Final Report Title Page

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Final Technical Report

Manzanita Wind Energy Feasibility Study Project

DE-FC36-02GO12111, A000

EXECUTIVE SUMMARY

The Manzanita Wind Energy Feasibility Study Project was funded under the U.S. Department of Energy's Tribal Energy Program, with the Manzanita Band of the Kumeyaay Nation managing the project, and SeaWest Consulting, LLC performing the technical scope. The project was completed on September 30, 2004.

The completed feasibility study provides a technical and economic evaluation of a third party developing a commercial wind energy power-generating project on Manzanita Tribal land. The report addresses and documents:

- site configuration
- transmission and interconnection capacity
- wind resource assessment
- permitting requirements
- economic, cultural, and social benefit to the Tribe
- project financing requirements
- long-term operations requirements
- schedule for project development.

This final project report provides a technical accounting of the activities performed, and a comprehensive description of the results achieved, including lessons learned by the Manzanita Wind Energy Feasibility Study. This report contains the following sections:

- Executive Summary
- Project Overview
- Objectives
- Description of Activities Performed
- Conclusions and Recommendations
- Lessons Learned

PROJECT OVERVIEW

The Manzanita Indian Reservation is located in southeastern San Diego County, California. The Tribe has long recognized that the Reservation has an abundant wind resource that could be commercially utilized to its benefit.

Manzanita has explored the wind resource potential on tribal land and developed a business plan by means of this wind energy feasibility project, which enables Manzanita to make informed decisions when considering the benefits and risks of encouraging large-scale wind power development on their lands.

Technical consultant to the project has been SeaWest Consulting, LLC, an established wind power consulting company. The technical scope of the project covered the full range of feasibility assessment activities from site selection through completion of a business plan for implementation.

OBJECTIVES

The primary objectives of this feasibility study were to:

(1) document the quality and suitability of the Manzanita Reservation as a site for installation and long-term operation of a commercially viable utility-scale wind power project; and,

(2) develop a comprehensive and financeable business plan.

DESCRIPTION 0F ACTIVITIES PERFORMED

The Manzanita Wind Energy Feasibility Study project was completed on September 30, 2004. To meet the objectives of the feasibility study, the following activities were implemented during the project:

1. Documentation / Assessment of Site Capacity

Site Condition and land ownership were documented as well as topography and general suitability for a wind farm.

- Completed in April 2003.

2. Renewable Resource Assessment

The wind resource was assessed through installation of two meteorological collection towers with appropriate instrumentation. The collected wind data was correlated with long-term off-site wind data sources, estimation of average wind speeds, and an estimate of the probable average annual energy produced by a wind project.

- Completed in November 2003.

3. Permitting Requirement Review

This entailed a review of the permitting requirements, costs and timing to secure permits to develop and operate a wind facility on the site. This evaluation includes the wind turbine and balance of plant, including substation, interconnection, roads and access. Completion of activities 1, 2, and 3 resulted in site selection, and provided the basis for defining the specific site area and project definition.

- Completed in November 2003.

4. Utility Interconnection and Transmission Feasibility

The likely interconnection scheme for the project, the available capacity, and the timing associated with this approach were reviewed. In addition, preliminary costs for interconnection were developed

- Completed in April 2003

5. Construction Assessment

Construction costs were assessed, based on visual inspection and available data for geotechnical considerations. It was not based on subsurface geotechnical investigation, which is expensive and outside the scope of this study.

- Completed in September 2003

6. Technology Selection & Evaluation

This activity involved the evaluation of potential wind turbine makes and models that would be suitable to the wind resource and site conditions, and that are economically well suited to the location and market conditions.

This activity also included selection of primary balance of plant items for the project. Selection of the technology determined expected capital costs, installation costs, and operating costs.

- Completed in November 2003

7. Economic Feasibility Analysis

An economic model was prepared that incorporated financial assumptions, estimated income, capital costs, operating costs, and forecasted the financial performance of a project on this site. The assumptions were that a private, third party entity would secure a power purchase agreement with a California utility under the Renewable Portfolio Standard requirements, and would operate this project under typical commercial terms and costs.

The economic assumptions are representative of what a 2004 wind energy project is most likely to experience, based upon the consultant's knowledge of the California renewable energy market, and wind project economics.

- Completed in October 2003.

8. Training and Other Tribal Professional Development

Technical training was performed regarding the met tower, wind data collection, and the wind-monitoring program. SeaWest provided training in project development strategies to the Manzanita Renewables Committee through ongoing meetings and discussions during the term of the project

- Completed in September 2004

9. Preparation of Business Plan

SeaWest consulted with the Manzanita Renewables Committee and designed a project specific plan, which consists of the following sections:

- Executive Summary
- Market Analysis
- Business Approaches
- Project Ownership Structure
- Components of a Wind Agreement
- Recommended Strategies
- Costs to Proceed
  - Completed in September 2004

CONCLUSIONS AND RECOMMENDATIONS

In several meetings with SeaWest Consulting, the project's technical consultant, the Executive Committee, Manzanita Renewables Committee, and Tribal representatives discussed the various alternatives for wind energy development that would become the "Business Plan." Options that were considered not feasible were discarded. At the conclusion of the discussions, Manzanita considered the following to be the most feasible option:

From "Business Plan"

> Work out a long-term wind lease with an established wind energy developer. Under this option Manzanita's principal role would be as a landowner and regulatory authority for a wind energy project developed on Reservation land, and owned and operated by others.

Under this scenario, Manzanita would sign a long-term wind energy land agreement (potentially in the form of a lease, easement or land use agreement) with a qualified wind developer who would demonstrate that there is a likelihood that he would be able to complete a wind project on the site, resulting in long-term rental income for Manzanita.

The benefits to Manzanita of this option include:

1. Immediate income for Manzanita, in the form of option or lease payments.
2. Financial risks, development risks, and extensive development work would fall on the developer, rather than Manzanita.
3. Once the project is developed there would be a long-term stream of rental payments to Manzanita for the energy generated by the project that is unlikely to be affected by changing or adverse economic conditions in the region.
4. Manzanita would maintain a level of control over the site and project operator, since Manzanita is both the landowner and regulatory authority.Full use of the

site would return at the end of the project period (approximately 21 to 26 years from construction).

5. Manzanita would diversify its income from those sources where the Tribe presently plans to earn income.

Recommendations: The following are recommendations for Manzanita to create new long-term income for the tribe, while assuring the best compatibility with existing uses on the Reservation:

1. Manzanita should diversify its income by including wind energy rental income. This income would not be significantly affected by downturns in the local economy, as could other income sources.

2. Manzanita should sign a long-term wind energy land agreement (potentially in the form of a lease, easement or land use agreement) with a qualified wind developer who can demonstrate the likelihood they would be able to complete a wind project on the site, resulting in long-term rental income for Manzanita.

3. The land agreement should include significant payments to Manzantia for signing the agreement.

4. The agreement should place the financial risk and development risk on the developer, rather than Manzanita, and should include requirements for equipment removal at the end of the project.

5. Manzanita should oversee a project impact review process and maintain authority through a permit over the project so that the owner or operator could not substantially change the project once it is built, in a manner that increases its impacts on Manzanita.

6. No wind turbines should be placed near existing houses or buildings on the Reservation.

7. Manzanita should require that any wind turbine models and types meet the standards of noise and safety set by the largest manufacturers of the industry.

LESSONS LEARNED

Throughout the Manzanita Wind Energy Feasibility Study Project, there has been an opportunity to gain first hand experience with a Tribal resource of significant economic potential.

The project has also provided a significant learning experience in project development strategies. There has also been the benefit of technical training for Tribal members in resource documentation.

As a result of the Manzanita Wind Energy Feasibility Project period, the Tribe now has the necessary information and experience to carry out a comprehensive development of a wind energy project utilizing current technology. There is also an increased opportunity for continuance of tribal development activities through utilization of benefits achieved through a potential wind power project.

In addition, there has been the opportunity to validate the potential performance of a commercial grade renewable energy project, which may be a useful model for other Tribes to replicate, who are considering wind as an economic development strategy.

See the attached Feasibility Report and Business Plan for additional details. The Manzanita Band of Mission Indians has authorized release of the attached documents.

Manzanita Wind Energy Feasibility Project

Renewable Energy Development on Tribal Lands: Feasibility Study

IMPORTANT NOTICE

This Study has been prepared by SeaWest Consulting, LLC. ("SeaWest") for presentation to the Manzanita Band of the Kumeyaay Nation ("Manzanita") per the requirements of the Consulting Contract between Manzanita and SeaWest.

This document shall be considered confidential and proprietary, and is intended for the use of Manzanita only, unless otherwise specifically authorized by Manzanita in writing.

This Study has been prepared from information gathered by SeaWest, which makes no promises, guarantees, or representations as to the accuracy or completeness of this document, including, without restriction, economic and financial projections, and risk evaluation. No part of this Study should be construed as legal, financial, or tax advice. Manzanita should consult professional advisors on such matters.

Prepared for:

Manzanita Band of the Kumeyaay Nation

P.O. Box 1302
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Attention: Mr. Leroy Elliott, Chairman

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I. EXECUTIVE SUMMARY:

A. Purpose and Scope of this Study

The Manzanita band of the Kumeyaay Nation ("Manzanita") has retained SeaWest Consulting, LLC ("SeaWest") to perform a feasibility assessment of the potential for a wind energy development, in a portion of the Manzanita Reservation. This work is being funded under the Department of Energy's Tribal Energy Program, with Manzanita managing the project, and SeaWest Consulting performing the technical scope. The DOE program number is DE-FC36-02GO12111, A000. This feasibility report provides a technical and economic evaluation of a third party developing a commercial wind energy power generating project on Manzanita lands.

SeaWest Consulting has completed Milestones 1 through 7 of the Consulting Contract dated October 23, 2002 between the Manzanita Tribe and SeaWest Consulting, LLC. Milestones 8 and 9, which cover Tribal Professional Development and preparation of a business plan, will be handled separately from this Feasibility Report.

- Milestone 1 comprises documentation of the site conditions, land ownership, topography, and general suitability for a wind farm.

- Milestone 2 is comprised of the wind resource assessment, which includes on-site wind data collection, assessment of the wind resource, correlation with long-term off-site wind data sources, estimation of average wind speeds, and an estimate of the probable average annual energy produced by a wind project on the site.

- Milestone 3 is a review of the permitting requirements, costs and timing to secure permits to develop and operate a wind facility on the site. This evaluation includes the wind turbine and balance of plant, including substation, interconnection, roads and access. Completion of these three milestones results in site selection, and provides the basis for defining the specific site area and project definition.

- Milestone 4 is a review of the likely interconnection scheme for the project, the available capacity, and the timing associated with this approach. Preliminary costs are developed for interconnection as well.

- Milestone 5 comprises estimation of construction costs, based on visual inspection and available data for geotechnical considerations. It is not based on subsurface geotechnical investigation, which is expensive and outside the scope of this study.

- Milestone 6 is the evaluation of potential wind turbine makes and models that would be suitable to the wind resource and site conditions, and that are economically well suited to the location and market conditions. This milestone also includes selection of primary balance of plant items for the project. Selection of the technology will determine the expected capital costs, installation costs, and operating costs.

- Milestone 7 is the preparation of an economic model that incorporates financial assumptions, estimated income, capital costs, operating costs, and forecasts the

financial performance of a project on this site. The assumptions are that a private, third party entity would secure a power purchase agreement with a California utility under the Renewable Portfolio Standard requirements, and would operate this project under typical commercial terms and costs. The economic assumptions are representative of what a 2004 wind energy project is most likely to experience, based upon our extensive first hand knowledge of the California renewable energy market, and wind project economics.

