Debenham Energy, LLC

Wind Energy Development and Consulting
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John Doe
General Manager
ACME Inc.
1522 Escondido Way
Belmont, CA 94002

September 6, 2005

Dear Mr. Doe,

I want to thank you for your interest in evaluating the feasibility of installing wind turbines at your site. This letter will provide the necessary background to understand the economic drivers of this type of project so that you can make informed decisions. Enclosed is a Preliminary Wind Power Feasibility Analysis for the XXXXX facility.

Your site is in an industrial area with a significant amount of land, so the land use is probably appropriate for wind turbines. The wind resource is good and with an assumed electricity rate of $.08/kWh, the available state incentives and your electrical load the economics are good. If we pursue a more detailed study we will take a closer look at your utility rate structure and different numbers and sizes of wind turbines.

The attached Preliminary Analysis includes a representative cash flow analysis a single Fuhrlander FL1000 (1 MW) wind turbine (230 foot tower). The financial analysis depends on whether the equipment is financed, purchased structured as a long-term of a Power Purchase Agreement. The attached analysis assumes the equipment is purchased (30 down payment). The projected Internal Rate of Return is 34%. For a Power Purchase Agreement the savings could be in the range of 10-30% based on today's tariffs and interconnection rules. The actual savings will depend on the installation cost and the wind resource estimate both of which will be confirmed during a Feasibility Study. It will also depend on the number and size of wind turbines. The table below is a summary showing the impact of several different size wind turbines.

Table 1 – Turbine Heights, Annual Production (Kwh/Yr) and Savings ($/Yr)

Size (kW)	Height to Center of Rotor (feet)	Height to Tip of Blade (feet)	Energy Production (kWh/yr)	Annual Utility Savings ($/Yr)
1,000	230	318	1,496,553	$119,724
1,500	262	389	2,752,175	$220,174
2,500	328	492	4,368,133	$349,451

* Based on blended rate of $.08/kWh

The California Self Generation Incentive Program provides funds for distributed generation projects. The incentive is limited to 1 megawatt of installed capacity. This incentive is provided

for projects up to 5 megawatts with the incentive applied to the first megawatt. Your load is sufficient for more than 5 megawatts however it would be certainly be prudent to limit the first phase to 5 megawatts to receive the incentive. It is important to understand this as is drives the Return on Investment. Larger turbines have a lower cost per kW. They also produce more kWh/Yr per kW installed. These economies of scale start to offset the fact that the incentive is limited to 1 megawatt. What this means is that the Internal Rate of Return drops promptly after 1 megawatt due to the incentive limit then increases due to the economies of scale. This is a critical concept to understand.

One thing that is unique about this site is that the diurnal (daily) wind patterns are so pronounced. The wind consistently peaks in the afternoon as shown in the chart below. The effects are actually more pronounced than shown below because the power output is proportional to wind speed raised to the third power due to what are called the 'fan laws'. If your electricity rates are based on Time of Use (TOU) pricing it means that the average (or 'blended') rate of $.08/kWh may understate the incremental cost of electricity. I can analyze this impact during the Feasibility Study. Another factor to consider is the current discussion of real-time pricing in California. It is not possible to quantify this now since specifics are lacking but it may be a factor to consider in long-term projections for your applicable energy rates.

If your financial criteria can likely be met with the wind turbine sizes that can realistically be permitted at your site then we would propose a Feasibility Study. The purpose of the Feasibility Study is threefold:

1. Identify potential fatal flaws.
2. Validate the financial estimates provided in the Preliminary Analysis.
3. Identify the permitting requirements and generate a plan.

The Feasibility Study will also include a review and comparison to known wind resources by a professional meteorologist with over 20 year of experience in California who has access to local wind data. A Feasibility Study typically costs between $5,000 and $10,000 and take 2-3 months to complete. A sample can be provided if requested.

The attached Preliminary Analysis is a summary that includes:

- **Street Map**. This is used to confirm that we have the correct location.
- **Topographical map**. This shows the local topography and is used to help find potential location(s) of the wind turbines to maximize energy production.
- **Aerial Photograph**. This helps us identify the potential locations for the wind turbine(s). Proximity to the street (for crane access), suitable laydown areas for rotor assembly, distance from neighbors and structures as well as electrical interconnection points are considerations in selecting the best location.
- **Wind Resource Map**. This shows Wind Class (1-7) by color. It is based on the wind power density (watts per square meter). The wind model was prepared for the California

