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## ACKNOWLEDGEMENTS

Special acknowledgements are due to all those who helped to establish the Wind Performance Reporting Systems (WPRS). The program was developed by the California Energy Commission (CEC) in conjunction with the state's Wind Industry and the American Wind Energy Association (AWEA) under the direction of *David L. Modisette*, Chief, Energy Technologies Development Division; and *Michael DeAngelis*, Manager, Research and Development Office.

The cover layout and design was provided by Tino Flores. Devorah Eden provided assistance coordinating the final document.

## TABLE OF CONTENTS

1.	Introduction .....	1
2.	WPRS Background .....	3
3.	WPRS Implementation Issues .....	5
4.	California Wind Resource Areas .....	6
5.	Staff Summary .....	7
	A. Industry Performance .....	7
	B. Industry Production and Capacity Trends .....	10
	Statewide .....	10
	Resource Areas .....	12
	Turbine Size .....	14
	Turbine Types .....	15
	Domestic and Foreign Turbines .....	17
	Ten Largest Wind Turbine Manufacturers .....	19
	Ten Largest Wind Project Operators .....	21
	Time-of-Use Production .....	23
	C. Wind Project Costs .....	24
6.	WPRS Annual Summary Tables .....	25
7.	WPRS Data .....	32
	Alphabetical List of Operators and Other Participants .....	33
	Wind Data Section Notes .....	34
	Altamont Pass .....	36
	Boulevard .....	51
	Carquinez Strait .....	53
	Pacheco Pass .....	54
	Salinas Valley .....	55
	San Geronio Pass .....	56
	Tehachapi Pass .....	71
<u>Appendix A.</u>	Non-Operating Wind Projects .....	92
<u>Appendix B.</u>	Wind Turbine Manufacturers .....	95
<u>Appendix C.</u>	WPRS Regulations .....	101

## 1. INTRODUCTION

Although the wind industry is very young, it has already made a substantial impact on the California energy market. Today, California has over 1200 megawatts of wind generating capacity, and in 1986 produced enough output to meet the annual electricity needs of over 200,000 typical California homes. As a result, California has become the leader in wind development with almost 90 percent of the world's total generating capacity.

As the industry began exponential growth in 1981, the California Energy Commission (CEC) and the American Wind Energy Association (AWEA) recognized the need for performance and other technology related information. Subsequent efforts by these two organizations led to the adoption of the Wind Performance Reporting System (WPRS) regulations in 1984. These regulations require all wind operators with projects rated greater than 100 kW and who sell electricity to a power purchaser, to report quarterly performance and related project information to the CEC. The Commission has used this information to complete quarterly and annual report for two years.

This annual report provides a detailed compilation of all 1986 reported data. From this data, staff summarized wind industry performance information, production and

capacity trends and cost information. Additionally, tables have been included that organize the data according to statewide totals, resource areas, turbine sizes, turbine types, turbine manufacturers, project operators and origin of turbine manufacturers.

Although many valuable observations about California's wind industry can be drawn from WPRS reported data, it is important to recognize some important limitations. First, the WPRS program has only collected wind data for two years. A complete industry evaluation would require several more years of data. This is especially true for an industry such as wind which is so dependent on weather conditions that vary from year to year. Moreover, much of the data reported is not directly comparable because the industry still does not have a standardized turbine rating system. As a result, turbines are tested under different conditions and rated at widely varying miles per hour specifications. Evidence of the problem is indicated by the lack of correlation between blade swept area and turbine kW specifications. For example, one manufacturer's 400 kW turbine has only a slightly larger blade swept area than another manufacturer's 95 kW turbine. In other cases, the current product being offered by an operator or manufacturer may not be properly represented in the report because old and new

turbine data are grouped together. Often, newer equipment will be more efficient and reliable. Further, performance data does not consider other important variables such as cost per kW, durability of the system and quality of the site's wind resource. Thus, important wind industry findings presented in this annual report should be checked against many other hidden factors involved in wind development.

## 2. WPRS BACKGROUND

### What is the Wind Performance Monitoring System (WPRS)?

California law requires the California Energy Commission (CEC) to serve as a central repository in state government for the collection and dissemination of information on energy supplies. Relative to wind energy, the Commission adopted WPRS regulations on November 28, 1984. Starting in January, 1985, these regulations required all California wind operators with projects rated over 100 kW to provide quarterly wind performance reports if they sold electricity to a power purchaser. These reports include actual energy production and related project information. In addition, all California power purchasers are required to file quarterly reports documenting the power purchased from these wind operators. The CEC uses this information to produce quarterly and annual reports on wind industry performance in California.

### Why Were WPRS Regulations Developed?

WPRS regulations were instituted for several reasons. First, the industry, investors, financial community and government agencies needed actual performance information to better evaluate the status of wind technology. Second, information that would help minimize tax abuse would benefit everybody involved in wind development: the industry would have less "bad press" and better public opinion; investors

would be better able to make informed investments, and government and public monies would be allocated to better performing projects. The WPRS regulations were also intended to provide performance information that is useful for government tracking of energy supplies and thereby allow for better planning of the state's energy needs.

Before federal tax credits expired in 1985, project financing was primarily venture capital from private investors who were willing to take a substantial risk on the technology due to the tax benefits they would receive. Since then, the focus of wind development has been on revenues from power sales and greater reliance on conventional financing from institutional lenders and foreign investors. WPRS information is also needed now to establish performance credibility with these new sources of financing.

### What Information Do WPRS Reports Provide?

WPRS quarterly reports include the following information for all wind projects in California rated at 100 kW or greater which sell electricity: turbine manufacturers, model numbers, rotor diameters and kW ratings; the number of cumulative and new turbines installed; the projected output per turbine; the output for each turbine model, and the output for the entire project.

What Information is Not Provided by WPRS  
Quarterly Reports ?

WPRS reports do not provide information on all wind energy projects in California.

Nonoperating wind projects are not required to report performance information. The absence of a project from WPRS reports typically indicates that the project is not selling any power or is less than 100 kw. Other capacity not reported includes turbines that do not produce electricity for sale including turbines installed by utilities, government organizations and research facilities.

WPRS reports also do not include cost information for individual projects. Although cost information is reported for new projects, it is only reported in aggregate form. Lastly, WPRS reports are not able to always differentiate between old and new turbine performance. This is because turbines are often reported together in groups combining old and new machines. However, where new turbine performance could be analyzed separately, it is evaluated to track any improvements that may occur with wind technology.

### 3. WPRS IMPLEMENTATION ISSUES

A number of problems were encountered and resolved the first two years of WPRS reporting and are discussed below.

Validating performance data. It was originally intended that utility quarterly reports would be used to validate operator output data. However, numerous problems occurred. First, some utilities did not provide information according to a calendar quarter. Second, utility data was only provided for the operator who filed a power sales agreement. However, in many cases more than one project was reported under a single utility contract making it difficult to verify individual project output figures. In order to establish a more reliable validation procedure, staff added utility receipts as a voluntary additional submission item to be filed with quarterly reports. Operator reported output figures that agree with either submitted utility receipts or utility reported data have been noted as validated.

Operators who failed to file. Utility quarterly reports inform CEC staff of all wind farm operators with projects rated 100 kW or greater who have sold power and are therefore required to submit WPRS reports. Those operators that sold power but did not submit reports were noted as "failed to file". By the end of the year, only two operators had failed to file. Depending on the

circumstances, staff will consider various options for resolving the situation.

Operators who filed reports with data missing. Some operators filed WPRS reports with one or more data items missing. The predominant missing data item was the projected quarterly output per turbine. Apparently, some wind projects were sold with only annual output estimates. Staff will continue to try and work with operators to report complete information.

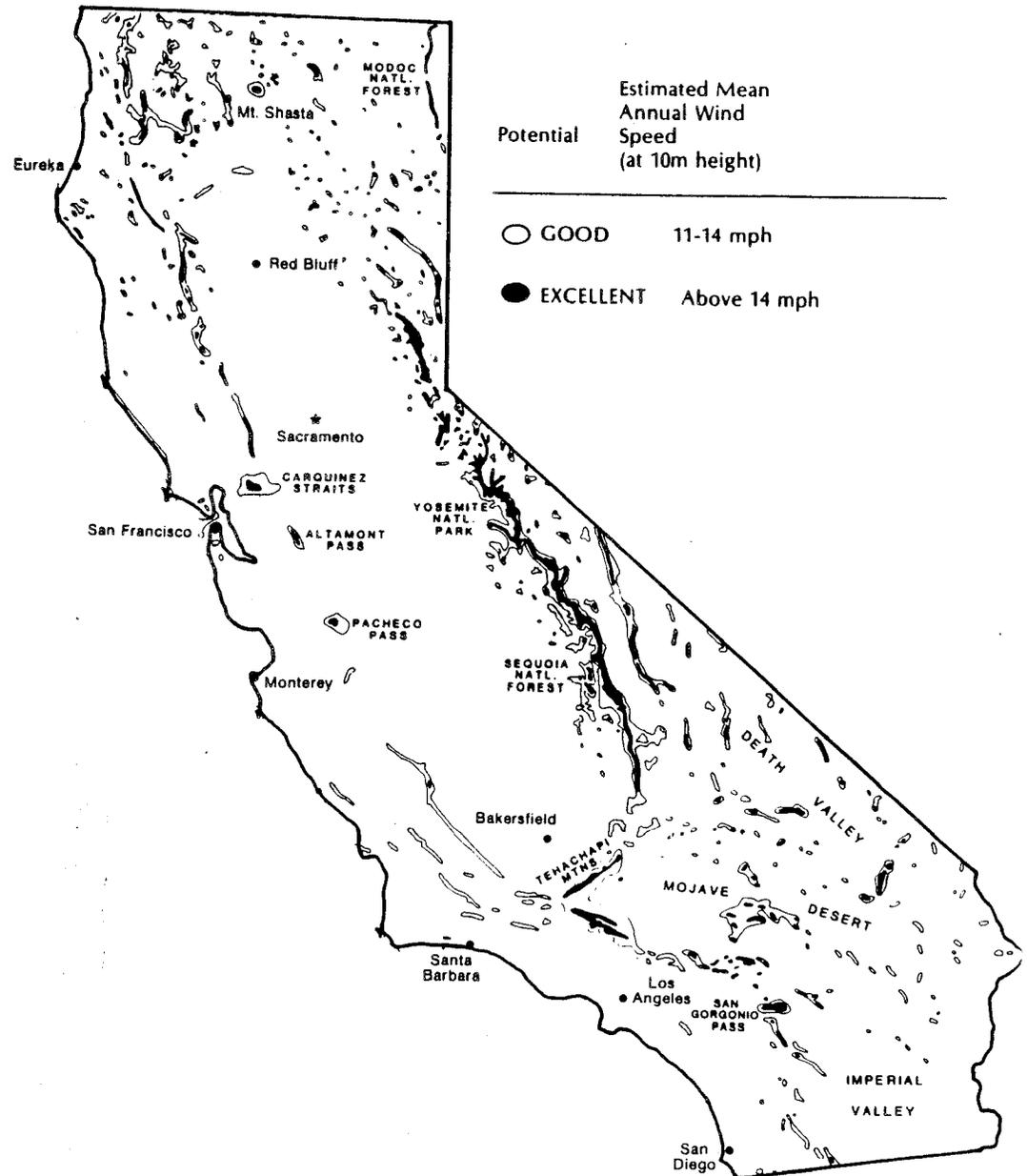
#### 4. CALIFORNIA WIND RESOURCE AREAS

The wind resource map on this page includes the geographic location and quality associated with the major wind resource areas in California. The following six resource areas currently report wind project information:

- Altamont Pass
- Boulevard (resource area in San Diego County not shown on map)
- Carquinez Straits
- Salinas Valley (resource area in Monterey County not shown on map)
- San Geronio Pass
- Tehachapi Pass

Areas designated "good" are roughly equivalent to an estimated mean annual power, at 10 meter height, of 200 to 300 watts per square meter ( $W/m^2$ ), and excellent above  $300 W/m^2$ .

Source: A. Miller and R. Simon, "Wind Power Potential in California", San Jose State University, prepared for the CEC, May 1978.



## 5. STAFF SUMMARY

### 5.A INDUSTRY PERFORMANCE

Total Capacity. A cumulative capacity of 1,235 megawatts was reported operational during the fourth quarter of 1986 to the WPRS program. Note that this capacity does not include what appears to be a significant amount of capacity that is no longer operating. For a complete list of nonoperating projects see *Appendix A*.

Electricity Output. In 1986, the California wind industry produced approximately 1,217 million kWh of electricity. This is enough power to meet the annual electricity needs of over 200,000 typical California homes.

Electricity Production Percent of Projected. Although the production from California wind projects represents a substantial amount of electricity, the industry as a whole only produced 50% of the total output it projected for 1986. Both industry observers and participants agree that many wind developers overstated their capabilities and provided projections that were not achievable. Note, however, that the percent of projected has increased 5% since last year when the industry produced only 45% percent of projected electricity output.

Capacity Factor. Capacity factors are a useful indication of performance. A capacity factor is

the ratio of actual energy output to the amount of energy a project would produce if it operated at full rated power 24 hours a day over a given time period. As indicated earlier, there should be standardized testing of all wind turbines for capacity factors to be truly comparable, but currently there is no such program. Instead, wind turbine ratings are based on widely varying test conditions and miles per hour specifications.

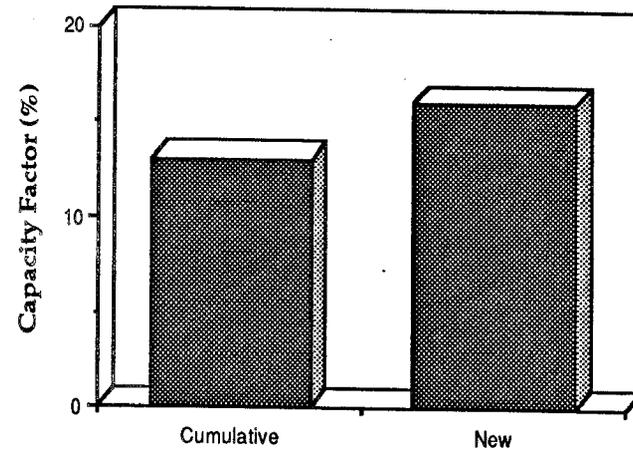
Nonetheless, capacity factors are still a good indication of wind project performance. The annual capacity factor is the average of the quarterly capacity factors calculated for each group of turbines reported. Note that only operating turbines were used to calculate capacity factors so that the performance results would not be skewed by a substantial amount of nonoperational capacity. For projects with new turbines, only half of the new capacity is included in the capacity factor calculation during the quarter of installation. This is because it is unlikely new capacity operated for the entire quarter it was installed, and new equipment typically needs a "debugging" period before it operates at full rated power.

The resulting statewide capacity factor for 1986 was 13%. This is substantially below 20 to 30% capacity factors cited for wind turbines in most technical reports. The upper limit capacity factor

estimated for wind technology ranges from 30 to 35%. Indeed, two projects did achieve this upper limit with annual capacity factors greater than 30%.

The low performance indicated for the industry as a whole is consistent with the low percent of projected electricity production. However, it appears that the statewide average performance may be adversely affected by a substantial number of older turbines that are less reliable and less efficient than the turbines currently being installed. In fact, where wind turbines installed after 1985 could be separately analyzed, the capacity factor was 16%, or 23% higher for the industry as a whole (*Figure 1*).

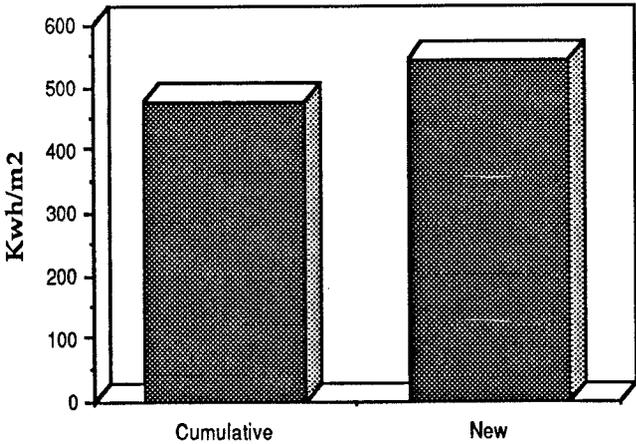
Kwh per Square Meter. Annual kWh per square meter calculations provide another good wind technology performance indicator. The advantage of this indicator is that it is based on blade swept area, which is a wind turbine specification determined by standard measurements rather than non-standardized kW ratings used to determine capacity factors. Unfortunately, it is still difficult to develop directly comparable kWh per square meter results. This is because the data reported for some turbine models include new turbines which have not had the benefit of a full operational year. Where any kWh per square meter calculation does not include a full operational year, an asterisk has been marked



**Figure 1:** Capacity Factors for New and Cumulative Turbine Stock

next to the value on all summary tables. Also note that horizontal and vertical axis turbines are not directly comparable relative to this performance indicator based on what appear to be inherent technical differences. In particular, although vertical axis turbines have a lower capacity factor than horizontal axis turbines, they have a higher kWh per square meter production.

For 1986, the average kWh per square meter annual production was 475. Where turbines installed after 1985 could be isolated, the resulting kWh per square meter increased 14% to 543 (Figure 2).



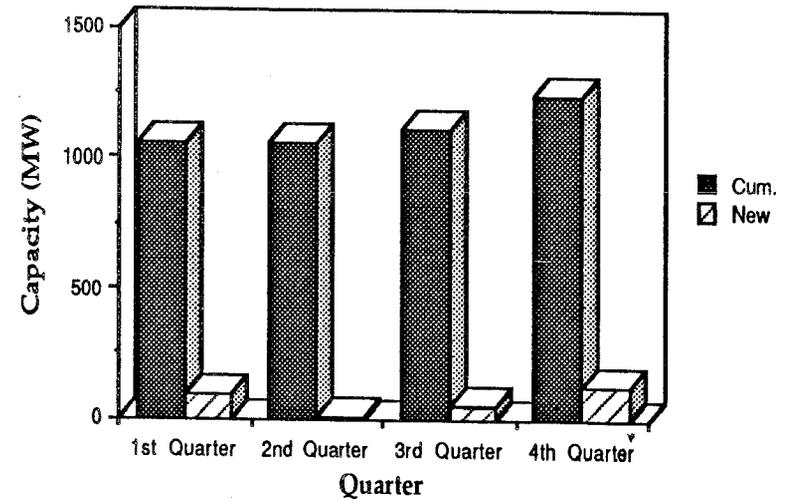
**Figure 2:** Kwh Per Square Meter Production for New and Cumulative Turbine Stock

## 5.B INDUSTRY PRODUCTION AND CAPACITY TRENDS

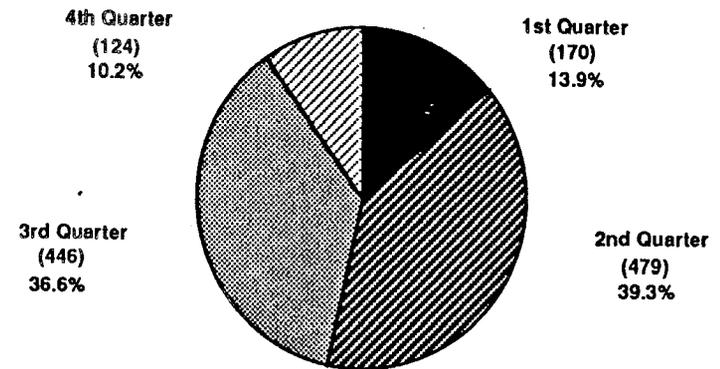
### Statewide

As predicted, there was a tremendous drop in wind development in 1986 in response to the expiration of federal tax credits at the end of 1985. By the end of 1986, 276 MW of new capacity had been installed bringing the total cumulative capacity to 1,235 MW (Figure 3). Over 80% of the new capacity was installed in the first and fourth quarters. This development profile is probably the result of many projects intended for late 1985 completion not being completed until the first quarter of 1986, and the typical increase in development during the fourth quarter.

Wind output in 1986 was consistent with the typical California wind resource profile: low winds at the beginning and end of the year with high winds during spring and summer when the heating season creates a natural draw of cool coastal air into hot valleys and deserts. The data showed that more than 75% of all annual output was produced in the second and third quarters of 1986 (Figure 4).