B. General Findings of this Study:

- **SeaWest Consulting has evaluated the major factors that determine whether a commercial wind energy project is feasible on Manzanita Reservation lands. The more recently acquired portion of the Reservation (Sections 21 and 28) is sufficient in size to accommodate approximately** 19.5 to 21.0 MW **of large, commercial wind turbine generators, with a small overlap onto the westerly most portion of Section 22. The measured wind at this location and the economic analysis shows that a commercial wind project of this size is** not feasible**, due to the moderate wind speeds, relatively high costs and small project size. We believe that development of a smaller project between 19.5 MW and 1.6 MW in size would not be feasible, under any reasonably foreseeable market conditions.**

- **A second alternative consisting of a 30.0 MW project with 19.5 MW on Sections 21 and 28, and 10.5 MW on the adjacent section to the north was analyzed.** This alternative is economically viable, **provided that no critical environmental or economic issues affect the land, and that transmission rights across adjacent (La Posta) land can be secured.**

- **A 30.0 MW third alternative project located in Sections 21 and 28, and on additional Reservation land was also analyzed. Potential locations for these additional turbines are along Old Mine Road, in Sections 34, 35 and the southeast quarter of Section 27. These sites were included to bring the project size up to 30.0 MW. This alternative was also found to be** not feasible**, due to the lower average wind speeds of the additional sites.**

- **Wind projects benefit significantly from increased size, since capital costs, financing costs, development costs and operating expenses are all lower when project size increases on a per megawatt basis. Depending on the wind speed, market price for energy sales and other economic and operational factors, between 30 and 60 MW is often a point where economies of scale begin to benefit the project. In other words, if a project is smaller than this size it is noticeably more costly to develop and operate, and may become infeasible to develop in the current and reasonably foreseeable future. The Manzanita site is small compared to the 30 to 60 MW criteria, so there is a benefit to incorporating as much similarly windy adjacent land into the project, if it can be done cost effectively and the average wind speeds for the overall project do not decrease by adding the additional land.**

- **The economics of a wind project are determined by wind speed, rates paid for delivered energy, interconnection capacity, development costs, financing**

costs, operating costs, wind turbine characteristics, transmission fees, and a list of lesser items that also determine feasibility. Wind speed is nearly always the single most important factor that determines the economic feasibility of a site for wind energy generation.

- **Additional land with a similar topography and exposure to the wind exists to the east, west and north. Since it is important to increase the size of the project to the limits of interconnection capacity (approximately 30 MW) it is important to consider only the most windy available turbine sites into the project, provided it does not significantly adversely affect the environmental or land use compatibility of the total project.**

- **SeaWest Consulting evaluated the wind resource and determined that the estimated average annual wind speed is 7.7 meters per second (17.2 mph) for a 19.5 MW sized project. Wind energy sites developed in Southern California over the last five years (Palm Springs, Cabazon, San Gorgonio) have typically been 8 to 9.5 meters per second average annual wind speed. The Manzanita site is noticeably less windy than those sites that have been developed recently in Southern California. This places the site in a relative ranking of developed wind sites in southern California in the bottom 1/3. If additional turbines were to be added along Old Mine Road, the average wind speed at these added sites would likely be lower than the average for**

the 19.5 MW of turbine sites. Therefore, the average wind speed overall would likely drop by an unknown amount, estimated to be 0.5 to 1.5 mph

- **We compared the GE Wind 1.5 MW turbine with 77 meter rotor to seven other leading Class I and II wind turbines that could be used on this site. We believe the GE 1.5 SL is the best choice based on cost per kilowatt-hour generated, for the life of the project.**

- **Also included in this report is the information regarding the environmental conditions (biological, cultural resources, visual impacts) occurring at the Manzanita site. This was not a detailed environmental assessment, but is based on preliminary information and site inspection only. Based on the study and site investigation to date, SeaWest believes there are no significant issues affecting the permitting, construction or operation of the proposed wind project. Please note that the adjacent State land north of the Reservation was not analyzed with respect to environmental conditions.**

- **Detailed cost estimates, energy production estimates and other details are contained in the body of this report. Information about the wind assessment, wind turbine, details of costs, construction costs, and other items are included in the Appendix.**

Thank you for the opportunity to provide technical and consulting services to Manzanita.

Sincerely

Michael Azeka
President

1. Site Assessment (Milestone 1)

The Manzanita Reservation comprises approximately 4,579 acres of hilly, undeveloped or sparsely developed land, located in southeastern San Diego County. The Reservation consists of large contiguous sections of land, and a small out-parcel surrounded by Reservation land. Most of the Manzanita Reservation is crossed with roads, and contains houses, buildings and other facilities, at a very low density. Only approximately 65 Tribal Members live on the Reservation, in single family homes.

The Tribe has been considering a potential wind energy project for many years, and had previously identified potential sections of land that might be suitable for wind energy development. These lands were previously Bureau of Land Management sections that were transferred to Manzanita nearly two years ago. A vicinity map follows as Figure 1.

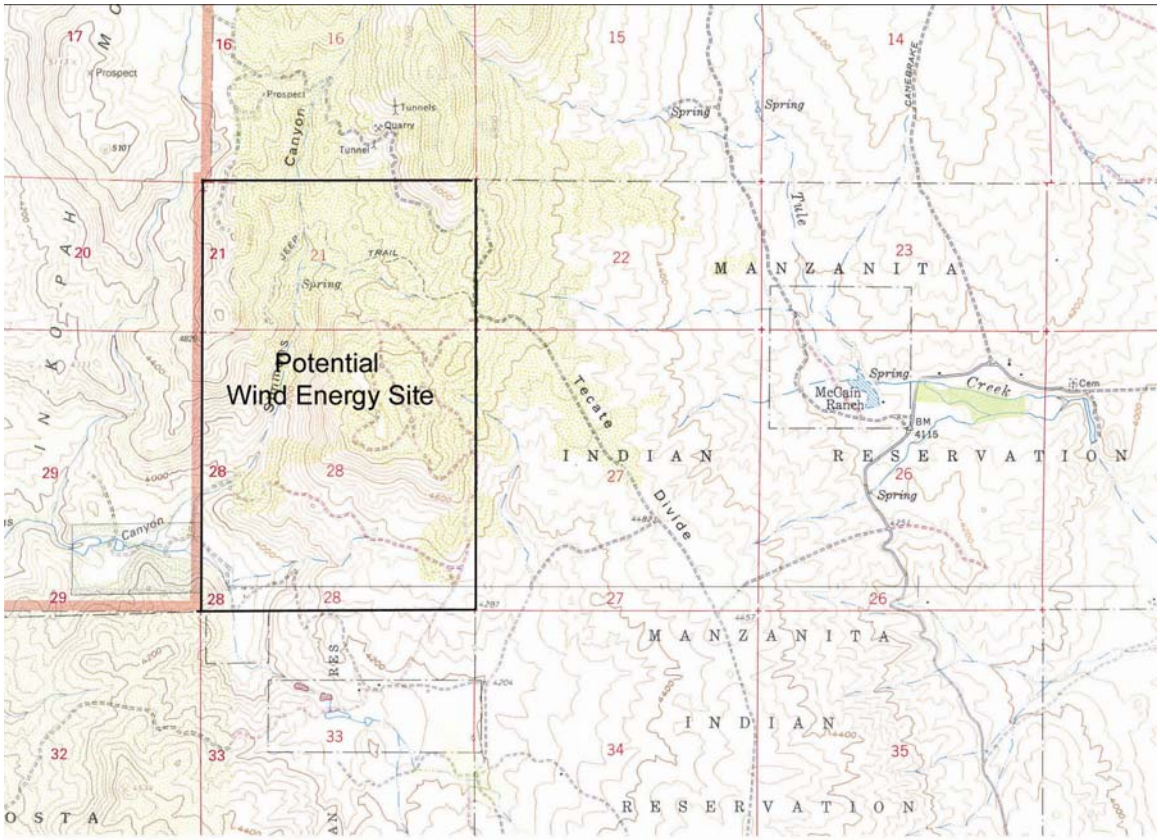


Figure 1. Vicinity Map

SeaWest Consulting senior personnel inspected Sections 21, 22, 27, and 28 and from the standpoint of permitting and environmental sensitivity on January 17, 2003. Sections 21 and 28 are the recently acquired lands which formerly belonged to the Bureau of Land Management, and Sections 22 and 27 have been part of the Reservation for a long time. SeaWest staff included Michael Azeka, Senior Project Manager, and J. Brian Armstrong, Senior Meteorologist. Accompanied by Tom Ward of the Manzanita Band of the Kumeyaay Nation, SeaWest inspected and placed stakes at three potential meteorological mast sites, and surveyed the overall ridges and access routes which could be used for a potential wind energy project, should a project prove feasible.

The following field observations were made:
There were three potential locations that could provide representative wind speed data. These three sites were not found to have significant biological, visual, grading, soil stability or feasibility issues, with respect to installing meteorological masts, based on field observations. Access to these sites was by existing roads, however several hundred feet of new dirt road was cleared to access the site designated Met 397 in Section 28. The Tribe considered these three locations for placement of meteorological masts, and approved two of the proposed locations to install wind measurement masts. This approval was granted after evaluation of the environmental conditions and submitted written documentation of the site conditions.

SeaWest Consulting staff also investigated two major ridges traversing Sections 21 and 28, and the westerly portion of Section 22. These ridge areas were inspected for evidence of sensitive biological or physical conditions which could preclude development. No evidence of unstable soils, extensive bedrock, slope failure, erosion, or excessive groundwater seepage was observed. Vegetation information was reviewed for presence of sensitive habitat. No detailed or long-term biological surveys were conducted.

2. Wind Resource Assessment (Milestone 2):

Wind speed, direction and temperature data has been collected at two anemometer masts located on the Manzanita site. Eight months of data was collected at 50, 30 and 10 meters height above the ground, using newly purchased and installed NRG towers, NRG anemometers, and data loggers. No problems in the data collection were experienced, and no missing data periods were experienced. Wind direction and wind speed data were collected from March 20, 2003 through November 10, 2003, and data collection remains on-going. Air density was estimated at 1.02. These data were reviewed and analyzed by SeaWest Consulting's in-house meteorologist, to determine whether the site was likely to have an adequate wind resource to attract a commercial wind energy project.

The meteorologist has calculated the annual wind speed at the two masts through a correlation to the RAWS (Remote Automated Weather Station) anemometer at Ranchita. There were 219 days of concurrent data, with a correlation value ' r ', of 0.91. This is a very high level of correlation, so the results have much less uncertainty than if the

correlation was lower. Ranchita provides just over 8 years of data, forming a good long-term record of wind patterns. Consequently, the meteorologist has a fairly high degree of confidence in the energy projection.

Based on the estimated wind speed the site is an average level candidate for wind energy development (i.e., neither very windy nor insufficiently windy). The estimated annual wind speed at 65 meters for one tower is 7.8 m/s, and 7.1 m/s at the second tower. Correcting for the locations of potential wind turbines, the average annual wind speed was estimated to be 7.65 meters per second at 65 meters height for a 19.5 MW sized wind project. This wind speed estimate is contained in Appendix 1 of this report.

If the project were to be increased to 30.0 MW, all on the Manzanita Reservation, the average annual wind speed would likely decrease to 7.5 meters per second. Based on this average annual wind speed, the expected average annual energy production was estimated for the GE Wind Energy 1.5 SL wind turbine. This wind turbine is calculated to produce a net of 4,045,000 kilowatt-hours per year, per turbine. The estimated net capacity factor for this turbine (77 meter rotor diameter and 65 meter hub height) on this site is approximately 30%.

