Decommissioning Plan
Foundry Works Solar
Lake County, Indiana

Stantec

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1.0 INTRODUCTION

Foundry Works Solar Energy LLC (Foundry Works), a subsidiary of Invenergy Solar Development North America LLC (Invenergy), is proposing to construct the Foundry Works Solar Energy Center in Lake County, Indiana. The proposed Foundry Works Solar Energy Center (the Project) is to be located within Eagle Creek Township, west of Hebron, Indiana. Major components of the Project include solar modules, a tracking system, inverter/transformer stations, and a Project substation. Foundry Works is considering bi-facial solar modules for the Project. The Project will occupy approximately 1,300 acres of land (within perimeter fencing) and will have a maximum nameplate generating capacity of up to 200 megawatts (MW) alternating current (AC).

This Decommissioning Plan (Plan) provides a description of the decommissioning and restoration phase of the Project. Start-of-construction is planned for early 2022, with a projected Commercial Operation Date in the fourth quarter of 2023. The decommissioning phase is assumed to include the removal of Project facilities as listed in Section 1.1 and shown in Figure 1.

This Plan includes an overview of the primary decommissioning Project activities, including the dismantling and removal of facilities, and subsequent restoration of land. A summary of estimated costs and revenues associated with decommissioning the Project are included in Section 4.0. The summary statistics and estimates provided are based on a 200-$MW_{[AC]}$ Project array design.

1.1 SOLAR FARM COMPONENTS

The main components of the Project include:

- Solar modules and associated above ground cabling
- Tracking system and steel piles
- Inverter/transformer stations
- Site access and internal roads
- Perimeter fencing
- Below ground electrical cabling and conduits
- Project substation

1.2 TRIGGERING EVENTS AND EXPECTED LIFETIME OF PROJECT

Project decommissioning may be triggered by events such as the end of a power purchase agreement or when the Project reaches the end of its operational life. The Project will be considered to be abandoned if the Project is non-operational for a period of twelve (12) consecutive months. If properly maintained, the expected lifetime of a utility-scale solar panel is approximately 30 to 35 years with an opportunity for a project

lifetime of 50 years or more with equipment replacement and repowering. Depending on market conditions and project viability, solar arrays may be retrofitted with updated components (e.g., panels, frame, tracking system, etc.) to extend the life of a project. In the event that the modules are not retrofitted, or at the end of the Project's useful life, the panels and associated components will be decommissioned and removed from the Project site.

The value of the individual components of the solar facility will vary with time. In general, the highest component value would be expected at the time of construction with declining value over the life of the Project. Over most of the life of the Project, components such as the solar panels could be sold in the wholesale market for reuse or refurbishment. As efficiency and power production of the panels decrease due to aging and/or weathering, the resale value will decline accordingly. Secondary markets for used solar components include other utility scale solar facilities with similar designs that may require replacement equipment due to damage or normal wear over time; or other buyers (e.g., developers, consumers) that are willing to accept a slightly lower power output in return for a significantly lower price point when compared to new equipment.

Components of the solar facility that have resale value may be sold in the wholesale market. Components with no wholesale value will be salvaged and sold as scrap for recycling or disposed of at an approved offsite licensed solid waste disposal facility (landfill). Decommissioning activities will include removal of the arrays and associated components as listed in Section 1.1 and described in Section 2.

1.3 DECOMMISSIONING SEQUENCE

Decommissioning activities will begin within 12 months of the Project ceasing operation and are anticipated to be completed within 12 months from start date. Monitoring and site restoration may extend beyond this period to ensure successful revegetation and rehabilitation. The anticipated sequence of decommissioning and removal is described below; however, overlap of activities is expected.

- Reinforce access roads, if needed, and prepare site for component removal
- Install temporary fencing and best management practices (BMPs) to protect sensitive resources
- De-energize solar arrays
- Dismantle panels and above ground wiring
- Remove tracking and piles
- Remove inverter/transformer stations, along with support piers and piles
- Remove electrical cables and conduits
- Remove access and internal roads and grade site to restore original contours, as necessary

- Remove substation, if decommissioned
- De-compact subsoils (if required), restore and revegetate disturbed land to pre-construction land use to the extent practicable

2.0 PROJECT COMPONENTS AND DECOMMISSIONING ACTIVITIES

The solar facility components and decommissioning activities necessary to restore the Project area, as near as practicable, to pre-construction conditions are described within this section.

