# Chokecherry and Sierra Madre Wind Energy Project

# Construction, Operations and Decommissioning Plan

Power Company of Wyoming LLC

555 Seventeenth Street
Suite 2400
Denver, CO 80202

April 2014

# Table of Contents

## *Table of Figures*



## *Table of Tables*

# 1. OBJECTIVE

The Power Company of Wyoming, LLC (PCW) has developed this Construction, Operations, and Decommissioning Plan (COMP) for the Chokecherry and Sierra Madre Wind Energy Project (CCSM Project) to document the general processes by which the Project will be built, operated, and removed. This plan is preliminary, and PCW will update it as part of the development of each Site-Specific Plan of Development (SPOD) for the BLM.

## 2. PROJECT DEFINITION

PCW is developing a 2,000 to 3,000 MW wind energy project on The Overland Trail Cattle Company (TOTCO) ranch in Carbon County, Wyoming. The Project will consist of the following facilities:

- 1,000 wind turbines, with associated foundations and ground clearing;
- Access roads;
- Underground and overhead 34.5kV electrical collection lines;
- Six collection substations and an interconnection station;
- Internal 230kV transmission lines;
- Rail distribution facility;
- An Operations Center building and two Maintenance Facility buildings; and
- Associated laydown areas, construction trailer complex, and water extraction sites

A map of the general locations of the Project facilities, as well as more details on the attributes of these facilities, can be found in the *Chokecherry and Sierra Wind Energy Project Wyoming Industrial Development Information and Siting Act Section 109 Permit Application* (the Application) dated May 2014.

# 3. CONSTRUCTION

The range of construction techniques expected to be utilized for the CCSM Project are described in this chapter.

## 3.1 PROJECT CONSTRUCTION ACTIVITIES

The range of expected activities associated with the construction of each of the CCSM Project's long-term components are discussed below.

### 3.1.1 Rail Facility

Construction of the rail facility will occur in two stages: site preparation and track construction. Site preparation will begin with topsoil removal, which will be stockpiled and stored per the guidelines in the Master Reclamation Plan. The site will then be excavated, graded, and compacted and the necessary drainage structures and features will be installed. Sub-ballast aggregate material will then be placed to support the trackbed and provide a barrier for storm water infiltration of the subgrade.

Once the site preparation is completed, the track materials (rail, cross ties, and fasteners) will be assembled to form the running track and turnouts. Near the completion of the facility, Union Pacific will install the switches and crossings necessary to connect the facility to the main line. Upon completion, all track components will be inspected and tested as needed to verify they meet railroad requirements.

During the construction of the rail facility, the CCSM Project's delivery storage area, adjacent to the rail facility, will also be constructed. The construction of this area is described in Section 3.2.2.

### 3.1.2 Roads

The construction of the Project roads begins with clearing and grading operations. The topsoil that is cleared and placed in a berm along the outer edge of the road disturbance area per the requirements of the Master Reclamation Plan. The clearing and grading of any vegetated areas will also include the use and stockpiling of waste vegetation for reclamation as defined in the CCSM Project's Master Reclamation Plan.

Gravel will be applied to the permanent driving surface of the Project roads as specified in site-specific design sets. The design characteristics of the Project road, including details on gravel widths and thicknesses, are provided in the Road Design Manual with each site-specific plan of development.

The equipment typically used during the construction of roads consists of bulldozers, motor graders, compaction equipment, aggregate hauling trucks and water trucks. The bulldozers and motor graders will complete the clearing and grading operations. The compaction equipment, typically vibratory rollers, will compact the subgrade prior to placement of the aggregate. The compaction rollers will also be used after the delivery and grading of the road aggregate. For roads in which crane travel is intended, the compaction rollers will also compact the road shoulders to the widths necessary for the crane travel. It may also be necessary to occasionally use a water truck to condition the subgrade soils in order to meet the compaction requirements for the subgrade, as well as for dust control during and after road construction.

**Figure 1. Example Road Construction**

At the completion of the road construction, PCW will test the roads to verify that they meet design requirements. This testing will include proof-rolling or similar techniques for deflection verification.

### 3.1.3 Wind Turbine Pads

Wind turbine pads are the areas around each wind turbine site that provide sufficient room to construct the turbine's foundation, and stage and erect the turbine components (see Figure 2). The pads will be prepared same time the roads to the pads are constructed using similar construction techniques. Unless the pad site is naturally sufficiently flat and stabilized, the pad site will be cleared and graded with topsoil stockpiled per the requirements of the Master Reclamation Plan. The pad will be compacted using compaction rollers and water trucks as needed. As soil conditions require for stabilization, an aggregate surface will be placed across the pad site.

