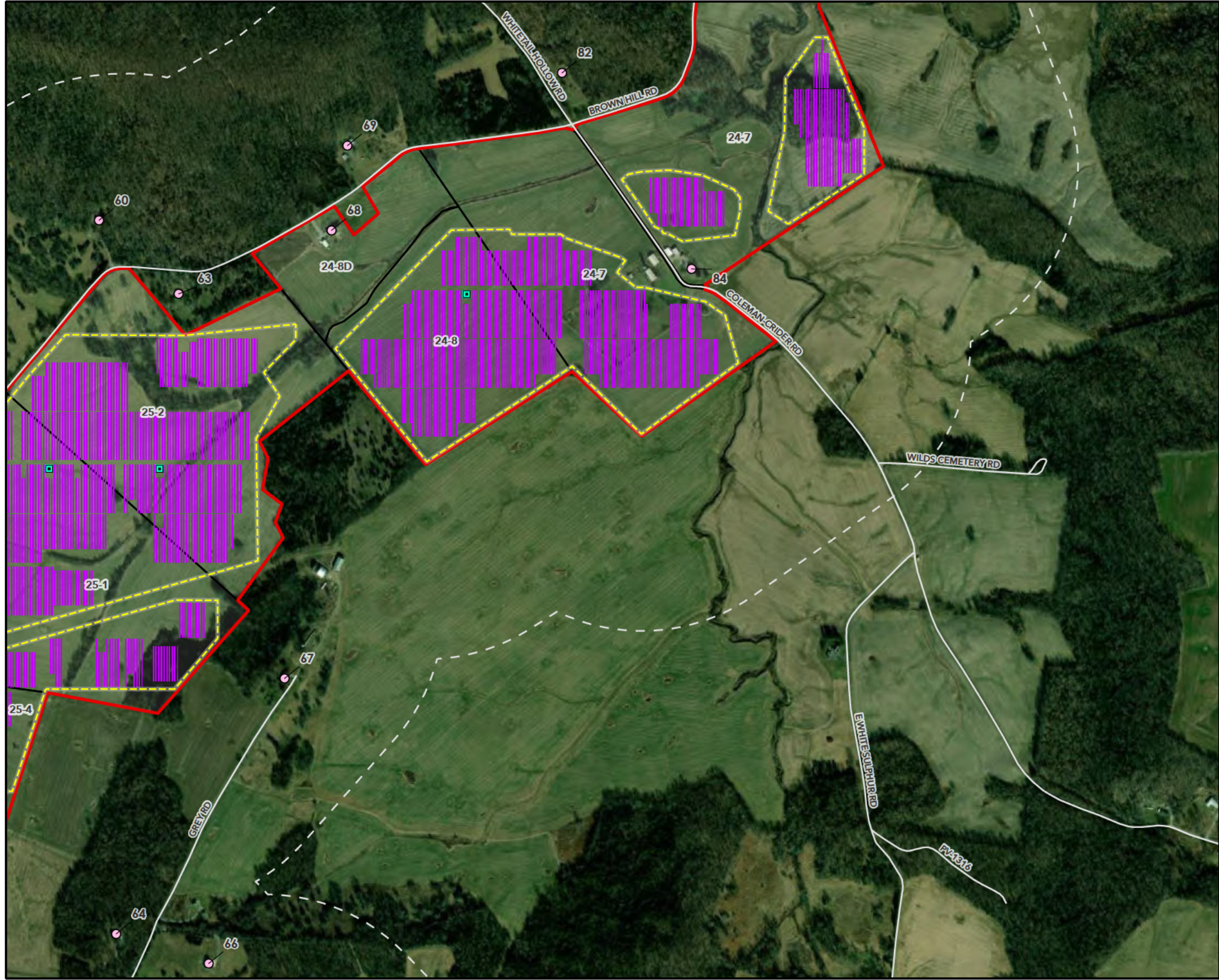


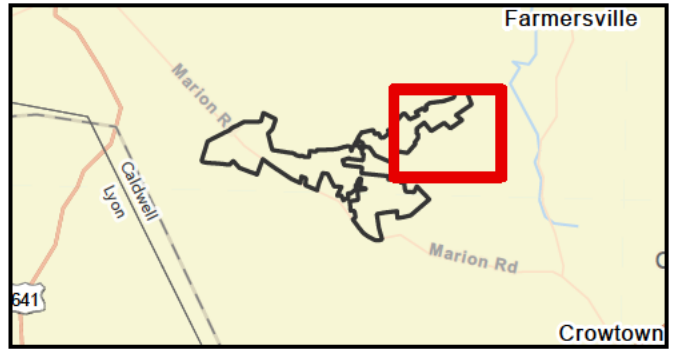
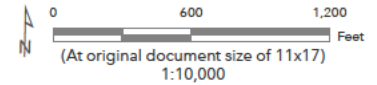
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**ESB-03-4-5**