2.1 OVERVIEW OF SOLAR FACILITY SYSTEM

Foundry Works anticipates utilizing approximately 483,678 solar modules, with a total nameplate generating capacity of approximately 200.0 $MW_{[AC]}$ on the 1,300-acre site. Statistics and cost estimates provided in this Plan are based on a LONGi LR5-72HBD 550-watt bifacial module although the final panel manufacturer has not been selected at the time of this report.

Foundations, steel piles, and electrical cabling and conduit will be removed. Access roads may be left in place if requested and/or agreed to by the landowner. Foundry Works will communicate with the appropriate local agency to coordinate the repair of public roads damaged or modified during the decommissioning and reclamation process.

Estimated quantities of materials to be removed and salvaged or disposed of are included in this section. Most of the materials described have salvage value, although there are some components that will likely have none at the time of decommissioning. All recyclable materials, salvaged and non-salvage, will be recycled to the extent possible. All other non-recyclable waste materials will be disposed of in accordance with state and federal law in a licensed solid waste facility.

Table 1 presents a summary of the primary components of the Project included in this decommissioning plan.

Table 1 Primary Components of Solar Farm to be Decommissioned

Component	Quantity	Unit of Measure
Solar Modules (approximate)	483,678	Each
Tracking System (full equivalent trackers)	5,039	Tracker
Steel Piles	35,909	Each
Inverters/Transformer Stations	53	Each
Electrical Cables and Conduits (below-ground)	192,590	Lineal Foot (estimated)
Perimeter Fencing	134,000	Lineal Foot (estimated)
Internal Access Roads (approximate)	73,290	Lineal Foot (estimated)
Substation	1	Each

2.2 SOLAR MODULES

Foundry Works is considering the LONGi LR5 (550-watt) bi-facial module or similar model for the Project. Each module assembly (with frame) has a total weight of approximately 71.2 pounds. The modules are approximately 89 inches long and 45 inches in width and are mainly comprised of non-metallic materials such as silicon, mono- or poly-crystalline glass, composite film, plastic, and epoxies, with an anodized aluminum frame.

At the time of decommissioning, module components in working condition may be refurbished and sold in a secondary market yielding greater revenue than selling as salvage material.

2.3 TRACKING SYSTEM AND SUPPORT

The solar modules will be mounted on a single axis, two-in-portrait tracking system, such as the Gemini tracker manufactured by NEXTracker or a similar manufacturer. Each tracker is approximately 55 meters (180 feet) in length and will support approximately 96 solar modules. Smaller trackers may be employed at the edges of the layout, to efficiently utilize available space. The tracking systems are mainly comprised of galvanized and stainless steel; steel piles that support the system are comprised of structural steel.

The solar arrays will be deactivated from the surrounding electrical system and made safe for disassembly. Tracker lubricants will be removed and properly disposed of or recycled according to regulations current at the time of decommissioning. Electronic components, and internal electrical wiring will be removed and salvaged. The steel piles will be completely removed.

The supports, tracking system, and piles contain salvageable materials which will be sold to provide revenue to offset decommissioning costs.

2.4 INVERTER/TRANSFORMER STATIONS

Inverters and transformers are located within the array and will sit on skids with steel piles. The inverters and transformers will be deactivated, disassembled, and removed. Depending on condition, the equipment may be sold for refurbishment and re-use. If not re-used, they will be salvaged or disposed of at an approved solid waste management facility. All oils and lubricants will be collected and disposed of at a licensed facility.

2.5 ELECTRICAL CABLING AND CONDUITS

The Project's underground electrical collection system will be placed at a depth of approximately three to four feet (36 to 48 inches) unless a greater depth is required by a landowner. Cabling will be removed and salvaged. To be conservative, no salvage value of the cabling is included in this Plan.

2.6 PROJECT SUBSTATION

Foundry Works will include a Project substation as shown on the attached figure. The substation footprint will be approximately 420 feet by 420 feet and will contain within its perimeter, a gravel pad, power transformer and footings, electrical control house and concrete foundations, as needed. The substation transformer may be sold for re-use or salvage. Components of the substation that cannot be salvaged will be transported off-site for disposal at an approved waste management facility. The substation will service Foundry Works and although it may be retained at the end of the Project life, an estimated decommissioning cost has been included in this Plan.

