



Chipmunk Solar

Exhibit L

Decommissioning Plan

**Case No. 21-0960 EL BGN**

# **DECOMMISSIONING PLAN AND COST EVALUATION**

**FOR THE:  
CHIPMUNK SOLAR PROJECT  
PICKAWAY COUNTY, OHIO**

**PREPARED FOR:  
ENVIRONMENTAL DESIGN & RESEARCH  
5 E. LONG STREET, SUITE 700  
COLUMBUS, OHIO 43215**

**FEBRUARY 2022**

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## **1.0 EXECUTIVE SUMMARY**

### **1.1 Introduction**

Hull & Associates, LLC (Hull) was retained by Environmental Design & Research (EDR), on behalf of Chipmunk Solar, LLC to prepare the Chipmunk Solar Project Decommissioning Plan. The Chipmunk Solar Project is a solar-powered electric generation facility planned to consist of arrays of ground mounted solar panel modules, metal racking system and support piles, underground electric collection cables, inverters, transformers, a substation, an offsite operations and maintenance building, solar meteorological stations, a supervisory control and data acquisition (“SCADA”) system, electrical interconnect transmission line, and associated access roads (collectively, the “Facility”). The Facility is located in Deer Creek, Jackson, and Monroe Townships and the Village of Williamsport in Pickaway County, Ohio.

Chipmunk Solar, LLC plans to utilize Tier 1 modules with a total nominal rating of approximately 536 Megawatts (MW) Direct Current (DC) and 400 Megawatts (MW) Alternating Current (AC). For the purpose of this decommissioning cost evaluation, Hull has evaluated the Facility as described in Chipmunk Solar, LLC’s Application for a Certificate of Environmental Compatibility and Public Need and additional pertinent information provided by EDR including assuming that approximately 893,344 (600W) modules will be installed. Any changes to the specific number of modules utilized or other minor changes as the Facility reaches final design will not change the overall conclusions of, or decommissioning methods described in, this Decommissioning Plan. There may be minor changes to the cost estimate included as Appendix A, which will be updated before the financial assurance described in Section 5.0 is implemented. The purpose of the decommissioning cost evaluation is to review the Facility and to make a recommendation to Chipmunk Solar, LLC regarding the total cost to retire the Facility at the end of its useful life.

This Decommissioning Plan will be updated every five years from the commencement of construction.

### **1.2 Results**

Chipmunk Solar, LLC estimates that the Facility should have an expected useful life of approximately 40 years. When the project owner determines that the Facility should be retired, this plan will be used for the decommissioning effort. The decommissioning costs include the costs to return the site to a condition compatible with the surrounding land, similar to the conditions that existed before development of the Facility. Included are the costs to retire the power generating equipment as well as the costs to retire the balance of plant (BOP) facilities. All equipment, structures and supporting components will be removed off-site, with the exception of the underground improvements (i.e., cabling and foundations) which will only be removed to three feet below grade.

The access roads and the substation surface will be restored to conditions similar to those prior to construction of the Facility. If a landowner prefers to retain an access road for future use, it will not be decommissioned.

Surface water drainage will be restored to conditions prior to construction of the Facility. When the equipment, access roads and foundations (to three feet below grade) are removed and the ground surface restored, final grading will be consistent with conditions that existed before development of the Facility. Ground water resources in this area are generally found at a depth well below any foundations for this Facility and, therefore, construction and decommissioning activities are planned to be well above any groundwater resources. Decommissioning activities will also avoid all streams and wetlands. Therefore, there will be no anticipated impacts to surface or groundwater resources and wetlands. If information becomes available at a later date that would suggest that these resources would be affected, it will be addressed in the five-year update to this plan.

All decommissioning work will be conducted under applicable permits and approval as generally outlined within Section 6.0 below.

The decommissioning is estimated to take no more than 18 months, including up to 12 months for equipment removal and an additional 6 months for seasonal restoration and revegetation activities.

Based on the results of this evaluation, the estimated decommissioning obligation cost for the Facility is provided in Appendix A.

## **2.0 PROJECT DESCRIPTION**

### **2.1 Project Introduction**

The Facility is planned to consist of large arrays of ground mounted solar panel modules, metal racking system and support piles, underground electric collection cables, inverters, transformers, a substation, an offsite operations and maintenance building, solar meteorological stations, a supervisory control and data acquisition (“SCADA”) system, electrical interconnect transmission line, and associated access roads (collectively, the “Facility”). The Facility is located in Deer Creek, Jackson, and Monroe Townships and the Village of Williamsport in Pickaway County, Ohio. The cost evaluation attached as Appendix A is based on the Facility as described in Chipmunk Solar, LLC’s EDR’s Application for a Certificate of Environmental Compatibility and Public Need.