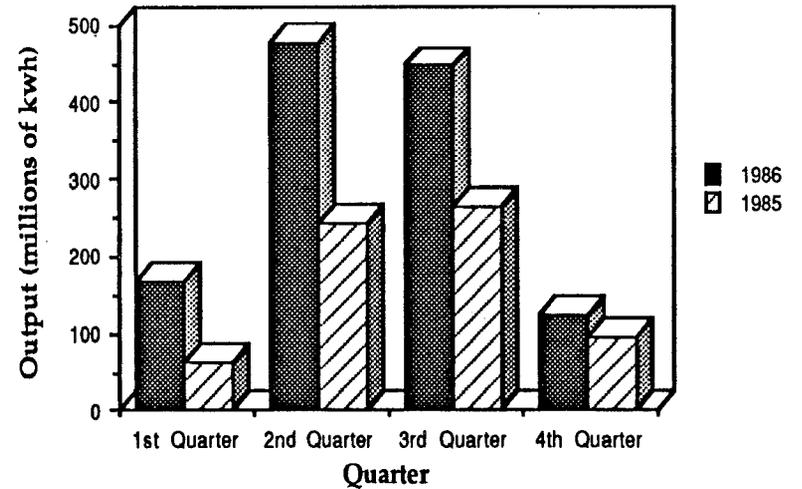


**Figure 3:** Statewide Wind Capacity

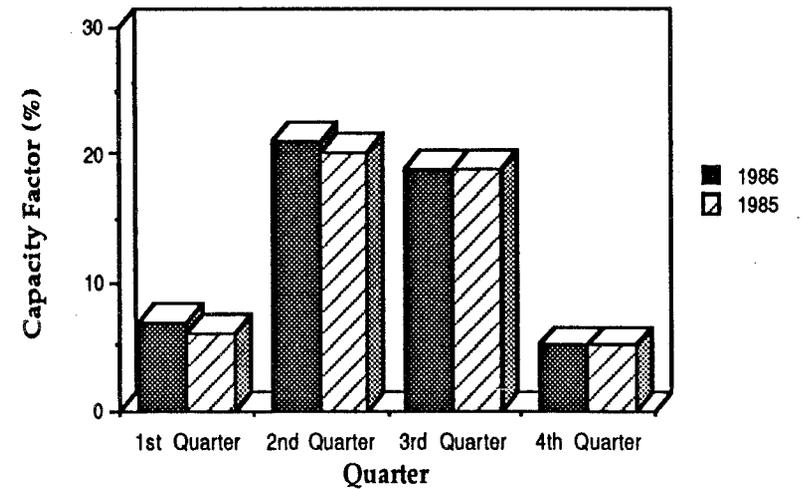


**Figure 4:** Statewide Wind Output (millions of kwh)

Total output for 1986 was very impressive, increasing more than 80% from 1985 (Figure 5). Quarterly capacity factors were consistent with the California wind resource profile just discussed. The capacity factors were 7%, 20%, 19% and 5% respectively for the first, second, third and fourth quarters. These quarterly capacity factors are almost identical to those of 1985 (Figure 6). The annual average statewide capacity factor for 1986, 13%, was also identical to 1985.



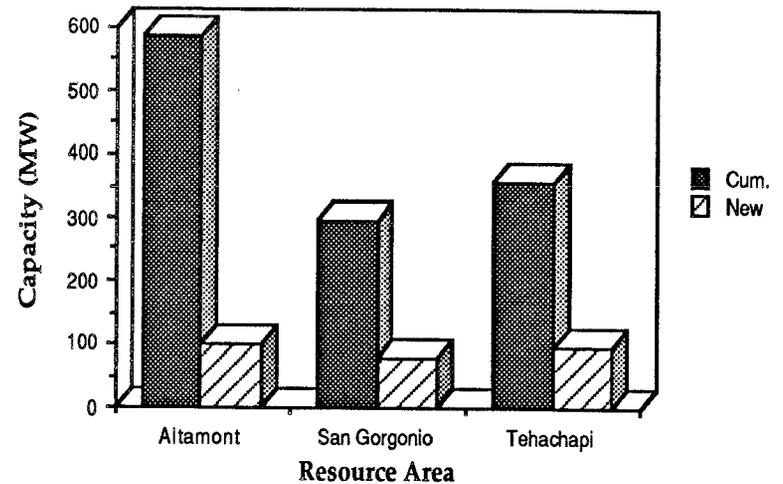
**Figure 5: Statewide Wind Output**



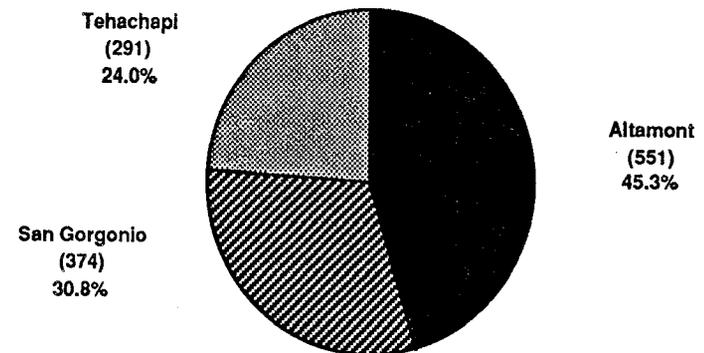
**Figure 6: Statewide Capacity Factors**

Resource Areas

Although wind projects are reported to WPRS for seven different resource areas in California, virtually 100% of all California capacity and output occurs in three resource areas: Altamont Pass, San Gorgonio Pass and Tehachapi Pass. All three of these areas are narrow mountain passes leading into hot and dry valley or desert regions. Among these three resource areas, 47% of all capacity is in the Altamont Pass. The remaining 53% of capacity is split between San Gorgonio Pass (24%) and Tehachapi Pass (29%) (Figure 7). Growth as a percent of existing capacity was highest in Tehachapi (28%) followed by San Gorgonio (26%) and Altamont (17%). Quantitatively, most new capacity was developed in the Altamont Pass, but it was only slightly more than in Tehachapi. The kWh output and percent of total statewide output for each resource area is shown in Figure 8. Compared with the capacity distribution from Figure 7, San Gorgonio (31% output vs. 24% capacity) produced a greater proportion of output and Altamont (45% output vs. 47% capacity) and Tehachapi (24% output vs. 29% capacity) produced a lesser proportion of output.

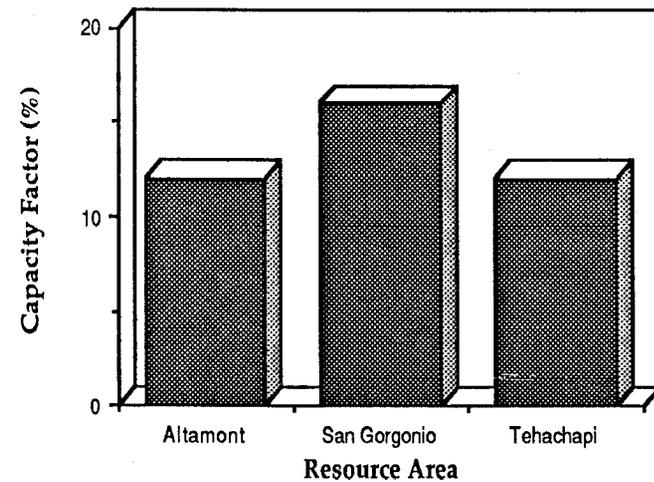


**Figure 7: Resource Area Capacity**



**Figure 8: Resource Area Output (millions of kwh)**

San Gorgonio had the highest capacity factor, 16%, of these three resource areas (Figure 9). The other two resource areas had 12% capacity factors. It is possible that San Gorgonio's higher capacity factor is partly attributed to newer machines in this resource area. This is because many San Gorgonio wind developers met substantial delays getting local government approvals for their projects during early wind development years.

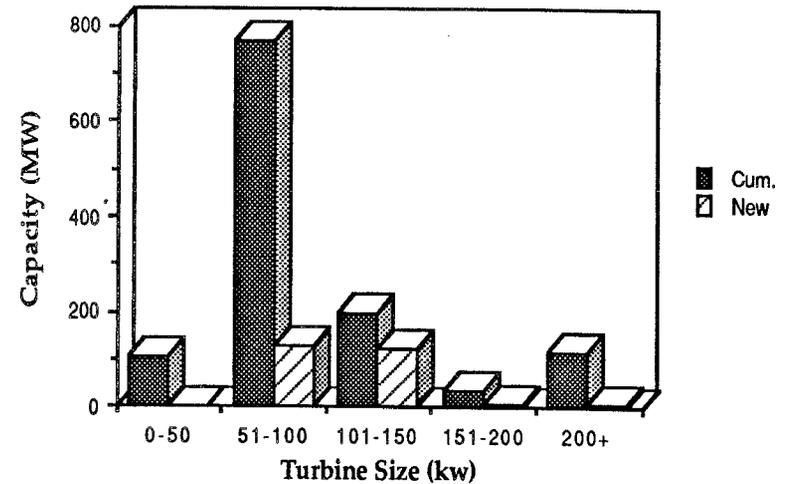


**Figure 9:** Capacity Factor by Resource Area

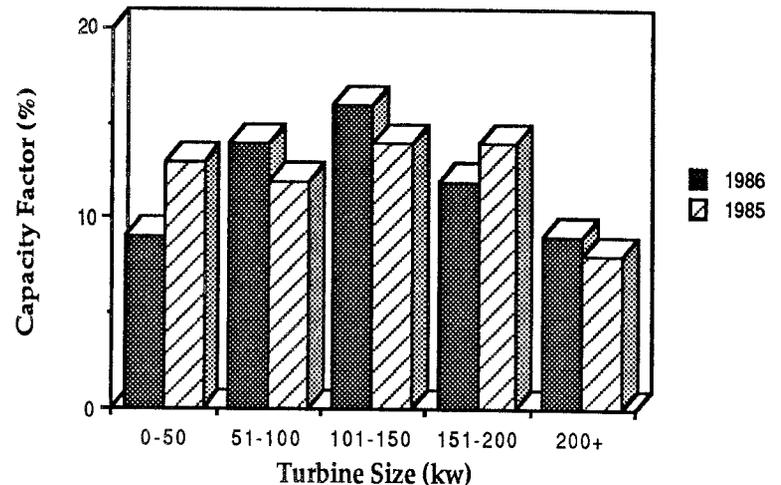
## Turbine Size

Although many industry specialists predict that turbines in the 300 kW size range will be the trend for future wind development, 1986 data indicates that turbines in the 51 to 100 kW size category are still dominant. This turbine size accounted for almost two-thirds of cumulative wind capacity (*Figure 10*). However, the biggest growth trend was in the 101 to 150 kW size category which almost tripled in capacity since 1985, growing from 7% to 16% of cumulative wind capacity. In fact there was almost as much new turbine capacity installed in this size category as in the dominant 51 to 100 kW size category. The capacity percentages for all turbine size categories are: 9% for 0 to 50 kW, 62% for 51 to 100 kW, 16% for 101 to 150 kW, 3% for 151 to 200 kW and 10% for greater than 200 kW.

The capacity factors were significantly higher in turbine size categories between 50 kW and 200 kW (*Figure 11*). The actual capacity factors by turbine size category were: 9% for 0 to 50 kW, 14% for 51 to 100 kW, 16% for 101 to 150 kW, 12% for 151 to 200 kW and 9% for greater than 200 kW.



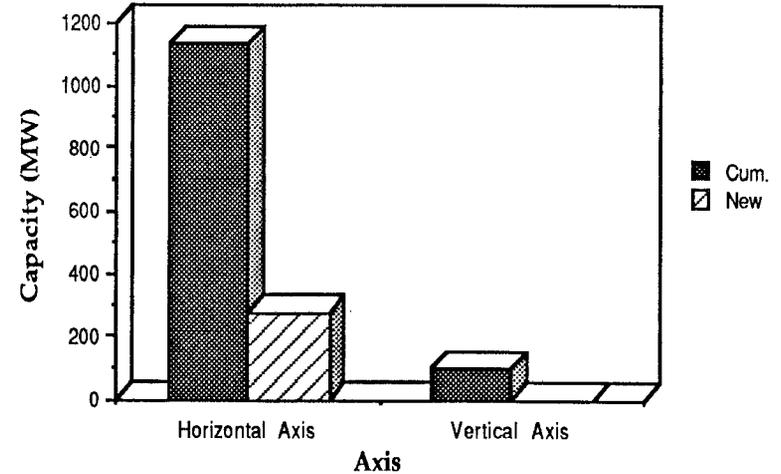
**Figure 10:** Capacity by Turbine Size



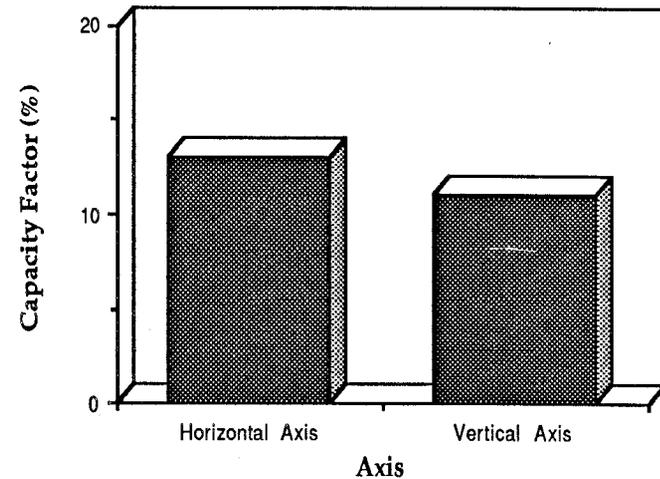
**Figure 11:** Capacity Factor by Turbine Size

## Turbine Types

Based on the data reported, staff was able to differentiate between horizontal and vertical axis machines, but not other important turbine characteristics such as downwind and upwind configurations, number of blades, and braking devices. The data on turbine axis shows that the California wind industry is clearly dominated by horizontal axis machines which accounted for 92% of all capacity and over 99% of new capacity (Figure 12). Comparing performance, horizontal axis turbines had a capacity factor of 13% compared to 11% for vertical axis turbines (Figure 13).

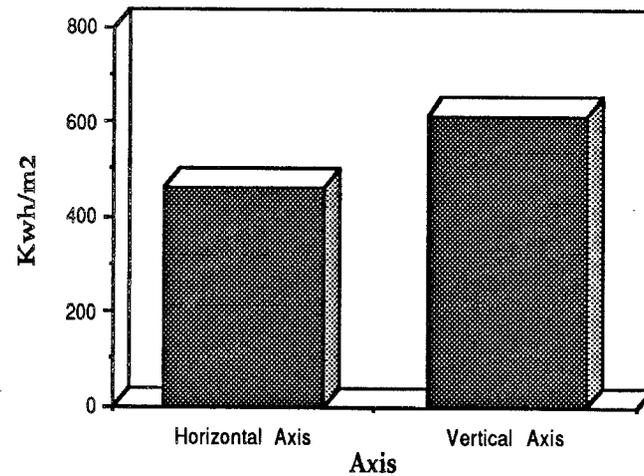


**Figure 12:** Capacity by Turbine Axis



**Figure 13:** Capacity Factors by Turbine Axis

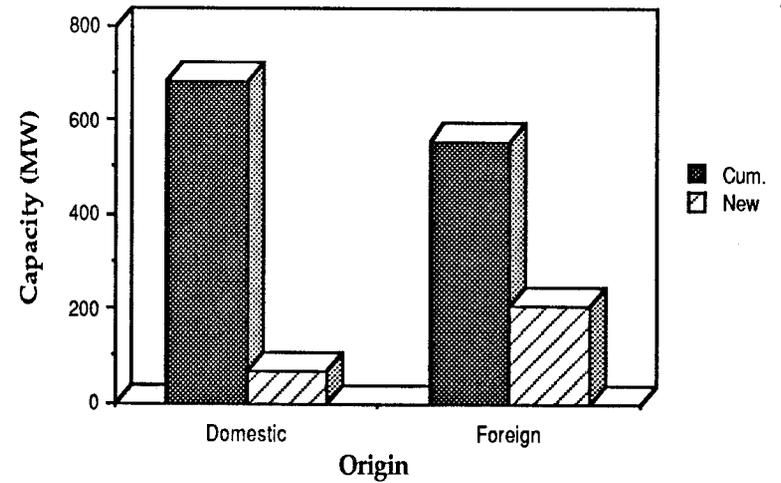
However, as indicated earlier, even though the capacity factor was lower for vertical axis turbines, they had a higher kWh per square meter performance indicator (*Figure 14*). This inconsistency indicates that kWh per square meter ratings are not directly comparable among these two turbine types.



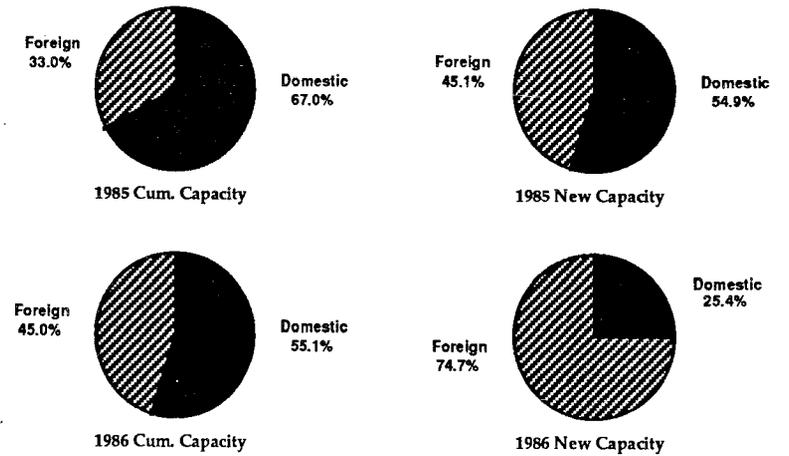
**Figure 14: Kwh Per Square Meter Production by Turbine Axis**

### Domestic and Foreign Turbines

There has been widespread interest in how domestic and foreign turbines compare. At the end of 1986, there were 680 MW of domestic turbine capacity compared to 555 MW of imported foreign turbine capacity, but only 70 MW of new domestic capacity compared to 206 MW of new foreign turbine capacity (Figure 15). These figures indicate that the shift to foreign turbines mentioned in the 1985 WPRS annual report is fully evident in 1986. Specifically, the foreign turbine share of total capacity has increased from 33% in 1985 to 45% at the end of 1986 with new foreign turbine capacity representing almost 75% of all new 1986 capacity (Figure 16).



**Figure 15:** Capacity by Origin



**Figure 16:** Capacity Distribution by Origin

It is important to note that new foreign turbine capacity from 1985 and 1986 accounts for almost 70% of the total foreign capacity while new domestic capacity from this same two year period represents only 43% of total domestic capacity. Thus, foreign turbine performance results benefit from considerably newer machines. In fact, the capacity factor for foreign turbines was 70% higher than for domestic turbines (17% vs. 10%) (Figure 17). Note that these capacity factor results are the same as those from 1985. When using a kWh per square meter analysis to measure performance, foreign turbines were almost 25% higher than domestic turbines (Figure 18). An important reason why performance indicators are lower for domestic turbines than foreign turbines is the generally older age of domestic turbines. A reason why kWh per square meter performance is relatively close compared to capacity factor performance between domestic and foreign turbines is that rated capacities appeared to be overstated for domestic turbines.