2.7 OPERATIONS AND MAINTENANCE BUILDING

Foundry Works will construct or purchase a project-specific building to utilize for an operations and maintenance (O&M) building. The building, along with the parcel it is located on, will likely be sold at the end of Project life; therefore, no O&M building removal is included in this Plan.

2.8 PERIMETER FENCING, SITE ACCESS AND INTERNAL ROADS

The Project site will include an approximately seven-foot-high deer fence around the perimeter of each array site. A network of access roads will allow access to solar facility equipment. The internal access roads will be composed of gravel approximately 16 feet wide and total approximately 73,290 feet (13.88 miles) in length. The internal access road lengths may change with final Project design. To be conservative, the decommissioning estimate assumes that all internal array access roads will be completely removed.

During installation of the Project site access roads, subgrade conditions may be stabilized by either the placement of Geogrid reinforced granular fills over soft ground, chemical stabilization, or cement stabilization. This Plan assumes the installation of up to six inches of aggregate base materials over geotextile fabric. The estimated quantity of these materials is provided in Table 2.

Table 2 Typical Access Road Construction Materials

Item	Quantity	Unit
Geotextile fabric	130,293	Square Yards
Gravel or granular fill; six-inch thick	21,716	Cubic Yards

Decommissioning activities include the removal and stockpiling of aggregate materials onsite for salvage preparation. It is conservatively assumed that all aggregate materials will be removed from the Project site and hauled up to five miles from the Project area. The underlying geotextile fabric will be removed during the access road decommissioning. Fabric that is easily separated from the aggregate during excavation

will be disposed of in an approved solid waste disposal facility. Fabric that remains with the aggregate will be sorted out at the processing site and properly disposed of. Following removal of aggregate and geotextile fabric, the access road areas will be graded, de-compacted with deep ripper or chisel plow (ripped to 18 inches), back-filled with native subsoil and topsoil, as needed, and land contours restored as near as practicable to preconstruction conditions.

3.0 LAND USE AND ENVIRONMENT

3.1 SOILS

The areas of the Project that were previously utilized for agricultural purposes will be restored to their preconstruction condition and land use. Topsoil reserved during construction and stored in long-term berms will be used if available and supplemented with comparable soils. Restored areas will be revegetated in compliance with regulations in place at the time of decommissioning. The proposed solar facility is predominantly located on land currently utilized for agricultural purposes. The Project site is relatively flat with natural and man-made drainage waterways located in low-lying areas. Soils within the proposed Project area include: Alida loam (AI), Blount silt loam (BIA), Door loam (DoA, DoB), Elliott silt loam (El), Houghton muck (Ca), Markham silt loam (MaB2), Milford silt loam (Mo), Milford silty clay loam (Mr), Ozaukee silt loam (OzaB, OzaC2), Ozaukee silty clay loam (OzIB3, OzIC3), Pewamo silty clay loam (Pc), Rensselaer loam (Rn), Tracy loam (TcA, TcB), and Tyner loamy fine sand (TyB). Areas of the Project that were previously utilized for agricultural purposes will be restored, as near as practicable, to their preconstruction condition and land use.

3.2 RESTORATION AND REVEGETATION

Portions of the Project site that have been excavated and back-filled will be restored to conditions as near as practicable to preconstruction conditions. Soils compacted during de-construction activities will be de-compacted, as necessary, to restore the land to pre-construction land use. If present, drain tiles that have been damaged will be repaired or replaced in order to maintain appropriate drainage. Topsoil will be placed on disturbed areas, as needed, and seeded with appropriate vegetation or in coordination with landowners.

3.3 SURFACE WATER DRAINAGE AND CONTROL

As previously described, the proposed Project area is predominantly located in actively drained agricultural land. The terrain is relatively flat with several man-made and natural drainages. The Project facilities are being sited to avoid wetlands, waterways, and drainage ditches to the extent practicable.

Surface water conditions at the Project site will be reassessed prior to the decommissioning phase. Foundry Works Solar will obtain the required water quality permits from the Indiana Department of Environmental Management (IDEM) and the U.S. Army Corps of Engineers (USACE), as needed, prior to decommissioning the Project. Required construction storm water permits will also be obtained and a Stormwater Pollution Prevention Plan (SWPPP) prepared describing the protection needed to reflect conditions present at the time of decommissioning. BMPs may include: construction

entrances, temporary seeding, permanent seeding, mulching (in non-agricultural areas), erosion control matting, silt fence, filter berms, and filter socks.

