within the previously approved Pine Tree Wind Energy Project and the Sky River Wind Energy Project, which have already been analyzed in accordance with CEQA. The project proponent has not obtained land control of the lands needed to utilize this option.

### 3.5 Proposed Project Characteristics

The proposed project facilities would include WTGs, service roads, a power collection system, communication cables, a generation interconnection line to the existing Sky River Substation, underground transmission lines, electrical switchyards, project substation, temporary meteorological towers and O&M facilities. The proposed project’s temporary facilities would include construction access roads and turnaround areas, water storage areas for dust control and other limited construction-related needs, laydown/staging areas, construction office trailers, and concrete batch plants. Proposed project elements are shown on Figure 3.2 and include:

- Up to a maximum of 116 WTGs not to exceed 500 feet in height with associated generators, towers, foundations, and pad mounted transformers (each WTG could range from 1 MW to 3 MW), for a total generation capacity not to exceed 339 MW of electricity;
- Four existing and up to four additional unguyed permanent met towers (North Sky River Wind Energy Project);
- Four temporary met towers (Jawbone Wind Energy Project);
- On-site and off-site project access roads, control cables, power collection cables, and transmission lines necessary to serve the proposed project and connect to the California Independent System Operator (CAISO) grid;
- One project substation to step up the voltage generated by the WTG to meet the electrical transmission system’s 230-kV voltage;
- Two O&M facility areas (North Sky River Wind Energy Project – 5 acres; Jawbone Wind Energy Project – 6.5 acres);
- Two remote staging/office trailers; and
- One temporary mobile concrete batch plant.

Infrastructure locations as evaluated in this EIR are depicted in Figure 3-2. The proposed project site plan is not intended to reflect the precise location of proposed WTGs and structures. Prior to the preparation of final engineering plans, the project proponents would ensure that no WTGs or structures are located within the road reservation areas set forth in the Circulation Element of the KCGP. The proposed project facilities are described in detail below.

### Project Components

**Wind Turbines Generators.** Up to 116 WTGs would be installed at the proposed project site. Tables 3-3 and 3-4 show examples of WTGs that may be installed at the proposed project site.

| Table 3-3 Proposed Wind Turbine Generator Characteristics for the North Sky River Wind Energy Project |
|---|---|---|---|---|
| | GE XLE 1.5 MW | GE XL 2.5 MW | GE XL 2.75 MW | Siemens SWT-2.3-93 2.3 MW | Siemens SWT-2.3-101 2.3 MW |
| Tower/Hub Height (Feet) | 262.5 | 328.1 | 328 | 262.5 | 262.5 |
| Rotor Radius (Feet) | 135 | 164 | 169 | 147.6 | 160.8 |
| Rotor Diameter (Feet) | 271 | 328.1 | 337.9 | 305 | 331.4 |
Table 3-3 Proposed Wind Turbine Generator Characteristics for the North Sky River Wind Energy Project

<table>
<thead>
<tr>
<th></th>
<th>GE XLE 1.5 MW</th>
<th>GE XL 2.5 MW</th>
<th>GE XL 2.75 MW</th>
<th>Siemens SWT-2.3-93 2.3 MW</th>
<th>Siemens SWT-2.3-101 2.3 MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground Clearance</td>
<td>Feet</td>
<td>Feet</td>
<td>Feet</td>
<td>Feet</td>
<td>Feet</td>
</tr>
<tr>
<td>Maximum Overall Height</td>
<td>397.8</td>
<td>492.1</td>
<td>496.9</td>
<td>415</td>
<td>423.2</td>
</tr>
</tbody>
</table>

Table 3-4 Proposed Wind Turbine Generator Characteristics for the Jawbone Wind Energy Project

<table>
<thead>
<tr>
<th></th>
<th>GE SLE 1.5 MW</th>
<th>GE XL 2.5 MW</th>
<th>GE Series 2.75 MW</th>
<th>Siemens SWT-2.3-93 2.3 MW</th>
<th>Siemens SWT-2.3-101 2.3 MW</th>
<th>Gamesa G90 2.5/90 2.5 MW</th>
<th>Goldwind 90 3.0 MW</th>
<th>Vestas 112 3.0 MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tower/Hub Height</td>
<td>Feet</td>
<td>Feet</td>
<td>Feet</td>
<td>Feet</td>
<td>Feet</td>
<td>Feet</td>
<td>Feet</td>
<td>Feet</td>
</tr>
<tr>
<td>262.5</td>
<td>328.1</td>
<td>278.9</td>
<td>262.5</td>
<td>262.5</td>
<td>328.0</td>
<td>262.5</td>
<td>262.5</td>
<td>278.9</td>
</tr>
<tr>
<td>Rotor Radius</td>
<td>126.3</td>
<td>164</td>
<td>169</td>
<td>147.6</td>
<td>160.8</td>
<td>144.3</td>
<td>147.6</td>
<td>183.7</td>
</tr>
<tr>
<td>Rotor Diameter</td>
<td>252.6</td>
<td>328.1</td>
<td>337.9</td>
<td>305</td>
<td>331.4</td>
<td>295.3</td>
<td>295.3</td>
<td>367.5</td>
</tr>
<tr>
<td>Ground Clearance</td>
<td>136.1</td>
<td>164</td>
<td>109.9</td>
<td>114.8</td>
<td>101.7</td>
<td>183.7</td>
<td>147.6</td>
<td>95.1</td>
</tr>
<tr>
<td>Maximum Overall Height</td>
<td>388.8</td>
<td>492.1</td>
<td>447.9</td>
<td>415</td>
<td>423.2</td>
<td>475.6</td>
<td>410.1</td>
<td>462.6</td>
</tr>
</tbody>
</table>

