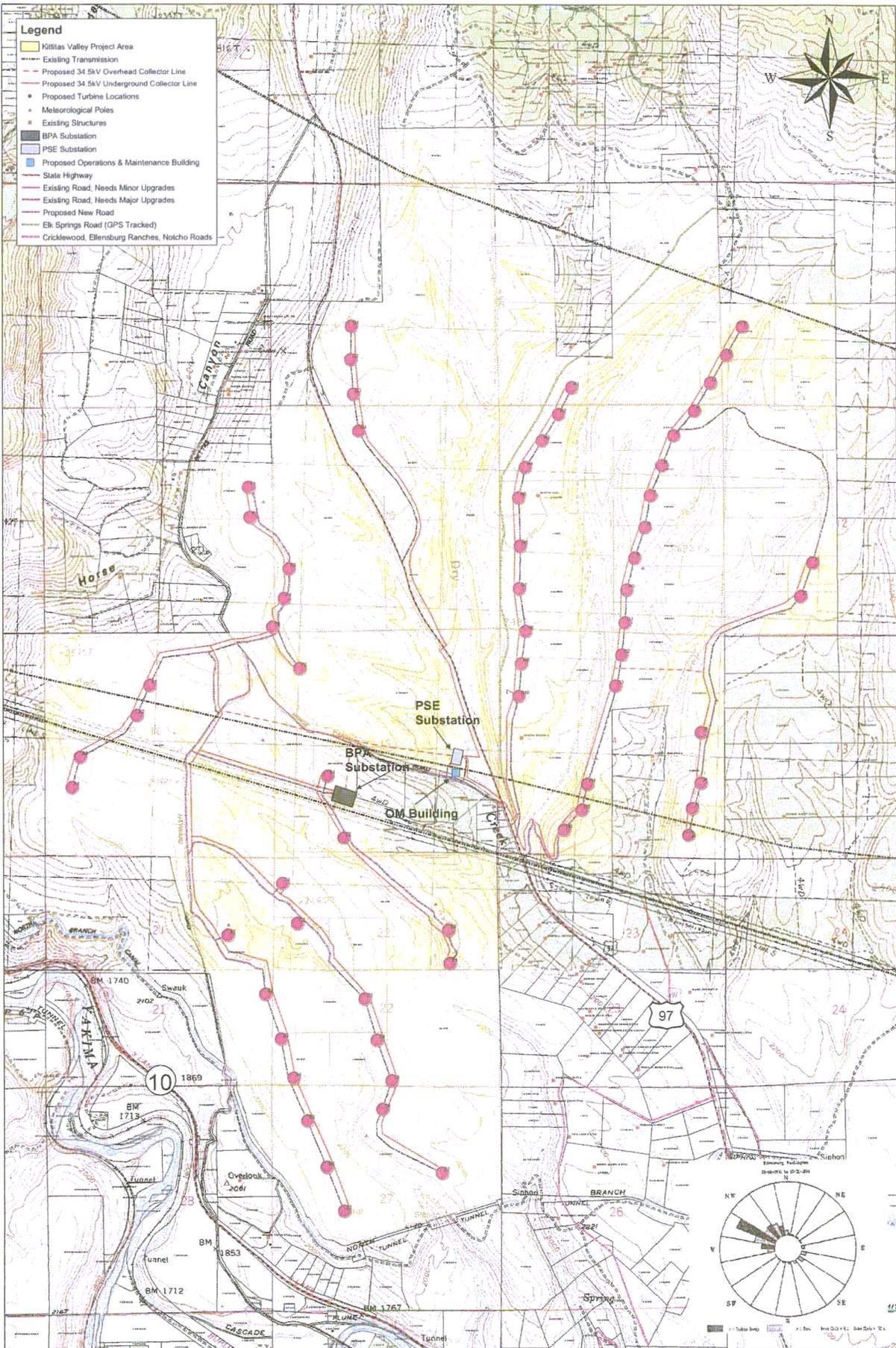


Kittitas Valley Wind Power Project
 Vicinity Map with Residence Locations
 Map Created December 22, 2005

0.0 0.2 0.4 0.6 0.8 1 1.2 1.4 1.6 1.8 Miles



Kittitas Valley Wind Power Project
 Preliminary Site Layout
 Map Revised December 28, 2005