Energy Commission and provides a preliminary indication of the wind power which is available at your site. Several methods can be used to increase the confidence of the wind data as part of a more detailed study. The available wind energy is the most critical economic driver as the electrical generation is proportional to the wind speed raised to the third power. Information on the methodology used to generate the wind data can be found on the website below:

http://www.awstruewind.com/inner/services/windmapping/mesomap/mesomap.htm

- **Expected Wind Turbine Performance**. This includes preliminary power generation estimates for various wind turbines which are suitable for your site. Allowable wind turbine size and required offsets from the property lines will have to be investigated to determine what size wind turbine could be permitted at this site. The estimates are based on manufacturer's performance data and the AWS Truewind wind resource estimates.
- **Wind Patterns at Ontario Airport**. These graphs show the daily, weekly and monthly wind patterns for the nearby Ontario Airport. The wind patterns at your facility are certainly similar.
- **Preliminary Economic Analysis**. The economic analysis will depend on whether the equipment is purchased, financed or if electricity is sold as a negotiated Power Purchase Agreement. Additional analysis can be provided if requested. The California Self Generation Incentive Program (SGIP) provides $1,500/kw on the first 1000 kW installed (limit of 5 MW). Details on this program can be found on the following website:

  http://www.sce.com/NR/rdonlyres/9FB68E80-7AAE-4E19-B51C-BB5730C44898/0/2005SGIPHandookr1050423.pdf

I managed the development of a recently completed distributed generation wind project at the Federal Prison in Victorville, California. Information on this project can be seen on my website. If desired you may contact the Warden as he is one of my references. I am looking forward to visiting the site to verify our assumptions as well as to discuss the next steps.

Do not hesitate to call if you have any questions.

Regards,

Scott Debenham

Scott Debenham
Debenham Energy LLC
www.debenhamenergy.com

Attachment 1: Preliminary Analysis

Preliminary Wind Power Site Assessment

for the

ACME Inc
Treatment Plant

August 31, 2005

Scott Debenham

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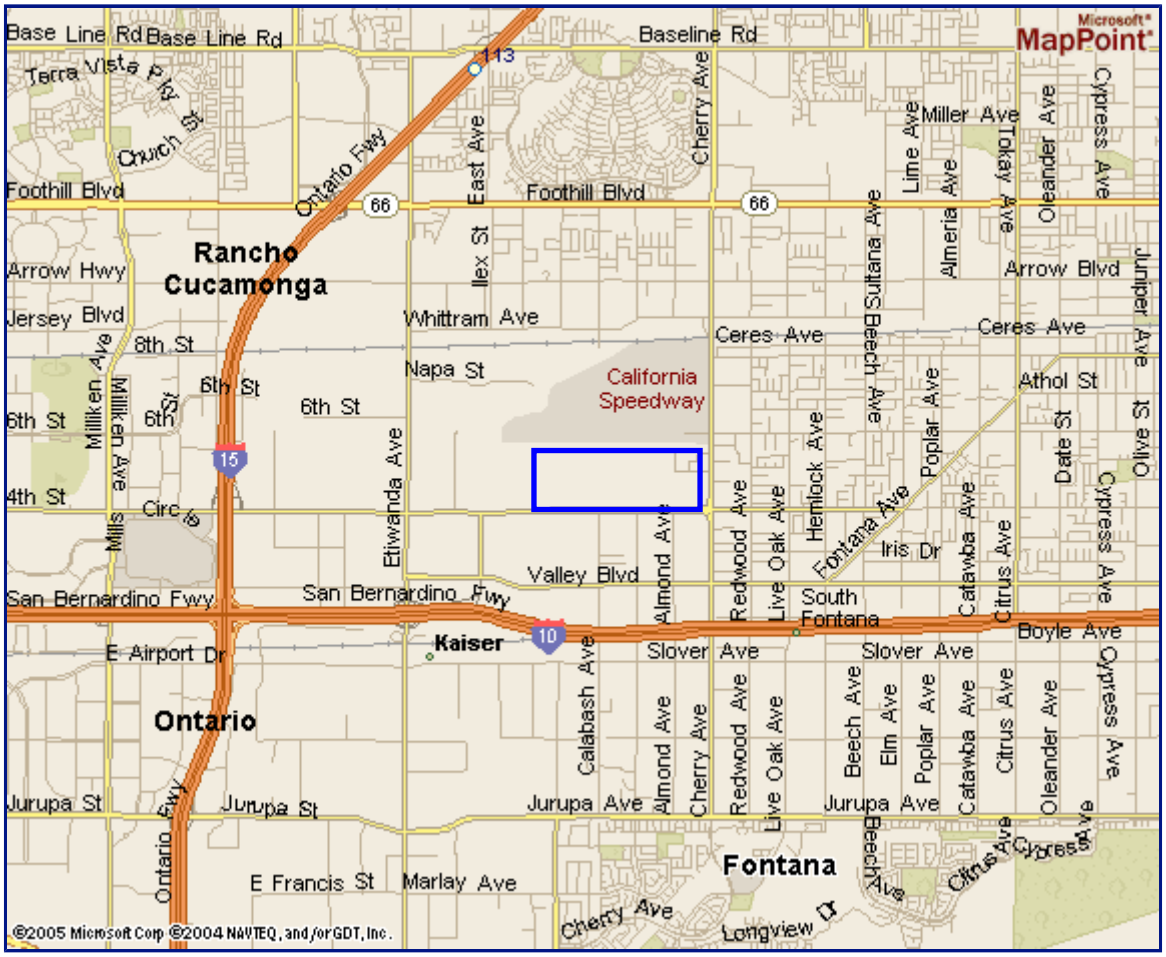
California Steel Industries, Inc Site Locator Map