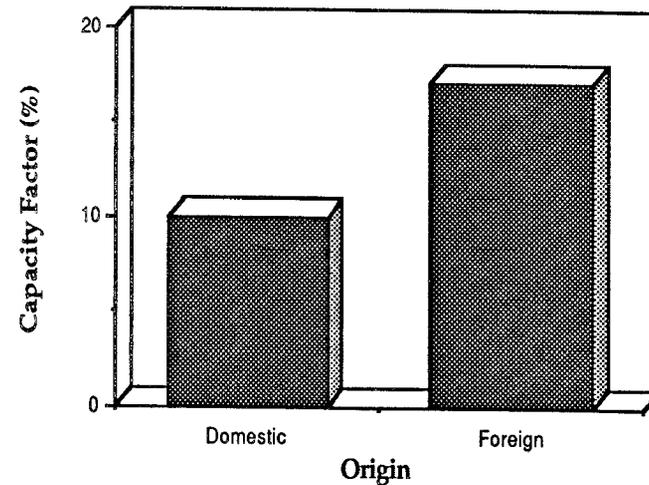


Figure 17: Capacity Factors by Origin

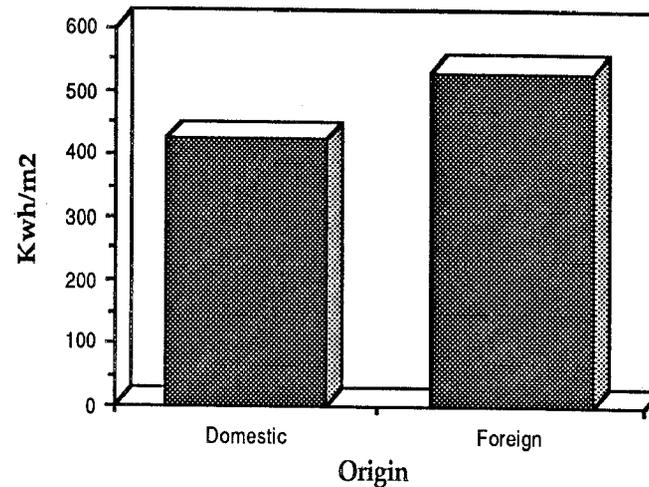
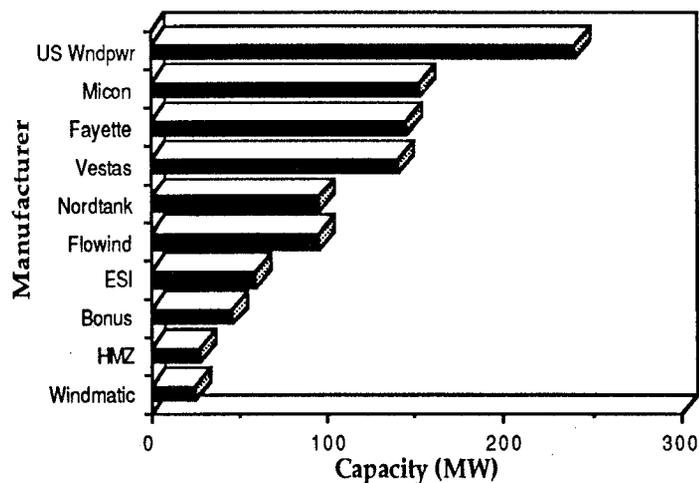


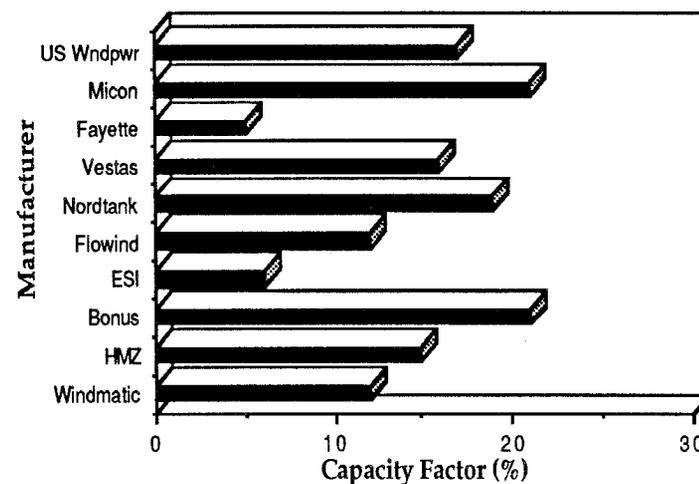
Figure 18: Kwh Per Square Meter Production by Origin

## The Ten Largest Wind Turbine Manufacturers

The ten largest wind turbine manufacturers represent over 80% of the California wind generating capacity. The four largest manufacturers alone (U. S. Windpower, Micon, Fayette, and Vestas) account for 55% of all capacity. The ten largest manufacturers and their individual generating capacities are shown in *Figure 19*. There is a wide range of capacity factors among these manufacturers (*Figure 20*). The manufacturers with the highest capacity factors are three Danish machines, Micon (21%), Bonus (21%), and Nordtank (19%), and one U. S. machine, U. S. Windpower (17%). It is important to recognize that many factors should be considered when evaluating this data. For instance, U. S. Windpower has a much older turbine base than the Danish machines and is solely located in Altamont Pass which appears to have had lower than average wind resource availability in 1985 and 1986.

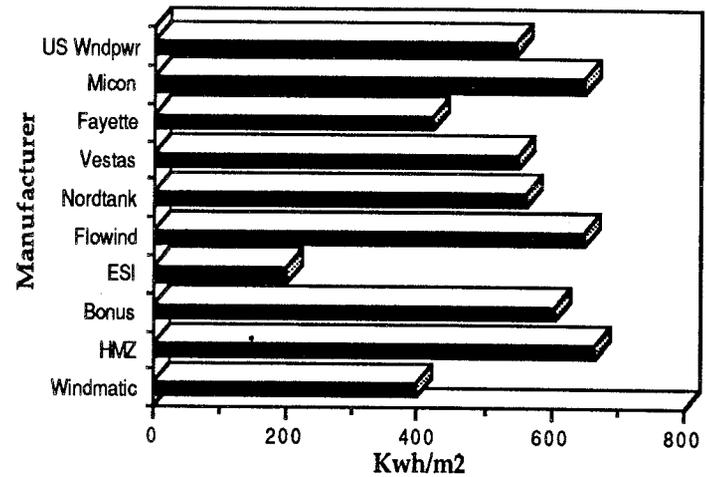


**Figure 19:** Cumulative Capacity for 10 Largest Turbine Manufacturers



**Figure 20:** Capacity Factors for 10 Largest Turbine Manufacturers

The annual kWh per square meter results are shown for the ten largest manufacturers in *Figure 21*. The manufacturers with the best results are HMZ (666), Micon (648), Bonus (605) and Nordtank (562). Note that the FloWind vertical axis turbine had a high kWh per square meter result. However, as indicated earlier, vertical axis turbines are not directly comparable relative to this performance indicator.

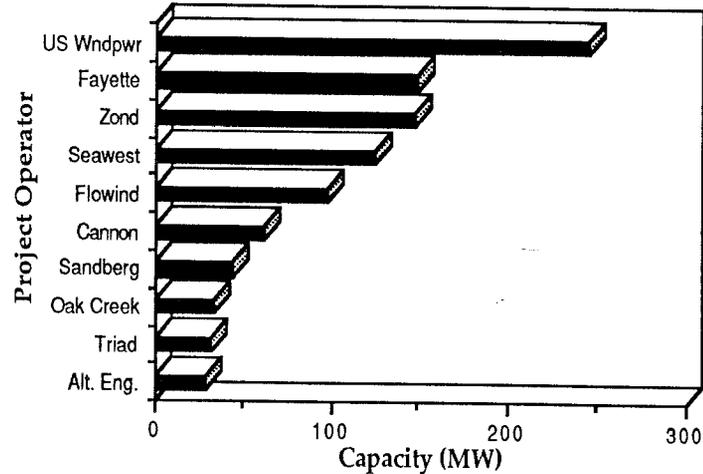


**Figure 21:** Kwh Per Square Meter Production for 10 Largest Turbine Manufacturers

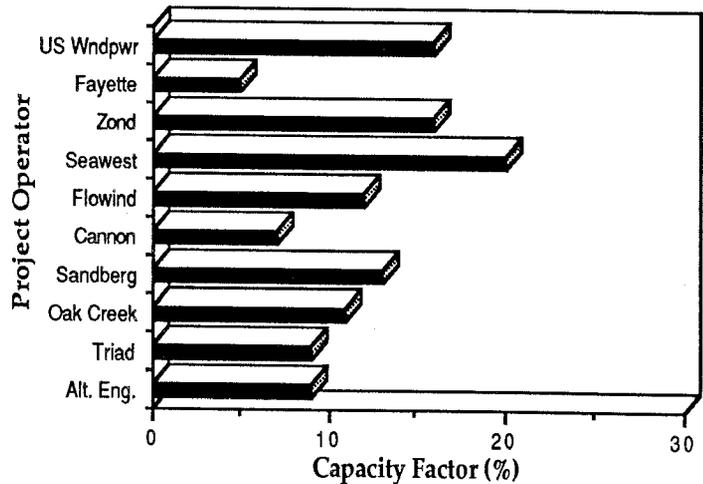
The Ten Largest Wind Project Operators

Similar to the ten largest wind turbine manufacturers, the ten largest wind project operators represent almost 80% of the total California wind generating capacity, with the four largest operators (U. S. Windpower, Fayette, Zond and Seawest) accounting for 54% of all California capacity (Figure 22). Three of these larger project operators are also manufacturers.

Performance for the largest wind project operators, similar to the largest manufacturers, is also quite varied (Figure 23). The operators with the highest capacity factors are Seawest (20%), U. S. Windpower (16%) and Zond (16%). It should also be noted that two smaller operators, San Gorgonio Farms and Universal Properties (not shown in Figures 22 and 23), had the highest capacity factors, 31% and 34% respectively. Both of these projects are significant, because they confirm the potential of wind technology performance when developers combine quality machines and a good wind resource site.

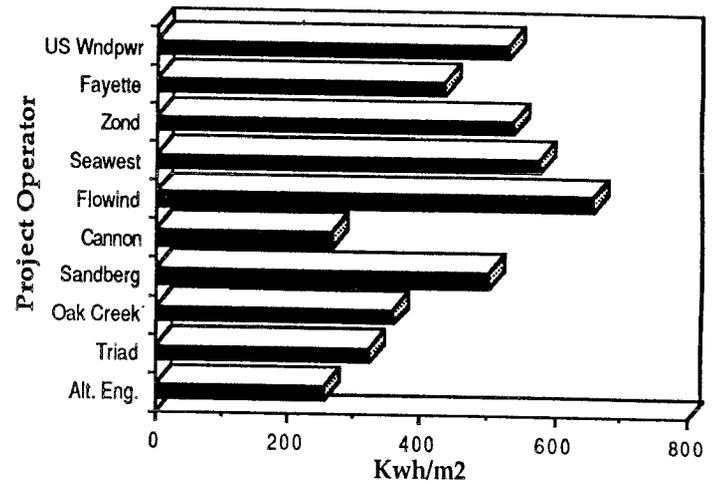


**Figure 22:** Cumulative Capacity for 10 Largest Project Operators



**Figure 23:** Capacity Factors for 10 Largest Project Operators

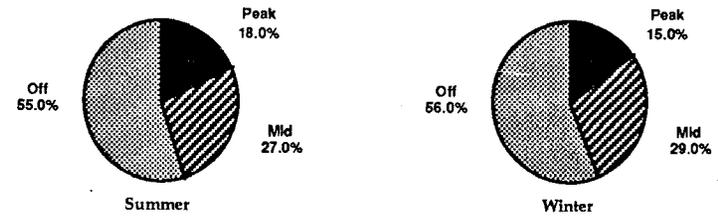
Annual kWh per square meter results for the ten largest operators are shown in *Figure 24*. Among these operators, Seawest (579), Zond (539) and U. S. Windpower (530) had the best performance. Note that among all operators, San Gorgonio Farms and Universal Properties (not shown on *Figure 24*) again had the best performance with 852 and 693 kWh per square meter respectively.



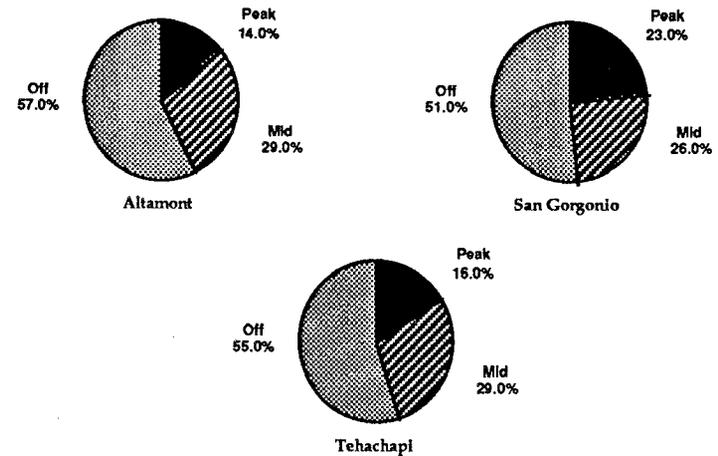
**Figure 24:** Kwh Per Square Meter Production for 10 Largest Project Operators

Time-of-Use Production

As illustrated in Figure 4, over 75% of all wind generated electricity occurs in the second and third quarters of the year. This annual production profile is well matched to the seasonal peak demand for electricity in California which occurs during the spring/summer season due to high space cooling requirements. Staff then analyzed how wind electricity production matched daily time-of-use electricity demand requirements. Based on this analysis, 18% of wind electricity production occurred during summer peak periods with 27% of production occurring during mid- peak and 55% occurring during off- peak (Figure 25). Although almost 50% of wind output occurs during peak and mid peak periods, there is still a large potential benefit to coupling wind systems with emerging energy storage technologies. Among the three wind resource areas, San Gorgonio had the highest percent on peak (23%) followed by Tehachapi (16%) and Altamont (14%) (Figure 26).



**Figure 25: Statewide Time-Of-Use Electricity Generation**



**Figure 26: Spring/Summer Time-Of-Use Electricity Generation by Area**

## 5. C WIND PROJECT COSTS

WPRS regulations require operators to submit cost data on all new turbines installed each reporting period. While regulations require operators to report this cost data on a specific project basis, these same regulations restrict the publication of this data to an aggregated format to ensure confidentiality.

Although operators reported 278 megawatts of new 1986 capacity, cost data was only provided for 76 megawatts of this new capacity. Staff is considering various options to resolve this reporting omission. Based on the cost data that was reported, the average weighted cost for wind projects was \$1,604/kW. This is substantially less than the average \$1,887/kW reported for 1985.

Actual reported costs on an individual project basis varied widely from the average cost, ranging from \$1,000/kW to \$2,361/kW.

## 6. WPRS ANNUAL SUMMARY TABLES

The tables on the following pages include aggregated data for all wind projects that have submitted 1986 quarterly reports to the California Energy Commission as part of the WPRS program. These tables summarize detailed WPRS data included in Section 7 of this report. In addition to statewide information, the summary tables were designed to provide information for different resource areas, turbine sizes, turbine types, turbine manufacturers, turbine operators and for domestic and foreign turbines. Note that the totals for the various subcategories may not always add up to the statewide totals because there were a few projects where missing data did not allow all information to be sorted completely.

Also note that kWh per square meter results include an asterisk if some portion of the cumulative turbine capacity being considered includes new turbine capacity that did not operate for a full year. It is important to recognize that the negative impact on performance for most turbine groups noted with an asterisk is minimal unless the new turbine capacity represents a significant percentage of cumulative capacity.

1986 WPRS DATA SUMMARY TABLE

Data Category	Cumulative Capacity (kw)	New Capacity (kw)	Output (kwh)	Actual /Proj. Output (%)	Actual Capacity Factor (%)	Kwh /square meter	Cumulative Turbines	New Turbines
STATEWIDE								
1st Quarter	1,057,106	98,267	169,495,958	51	7	71*	12,904	1,084
2nd Quarter	1,057,749	10,493	478,697,293	54	21	191*	12,838	127
3rd Quarter	1,113,688	43,437	446,041,015	58	19	169*	13,430	474
4th Quarter	1,235,052	123,578	123,512,633	35	5	44*	14,609	1,193
1986 Totals	1,235,052	275,775	1,217,746,899	50	13	475	14,609	2,878
RESOURCE AREA								
Altamont								
1st Quarter	514,955	29,200	50,799,235	50	5	46*	5,517	318
2nd Quarter	517,835	3,080	218,505,597	50	20	196*	5,546	31
3rd Quarter	535,380	18,520	236,421,223	53	20	205*	5,718	185
4th Quarter	583,600	49,090	45,581,494	41	4	36*	6,219	510
1986 Totals	583,600	99,890	551,307,549	49	12	483	6,219	1,044
San Gorgonio								
1st Quarter	259,279	52,142	62,563,895	60	11	98*	3,835	542
2nd Quarter	266,247	368	149,141,731	55	26	232*	3,861	4
3rd Quarter	277,834	8,705	127,147,894	63	21	189*	3,977	81
4th Quarter	294,825	15,905	34,849,977	34	5	50*	4,155	156
1986 Totals	294,825	77,120	373,703,497	53	16	569	4,155	783
Tehachapi								
1st Quarter	280,842	16,925	55,675,458	44	9	85*	3,491	224
2nd Quarter	271,637	7,045	110,571,554	59	19	150*	3,370	92
3rd Quarter	298,444	16,212	82,221,136	66	13	102*	3,674	208
4th Quarter	355,157	58,083	42,715,672	32	6	50*	4,175	507
1986 Totals	355,157	98,265	291,183,820	50	12	387	4,175	1,031

\* See note at the beginning of this section

1986 WPRS DATA SUMMARY TABLE

Data Category	Cumulative Capacity (kw)	New Capacity (kw)	Output (kwh)	Actual /Proj. Output (%)	Actual Capacity Factor (%)	Kwh /square meter	Cumulative Turbines	New Turbines
=====								
TURBINE SIZE								
-----								
0 - 50 kw								
1st Quarter	106,555	2,760	15,159,947	38	7	40*	2,929	69
2nd Quarter	106,555	0	36,284,919	37	16	78	2,934	0
3rd Quarter	106,555	0	25,832,989	30	11	55	2,934	0
4th Quarter	106,500	500	7,770,038	22	3	21*	2,931	20
1986 Totals	106,500	3,260	85,047,893	32	9	194	2,931	89
-----								
51 - 100 kw								
1st Quarter	677,431	32,535	109,931,924	51	8	74*	8,330	492
2nd Quarter	671,174	10,193	309,897,011	53	21	208*	8,235	125
3rd Quarter	716,819	33,815	312,454,456	63	20	195*	8,742	390
4th Quarter	769,494	53,220	89,207,821	41	5	52*	9,381	621
1986 Totals	769,494	129,763	821,491,212	52	14	529	9,381	1,628
-----								
101 - 150 kw								
1st Quarter	130,140	51,532	25,056,181	61	9	83*	1,084	468
2nd Quarter	130,440	300	77,385,513	71	27	255*	1,086	2
3rd Quarter	139,152	8,860	69,902,811	69	23	214*	1,166	82
4th Quarter	202,296	64,008	18,660,903	33	4	38*	1,687	529
1986 Totals	202,296	124,700	191,005,408	59	16	590	1,687	1,081
-----								
151 - 200 kw								
1st Quarter	35,880	10,200	2,458,000	32	3	41*	181	51
2nd Quarter	35,880	0	14,415,369	52	19	243	181	0
3rd Quarter	36,700	0	15,807,007	59	20	266	184	0
4th Quarter	36,900	200	2,994,361	39	4	50*	185	1
1986 Totals	36,900	10,400	35,674,737	46	12	600	185	52
-----								

\* See note at the beginning of this section

1986 WPRS DATA SUMMARY TABLE

Data Category	Cumulative Capacity (kw)	New Capacity (kw)	Output (kwh)	Actual /Proj. Output (%)	Actual Capacity Factor (%)	Kwh /square meter	Cumulative Turbines	New Turbines
=====								
TURBINE SIZE								
-----								
200+ kw								
1st Quarter	107,100	1,240	16,889,906	57	7	98*	380	4
2nd Quarter	113,700	0	40,714,481	57	17	227	402	0
3rd Quarter	114,462	762	22,043,752	39	9	122*	404	2
4th Quarter	119,862	5,650	4,879,510	15	2	26*	425	22
1986 Totals	119,862	7,652	84,527,649	42	9	473	425	28
=====								
TURBINE AXIS								
-----								
Horizontal Axis								
1st Quarter	960,933	98,267	147,212,463	49	7	65*	12,380	1,084
2nd Quarter	953,846	10,493	432,692,094	53	21	185*	12,265	127
3rd Quarter	1,011,553	42,675	416,665,013	57	19	168*	12,878	472
4th Quarter	1,135,367	123,578	115,488,430	36	5	43*	14,058	1,193
1986 Totals	1,135,367	275,013	1,112,058,000	49	13	461	14,058	2,876
-----								
Vertical Axis								
1st Quarter	96,173	0	20,882,695	63	10	137	524	0
2nd Quarter	103,903	0	41,026,559	59	18	247	573	0
3rd Quarter	102,135	762	29,275,842	70	13	182*	552	2
4th Quarter	99,685	0	7,895,196	25	4	49	551	0
1986 Totals	99,685	762	99,080,292	54	11	615	551	2
=====								

