CHAPTER 2.0
PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action (Preferred Alternative)

The proposed wind generation project consists of either 58 Gamesa Eolica G52 (850 kW) or 49 Mitsubishi Heavy Industries (MHI) 1000A (1,000 kW) wind turbine generators (WTG), pad-mounted electric transformers, ancillary facilities, gravel roads, underground and overhead interconnection lines, and an electrical substation. The total electrical capacity would be either 49 megawatts (MW) under Development Option A (using MHI 1000A turbines) or 49.3 MW using Development Option B (using Gamesa G52 turbines). Option A uses a wind turbine with a larger diameter rotor, and a 1,000 kilowatt rating, but will employ fewer turbines overall, and Option B uses a wind turbine with a smaller rotor and 850 kilowatt rating, but will include more turbines. A larger rotor and greater megawatt rated wind turbine requires wider spacing between adjacent turbines than the smaller rotor with the lower megawatt rating. Presently, all the major wind turbine manufacturers in the U.S. market are sold out until mid- 2008 or beyond, and the project proponent is unable to determine which manufacturer will be able to supply the wind turbines for the project. For this reason, two development option layouts and wind turbine types were included in the project description, in order to deal with the current uncertainty in wind turbine supply. It is not intended that the project would mix two different types or sizes of wind turbine, but instead there would be one, uniform wind turbine make and model used in the project. These two options are given equal weight as to which would be preferred and are analyzed as such throughout this document. They are not intended as alternatives which would reduce or lessen a significant environmental effect as required by CEQA and NEPA. The alternatives to the project are discussed in *Section 2.10*.

The Mountain View IV project would be built on public lands in Sections 22 and 28, under the jurisdiction of the U.S. Department of the Interior, Bureau of Land Management (BLM) along with private land owned by Coachella Valley Water District (CVWD) in Section 27, contiguous on the eastern boundary. Both parcels are within the incorporated limits of the City of Palm Springs. The BLM portion of the project is proposed to include between 21 and 24 wind turbine generators rated at 850 to 1,500 kW (kilowatts) each, for a total of between 20.4 and 21.0 MW capacity. The proposed project in Section 28 replaces an abandoned wind energy project built in the mid-1980's that was removed over several of the last six years. An interconnecting line and electrical substation for the wind project are proposed in Section 22. The CVWD portion of the project is subject to a Conditional Use Permit (CUP) through the City of Palm Springs and would include between 28 and 34 wind turbines in Section 27 with up to 28.0 MW in rated capacity. The total installed capacity of the public and private land under either Option A or B would not exceed 50.0 MW. The applicant is requesting a three-year expiration date on the CUP instead of the standard two-year period, which the City allows under its Municipal Code (Section 94.02.00[H][8]) provided the request does not exceed five years and is approved by the City Council and Planning Commission.

The project will include existing 16 foot wide gravel roads totaling 17,200 linear feet, and new 16 foot wide gravel roads totaling 16,065 linear feet on-site to connect to existing adjacent roads. Each of the wind turbines will have a 63' x 47' gravel area, with 4" to 6" of gravel over compacted native soil. No more than 2,000 total cubic yards of cut and 2,400 total cubic yards of fill, balanced on site, will be required. An existing off-site road in Section 21 crossing private land and an existing road along the southern boundary of Section 22 provide access to the site. Other proposed facilities include extension of an existing overhead power line within public land in Section 22 (approximately 5,450 total linear feet) and construction of a 34.5 kV to 115 kV electrical substation on public land just north of the Union Pacific Railroad line, all located in Section 22.

2.2 Statement of Project Objectives

Senate Bill 1078 establishes the California Renewables Portfolio Standard (RPS) for California. It requires a retail seller of electricity (investor owned utilities and direct access providers) to increase their use of renewable resources (i.e., wind, geothermal, biomass, and solar) until 20 percent of their retail sales are procured from renewables by 2010, and to 33 percent of their retail sales by the end of 2020. The intent of the RPS requirement is to decrease California's dependence on fossil fuel generated power and provide cleaner air by decreasing "greenhouse" emissions. It would result in more than doubling the state's existing base of wind, geothermal, biomass and solar electric generation.

In 1992 the Energy Policy Act was signed into law and included enactment of a Production Tax Credit (PTC) under Section 45 of the Internal Revenue Code of 1986. This credit was available to corporate entities building new renewable energy production facilities such as wind, solar, biomass, wood chip, and geothermal electric power production plants. The PTC provides a 1.5 cent-per-kilowatt-hour tax credit (adjusted annually for inflation) for electricity generated with wind turbines. The credit is available to new renewable energy facilities placed into commercial service after enactment of the law, and prior to the latest deadline. The PTC, which had expired in 2003 and 2005 was recently extended to December 31, 2007.

The following objectives reflect the development goals of the project applicant:

- Provide energy from the project to help meet California's RPS requirement for renewable energy.
- Take advantage of the PTC which would help subsidize the cost of producing wind generated electricity, and make it more competitive with non-renewable energy generation.
- Implement the BLM's Wind Energy Development Program by developing renewable energy on BLM-administered land
- Develop a wind energy project on the windiest sites available, in order to maximize energy production, and provide the lowest cost renewable, non-polluting electricity.

- Provide a wind energy project which is consistent with the BLM's Best Management Practices (BMP's) which are designed to incorporate the best set of practices for developing wind energy and ensuring minimal environmental impacts.
- Develop a wind energy project subject to a Conditional Use Permit and the requirements of the Palm Springs Municipal Code regulating Commercial Wind Energy Conversion Systems (WECS).
- Utilize an already disturbed and underutilized site with electrical infrastructure and road access nearby.
- Re-use existing roads and power pole lines on the sites.
- Utilize a site with gentle topography and which will not require extensive grading or site disturbance.

2.3 Project Entitlements

City of Palm Springs

The proposed development is located on property that is currently zoned Watercourse on the Palm Springs Zoning Map. The zoning classification permits the types of land uses that are proposed, subject to a Conditional Use Permit and the requirements of Section 94.02.00(H)(8) of the Palm Springs Municipal Code regulating Commercial Wind Energy Conversion Systems (WECS). The City will also be responsible for certifying the Final EIR/EIS for the project. In addition, the applicant has entered into an agreement with the CVWD to lease its land on Section 27.

Bureau of Land Management

The applicant has requested a new right-of-way grant on Section 28 to construct and operate a new wind energy generation facility on public land. The term of the BLM right-of-way grant is 26-years, as that provides adequate time to develop and commission the project, operate it for the minimum term of the power purchase agreement, and provide time to decommission and remove the project. The project also includes linear right-of-way in Section 22 to allow for extension of overhead power lines, road access to the site, and construction of a new substation. The BLM, as co-lead agency will also be required to approve the Final EIR/EIS for the project.

Southern California Gas Company

The proposed above ground 115 kV power line tap for the project substation will cross a natural gas pipeline in the northern portion of Section 22 located north of the Union Pacific railroad tracks. Therefore, the project proponent will be required to secure an encroachment agreement from the Southern California Gas Company. Utility easements of record shall be observed and unauthorized disturbance shall be prohibited as provided by law.

Union Pacific Railroad

The proposed above ground power line extension will cross the Union Pacific Railroad line in the northern portion of Section 22 on its approach to the proposed substation. The overcrossing will require a crossing agreement from the Union Pacific Railroad.