Title  
**Project Layout**

Client/Project  
Golden Solar Project

Project Location  
Caldwell County, Kentucky

- Project Area
- 1500-Ft Buffer
- + Cemeteries
- Residence
- Business
- Church
- Inverters
- Fencing
- Proposed Substation
- Existing Substation
- Solar Panels
- Property Boundary



**Notes**  
 1. Coordinate System: NAD 1983 2011 StatePlane Kentucky FIPS 1600 Ft US  
 2. Background Source: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, Maxar



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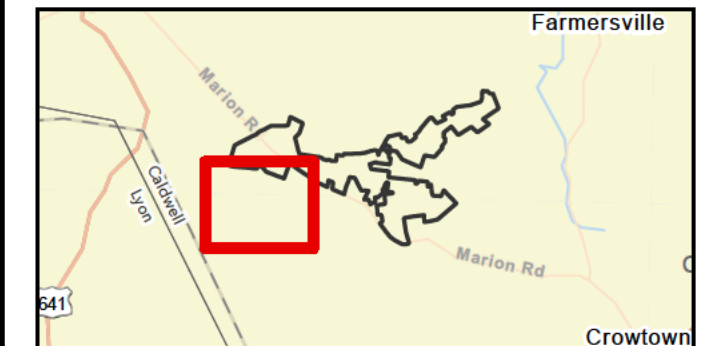
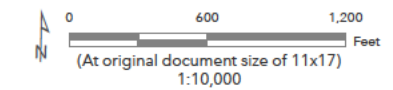
Figure No.  
**ESB-03-4-6**

Title  
**Project Layout**

Client/Project  
Golden Solar Project

Project Location  
Caldwell County, Kentucky

- Project Area
- 1500-Ft Buffer
- + Cemeteries
- Residence
- Business
- Church
- Inverters
- Fencing
- Proposed Substation
- Existing Substation
- Solar Panels
- Property Boundary



**Notes**  
 1. Coordinate System: NAD 1983 2011 StatePlane Kentucky FIPS 1600 Ft US  
 2. Background Source: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, Maxar





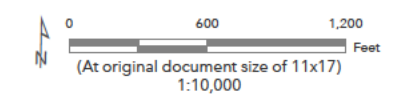
Figure No.  
**ESB-03-4-7**

Title  
**Project Layout**

Client/Project  
Golden Solar Project

Project Location  
Caldwell County, Kentucky

- Project Area
- 1500-Ft Buffer
- + Cemeteries
- Residence
- Business
- Church
- Inverters
- Fencing
- Proposed Substation
- Existing Substation
- Solar Panels
- Property Boundary



- Notes**
1. Coordinate System: NAD 1983 2011 StatePlane Kentucky FIPS 1600 Ft US
  2. Background Source: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, Maxar



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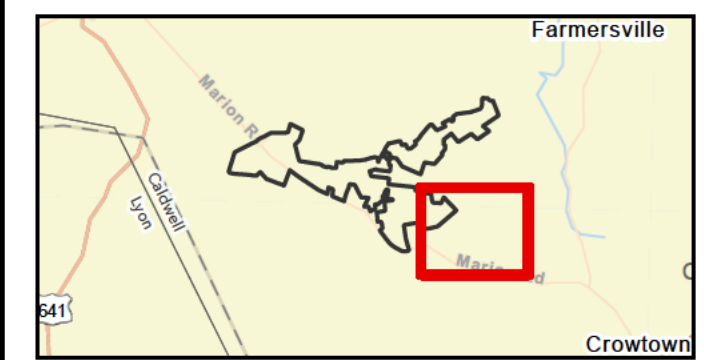
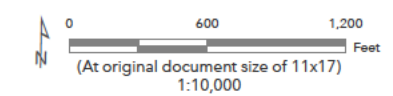
Figure No.  
**ESB-03-4-8**

Title  
**Project Layout**

Client/Project  
Golden Solar Project

Project Location  
Caldwell County, Kentucky

- Project Area
- 1500-Ft Buffer
- + Cemeteries
- o Residence
- o Business
- o Church
- Inverters
- Fencing
- Proposed Substation
- Existing Substation
- Solar Panels
- Property Boundary