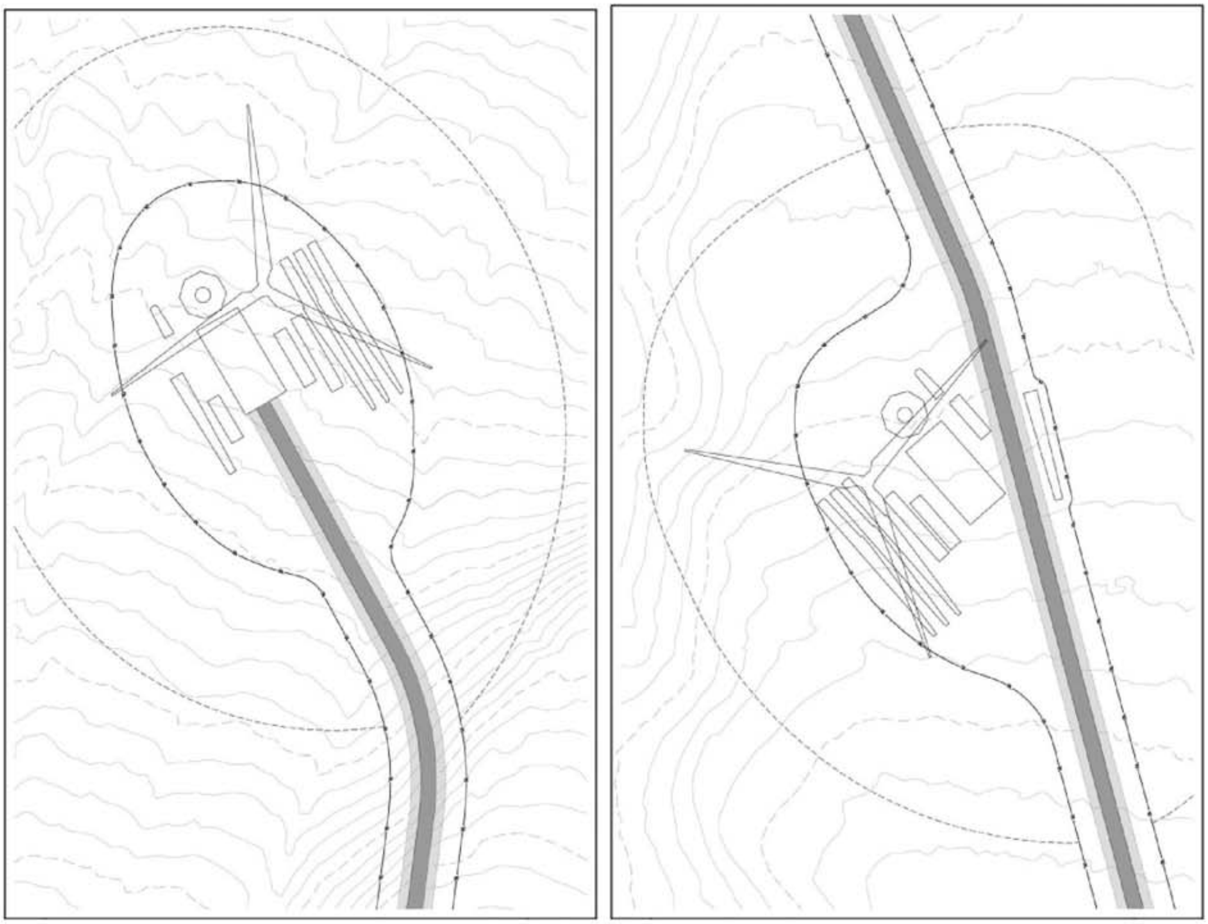

**Figure 2. Typical Wind Turbine Pad Configurations**

When backfilling for the turbine foundation is complete (see Section 3.1.4), the crane pad is generally installed next. The crane pad is constructed to provide the erection cranes with a level surface from which to erect the turbine components, and is commonly about 50 feet wide and 100 feet long for a 400 ton crane. The equipment used to build the crane pad includes a bulldozer and vibratory roller compactor. The bulldozer will also be used to complete any clearing around the foundation area to accommodate the trucks that will be delivering the turbine components.

Upon completion of the turbine erection, the wind turbine pads will be reclaimed to the long-term pad design in accordance with the Master Reclamation Plan.

**Figure 3. Example Wind Turbine Pad Use During Construction**

### 3.1.4 Wind Turbine Foundations

A wind turbine foundation consists of an anchor bolt cage in a steel reinforced concrete structure. The area above the foundation is cleared of any vegetation and the topsoil is removed and separated from the subgrade material as part of the wind turbine pad construction. The foundation is excavated to the design depth using tracked excavators. Upon completion of the excavation, a thin (commonly two to three inches thick) concrete surface called a mudmat is poured. The mudmat provides a clean and level working surface from which to assemble the foundation. On the mudmat, workers begin assembling the bottom layer of the concrete reinforcing. An anchor bolt cage is then assembled and placed on the bottom layer of steel reinforcing. Workers then assemble a top layer of steel reinforcing intermeshed through the anchor bolt cage. Forms are then placed around the steel reinforcing and anchor bolt cage in preparation for pouring the base section of the foundation. The base section of the foundation is then poured using ready mixed concrete trucks discharging into a concrete telebelt or concrete pump truck to accommodate the size of the foundation.

Following placement of the base section of the foundation, workers place a circular form around the exposed anchor bolt cage to pour the foundation pedestal. Approximately one foot of the anchor bolts are left exposed above the pedestal forms for connection to the base tower flange. Additional steel reinforcing is placed within the pedestal forms, as well as polyvinyl chloride (PVC) conduit to allow connection of the turbine to the collection system upon turbine erection. After all the reinforcing and conduit is installed, the concrete is poured for the pedestal.

**Figure 4. Example Wind Turbine Foundation Construction**

Following adequate concrete curing time, the forms are stripped and backfill of the foundation begins. The backfill operations are contingent upon the concrete reaching the required strength. Backfill operations involve a bulldozer and vibratory roller compactor. The backfill is placed in incremental lifts per the engineer's design requirements and tested for compaction requirements to provide the necessary overburden on the foundation (as defined in the final Project design and site-specific construction plan). All excavated material is commonly used in the backfill operation to achieve positive drainage from the turbine base. After completion of the backfill operations, the site is ready for the remaining turbine pad preparation.

### 3.1.5 Wind Turbine Installation

For the purposes of this document, wind turbine installation includes the following activities (addressed in the order presented):

- off-load of the turbine components
- erection of the base and mid sections of the tower
- assembly of the rotor
- erection of the top tower sections, nacelle and rotor
- internal connections and mechanical completion

Each of the above activities will utilize different equipment, and in some cases, different erection crews.

With the wind turbine pad and foundation complete, the site is ready for off-loading of the turbine components. Each turbine component will be delivered to the turbine pad on a semi-tractor and trailer configured to accommodate the length and weight of the component. Each site will receive three to four tower sections (dependent upon the turbine manufacturer), three blades, one hub, one nacelle, two to four electrical components (such as down-tower assemblies, padmounted transformers, or switchgear), and crates of bolts and other components. The typical equipment used to off-load these components consists of rough terrain cranes, forklifts and a crawler crane. There are two rough terrain cranes that typically off-load the tower sections and blades by performing tandem picks at each end of the component. The hub is off-loaded using a single rough terrain crane. Depending on the weight and configuration of the nacelle, a crawler crane may be required to off-load the nacelle. The forklifts are used to place dunnage under the turbine components to keep them off the ground and stored them in a secure manner prior to their erection. All of the components are placed within the turbine pad adjacent to the crane pad such that they are within the picking radius of the various cranes that will be used to erect that component. The typical process of unloading consists of the delivery truck pulling into the pre-determined position near the crane pad, the crane(s) then position next to the component and the rigging is attached to the component and the crane(s). The component is then lifted off the delivery truck, the truck pulls forward, the forklifts set the dunnage under the component and the crane(s) lower the component onto the dunnage. This process repeats until every turbine component is off-loaded.

After all the turbine components have been off-loaded, the site is ready to begin erection of the tower base and mid (or lower-mid for a 4 segment tower) sections. Prior to any cranes arriving at the site, a forklift often places wooden crane mats on the crane pad. This is done to support the crawler crane during its erection activities. The erection of the base and mid-sections is typically performed by a 200 to 300 ton crawler crane. The crawler crane walks itself onto the crane pad and mats that are adjacent to the foundation and staged turbine components. The crawler crane is accompanied by a smaller rough terrain "helper" crane that assists in lifting the tower sections from the ground to a vertical position. A forklift assists with moving dunnage and crane mats during the operation. The base tower section is prepared by placing the required rigging at each end of the tower. The crawler crane and helper crane hook onto the rigging and jointly lift the base tower section. The tower section is lifted to a vertical position and placed on crane mats to allow the rigging on the bottom of the tower to be removed. The crawler crane then lifts the tower section and it is placed on the anchor bolts that were left extended on the foundation pedestal. The base section is then leveled and bolted to the anchor bolt cage. The contractor then places grout under the tower to form the final connection between the tower and foundation.