2.4 Project Boundary and Land Ownership

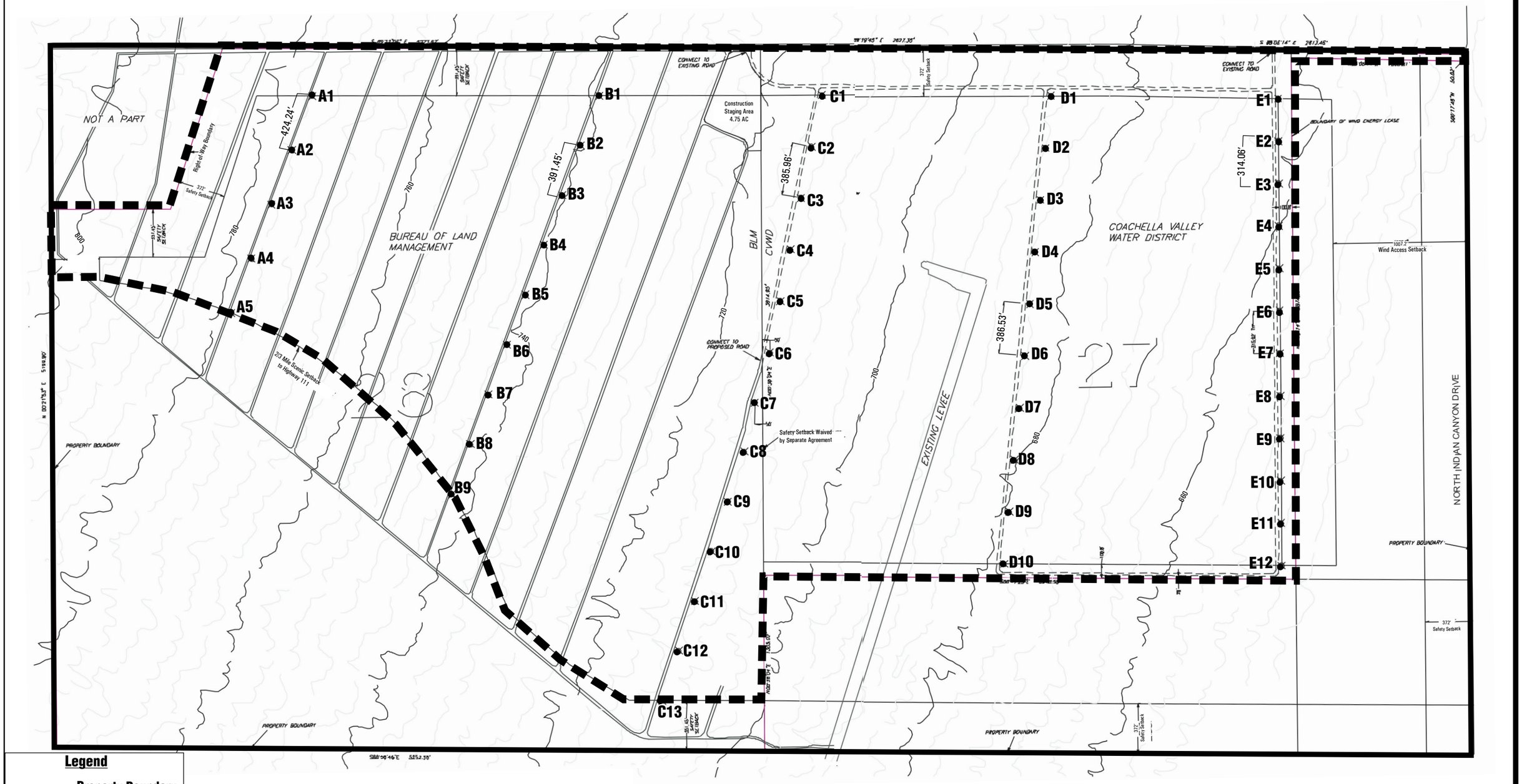
The Mountain View IV project consists of both public land in Sections 22 and 28, along with private land (owned by Coachella Valley Water District) in Section 27, contiguous on the eastern boundary. The BLM lands consist of 629 acres in Section 28 and 400 acres in Section 22. The total project area on BLM land includes approximately 1,029 acres. The total project area within the CVWD property on Section 27 includes approximately 630 acres. The entire project site includes approximately 1,659 acres and is within the incorporated city limits of the City of Palm Springs.

2.5 Existing Site Features

The Section 27 and 28 project sites consist primarily of vacant desert land with 11.1 miles of existing gravel roads, buildings, meteorological towers, overhead pole lines, and fences originally installed for the previous wind energy project on Section 28. The land in Section 22 contains five operating wind energy projects, access roads, overhead pole lines, wind turbines, meteorological towers, padmounted transformers, outdoor storage yard, and electrical substation. Section 27 also includes a flood control berm, gravel road and two 199 foot tall meteorological towers for collecting wind and climate data. Section 28 contains four 199 foot tall meteorological towers, remnants of a previous wind turbine operation including seven concrete block and wood buildings, some abandoned electrical transformers, 15 gravel roads, approximately 2.3 miles of overhead electrical lines, and an existing operating wind energy project on the western end, operated by others. The remainder of the site is primarily covered by desert scrub vegetation, and a series of drainage swales, along with areas of cobbles and boulders. There is also scattered debris throughout the property which has been illegally dumped, blown onto the site, or left by periodic flooding of the project area. Aside from the flood control berm, the site does not have any steep slopes but has gentle sloping topography to the southeast with total relief of approximately 160 feet, ranging from about 804 feet above sea level at the northwest corner to 644 feet at the southeast corner.

2.6 Proposed Site Features

As shown in *Figures 2.6-1* and *2.6-2, Option A and Option B Site Plans*, and *Figures 2.6-3* and *2.6-4, Option A and Option B Equipment Details*, the project proposes development of between 49 and 58 wind turbine generators and ancillary facilities. The layout consists of roughly parallel north-south rows of laterally spaced wind turbines, each with an adjacent pad-mounted transformer. In the case of the BLM land in Section 28, each row of wind turbines is proposed in the same location