**Notes**  
 1. Coordinate System: NAD 1983 2011 StatePlane Kentucky FIPS 1600 Ft US  
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### **Request**

5. Provide Golden Solar's traffic management plan for construction and deliveries going to the site that will avoid negative impacts on the community, specifically the school zone on Marion Road.
- 

### **Response**

A traffic management plan is attached hereto. Golden Solar representatives spoke to the Superintendent of Caldwell County Schools, Jeremy Roach, on January 20<sup>th</sup> about the Golden and Caldwell solar projects. Golden Solar representatives provided Mr. Roach with details about expected traffic and transportation routes during construction of the solar projects and Mr. Roach provided details about typical peak school drop-off and pick-up times and associated traffic. Golden Solar will incorporate consideration of peak school traffic schedules when preparing construction traffic and delivery plans and will minimize or mitigate impacts on school traffic to the extent feasible. Proposed mitigation measures for the school zone on KY-91 are discussed in the attached traffic control plan.

A Golden Solar representative spoke with David Waldrum (Caldwell County Road Supervisor) on January 20, 2023 regarding project updates and to inquire about general road use and traffic concerns. Mr. Waldrum stated he is not concerned about Golden's traffic use along KY-91 or the interstates, but would like to be notified of any planned Golden traffic along county or town roadways near the Golden Solar project. Golden representatives will provide more information to Mr. Waldrum as traffic plans progress and will coordinate a Road Use Agreement with Caldwell County prior to construction. Golden Solar will continue to coordinate the traffic management plan with the school district and road authorities.



## MEMORANDUM

Date: January 23, 2023

Re: Golden Solar Traffic Assessment Memorandum  
Case No. 2020-00243  
Westwood File #0028136.00

To: Kentucky State Board on Electric Generation and Transmission Application

From: Paul Villaluz, P.E., PTOE, RSP<sub>1</sub>

This memorandum has been prepared to respond to the Kentucky State Board on Electric Generation and Transmission Application's comment on the Golden Solar Facility Traffic Assessment, Application Exhibit H, Attachment F (Traffic Assessment), prepared by Cardno (Case No. 2020-00243) regarding a traffic management plan for construction and deliveries going to the site of the Golden Solar Facility.

The Golden Solar Facility will be an up to 100-megawatt ( $MW_{AC}$ ) alternating current photovoltaic electricity generation facility located on approximately 1,870 combined acres in Caldwell County between the towns of Fredonia and Princeton. Figure 1 from the Traffic Assessment is included in Appendix A. This project may be constructed at the same time as the adjacent Caldwell Solar Project, an up to 200-megawatt ( $MW_{AC}$ ) facility.

### *Traffic Management Plan*

Three major roadways are present near the project area vicinity: I-69, KY-91 (Marion Road), and KY-641. KY-91 is a two-lane road with a functional classification of Major Collector, that travels in a northwestern/southeastern direction along the southern border of the Golden Solar and northern border of the Caldwell Solar project areas. The construction traffic will use existing county roadways to access the project site, with KY-91 expected to be the primary roadway access.

During construction, a temporary increase in traffic volume associated with travel by commuting construction laborers and delivery of equipment and materials is anticipated (refer to the Traffic Assessment prepared by Cardno for more details). Many of these trips will pass through residential and school areas along KY-91 between I-69 and the project site. The types of vehicles for construction traffic are similar to the types of vehicles for existing conditions, primarily consisting of commuting cars and semi-trailer trucks.

The Traffic Assessment does not anticipate adverse effects from increased traffic volume to traffic function along KY-91 and other routes. However, to minimize potential inconvenience to traffic related to the school zones along Ky-91, the following mitigation measures are recommended:

- Scheduling of oversized delivery trips (i.e. main power transformers) within the school zone outside of peak school drop-off and pick-up times. These delivery trips can also be scheduled for periods such as holidays and/or spring/summer/winter breaks.
- Communicating general construction schedules with the superintendent of Caldwell County Schools.
- Designing traffic control procedures to maximize driver and pedestrian safety as these delivery trips are traveling along KY-91 within the school zone. These procedures will be coordinated between the Owner/Contractor and state/local officials as the design and construction schedule of the Golden Solar Facility develops. The Owner/Contractor intends to comply with applicable Work Zone Traffic Control standards set forth by the Manual on Uniform Traffic Control Devices and by state/local agencies.

