Just Wind - Wind Farm Development

2470 Fairview Lane • Mound, Minnesota 55364 Phone (612) 245-6608

June 23, 2007

Ilona A. Jeffcoat-Sacco
Executive Secretary
North Dakota Public Service Commission
600 East Boulevard Avenue Dept. 408
Bismarck, North Dakota 58505-0480

RE: Section C, J, K, and L: North Dakota Public Service Commission
Ten-Year Plan Report. Chapter 49-22 NDCC
Energy Conversion and Transmission Facility Siting.

Dear Secretary Jeffcoat-Sacco:

In accordance with NDCC Section 49-22 of the North Dakota Public Service Commission's administrative rules, Just Wind LLC, ("Just Wind") respectfully submits one original and ten (10) copies of the Ten Year Plan Report.

The report contains as much information as available at this time. It is the intention of Just Wind to update and improve this information. As that happens, updated copies of reports, studies and findings will be forwarded to the North Dakota Public Service Commission.

Section C:

Location:
Maps depicting the Development site are enclosed in the report.

Size and Type:
Technical specification for the MWT 95/2.4 MW turbines are attached as Figure 14 of the report.

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Proposed Timetable:

Due to the pressure on the wind industry at this time, a timeline is both best guess, and anticipated. As mentioned in the report, some items are complete while others are in process. A number of studies are in process as well as planned to start. The transmission Queue process can be variable. At this time anticipated Commercial Operation is expected to be by December 31, 2008. That is for Phase 1 of the project. Phase 2 is expected to start sometime within 2009.

The reason for submitting the Ten Year Plan at this time is to meet the required July 1st timeline. Just Wind will be submitting its Site Application to the North Dakota Public Service Commission sometime after July 1st, 2007. Just Wind plans to start site survey and environmental studies shortly. Full scale construction is dependent on a number of items that yet need to be completed. Upon successful completion of those items, Just Wind anticipates to start construction in the fall of 2007.

Pollutants:

Wind is a non-polluting source of renewable energy. Just Wind will work closely with the necessary agencies to ensure minimum environmental impact at or near the Development site. Some items have been identified in the report.

Section J:

Regional Coordination:

Depending on the outcome of Requests For Proposals (RFPs), with certain power companies, Just Wind hopes to be a Designated Network Resource for regional power companies to help them meet their growing need for power production. The Interconnection Process as well as the Transmission Service Request, helps determine a coordinated regional plan to meet energy needs as well as system reliability.

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Section K:

Environmental:
The report at this time describes efforts to minimize the environmental impact at and around the Development site. Environmental reviews are planned to be an ongoing process at or around the development site throughout the term of the project. The wind farm project will contribute to energy independence from foreign sources as well as help in the fight against global warming by being a non-polluting, environmentally friendly, affordable renewable energy source. As environmental reviews and additional study results are gathered, that information will be forwarded to the PSC.

Section L:

Projected Demand:
Based on the Annual Energy Outlook, a report by the Department of Energy/ Energy Information Administration, the Official Energy Statistics from the U. S. Government, continued growth in electricity use is expected in all sectors. Total electricity sales increase by 50 percent in the AEO2006 reference case, from 2004 to 2030. The largest increase is in the commercial sector, as service industries continue to drive economic growth. By customer sector, electricity demand grows by 75 percent from 2004 to 2030 in the commercial sector, by 47 percent in the residential sector, and by 24 percent in the industrial sector. Just Wind plans to be able to help meet the electrical needs of the region, with this project and future projects.

Conclusion:
If additional information is needed, please contact me. My contact information is in the report.

Respectfully Submitted,

Jeffrey L. Metzger.

LOGAN COUNTY

WIND FARM PROJECT

A LARGE WIND ENERGY

CONVERSION SYSTEM

Ten Year Plan Report For:

THE NORTH DAKOTA PUBLIC SERVICE COMMISSION

Chapter 49-22, NDCC
Energy Conversion and Transmission Facility Siting

Prepared by

Just Wind, LLC.

2470 Fairview Lane • Mound, Minnesota 55364

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Federal Tax ID Number	20-5335654
Project Location	Bryant Township, Logan County Glendale Township, Logan County Near Napoleon, North Dakota

June, 2007

Subject: "**Logan County Wind Farm"**

Enclosed you will find information providing a summary of our project. At this time the majority of the information pertains to Phase One only. As the project develops further, we can and will provide additional information and contacts. I hope the information provided will help you to make an informed decision about our project resource. If need be, please contact me.

A. INTRODUCTION

1. Project Overview:

Just Wind plans to construct up to approximately 500 megawatts (MW) of nameplate wind power generating capacity (the "Development"). The total development will consist of 2 Phases of approximately 210 Mitsubishi MWT 95/2.4 wind turbine generators and associated collection system, including underground power collection lines, turbine access roads, underground telemeter communication lines, substation and any other equipment necessary for successful operation of the Development. Just Wind also plans to incorporate a Hydrogen Production and Storage Facility within the Development that will have a generation capacity of approximately 175 MWs as a back up generation system for the times the wind isn't blowing to meet our contractual obligation to the transmission system. Our total Interconnection Request is for 750 MWs.

The first Phase of the Development will consist of 80 Mitsubishi MWT 95/2.4 wind turbine generators. Which will have a nameplate capacity of 192 MWs. The new substation design will accommodate 375 MWs of power handling capacity for the first Phase, along with the possible Hydrogen System, with the understanding that the Phase 2 side of the Development will add an additional 375 MWs of substation power handling capacity. This will accommodate the addition of approximately 130 turbines, which will have a nameplate capacity of 312 MWs in Phase 2, which we hope to build within the next few years.

For the purpose of our initial submission, information for Phase One and Two, will be considered and shown. Not to include the Hydrogen Facility. As that will be added on a different time line.

Available wind monitoring data analysis of 5 years done by 2 independent engineering firms indicates an excellent wind resource. (Figure 1). The Development sites identified in this information are located in Bryant, and Glendale Townships in Logan County North Dakota. (Figure 2).

2. Development Summary:

Development Description

Just Wind proposes to own, finance, construct, operate, maintain, and manage the Development near the town of Napoleon, North Dakota. The Development will utilize Mitsubishi MWT 95/2.4 MW wind turbines.

The 2.4 MW wind turbines will be mounted atop free standing tubular towers. The towers will be 80 meters (262.46 feet) in height. The blades on the wind turbines are 46.2 meters (129.73 feet) long, resulting in a maximum overall height of the wind turbines of 126.2 meters (329.19 feet) when one blade is in the vertical position. The rotor diameter will be 95 meters (266.76 feet).

Proposed Site

The proposed Development site is located in Logan County, North Dakota, near the town of Napoleon. The first Phase Development site will be in Bryant Township (T-135-N, R-72-W), Phase Two Development site will be in Glendale Township (T-136-N, R-72-W), (Figure 2). Just Wind has obtained Lease Options and Wind Energy Lease Agreements, sufficient for Phase 1. All turbines will be sited within the Development site boundary. The total Development site area including the wind plant and land leases is approximately 17,000 acres. The total Development is expected to consist of approximately 64 acres.

The Development site exhibit's a relative flat elevation to the surrounding land areas and an excellent wind exposure for optimum energy capture. (Figure 13). An extensive wind resource assessment based on 5 years of data has been performed in and around the Development site by two independent wind engineering firms.

Figure 2 shows detailed maps of the Development site including: general county location with county boundaries, topography of the area, the project site boundaries, Prime Farm land with section numbers, Land Cover, Hydrological Soil Groups, Wetlands, a FEMA Q3 Flood Data Map and a Threatened and Endangered Species Map.

Figure 3 is a map depicting a potential design of the proposed facility. It is important to emphasize that the depicted locations of these facilities, including but not limited to the wind turbines and access roads, are likely to change subsequent to further site study and planning activities by Just Wind.

Projected Output

Under estimated average wind conditions in the Development site, the first phase of 192 MW wind power plant will deliver approximately 717,094.2 megawatt hours (MWh) per year.

Siting Plan

The Development site is located in the relative southeastern part of North Dakota. Just Wind explored a number of prospective wind sites in the region and ran comparisons to select the site which offers the optimum advantage in terms of available wind resource, existing infrastructure and ability to deliver power directly to the transmission system.

Spacing between the wind turbines is approximately 4.1 to 7.1 rotor diameters (RD). (Figure 4). Extra land in available in the Development site to provide flexibility in final turbine placement. The turbines will be placed using the established County Zoning setback requirements from occupied residence and public roads. Turbines will not be located in wildlife management area (WMAs), scientific and natural area (SNAs), or Class 3, 4, or 5 wetlands. Just Wind is working closely with the North Dakota Game and Fish Department and the U. S. Fish and Wildlife Service in our environmental studies to develop an environmentally and ecologically friendly project.

Just Wind's engineers will attempt to maintain the required setbacks based on the Logan County Zoning Ordinance or greater. Establishing a greater setback from homes allows for greater public acceptance within the Development site. Just Wind strives to create positive working relationships with homeowners within the Development site and feels the increased setback contributes to this.

Commercial Operation

The Development is anticipated to be fully commercially operational by December 31, 2008.

Operation and Maintenance

Just Wind plans to enter into a Maintenance Agreement with Mitsubishi Power Systems for the Operation and Maintenance of the Development for the 20-30 year minimum life of the project. Just Wind is also engaged in negotiations with Mitsubishi to train local individuals in the Service and Maintenance of the MWT 95/2.4's.

Site Control

As of this report, Just Wind has obtained Option Agreements and Wind Energy Lease Agreements with landowners for sufficient land within the Development site for the installation of the 192 MW wind generation plant.

Permits and Licenses

Just Wind and its associates will undertake all required environmental reviews and obtain all permits and licenses that are necessary to complete the Development.

Development and Construction

Just Wind and/or its construction affiliates, will perform or manage all development and construction activities. Specifically, Just Wind and/or its affiliates will:

- Acquire land leases (Done)
- Install wind sensors (Done)
- Measure and analyze the wind resource and site the 2.4 MW wind turbines. (Done)
- Undertake environmental review and obtain specific permits and licenses for the Development. (In Process)
- Perform civil engineering for construction of the Development, construct foundations, towers, the power collection system and substation, assemble and install 2.4 wind turbines. (Some work in Process)
- Install the communication system, including supervisory control and data acquisition software and hardware.
- Arrange project financing.

3. Project Ownership:

Just Wind plans to maintain ownership of the Development, but reserves the right to assign ownership to one or more institutions or other investors or project entities formed for that purpose.

As of now, the project ownership is based on the Minnesota "flip". The financing structure will allow for as much local ownership as possible in the project, with PTC investors involved for both debt and equity financing.

a. Just Wind, LLC

Just Wind, LLC is a startup wind development company that is looking to undertake three core activities in the wind industry: development, operations and maintenance, and asset management services. At this time, Just Wind is looking to develop two additional sites in North Dakota with plans to install its wind monitoring equipment at one of those sites in the Spring or Summer of 2007.

B. DEVELOPMENT DESCRIPTION:

Just Wind has developed this report to meet the necessary requirements of the North Dakota Century Plan, The North Dakota Administrative Code, Article 69-06, The North Dakota Conversion Facility Siting Overview NDCC Chapter 49-22, Jurisdictional Energy Conversion Facilities 49-22-03(5), The North Dakota Transmission Facility Siting Overview, Jurisdictional Transmission Facilities 49-22-03. The Environmental Impact Study information request by the Western Area Power Administration (WAPA), as an aid to our engineering groups, our financial groups, our construction group, and as RFP response information.