### **2.2 Solar Module Units**

Chipmunk Solar, LLC’s Application for a Certificate of Environmental Compatibility and Public Need assumes that approximately 893,344 (600W) modules will be installed for a total nominal rating of approximately 536 MW DC and 400 MW AC. The solar panels will be mounted to a metal racking system with piles that will be driven or rotated into the ground in long rows or “arrays”. Each of the Project’s arrays will use one of two types of racking: “fixed-tilt” or “single-axis tracking (SAT).” Fixed-tilt racking will be stationary, and each array will run in an east-west direction. Solar panels mounted on fixed-tilt racking will be oriented or “tilted” to the south, with the low (southern) end of the panel one (1) to three (3) feet above the ground surface and the high (northern) end of the panel eight (8) to fourteen (14) feet above the ground surface. SAT arrays will run in a north-south direction and be equipped with electric motors that very slowly rotate the panels throughout the day to keep them perpendicular to the angle of the sunlight. SAT arrays will face east at sunrise, rotate with the sun during the day, face west at sunset, and then re-set to the east.

### **2.3 Electric Collection Cables, Inverters and Transformers**

The Facility will include a network of buried electric lines and associated communication lines that will collect and transmit the power (“collection lines”) and up to 120 inverters. Solar panels will be grouped into a series of circuits routing through cable trays on the racking to combiner boxes. Power from the combiner boxes will then be transmitted to DC-to-AC inverters, step up transformers and cabinets containing power control electronics. Cables used for transferring electrical power can be located underground or aboveground. The electrical conversion equipment will be mounted on a foundation, such as a metal skid and helical piers or field-constructed foundations. AC power will be delivered through collection lines to the substation.

## **2.4 Substation and Interconnection Transmission Line**

As stated in Section 2.3, the electrical power from the solar panels will be routed to a central electrical substation. The major components of the substation will be collection line feeders and breakers, bus, main power transformer, high voltage breaker, metering/relaying transformers, disconnect switches, enclosure containing power control electronics and a lightning mast. The substation transformers and select equipment will be constructed on concrete foundations and be surrounded by a perimeter fence.

The Facility will deliver power to a single point of interconnection (POI) on the Biers Run – Bixby 345 kilovolt (kV) circuit, owned by AEP Ohio Transmission Company, Inc. (AEP). The POI will consist of a new three circuit breaker 345 kV switching station and a short gen-tie line from the Facility substation to the switching station (collectively, the POI).

## **2.5 Access Roads**

Each solar field will have a gated entrance to support construction and allow for vehicle access to facilitate operations, maintenance, repair and replacement of equipment in addition to providing access for emergency response. The Facility will include approximately 17.5 miles of access roads for construction, operation and maintenance of the solar farm. The access roads will be up to 25 feet wide during construction and then reduced to 16 feet wide during operation. Main access roads that serve the inverters and substation equipment will likely be surfaced with gravel.

## **2.6 Solar Meteorological Stations and Supervisory Control and Data Acquisition (“SCADA”) System**

The Facility will include up to six (6) meteorological stations, which will include a pyranometer, anemometer, wind vane, barometer, rain bucket, temperature probe and associated communications equipment. All equipment will be installed on a foundation, gravel pad or the ground surface and will be up to fifteen (15) feet in height and will be fenced and gated.

The Facility will also include a single masonry or metal structure that will house SCADA equipment. It will contain computers communications and other electronic devices to assist in the monitoring and operation of the Facility. The SCADA structure will have electrical service, but will not include offices or be occupied, and will not include water or sewer service. The SCADA structure will be constructed on a cast-in-place or pre-fabricated concrete foundation, occupy less than 400 square feet, and be less than 15 feet high.

The SCADA system will also include buried fiber optic cable, collocated with the buried medium-voltage collection system, linking the SCADA structure with sensors and or controls located at each inverter, pyranometer, and within the solar array.