Project Size	**Avg. Wind Speed (m/sec)**	**Avg. Wind Speed (MPH)**	**Avg. Total Annual Energy (KW-Hr)**	**Avg. Capacity Factor**
19.5 MW On the Reservation	7.65 m/sec	16.8 MPH	54,300,000	32%
30.0 MW On the Reservation	7.5 m/sec	16.5 MPH	80,900,000	30%
30.0 MW On & Off Reservation	7.8 m/sec	17.2 MPH	94,400,000	35%

In establishing a meteorological program, it is necessary to configure the equipment in a manner in which these parameters can be measured and estimated at hub height of the proposed wind turbine. In the case of the GE 1.5 MW turbine, the hub height is 65 meters, or 213.25 feet above the ground. Vertical wind shear is the increase in average wind speeds as height above the ground is increased. Vertical wind shear was measured at the two anemometer locations over the entire measurement period, and found to be essentially zero. Therefore, increasing the height of the turbines above 65 meters at the hub height does not yield increased energy production, so a height of 65 meters was settled upon.

3. Additional Wind Data Collection:

Wind direction and wind speed data were collected from March 20, 2003 through November 10, 2003, at the two anemometers, and data collection remains on-going. No problems in the data collection were experienced, and no missing data periods were experienced.

Based on these two anemometers, we believe there is additional land north of the Reservation that is sufficiently windy to more favorably support the economics of a wind project. If additional turbines were to be added on this off-Reservation land, the average wind speed at these added sites would bring the overall average higher than the average for the 19.5 MW of turbine sites on the Reservation. Confirmation of this situation would need to be performed outside the scope of this study.

4. Energy Estimate:

Wind speeds are estimated to average 7.65 meters per second for the 19.5 MW of turbine sites. The GE wind turbine considered for this project is the 1.5 MW with 77 meter rotor, and 65 meter hub height. Based on the air density of 1.02 kg/m^3 the 13 wind turbines should have a total net energy production of approximately 54,300,000 kW-hours per year for a 19.5 MW project. If the project is increased to 30.0 MW (all on Manzanita Reservation), the total net energy production would be approximately 80,900,000 kW-hours per year. If off-reservation land to the north is added to the site on Sections 21 and 28, be estimate the total net energy production would increase to approximately 94,400,000 kW-hours per year (estimate not based on actual measured data). Since revenue from energy sales is directly affected by this net energy production number, the improved performance of the third alternative is significant.

To calculate net energy production, we deducted for topographic effect (2%), electrical loss (2%), availability (3%), high wind hysteresis (0%), icing losses (0%), and column wind loss (1%). Electrical loss is due to internal losses in the padmount transformer, and the underground and overhead lines from the site to the substation. Availability is due to the turbine being shut down for service or any turbine fault. High wind hysteresis is due to the time taken by the turbine in re-starting due to high wind shut-off. Icing losses are zero due to the mild temperatures and low likelihood that ice would build-up on blades. Column wind loss is reduced production caused by the wake seen by adjacent turbines when the wind comes from directions other than perpendicular to the row of turbines. The estimate of net production does not assume any loss for substation outages or system shut-down.

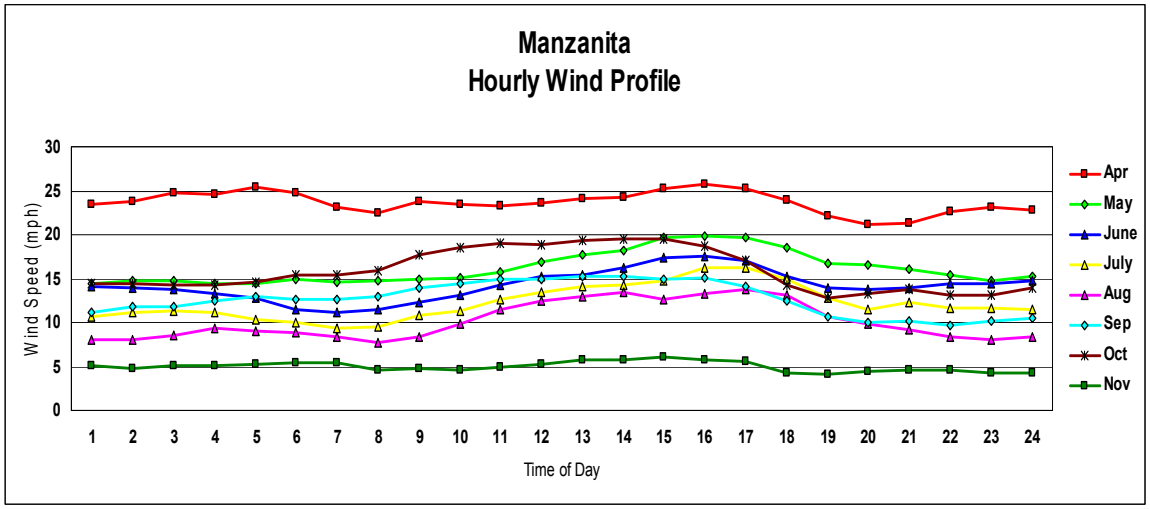
The net capacity factor for the 19.5 MW alternative, considering all these losses, is 31.8% for a 19.5 MW project. This is a moderate to mediocre performance compared to typical recent commercial wind projects in Southern California (Palm Springs, San Gorgonio, Cabazon, Mojave and Tehachapi).

5. Daily and annual pattern of wind generation:

SeaWest Consulting has collected approximately 8 months of wind data at the Manzanita meteorological towers, beginning in late March of 2003 through the present. Presented below is a graph depicting the average wind speeds for each month, averaged for each hour of the day. Several patterns in the diurnal wind resource appear. The first two months show little variation of the wind speed during the day, with less than 1-2 mph differences between the hour with the highest wind speed and lowest. April of 2003 was characterized with above average number of storms passing through southern California. Because the storms which contain high winds occur randomly, there was no clear diurnal pattern when all 30 days are averaged together. The second month with small variations of the wind throughout the day was November. The data analyzed for this study ended in mid-November, and during this period the winds were very light throughout the day with all hours averaging around 5 mph.

All the months between May and October of 2003 show a distinct diurnal pattern. The lowest wind speeds typically occur during the night-time hours, and the peak wind speeds occur in the early afternoon. This is a typical diurnal pattern seen throughout southern California during the summer months. It is a result of the heating of the desert during the day, causing rising air, which brings in cooler maritime air from the coast across the mountains into the desert.

The remaining four winter months are expected to follow the pattern shown in April and November, with little or no strong diurnal pattern. Instead, the highest wind speeds will occur randomly throughout the day depending on the time of day of the passage of winter storms.



III. PROJECT COSTS/REIMBURSEMENTS

1. Construction costs:

A work-up of construction costs was prepared by SeaWest Consulting, based on recent bids from qualified contractors on similar sites. An estimate of total project costs was prepared which includes construction, equipment, financing, legal, transmission and interconnection costs, as well as on-site project costs. **Total Project Cost for a 19.5 MW wind project is approximately $29,000,000 to $35,000,000 on this site. Total Project Cost for a 30.0 MW wind project, either all on the Reservation, or both on and off the Reservation is estimated to be approximately $40,000,000 to $48,500,000.** This total includes all costs for wind turbines, construction, integration, electrical system, 69 kV Substation, and overhead 6-mile pole line from a Riser Pole at the site to the new Substation near the existing 69 kV line.

2. Other Costs:

Off-site road access, off-site improvements, and off-site transmission easement rights, would range from $100,000 to $300,000. This cost is included above.

3. Operating costs:

A work-up of operating costs was prepared by SeaWest Consulting, based on actual operating costs experienced on similar projects, and information from GE Wind.

4. Federal Production Tax Credits:

Wind energy projects rely extensively on federal tax credits to encourage development and successful operation (actual production of electricity). 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 owning and operating new renewable energy production facilities such as solar, biomass, wood chip, geothermal, and wind power plants. The tax credit in 1992 was $0.015 per kilowatt hour (kWh) produced by the facility, and has increased each year by the official rate of inflation from the previous year, for the first ten years of operation of the equipment. The current PTC rate is approximately $0.019 per kWh. The credit is available to new renewable energy facilities placed into commercial service after enactment of the law, and prior to the latest deadline, December 31, 2003. The PTC was expected to pass as part of the Energy Bill that recently failed in Congress in late November, 2003. The PTC expired on December 31, 2003, but is expected to be renewed later this spring by Congress and signed by the President. **The value of the PTC to project owners that pay corporate income taxes is approximately equal to 19% of the total value of the wind project.**

Indian Tribes typically cannot utilize the PTC, because they do not have significant corporate federally taxable income. Since the PTC accounts for approximately 19% of the value of the project, not being able to utilize the PTC is a severe disadvantage, making tribal ownership of large wind projects very limited or impossible.

One of the major obstacles to wind power development in the US has historically been the low price utilities pay Independent Power Producers (IPP) for their energy. Utility policy has been to use the price of natural gas, which prior to 2001 fluctuated between averages of $0.025 to $0.035 per kWh, as a measure of what they would pay IPPs for energy. This payment is generally known as "avoided cost", in that the utility "avoids" the cost of producing the power, and pays the IPP instead. With the addition of the inflation-escalated PTC now at $0.019 per kWh, combined with natural gas prices that have risen, wind project economics have become more attractive. With total project revenue now in excess of $0.05 per kWh, previously scarce and expensive project financing has become widely available due to the now demonstrable profitability of wind projects.

The PTC has indirectly provided a substantial incentive for wind turbine manufacturers to improve the reliability and efficiency of their equipment, since the PTC is captured only for electric power actually produced and transmitted. Poor turbine "up-time" (availability), high O&M costs, or substandard power production would eliminate a turbine from consideration for installation on a project planning to utilize the PTC. As a direct result of the PTC, nearly $5 billion in capital investment in wind energy projects has been made in the US in the past 4 years, and another $1.5 to $2 billion is projected to be invested in wind projects in the US prior to the December 31, 2003 deadline.

IV. wIND tURBINE sELECTION

SeaWest has reviewed the site conditions, including wind speeds, maximum and minimum temperatures, altitude/air density, site accessibility, visual sensitivity, land use compatibility, and height limits applicable at this site. Based on the relative absence of limiting constraints, a wide number of makes and models of wind turbine could be deployed at this site. Therefore, the selection of the best wind turbine model and options is primarily based on the best energy production, given the wind speeds and air density, and the capital and operating costs.

SeaWest routinely compares the latest models of wind turbines from the leading manufacturers, and performs cost-benefit comparisons approximately ten times per year. Manufacturers considered in these comparisons include Vestas, GE Wind Energy, NEG Micon, Nordex Energy, Gamesa Eolica, Mitsubishi Heavy Industries, and Bonus A/S. These manufacturers represent seven of the twelve largest wind turbine manufacturers in the world. Wind turbines from these manufacturers included models ranging from 660 kW to 1.80 MW. The current "short list" of wind turbines that could be used at the Manzanita site, and which exhibit the lowest cost per kilowatt generated include the GE 1.5SL with 77 meter rotor, the Vestas 1.8 MW with 80 meter rotor, Bonus 1.3 MW with 62 meter rotor, MHI 1.0 MW with 61.4 meter rotor, and the NEG Micon 1.65 MW with 72 meter rotor, and the NEG Micon 950 kW with 54 meter rotor. Of these, the GE has come

out ahead as the lowest cost turbine on the past three

v. Siting Considerations

per kilowatt-hour generated comparisons.

Based on these extensive comparisons, we believe that among the currently available Class II wind turbines that can be used on this site, the GE 1.5 SL with 77 meter rotor is one of the best choices, based on cost per kilowatt-hour generated, for the life of the project.