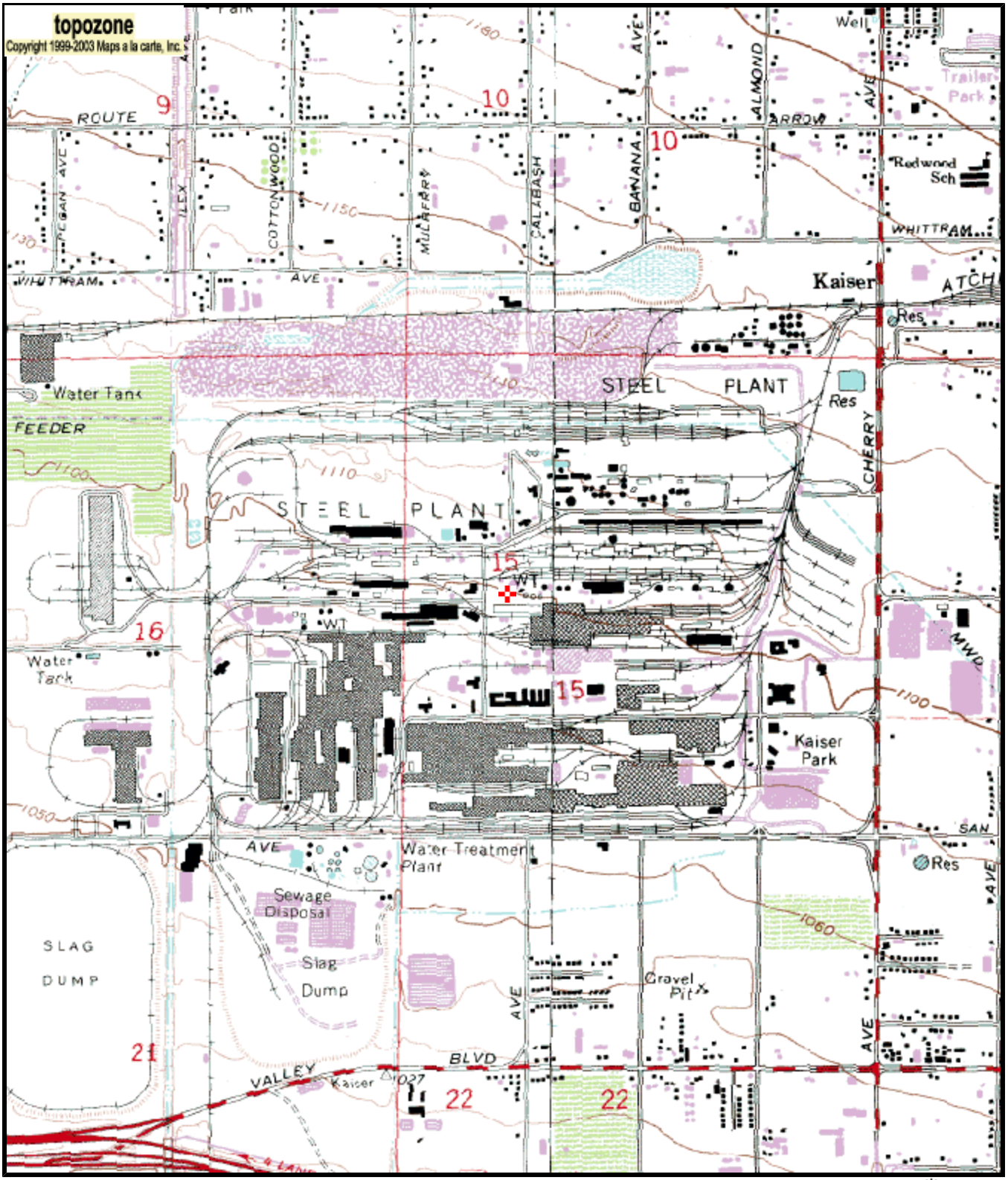
msn Maps & Directions

Featuring Microsoft® MapPoint® Technology

Fontana, California, United States



California Steel Industries, Inc Topographic Map