0 0.1 0.2 0.4 0.6 0.8 1 Miles

NOT FOR CONSTRUCTION

Project Description

The Project will be built on open ridge tops between Ellensburg and Cle Elum at a site located about 12 miles northwest of the city of Ellensburg. The site center is located approximately where the main Bonneville Power Administrations (BPA) and Puget Sound Energy (PSE) east-west transmission line corridors intersect with state Highway 97. Maps showing the Project location and site layout are presented in Exhibits 1 and 2. Land use in the entire study area consists primarily of privately-owned open space and livestock grazing and publicly-owned land (WDNR). The entire Project encompasses approximately 6,000 acres. A permanent footprint of approximately 90 acres of land area will be required to accommodate the proposed turbines and related support facilities. Turbines will be located on open rangeland in areas that are currently zoned as Forest and Range and Ag-20 by Kittitas County. The Project area is bisected by five Bonneville Power Administration (BPA) and one Puget Sound Energy (PSE) high-voltage transmission lines. A Project substation, which would connect the Project's output to the regional transmission grid, would be constructed near the center of the Project site, adjacent to the BPA or PSE lines.

Infrastructure

The Project will consist of up to 80 wind turbines for an installed nameplate capacity of up to 246 megawatts (MW). The Applicant has not made a final selection of the specific turbine model to be used for this Project. Figure 1 shows the minimum and maximum dimensions for the range of turbines being considered for the Project. If a larger turbine model is selected (i.e. over 3MW nameplate capacity), fewer turbines will be installed. For purposes of this application, the Project will utilize proven, 3-bladed, upwind, megawatt-class wind turbines on tubular steel towers.

The Kittitas Valley Wind Power Project will also include other prime elements including roads, foundations, underground and overhead electrical lines, grid interconnection facilities, feeder lines running from the on-site step-up substations to the interconnection substations, O&M center and associated supporting infrastructure and facilities. The Project turbines will be laid out in strings (also called rows), connected by a network of gravel access roads. A general site layout illustrating these key elements is contained in Exhibit 1, 'Project Site Layout'.

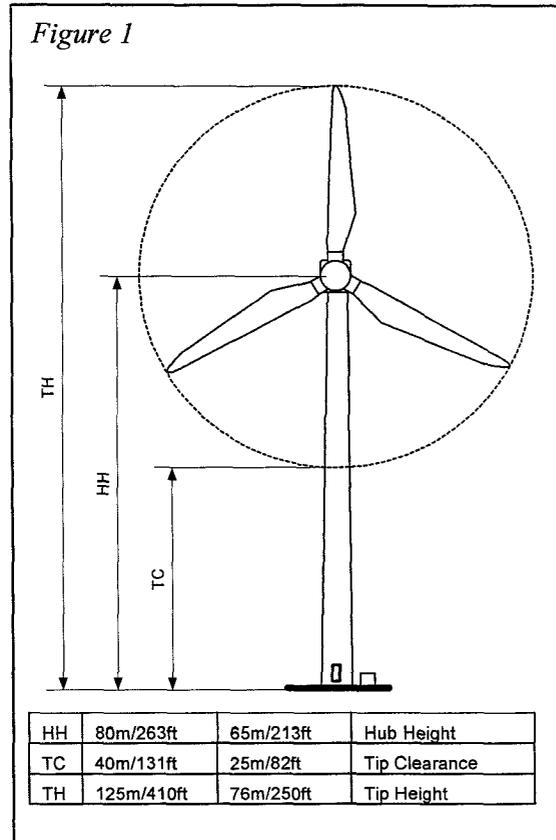
Wind Turbine Generators

Several wind turbine generators (WTGs) are under evaluation for the Project. Based on these evaluations, a number of wind turbine vendors have been pre-qualified to supply equipment for the Project. The Project will implement 3-bladed wind turbines on tubular steel towers each ranging in size from 1.8 MW to 3 MW (generator nameplate capacity) and with dimensions as shown in Figure 1.

The pre-qualified wind turbines all have a minimum design life of 20 years under extreme high wind and high turbulence conditions. Based on the lower turbulence intensities on the Project site, it is likely that the original WTGs will operate well into their third decade before a retrofit or replacement program is implemented.

Wind Turbine Basic Configuration

Wind turbines consist of 3 main physical components that are assembled and erected during construction: the tower, the nacelle (machine house) and the rotor (3-blades).