### **3.0 DECOMMISSIONING PLAN**

Chipmunk Solar, LLC estimates the Facility should have an expected useful life of approximately 40 years. Upon the retirement of the Facility, decommissioning and restoration of the entire Facility will be performed and managed by qualified, contractors who have demonstrated relevant experience. The selected contractor will secure all the required permits, schedule the planned activities, and work with waste management firms to segregate materials that can be reused and recycled from those that must be properly disposed of at licensed disposal facilities that operate in accordance with current applicable federal, state and local laws, rules, regulations and ordinances at the time of decommissioning. Advance notification of decommissioning to all stakeholders, including landowners, and other relevant agencies will occur prior to any on-site activities. During decommissioning activities, coordination with the County Engineer will be completed to ensure provisions are in place for repair of public roads that are damaged or modified during the decommissioning process.

During decommissioning and restoration activities, necessary environmental protection measures will be implemented. Activities during decommissioning will be comparable to the construction phase, including the use of heavy equipment onsite, preparing staging areas, and restoring areas that were disturbed during work activities. Best management practices regarding erosion and sedimentation controls will be implemented, as well as dust and noise mitigation controls. Additionally, contingency plans will be in place for unforeseen conditions and spills. A project specific Health & Safety Plan (HASP) will be prepared by the respective contractors and be available onsite. All assigned personnel will have participated in the contractor defined safety training programs associated with this type of work. The HASP will address employee health and safety during planned activities, personal protective equipment, identify safety procedures and protocols and include a section describing emergency response and communication plans. Daily jobsite safety analysis (JSA) will be conducted each morning identifying planned activities, potential hazards and the associated engineering controls/hazard mitigation measures.

Additionally, contractors shall be obligated to maximize the salvage value for the overall project and all recyclable materials, salvaged and non-salvaged, shall be recycled to the furthest extent practicable.

See below for a description of the individual Facility components and the proposed plan for decommissioning these components. The Facility will be deenergized and isolated from all external electrical lines in coordination with the transmission utility prior to commencing removal and recycling activities.



### **3.1 Solar Module Units**

All modules will be disconnected, removed from the racking, carefully packaged and transported for resale, recycling or disposal. The connecting cables and combiner boxes will be disconnected and removed. The steel racking system supporting the solar modules will be unbolted and disassembled. All steel support structures will be completely removed and transported offsite for resale, recycling or disposal. Any demolition debris that is not salvageable will be transported offsite to licensed disposal facilities, operating in accordance with applicable federal, state and local laws, rules, regulations and ordinances at the time of decommissioning. Vehicles used for transport will be legal weight and dimensions. All piles shall be removed from the site by the pull-out method, and if sections of piles detach during this operation, sections will be removed if they are within 3 feet of the final ground surface.

### **3.2 Electric Collection Cables, Inverters and Transformers**

Decommissioning will require dismantling and removal of electrical equipment, including above ground cables, inverters and transformers. Buried collection cables more than 3 feet below grade will not be removed. All electrical equipment will be removed from the Facility property and transported offsite. Concrete foundations and support pads will be removed from the site. Concrete foundations will be removed if they are within 3 feet of the final ground surface. Vehicles used for transport will be legal weight and dimensions, with the exception of some larger electrical equipment that may require special hauling permits. Prior to removal of the transformers, any fluids will be pumped out into a separate industry-approved disposal container and sealed to prevent any spillage during storage and/or transportation. It is expected that any fluids will be recycled and reused. Equipment and materials are expected to be salvaged for resale or scrap value depending upon market conditions.

### **3.3 Substation and Interconnection Transmission Line**

The equipment in the substation and surrounding fencing will be removed from the site, recycled or reused and properly disposed of. The Facility owner will contact the applicable regional transmission organization and interconnection utility prior to decommissioning to manage/coordinate efforts to ensure no disruption to the electrical grid.

### **3.4 Access Roads**

For purposes of this study, it is assumed that all of the access roads will be removed as part of the decommissioning of the Facility. This will include removal of the aggregate surface, geotextile materials and any modified subgrade material. Areas where aggregate surfacing has been removed will be decompacted and spread with topsoil. The decommissioned areas, inclusive of the access roads, will be graded to contours consistent with pre-construction topography to ensure suitable surface drainage, and

restore drainage patterns. The aggregate will be removed from the site and reused or properly disposed of. Site perimeter fencing and gates will be removed from the site, recycled or reused and properly disposed of. Participating landowners may choose to retain roads for their own use following decommissioning, so prior to any removal activities landowners will be directly contacted to document their intentions and adjust the decommissioning plan as needed.

### **3.5 Solar Meteorological Stations and Supervisory Control and Data Acquisition (“SCADA”) System**

The equipment, any foundations and surrounding fencing for the six (6) Solar Meteorological Stations will be removed by mechanical equipment and the demolition contractor will take ownership of the equipment. All fencing will be removed from the site and recycled or reused.