The WTGs would be a three-blade, up-wind design, placed strategically on the sloping topography in rows to maximize output. Due to military air traffic restrictions, the WTGs would also need to conform to the military height requirements at the time of proposed project permitting, as defined by Section 19.64 of the Zoning Ordinance and Figure 19.08.160 of that same document. Presently, the project site is located across several of the military review zones in Figure 19.08.106, including green (no review requirement), yellow (all structures over 500 feet), and red (wind turbines and communications towers over 80 feet and all other structures over 100 feet). Without military review, those structures falling within the yellow zone would be limited to 500 feet above ground elevation, and those structures falling within the red zone, which includes 1,337 acres of the eastern portion of the site, would be limited to 80 feet above ground elevation for wind turbines and communications towers and 100 feet for all other structures. Figure 3-4 shows military review requirements for the proposed project site. The proposed project is designed in conformance with Section 19.08.160 (Height of Structures) of the Zoning Ordinance to avoid military flight test airspace for Edwards Air Force Base.

Depending upon WTG manufacturer(s) and model(s) chosen, the WTGs would range in height from 398 to 497 feet (see Tables 3-3 and 3-4), as measured from the top of the foundation to the blade tip (with the blade in the vertical position). The power output of the WTGs could range from 1.5 to 2.75 MWs. The installed WTGs would be state-of-the-art utility multi-MW class machines, and would be arranged in rows in accordance with applicable industry siting recommendations for optimum energy production and minimum project area land disturbance impact.

**Tower.** The tower portion of each WTG is ranges from 262.5 feet to 328.1 feet tall and extends from the top of its concrete foundation at ground level up to its connection with the nacelle. Tower
types for both GE and Siemens WTGs include smooth, hollow-steel structures divided into three or more (upper, middles, and base) sections. The dimensions of the tower are detailed in Tables 3-3 and 3-4. The towers would be painted a neutral white or off-white color and would have a non-reflective finish.

The Siemens towers are 15 feet in diameter at the base and taper to 8.5 feet at the top of the upper section. A complete Siemens tower weighs 352,740 pounds. The GE towers are also 15 feet in diameter at the base and up 8 feet in diameter at the top of the upper section. Each complete GE tower is expected to weigh 276,239 pounds. The exact dimensions and weight of the towers may vary depending on the manufacturer’s specifications.

A controller cabinet would be located at the base inside each tower. A ladder and/or man elevator would ascend to the nacelle to provide access for turbine maintenance. A lockable door would provide access to the base of the tower.

**Nacelle.** The nacelle is a large aerodynamic structure on top of the tower and is constructed of welded steel and fiberglass coated with corrosion protective paint. The nacelle contains the inner mechanical workings of the turbine, including the power generating components comprising the main drive shaft/generator and the gearbox, electrical components/cabinets, and, depending on the turbine size and make, the power transformer, which steps up the turbine voltage to the voltage level of the internal wind farm electrical distribution network. The nacelle also contains the blade pitch control (a system that controls the angle of the blades), a cooling system, and the yaw drive, which controls the position of the turbine relative to the wind. The outer visible shell of the nacelle is typically an insulated aerodynamic fiberglass cover installed over the bed-frame and serves to protect the equipment, streamline airflow, and absorb mechanical and vibration noise.

**Hub.** The hub attaches the blades to the rotor shaft and is usually made from a large iron casting. It sits on the front side of the nacelle and is covered by a composite nose-cone structure to streamline the airflow and protect the equipment. The hub also contains the mechanisms that allow the blades to pitch in response to wind, temperature, and air density conditions.