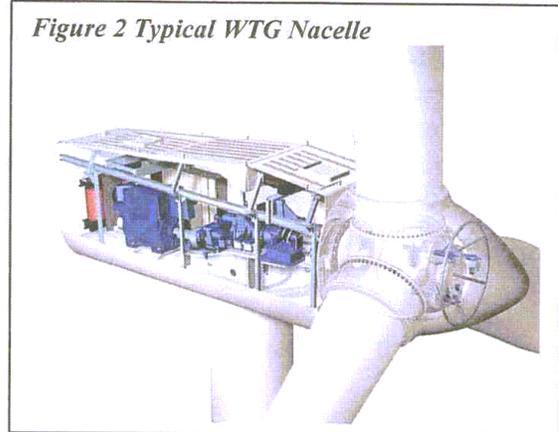
Tower

The WTG tower is a tubular conical steel structure that is manufactured in multiple sections depending on the tower height. Towers for the Project will be fabricated, delivered and erected in 2 to 4 sections. A service platform at the top of each section allows for access to the tower connecting bolts for routine inspection. An internal ladder runs to the top platform of the tower just below the nacelle. A nacelle ladder extends from the machine bed to the tower top platform allowing nacelle access independent of its orientation. The tower is equipped with interior lighting and a safety glide cable alongside the ladder.

The tower design is certified by experienced and qualified structural engineers who have designed several generations of turbine towers that have proven themselves well in some of the most aggressive wind regions of the world. The towers and foundations are designed for a survival gust wind speed of 90+ mph with the blades pitched in their most vulnerable position. For the cold-weather winter conditions on the Project site, special material specifications are set to ensure that materials do not go below the brittle transition temperature.

Nacelle

Figure 2 shows the general arrangement of a typical nacelle that houses the main mechanical components of the WTG. The nacelle consists of a robust machine platform mounted on a roller bearing sliding yaw ring that allows it to rotate (yaw) to keep the turbine pointed into the wind to maximize energy capture. A wind vane and anemometer are mounted at the rear of the nacelle to signal the controller with wind speed and direction information.



The main components inside the nacelle are the drive train, a gearbox, and the generator. On some turbines, the step-up transformer is situated at the rear of the nacelle that eliminates the need for a pad-mounted transformer at the base of the tower.

The nacelle is housed by a fully enclosed steel reinforced fiberglass shell that protects internal machinery from the environment and dampens noise emissions. The shroud is designed to allow for adequate ventilation to cool internal machinery such as the gearbox and generator.

Drive Train

The rotor blades are all bolted to a central hub. The hub is bolted to the main shaft on a large flange at the front of the nacelle. The main shaft is independently supported by the main bearing at the front of the nacelle. The rotor transmits torque to the main shaft that is coupled to the gearbox. The gearbox increases the rotational speed of the high speed shaft that drives the generator at 1200-1800 RPM to provide electrical power at 60 Hertz (Hz).

Rotor Blades

Modern WTGs have 3-bladed rotors that turn quite slowly at about 17-20 RPM resulting in a graceful appearance during operation. The rotor blades are typically made from a glass-reinforced polyester composite similar to that used in the marine industry for sophisticated racing hulls. Much of the design and materials experience comes from both the marine and aerospace industries and has been developed and tuned for wind turbines over the past 25 years. The blades are non-metallic, but are equipped with a sophisticated lightning suppression system that is defined in detail in Section 2.3.6.1.11, 'Lightning Protection Systems', of the ASC.

Turbine Control Systems

Wind turbines are equipped with sophisticated computer control systems which are constantly monitoring variables such as wind speed and direction, air and machine

temperatures, electrical voltages, currents, vibrations, blade pitch and yaw angles, etc. The main functions of the control system include nacelle operations as well as power operations. Generally, nacelle functions include yawing the nacelle into the wind, pitching the blades, and applying the brakes if necessary. Power operations controlled at the bus cabinet inside the base of the tower include operations of the main breakers to engage the generator with the grid as well as control of ancillary breakers and systems. The control system is always running and ensures that the machines are operating efficiently and safely.

Electrical Collection System

Electrical power generated by the wind turbines will be transformed and collected through a network of underground and overhead cables that terminate at the Project interconnection substation.