Legend

- Property Boundary
- Development Area
- Turbines

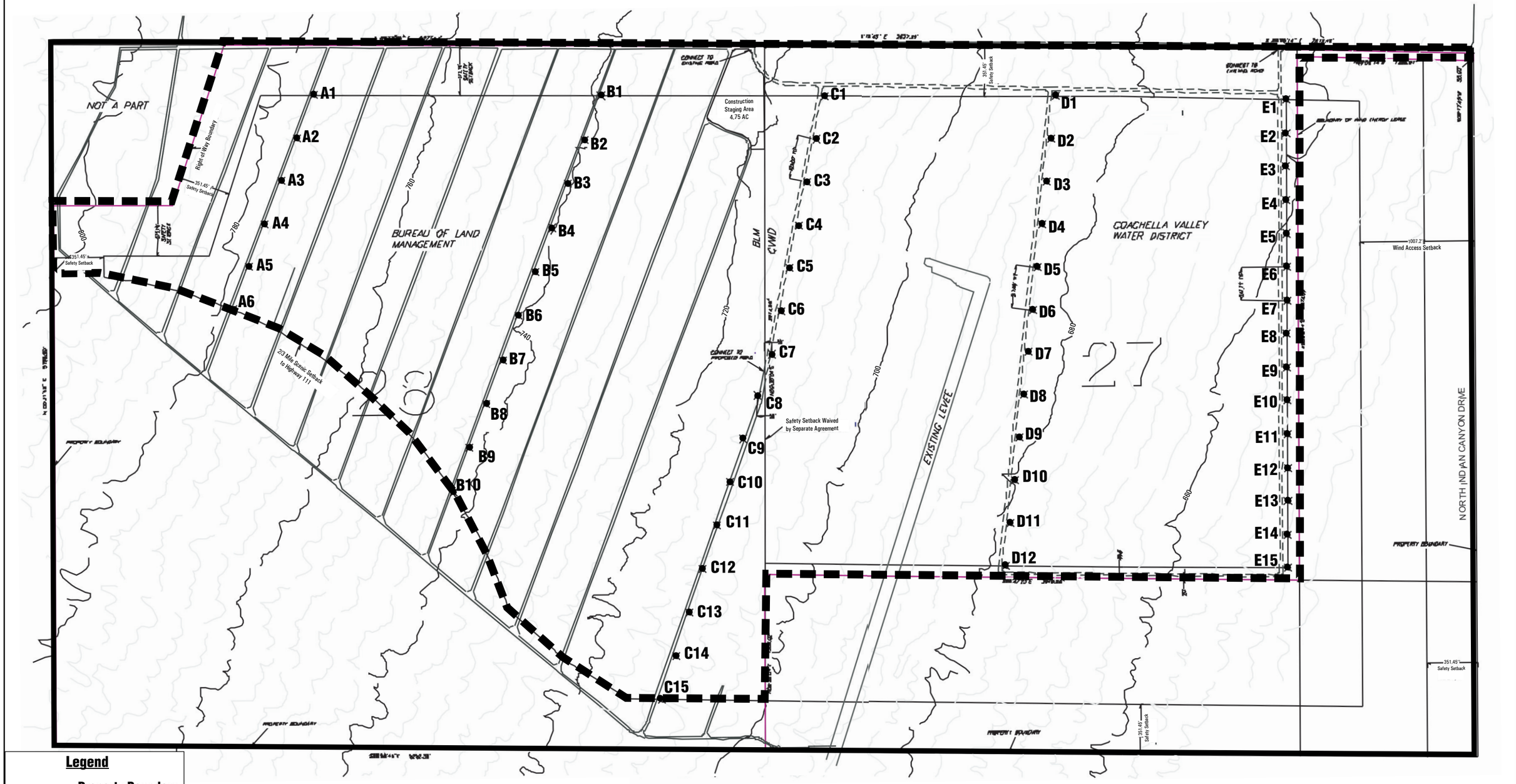
SOURCE: Stantec Engineering

Not to scale

Mountain View IV Wind Energy Project EIS/EIR

Development Option A Site Plan

FIGURE 2.6-1



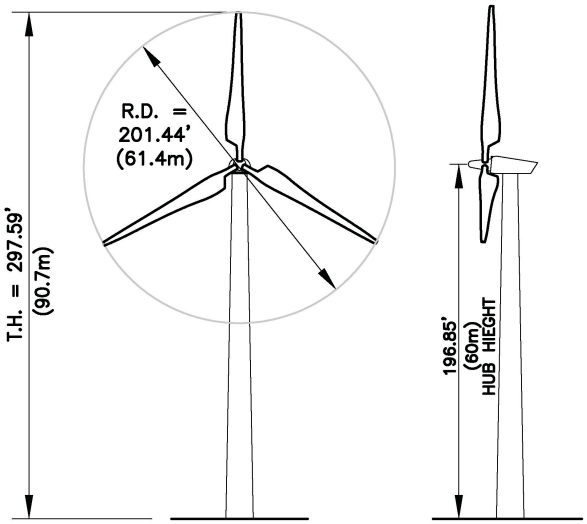
SOURCE: Stantec Engineering

Not to scale

Mountain View IV Wind Energy Project EIS/EIR

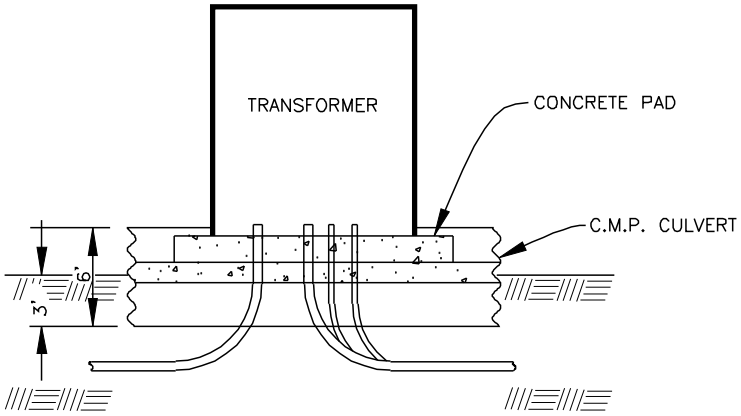
Development Option B Site Plan

FIGURE 2.6-2



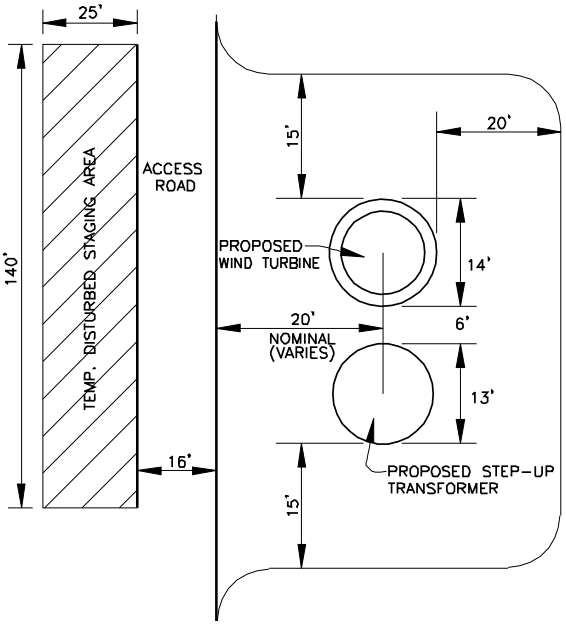
WIND TURBINE ELEVATION

MHI 1000A
1000kW WIND TURBINE
N.T.S.



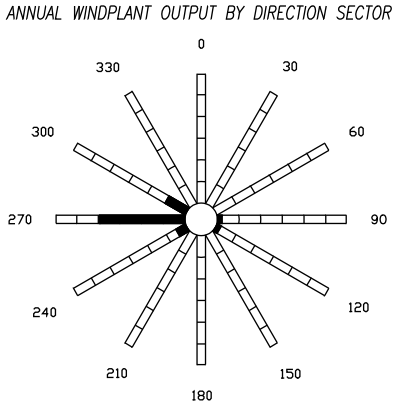
TRANSFORMER DETAIL

NTS



TURBINE SITE DETAIL

N.T.S.