\* See note at the beginning of this section

1986 WPRS DATA SUMMARY TABLE

Data Category	Cumulative Capacity (kw)	New Capacity (kw)	Output (kwh)	Actual /Proj. Output (%)	Actual Capacity Factor (%)	Kwh /square meter	Cumulative Turbines	New Turbines
=====								
TURBINE MANUFACTURERS 1986 TOTALS								
-----								
Aeroman (Eng)	12,920	0	18,941,267	36	17	477	323	0
Airmaster (USA)	1,000	0	0	-	-	-	10	0
Blue Max (USA)	7,850	0	870,499	7	1	48	157	0
Bonus (Den)	46,300	8,600	82,365,505	59	21	605*	681	123
Bouma (Ger)	5,325	4,050	7,145,067	-	17	646*	41	30
Carter (USA)	21,100	1,650	25,289,053	56	16	669*	398	24
Century (USA)	9,275	150	268,571	-	19	-	109	2
Danwin (Den)	2,750	2,750	5,823,568	-	-	-	25	25
Dynergy (USA)	17,284	368	2,697,467	9	2	68*	68	4
Enertech (USA)	22,430	2,640	18,267,212	28	9	244*	533	60
ESI (USA)	58,791	0	32,677,026	34	6	198	722	0
Fayette (USA)	144,825	380	61,640,834	27	5	421*	1,455	4
Flowind (USA)	94,835	762	96,267,088	58	12	648*	512	2
HMZ (Belgium)	28,050	10,200	35,261,386	58	15	666*	144	51
Howden (Scot)	29,400	990	12,710,976	23	5	189*	96	3
Jacobs (USA)	11,705	0	16,010,394	42	16	469	630	0
Lolland (Den)	7,075	0	7,835,676	42	13	429	71	0
Maetecnic (USA)	900	0	21,240	-	-	-	6	0
Micon (Den)	153,448	101,430	189,249,927	63	21	648*	1,722	1,004
Nordtank (Den)	95,795	73,435	73,781,128	72	19	562*	1,207	863
Novenko (USA)	1,950	1,950	2,579,609	-	-	-	30	30
Polenko (Neth)	2,700	0	3,045,103	49	13	410	27	0
Riisager (Ger)	1,170	0	0	-	-	-	13	0
Starwind (USA)	500	0	20,345	-	-	-	4	0
Strm Mstr (USA)	12,985	0	3,197,088	18	16	118	294	0
Sumitomo (Japan)	200	200	4,052	-	-	-	1	1
US Wndpwr (USA)	240,350	59,000	279,514,420	63	17	544*	2,706	590
Vanguard (USA)	5,700	0	9,882,701	-	20	729	60	0
Vawtpower (USA)	7,300	0	246,000	3	0	22	40	0
Vestas (Den)	140,239	90	200,575,397	49	16	550*	1,784	1
WEG (Eng)	4,750	4,750	0	-	-	-	19	19
Wecs-Tec (USA)	1,985	0	971	-	-	-	30	0
Wenco (Switz)	3,300	0	70,000	-	-	-	19	0
Windane (USA)	840	840	650,363	-	-	-	21	21
Windmatic (Den)	25,495	1,040	19,080,864	52	12	395*	341	16
Windtech (USA)	15,980	0	5,129,799	15	4	112	207	0
Windworld (Den)	500	500	17,700	-	-	-	5	5

\* See note at the beginning of this section

1986 WPRS DATA SUMMARY TABLE

Data Category	Cumulative Capacity (kw)	New Capacity (kw)	Output (kwh)	Actual /Proj. Output (%)	Actual Capacity Factor (%)	Kwh /square meter	Cumulative Turbines	New Turbines
PROJECT OPERATORS 1986 TOTALS								
Aeolus	435	0	399,630	-	11	147	15	0
Airtricity	-	-	1,186,400	-	-	-	-	-
Altamont Energy	29,460	15,500	16,875,258	29	9	255*	454	242
Alt.-Amer. Partners	-	-	205,680	-	-	-	-	-
Amer. Divers.	24,730	6,890	40,510,966	68	19	574*	374	106
Arbutus	21,930	970	24,077,800	33	13	320*	333	23
Buckeye	660	0	469,299	42	8	201	30	0
CalWind Res.	8,710	7,995	12,428,000	52	17	461*	134	123
Cannon	61,825	48,250	24,584,800	-	7	268*	726	524
Casas del Sol	160	0	127,500	46	9	226	4	0
CTV	11,320	0	17,447,009	-	18	501	283	0
Dollar Energy	4,220	0	875,200	14	2	140	76	0
Earth En. Sys.	29,240	0	32,647,217	37	13	393	861	0
Energy 21	500	500	54,000	-	-	-	20	20
En. Dev. & Con.	5,200	0	246,000	3	1	33	26	0
Energy Unltd.	4,915	0	9,140,227	73	22	661	91	0
Fayette	150,309	380	69,748,436	29	5	434*	1,503	4
Flowind	97,665	3,712	102,022,486	59	12	656*	537	28
Howden	28,410	0	12,338,112	23	5	189	93	0
Liberty Windfarms	4,000	0	869,528	16	3	93	80	0
Oak Creek	32,630	0	30,535,941	38	11	360	489	0
OESC	3,400	0	3,022,000	28	10	252	85	0
Richard Immel	150	0	278,004	-	21	338	6	0
San Gorg. Farms	8,975	0	34,921,393	66	31	852*	147	1
Sandberg	43,631	1,268	47,139,823	73	13	502*	403	7
Seawest	124,564	48,252	137,322,546	57	20	579*	1,485	885
So. Cal. Sunbelt	17,580	0	11,024,714	-	-	-	188	0
TERA	8,620	0	6,910,105	21	9	224	146	0
Transworld	16,764	0	2,255,800	9	2	59	219	0
Triad Amer. En.	31,480	0	24,118,084	-	9	325	293	0
Universal Prop.	500	0	1,476,750	-	34	693	10	0
U.S. Windpower	245,100	63,750	279,514,420	62	16	530*	2,725	609
Western Wind	12,423	15,950	13,212,531	52	16	505*	121	166
Wind Gen. Parks	250	0	126,600	30	8	381	1	0
Wind Source	2,200	0	1,707,863	25	9	281	46	0
Wind Watt	375	0	96,900	12	4	101	5	0
Windland	6,925	2,550	8,496,628	50	14	582*	89	28
WindMaster	28,050	10,200	35,261,386	58	15	656*	144	51
Windridge	2,470	1,040	2,726,000	58	12	360*	38	16
Windustries	6,720	0	5,249,800	23	9	259	144	0
Wintec	10,841	3,161	1,052,623	44	5	32*	276	44
Zephyr	2,250	0	400	-	-	-	30	0
Zond	146,525	90	205,043,040	48	16	539*	1,900	1

1986 WPRS DATA SUMMARY TABLE

Data Category	Cumulative Capacity (kw)	New Capacity (kw)	Output (kwh)	Actual /Proj. Output (%)	Actual Capacity Factor (%)	Kwh /square meter	Cumulative Turbines	New Turbines
=====								
DOMESTIC AND FOREIGN TURBINES 1986 TOTALS								
-----								
Domestic Turbines								
1st Quarter	629,505	5,890	71,860,599	49	5	55*	7,712	91
2nd Quarter	624,128	3,448	214,615,275	46	16	167*	7,564	35
3rd Quarter	640,285	19,212	221,083,744	52	16	167*	7,725	187
4th Quarter	679,945	41,350	45,908,652	30	3	33*	8,091	393
1986 Totals	679,945	69,900	553,468,270	44	10	422	8,091	706
-----								
Foreign Turbines								
1st Quarter	427,601	92,377	96,234,559	52	10	87*	5,192	993
2nd Quarter	433,621	7,045	259,103,378	60	28	213*	5,274	92
3rd Quarter	473,403	24,225	224,857,111	65	22	172*	5,705	287
4th Quarter	555,107	82,228	77,474,974	40	7	55*	6,518	800
1986 Totals	555,107	205,875	657,670,022	54	17	527	6,518	2,172
=====								

\* See note at the beginning of this section

## 7. WPRS DATA

This section of the report includes WPRS 1986 project data as submitted by wind projects operators for all four quarters. In addition, totals are shown for the entire year. The data are organized into separate sections for each resource area. Operators are listed alphabetically within each resource area section and numbered sequentially through this entire WPRS Data section. The following alphabetical listing of wind project operators and participants is keyed to these sequential numbers for quick access to specific wind industry data. After this listing, notes are provided that describe how data are reported. As mentioned earlier, it is important to remember that these data only represent performance results for one year and should not be used as the sole basis for evaluating wind projects.

### Alphabetical Listing of Wind Project Operators and Participants

The following alphabetical listing includes all operators and other participants involved in wind projects that reported 1986 data to the WPRS program. The number in parentheses following each operator and other participant refers to the sequential number location in this section.

Aeolus Wind Farms, Inc.	(12A)	Mark Technologies	(23B)
Airtricity	(33A)	Natural Resource Ventures	(33A)
Altamont-Amer. Partners	(1A)	Oak Creek Energy Systems	(43A)
Altamont Energy Corp.	(2A,B)	O.E.S.C.	(22A, 30A)
Altech Energy Ltd.	(7A)	PanAero Corp.	(32B)
Altech Energy Ltd., II	(22A)	Phoenix Energy, Ltd.	(25B)
Amer. Diversified Cap. Corp.	(3A,B)	Renewable Energy Ventures	(19A)
Arbutus	(34A)	Richard Immel Wind Farm	(14A)
Buckeye International	(13A)	San Gorgonio Farm	(24A)
Cali. Wind Energy Sys.	(7B)	Sandberg Wind Corp.	(3B, 7A-G, 13A, 25A-C, 44A)
CalWind Resources Inc.	(35A)	Southern Cali. Sunbelt	(26A, 45A)
Cannon Financial Group	(36A,B,C)	TaxVest Wind Farms	(7D,G)
Casas Del Sol	(18A)	TERA Corp.	(8A)
CCC Alter. Energy Venture	(19B)	Transworld Wind Corp.	(23B, 27A,B)
Coram Energy Group, Ltd.	(35A,C)	Triad American Energy	(28A-C, 46A)
CTV Marketing	(37A,B,C,D)	Universal Properties	(47A)
Dollar Energy Sys. Corp.	(38A)	U.S. Windpower	(9A-D)
Earth Energy Systems	(19A,B,C)	Viking-Energy 83 Ltd.	(7E)
Energy Devel. & Construc. Co.	(20A)	Western Windfarms	(7F, 29A)
Energy Conversion Tech.	(37A,B,C,D, 41A)	Wind Generator Parks, Inc.	(15A)
Energy 21, Inc.	(17A)	Wind Source, Inc.	(48A)
Energy Unlimited, Inc.	(21A, 39A)	Wind Watt, Inc.	(16A)
Fayette	(4A-J)	WindMaster	(10A)
Flowind Corp.	(5A,B, 40A,B)	Windridge, Inc.	(50A)
Grant Line Energy Corp.	(2A)	Windustries	(30A)
Howden Wind Parks, Inc.	(6A)	Wintec, Ltd.	(31A-C)
Illinois Wind Power	(41A)	Zephyr Park	(51A)
Liberty Windfarms	(42A)	Zond Systems, Inc.	(32A,B, 47A, 52A-H)

## WIND DATA SECTION NOTES

Definitions for most of the wind data categories used in this section are provided in the WPRS regulations included in Appendix C. The discussion below includes other important notes on how data is reported in this section as well as points of clarification.

Data missing. Some operators have submitted incomplete reporting forms. In these cases, the items not completed have been noted as "data missing". It should be noted that operators with missing data are in violation of WPRS regulations.

Electricity Produced. Individual turbine model outputs submitted by wind operators are included for each quarter along with the annual total. In addition, the annual total for the entire project follows after the data for the individual turbine models. Note that the individual turbine model outputs may not always add up to the total project output. This is because individual turbine production is usually read from meters owned by project operators, whereas the total project output is measured from utility substation meters. Line losses and calibration differences between meters should account for these differences. The validation status of output data is noted in the parentheses next to the quarter output reported for each turbine model: "V" indicates that the data has either been

validated by utility billings supplied by the operator or matched utility reported outputs; "NV" indicates operator data was not validated because it did not match any utility billings or utility reported quarterly data, and "UD" indicates that an operator did not report required WPRS information and that the output data comes from data in utility submitted quarterly reports.

Failed to File. CEC staff identified wind project operators that have not reported data but according to utility reports should have participated in the WPRS program. These operators were subsequently notified by mail of the WPRS requirements. CEC staff listed these operators with an indication that they "failed to file" if after sending notification, the identified operators either still did not respond, or did not provide CEC staff with an explanation explaining why they were not required to participate in the WPRS program.

Other Participant(s). In some cases other participants in addition to the listed project operator may be involved in a project. These other participants could include project managers, joint venture partners, wind developers using another developer's site, etc.

Projected Quarterly Production Per Turbine. The total quarterly projected production for a specific turbine model can be determined by multiplying the "Projected Quarterly Production Per Turbine" times the "Cumulative Number of Turbines" for that turbine model. The total quarterly projected production for an entire project can be calculated by adding the projected production totals for all turbine models in a project. This total projected production can be compared to the total project "Electricity Produced" to check how close a specific project came to meeting its projected output. When making this comparison, note any new capacity would not have had the benefit of a full operational quarter for the quarter they were installed.

Rotor (M<sup>2</sup>). The diameter of the rotor swept area for each wind turbine allows different wind systems to be compared independent of wind resource area. Theoretically, the power available for any wind turbine is proportional to the square of the diameter of the rotor swept area. Thus, doubling the size of the rotor diameter should increase the power output by a factor of four.

Size (kw). For each turbine model listed, the kw size rating is followed by a miles per hour (mph) specification noted in parentheses. As noted earlier, these mph specifications vary widely for different turbine models because there is no standardized rating method.

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine This Quarter (kwh)	Installed	Produced	
							New	Cum.	(kwh)
ALTAMONT PASS ----- (Alameda and Contra Costa)									
1. Altamont-American Partners 12760 High Bluff Dr., #370 San Diego, CA 92103									
A. Altamont-American Partners									
					1				0
					2	FAILED TO FILE			69,840
					3	FAILED TO FILE			94,560
					4	FAILED TO FILE			41,280
=====									
Project Total:									205,680
=====									
2. Altamont Energy Corp. 1330 Lincoln Ave., Suite 201 San Rafael, CA 94901									
A. Jess Ranch									
Other Participant: Grant Line Energy Corp.									
	ESI-54	(H)	215	55 kw @	35 mph	1	17,462	0 26	81,520
						2	63,538	0 26	296,208
						3	63,538	0 26	188,239
						4	17,462	0 26	34,560
						Annual	162,000		600,527
-----									
	ESI-54-S	(H)	215	69 kw @	35 mph	1	20,500	0 109	69,472
						2	72,000	0 109	331,296
						3	72,000	0 109	907,221
						4	20,500	0 109	268,640
						Annual	185,000		1,576,629
-----									
	Nordtank	(H)	200	65 kw @	35 mph	1	20,500	0 75	725,688
						2	72,000	0 75	2,400,552
						3	72,000	0 75	2,195,103
						4	20,500	0 75	458,640
						Annual	185,000		5,779,983
-----									

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity	
						Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)	
ALTAMONT PASS										
(Alameda and Contra Costa)										
A. Jess Ranch, Con't.	Vestas	(H)	200	67 kw @	35 mph	1	20,500	0	2	19,401
						2	75,250	0	2	87,385
						3	75,250	0	2	105,530
						4	20,500	0	2	12,950
						Annual	191,500			225,266
Project Total:									8,182,405	
=====										
B. Souza Ranch	Enertech	(H)	140	40 kw @	35 mph	1	11,986	48	48	123,918
						2	42,032	0	48	239,505
						3	42,032	0	48	431,074
						4	11,968	0	48	135,512
						Annual	108,018			930,009
	Howden	(H)	755	330 kw @	35 mph	1	94,189	3	3	76,080
						2	330,811	0	3	296,784
						3	330,811	0	3	0
						4	94,189	0	3	0
						Annual	850,000			372,864
	Nordtank	(H)	200	65 kw @	35 mph	1	19,941	50	50	798,240
						2	72,559	0	50	2,346,816
						3	72,559	0	50	2,884,126
						4	19,941	136	186	1,343,098
						Annual	185,000			7,372,280
	Windworld	(H)	300	100 kw @	35 mph	1	0	0	0	0
						2	0	0	0	0
						3	0	0	0	0
						4	30,619	5	5	17,700
						Annual	30,619			17,700
Project Total:									8,692,853	

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected Quarterly Production Per Turbine This Quarter	Turbines Installed		Electricity Produced (kwh)	
						(kwh)	New	Cum.	(kwh)	
ALTAMONT PASS ----- (Alameda and Contra Costa)										
3. American Diversified Capital Corp. 3200 Park Center Drive, Suite 1500 Costa Mesa, CA 92626										
A. Windfarm II										
	Bonus 65	(H)	181	65 kw @	38 mph	1	21,885	106	211	2,790,213
						2	57,088	0	211	9,375,183
						3	57,247	0	211	8,918,230
						4	22,202	0	211	1,866,240
						-----				
						Annual	158,422			22,949,866
						-----				
	Nordtank 65/13(H)	201		65 kw @	35 mph	1	24,170	0	125	1,808,787
						2	63,050	0	125	5,869,017
						3	63,226	0	125	5,280,170
						4	24,520	0	125	1,244,160
						-----				
						Annual	174,966			14,202,134
						=====				
	Project Total:									37,152,000
						=====				
Other Participant: Seawest Energy	B. American Diversified Wind Partners									
	WPS 20-100	(H)	302	100 kw @	29 mph	1	7,900	0	12	143,117
						2	50,800	0	12	642,994
						3	53,600	0	12	609,286
						4	8,700	0	12	68,117
						-----				
						Annual	121,000			1,463,514
						-----				
	Windmatic 14-6(H)	154		65 kw @	35 mph	1	6,090	0	26	133,170
						2	31,125	0	26	823,743
						3	33,375	0	26	844,857
						4	6,840	0	26	93,682
						-----				
						Annual	77,430			1,895,452
						=====				
	Project Total:									3,358,966
						=====				

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine (kwh)	Installed New	Cum.	Produced (kwh)
ALTAMONT PASS ----- (Alameda and Contra Costa)									
4. Fayette P.O. Box 1149 Tracy, CA 95376									
A. Castello Windranch	Fayette 95IIS (H)	95	95 kw @	37 mph	1	7,000	0	8	19,549
					2	64,400	0	8	215,565
					3	61,600	0	8	225,963
					4	7,000	0	8	31,793
					Annual	140,000			492,870
=====									492,870
Project Total:									492,870
=====									
B. Fayette Wind Farms	Fayette 95IIS (H)	95	95 kw @	37 mph	1	7,000	0	1140	3,308,130
					2	64,400	4	1144	21,150,780
					3	61,600	0	1144	22,900,993
					4	7,000	0	1129	2,971,748
					Annual	140,000			50,331,651
-----									
	Bonus 120/20 (H)	296	120 kw @	34 mph	1	15,000	0	14	181,238
					2	138,000	0	14	1,096,885
					3	132,000	0	14	921,617
					4	15,000	0	14	217,950
					Annual	300,000			2,417,690
-----									
	Fayette 400kw (H)	374	400 kw @	44 mph	1	30,000	0	2	0
					2	276,000	0	2	0
					3	264,000	0	2	0
					4	30,000	0	2	0
					Annual	600,000			0
-----									

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis (M2)	Size (kw)	Quarter; Annual	Projected Quarterly Production Per Turbine (kwh)	Turbines Installed New	Turbines Installed Cum.	Electricity Produced (kwh)
ALTAMONT PASS								
(Alameda and Contra Costa)								
B. Fayette Wind Farms, Con't.	Fayette 75IIS (H)	85	75 kw @ 40 mph	1	6,000	0	36	86,689
				2	55,200	0	36	375,926
				3	52,800	0	36	344,897
				4	6,000	0	36	56,828
				Annual	120,000			864,340
	Micon M110/US (H)	293	108 kw @ 33 mph	1	15,000	0	8	133,536
				2	138,000	0	8	532,515
				3	132,000	0	8	533,472
				4	15,000	0	8	103,419
				Annual	300,000			1,302,942
	Fayette 75IS (H)	85	75 kw @ 48 mph	1	5,000	0	4	7,507
				2	46,000	0	4	46,923
				3	44,000	0	4	32,110
				4	5,000	0	4	5,020
				Annual	100,000			91,560
Project Total:								55,501,053
C. Wind Energy Technology Associates I (WETA I)	Fayette 400kw (H)	374	400 kw @ 44 mph	1	30,000	0	7	0
				2	276,000	0	7	461,188
				3	264,000	0	7	72,565
				4	30,000	0	7	0
				Annual	600,000			533,753
Project Total:								533,753

