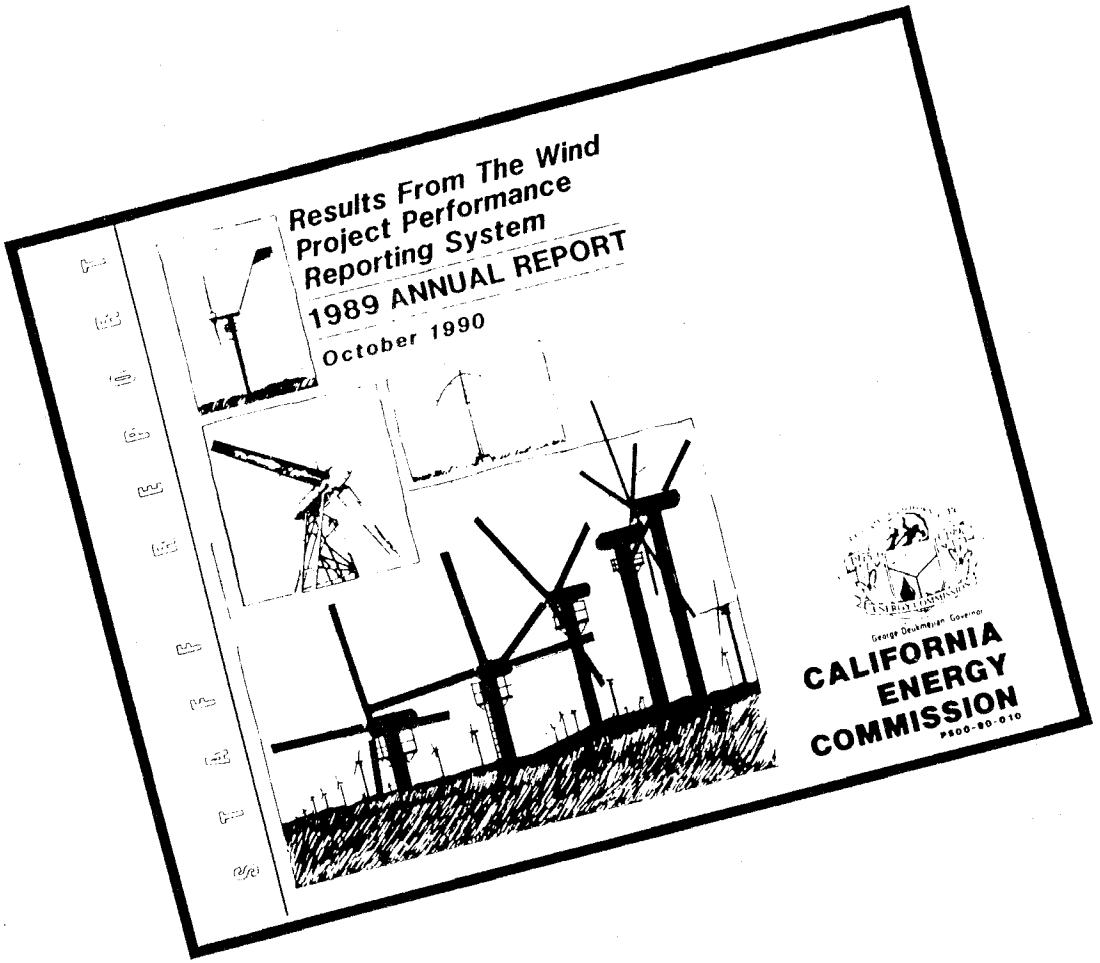

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ACKNOWLEDGEMENTS

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 in conjunction with the state's wind industry and the American Wind Energy Association (AWEA) under the direction of *Nancy Deller*, Deputy Director, Energy Technology Development Division; and *Michael DeAngelis*, Manager, Research and Development Office.

The cover layout and design was provided by Tino Flores.

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1. INTRODUCTION

Although the wind industry is very young, it has already made a substantial impact on the California energy market. Today, California has more than 1300 megawatts (MW) of wind generating capacity, and in 1989 produced enough output to meet the annual electricity needs of 350,000 typical California homes. As a result, California has become the leader in wind development with the predominant share of the world's total generating capacity.

As the industry began exponential growth in 1981, the California Energy Commission 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 Energy Commission. The Commission has used this information to complete quarterly and annual reports for five years.

This annual report provides a detailed compilation of all 1989 reported data. From this data, Energy Commission staff have summarized wind industry performance information and production and capacity trends. Tables are 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 collected wind data for five years. A complete industry evaluation should consider all of this data rather than any single year. 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 has not implemented 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. Analysis of the data reported since 1985 confirms that the newer equipment is typically more efficient and reliable. Lastly, performance data does not consider other important variables such as cost per kW, expected operation and maintenance costs, 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 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 Commission 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 that 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. Although included in previous WPRS reports, aggregate cost data is not included in this 1989 report. This is because the cost data reported for new capacity was too limited to provide an accurate industry cost profile. Lastly, WPRS reports are not able to always differentiate between old and new turbine performance. This is because turbines are often reported in groups combining old and new machines. However, where new turbine performance could be analyzed separately, it is evaluated to track any technology improvements.

3. WPRS IMPLEMENTATION ISSUES

A number of problems encountered and resolved the first two years of WPRS reporting 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.

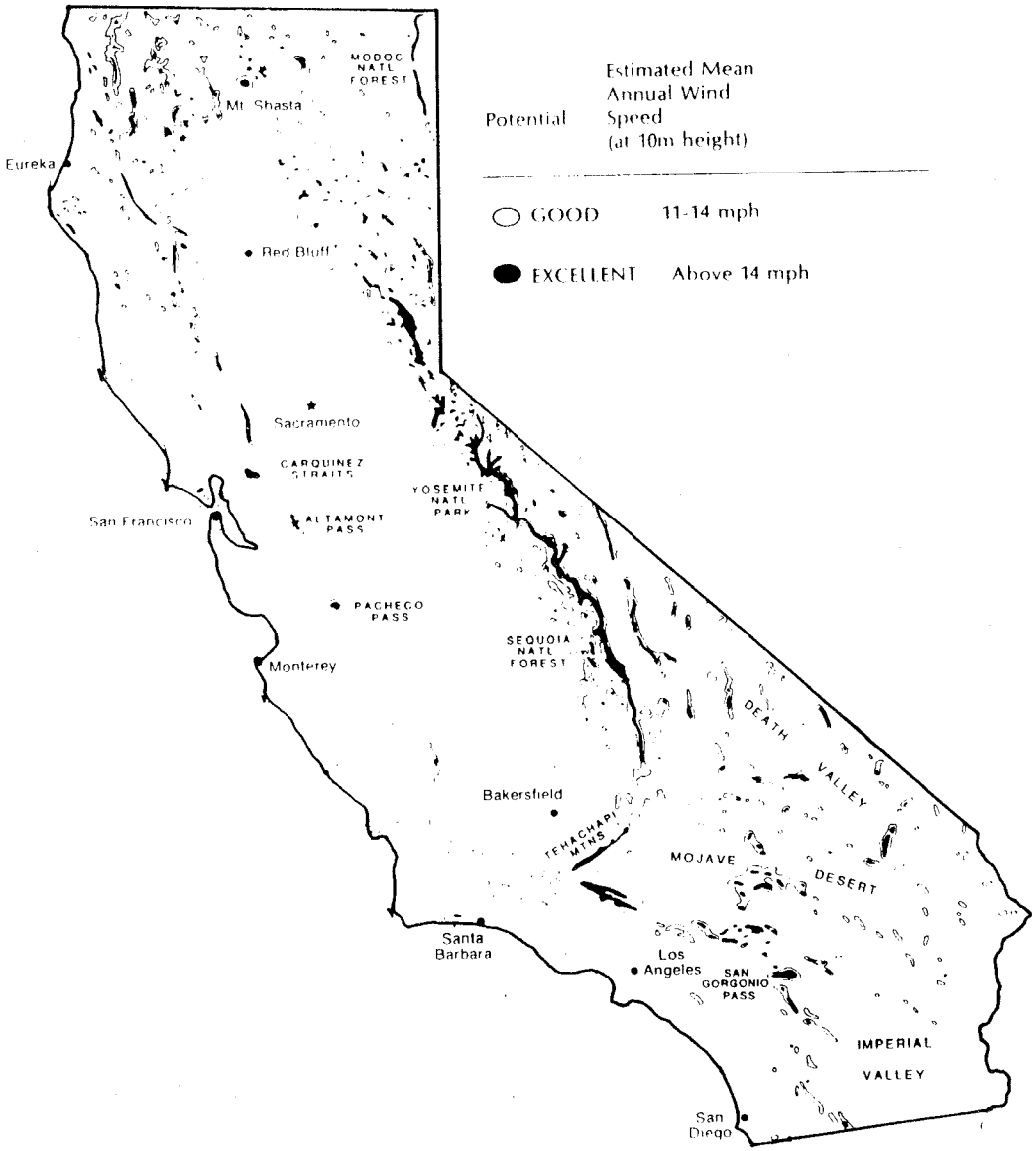
Operators who failed to file. Utility quarterly reports inform Commission staff of all wind farm operators with projects rated 100 kW or greater who have sold power and are therefore required to submit WPRS reports. Those operators that sold power but did not submit reports were noted as "failed to file." By the end of the year, eight operators had failed to file. Depending on the circumstances, Commission 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. In these cases, the value "0" has been used. 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 Gorgonio 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/m2), and "excellent" above 300 W/m2.

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 1,302 megawatts was reported operational during the fourth quarter of 1989 to the WPRS program. Although this total capacity represents substantial growth since the beginning of 1985 when there was just over 500 MW, it also represents a substantial leveling off since the end of 1986 when there was 1,235 MW. One possible explanation for this trend is that the attrition of older turbines installed between 1981 and 1985 may be counteracting the limited amount of new capacity installed since 1987. Many early turbines were often manufactured and/or installed hastily due to time constraints. This is because investor financing was typically available late in the calendar year, but projects had to be completed by the end of the year to qualify for tax incentives. The authors expect this attrition to continue in the near future.

Electricity Output. In 1989, the California wind industry produced over 2 billion kWh of electricity. This is enough power to meet the annual electricity needs of almost 350,000 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 62% of the total output it projected for 1989. 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 17% since 1985 (45%).

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. Note, however, that the American Wind Energy Association has completed development of voluntary standards for testing wind turbines. 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. Only operating turbines were used to calculate capacity factors so that the performance results would not be skewed by 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 new turbines are not likely to operate for the entire quarter they are installed. In addition, new equipment typically needs a "debugging" period before it operates at full rated power.

The resulting statewide capacity factor for 1989 was 18%. This is substantially below 20 to 30% capacity factors cited for wind turbines in most technical

reports. However, it represents almost a 40% increase over the 13% capacity factor from the first two WPRS years (1985 and 1986), and a 6% increase from the 17% capacity factor for 1988. The upper limit capacity factor estimated for wind technology ranges from 30 to 35%. Indeed, one project consistently achieves this upper limit including an annual capacity factor of 39% this year.

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 25%, or almost 46% higher than the industry as a whole *(Figure 1)*.

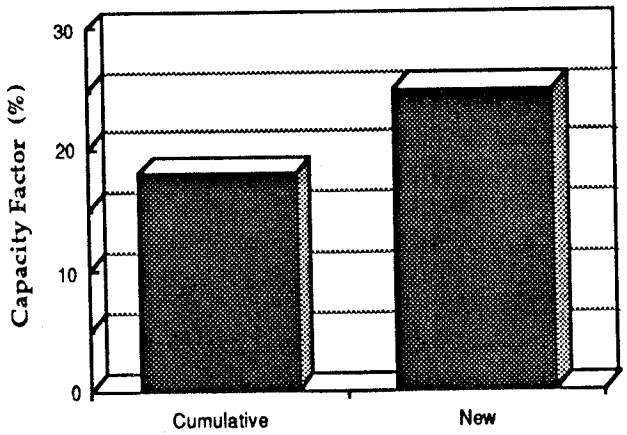


Figure 1: Capacity Factors for New and Cumulative Turbine Stock

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 for all turbines, an asterisk has been marked next to the value on all summary tables.