An individual developer may have a business arrangement with another wind turbine supplier that provides more favorable pricing or other advantages that make another wind turbine vendor and model equally or more favorable. However, we believe that any established wind energy developer would have this wind turbine on its list of final choices for this site and this wind profile. Therefore, for purposes of this analysis, we have used the GE Wind 1.5 SL with 77 meter rotor and 65 meter hub height.

SeaWest performed an evaluation of the proposed site with respect to permitting, interconnection, ease of construction, and land use compatibility.

1. Site Layout:

A Plot Plan was prepared for the proposed site. This plan is used for quantity estimates and will be the basis for the feasibility analysis.

The project improvements will consist of the following:

GE 1.5SL wind turbine generators, on 65 meter (213.2 foot) towers and foundations
1.725 MVA padmounted transformers
Underground 34.5 kV electrical lines
Overhead 6 mile long electrical line to interconnection point
Roads, gates, fencing
Maintenance building and small yard
69 kV Substation

Details of design, such as specification of circuit breakers, reclosers, capacitor banks, lightning arrestors, substation upgrades, SCADA system, and ancillary equipment will be

determined at a later date. However, requirements for these items are not expected to be significant.

2. Permitting:

Discussion with San Diego County has confirmed that the County does not claim jurisdiction for any portion of the potential 19.5 MW wind project. In addition, as the project would not be part of a casino proposal, the State of California would also not exercise jurisdiction for permitting nor environmental review under the California Environmental Quality Act. Therefore, the permitting process would consist of Tribal approval, under Manzanita's environmental and land use review procedure, and NEPA (National Environmental Protection Act) review by the BIA (or Department of Energy), as the lead agency. A more detailed description of the NEPA process follows.

The US Fish and Wildlife Service would be consulted under a NEPA process. They would require the study of numerous federally listed endangered species to determine whether any significant impacts to those species would likely occur from the proposed project. This process typically takes 10 to 24 months, and costs between $80,000 and $200,000 to complete, including biological, cultural resources, geotechnical and other studies. Not enough is presently know to determine the exact feasibility of this site with respect to this process. Detailed site studies would need to be conducted for biological and cultural/historical resources to determine the time frame and costs involved.

If the project were expanded to include off-Reservation land, this cost would increase by approximately $30,000 to $70,000.

3. Federal Aviation Administration Review:

Structures taller than 200 feet are required to be reviewed by the Federal Aviation Administration (FAA), and usually require lighting per FAA standards. The wind turbines will exceed 200 feet, so they will be required to be reviewed for potential obstructions to air traffic under FAA 7460. We do not expect this to be a significant issue, although daytime white strobe and night time red blinking lighting of the turbines will likely be required.

4. Land Use Compatibility:

Wind turbines are compatible with other land uses, including farming, grazing, open space, low use outdoor recreation, and other uses where non-habitable structures are used. The primary considerations are noise, public safety, visual impacts, and low frequency vibration. Modern wind turbines produce low levels of noise, so they can be located much closer to noise sensitive land uses than were previously accepted.

Existing uses on the Reservation include the MAC building, the Tribal Office, the Horse Camp, RV campground, the Lake, a proposed motocross racing facility, and approximately 40 houses and other buildings. Wind turbines present a very unlikely but possible risk of blade loss or toppling (due to earthquake), so they should not be located less than a distance equal to the total height of the turbine and blades from houses, offices, recreation buildings, and enclosed structures used by people. Consequently, should a major mechanical problem develop, no habitable building or human use area would be affected. Careful consideration of compatible uses should be made by any developer proposing to place wind turbines on the Reservation less than 500 feet from a building, office or habitable structure. A wind turbine the size of the GE 1.5 SL should be placed at least 500 feet from a habitable structure to ensure compatibility.

While the site is visible from all directions, it is not a prominent land feature, and is not visually significant from a regional perspective. Therefore, use of the higher elevation lands on the Reservation would not have a significant regional visual impact.

5. Site Size, Configuration and Future Expansion:

The Manzantia Reservation contains existing houses scattered near the perimeter of the Reservation, primarily along Blackwood Road, Crestwood Road, Hubble Road, Cross Road, and near portions of Old Mine Road. Other sensitive uses include the Horse Camp, Lake, and the McCain Ranch that is located within the Reservation. Generally, individual wind turbines should be located at least 500 feet from any residences, and a row of wind turbines should be located at least 1,000 feet from occupied residences to minimize noise to the residents. Based on these setbacks, there is room for approximately 8 to 9 wind turbines on the east edge of Old Mine Road, between Blackwood Road and McCain Ranch. If 19.5 MW of turbines are installed on Sections 21 and 28 (the western sections of the Reservation), plus an additional 8 turbines near Old Mine Road, it would bring the total to 31.5 MW. Based on the economic analysis, however, this alternative does not appear to be financially viable.

If added transmission capacity can be secured, and off-Reservation windier land could be added, the project size may be able to be expanded beyond the 30 MW limit, and the economics of this perhaps 45 MW project could be attractive and feasible. **This is probably the best scenario for developing the site for a commercial wind project, and would provide the greatest probability of success, and the most revenue to Manzanita.**

Additional potential windy land exists to the north (BLM and State land) and to the west (La Posta Reservation and South Campo). These lands should be investigated for feasibility to expand the site area to increase the overall project to more than 30.0 MW. We believe, however, that the likelihood of La Posta Reservation or Campo land being sufficiently windy to support expansion is low, since the La Posta or Campo land is likely to be less windy than the Manzanita sites.

A project 30.0 MW or smaller would normally not be installed in phases, since the cost of doing so increases significantly. Wind projects toady are often 100 MW in size, so a 30 MW is considered small and relatively expensive to build.

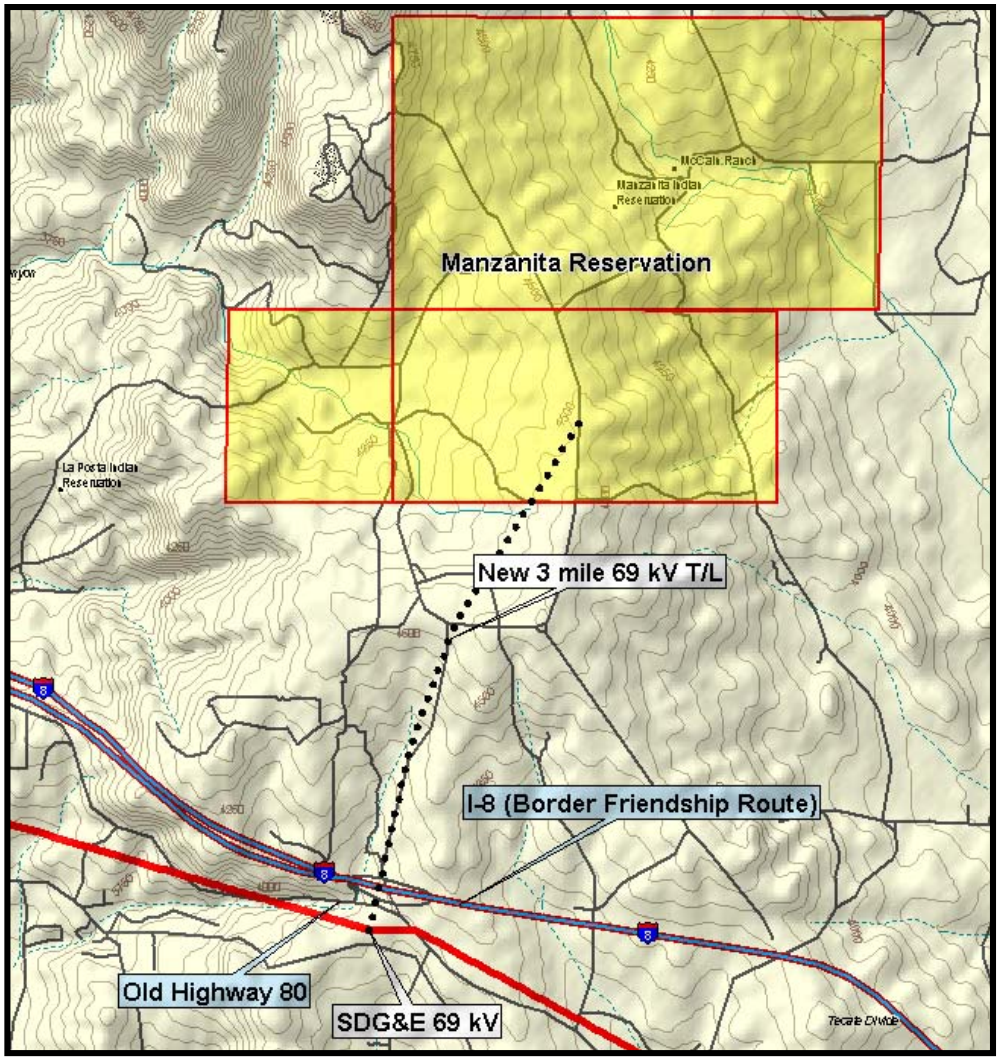
6. Ease of Construction:

Visual inspection of the ground surface, our experience in installing the met tower anchors, and inspection of the motorcycle track excavation on adjacent Reservation land indicates soil conditions are likely to range from readily workable, to very rocky and steep, thereby increasing construction costs. We recommend a qualified engineering geologist review the site to provide seismic safety data, and foundation design parameters relevant to final costs for construction. A detailed review of bridges and culvert crossings should be performed by equipment contractors to confirm road and bridge ratings and vertical clearances for delivery of very heavy loads can be accommodated.

7. Transmission Access:

The region is served by only one line, a 69 kilovolt (kV) line owned by San Diego Gas & Electric ("SDG&E"). The line comes from the San Diego Metropolitan area and ends at SDG&E's Boulevard substation. This line generally runs from northwest to southeast, and passes approximately 3 miles to the south of the proposed project area.

Several miles south of the proposed project site, near the Mexican border, a main grid 500 kV tie line runs between Southern California and Arizona. Unfortunately, the cost of making a connection to the 500 kV line would almost double the cost of the wind project, and is therefore considered not an option for the connection of a small wind project.



The abovementioned 69 kV line was constructed years ago with a small conductor size to serve the limited load in the area. This small conductor size, combined with the 69 kV rating and the long distance, limits the capability of the existing line to about 30 MW. Replacing the cables of the line with a larger wire size would increase the capacity, however, the length of line that would need to be replaced would be in excess of 25 miles and would cost several million dollars.

For the interconnection of a 30MW project, SeaWest Consulting would anticipate the construction of a 34.5 kV to 69 kV step-up substation on the project site to raise the voltage from the 34.5 kV site voltage to 69 kV for connection to the grid. From the project substation a new 69 kV tap line would be constructed south approximately 3 to 4 miles to a tap point with the existing SDG&E line.

At least one other wind energy company is pursuing a wind generation project with the Campo tribe, and that company has already filed a request for all the available capacity on this line. While their request does not close out the possibility of a wind project on

VI. CONCLUSIONS

Manzanita's site, if that project goes forward first, it would utilize all the presently available capacity on this 69 kV line. The 69 kilovolt electrical line is operated under rules by the California Independent System Operator (CAISO) and by the Federal Energy Regulatory Commission. The rules regarding access to potentially congested transmission lines are currently changing, and it is not possible to predict what the final rules will be regarding access to this transmission line. Therefore, we recommend that Manzanita facilitate and move forward quickly on any project development activities that would give them preference to this transmission line ahead of the Campo proposal, so that they are not disadvantaged and delayed due to lack of available transmission access.