The structure, equipment, foundations and surrounding fencing for the SCADA system will also be removed by mechanical equipment and the demolition contractor will take ownership of the equipment. All fencing will be removed from the site and recycled or reused. Support piles will be removed from the site by the pull-out method, and if sections of piles detach during this operation, sections will be removed if they are within 3 feet of the final ground surface.

## 4.0 SITE RECLAMATION

Once the removal of all equipment and site demolition is complete, site reclamation activities will commence. Agricultural areas will be restored to conditions prior to site disturbance. The decommissioned areas, inclusive of the access roads, will be final graded consistent with agricultural use to ensure suitable surface drainage and drainage patterns. Soil quality should improve during the life of the project, due to solar facility maintaining vegetative ground cover throughout the life of the Facility. Maintenance during operation would include mowing activities and leaving grass cuttings in place to decompose. The decomposed organic material would then be naturally added to the existing soils. In areas where topsoil was removed during construction, topsoil will be redistributed to provide similar ground cover that was present prior to site disturbance. Areas disturbed during decommissioning activities will be seeded and mulched to provide vegetative cover to minimize erosion of topsoil. Seed mixes and other materials used will be acquired in quantities sufficient to complete any revegetation work necessary following decommissioning. Ideally, seeding will occur in the fall before first frost or early spring just before the last frost. The average frost-free growing season for the area is mid-April through the end of October. Sources of guidance for seeding and mulching, including watering, mowing, and repairing include the Ohio Rainwater and Land Development Manual (Ohio Department of Natural Resources, 2006)<sup>1</sup> and Item 659 of the Ohio Department of Transportation, Construction & Material Specifications. (Ohio Department of Transportation, 2019 Edition)<sup>2</sup>. Prior to preparing for seeding, any areas where the soil has been compacted by decommissioning activities shall be decompacted prior to placing topsoil and preparing the seed bed. Decompaction can be performed with a disk for shallow compaction or a winged subsoiler or straight ripper shank for areas that may have been compacted to deeper depths.

During the operation of the Facility, the ground under all the solar array areas will be vegetated and decommissioning activities will cause minimal surface disturbance to these areas. Because there will be a healthy stand of vegetation prior to decommissioning activities, it is assumed 40 percent of the area under the arrays will not require reclamation. Therefore, for cost estimating purposes, it is assumed that 60 percent of the array areas will require reclamation activities such as decompaction, minimal grading, and seed and mulch. The site will be monitored for one year after completion of decommissioning activities to ensure successful revegetation and restoration activities.

<sup>1</sup><https://epa.ohio.gov/divisions-and-offices/surface-water/guides-manuals/rainwater-and-land-development>

<sup>2</sup>[https://www.dot.state.oh.us/Divisions/ConstructionMgt/OnlineDocs/Specifications/2019CMS/2019\\_CMS\\_01212022\\_for\\_web\\_letter\\_size.pdf](https://www.dot.state.oh.us/Divisions/ConstructionMgt/OnlineDocs/Specifications/2019CMS/2019_CMS_01212022_for_web_letter_size.pdf)

Any agricultural drainage tiles impacted during the decommissioning activities will be restored to conditions prior to site disturbance no later than 30 days after such damage is discovered. Tile installation or repairs shall be performed, to the extent practical, in accordance with applicable provisions of the current version of the Standard Practice for Subsurface Installation of Corrugated Polyethylene Pipe for Agricultural Drainage or Water Table Control, ASTM F449-02 (2008)<sup>3</sup> and NRCS Ohio Construction Specification OH-9, Subsurface Drain Investigation, Removal and Repair (January 2017)<sup>4</sup>.

<sup>3</sup><https://www.astm.org/f0449-02r14.html>

<sup>4</sup>[https://efotg.sc.egov.usda.gov/references/public/OH/Subsurface\\_Drain\\_Investigation\\_OH-09\\_CS\\_2017-01.pdf](https://efotg.sc.egov.usda.gov/references/public/OH/Subsurface_Drain_Investigation_OH-09_CS_2017-01.pdf)

## **5.0 DECOMMISSIONING COSTS**

The Facility owner will provide for financial security to ensure that funds are available to decommission the Facility and restore the land consistent with pre-construction conditions. Prior to the commencement of construction, the applicant shall provide a performance bond for the estimated decommissioning cost (excluding salvage value) which lists the owner as the principle, the insurance company as the surety and the Ohio Power Sitting Board as the obligee. Following the commencement of construction of the Facility, the cost estimate will be updated every 5 years by an engineer licensed in the State of Ohio and the bond amount will be adjusted accordingly. Based on the results of this evaluation, the estimated decommissioning cost for the Facility is provided in Appendix A.

