Hecate Energy Pulaski LLC

New River Valley Solar

Decommissioning Plan

November 2020

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Project Summary

This Decommissioning and Restoration Plan (“Plan”) for the New River Valley Solar Project (”Project”) was prepared by the Timmons Group and Hecate Energy Pulaski LLC ("the Project Owner"). The Plan has been prepared to address the requirements of Code of Ordinances of Pulaski County, Virginia, and provides for the decommissioning of the Project and restoration of the Project site at the end of the Project’s useful life or in the unlikely case of its abandonment. The Plan provides an overview of all activities related to the removal of the solar energy system, its equipment and panels, and any appurtenant structures and for the restoration of the site to its previous condition as much as reasonably practicable.

The facility has an engineered design life of thirty-five (35) years and may be reasonably expected to economically produce beyond its designed life. This Plan, however, assumes that decommissioning activities will be completed at the end of the economic useful life of the Project.

During decommissioning all of the Project’s facilities will be dismantled and removed. During restoration, the Project site will be returned to its previous condition. If it is agreed upon with the County, and the landowner, some or all the Project access roads may be kept in place for continued use.

The Project Owner will meet with the County prior to ceasing operations, to review its plans to decommission the Project and restore the premises. Within twelve (12) months of initiating the decommissioning, the Project Owner will remove the relevant components from the land and restore the site as described below.

The decommissioning of the Project and restoration of the site will comply with any applicable municipal, state and federal regulations. As with the construction, a manager responsible for safety will be present on site for the duration of the work.

The Project Owner will ensure that the decommissioning and restoration of the proposed facility is carried out in accordance with Pulaski County’s requirements and the measures and practices described in this Plan. This will include but not be limited to:

- Providing notification regarding the plans to continue or cease the operation of the Project.
- Providing a schedule for the start and completion of the decommissioning and restoration activities.
- Providing site restoration measures that will restore it to its prior condition.
- Providing restoration of the site, as practicable, to its pre-construction state as timberland and pastureland.

- Providing a decommissioning and restoration cost estimate as well as the methods for ensuring that the funds will be available for decommissioning and site restoration.

Introduction and Project Description

The New River Valley Solar Project is being planned by Hecate Energy Pulaski LLC. This Decommissioning and Restoration Plan is being submitted to Pulaski County.

Hecate Energy Pulaski LLC proposes to develop this project in three phases as follows:

- Phase 1, known as Hazel Hollow, will be permitted for 150 MW alternating current over 1,593.8 acres. The point of interconnection will be the Hazel Hollow Substation.

- Phase 2, known as Morgan's Cut, will be permitted for 100 MW alternating current over 847.5 acres. The point of interconnection will be Morgan's Cut Substation.

- Phase 3, known as Wurno, will be permitted for 30 MW alternating current over 255.9 acres in Pulaski County, and an additional 305.7 acres within the Town of Pulaski.

The Project is located on agricultural and industrial land.

The Project is being developed by Hecate Energy, a renewable energy development, construction, and operations company based in Chicago, Illinois.

The following Plan is based on today's known technologies, means, and methods. These may change over the life of the Project.

Decommissioning Plan Overview

The facility has an engineered design life of thirty-five (35) years and may be reasonably expected to economically produce beyond its designed life. This Plan, however, assumes that decommissioning activities will be completed at the end of the economic useful life of the project.

Project Owner will meet with the County prior to ceasing operations, to review its plans and schedule for decommissioning the Project and restoring the premises.

During decommissioning all of the Project's facilities will be dismantled and removed, including the perimeter fences, concrete foundations (to a depth of 3 ft below grade), steel piles, mounting racks, trackers, Photovoltaic ("PV") modules, above-ground and underground cables (to a depth of 3 ft below grade), transformers, inverters, fans, switch boxes, fixtures, combiner boxes and project substations. All above ground structures including circuit breakers, chain link fencing, main power transformer and control

buildings will be removed. All electrical equipment will be removed for reuse or disposal and will carry a significant salvage value. All fill and gravel will be removed, and the site will be graded to restore terrain profiles to the extent practicable. Within twelve (12) months of initiating the decommissioning, Project facilities will be removed from the leased land and restoration will be completed.

The Applicant will be responsible for performing the Facility decommissioning. The decommissioning and restoration work will generally involve the following:

- Planning, permitting, and consultation;
- Disassemble and recycle PV panels;
- Remove and recycle inverter stations, combiner boxes, and switchboards;
- Remove transformers and transport to a licensed facility for draining, disassembly, and recycling;
- Remove circuit breakers and transport to a licensed facility for degassing, disassembly, and recycling;
- Disassemble and recycle tracker steel components;
- Disassemble and recycle substation steel and components;
- Remove and recycle tracker I-beam posts;
- Remove, crush and recycle concrete foundations (substation components and inverter skids);
- Remove and recycle selected stone roads;
- Remove and recycle perimeter fencing;
- Collect and dispose of non-recyclable materials (loose debris, road filter fabric, select substation components, above ground PVC conduits);
- Regrading and decompaction as needed; and
- Clean up and inspection.