**Blades/Rotor.** The WTGs typically would have three large blades bolted to the hub. The blades and hub together as a unit are called the rotor. The blades are long, tapered, small-chord airfoils which resemble airplane wings and vary in thickness from the tip (thinnest portion) and the root (thickest portion) where they attach to the hub. The complete rotor set, blades and nacelle for the Siemens WTG weigh 670,205 pounds. The complete rotor set, blades and nacelle for the GE WTG weigh a 378,091 pounds.

**Controller.** All the candidate WTGs are equipped with a controller, which is a microprocessor that automatically regulates the operation of the WTG. The controller receives wind speed data from anemometers and wind vanes mounted to the top of the nacelle. The controller is responsible for start-up, shut-down, pitch control (angle of blades towards the wind), yaw control (vertical axis movements), and safety monitoring. A central O&M facility for the proposed project would receive communications from each controller via fiber-optic cables or other means of communication such as radio-links. The controller would transmit operational data to the O&M facility to allow permanent supervision of each WTG and optimize its operation. A central Supervisory Control and Data Acquisition (SCADA) System would monitor all WTGs within the proposed project and allow a central operation as well as optimization of maintenance.
Transformer. A step-up transformer would be used at each WTG to boost voltage to the appropriate utility distribution level of 34.5-kV. This is done because the low voltage power generated by the WTG (500-1,000 Volts) is not suitable for power transmission. The transformer would either be contained within the WTG unit itself or would be pad-mounted next to the base of the WTG. The electricity from the transformer is transmitted via underground or overhead collection system electrical cables to the proposed project substation(s).

WTG Foundation/Pad. The WTG foundations would have one of three designs, depending on geotechnical constraints and other factors, including wind patterns at the site, site access, and material availability. The three possible types of WTG foundations are (1) canister post-tensioned foundation, (2) rock anchor, or (3) a modified spread-footing.

The canister foundation would be drilled or dug to 15 to 35 feet deep, depending on geotechnical conditions and loadings, and would be 18 feet in diameter. The foundation would be in the configuration of an annulus—two concentric steel cylinders. The central core of the smaller, inner cylinder would be filled with soil removed during excavation. In the cavity between the rings, bolts would be used to anchor the tower to the foundation, and the cavity would be filled with concrete. Bolting the tower to the foundation would provide post-tensioning to the concrete.

A rock anchor-type foundation is an alternative to the canister foundation. Six to 20 holes, depending on geotechnical data, would be drilled 35 feet into the bedrock, and steel anchors would be epoxy-grouted in place. A reinforced concrete cap containing the anchor bolts would be poured on the top of the steel anchors to support the tower structure.

The modified spread-footing is octagonal in its footprint and 60 feet by 60 feet of reinforced concrete approximately 3 feet thick along the edges and tapering up to 9 feet thick in the middle, where it extends as a cylinder upward to approximately 1 foot above grade with the anchor bolts embedded. The excavated foundation is backfilled with suitable materials from the excavation and compacted, leaving just the concrete base on which to erect the tower base section.

Safety

Braking System. The WTGs would be equipped with two fully independent braking systems that could stop the rotor by acting either together or independently. The braking system is designed to be fail safe, allowing the rotor to be brought to a halt under all foreseeable conditions. The system consists of aerodynamic braking by the rotor blades and by a separate hydraulic disc brake system. Both braking systems would operate independently so that if one failed, the other could still bring the WTG to a halt. If power were lost, the brakes would immediately be mechanically activated. The aerodynamic braking system would also be configured so that if power were lost, it would be immediately activated. Each WTG also would be equipped with a brake that generally would be used to keep the rotor from moving while maintenance routines or inspections that require a stationary rotor are performed.

Vibration and Fire Protection. Each WTG also would be equipped with vibration, temperature, and fire detection systems in the nacelle and tower. The fire detection system would be connected to the main controller and the central SCADA system. In the event of a fire fault or excess vibration or
temperature, the WTG would be halted immediately, and an alarm condition would be activated in the control system.

**Lightning Protection.** The WTGs would be equipped with an engineered lightning protection system that connects the blades, nacelle, and tower to the earthing (grounding) system at the base of the tower.

**Aviation Safety Lighting.** In accordance with Federal Aviation Administration (FAA) rules it is anticipated that some of the towers would be furnished with blinking lights for night-time visibility by aircraft. FAA requirements stipulate that lights generally operate only at night or during poor visibility; the color of the WTGs make them visible to aircraft during the day under normal conditions. The number of wind turbines with lights and the type of lighting would be determined in consultation with the FAA.

It should be noted that the proposed project is located within R-2508 restricted airspace and would conform to R-2508 related aviation requirements; it is not anticipated that additional lighting would be required beyond that identified by the FAA.

**Safety Signage.** Safety signing would be posted where necessary around WTGs, transformers, and other high-voltage facilities, and along roads, in conformance with applicable state and federal regulations. A Project Site Safety and Security Plan would be developed and included as part of the project requirements.