## **6.0 DECOMMISSIONING SCHEDULE AND PERMITS**

The decommissioning is estimated to take no more than 18 months, including up to 12 months for equipment removal, and an additional 6 months for seasonal restoration and revegetation activities.

This estimated schedule includes time for multiple (approximately 3 to 4) demolition and restoration crews to restore all areas to a condition prior to being disturbed. Essentially all of the land being used by the Facility was previously agricultural lands, so the intended future use of the land following reclamation is for it to return to agricultural use.

The structure of the demolition and restoration crews will be the following:

### **Structure Demolition Crew:**

- machine operators;
- laborers;
- truck operators; and
- general Superintendent.

### **Restoration crew:**

- machine operators;
- laborers; and
- truck operators.

At a minimum, the following permits, plans, and/or approvals will likely be required prior to initiating demolition activities:

- Health and Safety Plan;
- Demolition Permit;
- Road Use and Maintenance Agreement (RUMA);
- Waste Disposal Plan;
- NPDES General Permit for Storm Water Associated with Construction Activities and a Stormwater Pollution Prevention Plan (SWPPP); and
- Dust Control Plan/Equipment Mobilization.

While the above list is intended to cover the major permits and approvals that will likely be required, local requirements and changes in regulatory requirements over time may require additional site-specific permits and/or approvals that may not be listed above. A detailed study is recommended as part of the normal pre-demolition planning activities to confirm the exact permitting requirements that may be needed to execute the work.

## **7.0 DECOMMISSIONING COST ASSUMPTIONS**

In addition to the project scope understandings and assumptions described in Sections 3 and 4, the following general assumptions were made as the basis for the cost estimates:

1. The cost estimate is based on limited design information provided by the Client at the time of preparation of this plan and a 10% contingency has been included.
2. The cost estimate is based upon typical industry and market conditions as of the date of this estimate. Natural disasters, homeland security escalation, inflation, financing, and other unforeseen circumstances can cause sudden increases in material and labor costs.
3. Salvage value is excluded.
4. It is recognized that neither Hull nor its Client has control over the cost of labor, materials or equipment, or over the contractor's methods of determining bid prices and competitive bidding or negotiating conditions.
5. The costs were based on a standard work shift and does not include premiums for work required to be completed during off hours or weekends.
6. The estimate does not include contractor standby time.
7. The estimate assumes that contractors will have full access to all work areas at the scheduled time of work and does not include delays associated with gaining access.
8. No hazardous construction material abatement is required.
9. Cleanup of contaminated soils, hazardous materials, or other conditions present on-site having a negative environmental impact are not anticipated; therefore, no environmental cleanup costs have been included.
10. During decommissioning efforts, public road improvements were not anticipated due to legal load limits (weight, size) or special hauling permits being adhered to.

## **8.0 STANDARD OF CARE AND LIMITATIONS**

Hull has performed its services using that degree of care and skill ordinarily exercised under similar conditions by reputable members of its profession practicing in the same or similar locality at the time of service. No other warranty, express or implied, is made or intended by our oral or written reports. The work did not attempt to evaluate past or present compliance with federal, state, or local environmental laws or regulations. Hull makes no guarantees regarding the completeness or accuracy of any information obtained from public or private files or information provided by subcontractors.



## **APPENDIX A**

### Decommissioning Cost Evaluation

**Chipmunk Solar Project  
Pickaway County, Ohio  
Decommissioning Obligation Cost Evaluation**

<b><u>Description</u></b>	<b><u>Estimated Duration (weeks)</u></b>	<b><u>Gross Estimated Cost</u></b>
Mobilization/Demobilization/ General Conditions	20	\$ 1,030,391
Health & Safety	20	\$ 15,000
SWPPP & Dust Control	20	\$ 435,264
Removal of Equipment	14	\$ 11,010,111
Site Demolition	3	\$ 433,353
Site Reclamation	3	\$ 5,269,461
<b>Totals excluding 10% Contingency</b>		<b>\$ 18,193,580</b>
<b>10% Contingency</b>		<b>\$ 1,819,358</b>
<b>Total inclusive of 10% Contingency</b>		<b>\$ 20,012,938</b>

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Summary: Application Exhibit L (Decommissioning Plan) electronically filed by Mr.  
Michael J. Settineri on behalf of Chipmunk Solar LLC