After successfully erecting the base section and allowing sufficient time for the grout to set up, the next tower section (mid or lower-mid) is lifted and placed onto the tower base in a manner similar to that described above. The two tower sections are then bolted together prior to the crane being released. For a four segment tower, the upper-mid section is then lifted and placed onto the lower-mid section in the same manner, or in the alternative, the upper-mid section may be bolted onto the lower-mid section prior to lifting. Upon completion of the tower erection, the crawler crane then walks to the next site to perform the same operation.

Following installation of the turbine tower, the rotor must be built. Certain turbine manufacturers allow the assembly of the rotor on the ground and then the erection of the complete rotor by the main erection crane. When completed in this manner, the rotor assembly typically consists of a 100 to 200 ton crawler crane and a forklift to assist its operation. The crawler crane lifts each blade and positions it into the opening in the hub. The crew bolts the blade to the hub and positions dunnage under the blade to support it. The crawler crane continues to lift and place the remaining blades on the hub until the rotor is complete. The crews tie down the assembled rotor to prevent it from moving until it is read for erection. Upon completion of assembling the rotor, the crawler crane and forklift walk to the next site and repeat this operation.

The main erection crane is the next crawler crane to visit the turbine site. The main erection crane is typically a 400 to 600 ton crawler crane. Its purpose is to erect the remaining upper tower section(s), nacelle and hub. The main erection crane is assisted by a rough terrain "helper" crane and forklifts. The main erection crane walks onto the crane pad and mats to perform the erection activities. Similar to the installation of the base and mid-sections described above, the main erection crane and helper crane hook rigging onto each end of the upper tower section(s) and lift them to a vertical position, the bottom rigging is then removed and the tower section is placed on those sections already assembled. Once all the tower sections have been erected and bolted together, the main erection crane will then be rigged to a beam that allows the nacelle to be lifted. The main erection crane will lift and position the nacelle over the top tower section's flange to allow it to be bolted together. The next step is to lift the assembled rotor and attach it to the nacelle. The crawler crane and helper crane lift the rotor together until it reaches a vertical position, at which time the rigging for the helper crane is removed. The crawler crane lifts and positions the rotor so that the bolt holes align with the nacelle and the two components fasten together. After the rotor is securely attached to the nacelle, the main erection crane removes its rigging from the rotor and walks to the next turbine site to repeat this operation.

While PCW expects to assemble the rotor on the ground and preform one lift to place it, there are certain turbine manufacturers that do not permit the rotor to be assembled on the ground. These manufacturers require that each individual blade be attached to the hub after it is erected. In this case, the turbine site will be visited by another crawler crane after the main erection crane has erected the nacelle and hub. The typical crane used for attaching the blades is a 200 to 300 ton crawler crane. It is typically assisted by a forklift. The crane attaches to a beam specifically designed to lift each individual blade up to the hub. The crane lifts the blade and positions it so that the bolts align with the opening in the hub and it is inserted and bolted securely. The crew in the turbine then rotates the hub in order to properly position it for the next blade. The crane then attaches to the next blade and repeats the procedure. After all three blades are securely fasted to the hub the crawler crane walks to the next site to repeat the operation.

Once the major components of the wind turbine are assembled, work is done internally to connect the generation equipment in the nacelle with drop cables in the tower and the control system in the base. All mechanical connections are secured and checked. When these activities are completed, generally over the course of 2 to 4 days, the turbine has achieved a state of mechanical completion and is ready for commissioning.

It is important to note that the procedure described above is general. Wind turbine vendors may have very specific procedures that differ somewhat from those described for each turbine model. The installation procedures for all current commercial turbine models are similar, however, and PCW does not expect significant deviation from the above procedures.

**Figure 5. Example Wind Turbine Installation**

**Figure 6. Example Wind Turbine Nacelle and Blade Installation**

### 3.1.6 Electrical Collection System

PCW expects to construct both underground and overhead 34.5 kV electrical collection systems. The majority of the 34.5 kV collection system would be underground, however there will be areas of the project where terrain and economics would drive the usage of overhead collection. The 34.5 kV electrical collection system connects each WTG to a substation.

#### 3.1.6.1 Underground Collection System

The placement of 34.5 kV collection cables into the ground can either be done with one-pass trenching machines, or by laying the cables into excavated trenches which are then backfilled. Initial geotechnical information indicates that the depth of rock is very shallow on the Project Site, making it unlikely that the single-pass trenching machine method will be sufficient. As such, the open trench method (which has the greater level of disturbance between the two options) is described below.

For open-trench collection system installation, a separate trench would be utilized for each collection circuit. Trenches would be excavated with a trenching machine or backhoe; however, if competent rock is encountered at shallow depth, it would be necessary to jackhammer rock locally or drill and blast sections to open up a trench. If the rock content in local soil conditions is negligible, the collector cables and fiber-optic cables will be placed directly on the bottom of these trenches. The native material excavated from the trench will be sifted for rocks, backfilled on top of the cables, and compacted with a vibratory compactor. The backfill will be placed in lifts to achieve sufficient soil compaction and allow for the warning tape to be installed.

If the rock content in local soil conditions is high enough to cause risk of cable jacket damage during installation, bedding material (likely sifted backfill from elsewhere on the Project Site, or possibly engineered backfill from off-site) will be placed in the trench prior to installing the collector cables and fiber-optics. In such rocky conditions, it is also likely that the soil excavated from the trench will have too much rock content to be used to backfill the trench without damaging the cables. In those instances, an engineered backfill (soil with good thermal dissipation properties that is free of rocks) will be utilized to backfill the trench. Such backfill may be obtained from within the site, or imported from an off-site quarry or pit, as determined in the site-specific construction plans. As above, the backfill will be placed into the trench in lifts for compaction and warning tape installation.

**Figure 7. Example Underground Collection System Installation**

Geotechnical testing in the area around the cables will determine the heat dissipation properties of the soil. If necessary, the engineered backfill for the trenches may include material necessary to improve the overall thermal properties. Such material improvements would be determined in the detailed collection system design and included in site-specific construction plans.

Where splices are necessary in collection system cables, above-ground splice boxes will be installed above the collection cable trench. Similarly, in locations where two or more sets of underground lines converge, pad mounted switch panels would be used to tie the lines together into one or more sets of larger feeder conductors. These above-ground boxes are commonly four to six feet across and four feet high, constructed of plastic and fiberglass material appropriate for medium-voltage connections, and colored green. PCW would install concrete bollards around the boxes to avoid accidental damage by Project vehicles.

### 3.1.6.2 Overhead Collection System

The installation of the overhead collection system involves the placement of electrical poles and the stringing of cables between the poles. PCW intends to use wooden poles where possible and light-duty steel as needed. PCW will utilize overland travel on unimproved access routes where terrain and ground conditions allow to minimize the surface disturbance necessary to access the poles and string cable between them. Where ground clearing and grading is required, PCW will perform the minimum amount necessary.