With the implementation of these policies, the similar type of traffic experienced, and temporary incremental increase of volume on the roads, the project will minimize negative impacts to the community.

January 23, 2023

**APPENDIX A**  
**TRAFFIC STUDY FIGURE**

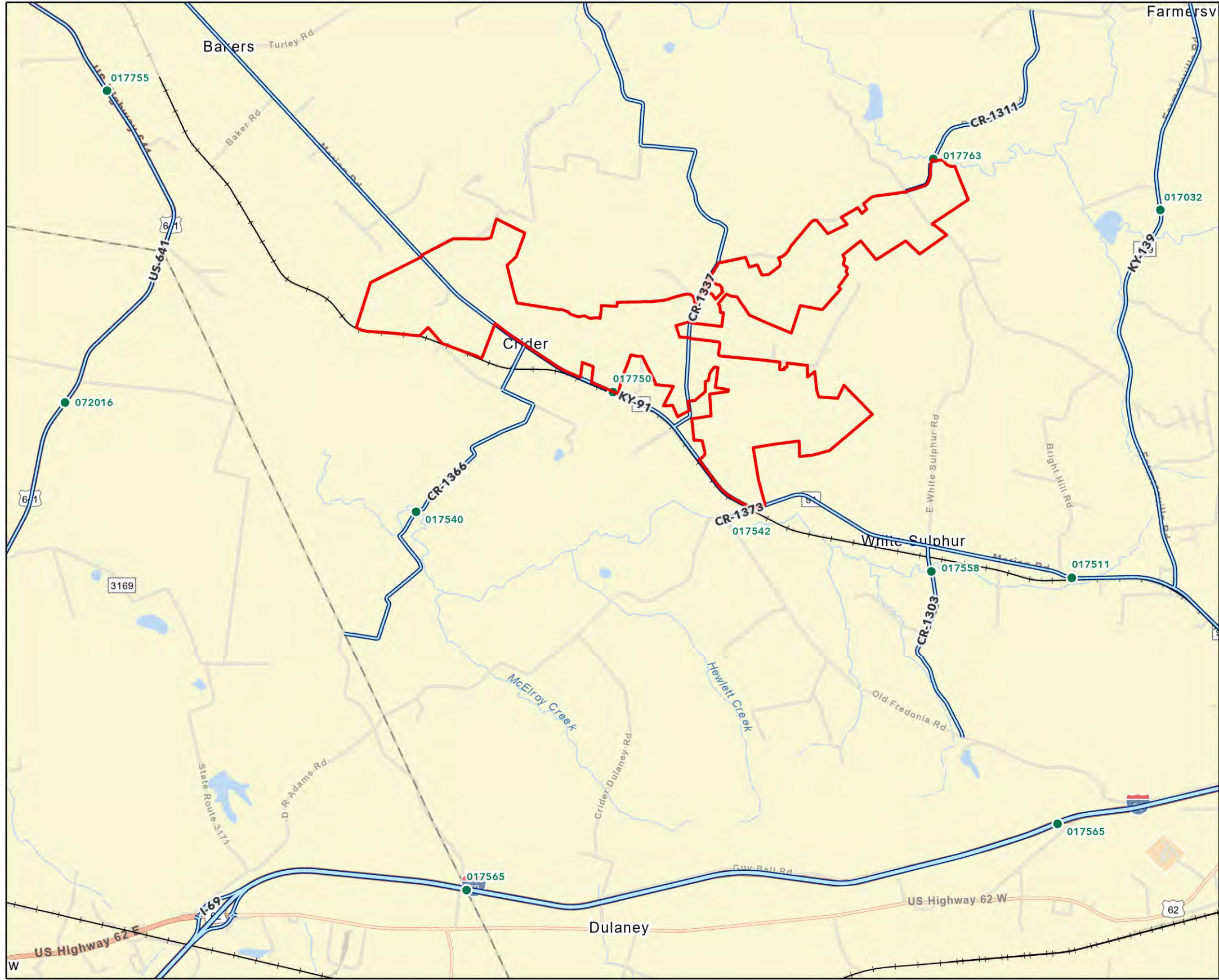


Figure No.