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity	
					Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)	
ALTAMONT PASS									
(Alameda and Contra Costa)									
D. Wind Energy Technology Associates II (WETA II)	Fayette 400kW (H)	374	400 kw @	44 mph	1	30,000	0	23	0
					2	276,000	0	23	14,601
					3	264,000	0	23	26,667
					4	30,000	0	23	912
					Annual	600,000			42,180
Fayette 95IIS (H)	95	95 kw @	37 mph	1	7,000	0	32	98,607	
				2	64,400	0	32	698,728	
				3	61,600	0	32	759,368	
				4	7,000	0	32	82,174	
				Annual	140,000			1,638,877	
Project Total:								1,681,057	
E. Wind Energy Technology Associates III (WETA III)	Bonus 120/20 (H)	296	120 kw @	29 mph	1	15,000	0	11	169,086
					2	138,000	0	11	908,012
					3	132,000	0	11	804,134
					4	15,000	0	11	184,842
					Annual	300,000			2,066,074
Fayette 95IIS (H)	95	95 kw @	37 mph	1	7,000	0	19	9,291	
				2	64,400	0	19	348,016	
				3	61,600	0	19	251,034	
				4	7,000	0	19	28,404	
				Annual	140,000			636,745	
Micon M110/US (H)	293	108 kw @	33 mph	1	15,000	0	15	195,965	
				2	138,000	0	15	997,999	
				3	132,000	0	15	950,390	
				4	15,000	0	15	176,542	
				Annual	300,000			2,320,896	
Project Total:								5,023,715	

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity Produced (kwh)		
					Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.			
ALTAMONT PASS ----- (Alameda and Contra Costa)										
F. Wind Energy Partners I	Fayette 75IIS (H)	85	75 kw @	40 mph	1	6,000	0	30	84,617	
					2	55,200	0	30	377,413	
					3	52,800	0	30	315,946	
					4	6,000	0	30	35,533	
					-----	-----	-----	-----	-----	
					Annual	120,000			813,509	
	=====								Project Total:	813,509
	=====									
G. Wind Energy Partners II	Fayette 75IIS (H)	85	75 kw @	40 mph	1	6,000	0	78	185,665	
					2	55,200	0	78	736,662	
					3	52,800	0	78	752,796	
					4	6,000	0	78	130,070	
					-----	-----	-----	-----	-----	
					Annual	120,000			1,805,193	
	=====								Project Total:	1,805,193
	=====									
H. Wind Energy Partners III	Fayette 75IIS (H)	85	75 kw @	40 mph	1	6,000	0	10	14,679	
					2	55,200	0	10	126,021	
					3	52,800	0	10	131,016	
					4	6,000	0	10	30,251	
					-----	-----	-----	-----	-----	
					Annual	120,000			301,967	
	-----									
	Fayette 95IIS (H)	95	95 kw @	37 mph	1	7,000	0	23	42,986	
					2	64,400	0	23	449,952	
					3	61,600	0	23	266,355	
					4	7,000	0	23	0	
					-----	-----	-----	-----	-----	
					Annual	140,000			759,293	
	=====								Project Total:	1,061,260
	=====									

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor (M2)	Size (kw)		Quarter; Annual	Projected	Turbines		Electricity	
							Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)	
ALTAMONT PASS ----- (Alameda and Contra Costa)											
I. Windranch Partners I	Fayette 95IIS (H)	95	95 kw @	37 mph		1	7,000	0	17	60,713	
						2	64,400	0	17	470,490	
						3	61,600	0	17	503,516	
						4	7,000	0	17	50,643	
						Annual	140,000			1,085,362	
=====										Project Total:	1,085,362
=====											
J. Windranch Partners II	Fayette 95IIS (H)	95	95 kw @	37 mph		1	7,000	0	37	139,400	
						2	64,400	0	37	883,954	
						3	61,600	0	37	940,991	
						4	7,000	0	37	91,619	
						Annual	140,000			2,055,964	
=====										Project Total:	2,055,964
=====											
5. FloWind Corporation 1183 Quarry Lane Pleasanton, CA 94566											
A. FloWind I (Dyer Road)	Flowind 17	(V)	260	143 kw @	44 mph	1	17,357	0	75	1,254,486	
						2	68,169	0	75	3,722,564	
						3	51,808	0	75	3,518,700	
						4	15,447	0	75	743,444	
						Annual	152,781			9,239,194	
-----											
	Flowind 19	(V)	340	250 kw @	38 mph	1	30,717	0	1	13,080	
						2	120,642	0	1	69,950	
						3	91,688	0	1	80,567	
						4	27,338	0	1	17,852	
						Annual	270,385			181,449	
=====										Project Total:	9,420,643
=====											

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity	
						Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)	
ALTAMONT PASS ----- (Alameda and Contra Costa)										
B. Flowind II (Elworthy)	Danwin H19	(H)	284	110 kw @	30 mph	1	31,325	23	23	464,840
						2	108,504	0	23	2,121,972
						3	120,401	2	25	2,617,524
						4	32,207	0	25	619,232
						Annual	292,437			5,823,568
	Flowind 17	(V)	260	142 kw @	44 mph	1	23,957	0	73	1,601,008
						2	107,527	0	73	5,449,195
						3	113,070	0	73	5,429,569
						4	24,342	0	73	989,858
						Annual	268,896			13,469,630
	Flowind 19	(V)	340	250 kw @	38 mph	1	39,619	0	19	602,878
						2	187,009	0	19	2,589,837
						3	190,559	0	19	2,947,309
						4	40,134	0	19	471,710
						Annual	457,321			6,611,734
=====										
Project Total:									25,904,932	

6. Howden Wind Parks, Inc.  
1330 Lincoln Ave.  
San Rafael, CA 94901

A. Howden Wind Park I	Howden 330/31	(H)	756	330 kw @	34 mph	1	67,500	0	82	2,377,000
						2	222,100	0	82	9,960,000
						3	266,400	0	82	0
						4	68,600	0	82	0
						Annual	624,600			12,337,000

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity	
						Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)	
ALTAMONT PASS										
(Alameda and Contra Costa)										
A. Howden Wind Park I, Con't.	Howden 60/15	(H)	177	60 kw @	34 mph	1	12,000	0	10	0
						2	45,100	0	10	0
						3	47,000	0	10	0
						4	11,200	0	10	0
						Annual	115,300			0
Howden 750/45 (H)	1590	750 kw @	34 mph	1	146,500	0	1	0		
				2	516,700	0	1	1,112		
				3	597,700	0	1	0		
				4	141,100	0	1	0		
				Annual	1,402,000			1,112		
Project Total:									12,338,112	

7. Seawest Energy Group  
 1660 Hotel Circle North  
 Suite 400  
 San Diego, CA 92108

A. Altech Energy, Ltd.	Enertech 44/40(H)	140	40 kw @	30 mph	1	9,700	0	144	152,358
					2	30,900	0	144	2,448,000
					3	30,300	0	144	3,089,620
					4	9,100	0	144	116,825
					Annual	80,000			5,806,803
Project Total:									5,806,803

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity	
						Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)	
ALTAMONT PASS ----- (Alameda and Contra Costa)										
Other Participant: California Wind Energy Systems, Ltd.	ESI 54	(H)	211	50 kw @	30 mph	1	9,800	0	30	142,550
						2	31,300	0	30	240,000
						3	30,370	0	30	639,541
						4	9,200	0	30	83,455
						-----	-----	-----	-----	-----
						Annual	80,670			1,105,546
=====									Project Total:	
=====									1,105,546	
=====										
Other Participant: Seawest Energy Group, Inc.	Micon 60/13	(H)	200	60 kw @	33 mph	1	14,100	0	1	14,240
						2	47,800	0	1	45,840
						3	47,000	0	1	47,410
						4	14,100	0	1	8,407
						-----	-----	-----	-----	-----
						Annual	123,000			115,897
=====									Project Total:	
=====									115,897	
=====										
Other Participant: TaxVest Windfarms, Inc. II	Micon 60/13	(H)	200	60 kw @	33 mph	1	13,700	0	11	117,080
						2	43,600	0	11	408,800
						3	42,900	0	11	416,341
						4	12,800	0	11	63,225
						-----	-----	-----	-----	-----
						Annual	113,000			1,005,446
=====									Project Total:	
=====									1005446	
=====										
Other Participant: Viking-Energy 83, Ltd.	Micon 60/13	(H)	200	60 kw @	33 mph	1	14,300	0	26	262,930
						2	45,500	0	26	1,025,360
						3	44,800	0	26	1,119,293
						4	13,400	0	26	160,917
						-----	-----	-----	-----	-----
						Annual	118,000			2,568,500
=====									Project Total:	
=====									2,568,500	
=====										

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity		
						Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)		
=====											
ALTAMONT PASS											
(Alameda and Contra Costa)											
Other Participant: Western Windfarms	F. Astroseal, Battlement			65 kw @	30 mph	Micon 65/13 (H) 200	1	29,580	0	8	78,349
							2	126,324	0	8	232,592
							3	156,600	0	8	171,346
							4	35,496	0	8	44,334
							Annual	348,000			526,621
=====											
Project Total:											
=====											
Other Participant: Taxvest Windfarm 174	G. Taxvest Windfarm 174			60 kw @	33 mph	Micon 60/13 (H) 200	1	13,700	7	174	1,974,818
							2	43,600	0	174	7,053,174
							3	42,900	0	174	6,050,278
							4	12,800	0	167	1,331,683
							Annual	113,000			16,409,953
=====											
Project Total:											
=====											
8. TERA Corporation 2150 Shattuck Ave. Berkeley, CA 94704											
A. Delta Energy Project				50 kw @	30 mph	ESI 54 (H) 211	1	42,400	0	58	382,976
							2	63,600	0	58	577,589
							3	63,600	0	58	315,797
							4	42,400	0	58	56,298
							Annual	212,000			1,332,660
-----											
				65 kw @	30 mph	ESI 54S (H) 211	1	46,400	0	88	606,620
							2	69,600	0	88	2,677,451
							3	69,600	0	88	2,000,341
							4	46,400	0	88	293,033
							Annual	232,000			5,577,445
=====											
Project Total:											
=====											

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected Quarterly Production Per Turbine This Quarter (kwh)	Turbines Installed		Electricity Produced (kwh)
							New	Cum.	
ALTAMONT PASS									
(Alameda and Contra Costa)									
9. U.S. Windpower									
500 Sansome Street, Suite 600									
San Francisco, CA 94111									
A. Midway Road									
USW 56-100	(H)	230	100 kw @	29 mph	1	21,000	30	671	9,465,202
					2	81,900	0	671	43,484,300
					3	86,100	68	739	49,122,103
					4	21,000	244	983	10,602,968
					Annual	210,000			112,674,573
USW 56-50	(H)	230	50 kw @	22 mph	1	15,000	0	407	549,567
					2	58,500	0	407	1,771,945
					3	61,500	0	407	1,821,068
					4	15,000	0	407	413,667
					Annual	150,000			4,556,247
WEG MS-2	(H)	491	250 kw @	33 mph	4	68,700	19	19	0
Project Total:								117,230,820	
B. Dyer Road									
USW 56-100	(H)	230	100 kw @	29 mph	1	21,000	2	135	3,781,631
					2	81,900	0	135	12,714,688
					3	86,100	103	238	20,597,600
					4	21,000	0	238	4,597,434
					Annual	210,000			41,691,353
USW 56-50	(H)	230	50 kw @	22 mph	1	15,000	0	198	219,569
					2	58,500	0	198	518,112
					3	61,500	0	198	763,600
					4	15,000	0	198	179,366
					Annual	150,000			1,680,647
Project Total:								43,372,000	



1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity	
						Quarterly Production Per Turbine This Quarter (kwh)	Installed	Cum.	Produced (kwh)	
-----										
ALTAMONT PASS										
-----										
(Alameda and Contra Costa)										
11. Zond Systems, Inc.										
112 South Curry Street										
Tehachapi, CA 93561										
A. Santa Clara	Vestas 17	(H)	227	100 kw @	45 mph	1	27,963	0	200	1,810,789
						2	107,191	0	200	9,660,563
						3	90,880	0	200	12,714,834
						4	6,991	0	200	2,892,659
							-----			-----
					Annual		233,025			27,078,845
=====										
Project Total:										
=====										
-----										

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)
BOULEVARD									
(San Diego)									
12. Aeolus Wind Farms									
38145 Old Hwy 80									
Boulevard, CA 92005									
A. Aeolus Wind Farms	Enertech 44/25(H)	141	25 kw @ 30 mph		1	0	0	11	108,788
					2	0	0	11	30,000
					3	0	0	11	24,211
					4	FAILED	TO	FILE	87,727 *
					Annual	0			162,999
	Enertech 44/40(H)	141	40 kw @ 30 mph		1	0	0	4	52,901
					2	0	0	4	81,916
					3	0	0	4	14,087
					4	FAILED	TO	FILE	- *
					Annual	0			148,904
Project Total:									399,630
=====									
13. Buckeye International									
1660 Hotel Circle North									
Suite 400									
San Diego, CA 92108									
A. California Wind Energy, Ltd.	Micon 22	(H)	78	22 kw @ 37 mph	1	12,100	0	30	159,065
Other Participant:					2	11,000	0	30	99,914
Seawest Energy					3	5,800	0	30	73,075
					4	8,300	0	30	137,245
					Annual	37,200			469,299
Project Total:									469,299
=====									

\* Output for this failed to file project is included only under the first turbine model listed

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
BOULEVARD ----- (San Diego)									
14. Richard T. Immel Wind Farm 3911 Via del Campo San Clemente, CA 92672									
A. Immel Wind Farm	Enertech 44/25(H)	137	25	kw @ 30 mph	1	0	0	6	76,516
					2	0	0	6	80,881
					3	0	0	6	49,589
					4	0	0	6	71,018
									-----
					Annual	0			278,004
					Project Total:				278,004
=====									

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Size (M2)	Size (kw)	Quarter; Annual	Projected Quarterly Production Per Turbine This Quarter (kwh)	Turbines Installed New	Turbines Installed Cum.	Electricity Produced (kwh)
CARQUINEZ STRAIT									
(Solano, Contra Costa)									
15. Wind Generator Parks, Inc.									
7 Wolfback Ridge Road									
Sausalito, CA 94965									
A. Wind Generator Parks, Inc.	Carter 250	(H)	332	250 kw @ 42 mph	1	75,000	0	1	16,800
					2	175,000	0	1	87,000
					3	175,000	0	1	22,800
					4	75,000	0	1	0
					Annual	500,000			126,600
Project Total:									126,600
=====									
16. Wind Watt, Inc.									
1320 Willow Pass Road									
Suite 520									
Concord, CA 94520									
A. Lopes Road Wind Park	Windtech 175	(H)	191	75 kw @ 30 mph	1	30,000	0	5	31,800
					2	60,000	0	5	43,200
					3	70,000	0	5	21,900
					4	40,000	0	5	0
					Annual	200,000			96,900
Project Total:									96,900
=====									

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)
PACHECO PASS ----- (Merced)									
17. Energy 21 18 Eastwood Court Oakland, CA 94611									
A. Energy 21	Carter	(H)	77	25 kw @ 30 mph	4	0	20	20	54,000
					Annual				54,000
	Project Total:								54,000

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected Quarterly Production Per Turbine This Quarter (kwh)	Turbines Installed New	Turbines Installed Cum.	Electricity Produced (kwh)
SALINAS VALLEY									
(Monterey)									
18. Casas del Sol									
P.O. Box 89									
Pacific Grove, CA 93950									
A. Herbert Ranch #1	Enertech 44/40(H)	44	40	kw @ 30 mph	1	10,780	0	4	11,500
					2	26,250	0	4	55,500
					3	23,170	0	4	45,000
					4	9,806	0	4	15,500
					Annual	70,006			127,500
Project Total:									127,500

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis (M2)	Size (kw)	Quarter; Annual	Projected Quarterly Production Per Turbine (kwh)	Turbines Installed New	Turbines Installed Cum.	Electricity Produced (kwh)
SAN GORGONIO PASS								
(Riverside)								
19. Earth Energy Systems, Inc. 250 Prairie Center Drive Eden Prairie, MN 55344								
A. REV Wind Power Partners								
Other Participant: Renewable Energy Ventures	ESI 54-S	(H) 216	80 kw @ 40 mph	1	38,200	0	168	1,137,600
				2	81,100	0	168	2,412,439
				3	63,500	0	168	2,519,424
				4	28,300	0	168	702,623
				Annual	211,100			6,772,086
-----								
	Jacobs 17.5	(H) 50	18 kw @ 27 mph	1	9,500	0	208	1,008,000
				2	19,800	0	208	2,130,761
				3	15,600	0	208	2,146,176
				4	7,200	0	208	425,397
				Annual	52,100			5,710,334
=====								
Project Total:								12,482,420
=====								
B. Jacoby - Kerr Wind Park								
Other Participant: CCC Alternative Energy Ventures	Jacobs 26-17.5(H)	49	18 kw @ 27 mph	1	10,300	0	16	111,684
				2	20,800	0	16	185,386
				3	16,400	0	16	204,768
				4	8,000	0	16	34,488
				Annual	55,500			536,326
-----								
	Jacobs 26-17.5(H)	49	18 kw @ 27 mph	1	9,500	0	134	845,626
				2	19,000	0	134	1,550,909
				3	15,600	0	134	1,581,492
				4	7,200	0	134	367,990
				Annual	51,300			4,346,017
-----								

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine (kwh)	Installed	Cum.	Produced (kwh)
SAN GORGONIO PASS									
(Riverside)									
B. Jacoby-Kerr Wind Park, Con't.	Jacobs 29-20	(H)	61	20 kw @ 27 mph	1	12,200	0	54	372,288
					2	25,600	0	54	524,505
					3	19,300	0	54	488,940
					4	9,700	0	54	195,121
					Annual	66,800			1,580,854
Project Total:								6,463,197	
C. Whitewater/Riverview Wind Park	Jacobs 29/20	(H)	60	20 kw @ 27 mph	1	12,700	0	218	764,822
					2	29,600	0	218	1,262,506
					3	20,100	0	218	1,339,358
					4	12,000	0	218	470,177
					Annual	74,400			3,836,863
Nordtank 65/13(H)	200	65	kw @ 35 mph	1	36,800	0	63	1,697,578	
				2	84,300	0	63	4,087,094	
				3	56,600	0	63	3,427,042	
				4	33,400	0	63	653,023	
				Annual	211,100			9,864,737	
Project Total:								13,701,600	
=====									
20. Energy Development and Construction Co.									
745 5th Ave. Suite 405									
New York, NY 10151									
A. Karen Avenue Wind Farm	Vawtpower 185-(V)	288	200	kw @ 34 mph	1	61,000	0	26	90,000
					2	145,000	0	26	6,000
					3	105,000	0	26	66,000
					4	49,000	0	26	84,000
					Annual	360,000			246,000
Project Total:								246,000	

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)
SAN GORGONIO PASS ----- (Riverside)									
21. Energy Unlimited, Inc. 2 Aldwyn Center Villanova, PA 19085									
A. Mountain Pass '85 Ltd.	Bonus 65/13 kw(H)	181	65 kw @ 40 mph		1	20,500	0	66	1,304,000
					2	72,000	0	66	3,308,000
					3	43,000	0	66	2,312,000
					4	24,500	0	66	1,344,000
					-----	-----	-----	-----	-----
					Annual	160,000			8,268,000
					=====	=====	=====	=====	=====
					Project Total:				8,268,000
=====									
22. O.E.S.C. P.O. Box 913 North Palm Springs, CA 92258									
A. Altech Energy Ltd., II	Enertech 44/40(H)	141	40 kw @ 30 mph		1	22,481	0	85	632,000
Other Participant:					2	54,980	0	85	1,842,000
Altech Energy Ltd., II					3	37,380	0	85	473,000
					4	15,200	0	85	75,000
					-----	-----	-----	-----	-----
					Annual	130,041			3,022,000
					=====	=====	=====	=====	=====
					Project Total:				3,022,000
=====									
23. Sandberg Wind Corporation 31324 Via Colinas Suite 114 Westlake Village, CA 91362									
A. Ventus Wind Park (SWC II)	Storm Master (H)	113	45 kw @ 33 mph		1	24,637	0	9	104,410
					2	24,637	0	9	105,657
					3	24,637	0	9	231,494
					4	24,637	0	9	35,924
					-----	-----	-----	-----	-----
					Annual	98,548			477,485
					=====	=====	=====	=====	=====
					Project Total:				477,485

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor (M2)	Size (kw)		Quarter; Annual	Projected	Turbines		Electricity
							Quarterly Production Per Turbine (kwh)	Installed	Cum.	Produced (kwh)
SAN GORGONIO PASS ----- (Riverside)										
B. Whitewater Wind Park (SWC III)	Carter 250	(H)	332	250 kw @ 41 mph		1	136,875	0	6	1,109,596
						2	136,875	0	6	557,244
						3	136,875	0	6	425,274
						4	136,875	0	6	121,920
						Annual	547,500			2,214,034
-----										
	Carter 300	(H)	332	300 kw @ 42 mph		1	136,875	0	22	0
						2	136,875	0	22	3,005,088
						3	136,875	0	22	3,882,280
						4	136,875	3	25	503,171
						Annual	547,500			7,390,539
-----										
	Maetecnic	(H)	269	150 kw @ 28 mph		1	0	0	6	0
						2	0	0	6	5,460
						3	0	0	6	8,314
						4	0	0	6	7,466
						Annual	0			21,240
-----										
	Nordtank	(H)	201	65 kw @ 44 mph		1	0	0	4	0
						2	0	0	4	116,829
						3	0	0	4	53,273
						4	0	0	4	28,342
						Annual	0			198,444
-----										
	Riisager	(H)	190	90 kw @ 27 mph		1	49,275	0	13	0
						2	49,275	0	13	0
						3	0	0	13	0
						4	0	0	13	0
						Annual	98,550			0