For 1989, the average kWh per square meter annual production was 685 or 7% higher than for 1988 (639). Where turbines installed after 1985 could be isolated, the resulting kWh per square meter increased almost 25% to 852. *(Figure 2)*

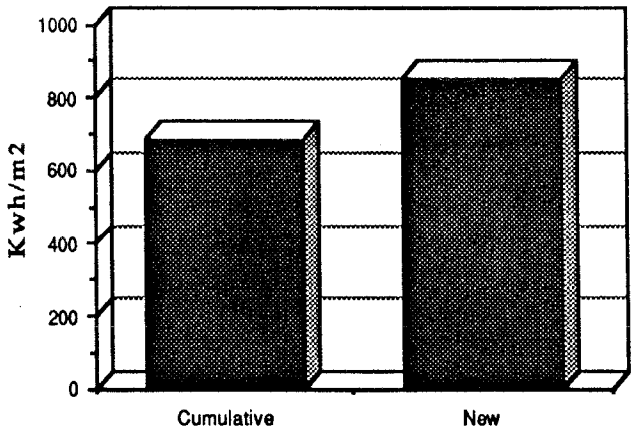


Figure 2: Kwh Per Square Meter Production for New and Cumulative Turbine Stock

5.B INDUSTRY PRODUCTION AND CAPACITY TRENDS

Statewide

Although the growth rate of wind development has declined substantially since the expiration of federal and state tax credits at the end of 1985 and 1986 respectively, it has shown a small increase since 1988. Specifically, only 64 MW of new capacity had been installed in 1989 compared to almost 400 MW of new capacity was installed in 1985 when developers rushed to take advantage of expiring tax credits. Note that only 59 MW of new capacity was installed in 1988. The net result is that total cumulative capacity has increased from 1,202 MW in 1988 to 1,302 MW in 1989 *(Figure 3)*.

Wind output in 1989 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 almost 75% of all annual output was produced in the second and third quarters of 1989 *(Figure 4)*. This is a good match to California's high seasonal peak demand for electricity during summer months. However, the diurnal time-of-use profile for wind generated electric power continues to be poorly matched to utility peak demand periods. This is discussed further in **Section 5.C**.

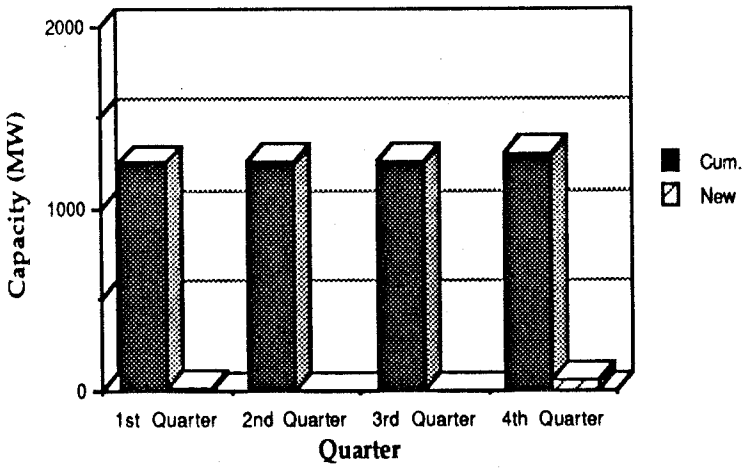


Figure 3: Statewide Wind Capacity

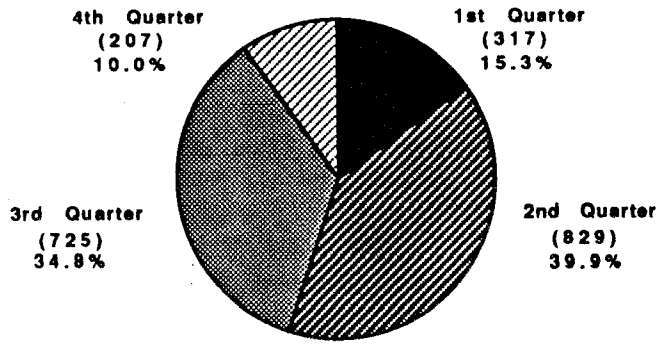


Figure 4: Statewide Wind Output
(millions of kWh)

Although total capacity has only increased 100 MW since 1988, productivity is steadily increasing. Total output in 1989 increased more than 14% since 1988 and over 200% since 1985 *(Figure 5)*. Quarterly capacity factors were consistent with the California wind resource profile just discussed. The capacity factors were 11, 28, 25, and 8 percent respectively for the first, second, third, and fourth quarters. The total annual capacity factor has increased significantly from earlier years *(Figure 6)*. The annual average statewide capacity factor for 1989 was 18% compared to 17% for 1988, 16% for 1987, and 13% for both 1986 and 1985.

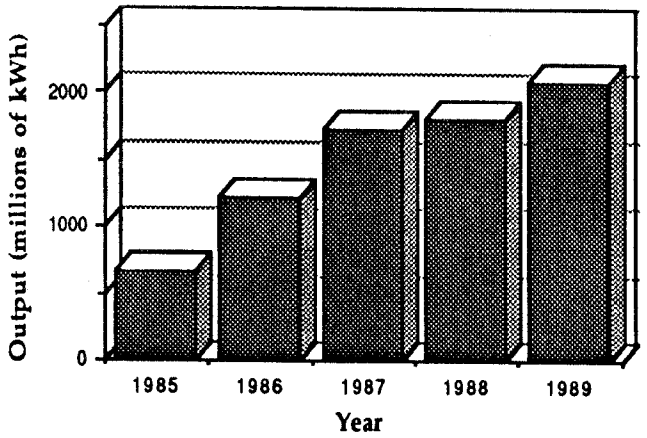


Figure 5: Statewide Wind Output

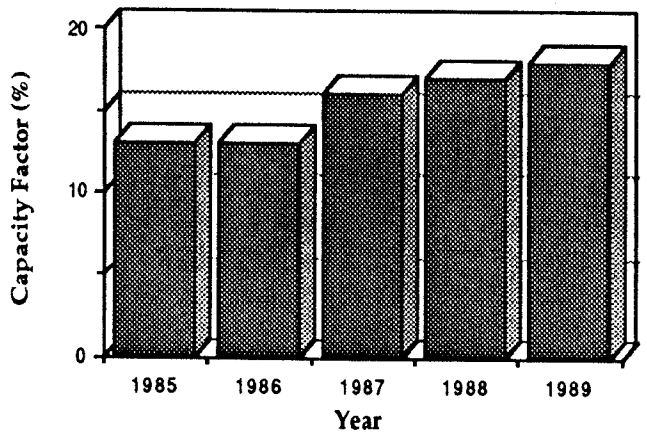


Figure 6: Statewide Capacity Factors

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, 51% of all capacity is in the Altamont Pass, 17% is in San Gorgonio Pass and 32% is in Tehachapi Pass *(Figure 7)*. Growth as a percent of existing capacity was highest in San Gorgonio (11%) followed by Tehachapi (7%) and Altamont (2%). Quantitatively, almost 45% of all new capacity was developed in the Tehachapi Pass. The kWh output and percent of total statewide output for each resource area shown in *Figure 8*. Compared with the capacity distribution from *Figure 7*, San Gorgonio (25% output vs. 17% capacity) produced a higher proportion of output while Altamont (47% output vs. 51% capacity) and Tehachapi (28% output vs. 32% capacity) produced a lower proportion of output.

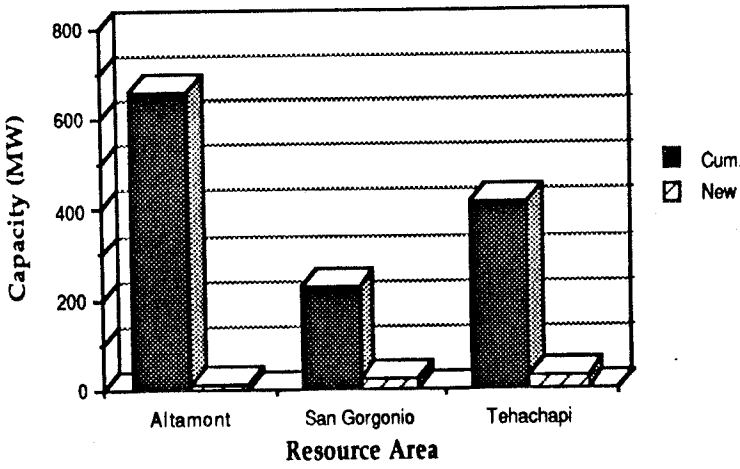


Figure 7: Resource Area Capacity

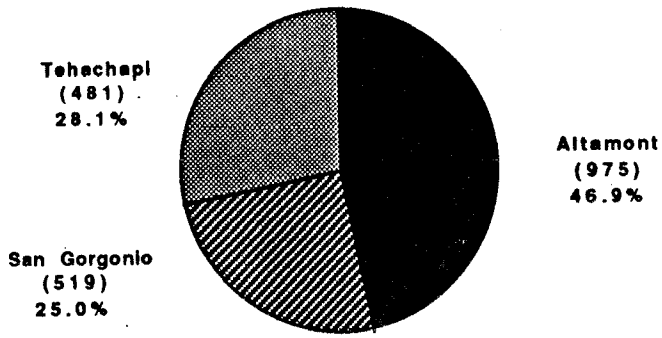


Figure 8: Resource Area Output (millions of kWh)

Among the three largest resource areas, San Gorgonio had the highest capacity factor (25%), followed by Tehachapi (17%) and Altamont (16%) *(Figure 9)*. 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. In addition, it is important to note that two very large developers significantly impact Altamont's performance with more than 230 MW of capacity averaging only a 6% average capacity factor.

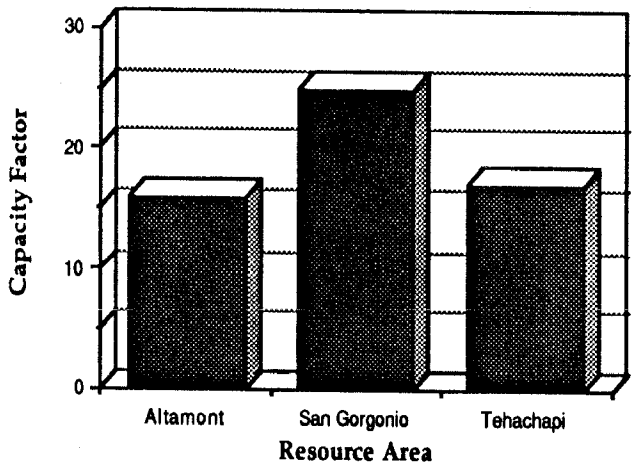


Figure 9: Capacity Factor by Resource Area

Turbine Size

Although many industry specialists predict that turbines in the 300 kW size range will be the trend for future wind development, 1989 data continues to indicate that 51 to 100 kW is still the dominant size category. This turbine size accounted for more than 60% of the cumulative wind capacity. This year however, the larger turbine sizes (151-200 kw and 200+ kw) accounted for almost 75% of all new capacity *(Figure 10)*. The capacity percentages for all turbine size categories are: 5% for 0-50 kW, 61% for 51-100 kW, 18% for 101-150 kW, 5% for 151-200 kW and 11% for greater than 200 kW. The new capacity percentages for each turbine size category are: 0% for 0-50 kw, 19% for 51-100 kw, 7% for 101-150 kw, 35% for 151-200 kw, and 39% for 200+ kw.

The capacity factors were significantly higher and most improved for the 101-150 turbine size category *(Figure 11)*. The actual capacity factors by turbine size category were: 16% for 0-50 kW, 18% for 51-100 kW, 20% for 101-150 kW, 23% for 151-200 kW and 11% for greater than 200 kW.

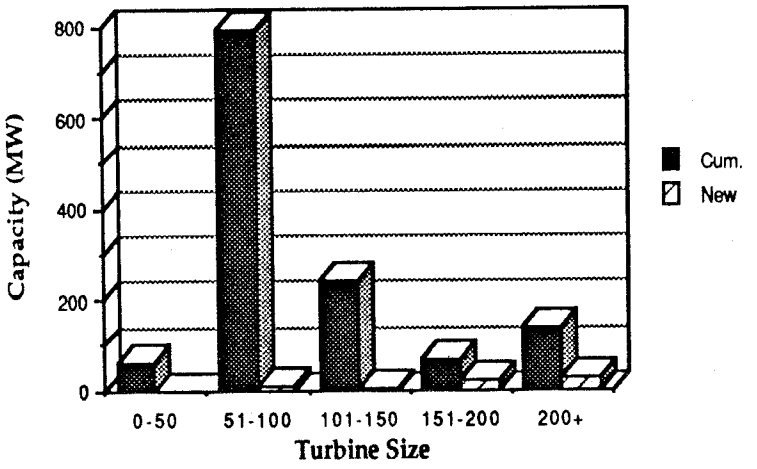


Figure 10: Capacity by Turbine Size

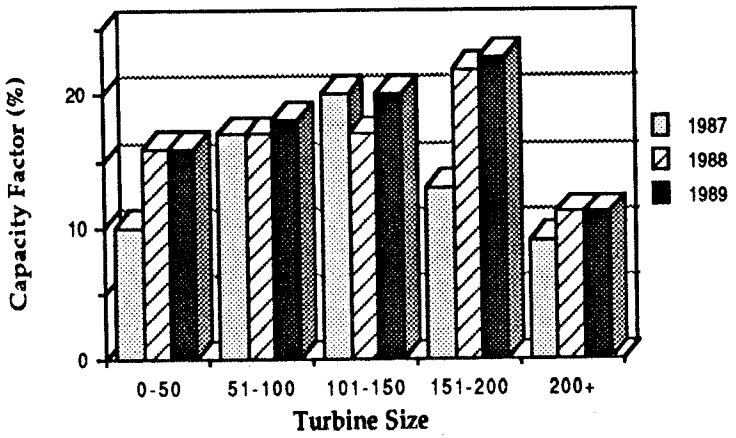


Figure 11: Capacity Factor by Turbine Size

Turbine Types

Based on the data reported, Energy Commission were 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 93% of all capacity and 100% of new capacity *(Figure 12)*. Comparing performance, horizontal axis turbines had a 111% higher capacity factor than vertical axis turbines (19% v. 9%) *(Figure 13)*.

