everpower

Lewis County Special Use Permit Application for the

COYOTE CREST WIND ENERGY PARK

Prepared by:
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Lewis County
Special Use Permit Application Summary
for the
Coyote Crest Wind Park

Applicant: **Pe Ell North LLC**
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David McClain, Vice President
(503) 928-5501

Property Owners:

Lessee: **Pe Ell North LLC**
Contact information as above

Lessor: **Weyerhaeuser Company**
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Engineer: **Kleinfelder**
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Location:

The majority of the Coyote Crest Wind Park Project (Project) is located in western Lewis County, north of the community of Doty, Washington. A small portion of the Project Area will be located in eastern Pacific County, Washington. The transmission line for the project will extend northward to Cedarville Substation in Grays Harbor County where it will interconnect with Grays Harbor PUD and the Bonneville Power Administration transmission system. The Coyote Crest Wind Park wind power generation facilities will be located in T 15N, R 6W Sections 24 and 25; T 15N, R 5W, Sections 29, 30, 31 and 32; T 14N, R 5W, Sections 5, 6, 8, 9, 16, 17, 18, 20, and 27. The transmission line will be located in T 15N, R 5W, Sections 20, 21, and 30. Due to the inter-county nature of the Project, the Applicant and Lewis, Pacific and Grays Harbor Counties have decided to coordinate their efforts to conduct one SEPA review for all three counties, therefore avoiding the redundancy of several SEPA reviews. Because most of the Project is located in Lewis County, Lewis County will act as the lead agency for the SEPA process, while Pacific and Grays Harbor Counties will have the opportunity to comment on the SEPA process and final SEPA document. The SEPA process will examine all the impacts of the Project on all the counties and take into account the public comments from each county. Each county can then use the SEPA document to make informed permit decisions.

Brief Description of Proposal:

The Coyote Crest Wind Park is a 118 MW Wind Energy Power Generation Facility and 115 kV Transmission Line. The project involves the installation of 47 individual wind turbines which will vary in tower height from 80 to 100 meters (262 – 328 feet). Electrical power from all wind turbine generators will be collected by a project power cable system that delivers the electrical energy to an on-site substation where the power is transformed to 115 kV for delivery to the regional power grid. The transmission line will follow or be located near existing Weyerhaeuser roads and Grays Harbor PUD utility easements in Lewis County and in Grays Harbor County to the existing 115 kV substation at Cedarville, which is interconnected to the Bonneville Power Administration power line at South Elma, Washington.

Impact on Lewis County:

The Project will have an impact on Lewis County in terms of both the economy and the environment. It will immensely benefit the County in terms of jobs and increased tax revenue, and will have only a minimal impact on the environment in and surrounding the Project Area. Approximately 95 people will likely be employed at some time during Project construction, while 6 to 8 permanent employees will be employed on various shifts during Project operation, 24 hours per day, 365 days per year. It is expected that a significant portion of the construction labor force will be sourced from the local area.

Any environmental impacts resulting from construction and operation of the Project, including those to soils, wetlands, air, vegetation, wildlife and views, will be mitigated per county, state, and national regulations and guidelines. The Applicant will also mitigate additional impacts resulting from traffic, noise, and waste, and seek to avoid all safety hazards, including electrical, fire and workplace. The Applicant does not expect the Project to impact hunting and recreational activities or cultural resources.

Impacts to soil and water, including erosion and sedimentation, will be managed through a Construction Stormwater Pollution Prevention Plan, filed with the Washington Department of Ecology. No known wetlands exist within the Project Area, but any work associated with the transmission line, which may be located adjacent to wetlands, will adhere to all applicable laws. Additionally, wind turbine generator construction areas will not be located within 100 feet of drainages or any other body of water in order to reduce the potential contamination from spills. All hazardous materials, such as lubricants, will be stored in approved containers and storage facilities to prevent leakage into waterways. Similarly, air emissions from the Project area will be controlled through use of well-maintained and properly run equipment, use of dust reduction practices on roads, covering construction materials that may cause air emissions, and conducting all brush disposal and slash burning according to state regulations.

The Applicant will also implement mitigation measures to limit the impact of the Project on vegetation and wildlife. Mitigation measures to facilitate restoration of temporarily disturbed vegetative areas in the Project Area will include site reclamation and reseeding, avoiding the introduction of noxious weeds by cleaning construction vehicles before they enter the Project Area, re-vegetating disturbed areas with native species, ensuring hay bales used in sediment control and for other purposes are weed free, actively controlling noxious weeds, and following forest management criteria established by Weyerhaeuser and DNR. With respect to wildlife, the Project's impact will be studied during the SEPA analysis and is expected to be minimal. Mitigation measures to further reduce the impact of the Project on wildlife may be required under SEPA, and additional mitigation measures may also be suggested by the Technical Advisory Committee, established according to Washington Department of Fish and Wildlife Guidelines. The Technical Advisory Committee will also assist the Applicant in developing a Post-construction Avian Monitoring Plan.

As with impacts to wildlife, the visual impacts of the Project are expected to be minimal. The Applicant determined through a visual analysis of the Project Area that Doty is the only location from which the Project's wind turbine generators are significantly observable. Visual impact of the Project will be further minimized by using low reflectivity, neutral color finishes for turbines and minimizing security lighting at the Project substation. Ground level security lighting will be motion sensitive so as to limit the impact of lights on the night landscape. Finally, security lighting devices will be designed to be least visible from ground level. Approximately 1/3 of the turbines will be equipped with FAA required synchronized flashing red lights for evening/nighttime hours.

As with environmental impacts, other Project impacts, such as increased traffic and noise, and the production of solid and hazardous waste, will be reduced to the extent possible. The Applicant will mitigate traffic impacts associated with construction of the Project by developing and implementing a Construction Traffic Management Plan for use of state and county roads. Sound levels during Project operation will be 50 dBA or less at the Project Area boundary. Noise during construction of the transmission line will be minimized according to standard management practices. Finally, all solid and hazardous waste associated with Project construction and operation will be disposed of through a local waste disposal company and recycled when possible. Solid and hazardous waste will not be stored on site.

In addition to avoiding hazards relating to waste, the Applicant intends to monitor all safety hazards possibly originating from construction and operation of the Project, including mechanical, fire, electrical and workplace. All wind turbine generators will be equipped with multiple safety systems to reduce mechanical hazards, and will be equipped with lightning protection systems. Additionally, the Project configuration includes over 500 feet of safety zone setback from the nearest Project boundary. This, combined with private access roads, the remoteness of the site, and access restriction, will ensure adequate and reasonable protection from tower collapse, blade throw, and ice throw hazards that may be associated with the Project. The Applicant will also coordinate on-site security with both Weyerhaeuser and the Lewis County Sheriff's Office. The Applicant intends to prevent fire hazards and minimize the consequences of any fire that might occur by incorporating the Weyerhaeuser Fire and Safety Plan, conducting fire safety training with employees and contractors, maintaining fire suppressant equipment within the Project Area, using mufflers and spark arrestors on all construction equipment, requiring construction shut-downs when necessary due to dry weather conditions, maintaining a fire watch during fire season, and prohibiting smoking outside of vehicles and buildings. Risk of fire damage will be further managed by working with various Lewis County Fire Protection Districts. Electrical and other workplace hazards will be minimized through use of a safety plan, including training employees in tower climbing, cardiopulmonary resuscitation, first aid, rescue techniques, and safety equipment inspection, trimming vegetation to avoid contact with transmission lines, and marking the location of all buried Project power collection system cables.

The Applicant does not expect the Project to impact hunting and recreational opportunities, or cultural resources, which are not known to be located within the Project Area. Hunting and recreational opportunities will continue to be at the discretion of the land owners, Weyerhaeuser and DNR. If any archeological artifacts or human remains are discovered, work in that area will cease and Applicant will notify the Washington Department of Archeology and Historic Preservation, Lewis County, and any affected tribes.

More detailed descriptions of the various impacts and accompanying mitigation measures may be found in the body of the Application, below.

Coyote Crest Wind Park

Project Description

TABLE OF CONTENTS

i. LIST OF MAPS AND FIGURES

ii. LIST OF APPENDICES

iii. LIST OF ABBREVIATIONS

BMP	Best Management Policy
BPA	Bonneville Power Administration
CTED	Washington Department of Community, Trade and Economic Development
DAHP	Washington Department of Archeology and Historic Preservation
dBA	A-weighted Decibels
DNR	Washington Department of Natural Resources
DOE	United States Department of Energy
EFSEC	Energy Facility Site Evaluation Council
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FPA/N	Forest Practices Application/Notice Permit
IEC	International Electrotechnical Commission
kV	Kilovolts
MW	Megawatts
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
RMAP	Road Maintenance and Abandonment Plans
SCADA	Supervisory Control and Data Acquisition System
SEPA	State Environmental Policy Act
SWPPP	Stormwater Pollution Prevention Plan
TAC	Technical Advisory Committee
TESCP	Temporary Erosion and Sedimentation Control Plan
USFW	United State Fish and Wildlife Service
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WSDOT	Washington State Department of Transportation
WSFPA	Washington State Forest Practices Act
WTG	Wind Turbine Generator

1.0 INTRODUCTION

This Project Description is part of the Application for Special Use Permit (Application) for the Coyote Crest Wind Park Project (the Project). The Project is a renewable energy generation facility that will consist of 47 wind turbines and have a nameplate capacity of up to 2.5 megawatts (MW) each. The majority of the Project will be located in unincorporated Lewis County, approximately 5 miles north of the community of Doty, Washington, while a small portion of the Project will be located in unincorporated Pacific County, Washington. See **Figure 1** for a map of the Project Area.

The Coyote Crest Wind Project will benefit the nation, the state, and the local community. On a national level, the Project will play a part in providing energy security. On a state level, the Project will assist the state's utilities in meeting the Renewable Portfolio Standard (RPS) passed by Washington voters in 2006, requiring Washington's 17 largest utilities to purchase at least 15 percent of their electricity from renewable energy resources by 2020. Additionally, the Project will play a role in achieving Washington's goal to reduce greenhouse gas emissions to 50 percent below 1990 levels by 2050. Finally, the Project will benefit the local community through contribution to an increased tax base and an increase in local employment.

Pe Ell North LLC (The Applicant) is applying to Lewis County for land use approvals and permits necessary to construct and operate the Project. Since the majority of the Project is located in Lewis County, Lewis County, Pacific County and Grays Harbor County have agreed that Lewis County will act as the head agency for the SEPA review of this Project. This Application includes descriptions of:

- Applicant Information (Section 2)
- Land Ownership and Use (Section 3)
- Engineering and Planning Team (Section 4)
- Project Facilities (Section 5)
- Work Force and Operating Hours (Section 6)
- Water Supply and Sewage Disposal (Section 7)
- Access Roads (Section 8)
- Site Characteristics (Section 9)
- Construction Process (Section 10)
- Vehicles and Traffic Impacts (Section 11)
- Adjacent Properties (Section 12)
- Washington's Forest Practices Act Compliance (Section 13)
- Mitigation Measures (Section 14)
- Decommissioning and Site Restoration (Section 15).

All figures and appendices are grouped together at the end of the Application. Some of the figures are formatted for large scale printing and therefore may not be to scale when printed on 8 ½ x 11 or 11 x 17 sized paper.

Many of the topics addressed in this Project Application will be discussed in greater detail in the SEPA Document. The following is a summary of the Project Description:

- The Project Area consists of 94 acres of wind turbine facilities. The Project will include 44 turbine locations located entirely within the confines of the Weyerhaeuser Company McDonald Tree Farm and 3 turbine locations located on Washington Department of Natural Resources (DNR) lands immediately adjacent to the Weyerhaeuser property. Approximately 4.3 miles of transmission line cross the Weyerhaeuser property and 8.3 miles of overhead 115 kV

transmission line follow public rights of way along Grays Harbor PUD easements to Cedarville Substation. A 0.5 acre substation expansion will be located adjacent to the existing Grays Harbor PUD Cedarville Substation within the property area owned by Grays Harbor PUD.

- The majority of Project wind generation facilities and improvements will be in Lewis County, with a small portion in Pacific County.
- The onsite Project facilities will include 47 wind turbines, a 115 kV transformer substation, a maintenance building, other underground electrical transmission lines, and other ancillary utilities and facilities.
- The offsite improvements will include 6.5 miles of 115 kV transmission line in Lewis County and 6.3 miles of 115 kV transmission line in Grays Harbor County, as well as an expansion of the existing Cedarville substation in Grays Harbor County.
- Public road improvements will include some widening improvements to the intersection of Stevens Road and Highway 6; the intersection of Stevens Road and Elk Creek Road; and the intersection of Coyote Crest Road and Garrard Creek Road.
- There are no residences located within 3,000 feet of the proposed turbines.
- Sound from the Project will be 50 dBA or less at the Project Area boundary.
- Based on preliminary studies, the Project is not expected to result in permanent impacts to wetlands, streams, or special areas of critical concern.
- Nighttime red lighting will be required on some but not all of the Project turbines by the Federal Aviation Administration (FAA).
- There will be two access routes to the Project:
    - The southern route, via Highway 6 to Stevens Road and then to Elk Creek Road to Weyerhaeuser Road 7010 and via private Weyerhaeuser roads to the Project area;
    - The northern route, via Highway 12 to Oakville to Garrard Creek Road to Coyote Crest Road and Weyerhaeuser C-Line Road to the Project Area.
- No improvements are anticipated for public road access in Grays Harbor County. The transmission line improvements in Grays Harbor County will be within an existing Grays Harbor PUD easement. The improvements to the Cedarville Substation will also be within the existing property owned by Grays Harbor PUD.
- The current land use designation for the Project Area in Lewis County is General Forest.

The Project will be located on lands leased from Weyerhaeuser Company and the Washington Department of Natural Resources (DNR)[1]. The majority of the wind energy turbine facilities (44 turbines) will be located on the Weyerhaeuser McDonald Tree Farm. Pe Ell North LLC has proposed that three turbine facilities be located on an adjacent DNR parcel pending DNR's decision to lift its suspension on wind leases and approves a lease for Pe Ell North LLC. If DNR fails to award the lease, these 3 turbines will be located in alternative locations on Weyerhaeuser property. The Project is expected to be staffed with a supervisory crew 24 hours per day, 365 days a year. The actual power generation of the Project will depend upon the wind resource and will vary by wind turbine generator. It is expected that out of 8760 hours in a year, the Project turbines will generate variable amounts of electricity 80% of the time.

The Project Area is located in a rural and unpopulated section of Lewis and Pacific Counties that is characterized primarily by commercial forestry use. The land use in the general Project Area is commercial timber lands characterized by large cutting units with a matrix of varied age stands of timber. Access to the McDonald Tree Farm is controlled through gates located at the primary entry points. Construction and operations access to the turbine facilities placed on the DNR lands will be via the

[1] Pe Ell North LLC has a lease pending with the Washington Department of Natural Resources, but the Department has currently suspended all wind leases.

Weyerhaeuser McDonald Tree Farm roads. The 115 kV transmission line route from the Project Area will pass through the Weyerhaeuser ownership to Garrard Creek Road and will follow Garrard Creek Road through a lightly populated area of the Chehalis River Valley. Rural residential development occurs along the main county roads in the area including dwellings on farm or ranch properties and scattered residences on large lots along Elk Creek Road, Stevens Road, State Highway 6 and Garrard Creek Road.

Construction of the Project will involve clearing and grubbing of areas for wind turbine generator (WTG) foundation areas, construction laydown areas and road improvements. Clearing and access road construction will use standard timber clearing and road construction methods used for logging operations in the Weyerhaeuser tree farm under forest practice regulations. The wind turbine construction procedures will use methods typical of wind projects and involve the use of large cranes to place the WTGs and towers onto the foundation structures. Electrical power collection lines from each WTG are typically buried in a trench paralleling the main project road. Transmission lines from the project area to the regional grid are typically above ground power lines.

The Project site is a mountainous area with good quality all-weather logging roads with good drainage control. The equipment transportation requirements for the long turbine blades and tower sections will require reconstruction of segments of the existing private Weyerhaeuser road system. A new short spur road will be constructed from existing roads to reach each turbine location. To the extent practical and within engineering standards for wind facility transportation requirements, existing roads will be used.

The following sections include descriptions of the proposed facilities, road improvements and operations and maintenance information. The project description also includes proposed mitigation procedures and actions that will be built into the project plans to minimize environmental impacts from the Project.