The reality of wind energy development in California is that small projects are disadvantaged, due to the relatively high costs of building, financing and operating them. Projects that are closer to the 50 MW size will benefit noticeably from the economies of scale that accrue to larger projects. Therefore, the larger a project that can be but together on the Reservation and adjacent to the Reservation, the more likely it is to be built and therefore to be of economic benefit to Manzanita.

1. The sites on Sections 21 and 28 can be characterized as moderately windy, but due to their small size and costs to develop, they are not feasible to develop on their own. They must be incorporated into a larger project to be economically viable.

2. It is unlikely a project could be pulled together below 30 MW in size that would be economically viable, given the sites available on the Reservation, even if additional sites near Old Mine Road are used.

3. Regulations, state policies, economic conditions and interest by SDG&E for new wind power generation all point to a favorable set of conditions that have not been in place in San Diego County until recently. The timing for a new wind

project is now good, provided the economics can be made to work.

4. Competition from a competing wind proposal on the Campo reservation will likely eliminate the viability of a wind project on Manzanita Reservation for many years if that proposal proceeds ahead of a project on Manzanita's Reservation, because of limited transmission capacity. Manzanita's site is believed to be windier, which is an advantage. However, being first means that there would be a cost and time savings so significant that it could make other projects infeasible or delay them for many years.

5. The winds at the best locations on the Reservation are moderate, so the economics are somewhat marginal. Therefore, a viable project in this location must lower its development costs and utilize only the windiest turbine sites. If this can be accomplished, it is very likely a commercially feasible 30 to 50 MW wind project would be built on the Reservation and adjacent to the Reservation.

6. Energy prices for wind projects are somewhat fixed for the near term, and the wind energy pricing late in 2003 contributes to making a 30+ MW wind project on the Reservation and on adjacent windier land, economically feasible. Future energy pricing is not known, and there is pressure to lower wind energy pricing in California in the near future.

APPENDIX 1

WIND ASSESSMENT AND ENERGY ESTIMATE

Prepared by J. Brian Armstrong
November 14, 2003

Manzanita Wind Feasibility Study
Wind Assessment and Energy Estimate

I. Wind Resource Assessment Data Collection and Analysis

SeaWest Consulting completed a review of the recent wind data from the Manzanita site. There is now 8 months of data from the two 50 meter meteorological masts. The additional wind data has not changed the conclusions regarding the feasibility of the site as a good candidate for wind energy development.

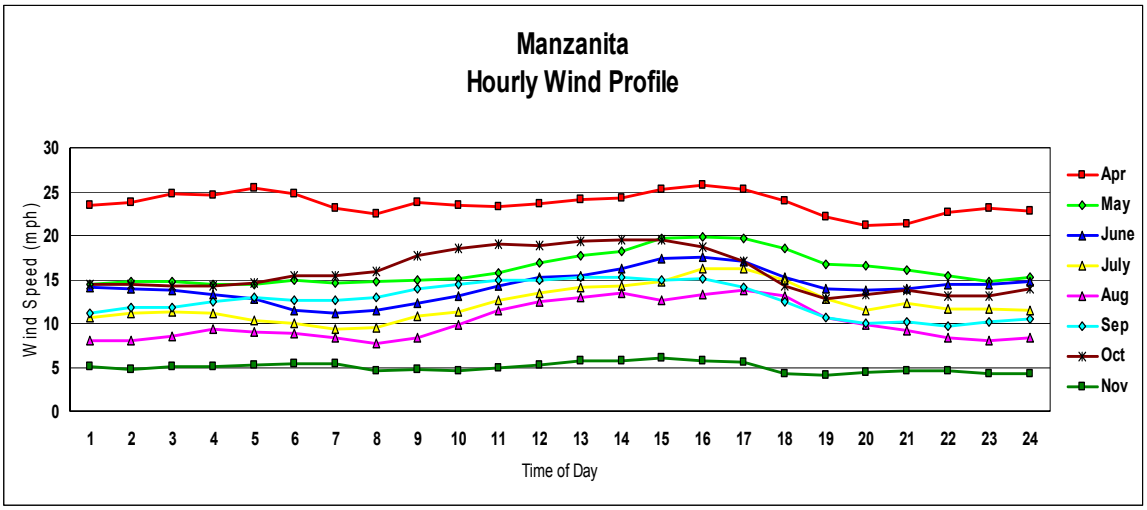
The estimated annual wind speed at 65 meters for one tower is 7.8 m/s, and 7.1 m/s at the second tower. The estimated net energy for the GE 1.5 with a 77 meter rotor diameter and 65 meter hub height is approximately 31%. This is consistent with a preliminary estimate made two months ago. I have calculated the annual wind speed at the masts through a correlation to the RAWS (Remote Automated Weather Station) at Ranchita. There were 219 days of concurrent data, with a correlation value, ' r ', of 0.91. There is just over 8 years of data that forms a good long-term record at Ranchita. Therefore I have a fairly high degree of confidence in the energy projection.

II. Wind Resource Characteristics

SeaWest has collected approximately 8 months of wind data at the Manzanita meteorological towers, beginning in late March of 2003 through the present. Presented below is a graph depicting the average wind speeds for each month, averaged for each hour of the day. Several patterns in the diurnal wind resource appear. First, two months show little variation of the wind speed during the day, with less than 1-2 mph differences between the hour with the highest wind speed and lowest. April of 2003 was characterized with above average number of storms passing through southern California. Because the storms which contain high winds occur randomly, there was no clear diurnal pattern when all 30 days are averaged together. The second month with small variations of the wind throughout the day was November. The data analyzed for this study ended in mid November, and during this period the winds were very light throughout the day with all hours averaging around 5 mph.

All the months between May and October of 2003 show a distinct diurnal pattern. The lowest wind speeds typically occur during the night-time hours, and the peak wind speeds occur in the early afternoon. This is a typical diurnal pattern seen throughout southern California during the summer months. It is a result of the heating of the desert during the day, causing rising air, which brings in cooler maritime air from the coast across the mountains into the desert.

The remaining four winter months are expected to follow the pattern shown in April and November, with little or no strong diurnal pattern. Instead, the highest wind speeds will occur randomly throughout the day depending on the time of day of the passage of winter storms.



III. Energy Estimate

Potential wind turbines were sited on the Reservation to determine the potential size and configuration of a wind project. The number of turbines that could be located in Sections 22 and 28 were estimated, and the potential project size was determined to be 19.5 MW. The following estimate determines that the average wind speed for the 19.5 MW alternative would be 7.65 meters per second (16.8 MPH).

Further analysis of the Reservation identified additional turbine sites could be utilized in portions of Sections, 27, 34 and 35, in the vicinity of Old mine Road, and away from existing homes. If additional turbines could be placed along the southern portion of Old Mine Road, the total MW would increase to 30.0 MW, however, since the added turbine sites are estimated to be slightly less windy, the average wind speed overall would decrease. We estimate that the average total wind speed would decrease from 7.65 meters per second to 7.5 meters per second.

The following table shows the projected annual energy for the project with all the assumptions. Also included is a table of the monthly wind speeds for the long term data at the RAWS Ranchita weather station, which was used for correlation purposes.

ESTIMATE OF ENERGY PRODUCTION

MANZANITA, SITE
Date Prepared: 11/14/03

Wind Turbine Type: GE 1.5MW with 77meter Rotor
Air Density = 1.02
Average Wind Velocity = 7.65 M/S @ 65M (Correlated to Ranchita)
Project Size is 19.5 MW

Wind Speed	KW	HOURS	KWH
0	0	67	0
1	0	253	0
2	0	422	0
3	0	606	0
4	29	803	23287
5	102	1022	104244
6	202	988	199542
7	340	930	316323
8	526	741	389699
9	765	544	415867
10	1032	426	439193
11	1252	356	445312
12	1392	311	432409
13	1449	255	369094
14	1500	255	382085
15	1500	203	305202
16	1500	138	207351
17	1500	120	179394
18	1500	106	158426
19	1500	67	100181
20	1500	59	88532
21	1500	30	44266
22	1500	23	34947
23	1500	11	16309
24	1500	6	9319
25	1500	6	9319
>25	0	14	0
	TOTAL	**8,760**	**4,670,299**

Gross Annual Production (KW-Hr)	4,670,299
Topographic (Adjust W/S to =7.8 & Site Conditions)	98%
Array Loss Adjustment	97%
Transmission Efficiency	98%
Availability	97%
Icing	100%
High Wind Hysteresis	100%
Column Wind	99%
NET ENERGY PRODUCED	**4,176,576**
NET CAPACITY FACTOR	**0.318**

Ranchita RAWS Weather Station Data
Monthly Average Wind Speeds (m/sec)

	1995	1996	1997	1998	1999	2000	2001	2002	2003
January	7.3		9.2	6.1	8.1	7.9	6.0		5.0
February	7.1		8.1	9.6	8.4	10.3	8.3	7.8	7.5
March	7.3		7.8	8.2	9.4	6.7	6.3	9.3	8.2
April	10.2	8.9	9.6	9.9	11.1	9.5	10.9	9.9	12.3
May		10.7	8.4	10.9	9.6	9.3	6.8	7.8	8.6
June		7.7	10.2	11.2	8.4	8.1	8.8	8.1	7.1
July		5.6	7.1	5.9	7.6	7.3	7.9	5.6	6.0
August		6.4	6.1	5.5	6.2	5.5	5.2	7.6	4.9
September		6.5	7.2	6.8	5.4	6.9		7.1	5.7
October		8.5	7.5	7.4	6.7	7.6		5.7	7.3
November		8.2	6.8	6.7	6.7	7.4		8.1	
December		8.4	7.5	8.3	7.2	6.0		6.8	
Annual Average									7.7

Ranchita Monthly Averages	Average Wind Speed (m/sec)
January	7.1
February	8.4
March	7.9
April	10.3
May	9.0
June	8.7
July	6.6
August	5.9
September	6.5
October	7.2
November	7.3
December	7.4
Annual Average Wind Speed	7.7

APPENDIX 2

FINANCIAL ANALYSIS
30.0 MW ALTERNATIVES USING GE WIND 1.5 MW TURBINES

Prepared by Steele Fairbanks
January 14, 2004

The following two financial models are of a 30.0 MW wind energy project located on the Manzanita Reservation. The assumptions for this model are typical for privately developed commercial wind projects in California.

Financial model assumptions are as follows:

- Wind Turbines are GE Wind 1.5 SL Wind Turbines on 65 Meter Tubular Towers
- Power Purchase Pricing is 5.38 cents per kilowatt-hour, flat over 20 years
- 100% of power would be sold to SDG&E
- Land Rent is 3.00% of gross revenue
- Financing would be non-recourse debt and equity financing
- The project would be owned by an entity able to utilize the federal Production Tax Credits

Alternative A is for a 30.0 MW wind project with an average capacity factor of 35%. This alternative would be 65% on Manzantia Reservation Land Sections 22 and 28, and 35% on adjacent windier land. **This alternative is financially feasible.**

Alternative B is for a 30.0 MW wind project with an average capacity factor of 30%. This alternative would be 100% on Manzanita Reservation land, Sections 22, 28 and along Old Mine Road. **This alternative is not financially feasible.**

No 19.5 MW alternative was included here because it is less feasible than Alternative B.

The conclusion of this financial model is that for a 30% capacity factor site (Manzanita Sites only), the project does not make economic sense. For a 35% capacity factor (Manzanita plus windier site), the project does make economic sense.

