



# **Decommissioning Plan Diamond Tail Solar + BESS Project Sandoval County, New Mexico**

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## Table of Contents

<b>1.0</b>	<b>INTRODUCTION.....</b>	<b>2</b>
1.1	SOLAR FARM COMPONENTS .....	2
1.2	TRIGGERING EVENTS AND EXPECTED LIFETIME OF PROJECT .....	2
1.3	DECOMMISSIONING SEQUENCE .....	3
<b>2.0</b>	<b>PROJECT COMPONENTS AND DECOMMISSIONING ACTIVITIES .....</b>	<b>6</b>
2.1	OVERVIEW OF SOLAR FACILITY SYSTEM .....	6
2.2	SOLAR MODULES .....	7
2.3	TRACKING SYSTEM AND SUPPORT .....	7
2.4	INVERTERS, BATTERIES AND TRANSFORMER STATIONS.....	7
2.5	ELECTRICAL CABLING AND CONDUITS .....	8
2.6	PROJECT BELOW GROUND INTERCONNECTION LINE.....	8
2.7	SWITCHGEAR STRUCTURE .....	8
2.8	PERIMETER FENCING, SITE ACCESS AND INTERNAL ROADS.....	8
<b>3.0</b>	<b>LAND USE AND ENVIRONMENT .....</b>	<b>10</b>
3.1	LAND USE.....	10
3.2	RESTORATION AND REVEGETATION .....	10
3.3	SURFACE WATER DRAINAGE AND CONTROL.....	10
3.4	MAJOR EQUIPMENT REQUIRED FOR DECOMMISSIONING .....	10

### LIST OF TABLES

Table 1	Primary Components of Solar Farm to be Decommissioned .....	6
Table 2	Typical Access Road Construction Materials.....	9

### LIST OF FIGURES

Figure 1	Project Layout
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# 1.0 INTRODUCTION

PCR Investments SP4, LLC (PCR) proposes constructing the Diamond Tail Solar+BESS Project in Sandoval County, New Mexico. The proposed Diamond Tail Project (Diamond Tail or “the Project”) is to be located northwest of Sandoval, NM. Major components of the Project include bi-facial solar modules, a tracking system, inverter/transformer stations, batteries, access roads, and below-ground interconnection cable. The Project will occupy approximately 1800 acres of land (within perimeter fencing) and will have a maximum nameplate generating capacity of up to 220 megawatts (MW) of alternating current (AC) + 110 MW 4hs batteries.

This Decommissioning Plan (Plan) describes the decommissioning and restoration phase of the Project. Construction is anticipated to begin approximately 12 months after receipt of the required Sandoval County permit approval or PNM interconnection approval (GIA) for this project, of both milestones, the latter.

The decommissioning phase is assumed to include the removal of Project facilities as listed in Section 1.1 and shown in Figure 1.

These plans ensure that Project facilities are properly removed after their useful life. The plans include provisions for removal of all structures, foundations, underground cables (buried shallower than the leases and Site Permits allow to remain in place), unused transformers and foundations, and restoration of soil and vegetation.

After all equipment is removed, any holes or voids created by poles, concrete pads and other equipment will be restored to the surrounding grade and tilled to farmable condition. In addition, the site may be revegetated with a previously approved seed mix to minimize erosion and reduce impact to surrounding vegetation. All access roads and other areas compacted by equipment will be de-compacted to a depth of 18 inches from finished grade prior to fine grading and tilling or seeding. This may include seeding as farmland or re-development of the land for other beneficial uses, based on consultation with landowners.

## 1.1 SOLAR FARM COMPONENTS

The main components of the Project include:

- Solar modules and associated above-ground cabling
- Tracking system and steel piles
- Central inverters
- Transformers stations
- Batteries
- Site access and internal roads
- Perimeter fencing

- Below-ground electrical cabling and conduits
- Switchgear structure
- Poles and cabling to point of interconnection (POI)

## **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 or following a continuous one-year period in which no electricity is generated, or if substantial action on construction or repairs to the project is discontinued for a period of one year, the permit holder will have one year to complete decommissioning of the utility-scale solar installation. At the discretion of the County Zoning Administrator, the continuous one-year period that triggers decommissioning may be extended if the applicant demonstrates an ongoing commitment to the project through activities such as but not limited to making lease payments or documentation of ongoing maintenance or repairs. The landowner or tenant must notify the County Zoning Administrator when the project is discontinued and when decommissioning is complete.