Installation of the two types of poles used in the overhead collection system generally involves the following steps:

- **Pole Framing.** The components of the structures (poles, cross-arms, insulators, and hangers) are brought to the locations of their installation to be assembled. This work is typically performed on the ground just prior to erection of the structures.
- **Setting Direct Embedded Poles.** The medium-voltage wooden pole designs intended for use will be embedded into the ground without the use of a separate foundation. The construction process consists of first excavating the holes for the structure to the required depth. This can be accomplished through the use of a vertical drilling rig or excavator. Once the excavation for a structure is completed, the structure is hoisted into place by either a boom truck or all-terrain crane. The structure is checked for proper embedment depth, alignment and plumb. The structure is held in place while it is backfilled with either aggregate/rock or concrete. The backfill is mechanically vibrated or tamped in lifts to eliminate voids and assure proper bearing pressure. After the pole is backfilled, it is released.
- **Foundations.** Steel structures used for the overhead collection system will require concrete foundations. These foundations will be installed 3 to 5 weeks ahead of the structure erection to allow concrete to reach design strength. The foundation site is excavated, and frames placed onto excavated soil or a mudmat. Steel reinforcement is added within the frame, and concrete is poured. Once the concrete has reached sufficient strength, the forms are removed and the area backfilled. As an alternative, PCW may choose to utilize precast foundations based on the soil conditions and technical requirements. The surface disturbance of either foundation design is similar.

Once the pole installation is complete, stringing can begin. Stringing involves the pulling of the conductors through the stringing dollies by means of ropes. The use of guard structures will be required when crossing public roads. Guard structures are simply temporary wood structures or nets that prevent the pulling lines or conductor from falling onto the roadway.

The stringing dollies are attached to the insulators at the time of framing, and a rope line is looped down the structure to aid in the pulling of the stringing line. The line is pulled through the dollies from a tensioner to a dead end point on the line and attached to conductors located on a reel trailer. The tensioner then pulls the conductor though the dollies. When the desired span or reel length is reached, the reel end of the cable is placed into the dead end structures and the proper tension is applied.

Once the proper tension and sag is obtained, the cable is clipped into place. This process involves the removal of the stringing dollies and the installation of the cable clamps to firmly hold the conductor. The clipping process can be performed by bucket trucks. Once completed the line is brought into service.

### 3.1.7 Substations (Collection, Interconnection)

Each substation site is first cleared of vegetation and the topsoil is removed. The topsoil will be separated and stockpiled per the requirements of the Project's Master Reclamation Plan. The site is then graded to subgrade elevation per the requirements of the final design. Structural footings and underground utilities, along with electrical conduit and a grounding grid are installed, followed by aboveground structures and equipment. A chain-link fence is constructed around the new substation for security and to restrict unauthorized persons, livestock, and wildlife from entering the substation. The site is then finish graded and gravel surfaced, and reclamation is initiated outside the substation fence.

Control buildings will most likely be prefabricated, and will be assembled or placed onto concrete slabs within the substations. Major equipment to be installed inside the control buildings consists of relays, control panels, servers, communication equipment, power supplies, a battery bank for back-up power, and a heating/cooling system.

Steel structures are erected on concrete footings to support switches, electrical buswork, instrument transformers, lightning arrestors, and other equipment, as well as termination structures for incoming and outgoing transmission lines. Per common utility practice, these structures are fabricated from tubular steel and galvanized. Structures are grounded by thermally welding one or more ground wires to each structure.

Major equipment will be set by crane and either bolted or welded to the foundations. Oil spill containment basins will be installed around major oil-filled transformers and other equipment. Smaller equipment, included air switches, current and voltage instrument transformers, insulators, electrical buswork, and conductors will be mounted on the steel structures.

Control cables are pulled from panels in the control building, through the underground conduits and concrete trench system, to the appropriate equipment. After the cables are connected, the controls are set to the proper settings, and all equipment is tested before the transmission line is energized.

**Figure 8. Example Collection Substations Under Construction**

### 3.1.8 Internal Transmission

The installation of the internal transmission lines is similar with respect to that of the overhead collection system, however the size of the equipment involved is larger. As such PCW will establish gravel roads to each structure per the procedure described in Section 3.1.2.

Installation of steel transmission structures with concrete foundations generally involves the following steps:

- **Foundations.** Transmission foundations are typically installed 3 to 5 weeks ahead of the structure erection to allow concrete to reach design strength. The foundation site is excavated, and frames placed onto excavated soil or a mudmat. Steel reinforcement is added within the frame, and concrete is poured. Once the concrete has reached sufficient strength, the forms are removed and the area backfilled.
- **Structure Framing.** The components of the structures (pole pieces, cross-arms, insulators, and hangers) are brought to the locations of their installation to be assembled. This work is typically performed on the ground prior to erection of the structures. At sites where terrain or environmental constraints don't allow for on-site assembly, the framing will be done at a nearby staging area.
- **Setting Base Plate Poles.** Once the concrete has reached sufficient strength and the structures are framed, the structures can be erected onto the foundations. This is commonly done by cranes or boom trucks. The structure is hoisted off the ground and then set onto the foundation. The structure is checked for alignment and plumb, and if necessary leveled by adding shims or adjusting leveling nuts. If required for the design, grouting is then added to the base of the tower and allowed sufficient time (generally 2 to 4 weeks) to cure.

It is possible for some designs of steel monopole transmission structures to be installed by direct embedment. If used, this process would be similar to that of the overhead collection poles described in Section 3.1.6.2.

Once the structure installation has been completed, the conductor is strung per the procedure discussed in Section 3.1.6.2.

**Figure 9. Example Transmission Structures Under Construction**

### 3.1.9 Wind Turbine Commissioning

Once wind turbine mechanical completion has been achieved and the collection system is available to receive generation, control of the turbine will then be transferred to the turbine manufacturer for commencement of commissioning activities. Wind turbine commissioning will be performed individually for each turbine in the Project.

Wind turbine commissioning consists of numerous checks, verifications, and tests in regard to turbine assembly and functionality. Once the initial checks are all performed, the turbine is allowed to run under supervision to verify full functionality. When these activities are complete, the turbine manufacturer will present a commissioning completion certificate and transfer control of the turbine back to PCW. At that time the turbine will be ready to run in typical unattended mode.

If the collection system is not available to accept generation when commissioning is desired to start, the turbine vendor can perform commissioning in two steps. The pre-commissioning step involves checking the control and communications systems, and as many other turbine systems as possible without grid power. Once the collection system is available, the remaining commissioning items are performed, including the test operation. This process is commonly done when time available to commission the turbines is expected to be short once the collection system is available.