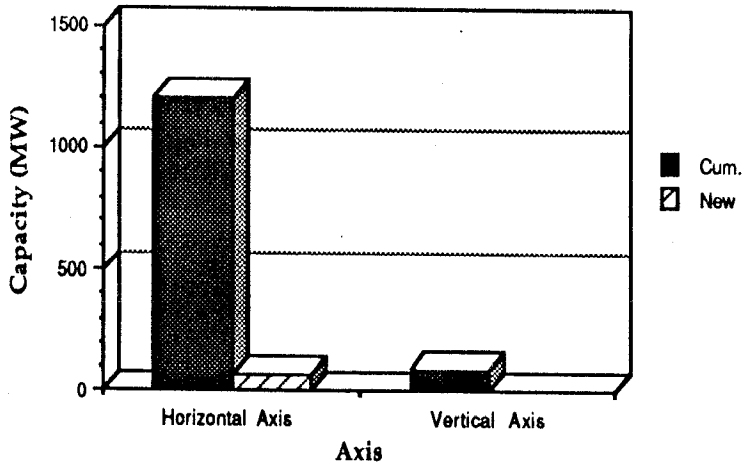


Figure 12: Capacity by Turbine Axis

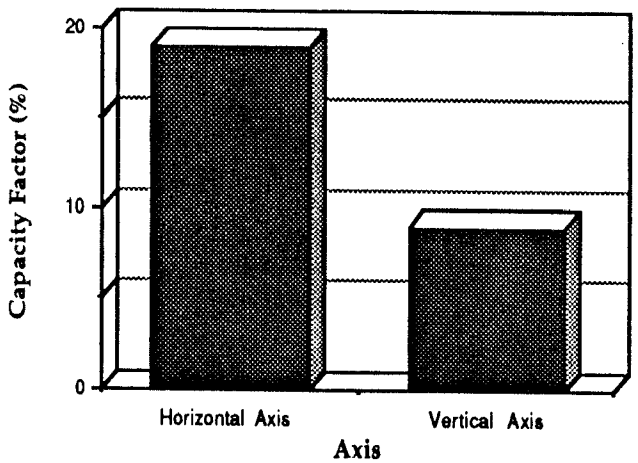


Figure 13: Capacity Factors by Turbine Axis

Similarly, kWh per square meter performance results were also much higher for horizontal axis turbines (696 vs. 497), but to a less degree than capacity factor performance *(Figure 14)*.

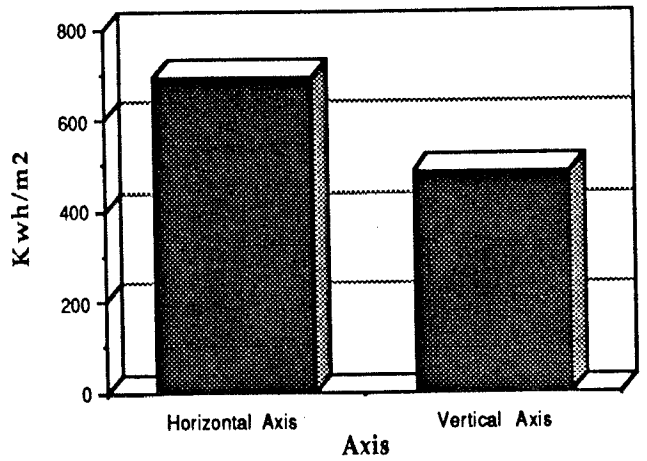


Figure 14: Kwh Per Square Meter Production by Turbine Axis

Domestic and Foreign Turbines

There has been widespread interest in how domestic and foreign turbines compare. At the end of 1989, there were 674 MW of domestic turbine capacity compared to 628 MW of foreign turbine capacity. New capacity was predominantly foreign with 53 megawatts of new capacity compared to 11 megawatts of new domestic capacity *(Figure 15)*. The foreign turbine share of total capacity after increasing from 33% in 1985 to 45% at the end of 1986, had slipped to 42% at the end of 1988, but was up to 48% at the end of 1989. This increase is the result of new foreign turbine capacity accounting for 83% of all new capacity in 1989. In contrast, foreign turbine new capacity only accounted for 13% of all new capacity in 1988 *(Figure 16)*.

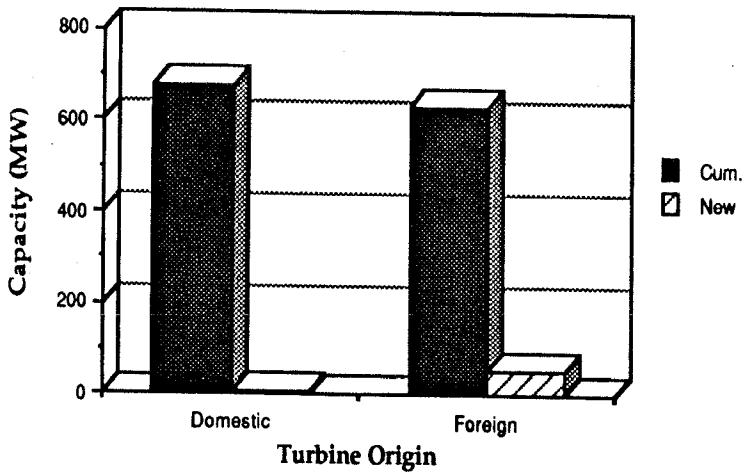


Figure 15: Capacity by Origin

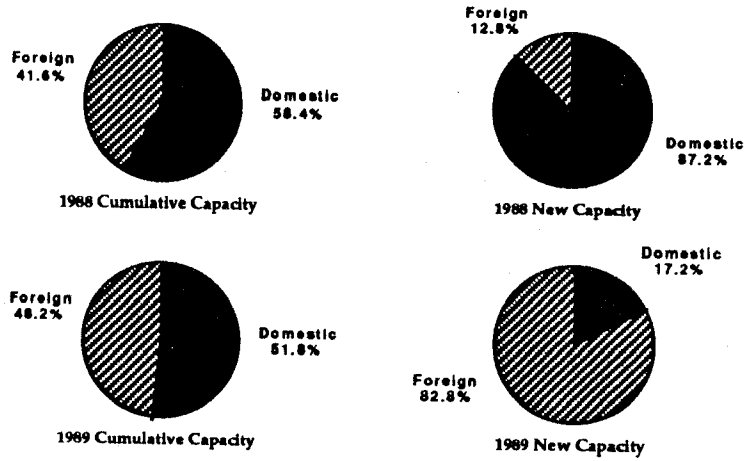


Figure 16: Capacity Distribution by Origin

It is important to note that new foreign turbine capacity since 1985 accounts for approximately 83% of the total foreign capacity while new domestic capacity from this same two year period represents 63% of total domestic capacity. Thus, foreign turbine performance results benefit from considerably newer machines. In addition, two large developers in Altamont Pass have more than 230 megawatts of domestic turbine capacity with only a 6% average capacity factor that brings down domestic turbine performance. As a result, the capacity factor for foreign turbines (21%) was 40% higher than for domestic turbines (15%). However, if the low performing turbines manufactured by the two large operators just mentioned are eliminated from the domestic turbine data-base, the adjusted domestic turbine performance (20%) almost equals foreign turbines *(Figure 17)*. When using a kWh per square meter analysis to measure performance, domestic turbines were only 5% lower than foreign turbines without any adjustments *(Figure 18)*. A reason why kWh per square meter performance is comparatively better than capacity factor performance for domestic turbines is that rated capacities appeared to be overstated for domestic turbines, especially the older models.

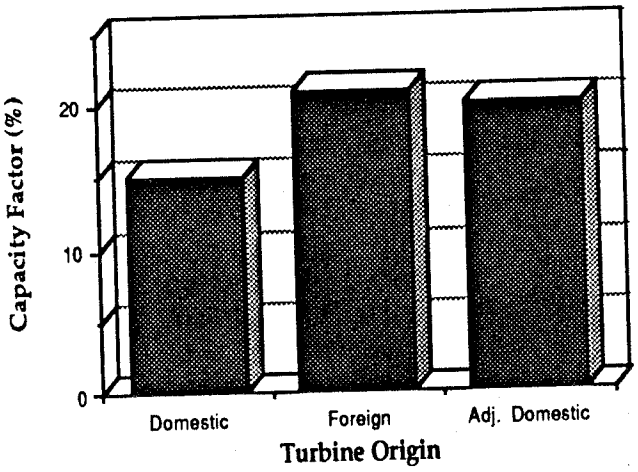


Figure 17: Capacity Factor by Origin

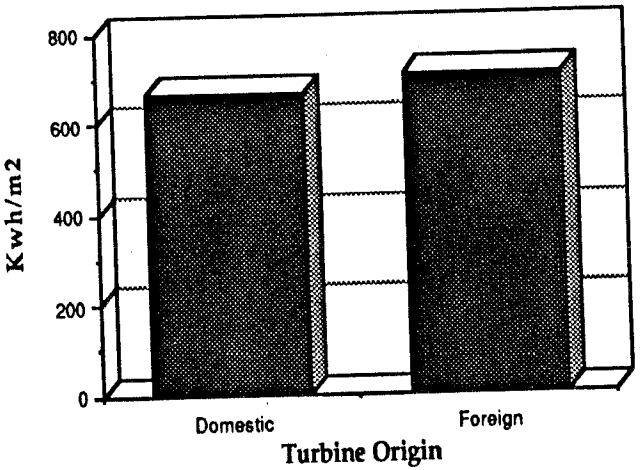


Figure 18: Kwh Per Square Meter Production by Origin

The Ten Largest Wind Turbine Manufacturers

The ten largest wind turbine manufacturers represent almost 87% of the California wind generating capacity. The four largest manufacturers alone (U. S. Windpower, Vestas, Micon, and Fayette) account for 59% 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 Danwin (30%), Bonus (26%), and Mitsubishi (MWT) (24%), followed by Nordtank (22%), and U.S. Windpower (20%), Vestas (20%), and Micon (20%). 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 foreign machines.

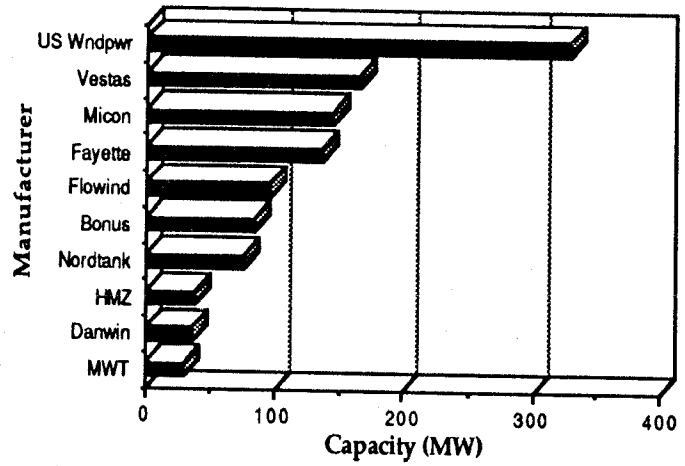


Figure 19: Cumulative Capacity for 10 Largest Turbine Manufacturers

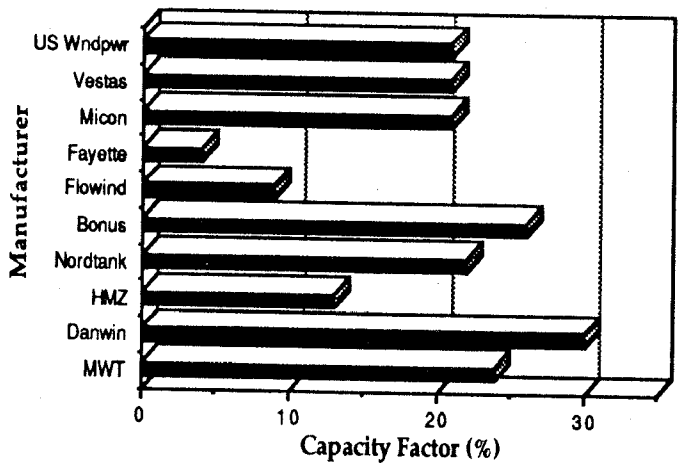


Figure 20: Capacity Factors for 10 Largest Turbine Manufacturers

The annual kWh per square meter results are shown for the ten largest manufacturers in *Figure 21*. The manufacturers with the best results are Mitsubishi (MWT) (1053), Danwin (974), Bonus (862), and U.S. Windpower (811).