1. Description of the 2.4 Wind Turbine Technology:

The Information Enclosed is to be considered **"CONFIDENTIAL."** (See Figure 14).

2. Development Layout:

80 Turbine Project Layout from EAPC. (Figure 3).

3. Associated Facilities:

In addition to the 2.4 MW wind turbines, the Development also includes a system of gravel access roads that allow for easy accessibility to the wind turbines year round. One of the features of our site is the number of already existing county roads as well as section line roads that will lessen the amount of environmental impact the project will have on the area. The new roads will be approximately 16 feet wide and low profile to allow cross-travel by farm equipment. Just Wind will work closely with landowners to locate access roads in order to minimize land use disruptions, and will install gates, when necessary, between access roads and public roads. The Development will also have a few permanent reference meteorological towers (met towers). The guyed towers will be up to 80 meters in height. They will be equipped with six anemometers and wind direction sensors at several levels. The total number of met towers will be determined during the final turbine siting process. As with the access roads, Just Wind will locate the met towers to have the least possible impact on farming operations. Along with the wind farm project, Just Wind is planning to incorporate a Hydrogen Production and Storage Facility capable of providing supplemental energy to make the wind plant both reliable and available 100% of the time. Providing a source of non polluting renewable efficient energy that is more dependable than traditional generation facilities.

4. Land Rights and Wind Energy Lease Agreements:

Just Wind has obtained Option Agreements and Wind Energy Lease Agreements with landowners for land within the Development site boundary necessary for the installation of the components of the wind power plant. Upon the completion of the necessary legal work, these Wind Energy Lease Agreements will be filed at the Logan County Court House.

C. PROPOSED SITE:

1. Site Boundaries:

The proposed Development site is located in Logan County, North Dakota, near the town of Napoleon. The Development site boundaries are illustrated in Figure 2.

2. Wind Resource Consideration:

The wind power plant production is determined by the wind resources at the Development site. Just Wind has had the 5 years of collected wind data analyzed by two independent wind engineering firms, and based on that data a fifty (50) year projection was completed to estimate the potential energy production for the Development. The projections are perceived to be accurate within 96%-98%. These projections include the project's annual, seasonal and monthly deliveries. By correlating site-specific characteristics with long term data from a number of other resources, an estimate of the inter-annual variation of energy output has also been made.

3. Wind Characteristics of Logan County Wind Farm:

Land use in the wind plant area is mainly agricultural and grazing activities and as a results, there are few trees or structures in the proposed Development site to retard the wind as it passes over the land. Figure 13 shows the typical setting of the Development area.

a. Inter-annual Variations:

The wind resource varies from year to year. The inter-annual variation is shown in Figure 5.

b. Seasonal Variation:

On a seasonal basis, the wind speeds measured on the Development site are weakest in July and August and increase steadily during the fall. the strongest wind occurs between November and May. (Figure 5).

c. Hub Height Turbulence: (Figure 6).

d. Climatic Data: (Figure 7).

e. Wind Speed Frequency Distribution:

Figure 8 is the frequency distribution and has been integrated with the density corrected 2.4 power curve. Figure 8 also shows the annual wind speed frequency distribution at the turbine hub height.

f. Wind Variation with Height: (Figure 5).

g. Spatial Wind Variation:

Analysis of the wind data within the Development site area indicates that energy production is expected to vary within the site by approximately 7.7%.

h. Wind Direction: (Figure 8).

4. Other Meteorological Conditions:

a. Temperature: (Figure 7).

5. Wind Plant Energy Production:

a. Proposed Array Spacing for Wind Turbine Efficiency:

The wind turbines ate sited in clusters or strings within the site boundaries. The wind turbines are sited so as to have a good exposure to winds from all directions. Data analysis suggests that the optimal turbine string alignments are from northwest to southeast. Sufficient spacing between the turbines is utilized to minimize array wake loss. (Figure 4). Greater or lesser spacing between turbine strings was used in areas where terrain dictated the spacing. Setbacks for turbines siting will fall within the local zoning ordinances.

b. Base Energy Calculation:

Figure 9 presents the estimated gross annual output per turbine. Theoretical energy is normalized to 8760 hours (one full year). The term "normalized to 8760 hours" means that the production shown represents the "average" year (or average 8760 hours) based on actual data from the site. Figure 9 shows that annual gross energy yield to be 796,771.4 MWhs per year. This is the estimated gross energy output for the 80 turbine location in the area of the Development site. The base energy calculation presented in Figure 9 assumes a normal or average wind year. In order to show the magnitude of year to year variability in the proposed Development site output, a simulation of annual average output was developed using long-term site data information and information provided by EAPC Architects and Engineers.

The maximum variation in energy within the Development site has been estimated to vary within +/- 7 percent between the 80 turbines. Based on this data, one would expect the annual variation in energy at the Development site to be within 10% of the mean during most years. The net annual energy output is estimated to be approximately 9,959.6 MWhs per turbine in the project site.

D. COST ANALYSIS:

The following sections describe the cost-related implications of the Development as a means of assessing the suitability for development. The site specific wind resource, construction costs and operating cost have been considered.

1. Wind Plant Energy Output:

The sole fuel for the proposed Development is wind, a clean and reliable energy source. Integrated into a utility fuel mix, wind is an excellent hedge against other fuel price risks, has no fuel transportation costs or environmental hazards and emits no pollutants (greenhouse gases) that would further alter the climate. Along with wind, Just Wind is planning to incorporate a Hydrogen Production Facility within its Development which would act as an energy storage system for back-up power in the event the wind isn't blowing.

The single most important factor affecting the price of wind generated electricity is the capital cost required to build the wind power plant. With zero "fuel" cost and essentially linear costs for ongoing operations and maintenance, the number of kilowatt-hours produced has a dramatic effect on the cost of wind generated electricity. Because a wind power plant's capital costs are fixed, the greater the number of kilowatt-hours produced the lower the cost per kilowatt-hour. For this reason, an accurate understanding of the wind resource is critical to the success of the Development.

The engineers and meteorologists hired by Just Wind have used an extensive meteorological database to develop accurate energy projections for the Development site. Along with the several years of wind data collected within the Development site, they have produced reliable estimates of the propose wind power plant's annual, seasonal and monthly deliveries.

2. Capital and Operational Costs:

The total installed capital costs for Just Wind's Development are estimated to be approximately $320 million, including the 2.4 wind turbines, associated electrical and communication systems, access roads, land leases, permitting, and other development costs. Ongoing operations and maintenance costs and administrative costs vary between years based on depreciation and other factors reflected in the financial projections and are estimated to be approximately between $23 and $70 million per year, including payment to landowners for wind leases and property taxes. The amount per year is anticipated to be roughly split between the operations and maintenance costs, landowner payments, and property taxes.

3. Site and Design Dependent Costs:

The overall cost of developing the Development site depends primarily on site selection and construction timing. Site dependent costs will include: the relative ease of access to the individual wind turbine location, site specific subsurface conditions which determine foundation design, site access road design and layout, ease of plowing in electrical and communication cable, and the layout of the turbine arrays which governs underground cable placement. Underground cable will be employed in all areas of the Development to connect the individual wind turbine generators to transformers, communication enclosures, and feeder lines. The underground placement of cables along the turbine strings is preferable for land use and aesthetic purposes on all land.

E. ENGINEERING AND OPERATIONAL DESIGN AND ANALYSIS:

1. Wind Plant Electrical System

a. Low Voltage System, Medium Voltage System (In Design).
b. Turbine to Substation Wiring Design & Routing (In Design).

2. Transmission Line and Interconnection:

a. Description (In Process).
b. Design Standards (In Process).
c. Location of the Proposed Electrical Facilities (See Figure 2).

3. Wind Plant Substation:

a. Grounding System (In Design).
b. Communication System (In Design).
c. kW Rating (In Design).
(All In Design Items Will Be Furnished When Complete).

4. Wind Plant Operations:

a. Site Control and Data Acquisition (SCADA) System.

The wind turbines, as well as certain circuit breakers, metering and meteorological equipment are monitored by a centralized SCADA system. The SCADA system is designed to: monitor the condition of the wind plant equipment, alert service technicians to any fault or alarm conditions and also record and sort data relating to availability, kWh production and turbine performance.

If a turbine faults off line or if a collection system circuit breaker trips, an error code is enunciated on the SCADA system, which then pages the on-call technicians who responds by physically going to the equipment to investigate or, if the fault occurs when no technician are on site, he can call up the SCADA from a laptop or other remote PC. Once connected to the SCADA system, the technician can see more specifically what equipment has been faulted and the exact nature of the fault. The technician can also view current wind speed and production data to determine if an emergency visit to the wind power plant is warranted. As required or deemed appropriate, remote access to the SCADA system can be made available to the local utility and the turbine manufacturers.

b. Operation and Maintenance:

The project will require scheduled maintenance of individual wind turbines, the transmission facilities, and ongoing site improvements (roads, gates, fences, etc.). Estimates if the duration and scheduling of the maintenance activities are based on manufacturers experience and recommendation. Schedules maintenance of the wind turbines and transmission facilities will be completed whenever possible, at times when the wind speed at the site is insufficient for the project to produce power. Just Wind plans to enter into a long-term agreement to operate and manage the Development. Just Wind will be responsible for daily operations. Just Wind is in the process of negotiating with Mitsubishi for a long-term maintenance contract that would include labor, parts, and availability. Just Wind is also negotiating with Mitsubishi to train approximately 12-20 full time site technicians and a Wind Power Plant Supervisor. An extensive Operations and Maintenance plan is being developed based on and exceeding turbine manufacturers schedules.

5. Project Schedule:

a. Land Acquisition:

Land Options Agreements and Wind Energy Lease Agreements with local landowners is complete for phase one.

b. Equipment Procurement, Manufacture Delivery:

Equipment procurement and turbine manufacturing will be started prior to commencing construction of the wind power plant and will be completed concurrently with the phased completion of other project construction.

6. Wind Plant Construction:

a. Construction Management:

Just Wind will perform the construction management services. Generally, Just Wind by itself or in coordination with local contractors, will undertake the following activities:

- Securing building, electrical, grading, and any permits necessary for the Development.
- Performing detailed civil, structural, and electrical engineering.
- Schedule execution of construction activities.
- Completing surveying and geo-technical investigations.
- Forecasting project labor requirements and budgeting.

Just Wind will also serve as the key contact and inter face for subcontractor coordination. Just Wind will over see the installation of communication and power collection lines as well as the substation. Just Wind will also oversee the installation of access roads, concrete foundations, towers, machines and blades, as well as the coordination of materials receiving and inventory distribution. Just Wind along with its construction subcontractors will be responsible for completing all wind power plant construction.

The proposed Development will be constructed under direct supervision of Just Wind's on-site construction manager with the assistance of local contractors. The construction consists of the following tasks:

- Site development, including access roads.
- Foundation excavation.
- Concrete foundations.
- All electrical and communication installation.
- Tower assembly and machine erection.
- System testing

b. Construction Financing

Just Wind will be responsible for financing all pre-development, development and construction activities. Just Wind anticipates financing the cost of all pre-development activities through independent construction financing.

c. Permanent Financing

Just Wind anticipates obtaining permanent financing from an institutional lender and/or other institutional investors prior to commercial operation of the wind plant.

d. Expected Commercial Operation Date

The commercial operation date of the proposed wind power plant will be phased in over a (2) two month period, with segments of the wind plant coming on line in stages. Full wind power plant commercial operation is anticipated to be achieved by December 31, 2008.