The applicant will be in responsible charge to properly track and manifest all material leaving the site and properly dispose to licensed recycling and disposal programs.

Decommissioning and removal of Facility components from the Facility Area is anticipated to occur within 12-months following discontinuation of operations on the Facility Area. The decommissioning is anticipated to be completed over six months.

Managing Excess Materials and Waste

During the decommissioning phase, waste materials will be removed in accordance with applicable local regulations. This will include but not be limited to obtaining all required permits and doing all soil testing as deemed necessary either by permit or additionally by third-party professionals to ensure there is no contamination of the site after removal has occurred. It is the goal of the Project Owner to reuse and recycle materials to the extent practicable and to work with local subcontractors and waste firms to segregate material to be recycled. As an example, since the mounting racks are made up of manufactured metal, it is anticipated that nearly 100% of the above grade metal is salvageable based on current industry practices and trends.

Many components of the Project are reusable or recyclable and have salvage value. The Project Owner will manage decommissioning to minimize, to the extent practicable, the volume of project components and materials discarded as waste. Table 1 below outlines the anticipated disposition methods of the different project components.

Table 1

Anticipated Project Decommissioning Disposition Methods

Component	Disposition Method
Concrete Foundations	Crush and recycle
Solar Panels	Reuse or recycle
Metal racks and mounts	Salvage/recycle
Steel piles and rack foundations	Salvage/recycle
Wiring and cabling	Recycle/salvage
Inverters, transformers, and breakers	Salvage/recycle/reuse
Granular material	Reuse/dispose

Component	Disposition Method
Main power transformer	Reuse/sell
High voltage circuit breakers	Reuse/sell
Project substation steel and switches	Reuse/salvage/recycle
Fence steel	Salvage/recycle
Project substation controls	Dispose/reuse

Major pieces of equipment such as transformers and breakers are recyclable and reusable and will have significant market value. The solar panels are expected to retain over 85% of their generation capability after 35 years of operation so their market value as a reusable item is very high.

Existing solar panel manufacturers have programs to buy and salvage panels.

These programs extract the raw materials in the panels to make new panels at a significant discount from new material costs. Recycled materials include the semiconductor and glass.

Other components such as electrical cable have a high salvage-market value due to their copper and aluminum content. The same is true for the steel and aluminum racks and foundations that support the solar panels.

As the great majority of the facility will consist of reusable and recyclable items, only a small percentage of the project components and materials will be disposed of in landfills. Any items or materials that are landfilled will be nontoxic. The Project Owner will assume the responsibility for removing this material from the site and properly disposing of it.

Decommissioning Costs and Salvage

To come up with a reasonably accurate cost estimate for the actual decommissioning process and to a salvage value for the material on a specific site requires much more detail than what is available presently. A detailed cost estimate would have more information from the design perspective with regard to the electrical component of the project. That would include some knowledge of inverters used, panels deployed, and structures used such as the steel to deploy to support the panel racks which are aluminum. However, since that information is not available right now we can use as a reasonable method an average of decommissioning costs and salvage values we have calculated on similar projects very recently and extrapolate those costs on a per dc watt basis. As follows here is the base calculation:

Total project power generated: 280 MWac, 378 MWdc (all three phases)

Test Case (Virginia), 10/2020

Generated Power Capacity: 135 MWac, 184 MWdc

Estimated Decommissioning Cost: $6,450,043, $0.035/watt(dc)

Estimated Salvage Value: $7,824,448, $0.043/watt(dc)

Estimated decommissioning cost calculation NRV Solar

378,000,000 watts X $0.035/watt = **$13,230,000**

Estimated salvage value calculation, NRV Solar

378,000,000 watts X $0.043/watt = **$16,254,000**

The above calculation could be refined but would require more real data and design information than we have now. To do that analysis would require significant engineering work to arrive at the best actual value which can be done when that information is made known.

It is also the case that these values are subject to change by factors that are known but not predictable. An example would be labor costs which could be very different at the time of decommissioning. The salvage values are based on salvage values assumed today which are sensitive scrap values for raw materials such as steel and aluminum which are variable as commodities over time.

We can say based on using a very similar comparison with the Test Case project in Virginia that the estimate decommissioning cost for New River Valley Solar is $13,230,000. The estimated salvage value is $16,254,000.