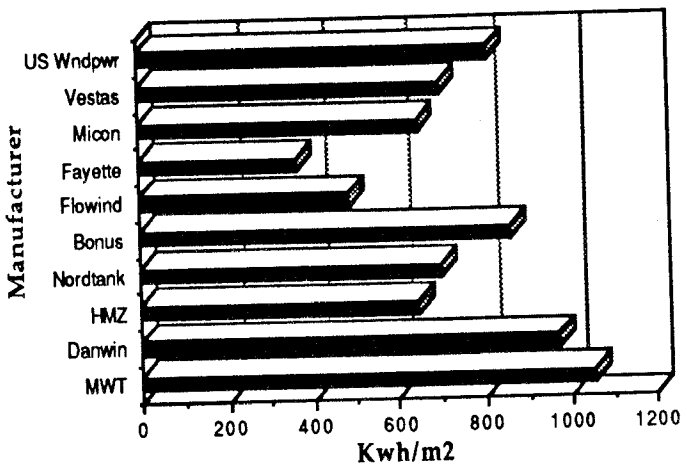


Figure 21: Kwh Per Square Meter Production for 10 Largest Turbine Manufacturers

The Five Largest Wind Project Operators

As in the past, this report focuses on just the five largest operators due to industry consolidation and growth primarily limited to major developers. In fact, the five largest wind project operators (U.S. Windpower, SeaWest, Zond, Fayette, and FloWind) represent almost 75% of the total California wind generating capacity *(Figure 22)*.

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 (23%), U.S. Windpower (21%), and Zond (20%). It should also be noted that one smaller operator, San Gorgonio Farms (not shown in Figures 22 and 23), has consistently produced the highest capacity factors every year WPRS data has been published, including 39% for 1989. This project is significant, because it has consistently demonstrated the potential of wind technology performance when developers combine quality machines and a good wind resource site.

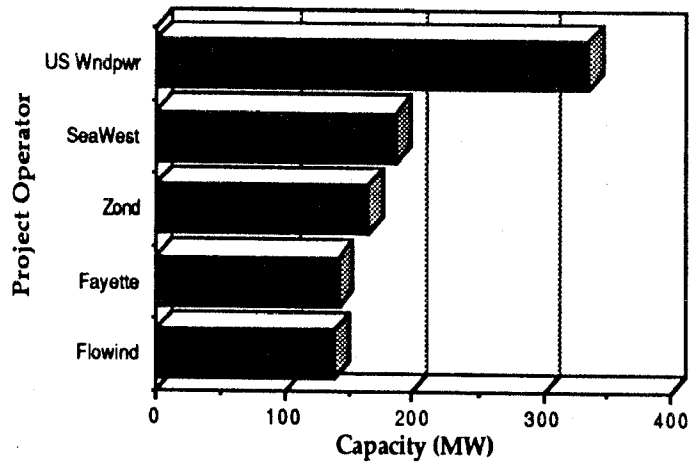


Figure 22: Cumulative Capacity for 5 Largest Project Operators

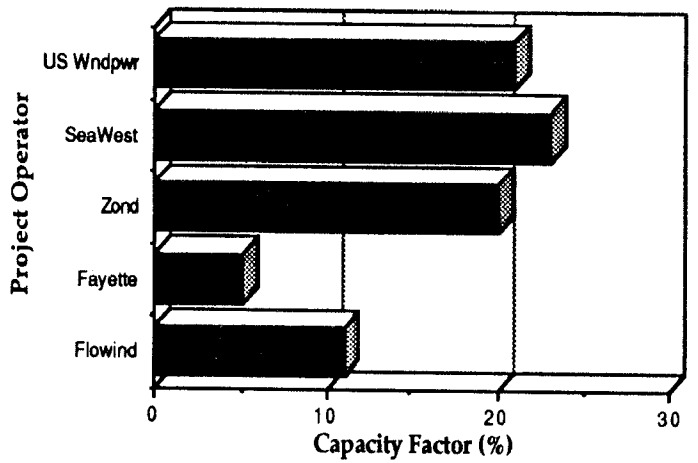


Figure 22: Capacity Factors for 5 Largest Project Operators

Annual kWh per square meter results for the five largest operators are shown in *Figure 24*. Among these operators, U.S. Windpower (816), SeaWest (714), Zond (680), and FloWind (647) had the best performance. Note that among all operators, San Gorgonio Farms (not shown on Figure 24) again had the best performance with 1,223 kWh per square meter.

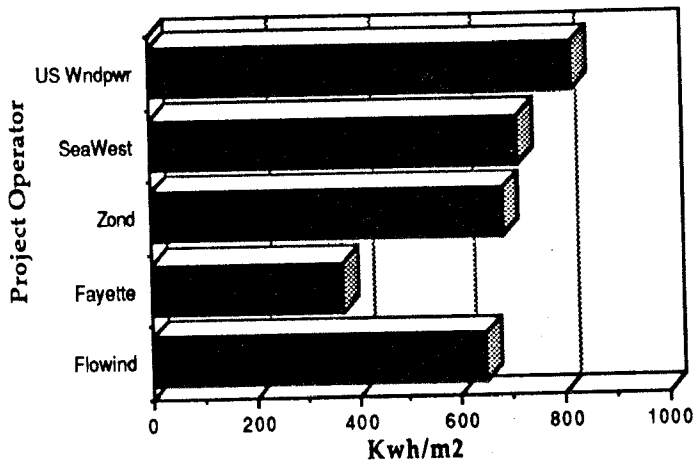


Figure 24: Kwh Per Square Meter Production for 5 Largest Project Operators

5.C TIME-OF-USE PRODUCTION

The time-of-use distribution for wind generated electricity during California utility peak seasonal demand months (May-September) is illustrated in *Figure 25* . This profile is based on tabulated utility billing data supplied by a majority of the wind operators to verify reported wind production figures. Although wind production in California has an excellent matched to seasonal peak demand (See *Figure 4*), the billing data indicates this production is poorly matched to time-of-use needs. Specifically, among all electricity produced by wind projects during seasonal peak demand months in 1989, only 8% occured during "peak" periods with 27% produced during "mid-peak" periods and almost two-thirds (64%) produced during "off-peak" periods. Thus, there is a substantial need for research and development efforts that couples wind systems with existing and emerging energy storage technologies such as pumped hydro, compressed air energy storage and utility battery systems. This work is critical both to improve wind technology economics ("peak" electricity during seasonal high demand periods will generally be more valuable by a factor of three or more than "off-peak" electricity) and to optimize wind facility coordination with utility needs (additional power available during peak periods can help defray the need for additional generation plants or defer operation of the most inefficient utility plants typically used during peak periods). In addition, the evaluation of the wind resource at a specific site should not only consider the average wind speed but also better assess the match between the distribution of wind speeds and the distribution of the utility's load. For example, Pacific Gas and

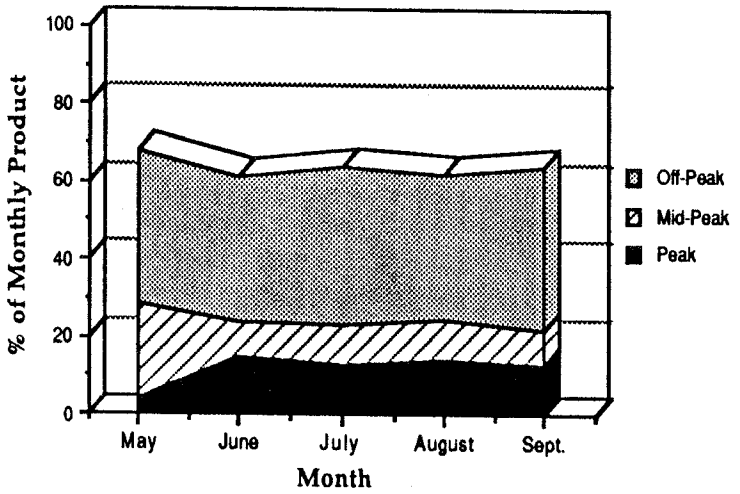


Figure 25: Statewide Time-of-Use Distribution

Electric has performed resource assessment work that has identified Solano County as an excellent wind resource area in their region with a significantly improved match to their daily peak demand period.

6. WPRS ANNUAL SUMMARY TABLES

The tables on the following pages include aggregated data for all wind projects that have submitted 1989 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.

1989 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	1,249,533	15,380	317,221,259	63	11	106*	14,056	105
2nd Quarter	1,266,053	0	829,116,418	69	28	271	13,945	0
3rd Quarter	1,263,388	25	725,175,946	72	25	238*	13,910	1
4th Quarter	1,302,168	48,680	207,453,450	43	8	70*	14,106	295
1989 Totals	1,302,168	64,085	2,078,967,073	62	18	685*	14,106	401
RESOURCE AREA								
Altamont								
1st Quarter	632,920	1,400	84,675,843	63	6	59*	6,178	14
2nd Quarter	659,340	0	412,281,192	74	27	287	6,242	0
3rd Quarter	659,275	0	413,268,665	74	27	290	6,241	0
4th Quarter	659,375	10,000	65,060,090	35	5	50*	6,242	100
1989 Totals	659,375	11,400	975,285,790	62	16	686*	6,242	114
San Gorgonio								
1st Quarter	213,578	10,380	94,715,345	65	19	145*	3,382	73
2nd Quarter	210,053	0	213,684,885	66	40	316	3,292	0
3rd Quarter	210,078	25	152,814,912	65	28	222*	3,293	1
4th Quarter	223,758	13,680	58,118,909	61	11	82*	3,388	95
1989 Totals	223,758	24,085	519,334,051	64	25	765*	3,388	169
Tehachapi								
1st Quarter	401,100	3,600	137,730,947	61	16	147*	4,434	18
2nd Quarter	394,725	0	203,110,296	63	24	220	4,349	0
3rd Quarter	392,100	0	159,021,518	77	19	173	4,314	0
4th Quarter	417,100	25,000	84,214,075	41	10	86*	4,414	100
1989 Totals	417,100	28,600	584,076,836	61	17	626*	4,414	118

1989 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								
1 - 50 kw								
1st Quarter	64,645	0	16,513,554	51	14	97	2,064	0
2nd Quarter	61,120	0	29,510,401	54	25	180	1,974	0
3rd Quarter	61,145	25	20,535,694	47	17	121*	1,975	1
4th Quarter	61,145	0	8,146,916	34	7	49	1,975	0
1989 Totals	61,145	25	74,706,565	47	16	447*	1,975	1
51 - 100 kw								
1st Quarter	804,125	2,180	191,752,025	67	11	105*	9,419	27
2nd Quarter	796,360	0	499,886,540	71	29	277	9,315	0
3rd Quarter	793,670	0	437,292,203	71	25	243	9,279	0
4th Quarter	793,770	10,000	121,715,627	43	8	73*	9,280	100
1989 Totals	793,770	12,180	1,250,646,395	63	18	698*	9,280	127
101 - 150 kw								
1st Quarter	233,191	0	66,153,436	59	13	116	1,919	0
2nd Quarter	233,191	0	153,003,092	66	30	268	1,919	0
3rd Quarter	233,191	0	146,619,630	82	29	259	1,919	0
4th Quarter	237,751	4,560	41,996,711	49	8	74*	1,957	38
1989 Totals	237,751	4,560	407,772,869	64	20	717*	1,957	38
151 - 200 kw								
1st Quarter	58,960	13,200	17,267,996	92	16	138*	325	78
2nd Quarter	58,960	0	44,098,218	89	35	352	325	0
3rd Quarter	58,960	0	37,188,331	90	30	297	325	0
4th Quarter	68,080	9,120	11,722,953	46	9	77*	382	57
1989 Totals	68,080	22,320	110,277,498	79	23	864*	382	135