Power from the wind turbines will be generated at 575-690 Volts (V), depending on the type of turbine utilized for the Project. Power from the turbines is fed through a breaker panel at the turbine base inside the tower and is interconnected to a pad-mounted step-up transformer (located either inside the tower base or on an adjacent concrete pad) that steps the voltage up to the collection system voltage (typically 34.5kV or 24.94kV). The pad transformers are interconnected on the high side to underground cables that connect all of the turbines together electrically. Where practicable, the underground cables are installed in a trench that runs beside the Project's roadways. In locations where two or more sets of underground lines converge, underground vaults and/or pad-mounted switch panels will be utilized to tie the lines together into one or more sets of larger feeder conductors.

*Typical Pad-Mount Transformer
(shown before terminations landed)*

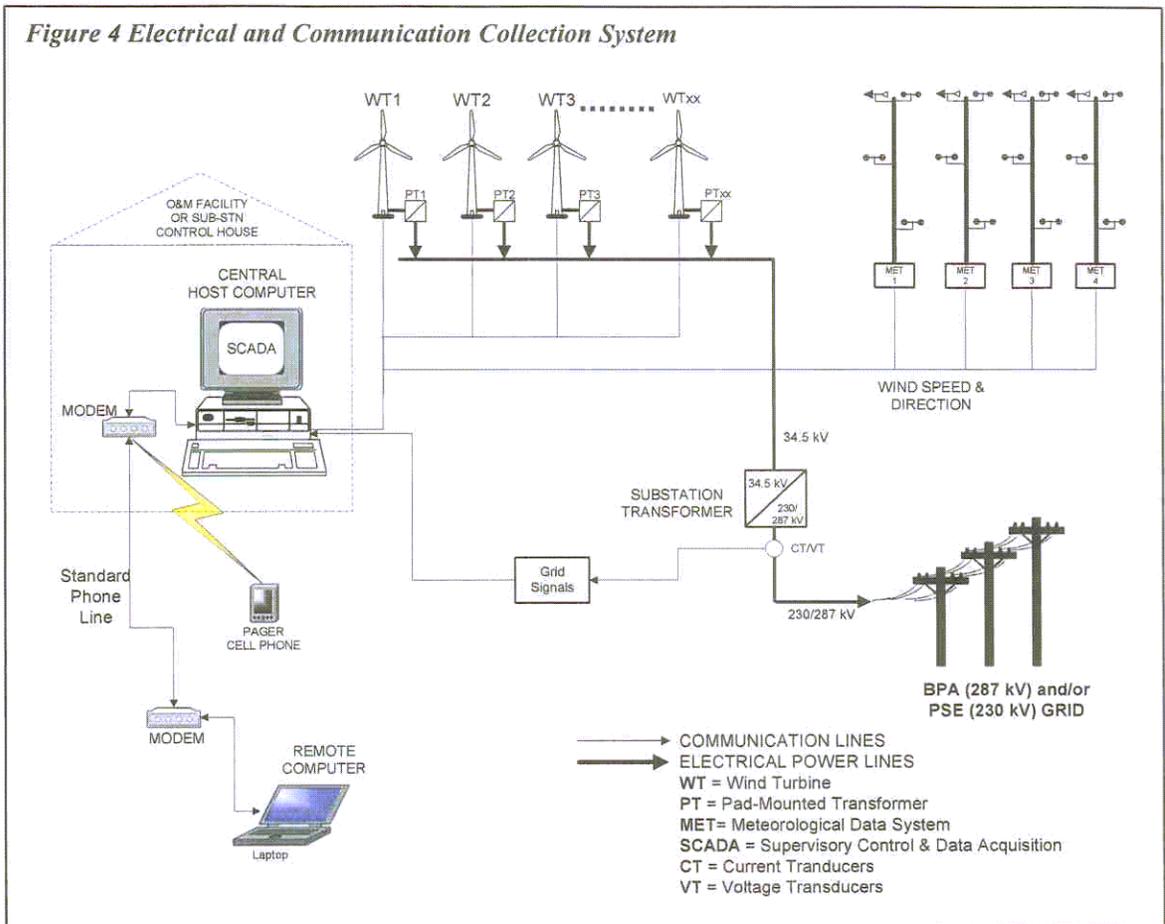


Short sections of overhead collector cable may be required at a few locations, such as over steep ravines or riparian areas, where trenched cable would have a greater environmental impact. For the few short runs of overhead power lines, a fused, switch-riser pole will be used to run the cables from the underground trench to the overhead conductors. The collection cables feed to a step-up/interconnection substation where the voltage is stepped up to interconnection voltage (230kV), then interconnected to the transmission grid.