Alternative A

30.00 MW Manzanita Wind Project - Debt

Project Dates	
Construction Period Start	1-Feb-05
Construction Period Length in Months	4.00
Operational Period Start	30-Jun-05
Operational Period End	30-Jun-30
Operating Period Length	25

Technical Plant Assumptions Summary	
Turbine Capacity (kW)	1500
Turbine Count	20
Installed Capacity (MW)	30.00
Capacity Factor	35.00%
Average Net Output/WTG (GWh per annum)	4.60
Total Net Output (GWh per annum)	91.980000

Power Price Assumptions	
First Year Rate	0.05380
Flat Rate or Escalating	Flat
PPA Term (Years)	20
Post PPA Price (% PPA Price)	0.04500
PPA Payment Offset (days)	30

Operating Cost Assumptions	
Land Rent (% Energy Revenue) - yrs 1-15	3.00%
Land Rent (% Energy Revenue) - yrs 16-20	3.00%
Transmission Easement/Access Rights, p.a.	0
Site Management (MOMA) p.a.	6,000
Service Fee/WTG - years 1 thru 5	13,000
Service Fee/WTG - years 5 thru 10	13,000
Service Fee/WTG - years 10 thru end	13,000
Warranty Fee/WTG - years 1 thru 2	0
Warranty Fee/WTG - years 3 thru 5	0
Warranty Increase to 97% - years 1 thru 5	0
General Repairs/WTG - yrs 1 thru 20	8,000
Balance Of Plant Repairs/WTG - yr 1	1,500
Balance Of Plant Repairs/WTG - yrs 2 thru 20	2,250
Blade Cleaning/WTG	2,400
Electricity Usage/WTG	1,500
SCADA p.a.	12,000
Substation Maintenance p.a.	20,000
Interconnection Facilities Charge, p.a.	28,000
Insurance/WTG	7,200
Third-Party Admin., Audit, and Other Fees p.a.	25,000
Real Property Tax/MW	0
Personal Property Tax	531,692
Agency Fees p.a. - years 1 thru 10	20,000
Agency Fees p.a. - years 11 thru 19	20,000
Independent Engineer Fees p.a. year 1	20,000
Independent Engineer Fees p.a. year 2 thru end	10,000
Post-Warranty Parts Inventory ($=2005)	100,000

Monthly Energy Pattern	
January	3.6%
February	5.3%
March	8.4%
April	11.1%
May	13.9%
June	13.1%
July	12.2%
August	9.7%
September	8.4%
October	7.1%
November	4.3%
December	3.0%
Total	100.0%
Semiannual	
July - December	44.7%
January - June	55.3%
Total	100.0%

Financial Assumptions	
Tranche A Balance of Plant Loan (LIBOR+150bps)	7.50%
Tranche B Senior Loan:	
U.S. Treasuries - Avg. Life	5.25%
Term Loan Margin	3.25%
Swap Fees	0.00%
All-In Interest Rate	8.50%
Tranche C Junior Loan:	
U.S. Treasuries - Avg. Life	4.50%
Term Loan Margin	3.25%
Swap Fees	0.00%
All-In Interest Rate	7.75%
Financing Structure	
Senior Debt	21,610,000
Junior Debt	0
Equity	26,527,938
Total Capitalization	48,137,938
Debt/Total Capital	44.9%
Tranche B Loan Repayment Term	19.00 years
Tranche B Average Life	11.82 years
Tranche C Loan Repayment Term	0.00 years
Tranche C Average Life	#VALUE!
Forecast ADSCRs	
Year 1	1.400
Year 2	1.405
Year 3	1.410
Year 4	1.415
Year 5	1.420
Year 6	1.425
Year 7	1.430
Year 8	1.435
Year 9	1.440
Year 10	1.445
Year 11	1.450
Year 12	1.455
Year 13	1.460
Year 14	1.465
Year 15	1.470
Year 16	1.475
Year 17	1.480
Year 18	1.485
Year 19	1.490
Year 20	1.495
Sr. Debt Service Reserve (% of Annual DS)	50%
O&M Reserve (% of Annual O&M)	50%
Interest Rate on Reserves & Cash Balances	3.50%
Indexation Assumptions	
Base Date (Annual Adjustment)	01-Dec-05
General Inflation (GDP-IPD)	2.50%

CEC Incentive Funding Structure	
Total Incentive Available:	
Daggett	0
Total	0
CEC Funding Rate - All Years (Per kWh):	
Daggett	0.0000
Number of WTGs	0
CEC Payment Offset (days)	70

Sources and Uses of Funds		
Sources of Funds	**US($000)**	**%tage**
Senior Loan	21,610,000	44.89%
Junior Loan	0	0.00%
Equity	26,527,938	55.11%
Total Sources of Funds	48,137,938	100.00%
Uses of Funds		
Project Cost	46,234,113	96.05%
Senior Debt Service Reserve	1,284,824	2.67%
Junior Debt Service Reserve	0	0.00%
O&M Reserve	319,000	0.66%
Working Capital Reserve	300,000	0.62%
Total Uses of Funds	48,137,938	100.00%

Reserve Accounts		
	Check:	Check:
Sr. Debt Service Reserve	1,284,824.5	1,284,824.5
Jr. Debt Service Reserve	-	-
O&M Reserve	319,000.0	319,000.0
Working Capital	300,000.0	N/A

Project Economics	
Equity Investment	26,527,938
Post-Tax Equity IRR (20-Year)	**15.00%**
Post-Tax Equity IRR (25-Year)	**15.45%**
Sr. Debt Coverage Ratios:	
Minimum DSCR	1.100
Maximum DSCR	1.926
Average DSCR	1.446

Cost Breakdown			
Installation Fees ($0/MW)	0		
Other Development Expenses	1,200,000		
SCE Fee	0		
Substation/Inconnection/Transmission/Easements	5,000,000		
WTG Cost (Incl. FAA Lights, 97% Warranty) - $880/k	26,400,000	880.00	
SCADA System	375,000		
California Sales Tax	2,156,438		
Construction Cost - $190/kW	5,700,000		
Construction Interest Expense	537,500		
Non-Building O&M Mobilization	150,000		
Development Fees	4,000,000		
Senior DSR	0		
Junior DSR	0		
O&M Reserve Account	319,000		
Working Capital	300,000		
Legal Fees and Expenses	2,000,000	Cost Per kW:	
Total Project Cost	**48,137,938**	1,584	

Tax Assumptions	
Book Depreciation (years)	30
Depreciation	3-Yr MACRS
Combined Federal and State Tax Rate	38.50%
State Sales Tax Rate	7.75%
Base Production Tax Credit/kWh	0.015
PTC Inflation Factor - April 1, 2003	1.2048
PTC Annual Indexation	2.50%
PTCs Monetized (% of Total Produced)	0.0%

Alternative B

30.00 MW Manzanita Wind Project - Debt

Project Dates	
Construction Period Start	1-Feb-05
Construction Period Length in Months	4.00
Operational Period Start	30-Jun-05
Operational Period End	30-Jun-30
Operating Period Length	25

Technical Plant Assumptions Summary	
Turbine Capacity (kW)	1500
Turbine Count	20
Installed Capacity (MW)	30.00
Capacity Factor	30.00%
Average Net Output/WTG (GWh per annum)	3.94
Total Net Output (GWh per annum)	78.840000

Power Price Assumptions	
First Year Rate	0.06544
Flat Rate or Escalating	Flat
PPA Term (Years)	20
Post PPA Price (% PPA Price)	0.04500
PPA Payment Offset (days)	30

Operating Cost Assumptions	
Land Rent (% Energy Revenue) - yrs 1-15	3.00%
Land Rent (% Energy Revenue) - yrs 16-20	3.00%
Transmission Easement/Access Rights, p.a.	0
Site Management (MOMA) p.a.	6,000
Service Fee/WTG - years 1 thru 5	13,000
Service Fee/WTG - years 5 thru 10	13,000
Service Fee/WTG - years 10 thru end	13,000
Warranty Fee/WTG - years 1 thru 2	0
Warranty Fee/WTG - years 3 thru 5	0
Warranty Increase to 97% - years 1 thru 5	0
General Repairs/WTG - yrs 1 thru 20	8,000
Balance Of Plant Repairs/WTG - yr 1	1,500
Balance Of Plant Repairs/WTG - yrs 2 thru 20	2,250
Blade Cleaning/WTG	2,400
Electricity Usage/WTG	1,500
SCADA p.a.	12,000
Substation Maintenance p.a.	20,000
Interconnection Facilities Charge, p.a.	28,000
Insurance/WTG	7,200
Third-Party Admin., Audit, and Other Fees p.a.	25,000
Real Property Tax/MW	0
Personal Property Tax	530,925
Agency Fees p.a. - years 1 thru 10	20,000
Agency Fees p.a. - years 11 thru 19	20,000
Independent Engineer Fees p.a. year 1	20,000
Independent Engineer Fees p.a. year 2 thru end	10,000
Post-Warranty Parts Inventory ($=2005)	100,000

Monthly Energy Pattern	
January	3.6%
February	5.3%
March	8.4%
April	11.1%
May	13.9%
June	13.1%
July	12.2%
August	9.7%
September	8.4%
October	7.1%
November	4.3%
December	3.0%
Total	**100.0%**
Semiannual	
July - December	44.7%
January - June	55.3%
Total	100.0%

Financial Assumptions	
Tranche A Balance of Plant Loan (LIBOR+150bps)	7.50%
Tranche B Senior Loan:	
U.S. Treasuries - Avg. Life	5.25%
Term Loan Margin	3.25%
Swap Fees	0.00%
All-In Interest Rate	8.50%
Tranche C Junior Loan:	
U.S. Treasuries - Avg. Life	4.50%
Term Loan Margin	3.25%
Swap Fees	0.00%
All-In Interest Rate	7.75%
Financing Structure	
Senior Debt	22,950,000
Junior Debt	0
Equity	25,187,938
Total Capitalization	48,137,938
Debt/Total Capital	47.7%
Tranche B Loan Repayment Term	19.00 years
Tranche B Average Life	11.84 years
Tranche C Loan Repayment Term	0.00 years
Tranche C Average Life	#VALUE!
Forecast ADSCRs	
Year 1	1.400
Year 2	1.405
Year 3	1.410
Year 4	1.415
Year 5	1.420
Year 6	1.425
Year 7	1.430
Year 8	1.435
Year 9	1.440
Year 10	1.445
Year 11	1.450
Year 12	1.455
Year 13	1.460
Year 14	1.465
Year 15	1.470
Year 16	1.475
Year 17	1.480
Year 18	1.485
Year 19	1.490
Year 20	1.495
Sr. Debt Service Reserve (% of Annual DS)	50%
O&M Reserve (% of Annual O&M)	50%
Interest Rate on Reserves & Cash Balances	3.50%
Indexation Assumptions	
Base Date (Annual Adjustment)	01-Dec-05
General Inflation (GDP-IPD)	2.50%

CEC Incentive Funding Structure	
Total Incentive Available:	
Daggett	0
Total	0
CEC Funding Rate - All Years (Per kWh):	
Daggett	0.0000
Number of WTGs	0
CEC Payment Offset (days)	70

Sources and Uses of Funds		
Sources of Funds	US($000)	%tage
Senior Loan	22,950,000	47.68%
Junior Loan	0	0.00%
Equity	25,187,938	52.32%
Total Sources of Funds	48,137,938	100.00%
Uses of Funds		
Project Cost	46,167,426	95.91%
Senior Debt Service Reserve	1,351,511	2.81%
Junior Debt Service Reserve	0	0.00%
O&M Reserve	319,000	0.66%
Working Capital Reserve	300,000	0.62%
Total Uses of Funds	48,137,938	100.00%

Reserve Accounts	Check:	Check:
Sr. Debt Service Reserve	1,351,511.1	1,351,511.1
Jr. Debt Service Reserve	-	-
O&M Reserve	319,000.0	319,000.0
Working Capital	300,000.0	N/A