7. Decommissioning and Restoration

a. Estimated Decommissioning Costs

Approximately $1 million total is budgeted for decommissioning of the Development.

b. List of Decommissioning Activities

Decommissioning activities include the removal of the wind turbine nacelles, blades, towers, foundations, roads, and other facilities to a depth of 48 inches below grade. Underground cables would remain as the damage done by removal would be extreme.

c. Method for Ensuring that Funds are Available for Decommissioning

Decommissioning funds will be set aside as a specific budget item. A set-aside guarantee will be executed on behalf of the Development with an independent administrator of such funds. A periodic review of that fund will be conducted. During year 20 of operation of the wind power plant, approximately $5,000 per turbine will be set aside for decommissioning if necessary.

d. Method for Updating that Funds are Available and Updating Decommissioning Costs

The independent administrator will report annually to the Development on the status of decommissioning funds. The Development will report every 3 years to the independent administrator with an updated budget for the cost of decommissioning the wind power plant in current-year and decommissioning-year dollars.

F. ENVIRONMENTAL ANALYSIS:

This section provides a description of the environmental conditions, which exist at the Development site. Consistent with the various agencies regulations, various exclusion and avoidance criteria have been taken into account in the section of the project area from a large study area. To support this siting process, surveys and studies of the Development site were and will be undertaken to assess the presence or absence of the following:

- National and state parks, wildlife refuges, wilderness areas, monuments, historic sites, and districts and special designation river ways and trails.
- State wildlife management, scientific and natural areas.
- Nature conservancy preserves.
- County and municipal parks.
- Registered historic sites and districts.
- Prime farmlands.
- Wetlands.
- Avian nesting areas and migration routes.
- Streams.
- Residences

(Information will be in Annex 3: Environmental Impact Study and Houston Engineering's Environmental Study Review. When complete a copy will be provided).

1. Demographics/Homes

a. Site Description of Resources

The proposed Development is located within a lightly populated rural area in somewhat Southeastern North Dakota, (Figure 2). The Development site is located in Logan County, North Dakota. Information on demographics and housing for this section was taken from the U.S. Census Bureau, (Figure 10). The population in Logan County has decreased by an estimated 2.0 percent since 2000. There is indication of no new residential construction occurring in the site area. The estimated 2004 population is 2099.

b. Impacts

Demographics and residences are anticipated to be affected by the proposed construction and operation of the wind power plant. Figure 11 contains an estimate of the additional tax revenue that will be generated as a results of the Development.

c. Mitigative Measures

Just Wind purposes to use the required setbacks established by the Logan County Zoning Ordinance from occupied homesteads, public roads, and adjacent property of landowners not involved in the Project.

d. Occupancy Status of Structures

There are approximately seven (7) homesteads within the Development site.

2. Noise

Noise consultants have recommended a maximum noise threshold of 45 dBA at occupied homes. To facilitate planning for this guideline, the manufacturer has created simulations verified by independent testing of noise emissions from the 2.4 MW turbine. Results indicate source noise from a turbine at hub height to be 104 dB. Uncertainty is +/-2 dB for results. At distances of 1,000 feet, noise will meet the industry standard of 45 dBA at all occupied homes in the project site. A noise diagram and additional information is included as Figure 12.

a. Site Conditions

Background noise levels in the Development site area are typical of those in rural settings, where decibel levels are commonly in the low to mid-30 decibels (dBA). These ratings are relatively low background levels and generally representative of the Project site. Higher levels exist near main roads and other areas of human activity. In addition, the windy conditions in this region tend to increase ambient noise levels compared to other rural areas.

b. Impact

The wind turbines will be sited so as to comply with or exceed the existing noise standards established by the North Dakota Pollution Control Agency. The maximum noise levels for the Development, as measured at all occupied residences, will be no greater than 454 dBA with no discernable pure tones.

c. Mitigative Measures

Setbacks will be established where wind turbines will be sited according to the Logan County Zoning Ordinance so as to create a setback or buffer to minimize noise.

3. Visual

a. Site Description

The Development site for the proposed Project is visually dominated by agricultural fields, farmsteads, fallow fields and large open vistas. The landscape can be classified as rural open space with gently rolling topography. Local vegetation in the area is predominantly pasture with varying crops of corn, sunflower, small grain and forage crops, creating a low uniform cover. Farmsteads are typically surrounded by a mix of deciduous and coniferous trees planted for windbreaks. In the swales, there is occasional riparian growth of native willows, cattails, sedges, and rushes. Figure 13 depicts the typical rural setting of the Development site.

The settlements in Logan County are residences and farm buildings, (occupied and unoccupied), scattered along the rural township and county roads. These structures are focal points in the dominant open space character of the vicinity.

At close range, the turbines will be visible from local county, township and state roads adjacent to the wind power plant. All of these local two-lane roads carry limited amounts of traffic, of which most is local. In the general Development area there will be intermittent expansive views of the area.

b. Impact

The placement of up to 80 turbines with the potential of 210, will have some impact on the area's visual quality. However, visual effect is primarily based on a subjective human response. The wind power plant will most likely have a combination of effects on the visual quality/rural character of the area. From one perspective, the proposed Development site might be perceived as a visual intrusion on the natural aesthetic value of the landscape, characterized by it's tubular steel structures, standing on formerly undisturbed land.

On the other hand, wind plants have their own aesthetic quality, distinguishing them from other non-agricultural land uses. First, the wind plant does not generate much traffic or significantly increase day-to-day human activity in the area. Therefore, the Development site will retain the rural nature of the area. Second, although "industrial" in form and purposes, wind turbines are essentially "farming" the wind for energy. The proposed land use would not involve any ongoing use of non-renewable resources or put any emissions into the environment. Fossil fuels will not be refined, transported, or burned for the production of electricity. Emissions of toxic substances will not be produced by the wind plant. Although the turbines are "hi-tech" in appearance, they are compatible with the natural environment and rural area.

c. Mitigative Measures

The following are proposed mitigative measures:

- Wind turbines and turbines access roads will not be located in Nature Conservancy Land, State Wildlife Management Areas, or Scientific and Natural Areas. However, some turbine locations might be in native prairies. In accordance with state and federal guidelines.
- Turbines will not be located in biologically sensitive areas such as wetlands or relic prairies.
- Turbines will be illuminated according to FAA regulations.
- Existing roads will be used for construction and maintenance where possible. Road construction will be minimized to lessen the environmental damage to the land within the Development area.
- Access roads created for the wind power plant will be located on gentle grades to minimize visual cuts and fills.
- Temporarily disturbed areas will be reseeded to blend in with existing vegetation.
- Any local road damage will be repaired.

4. Adverse Human and Environmental Effects Which Cannot be Avoided

Aesthetics. The wind turbine arrays will be prominent features in the landscape. By design, these structures are placed in open areas, some in higher elevations. Some mitigative measures as described in Section 3, can be implemented to somewhat limit visual impacts. However, it is inevitable that the wind turbines will be noticed. The degree to which the visual impacts are considered adverse is subjective, and can be expected to vary depending on the viewer's perspective.

Commitment of Land. The proposed Development will be sited on land for which Just Wind currently has legal, valid, and binding contracts for wind energy rights. Approximately 64 acres will actually be impacted with turbines and related equipment, access roads, and maintenance facilities. The existing use of this land can continue as agricultural of open fields. Some areas will be affected as the character of the land surface changes from vegetation of agricultural fields to gravel roads, tower foundations, or maintained grassy areas.

Wind Turbine and Substation Noise. When in motion, the wind turbines emit a perceptible sound. The level of this noise varies with the speed of the wind turbine and the distance of the listener to the turbine. On relatively windy days, the turbines create more noise; however, the ambient, or natural, noise level simply from the wind tends to override the wind turbine noise as distance from the turbine increases. The noise generated by the wind turbines is less than 45 dBA at an average distance of 500 feet.

Avian Impacts. Occasional collisions of avian species with turbine blades occur at wind power plants. The frequency of these collisions depends upon the spacing and number of turbines, as well as the size of the local and migrating avian species that frequent the project area. The wind turbines must be spaced far apart to avoid interference or wake effects. This design tend to lower the number of avian collisions. While a number o different species of birds use the project area for habitat, as described in Section 16, the Development site does not represent a significant habitat for raptors nor is it a significant migratory route.

G. IDENTIFICATION OF REQUIRED PERMITS/APPROVALS

Just Wind has identified the applicable regulatory approvals required for the construction and operation of the proposed wind power plant and accompanying Hydrogen Production/Storage Facility. Contacts have been established with appropriate federal, state, and local agencies to discuss the applicable permitting requirements, and to learn of and mitigate any concerns by these agencies early in the development process. The following items summarize applicable permits & Licensed for the wind power plant and Hydrogen Production/Storage Facility:

Public Service Commission
Site Permit

There are a number of primary regulatory approvals required for the construction and operation of the Project, by the Public Service Commission, ("PSC").

Pursuant to the North Dakota Energy Conversion Facility Siting Overview, (N. D. C. C. Chapter 49-22 and North Dakota Administrative Code Article 69-06).

Jurisdictional Energy Conversion Facilities: (49-22-03(5)). Any plant, addition, or combination of plant and addition designed for or capable of:

- Generation of 100 MW or more of electricity.

June, 2007

Pursuant to North Dakota Transmission Facility Siting Overview, (N. D. C. C. Chapter 49-22 and North Dakota Administrative Code Article 69-06).

Jurisdictional Transmission Facilities: (49-22-03). Electric transmission lines and associated facilities with a design in excess of 115 kV, except for some temporary facilities as described in the statute.

Waiver of Procedures and Time Schedules: (49-22-07.2, 69-06-06). Utility may make application for a wavier of any procedures and time schedules, including the requirement for separate corridor and route applications. The Commission may grant the wavier after hearing upon a finding that:

- A demonstrable emergency exists which requires immediate construction and that adherence to the procedures and time schedules would jeopardize the utility's system.

- The proposed facility is of such length, design, location, or purpose that it will produce minimal adverse effects.

Ten Year Plan: (49-22-04, 69-06-02). Every utility that owns, operates, or plans within the next ten years to own, operate or start construction shall file a ten-year plan by July 1 of each year.

Logan County Building (Zoning) Permit

FAA Approval

(Some permitting is in process. As additional information becomes available, it will be forwarded to you).