1

Title

**Traffic Study Figure**

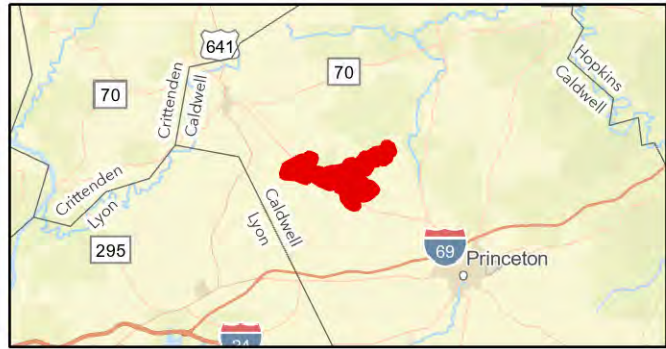
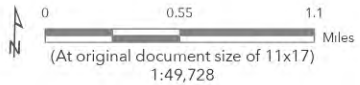
Client/Project

Golden Solar Project

Project Location

Caldwell County, Kentucky

- Project Area
- Major Roads
- Railway
- Traffic Station



**Notes**

1. NAD 1983 2011 StatePlane Kentucky FIPS 1600 Ft US
2. Basemap Sources: Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc., METI/NASA, USGS, EPA, NPS, USDA, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS
3. Data Source: Kentucky Transportation Cabinet (KYTC)



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**Request**

6. Provide the types of jobs for construction and operation used in the Jobs and Economic Development Impact (JEDI) modeling.
- 

**Response**

The JEDI model defines direct jobs as “construction and installation labor” and “construction and installation related services.” In National Grid Renewables' experience, construction jobs typically include electricians, operators, carpenters, laborers and various specialized subcontractors. These jobs will support site preparation and installation of piling, racking, tracker systems, modules, inverters, collection system, substation, transmission system, SCADA system, MET stations, and vegetation management.

For Operations, direct jobs are not allocated by sector but rather identified as “plant employees” in JEDI calculation sheets. JEDI relies on analyst estimated annual labor spend and analyst estimated annual salaries to estimate number of direct jobs during operation. In National Grid Renewables' experience, the job titles created during the operational phase typically include Plant Manager and Plant Technician. Operational activities typically include inspection and maintenance of electrical equipment, ground vegetation, buffer vegetation, and access drives.

**Request**

7. Confirm the habit study requested by the United States Department of Fish and Wildlife (Fish and Wildlife) regarding the grey bat was provided. If it has not been provided to Fish and Wildlife, provide proof that the habitat study was conducted and confirmation that it will be provided to Fish and Wildlife.
- 

**Response**

Stantec (previously Cardno) has provided an update regarding habitat studies, as well as a summary of potential impacts to bat species and consultation with Fish and Wildlife. Please see the attached memorandum from Stantec.

To: Courtney Pelissero  
National Grid Renewables  
Project/File: Golden Solar Project Bat Review

From: Bruce Moreira  
Stantec  
Date: January 20, 2023

---

**Reference: Golden Solar Project Bat Review**

This memo provides details on three items requested by the Kentucky State Board on Electric Generation and Transmission Siting (KYSB) data request issued on January 13, 2023 for Golden Solar (Case 2020-00243). The three items were:

- Bat Habitat Surveys
- Bat Hibernacula and Nearby Caves
- Bat Mortality from Solar Panels

Each of these items is addressed below.

**Bat Habitat Surveys**

Item 7 in the data request asked for additional information on bat habitat surveys:

Confirm the habitat study requested by the United States Department of Fish and Wildlife (Fish and Wildlife) regarding the grey bat was provided. If it has not been provided to Fish and Wildlife, provide proof that the habitat study was conducted and confirmation that it will be provided to Fish and Wildlife.

The question above specifically identifies Gray Bat (*Myotis grisescens*) for the requested habitat surveys. However, in our meeting notes from November 20, the discussion on habitat impacts covered three bat species:

- Gray Bat: Endangered
- Indiana Bat (*Myotis sodalists*): Endangered
- Northern Long-eared Bat (*Myotis septentrionalis*): Threatened

The habitat study requested by US Fish and Wildlife Service (USFWS) was focused on forested areas which would impact summer tree roosting species (i.e. Indiana and Northern Long-eared Bat). The Gray Bat only roosts in caves year-round and would not use forested areas as summer roosting habitat. Gray bat foraging habitat would include riparian woodlands along streams. Riparian woodlands are largely being avoided by the proposed project layout.

Stantec completed habitat surveys of all large intact forested areas which had potential to provide summer roosting or foraging habitat in the Golden Solar Project Area in October 2020 (Attachment 1). The October 2020 habitat report did not identify any caves suitable for use as bat hibernacula. After reviewing the October 2020 habitat report, USFWS asked for additional surveys only if proposed habitat identified in the report would be impacted by clearing. At the time of the consultation, the option to clear the trees was discussed, but during further development of the project, the layout was adjusted to avoid all of the bat habitat areas and no clearing was proposed.