3.4 MAJOR EQUIPMENT REQUIRED FOR DECOMMISSIONING

The activities involved in decommissioning the Project include removal of the above ground components of the Project: solar modules, racking, tracking system, foundations and piles, inverters, transformers, access roads, and electrical cabling and conduits. Restoration activities include back-filling of pile and foundation sites; de-compaction of subsoils; grading of surfaces to pre-construction land contours and revegetation of the disturbed areas.

Equipment required for the decommissioning activities is similar to what is needed to construct the solar facility and may include, but is not limited to: small cranes, low ground pressure (LGP) track mounted excavators, backhoes, LGP track bulldozers, LGP off-road end-dump trucks, front-end loaders, deep rippers, water trucks, disc plows and tractors to restore subgrade conditions, and ancillary equipment. Standard dump trucks will be required to transport material removed from the site to disposal facilities.

4.0 DECOMMISSIONING COST ESTIMATE SUMMARY

Expenses associated with decommissioning the Project will be dependent on labor costs at the time of decommissioning. For the purposes of this report, approximate late 2020 to early 2021 average market values were used to estimate labor expenses. Fluctuation and inflation of the labor costs were not factored into the estimates.

4.1 DECOMMISSIONING EXPENSES

During decommissioning, the Project will incur costs associated with disposal of components not sold for salvage, including materials which will be disposed of at a licensed facility, as required. Decommissioning costs also include backfilling, grading, and restoration of the proposed Project site as described in Section 2. Table 3 summarizes the estimates for activities associated with the major components of the Project.

Table 3 Estimated Decommissioning Expenses – 200 MW Solar Array

Activity	Unit	Number	Cost per Unit	Total
Overhead and management (includes estimated permitting required)	Lump Sum	1	$770,000.00	$770,000
Solar modules; disassembly and removal	Each	483,678	$4.00	$1,934,712
Tracking system disassembly and removal	Each	5,039	$620.00	$3,124,180
Steel pile/post removal	Each	35,909	$12.50	$448,863
Inverter/transformers stations	Each	53	$1,100.00	$58,300
Below-ground electrical cables	Lineal Foot	192,590	$0.40	$77,036
Access road excavation and removal	Lump Sum	1	$238,871	$238,871
Perimeter fence removal	Lineal Foot	134,000	$2.80	$375,200
Topsoil replacement and rehabilitation of site	Lump Sum	1	$968,500.00	$968,500
Public road repair	Lump Sum	1	$216,000.00	$216,000
Substation removal	Lump Sum	1	$300,000.00	$300,000
Total estimated decommissioning cost				**$8,511,662**

4.2 DECOMMISSIONING REVENUES

Revenue from decommissioning the Project will be realized through the sale of the solar facility components and construction materials. As previously described, the value of the decommissioned components will be higher in the early stages of the Project and decline over time. Resale of components such as solar panels is expected to be greater than

salvage (i.e., scrap) value for most of the life of the Project, as described below. For purposes of this report, only estimated salvage values were considered in net revenue calculations, as this is the more conservative estimate strategy.

Modules and other solar plant components can be sold within a secondary market for re-use. A current sampling of reused solar panels indicates a wide range of pricing depending on age and condition ($0.10 to $0.40 per watt). Future pricing of solar panels is difficult to predict at this time, due to the relatively young age of the market, changes to solar panel technology, and the ever-increasing product demand. A conservative estimation of the value of solar panels at $0.10 per watt would yield approximately $26,602,000. Increased costs of removal, for resale versus salvage, would be expected in order to preserve the integrity of the panels; however, the net revenue would be substantially higher than the estimated salvage value.

The resale value of components such as trackers, may decline more quickly; however, the salvage value of the steel that makes up a large portion of the tracker is expected to stay at or above the value used in this report.

The market value of steel and other materials fluctuates daily and has varied widely over the past five years. Salvage value estimates were based on an approximate five-year-average price of steel and copper derived from sources including on-line recycling companies and United States Geological Survey (USGS) commodity summaries. The price used to value the steel used in this report is $240 per metric ton; aluminum at $0.40 per pound; silicon at $0.40 per pound and glass at $0.05 per pound.