Figure 1

Project:
NAPOLEON.WIND

Description:
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Calculated:
03/04/2007 10:06 AM/2.5.6.79

PARK - Main Result

Calculation: 20070304 MWT 95-2.4 60Hz 2400 95.0

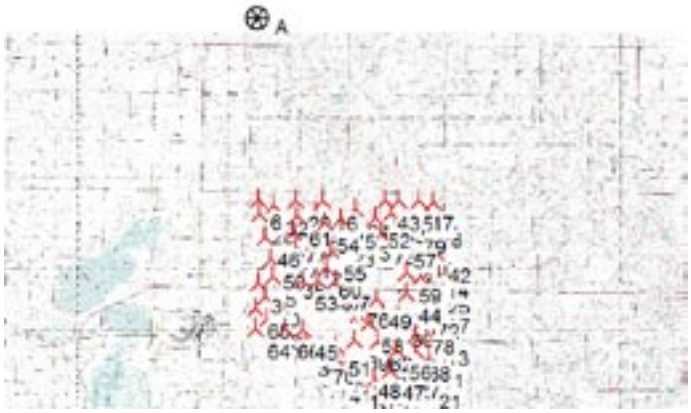
Wake Model N.O. Jensen (RISØ/EMD)

Calculation Settings

Air density calculation mode	Individual per WTG
Result for WTG at hub altitude	1.165 kg/m3 to 1.172 kg/m3
Hub altitude above sea level (asl)	683.2 m to 739.2 m
Annual mean temperature at hub alt.	3.5 ºC to 3.9 ºC
Pressure at WTGs	925.6 hPa to 932.0 hPa

Wake Model Parameters
Wake Decay Constant0.075

Wind statistics US 45.00 m Napoleon Wind.wws



Scale 1:250,000
New WTG Site Data

Key results for height 80.0 m above ground level

Terrain UTM WGS84 Zone: 14

	East	North	Name of wind distribution	Type	Wind energy [kWh/m2]	Mean wind speed [m/s]	Equivalent roughness
A	442,927	5,160,485	Park/Wasp Calc	WAsP (RVEA0011 1, 0, 0, 13)	5,833	9.1	0.8

Calculated Annual Energy for Wind Farm

WTG combination	Annual Energy Result [MWh]	Annual Energy Result-10.0% [MWh]	Park Efficiency [%]	Mean WTG energy [MWh]	Capacity Factor for Result [%]	Capacity Factor for Result-10.0% [%]
Wind farm	796,771.4	717,094.2	91.3	9,959.6	47.3	42.6

Calculated Annual Energy for each of 80 new WTG's with total 192.0 MW rated power

	Terrain	WTG type Valid	Manufact.	Type	Power [kW]	Diam. [m]	Height [m]	Power curve Creator	Name	Annual Energy Result [MWh]	Result-10.0% [MWh]	Park Efficiency [%]	Mean wind speed [m/s]
1	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,549.1	9,494	90.5	9.3
2	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,122.5	9,110	89.3	9.1
3	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,691.6	9,622	93.6	9.1
4	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,414.4	9,373	91.3	9.1
5	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,135.4	9,122	92.9	8.9
6	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,559.6	9,504	94.5	9.0
7	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,176.2	9,159	91.5	9.0
8	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,963.1	8,967	89.3	9.0
9	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,005.6	9,005	90.2	8.9
10	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,261.2	9,235	90.5	9.1
11	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,330.9	9,298	93.3	8.9
12	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,186.2	9,168	90.5	9.0
13	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,388.6	9,350	92.8	9.0
14	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,063.7	9,057	91.4	8.9
15	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,148.9	9,134	91.0	9.0
16	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,190.8	9,172	92.1	8.9
17	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,485.5	9,437	92.2	9.1
18	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,330.8	9,298	94.0	8.9
19	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,947.9	8,953	89.9	8.9
20	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,177.4	9,160	92.1	8.9
21	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,500.8	9,451	95.8	8.9
22	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,861.2	8,875	90.5	8.8
23	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,882.4	8,894	90.1	8.9

Continued on next page...

Project:
NAPOLEON.WIND

Description:
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Calculated:
03/04/2007 10:06 AM/2.5.6.79

PARK - Main Result

Calculation: 20070304 MWT 95-2.4 60Hz 2400 95.0

...continued from previous page

	WTG type							Power curve		Annual Energy		Park	
	Terrain	Valid	Manufact.	Type	Power [kW]	Diam. [m]	Height [m]	Creator	Name	Result [MWh]	Result-10.0% [MWh]	Efficiency [%]	Mean wind speed [m/s]
24	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,008.5	9,008	91.6	8.9
25	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,315.3	9,284	92.3	9.0
26	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,204.9	9,184	93.9	8.8
27	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,144.1	9,130	92.6	8.9
28	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,254.3	9,229	91.6	9.0
29	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,855.9	8,870	89.3	8.9
30	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,991.6	8,992	89.8	9.0
31	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,856.1	8,870	90.2	8.9
32	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,202.9	9,183	92.2	8.9
33	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,089.4	9,080	93.8	8.8
34	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,206.9	9,186	94.3	8.8
35	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,829.3	8,846	90.9	8.8
36	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,120.6	9,109	93.1	8.8
37	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,996.3	8,997	92.7	8.8
38	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,514.6	8,563	88.6	8.8
39	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,803.0	8,823	89.6	8.9
40	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,989.5	8,991	92.8	8.8
41	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,311.1	9,280	94.8	8.8
42	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,080.5	9,072	91.8	8.9
43	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,919.0	8,927	90.9	8.8
44	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,761.7	8,786	90.9	8.8
45	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,996.5	8,997	92.0	8.8
46	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,026.0	9,023	93.1	8.8
47	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,939.7	8,946	92.0	8.8
48	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,878.2	8,890	91.1	8.8
49	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,733.3	8,760	89.8	8.8
50	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,994.9	8,995	92.5	8.8
51	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,807.3	8,827	90.8	8.8
52	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,729.2	8,756	89.5	8.8
53	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,788.9	8,810	91.0	8.8
54	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,865.9	8,879	88.8	8.9
55	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,528.7	8,576	89.4	8.7
56	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,647.6	8,683	89.6	8.8
57	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,623.8	8,661	89.5	8.8
58	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,650.1	8,685	88.9	8.8
59	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,691.1	8,722	90.0	8.8
60	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,563.3	8,607	89.0	8.8
61	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,713.8	8,742	89.8	8.8
62	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,653.6	8,688	89.4	8.8
63	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,624.7	8,662	89.6	8.8
64	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,271.3	9,244	96.3	8.7
65	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,048.4	9,044	94.1	8.7
66	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	10,010.5	9,009	93.7	8.7
67	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,576.5	8,619	89.8	8.7
68	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,815.6	8,834	91.0	8.8
69	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,682.3	8,714	91.1	8.7
70	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,931.2	8,938	92.9	8.7
71	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,613.9	8,653	90.5	8.7
72	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,642.2	8,678	90.6	8.7
73	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,630.5	8,667	89.5	8.8
74	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,957.5	8,962	93.2	8.7
75	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,530.5	8,577	89.1	8.7
76	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,510.0	8,559	89.9	8.7
77	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,581.4	8,623	88.6	8.8
78	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,560.2	8,604	90.2	8.7
79	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,510.6	8,560	88.9	8.7
80	A	Yes	MWT	95/2.4	2,400	95.0	80.0	USER	MWT 95/2.4	9,613.3	8,652	89.9	8.7

Wind Data Analysis for Napoleon, North Dakota

Revision 7
January 4, 2007

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Prepared for: Jeff Metzger
Just Wind LLC

1. Introduction

This report details the preliminary analysis I performed on the wind resource data set measured at Napoleon, North Dakota between August 7, 2001 and June 30, 2006. The data set contains hourly measurements of the data elements listed in Table 1.

Table 1 – Columns in data set.

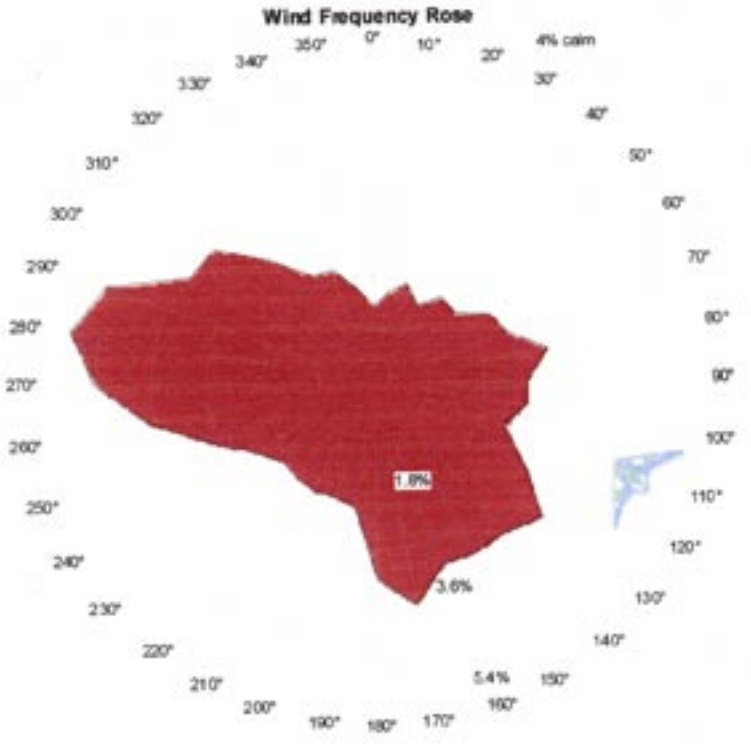
Column	Units
Average wind speed at 150 ft	mph
Std. dev. of wind speed at 150 ft	mph
Max. wind speed at 150 ft	mph
Min. wind speed at 150 ft	mph
Average wind speed at 98 ft	mph
Std. dev. of wind speed at 98 ft	mph
Max. wind speed at 98 ft	mph
Min. wind speed at 98 ft	mph
Average wind speed at 33 ft	mph
Std. dev. of wind speed at 33 ft	mph
Max. wind speed at 33 ft	mph
Min. wind speed at 33 ft	mph
Wind direction at 150'	°
Std. dev. of wind direction at 150'	°
Wind direction at 33'	°
Std. dev. of wind direction at 33'	°
Temperature at 9.8ft	°F

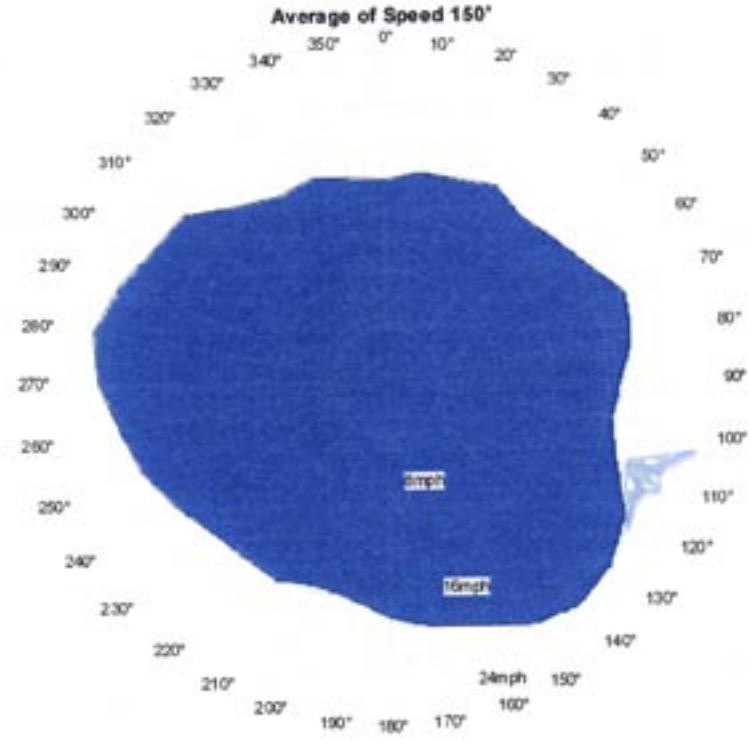
2. Analysis of Measured Data

I analyzed the data set with Windographer, a wind resource assessment program described at www.mistaya.ca. I removed approximately 3% of the data due to icing effects. Table 2 shows summary statistics for the wind speed columns.