WIND ENERGY ROSE

DATA FROM CABAZON
SITE 2 130 FT. LEVEL
MAY 94'– APR. 95'

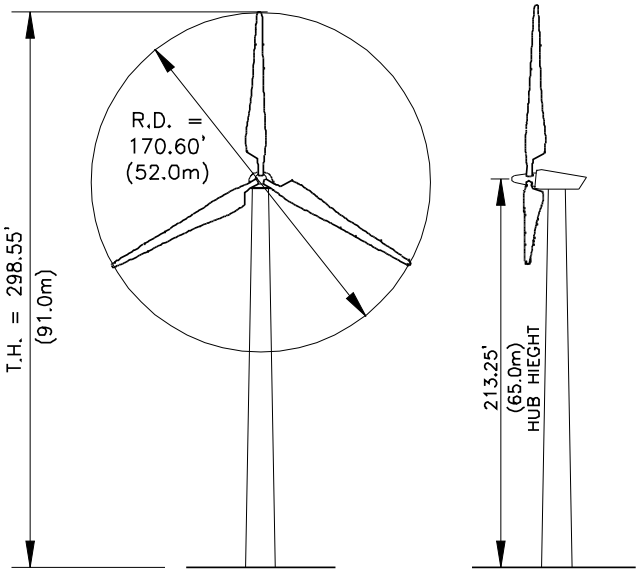
Bin Center	Percent
0	0%
30	0%
60	0.2%
90	3.5%
120	3.5%
150	0.2%
180	0.1%
210	0.1%
240	8.4%
270	66.0%
300	18.0%
330	0%
TOTAL	100%

SOURCE: AES SeaWest

Mountain View IV Wind Energy Project EIS/EIR

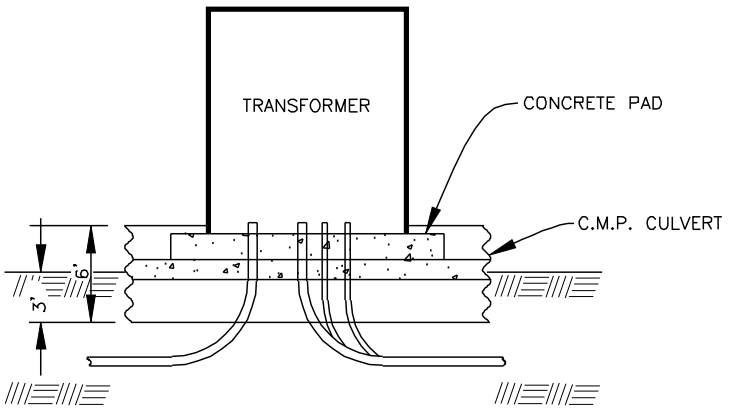
Mitsubishi 1000A Equipment Details

FIGURE
2.6-3



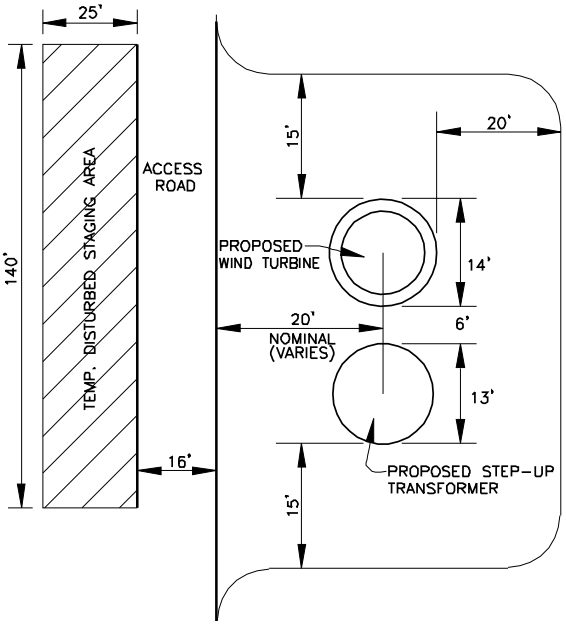
WIND TURBINE ELEVATION

GAMESA G52
850kW WIND TURBINE
N.T.S.



TRANSFORMER DETAIL

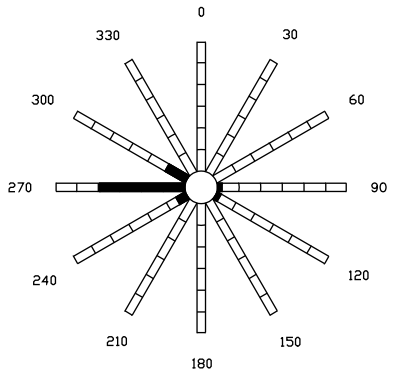
NTS



TURBINE SITE DETAIL

N.T.S.

ANNUAL WINDPLANT OUTPUT BY DIRECTION SECTOR



WIND ENERGY ROSE

DATA FROM CABAZON
SITE 2 130 FT. LEVEL
MAY 94'– APR. 95'

Bin Center	Percent
0	0%
30	0%
60	0.2%
90	3.5%
120	3.5%
150	0.2%
180	0.1%
210	0.1%
240	8.4%
270	66.0%
300	18.0%
330	0%
TOTAL	100%

SOURCE: AES SeaWest

Mountain View IV Wind Energy Project EIS/EIR

Gamesa G52 Equipment Details

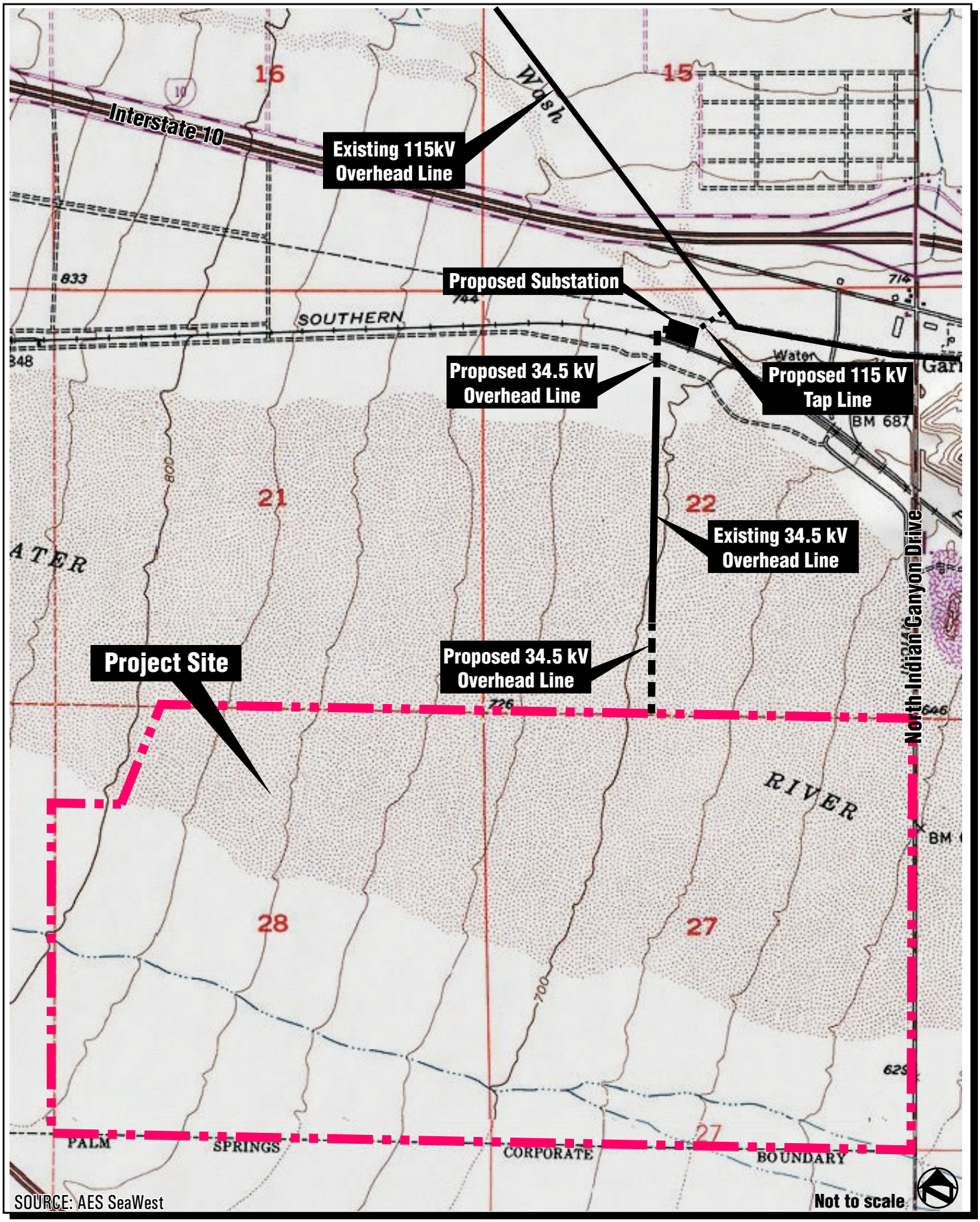
FIGURE
2.6-4

where previous rows of wind turbines were constructed and operated for approximately 15 years, thereby minimizing new disturbance. New access roads will be constructed adjacent to proposed wind turbines on Section 27. Both areas will include new underground electrical lines, communications lines and a communication system. Two proposed rows of wind turbines and roads in Section 27 are on land that has recently been graded and disturbed by placement of 2 to 3 feet of sand and silt that was placed by the Coachella Valley Water District, as part of its groundwater recharge facility management.