The main material of the tracking system and piles is assumed to be salvageable steel. The main components of the solar modules are glass and silicon with aluminum framing. A 50 percent recovery rate was assumed for all panel components, due to the processing required to separate the panel components. Alternative and more efficient methods of recycling solar panels are anticipated before this Project is decommissioned, given the large number of solar facilities that are currently being developed. Table 4 summarizes the potential salvage value for the solar array components and construction materials.

Table 4 Estimated Decommissioning Revenues

Item	Unit of Measurement	Quantity per Unit	Salvage Price per Unit	Total Salvage Price per Item	Number of Items	Total
Panels - Silicon	Pounds per Panel	1.8	$0.40	$0.720	483,678	$348,248
Panels - Aluminum	Pounds per Panel	2.8	$0.40	$1.120	483,678	$541,719

Item	Unit of Measurement	Quantity per Unit	Salvage Price per Unit	Total Salvage Price per Item	Number of Items	Total
Panels - Glass	Pounds per Panel	26.7	$0.05	$1.335	483,678	$645,710
Tracking System and Posts	Metric tons per $MW_{[AC]}$	40	$240	$9,600	200	$1,920,000
Substation Components (steel and transformers)	Lump Sum	1				$50,000
Total Potential Revenue						$3,505,677

* Revenue based on salvage value only. Revenue from used panels at $0.10 per watt could raise $26,602,000 as resale versus the estimated salvage revenue.

4.3 DECOMMISSIONING COST SUMMARY AND FINANCIAL ASSURANCE

The following is a summary of the net estimated cost to decommission the Project, using the information detailed in Sections 4.1 and 4.2. Estimates are based on late 2020 to early 2021 prices, with no market fluctuations or inflation considered.

The following table represents the total estimated net decommissioning cost.