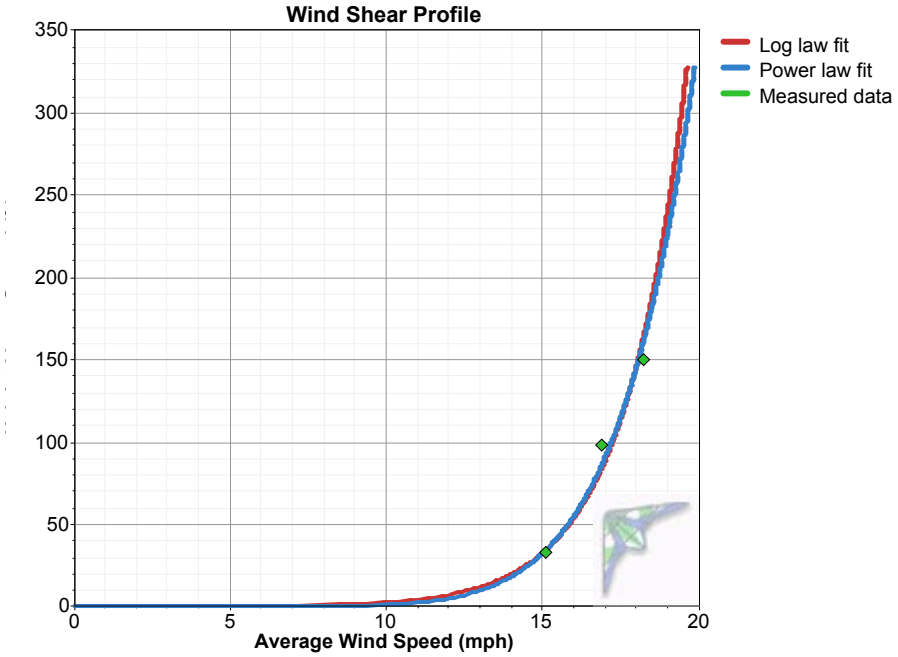
Table 2 – Summary Wind Speed Statistics

Variable	Speed 150'	Speed 98'	Speed 33'
Height above ground (ft)	150	98	33
Mean wind speed (mph)	18.27	16.92	15.11
Median wind speed (mph)	18.00	16.40	14.00
Min wind speed (mph)	0.80	0.80	0.80
Max wind speed (mph)	56.50	55.10	52.60
Mean power density (W/m²)	421	342	263
Mean energy content (kWh/m²/yr)	3,690	2,995	2,302
Energy pattern factor	1.569	1.605	1.729
Weibull k	2.516	2.421	2.275
Weibull c (mph)	20.58	19.03	17.08
Mean turbulence intensity	0.0984	0.105	0.125
Frequency of calms (%)	4.46	5.66	6.67
Actual observations	38,580	38,490	38,580
Missing observations	4,344	4,434	4,344
Data completeness (%)	89.9	89.7	89.9


Wind Frequency Rose
4% calm
1.8%
3.6%
5.4%


Average of Speed 150°
8mph
16mph
24mph

The following graph shows the wind shear profile



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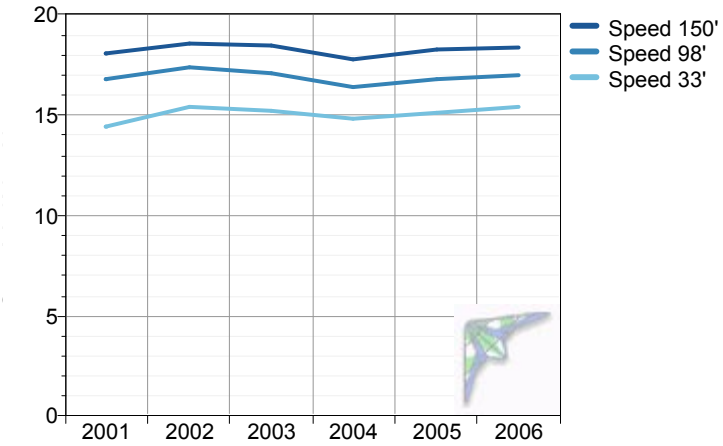
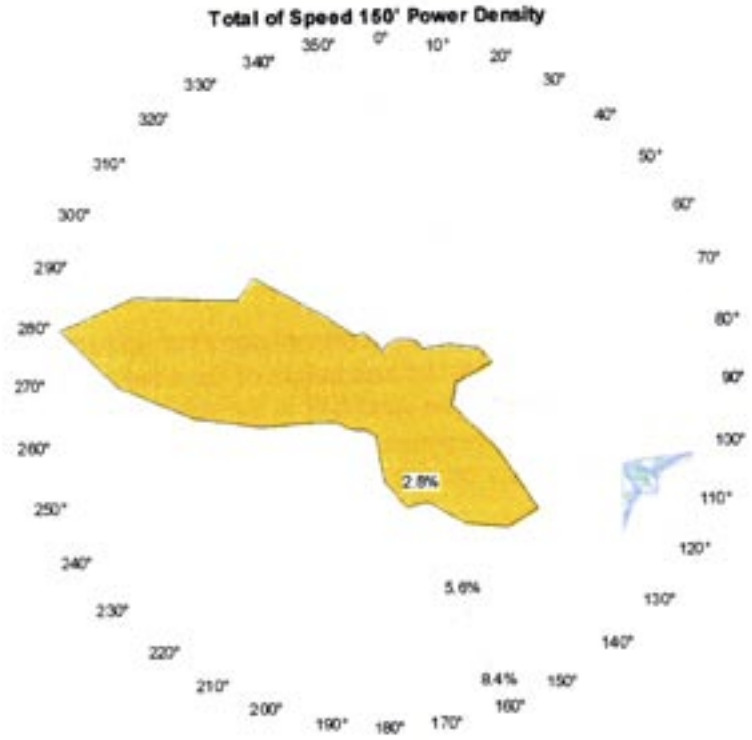


The following graph shows the average seasonal wind speed profile. The spring and fall tend to be the windiest seasons, with winter and summer less windy.



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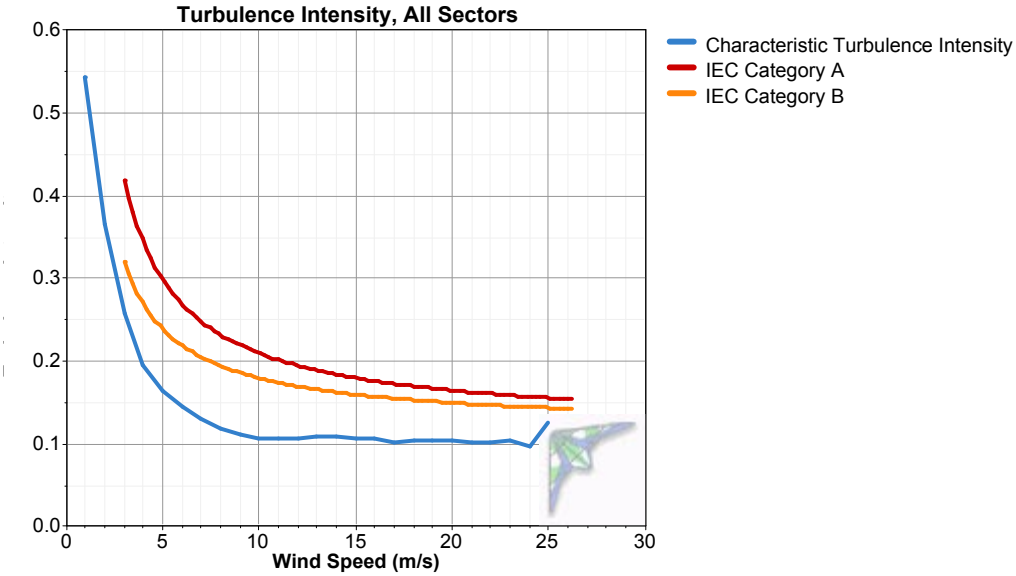

Table 3 summarizes the results of Windographer's calculations of wind energy output in the Napoleon wind regime. These calculations assume:

1. The 4-year data set is representative of the long term wind regime at the site.
2. The wind turbine is exposed to exactly the same wind resource as measured by the met tower.
3. The best-fit power law wind shear profile observed up to the 150 foot height of the met tower applies up to the hub height of the wind turbine.
4. The wind turbine performs as specified in the power curve.
5. There are no losses due to maintenance downtime, air turbulence, interference between turbines, or any other reason.

Table 3 – Gross unadjusted energy output estimates

Turbine	Hub Height	Avg. Wind Speed at Hub Height	Time At Zero Output	Time At Rated Output	Average Power Output	Annual Energy Output	Average Capacity Factor
	(m)	(mph)	(%)	(%)	(kW)	(kWh/yr)	(%)
Vestas V80 - 1.8 MW	60	18.69	13.12	0.16	666	5,838,463	37.0
Vestas V80 - 1.8 MW	67	18.96	12.84	0.17	688	6,024,068	38.2
Vestas V80 - 1.8 MW	78	19.34	12.46	0.20	717	6,284,459	39.9
Vestas V90 - 3.0 MW	65	18.88	5.96	0.58	1,021	8,940,959	34.0
Vestas V90 - 3.0 MW	80	19.40	5.78	0.67	1,085	9,500,458	36.2
Vestas V90 - 3.0 MW	90	19.71	5.68	0.72	1,122	9,828,431	37.4
Vestas V90 - 3.0 MW	105	20.12	5.58	0.79	1,172	10,265,700	39.1
Vestas V100 - 2.75 MW	100	19.99	1.38	12.15	1,819	15,937,734	66.2
Mistubishi MWT92/2.4	70	19.07	9.51	6.83	1,016	8,899,791	42.3
Mistubishi MWT95/2.4	80	19.40	9.32	9.73	1,093	9,572,735	45.5
REpower MM70	55	18.48	7.10	3.48	635	5,562,853	31.8
REpower MM70	65	18.88	6.89	3.82	667	5,842,835	33.3
REpower MM70	80	19.40	6.70	4.48	709	6,213,661	35.5
REpower MM82	59	18.65	7.02	6.05	776	6,798,728	38.8
REpower MM82	80	19.40	6.70	7.61	844	7,392,869	42.2
REpower MM82	100	19.99	6.50	9.16	895	7,842,111	44.8
REpower MM92	78.5	19.36	9.34	15.2	1,037	9,080,696	51.8
REpower MM92	80	19.40	9.32	15.46	1,041	9,117,873	52.0
REpower MM92	100	19.99	9.07	18.68	1,089	9,541,547	54.5
REpower 5M onshore	100	19.99	9.08	9.16	2,099	18,390,526	42.0
REpower 5M onshore	120	20.49	8.83	11.05	2,209	19,349,790	44.2
Siemens PP 2.3 MW Mk II	70	19.07	6.81	1.48	1,021	8,945,184	44.4
Siemens PP 2.3 MW Mk II	80	19.40	6.69	1.60	1,057	9,262,876	46.0
Nordex N90/2300 kW	80	19.40	6.70	7.61	1,023	8,957,852	44.5
Nordex N90/2300 kW	100	19.99	6.50	9.16	1,083	9,483,898	47.1
Nordex N90/2300 kW	105	20.12	6.46	9.59	1,096	9,596,856	47.6