1989 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	88,612	0	7,634,176	27	4	64	328	0
2nd Quarter	116,422	0	42,452,427	53	19	242	411	0
3rd Quarter	116,422	0	34,206,777	60	15	195	411	0
4th Quarter	141,422	25,000	11,543,148	28	5	49*	511	100
1989 Totals	141,422	25,000	95,836,528	42	11	550*	511	100
TURBINE AXIS								
Horizontal Axis								
1st Quarter	1,154,698	15,380	290,919,437	66	12	109*	13,544	105
2nd Quarter	1,171,218	0	738,032,392	70	29	274	13,433	0
3rd Quarter	1,168,553	25	656,724,907	73	26	244*	13,398	1
4th Quarter	1,207,333	48,680	183,107,326	43	8	69*	13,594	295
1989 Totals	1,207,333	64,085	1,868,784,062	63	19	696*	13,594	401
Vertical Axis								
1st Quarter	94,835	0	8,806,749	27	4	59	512	0
2nd Quarter	94,835	0	31,797,802	50	15	214	512	0
3rd Quarter	94,835	0	19,561,501	50	9	132	512	0
4th Quarter	94,835	0	12,200,176	40	6	82	512	0
1989 Totals	94,835	0	72,366,228	42	9	487	512	0

1989 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 1989 TOTALS								
Domestic Turbines								
1st Quarter	687,120	1,400	88,684,871	55	6	66*	7,765	14
2nd Quarter	676,430	0	364,198,680	72	25	280	7,573	0
3rd Quarter	673,765	25	338,763,792	71	24	260*	7,538	1
4th Quarter	673,867	10,000	70,900,534	53	6	60*	7,539	100
1989 Totals	673,867	11,425	862,547,877	63	15	666*	7,539	115
Foreign Turbines								
1st Quarter	562,413	13,980	212,788,115	68	17	143*	6,291	91
2nd Quarter	589,623	0	409,281,314	67	31	263	6,372	0
3rd Quarter	589,623	0	340,569,416	74	26	220	6,372	0
4th Quarter	628,303	38,680	125,773,168	38	9	77*	6,567	195
1989 Totals	628,303	52,660	1,088,412,013	62	21	703*	6,567	286

1989 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 1989 TOTALS								
Aeroman (Ger)	11,320	0	19,858,743	-	20	570	283	0
Airmaster (USA)	1,000	0	0	-	-	-	10	0
Blue Max (USA)	5,900	0	1,723,568	32	6	222	134	0
Bonus (Den)	84,420	4,560	186,062,113	74	26	862*	888	38
Bouma (Neth)	4,860	0	4,674,144	-	11	413	36	0
Carter (USA)	12,225	0	11,231,250	40	12	405	363	0
Century (USA)	8,900	0	407,070	-	1	79	104	0
Danwin (Den)	36,030	18,720	70,726,092	74	30	974*	233	117
ESI (USA)	23,995	0	23,172,464	31	12	333	353	0
Enertech (USA)	16,950	0	28,949,239	51	19	483	396	0
Fayette (USA)	136,510	0	45,400,116	19	4	365	1,362	0
Floda (Aust)	1,500	0	3,029,160	78	23	992	3	0
Flowind (USA)	94,835	0	72,366,228	42	9	488	512	0
HMZ (Belgium)	37,300	0	43,129,383	-	13	641	174	0
Howden (Scot)	28,410	0	26,905,325	47	15	423	93	0
Jacobs (USA)	11,705	0	18,873,079	65	18	595	630	0
Lolland (Den)	7,075	0	7,659,551	-	12	419	71	0
MWT (Japan)	30,000	25,000	12,690,337	81	24	1,053*	120	100
Micon (Den)	144,069	0	264,810,259	60	21	646	1,637	0
Nordtank (Den)	75,785	780	144,548,863	86	22	694*	906	13
Polenko (Neth)	1,500	0	1,756,551	37	13	461	15	0
Starwind (USA)	625	0	0	-	-	-	5	0
Strm Mstr (USA)	4,000	0	698,529	45	13	412	100	0
Sumitomo (Japan)	200	0	212,065	-	12	584	1	0
US Wndpwr (USA)	328,700	11,400	613,261,277	83	21	811*	3,287	114
Vestas (Den)	164,830	3,600	300,715,284	54	21	696*	2,078	18
WEG (Eng)	5,300	0	12,188,372	84	26	1,142	21	0
Wecs-Tec (USA)	1,985	0	0	-	-	-	30	0
Wenco (Switz)	2,800	0	8,730	-	-	-	14	0
Wincon (USA)	1,944	0	4,213,346	82	25	799	18	0
Windane (USA)	560	0	449,957	-	9	223	14	0
Windmatic (Den)	15,785	0	19,656,550	57	14	479	199	0
Windstar (USA)	25	25	4,180	-	6	-	1	1
Windtech (USA)	1,125	0	262,995	-	5	128	15	0

1989 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 1989 TOTALS								
Altamont Energy	-	-	24,022,750	-	-	-	-	-
Alt.-Amer. Partners	-	-	155,040	-	-	-	-	-
Amer. Divers. (FSLIC)	2,890	0	37,004,122	-	-	-	38	0
Amer. Power Sys.	3,705	0	7,613,209	87	23	715	204	0
Arbutus	15,950	0	27,348,000	58	18	557	250	0
Birds Landing Power	250	0	94,800	44	9	286	1	0
Buckeye	660	0	111,428	11	3	48	30	0
Cannon	77,063	0	109,585,178	-	18	625	864	0
Coram Energy	11,320	0	19,858,743	-	20	571	283	0
Dollar Energy	-	-	1,514,200	-	-	-	-	-
Energy Unlimited	9,475	4,560	9,961,342	80	22	674*	129	38
Energy 21	500	0	0	-	-	-	20	0
Fayette	141,994	0	50,709,941	21	5	372	1,410	0
Flowind	139,440	0	171,496,045	54	14	647	862	0
Howden	28,410	0	32,116,518	47	11	423	93	0
Mogul Energy	3,200	0	1,723,568	32	6	222	80	0
Natural Resource	8,710	0	14,352,000	84	19	533	134	0
OESC	3,400	0	1,491,000	72	20	-	85	0
Oak Creek	31,480	0	24,837,328	-	11	332	466	0
Renewable Energy	17,080	0	26,863,200	56	18	578	376	0
Richard Immel	150	0	64,168	-	5	78	6	0
San Gorgonio Farms	15,885	0	54,070,340	86	39	1,223	200	0
Sandberg	-	-	50,401,000	-	-	-	-	-
SeaWest	188,224	43,720	317,278,315	62	23	714*	1,820	217
So. Cal. Sunbelt	17,610	0	17,159,144	70	15	515	188	0
TERA	8,555	0	2,326,042	6	3	76	145	0
Triad Amer. En.	-	-	11,323,800	-	-	-	-	-
U.S. Windpower	334,000	11,400	625,449,649	83	21	816*	3,308	114
Western Windarm	3,351	0	7,599,550	86	26	805	37	0
Wind Farms Man.	-	-	1,582,000	-	-	-	-	-
Windland	10,925	3,600	19,390,094	73	21	797*	109	18
WindMaster	37,300	0	43,129,383	75	13	641	174	0
Windridge	-	-	3,508,000	-	-	-	-	-
Windustries	6,720	0	12,037,800	47	20	543	144	0
Wintec	24,661	805	58,916,368	85	27	794*	647	14
Zond	164,675	0	293,873,008	58	20	680	2,111	0

7. WPRS DATA

This section of the report includes WPRS 1989 project data as submitted by wind project 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. *Appendix A* includes a list of all turbine manufacturers also keyed to these sequential numbers. After the listing of operators, 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 1989 data to the WPRS program. The number in parentheses following each operator and other participant refers to the sequential number location in this section.

Altamont Amer. Partners	(1A)
Altamont Energy Corp.	(2A)
Altech Energy Ltd.	(7A)
Altech Energy Ltd., II	(18A, 22A)
Amer. Diversified Cap. Corp.	(3A)
American Power Systems	(16A)
Arbutus	(29A)
Birds Landing Power, Inc.	(14A)
Buckeye International	(12A)
Cal. Wind Energy Systems	(7C)
CalWind Resources, Inc.	(36A)
Cannon Financial Group	(30A-B)
CCC Alter. Energy Venture	(16A)
Coram Energy Group	(31A-D)
Dollar Energy Sys. Corp.	(32A)
Energy Conversion Tech.	(31A-D)
Energy 21, Inc.	(15A)
Energy Unlimited, Inc.	(17A, 33A)
Fayette	(4A-I)
FloWind Corp.	(5A-B, 34A-B)
Grant Line Energy Corp.	(2A)
Howden Wind Parks, Inc.	(6A)
Mogul Energy Corp.	(35A)
Natural Resource Ventures	(36A)
Oak Creek Energy Systems	(37A)
O.E.S.C.	(18A)
PanAero Corp.	(28B)
Phoenix Energy, Ltd.	(22D)
Renewable Energy Ventures	(19A)
Richard Immel Wind Farm	(13A)
San Gorgonio Farm	(20A)
Sandberg/Sect. 28 Owners'	(21A)
SeaWest	(3A, 7A-G, 12A, 22A-E, 38A-B)
Southern Cali. Sunbelt	(23A, 39A)
TaxVest Wind Farms	(7E-F)
TERA Corp.	(8A)
Triad American Energy	(24A)
U.S. Windpower	(9A-E)
Viking-Energy 83 Ltd.	(7G)
Western Windfarms	(7B, 25A)
Windfarms Management	(40A)
Windland	(41A-B)
WindMaster	(10A)
Windridge, Inc.	(42A)
Windustries	(26A)
Wintec, Ltd.	(27A-F)
Zond Systems, Inc.	(11A, 28A-B, 43A-U)

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 B*. 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 include a value of "0". It should be noted that operators with missing data are in violation of WPRS regulations.

Failed to File. Commission 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. Commission 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 an explanation as to why they were not required to participate in the WPRS program.

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 failed to file required WPRS information and that the output data comes from data in utility submitted quarterly reports. Where there were more than one turbine model, the total project output based on utility data was listed only for the first turbine model and noted with an asterisk (*). This was necessary since the operator's report was not available to disaggregate the utility reported output among turbine models.

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. Comparing this total projected production to the total project "Electricity Produced" indicates 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^2). 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.

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)	Quarter/ Annual	Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
ALTAMONT PASS (Alameda & Contra Costa)										
1. ALTAMONT-AMERICAN PARTNERS 5755 Oberlin Dr., St. 200 San Diego, CA 92121	A. Altamont-American Partners	**FAILED TO FILE**				1				24,960 (UD)
		FAILED TO FILE				2				114,720 (UD)
		FAILED TO FILE				3				0 (UD)
		FAILED TO FILE				4				15,360 (UD)
							PROJECT TOTAL:			**155,040**
2. ALTAMONT ENERGY CORP. 68 Mitchell Blvd., St. 205 San Rafael, CA 94903	A. Jess Ranch and Souza Ranch	**FAILED TO FILE**				1				3,020,920 (UD)
Other Participant: Grant Line Energy Corp.		**FAILED TO FILE**				2				11,544,704 (UD)
		FAILED TO FILE				3				7,919,938 (UD)
		FAILED TO FILE				4				1,537,188 (UD)
							PROJECT TOTAL:			**24,022,750**
3. AMERICAN DIVERSIFIED/F.S.L.I.C. 523 W. 6th St., St. 440 Los Angeles, CA 90014	A. American Diversified Wind Partners	Polenko	(H)	302	100 kw @ 29 mph	1	7,900	0	12	0 (NV)
Other Participant: SeaWest Energy Group						2	**FAILED TO FILE**			17,263,800 (UD)*
						3	**FAILED TO FILE**			16,957,800 (UD)*
						4	**FAILED TO FILE**			2,642,400 (UD)*
						Annual				36,864,000
		Windmatic 14-65	(H)	184	65 kw @ 35 mph	1	6,090	0	26	140,122 (NV)
						2	**FAILED TO FILE**			0 (UD)*
						3	**FAILED TO FILE**			0 (UD)*
						4	**FAILED TO FILE**			0 (UD)*
						Annual				140,122
							PROJECT TOTAL:			**37,004,122**