Central SCADA System

Each turbine is connected to a central Supervisory Control and Data Acquisition (SCADA) System as shown schematically in Figure 4. The SCADA system allows for remote control and monitoring of individual turbines and the wind plant

as a whole from both the central host computer or from a remote PC. In the event of faults, the SCADA system can also send signals to a fax, pager or cell phone to alert operations staff.



Safety Systems

All turbines are designed with several levels of built-in safety and comply with the codes set-forth by European standards as well as those of OSHA and ANSI.

Braking Systems

The turbines are equipped with two fully independent braking systems that can stop the rotor either acting 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 operate independently such that if there is a fault with one, the other can still bring the turbine to a halt. Brake pads on the disc brake system are spring loaded against the disc and power is required keep the pads away from the disc. If power is lost, the brakes will be mechanically activated immediately. The aerodynamic braking system is also configured such that if power is lost it will be activated immediately using back-up battery power or a hydraulic actuator, depending on the turbine's design.

After an emergency stop is executed, remote restarting is not possible. The turbine must be inspected in-person and the stop-fault must be reset manually before automatic operation will be re-activated.

The turbines are also equipped with a parking brake that is generally used to “park” the rotor while maintenance routines or inspections that require a stationary rotor are performed.

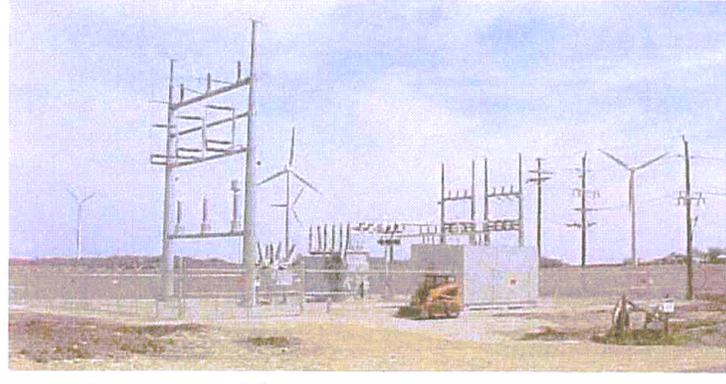
Electrical Collection and Communication System

The electrical output of the WTGs is collected and transmitted to the Project substation via underground and overhead electric cables. Underground cables are proposed wherever feasible to minimize visual and avian impacts. At the substation, the voltage will be increased to be compatible with the transmission lines to which the Project will be interconnected. Along with the electric collector cables, fiber optic or copper communication wires also link the individual turbines to a central operations and maintenance (O&M) center allowing around-the-clock remote monitoring and control of the turbines. This electrical collection and communication system is depicted schematically in Figure 4.

Substation and O&M Facility

Electrical power generated by the wind turbines is transformed and collected through a network of underground and overhead cables which all terminate at the Project step-up/interconnection substation. Because the BPA and PSE high voltage transmission

