



# REVISIONS TO SOLAR ENERGY FACILITY IMPACT ANALYSIS DUE TO ADDITION OF OPERATIONS AND MAINTENANCE BUILDING

OAK TRAIL SOLAR PROJECT  
CURRITUCK COUNTY, NORTH CAROLINA  
OAK TRAIL SOLAR, LLC

PREPARED BY:  
WSP USA ENVIRONMENT & INFRASTRUCTURE INC.  
2801 YORKMONT ROAD, SUITE 100  
CHARLOTTE, NC 28208

T: 704-357-8600  
WSP.COM

March 21, 2023

Prepared By:  
WSP USA Environment & Infrastructure Inc.  
2801 Yorkmont Road, Suite 100  
Charlotte, NC 28208

Prepared For:  
Oak Trail Solar, LLC  
6688 N. Central Expressway, Suite 500  
Dallas, TX 75206

WSP Project No.: 6706-19-0060



## LIST OF ACRONYMS

E&SC	erosion and sediment controls
Facility	solar photovoltaic power generation facility
First Solar	First Solar, Inc.
H&H	hydrologic and hydraulic
NCDOT	North Carolina Department of Transportation
Site	Oak Trail Project Site
Oak Trail	Oak Trail Solar, LLC
O&M	Operation and Maintenance
PV	photovoltaic
ROW	right-of-way
SEF	Solar Energy Facility
SPCC	Spill Prevention, Control, and Countermeasure Plan
SWP3	Stormwater Pollution Prevention Plan
TMEIC	Toshiba Mitsubishi-Electric Industrial Systems Corporation
UDO or Ordinance	Currituck County Unified Ordinance Development
UL	Underwriters Laboratory
USACE	U.S. Army Corps of Engineers
WOUS	Waters of the U.S.

# SOLAR ENERGY FACILITY IMPACT ANALYSIS

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## 1.0 REVISIONS TO APPROVED IMPACT ANALYSIS DUE TO ADDITION OF OPERATIONS AND MAINTENANCE BUILDING

A Solar Energy Facility (SEF) Impact Analysis was prepared for the Currituck County Use Permit application related to the development of a solar photovoltaic (PV) power generation facility (Facility) at the Oak Trail Project Site (Site). The Use Permit for the Facility was approved by the Board of Commissioners on November 16, 2020 (PB 20-18). This amendment being sought for the addition of the Operations and Maintenance Building (“O&M Building”) does not impact the vast majority of the previously reviewed and approved Impact Analysis. The only sections requiring revisions due to the addition of the O&M Building are provided below.

## 2.0 CONSTRUCTION ACTIVITY PLAN

### 2.1 AMOUNT OF LAND DISTURBANCE

Construction operations have begun land disturbance under NCDEQ Project ID: Curri-2021-013 for clearing and grubbing within areas intended for development of Facility components (e.g. PV modules, substation, utility switchyard, and support construction areas [e.g., construction entrances, laydown yards, etc.]). The addition of the O&M Building, related access road, and parking will add approximately 1.32 acres of land disturbance and a permit modification will be submitted to NCDEQ.

Once construction is complete, temporarily disturbed areas will be restored, including removal of excess road material, de-compaction, and rock removal in agricultural areas, and returned to their approximate pre-construction contours. Exposed soils at the Site will be stabilized by seeding, mulching, and/or plantings.

### 2.2 LAND SURFACE CLEARING AND GRADING PLAN

O&M Building, access road and parking construction will require additional clearing or disturbance of approximately 1.32 acres. Most of the intended disturbance is expected to occur in previously-disturbed agricultural lands. Existing trees will be protected, to the extent possible. The total construction area under Project ID: Curri-2021-013 is 778.0 acres.

Areas that require grading are expected to be freed from irregular surface changes, smoothed, compacted, and sloped to drain. Where concrete slabs are to be installed, final earth grade will be sloped away to maintain proper drainage. Embankment slopes shall be protected against rutting and scouring during construction in a manner similar to that

required for excavation slopes. Site grading will be compatible with the general topography for the area. As described in Section 2.7, proper erosion and sediment controls (E&SC) will be employed in all disturbed areas.

## 2.3 ENERGY, WATER, AND MATERIAL NEEDS

Gasoline and diesel fuel are expected to provide the energy needs to equipment and vehicles during construction. Fuel will be properly stored while onsite. Contractors are expected to utilize temporary fuel tanks (stored within proper secondary containment) within the laydown yards for truck refueling during the construction phase.