0 0.3 0.6 0.9 1.2 1.5 km

0 0.2 0.4 0.6 0.8 1 mi

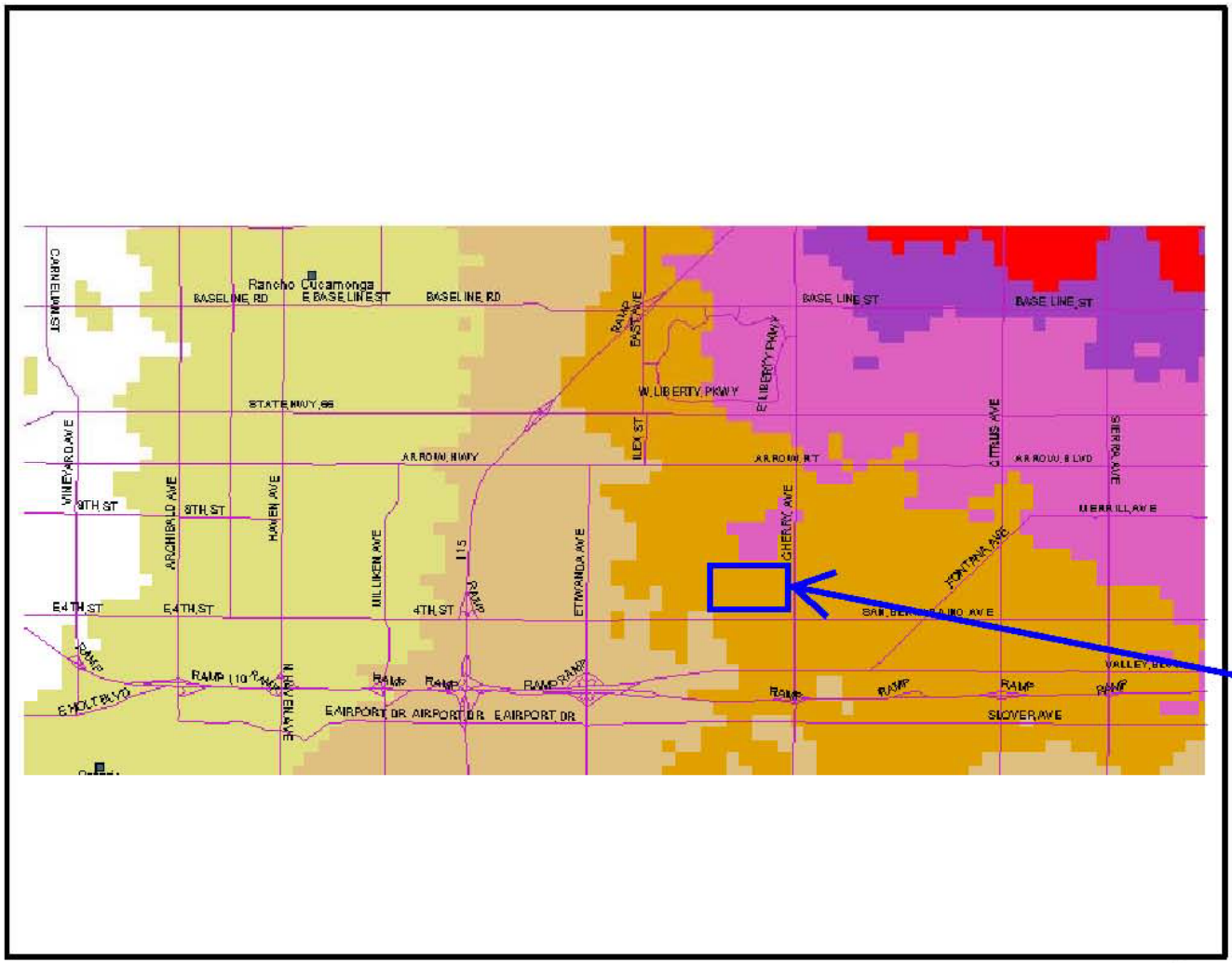
Map center is 34.0849°N, 117.5027°W (WGS84/NAD83)
GUASTI quadrangle
Projection is UTM Zone 11 NAD83 Datum