Figure 3

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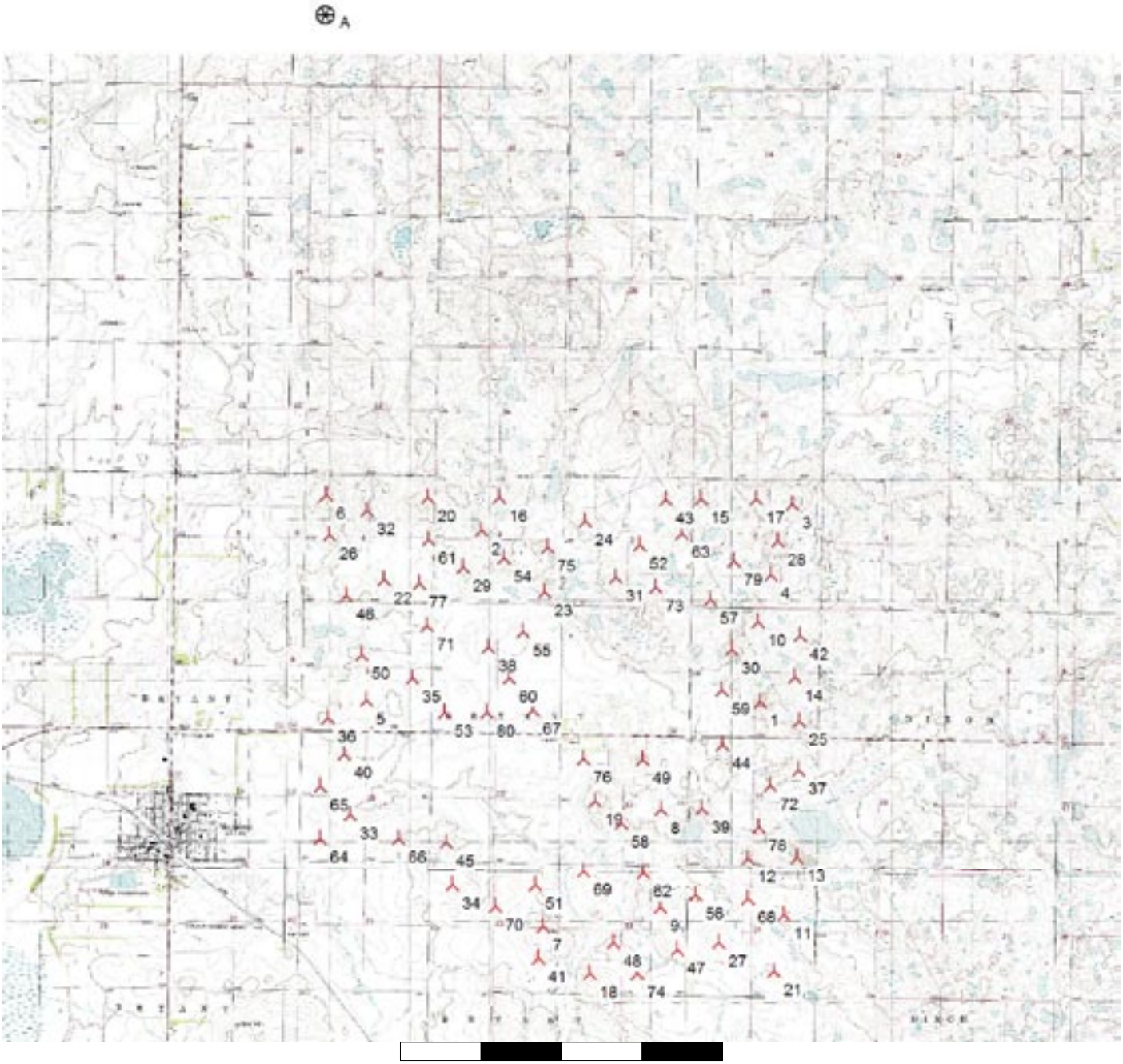
PARK - 24K TOPO

Calculation: 20070304 MWT 95-2.4 60Hz 2400 95.0 **File:** e432000n5160000z14t.jpg



Map: , Print scale 1:75,000, Map center UTM WGS 84 Zone: 14 East: 445,847 North: 5,154,529

New WTG Site Data

Figure 4

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PARK - WTG distances

Calculation: 20070304 MWT 95-2.4 60Hz 2400 95.0

WTG distances

	Z [m]	Nearest WTG	Z [m]	Horizontal distance [m]	Distance in rotor diameters
1	659.2	59	634.0	498	5.2
2	640.9	54	635.0	437	4.6
3	652.3	17	651.2	460	4.8
4	652.3	28	647.8	429	4.5
5	615.5	36	611.9	526	5.5
6	626.8	26	618.0	503	5.3
7	630.5	41	625.7	392	4.1
8	634.0	39	630.9	506	5.3
9	636.2	56	630.3	465	4.9
10	652.3	30	645.8	478	5.0
11	642.5	68	633.0	492	5.2
12	641.5	78	623.0	412	4.3
13	640.1	12	641.5	609	6.4
14	647.4	42	645.8	517	5.4
15	643.1	43	635.8	444	4.7
16	637.0	2	640.9	467	4.9
17	651.2	3	652.3	460	4.8
18	632.5	48	627.9	480	5.1
19	627.9	58	624.8	428	4.5
20	633.1	61	624.0	520	5.5
21	640.1	11	642.5	710	7.5
22	618.7	77	618.7	442	4.6
23	629.3	55	619.6	558	5.9
24	630.6	75	624.3	569	6.0
25	646.2	1	659.2	538	5.7
26	618.0	6	626.8	503	5.3
27	637.0	47	630.9	525	5.5
28	647.8	4	652.3	429	4.5
29	629.4	2	640.9	513	5.4
30	645.8	10	652.3	478	5.0
31	630.9	52	630.9	500	5.3
32	624.8	6	626.8	547	5.8
33	608.0	64	603.2	480	5.1
34	615.7	45	615.7	539	5.7
35	615.7	53	615.6	584	6.1
36	611.9	40	609.5	492	5.2
37	628.0	72	623.3	394	4.1
38	618.7	60	618.7	463	4.9
39	630.9	8	634.0	506	5.3
40	609.5	36	611.9	492	5.2
41	625.7	7	630.5	392	4.1
42	645.8	14	647.4	517	5.4
43	635.8	15	643.1	444	4.7
44	627.9	59	634.0	680	7.2
45	615.7	34	615.7	539	5.7
46	612.3	22	618.7	509	5.4
47	630.9	27	637.0	525	5.5
48	627.9	18	632.5	480	5.1
49	624.8	8	634.0	670	7.1
50	612.6	5	615.5	569	6.0
51	620.5	7	630.5	534	5.6
52	630.9	31	630.9	500	5.3
53	615.6	80	616.0	525	5.5
54	635.0	2	640.9	437	4.6
55	619.6	38	618.7	478	5.0
56	630.3	9	636.2	465	4.9
57	631.0	79	633.8	562	5.9
58	624.8	19	627.9	428	4.5
59	634.0	1	659.2	498	5.2
60	618.7	38	618.7	463	4.9
61	624.0	20	633.1	520	5.5
62	624.8	9	636.2	479	5.0
63	631.0	43	635.8	467	4.9
64	603.2	33	608.0	480	5.1
65	604.5	40	609.5	500	5.3
66	609.4	45	615.7	593	6.2
67	616.0	60	618.7	500	5.3
68	633.0	11	642.5	492	5.2
69	617.8	51	620.5	622	6.5
70	615.7	51	620.5	571	6.0
71	612.6	77	618.7	530	5.6
72	623.3	37	628.0	394	4.1
73	629.6	31	630.9	515	5.4
74	627.5	48	627.9	480	5.1
75	624.3	54	635.0	557	5.9
76	616.2	19	627.9	544	5.7
77	618.7	22	618.7	442	4.6
78	623.0	12	641.5	412	4.3
79	633.8	4	652.3	487	5.1
80	616.0	60	618.7	506	5.3

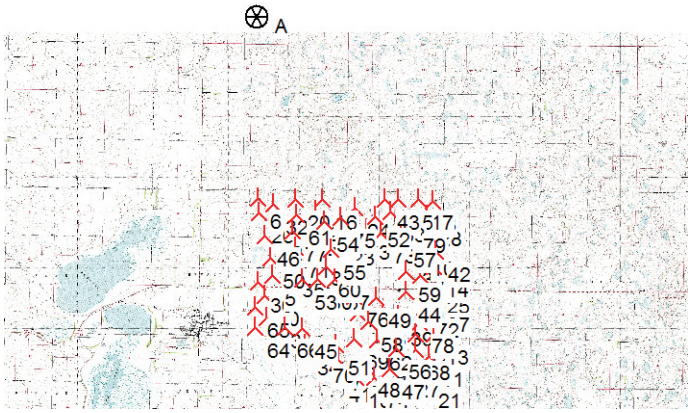
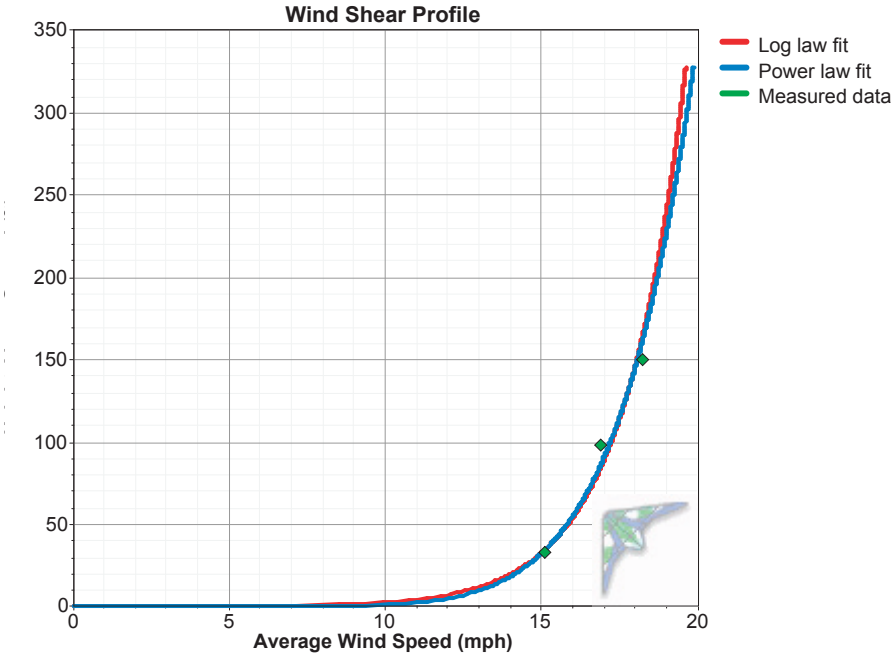


Figure 5

The following graph shows the wind shear profile



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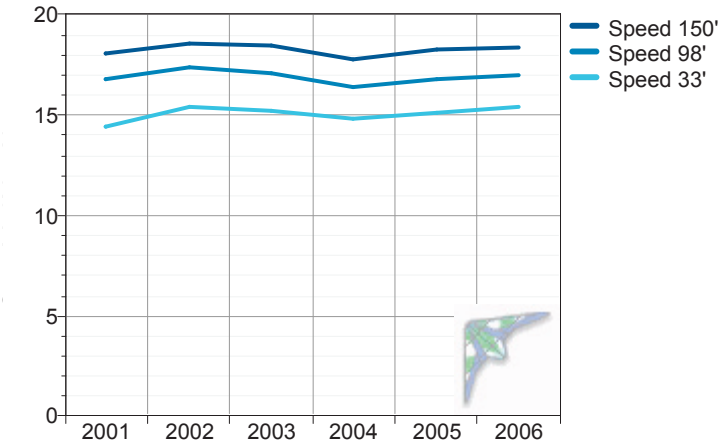