Temporary power may be required during construction. If construction trailers will require power, temporary service will be obtained from the local electric service provider. Other sources of power during construction include portable generators to be deployed as needed.

The majority of water use during construction will likely be for dust suppression, although another suppressant, such as calcium carbonate, may be used instead of water. If water-based suppression techniques are used, the suppression methods will limit the amount of water that leaves the site as runoff. It is anticipated that dust suppression will be needed throughout the duration of construction activities. Measurable quantities of wastewater will not be discharged from the Facility during construction, as temporary restroom facilities will be maintained and removed from the site at the completion of construction activities.

The primary materials needed for site development include:

First Solar, Inc. (First Solar) panels:

- Series 4TM PV Modules, and
- Series 6TM PV Modules;
- Steel piles to support the panels;
- Single axis tracker systems;
- Toshiba Mitsubishi-Electric Industrial Systems Corporation's (TMEIC) Solar Ware inverters (or similar);
- Overhead/underground cables; and
- Material for construction of the Substation, Switchyard, [and O&M Building.](#)

## 2.4 FENCING AND LIGHTING PLANS

Proposed security fencing during construction will be chain link fence set back at least 150 feet from all North Carolina Department of Transportation (NCDOT) non-major arterial street rights-of-way (ROWs) and property lines in accordance with UDO § 4.2.3.K(3) of the UDO. As described in UDO § 5.2.6, a Type D opaque buffer will be installed for the constructed Facility in accordance with UDO § 4.2.3.K(6).

[An O&M Building is anticipated for the Site, and](#) lighting will be implemented in compliance with UDO § 5.4. Security and maintenance lighting is anticipated for the [O&M Building.](#)

substation, and inverter locations. The exterior lights will comply with illumination requirements, unless required for security or emergency purposes.

## 2.6 CONSTRUCTION WORK FORCE AND TIMEFRAME

Approximately 200 contracted workers may be present while constructing the Facility. Construction is anticipated to take 12 months, during which time contracted workers will stimulate the local economy. Construction is anticipated to proceed in the following sequence, with the potential for multiple activities to be performed concurrently:

- Site security;
- Installation of proper E&SC measures;
- Site clearing and grading;
- Access road construction;
- Buffer/screening installation;
- Grading and drainage;
- Pile foundation installation;
- PV module installation;
- Installation of the electrical collection system;
- Installation of inverters;
- Substation construction;
- Switchyard construction;
- [O&M Building construction](#);
- Pollinator habitat installation and site revegetation; and,
- Facility commissioning and energization.

## 3.0 OPERATION PLAN

### 3.1 MAINTENANCE ACITIVIES AND SCHEDULE

All critical Facility systems and sub-systems will be properly maintained and will include a scheduled preventative maintenance regimen. Maintenance activities will also include routine equipment repair and responses to unplanned outages.

Facility staff will receive continuous site monitoring and remote control responses from the remote operations center, [and the On-Site O&M Building](#). In addition, staff will receive

continuous predictive equipment health analytics algorithms and automated performance calculations.

On a monthly basis, a safety audit of the Facility and grounds will be performed and will include review of fencing, walkways, fire extinguishers, lighting, and eyewash stations. Staff will perform environmental inspections of any oil containing structures, site vegetation, and drainage in compliance with SWP3 and/or SPCC requirements. All Facility solar equipment will be visually inspected, and the weather station will be inspected and cleaned. Staff will receive remote data validation and performance engineering reviews and analyses.

The annual maintenance plan includes regularly scheduled visual, mechanical, and electrical maintenance activities and is intended to optimize Facility performance and protection. Activities include maintenance of equipment and systems such as: Gen-tie System; Switchyard; Transformers; Breakers; Batteries; Information Technology; Network and Communication Systems; Solar Panels and their Transformers; Inverters; Auxiliary Systems and Sensors, including Meteorological Gauges and Sensors; and Health and Safety Systems (e.g., eyewash stations, etc).

#### 4.9 WATER MANAGEMENT

The Project Area is located in an agricultural area with extensive modified drainage networks and a high- water table. Jurisdictional aquatic features, existing floodplains, and canals will be avoided and protected using appropriate setbacks and BMPs. Prior to Site disturbance, a two-dimensional hydrologic and hydraulic (H&H) model of the Site will be created to simulate rainfall runoff flow, for both pre- and post-development conditions. The results of the drainage modeling and flow analysis will identify the necessary drainage basin size, required sedimentation basin volume, and outfall flow rate and velocity.