**Electrical Collection System.** The proposed project entails installation of a small step-up transformer in or near the base of each WTG to increase the output voltage of the power generated by the WTG to a level suitable for local power collection within the property. For the proposed project, the power collection system voltage is 34.5-kV. Underground cables or overhead wooden poles would be installed throughout the majority of the proposed project and would connect to and between each WTG, connecting each WTG to a feeder circuit; each feeder circuit would in turn be connected to the project substation. Fiber-optic communication wires would also be laid down using the same underground trenching channels, and overhead, in conjunction with the feeder circuits connecting each of the WTGs with the operations, maintenance, and control building to the substation. Overhead circuits could be used to avoid environmentally sensitive areas, or other constraints inherent to the site. The different WTG circuits would gather at the project substation (or switchyard) and then be sent to the overhead electricity lines leading to a grid interconnection point.

**Operations and Maintenance Facility.** Two O&M facilities would be constructed for project operations in locations to be determined. Potential staging areas for both temporary and permanent uses are currently being evaluated. Each facility would include an O&M building on a concrete slab and compacted gravel storage yard and parking area. The O&M building would include a main building with offices, SCADA system, control room, spare parts storage, restroom, and shop area; outdoor parking facilities; laydown and setup area; a turnaround area for larger vehicles; outdoor lighting; and gated access with partial- or full-perimeter fencing as well as a small information center for potential visitors. During construction, it is possible that each O&M facility area would be leveled and graded to temporarily serve as a central base of operations for construction trailers and portable toilets. Fencing would be installed consistent with Kern County’s fencing requirements in Section 19.4.140(c) of the County Zoning Ordinance.

**Supervisory Control and Data Acquisition System.** The SCADA system is critical to proper operations and maintenance of the proposed project and utilizes proprietary software, a fiber optic
transmission system, a telephone communications network and other means of communication such as radio-links and phase loop communication systems. The SCADA system functions as a monitoring and diagnostic tool that optimizes the proposed project’s operations. It allows for the remote start, stop, reset and tag out for individual WTGs, thus minimizing the manpower and site visits needed to run the proposed project. This system utilizes network interfaces to collect and analyze diagnostic information generated from the WTGs, meteorological towers and substations. The SCADA system would also control the various proposed project substations allowing a fully centralized operation of the proposed project.

**Meteorological Towers.** The proposed project would rely on existing met towers, on private land, and BLM-pending new met tower locations to measure and collect data to support project viability and determine optimum turbine layout. As shown in Figure 3-2, the met towers would be placed on sites intended for installation of WTGs.

It is expected that once the proposed project is constructed, some of the larger existing 196.9 feet (60-meter) met towers would remain to support project operations and some additional towers may be installed to meet reporting obligations, and to maximize operational efficiency. The met towers would be guyed climbable towers. These towers would also support anemometers, wind direction sensors, and temperature and relative humidity gauges at the same height as the WTG rotor hubs to monitor wind and other climate data needed to support operations. The exact number and location of the met towers would be determined based on site terrain and energy purchaser requirements.

Kern County has approved four met towers located on private lands and an application for approval of two met towers on BLM lands is under review. There are also nine existing met towers that were installed by previous developers within the proposed project area, both within and outside of the proposed project boundary. The use or retrofit of the existing met towers is pending resolution by the project proponents and other developers.

**Transmission Lines to Serve the Proposed Project.** The proposed project would interconnect at either the Sky River Substation or the Pine Tree Substation. Interconnection at the Sky River Substation would require construction of 13 miles of 230-kV transmission line from the boundary of the North Sky River Wind Energy project site. Interconnection at the Pine Tree Substation would require the construction of a minimum of six miles of 230-kV transmission line from the boundary of the Jawbone Wind Energy project site. The proposed transmission line route for connection to the Sky River Substation runs through private property, then through 1.74 miles of BLM-managed property, and then through a portion of the existing Sky River Project (Figure 3-2). Any helicopter use associated with transmission line construction would utilize a nearby airport in California City for take-off and landing, as well as fueling of any helicopters that would perform work at the project location. There would be no need for on-site storage of any fuel to be used by a helicopter. Table 3-5 presents key information regarding the system.