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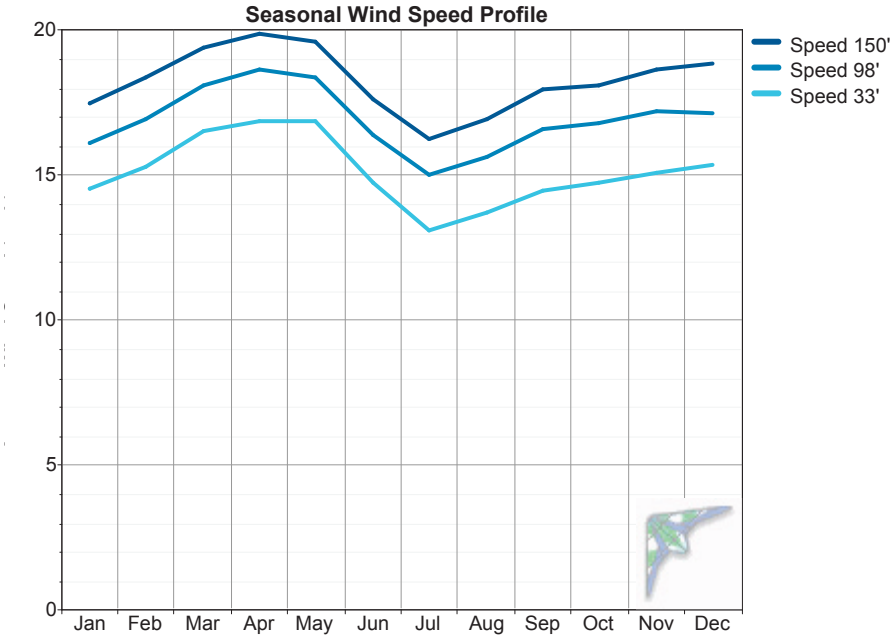
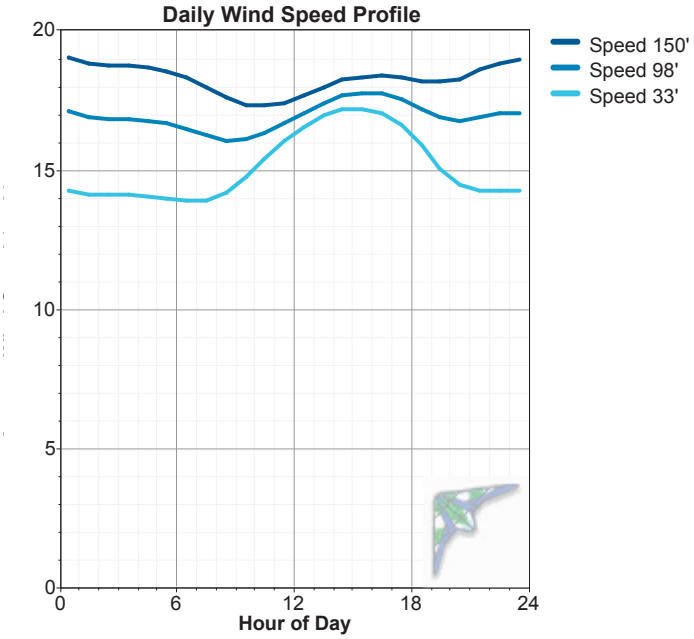
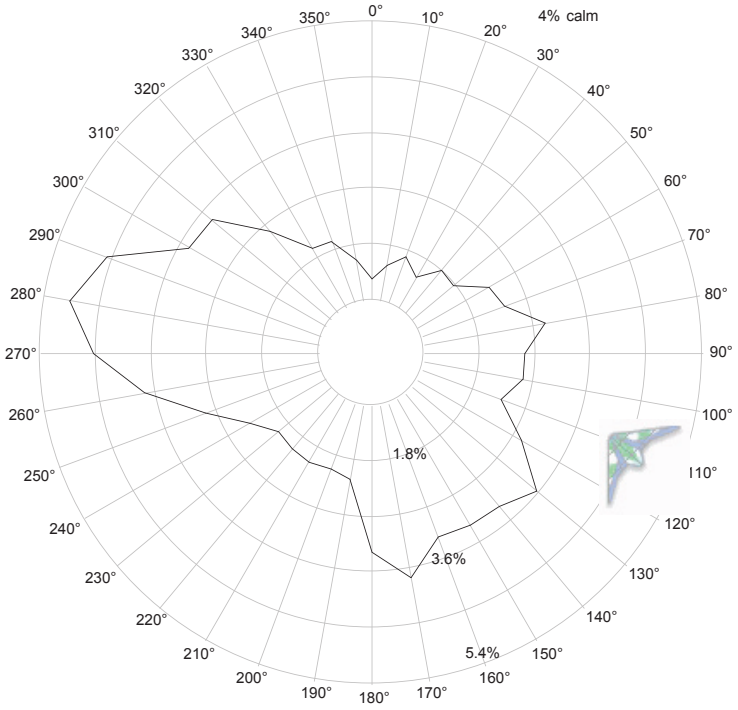


The following graph shows the average daily wind speed profile for the three measurement heights. This is a typical pattern, showing an afternoon peak at 33’ and a nighttime peak at 150’.

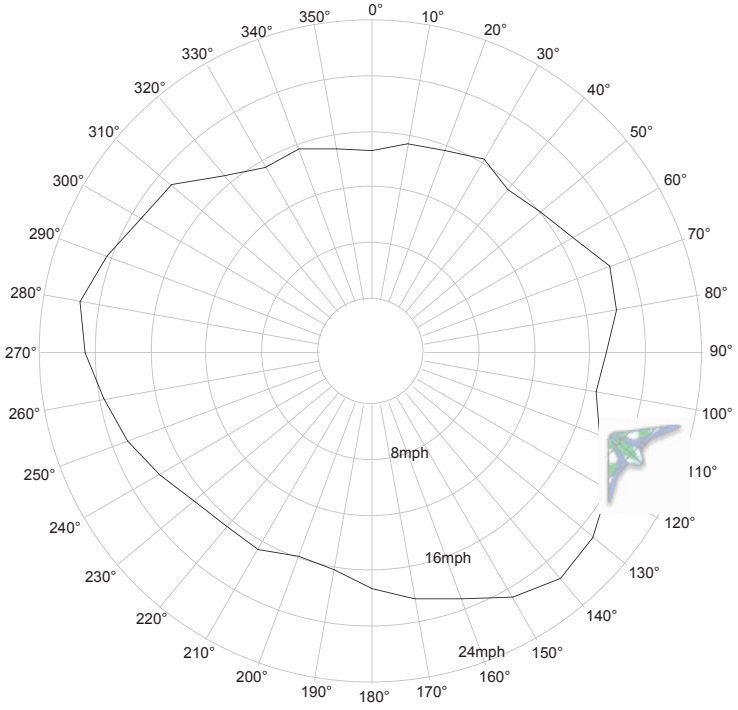


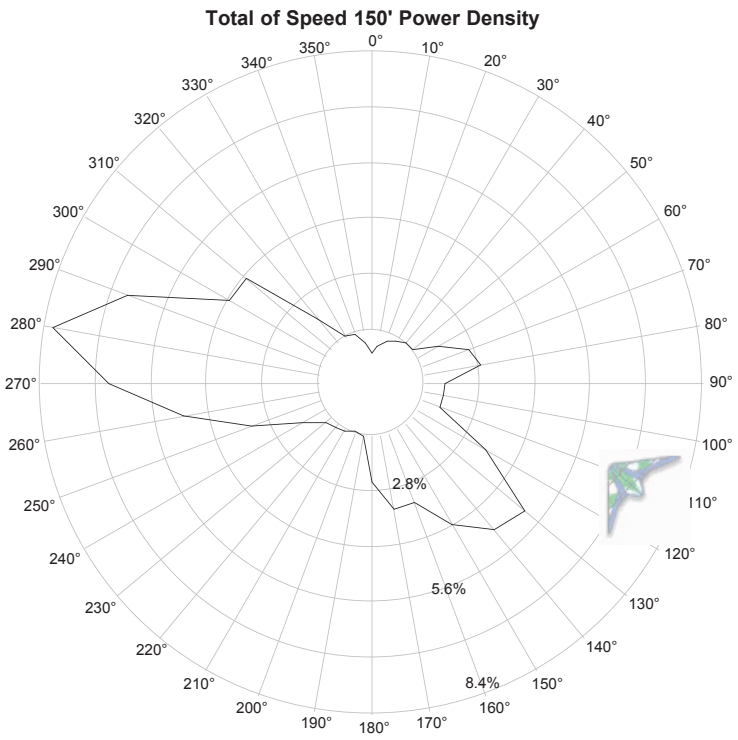
The following wind roses show the frequency with which the wind blows from each direction, the average wind speed versus direction, and the total wind energy versus direction.

Wind Frequency Rose



Average of Speed 150'





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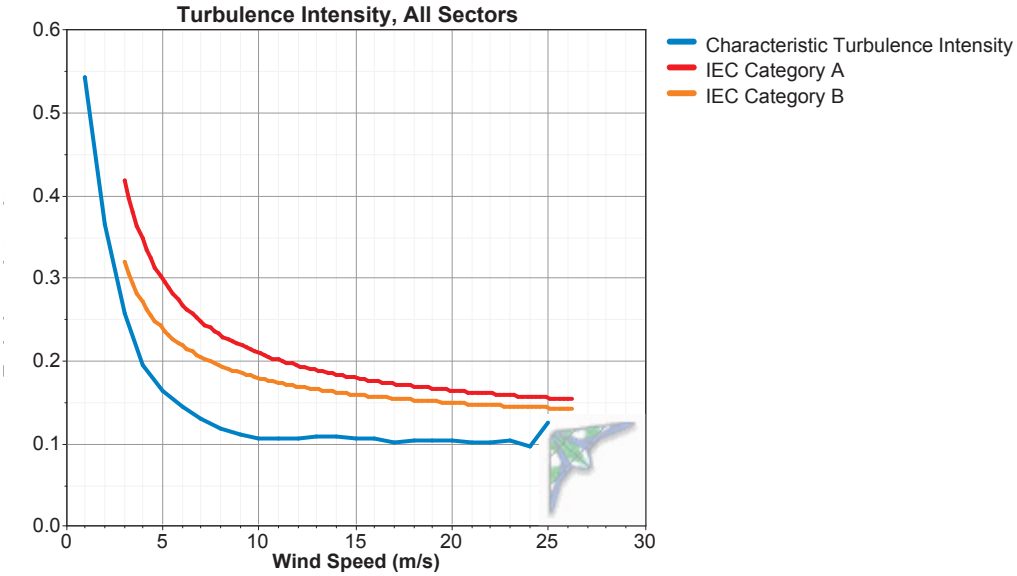

Figure 6

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PARK - WTG Turbulence: Main Result

Calculation: 20070304 MWT 95-2.4 60Hz 2400 95.0 Turbulence

Turbulence Model
Empirical turbulence - Dutch TNO laboratory : 1993

Wake Model
N.O. Jensen (EMD) : 2005

Calculation Settings

Air density calculation mode	Individual per WTG
Result for WTG at hub altitude	1.165 kg/m3 to 1.172 kg/m3
Hub altitude above sea level (asl)	683.2 m to 739.2 m
Annual mean temperature at hub alt.	3.5 °C to 3.9 °C
Pressure at WTGs	925.6 hPa to 932.0 hPa

Turbulence measure-height50.00 m
Ambient turbulence level14.7 %
Number of WTGs80

Wake Model Parameters
Wake Decay Constant0.075

Scale 1:2

New WTG Site Data

Maximum Turbulence Levels From Turbines

The table is showing the maximum turbulence intensity levels for the selected turbines. Also reported is the direction for the maximum turbulence level as well as the reduced wind speed when the wind flows from the direction of the maximum turbulence level.