Road access to the site would be from North Indian Canyon Drive by an existing one mile long and 30-foot wide gravel road along the southerly section line of Section 22, continuing onto the easterly half of Section 21 along the common property line with Section 28.

To provide the most economical development with the least impact to the site, the wind turbines on Sections 28 and 27 are proposed to use a common system of roads, electrical lines, communication system, transmission lines and substation, all located on public and private land.

Interconnection of the project is proposed to be from a point on the northwestern corner of Section 27, proceeding north along an existing north-south overhead pole line west of the half section line of Section 22 and continuing overhead across the Union Pacific Railroad to a proposed substation, near the northern boundary of Section 22, south of Garnet Avenue. At this point the proposed substation will step up the voltage for connection into an existing 115kV line owned by Southern California Edison. A portion of the power line will be newly constructed as shown on *Figure 2.6-5*, which also shows the location of the proposed substation.



Mountain View IV Wind Energy Project EIS/EIR

New Power Line Alignment and Substation

FIGURE 2.6-5

Table 2.6-1 provides a summary of site disturbance associated with various aspects of the proposed project. A detailed description of proposed site features follows.

Table 2.6-1
Site Disturbance Summary

Site Component	Disturbance
Number of Turbines	49-58
Turbine Sites	3.3-3.9 acres
New Access Roads	5.9 acres
Substation	0.6 acres
New Interconnect lines	0.8 acres
Permanent Disturbed Area*	***10.6-11.2 acres***
Temporary Disturbed Area**	***13.3 -15.7 acres***
Estimated Raw Cut	2,000 cubic yards
Estimated Raw Fill	2,400 cubic yards

*It should be noted that of this total permanent disturbed area, between 5.8 to 6.1 acres would be in areas already disturbed by CVWD activities (described in *Section 2.6*), thus reducing actual disturbance of natural areas to between 4.8 and 5.1 acres.
**Temporary disturbed areas include a 3,500 square foot staging area adjacent to each turbine and a 4.75 acre construction staging area in the northeast corner of Section 28 as well as trenching for interconnection of turbines. The temporary staging and trenching areas will be renaturalized at the completion of construction.

Based on an overall project area of 1,659 acres, the temporary and permanent disturbance areas would be one percent or less of the entire project site.

Turbine Operating Characteristics and Materials – Both the MHI 1,000 kW wind turbines (Development Option A) and the Gamesa 850 kW wind turbines (Development Option B) proposed for the project are three-blade, upwind, wind turbine generators. These turbines use an on-board CPU (central processor unit), an automatic turbine controller which continuously monitors wind characteristics and turbine conditions and adjusts to ensure the maximum power is generated and the long-term safety and operating life of the turbine is assured. Below a pre-determined wind speed threshold the turbine will not rotate, because the amount of energy in the wind is not sufficient for the turbine to produce a net amount of power. Above this threshold (cut-in wind speed) the rotor begins to turn, and the generator produces alternating current electricity synchronized with the electric grid frequency, at a voltage which can be stepped up to transmission-level voltages. At a pre-determined maximum wind speed (cut-out wind speed), the turbine shuts down in order to limit the amount of stresses high winds present to the turbine.

The turbine is a pitch regulated constant speed design, which continuously adjusts the pitch angle of the blades to adjust for changing wind speeds within the acceptable operating range. The turbine is equipped with a wind direction sensor which continuously measures the wind direction. The turbine rotates around to face the predominant wind direction as the wind changes direction, thereby ensuring maximum energy production.

Components of the turbine include 1) three fiberglass reinforced plastic *blades*, varying in thickness such that they are thinnest at the tip and thickest near the root where they attach to the steel/cast iron hub. The blades utilize aerodynamic lift, somewhat like an airplane wing, to provide the driving force which rotates the rotor; 2) a *nacelle* of welded steel and fiberglass construction, fully enclosed, and painted with corrosion protective paint. The nacelle contains a steel chassis, which supports the main bearings, drive shaft, gearbox, generator and main sub-assemblies; and 3) a reinforced steel monopole tower supported by a reinforced concrete foundation and painted with corrosion protective paint.

Turbine Foundations - The turbine foundations consist of a Patrick and Henderson, Inc. patented design using a large diameter, cast-in-place pier. This type of pier would be constructed by excavating to approximately thirty (30) foot depth with an excavator. Within the excavation, a smaller diameter, corrugated-steel casing is set concentrically within the larger diameter corrugated-steel casing. Steel tie rods within PVC sleeves are placed vertically and concrete is placed in the annular space between the casings. The tie rods are post-tensioned to keep the concrete in compression during loading. Soil backfill is placed within the central casing. The annular space between the outer casing and the excavation walls will be backfilled with sand-cement slurry.

Transformers are placed adjacent to the turbine foundations on raised foundations. The design raises the transformer above the surrounding soil, elevates it above potential flood levels, and provides containment of oil in the event of a spill. Excavation of the transformer foundations is done in a similar manner to that for the turbine foundations. The transformer foundations extend approximately ten (10) feet in depth below grade, and are designed to contain 125% of the volume of oil in the transformer in the event of a leak or spill. Soil excavated for the transformer foundation is placed inside the CMP tube which forms the foundation, also resulting in little waste soil and minimal site disturbance.

Turbine Siting and Spacing- Turbines have been sited to address various constraints and setbacks applicable to the property. The proposed turbines would be sited in compliance with the City's applicable safety and wind access setbacks as outlined in Section 94.02.00(H)(8) of the Palm Springs Municipal Code regulating Commercial Wind Energy Conversion Systems (WECS).

The turbines are spaced according to manufacturer specifications of each of the two turbine types. Lateral spacing between the turbines will range from approximately 314 feet to 424 feet for Option

A and from 247 feet to 340 feet for Option B. Spacing between turbine rows ranges from approximately 1,650 to 2,100 feet for both Options A and B.

Waiver of Setbacks – The City of Palm Springs and BLM regulations for wind energy provide that wind turbines set back from east and west property lines by certain distances, in order to maintain compatibility and safety between adjoining wind projects owned by competing interests. These setbacks are called "safety setbacks" and "wind access setbacks". The purpose of the safety setback is to provide a buffer between wind turbines and adjoining land so that if there were a substantial failure of the wind turbine, there would be a buffer area that minimizes potential impacts to adjoining property that is not part of the project site. The purpose of the wind access setback is to provide compatibility between up-wind and down-wind turbines that are owned by competing parties. As the Section line boundary between Sections 27 and 28 bisects the project, normally required safety setbacks and wind access setbacks at the Section line are not needed, so the project applicant has requested a variance to the setbacks at this internal boundary. In support of this, the project applicant has arranged a waiver of setbacks agreement between the land owners (BLM and Coachella Valley Water District) that provides for the long-term elimination of the safety setback and wind access setback at the boundary between Sections 27 and 28.