**Reference: Golden Solar Project Bat Review**

It should be noted that the layout which appears in Figure 1 of the Bat Habitat Quality Memo was a preliminary layout and does not reflect the latest proposed layout provided to KYSB. The latest layout proposes no development in the bat habitat identified in the memo. The latest layout also minimizes impacts to riparian woodlands which could be foraging habitat for Gray Bats.

Because the bat habitat areas are being avoided, no additional habitat surveys are expected by USFWS. Golden Solar has committed to USFWS to complete maternity roost tree surveys in the event that any of the habitat areas identified in the Bat Habitat Quality Memo are proposed for clearing for project development. USFWS has established mitigation costs for clearing large intact forested areas considered roosting habitat for tree roosting bat species, however riparian wooded forest specific to Gray Bats has not included in this mitigation consideration.

### **Bat Hibernacula and Nearby Caves**

During the testimony provided on January 10, 2023, KYSB staff inquired about the potential for Gray Bats to occupy nearby caves as hibernacula. The Kentucky Biological Assessment Tool (KYBAT) occurrence report completed for Golden Solar in June 2020 (Attachment 2) identified one occurrence of Gray Bat and three caves within one mile of the Project Area. The bat caves were McElroy Cave (719, Fredonia), Phelps Cave (720, Fredonia), and Rice Cave (721, Fredonia). Locations of the caves were not included in the report. Our October 2020 habitat survey (Attachment 1) did not identify any caves suitable for use as hibernacula in the Project Area.

The Gray Bat occurrence in the KYBAT report included a coordinate location which corresponded to a wooded area approximately 3 miles west of the nearest proposed project infrastructure for Golden Solar. When we contacted KYBAT staff about providing details on the locations of the three caves in the KYBAT report, we were told that details could not be provided by KYBAT and that inquiries should be directed to the Kentucky Speleological Survey. We contacted the Speleological Survey but have not received details as of Jan 20, 2023.

In our consultation with USFWS staff regarding listed bat species, they did not raise any concerns about nearby bat hibernacula or caves. The concern from USFWS staff was focused on clearing large intact forested areas that could be used by bats as summer roosting and foraging habitat. These concerns are addressed above in the section on bat habitat surveys and impacts to these areas are being minimized by project development.

### **Bat Mortality from Panels**

In a meeting with USFWS in November 2020, USFWS asked about the likelihood of bats to experience mortality from solar panels by confusing them with a water surface and colliding with the panels. During the testimony provided on January 10, 2023, KYSB staff asked similar questions about Gray Bat and panel collisions.

During subsequent meetings with USFWS, we outlined the following reasons why Gray Bat collisions with solar panels were unlikely. Listed bat species in Kentucky navigate using echolocation and are well adapted to moving through wooded areas with densely packed obstacles. Bats are highly maneuverable and examples of bat mortality from stationary objects are rare. Solar panels represent a stationary object with a surface that is easy to identify and avoid by echolocation. The tracking systems supporting the panels are relatively simple features with linear components which would not represent a complex,



**Reference: Golden Solar Project Bat Review**

confusing, or dynamic obstacle to bats. As a result, bats would not be expected to collide with solar panels or their tracking systems. Research on mortality of bats from solar projects is limited but recent results from a study conducted in California indicated mortality to bats on photovoltaic projects was less than one tenth of one percent of mortality to avian species (11.61 bird fatalities/MW/year compared to 0.06 bat fatalities/MW/year, Smallwood 2022<sup>1</sup>).

Since the November 2020 meeting with USFWS, the issue of direct bat mortality from solar panels has not been raised again by USFWS. This includes in consultation with the USFWS on the Unbridled Solar project. Unbridled Solar has been approved for construction by KYSB and is moving into final construction design. Mitigation payments for impacts to listed bat species from Unbridled have only considered habitat removal and no consideration of direct bat mortality from solar panels has been raised by USFWS.

Regards,

**STANTEC CONSULTING SERVICES INC.**



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Attachment 1: Golden Solar Bat Habitat Quality Memo  
Attachment 2: Golden Solar KYBAT Standard Occurrence Report

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<sup>1</sup> Smallwood, K. S. 2022. Utility-scale solar impacts to volant wildlife. *Journal of Wildlife Management* 86:e22216. <https://doi.org/10.1002/jwmg.22216>