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. If 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 solar panels could be sold in the wholesale market for reuse or refurbishment. As the efficiency and power production of the panels decreases 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 the removal of the arrays and associated components as listed in Section 1.1 and described in Section 2.

## **1.3 DECOMMISSIONING SEQUENCE**

Decommissioning activities are anticipated to begin within six (6) months of the Project

ceasing operation and will be completed within twelve (12) months from the time the Project ceases operation. 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 erosion control best management practices (BMPs) to protect sensitive resources

- De-energize solar arrays
- Dismantle panels and above ground wiring
- Remove module trackers and piles
- Remove inverters
- Remove transformers and skids
- Remove below-ground medium voltage and interconnection electrical cables and conduit (less than 48 inches in depth)
- Remove switchgear structure
- Remove access and internal roads and complete minor grading as required to re-establish overall drainage patterns similar to pre-development conditions
- De-compact subsoils (if required), restore and revegetate disturbed land to allow for 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

PCR anticipates utilizing approximately 502,000 solar modules, with a total nameplate generating capacity of up to 273 MW direct current (DC) converting to approximately 220 MW<sub>[AC]</sub> + 110 MW 4 hs batteries on the approximately 1800-acre site. Statistics and cost estimates provided in this Plan are based on a bifacial solar module although the final panel manufacturer has not been selected at the time of this report.

Above ground facilities, such as modules, trackers, foundations, steel piles, electrical cabling and conduit will be removed from the site. Electrical cabling greater than 48 inches in depth may be abandoned in place. Access roads may be left in place if requested and/or agreed to by the landowner. Public roads damaged or modified during the decommissioning and reclamation process will be repaired to the pre-decommissioning condition at PCR's expense.

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)	502,000	Each
Tracking System (equivalent trackers – 81 modules)	5,574	Equivalent Trackers
Steel Piles	55,000	Each
Inverters (within arrays)	70	Each
Transformer Stations (on skids and piles)	1	Each
Electrical Cables and Conduits (greater than 48-inches below ground abandoned in place)	20,000	Lineal miles(estimated)
Perimeter Fencing	12	Lineal miles (estimated)
Internal Access Roads (approximate)	120,000	Lineal Foot (estimated)

Component	Quantity	Unit of Measure
Switchgear Structure	1	Each
Below Ground Interconnection Cable (greater than 48-inches below ground abandoned in place)	0	Lineal Feet (estimated)

## 2.2 SOLAR MODULES

PCR is considering a 550-watt bi-facial module, such as those manufactured by ZNSHINE Solar or similar type of model for the Project. The ZNSHINE Solar module has been used as a representative module for the calculations in this Plan. Each module assembly (with frame) has a total weight of approximately 74 pounds. The modules are approximately 89.7 inches long and 44.6 inches in width and are mainly comprised of non-metallic materials such as silicon, mono- or poly-crystalline glass, 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 one-in-portrait tracking system, such as the Nextracker Origin tracker manufactured by Nextracker Solar or a similar manufacturer. Each tracker is approximately 320 feet in length and will support 81 solar modules. Smaller trackers may be employed at the edges of the layout to efficiently utilize available space. The tracking system is 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. 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 INVERTERS, BATTERIES AND TRANSFORMER STATIONS

PCR is proposing to use the Sungrow SG3600UD-MV-US or similar inverters, which will be mounted on a racking system located with transformers in two central locations within the solar array.

The batteries will be Tesla Megapack or similar, which will be mounted on a racking system and concrete foundation, with gravel all around them, located near the substation of the Solar + BESS project.

The transformers typically sit on a skid assembly mounted on steel pile foundations within



the array. The inverters, batteries and transformers, and associated equipment will be deactivated, disassembled, and removed. Depending on the 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 minimum depth of approximately four (4) feet (48 inches) unless a greater depth is required by a landowner. Cabling installed below four feet will not interfere with future land use and can be abandoned in place. For purposes of this Plan, it is assumed that all cabling and conduit located at a depth greater than four feet below the surface will be abandoned in place.