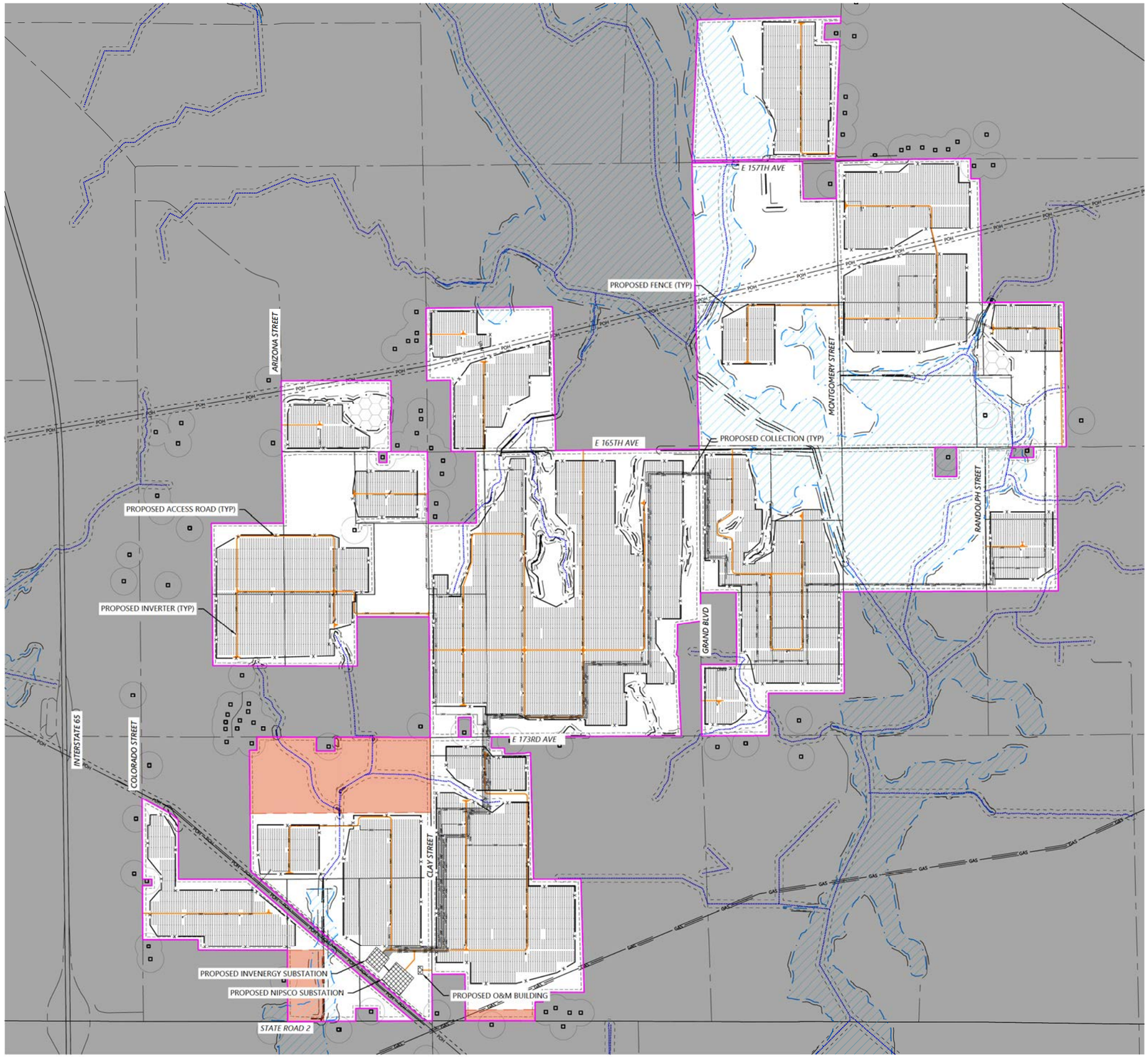
Table 5 Net Decommissioning Summary

Item	Cost/Revenue
Decommissioning Expenses	**$8,511,662**
Potential Revenue – salvage value of panel components and recoverable materials	**$3,505,677**
Net Decommissioning Cost	**$5,005,985**

Foundry Works Solar has indicated that in compliance with the Lake County, Indiana Solar Ordinance No. 2527, Section 9.10.2 – Solar Farms, a financial guarantee to cover the approved decommissioning cost estimate will be provided. The financial guarantee must be in the form of a bond, cash or other surety approved by Lake County. The surety is required to be submitted and approved by the Lake County Board of Commissioners prior to the issuance of any building permits for the Project. Foundry Works Solar Energy LLC will be responsible for decommissioning the Project facilities.

FIGURES

Figure 1 Project Layout



LEGEND:

- PROJECT BOUNDARY
- PARCEL LINES
- NON-PARTICIPATING PROPERTIES
- EX. ROAD CENTERLINES
- EX. RESIDENCE
- EX. OVERHEAD POWER
- EX. GAS PIPELINE
- EX. COUNTY DRAINAGE LINE
- EX. DELINEATED WATER LINE
- EX. DELINEATED WETLAND
- FEMA FLOOD PLAIN
- PROPOSED PROPERTY SETBACK
- PROPOSED FEMA SETBACK
- PROPOSED DELINEATED WATER LINE SETBACK
- PROPOSED DELINEATED WETLAND SETBACK
- PROPOSED DRAINAGE LINE SETBACK
- PROPOSED TRANSMISSION LINE SETBACK
- PROPOSED GAS LINE SETBACK
- PROPOSED RESIDENT HOUSE SETBACK
- EXCLUSION AREA
- PROPOSED SOLAR ARRAY
- PROPOSED ACCESS ROAD
- PROPOSED SECURITY FENCE
- PROPOSED ELECTRICAL EQUIPMENT
- PROPOSED COLLECTION LINES
- PROPOSED FACILITIES

PROPOSED PANEL SETBACKS	
NON-PARTICIPATING PROPERTY LINE	50 FT
RESIDENCES	200 FT
DELINEATED STREAMS	75 FT
COUNTY DRAINAGE FEATURES	75 FT
FROM ROAD ROW	
STATE ROADS	60 FT
COUNTY ROADS	50 FT
OTHER ROADS	30 FT
WETLANDS	50 FT
FEMA FLOODPLAIN	50 FT
NATURAL GAS LINES	30 FT
TRANSMISSION LINES	75 FT

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REVISIONS:

#	DATE	COMMENT
A	11/09/2020	Overall Site Layout
B	11/13/2020	Overall Site Layout
C	02/08/2021	Overall Site Layout
D	02/24/2021	Overall Site Layout
E	03/23/2021	Overall Site Layout
F	03/25/2021	Overall Site Layout
G	04/1/2021	Overall Site Layout

N

0' 1000' 2000' 3000'

Foundry Works Solar Project

Lake County, Indiana

Overall Site Layout

NOT FOR CONSTRUCTION

DATE: 04/1/2021

SHEET: EX.02