PCWISC0728

### 3.1.10 Operations and Maintenance Buildings

Construction of the operations and maintenance buildings will involve conventional construction techniques for pre-engineered buildings, with the erection of the buildings on concrete foundations. Typical construction activities include the following:

- survey and stake site
- clear and grub site, stockpiling top soil per the Project Master Reclamation Plan
- perform site grading
- install underground utility connections (water, power, communications, sewer)
- construct concrete building foundations (designed for the local soil conditions)
- erect the building structures and exterior enclosures with small, all-terrain cranes
- install interior equipment and finishes
- install parking and drive areas
- install permanent security fences around outdoor storage yards

## 3.2 TEMPORARY CONSTRUCTION FACILITIES

In addition to the long-term facilities constructed for the Project, temporary facilities will be needed during the construction stage. These facilities are described below.

### 3.2.1 Construction Trailer Complex

The construction trailer complex will be graveled and will house the temporary office trailers for the on-site project management staff, as well as multiple storage containers for project tools and equipment. It will also serve as the main marshaling area for the entire Project. This complex would also include temporary portable sanitation facilities (portable toilets), fuel storage, waste disposal containers, parking for up to 2,000 vehicles, and possibly an area for vehicle maintenance. The entire complex would be fenced, gated and lit for security.

Equipment typically used to establish the complex site includes bulldozers, motor graders, compaction equipment, aggregate hauling trucks, and water trucks. The bulldozers and motor graders will complete the clearing and grading operations. The compaction equipment, typically vibratory rollers, will compact the subgrade prior to placement of the aggregate. The compaction rollers will also be used after the delivery and grading of the aggregate. It may also be necessary to occasionally use a water truck for dust control during and after construction.

Once the site is prepared, the trailers will arrive to the Project by truck. The trailers will be placed on stands, and the double and triple-wide trailers will be connected together. Trailers will be connected to temporary power and telephone connections. Portable toilets will be delivered to areas adjacent to the trailers.

### 3.2.2 Delivery Staging Area and Laydown Yards

A delivery staging area is commonly a storage yard into which components and material are delivered. These items will remain in the yard until they are needed for construction. Some items are stored uncovered, while others may be stored in cargo containers or crates. Staging areas are commonly graded and graveled, surrounded by fencing, and may include night lighting and security.

In most wind energy projects, the wind turbine components are brought to the site by truck. The typical arrangement for truck deliveries are for turbine components to be delivered right to the turbine pad on which they are needed, and stored there until the turbine erection is performed. This is to avoid double-handling of components. Because PCW is intending to receive most Project deliveries by rail, and given the volume of material that will arrive with each train and the required speed in which the trains must be unloaded, it is not feasible to delay the unloading process while components are trucked directly to the turbine pads from the trains. Rather, components will be unloaded from the trains onto a main staging area adjacent to the rail facility. Within this area, components will be organized by type and kept until they are needed on the site. Figure 10 shows a delivery staging area of this type.

**Figure 10. Example Delivery Staging Area**

Given the integration of the primary delivery storage area with the rail facility, PCW is expecting at least a portion of that area to remain intact after Project construction is completed. For planning purposes PCW is anticipating 50 acres of the storage area will remain long-term.

In addition to the delivery storage area, PCW will have laydown yards on the Project Site. The laydown yards are primarily used to store construction material (aggregate, steel, cement, and other items) in areas close to construction sites. The concrete batch plants will also be located within the laydown yards.

### 3.2.3 Concrete Batch Plants

Temporary concrete batch plants will be used for preparing and mixing the concrete used for wind turbine foundations, the footings and the pads at the substations, the operations and maintenance buildings foundations, and other necessary project facilities. The batch plant complexes consist of a mixing plant, areas for sand and aggregate stockpiles, an access road, and truck load-out and turnaround areas. The batch plants themselves consist of cement storage silos, water and mixture tanks, aggregate hoppers, and conveyors to deliver different materials.

PCW is anticipating operating two batch plants simultaneously each year when foundations are being built. The batch plants will be located within Project laydown yards close to the sites where foundations are being poured. The batch plants will be relocated as needed to maintain an efficient operation.

### 3.2.4 Water Facilities

Water use during construction will be primarily for dust suppression and compaction of roads, as well as batch plant operations. Many sources of water are available to meet Project water demands, therefore the necessary facilities and structures are varied depending on the supply and location. The main components of the water supply system and the range of variations are discussed below.

### 3.2.5 Surface Water Supplies

The Project design calls for surface water to be extracted from the North Platte River via the North Platte Pump Station. This station will consist of submersible pump and a concrete wet well connected to the river via a 24 inch intake pipe. The surface water extracted will then be transported to the Smith Draw Water Station via a buried pipeline and two booster stations. The pump intake will be properly designed and screened to reduce impingement and entrainment.

### 3.2.6 Groundwater Supplies

Where possible, PCW will utilize existing ranch wells near water stations to extract groundwater. PCW anticipates new pumps may be required for the Project. Extracted water will be transported to the water stations via buried pipelines. Wherever possible, pipelines are being located along Project roads or existing ranch roads.

#### 3.2.6.1 Water Treatment Facilities

It is anticipated that water treatment may be required to meet water quality standards for specific uses on site, including batch plant operations. If water treatment is required, temporary water treatment facilities would be leased or purchased. A variety of skid or trailer mounted water treatment equipment is available from multiple vendors that could meet the water treatment needs of the Project. Where possible the water treatment equipment would be co-located with batch plants or laydown yards to minimize disturbance.

### 3.2.7 Construction Stage Only Road Features

The following roads and civil features support the construction stage of the Project. At the end of construction, these features will be reclaimed per the requirements of the Master Reclamation Plan.

#### 3.2.7.1 Crane Erection/Teardown Areas

The large cranes used for turbine erection will be brought into the site on flatbed semi-trailers and assembled onsite. The cranes will be assembled near to the first turbine that is erected in an area, and ultimately disassembled near the last turbine that is erected. Then each crane will be hauled away either to another region of the project or offsite altogether. Temporary erection and teardown areas have been identified in the design and will be cleared and leveled to provide adequate working area for these activities. Once erection and teardown is complete, the area will be restored to original condition and vegetation will be re-established in accordance with the project reclamation plan.

#### 3.2.7.2 Crane Paths

Once assembled, the large erection cranes will generally "walk" from turbine to turbine utilizing the project resource roads and compacted shoulders. In addition, it may be necessary to move the crane cross-country on predetermined crane path routes. Crane path routes have been identified in the design in locations what will either significantly shorten the required travel distance of a crane, or avoid a crane teardown and reassembly. These paths will be cleared of heavy brush, leveled where necessary, and compacted. Once crane travel is complete, the paths will be restored to original condition and re-established in accordance with the project Master Reclamation Plan. PCW has made reasonable effort to minimize the number of crane paths required outside of the Project roads.