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator		Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)	Quarter/ Annual	Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
ALTAMONT PASS (Alameda & Contra Costa)											
4. FAYETTE P.O. Box 1149 Tracy, CA 95378											
	A.	Castello Windranch	Fayette 95IIS	(H)	95	95 kw @ 37 mph	1	7,000	0	8	0 (V)
							2	64,400	0	8	211,594 (V)
							3	61,600	0	8	234,888 (V)
							4	7,000	0	8	0 (V)
							Annual	140,000			446,482
	B.	Fayette Wind Farms	Bonus 120/20	(H)	296	120 kw @ 34 mph	1	15,000	0	14	179,607 (V)
							2	138,000	0	14	1,220,767 (V)
							3	132,000	0	14	1,154,536 (V)
							4	15,000	0	14	0 (V)
							Annual	300,000			2,554,910
			Fayette 400KW	(H)	374	400 kw @ 44 mph	1	30,000	0	2	0 (V)
							2	276,000	0	2	0 (V)
							3	264,000	0	2	0 (V)
							4	30,000	0	2	0 (V)
							Annual	600,000			0
			Fayette 75IIS	(H)	85	75 kw @ 40 mph	1	6,000	0	14	2,238 (V)
							2	55,200	0	14	115,823 (V)
							3	55,280	0	14	122,663 (V)
							4	6,000	0	14	0 (V)
							Annual	122,480			240,724
			Fayette 95IIS	(H)	95	95 kw @ 37 mph	1	7,000	0	1,061	189,971 (V)
							2	64,400	0	1,061	18,583,141 (V)
							3	61,600	0	1,061	19,066,232 (V)
							4	7,000	0	1,061	0 (V)
							Annual	140,000			37,839,344
			Micon M110/US	(H)	293	108 kw @ 33 mph	1	15,000	0	8	160 (V)
							2	138,000	0	8	338,898 (V)
							3	132,000	0	8	260,810 (V)
							4	15,000	0	8	0 (V)
							Annual	300,000			599,868
								PROJECT TOTAL:			**41,234,846**

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)	Quarter/ Annual	Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
ALTAMONT PASS (Alameda & Contra Costa)										
4. FAYETTE (Con't.)	C. WETA I	Fayette 400KW	(H)	374	400 kw @ 44 mph	1	30,000	0	7	0 (V)
						2	276,000	0	7	0 (V)
						3	264,000	0	7	0 (V)
						4	30,000	0	7	0 (V)
						Annual	600,000			0
							PROJECT TOTAL:			**0**
	D. WETA II	Fayette 400KW	(H)	374	400 kw @ 44 mph	1	30,000	0	23	1,140 (V)
						2	276,000	0	23	0 (V)
						3	264,000	0	23	0 (V)
						4	30,000	0	23	0 (V)
						Annual	600,000			1,140
		Fayette 95IIS	(H)	95	95 kw @ 37 mph	1	7,000	0	33	481 (V)
						2	64,400	0	33	577,691 (V)
						3	61,600	0	33	484,920 (V)
						4	7,000	0	33	0 (V)
						Annual	140,000			1,063,092
							PROJECT TOTAL:			**1,064,232**
	E. WETA III	Bonus 120/20	(H)	296	120 kw @ 29 mph	1	15,000	0	11	149,912 (V)
						2	138,000	0	11	1,018,351 (V)
						3	132,000	0	11	963,312 (V)
						4	15,000	0	11	0 (V)
						Annual	300,000			2,131,575
		Fayette 95IIS	(H)	95	95 kw @ 37 mph	1	7,000	0	19	2,003 (V)
						2	6,440	0	19	377,969 (V)
						3	61,600	0	19	242,224 (V)
						4	7,000	0	19	0 (V)
						Annual	82,040			622,196

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)	Quarter/ Annual	Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
ALTAMONT PASS (Alameda & Contra Costa)										
4. FAYETTE (Con't.)										
E.	WETA III (Con't.)	Micon M110/US	(H)	293	108 kw @ 33 mph	1	15,000	0	15	10,186 (V)
						2	138,000	0	15	13,286 (V)
						3	132,000	0	15	0 (V)
						4	15,000	0	15	0 (V)
						Annual	300,000			23,472
						PROJECT TOTAL:				**2,777,243**
F.	Wind Energy Partners I	Fayette 75IIS	(H)	85	75 kw @ 40 mph	1	6,000	0	30	103 (V)
						2	55,200	0	30	279,895 (V)
						3	52,800	0	30	240,392 (V)
						4	6,000	0	30	0 (V)
						Annual	120,000			520,390
						PROJECT TOTAL:				**520,390**
G.	Wind Energy Partners II	Fayette 75IIS	(H)	85	75 kw @ 40 mph	1	6,000	0	78	1,361 (V)
						2	55,200	0	78	857,948 (V)
						3	52,800	0	78	655,231 (V)
						4	6,000	0	78	0 (V)
						Annual	120,000			1,514,540
						PROJECT TOTAL:				**1,514,540**
H.	Wind Energy Partners III	Fayette 75IIS	(H)	85	75 kw @ 40 mph	1	6,000	0	10	0 (V)
						2	55,200	0	10	0 (V)
						3	52,800	0	10	0 (V)
						4	6,000	0	10	0 (V)
						Annual	120,000			0
		Fayette 95IIS	(H)	95	95 kw @ 37 mph	1	7,000	0	23	431 (V)
						2	64,400	0	23	275,284 (V)
						3	61,600	0	23	243,131 (V)
						4	7,000	0	23	0 (V)
						Annual	140,000			518,846
						PROJECT TOTAL:				**518,846**

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)	Quarter/ Annual	Projected Prod./Turb. (kWh)	Turbines Installed: New	Cum.	Electricity Produced (kWh)
ALTAMONT PASS (Alameda & Contra Costa)										
4. FAYETTE (Con't.)	I. Windranch Partners I	Fayette 95IIS	(H)	95	95 kw @ 37 mph	1	7,000	0	17	21,558 (V)
						2	64,400	0	17	290,085 (V)
						3	61,600	0	17	366,874 (V)
						4	7,000	0	17	0 (V)
						Annual	140,000			678,517
							PROJECT TOTAL:			**678,517**
	J. Windranch Partners II	Fayette 95IIS	(H)	95	95 kw @ 37 mph	1	7,000	0	37	34,767 (V)
						2	64,400	0	37	880,255 (V)
						3	61,600	0	37	1,039,823 (V)
						4	7,000	0	37	0 (V)
						Annual	140,000			1,954,845
							PROJECT TOTAL:			**1,954,845**
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	787,564 (V)
						2	68,169	0	75	3,354,205 (V)
						3	51,808	0	75	3,120,141 (V)
						4	15,447	0	75	385,636 (V)
						Annual	152,781			7,647,546
		Flowind 19	(V)	340	250 kw @ 38 mph	1	30,717	0	1	4,279 (V)
						2	120,642	0	1	59,981 (V)
						3	91,688	0	1	75,872 (V)
						4	27,338	0	1	8,841 (V)
						Annual	270,385			148,973
							PROJECT TOTAL:			**7,796,519**
	B. FloWind II (Elworthy)	Bonus Mark II	(H)	302	119 kw @ 29 mph	1	37,854	0	225	5,778,591 (V)
						2	125,328	0	225	24,184,841 (V)
						3	138,986	0	225	26,913,742 (V)
						4	37,486	0	225	4,497,378 (V)
						Annual	339,654			61,374,552

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)	Quarter/ Annual	Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
ALTAMONT PASS (Alameda & Contra Costa)										
5. FLOWIND CORP. (Con't.)										
B.	FloWind II (Elworthy) (Con't.)	Bonus Mark III	(H)	415	150 kw @ 29 mph	1	53,665	0	100	3,556,839 (V)
						2	168,169	0	100	12,969,442 (V)
						3	176,229	0	100	15,330,491 (V)
						4	49,705	0	100	3,017,743 (V)
						Annual	447,768			34,874,515
		Danwin H19	(H)	284	110 kw @ 30 mph	1	31,325	0	25	216,131 (V)
						2	108,504	0	25	825,684 (V)
						3	120,401	0	25	1,229,915 (V)
						4	32,207	0	25	403,379 (V)
						Annual	292,437			2,675,109
		Flowind F17	(V)	260	142 kw @ 44 mph	1	23,957	0	73	656,516 (V)
						2	107,527	0	73	3,429,299 (V)
						3	113,070	0	73	3,452,406 (V)
						4	24,342	0	73	387,387 (V)
						Annual	268,896			7,925,608
		Flowind F19	(V)	340	250 kw @ 38 mph	1	39,619	0	19	123,923 (V)
						2	187,009	0	19	854,734 (V)
						3	190,559	0	19	787,846 (V)
						4	40,134	0	19	74,913 (V)
						Annual	457,321			1,841,416
							PROJECT TOTAL:			**108,691,200**
6. HOWDEN WIND PARKS, INC. 6400 Village Parkway Dublin, CA 94568										
A.	Howden Wind Park I	Howden 330/33	(H)	756	330 kw @ 34 mph	1	**FAILED TO FILE**			5,211,193 (UD)*
						2	236,855	0	82	15,764,304 (NV)
						3	226,695	0	82	10,260,432 (NV)
						4	84,455	0	82	236,257 (NV)
						Annual	548,005			31,472,186

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)	Quarter/ Annual	Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
ALTAMONT PASS (Alameda & Contra Costa)										
6. HOWDEN WIND PARKS, INC. (Con't.)	A. Howden Wind Park I (Con't.)	Howden 60/15	(H)	177	60 kw @ 34 mph	1	FAILED TO FILE			0 (UD)*
						2	40,284	0	10	0 (NV)
						3	38,556	0	10	0 (NV)
						4	14,364	0	10	0 (NV)
						Annual	93,204			0
		Howden 750/45	(H)	1590	750 kw @ 34 mph	1	FAILED TO FILE			0 (UD)*
						2	440,140	0	1	233,625 (NV)
						3	421,260	0	1	405,825 (NV)
						4	156,940	0	1	4,882 (NV)
						Annual	1,018,340			644,332
						PROJECT TOTAL:				32,116,518
7. SEAWEST ENERGY GROUP 1455 Frazee Road, Suite 300 San Diego, CA 92108	A. Altech Energy, Ltd.	Enertech 44/40	(H)	140	40 kw @ 30 mph	1	9,700	0	144	553,885 (V)
						2	30,900	0	144	3,311,447 (V)
						3	30,300	0	144	3,867,651 (V)
						4	9,100	0	144	464,659 (V)
						Annual	80,000			8,197,642
						PROJECT TOTAL:				8,197,642
Other Participant: Altech Energy, Ltd.										
	B. Astroseal, Battlement	Micon 65/13	(H)	200	65 kw @ 30 mph	1	13,700	0	8	46,105 (V)
						2	43,600	0	8	110,236 (V)
						3	42,900	0	8	95,358 (V)
						4	12,800	0	8	17,632 (V)
						Annual	113,000			269,331
						PROJECT TOTAL:				269,331
Other Participant: Western Windfarms										
	C. C.W.E.S.	ESI 54	(H)	211	50 kw @ 30 mph	1	9,800	0	30	0 (V)
						2	31,300	0	30	0 (V)
						3	30,700	0	30	158,051 (V)
						4	9,200	0	30	128,329 (V)
						Annual	81,000			286,380
						PROJECT TOTAL:				286,380
Other Participant: California Wind Energy Systems, Ltd.										

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)	Quarter/ Annual	Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
ALTAMONT PASS (Alameda & Contra Costa)										
7. SEAWEST ENERGY GROUP (Con't.)										
D.	Seawest Energy Group, Inc.	Micon 60/13	(H)	200	60 kw @ 33 mph	1	15,100	0	1	5,696 (V)
						2	47,800	0	1	0 (V)
						3	47,000	0	1	0 (V)
						4	14,100	0	1	0 (V)
						Annual	124,000			5,696
						PROJECT TOTAL:				**5,696**
E. Other Participant: TaxVest Windfarms, Inc. II	TaxVest Windfarms, Inc. II	Micon 60/13	(H)	200	60 kw @ 33 mph	1	13,700	0	11	13,473 (V)
						2	43,600	0	11	32,516 (V)
						3	42,900	0	11	36,303 (V)
						4	12,800	0	11	3,948 (V)
						Annual	113,000			86,240
						PROJECT TOTAL:				**86,240**
F. Other Participant: TaxVest Windfarms 174	Taxvest Windfarm 174	Micon 60/13	(H)	200	60 kw @ 33 mph	1	13,700	0	174	363,979 (V)
						2	43,600	0	174	556,838 (V)
						3	42,900	0	174	369,961 (V)
						4	12,800	0	174	38,941 (V)
						Annual	113,000			1,329,719
						PROJECT TOTAL:				**1,329,719**
G. Other Participant: Viking-Energy 83, Ltd.	Viking-Energy 83	Micon 60/13	(H)	200	60 kw @ 33 mph	1	14,300	0	26	132,111 (V)
						2	45,500	0	26	919,931 (V)
						3	44,800	0	26	946,432 (V)
						4	13,400	0	26	146,310 (V)
						Annual	118,000			2,144,784
						PROJECT TOTAL:				**2,144,784**
8. TERA CORPORATION 2150 Shattuck Ave. Berkeley, CA 94704										
A.	Delta Energy Project (Delta I-III)	ESI 54	(H)	211	50 kw @ 30 mph	1	42,400	0	58	13,317 (NV)
						2	63,600	0	58	136,084 (NV)
						3	63,600	0	58	147,959 (NV)
						4	42,400	0	58	6,882 (NV)
						Annual	212,000			304,242