M=13.395
G=-0.282

Aerial Photo, Medium Scale

USGS **Fontana, California, United States** 29 Mar 2004

Fontana Wind Resource Map



Wind Resource at 50 m

	Mean Power Class	Mean Power
	1-	< 100
	1+	100-200
	2	200-300
	3	300-400
	4	400-500
	5	500-600
	6	600-800
	7	> 800

Wind Data for California Steel

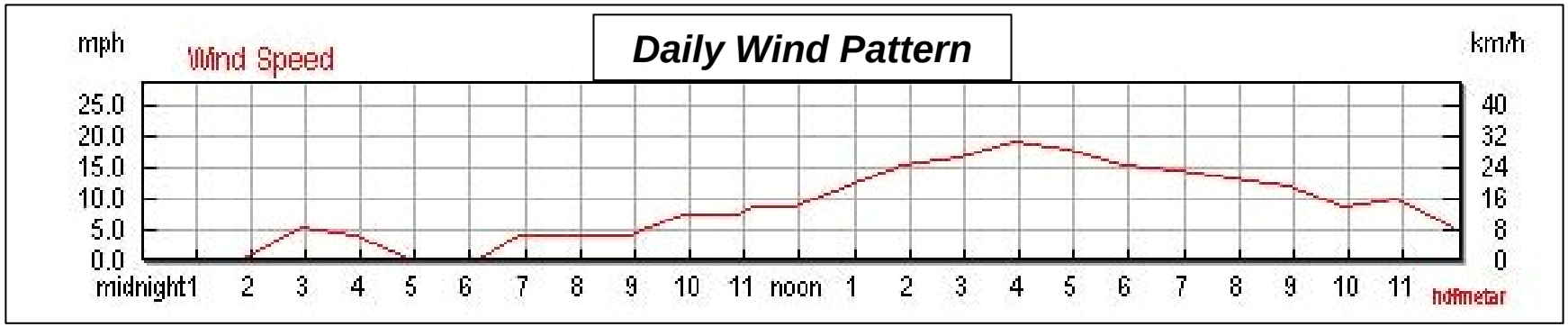
Lat: 34.085 N
Lon: 117.495 W
Elevation: 335 m
Wind Power Density (W/m2) at 50 m: 397
Mean Wind Speed at 50 m: 5.46 mps
Surface Roughness: .01
Weibull Factor: 2 (assumed)