2.0 APPLICANT INFORMATION

The Project applicant is Pe Ell North LLC. The development of the Coyote Crest Wind Project will take place on lands leased by Pe Ell North LLC from Weyerhaeuser Company and Washington Department of Natural Resources.

Applicant:

Pe Ell North LLC
70 NW Couch Street, Suite 405
Portland, OR 97209
Washington Secretary of State Number: 602798248

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Vice President
(503) 232-5001
dmcclain@EverPower.com

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Contact:
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Senior Vice President
(212) 847-8111
cshears@EverPower.com

Property Owner/ Lessor:

Weyerhaeuser Company
Western Timber Lands
16703 SE Mcgillivray Blvd #220
Vancouver, WA 98683

Contact:
Ian Manclark
(360) 891-4794

Property Owner/ Lessor:

Washington State Department of Natural Resources
Pacific Cascade Region
P.O. Box 280
Castle Rock, WA 98611-0280

Contact:
Patrick Hennessy
(360) 596-5149

3.0 LAND OWNERSHIP AND USE

3.1 Project Area: Weyerhaeuser McDonald Tree Farm and DNR Lands

Pe Ell North LLC has entered into a development lease with Weyerhaeuser Company and has a lease pending with the Washington Department of Natural Resources (DNR) for the development of the wind energy resources in the Coyote Crest area of the Doty Hills in Lewis and Pacific Counties, Washington. Approximately 3,240 acres within the Coyote Crest Wind Park Lease Area are owned by Weyerhaeuser and are located on the McDonald Tree Farm, while approximately 320 acres within the Coyote Crest Wind Park Lease Area are owned by DNR. Total lease area is 3,560 acres, only 175 of which will be used for WTGs, transmission line, new roads, and support facility. The Project Area is shown in **Figure 1**. **Figure 2** shows the ownership boundaries within the Project wind energy turbine area. **Figure 3** shows the location of the WTG facilities within the Weyerhaeuser Company McDonald Tree Farm and the adjacent DNR lands.

The property leased from Weyerhaeuser is also part of the McDonald Tree Farm, which is managed for sustained-yield timber production. The harvesting program employs several different types of harvesting systems and is managed in compliance with the Washington State Forest Practices Act administered by DNR. Forest practices are actions related to growing, harvesting, and processing timber, including road construction, road maintenance, forest thinning, salvage harvesting, reforestation and other silvicultural and environmental practices. The Forest Practices Act and its corresponding rules regulate these activities on State and Private timber lands in the State of Washington.

The Coyote Crest Wind Park has been designed to be a compatible co-located facility within these commercial forest lands, and approximately 30% of the Wind Turbine Generator (WTG) sites are co-located on existing cable logging landings. WTG facilities have been located in areas where road and log landing infrastructure have already been constructed. The WTG are located along the significant ridgelines in this area, which have historically been used by cable logging operations for landing areas and guyline corridors; however, the WTG foundations and towers have been sited to allow log harvesting operations to occur in the same area over the life of the Coyote Crest Wind Park. Cable logging systems use a stationary machine or yarder and a spar pole to pull logs to the landing area by means of steel cables and are used on slopes exceeding 30%. Approximately 70% of the WTG sites are located in areas where shovel or skidder logging operations generally occur in areas where the slopes are less than 30%. These harvesting stations and logging roads represent a significant investment in the tree farm and will be used several times during a 100 year period. This Project has been designed to use this existing infrastructure while not interfering with the existing and long term use for timber operations.

A standard cable operation consists of several steel cable lines including a main operating line, used to pull the logs and rigging to the landing; a haulback line, used to pull the mainline rigging back to where the logs will be hooked to the rigging; and several guy lines, used to stabilize the yarder and spar pole, which are anchored to green stumps or other equipment such as a Caterpillar tractor. In cable logging the lift comes from the metal spar pole at the yarder. The spar height and the terrain limit the amount of lift supplied and therefore restrict the area that can be harvested from a specific log landing. The log landing areas for cable logging systems are often constructed near the break in slope of a ridge line, allowing the yarder and spar pole to be located within 60 feet of the slope break. Yarders and spar poles are generally less than 100 feet high (30 meters). See **Section 13** for a discussion of compliance with the Washington State Forest Practices Act (WSFPA).

At Coyote Crest, the Applicant has identified and taken into consideration all existing and planned log landings in siting the WTG foundation locations. The WTG foundations will be located a sufficient

distance behind these landing areas to allow the placement of a log yarder and other log processing and loading equipment and therefore allow unobstructed logging operations to take place in the same general area as the WTGs.

In addition to the WTG foundations, the WTG site will include a crane parking area and equipment laydown areas, which will be planned and laid out according the site specific conditions of each WTG site. The crane parking area must be level for the crane to operate and lift the heavy components of the WTG into place. The crane requires a minimum of 22 meters (72 feet) of setback from the WTG to operate with minimum constraints. Also, an area of approximately 76 meters (250 feet) in diameter around each WTG must be cleared of all trees to allow for swinging of equipment and lifting of the equipment to the top of the tower. In general, the areas where the WTGs are to be located have already been harvested or are currently planned to be harvested. During WTG construction operations, log harvesting will be suspended in the immediate vicinity of the Coyote Crest Project to reduce operational conflicts.

3.2 Land Ownership Along Transmission Line Route

The proposed Project transmission line is approximately 12.6 miles long and will connect the Project to Grays Harbor PUD. The exact path of the transmission line has not yet been determined, but generally it will run for 4.3 miles from the northeastern corner of the Project across Weyerhaeuser property to Garrard Creek Road. Once the transmission line reaches Garrard Creek Road, it will continue to follow Garrard Creek Road and then South Bank Road for 8.3 miles, ending at Cedarville Substation in Grays Harbor County. This portion of the transmission line will be located within the Grays Harbor PUD utility easement. Existing pole structures along the Grays Harbor PUD easement will be replaced with larger single pole structures to allow for co-location of the 115 kV conductor wire and the lower voltage 12.5 kV distribution line.

Figure 4 shows the proposed location of the 115 kV transmission line on Weyerhaeuser lands. **Figure 5** shows the proposed location of the 115 kV transmission line along Garrard Creek Road and South Bank Road and ownership within 500 feet of the transmission line.

3.3 General Forest Area Land Use and Ownership

The Project Area is situated along a long north-south oriented ridge line known as Coyote Crest and the Doty Hills which separates the Chehalis Valley from the coastal areas of Grays Harbor and Willapa Bays. The terrain within the Project Area is a broad high ridgeline with elevations from 2,100 feet at the southern turbine locations, 2,000 in the center area, and 1,800 feet in the northern turbine area. The Project Area is within the Washington Coastal Mountain Range geographical area and rain fall in this area typically exceeds 80 inches per year.

The Project Area is a rural and unpopulated section of Lewis and Pacific Counties where the dominant land use is commercial forestry. See **Figure 6** for a Lewis County and Pacific County Zoning Map. The commercial timber lands within the Coyote Crest Wind Park and surrounding Project Area are characterized by harvest units (50 to 100 acres in size) with a matrix of various age stands of timber with an average rotation of 40 years. Portions of the Weyerhaeuser McDonald Tree Farm in the immediate Project Area have recently been harvested and replanted. All project related lands have been cut at least once and several areas are on their third and fourth rotation. The DNR lease area has also been extensively harvested.

The private timber lands owned by Weyerhaeuser are not open to general public use, although some low-intensity outdoor recreational uses such as hunting and road vehicle use occur with the permission of

Weyerhaeuser, which retains the right to revoke all use. Access to the McDonald Tree Farm can be controlled through gates located at the primary entry points. **Figure 7** shows the location of the principal access roads and regional arterial routes to be used for the Project.

The transmission line route and access routes are located in the lightly populated area of the Chehalis River Valley. Rural residential development occurs along the main county roads including dwellings on farm or ranch properties and scattered residences on large lots along Elk Creek Road, Stevens Road and State Highway 6 and Garrard Creek Road.

There are no residences within the vicinity of the wind turbine project areas. There are no residences located along the possible transmission line route on Weyerhaeuser land, 7 residences located along the possible transmission line route along Coyote Crest Road, and 18 residences along the transmission line route following Garrard Creek Road to the Lewis County Boundary with Grays Harbor County. **Figure 2** shows ownership within one mile of the wind turbine generator facilities. **Figure 8-A** shows the ownership of property within 500 feet of the associated transmission line in Lewis County, while **Figure 8-B** shows the ownership of property within 500 feet of the associated transmission line in Grays Harbor County.

Washington State Department of Natural Resources (DNR) forest lands are adjacent and immediately east of the Project Area. The DNR lands are used for commercial forestry timber production, habitat, and recreation such as hunting. Only 320 acres (the west half of Section16 T. 14N, R. 5W) of DNR lands will be included in the Project Area and used for wind development.

There are no wells within 500 feet of the Project wind turbine facilities. **Figure 9** shows the location of wells within 500 feet of the principal access route and transmission facilities and substation.

Operations on the McDonald Tree Farm and DNR leases are subject to the Washington State Forest Practices Act. Weyerhaeuser manages the McDonald Tree Farm on a sustainable forestry basis. The entire tree farm has been inventoried and classified into a series of timber management units. These timber management units take into consideration the age of the stand of trees, the type of trees, slope and environmental considerations. Harvest management planning evaluates these management areas for scheduled harvesting approximately every 40 years depending upon the growth in each stand. The majority of the Project Area has been harvested once and several areas have been harvested several times over the past 50 years.

Forestry operations and the clearing associated with the Project are subject to DNR regulations under the Washington State Forest Practices Act. **Section 13** contains a description of the DNR requirements for the Project. A Forest Practices Application/Notice permit must be obtained for activities on forest lands involving harvesting, road construction, rock pits and installation or change of culverts and/or bridges. **Figures 10-A through 10-D** show the location of known Critical Areas of Concern within 5 miles of the Project, transmission line, and substation facilities.

All fish-bearing streams near the Project Area are shown in **Figure 10-B**. **Figure 11** identifies all perennial streams near the Project Area.

4.0 ENGINEERING AND PLANNING TEAM

The Project will be developed utilizing qualified engineers, planners, foresters and contractors. The following subcontractors are responsible for various aspects of the project plans and design.

4.1 Planning

Tetra Tech EC Inc.
19803 North Creek Parkway,
Bothell, WA 98011
Tel: 425-482-7600

Lead Ecologist: Lynn Sharp
Tel: 503-222-4548
Fax 503-227-1287

4.2 Transmission Line and Substation Planning and Engineering

Elcon Associates Corporate Office
12670 NW Barnes Road
Portland, OR 97229
Tel: 503-644-2490
Fax: 503-644-2911

Lead Engineer: Mike Unger, PE

4.3 Forestry Planning

Mason, Bruce & Girard, Inc.
707 SW Washington, Suite 1300
Portland, OR 97205
Tel: 503-224-3445
Fax: 503-224-6524

Lead Forester: Steve Fairweather, PhD.

4.4 Surveying and Engineering

Kleinfelder
9200 SW Nimbus Ave., Suite A
Beaverton, OR 97008

Jay C. Beeks, P.E.
Tel: 503-207-4312

4.5 Construction Contractor

To be selected.

4.6 EverPower Project Management

David McClain	Vice President
Dave Berthelsen	Director, Construction
Steve Bloom	Legal Counsel
Zach Morris	Project Engineer
Meghan Pedden	Manager, Development

5.0 PROJECT FACILITIES

The Project consists of several types of facilities including the wind turbines themselves, underground power collection system, above-ground transmission system and substation, access roads, and an operations and maintenance facility. Each component is described below and is based on the Project planning information available at this stage. Construction of the Project will likely take place over a 3 year period with breaks for inclement winter weather. The first phase will involve clearing, grubbing, and construction of road improvements; the second phase will involve construction of approximately 40 wind turbine generators and associated transmission line; and the third phase will involve construction of the remaining 7 wind turbine generators.

5.1 Wind Turbines

The proposed Project includes 47 wind turbines. A wind turbine refers to the entire structure that produces electrical power. Each turbine consists of several mechanical parts, including three large rotor blades connected at the rotor hub located at the front of the housing unit called the nacelle. Inside the nacelle the rotor hub is connected to a drive shaft or rotor which is connected to the generator via a gear box. The entire nacelle and rotor hub are mounted atop a tubular tower which is anchored to a tower foundation. Each of these turbine components is discussed in the section.

The Applicant proposes to use either the Nordex N90 or the Repower MM 92 turbine, or WTG equipment of similar size and quality, for the Project. Both wind turbine generators have generation capacity in the range of 2 to 2.5 megawatts (MW) and can be mounted on 80 meter (262.5 ft.) and 100 meter (328 ft.) towers. The total height from the ground to the blade tip point (located at the straight up position) depends upon the tower height and will be between 406 and 471 feet. The different tower heights will depend upon the terrain for each specific tower location.

A tower with a hub height of 80 to 100 meters makes it possible to use sites which until recently were not viable for technical and economic reasons. The high hub height of the N90 and MM92 machines make them the ideal wind turbine machines for forest locations with complex terrain. **Figure 12** illustrates typical turbine facility components.

5.2 Foundations

The wind turbines will sit atop steel and concrete foundations designed for the specific subsurface conditions at the individual turbine sites. Foundations will be designed by a registered engineer licensed in the State of Washington who will select the appropriate foundation design for each turbine location based on site specific geotechnical information, load bearing recommendations of the geotechnical engineer, and specifications of the wind turbine provided by the wind turbine manufacturer. The foundation designs will conform to State and County requirements and standard industry practices. There are two industry standard foundation designs that may be used for the Project depending upon the tower location and the geotechnical conditions.

Figure 13 illustrates an inverted T foundation. The inverted T foundation is a spread footing that employs a relatively shallow concrete base with a relatively large diameter. The depth of the base will be approximately 10 feet below grade and is expected to be between 50 and 65 feet in diameter. The top of the concrete pedestal will extend between 6 and 18 inches above finished grade and be up to 20 feet in diameter. The turbine tower is fastened to the foundation by tensioned anchor bolts that run through the turbine tower base flange down into the concrete base. A layer of grout 2 to 3 inches thick, and

depending on the turbine model, possibly a steel ring, are typically located between the turbine tower base flange and the concrete pedestal.

Figure 14 illustrates a typical rock anchor foundation employed in an area of bed rock. A rock anchor foundation consists of a cylindrical cap of concrete that rests atop the bedrock layer. The concrete cap is typically between 5 and 10 feet thick and can be up to 30 feet in diameter. The top of the concrete cap may extend 6 to 18 inches above finished grade. The concrete cap is anchored to the bedrock by a series of rock bolts 40 to 50 feet in length. Once the rock bolts are tensioned, the conduits in which they are housed are filled with grout. The turbine tower is fastened to the foundation in the same manner as would be done for an inverted T foundation.

5.3 Towers

Tubular steel towers will support the nacelle, rotor and blades. The purpose of the tower structure is to position the turbine blades high enough to intercept the consistently strong winds. Winds closer to the surface have slower speeds due to ground interference, trees and surface roughness. The higher hub heights also minimize the effects of wind turbulence that may be created by trees and terrain. Each tower will be designed to place the hub height between 80 meters (262.5 feet) and 100 meters (328 feet) depending upon the terrain and final design of the equipment configuration. The towers will have a base diameter of 14 to 16 feet at the base, will weigh approximately 160 tons, and will consist of four tapering sections. The towers are constructed of heavy, rolled steel, with a smooth exterior surface which will be painted a neutral color as directed by the FAA. **Figures 15-A and 15-B** illustrate a typical tower structure.

A locked steel door will provide secured access to the tower base. A computerized control cabinet is located inside the tower. Power and control cables and a steel ladder and platform system will extend within the tower interior from the base access door to the nacelle. The access ladder will provide maintenance crews access to the nacelle.

5.4 Nacelle and Rotors

The nacelle is the housing that covers the operating mechanism of the turbine. The nacelle is approximately 35 feet long, 10 feet wide and 13 feet high. The exterior surface is typically constructed of fiberglass lined with sound absorbing foam. The generator, gear box and associated control equipment for the turbine are housed inside the nacelle. See **Figure 12** for an illustration of a typical turbine facility. The nacelle is accessed through the internal tower ladder system. The majority of the servicing of the machinery will be conducted from within the nacelle to protect the equipment and operator from weather.