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)	Quarter/ Annual	Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
ALTAMONT PASS (Alameda & Contra Costa)										
8. TERA CORPORATION (Con't.)	A. Delta Energy Project (Delta I-III) (Con't.)	ESI 54S	(H)	211	65 kw @ 39 mph	1	46,400	0	88	157,152 (NV)
						2	69,600	0	88	889,140 (NV)
						3	69,600	0	87	904,188 (NV)
						4	46,400	0	87	71,320 (NV)
						Annual	232,000			2,021,800
						PROJECT TOTAL:				**2,326,042**
9. U.S. WINDPOWER 6952 Preston Ave. Livermore, CA 94550	A. Dyer Road	USW 56-100	(H)	230	100 kw @ 29 mph	1	21,000	5	476	10,228,400 (V)
						2	81,900	0	412	36,738,801 (V)
						3	86,100	0	409	35,851,201 (V)
						4	21,000	10	410	6,675,200 (V)
						Annual	210,000			89,493,602
						PROJECT TOTAL:				**89,493,602**
	B. Frick	USW 56-100	(H)	230	100 kw @ 22 mph	1	21,000	0	100	2,432,306 (V)
						2	81,900	0	100	8,315,042 (V)
						3	86,100	0	100	7,294,079 (V)
						4	21,000	0	100	1,953,120 (V)
						Annual	210,000			19,994,547
						PROJECT TOTAL:				**19,994,547**
	C. Midway Road (Patterson Pass Road)	USW 56-100	(H)	230	100 kw @ 29 mph	1	21,000	9	1,344	23,056,149 (V)
						2	81,900	0	1,350	106,631,818 (V)
						3	86,100	0	1,350	101,411,438 (V)
						4	21,000	0	1,339	15,949,939 (V)
						Annual				247,049,344
		WEG MS-2	(H)	491	250 kw @ 33 mph	1	62,454	0	20	1,145,039 (V)
						2	256,065	0	20	5,286,103 (V)
						3	237,329	0	20	4,782,314 (V)
						4	68,700	0	20	607,419 (V)
						Annual	624,548			11,820,875

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)	Quarter/ Annual	Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
ALTAMONT PASS (Alameda & Contra Costa)										
9. U.S. WINDPOWER (Con't.)										
C.	Midway Road (Patterson Pass Road) (Con't.)	WEG MS-3	(H)	855	300 kw @ 26 mph	1	0		1	33,071 (V)
						2	0		1	152,071 (V)
						3	336,000		1	167,446 (V)
						4	84,000		1	14,909 (V)
						Annual	420,000			367,497
							PROJECT TOTAL:			**259,237,716**
D.	Ralph	USW 56-100	(H)	230	100 kw @ 29 mph	1	21,000	0	583	8,582,500 (V)
						2	81,900	0	650	54,883,199 (V)
						3	86,100	0	653	61,651,201 (V)
						4	21,000	90	664	12,625,085 (V)
						Annual	210,000			137,741,985
							PROJECT TOTAL:			**137,741,985**
E.	Vasco Road	USW 56-100	(H)	230	100 kw @ 29 mph	1	21,000	0	774	10,710,000 (V)
						2	81,900	0	774	47,750,400 (V)
						3	86,100	0	774	52,210,799 (V)
						4	21,000	0	774	8,310,600 (V)
						Annual	210,000			118,981,799
							PROJECT TOTAL:			**118,981,799**
10. WINDMASTER P.O. Box 669 Byron, CA 94514										
A.	Windmaster	HMZ 200kw	(H)	373	200 kw @ 33 mph	1	0	0	139	2,925,800 (V)
						2	0	0	139	13,215,474 (V)
						3	0	0	139	13,339,767 (V)
						4	0	0	139	1,930,683 (V)
						Annual	0			31,411,724
		HMZ 250kw	(H)	408	250 kw @ 33 mph	1	0	0	20	442,789 (V)
						2	0	0	20	2,590,113 (V)
						3	0	0	20	2,863,622 (V)
						4	0	0	20	292,138 (V)
						Annual	0			6,188,662

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)	Quarter/ Annual	Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
ALTAMONT PASS (Alameda & Contra Costa)										
10. WINDMASTER (Con't.) A.	Windmaster (Con't.)	HMZ 300kw	(H)	483	300 kw @ 33 mph	1	220,285	0	15	254,118 (V)
						2	220,285	0	15	2,373,882 (V)
						3	220,285	0	15	2,590,243 (V)
						4	220,285	0	15	310,754 (V)
						Annual	881,140			5,528,997
							PROJECT TOTAL:			**43,129,383**
11. ZOND SYSTEMS, INC. 112 South Curry Street Tehachapi, CA 93561 A.	1985 Zond Windsystem Partners Series 85C	Vestas 17	(H)	227	100 kw @ 45 mph	1	30,057	0	200	3,464,997 (V)
						2	91,569	0	200	12,747,771 (V)
						3	81,084	0	200	13,051,208 (V)
						4	30,290	0	200	2,300,858 (V)
						Annual	233,000			31,564,834
							PROJECT TOTAL:			**31,564,834**

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
BOULEVARD (San Diego)										
12. BUCKEYE INTERNATIONAL 1455 Frazee Rd., Suite 300 San Diego, CA 92108										
A.	California Wind Energy, Ltd.	Micon 22	(H)	78	22 kw @ 37 mph	1	12,100	0	30	68,997 (V)
Other Participant: SeaWest Energy						2	11,000	0	30	36,370 (V)
						3	5,800	0	30	6,061 (V)
						4	8,300	0	30	0 (V)
						Annual	37,200			111,428
							PROJECT TOTAL:			**111,428**
13. 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	30,127 (NV)
						2	0	0	6	3,675 (NV)
						3	0	0	6	14,390 (NV)
						4	0	0	6	15,976 (NV)
						Annual	0			64,168
							PROJECT TOTAL:			**64,168**

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Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
CARQUINEZ (Contra Costra)										
14. BIRDS LANDING POWER, INC. (frmly Wind Generator Parks, Inc.) 7 Wolfback Ridge Road Sausalito, CA 94965										
	A. Wind Generator Park	Carter 250	(H)	332	250	kw @ 42 mph	1 75,000	0	1	0 (NV)
							2 175,000	0	1	0 (NV)
							3 175,000	0	1	50,400 (NV)
							4 75,000	0	1	44,400 (NV)
							Annual 500,000			**94,800**
							PROJECT TOTAL:			**94,800**

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Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
PACHECO PASS (Merced)										
15. ENERGY 21 18 Eastwood Court Oakland, CA 94611										
A.	Energy 21	Carter	(H)	77	25 kw @ 30 mph	1	0	0	20	0 (V)
						2	0	0	20	0 (V)
						3	0	0	20	0 (V)
						4	0	0	20	0 (V)
						Annual	0			0
						PROJECT TOTAL:				0

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Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
SAN GORGONIO PASS (Riverside)										
16. AMERICAN POWER SYSTEMS, INC. 26 Linda Isle Newport Beach, CA 92660										
	A. Jacoby-Kerr Wind Park	Jacobs 26-17.5 @ 120'	(H)	49	18 kw @ 27 mph	1	8,037	0	16	161,467 (V)
Other Participant: CCC Alternative Energy Ventures						2	12,100	0	16	193,632 (V)
						3	12,100	0	16	189,400 (V)
						4	12,100	0	16	90,883 (V)
						Annual	44,337			635,382
		Jacobs 26-17.5 @ 80'	(H)	49	18 kw @ 27 mph	1	7,182	0	134	1,190,821 (V)
						2	11,100	0	134	1,480,200 (V)
						3	11,100	0	134	1,578,971 (V)
						4	11,100	0	134	587,762 (V)
						Annual	40,482			4,837,754
		Jacobs 29-20	(H)	61	20 kw @ 27 mph	1	9,662	0	54	480,119 (V)
						2	14,300	0	54	762,762 (V)
						3	14,300	0	54	624,516 (V)
						4	14,300	0	54	272,676 (V)
						Annual	52,562			2,140,073
						PROJECT TOTAL:				7,613,209
17. ENERGY UNLIMITED, INC. 1 Aldwyn Center Villanova, PA 19085										
	A. Mountain Pass '85 Ltd.	Bonus 120	(H)	302	120 kw @ 40 mph	1	0	0	0	0 (V)
						2	0	0	0	0 (V)
						3	0	0	0	0 (V)
						4	38,800	38	38	673,780 (V)
						Annual	38,800			673,780
		Bonus 65/13 kw	(H)	181	65 kw @ 40 mph	1	20,500	0	66	2,124,000 (V)
						2	72,000	0	66	3,920,000 (V)
						3	43,000	0	66	2,144,000 (V)
						4	24,500	0	66	730,220 (V)
						Annual	160,000			8,918,220
						PROJECT TOTAL:				9,592,000

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Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
SAN GORGONIO PASS (Riverside)										
18. O.E.S.C., INC. P.O.B. 913 N. Palm Springs, CA 92258 (SEAWEST ENERGY GROUP Starting From Second Quarter)										
A. Other Participant: Altech Energy Ltd., II	Altech Energy Ltd., II (Managed by SeaWest Energy Group starting from 6/1/89)	Enertech 44/40	(H)	141	40 kw @ 30 mph	1	24,300	0	85	1,491,000 (V)
						PROJECT TOTAL:				**1,491,000**
19. RENEWABLE ENERGY VENTURES P.O. Box 742 North Palm Springs, CA 92258										
A.	REV Wind Power Partners	ESI 54-S	(H)	216	80 kw @ 40 mph	1	38,200	0	168	3,235,334 (V)
						2	81,100	0	168	8,452,400 (V)
						3	63,500	0	168	6,635,520 (V)
						4	28,300	0	168	2,236,788 (V)
						Annual	211,100			20,560,042
		Jacobs 26-17.5 kw	(H)	49	18 kw @ 27 mph	1	9,500	0	208	1,315,066 (V)
						2	19,800	0	208	2,563,600 (V)
						3	15,600	0	208	1,658,880 (V)
						4	7,200	0	208	765,612 (V)
						Annual	52,100			6,303,158
						PROJECT TOTAL:				**26,863,200**
20. SAN GORGONIO FARMS 21515 Hawthorne Blvd., Ste. 1059 Torrance, CA 90503										
A.	San Gorgonio Farms Wind Park (Con't.)	Bonus 100 kw	(H)	177	100 kw @ 28 mph	1	62,400	0	55	4,575,890 (V)
						2	146,520	0	55	9,216,870 (V)
						3	161,160	0	55	6,826,370 (V)
						4	49,920	0	55	2,232,360 (V)
						Annual	420,000			22,851,490
		Bonus 120 kw	(H)	177	120 kw @ 40 mph	1	68,640	0	1	81,627 (V)
						2	161,172	0	1	179,480 (V)
						3	155,276	0	1	148,880 (V)
						4	54,912	0	1	33,540 (V)
						Annual	440,000			443,527

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Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
SAN GORGONIO PASS (Riverside)										
20. SAN GORGONIO FARMS (Con't.)										
	A. San Gorgonio Farms Wind Park	Bonus 65 kw	(H)	15	65 kw @ 33 mph	1	43,680	0	81	3,645,743 (V)
						2	102,564	0	81	7,444,452 (V)
						3	98,812	0	81	5,541,659 (V)
						4	34,944	0	81	1,939,568 (V)
						Annual	280,000			18,571,422
		Carter 25 kw	(H)	89	25 kw @ 26 mph	1	12,480	0	15	6,099 (V)
						2	29,304	0	10	29 (V)
						3	0	0	10	0 (V)
						4	0	0	10	0 (V)
						Annual	41,784			6,128
		Floda 500kw	(H)	36	500 kw @ 31 mph	1	218,400	0	3	769,320 (V)
						2	512,820	0	3	1,210,080 (V)
						3	494,060	0	3	691,803 (V)
						4	174,720	0	3	357,957 (V)
						Annual	1,400,000			3,029,160
		Micon 65 kw	(H)	15	65 kw @ 33 mph	1	43,680	0	50	1,837,403 (V)
						2	102,564	0	50	3,826,052 (V)
						3	98,812	0	50	2,601,059 (V)
						4	34,944	0	50	904,099 (V)
						Annual	280,000			9,168,613
							PROJECT TOTAL:			**54,070,340**
21. SANDBERG/SECTION 28 OWNERS' ASSCT. 1000 N. Farrell Dr., #404 Palm Springs, CA 92262										
	A. Ventus Wind Park (SWC III)	**FAILED TO FILE**				1				6,082,000 (UD)
		FAILED TO FILE				2				21,084,000 (UD)
		FAILED TO FILE				3				17,772,000 (UD)
		FAILED TO FILE				4				5,463,000 (UD)
							PROJECT TOTAL:			**50,401,000**