Access Roads - Public access to the project site will be from the Interstate 10 freeway exit at North Indian Canyon Drive; south on North Indian Canyon Drive a distance of approximately 1.2 miles to an existing gravel access road at the northeastern property boundary. Traffic will then proceed west along this access road to a proposed gated gravel road that enters the wind turbine site. An east-west access road just south of the property boundary road will connect to five roads, which are along the turbine rows for access to the turbines. The roads will be sixteen (16) feet wide and covered with 4 to 6 inches of gravel over a compacted base of native earth. The internal roads will be at-grade, and designed to allow existing drainages to flow over the road, rather than through a culvert underneath. The project proposes to utilize approximately 6.3 acres of existing roadways, and construct 5.9 acres of new roads.

Meteorological Towers - A meteorological tower is a regular feature of a wind power project. The towers are strategically placed within the wind farm to optimize efficiency in reading wind-speed and climatic conditions. These towers are supported by guy wires and include anemometers, wind direction sensors, temperature and relative humidity gages which are placed on the tower at various heights to monitor wind and other climatological conditions. As discussed in Section 2.5, there are two (2) existing meteorological towers in Section 27 and four (4) in Section 28. These will be removed prior to project implementation and replaced with one additional permanent tower to be located as follows: 504 feet due west of Turbine B-9 (Option A) or 426 feet due west of Turbine B-10(Option B).

Electrical Collection System - Electricity is transmitted from each wind turbine through its associated padmount transformer to a project substation, from which it ties directly into the electric utility's transmission lines (see *Figure 2.6-6 Electrical Transmission Schematic*). The collection system is described in more detail below:

Low voltage electricity is generated by the wind turbine at approximately 500 or 600 volts. *Low voltage lines* connect from an individual turbine to a padmount *transformer,* which increases its voltage to 34.5 kV (medium voltage). These transformers are installed on raised concrete foundations that elevate the transformer above any potential flood waters and provide secondary containment in the event of a leak. Low-voltage lines run underground between the turbine and transformer over distances of approximately thirty feet.

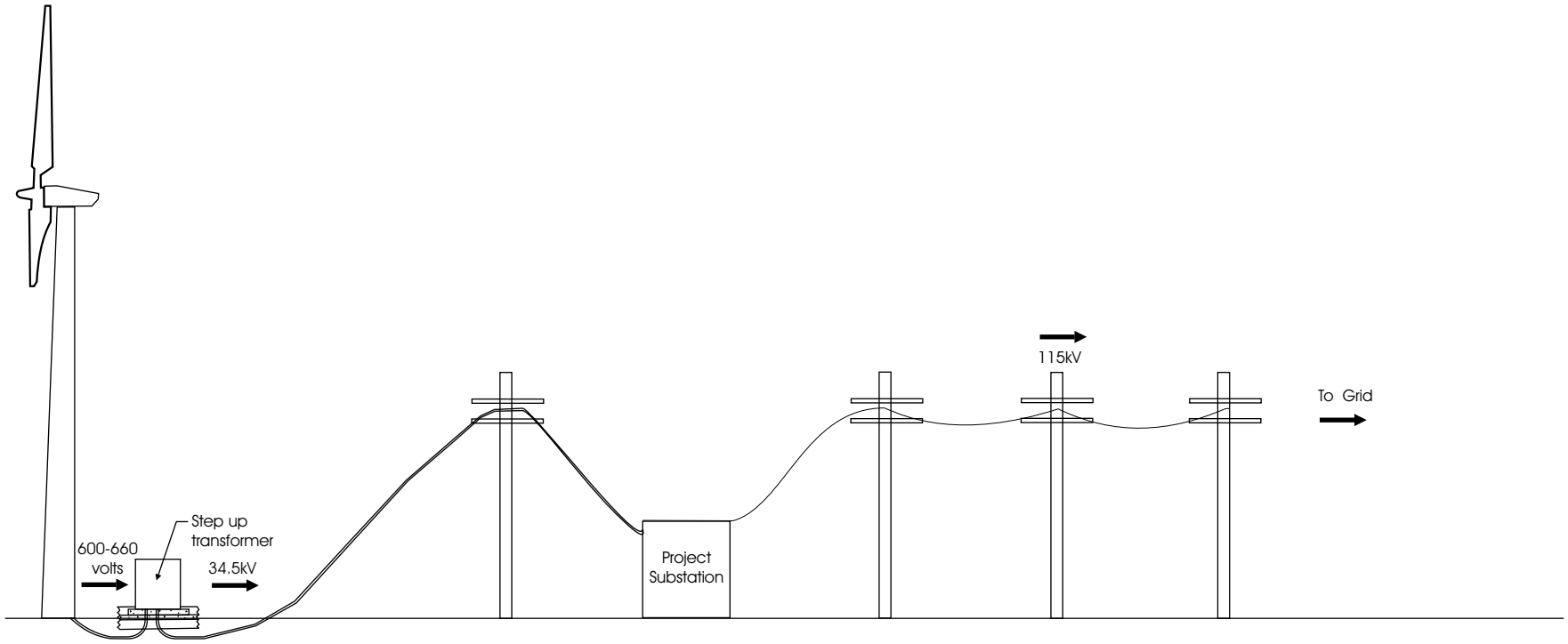
Medium voltage lines connect individual transformers together and then connect to a common point at the substation. The medium voltage lines will be 34.5 kV and located underground between turbines in Sections 27 and 28, proceeding to an existing north-south above-ground 34.5 kV pole line and ultimately to the electrical substation. At the substation, the voltage is stepped up to the interconnection voltage of 115 kV.

High voltage lines are 115 kV or higher and are owned and operated by the electrical utility, rather than the wind farm. They are above ground and are designed to link to regional or area-wide transmission systems. At the substation a 115 kV tap line will extend from the substation to the existing 115 kV transmission line owned by Southern California Edison.

Disconnectors, cut-outs, switches, lightning arresters, capacitors, meters, and other electrical devices are either pole-mounted or placed in steel encasements at ground level.

Riser poles connect underground power lines to the overhead collection lines on route to the substation. Riser poles can also have switches, or disconnects, meters, lightning arrestors and other devices.

The *substation* boosts the voltage level of the power collection system to that of the utility's grid. A large transformer is the principal component of the project substation. In addition, the substation also contains meters, Supervisory Control and Data Acquisition (SCADA) equipment, circuit breakers, electrical devices mentioned above, power quality enhancing equipment (capacitor banks), and other devices which are designed to monitor and regulate the flow of electrical power.



SOURCE: Dudek

Not to scale

Mountain View IV Wind Energy Project EIS/EIR

Electrical Transmission Schematic

FIGURE 2.6-6

Utility Extensions - The project will be delivering energy to the Southern California Edison owned transmission line known as the Banning-Garnet-Maraschino Windfarm 115 kV line. The project proposes no facilities which are permanently manned. Consequently, utilities such as water, sewer, natural gas or cable television commonly associated with human occupation are not needed. Interconnection of the project is proposed to be from a point on the northwestern corner of Section 27, proceeding overhead north 650 feet to an existing 3,600 foot long north-south overhead pole line west of the half section line of Section 22. This overhead line would then be extended 1,200 feet across the Union Pacific Railroad to a proposed substation, near the northern boundary of Section 22. At this point the proposed substation will step up the voltage for connection into the existing Banning-Garnet-Maraschino Windfarm 115kV line owned by Southern California Edison (refer to *Figure 2.6-5*). The proposed substation will be sufficient to accept all of the power from the project.