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis (M2)	Size (kw)	Quarter; Annual	Projected Quarterly Production Per Turbine (kwh)	Turbines Installed New	Turbines Installed Cum.	Electricity Produced (kwh)	
SAN GORGONIO PASS									
(Riverside)									
B. Whitewater Wind Park (SWC III), Con't.	Windmatic 15S (H)	189	65 kw @ 32 mph	1	35,587	0	63	848,021	
				2	35,587	0	63	2,238,712	
				3	35,587	0	63	2,269,091	
				4	35,587	0	63	440,820	
				Annual	142,348			5,796,644	
Windmatic 17S (H)	227	95 kw @ 34 mph	1	62,500	0	15	98,970		
			2	62,500	0	15	182,092		
			3	62,500	0	15	140,090		
			4	62,500	0	15	0		
			Annual	250,000			421,152		
Windtech	(H)	197	80 kw @ 35 mph	1	43,800	0	91	913,498	
				2	43,800	0	91	2,188,152	
				3	43,800	0	91	1,550,130	
				4	43,800	0	91	144,886	
				Annual	175,200			4,796,666	
Other Participant: Mark Technologies	Micon	(H)	293	108 kw @ 45 mph	1	0	0	132	2,459,452
					2	0	0	132	10,827,271
					3	85,800	0	132	10,520,673
					4	43,350	0	132	1,080,000
					Annual	129,150			24,887,396
Other Participant: Transworld Wind	Dynergy 180	(H)	0	180 kw @ 37 mph	1	0	0	16	0
					2	0	0	16	131,769
					3	0	0	5	100,275
					4	62,400	0	5	5,909
					Annual	62,400			237,953

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity	
						Quarterly Production Per Turbine (kwh)	Installed	Cum.	Produced (kwh)	
SAN GORGONIO PASS										
(Riverside)										
Other Participant: B. Transworld Wind	Whitewater Wind Park (SWC III), Con't.	Windshark	(H)	213	92 kw @ 33 mph	1	50,370	0	16	154,381
						2	50,370	4	20	446,669
						3	50,370	0	20	97,220
						4	25,800	0	20	0
						Annual	176,910			698,270
Project Total:									46,662,338	

24. San Gorgonio Farms  
 21515 Hawthorne Blvd.  
 Suite 1059  
 Torrance, CA 90503

A. San Gorgonio Farms Wind Park	Bonus 120 kw	(H)	294	120 kw @ 40 mph	1	76,560	0	1	66,690
					2	180,400	0	1	164,309
					3	95,480	0	1	110,936
					4	89,320	0	1	42,863
					Annual	441,760			384,798
	Bonus 65 kw	(H)	177	65 kw @ 33 mph	1	47,600	0	81	3,160,894
					2	114,800	0	81	6,297,440
					3	60,760	0	81	5,508,751
					4	56,840	0	81	1,404,472
					Annual	280,000			16,371,557
	Carter 25 kw	(H)	75	25 kw @ 26 mph	1	13,600	0	200	1,578,721
					2	32,800	0	200	3,313,366
					3	17,360	0	200	2,886,710
					4	16,240	0	15	57,833
					Annual	80,000			7,836,630

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Size (M2)	Size (kw)	Quarter; Annual	Projected Quarterly Production Per Turbine (kwh)	Turbines Installed New	Turbines Installed Cum.	Electricity Produced (kwh)
SAN GORGONIO PASS									
(Riverside)									
A. San Gorgonio Farms Wind Park, Con't.	Micon 60/13	(H)	201	60 kw @ 33 mph	1	47,600	0	7	293,320
					2	114,800	0	7	584,392
					3	60,760	0	7	427,178
					4	56,840	0	7	148,708
					Annual	280,000			1,453,598
	Micon 65 kw	(H)	201	65 kw @ 33 mph	1	47,600	0	43	1,301,069
					2	114,800	0	43	2,207,434
					3	60,760	0	43	2,380,545
					4	56,840	0	43	656,027
					Annual	280,000			6,545,075
	Micon 65 kw	(H)	201	65 kw @ 33 mph	1	36,540	0	15	444,515
					2	86,100	0	15	1,023,210
					3	45,570	1	16	862,010
4					42,630	0	16	0	
Annual					210,840			2,329,735	
Project Total:								34,921,393	

25. Seawest Energy Group  
 1600 Hotel Circle North  
 Suite 400  
 San Diego, CA 92108

A. Altech III/Difwind Partners	Micon 100/US	(H)	283	108 kw @ 30 mph	1	53,500	364	364	8,362,987
					2	160,200	0	364	32,177,982
					3	108,900	0	364	28,386,494
					4	41,400	0	364	7,191,386
					Annual	308,600			76,118,849

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines Installed		Electricity	
						Quarterly Production Per Turbine This Quarter (kwh)	New	Cum.	Produced (kwh)	
SAN GORGONIO PASS										
(Riverside)										
A. Altech III/Difwind Partners, Con't.	Micon 110/US	(H)	300	110 kw @	30 mph	4	44,200	20	20	53,700
	Micon 60	(H)	201	60 kw @	30 mph	1	32,200	92	92	1,513,013
						2	79,900	0	92	4,164,018
						3	52,700	0	92	3,231,976
						4	22,200	0	92	762,224
						Annual	166,600			9,671,231
Project Total:									85,843,780	
B. Phoenix Energy Associates/ Other Participant: Phoenix Energy, Ltd.	Enertech 44/40(H)		140	40 kw @	30 mph	1	27,283	0	90	390,697
						2	59,388	0	90	1,485,626
						3	42,998	0	90	336,512
						4	17,331	0	90	88,342
						Annual	137,048			2,291,177
	Micon 110/US	(H)	300	110 kw @	33 mph	4	47,600	16	16	77,627
	Micon 60/13	(H)	200	60 kw @	33 mph	1	41,574	0	130	4,073,303
						2	90,496	0	130	8,270,374
						3	65,520	0	130	7,119,302
						4	26,410	0	130	1,840,217
						Annual	224,000			21,303,196
Project Total:									23,672,000	
C. Difwind Partners	Micon 110	(H)	300	108 kw @	30 mph	4	41,900	73	73	258,000
Project Total:									258,000	

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity Produced (kwh)	
						Quarterly Production Per Turbine This Quarter (kwh)	Installed	New Cum.		
SAN GORGONIO PASS										
(Riverside)										
26. Southern California Sunbelt										
P.O. Box 862										
North Palm Springs, CA 92258										
A. Palm Springs Wind Park										
Windmatic 15S (H)	189	65 kw @	32 mph	1	1	FAILED	TO	FILE	463,200 *	
				2	2	FAILED	TO	FILE	2,233,600 *	
				3	3	35,652	0	64	2,745,835	
				4	4	15,469	0	64	727,039	
				Annual	Annual	51,121			3,472,874	
Wenco	(H)	0	200 kw @	0 mph	1	1	FAILED	TO	FILE	- *
					2	2	FAILED	TO	FILE	- *
					3	3	0	0	14	0
					4	4	0	0	14	0
					Annual	Annual	0			0
Starwind	(H)	0	125 kw @	0 mph	1	1	FAILED	TO	FILE	- *
					2	2	FAILED	TO	FILE	- *
					3	3	0	0	4	20,354
					4	4	0	0	4	0
					Annual	Annual	0			20,354
Project Total:									6,190,028	

\* Output for this failed to file project is included only under the first turbine model listed

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected Quarterly Production Per Turbine This Quarter (kwh)	Turbines Installed		Electricity Produced (kwh)
							New	Cum.	
SAN GORGONIO PASS ----- (Riverside)									
27. Transworld Wind Corporation 777 E. Taquitz-McCallum Way Suite 333 Palm Springs, CA 92262									
A. Cabazon									
	Windshark	(H)	210	92 kw @ 40 mph	1	30,880	0	72	284,244
					2	77,200	0	72	613,000
					3	55,970	0	72	84,000
					4	28,950	0	72	0
					Annual	193,000			981,244
-----									
	Storm Master	(H)	40	40 kw @ 60 mph	1	0	0	43	183,756
					2	0	0	43	240,800
					3	0	0	43	0
					4	0	0	43	0
					Annual	0			424,556
-----									
	Wenco	(H)	100	100 kw @ 0 mph	1	0	0	5	0
					2	0	0	5	70,000
					3	0	0	5	0
					4	0	0	5	0
					Annual	0			70,000
=====									
	Project Total:								1,475,800
=====									
B. Maeva I, Maeva II									
	Windshark	(H)	210	80 kw @ 34 mph	1	19,360	0	99	84,000
					2	48,400	0	99	480,000
					3	35,090	0	99	216,000
					4	18,150	0	99	0
					Annual	121,000			780,000
=====									
	Project Total:								780,000
=====									

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Size (M2)	Size (kw)	Quarter; Annual	Projected Quarterly Production Per Turbine This Quarter (kwh)	Turbines Installed New	Cum.	Electricity Produced (kwh)
SAN GORGONIO PASS									
(Riverside)									
28. Triad American Energy									
11791 Fitch									
Irvine, CA 92714									
A. Triad I	ESI 54S	(H)	213	80 kw @ 40 mph	1	0	0	63	435,000
					2	0	0	63	771,000
					3	0	0	63	414,000
					4	0	0	63	207,000
					Annual	180,000			1,827,000
Project Total:									1,827,000
B. Triad II	ESI 54S	(H)	213	80 kw @ 40 mph	1	0	0	90	1,728,000
					2	0	0	90	1,815,000
					3	0	0	90	816,000
					4	0	0	90	306,000
					Annual	220,000			4,665,000
Project Total:									4,665,000
C. Triad IV - VII	ESI 80	(H)	476	250 kw @ 46 mph	1	0	0	36	1,108,640
					2	0	0	36	2,621,177
					3	0	0	36	1,703,153
					4	0	0	36	668,329
					Annual	0			6,101,299
	Vanguard 20/95(H)		226	95 kw @ 40 mph	1	0	0	60	1,339,360
					2	0	0	60	3,402,823
					3	0	0	60	3,240,847
					4	0	0	60	1,899,671
					Annual	0			9,882,701
Project Total:									15,984,000

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)
SAN GORGONIO PASS ----- (Riverside)									
29. Western Windfarms 2352 Research Drive Livermore, CA 94550									
A. Dillon Devers	Micon 108	(H)	293	108 kw @ 33 mph	1	47,940	13	13	180,506
					2	124,080	0	13	504,515
					3	64,860	0	7	485,091
					4	45,120	0	4	52,574
					Annual	282,000			1,222,686
-----									
	Micon 65	(H)	200	65 kw @ 30 mph	1	30,600	16	16	349,114
					2	82,800	0	16	781,750
					3	39,600	0	16	2,321,843
					4	27,000	0	15	155,415
					Annual	180,000			3,608,122
-----									
	Micon M110	(H)	293	108 kw @ 33 mph	1	47,940	27	27	554,446
					2	124,080	0	27	2,058,060
					3	64,860	80	107	2,173,066
					4	45,120	0	102	1,016,542
					Annual	282,000			5,802,114
-----									
	Novenco	(H)	200	65 kw @ 30 mph	1	30,600	30	30	931,934
					2	82,800	0	30	1,647,675
					3	39,600	0	30	0
					4	27,000	0	30	0
					Annual	180,000			2,579,609
=====									
	Project Total:								13,212,531
=====									

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor Size (M2) (kw)	Quarter; Annual	Projected	Turbines		Electricity
					Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)
SAN GORGONIO PASS ----- (Riverside)								
30. Windustries c/o O.E.S.C. P.O. Box 913 North Palm Spring, CA 92258								
A. Windustries I								
Enertech 44/40(H)	141	40 kw @	30 mph	1	23,000	0	96	1,368,418
				2	57,600	0	96	1,899,300
				3	44,600	0	96	466,800
				4	19,900	0	96	151,000
				-----	-----	-----	-----	-----
				Annual	145,100			3,885,518
-----								
Enertech 44/40(H)	141	60 kw @	35 mph	1	28,300	0	48	1,139,582
				2	77,400	0	48	224,700
				3	57,200	0	48	0
				4	24,100	0	48	0
				-----	-----	-----	-----	-----
				Annual	187,000			1,364,282
Project Total:								5,249,800
=====								
31. Wintec, Ltd. 1299 Ocean Ave., Suite 902 Santa Monica, CA 90401								
A. Wintec 1 Windpark								
Carter 25 kw (H)	75	25 kw @	26 mph	1	17,267	0	0	0
				2	32,332	0	0	0
				3	24,789	0	0	0
				4	5,612	0	185	475,123
				-----	-----	-----	-----	-----
				Annual	80,000			475,123
-----								
Micon 65/13 kw(H)	200	65 kw @	33 mph	1	45,326	0	0	0
				2	84,871	0	0	0
				3	65,071	0	0	0
				4	14,732	7	23	193,277
				-----	-----	-----	-----	-----
				Annual	210,000			193,277
Project Total:								668,400

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)
SAN GORGONIO PASS									
(Riverside)									
B. Wintec Palm Windpark	Micon 65/13 kw(H)	200	65 kw @	33 mph	1	45,326	0	0	0
					2	84,871	0	0	0
					3	65,071	0	0	0
					4	14,732	30	30	0
					Annual	210,000			0
Project Total:									0
C. Wintec I Annex	Micon 108	(H) 293	108 kw @	33 mph	1	50,819	0	0	0
					2	112,031	0	0	0
					3	98,170	0	0	0
					4	18,980	7	7	90,456
					Annual	280,000			90,456
Micon 65	(H) 200	65 kw @	33 mph	1	38,115	0	0	0	
				2	84,023	0	0	0	
				3	73,627	0	0	0	
				4	14,235	31	31	293,767	
				Annual	210,000			293,767	
Project Total:									384,223
=====									
32. Zond Systems									
112 South Curry									
Tehachapi, CA 93561									
A. Painted Hills	Vestas 15	(H) 187	65 kw @	35 mph	1	45,487	0	61	1,519,874
					2	82,473	0	61	3,433,130
					3	51,226	0	61	2,250,979
					4	33,372	0	61	664,635
					Annual	212,558			7,868,618



1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine This Quarter (kwh)	Installed	Produced	
-----	-----	-----	-----	-----	-----	-----	New	Cum.	(kwh)
TEHACHAPI PASS									
(Kern)									
33. Airtricity									
151 Kalmus Ave., Ste A-203									
Costa Mesa, CA 92626									
A. Airtricity Wind Park									
	FAILED TO FILE				1				805,600
	FAILED TO FILE				2				375,200
	FAILED TO FILE				3				5,600
					4				0
=====									
Project Total:									1,186,400
=====									
34. Arbutus									
4041 MacArthur Blvd.									
Suite 230									
Newport, CA 92660									
A. Pajuela Peak Wind Park									
	Bonus 65	(H)	225	65 kw @ 45 mph	1	45,000	0	229	3,861,705
					2	67,500	2	231	7,974,429
					3	50,625	0	231	7,342,800
					4	61,875	0	231	4,012,674
					Annual	225,000			23,191,608
-----									
	Windane 12	(H)	144	40 kw @ 30 mph	1	24,528	21	21	74,185
					2	36,792	0	21	306,734
					3	27,594	0	21	186,100
					4	33,726	0	21	83,344
					Annual	122,640			650,363
-----									
	Windtech 75	(H)	250	75 kw @ 35 mph	1	44,700	0	81	36,110
					2	67,050	0	81	113,637
					3	50,288	0	81	67,100
					4	61,462	0	81	18,982
					Annual	223,500			235,829
=====									
Project Total:									24,077,800

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine This Quarter (kwh)	Installed	Produced	
							New	Cum.	(kwh)
TEHACHAPI PASS									
(Kern)									
35. CalWind Resources									
20969 Ventura Blvd.									
Suite 222									
Woodland Hills, CA 91364									
A. Wind Resource I									
	Nordtank 65/13 (H)	201	65 kw @ 35 mph	1	29,920	123	134		2,400,000
				2	66,880	0	134		4,688,000
				3	46,640	0	134		3,456,000
				4	32,560	0	134		1,884,000
				Annual	176,000				12,428,000
Project Total:									12,428,000
=====									
36. Cannon Financial Group									
6920 Miramar Rd.									
Suite 304									
San Diego, CA 92121									
A. Cameron Ridge Windpark									
	Bouma 200	(H) 314	135 kw @ 40 mph	1	0	30	35		1,006,863
				2	0	0	35		2,323,516
				3	0	0	35		2,460,585
				4	0	0	35		1,140,498
				Annual	450,000				6,931,462
	Century 6000	(H) 117	75 kw @ 30 mph	1	0	0	206		15,611
				2	0	0	3		0
				3	0	2	5		22,334
				4	0	0	5		5,933
				Annual	220,000				43,878
	Century 9000	(H) 117	100 kw @ 37 mph	1	0	0	50		29,224
				2	0	0	50		83,299
				3	0	0	44		41,423
				4	0	0	44		70,747
				Annual	266,000				224,693

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter;	Projected	Turbines		Electricity
					Annual	Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)
-----									
TEHACHAPI PASS									
-----									
(Kern)									
A. Cameron Ridge Windpark, Con't.	Nordtank 150	(H)	330	150 kw @ 42 mph	1	0	0	0	0
					2	0	2	2	7,592
					3	0	0	2	101,873
					4	0	100	102	171,659
					Annual	520,000			281,124
-----									
	Nordtank 65/138(H)		201	65 kw @ 35 mph	1	0	0	0	0
					2	0	0	0	0
					3	0	0	0	0
					4	0	50	50	0
					Annual	190,000			0
-----									
	Nordtank 90/16.(H)		216	75 kw @ 42 mph	1	0	6	6	47,502
					2	0	87	93	2,673,593
					3	0	204	297	7,957,785
					4	0	43	340	6,423,163
					Annual	276,000			17,102,043
=====									
	Project Total:								24,583,200
=====									
B. Cannon 1982 Phase I Program	Storm Master Mo(H)		113	40 kw @ 38 mph	1	0	0	85	1,600
					2	0	0	85	0
					3	0	0	85	0
					4	0	0	85	0
					Annual	122,040			1,600
=====									
	Project Total:								1,600
=====									

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)
TEHACHAPI PASS									
(Kern)									
C. Cannon 1983 Phase II Wind Park	Century 6000	(H)	117	75 kw @ 30 mph	1	0	0	60	0
					2	0	0	60	0
					3	0	0	60	0
					4	0	0	60	0
					Annual	220,000			0
Windtec 175	(H)	197	75 kw @ 35 mph	1	0	0	5	0	
				2	0	0	5	0	
				3	0	0	5	0	
				4	0	0	5	0	
				Annual	220,000			0	
Project Total:									0

37. CTV Marketing  
1725 S. Douglass Road  
Suite B  
Anaheim, CA 92806

A. Coram Energy Group	Aeroman 12.5 Se(H)	123	40 kw @ 27 mph	1	0	0	27	331,412	
Other Participant:				2	0	0	27	681,987	
Energy Conversion Technology, Inc.				3	0	0	27	538,843	
				4	0	0	27	262,236	
				Annual	160,000			1,814,478	
Project Total:									1,814,478

B. Coram TaxVest Windfarm	Aeroman 12.5 Se(H)	123	40 kw @ 27 mph	1	0	0	100	1,259,326	
Other Participant:				2	0	0	100	2,822,388	
Energy Conversion Technology, Inc.				3	0	0	100	2,247,087	
				4	0	0	100	1,127,389	
				Annual	160,000			7,456,190	
Project Total:									7,456,190