Methods will be employed to reduce runoff and water quality impacts including employing BMPs where necessary. Sedimentation controls and BMPs will be inspected throughout the construction process. Construction and operations SWP3s and a Major Stormwater Plan will be developed and implemented at the Facility. Small agricultural ditches within the former fields may be modified, following USACE approval. Setbacks from the flood zone, canals, and other jurisdictional WOUS will be maintained. The drainage ditches and canals adjoining the Site will be maintained to keep the ditches free and clear of drainage impediments.

The proposed Facility will not result in wide-scale conversion of land to impervious surfaces. While PV panels themselves are impervious, they are disconnected from the ground surface so rain can run off the panel and fall onto the pervious underlying surface. In fact, NCDEQ's stormwater design manual states that solar panels associated with ground-mounted solar farms are considered pervious surfaces if configured with the recommendations in the manual, which the Facility will be. The collection substation, [O&M Building](#), [O&M related parking](#), and access roads are the only source of impervious surfaces

within the Facility and are anticipated to generate minimal runoff. Therefore, no significant changes to the rate, make-up, or volume of stormwater runoff are anticipated.





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**Exhibit 4**

Community Meeting Summary

### Summary of Community Meeting – O&M Building for Oak Trail Solar, LLC

A community meeting was held at the event venue at Eagle Creek on Wednesday, March 15, 2023 from 6 to 8 PM to present the proposed addition of an operations and maintenance (O&M) building to the Oak Trail Solar Project, receive feedback from community stakeholders and attendees, and satisfy Step 2 of the Special Use Permit review process. A list of attendees and a summary of comments are provided below.

<b>Attendees</b>	<b>Affiliation</b>
Carol Andrews*	Community Stakeholder
Cory Arnold	Community Stakeholder
Doug Cowan	Community Stakeholder
Matt Crook	LRE Representative
Tom Evans*	Community Stakeholder
Owen Etheridge	County Representative
Tammy Glave	County Representative
Richard Harmon	LRE Representative
Mark Hoar	Community Stakeholder
Debbie Ivarson	Community Stakeholder
Joan Ivarson	Community Stakeholder
Robert Kelly	Community Stakeholder
Juanita Krause	County Representative
Melanie Mallard	Community Stakeholder
Jason Martinson	LRE Representative
Merrick Parrott	LRE Representative
JoAnn Stich	Community Stakeholder
Nannie Stempel	Community Stakeholder
Brad Thompson	LRE Representative
Kevin Thornton	LRE Representative
Bret Washburn	Community Stakeholder
Lisa Washburn	Community Stakeholder

\*Names transcribed from the written sign-in sheet and spelling may be incorrect.

## **Feedback**

Comments raised by attendees during the meeting include:

O&M Building:

- Questions about O&M building location
- Questions about what will be housed in O&M building

Solar Energy Facility Construction:

- Questions about construction traffic impacts and patterns
- Comments about muddy conditions during construction
- Comments about dusty conditions during construction
- Comments about worn out grass at turn-in/corner of Puddin Ridge Road
- Questions about construction stormwater measures
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- Questions about utility switchyard retention pond and potential for mosquitos
- Questions about availability of soil from retention pond excavation
- Questions about local tax and charity contributions

## SIGN-IN SHEET

Oak Trail Solar O&amp;M Bldg. Public Information Meeting

March 15, 2023



Name	Address	Email/Phone
Nannie Strempele	176 Providence Dr Moyock, NC	strempele@gmail.com 757-325-0916
Robert Kelly	177 Oxford Rd Moyock, NC	robertshane.kelly@gmail.com
Cory Arnold	246 Oxford Road Moyock, NC 27958	cory.garnold@gmail.com
Dobbie Ivarson Joan Ivarson	413 Green Lake Rd. Moyock, NC 27958	Rattybear@aol.com
Bret + Lisa Washburn	260 Oxford Rd Moyock, NC 27958	lwashburn10@verizon.net
Tammy Glase	Plus Staff	

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SIGN-IN SHEET

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Name	Address	Email/Phone
Melanie Malleld		
Cary A. Andrews		
Justin	312 Sunny Lake	
Tom Erace		
Douglas Cowan	308 SUNNY LAKE RD.	

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