The rotor assembly for each turbine includes three blades that are attached to the front of the nacelle at the hub. The rotor sweep of the blades is 90 meters (295.2 feet) making it possible to exploit the maximum amount of energy from the wind flow through the hub height area. The Project will use an upwind turbine design with the nacelle turning into the wind to place the nacelle and tower behind the blades. The blades are composed of laminated fiberglass and aluminum composite and will have a smooth outer surface. Each blade is fabricated in the factory and transported to the site separately and then bolted to the rotor hub, and a crane is used to lift the nacelle and assembled rotor hub into place.

In addition to the generator and gear box, other equipment included inside of the nacelle will include electrical motors used to turn the nacelle into the wind and control the pitch of the rotor blades, and an automatic braking system. The pitch of the blades is controlled by a computer that will rotate the blades on their axis to maintain an optimum angle to the wind to maximize the generation output at a given wind

speed. The minimum cut in speed is 3 meters/second (6.7 mph) and the safety cut out speed is 25 meters/second (56 mph). At wind speeds above the maximum safety threshold of 55 mph, the blades will rotate into a feathered position and the braking system will stop the rotor from turning. After 10 minutes and when speeds reduce to below 55 mph, the blades will rotate their pitch into the wind and start turning again.

5.5 FAA Lighting

The Federal Aviation Administration (FAA) normally requires any structure that exceeds 200 feet above ground level to be marked and/or lighted. Standards for marking and lighting are set forth in FAA Advisory Circular 70 / 7460 -1K. FAA "obstruction lighting" for wind facilities generally require one red blinking nighttime light, which federal studies show is easier for pilots to see. Under the recommendations, turbines at the ends of a row of turbines would be lit, with the remaining turbines lit at half-mile intervals. In areas with less air traffic, the white paint typically used for wind turbines is sufficient for day time marking when combined with a 24 hour blinking red light. The red blinking light is typically installed at the top of the nacelle. Requirements for lighting and marking are specified in a formal FAA Determination of No Hazard to Air Navigation. **Figure 16** is an illustration of a nacelle and rotor with FAA Lighting.

The Applicant will file for formal FAA determination for the turbine placements shown in **Figure 3.**

5.6 Turbine Locations and Crane Pads

The 47 turbines will be distributed within the Project Area as shown in **Figure 3**. The turbine placement plan was determined using computerized modeling of the topographic features, wind resource considerations from metrological data collected in the Project Area, long term weather data, environmental considerations such as stream set back requirements, and property ownership set back criteria. The objective of the wind turbine placement is to provide optimum exposure to the wind from all primary wind directions, with emphasis on exposure to the prevailing northwesterly wind direction. Sufficient spacing was established between wind turbine towers to minimize energy loss created by turbulence between and among turbines.

Final turbine foundation locations may be micro-sited within 300 feet of the identified location in **Figure 3** to better accommodate site conditions during construction and to avoid environmental features, geotechnical conditions, or conflicts with Weyerhaeuser cable logging stations that become apparent during construction activities.

Typically layouts incorporate safety zones designed to protect adjacent uses from any rare incidences such as blade throw, ice throw, and tower collapse. The turbine facilities locations are over 500 feet from the nearest lease boundary and there are no buildings or improvements, other than roads, within 1,000 feet of the facilities. Safety set-backs are not required because of the relative isolation of the site. Logging activities are expected to continue in the immediate vicinity of the turbine locations. Weyerhaeuser and the Applicant have established a 300 foot safety zone surrounding each turbine location inside of which close coordination will be required of ongoing forestry operations.

Construction of the wind turbines will require the construction of a crane pad adjacent to each turbine. The turbine crane pad is a permanent parking area needed for the construction and long term maintenance and eventual decommissioning of the turbine equipment. **Figure 17** illustrates a typical turbine foundation area and crane parking area with onsite equipment laydown and storage. Typically, each turbine foundation area and crane pad parking area will require approximately 3.2 acres of clearing for cut

and fill, foundation area, and lay down area for the assembly of the rotor and tower. However, in some areas, topographic conditions may constrain the area available for full equipment laydown adjacent to the WTG foundation, as shown in **Figure 18**, which illustrates a typical turbine foundation area without onsite equipment laydown and storage. Each turbine site will have a permanent operations area of 1.5 acres, which will include the turbine foundation and a permanent crane parking pad for long term maintenance requirements. The remaining area will be replanted upon completion of construction.

5.7 Public Road Improvements

Access to the Project Area is currently provided by use of existing public roads to the Weyerhaeuser McDonald Tree Farm and via private Weyerhaeuser logging roads to the Project Area. There are two primary approaches to the Project Area: the southern approach, via Elk Creek Road near Doty, Washington, and the northern approach, via Garrard Creek Road in northwest Lewis County. All major equipment, such as wind turbine tower segments, blades and nacelles, will be transported into the project area via the northern approach road. Secondary equipment, construction materials, crews and other vehicles will generally approach the Project Area via both the northern and southern approach roads.

The following improvements to public roads will be required to accommodate the truck traffic associated with the delivery of the wind turbine towers, blades and nacelle.

Southern Approach: State Highway 6 will provide primary access to the Doty area from Interstate 5 near Chehalis, Washington. Lewis County roads that will be used to access the Project Area from the south include Stevens Road and Elk Creek road near Doty, Washington. Minor widening of intersections of county roads will be required to accommodate turning radius for equipment loads at the following intersections:

- Widening the Stevens Road intersection with Highway 6 by installing a right turn lane on Highway 6 at Stevens Road and widening the east bound shoulder of Highway 6 at Stevens Road;
- Widening both shoulders of Elk Creek Road intersection with Stevens Road in Doty;

All stream crossing improvements will be made within existing road corridors and no construction will be allowed in or near existing stream beds.

Northern Approach: The northern approach will be used for all oversized and heavy loads. Loads will include turbine tower segments, blades, hubs and nacelles for all wind turbine generators. The equipment will be delivered by truck from Interstate 5 via State Highway 12 to Porter Creek Road and then south on South Bank Road to Garrard Creek Road. Access to the Project Area from Garrard Creek Road will be via Coyote Crest Road, which is also designated as Weyerhaeuser C-Line Road.

Minor widening of intersections of the following county roads will be required to accommodate turning radius for equipment loads:

- Garrard Creek Road and Brooklyn Road
- Coyote Crest Road / C-Line Road and Garrard Creek Road.

Weyerhaeuser Roads: All of the Weyerhaeuser roads are private roads with locked gates. The Weyerhaeuser McDonald Tree Farm has numerous high quality all-weather gravel logging roads. The Project will utilize this road system to the maximum extent possible for construction of the proposed Project facilities. Development of the project will require improvements to be made to several Weyerhaeuser roads to provide adequate turning radius for long loads and grade improvements for crane

and heavy loads. A system of project roads will be constructed to provide access to all turbine locations. **Section 8.0** provides a detailed description of the project road improvements.

DNR Roads: If the DNR lease or right of way is approved, approximately 0.5 miles of new road will be constructed on DNR land to connect with Weyerhaeuser roads, and approximately 0.75 miles of road will be rebuilt from existing logging roads. The new road will be isolated with a gate near turbine #38. These new and improved roads on DNR land will create a continuous road loop connecting turbine sites on DNR property to those on Weyerhaeuser property.

5.8 Project Electrical System and Transmission Line Design

The Project's electrical system will consist of four primary components: the power collection system from each WTG, a Project substation to which all power collection system cables will connect, the 115 kV transmission line from the Project to the Grays Harbor PUD Cedarville Substation. The function of the electrical system will be to collect the electricity produced by the Project turbines and convert it to higher voltage electricity to be fed into the regional power grid for delivery to various purchasers.

5.8.1 Power Collection System

The power collection system has been configured to follow the Project road system. Power collection cables from each wind turbine facility will be placed underground or on wood pole structures when necessary and feasible to do so. The generator housed in the nacelle of each turbine will produce electricity at 660 volts. Lower voltage cables located inside of the tower will carry the electricity from the nacelle through the tower to a transformer mounted on the concrete pad adjacent to the base of the tower. The transformer pad will be 8 to 10 feet square and 2 feet thick. The transformer, located on the pad, will be approximately 5 feet high and located in a fully enclosed cabinet. The transformer will raise the voltage from 660 volts to the collection system voltage of 34.5 kilovolts (kV).

Electricity will be transmitted from the transformer into a 34.5 kV underground power cable installed as part of the power collection system. A network of underground power collection cables will connect the turbines to the Project's 115 kV substation. Junction boxes that merge multiple incoming cables into one outgoing line will be installed at various locations within the Project Area to facilitate the collection of the power from the turbines. Each 34.5 kV circuit will carry up to 25 MW of power. Several circuits will be required to evacuate power from all wind turbine generators to the substation. See **Figure 4** for a map of the underground power cable routes. **Figure 4** also includes schematic diagrams of single, double, and triple cable trenches that will be constructed along underground power cable routes. All buried power cable routes will be clearly marked and built to IEC standards.

The power collection system will be placed underground except where it is not reasonable to do so based on site-specific physical conditions (i.e. a stream crossing, steep and /or rocky terrain). Underground cables will be installed in excavated trenches or directly plowed into the earth at a depth of 4 feet below the ground surface. Whenever possible, multiple circuits will be co-located in common trenches.

5.8.2 Project Substation Location and Design

An electrical substation will be needed in the Project Area to provide further increase or step up in voltage from the 34.5 kV power collection systems from the Project turbines to the 115 kV voltages of the regional transmission grid. The location of the Project Substation is shown in **Figure 3**, near the SW ¼ of the SW ¼ corner of Section 32 T 15N, R 5W. This location is near the intersection of the northern access road and the wind turbine generator area.

A large 34.5/115 kV power transformer will be located within the Project substation along with disconnect switches and communication equipment. The transformer will step-up or raise the voltage from 34.5 kV to 115 kV to meet the higher voltage of the receiving Grays Harbor PUD electric transmission line grid system and Cedarville Substation. The 115 kV line will also have sufficient transmission capacity to evacuate all of the power from the Project Area. In addition to the transformer, disconnect switches, and metering relays, the substation will have a small metering and operating building that will house the power generation control and relaying equipment, station batteries, and the on-site Supervisory Control and Data Acquisition (SCADA) System, which will communicate operations information with the transmission control information system. The entire substation area will be cleared, graded and covered with gravel and surrounded by a chain link fence. The completed substation will occupy approximately 2 acres. The substation will be designed to meet the standards of the National Electric Safety Code and the requirements of the Grays Harbor PUD and Bonneville Power Administration (BPA) interconnection system. A 1 acre maintenance yard and vehicle shelter will be constructed adjacent to the substation and will store spare parts, road maintenance vehicles and equipment for forest fire fighting.

5.8.3 115 kV Transmission Line

An overhead 115 kV transmission line will be constructed from the Project substation to the existing Grays Harbor PUD Cedarville substation, which is interconnected to the BPA South Elma substation. The 115 kV line route will consist of three segments: 4.3 miles of transmission line on Weyerhaeuser property; 2 miles of transmission line along Garrard Creek Road in Lewis County utilizing Grays Harbor PUD easements; and 6.3 miles of transmission line along Garrard Creek Road and South Bank Road in Grays Harbor County utilizing Grays Harbor PUD easements.

The 115 kV transmission line will be designed as a single pole configuration with three conductor wires and a static wire. The single pole design will follow along existing road ways and utility easements. Poles will be approximately 100 to 300 feet apart depending upon the site specific conditions. **Figure 19-A** illustrates a typical 115 kV transmission line pole design. **Figure 19-B** shows a 115 kV transmission line pole typical of existing structures along South Bank Road and is representative of the style of the structures proposed for Lewis County. **Figure 19-C** shows a cross section of the transmission corridor through the Weyerhaeuser Tree Farm.

5.8.4 Cedarville Substation

Interconnection with the Grays Harbor PUD and eventually the BPA transmission system will occur at the existing Grays Harbor PUD Cedarville Substation in Grays Harbor County. This existing facility will be expanded to allow for additional disconnect and interconnection switch gear. The proposed location for the interconnection substation is on Grays Harbor PUD lands and is shown in **Figure 4** at the intersection of South Bank Road and Lewis Road in Grays Harbor County.

5.9 Meteorological Towers

Three meteorological towers are currently installed in the Project Area and are used to assess the wind energy potential of the Coyote Crest site. Project development typically involves the use of several meteorological towers during the exploration and design phase of the project. These meteorological towers are only a few feet in diameter and are considerably smaller then wind turbine towers. They are constructed of triangular tubular aluminum sections approximately 14 inches on the side and are secured by multiple guy wires that extend up to 110 from the tower base. These towers are 80 meters (262.4 feet)

in height and have several anemometer and other weather instrument booms at the 45 meter (147.6 feet) and 80 meter heights. Meteorological towers are standard features of utility scale wind projects and are used to provide the project control system with accurate real time wind speed and wind direction information. The towers have concrete foundations, anchors and guy wires. **Figures 20-A and 20-B** show a typical permanent meteorological tower.

5.10 Operations and Maintenance Facility

The proposed Project facilities will include a permanent building to support ongoing operations and maintenance (O&M) activities. The O&M building will include an enclosed bay for storage of equipment and parts; a workshop; an office and control center for monitoring and operations of the facility; a restroom and kitchen facilities; and a parking area for vehicles. The enclosed space needed for the O&M building is approximately 5,500 square feet. See **Figure 21** for a general plan and profile of the Operations and Maintenance Facility, which Applicant currently plans to locate at the Project Substation.

5.11 Safety and Control Systems

The Project will include a communication and control system for monitoring and controlling the turbines. The communication and control system will use fiber optic communication lines that will run parallel to the power collection system. Each turbine will be equipped with a rotor control and braking system which will respond automatically to the set controller conditions for cut-out speeds and can be operated by the operational control center in the O&M facility.

Aircraft safety lighting will be installed on the exterior of some nacelles to comply with the FAA rules for structure lighting. See **Section 5.5** for the criteria for FAA lighting. Approximately 30% of the 47 turbines will be equipped with synchronized low intensity flashing red lights (L-864) for nighttime use.

Each wind turbine, including rotor blades, will be equipped with lightning protection systems which will be connected to an underground grounding arrangement to facilitate the flow of lightning energy safely to the ground. All equipment, cables and structures comprising the wind turbines will be connected to a metallic grounding system.

The 115 kV transmission line poles and wire will have a lightning protection grounding system including metallic grounding wire for each pole structure and a static wire paralleling the conductor wires.

The turbine towers will have locked access doors. The substations will be fenced and locked to prevent unauthorized entry.

6.0 WORKFORCE AND OPERATING HOURS

The Project will result in the creation of several new jobs in Lewis County. There will be two stages of job creation: the temporary (12 to 24 months) construction work force and the permanent operations and maintenance (O&M) work force.

6.1 Construction Workforce

Approximately 95 people will likely be employed at some time during the Project construction. Some of these workers will be employees of the Applicant, but most will work for various construction contractors and equipment vendors who will provide construction goods and services to the Project. The size of the construction work force present at any given time will vary with the scheduled task in the construction process. Peak construction work force will most likely occur during the turbine foundation and electrical power collection system construction. Based on the nature and sequence of construction activity, the peak work force will not likely exceed 75 workers at any given time. Work efforts involving surveying, clearing and grubbing, road construction, foundation excavation and construction, batch plant operations, and site restoration are likely to utilize local firms. Transmission line and substation construction, turbine assembly and erection, instrument and control system installation, and start up and testing require specialized skills that are less likely to be available locally but are available in the general region.

6.2 Operations and Maintenance Workforce

The Applicant intends to operate and maintain the Project once constructed. Long-term operations and maintenance activities for the Project will include the following functions:

- Round the clock operations monitoring of the Project output and performance of the individual wind turbines and management of the instrument, control and safety systems;
- Controlling turbine operations and power output to meet scheduled deliveries and implementation of scheduled outages for scheduled maintenance;
- Performance of periodic and routine testing and maintenance of the turbines;
- On site repairs of Project equipment as needed in response to malfunctions or scheduled maintenance;
- Patrolling the Project Area to ensure security and monitor on site conditions including inspections of equipment, monitoring of re-vegetation and wildlife, and discouraging unauthorized use;
- Periodic maintenance of Project access roads.

The Project will employ 6 to 8 full time staff for long term operations and maintenance. Periodically, specialized contractors will be used to assist in the maintenance of the Project turbines, transmission line and substation.