As noted in *Section 2.3*, the extension of utilities for the project will require a crossing agreement from the Union Pacific Railroad and an encroachment agreement from Southern California Gas Company in order to cross their easements in Section 22 with new power lines approaching the substation.

Safety and Control System - The turbine controller includes a safety system and a control system. The safety system enables automatic shut down of the wind turbine generator, and operates independently of all other wind turbine controls to protect the turbine from damage or catastrophic failure. Various sensors monitor key parameters such as rotor speed, generator current, electrical load, nacelle vibration, yaw error (the difference between the wind direction and the directional orientation of the turbine), control system hydraulic pressure, turbine controller failure, etc. If any sensor signal deviates from the normal operating range, the safety system automatically shuts down the wind turbine. The control system complements these functions by automatically performing the following functions: power regulation over a wide range of wind speeds including start-up, shut-down and generator grid connection; yaw control; and protection against damage due to abnormal operating conditions and/or extreme environmental conditions. The control system is designed so that the safety system will override all other wind turbine control functions, if necessary.

The safety system ensures that the wind turbine is shut down immediately at the onset of mechanical disorders such as nacelle vibration, over speed, grid electrical disorders or loss of grid power. In the case of electrical disorder, the wind turbine is automatically brought back into service upon elimination of the disorder. In the event of a mechanical disorder, the controller may keep the wind turbine immobile until the cause of the disorder is identified and removed by the windplant operator or maintenance crew, depending on the nature of the disorder.

The Mitsubishi and Gamesa wind turbine blades are of variable pitch type and are driven to different pitch angles by a hydraulic system. In the event of grid power failure, the rotor blade pitch can be controlled up to the fully feathered position by oil pressure from an accumulator which operates

even if there is no electric power. Therefore, should a grid power failure take place, the wind turbine can be brought safely to a halt without the risk of excessive over speed of the rotor. In addition, the turbine is protected by two independent brake systems; an aerodynamic brake affected by pitch control and a mechanical brake system. The aerodynamic brake performs the function of the primary system; the mechanical brakes perform the function of the secondary system. In normal operation, the aerodynamic brake is applied first, to keep fatigue stresses at a minimum. In case of a grid power failure the aerodynamic and mechanical brakes are applied simultaneously. If one system fails, the other is still capable of returning the turbine to a safe condition and/or holding it in position.

Communication System - Turbine control and monitoring systems use communication lines consisting of underground fiber optic cables arranged in a collection system which connects to each individual turbine. The fiber optic lines carry light pulse signals. The communication system collects data from individual turbine controllers and is the means by which operating parameters are monitored, adjusted, turned off, etc. The communication system also transmits information from the project to a central monitoring location at the project proponent's regional North Palm Springs Office where computers monitor performance, operation and various functions of the wind plant as described in the Safety and Control section previously.

Lighting - The project proponent has filed a Form 7460-1 Notification of Proposed Construction or Alteration with the Federal Aviation Administration (FAA), and the FAA has issued a Determination of No Hazard to Air Navigation for all the proposed wind turbines. This determination found that the wind turbines would not present a hazard to air navigation or aircraft radar, provided that recommended night time flashing red lights are installed and synchronized to blink simultaneously. The FAA determined that no daytime lighting or marking is required, and 17 of the 49 wind turbines will need to be lighted using standard FAA approved red lighting, designed to increase conspicuousness to aircraft in the general area. These lights will be installed on top of specific wind turbines within the project site, as determined by the FAA Study.

Fencing - The project site will be fenced using three-strand barbed wire to protect the site from illegal trespass, trash dumping, and off-road vehicle use. This type of fencing allows passage through the site by most wildlife species. A limited amount of chainlink fencing may also be used adjacent to the project entrance gates for additional security.

2.7 Construction Activities

During construction grading, there is the potential for some short-term erosion to occur and discharge of pollutants, especially during rainy periods. Measures to control erosion and discharge of pollutants, such as sandbagging or other means of stabilization or impoundment will be employed

during construction in conformance with the NPDES permit standards. Construction activities required for the project are described below and are estimated to take approximately six (6) months.

Clearing - Only very small amounts of clearing are required, since there is little topsoil vegetation or debris where the new improvements are planned.

Road Grading - Grading is limited to areas of the roads where local erosion has occurred, and leveling and rock removal. Larger rocks on the surface where roads, trenches or foundations occur will be moved to nearby locations and spread on the surface in patterns similar to existing conditions. The minimal amounts of excess material excavated during foundation and trench construction will be spread on the roads or disposed of on site.

Foundation Construction - The turbine foundations consist of a Patrick and Henderson, Inc. patented design using a large diameter, cast-in-place pier. These piers will extend approximately thirty (30) feet below grade. This type of pier would be constructed by excavating to the desired depth and size with an excavator. Within the excavation, a smaller diameter, corrugated-steel casing is set concentrically within the larger diameter corrugated-steel casing. Steel tie rods within PVC sleeves are placed vertically and concrete is placed in the annular space between the casings. The tie rods are post-tensioned to keep the concrete in compression. Soil backfill is placed within the central casing. The annular space between the outer casing and the excavation walls will be backfilled with sand-cement slurry.

Construction/Staging Areas - During construction, staging of construction equipment and short-term storage of transformers, turbine components, blades, towers, electrical cable, foundation parts, and other major components will occur. The project staging areas will be approximately 3,500 square feet (140' by 25') at each turbine, and will be located over 1,000 feet from the North Indian Canyon right-of-way, and over 2/3 of a mile from the nearest residential areas. Protection of the ground surface will be accomplished by wooden frames or pallets or straw bales, which will be placed on the ground while the turbine and tower components are unloaded and awaiting installation. The construction staging areas will be removed from the sites upon commencement of the operational period.

Turbine and Electrical System Construction - Turbine components will be delivered to the site by truck and trailer. The towers are assembled on the ground in sections, and hoisted into place by cranes. Typically, turbine blades will be attached to the rotor hub and the nacelle will be hoisted into place with blades attached. Electrical lines will be installed in trenches parallel to the roads, on the same side as the turbines. The electrical lines are connected to the transformers and turbines, and the communication system is installed. The substation is constructed and prepared for interconnection to the transmission grid. The final steps include connecting the turbines to the interconnection, energizing the electrical systems, testing and commissioning.

Site Clean up - All disturbed areas will be smoothed or restored to their approximate prior grade, and any debris removed and properly disposed of off-site. Because of the very high winds commonly found on the sites, and because of the very sparse vegetation adapted to this very windy site, and lack of top soil, permanent irrigation and re-seeding would be inappropriate. Any material placed in the areas of the foundations or roads will be compacted to 80% or greater, as required for soil stability. No exposed cut/fill slopes or banks will result from the improvements, and no soil stability problems are anticipated from the project construction.

Construction Traffic - Construction traffic is estimated at approximately 25 total trips per day. All construction traffic will exit the Interstate 10 freeway at Indian Avenue; proceed south from there on North Indian Canyon Drive, a distance of approximately 1.2 miles to the northern property boundary. Traffic will then proceed west along the access road located at the northern property boundary.

Dust Conrol - Project construction and operational activities will comply with the project's Dust Control Plan. Construction recommendations include the implementation of management practices which minimize dust and blowsand to the greatest extent practical, the use of gravel base to reduce silt content of roadbeds and turbine sites, a 15 mph vehicle speed limit, and regular watering of roadbeds/graded areas during construction. Operational recommendations include restrictions on unauthorized traffic, a 15 mph vehicle speed limit, and reestablishment of natural vegetation in temporarily disturbed areas to the extent feasible.