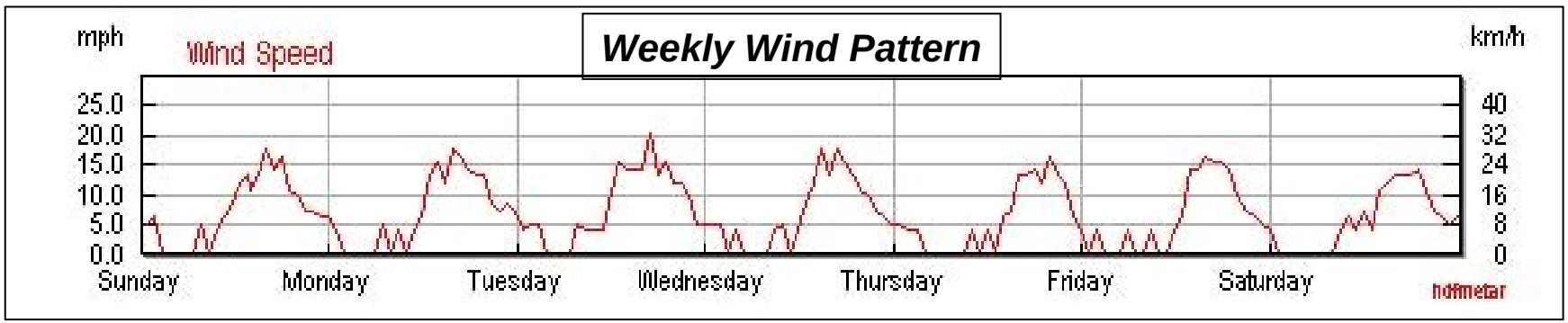
Miles
0 0.2 0.4

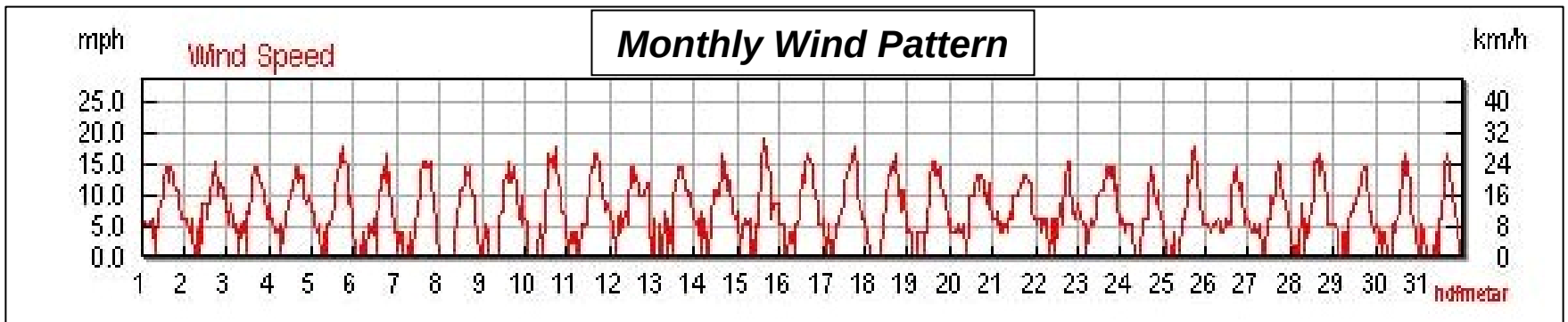
N

Ontario Airport - Wind Profile

Wind Pattern Strongly Correlates with Peak Energy Demand







WindCad Turbine Performance Model

Fuhrlaender FL 1000 Wind Turbine, 54 meter rotor diameter

Prepared For:	**California Steel**
Site Location:	**Fontana, CA**
Data Source:	**TrueWinds California Wind Map Model**
Date:	**9/4/2005**

1000 kW

Inputs:	
Ave. Wind (m/s) =	5.46
Weibull K =	1.16
Site Altitude (m) =	335
Wind Shear Exp. =	0.143
Anem. Height (m) =	50
Tower Height (m) =	70
Turbulence Factor =	10.0%

Results:	
Hub Average Wind Speed (m/s) =	5.73
Air Density Factor =	-3%
Average Output Power (kW) =	189.82
Daily Energy Output (kWh) =	**4555.7**
Annual Energy Output (kWh) =	1,662,837
Monthly Energy Output =	138,570
Percent Operating Time =	58.9%

90% of expected Annual Energy Output (kWh/yr) used in financial Proformas

Weibull Performance Calculations

Wind Speed Bin (m/s)	Power (kW)	Wind Probability (f)	Net kW @ V
1	0.00	11.92%	0.000
2	0.00	11.55%	0.000
3	0.00	10.56%	0.000
4	21.81	9.39%	2.048
5	57.57	8.21%	4.726
6	96.83	7.09%	6.864
7	175.34	6.07%	10.637
8	279.14	5.15%	14.383
9	389.06	4.35%	16.921
10	502.46	3.65%	18.346
11	591.43	3.05%	18.044
12	706.58	2.54%	17.938
13	780.73	2.10%	16.430
14	818.24	1.74%	14.226
15	879.30	1.43%	12.590
16	898.49	1.18%	10.563
17	898.49	0.96%	8.650
18	902.85	0.79%	7.100
19	900.24	0.64%	5.769
20	880.17	0.52%	4.586
©2005 Lorax Energy Ltd	Totals:	92.89%	189.822

Weibull Calculations:
Wind speed probability is calculated as a Weibull curve defined by the average wind speed and a shape factor, K. To facilitate piece-wise integration, the wind speed range is broken down into "bins" of 1 m/s in width (Column 1). For each wind speed bin, instantaneous wind turbine power (W, Column 2)) is multiplied by the Weibull wind speed probability (f, Column 3). This cross product (Net W, Column 4) is the contribution to average turbine power output contributed by wind speeds in that bin. The sum of these contributions is the average power output of the turbine on a continuous, 24 hour, basis.
Best results are achieved using annual or monthly average wind speeds. Use of daily or hourly average speeds is not recommended.