6.3 Days and Hours of Operation

The operations center will be staffed 24 hours a day, 365 days a year.

6.4 Expected Operations Pattern

The Projects wind turbines will not operate during all hours of the year because the wind does not blow at sufficient speeds to operate the turbines all the time. The Applicant has collected several years of regional and Project specific meteorological data within the Project Area. These data were correlated with 20 years of historical regional data to project an operating pattern. The Applicant expects the Project to operate approximately 30% percent of the time annually.

Each turbine will require 40 to 50 hours of scheduled mechanical and electrical maintenance per year. Routine maintenance will occur every six months and an annual inspection and any major maintenance will be scheduled for the summer when wind power generation is at its seasonal low. Long term monitoring of the project will also require periodic visits by consulting scientists involved in biological monitoring, meteorological station maintenance, and vegetation control.

6.5 Operations, Safety Measures and Hazardous Materials

The wind turbine generators are designed to operate automatically and independently, and are continuously monitored by a control system called the Supervisory Control and Data Acquisition system (SCADA). The SCADA will monitor the operations and output of each turbine. Each turbine will be equipped with monitors that communicate operations conditions through communications lines to the operations and maintenance center. Alarm systems will be triggered if operational characteristics fall outside of set limits. Each turbine will have automatic braking systems to shut down the rotor in the event of malfunctions or excessive wind speeds. Much of the site operation is handled remotely from the O&M office via the use of computers and a high-speed communication network between the turbines. Generally projects are staffed with one operator for every 10 to 20 WTGs, depending on the project and turbine size. See **Section 6.2** for a more detailed description of the necessary O&M workforce. Operators are specially trained and apply both electrical and mechanical skills to address turbine faults, troubleshoot operation problems, and perform repairs. Much of the work is performed inside the turbines, which involves a significant amount of climbing.

Hazardous materials are those listed in the EPA Consolidated List of Chemical Subject to Reporting under Title III of the Superfund Amendments and Reauthorization Act of 1986. Construction, operation, and decommissioning of the Project require the use of some hazardous materials, but this use is minimal. Types of hazardous materials that may be present include fuels, lubricants, cleaning solvents, paints, pesticides, and explosives. The Applicant will comply with all applicable federal and state regulations regarding notices to federal and local emergency response authorities, including the maintenance of appropriate chains of custody forms. The turbines will use synthetic oil as a lubricant in the gearboxes and hydraulic fluid for the blade pitch actuators. Each turbine will contain lubricating oil. Turbine oil will be tested regularly and replaced as needed. All oil supplies will be kept at the maintenance facility in dry covered storage areas. All waste oil and fluids collected during maintenance will be placed in appropriately marked barrels and transferred off-site to an approved waste facility. To mitigate impacts from leaks of hazardous materials or industrial wastes during on-site storage, materials storage and dispensing areas (fueling stations for off-road construction equipment), as well as waste storage areas, are typically equipped with secondary containment features. Additionally, fluid-containing transformers may also be installed within secondary containment features, or be designed in such a way that their outer cases serve as containment devices. To further mitigate adverse impacts and ensure timely response to accidental leaks or spills, appropriate spill containment and recovery equipment could be maintained in the Project Area.

The Applicant will implement standard safety plans for the Project which are tailored to the specifics of the Project site requirements. The safety plans include key components that are specific to wind energy facilities such as fire safety and emergency tower rescue programs. These programs define hazards that could be present, prescribe procedures to be followed by operations and maintenance personnel, identify equipment needed to implement the programs and specify applicable training requirements.

The Project will also incorporate into its safety plans the standard operating procedures specified by Weyerhaeuser for road travel, construction operations and wild fire. Emergency evacuation procedures and forest fire safety procedures will be incorporated into all construction and operations programs.

7.0 WATER SUPPLY AND SEWAGE DISPOSAL

There are no existing wells within 500 feet of the Project substation.

Construction water for the concrete batch plant, road construction and dust abatement will come from Weyerhaeuser's existing water sources used to support the timber operations of the McDonald Tree Farm or from an existing well along Garrard Creek Road. Bottled water will be provided by contractors for the construction work force.

Portable toilets will be provided by contractors working on the Project during the construction phase. These portable toilets will be serviced regularly and the sanitary effluent trucked off site for disposal by the contractor.

Water consumption for the operations and maintenance facility will be considerably less than 5,000 gallons per day. Domestic water for the O&M facility at this location will be provided by development of an exempt well. Bottled water will be supplied to the operations and control center.

Restroom and kitchen facilities will drain to an onsite septic system and a Lewis County septic system permit will be obtained for the site.

8.0 ACCESS ROADS

Access roads into the Project Area and along the transmission line route will involve a mix of public and private roads. **Section 5.7**, Public Road Improvements, describes the state and county roads that will be used to access the project areas and the improvements required to accommodate the project related construction equipment and deliver component parts of the wind turbine machines and towers. Access to the Project Area is currently provided by use of existing public roads to the Weyerhaeuser McDonald Tree Farm from either Elk Creek Road near Doty or Garrard Creek Road near Oakville, Washington

All major equipment such as large erection cranes, crane booms, wind turbine tower segments, blades and nacelle will be transported into the project area via Garrard Creek Road to Coyote Crest Road. The Coyote Crest / Weyerhaeuser C-Line road has a consistent grade and has been identified as the route which will require the fewest road improvements to access the project area with the oversized and extra long loads.

Equipment mobilization and construction material deliveries that can utilize a standard logging road will utilize the Elk Creek Road access route. Secondary equipment, construction materials, crews and other vehicles will generally approach the project area from the southern approach roads via Elk Creek Road near Doty, Washington.

The wind turbine construction area is spread over several miles and will involve numerous road improvements to the Weyerhaeuser road system and to access the DNR leases. Two types of road improvements will be made on the Weyerhaeuser and DNR lands associated with the development of the Project:

- Widening and realignment of existing primary access roads into the Project Area; and
- Construction of a new crane and utility corridor road to each wind turbine location.

Each road type has different functions and design specifications.

8.1 Weyerhaeuser Access Road Improvements

Weyerhaeuser's existing road system through the McDonald Tree Farm will be used to access the Project Area wind turbine sites. The widening and realignment of some segments of the existing Weyerhaeuser access roads will be required to accommodate the long loads associated with a wind turbine, some of which are in excess of 160 feet in length. The Project access roads in the McDonald Tree Farm will be single lane roads with a 16 foot travel surface width for straight sections and up to a 20 foot travel surface width for curved sections.

The access route to the Coyote Crest Wind Park via Garrard Creek Road will include use of the following existing private roads owned by Weyerhaeuser Corporation:

- Coyote Crest Road/ C-Line Road approximately 2.6 miles.
- Road #723, approximately 2.8 miles
- Road #720, approximately ½ mile

The access route to the Coyote Crest Wind Park via Elk Creek Road will include use the following existing private roads owned by Weyerhaeuser Corporation:

- Road #7010, approximately 0.8 miles,
- Road #7011, approximately 1.0 miles,
- Road #9200, approximately 2.5 miles to the project site.

Gravel for road improvements will be supplied from existing rock sources within Weyerhaeuser's McDonald Tree Farm or existing quarries in Lewis and Grays Harbor counties.

8.2 Project Crane and Utility Corridor Roads

Within the Project Area, a central turbine construction road will be constructed following the existing Weyerhaeuser #9000 and #720 road system to the extent practical. The turbine construction road will be designed to allow the erection crane and other specialized equipment handling tractors access to each wind turbine generator tower location and to move between turbine locations with minimum crane disassemble and reassemble required. The proposed crane and utility corridor road system is shown in **Figure 22**. The preliminary design assumes that the maximum road width of 40 feet would be constructed. The actual road width could be as narrow as 16 – 20 feet (typical single lane logging road width). Final design of road widths will depend upon detailed plans and profiles, topographic mapping and crane configuration requirements. Typical crawler tractor cranes of a size sufficient to erect wind turbine generator facilities generally require a 20 to 40-foot wide cleared walking area. Typical rubber tire crane equipment capable of erecting wind turbine generator facilities require a 16-20 foot operating road surface.

Figure 23 shows a typical cross section of the crane and utility corridor to each turbine location, as well as the worst case scenario cut and fill. Although **Figure 23** depicts cut slopes of 2 to 1 and fill slopes of 1 to 2, typical cut slopes in the Project Area are 1 to 1 and typical fill slopes are 1 to 1 ½. Final road design will depend upon the result of the geotechnical studies and the road width requirements for the crane equipment selected to erect the wind turbine generator facilities.

The central crane access road between turbine locations will be designed with a 40 foot wide tractor walking path to allow safe movement of the turbine assembly crane used during the initial construction period. This corridor will also be used for locating the underground electrical conduits between wind turbines. The crane roadway will be finished with a standard 16' gravel logging road and along the center line of the crane path. The crane path and utility corridor will be replanted upon completion of the construction and the finished 16' all weather gravel maintenance road will allow maintenance and operations access to each wind turbine site.

Detailed plans for the Project road system and the connections to county roads will be prepared following detailed topographic mapping of turbine locations and a detailed evaluation of road requirements.

8.3 Access to DNR Lease Lands

Assuming the DNR lease or right of way is approved, access to the wind turbine generators located on the DNR lease lands in Section 16, T 14 N, R 5W will be via Weyerhaeuser Road # 9400 and #9000. The DNR lease area is accessible from DNR Road #9470, which is currently not connected to the Weyerhaeuser road system. A 2,000 foot extension of DNR Road #9470 will be constructed to connect DNR property to wind turbine generator #43. The proposed crane and utility corridor road will follow the general ridgeline between wind turbines. Approximately 1.2 miles of the central crane access road will be constructed on the DNR lease following the DNR Road #9470 right of way. If the DNR lease or right of way is not approved, the Applicant will improve Weyerhaeuser #9000 Road, located between turbines 31 and 40.

8.4 Transmission Line Access

Access to the 115 kV transmission line will be from several private and public roads. The proposed 115 kV transmission line will interconnect with the existing Grays Harbor PUD transmission system at Cedarville Substation at the intersection of South Bank and Lewis roads in Grays Harbor County. The exact path of the transmission line has not yet been determined, but generally it will run for 4.3 miles from the northeastern corner of the Project across Weyerhaeuser property to Garrard Creek Road. Construction of this segment of the 115 kV line will be from existing Weyerhaeuser logging roads. The transmission line will follow existing Grays Harbor PUD easements along Garrard Creek Road and South Bank Road to Cedarville Substation. The transmission line will interconnect with Grays Harbor PUD through the existing Cedarville Substation. Any improvements to the Cedarville Substation will be made by Grays Harbor PUD.

8.5 Transportation Planning

Trucks will be used to deliver construction equipment and materials. The wind turbines, towers, transformers and other large equipment will be transported to the site using semi-trucks and lowboy transporters designed for heavy loads (i.e. multiple axles). Each wind turbine unit will consist of four tower sections, the nacelle, hub assembly, three rotor blades and a controller. The range of load sizes of these components and truck requirements are summarized in **Table 1**. Several of these loads will have a gross vehicle weight of upwards of 105,500 pounds, which exceeds the Washington State Department of Transportation (WSDOT) size and load limit. Because all loads transported on (WSDOT) rights of way must be within the legal size and load limits or must have valid oversize and/or overweight permits, all trucks will be required to obtain WSDOT permits for oversized loads. The trucks will deliver the equipment to the Project Area either to a designated central lay down area or to the individual wind turbine sites. Movement of the transporters will have a short term impact on regional traffic along the access routes.

Table 1: Size of Wind Turbine Components and Truck Requirements

Maximum Height	16.4 ft
Maximum Width	16.4 ft
Maximum Load per Axle	17 tons
Maximum Weight	182 tons
Maximum Length	177 ft

Tower components will be transported in three to four segments. Each tower segment will be approximately 66 to 75 feet long with one segment per truck. Blades will be transported two at a time on one truck. The nacelles and associated components will require two additional truck loads per turbine. Therefore, each turbine will require 14 truck trips (7 inbound, 7 outbound) for delivery of turbine components. Delivery of turbine components for the entire project (47 turbines) will require 658 loads (329 inbound, 329 outbound). The frequency and duration of the truck trips will depend upon the specific construction schedule and delivery schedule set by Applicant and the construction contractor.

Construction related traffic will consist of deliveries of Project equipment and construction materials such as concrete and steel by truck. Truck deliveries are anticipated to occur between 8 a.m. and 4:30 p.m. on weekdays. In total, 4,800 heavy duty truck deliveries are expected during the 24 month construction period, with 50 trucks per day or 100 daily truck trips (inbound and outbound) anticipated during peak construction. It is anticipated that truck deliveries will include:

- Major equipment (e.g. tower sections, nacelles, blades);

- Gravel for site access roads, O&M facility area and substation);
- Water trucks for road wetting during compaction and for dust control;
- Construction equipment delivery and pickup;
- Concrete and reinforcing steel;
- Mechanical equipment;
- Electrical equipment and material (transformers, cable, etc.);
- Miscellaneous steel, roofing, and siding;
- Construction consumables;
- Contractor mobilization and demobilization.

It is anticipated that during periods of peak construction activity there will be from 60 to 75 workers on-site, and as many as 95 workers would be employed during construction of the Project. This work force could generate as many as 80 inbound trips during the a.m. peak hours and 80 outbound trips during the p.m. peak hours. These crew transportation trips are well within the capacity of the local road network and would not significantly affect existing levels of service.

9.0 DEVELOPMENT SITE CHARACTERISTICS

9.1 Total Size of Development Site

The development site is a linear feature extending approximately 8 miles along the top of the Doty Hills and Coyote Crest and following approximately the route of Weyerhaeuser Road #9000. The total size of the development site includes the following:

- 94 acres of permanent WTG site improvements, including permanent parking areas;
- 17 miles of buried utility lines, which will be located within road improvements;
- 17 miles of existing and improved access roads:
  - 70% of which are adequate in grade, while the other 30% will require adjustment as to alignment, grading and widening, to be determined upon final topographic mapping and engineering design.
  - 15.7 miles on Weyerhaeuser land, 1.3 miles on DNR land, both of which will be used for both timber and wind project operations;
- 6.3 miles of above ground 115 kV transmission line in Lewis County and 6.3 miles of above ground 115 kV transmission line in Grays Harbor County;
- 2.5 acres of substation and equipment yards at the wind project.

9.2 Non-residential Building

The project will have a small operations and maintenance building (5,500 square feet) at the substation near the southern end of the WTG facilities.

9.3 Impervious Surface Area

Impervious surface area will include the WTG foundations, WTG gravel covered parking areas, substations, and maintenance yards. See **Table 2** for estimates of the impervious surfaces associated with each element of the proposed project.

Table 2: Estimates of Impervious Surfaces

Project Feature	Acres of Impervious Surface
Wind Turbine Generator Foundations	1
Crane Pads	16
Substation	2
Maintenance Buildings	2
New Gravel Surfaces (including roads)	20
Total	**41**

10.0 CONSTRUCTION PROCESS

Construction of wind energy projects generally requires 12 months, depending on the size of the project, terrain, and weather conditions. Construction is typically planned for low wind months; however, some projects may require up to 18 to 24 months if high winds and winter weather occur. The type of equipment used in constructing wind energy projects is similar to most construction sites with the exception of the large-capacity crane use to install the top tower sections, nacelle, and rotor. During construction the project schedule is focused on minimizing the time required for the large-capacity crane due to their high operating costs. Construction of the Project will involve standard timber clearing, road construction methods used for logging operations in the Weyerhaeuser tree farms, and wind turbine construction procedures typically used for wind projects. Conventional earthmoving equipment such as excavators, bulldozers, graders, dump trucks, and cement trucks are the first pieces of equipment at the site and are used to construct the access roads and foundations, and install power cabling. During the installation of this infrastructure, turbine and tower components are delivered to the site and staged near the foundations. Upon completing assembly of the turbines, electrical and communication connections are made and turbine testing begins. Once the turbines are commissioned, energy production can begin.

The Project Area is a mountainous area with good all-weather forest roads with good drainage control. The following describes the general sequence of the construction and the procedures to be used for construction of the various Project components.