2.8 Operation and Maintenance

Maintenance schedule - Regularly scheduled maintenance of wind energy facilities generally includes inspections, lubrication of mechanical parts, cleaning of blades, and changing of fluids, which is typically performed twice yearly or quarterly, in conformity with manufacturers' guidelines. Occasionally, major overhauls or component replacements are required. This may necessitate the temporary use of cranes or equipment similar to that used during construction. Maintenance personnel will average approximately two (2) visits of wind turbines per day, in order to service turbines, replace parts, and perform other general maintenance procedures.

Operating Traffic - Based on other operating wind energy projects, the applicant estimates that long term traffic for maintenance and operations will be approximately ten (10) total vehicular trips per day, in order to service turbines, replace parts, and perform other general maintenance procedures.

Industrial Wastes and Toxic Substances - The wind turbines typically use the following lubricating oils and greases: Mobilux 2, Mobilith 5HC 460 grease, Hydro TL 15, and Tribol 1510/320 or equivalents. None of these contain any compounds listed as hazardous by the Environmental Protection Agency (EPA). These are used in moderate quantities (less than 25 gallons per turbine)

and are contained entirely within the spill trap and nacelle to protect accidental leakage. Lubricating oils are checked quarterly, filled as needed, and changed about every two years. Spent fluids will be recycled with a certified waste contractor. The oil change will be performed up-tower, where any accidental spills will be contained by the nacelle. No oils or greases will be stored on-site.

The foundation for the transformers is designed to contain 125% of the capacity of oil in the transformer, in order to protect the site in case of a leak. Inspection of each transformer will be performed on a regular basis, and after a catastrophic event which could result in transformer damage, in order to detect and prevent leaks.

All production, use, storage, transport, and disposal of petroleum based materials as a result of this project will be in strict accordance with federal, state, and local government regulations and guidelines. No extremely hazardous materials as defined in 40 Code of Federal Regulations (CFR) 335 would be produced, used, stored, or disposed of as a result of this project.

Site Security - The project's security control measures (e.g., fencing, locked gates, on-site maintenance personnel, and security guard patrolling of the property) would serve to prevent trespassing and/or other illegal activities at the site. The project site is currently in an area served by the Palm Springs Police Department. The Police Department has mutual aid agreements with the Riverside County Sheriffs Department, California Highway Patrol, and the Cities of Desert Hot Springs and Cathedral City.

2.9 Alternatives to the Proposed Action

CEQA Requirements

In order to fully evaluate proposed projects, both CEQA and NEPA require that alternatives be discussed. Section 15126.6 of the State CEQA Guidelines requires the discussion of "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." The alternatives discussion is intended to "focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives as listed in *Section 2.3*, above.

Pursuant to the guidelines stated above, a range of alternatives to the proposed project are considered and evaluated in this EIR/EIS. These alternatives were developed in the course of project planning, environmental review, and public hearings. The discussion in this section provides:

1. A description of alternatives considered.

2. An analysis of whether the alternatives meet most of the objectives of the proposed project (described in *Section 2.2*, above).

3. A comparative analysis of the alternatives under consideration and the proposed project. The focus of this analysis is to determine if alternatives are capable of eliminating or reducing the significant environmental effects of the project to below a level of significance.

NEPA Requirements

According to the Council on Environmental Quality's (CEQ) NEPA Regulations (40 C.F.R. 1502.14), an EIS must present the environmental impacts of the proposed action and alternatives in comparative form, defining the issues and providing a clear basis for choice by decision-makers and the public. The alternatives section shall: a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated. b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits. c) Include reasonable alternatives not within the jurisdiction of the lead agency. d) Include the alternative of no action. e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference. f) Include appropriate mitigation measures not already included in the proposed action or alternatives. The CEQ has stated that "[r]easonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense rather than simply desirable from the standpoint of the applicant" (CEQ, 1983).

The environmental consequences of the alternatives, including the proposed action, are to be discussed in the EIR/EIS in accordance with CEQ NEPA Regulations (40 C.F.R. 1502.16). The discussion shall include "Possible conflicts between the proposed action and the objectives of federal, regional, State, and local land use plans, policies and controls for the area concerned." Other feasibility factors to be considered may include cost, logistics, technology, and social, environmental, and legal factors.

Based on the criteria discussed above, alternatives that have been selected for analysis include the No Action Alternative and a Reduced Density Alternative. No significant unavoidable impacts or impacts which cannot be mitigated have been identified for the project, therefore, no other development alternatives are proposed.

The No Action Alternative

This alternative, also known as the "No Project" alternative under CEQA, assumes that the project as proposed would not occur and the project site would remain in its present condition consisting of vacant and disturbed desert lands within the 100-year floodplain of the Whitewater River. No environmental consequences associated with construction and operation of the proposed project would occur. No significant unavoidable impacts have been identified, but the projects beneficial impacts related to improved air quality and energy production would not occur. As discussed in *Section 1.3*, *Purpose and Need for Proposed Project*, the project has the primary purpose of producing renewable, non-polluting wind energy consistent with the state and federal polices cited therein. The proposed project would serve to incrementally offset the need for energy production from more conventional means such as non-renewable, fossil-fuel burning power plants. The No Action Alternative would not offset such non-renewable, and higher polluting energy production.

Further, the No Action alternative would not meet most of the project objectives outlined in *Section 2.2*, above including, implementation of the BLM's Wind Energy Development Program on BLM-administered land, and maximizing wind energy development on the windiest sites available, in order to maximize energy production, and provide the lowest cost renewable, non-polluting electricity. Specific environmental effects of the No Action alternative are discussed in *Section 3.0* for each topical issue.

Reduced Development Alternative

This alternative assumes development would occur only on BLM land within Section 28 with the same number of wind turbines as proposed for that portion of the project. The total number of turbines to be installed under this alternative would therefore be 21 under Option A and 24 under Option B. The extension of utility lines and an electrical substation on BLM land in Section 22 would also be required with either development option. Each row of wind turbines will be accessed by a network of existing gravel roads that will only require minimal refurbishment to bring them up to current road standards, thereby minimizing site disturbance. New underground electrical lines, communications lines and a communication system will be installed in the same area where previous facilities were located. The perimeter of Section 28 is surrounded on the north, east and south by an existing three-strand barbed wire fence to minimize unauthorized entry and off-road vehicle use of the site, while still allowing wildlife movement. This alternative results in a reduction of approximately 5.8 – 6.1 acres in overall site disturbance as compared to the proposed project due to use of existing roads within Section 28. Specific environmental effects of the Reduced Development alternative are discussed in *Section 3.0* for each topical issue.

Other Alternatives Considered but Rejected From Further Analysis

Regarding alternative locations, it is expected that developing a similar project at one or more parcels in the area which are suitable for wind energy development would result in comparable impacts as the project and could be mitigated. Further, no other vacant site in the general area which is equally suitable for wind energy, with similar wind speeds and of a sufficient size to accommodate a total of 49 MW of wind generation is available. Factors considered included land availability, land use compatibility (away from homes, freeways, and Highway 111 setbacks), noise, visual impacts, floodplains, and biological impacts. Further, one of the project objectives (Section 2.2) is to use a site previously used for wind energy to take advantage of available infrastructure and reduced development area. Based on all these considerations, no equally suitable site is available, so an alternative site was not selected. No other alternatives which would meet the general objectives of the project, while eliminating significant impacts have been identified.