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Size (M2)	Size (kw)	Quarter; Annual	Projected Quarterly Production Per Turbine This Quarter (kwh)	Turbines Installed New	Cum.	Electricity Produced (kwh)
TEHACHAPI PASS									
(Kern)									
C. Coram TaxVest Windfarms	Aeroman 12.5 Se(H)	123		40 kw @ 27 mph	1	0	0	47	495,200
Other Participant:					2	0	0	47	1,180,149
Energy Conversion Technology, Inc.					3	0	0	47	857,600
					4	0	0	47	407,200
					Annual	160,000			2,940,149
Project Total:									2,940,149
D. Coram TaxVest Windfarms									
Aeroman 12.5 se(H)	123		40 kw @ 27 mph	1	0	0	109	271,237	
Other Participant:				2	0	0	109	2,204,955	
Energy Conversion Technology, Inc.				3	0	0	109	1,860,000	
				4	0	0	109	900,000	
				Annual	160,000			5,236,192	
Project Total:									5,236,192
38. Dollar Energy Systems Corp.									
140 Marine View Drive									
Suite 106									
Solano Beach, CA 92075									
A. The Mariah Wind Park	Storm Master 12(H)	79		40 kw @ 35 mph	1	10,000	0	20	68,950
					2	25,000	0	20	56,742
					3	27,000	0	20	27,230
					4	18,000	0	17	34,083
				Annual	80,000				187,005
	Storm Master 12(H)	79		60 kw @ 45 mph	1	10,000	0	60	206,850
					2	25,000	0	60	219,058
					3	27,000	0	60	144,170
					4	18,000	0	59	118,117
				Annual	80,000				688,195
Project Total:									875,200

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine (kwh)	Installed New	Cum.	Produced (kwh)
TEHACHAPI PASS ----- (Kern)									
39. Energy UnLimited, Inc. 2 Aldwyn Center Villanova, PA 19085									
A. Windy Flats '82 and Mountain Flats '83									
	Carter 25kw	(H)	75	25 kw @ 25 mph	1	27,744	0	25	227,595
					2	23,320	0	25	323,661
					3	12,464	0	25	190,762
					4	16,472	0	25	130,209
					Annual	80,000			872,227
Project Total:									872,227
=====									
40. FloWind Corporation 1183 Quarry Lane Pleasanton, CA 94566									
A. FloWind Cameron Ridge									
	Flowind 17	(V)	260	142 kw @ 44 mph	1	59,841	0	161	6,391,515
					2	90,175	0	161	7,527,915
					3	46,249	0	161	6,074,706
					4	55,297	0	161	2,534,437
					Annual	251,562			22,528,573
	Flowind 19	(V)	340	250 kw @ 38 mph	1	115,641	0	122	7,536,244
					2	182,951	0	122	12,524,095
					3	90,982	0	122	6,476,456
					4	103,621	0	122	1,637,511
					Annual	493,195			28,174,306
	Flowind 25	(V)	515	381 kw @ 44 mph	1	0	0	0	0
					2	0	0	0	0
					3	12,838	2	2	12,838
					4	0	0	2	0
					Annual	12,838			12,838

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)
TEHACHAPI PASS									
(Kern)									
A. Flowind Cameron Ridge, Con't.	Sumitomo H22	(H)	363	200 kw @ 30 mph	1	0	0	0	0
					2	0	0	0	0
					3	0	0	0	0
					4	0	1	1	4,052
					Annual	0			4,052
Project Total:									50,719,769
B. Flowind IV	Flowind 19	(V)	340	250 kw @ 38 mph	1	94,005	0	58	3,461,142
					2	165,917	0	58	6,984,000
					3	84,944	0	58	4,656,000
					4	84,562	0	58	876,000
					Annual	429,428			15,977,142
Project Total:									15,977,142
=====									
41. Illinois Wind Power									
666 N. Lakeshore Drive									
Suite 423									
Chicago, IL 60611									
A. Illinois Wind Power	ESI 80	(H)	467	300 kw @ 40 mph	1	90,000	0	5	63,085
Other Operator:					2	90,000	0	5	405,755
Energy Conversion Technology, Inc.					3	90,000	0	5	0
					4	90,000	0	5	0
					Annual	360,000			468,840
Project Total:									468,840
=====									

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine (kwh)	Installed	Cum.	Produced (kwh)
TEHACHAPI PASS									
(Kern)									
42. Liberty Windfarms									
3501 Bernard #11C									
Bakersfield, CA 93306									
A. Liberty Wind Park	Blue Max 50	(H)	117	50 kw @ 30 mph	1	17,500	0	80	218,984
					2	24,500	0	80	381,176
					3	10,500	0	80	211,280
					4	17,500	0	80	58,088
					Annual	70,000			869,528
Project Total:									869,528
=====									
43. Oak Creek Energy Systems									
P.O. Box 469									
Tehachapi, CA 93561									
A. Oak Creek Energy Systems	Blue Max	(H)	108	50 kw @ 0 mph	1	0	0	27	971
					2	0	0	27	0
					3	0	0	27	0
					4	0	0	27	0
					Annual	0			971
	Blue Max	(H)	117	50 kw @ 0 mph	1	21,450	0	50	0
					2	32,890	0	50	0
					3	60,060	0	50	0
					4	28,600	0	50	0
					Annual	143,000			0
	Bonus	(H)	200	65 kw @ 0 mph	1	27,000	0	51	820,834
					2	41,400	0	51	1,722,928
					3	75,600	0	51	983,204
					4	36,000	0	51	412,232
					Annual	180,000			3,939,198

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine (kwh)	Installed	Produced	
							New	Cum.	(kwh)
TEHACHAPI PASS									
(Kern)									
A. Oak Creek Energy Systems, Con't.	Carter	(H)	75	25 kw @ 0 mph	1	11,400	0	70	156,395
					2	17,480	0	70	350,791
					3	31,920	0	70	257,342
					4	15,200	0	70	103,058
					Annual	76,000			867,586
	Flowind	(V)	0	120 kw @ 0 mph	1	0	0	1	22,342
					2	0	0	1	31,031
					3	0	0	1	13,697
					4	0	0	1	5,152
					Annual	0			72,222
	Lolland	(H)	184	75 kw @ 0 mph	1	31,050	0	21	177,280
					2	47,610	0	21	404,759
					3	44,950	0	21	154,747
					4	41,400	0	21	59,086
					Annual	165,010			795,872
	Lolland	(H)	288	110 kw @ 0 mph	1	45,000	0	50	1,150,625
					2	69,000	0	50	3,022,207
					3	126,000	0	50	2,002,316
					4	60,000	0	50	864,656
					Annual	300,000			7,039,804
	Micon	(H)	293	110 kw @ 0 mph	1	45,000	0	50	482,301
					2	69,000	0	50	2,867,042
					3	126,000	0	50	1,919,385
					4	60,000	0	50	687,053
					Annual	300,000			5,955,781

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine This Quarter (kwh)	Installed	Produced	
							New	Cum.	(kwh)
TEHACHAPI PASS									
(Kern)									
A. Oak Creek Energy Systems, Con't.	Micon	(H)	200	65 kw @ 0 mph	1	27,000	0	66	811,120
					2	41,400	0	66	2,091,259
					3	75,600	0	66	1,282,440
					4	36,000	0	66	480,937
					Annual	180,000			4,665,756
	Nordtank	(H)	200	65 kw @ 0 mph	1	27,000	0	66	1,145,282
					2	41,400	0	66	2,705,145
					3	75,600	0	66	1,877,492
					4	36,000	0	66	824,464
					Annual	180,000			6,552,383
	Vestas	(H)	200	65 kw @ 0 mph	1	27,000	0	7	134,053
					2	41,400	0	7	286,030
					3	75,600	0	7	162,442
					4	36,000	0	7	62,865
					Annual	180,000			645,390
	Wecs-Tec	(H)	0	65 kw @ 0 mph	1	0	0	29	971
					2	0	0	29	0
					3	0	0	29	0
					4	0	0	29	0
					Annual	0			971
	Wecs-Tec	(H)	0	100 kw @ 0 mph	1	0	0	1	0
					2	0	0	1	0
					3	0	0	1	0
					4	0	0	1	0
					Annual	0			0
Project Total:									30,535,934

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)
TEHACHAPI PASS									
(Kern)									
44. SeaWest Industries, Inc.									
1455 Frazee Road									
Suite 300									
San Diego, CA 92108									
A. Difwind VI/Viking I	Micon 110	(H)	300	108 kw @ 30 mph	1	70,700	0	0	0
					2	137,800	0	0	0
					3	85,700	0	0	0
					4	78,200	251	251	0
					Annual	372,400			0
	Nordtank 150	(H)	330	150 kw @ 35	1	77,300	0	0	0
					2	150,400	0	0	0
					3	93,500	0	0	0
					4	85,400	62	62	0
					Annual	406,600			0
Project Total:									0
=====									
45. Southern California Sunbelt									
701 S. Parker St., Suite 7300									
Orange, CA 92668									
A. Mojave Wind Park	Airmaster	(H)	0	100 kw @ 40 mph	1	FAILED	TO	FILE	132,000 *
					2	FAILED	TO	FILE	2,300,000 *
					3	0	0	10	0
					4	0	0	10	0
					Annual	0			0

\* Output for this failed to file project is included only under the first turbine model listed

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor Size (M2)	Rotor Size (kw)	Quarter; Annual	Projected	Turbines		Electricity	
						Quarterly Production Per Turbine This Quarter (kwh)	Installed	Produced		
-----	-----	-----	-----	-----	-----	(kwh)	New	Cum.	(kwh)	
TEHACHAPI PASS										
(Kern)										
A. Mojave Wind Park (Con't.)	Windmatic 17S	(H)	227	95 kw @ 34 mph	1	FAILED	TO	FILE	- *	
					2	FAILED	TO	FILE	- *	
					3	35,652	0	96	1,675,656	
					4	15,469	0	96	727,039	
					Annual	51,121			2,402,695	
Project Total:									4,841,695	
=====										
46. Triad American Energy										
11791 Fitch										
Irvine, CA 92714										
Other Operator: Windland, Inc.	A. Triad III	ESI 54-S	(H)	213	80 kw @ 40 mph	1	0	0	38	247,831
					2	0	0	38	345,415	
					3	0	0	38	303,606	
					4	0	0	38	53,299	
					Annual	210,000			950,151	
		ESI 80-200S	(H)	476	250 kw @ 40 mph	1	0	0	6	204,415
					2	0	0	6	217,314	
					3	0	0	6	209,848	
					4	0	0	6	60,356	
					Annual	532,000			691,933	
Project Total:									1,642,084	
=====										

\* Output for this failed to file project is included only under the first turbine model listed

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity	
						Quarterly Production Per Turbine This Quarter (kwh)	Installed	Cum.	Produced (kwh)	
TEHACHAPI PASS -----										
(Kern)										
47. Universal Properties										
9460 Wilshire Blvd.										
Suite 617										
Beverly Hills, CA 90212										
	A.	Ridgeline Windfarm	ESI 54	(H) 213	50 kw @ 30 mph	1	0	0	10	323,400
Other Operator:						2	0	0	10	575,850
Zond Systems, Inc.						3	0	0	10	349,600
						4	0	0	10	227,900
							-----			-----
						Annual	0			1,476,750
=====										
						Project Total:				1,476,750
=====										
48. Wind Source										
2509 Thousand Oaks Blvd.										
Suite 197										
Thousand Oaks, CA 91362										
	A.	Cache Creek Wind Farm	Aeroman	(H) 122	40 kw @ 27 mph	1	21,000	0	40	260,530
						2	42,000	0	40	609,989
						3	56,000	0	40	494,053
						4	21,000	0	40	129,686
							-----			-----
						Annual	140,000			1,494,258
-----										
			Bouma	(H) 201	100 kw @ 54 mph	1	30,000	0	6	167,450
						2	60,000	0	6	46,155
						3	80,000	0	6	0
						4	30,000	0	6	0
							-----			-----
						Annual	200,000			213,605
=====										
						Project Total:				1,707,863
=====										

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Size (M2)	Size (kw)	Quarter; Annual	Projected Quarterly Production Per Turbine This Quarter (kwh)	Turbines Installed New	Turbines Installed Cum.	Electricity Produced (kwh)
TEHACHAPI PASS									
(Kern)									
49. Windland, Inc.									
2141 Palomar Airport Road									
Suite 360									
Carlsbad, CA 92009									
A. Windland Wind Park (Boxcar 1)	Bonus 120/20	(H)	296	120 kw @ 40 mph	1	78,500	11	11	378,295
					2	157,000	0	11	1,039,464
					3	78,500	0	11	849,924
					4	78,500	0	11	351,547
					Annual	392,500			2,619,230
	Carter Model 25(H)	77		25 kw @ 30 mph	1	15,300	0	39	337,428
					2	30,700	0	39	547,028
					3	15,300	0	39	597,517
					4	15,300	0	39	211,475
					Annual	76,600			1,693,448
	Carter Model 25(H)	332		250 kw @ 38 mph	1	120,000	1	13	384,031
					2	240,000	0	13	1,325,091
					3	120,000	0	13	1,527,995
					4	120,000	0	13	521,749
					Annual	600,000			3,758,866
	Storm Master 12(H)	113		40 kw @ 42 mph	1	18,000	0	10	0
					2	36,000	0	10	0
					3	36,000	0	10	0
					4	18,000	0	10	9,584
					Annual	108,000			9,584
Project Total:									8,081,128

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis (M2)	Size (kw)	Projected Quarterly Production Per Turbine		Turbines Installed		Electricity Produced (kwh)	
				Quarter; Annual	This Quarter (kwh)	New	Cum.		
TEHACHAPI PASS									
(Kern)									
B. Windland Wind Park (Boxcar II)	Bonus 65/13	(H)	181	65 kw @ 40 mph	1	37,200	4	4	51,127
					2	74,400	0	4	51,367
					3	37,200	0	4	36,990
					4	37,200	0	4	18,000
					Annual	186,000			157,484
Enertech 44/60	(H)	180	60 kw @ 35 mph	1	0	12	12	114,373	
				2	0	0	12	108,633	
				3	0	0	12	17,010	
				4	0	0	12	0	
				Annual	0			240,016	
Project Total:								397,500	

50. Windridge  
406 E. Tehachapi Blvd.  
Tehachapi, CA 93561

A. Willowind	Windmatic 15S	(H)	189	65 kw @ 34 mph	1	47,447	16	42	594,000
					2	38,974	0	42	888,000
					3	35,585	0	42	622,000
					4	47,447	0	42	622,000
					Annual	122,006			2,726,000
Project Total:								2,104,000	

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine (kwh)	Installed New	Cum.	Produced (kwh)
TEHACHAPI PASS ----- (Kern)									
51. Zephyr Park Ltd. 18 Eastwood Court Oakland, CA 94611									
A. Zephyr Park	Windtech 17S	(H)	197	75 kw @ 50 mph	1	0	0	30	400
					2	0	0	30	0
					3	0	0	30	0
					4	0	0	30	0
					Annual	160,000			400
Project Total:									400
=====									
52. Zond Systems, Corp. 112 South Curry Street Tehachapi, CA 93561									
A. Feeder 0	Storm Master 12(H)	113		40 kw @ 40 mph	1	47,600	0	47	196,060
					2	40,600	0	47	116,757
					3	22,400	0	47	149,983
					4	29,400	0	47	143,658
					Annual	140,000			606,458
Project Total:									718,955
=====									
B. Feeder 1 & 8	Polenko 18	(H)	254	100 kw @ 35 mph	1	108,129	0	15	157,230
					2	92,228	0	15	527,168
					3	50,884	0	15	544,545
					4	66,785	0	15	352,646
					Annual	318,026			1,581,589

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)
TEHACHAPI PASS									
(Kern)									
B. Feeder 1 & 8, Con't.	Storm Master	(H)	113	40 kw @ 40 mph	1	47,600	0	24	195,744
					2	40,600	0	24	270,095
					3	22,400	0	24	173,326
					4	29,400	0	24	145,040
					Annual	140,000			784,205
Vestas 15	(H)	184	65 kw @ 35 mph	1	81,953	0	8	157,666	
				2	69,901	0	8	284,537	
				3	38,566	0	8	175,152	
				4	50,618	0	8	119,703	
				Annual	241,038			737,058	
Vestas 15	(H)	184	65 kw @ 35 mph	1	81,953	0	58	1,145,482	
				2	69,901	0	58	1,698,241	
				3	38,566	0	58	919,579	
				4	50,618	0	58	677,186	
				Annual	241,038			4,440,488	
Windmatic 14S	(H)	165	65 kw @ 35 mph	1	72,541	0	30	544,085	
				2	61,873	0	30	800,733	
				3	34,137	0	30	383,189	
				4	44,805	0	30	296,092	
				Annual	213,356			2,024,099	
Project Total:								9,567,439	
C. Feeder 2	Vestas 15	(H)	184	65 kw @ 35 mph	1	81,953	0	2	25,371
					2	69,901	0	2	55,564
					3	38,566	0	2	42,536
					4	50,618	0	2	27,285
					Annual	241,038			150,756

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected Quarterly Production Per Turbine (kwh)	Turbines Installed New	Turbines Installed Cum.	Electricity Produced (kwh)
TEHACHAPI PASS									
(Kern)									
C. Feeder 2, Con't.									
Vestas 15	(H)	184	65 kw @ 35 mph	1	72,171	0	5	129,800	
				2	61,558	0	5	193,799	
				3	33,963	0	5	106,340	
				4	44,576	0	5	68,209	
				Annual	212,268			498,148	
-----									
Vestas 15	(H)	184	65 kw @ 35 mph	1	81,953	0	13	316,169	
				2	69,901	0	13	514,936	
				3	38,556	0	13	276,484	
				4	50,618	0	13	177,345	
				Annual	241,028			1,284,934	
-----									
Vestas 15	(H)	184	65 kw @ 35 mph	1	81,953	0	75	1,716,084	
				2	69,901	0	75	2,692,322	
				3	38,566	0	75	1,595,101	
				4	50,618	0	75	1,023,146	
				Annual	241,038			7,026,653	
=====									
Project Total:								8,960,491	
=====									
D. Feeder 3									
Vestas 15	(H)	184	65 kw @ 35 mph	1	72,171	0	97	2,056,388	
				2	61,558	0	97	3,382,798	
				3	33,963	0	97	1,925,513	
				4	44,576	0	97	1,228,295	
				Annual	212,268			8,592,994	
=====									
Project Total:								9,115,481	
=====									

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected Quarterly Production Per Turbine This Quarter	Turbines Installed		Electricity Produced (kwh)
						(kwh)	New	Cum.	(kwh)
<b>TEHACHAPI PASS</b>									
<b>(Kern)</b>									
E. Feeder 5	Vestas 15	(H)	184	65 kw @ 35 mph	1	64,906	0	1	22,320
					2	55,361	0	1	33,283
					3	30,544	0	1	19,928
					4	40,089	0	1	12,783
					Annual	190,900			88,314
	Vestas 15	(H)	184	65 kw @ 35 mph	1	72,171	0	86	1,907,662
					2	61,558	0	86	3,017,830
					3	33,963	0	86	1,713,822
					4	44,576	0	86	1,099,325
					Annual	212,268			7,738,639
	Vestas 17	(H)	227	90 kw @ 35 mph	1	82,569	0	4	146,664
					2	70,427	0	4	235,764
					3	38,356	0	4	147,758
4					50,999	0	4	104,340	
Annual					242,351			634,526	
<b>Project Total:</b>								<b>8,461,479</b>	
F. Feeder 6	Vestas 15	(H)	184	65 kw @ 35 mph	1	64,906	0	19	392,350
					2	55,361	0	19	586,982
					3	30,544	0	19	429,179
					4	40,089	0	19	252,699
					Annual	190,900			1,661,210
	Vestas 15	(H)	184	65 kw @ 35 mph	1	72,171	0	26	586,372
					2	61,558	0	26	1,003,950
					3	33,963	0	26	587,297
					4	44,576	0	26	345,799
					Annual	212,268			2,523,418

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project -----	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected Quarterly Production Per Turbine	Turbines Installed		Electricity Produced (kwh)
						This Quarter (kwh)	New	Cum.	
TEHACHAPI PASS ----- (Kern)									
F. Feeder 6, Con't.									
Vestas 17	(H)	227	90 kw @ 35 mph	1	64,906	0	5	70,341	
				2	55,361	1	6	216,354	
				3	30,544	0	6	126,187	
				4	40,089	0	6	159,864	
				Annual	190,900			572,746	
-----									
Windmatic 15S	(H)	184	65 kw @ 35 mph	1	53,848	0	9	46,606	
				2	45,929	0	9	141,020	
				3	25,340	0	9	87,846	
				4	33,259	0	9	66,476	
				Annual	158,376			341,948	
=====									
Project Total:								5,099,322	
=====									
G. K Site									
Vestas 15	(H)	184	65 kw @ 35 mph	1	40,716	0	49	468,271	
				2	67,338	0	41	1,420,330	
				3	21,924	0	41	649,942	
				4	44,022	0	41	387,505	
				Annual	174,000			2,926,048	
-----									
Vestas 17	(H)	227	90 kw @ 35 mph	1	40,716	0	39	507,007	
				2	67,338	0	37	2,032,517	
				3	21,924	0	37	1,252,694	
				4	44,022	0	37	775,067	
				Annual	174,000			4,567,285	
=====									
Project Total:								7,493,333	
=====									

1986 WIND PERFORMANCE REPORTING SYSTEM

Location/Operator/Project	Turbine Model	Rotor Axis	Rotor Size (M2)	Size (kw)	Quarter; Annual	Projected	Turbines		Electricity
						Quarterly Production Per Turbine This Quarter (kwh)	Installed New	Cum.	Produced (kwh)
TEHACHAPI PASS									
(Kern)									
H. 33 - East	Vestas 17	(H)	227	90 kw @ 35 mph	1	55,809	0	68	2,072,892
					2	92,300	0	68	2,698,755
					3	30,051	0	68	1,624,535
					4	60,340	0	68	1,080,435
					Annual	238,500			7,476,617
	Vestas 17	(H)	227	90 kw @ 35 mph	1	55,809	0	98	1,430,546
					2	92,300	0	98	3,371,937
					3	30,051	0	98	2,370,112
					4	60,340	0	98	1,585,587
					Annual	238,500			8,758,182
	Vestas 17	(H)	227	90 kw @ 35 mph	1	55,809	0	102	2,214,863
					2	92,300	0	102	5,086,367
					3	30,051	0	102	3,362,121
					4	60,340	0	100	2,355,846
					Annual	238,500			13,019,197
	Vestas 17	(H)	227	90 kw @ 35 mph	1	55,809	0	140	2,325,176
					2	92,300	0	140	5,201,884
					3	30,051	0	140	3,264,231
					4	60,340	0	140	1,898,881
					Annual	238,500			12,690,172
Project Total:								41,944,168	

**APPENDIX A  
NON-OPERATING WIND PROJECTS**

The following list of wind projects are currently not being operated by any wind operator. The power purchaser reports submitted to the CEC show that no electricity was bought from any of these projects during this reporting quarter. If any party begins to operate one of these projects, and subsequently receives payments for electricity from a wind power purchaser, then they will become responsible for filing regular quarterly WPRS reports.