10.1 Schedule and General Sequence

The construction process at Coyote Crest will be completed over an approximate 24 month period. The primary tasks in the construction process include:

- Establish site access;
- Survey and stake Project clearing requirements;
- Clearing and grubbing of construction areas;
- Perform site grading;
- Survey and stake Project facilities, road and transmission line;
- Construct Project access roads and turbine pads;
- Excavate and pour tower foundations;
- Excavate underground utility trenches;
- Place the underground power collection and communication cables in trenches;
- Construct the 115 kV transmission line to the BPA substation;
- Construct the Project substation;
- Construct the Project Operations and Maintenance facility;
- Transport tower sections to turbine locations and assemble towers;
- Transport nacelles, rotors and blades to the turbine locations;
- Assemble and lift nacelles, rotors and other turbine equipment onto the towers;
- Install permanent meteorological towers (as necessary);
- Install safety and control system;
- Start up and test all project systems;
- Commence commercial operations;
- Conduct final site grading and reclamation and clean-up.

Habitat, sensitive areas and other protected areas within the Project Area will be delineated, defined in contracting documents and marked in the field, pursuant to consultations with the Washington Department of Fish and Wildlife (WDFW) and Weyerhaeuser.

In general the first few months of construction activity will involve clearing and grubbing of the Project facilities and transmission line route. This will be followed by civil and electrical construction including construction of the Project access roads and tower foundations. Once the access roads and pad site excavation has been advanced and completed for half of the tower locations, the installation of the power collection system, communications lines and Project substation will be initiated and follow the road and pad construction through the project. Turbines will be erected as Project access roads and tower foundations are completed. Installation of nacelles, rotors and associated equipment will be the final task of major construction activity for each turbine. The Applicant expects to begin commercial operations within four months after the commissioning of the first wind turbine and completion of the transmission line interconnection.

10.2 Construction Equipment and Space Requirements

Construction of the Project will require the use of various types of construction equipment. **Table 3** summarizes the types and functions of construction equipment that are typically used in the construction of commercial wind energy projects. Construction activities will require temporary disturbance of a larger area than will be occupied by the permanent Project facilities. **Table 4** identifies the estimated area that will be cleared and disturbed in construction and within the permanent foot print of the various Project components.

Table 3: Typical Major Construction Equipment for Wind Energy Projects

Equipment	Use
Cranes	Erect wind turbine generators
D9 Bulldozers	Move earth and handle bulk material
Graders	Grade surfaces
Scrapers	Move and remove earth over short distances to create a flat surface such as a road
Dump trucks	Remove earth and bulk material, import gravel
Tree Faller/Buncher	Cut and stack trees
Self Loading Log Truck	Remove logs from construction area
Track Hoes	Excavation of foundations
Backhoes	Excavation of power cable trench
Trencher/Cable Layer	Installation of power cables

Table 4: Estimated Area of Construction Disturbance and Permanent Facilities

Project Feature	Temporary Construction Disturbance (acres)	Permanent Project Footprint (acres)
Wind Turbine and Crane Pads	94	18
Internal Power Collection System[1]	43	4.3
Project Substation	4	2
115 kV Transmission Line[2]	52	52
Permanent Met Towers	3	0.2
Project O&M Facility[3]	3	2
Staging /Storage Areas	10	1
New Access Roads[4]	20	20

Total Lease Area	233	99.5
Percent of Lease Area	.07%	.03%

1) The power collection system within the Project Area will be underground and 90% contained within the access road areas.
2) Estimated disturbance of 115 kV line outside of McDonald Tree Farm.
3) O&M Facility to be located with the Project Substation; estimated disturbance in addition to the substation area.
4) Existing Project access roads where increased in width to accommodate wider turns. Estimate includes both reconstructed and new roads.

10.3 Erosion and Sedimentation Control

Erosion and sedimentation control measures will be implemented at the beginning of the construction process and will be incorporated into the design and contractual requirements. Erosion and sedimentation control will be standard practice during the active construction, restoration and cleanup stages of the construction process. The Applicant will develop and implement a Temporary Erosion and Sedimentation Control Plan (TESCP). This design level plan will prescribe the use of Best Management Practices that are standard features of such plans. The Project TESCP will be based on and comply with the Washington Department of Ecology's Stormwater Management Manual for Western Washington, the Washington DNR Forest Practices Application/Notice (FPAN), the Washington DNR Road Maintenance and Abandonment Plans (RMAP), and any stipulations of the Washington DNR Hydraulic Project Approval. The Project TESCP will also address the erosion control and water quality conditions of the National Pollution Discharge Elimination System (NPDES) construction storm water discharge general permit

Based on applicable standards, the TESCP will include using coverings for exposed soils (soil stabilizers approved by DNR and Weyerhaeuser), storm water detention ponds, sediment control basins and traps, drainage culverts and other well established measures typical of a forest management area. Surface run off will be directed away from cut and fill slopes and other disturbed areas and into ditches to natural drainage features. Exposed areas will be re-vegetated as soon as possible following completion of the corresponding construction task.

10.4 Clearing and Grubbing

Construction activity for the Project will start with clearing of timber and stumps from roads, turbine pads, and the substation site and transmission line route. The Washington State Forest Practices Act (Title 222 WAC) and its corresponding rules regulate all harvesting and forest practices, including road construction and maintenance, brush control, and reforestation related to the installation of the capital improvements associated with the Project. The construction areas will be cleared of timber and, when necessary, stumps and other brush. The merchantable timber will be removed from the site and delivered to local log processing facilities. Logging slash, stumps and other organic materials will be piled and disposed through standard practices employed by Weyerhaeuser at the McDonald Tree Farm and by DNR for DNR timber lands and may include spreading out for natural desiccation, burning, or transportation to fiber markets.

10.5 Roads and Turbine Pads

The heavy construction activity for the Project will start with construction of access roads and turbine pads. The existing Weyerhaeuser private roads will provide the primary access into the Project Area. See **Section 8**. These existing road segments will be improved as necessary to accommodate the design

standards for the hauling of major equipment into the area. Improvements could include grading to modify the road profile, filling in low spots, widening turns, replacing culverts and applying new gravel to the road surface. Improvements to the existing Weyerhaeuser road system will be coordinated with Weyerhaeuser to minimize disruption of ongoing timber harvesting activities.

New gravel roads will be constructed in areas where existing roads could not be used for access to the turbine locations. These roads will vary in width from 16 foot travel surface widths for straight sections and 20 foot travel surface for curved sections. New road segments will include the standard drainage requirements specified by Weyerhaeuser for its roads and installed to comply with DNR regulations. Temporary disturbance and clearing along the turbine access roads will be approximately 35 to 50 feet wide under typical circumstances with wider clearing areas needed to accommodate cuts and fills as appropriate to construct and stabilize roads on slopes. The crane access roads will consist of a 32 to 40 foot wide crane walking path with a 16 foot wide permanent road in the center. The crane access roads allow for the crane to walk from turbine to turbine to minimize crane demobilization, reloading and re-assembly of the crane. The temporary disturbance areas adjacent to the roads will also accommodate the trenching for the Project utility lines. See **Figure 4** and **Figure 23**, which illustrate the crane access road, permanent road, and Project utility line trenches.

Temporary clearing around the turbine pads is assumed to occupy a 300 by 300 foot (2.07 acre) area with a radius of approximately 130 feet around the tower foundation. A typical tower foundation and turbine pad for an 80m to 100m tower would involve the construction of a one acre assembly area, which is cleared and leveled to a 5% grade. The turbine foundation and crane pad area would be constructed near the center of this cleared area. The large clearing area allows for assembly and crane maneuvering of the assembled hub and blades free of obstructions. See **Figures 17** and **18** for typical crane pad and foundation layouts. The different layouts reflect the options available to safely park and operate the crane to off load and assemble the turbines given variations in topography and site requirements.

Once grading for the roads and pads in a given sector of the Project have been completed, fill materials such as crushed rock and sand needed for the road and pad bases and road surfaces will be hauled to the Project Area, deposited, graded and compacted as needed. Native materials from the Project Area will be used to the greatest extent possible to meet the fill material needs and to achieve a cut and fill balance with the Project Area. Existing Weyerhaeuser rock sources will be utilized to provide the majority of the rock needed for compacted fills and road base. Quantities of filling and grading for the Project have not yet been estimated because they depend upon the final design of the project foundations and site specific geotechnical reports. Typical wind projects of this size involve approximately 300,000 cubic yards of material excavation and fill.

10.6 Staging Areas

Temporary lay down areas or staging areas will be established in the Project Area to support various construction functions. These include temporary storage of tower sections, nacelles and other turbine components at each turbine location. **Figures 17** and **18** illustrate the lay down requirements for a typical crane pad and tower foundation area and illustrates the size of the major components that must be assembled and stored at the turbine location for assemble of the wind turbine. Other temporary storage will be required throughout the Project Area for storage of other equipment and supplies for the installation of the underground cables and overhead transmission lines; parking of construction vehicles and equipment; parking of construction workers' personal vehicles; and the installation of portable fuel tanks surrounded by earth berms for spill control; rock crushers; and concrete batch plants. Staging area locations and dimensions have not been yet determined. One or more staging area approximately 3 acres

in size will be located as needed near existing roads and on previously disturbed log landing areas. These temporary facilities will be located on Weyerhaeuser lands.

10.7 Concrete Supply

The Applicant will contract with one or more construction companies to install the wind turbine tower foundations and pads and the substation pads. These facilities will require sizable volumes of concrete. The Applicant anticipates that one or more temporary concrete batch plants will be located within the Project Area at existing Weyerhaeuser rock pits. The contractor will be responsible for obtaining any environmental permits required to develop these temporary facilities.

The batch plant will involve a portable mixing plant that could be moved to different locations within the Project Area. The batch plant(s) would be set up in temporary staging areas or existing Weyerhaeuser rock pits. A diesel generator would likely be used to power the batch plant and any associated rock crusher. Typically these types of facilities require approximately 3 acres of land area to support the batch plant, related facilities and truck parking, including approximately 1 acre for the batch plant facility itself, 1 acre for raw material stockpiles, and 1 acre for parking, equipment storage and a settling pond for site drainage control.

Portable concrete batch plants, defined as concrete plants that operate at a site for less than one year, are permitted under the State of Washington's Sand and Gravel General NPDES Permit. The general permit specifies discharge limits and requires the operator to develop plans for monitoring, storm water pollution prevention planning, erosion and sediment control, and spill prevention and control. Best management practices for concrete truck washout requires a settling pound to be built to catch the wash-down runoff and storm water runoff. A portable water storage tank would be located at the plant to store water from off-site sources used to operate the batch plant.

10.8 Turbine Foundations

Once the Project roads are constructed, excavation will begin for turbine foundations. Typically either inverted-T or rock anchor-type foundations are used, with selection of the turbine foundation design to be based on the site specific geotechnical conditions. Construction of the turbine foundation usually takes 3 to 5 days depending upon the amount of rock that must be excavated. Foundation construction activities are expected to occur for approximately 6 to 8 months during the Project's construction process. See **Appendix I** for photographs of the construction process.

The inverted-T foundation requires a circular excavation approximately 8 feet deep and 90 feet in diameter (see **Figure 13**). Following excavation, a layer of compacted fill is placed at the bottom of the hole, and an octagonal-shaped, reinforced-concrete (concrete poured over steel rebar) footing up to 4-feet deep is poured on top of the fill. A 4-foot deep reinforced-concrete pedestal is then poured on top of the footing, and the footing and pedestal are covered with compacted backfill and topsoil. Steel anchor bolts extending through the pedestal to near the base of the footing will be used in a subsequent step to fix the tower to the foundation.

The rock anchor foundation requires a foundation base and drilling rock bolt anchors ranging from 25 feet to 35 feet deep (depending on site-specific subsurface conditions) and approximately 18 feet in diameter (see **Figure 14**). A cylindrical, corrugated metal form approximately 16 feet in diameter will be inserted in the hole, and another cylindrical corrugated form several feet smaller in diameter will be placed inside the larger form. The space between the two forms will be filled with reinforced concrete and two rings of anchor bolts, and the space inside the inner metal form will be filled with compacted backfill.

If bedrock is encountered at any turbine location, rock anchors will likely be used to secure the base of the foundation, regardless of which foundation design is used. Use of explosives (blasting) might be required for installation of rock anchors.

The Applicant will engage a geotechnical specialist to prepare a geotechnical report for the Project that will be used to determine the appropriate foundation design for each turbine location. The Applicant will also engage a licensed civil engineer during construction to inspect each foundation pour and prepare a quality assurance report for each foundation.

10.9 Power Collection Systems

The Power collection system for the Project will be installed using underground cable except where it is not feasible to do so and it is necessary to avoid sensitive environmental features, in which case the power collection cable will be placed on poles adjacent to the road system. The underground cable will be located within the disturbance area for construction of the Project road systems to the maximum extent possible. Several miles of 34.5 kV underground power cable will be installed to connect the turbine locations to a centralized substation and step-up transformer. Each 34.5 kV power cable will be capable of transferring a maximum of 25 MW of power. Several cable runs will be required to collect the entire Project output of approximately 118 MW. See **Figure 4** for a map of the collection routes and location of multiple cable trenches, as well as cross sections of typical one, two, and three-cable trenches. Underground cable will be installed using either a trenching or plowed-in method. The trenching method requires excavating a trench approximately 3 to 5 feet wide and approximately 4 to 5 feet deep, laying the electrical cables in a part of the trench, partially backfilling the trench, laying parallel communication cables, and backfilling the entire trench. Under the plowed method, the power collection and communication cables will be installed without the need to excavate an open trench; instead, the cables will be directly plowed into the ground. In either case, topsoil will be replaced on the surface of the disturbed area and will be reseeded with native plants. In certain areas, the underground cables may be encased in concrete to provide additional protection and stability in the ground.

Overhead 34.5 kV collector lines will be located adjacent to the project roads. Overheard collection cables will be mounted on wooden poles of approximately 37 feet in height. Construction of these facilities will require heavy equipment access within a corridor approximately 8 to 12 feet wide along each overhead line, plus a temporary laydown and work area around the base of each pole. The poles will be placed in holes excavated by augur and minimal or no clearing and grading will be required for constructing overhead lines.

10.10 115 kV Transmission Connection

Developing the Project transmission interconnection will require constructing an overhead transmission line from the Project substation to the existing Grays Harbor PUD transmission line near Cedarville, Washington, which is the planned reception point for power generated by the Project. The transmission interconnection will utilize a three circuit 115 kV line design, supported on wood-pole structures approximately 76 feet in height. The majority of these structures will be single pole structures. Occasionally at key angle points and spans, an H-frame structure will be employed to improve the structural integrity of the line.

The exact path of the transmission line has not yet been determined, but generally it will run from the northeastern corner of the Project across Weyerhaeuser property to Garrard Creek Road. The transmission line will then follow the Grays Harbor PUD easement to Cedarville Substation along

Garrard Creek Road and South Bank Road. Construction approach will vary for each segment of the transmission line construction.

In general, the design of the 115 kV line will utilize single wood poles, rather than an H-frame design, more typical of a BPA design. These structures will be placed outside of the existing road drainage areas and generally within 100 feet of the C-line road. That segment of the 115 kV line on Weyerhaeuser property will follow a designated 100 foot wide transmission line easement which will parallel and be accessed from C-Line Road system. Final design of the route will also take into consideration the Weyerhaeuser tree farm harvesting unit plan and the route will be located to the extent practical and feasible to minimize impacts to planned harvesting areas. The initial phase of transmission line construction on the Weyerhaeuser property will involve clearing of trees from the 100 ft. easement. This will generally be accomplished with conventional logging equipment from the C-Line road. In some areas, the minimum clearing area could be as narrow as 50 feet where structures are located adjacent to the existing road and the configuration of the structure places the conductive wires on the road site of the structure. In some areas of more mature stands of trees, additional feathering of the trees on adjacent tree stands along the Weyerhaeuser easement may occur to remove danger trees. Feathering of the transmission line corridor will consist of topping of trees and/or complete removal of large trees that could pose a danger if they were to fall and hit the transmission line. Feathering would be permitted over the life of the project to maintain the transmission line corridor which will pass through several of Weyerhaeuser's planned tree growing/harvesting units.

On the Weyerhaeuser property and along the Coyote Crest road easement the transmission line structures will, to the extent possible, be placed as close to the road as detailed design will allow. This will minimize construction of access trails to each structure. These poles will be approximately 60 to 76 feet above ground. **Figures 19-A**, **19-B,** and **19-C** illustrate this design configuration. H-frame structures will be used at specific angle points in the line where greater strength would be required. The exact location of each structure will be based on a detailed plane and profile engineering design of the route.