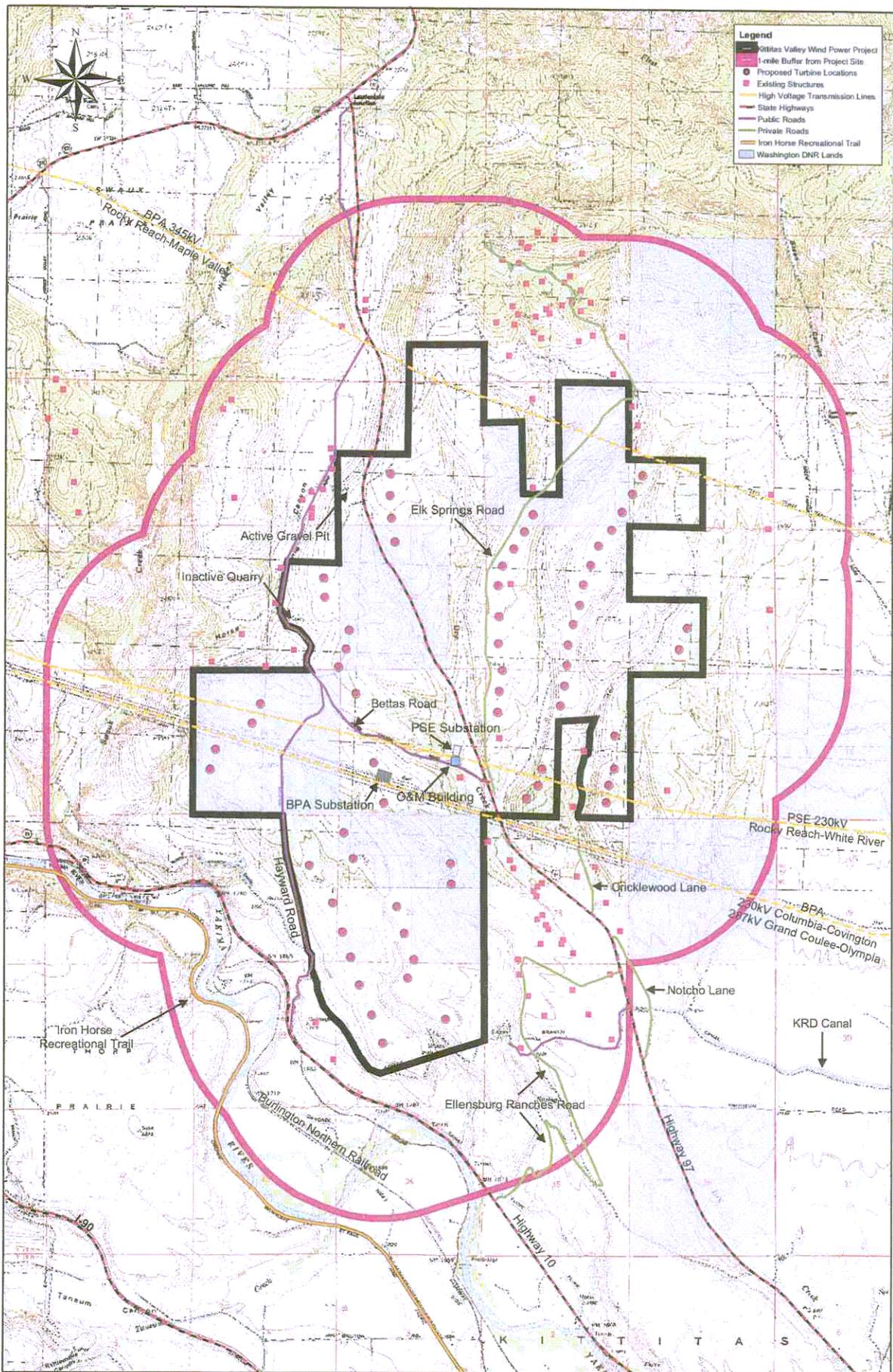
Figure 5 Typical Substation



lines directly cross the Project site, it is most likely a single combined step-up and interconnection substation will be constructed for the Project. The Project Site Layout in Exhibit 1 shows the general routing paths of the underground and overhead electrical lines as well as the proposed step-up/interconnection substation location. The main function of the substation and interconnection facilities will be to step up the voltage from the collection lines (at 34.5 kV) to the transmission level (230 kV or 287 kV), to interconnect to the utility grid and provide fault protection. The basic elements of the substation and interconnection facilities are a control house, a bank of main transformers, outdoor breakers, relaying equipment, high voltage bus work, steel support structures, and overhead lightning suppression conductors. All of these main elements will be installed on concrete foundations that are designed for the soil conditions at the substations sites. The substations