**Transmission Reinforcement Option.** The project proponent is currently evaluating a regional reinforcement option for the existing Wilderness transmission line to accommodate added generation from the project. The proposed option is shown in Figure 3-7. This option would include construction of a new 1,000-foot interconnection transmission line from the Highwind substation to a new tap on the existing Wilderness transmission line. No other system upgrades would be required for this option.
Table 3-5 Transmission Line Design Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>230 kV AC</td>
</tr>
<tr>
<td>Permanent right-of-way width</td>
<td>100 feet</td>
</tr>
<tr>
<td>Number of circuits supported by structure</td>
<td>One</td>
</tr>
<tr>
<td>Circuit configuration</td>
<td>Horizontal</td>
</tr>
<tr>
<td>Average height of structures</td>
<td>105 to 115 feet</td>
</tr>
<tr>
<td>Minimum ground clearance beneath conductors</td>
<td>30 feet</td>
</tr>
</tbody>
</table>

Project Substation. The proposed project would construct one 230-kV/34.5-kV onsite collector substation to minimize power losses in the collection and transmission system. Construction of the collector substation and interconnection facilities would involve several stages of work, including grading of the collector substation area; installation of a grounding mat; construction of several foundations for the transformers, power circuit breakers, and structures; erection and placement of the steel work and all outdoor equipment; and electrical work for all of the required terminations. The collector substation is estimated to require five acres of site disturbance and would be graded to control stormwater drainage.

The collector substation would permanently cover an area of five acres and would consist of the following: (1) a control house, (2) electrical breakers, (3) two 34.5-kV/230-kV transformers, (4) an overhead electrical bus connecting the various electrical apparatus, and (5) pole structures to support electrical conductors entering the collector substation and exiting and connecting to the 230-kV generation-tie transmission line. A suitable grounding grid would be installed to protect the substation against lightning and shorts. The collector substation would be built to Kern County requirements and enclosed within a security fence. Following construction, an inspection and commissioning test plan would be executed prior to the collector substation being energized.

Sky River Substation. The North Sky River Wind Energy Project would interconnect at the Sky River Substation, which would require construction of 13 miles of 230-kV transmission line from the boundary of the proposed project site. The proposed transmission line route runs through private property, through 1.74 miles of BLM-managed land, and through a portion of the existing Sky River Project.

Pine Tree Substation. The Jawbone Wind Energy Project would interconnect at either the Sky River Substation or the Pine Tree Substation. Connecting to the Pine Tree Substation would require the construction of a minimum of six miles of 230-kV transmission line from the boundary of the Jawbone Wind Energy project site.

Roads. Within the proposed project site, the new roadway system would use the existing road network to the greatest extent possible, and would be designed to limit disturbance and avoid sensitive resources to the extent possible. The preliminary roadway layout is shown on Figure 3-2. Based on existing topography and required design criteria, the proposed project’s new access roads would be constructed (and existing roadway alignments would be redesigned) to gain access to the WTG locations. Specifically, the proposed project’s interior road system would follow existing roadway alignments where possible, but grade adjustments would be required in most locations to accommodate maximum grades, as required by the turbine manufacturers. The maximum road grade on access roads used during construction would be 10 percent. Existing County roads would be widened to 40 feet from 24 feet and existing dirt roads would be widened to 40 feet from 20 feet.
Transmission Reinforcement Option Associated with the Proposed Project

Figure 3-7

Source: CH2M HILL, 2011.

North Sky River Wind Energy Project
and Jawbone Wind Energy Project
Draft Environmental Impact Report

County of Kern

3.0 Project Description

May 2011
Rod construction would be performed in multiple steps. First, rough grading and leveling of the roadway areas would occur. Temporary construction roads would be graded to accommodate large and heavy component and equipment deliveries to the turbine sites as well as operation of large equipment, including truck- or track mounted cranes. Due to topography, grading of access roads would in some limited cases disturb an area of 150 to 175 feet or more on either side of the centerline to accommodate appropriate cut or fill slopes to allow for the necessary road width and to comply with percent slopes per county grading requirements and manufacturer specifications of construction and installation equipment. These widths have been accounted for in the total area of project disturbance.

Once rough grading is complete, base rock would be trucked in, spread, and compacted to create a road base. Capping rock would then be spread over the road base and roll-compact ed to finished grade. At completion of heavy construction, the road would be regraded as detailed for service as a maintenance road. A final pass would be made with the grading equipment to level the road surfaces, and more capping rock would be spread and compacted in areas where needed. Structural controls to provide conveyance for stormwater runoff could include water bars to prevent road washout and V ditches, culverts and energy dissipation structures. Road work would be performed under final approved grading, erosion control, and stormwater quality management plans.

Temporary passing and turnaround areas would be provided throughout the site to facilitate safe passing of traffic. Turnaround areas would be provided at the end of WTG arrays to facilitate the turning of large transport vehicles following deliveries at the WTG pad locations along the WTG array. Up to 25 percent of the passing and turnaround areas developed during construction would be maintained to support safe passing for subsequent O&M traffic. The remaining turnaround areas would be reclaimed and temporary shoulder areas would be restored. Areas that are temporarily disturbed would be restored in accordance with the project’s restoration plan and in accordance with County and other permit conditions.