						Free Wsp: 9.5 m/s			Free Wsp: 14.5 m/s			Free Wsp: 19.5 m/s		
	Manufact.	Type	Power [kW]	Diam. [m]	Height [m]	Dir [deg]	Wsp [m/s]	It [%]	Dir [deg]	Wsp [m/s]	It [%]	Dir [deg]	Wsp [m/s]	It [%]
1	MWT	95/2.4	2,400	95.0	80.0	292	7.9	17.6	284	13.8	14.2	284	19.1	13.9
2	MWT	95/2.4	2,400	95.0	80.0	138	7.6	18.5	137	13.6	14.1	265	19.2	13.5
3	MWT	95/2.4	2,400	95.0	80.0	283	7.8	18.2	275	13.5	14.2	275	19.0	13.7
4	MWT	95/2.4	2,400	95.0	80.0	14	7.5	18.8	17	13.5	14.1	284	19.2	13.7
5	MWT	95/2.4	2,400	95.0	80.0	241	8.0	16.7	350	13.7	13.5	105	19.4	13.3
6	MWT	95/2.4	2,400	95.0	80.0	174	7.9	17.0	115	13.7	13.8	115	19.1	13.4
7	MWT	95/2.4	2,400	95.0	80.0	186	7.6	19.6	195	13.8	14.0	297	19.1	13.4
8	MWT	95/2.4	2,400	95.0	80.0	85	8.0	17.2	255	13.9	13.9	256	19.2	13.6
9	MWT	95/2.4	2,400	95.0	80.0	67	7.8	17.8	67	13.7	13.9	67	19.1	13.5
10	MWT	95/2.4	2,400	95.0	80.0	227	7.9	17.6	225	13.8	13.9	284	19.3	13.6
11	MWT	95/2.4	2,400	95.0	80.0	292	7.9	17.5	299	13.8	13.9	299	19.1	13.5
12	MWT	95/2.4	2,400	95.0	80.0	23	7.5	18.8	17	13.4	14.2	266	19.3	13.5
13	MWT	95/2.4	2,400	95.0	80.0	274	8.2	16.2	266	13.9	14.0	266	19.2	13.7
14	MWT	95/2.4	2,400	95.0	80.0	12	8.0	16.9	179	13.7	13.7	298	19.3	13.4
15	MWT	95/2.4	2,400	95.0	80.0	266	7.7	18.4	267	13.7	14.2	266	19.1	13.7
16	MWT	95/2.4	2,400	95.0	80.0	204	7.7	17.4	210	13.4	13.8	267	19.3	13.4
17	MWT	95/2.4	2,400	95.0	80.0	95	7.8	17.9	105	13.9	13.8	157	19.2	13.5
18	MWT	95/2.4	2,400	95.0	80.0	43	7.8	17.4	45	13.8	13.7	283	19.2	13.5
19	MWT	95/2.4	2,400	95.0	80.0	127	7.7	18.7	134	13.7	14.1	134	19.1	13.5
20	MWT	95/2.4	2,400	95.0	80.0	183	7.8	16.8	183	13.7	13.7	158	19.3	13.4
21	MWT	95/2.4	2,400	95.0	80.0	15	8.3	15.0	300	14.0	13.5	279	19.3	13.4
22	MWT	95/2.4	2,400	95.0	80.0	101	7.8	18.1	93	13.7	13.8	105	19.2	13.4
23	MWT	95/2.4	2,400	95.0	80.0	360	8.1	16.3	314	13.8	13.7	314	19.1	13.4
24	MWT	95/2.4	2,400	95.0	80.0	240	8.0	16.1	118	14.0	13.6	282	19.3	13.5
25	MWT	95/2.4	2,400	95.0	80.0	297	7.9	16.9	293	13.6	13.9	257	19.3	13.5
26	MWT	95/2.4	2,400	95.0	80.0	352	8.0	17.1	352	13.9	13.6	133	19.2	13.4
27	MWT	95/2.4	2,400	95.0	80.0	266	7.9	17.0	258	13.8	13.9	258	19.1	13.5
28	MWT	95/2.4	2,400	95.0	80.0	189	7.6	18.5	197	13.5	14.0	255	19.3	13.6
29	MWT	95/2.4	2,400	95.0	80.0	306	8.0	16.8	306	13.9	13.8	306	19.2	13.5
30	MWT	95/2.4	2,400	95.0	80.0	47	7.9	17.7	47	13.9	13.8	314	19.3	13.5
31	MWT	95/2.4	2,400	95.0	80.0	41	7.9	17.1	108	13.6	13.9	108	19.0	13.4
32	MWT	95/2.4	2,400	95.0	80.0	287	8.1	16.8	287	13.9	13.9	287	19.2	13.6
33	MWT	95/2.4	2,400	95.0	80.0	236	7.9	17.3	310	13.9	13.7	310	19.2	13.4
34	MWT	95/2.4	2,400	95.0	80.0	349	8.0	16.4	113	13.7	13.7	113	19.1	13.4

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Project:
NAPOLEON.WIND

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Calculated:
03/04/2007 10:17 AM/2.5.6.79

PARK - WTG Turbulence: Main Result

Calculation: 20070304 MWT 95-2.4 60Hz 2400 95.0 Turbulence

...continued from previous page

					Free Wsp: 9.5 m/s			Free Wsp: 14.5 m/s			Free Wsp: 19.5 m/s		
Manufact.	Type	Power [kW]	Diam. [m]	Height [m]	Dir [deg]	Wsp [m/s]	It [%]	Dir [deg]	Wsp [m/s]	It [%]	Dir [deg]	Wsp [m/s]	It [%]
35 MWT	95/2.4	2,400	95.0	80.0	139	8.1	16.1	141	13.9	13.7	141	19.2	13.4
36 MWT	95/2.4	2,400	95.0	80.0	161	7.9	17.5	152	13.8	13.9	153	19.1	13.5
37 MWT	95/2.4	2,400	95.0	80.0	244	7.5	19.2	246	13.6	13.9	255	19.3	13.4
38 MWT	95/2.4	2,400	95.0	80.0	150	7.7	17.8	142	13.4	14.0	142	19.0	13.4
39 MWT	95/2.4	2,400	95.0	80.0	265	7.8	17.4	273	13.7	14.0	273	19.1	13.6
40 MWT	95/2.4	2,400	95.0	80.0	333	7.9	17.2	333	13.9	13.6	128	19.4	13.3
41 MWT	95/2.4	2,400	95.0	80.0	6	7.6	19.6	14	13.7	13.9	111	19.2	13.4
42 MWT	95/2.4	2,400	95.0	80.0	186	7.8	16.9	291	13.6	13.8	293	19.1	13.4
43 MWT	95/2.4	2,400	95.0	80.0	86	7.7	18.1	157	13.6	13.9	159	19.0	13.4
44 MWT	95/2.4	2,400	95.0	80.0	4	8.2	15.2	127	14.1	13.5	127	19.3	13.4
45 MWT	95/2.4	2,400	95.0	80.0	169	8.1	16.5	271	13.9	13.8	271	19.2	13.5
46 MWT	95/2.4	2,400	95.0	80.0	72	7.9	17.0	64	13.8	13.6	162	19.3	13.4
47 MWT	95/2.4	2,400	95.0	80.0	78	8.0	16.8	335	13.5	13.6	280	19.2	13.4
48 MWT	95/2.4	2,400	95.0	80.0	146	7.9	17.7	146	13.9	13.9	146	19.2	13.5
49 MWT	95/2.4	2,400	95.0	80.0	164	8.3	15.5	267	14.1	13.7	267	19.3	13.5
50 MWT	95/2.4	2,400	95.0	80.0	178	8.1	16.2	111	13.9	13.6	111	19.2	13.3
51 MWT	95/2.4	2,400	95.0	80.0	174	7.8	16.8	164	14.0	13.6	266	19.3	13.4
52 MWT	95/2.4	2,400	95.0	80.0	219	7.9	17.0	156	13.9	13.7	290	19.2	13.4
53 MWT	95/2.4	2,400	95.0	80.0	95	7.9	16.6	87	13.7	13.6	157	19.4	13.2
54 MWT	95/2.4	2,400	95.0	80.0	317	7.8	18.4	255	13.6	14.0	255	19.0	13.6
55 MWT	95/2.4	2,400	95.0	80.0	251	7.8	17.1	255	14.0	13.6	255	19.3	13.4
56 MWT	95/2.4	2,400	95.0	80.0	255	7.8	17.9	255	13.8	14.0	255	19.1	13.5
57 MWT	95/2.4	2,400	95.0	80.0	37	8.0	16.2	287	13.8	13.7	287	19.1	13.4
58 MWT	95/2.4	2,400	95.0	80.0	310	7.7	18.6	307	13.7	14.1	307	19.1	13.5
59 MWT	95/2.4	2,400	95.0	80.0	109	7.8	17.4	112	13.6	13.8	157	19.4	13.4
60 MWT	95/2.4	2,400	95.0	80.0	325	7.8	17.7	140	13.7	13.8	140	19.1	13.4
61 MWT	95/2.4	2,400	95.0	80.0	3	8.0	16.8	134	13.8	13.7	135	19.2	13.4
62 MWT	95/2.4	2,400	95.0	80.0	152	7.7	17.6	158	13.6	13.9	268	19.2	13.5
63 MWT	95/2.4	2,400	95.0	80.0	339	7.9	17.7	259	13.8	13.8	258	19.2	13.4
64 MWT	95/2.4	2,400	95.0	80.0	55	7.9	17.3	48	13.8	13.6	114	19.4	13.2
65 MWT	95/2.4	2,400	95.0	80.0	137	8.0	17.1	129	13.8	13.7	130	19.1	13.3
66 MWT	95/2.4	2,400	95.0	80.0	93	8.2	15.8	301	14.0	13.5	267	19.3	13.3
67 MWT	95/2.4	2,400	95.0	80.0	320	7.8	16.9	272	13.7	13.7	272	19.1	13.3
68 MWT	95/2.4	2,400	95.0	80.0	111	7.9	17.5	111	13.9	13.8	279	19.2	13.4
69 MWT	95/2.4	2,400	95.0	80.0	255	8.2	15.9	255	14.0	13.6	258	19.2	13.4
70 MWT	95/2.4	2,400	95.0	80.0	66	8.0	16.1	301	13.9	13.6	301	19.2	13.3
71 MWT	95/2.4	2,400	95.0	80.0	355	8.0	16.6	314	14.0	13.5	314	19.2	13.3
72 MWT	95/2.4	2,400	95.0	80.0	66	7.6	19.5	66	13.7	13.9	307	19.3	13.4
73 MWT	95/2.4	2,400	95.0	80.0	288	7.9	16.9	284	13.8	13.8	281	19.1	13.5
74 MWT	95/2.4	2,400	95.0	80.0	318	7.9	17.4	314	14.0	13.7	314	19.2	13.4
75 MWT	95/2.4	2,400	95.0	80.0	52	8.1	16.3	256	13.5	13.8	261	19.1	13.4
76 MWT	95/2.4	2,400	95.0	80.0	161	8.1	16.6	163	13.9	13.6	284	19.4	13.3
77 MWT	95/2.4	2,400	95.0	80.0	281	7.8	18.4	281	13.8	13.9	285	19.3	13.5
78 MWT	95/2.4	2,400	95.0	80.0	195	7.5	18.8	195	13.6	13.8	284	19.2	13.4
79 MWT	95/2.4	2,400	95.0	80.0	107	7.9	17.5	107	13.9	13.8	107	19.2	13.4
80 MWT	95/2.4	2,400	95.0	80.0	35	8.0	17.0	275	13.8	13.7	274	19.1	13.3