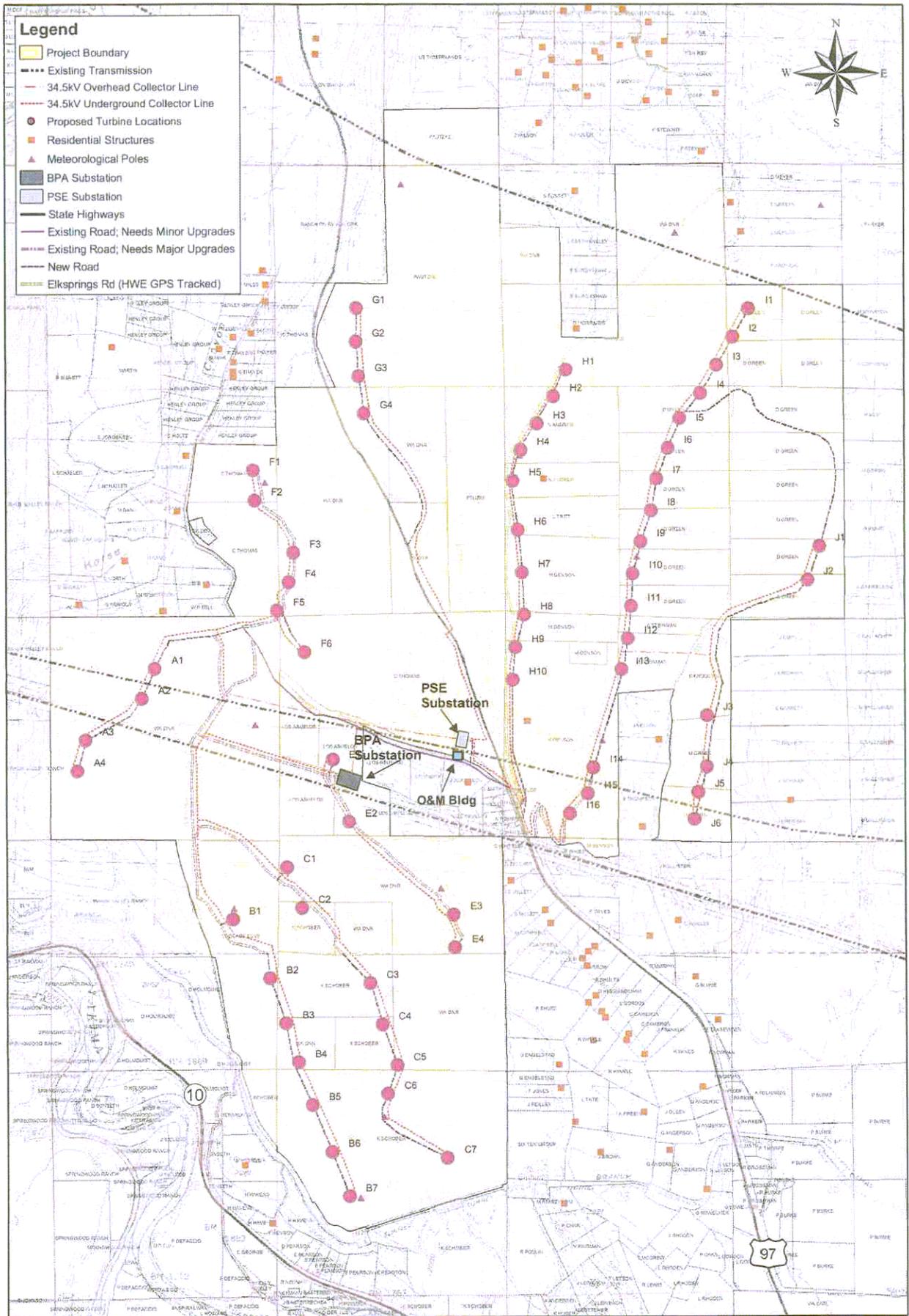
and interconnection facilities each consist of a graveled footprint area of approximately 2-3 acres, a chain link perimeter fence, and an outdoor lighting system as depicted in Figure 5.

An O&M facility is planned near the center of the Project site as indicated on the Project Site Layout in Exhibit 1. The O&M Facility will include a main building with offices, spare parts storage, restrooms, a shop area, outdoor parking facilities, a turn around area for larger vehicles, outdoor lighting and a gated access with partial or full perimeter fencing. The O&M building will have a foundation footprint of approximately 50 ft. by 100 ft. The O&M facility area will be leveled and graded and will serve as a central base. The overall O&M facility area will have a footprint of approximately 2 acres. The final design and architecture of the O&M facility will comply with all required building standards and codes and be determined prior to its construction.



Kittitas Valley Wind Power Project
 Existing Land Use
 Map Created December 28, 2005





Kittitas Valley Wind Power Project
 Kittitas County Development Agreement
 Preliminary Site Layout
 Map Revised November 21, 2005