Along Garrard Creek Road and South Bank Road to the Cedarville Substation, the transmission line structures will be placed within the Grays Harbor PUD easement. Existing structures for distribution power will be replaced by the new single wood pole structures. The transmission line in this area will have an under build component consisting of a second string of wires underneath the 115 kV wire, which will carry the lower voltage distribution power along the existing easement. Construction of this segment of the transmission line will be from the county roads and involve equipment accessing each transmission line pole from the county road. The existing poles will not be removed until the lower voltage power line has been transferred to the new structures. The final configuration will be similar to the transmission line configurations shown in **Figures 19-A** and **19-B**.

Transmission construction activities will include the following construction steps:

- Clearing and grubbing of the Weyerhaeuser easement area using conventional logging equipment;
- Constructions of short spur road trails to each tower as needed with a small dozer;
- Layout of the poles and insulators using pole handling truck and trailer with a self loader crane;
- Drilling of the hole and placement of the wood pole with a large truck mounted auger to drilling the hole for the pole;
- Setting the pole with a small crane or boom crane from a utility truck;
- Placement of concrete around the pole base with a typical redi-mix truck;
- Manual Installation of the insulators and ground wires;

- Stringing of the conductor wires using a stringing rope and drum pulley system from a truck holding the spool of conductor wire: pulling stations will be placed along the route at angle points and areas with sufficient access. Along the county roads, the spooling truck will be parked on the county road;
- Transfer of the lower voltage wire to the new structures, using utility boom trucks parked along the county road or next to the pole;
- Removal of old poles and rehabilitation of the easement areas.

Standard industry construction practices will be used to construct this facility, including surveying, right of way preparation, materials, hauling, structure assembly and erection, ground wire and conductor stringing, and cleanup and restoration.

A licensed surveyor will survey the transmission line route and stake structure locations. Holes for the transmission structures will be drilled or augured, typically to a depth of 4 to 6 feet and a width of 2 feet. Construction materials will be hauled by truck to the route and the structures will be assembled on site. Conductor stringing equipment will be placed at designated pulling stations along the route; additional areas might be needed for hard angle locations along the route. Construction activity will be concentrated at staging areas and around structure locations. Cleanup and restoration of disturbed areas will occur following stringing and testing of the line. Excess topsoil will be tamped around poles or spread on the right-of-way, and disturbed areas will be reseeded with native plants or agricultural crops, depending on the adjacent use.

See **Figures 4** and **5** for the proposed location of the 115 kV transmission line.

10.11 Substation and Operation and Maintenance Facility

The Project substation will be constructed while the electrical system components are being installed. Construction activities will include clearing and grading the substation site, which will occupy up to approximately 2 acres; constructing concrete pads for transformers, the control building and other equipment; installing the electrical equipment; assembling the control building; covering the remainder of the site with gravel; and constructing a chain-link fence around the perimeter of the substation site.

The Project operation and maintenance (O&M) facility will be constructed on a two-acre site located adjacent to the Project substation. It will involve conventional building construction techniques including site clearing and grading, construction of a concrete pad for the building, framing and finishing the building, installing electrical wiring and plumbing, and constructing a septic system and drain field.

See **Section 5.10** for a description of the O&M facility, and **Figure 21** for a general plan and profile of the O&M facility.

10.12 Turbine Equipment Erection

Following foundations construction, the WTG crane pad will be constructed next to the foundation. This pad will be an engineered parking pad with sufficient rock base to hold the crane and the associated outriggers in a stable position for lifting the heavy equipment. The WTG parts, including the tower segments, nacelles, rotors and other components, will be delivered to the tower locations. See **Figures 17 and 18** for typical WTG location configurations. Once a sufficient number of tower foundations are in place and finished, the first turbine towers, nacelles and blades will be brought to the Project Area for placement. The turbine components will be transported to the Project Area by truck and trailer. The towers will have three to four sections, each approximately 70 to 90 feet long. The actual size of each

segment will depend upon which supplier is selected. The tower segments will be delivered by trailers, each carrying one tower section.

Large cranes will lift the multiple tower sections into place. The bottom section will be bolted to the circular ring(s) of anchor bolts on the foundation pedestal, and the upper sections will be sequentially bolted in place. A typical construction sequence will involve a smaller crane working in advance of the larger crane. This smaller crane will place the lower segments of the WTG tower on the foundation and move to the next site. The larger crane will be assembled on site and will be used to hoist the upper tower segments and nacelle. The nacelle and rotor will be hoisted to the top of the tower by the large crane and bolted to the tower. The rotor hub and blades will be assembled on the ground, and this entire assembly will be lifted by crane and secured to the nacelle.

Upon completion of the WTG construction, the large crane will then travel under its own power to the next tower site. If this is not possible due to difficult terrain, then the crane will be partially disassembled and moved to the next location. To the extent possible, the crane road system between WTG locations will be constructed with sufficient cleared width to allow a crawler crane to travel between WTG sites. It is anticipated that up to six crane assemble and mobilizations will be required to assemble all 47 WTG facilities.

See **Appendix I** for photographs of a WTG being constructed and a hub and blade assembly being hoisted.

10.13 Final Grading and Restoration

Final grading of disturbed surfaces within the Project Area will occur following completion of the heavy construction activities, and any additional gravel needed will be placed on the Project access roads. All areas temporarily disturbed by Project construction will be restored to their original condition and reseeded with native vegetation. Areas subject to construction activity will be inspected for presence of noxious weeds and treated as necessary and all long-term storm-water management and erosion control measures will be inspected to assure that they are functioning adequately. A final site cleanup will be made before shifting responsibility for the Project Area from the construction contractor to the Project operations and maintenance crew, including collection and disposal of all construction debris and other waste materials that could not be reused. County roads will be restored to their pre-Project condition.

10.14 Turbine Testing

Following completion of construction activities on the first group of wind turbines, approximately a month of testing will occur before commercial operations begin. Testing will involve inspections of the mechanical, electrical and communication systems to ensure they are working properly and performing according to their respective specifications. The testing process will include checks of each wind turbine and the overall Project control system. Technicians qualified for the specific systems will perform all inspections.

10.15 Transportation and Access Routes

The existing transportation network servicing the proposed Coyote Crest Wind Park involves use of several state, county and private roads. The transportation route area impacted by the Project is bounded by Interstate 5 (I-5) to the east, State Route (SR) 6 to the south and SR 12 to the north, and includes several roads maintained by Lewis County and Grays Harbor County as well as private roads maintained by Weyerhaeuser.

The Applicant has identified the most logical route to/from I-5 that would be used during construction of the Project for the transport of materials including major equipment and oversize loads. This route involves delivery of equipment and materials via I-5 to SR 12, west on SR 12 to Potter Road, south on South Bank Road, and west and south on Garrard Creek Road to the primary project access route along Coyote Crest Road, a private road maintained by Weyerhaeuser. This route has been designated as the northern access route.

The Applicant has also identified a secondary route to/from I-5 that would be used during construction for the transport of materials that do not involve oversized loads, work crews and other construction related equipment and materials. This route involves the delivery of equipment and materials via I-5 to SR 6, south on Stevens Road to the community of Doty and then west on Elk Creek Road to the entry into the Weyerhaeuser McDonald Tree Farm and the 9000 Road system. This route has been designated as the southern access route.

Management of construction access and traffic will be a specific focus during the construction process, primarily because of the roadway and traffic considerations associated with transportation of construction materials and turbine components to the Project Area. The Applicant will develop a Construction Traffic Management Plan that will address the following traffic related issues:

- Transportation and access concerns on State and County Roads during the construction period. The plan will address over-length and heavy-weight loads and permits required for the turbine tower, nacelle and blade transportation which will require special transportation trucks and trailers. The plan will define access routes and procedures to be used by various types of construction equipment and material shipments, approved hours of operation for construction traffic, safety provisions and other management requirements.
- Transportation and access coordination and maintenance on Weyerhaeuser roads during the construction period. The traffic coordination plan will allow Applicant to avoid conflicts with ongoing forestry operations and improve safety along the designated routes. Radio communications, signs and flaggers will be used to coordinate traffic within the Weyerhaeuser tree farm.

Interstate-5:

I-5 is a major north-south freeway across the state of Washington, maintained by the Washington State Department of Transportation (WSDOT). Most of the route between SR 12 and SR 6 is a four lane divided roadway with two northbound lanes and two southbound lanes. Exits to SR 12 and SR 6 are via 12-foot wide travel surfaces with six-foot shoulders with sufficient turning radius to accommodate all oversize loads associated with the Project. The posted speed limit is 70 mph.

State Route-12:

SR 12 is a two lane, east west roadway with 4 to 8-foot wide asphalt shoulders between I-5 and Satsup. The posted speeds range from 35 mph to 65 mph. SR 12 provides access to Potter Road.

State Route 6:

SR 6 is a two lane, east-west roadway with 2 to 4-foot wide asphalt shoulders between I-5 and Pe Ell. The posted speeds range from 35 mph to 60 mph. SR 6 provides access to Stevens Road.

County Roads:

The south access route involves two Lewis County Roads:

- Stevens Road is a two lane paved county road with gravel shoulders and is the major access route to the community of Doty, Washington. This road provides local access to the village of Doty and its surrounding community and is a primary access for logging equipment entering into the McDonald Tree Farm from SR 6. Speed limits are 35 mph.
- Elk Creek Road is a two lane paved county road with gravel shoulders and is accessed via Stevens Road in the community of Doty. Elk Creek road is the main access route into the McDonald Tree Farm which is located at the end of the county paved road. Speed limits range from 35 mph to 60 mph.

Elk Creek Road and Stevens Road are the major route for the transportation of logging equipment and materials in and out of the McDonald Tree Farm.

The northern access route involves Garrard Creek Road, which is a two lane paved county road. Garrard Creek road will be accessed from South Bend Road in Grays Harbor County. This road has two-foot wide gravel shoulders and provides access to Coyote Crest Road, which is the major access route for logging equipment and materials into and out of the north end of the McDonald Tree Farm.

11.0 VEHICLES AND TRAFFIC IMPACTS

The project will generate significant traffic flow during the construction period and much lower traffic volumes related to project operations. The following section describes the anticipated traffic levels for project construction and ongoing long-term project operations.

11.1 Construction Trip Generation

Project construction is expected to take two years to complete. It is anticipated that most of the construction will occur in 2010. The construction labor is expected to travel to the site from within a 75 mile radius of the Project via one of the two major access routes. The roadway network discussed in **Sections 8** and **10.15**, above, will be the primary roadways used by construction vehicles traveling to and from the Project Area. Garrard Creek Road would likely receive the greatest impact from construction vehicles and workers as it will be the designated primary access route for all heavy equipment and materials. It is anticipated that some labor, equipment and materials will also access the project from the southern access route via Elk Creek/Stevens Road and approximately 20% of the empty material delivery trucks will exit the project via Elk Creek/Stevens Road.

It is anticipated that the majority of the construction workforce traffic will originate in Chehalis and Oakville. Even if the majority of the workforce were to come from outside Lewis County, the majority of that workforce would still access the project site from the I-5 corridor via the northern or southern access routes. Additionally, it is expected that a significant percentage of that workforce would temporarily relocate to the project vicinity and therefore travel on the same routes.

The wind turbines, towers, transformers and other large equipment will be transported to the site using a semi-truck and lowboy transporter configuration designed for heavy loads (i.e. multiple axles). The trucks will deliver the equipment to the Project Area via one of the designated routes. All oversized, extra-long, and overweight deliveries will be delivered to the site via the northern access route.

At the peak of construction during the spring and summer months of 2010, there will be an onsite workforce of approximately 95 workers. The average workforce over the entire construction period will be from 60 to 75 workers. Estimated round-trip construction vehicle trips generated are presented in **Table 5**. The transportation assumptions are based on Nordex 2.5 turbines and 100m towers, which require the greatest number of vehicle trips for delivery of equipment per turbine.

Table 5: Construction Trip Generation on Public Roads

Materials	Total Number of Load Trips
Tower Components	376
Nacelles	94
Rotors	94
Hubs	94
Blades	282
Anchor Bolts	8
Embed Rings	8
Rebar	94
Concrete	3551
Crane #1	16
Crane #2	8
D-9	6

Graders	6
Scrapers	6
Dump Truck Delivery	10
Transmission Poles	290
Auger Delivery	2
Conductor Wire	14
Insulators	20
Power Cables	60
WTG Transformers	32
Substation Transformers	2
Substation Steel	8
Substation Gravel	50
Substation Fence	8
O&M Building Materials	10
O&M Building Base Material	30
O&M Building Office	4
Rock	1200
Total	**6383**

1) Rock load trip number assumes all rock for the Project will be imported, rather than sourced from within the Project Area.

During peak construction period, employees will generate approximately 320 daily trips, 160 of which will occur during the evening peak hour. This trip estimate does not include any reduction from carpooling. In addition to worker traffic, there will be an estimated 20 heavy load and light duty delivery trucks per day during the peak of the construction period, resulting in 40 daily trips. Therefore the total number of vehicles during the peak construction period will be 180, which will generate approximately 320 daily trips. Construction related traffic will consist of deliveries of project equipment and construction materials such as steel and concrete. Truck deliveries are anticipated to occur between the hours of 7:00 AM and 4:30 PM on weekdays. These truck deliveries will include:

- Major equipment (e.g. tower sections, nacelles, blades, hub, and rotor);
- Concrete and reinforcing steel;
- Mechanical equipment;
- Electrical equipment and materials, transformers, cables, poles, etc.;
- Miscellaneous steel, roofing and siding;
- Construction consumables;
- Contractor mobilization and demobilization;
- Gravel for site access roads and substation;
- Construction equipment delivery and pickup;
- Water trucks to wet the road and during construction for compaction.

For the purposes of estimating trip generation, the most conservative scenario assumes construction of the larger 100 meter towers and the Nordex 2.5 turbines. This combination will require more loads per wind turbine generator, larger cranes and a larger foundation. It can take as many as seven trailers to transport components for one turbine and from 8 to more than 16 trailers to transport the large-capacity crane. Turbine and crane components are transported in compliance with Federal and various WSDOT requirements for both size and weights. However, the concern with many rural communities is that the bearing capacity of local roads may be insufficient to accommodate multiple large loads. A delivery route analysis can determine which portions of the existing infrastructure are to be avoided or modified.

Payment of infrastructure modifications required for construction is negotiable, and wind developers often accept paying the improvement costs.

Gravel for the site access roads and project concrete batch plant is expected to come from existing Weyerhaeuser sources.

Approximately 16 loads will be required to deliver the large crane, which is assembled on site.

11.2 Large and Oversized Loads

Extra large loads for each wind turbine generator will require approximately 13 oversize or large loads, including:

- 6 loads for towers segments;
- 3 loads for rotor blades;
- 3 loads with nacelle, hub and drive train;
- 2 loads with tower transformer switch cabinet, small parts and other containers.

The length and weight of these oversized loads are listed in **Table 6**. Loaded truck weights and heights will vary by the type of load and the equipment supplier's shipping and packing requirements as well as the type of transporter chosen to carry the load. Loaded truck weights may be greater than those shown in **Table 6** depending upon the final configurations. All major wind turbine components will be transported to the project site from either the Tacoma/Seattle area or the Port of Longview as there is no source for these components close to the project in Lewis County, and the required materials and equipment must be shipped into the region from larger port facilities.

Table 6: Length and Width of Oversized Loads

100 Meter Tower	**Length**	**Diameter**	**Weight (Tons)**
Section 1	39.2 ft	14 ft	75.4 Tons
Section 2	39.2 ft	14 ft	59.4 Tons
Section 3	51 ft.	14 ft	64.3 Tons
Section 4	58.7 ft	13 ft	58.2 Tons
Section 5	58.7 ft	13 ft	41.5 Tons
Section 6	68.9 ft	13 ft	35.9 Tons
Nacelle	34.7 ft	11.48 ft	54 Tons
Rotor Shaft / Gear box	15 ft	10 ft	43.7 Tons
Rotor blades (3 loads)	177 ft	10.5 ft	11.57 Tons
Switch Cabinet/ Transformer (2 loads)	7 ft	4 ft	2.97 Tons

Some of the trucks that will be delivering construction equipment and materials to the project site will have gross vehicle weights exceeding the WSDOT legal load limit. Trucks in excess of the legal load

limits, or "superloads," require special permits from WSDOT under RCW 46.44.090 for vehicles exceeding the state's maximum size, weight, and load limits. A WSDOT's superload permit is required for a vehicle or combination with a non-divisible load having a gross weight exceeding 200,000 pounds and/or a total width or height exceeding 16 feet. Adequate axel weight distribution will be provided for on transport trailers to distribute the weight in order to meet the WSDOT permitted load limits. The longest loads are the rotor blades, which are manufactured as single units and cannot be divided. The proposed northern access route has been designated as the primary route for these superloads.