Project Economics	
Equity Investment	25,187,938
Post-Tax Equity IRR (20-Year)	**15.00%**
Post-Tax Equity IRR (25-Year)	**15.38%**
Sr. Debt Coverage Ratios:	
Minimum DSCR	1.100
Maximum DSCR	1.940
Average DSCR	1.448

Cost Breakdown		
Installation Fees ($0/MW)	0	
Other Development Expenses	1,200,000	
SCE Fee	0	
Substation/Inconnection/Transmission/Easements	5,000,000	
WTG Cost (incl. FAA Lights, 97% Warranty) - $880/kW	26,400,000	880.00
SCADA System	375,000	
California Sales Tax	2,156,438	
Construction Cost - $190/kW	5,700,000	
Construction Interest Expense	537,500	
Non-Building O&M Mobilization	150,000	
Development Fees	4,000,000	
Senior DSR	0	
Junior DSR	0	
O&M Reserve Account	319,000	
Working Capital	300,000	
Legal Fees and Expenses	2,000,000	Cost Per kW:
Total Project Cost	**48,137,938**	1,564

Tax Assumptions	
Book Depreciation (years)	30
Depreciation	3-Yr MACRS
Combined Federal and State Tax Rate	38.50%
State Sales Tax Rate	7.75%
Base Production Tax Credit/kWh	0.015
PTC Inflation Factor - April 1, 2003	1.2048
PTC Annual Indexation	2.50%
PTCs Monetized (% of Total Produced)	0.0%

APPENDIX 3

GE WIND TURBINE INFORMATION
POWER CURVE and
SPECIFICATIONS

Prepared by GE Wind Energy
January 7, 2004

MANZANITA WIND ENERGY

BUSINESS PLAN

PREPARED FOR THE MANZANITA BAND OF THE KUMEYAAY NATION

DEPARTMENT OF ENERGY NUMBER DE-FC36-02GO12111, A000

Prepared by: SeaWest Consulting, LLC

September 2004

IMPORTANT NOTICE

This Business Plan has been prepared by SeaWest Consulting, LLC., ("SeaWest") for presentation to the Manzanita Band of the Kumeyaay Nation ("Manzanita") per the requirements of the Consulting Contract between Manzanita and SeaWest.

This document shall be considered confidential and proprietary, and is intended for the use of Manzanita only, unless otherwise specifically authorized by Manzanita in writing.

This Study has been prepared from information gathered by SeaWest, which makes no promises, guarantees, or representations as to the accuracy or completeness of this document, including, without restriction, economic and financial projections, and risk evaluation. No part of this Study should be construed as legal, financial, or tax advice. Manzanita should consult professional advisors on such matters.

Prepared for:

Manzanita Band of the Kumeyaay Nation

P.O. Box 1302
Boulevard, CA 91905
Attention: Mr. Leroy Elliott, Chairman

Report Prepared By:

SeaWest Consulting, LLC
1455 Frazee Rd., Suite 900
San Diego, CA 91910

September 26, 2005

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II. Market Analysis for Wind Energy in San Diego County

SeaWest Consulting, LLC has been engaged by the Manzanita Band of the Kumeyaay Nation "Manzanita" to prepare a wind energy feasibility study, and to develop a Business Plan based on the potential for a wind energy generation project on Reservation land. This work is being funded under the Department of Energy's Tribal Energy Program, DOE program number DE-FC36-02GO12111, A000. The following is the Business Plan developed to provide Manzanita with economically-based plans that would provide multiple benefits to the tribe and its members.

In meetings and discussions with the Manzanita Renewables Committee, the Executive Committee and tribe representatives, various alternatives for Manzanita to pursue were discussed. Options that were adjudged to be infeasible have been discarded. The alternatives are described in Section III. The most feasible option was determined by Manzanita to be the following:

Option 1. Work out a long-term wind lease with an established wind energy developer. Under this option Manzanita's principal role would be as a landowner and regulatory authority for a 19.5 to 21 MW wind energy project developed on Reservation land, and owned and operated by others. **This option is called the Preferred Option.** Under this option wind turbines could be built on Sections 21 and 28, approximately 1 mile north/northwest of any existing houses on the Reservation. No wind turbines would be proposed within 0.8 mile of the Tribal Office, Old Mine Road, the Horse Camp, MAC building or RV campground.

Commercial wind energy projects are dependent on their ability to deliver energy to a creditworthy purchaser of wholesale electricity who is able to receive the energy without incurring extensive "wheeling" charges (fees to deliver the power over transmission lines owned by others) or system impacts that drive up the utility's cost of using the energy. Wind generation projects are not able to sell energy directly to retail customers under California regulations, without incurring substantial regulatory requirements that make this infeasible. In the area around Manzanita's Reservation, only San Diego Gas & Electric, the major local utility, is the likely company who meets these criteria. San Diego Gas & Electric ("SDG&E") serves 3 million customers in San Diego County and southern Orange County, and purchases more than 14,990,000 megawatt-hours of energy annually. SDG&E is required to purchase increasing amounts of renewable energy such as wind, geothermal, solar, hydroelectric and biomass generated power under the 2002 legislation known as SB 1078, the Renewable Portfolio Standard. Because of this requirement, SDG&E has been soliciting bids from wind and other renewable generators to provide energy on a long-term basis.

The only other existing potential purchaser of wind energy is Imperial Irrigation District, ("IID"), a community-owned utility providing power to approximately 100,000 customers in Imperial County, the Coachella Valley, and a small portion of San Diego County. Based on this relatively small customer base, the maximum amount of renewable energy IID must purchase each year to satisfy requirements of the Renewable Portfolio Standard is equal to only about 7.9 MW additional per year, which is too small to be commercially viable for wind energy.

Consequently, IID provides very little or no demand for new wind energy generation for many years to come. In addition, IID's power lines are located many miles from Manzanita's site, resulting in high costs to deliver energy from the site to IID.

SDG&E recently filed a long-term energy resource plan with the California Public Utilities Commission (CPUC) which calls for increased renewable energy supplies to meet the future energy needs of its customers. These increased renewable energy purchases will enable SDG&E to comply with California Senate Bill 1078, which requires SDG&E, SCE and PG&E and others to increase their purchases of power generated from renewable resources by 1 percent each year, reaching 20 percent of all purchased electricity by 2017.

SDG&E has made substantial progress toward meeting this goal, is presently ahead of its 2.0 % target for purchasing renewable energy for 2004, and expects to purchase 5.3% of its energy in 2004 from renewable sources. Although this implies that SDG&E does not need to purchase additional renewable energy, they are currently evaluating bids for renewable energy supply submitted August 12, 2004, and are expected to acquire additional renewable energy from those bids. We believe the August 2004 bids will satisfy a large portion of SDG&E's future renewable energy supply that it needs to meet its Senate Bill 1078 requirements for many years to come. It is not presently known if SDG&E is planning additional solicitations during the next two years. These facts suggest there are limited and infrequent opportunities for Manzanita to take advantage of wind project opportunities in the present time frame.

In addition, a wind development is being pursued on the adjacent Campo and Ewiiaapaayp reservations by Superior Renewable Energy, a small Houston Texas energy company that has recently started to pursue wind energy in California. Those two tribes have each signed a land lease/easement agreement with Superior Renewable Energy to potentially develop a wind project on their land. Our research indicates that the Campo and Ewiiaapaayp sites would have similar wind speeds to Manzanita land, resulting in similar energy pricing, project economics and feasibility. We would expect Superior hopes to develop a large wind project on land that is immediately adjacent to the Manzanita Reservation, near the common boundary between Manzanita and Campo, since that portion of the Campo reservation is the windiest. Any wind turbines built on Campo land would be very visible from houses on the Manzanita Reservation, and would likely be less than ¼ mile away from any houses near Blackwood Road, along the southern boundary of the Reservation.

Wind energy bids must show the site location, point of delivery of the energy, and a general description of the project. The bid deadline for the SDG&E solicitation passed on August 12th, 2004, so it may already be too late to participate in this round of wind bids if SeaWest and Superior Renewable Energy's bids cannot be adapted to include the Manzanita site. The only remaining opportunity for Manzanita in the near term (the next two to six years) is to get an agreement in place with a wind developer prior to the final SDG&E deadline around November 2004, and to take steps to finalize that process soon, if the opportunity has not already passed. Unless a lease with a capable wind developer who is likely to secure a power purchase agreement can be signed prior to the SDG&E final bid short-list milestone, (expected to occur around November 2004), it is unlikely that an opportunity for a wind project on Reservation land will arise for 4 to 6 years.

III. Business Approaches

Energy Pricing

Viability of a wind development is highly dependent on how windy the site is, since this determines the project revenue and major costs for the project. Slight differences in wind speed result in large differences in generated energy, and therefore in revenue, since revenue increases as approximately the cube of the wind speed. The Manzanita site is only moderately windy, although it is marginally better than most potential sites in San Diego County. This means that energy from this site will not be low priced, thereby limiting its likelihood of developing unless costs to develop and deliver this energy can be kept low. Estimates of energy pricing from the site, given the moderate wind speed and site conditions, result in energy priced between $54 and $58 per megawatt-hour. This is considered to be at the upper end of market acceptable prices for wind energy, and is more expensive than is typical in other areas of Southern California such as the Palm Springs region, where market pricing for wind energy is in the range of $42 to $58 per megawatt-hour, and is often below $53. The ability of a wind project to meet market pricing is the main determining factor of whether or not a project can be built, so the conclusion is that the project is potentially feasible, but marginally so, and must be able to be developed with reasonable overall costs in order to be viable.

Various options were developed and considered for Manzanita. They include the following:

Option 1. Work out a long-term wind lease with an established wind energy developer. Under this option Manzanita's principal role would be as a landowner and regulatory authority for a 19.5 to 21 MW wind energy project developed on Reservation land, and owned and operated by others.

Option 2. Work out a development arrangement with an experienced wind energy developer which shares various responsibilities and benefits between the parties. Under this option Manzanita and its development partner would sell the project to a long-term equity owner upon completion. Barriers to this option include difficulty in Manzanita moving forward quickly with developer partners due to limited time, limited financial resources and experience.

Option 3: Wait and see what happens in the wind energy market or reject wind development proposals. This option assumes Manzantia would not pursue wind development opportunities with any party, and would continue to monitor the market for potential changes. Under this option it is likely that proposed competing wind projects on Campo and Ewiiaapaayp reservations by Superior Renewable Energy would be built during the next two years, utilizing all the presently available transmission capacity in the immediate area. Discussion with Superior Renewable Energy, combined with our knowledge of the wind patterns on the Campo Reservation indicates that Superior's wind turbines would most likely be placed adjacent to the northern boundary they share with Manzanita, since that portion of the Campo reservation is the windiest. We expect new large wind turbines would be placed between where the anemometer mast was installed by Superior Renewable Energy and the Manzanita Reservation. Any wind

turbines built on Campo land would be very visible from houses on the Manzanita Reservation, and would likely 500 to 900 feet away from houses near Blackwood Road, along the southern boundary of the Reservation.

Under this option three disadvantages would occur. First, there is limited transmission capacity presently available, enough for a Manzantia wind project **or** a Campo/Ewiiaapaayp project, but not for all three. New transmission capacity would need to be built by SDG&E and the California Independent System Operator to connect additional wind turbines on Manzanita's land, should a project materialize more than two years from now. These upgrades to the system will take time, and are available on a first come basis. As a result, a project developer ready to make commitments and with agreements in place with the tribes would have the best position, followed by others who would have to wait until the additional capacity is made available. It is feasible now, but is not known if this will be feasible in the future. The second disadvantage is that Superior Renewable Energy's project would likely go ahead within two years, regardless of what Manzanita decides. Therefore, Manzanita residents would have the visual impacts of wind turbines near existing homes, but no income from wind turbine royalties. The third disadvantage is that the opportunity for wind generation is highest now, with opportunities for additional wind generation being developed beyond 2006 uncertain. This is because federal incentives for wind are not likely to be extended beyond 2006, substantially driving up the cost of wind power from projects that are developed after December 2006. In addition, SDG&E is likely to be able to completely satisfy its need for new wind generation completely with the bids it is currently evaluating, with no future need to be filled. Consequently, we believe the opportunity for wind development is greatest now, and will be much lower or completely gone by January 2005.