Drainage culverts (new or upgrade of existing) may be installed to divert water away from areas where drainage swales intersect with roadways, thus preventing high stormwater flows from crossing road surface. Culverts would be installed in accordance with Kern County standards.

**Staging Areas.** Construction staging/laydown areas, with sizes ranging from 2.3 acres to 14 acres, would be located at convenient points around the proposed project site to permit the staging of construction equipment and job site trailers and the offloading and temporary storage of equipment and materials (Figure 3-2). The areas would be cleared of vegetation and compacted to support heavy equipment. At the end of construction, most of these areas would be reclaimed and revegetated, but one or two of these areas may be retained for long-term parts and equipment storage during operations.

**Office Trailers**

It is anticipated that six to eight temporary office trailers would be installed throughout the proposed project site at temporary staging areas during construction activities (Figure 3-2). Construction staff would use these trailers for daily operations such as plan review, meetings, environmental, health and safety trainings, and other general office activities. The trailers would be 200 square feet (10 by 20 feet) and 10 feet tall and would rest on piers or other temporary foundation structures. Temporary sanitary facilities would be brought in to the trailer sites and routinely maintained by a
licensed sanitary waste hauler and waste would be hauled offsite as needed to an approved disposal facility.

**Parking**

Parking for construction workers would be provided near the temporary office trailers in the temporary staging areas. Permanent parking facilities would be provided at the O&M building. Permanent parking spaces would be provided in accordance with the Kern County Zoning Ordinance.

**Equipment and Chemical Storage**

Equipment would be stored at the construction laydown areas, described previously. It may be necessary to store WTG parts or equipment near turbine arrays or individual WTGs during the installation process. In this case, equipment storage would be contained within the defined area of disturbance associated with the WTG array.

Hazardous and potentially hazardous chemicals used during construction of the proposed project and its associated linear facilities would include gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. There are no feasible alternatives to motor fuels and oils for operating construction equipment. The types of paint required are dictated by the types of equipment and structures that must be coated and by the manufacturers’ requirements for coating.

The quantities of hazardous materials that would be onsite during construction are small and similar to the quantities used during operation. Construction personnel would be trained to handle the materials properly. The most likely possible incidents would involve the potential for fuels, oil, and grease dripping from construction equipment. Due to the remote location of the proposed project site, it is expected that one 5,000-gallon temporary diesel storage tank would be installed onsite to serve construction vehicles. The tank would be located within one of the staging areas and would be located within a bermed area. The small quantities of fuel, oil, and grease that might drip from construction equipment would have relatively low toxicity.

Small oil spills may also occur during onsite refueling. The potential environmental effects from fueling operations are expected to be limited to small areas of contaminated soil. If a fuel spill occurs on soil, it would be cleaned up and removed in accordance with applicable regulations.

During construction of the proposed project and linear facilities, regulated substances, as defined in California’s Health and Safety Code, Section 25531, would not be used.

To minimize the potential for harmful releases through spills or contaminated runoff, chemicals would be stored in tanks or drums located within secondary containment areas. Use of extremely hazardous materials is not anticipated. Storage and use of petroleum products and hazardous materials would be subject to a hazardous materials management plan approved by Kern County and a Spill Prevention Control and Countermeasures Plan in accordance with 40 CFR Part 112.

**Fencing/Security.** Fencing would be installed in accordance with Kern County zoning requirements. Based on current Kern County ordinances, the proposed project may fence the exterior boundary of the property or choose to fence each WTG cluster or row independently. All project fencing requirements would be evaluated and the best-fit scenario would be incorporated into the project based upon the final determination by Kern County.
A Site Safety and Security Plan would be developed to include the following: Zero-injury safety policy, responsibilities and roles of personnel, health and safety for subcontractors, worker safety orientation and training, severe weather conditions, accident/incident reporting procedures, and employee safe work programs; safety signage and fencing requirements.

**Concrete Batch Plants.** Due to the remote nature of the proposed project, the lack of nearby permanent concrete batch plants and concrete curing time, the proposed project would require the use of one onsite temporary mobile concrete batch plant (Figure 3-2). The batch plant facilities would be five to eight acres in size. The batch plant and its ancillary facilities would include silos containing fly ash, lime, and cement; outside storage areas for sand, gravel, mixing equipment; and aboveground storage tanks for water. Designated areas for sand, gravel, and concrete unloading would be identified during the development review process and prior to construction.

The temporary mobile batch plant would operate during proposed project construction for four to five months of the construction period. The batch plant would require a standalone generator 250 kW in size. Fuel for the generator would be obtained from an 5,000-gallon aboveground storage tank with secondary containment for spill prevention. It is estimated that the batch plant would consume up to 25,000 gallons of water per day. Three temporary 10,000-gallon water tanks would be placed onsite to replenish the batch plant water as needed.