The primary intersections for these superloads will be:

- I-5 and SR 12 (US 12) at Grand Mound in Grays Harbor County;
- SR 12 and Porter Road at Porter, WA in Grays Harbor County;
- South Bank Road and Garrard Creek Road in Grays Harbor County;
- Garrard Creek Road and Brooklyn Road in Grays Harbor County;
- Garrard Creek Road and Coyote Crest Road in Lewis County.

All intersections in Grays Harbor County are adequate for negotiating the turning radius requirements of these superloads. Some minor shoulder reconstruction may be necessary at Garrard Creek Road and Brooklyn Road in the existing Gray Harbor County right of way to accommodate the turning radius of longer loads at this intersection.

A wider entry and reconstruction of shoulders will be required at the intersection of Coyote Crest Road and Garrard Creek Road in Lewis County. The sight distance at this intersection exceeds the minimum sight distance requirements set forth in WSDOT Design Manual, Chapter 9. Therefore, the road approach to Coyote Crest will be expanded to allow for southbound traffic on Garrard Creek Road to make a right turn onto Coyote Crest Road, allowing for a 165 ft. clear space turn radius from Garrard Creek Road onto Coyote Crest Road with a 50 ft. paved turning radius from the south bound lane onto Coyote Crest Road. Additional warning signs will also be installed along Garrard Creek Road at appropriate locations north and south of the Coyote Crest Road intersection.

11.3 Operations and Maintenance Traffic

The Project will operate continuously 24 hours per day, 7 days per week. It will employ an estimated 6 to 8 full time workers. The operations crew will normally work 8 hour shifts Monday through Friday with a smaller crew working weekends and nights. The maximum number of vehicle trips associated with workers commuting to and from the project on paved state and county roads will be approximately 40 during a 24 hour period. Traffic between the maintenance facilities and individual turbines will be on the private gravel roads located within the lease area.

During the operations and maintenance period there may be occasional need to replace blades or other equipment which will necessitate mobilization of crane equipment and spare parts into the Project Area. Major overhaul and maintenance work will be scheduled for the summer periods of July and August and may generate additional large loads and crew trips into and out of the project area. Overhaul and maintenance work may generate an additional 20 vehicle trips per day during the maintenance period. Vehicles used during the operations and maintenance of the project will primarily be from employees and contractors commuting to and from the project site and are not expected to exceed state or county legal roadway load limits. These trips are not expected to contribute to degradation of roadway conditions. Any superloads required during the operations and maintenance of the wind turbine facilities will require permits from WSDOT for those loads.

11.4 Hazardous Material Transport

No substantial quantities of industrial materials will be brought into or removed from the project site during project operations. The only materials that will be brought onto the site are those related to maintenance and/or replacement of Project facilities (e.g. nacelles or turbine components and electrical equipment). Hazardous materials transported to the site include minimal amounts of lubricating oils, hydraulic fluids, and mineral oil associated with equipment operations. Waste fluids will need to be changed infrequently (generally less than once per year and sometimes only once every five years). During the construction period, diesel fuel will be transported into the site at least twice a week to fuel construction equipment. See **Section 6.5** for a more detailed description of the storage and removal of hazardous waste on and from the Project Area.

12.0 ADJACENT PROPERTIES

The Project location is in a remote area of western Lewis County and eastern Pacific County. Therefore, there are a limited number of adjacent property owners to the actual wind turbine facilities. The Project is primarily located within the confines of Weyerhaeuser's McDonald Tree Farm. The adjacent property owners within 2 miles of the nearest wind turbine generator include:

- Washington Department of Natural Resources, which is the adjacent property owner to the immediate west of the wind turbine generators. Approximately 340 acres of Washington Department of Natural Resources lands are included in the proposed project plans.

  Washington Department of Natural Resources
  601 Bond Road
  P.O. Box 280
  Castle Rock, WA 98611-0280

  Contact: Michelle Metcalf
  (360) 274-2052
  michelle.metcalf@dnr.wa.gov

- Port Blakley Tree Farms LP, which is immediately adjacent to the northern most wind turbine generator (WTG#1).

  Port Blakely Tree Farms
  8133 River Drive SE
  Tumwater, WA 98501
  360-570-1992

- Green Diamond Resource Co Tree Farm is approximately 1 mile north of the Project Area and is not adjacent to any of the facilities.

The 115 kV transmission line route from the Project Area will pass through Weyerhaeuser's McDonald Tree Farm to Garrard Creek Road and will follow Garrard Creek Road through a lightly populated area of the Chehalis River Valley to Cedarville Substation located in Grays Harbor County. **Figure 8-A** shows the property owners adjacent to the transmission line route in Lewis County, the exact location of which has not been determined but which will cross Weyerhaeuser land and intersect with Garrard Creek Road, adjacent to the properties listed in **Appendix B**.

13.0 WASHINGTON'S FOREST PRACTICES ACT COMPLIANCE

The Coyote Crest Wind Park will be located on forested lands currently used to grow and harvest timber. The activities related to growing and harvesting timber are regulated through the Washington State Forest Practices Act (FPA) and its corresponding rules (Title 222 of the WAC). The FPA rules are intended to regulate all activities related to forest practices and other capital improvements and economic activities related to private, county and state forest lands. The DNR regulates forest practices on private and state lands in Washington.

Figure 24 illustrates a typical cable logging system employed in the Project Area with a WTG located in near proximity to the log landing. The WTG hub height is 80 meters (262.4 feet) high and the lowest point in the WTG blade rotation is 40 meters (131.2 feet) above the ground surface. A separation of 30.5 meters (100 feet) between the WTG foundation and the yarder tower location will be sufficient to allow unobstructed operations of both the cable logging system and the WTG.

13.1 Forest Practices Application/Notice

Under the FPA a Forest Practices Application/Notice (FPA/N) is required for harvesting timber, constructing forest roads, and installing or replacing stream crossings on forest roads. The FPA/N will be required for the project clearing plans, including the clearing required for the 47 WTG sites and the access road improvements. The Applicant and Weyerhaeuser will prepare the FPA/N for approval by DNR.

13.2 Road Maintenance and Abandonment Plan (RMAP)

Under the FPA a RAMP for the project road inventory and schedule for necessary road construction work will be prepared by the Applicant and Weyerhaeuser for approval by the DNR. Weyerhaeuser has an existing RAMP for the Project Area. All roads in the Project Area (existing roads and new roads constructed specifically for access to WTG sites) will be used for ongoing timber operations. Road maintenance will be an ongoing responsibility shared by the Applicant and Weyerhaeuser for roads related to the Project.

13.3 Fire Plans

The Applicant will incorporate into all operations the Weyerhaeuser fire plans and compliance with the DNR Industrial Fire Precaution Levels (IFPL).

The DNR uses an IFPL four-level industrial regulation system, shown in **Table 7,** to help prevent wildfires by regulating work in the woods during fire season.

The following levels regulate all operations on forested lands:

- Level I Closed Fire Season: Fire equipment and fire watch service is required;
- Level II Partial Hootowl: Limits certain activities between the hours of 8:00 p.m. and 1 p. m.;
- Level III Partial Shutdown: Prohibits some activities altogether and limits other activities between the hours of 8:00 p.m. and 1:00 p. m.;
- Level IV General Shutdown: all operations are prohibited.

Table 7 illustrates the type of operations prohibited or restricted under the different precaution levels. Generally fire season runs from April 15 to October 15. When very extreme fire weather conditions exist, DNR may issue an order restricting all access by all people to all activities on private and

public lands. These closures are very rare and will prevent operations personnel from reaching the Project Area if the fire danger warrants it. All WTGs are remotely operated and short closures will not cause significant disruption of continued operations. Additionally, DNR may issue waivers for ongoing operations to continue activities that are prohibited under an industrial fire precaution level. Each situation is unique and must be evaluated relative to conditions existing at the site. In order for operations to obtain a waiver the operation must be in compliance with all DNR fire protection laws and with general "fire safe" practices. Fire safe practices that the Applicant will apply during fire season will be closely coordinated with DNR and Weyerhaeuser and may include:

- Wetting down or removal of slash fuel in the immediate construction operations area;
- Night operations for some construction activities;
- Ceasing activities when relative humidity is less than 35% or during high temperature and high wind conditions;
- Increasing fire detection and suppression measures as fire precaution levels increase;
- Instituting a "fire watch" program for several hours after operations have ended for the day;
- On site communications with radio and cell phone to summon assistance in event of a fire breaks out.

Table 7: IFPL Four-Level Industrial Regulation System to Prevent Forest Fires

Operation: Power Saws			
Precaution Level	**Landing**	**Tractor/Skidder**	**Other Woods Saws**
I. Closed Season	Fire Watch	Fire Watch	Fire Watch
II. Partial Hootowl	Fire Watch	Hootowl	Hootowl
III. Partial Shutdown	Hootowl	Hootowl	Prohibited
IV. General Shutdown	Prohibited	Prohibited	Prohibited
Operation: Yarding			
Precaution Level	**Tractor/skidder**	**Cable (gravity systems)**	**Other Cable Systems**
I. Closed Season	Fire Watch	Fire Watch	Fire Watch
II. Partial Hootowl	Fire Watch	Hootowl	Hootowl
III. Partial Shutdown	Hootowl	Hootowl	Prohibited
IV. General Shutdown	Prohibited	Prohibited	Prohibited
Other Operations			
Precaution Level	**Loading**	**Blasting**	**Welding**
I. Closed Season	Fire Watch	Fire Watch	Fire Watch
II. Partial Hootowl	Fire Watch	Hootowl	Hootowl
III. Partial Shutdown	Hootowl	Hootowl	Hootowl
IV. General Shutdown	Prohibited	Prohibited	Prohibited

A primary consideration when evaluating fire safe operations will be fire prevention and reduction of ignition sources. As conditions require increased fire detection and suppression capabilities the Applicant will also increase fire prevention and awareness activities with all construction crews.

14.0 MITIGATION MEASURES

The Applicant will incorporate mitigation measures into the Project consistent with and based upon the analysis contained in the County SEPA analysis. This section summarizes the mitigation measures proposed by the Applicant.

14.1 Erosion Control

The Applicant will develop and implement a Construction Stormwater Pollution Prevention Plan (SWPPP) that satisfies the requirements of the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction Activities. The SWPPP will include Best Management Practices (BMPs) recommended by the Washington Department of Ecology's *Stormwater Management Manual for Washington*. The Construction SWPPP will include measures for temporary erosion and sedimentation control, and will identify a regular inspection and maintenance schedule for all erosion control structures. The construction SWPPP will also include the required DNR Forest Practices Application/Notification (FPA/N) and Road Maintenance and Abandonment Plan (RMAP).

14.2 Geotechnical and Landslide Areas

See **Figure 10-D** for a map of known slide areas. Preliminary geotechnical surveys of the WTG locations indicate that there are no unstable areas at the WTG sites. The geotechnical study for the Project Area will identify any unstable areas and they will be avoided to the extent practicable. To mitigate potential landslide hazards as a result of construction, the Applicant will use setback distances for structures, infiltration systems, and detention ponds, where appropriate and feasible. The setback distances are based on the analysis in the Project geotechnical report. Setback distances could be reduced and/or eliminated depending upon the detailed design plans and additional site specific studies of the geological conditions.

The Applicant will retain a geotechnical engineer licensed in Washington State to review and approve all grading, erosion, and drainage control plans prior to construction to assist in reducing the landslide risks from and to the Project. A hazards assessment and geotechnical boring will be completed for each WTG site prior to foundation design. If necessary, WTGs will be relocated to avoid unstable areas.

14.3 Seismic Activity and Design Standards

The Applicant will comply with the building code in effect in Lewis County when construction commences, whether the Uniform Building Code of 1997 or the International Building Code of 2000.

14.4 Air Quality

The Applicant will implement the following standard practices to reduce the air emissions from construction activity:

- To reduce emissions from construction equipment and vehicles, the construction contractor will be required to use well-maintained equipment and avoid prolonged periods of vehicle and equipment idling;
- Dust produced by construction will be reduced by spraying water or other dust suppressants over area of exposed soils such as storage yards and construction roadways, during periods of dry weather. Road areas that might be exposed to heavy use for prolonged periods will be covered with gravel. A 25 mph speed limit will be maintained on unpaved roads within the Project Area;

- All stored construction materials that may cause air emissions will be covered;
- All brush disposal and slash burning will be conducted pursuant to Washington State Forest Practices Act regulations.

14.5 Surface Water: Wetlands and Stream Report

Figure 10-C identifies the known inventories wetlands within and surrounding the Project Area. There are no known wetlands within the Project Area. Any work associated with the transmission line, which may be adjacent to wetlands, will adhere to the applicable laws, including federal and state regulations.

See **Figure 11** for a map showing the stream classifications within the Project Area. The Project configuration avoids any temporary or permanent impact to streams or wetlands, or their specific buffers. New culverts will be installed pursuant to the DNR RMAP when necessary for stormwater. The Project will utilize the existing Weyerhaeuser road system. The anticipated road improvements and new short access roads to each WTG site will not require any new stream crossings or any modification of existing stream crossings.

Project Construction staging areas will not be located within 100 feet of drainages or any other body of water to reduce the potential contamination form spills. The Applicant will use best management practices (BMPs) to control the use and disposal of waste materials during and following Project construction, including implementation of a spill prevention, containment and control plan.

The Applicant will store hazardous materials, such as lubricants, in approved containers and storage facilities. The Applicant will provide on-call spill response services either through a contract with a qualified environmental remediation services firm or with qualified in-house personnel.

14.6 Vegetation

The Project Area is an active commercial tree farm owned by Weyerhaeuser Company. Large areas adjacent to the turbine facilities have been harvested or are scheduled for harvesting. The applicant will coordinate its clearing operations with Weyerhaeuser to reduce peripheral impacts to adjacent commercial timber stands and other native vegetation and habitats. A timber management plan will be developed for the immediate area surrounding the turbines. The Applicant will employ BMP during construction to meet DNR requirements for the forest management plan including locating Project facilities to minimize the impacts of roads and utility crossings on riparian habitat to the greatest extent possible.

The Applicant will incorporate the following mitigation measures to facilitate restoration of temporarily disturbed areas in the Project Area and to avoid, minimize or reduce impacts of noxious weeds:

- Standards for site restoration will be established as part of Final Construction Plans and will incorporate forest management criteria established by Weyerhaeuser and DNR. The post-construction restoration or reclamation plan for the temporarily disturbed areas will include provisions for continuing active restoration until site stability is achieved or the reference standards are met.
- Site reclamation and reseeding will occur during the time of the year when seed germination and establishment is most likely to be successful.
- The construction contractor will be required to clean construction vehicles prior to bringing them into the Project Area from outside areas.
- Disturbed areas will be re-vegetated as quickly as possible with native species.
- If the construction contractor uses hay for sediment control or other purposes, it will certify that the hay bales are weed free.

- Noxious weeds that have established themselves as a result of the Project will be actively controlled in consultation with Weyerhaeuser.

14.7 Wildlife and Technical Advisory Committee

The Applicant will establish a Technical Advisory Committee (TAC) pursuant to the *WDFW Wind Power Guidelines.* The TAC will ensure that monitoring data is considered in a forum in which independent and informed parties can collaborate with the Applicant. The TAC will consist of up to six (6) members. Pursuant to the Guidelines, the TAC will be composed of one representative each from U.S. Fish and Wildlife Service, the Washington Department of Fish and Wildlife, the Washington Department of Natural Resources, Lewis County, the Applicant/Project owner, and Weyerhaeuser, the landowner. The Applicant will provide meeting space and logistical support for TAC, but TAC members will not be reimbursed for any time or expenses related to their participation on the TAC.