Inputs

Inputs

Average Wind Speed:	Use annual or monthly average wind speeds.
Weibull K Factor:	K=2 is used for inland sites, K=3 for coastal sites, K=4 for island sites and trade wind regimes.
Site Altitude:	In meters above sea Level.
Wind Shear Exponent	1/7 or 0.143 is used for normal terrain, 0.167 for rough terrain, 0.110 for open water.
Anemometer Height	Is the sensor height at which the average wind speed was measured.
Tower Height	Is nominal hub height.
Turbulence Factor:	Is for derating for turbulence, wire run losses and other performance influencing factors.

Results

Hub Ave. Wind Speed	Is corrected for wind shear and used to calculate the Weibull wind speed probability.
Air Density Factor	Is the reduction from sea level performance.
Average Power Output	Is the average 24-hour power produced, without the performance safety margin adjustment.
Daily Energy Output	Includes all deratings and is the primary performance parameter.
Monthly Energy Output	Is calculated from Daily Energy Output.
Annual Energy Output	Is calculated from Daily Energy Output.
Percent Operating Time	Is the time the wind turbine should be producing some power.

Use only with annual or monthly averages wind speeds to get proper long term Weibull distribution curve calculations.

1000 kW Wind Turbine - Cash Flow Analysis

Prepared for:
Site Location: **Fontana, CA**
Date: **9/4/2005**
Wind Turbine kW: **1000**
Quantity: **1**
State Incentive ($/kW)

90% of Predicted Annual Energy Output

Cash Purchase

Assumptions (Inputs)

Total Installed Cost ($):	
State Incentive ($):	
Cost After Credits and Rebates:	$400,000
Allocation to Business (%):	100
Annual Energy Output (kWh):	1,496,553
Electricity Cost ($/kWh):	$0.0800
Electricity Inflation Rate (%):	3
Loan Downpayment (%):	100
Down Payment ($):	
Amount of Loan ($):	$0
Interest Rate (%):	6%
Loan Term (Years):	4
Month Installed:	0
Net Federal Tax Rate (%):	34
Net State Tax Rate (%):	8
O & M Cost ($/kWh):	$0.010
O & M Inflation Rate (%):	3
State Tax Credit (%):	0
Federal Tax Credit (%):	0

Results

Loan Payments

Monthly Payment ($):	$0
Value of Interest Deduction ($):	$0
Net Monthly Payment ($):	$0

Ave. Monthly Savings on Bill

Year 1 ($):	$9,977
Year 10 ($):	$13,408
Year 20 ($):	$18,020
Year 30 ($):	$24,217