Stockpiles of sand and aggregate would be located in the vicinity of the batch plants in a manner that would minimize exposure to wind. Cement would be discharged via screw conveyor directly into an elevated storage silo without outdoor storage. The construction managers and crew would use Best Management Practices (BMP) and standard operating procedures to keep the plants, storage, and stockpile areas clean and to minimize the buildup of fine materials.

This application package also includes the request for a CUP for batch plants, in accordance with the Zoning Ordinance.

**Portable Rock Crusher.** To construct and improve project roads, a rock crusher would be required to provide appropriately sized aggregate for fill and road base. The portable rock crusher would be co-located with batch plants, as needed, and would have an average capacity of 20,000 tons per day. The crusher would operate during proposed project construction hours for four to five months of the construction period. In accordance with BMPs, the rock-crushing area would be sprayed by a water truck to suppress dust. The proposed crusher contains several dust-suppression features, including screens and water spray. Dust-control measures would be used at all emission points during operation, including startup and shutdown periods, as required.

**Fueling Stations.** Up to eight fueling stations would be located across the wind energy facility to minimize travel distance. Each fueling station would consist of a 500-gallon petroleum fuel tank located within secondary containment. Additionally, a 1,200-gallon diesel storage tank would be temporarily located at the main staging area. Each station would be equipped with a spill kit and would be operated in accordance with an approved Spill Prevention, Control, and Countermeasures (SPCC) Plan. The fueling stations would service light-duty vehicles. They would also be used to fill 100-gallon or smaller mobile tanks mounted on trucks, which would transport fuel to heavy equipment to be refueled in place on the wind energy facility. Fueling stations would be located in areas that would be disturbed for other construction purposes.

**Utilities.** Due to the remote location of the proposed project area, there is no existing domestic water delivery system, community sewer system, or electrical services.
Construction Water Usage and Source: It is anticipated that approximately 80 million gallons of water will be required for construction related activities, with a peak monthly water use rate of approximately 12 million gallons. On-site construction water requirements are detailed as follows:

<table>
<thead>
<tr>
<th>Use</th>
<th>Water Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil Compaction/Earthwork</td>
<td>52.7 Million Gallons</td>
</tr>
<tr>
<td>Onsite Concrete Batch Plant</td>
<td>1.3 Million Gallons</td>
</tr>
<tr>
<td>Dust Abatement</td>
<td>17.5 Million Gallons</td>
</tr>
<tr>
<td>Irrigation for Re-vegetation</td>
<td>0.5 Million Gallons</td>
</tr>
<tr>
<td>Contingency</td>
<td>8.0 Million Gallons</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>72.0 Million Gallons</td>
</tr>
</tbody>
</table>

During construction of the project, water would be obtained from a water well located within the project boundaries or would be trucked from an off-site source, or from a combination of both options as described below:

- **Water Well:** The first option is an existing well located northwest of the project site (Figure 3-2). Use of the well would include the installation of the following elements:
  - Temporary open water storage reservoir (300 feet x 400 feet) constructed on water supply parcel for use during construction;
  - Permanent open water storage reservoir (100 feet by 100 feet) constructed on water supply parcel for use after construction, to be kept dry when not in use;
  - Main water production well located at northeast corner of water supply parcel;
  - 2 monitoring wells located on water supply parcel;
  - Back-up production well located at southeast corner of water supply parcel;
  - Two underground water pipelines; and
  - Post-construction low-profile partially submerged concrete tank.

An underground water pipeline would connect the main well to the temporary water storage reservoir during the project’s construction period. A second underground water pipeline would connect the back-up well to the temporary water storage reservoir. After the construction of the project, the temporary water reservoir will be decommissioned and replaced with a low-profile partially submerged tank constructed from on-site concrete produced by the project’s batch plant. The tank would be completely closed so that no open water would be present and there is no potential to attract birds and wildlife or be a safety hazard during the post-construction operations period of the proposed project. A smaller 100 feet x 100 feet water storage reservoir would be also constructed, but kept dry. On occasions when the project proponents, U.S. Forest Service, and/or the Kern County Fire Department need to fight local wildfires, the reservoir could be quickly filled from the wells or storage tank for fire protection uses at the Jawbone Wind Energy and North Sky River Wind Energy projects, as well as in Jawbone Canyon, Piute Mountains, Kelso Valley, Walker Basin and the surrounding areas.