Pursuant to the Guideline, the TAC may recommend additional or alternative mitigation measures from those specified in the SEPA analysis. Any recommendation by the TAC must be approved by a majority of the TAC, which majority must include the representatives from WDFW, USFW and WDNR. The Applicant may accept the TAC's recommendation voluntarily. In the event that the Applicant does not accept the TAC recommendation, the TAC may forward the recommendation to Lewis County to determine whether: (i) the TAC's recommendation is reasonably necessary to mitigate identified adverse impacts of the Project; and (ii) the TAC's recommendation is reasonable and capable of being implemented.

The Applicant will develop a Post-construction Avian Monitoring Plan in coordinating with the TAC. At a minimum, the monitoring plan will include: (i) a 1-year standardized fatality monitoring program involving carcass searches, scavenger removal trials, and searcher efficiency trials, and (ii) a standard procedure for O&M personnel to report incidental bird fatalities and/or bird injuries over the life of the Project. The protocol for the fatality monitoring study will be similar to protocols used at other, newer-generation wind plants in northeastern Oregon and southeastern Washington.

14.8 Hunting

Hunting in the Project Area will be at the discretion of the land owners, Weyerhaeuser and DNR.

14.9 Energy and Natural Resources

No significant impacts to energy and natural resources would occur, and therefore, no mitigation measures are proposed.

14.10 Cultural Resources

There are no known cultural features within the Project Area. Most of the Project Area has been subject to logging activities for over a half century. The Applicant will address how it will avoid cultural sites in the micro-setting process and in the DNR review of the FPR/N. If any Project facilities are identified as impacting cultural sites, the Applicant will evaluate data on site-specific geotechnical and wind characteristics to determine whether it will be feasible to relocate the facilities in question and thereby avoid direct impact to cultural resources.

If any archaeological artifacts, including but not limited to human remains, are observed, disturbance and/or excavation in that area will cease, and the Applicant will notify the Washington Department of Archeology and Historic Preservation (DAHP), Lewis County, and the affected tribes. At that time, appropriate treatment and mitigation measures will be developed in coordination with the agencies and

tribes. If the Project cannot be moved or re-routed to avoid the resources, the Applicant will test the resources for eligibility for listing on the National Register of Historic Places. Depending on the outcome of the testing for eligibility, the Applicant will prepare a mitigation plan in consultation with DAHP and any affected tribes.

14.11 Mechanical Hazards

The Applicant intends to use either a Nordex or a Repower turbine for the Project. These turbines are equipped with multiple safety systems as standard equipment, including rotor speed controlled by a redundant pitch control system, an automatic backup disk brake system, multiple temperature sensors and a control system that will shut a turbine down and take it off-line if an overheat or over-speed condition is detected. The turbines also will be equipped with a lightning protection system.

The Applicant will use turbines designed to meet the requirements of the International Electrotechnical Commission's (IEC) 61400-1 Standard, which is sufficient to assure that the static, dynamic and defined-life fatigue stresses in the turbine blade will not be exceeded under the combined load cases expected at the Project Area.

Public access will be restricted and no high-value public facilities will be located within the safety zone established.

14.12 Tower Collapse, Blade Throw and Ice Throw

The Project is located on Weyerhaeuser timber land, to which access is restricted, and DNR lands, which are accessible from Weyerhaeuser lands. The Project configuration has built in over 500 feet of safety zone setback from the nearest Project boundary. The Weyerhaeuser roads in the Project Area are private and will be signed to notify timber operators of WTG operations safety areas. The remoteness of the site and access restriction are sufficient to provide adequate and reasonable protection for tower collapse, blade throw and ice throw hazards associated with the Project.

14.13 Fire Hazards and Fire Safety

The Applicant will provide the following measures intended to prevent fires and minimize the consequences of any fires that might occur:

- Applicant will comply with, and incorporate into its operations plans the Weyerhaeuser Fire and Safety Plan for Central Washington Operations. The plan is updated annually;
- During the construction period, all workers will be given fire safety training;
- The Applicant, through its construction contractor, will implement a work plan that minimizes the risk of fire;
- Appropriate fire suppressant equipment will be available to designated employees trained in its use;
- The construction contractor will use mufflers and spark arrestors on all construction equipment;
- The Final Construction Plans will provide for required construction shutdowns, and limitations on "hot" work when necessary, as directed above;
- During operation, the Applicant will provide regular turbine maintenance, including review of real-time and stored temperature sensor readings that will be used to highlight developing problems and facilitate prevention of equipment-caused fire;
- The Applicant will maintain updated emergency contact information and coordination procedures within the O&M Facility with Weyerhaeuser;

- Fire suppression will have the first priority over all other activities except worker safety. All fires within the area of the Project will receive prompt and vigorous control action;
- Standard Washington DNR Industrial Fire Precaution Levels will be employed;
- During wild fire season, relative humidity levels will be monitored and when less than 30% all clearing operations will be shut down. Construction operations may continue at the discretion of the Weyerhaeuser Operations Manger;
- Fire watch will be required on all operations during wildfire season;
- At the end of the work day, all equipment will be parked in areas of low fire risk and away from slash materials;
- Smoking will not be allowed outside of enclosed vehicles or buildings while working or traveling on Weyerhaeuser operating areas during fire season;
- Warming fires will not be permitted during fire season or other dry periods. Warming fires are to be built in safe place on cleared ground and away from stumps, logs, snags, and fuel. All fires are to be extinguished before a responsible person or crew leaves for any reason;
- All operating equipment for service contractors, construction contractors and Applicant operators will have fire extinguishers and other fire fighting tools as specified in the Weyerhaeuser Fire Plan and DNR fire season rules.

14.14 Electrical Hazards

The Applicant will use the following mitigating measures to minimize potential health and safety risks associated with electrical hazards from the Project:

- Prior to starting construction, the construction contractor will prepare and maintain a safety plan in compliance with stated Washington code requirements. This plan will be kept on-site and will detail how to manage hazardous materials such as fuel, and how to respond to emergency situations involving electrical hazards;
- During construction, the contractors will hold regular crew safety meetings to go over potential safety issues and concerns related to working on electrical facilities;
- At the end of each workday, the contractor and subcontractor will secure the site to protect equipment and workers;
- Selected employees will be trained, as necessary, in tower climbing, cardiopulmonary resuscitation, first aid, rescue techniques, and safety equipment inspection;
- Project workers will stay on established Project access roads during routine operation and maintenance activities;
- Vegetation will be trimmed to avoid contact will collection and interconnection lines;
- All new Project power collection system cables and interconnection transmission lines will be constructed and operated to meet the National Electric Safety Code;
- Installation crews will clearly mark the location of all buried Project Power Collection System cables.

14.15 Noise

The Project layout is designed such that sound levels during Project operation will be 50 dBA or less at the Project Area boundary. No additional mitigation is proposed.

In order to minimize noise during construction of the transmission line, the Applicant's construction contractor will be required to employ standard management practices.

14.16 Aesthetics, Light, and Glare

In order to minimize aesthetic, light and glare impacts during Project construction, the Applicant will:

- Maintain high-quality turbine towers, nacelles, and blades, and remove or promptly repair all parts of non-functioning turbines;
- Store vehicles and maintenance equipment within the Project Area at the Project Sub-station and/or the O&M Facility and keep the operation and maintenance area clean.

The Applicant has conducted a visual analysis of the Project Area in order to ensure that WTGs are located such that they will have minimal visual impact on the surrounding area. The primary focus of a visual analysis is to identify key observation points. Key observation points are generally selected to represent the locations from which the Project Area will be most visible and that are most likely to experience visual impacts. **Figure 25-A** shows the regional visual analysis used to identify key observation points. The results of the computer analysis shown in **Figure 25-A** identify which locations have a direct line of sight to each WTG location and identifies how many WTGs would be visible from each location. The selection of key observation points was based on this regional visual analysis and identification of key locations within a 15 mile radius surrounding the Project Area. Fifteen miles was considered the maximum distance at which the WTG could be distinguishable against the horizon. **Figure 25-B** shows the key observation points analysis. Four representative key observation points were selected and evaluated based on visual analysis and proximity to the Project:

- Chehalis Village;
- Chehalis;
- Doty; and
- Pe Ell.

The visual analysis identified Doty as the only key observation point with significantly observable views of WTGs, from which photographs were taken and a visual simulation prepared to further analyze how viewers in Doty will be impacted by the Project. **Figure 25-C** is a computer generated photograph of the view of the Project Area from Doty. Additionally, to the extent feasible, the Applicant will use the following practices to further minimize visual impact of the Project:

- Use existing roads to access turbines;
- Subject to FAA requirements, use low reflectivity, neutral color finishes for turbines, and other Project facilities. An earth-ton finish will be used on the O&M Facility to better blend it with surrounding landscape;
- Minimize security lighting at the Project substation, and make any ground level security lighting motion sensitive so that most of the time it does not impact the night landscape, and use lighting devices designed to be least visible from ground level.

14.17 Recreation

The Project Area is within the Weyerhaeuser McDonald Tree Farm and one section of DNR land, to which access is restricted. No significant impacts to recreation were identified, and therefore no mitigation measures are proposed.

14.18 Ground Transportation

The Applicant will mitigate traffic impacts associated with construction of the Project by developing and implementing a Construction Traffic Management Plan for use of State and County Roads. Applicant will also develop and implement as part of the traffic management plan an access coordination plan for traffic within the McDonald Tree Farm to minimize conflicts with ongoing timber harvesting operations.

14.19 Air Transportation

The Applicant will provide to Lewis County copies of the Determination of No-Hazard certificates issued by the Federal Aviation Administration (FAA) and related information, which demonstrate that the Project will not impact approved flight approaches, flight communications, or operations at the Chehalis-Centralia Airport.

The Applicant expects that it will equip approximately 1/3 of the turbines with FAA required synchronized flashing red lights for evening/nighttime hours.

14.20 Public Services

The Project is located in a remote area of Lewis County. Project facilities will not be utilizing any public utilities for water or sewer. The following section describes how the applicant will provide fire, security and solid waste services.

14.20.1 Fire Services

The Applicant will enter into a Fire Services Agreement with Lewis County Fire Protection District Nos. 11 and 16. The Applicant will also have firefighting equipment on site for brush fires and will coordinate its fire plan with Weyerhaeuser. The Fire Services Agreements will include a fire prevention, notification, coordination and fire control plan for the Project. The Applicant will work with Weyerhaeuser and Fire Districts Nos. 11 and 16 to identify water supplies within the Project Area required for firefighting and to draft a Fire Services Agreement. Applicant will append this Agreement to the Special Use Permit Application as **Appendix F-1** once the Agreement has been finalized.

The Applicant will implement the following measures identified in **Section 14.13** to reduce fire risk:

- During construction, power equipment will be equipped with safety features, including spark arrestors and/or approved mufflers, fire extinguishers and shovels;
- Equipment shutdowns will be required during periods of general industrial fire precautions in the local area, and limitations regarding “hot” work with electrical equipment and facilities will be observed;
- In order to prevent fires caused by catalytic converters on vehicles, designated parking areas will be created for workers vehicles;
- Designated worker smoking areas will be established to reduce the potential for fire;
- The Applicant will develop and implement a worker-oriented fire prevention program to provide additional knowledge of wildfire prevention and control practices to workers;
- The Weyerhaeuser Fire Plan will be implemented;
- The Applicant will provide fire, emergency medical, police agencies, and Weyerhaeuser with emergency contact and response information relating to the design of the Project, including the detailed maps of Project access roads, on-site facilities, and Turbines, and an addressing plan;
- The Applicant will institute procedures for rescue operations should an incident occur inside a turbine nacelle (including available on-site emergency rescue equipment);

- The Applicant also will execute an agreement with the appropriate agency addressing training and equipment related to potential high-angle rescue needs at the Project;
- During both construction and operation of the Project, the Applicant will locate refuse containers in areas that will reduce the potential for uncontained on-site debris;
- With the exception of natural vegetation, no burning of debris will be allowed without written permits from issuing agencies (DNR and Washington Department of Ecology);
- All flammable liquids will be stored according to 1997 Uniform Fire Code and inspected by the responsible agency;
- Applicant will maintain a standard forest lands fire fighting water tanker on site during operations.

14.20.2 Security

The Applicant will coordinate on-site security (including private security patrols as necessary) with Weyerhaeuser and Sheriff Patrol Areas West 2 and West 5 in order to reduce the potential for Project-related calls to local law enforcement. The Applicant will work with Weyerhaeuser and Sheriff Patrol Areas West 2 and West 5 to draft a Sheriff's Services Agreement, and will append this Agreement to the Special Use Permit Application as **Appendix F-2** once the Agreement has been finalized.

14.20.3 Solid Waste

During the construction phase, the Applicant will sort all solid waste associated with Project construction into bins for recycling and disposal. Solid wastes produced during construction of the Project may include containers, packaging materials for turbines and components, miscellaneous wastes associated with assembly of the turbines, and food scraps and other waste resulting from the presence of the construction labor force. Applicant intends to use a local disposal and recycling company to take all recycling and waste from the Project Area to a local landfill; no waste will remain on site.

During the operations and maintenance phase, the production of solid waste will be minimal and generally associated with individual operations and maintenance events. Solid waste produced during the operations and maintenance phase may include office-related wastes, including paper and food, generated by the maintenance labor force, and industrial wastes, including used oils, lubricants, and coolants removed from the turbines during routine maintenance, solvents, and cleaning agents. All solid waste associated with operations and maintenance, including those of a hazardous nature, will be removed following completion of each individual operations or maintenance event. See **Section 6.5** for a more detailed description of the storage and removal of hazardous materials on and from the Project Area.

14.21 Population, Housing and Employment

No significant adverse impacts to population, housing or employment are expected and therefore, no mitigation measures are necessary. It is likely that a large portion of the construction labor force will be sourced from the local area, for whom new housing will not be necessary; however, there exists sufficient temporary (hotels, motels, apartments, travel trailer parks, etc.) and permanent housing to support the construction labor force necessary to complete the Project. See **Appendix G**, Economic and Fiscal Benefits Memorandum, for a detailed description of the positive impacts to employment in Lewis County.

14.22 Fiscal Conditions of Lewis County

The Project will have significant positive impact on fiscal conditions in Lewis County. No mitigation measures are proposed. See **Appendix G**, Economic and Fiscal Benefits Memorandum, for a detailed description of the positive impacts to the Lewis County economy.

15.0 DECOMMISSIONING AND SITE RESORATION

Repowering wind energy projects refers to the replacement of old, more costly turbines with new equipment. As the turbines approach the end of their design life (i.e., 20 years) or if a significant improvement in technology occurs, a project owner may assess the costs associate with repowering a site.

Decommissioning involves the removal of all turbines, concrete foundations to some reasonable depth below grade, power poles, met towers, substation equipment, and O&M buildings. Site restoration includes regrading and replanting areas where foundations, roads, and buildings were located. The following information describes the specific actions the Applicant proposes are needed to restore the site to a useful and non-hazardous condition upon retirement of the facility.

15.1 Operating Life/Repowering

The Applicant proposes to operate the wind energy facility for 40 years. New technology may become available for re-powering the Project (replacing the generators and/or other major turbine components) during this time. After approximately 20 years the performance of the turbines will be reviewed and a decision made whether to repower or continue operations. This decision will be based on maintenance costs, market conditions and available technology.

15.2 Actions for Site Restoration

At the time the Applicant decides to terminate operation of the Project, the Project will be decommissioned. Decommissioning the Project will involve:

- Removal of the wind turbine nacelles, blades, towers, and other facilities;
- Removal of foundations to below grade so that forestry operations can resume;
- Cut off and secure underground cables in place;
- Removal of transformers and other substation equipment and recycle or reuse these materials to the extent practical. Remove gravel for reuse in another area of the tree farm. Area beneath the removed substation would be scarified and then replanted so forestry operations can resume;
- O&M building would be demolished using conventional equipment. Recyclable and reusable materials would be reused or sold as scrap to the extent practical. Other materials would be land filled in accordance with all federal, state and local laws. Areas beneath the removed O&M facilities would be scarified and then replanted so that forestry operations can resume;
- Roads also associated with forestry operations will be left in place for ongoing forestry operations.

15.3 Individual Turbine Unit Decommissioning

Turbines which underperform for mechanical reasons will be repaired or replaced. Individual turbines will not be decommissioned.

15.4 Transmission Line Decommissioning

Overhead transmission lines wire cables will be removed and recycled or used at another site for power transmission lines. Poles will be removed and recycled or used at another site.