#### 3.2.7.3 Emergency Egress Routes

To provide a safe working environment during the construction stage, PCW has devised emergency egress routes from remote areas of the Project Site. These routes would allow construction personnel to rapidly access public roads if necessary for extreme weather or medical evacuations, and for emergency vehicles to get onto the site quickly. While these routes are existing two-track ranch roads, some may require minor improvement to facilitate emergency vehicle travel. The routes will be marked as for emergency use only and will not be used for routine construction access.

# 4. OPERATIONS AND MAINTENANCE

This chapter describes the expected activities for the operations and maintenance of the Project. As portions of the project complete construction, the wind turbines in those portions will begin to generate electricity. As this generation begins, those portions of the project will transition from the construction stage to the operations stage. Requirements for the operation of the wind turbines and other Project equipment, as well as post-construction maintenance requirements, are described below.

## 4.1 PROJECT OPERATIONS

This section describes the common non-maintenance and non-repair activities performed on the Project between the completion of construction and the commencement of decommissioning.

As compared to many other forms of electrical energy generation, wind energy facilities do not have high operational staffing requirements. Operators at the Operations Center will watch for alarms or issues with the Project's components, manage any outages, and coordinate forecasting and reporting needs with utilities and regulators. Given the Project's size, it is assumed operators will be on duty at all times.

In addition to the operators, the Project will have administrative staff on duty during the business day. This will include project management and support staff.

### 4.1.1 Wind Turbines

Wind turbines operate autonomously, based upon internal sensors detecting the conditions of the wind, power grid, and the turbine itself. When the electric grid is available to accept generation and there is sufficient wind, wind turbines will operate and generate power in an automatic mode. If the turbine's sensors detect an issue with the turbine or grid, the turbine will shut down and send a notification to the Operations Center through the Project's SCADA system as to the nature of the issue.

### 4.1.2 Electrical Collection and Transmission

As with the wind turbines, the components that make up the electrical collection and transmission systems respond automatically to the requirements of the wind turbines and electrical grid. While manual operation of the system's switches is possible, it is only done on an emergency basis.

### 4.1.3 Nighttime Operations

The majority of site activities will occur during daylight hours. During instances where nighttime activities are required in substations, PCW is currently planning to utilize a combined switched and motion-detection system for exterior lights. A master control switch for exterior lights will be placed at the gate so that lights can be activated prior to personnel entering the yard (as required for safety). These lights will remain on when movement is detected within the substation, and for a "safety time period" (perhaps 30 to 60 minutes) after motion has been detected to facilitate worker safety. A few minutes prior to the end of the safety time period, the lights will flash to warn personnel that the lights are about to turn off. If motion is still not detected, the lights will then turn off at the end of the safety time period. The lights will turn back whenever motion is detected until the master switch at the substation gate is turned off. A similar system will be used for activities outside the operations and maintenance buildings (with master switches likely within the buildings). This approach will minimize the time the lights are on to avoid attracting wildlife, but provide adequate safety for project personnel. It should also minimize the instances of false motion detection needlessly activating the lights.

Nighttime operations activities outside the buildings and substations will be rare, and consist mainly of those maintenance activities discussed in Section 4.2. Any such activities would utilize temporary lighting fixtures that would not be used long-term.

### 4.1.4 Rail Facility

Once the construction stage of the Project is completed, relatively few loads will be brought to the site. This will include some spare parts for maintenance needs, and possibly additional aggregate to maintain Project roads. Given the amount of parts or material needed, PCW anticipates many of these deliveries will be more economical by truck rather than train. As such, the rail facility will not be operated often for the Project during the operations stage.

## 4.2 PROJECT MAINTENANCE

As with any energy facility, a key factor to achieving maximum efficiency of the Project once it is constructed is proper maintenance. PCW intends to implement a maintenance plan that will encompass all aspects of the Project. Features of the maintenance plan are discussed below.

PCW will employ technicians to perform Project maintenance who are properly trained and equipped for the required tasks. This will include a number of wind turbine technicians, high voltage technicians for the transmission lines, substations, and collection system, and civil technicians for the roads and related earthwork. If required, PCW may engage specialized technicians on an as-needed basis for limited periods of time.

### 4.2.1 Scheduled Turbine Maintenance

Wind turbine manufacturers specify a turbine maintenance schedule for each turbine model. PCW will base the Project's maintenance protocol on these manufacturer recommendations to maintain high reliability and maximum efficiency.

The requirements for scheduled maintenance vary by turbine vendor, but often include the following:

- Visual and noise inspection of all major turbine components
- Torque checks on tower and component bolts
- Level and leak check on lubrication systems

- Lubricate appropriate seals and bearings
- Level and leak check and sampling of gearbox oil
- Replace gearbox oil filters
- Brake system inspections
- Test control and emergency systems
- Inspect aviation warning lights

The frequency of scheduled maintenance is typically between six months and a year.

If the sampling and testing of turbine fluids determine that such fluids need to be replaced, that work would also be a scheduled maintenance activity. Such replacements are only performed when necessary, with industry averages around once every five years. The types and quantities of turbine fluids that may need field replacement are provided in Table 1.

**Table 1. Common Wind Turbine Fluid Volumes**

| Turbine Fluid | Common Volume Range |
|---|---|
| Gearbox Oil | 200 - 300 gal |
| Coolant | 50 - 150 gal |
| Hydraulic Oil | 10 - 60 gal |

PCW will prioritize the performance of scheduled maintenance during the summer months for areas of the Project where winter winds are particularly high and when site access is more challenging.

### 4.2.2 Unscheduled Turbine Maintenance

Even with a comprehensive and effective scheduled maintenance program, turbines will require additional repairs at unscheduled times. If such repair needs cause the turbine to go off-line, PCW will perform the necessary unscheduled maintenance as soon as practical to return the turbine to service.

The majority of unscheduled maintenance involves relatively minor repairs internal to the turbine, and hence can be performed whenever necessary. If an unscheduled maintenance activity requires work outside the turbine (such as blade cleaning or repair), or if tools or components need to be winched on the outside of the tower, then work would be performed as soon as weather conditions allow.

There will be some instances where a major turbine component (such as gearbox, generator, or blade) requires replacement, and an external crane would be necessary. In such an instance, PCW would re-establish a crane pad at the turbine site, possibly using an existing access road or adjacent area. The crane would be trucked to the site and assembled on the crane pad. Once the component replacement was complete, the crane would be disassembled and trucked from the turbine site, allowing the turbine to return to service. The crane pad would be reclaimed per the reclamation plan upon completion of the maintenance activity.

It is unlikely that turbines requiring unscheduled maintenance at the same time would be close enough together to make walking cranes between them viable. However, if such a situation did occur and walking the crane between sites was deemed appropriate, PCW would re-establish the compacted road shoulders as was done during the Project construction. Once the crane had moved and the unscheduled maintenance was completed, PCW would restore the road shoulders per the reclamation plan.