- **Trucked Water:** The second option is the use of water that could be acquired and trucked to the site from the Cal Portland Mojave Plan located at 9350 Oak Creek Road or from the Los Angeles Aqueduct in Jawbone Canyon Road.
Operational Water Source: During project operations, water for the O&M facility personnel and operations would either be obtained from the domestic water well located within the northwest portion of the site (Figure 3-2), or would be secured from a nearby water purveyor and trucked in as bulk water for potable and non-potable uses. Depending on water quality, bottled water may also be delivered to the O&M facility for potable use. The amount of daily water needed during operation would be minimal (e.g., approximately 2,500 gallons per day or less) and would be primarily limited to sanitary uses. A water system to support the project would be installed on O&M facility grounds. Most likely, two 5,000-gallon water storage tanks would be installed: one 5,000 gallon tank for O&M facility operations and one for fire water.

Sewerage Service: The proposed project site is undeveloped and is not presently served by a community sewage system. Therefore, the proposed project would require development of a septic system and leach line for the O&M facility. Discharge from the office sanitary system would be disposed of into an approved septic system near the O&M facility. The septic system and leach field would be constructed to comply with applicable requirements of the Kern County Environmental Health Department.

Electrical Service: Primary electrical service would be provided to both the O&M facility and the collector substation by separate 13.5-kV connections to the substation bus. Service to the O&M facility would come via underground cables from a separate 34.5kV station service transformer. Primary electrical service for the North Sky River switchyard would come from CCVTs connected to the 230kV bus in the switchyard.

Back-up power to operate the collector substation would be provided by backflow on the transmission line if the project is not operating. In addition, the substation would be equipped with a back-up generator to supply substation and turbine needs during emergency periods and during start-up and/or maintenance. It is anticipated that the substation generator would be a 150-kW generator powered by liquid propane (LP) fuel. Liquid propane fuel storage for the generator at the substation would be approximately 1,000 gallons. The substation back-up generator would comply with all applicable State of California and Environmental Protection Agency (EPA) emissions standards for this type of unit and application. The back-up generator and fuel supply would be located within secondary containment, as necessary, to meet all California and EPA requirements for spill prevention and control. Secondary containment design requirements, as well as SPCCs, would be provided in the project’s SPCC Plan.

Back-up power would be provided to the O&M facility by a connection to the collection substation via a 34.5kV station service transformer. In addition, the O&M facility would be equipped with a generator to provide back-up power service during emergency periods and during start-up and/or maintenance. It is anticipated that the generator would be a 150-kW generator powered by LP fuel. Liquid propane fuel storage for the generator at the O&M facility would be approximately 1,000 gallons. The O&M facility back-up generator would comply with all applicable State of California and EPA emissions standards and all design requirements for spill prevention and control, as described above for the substation.

Back-up power would be provided to the Sky River Switchyard Substation by a connection to the local electrical distribution system. In addition, the switchyard would be equipped with a generator to provide back-up power service during emergency periods and during start-up and/or maintenance. It is anticipated that the generator would be a 150-kW generator powered by LP fuel. Liquid propane fuel storage for the generator at the switchyard would be approximately 1,000 gallons.
gallons. The switchyard back-up generator would comply with all applicable State of California and EPA emissions standards and all design requirements for spill prevention and control, as described above for the substation.

3.6 Entitlements Required

- Amendment of Zone Maps 110, 111, 131, and 132 to include the WE Combining District
- Approval of a CUP for temporary batch plants
- FAA Determination of No Hazard to Air Navigation
- National Pollutant Discharge Elimination System (NPDES) Construction General Permit
- California Fish and Game Code Section 1600 et seq. permits (Streambed Alteration Agreements)
- Agreements pursuant to the California and federal Endangered Species Acts
- Record of Decision granting ROW for project features occurring on BLM-managed land
- Approvals from the California Public Utilities Commission for any project elements to be constructed by regulated public utilities
- Franchise Route Agreement for transmission lines in County right-of-way, as required

3.7 Construction

Construction Sequence and Equipment (North Sky River Wind Energy Project)

Schedule and Workforce

The proposed project for North Sky River Energy, LLC would last up to one year, including the installation of the roadway/access systems, construction office trailers, construction staging areas, other ancillary facilities required for construction, construction of WTG foundations and installation of the WTGs and interconnection facilities. After the WTGs are installed, the roadways would be reduced in width, and all exposed areas no longer needed for access would be restored to preconstruction conditions. It is expected that it would take up to 1 year to complete construction, including mobilization and restoration activities.

Grading would occur in the dry season to the extent practicable. Normally, construction would occur during daylight hours; however, some activities may require extended hours because of scheduling constraints or other time-sensitive matters, or to maintain structural integrity of concrete placement. Phases of construction would be performed in stages, as follows:

- Grading for construction office trailers, staging areas, project substation, and O&M facilities;
- Constructing site roads, turnaround areas, and crane pads at each WTG location;
- Constructing the WTG tower foundations and transformer pads;
- Installing the electrical collection system (underground and overhead lines);
- Assembling and erecting the WTGs;
- Constructing and installing the project substation; and