## **2.6 PROJECT INTERCONNECTION LINE**

A specific substation will be needed for the Project. The Project will utilize approximately 5.6 miles of 345 kV overhead line to connect to the POI.

Cabling will not interfere with future land use and can be abandoned in place. For purposes of this Plan, it is assumed that the interconnection line will be located parallel the existing PNM's transmission lines ( 345 kV).

## **2.7 SWITCHGEAR STRUCTURE**

PCR will utilize one switchgear room to be located in the south-east portion of the Project area. The structure will be in conformance with all local and state building codes and will be removed during the decommissioning process.

## **2.8 PERIMETER FENCING, SITE ACCESS AND INTERNAL ROADS**

The Project will include an approximately seven-foot-high woven wire fence surrounding the perimeter of the site.

A network of access roads will allow access to solar facility equipment. The internal access roads will be composed of gravel approximately 12 feet wide and the perimetral road will be approx. 20 feet; totaling approximately 130,000 feet in length. The internal and perimetral road lengths may change with final Project design. To be conservative, the decommissioning estimate assumes that all internal and perimetral roads will be completely removed.

Access roads located around the perimeter and/or within the array will be comprised of an eight-inch-thick gravel layer placed on compacted native soils. The estimated quantity of the material is provided in Table 2.

**Table 2 Typical Access Road Construction Materials**

Item	Quantity	Unit
Gravel or granular fill; eight-inch thick	35,000	Cubic Yards

Decommissioning activities include the removal and stockpiling of aggregate materials on-site for salvage preparation. It is conservatively assumed that all aggregate materials will be removed from the Project site and hauled up to five (5) miles from the Project area. Following removal of aggregate, the access road areas will be graded, de-compacted with a deep ripper or chisel plow (ripped to 18 inches), backfilled with native subsoil and topsoil, as needed, and graded as required to re-establish overall drainage patterns similar to pre-development conditions.

## **3.0 LAND USE AND ENVIRONMENT**

### **3.1 LAND USE**

Land use prior to proposed development is primarily agricultural. The areas of the Project that have been disturbed will be restored, as near as practicable, to their pre-construction condition and allow for similar land use. Topsoil, reserved during construction 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.

### **3.2 RESTORATION AND REVEGETATION**

Portions of the Project site that have been excavated and backfilled will be restored, as near as practicable, to pre-construction conditions. Soils compacted during de-construction activities will be de-compacted, as necessary, to restore the land to a condition suitable for pre-construction land use. Topsoil will be placed on disturbed areas, as needed, and seeded with appropriate vegetation in coordination with landowners.

### **3.3 SURFACE WATER DRAINAGE AND CONTROL**

As previously described, the proposed Project area is predominantly located on agricultural land. The terrain is relatively flat. The Project facilities are being sited to avoid wetlands, waterways, and drainage features to the extent practicable.

Surface water conditions at the Project site will be reassessed before the decommissioning phase. PCR will obtain the required water quality permits from the Iowa Department of Natural Resources (IDNR) and the U.S. Army Corps of Engineers (USACE), as needed, before decommissioning the Project. Required construction stormwater 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. Erosion control best management practices may include construction entrances, temporary seeding, permanent seeding, mulching (in non-agricultural areas), erosion control matting, silt fences, filter berms, and filter socks.

### **3.4 MAJOR EQUIPMENT REQUIRED FOR DECOMMISSIONING**

The activities involved in decommissioning the Project include removal of the Project components: solar modules, tracking system, foundations and piles, inverters, transformers, access roads, and electrical cabling and conduits (unless abandoned below ground). 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 and dump trucks, front-end loaders, deep rippers, water trucks, disc plows and tractors to restore subgrade conditions, and ancillary equipment. Standard dump trucks may be used to transport material removed from the site to disposal facilities and to import clean fill and topsoil if necessary.

PCR acknowledges that Sandoval County Regulations may require the site owner/operator to enter into a Public Roads Damage Avoidance and Mitigation Plan with the County before the start of decommissioning activities if decommissioning will utilize County roads.

# FIGURES

## Figure 1 Project Layout