### 4.2.3 Road Maintenance

The Project roads would receive continuous maintenance as needed. Road surfaces would be bladed and maintained to allow for safe access to all Project areas and to minimize dust generation. Periodic inspection, cleaning, and maintenance would be done for all drainages and erosion control measures.

### 4.2.4 Collection System

Once construction is complete, little maintenance on the collection system should be needed. Most maintenance issues that do occur on underground electrical lines do so at junction points or splices, which is why those points are done in above-ground splice boxes where they can be repaired easily. If an issue occurred with a section of underground cable away from a junction box, PCW would first perform testing to determine the location of the fault. Once the location was known, a small portion of the cable would be excavated and replaced. The excavation disturbance would then be reclaimed per the requirements of the reclamation plan.

PCW is planning on using above-ground lines for portions of the collection system. These lines will be frequently inspected, and repaired as needed. If a section of overhead line needed to be replaced, it would be done in a manner similar to the original installation. PCW would also perform any necessary vegetation management around overhead collection system lines to remove tree branches within about 50 feet of the structures or conductor.

### 4.2.5 Substations

Preventative maintenance for substation equipment is often performed on an annual basis, commonly requiring a brief (less than 1 day) shut-down and de-energization. PCW will have high-voltage technicians on-staff to perform and supervise such maintenance, and perform any as-needed maintenance outside the planned preventative maintenance.

Virtually all substation maintenance can be performed within the substation fence, and without using large equipment. Such work is often performed at ground level, or using utility boom trucks.

### 4.2.6 Transmission Lines

Transmission lines will be inspected frequently, commonly at least once per quarter plus after any strong storm events. Such inspections will occur from the ground and using nearby project roads. PCW would also perform any necessary vegetation management around overhead collection system lines to remove tree branches within about 50 feet of the structures or conductor.

When deemed necessary, inspection and maintenance work would be performed on the transmission line. This may require portions of the line to be de-energized, and crews to perform close inspections using utility boom trucks.

### 4.2.7 Other Facilities

The met towers on site would receive annual and as-needed maintenance to replace sensors and check structure conditions. As with the wind turbines, aviation warning lights will be equipped with sensors to notify maintenance personnel if any issues arise that require service.

As with any building, the site buildings (Operations Center and maintenance buildings) would receive as-needed maintenance.

## 4.3 OPERATIONS AND MAINTENANCE WORKFORCE

As the construction of each portion of the Project is completed, the responsibility for it will be turned over to the operations and maintenance personnel. The estimated number of personnel required to operate the Project is provided in Section 7.3 of the ISC application, and the responsibilities of each job function are described below. As with all projects, it is expected that some personnel will be qualified to work in multiple areas to balance workforce needs. PCW would look first to the local labor pool to fill these positions.

In response to some maintenance issues, PCW may find it necessary to engage additional personnel for short periods of time. The number of technicians and length of deployment would be determined when the issue occurs.

***Project Management and Administration***

These categories include the Project Manager, other management staff, and project administrative personnel. These personnel would be responsible for the overall management of the Project, as well as its business functions (such as accounting and payroll). Management and administration personnel will be located in the Operations Center.

***Operations***

Operations staff would manage the Project's SCADA system, oversee Project performance, manage the response to any unscheduled maintenance needs, and perform reporting services to the Project's off-takers. These personnel would be located in the Operations Center.

***Wind Turbine Maintenance***
This category encompasses the majority of the operations and maintenance staff, and includes all personnel involved with the maintenance of the wind turbines themselves. Most of this staff would be wind turbine technicians who will work in teams to perform maintenance on the turbines. It would also include technician foremen, training staff, and safety personnel.

***High Voltage Maintenance***
The high voltage maintenance staff would be technicians specially trained in the maintenance of high voltage equipment. Their primary responsibility will be to maintain the Project's substations and transmission lines.

***Civil Maintenance***
These technicians will maintain the Project's civil features, including roads, turbine pads, and erosion control measures. They will also maintain the water facilities and water crossing features.

***Environmental Monitors***
The environmental monitoring team will perform the site monitoring for compliance with site environmental plans and permits.

### 4.3.1 Health and Safety Program

As with the construction stage of the Project, a Human Health and Safety Plan will be fully developed and implemented. The operations stage version of this plan will be very similar to that for the construction stage, however, it will address additional issues regarding the size of the staffing and the year-round nature of the work.

# 5. DECOMMISSIONING

This chapter describes the methods and means to decommission the Project at the end of the Project's useful life, expected to be 30 years after initial operation.

## 5.1 PROJECT DECOMMISSIONING ACTIVITIES

PCW currently expects that the following activities will need to be performed to achieve project decommissioning. It is anticipated that Project decommissioning would occur over a three-year period. The exact requirements for equipment removal, including the depth to which buried components are extracted, will depend upon final permit requirements and common industry practices at the time of decommissioning.

For the disturbed area associated with each component to be removed, the area will be recontoured to the extent practical. Topsoil will be replaced and scarified to a depth appropriate for each area, with an overall project average expected to be six inches. Reseeding will be performed with seed mixes appropriate for each area based upon review and agreement with the landowner. Detailed requirements for reclamation, seedbed preparation, and reseeding are in the Project's Master Reclamation Plan.

### 5.1.1 Wind Turbines

Turbine decommissioning will consist of tower wiring removal and wind turbine dismantling. Turbine wiring removal will be done with turbine wiring demo crews and will take place before a crane gets to the turbine site.

Once the crane pad is complete (see Section 5.1.3) a main erection crane will be deployed to the turbine site. Main erection cranes are typically a 400 to 600 ton crawler crane with the size dependent upon the turbine design. The crane will remove the wind turbine piece by piece in roughly the reverse order and process of the original turbine installation. Main erection cranes will be assisted by rough terrain "helper" cranes and forklifts. Main erection crane will walk onto the crane pad and mats to perform the following decommissioning activities:

1. Remove the turbines rotor
2. Remove the turbines nacelle
3. Remove the turbines tower sections

Once the turbine parts are on the ground the next step is to disassemble the rotor. The rotor disassembly will be done with a 100 to 200 ton crawler crane or rough terrain cranes and a forklift to assist its operation.

Upon completion of rotor disassembly all turbine parts will be loaded onto trucks for transport back to the rail facility.

### 5.1.2 Foundations

Once the turbine has been removed, the top four feet of the foundation's pedestal will be removed (the remaining portion of the foundation will be buried in place[1]). The equipment used to perform the foundation removal will include: backhoe with ram, bucket with thumb, and processor. The removed foundation material will be separated into concrete and steel and hauled to the rail facility. The foundation removal equipment will then be relocated to another turbine site, and the foundation area reclaimed as part of the wind turbine pad reclamation (see Section 5.1.3).