Options that were considered but discarded included the following:

Option 1. Manzanita could develop the 19.5 to 21 MW wind project themselves (pursue grants, pursue the power purchaser, contract with an EPC contractor, secure bond financing, etc.) and sell it upon completion to a company that can use the federal tax credits. The capital requirements are substantial (about $28 million to $35 million, depending on project size and details) and the requirements are very high. The level of difficulty in developing a wind generation project is quite high, presenting a difficult challenge to experienced wind energy companies with adequate capital. Therefore, this option is not really available to Manzanita.

Option 2. Manzanita could develop and own a smaller wind project. This option assumes Manzanita would pursue DOE grants and secure bond financing to fund development activities, bond finance construction and equipment acquisition, and own the downsized 7 to 10 MW wind project on a along-term basis. This option was discarded because a smaller project would not be able to take advantage of economies of scale, thereby experiencing increased costs that would make the project infeasible. Further, Manzanita does not pay federal income taxes and therefore cannot utilize the federal production tax credits that account for 20% of the total value of the project. These factors make the project economics unfeasible, since the market price of energy from this project requires the cost reductions afforded by the PTC.

Option 3. Develop a very small project and use it to serve the Reservation's load under a net-metering scenario. This option was discarded because the total electric load is very small,

and the residences and community buildings are on separate meters served by San Diego Gas & Electric, the local utility. The total load is estimated to average only 30 to 50 kilowatts year-round, with summer peaks. In order to utilize this structure, all of the individual customers and community buildings on the reservation would have to be served by SDG&E as a single customer, requiring a major change in the way electricity is purchased, metered and billed. Further, a separate entity would need to be formed to act as the SDG&E customer, and the size of Manzanita's load is much too small to support the expense of setting up and maintaining this structure.

Preferred Option:

The Preferred Option is for Manzanita to negotiate a wind energy lease with an established wind company with a demonstrated track record, and a likelihood of successfully developing a project with SDG&E. Manzanita has already been approached by two wind energy developers who are interested in leasing Manzanita's sites for wind energy generation, demonstrating that there is a limited market for wind energy on this site. Since there are few and infrequent opportunities for wind developers to get power purchase agreements with SDG&E, Manzanita should work with the developer who has the greatest overall likelihood of success, rather than basing its decision primarily on who offers the best economic terms.

Under this scenario, Manzanita would sign a long-term wind energy land agreement (potentially in the form of a lease, easement or land use agreement) with a qualified wind developer who can demonstrate that there is a likelihood that he would be able to complete a wind project on the site, resulting in long-term rental income for Manzanita.

Benefits to Manzanita of the Preferred Option include:

1. Immediate income for Manzanita, in the form of option or lease payments.

2. Financial risks, development risks, and extensive development work would fall on the developer, rather than Manzanita.

3. Once the project is developed there would be a significant long-term stream of rental payments to Manzanita for the energy generated by the project that is unlikely to be affected by changing or adverse economic conditions in the region.

4. Manzanita would maintain a level of control over the site and project operator, since Manzanita is both the landowner and regulatory authority.

5. Manzanita would still own the land, and full use of it would return at the end of the project period (approximately 21 to 26 years from construction).

6. Manzanita would diversify its income from those sources where the tribe presently plans to earn income. This wind energy income would not be significantly affected by downturns in

the local economy, as could other income sources such as the motorcycle track, RV park, or casino income.

V. IV. Co[illegible]

Since the windiest land is located on the former BLM property, no wind turbines would need to be placed near existing houses or buildings on the reservation. Manzanita should work with the developer to insure this compatibility is maintained by requiring a minimum setback distance from homes and specified buildings of 2,640 feet (1/2 mile).

In order to make the project economics most favorable, the owner of the wind project must be able to utilize federal production tax credits ("PTC"). These tax credits account for approximately 20% of the value of the wind project, and can only be utilized by large companies who have profitable US operations that they desire to offset with tax credits, to lower their overall tax liability. Examples of such companies that own wind projects in California include Florida Power & Light, Shell (Shell Renewables), PPM Energy, GE Wind Energy, Cinergy Corporation, PGE-National Energy Group, and Caithness Energy. These companies are all quite large, with balance sheets in the hundreds of millions or billions of dollars.

No new wind projects other than very small self-generation wind projects are owned by entities other than these types of large corporations. Manzanita should consider a lease structure that anticipates the wind project being assigned to such an owner entity.

The wind project would be developed under an easement, land lease or similar agreement that grants the lessee rights to construct and operate a wind energy project on Reservation land. For purposes of this discussion we will refer to any of these forms of agreement as a "lease". It is customary that this lease would establish the following terms:

Area of the project improvements
Payments to Manzanita and the timing of these payments
Obligations of the parties
Term of the lease, including number of years and renewal provisions
Assignment terms and conditions
Rights of access, overhead and underground utility lines, and non-disturbance
Security stipulations and conditions
Insurance and liability requirements
General business requirements

Nearly all wind projects built in the US are developed using a similar structure as above.

Wind developers typically pay landowners several types of payment, from the initial signing of the lease, to the conclusion of the project. For a site large enough for a 19.5 MW wind project,

an initial payment of $10,000 to $25,000 is typical. This initial payment or option payment is intended to give the developer exclusive control of the site until further work can be completed, moving the project closer to the actual development stage.

Once wind data is acquired by the developer or the developer knows what wind speeds to expect through studies on adjacent land, the developer can estimate the cost of the generated electricity to the utility. At this point, the developer can prepare a somewhat reliable bid to the utility, as a first step to getting a power purchase agreement (PPA). Without a bid being accepted by SDG&E, the developer cannot represent that they have a any certainty that they will be able to develop the project. It is common for inexperienced wind developers to sign up land and then be unable to develop a project. Since the main income for a wind lease is paid during the stages after the project is certain it will proceed, it is important Manzanita choose the best developer that has the greater likelihood of being able to get a power purchase agreement, since without one the project cannot advance.

Rent for wind energy projects are typically paid either by a percentage of royalty from the sale of energy, which varies from month to month and year to year according to energy rates and windiness, or is based on a fixed rate according to the number of megawatts of wind turbines installed. Either structure can be set up to result in equal payments over time to the landowner. Typical rent payments derived from sale of energy would range from 3% to 4% of gross revenue if based on a royalty structure, or could be based on a fixed payment of approximately $4,000 to $5,000 per megawatt of turbines installed. Some rent agreements include an inflation factor that steps up the rent over time, usually equal to the rate of inflation (between 2% and 3%). Under a royalty structure, if the developer over-estimates the wind speed of the site, the actual rent paid to Manzanita would be below the projected rate. If the rental structure is fixed, Manzanita would receive the agreed-upon rent payments, regardless of whether the developer correctly estimated the wind speeds and energy expected. This is another reason why selecting an experienced wind developer is important.

SeaWest Consulting attended a meeting at the Manzanita Renewables Committee where Mr. Brison Ellinghaus of SeaWest WindPower, a separate but related wind company presented a rental structure to Manzanita. Under that rental proposal royalties of approximately $55,500 the first year were estimated to be paid to Manzanita for a 15 MW wind project on the Reservation. If the project were increased to 19.5 MW, this first year rent would be $72,180. These rent payments would increase each year by an inflation factor of 2.5%, and would also increase in year 20 and beyond by an additional percent. The resulting income stream would total $2,777,380 over 30 years for the 15 MW sized project, and would total $3,610,600 for the 19.5 MW sized project. If the rental period is only 25 years, this income would total $2,056,000 for a 15 MW sized project, and $2,672,700 for a 19.5 MW size project. In addition to this rent, SeaWest WindPower proposed payments to Manzanita for signing the agreement, for the initial lease period, and for installation of turbines before the project begins commercial operation. These payments totaled an additional $36,500. I am aware that SeaWest later increased the proposed payments prior to project operation, but the details are not available.

Based on these proposed terms, Manzanita could expect income from the 19.5 MW wind project of approximately $2,700,000 to $3,650,000 over a 25 year project life. Since modern wind turbines are certified to last up to 30 years, this is a very financially beneficial project outcome.

SeaWest Consulting does not have any information on any offers from other developers who may have approached Manzanita.

Net Income to Manzanita

Manzanita would expect to have some minor on-going costs associated with hosting a commercial wind project on the reservation. These would include costs associated with monitoring or auditing the revenue payments to Manzantia, any reporting required under BIA or Department of Energy programs, and oversight of the operation and maintenance company who maintains the site and wind equipment. In addition, if Manzanita issues a permit for the wind project, there would be some costs in reviewing and recordkeeping associated with this permit. These costs are expected to be very small in comparison to the revenue received from the project. It can be assumed that nearly all the income would be captured by Manzanita on a net basis.

VII. Recommended Strategies

The following are recommendations for Manzanita to create new long-term income for the tribe, while assuring the best compatibility with existing uses on the Reservation:

1. Manzanita should diversify its income by including wind energy rental income under the Preferred Option. Wind energy income could total between $ 2,700,000 and $3,650,000 over a 25+ year project life, depending on the project size. This income would not be significantly affected by downturns in the local economy, as could other income sources such as the motorcycle track, RV park, or casino revenue. In addition, casino gaming is on track to expand so much that there will eventually be too many casinos and slot/video poker machines in operation in the future. Wind energy income would be unaffected by any downturn in gaming income due to this overabundance in gaming.

2. Manzanita should sign a long-term wind energy land agreement (potentially in the form of a lease, easement or land use agreement) with a qualified wind developer who can demonstrate the likelihood they would be able to complete a wind project on the site, resulting in long-term rental income for Manzanita.

3. Manzanita should take immediate action in pursuit of this potential for a land agreement, since the opportunity will decrease or go away entirely by approximately December, 2004.

4. The land agreement should include significant payments to Manzantia for signing the agreement. Since the BIA would require approval of any land agreement that spans more than 7 years, the agreement and payment schedule would need to allow for this requirement.

5. The agreement should place the financial risk and development risk on the developer, rather than Manzanita, and should include requirements for equipment removal at the end of the project.

6. Manzanita should oversee a project impact review process and maintain authority through a permit over the project so that the owner or operator could not substantially change the project once it is built, in a manner that increases its impacts on Manzanita.

7. New wind turbines should be restricted to the former BLM property, so no wind turbines would be placed near existing houses or buildings on the Reservation. Manzanita should work with the developer to insure this compatibility is maintained by requiring a minimum setback distance from homes and specified buildings of 2,640 feet (1/2 mile).

8. Manzanita should require that any wind turbine models and types meet the standards of noise and safety set by the largest manufacturers of the industry.

VIII. Costs to Proceed

Expected costs to proceed would include the following:

1. Hiring legal counsel to represent Manzanita's interest in a land lease or similar instrument that would provide site control, wind data rights, and the terms identified in Section V above. This is estimated to cost between $2,000 and $3,500.

2. Environmental Review of a project development proposal would occur in the future, probably during mid-2005. Manzanita should require the developer to submit a review fee to cover review of the development proposal, and use this fee to hire a consultant to assist Manzanita in performing its review and permit issuance. Typical costs for this would range from $10,000 to $15,000, depending on the complexity of the project.