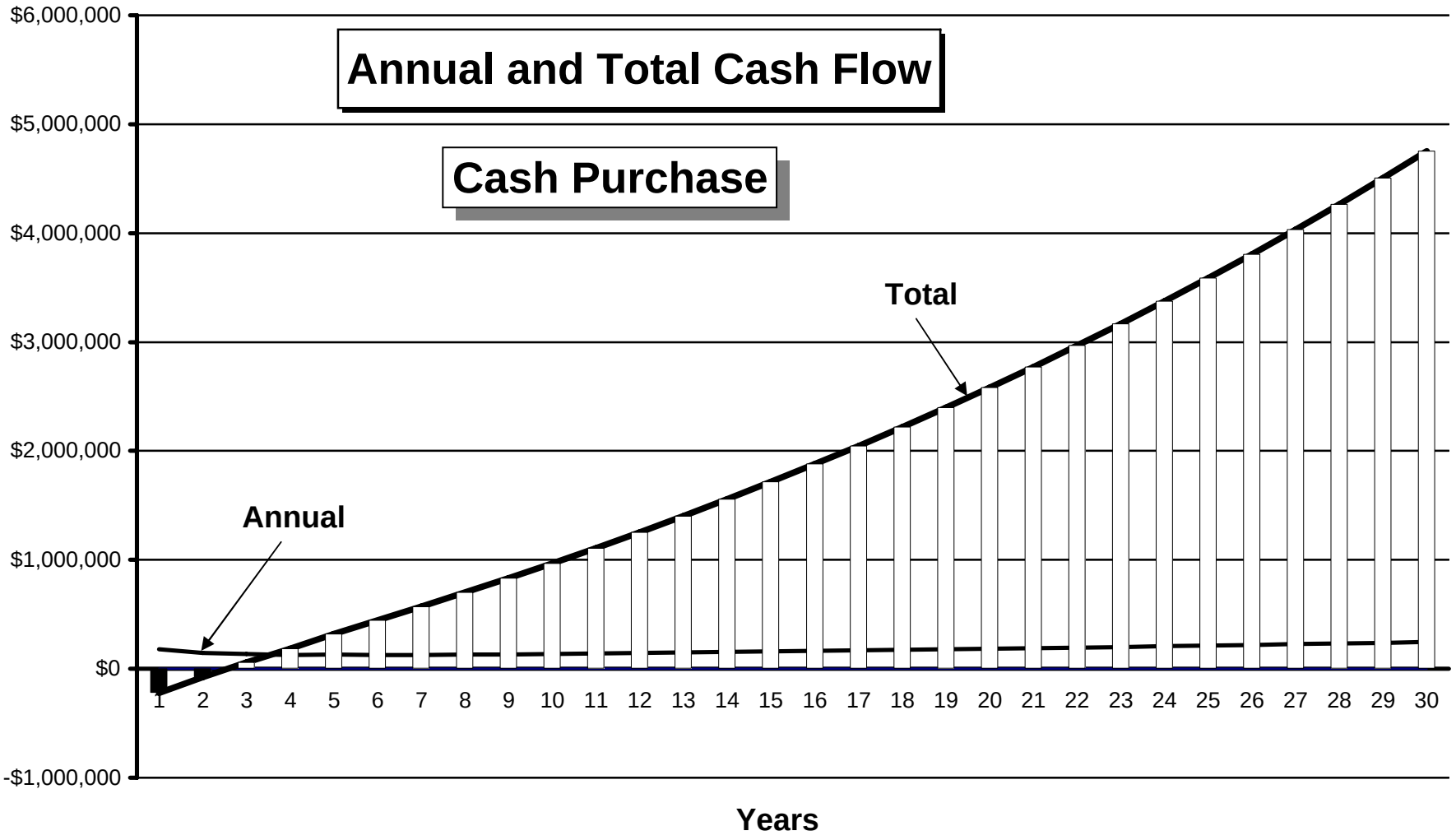
Internal Rate of Retrurn

Years 1 - 10:	34.8%

Annual Cash Flow Model

Year	Net Energy	O&M Costs	Net Deprec.	Net Loan Payments	Annual Cash Flow	Total Cash Flow
0						
1	$119,724	($14,966)	$73,920	$0	$178,679	($221,321)
2	$123,316	($15,414)	$37,632	$0	$145,533	($75,788)
3	$127,015	($15,877)	$22,579	$0	$133,718	$57,930
4	$130,826	($16,353)	$13,548	$0	$128,020	$185,950
5	$134,751	($16,844)	$13,548	$0	$131,454	$317,404
6	$138,793	($17,349)	$6,791	$0	$128,235	$445,639
7	$142,957	($17,870)	$0	$0	$125,087	$570,726
8	$147,246	($18,406)	$0	$0	$128,840	$699,566
9	$151,663	($18,958)	$0	$0	$132,705	$832,272
10	$156,213	($19,527)	$0	$0	$136,686	$968,958
11	$160,899	($20,112)	$0	$0	$140,787	$1,109,745
12	$165,726	($20,716)	$0	$0	$145,011	$1,254,755
13	$170,698	($21,337)	$0	$0	$149,361	$1,404,116
14	$175,819	($21,977)	$0	$0	$153,842	$1,557,958
15	$181,094	($22,637)	$0	$0	$158,457	$1,716,415
16	$186,526	($23,316)	$0	$0	$163,211	$1,879,626
17	$192,122	($24,015)	$0	$0	$168,107	$2,047,733
18	$197,886	($24,736)	$0	$0	$173,150	$2,220,883
19	$203,822	($25,478)	$0	$0	$178,345	$2,399,227
20	$209,937	($26,242)	$0	$0	$183,695	$2,582,922
21	$216,235	($27,029)	$0	$0	$189,206	$2,772,128
22	$222,722	($27,840)	$0	$0	$194,882	$2,967,010
23	$229,404	($28,676)	$0	$0	$200,729	$3,167,739
24	$236,286	($29,536)	$0	$0	$206,750	$3,374,489
25	$243,375	($30,422)	$0	$0	$212,953	$3,587,442
26	$250,676	($31,334)	$0	$0	$219,341	$3,806,784
27	$258,196	($32,275)	$0	$0	$225,922	$4,032,705
28	$265,942	($33,243)	$0	$0	$232,699	$4,265,405
29	$273,920	($34,240)	$0	$0	$239,680	$4,505,085
30	$282,138	($35,267)	$0	$0	$246,871	$4,751,956

Conservative assumption of no scrap value after 30 years.


Annual and Total Cash Flow
Cash Purchase
$6,000,000
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$0
-$1,000,000
Total
Annual
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Years