### 5.1.3 Wind Turbine Pads

To facilitate wind turbine removal, it may be necessary to restore portions of the turbine pads to construction stage conditions. Specifically, crane pads will likely be necessary to remove the turbine components. At the pad, topsoil will be cleared and stockpiled with a bulldozer per the requirements of the Project's Master Reclamation Plan. The pad is then compacted using compaction rollers and water trucks as needed. If soil conditions require, an aggregate surface will be placed.

Additionally, some areas around the pads may need to be compacted to allow turbine components to be stored on the ground until they can be removed from the site.

Once the wind turbine components have been removed, the turbine pad (including the crane pad) reclamation can be performed. Any above-ground electrical elements (such as padmount transformers) will be removed along with associated conduits and grounding to a depth of about 3 feet. Aggregate would be removed, and the ground restored to near pre-construction conditions. Regionally stockpiled top soil would be spread over the disturbed area, scarified, and reseeded per the requirements of the Master Reclamation Plan.

### 5.1.4 Electrical Collection System

The medium voltage collection system, consisting of overhead and underground elements, will be decommissioned as described below.

#### 5.1.4.1 Underground Collection System Decommissioning

The underground collection system consists of cable buried 3 feet below grade with above-ground junction and splice boxes. The above ground boxes will be removed, along with cabling tails to a depth of about 2 feet below grade. Cabling buried deeper than 2 feet will remain in place[2].

[1] Assumes decommissioning variance requests discussed in Section 8.2.1 of the Application are approved.
[2] Assumes decommissioning variance requests discussed in Section 8.2.1 of the Application are approved.

Equipment used to remove the boxes and cabling tails will consist of backhoes and bulldozers. Once removed the areas will be reclaimed and reseeded per the requirements of the Project Master Reclamation Plan.

#### 5.1.4.2 Overhead Collection System Decommissioning

The overhead collection system will be removed in its entirety. Any overhead collection structures with foundations will be decommissioned per the Section 5.1.2. Equipment used will consist of bucket trucks, backhoes, front end loaders, and bulldozers. Once removed the areas will be reclaimed and reseeded per the requirements of the Project Master Reclamation Plan.

### 5.1.5 Collection Substations

Collection substations internal to the Project Site will be removed. First, substation fencing will be removed. Then all electrical equipment will be removed utilizing rough terrain cranes and trucks. Once all equipment is removed the structural steel will be removed utilizing rough terrain cranes. Foundation will be removed utilizing the procedure discussed in Section 5.1.3. Finally, the site will be recontoured to the extent practical, with topsoil replaced and reseeded per the Project Master Reclamation Plan.

### 5.1.6 Internal Transmission

Internal 230 kV transmission lines that connect the collection substations to the interconnection substation will be removed in generally the following steps:

- **Removing the Conductor.** First the conductor cabling will be removed utilizing boom trucks and cable reeling machines.
- **Removing the Poles.** Once the conductor cabling has been removed the poles will be removed from their foundations using a rough terrain crane.
- **Foundation Removal.** Transmission foundations will be removed to four feet below grade and processed to separate the concrete and steel. This will be done with a backhoe with ram, bucket with thumb, and processor.

Once removed the areas will be reclaimed and re-seeded per the requirements of the Project Master Reclamation Plan.

### 5.1.7 Interconnection Substation

The interconnection substation for the Project will be removed in a manner consistent with the collection substations. If at some future time other permitted transmission lines or generation facilities interconnect into the substation such that decommissioning and removal of the substation would lead to instability of the transmission grid, then the interconnection substation would remain and continue under the operation and maintenance of PCW or a regional transmission operator such as Rocky Mountain Power or Western Area Power Administration until such time as decommissioning and removal is feasible.

### 5.1.8 Operations and Maintenance Buildings

The Operations Center and maintenance buildings would be demolished. The building sites would be recontoured and revegetated per the Project's Master Reclamation Plan.

### 5.1.9 Met Towers

All Project met towers would be removed, including all above-ground equipment and structures, as well as the upper two feet of met tower foundations[3]. Met tower areas would be recontoured and reclaimed per the Project's Master Reclamation Plan.

### 5.1.10 Roads

To perform the decommissioning activities, it may be necessary to return some roads to their construction stage conditions. This will allow for efficient crane access to the turbine sites and facilitate removal of the wind turbine components by truck.

Once decommissioning has been completed at the turbine pads, substation sites, and maintenance buildings, PCW will remove and reclaim the roads based upon the Project's Master Reclamation Plan. This will likely include the removal of aggregate and any unnecessary culverts, de-compaction of the road base, and recontouring of larger cuts and fills.

The equipment planned to be used during the decommissioning of the roads consists of bulldozers, motor graders, de-compaction equipment, reclaimers, frontend loaders, and aggregate hauling trucks.

### 5.1.11 Rail Facility

PCW would utilize the rail facility to remove wind turbine components and other materials from the Project Site. In a manner similar to the construction stage of the project, components would be taken from the site to the delivery staging area adjacent to the rail facility. From there, components would be loaded onto railcars for shipment to identified recycling, scrap, or landfill facilities.

After all components and material have been removed from the site, the rail facility would be decommissioned. Above-ground material such as aggregate, rails, and cross-ties would be removed, and the site recontoured. The site would be revegetated per the decommissioning reclamation plan.

## 5.2 TEMPORARY DECOMMISSIONING FACILITIES

As with construction, it may be necessary to establish temporary facilities to facilitate Project decommissioning.

[3] Assumes decommissioning variance requests discussed in Section 8.2.1 of the Application are approved.

### 5.2.1 Trailer Complex and Laydown Yards

The personnel involved in the decommissioning of the Project will require temporary office space, and equipment and material storage. Because the Operations Center and maintenance buildings will be removed as part of the decommissioning, PCW will need to establish a trailer complex and laydown yards within the Project Site similar to those used during the construction stage. Where practical, PCW will utilize the areas adjacent to the existing buildings and storage yards within the Project Site at the Operations Center and maintenance buildings.

The construction trailer complex would be placed and utilized for the duration of the decommissioning activities (3 years). The office complex and laydown yards would be graveled. The office complex would house the temporary office trailers for the project management on-site staff and also serve as the main marshaling area for all decommissioning activities. These areas would also include temporary portable sanitation facilities (portable toilets), fuel storage, waste disposal containers, along with parking. The entire office complex would be fenced, gated and lit for security.

The equipment typically used to establish the office complex site and laydown yards includes bulldozers, motor graders, compaction equipment, aggregate hauling trucks and water trucks. The bulldozers and motor graders will complete the clearing and grading operations. The compaction equipment, typically vibratory rollers, will compact the subgrade prior to placement of the aggregate. The compaction rollers will also be used after the delivery and grading of the aggregate. It may also be necessary to occasionally use a water truck for dust control during and after construction.

Upon completion of project decommissioning the office complex and laydown yards will be removed, the ground will be reclaimed and reseeded.