The name of these projects, their resource area, previous operator, current contact (if different than previous operator) and quarters they did not operate in 1986.

<u>Project Name</u>	<u>Resource Area/County</u>	<u>Previous Operator</u>	<u>Current Contact</u>	<u>Quarters Not Operating</u>
1. Airtricity	Tehachapi Pass Kern County San Gorgonio Pass Riverside County	Airtricity 100 Commercial Way Tehachapi, CA 93561	Same	4th
2. Altamont-American Partners, Ltd.	Altamont Pass Alameda County	Altamont-American Partners, Ltd. 12760 High Bluff Dr. Suite #370 San Diego, CA 92103	Same	1st
3. Alternative Energy Developments, International	Salinas Valley Monterey County	Alternative Energy Development, Int'l 1349 N. Oliver Dr. Ventura, CA 93001	Same	1st; 2nd; 3rd; 4th
4. Cache Creek Park	Tehachapi Pass Kern County	Wind Source, Inc. 187 E. Wilbur Ave. Suite # 6 Thousand Oaks, CA 91360	Same	4th
5. Cannon 1982 Phase I Program	Tehachapi Pass Kern County	Cannon Capital Group 6920 Miramar Rd. San Diego, CA 92121	Same	2nd; 3rd; 4th

<u>Project Name</u>	<u>Resource Area/County</u>	<u>Previous Operator</u>	<u>Current Contact</u>	<u>Quarters Not Operating</u>
6. Cannon 1983 Phase II Program	Tehachapi Pass Kern County	Cannon Capital Group 6920 Miramar Rd. San Diego, CA 92121	Same	1st; 2nd; 3rd; 4th
7. Desert Wind Partners	San Gorgonio Pass Riverside County	Desert Wind Partners (Address Unknown)	Mindtech 24 Union Jack Suite #3 Marina del Rey CA 90292	1st; 2nd; 3rd; 4th
8. Howden Wind Parks	Altamont Pass Alameda County	Howden Wind Parks 1330 Lincoln Ave. San Rafael, CA 94901	Same	3rd; 4th
9. Illinois Wind Power	Tehachapi Pass Kern County	Illinois Wind Power 666 N. Lakeshore Dr. Suite # 423 Chicago, IL 60611	Same	3rd; 4th
10. Pacheco Wind Park (Previously GE 3)	Pacheco Pass Merced County	Aura Energy Systems 22 Battery St., Ste. 300 San Francisco, CA 94111	West Wind Ind. P.O. Box 1705 Davis, CA 95617	1st; 2nd; 3rd; 4th
11. Ventus Wind Park (SWC I)	San Gorgonio Pass Riverside Co.	Sandberg Wind Corp. 31324 Via Colinas, Ste 114 Westlake Village, CA 91362	Same	1st; 2nd; 3rd; 4th
12. West Coast Wind Power	Altamont Pass Alameda County	West Coast Wind Power 601 California St., Ste 2100 San Francisco, CA 94108	Same	1st; 2nd; 3rd; 4th
13. Wind Generator Parks	Carquinez Strait Solano, Contra Costa County	Wind Generator Parks 7 Wolfback Ridge Rd. Sausalito, CA 94965	Same	4th

<u>Project Name</u>	<u>Resource Area/County</u>	<u>Previous Operator</u>	<u>Current Contact</u>	<u>Quarters Not Operating</u>
14. Wind Energy Tech. Associates (WETA) I	Altamont Pass Alameda County	Fayette P.O. Box 1149 Tracy, CA 95376	Same	1st; 2nd
15. Wind Watt, Inc.	Carquinez Strait Solano, Contra Costa County	Wind Watt, Inc. 1700 Broadway Vallejo, CA 94589	Same	4th
16. Zephyr Park Ltd.	Tehachapi Pass Kern County	Zephyr Park Ltd. 18 Eastwood Court Oakland, CA 94611	Same	2nd; 3rd; 4th

**APPENDIX B  
WIND TURBINE MANUFACTURES**

This Appendix contains the name, address, and phone number of all manufacturers and/or distributors of wind turbines installed in California wind projects as reported for WPRS.

<u>MANUFACTURER/DISTRIBUTOR</u>	<u>COUNTRY OF ORIGIN</u>	<u>TURBINE BRAND NAME(S)</u>	<u>PROJECT(S) WHERE TURBINE IS USED</u>
1. Airmaster c/o: Basin Petroleum Service P.O. Box 1161 Powell, WY 82435 "No Longer Active"	U.S.	Airmaster	45A
2. Airtricity 151 Kalmus Drive Costa Mesa, CA 92626 Phone: (714) 546-5217 "No Longer Active"	Denmark	Windmatic (WM)	3B, 23B, 50A, 52B, 52F
3. American M.A.N. West Coast Office 303 Hegenberger Road, Suite #402 Oakland, CA 94621 Phone: (415) 430-0754	West Germany	Aeroman	37A-D, 48A
4. Arizona Micro-Utilities 1890 E. Greenway Tempe, AZ 85282 Phone: (602) 839-7709	Switzerland	Wenco	26A, 27A
5. Blue Max "No longer in business"	U.S.	Blue Max	42A, 43A
6. Bonus 444 West Ocean Blvd. Suite 1102 Long Beach, CA 90802 Phone: (213) 436-9042	Denmark	Bonus	3A, 4B, 4E, 21A, 24A, 34A, 43A, 49A-B

<u>MANUFACTURER/DISTRIBUTOR</u>	<u>COUNTRY OF ORIGIN</u>	<u>TURBINE BRAND NAME(S)</u>	<u>PROJECT(S) WHERE TURBINE IS USED</u>
7. Bouma Wind Turbines P.O. Box 79483 Houston, TX 77024 Phone: (713) 222-0742	Germany	Bouma	36A, 48A
8. Carter Wind Systems, Inc. Box 405A Burkburnett, TX 76364 Phone: (817) 569-2238	U.S.	Carter	15A, 17A, 23B, 24A 31A, 39A, 43A, 49A
9. Century Design, Inc. 3635 Afton Road San Diego, CA 92123 Phone: (619) 292-1212 "No Longer Active"	U.S.	Century (CT)	36A, 36C
10. Danish Wind Turbines Marsk Stiysvej 4 DK 8800, Viborg DENMARK	Denmark	Windane	34A
11. Danish Windpower P.O. Box 14 DK 4900, Nakskov DENMARK	Denmark	Lolland	43A
12. Danwin A/S Industrivej 12 DK-3000, Helsingor DENMARK	Denmark	Danwin (H)	5B
13. Earth Energy Systems Inc. 250 Prairie Center Dr., St. 390 Eden Prairie, MN 55344	U.S.	Jacobs	19A-C

<u>MANUFACTURER/DISTRIBUTOR</u>	<u>COUNTRY OF ORIGIN</u>	<u>TURBINE BRAND NAME(S)</u>	<u>PROJECT(S) WHERE TURBINE IS USED</u>
14. Enertech Corporation P.O. Box 1085 Norwich, VT 05055 Phone: (802) 649-1145 "No Longer Active"	U.S.	Enertech	2B, 7A, 12A, 14A, 18A, 22A, 25B, 30A, 49B
15. Energy Sciences, Inc. 6591 Sierra Lane Dublin, CA 94568 Phone: (415) 833-0400 "No Longer Active"	U.S.	ESI	2A, 7B, 8A, 19A, 28A-C, 41A, 46A, 47A
16. Fayette Manufacturing Corp. P.O. Box 1149 Tracy, CA 95376 Phone: (415) 443-2929	U.S.	Fayette	4A-J
17. FloWind Corporation 21414 68th Avenue South Kent, WA 98032 Phone: (206) 872-8500	U.S.	FloWind (F)	5A-B, 40A-B, 43A
18. HMZ Belgium N.V. Rellestraat 3 Industrie Zone 5 3800 Sint-Truiden BELGIUM	Belgium	HMZ	10A
19. Holec Power Systems, Inc. P.O. Box 2227 Livermore, CA 94550 Phone: (415) 449-9960	Denmark	Polenko (WPS)	3B, 52B
20. James Howden and Company 195 Scotland Street Glasgow G5 9PJ SCOTLAND	Scotland	Howden (HWP)	2B, 6A

<u>MANUFACTURER/DISTRIBUTOR</u>	<u>COUNTRY OF ORIGIN</u>	<u>TURBINE BRAND NAME(S)</u>	<u>PROJECT(S) WHERE TURBINE IS USED</u>
21. Int'l. Dynergy Systems 777 E. Taquitz-McCallum Suite 333 Palm Springs, CA 92262 Phone: (714) 849-5766 "No Longer Active"	U.S.	Windshark, Dynergy	23B, 27A-B
22. Maetecnic 1600 Orange Street Alhambra, CA 91803-1622 Phone: (818) 284-5875	U.S.	Maetecnic	23B
23. Micon Energy Systems 1660 Hotel Circle Suite 400 San Diego, CA 92108 Phone: (619)297-8066	Denmark	Micon	4B, 4E, 7C-G, 13A, 23B, 24A, 25A-C, 29A, 31A-C, 43A, 44A
24. Micon Wind Turbine 2352 Research Drive Livermore, CA 92550 Phone: (415)449-1992	Denmark	Novenco	29A
25. Nordtank, Inc. 860 Via de la Paz Suite D-3 Pacific Palisades, CA 90272 Phone: (213) 459-8543	Denmark	Nordtank (NTV)	2A-B, 3A, 19C, 23B, 35A, 36A, 43A, 44A
26. Scandia Wind, Inc. 42625 N. Sierra Hwy. Lancaster, CA 93534 Phone: (805) 945-0611	West Germany	Riisager	23B
27. Starwind Maintenance 103 N. Hwy 101 Suite 2001 Encinitas, CA 92024	U.S.	Starwind	26A

<u>MANUFACTURER/DISTRIBUTOR</u>	<u>COUNTRY OF ORIGIN</u>	<u>TURBINE BRAND NAME(S)</u>	<u>PROJECT(S) WHERE TURBINE IS USED</u>
28. Sumitomo Machinery Corp. 2143 E. "D" Street Ontario, CA 91764	Japan	Sumitomo	40A
29. U.S. Windpower 500 Sansome Street Suite 600 San Francisco, CA 94111 Phone: (415) 398-3825	U.S.	U.S. Windpower (USW)	9A-D
30. Vawtpower, Inc. 134 Rio Rancho Drive Rio Rancho, NM 87124 Phone: (505) 892-9463 "No Longer Active"	U.S.	Vawtpower (VP)	20A
31. Vestas North American, Ltd. P.O. Box 276 Tehachapi, CA 93561 Phone: (805) 822-6839	Denmark	Vestas	2A, 11A, 32A-B, 43A, 52B-H
32. Vanquard "No Longer Active"	U.S.	Vanquard	28C
33. Wecs-Tec "No Longer Active"	U.S.	Wecs-Tec	43A
34. Wind Energy Group, Ltd. 345 Ruislip Rd. Southall, Middlesex, UB1 2QX ENGLAND	England	Wind Energy Group (WEG)	9A
35. Wind Matic 17900 Sky Park Circle Suite 106 Irvine, CA 92714	U.S.	Windmatic	26A, 45A

<u>MANUFACTURER/DISTRIBUTOR</u>	<u>COUNTRY OF ORIGIN</u>	<u>TURBINE BRAND NAME(S)</u>	<u>PROJECT(S) WHERE TURBINE IS USED</u>
36. Wind Power Systems 9279 Cabot Drive San Diego, CA 92126 Phone: (619) 578-0241	U.S.	Storm Master	23A, 27A, 36B, 38A, 49A, 52A-B
37. Wind World Strandvejon 146-148 DK 5600 Faaborg DENMARK	Denmark	Windworld	2B
38. Windtech Inc. P.O. Box 837 Glastonbury, CT 06033 Phone: (203) 659-3786	U.S.	Windtech	16A, 23B, 34A, 36C, 51A

APPENDIX C

REGULATIONS  
CALIFORNIA ADMINISTRATIVE CODE  
TITLE 20, CHAPTER 2, SUBCHAPTER 3, ARTICLE 4

**WIND PROJECT PERFORMANCE REPORTING SYSTEM**

Adopted  
November 28, 1984

### 1381 Title and Purpose.

The purpose of this article is to specify performance reporting requirements for operators of specified wind energy projects and for entities which purchase electricity from the projects and to identify requirements for the Commission to publish the information.

Authority cited: Sections 25213 and 25218(e),  
Public Resources Code Reference: Sections  
25216.5(d), 25601(c), and 25605, Public Resources  
Code.

### 1382 Definitions.

For the purposes of this article, the following definitions shall apply unless the Commission has clearly indicated otherwise in these regulations:

- (a) "Contingency Costs": the costs which may be paid by investors after the initial investment, but which are not paid out of project revenues. Contingency costs may include such costs as turbine repairs or annual insurance fees paid during the reporting year.
- (b) "Cumulative Number of Turbines Installed": the cumulative total number of turbines of a given model installed by the end of the reporting period.
- (c) "Electricity Produced (kWh)": the total kilowatt hours actually produced by all of the turbines of a particular turbine model contained within the wind project where the electricity is delivered to a wind power purchaser for sale during the reporting period.

- (d) "Name of Wind Project": the name used for the project in any prospectus, offering memorandum, or sales literature.
- (e) "Number of Turbines Installed During Reporting Period": the number of additional turbines installed during the calendar quarter of the reporting period.
- (f) "Project Cost": the total cost of the turbines installed during the reporting period. Project cost includes all debt and equity investment in the project (including non-recourse notes) and should be comparable to the project cost shown in the offering memorandum, prospectus or sales literature published by the developer.
- (g) "Projected Annual Production Per Turbine (kWh)": the annual average kWh production, by model, predicted by the developer in its prospectus, offering memorandum, or sales literature. This figure may be revised annually prior to the first reporting quarter of each year and shall be based upon average site specific wind distributions and the wind turbine power curves.
- (h) "Projected Quarterly Production Per Turbines (kWh)": the quarterly breakdown of the Projected Annual Production Per Turbine.
- (i) "Rotor (M<sup>2</sup>)": The rotor swept area in square meters for each turbine model.
- (j) "Size (kW)": the turbine manufacturer's published kW rating at a specific miles per hour (mph) with wind speed shown in parentheses.

- (k) "Turbine Model": the common or manufacturer's name for the turbine if that is a commonly used term for the model of a specific rotor (M<sup>2</sup>) and size (kW).
- (l) "Wind Power Purchaser": any electricity utility or other entity which purchases electricity from a wind project, as defined in this section.
- (m) "Wind Project": one or more wind turbine generators installed in California with a combined rated capacity of 100 kW or more, the electricity from which is sold to another party.
- (n) "Wind Project Operator": any developer or operator who directly receives payments for electricity from the wind power purchaser.

Authority cited: Sections 25213 and 25218(e), Public Resources Code Reference: Sections 25216.5(d), 25601(c), and 25605, Public Resources Code.

### 1383 Reporting Period

For the purpose of this article, and unless otherwise indicated, the reporting period shall be each calendar quarter, beginning with the first quarter following the effective date of this article. Quarterly reports filed pursuant to this article shall be submitted not later than the forty-fifth day following the close of each reporting period. Reports shall be deemed submitted as of the date of postmark, provided that the report is properly and legibly completed.

Authority cited: Sections 25213 and 25218(e), Public Resources Code Reference: Sections 25216.5(d), 25601(c), and 25605, Public Resources Code.

### 1384 Requirements to File

The information required by this article shall be submitted to the Commission by wind project operators and wind power purchasers. Reports shall be made on forms prescribed by order of the Commission and according to instructions accompanying the forms. A copy of the wind project prospectus, offering memorandum, and other sales literature shall accompany the initial report. All reports must be verified by a responsible official of the firm filing the report. Requests for confidentiality may be filed pursuant to 20 Cal. Admin. Code section 2501 et. seq.

Authority cited: Sections 25213 and 25218(e)  
Public Resources Code Reference: Sections 25216.5(d), 25601(c), and 25605, Public Resources Code.

### 1385 Information Requirements: Wind Project Operators

Each operator firm submitting information pursuant to the provisions of the article shall include the following:

- (1) Name of wind project
- (2) Name and address of operator
- (3) Name and phone number of contact person at operator's firm
- (4) Operator's name as shown on power purchase contract (if different than 2 above)
- (5) Name of wind power purchaser
- (6) Purchase contract number
- (7) Resource area and county
- (8) Dates of reporting period

- (9) Turbine model
- (10) Cumulative number of turbines installed
- (11) Number of turbines installed during reporting period
- (12) Rotor (M<sup>2</sup>)
- (13) Size (kW) at stated wind speed
- (14) Project cost
- (15) Additional project contingency costs for which investors may be responsible
- (16) Projected quarterly production per turbine (kWh)
- (17) Projected annual production per turbine (kWh)
- (18) Electricity produced (kWh)
- (19) Turbine manufacturer's name and address
- (20) Operator comments, if any

Authority cited: Sections 25213 and 25218(e), Public Resources Code Reference: Sections 25216.5(d), 25601(c), and 25605, Public Resources Code.

1386 Information Requirement: Wind Power Purchaser

Each wind power purchaser submitting information pursuant to the provisions of this article shall include the following:

- (1) Name of purchaser's firm
- (2) Name and phone number of contact person at purchaser's firm
- (3) Date of report
- (4) Name of wind project operator
- (5) Number of contract with wind project operator
- (6) kWh's produced during reporting period
- (7) Dates of reporting period
- (8) The maximum MW's which the operator can deliver to the purchaser as specified in the power sales agreement.
- (9) Purchaser comments, if any

Authority cited: Sections 25213 and 25218(e), Public Resources Code Reference: Sections 25216.5(d), 25601(c), and 25605, Public Resources Code.

1387 Publication of Data

The Commission staff shall compile and distribute, on a quarterly basis, the information reported by wind project operators and purchasers. Cost data will be published by the Commission in an aggregated form to the extent necessary to assure confidentiality. The final publication of each year shall combine the performance data for that year. The publication shall designate the name of any wind project operator from whom performance data is not received.

Authority cited: Sections 25213 and 25218(e), Public Resources Code Reference: Sections 25216.5(d), 25601(c), and 25605, Public Resources Code.

1388 Failure to Provide Information

The Commission may, after notifying any person of the failure to provide information pursuant to this article, take such action to secure the information as is authorized by any provision of law, including, but not limited to, Public Resources Code section 25900.

Authority cited: Sections 25213 and 25218(e), Public Resources Code Reference: Sections 25216.5(d), 25601(c), and 25605(e), and 25900, Public Resources Code.

1389 Exemptions

Operators of wind projects of less than 100 kW  
rated capacity or operators who do not offer  
electricity for sale are exempt from this article.

Authority cited: Sections 25213 and 25218(e),  
Public Resources Code Reference: Sections  
25216.5(d), 25601(c), and 25605, Public Resources  
Code.