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Location/Operator		Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
SAN GORGONIO PASS (Riverside)											
22. SEAWEST ENERGY GROUP 1455 Frazee Rd., Suite 300 San Diego, CA 92108											
Other Participant: Altech Energy Ltd., II	A.	Altech Energy Ltd., II (Since Second Quarter 1989)	Enertech 44/40	(H)	141	40 kw @	30 mph	1	-	-	-
								2	FAILED TO FILE		3,039,000 (UD)
								3	FAILED TO FILE		1,623,000 (UD)
								4	FAILED TO FILE		87,000 (UD)
									PROJECT TOTAL:		4,749,000
	B.	Altech III/Difwind Partners/ Difwind V	Micon 100/US	(H)	283	108 kw @	30 mph	1	53,500	0 364	5,776,058 (V)
								2	160,200	0 364	23,478,156 (V)
								3	108,900	0 364	23,985,544 (V)
								4	41,400	0 364	8,326,585 (V)
								Annual	364,000		61,566,343
			Micon 110/US	(H)	283	108 kw @	30 mph	1	53,700	0 20	1,171,623 (V)
								2	132,500	0 20	2,336,610 (V)
								3	85,200	0 20	1,736,859 (V)
								4	44,200	0 20	640,431 (V)
								Annual	315,600		5,885,523
			Micon 60	(H)	201	60 kw @	30 mph	1	32,200	0 92	2,001,319 (V)
								2	79,900	0 92	4,845,204 (V)
								3	52,700	0 92	2,196,217 (V)
								4	22,200	0 92	470,994 (V)
								Annual	187,000		9,513,734
									PROJECT TOTAL:		76,965,600
	C.	Difwind V	Micon 110	(H)	300	108 kw @	30 mph	1	50,800	0 73	3,996,000 (V)
								2	125,600	0 73	9,012,000 (V)
								3	80,700	0 73	5,485,200 (V)
								4	41,900	0 73	1,782,000 (V)
								Annual	299,000		20,275,200
									PROJECT TOTAL:		20,275,200

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Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
SAN GORGONIO PASS (Riverside)										
22. SEAWEST ENERGY GROUP (Con't.)	D. Phoenix Energy/Difwind V	Enertech 44/40	(H)	140	40 kw @ 30 mph	1	27,283	0	90	1,545,311 (V)
						2	59,388	0	90	3,712,318 (V)
Other Participant:						3	42,998	0	90	986,400 (V)
Phoenix Energy, Ltd.						4	17,331	0	90	144,233 (V)
						Annual	147,000			6,388,262
		Micon 110/US	(H)	300	110 kw @ 33 mph	1	57,800	0	16	1,166,702 (V)
						2	142,800	0	16	2,243,090 (V)
						3	91,800	0	16	1,628,540 (V)
						4	47,600	0	16	530,030 (V)
						Annual	340,000			5,568,362
		Micon 60/13	(H)	200	60 kw @ 33 mph	1	41,574	0	130	3,785,987 (V)
						2	90,496	0	130	8,370,592 (V)
						3	65,520	0	130	6,189,460 (V)
						4	26,410	0	130	2,427,137 (V)
						Annual	224,000			20,773,176
						PROJECT TOTAL:				32,729,800
	E. Swanmill Farms I	Danwin 23	(H)	415	160 kw @ 29 mph	1	91,500	60	60	3,984,000 (V)
						2	170,700	0	60	10,080,000 (V)
						3	125,500	0	60	7,592,000 (V)
						4	95,380	57	117	3,919,998 (V)
						Annual	483,080			25,575,998
						PROJECT TOTAL:				25,575,998
23. SOUTHERN CALIFORNIA SUNBELT 701 S. Parker St., Suite 7300 Orange, CA 92668	A. Palm Springs Wind Park	Starwind	(H)	0	125 kw @ 0 mph	1	0	0	5	0 (V)
						2	0	0	5	0 (V)
						3	0	0	5	0 (V)
						4	0	0	5	0 (V)
						Annual	0			0

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Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
SAN GORGONIO PASS (Riverside)										
23. SOUTHERN CALIFORNIA SUNBELT (Con't.)										
A.	Palm Springs Wind Park (Con't.)	Wenco	(H)	0	200 kw @ 0 mph	1	0	0	14	0 (V)
						2	0	0	14	0 (V)
						3	0	0	14	0 (V)
						4	0	0	14	0 (V)
						Annual	0			0
		Windmatic 15S	(H)	189	65 kw @ 32 mph	1	28,061	0	64	1,896,354 (V)
						2	57,957	0	64	4,712,605 (V)
						3	47,453	0	64	2,486,385 (V)
						4	20,590	0	64	849,528 (V)
						Annual	154,061			9,944,872
						PROJECT TOTAL:				**9,944,872**
24. TRIAD AMERICAN ENERGY 2212 Dupont Dr., St. A Irvine, CA 92715										
A.	Triad IV-VII	**FAILED TO FILE**				1				2,040,000 (UD)
		FAILED TO FILE				2				4,386,000 (UD)
		FAILED TO FILE				3				3,412,800 (UD)
		FAILED TO FILE				4				1,485,000 (UD)
						PROJECT TOTAL:				**11,323,800**
25. WESTERN WINDFARMS 2352 Research Drive Livermore, CA 94559										
A.	Dillon/Devers	Micon 108	(H)	293	108 kw @ 33 mph	1	47,940	0	4	221,254 (V)
						2	124,080	0	4	434,832 (V)
						3	64,860	0	4	302,535 (V)
						4	45,120	0	4	96,657 (V)
						Annual	282,000			1,055,278
		Micon 65	(H)	200	65 kw @ 30 mph	1	30,600	0	15	656,392 (V)
						2	82,800	0	15	987,400 (V)
						3	39,600	0	15	446,320 (V)
						4	27,000	0	15	240,814 (V)
						Annual	180,000			2,330,926

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Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
SAN GORGONIO PASS (Riverside)										
25. WESTERN WINDFARMS (Con't.) A. Dillon/Devers (Con't.)		Wincon 108	(H)	293	108 kw @ 33 mph	1	47,940	0	18	1,049,437 (V)
						2	124,080	0	18	1,854,412 (V)
						3	64,860	0	18	1,002,738 (V)
						4	45,120	0	18	306,759 (V)
						Annual	282,000			4,213,346
						PROJECT TOTAL:				7,599,550
26. WINDUSTRIES, INC. c/o O.E.S.C. P.O. Box 913 North Palm Springs, CA 92258 A. Windustries I		Enertech 44/40	(H)	141	40 kw @ 30 mph	1	23,500	0	96	1,057,300 (V)
						2	58,700	0	96	4,059,900 (V)
						3	45,500	0	96	2,559,200 (V)
						4	20,300	0	96	743,000 (V)
						Annual	148,000			8,419,400
		Enertech 44/60	(H)	141	60 kw @ 35 mph	1	28,900	0	48	316,700 (V)
						2	78,800	0	48	1,899,700 (V)
						3	58,400	0	48	1,029,500 (V)
						4	24,600	0	48	372,500 (V)
						Annual	190,700			3,618,400
						PROJECT TOTAL:				12,037,800
27. WINTEC, LTD. P.O. Box 457 N. Palm Springs, CA 92258 A. Wintec Cahuilla Windpark		Nordtank 60/13	(H)	201	60 kw @ 34 mph	1	45,326	0	72	3,309,921 (V)
						2	84,871	0	72	6,337,458 (V)
						3	65,071	0	72	4,189,654 (V)
						4	14,732	0	72	1,414,892 (V)
						Annual	210,000			15,251,925
						PROJECT TOTAL:				15,251,925

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Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
SAN GORGONIO PASS (Riverside)										
27. WINTEC, LTD. (Con't.)										
B.	Wintec Annex Windpark	Micon 108	(H)	293	108 kw @ 33 mph	1	50,893	0	7	329,087 (V)
						2	112,031	0	7	658,676 (V)
						3	91,002	0	7	403,598 (V)
						4	7,450	0	7	127,860 (V)
						Annual	261,376			1,519,221
		Micon 60/13	(H)	200	65 kw @ 33 mph	1	38,170	0	31	1,152,296 (V)
						2	84,023	0	31	2,290,240 (V)
						3	68,252	0	31	1,478,699 (V)
						4	19,555	0	31	519,834 (V)
						Annual	210,000			5,441,069
		Nordtank 601B	(H)	201	60 kw @ 34 mph	1	38,170	13	13	498,905 (V)
						2	84,023	0	13	974,339 (V)
						3	68,252	0	13	626,024 (V)
						4	19,555	0	13	199,011 (V)
						Annual	210,000			2,298,279
						PROJECT TOTAL:				**9,258,569**
C.	Wintec I Windpark	Carter 25 kw	(H)	75	25 kw @ 26 mph	1	17,267	0	185	1,387,529 (V)
						2	32,332	0	185	2,223,756 (V)
						3	24,789	0	185	1,576,143 (V)
						4	5,612	0	185	483,946 (V)
						Annual	80,000			5,671,374
		Micon 60/13 kw	(H)	200	65 kw @ 33 mph	1	45,326	0	23	935,071 (V)
						2	84,871	0	23	1,938,444 (V)
						3	65,071	0	23	1,117,257 (V)
						4	14,732	0	23	412,454 (V)
						Annual	210,000			4,403,226
						PROJECT TOTAL:				**10,074,600**
D.	Wintec II (Whitewater) Windpark	Jacobs 20	(H)	50	20 kw @ 27 mph	1	8,634	0	41	135,801 (V)
						2	16,166	0	41	144,706 (V)
						3	12,394	0	41	42,578 (V)
						4	2,806	0	41	8,827 (V)
						Annual	40,000			331,912

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Location/Operator		Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
SAN GORGONIO PASS (Riverside)											
27. WINTEC, LTD. (Con't.)	D.	Wintec II (Whitewater) Windpark (Con't.)	Nordtank 60/13	(H)	201	65 kw @ 34 mph	1	45,326	0	63	2,681,799 (V)
							2	84,871	0	63	5,254,094 (V)
							3	65,071	0	63	3,180,510 (V)
							4	14,732	0	63	1,365,904 (V)
							Annual	210,000			12,482,307
			Windstar 25	(H)	0	25 kw @ 0 mph	1	0	0	0	0 (V)
							2	0	0	0	0 (V)
							3	0	1	1	2,512 (V)
							4	0	0	1	1,668 (V)
							Annual	0			4,180
							PROJECT TOTAL:				**12,818,399**
	E.	Wintec III (Riverview) Windpark	Jacobs 20	(H)	50	20 kw @ 27 mph	1	8,634	0	177	880,800 (V)
							2	16,166	0	177	1,776,000 (V)
							3	12,394	0	177	1,300,800 (V)
							4	2,806	0	177	667,200 (V)
							Annual	40,000			4,624,800
							PROJECT TOTAL:				**4,624,800**
	F.	Wintec Palm Windpark	Micon 60/13 kw	(H)	200	60 kw @ 33 mph	1	45,326	0	30	1,301,184 (V)
							2	84,871	0	30	2,574,038 (V)
							3	65,071	0	30	1,576,121 (V)
							4	14,732	0	30	556,436 (V)
							Annual	210,000			6,007,779
			Nordtank 60/13	(H)	201	60 kw @ 34 mph	1	45,326	0	4	224,895 (V)
							2	84,871	0	4	358,504 (V)
							3	65,071	0	4	210,225 (V)
							4	14,732	0	4	86,672 (V)
							Annual	210,000			880,296
							PROJECT TOTAL:				**6,888,075**

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Location/Operator		Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
SAN GORGONIO PASS (Riverside)											
28. ZOND SYSTEMS, INC. 112 South Curry Tehachapi, CA 93561	A.	Painted Hills	Vestas 15	(H)	184	65 kw @	35 mph				
							1	45,488	0	61	1,979,494 (V)
							2	82,473	0	61	4,006,439 (V)
							3	51,227	0	61	2,504,554 (V)
							4	33,372	0	61	1,002,815 (V)
							Annual	212,560			9,493,302
			Vestas 17	(H)	227	100 kw @	45 mph				
							1	53,565	0	170	8,213,821 (V)
							2	97,118	0	170	15,796,539 (V)
							3	60,324	0	170	9,323,244 (V)
							4	39,298	0	170	4,067,194 (V)
							Annual	250,305			37,400,798
								PROJECT TOTAL:			**46,894,100**
Other Participant: PanAero Corporation	B.	Zond-PanAero Windsystems	Vestas 15	(H)	184	65 kw @	35 mph				
							1	80,009	0	460	14,024,416 (V)
							2	122,367	0	460	23,566,276 (V)
							3	80,009	0	460	16,207,237 (V)
							4	20,807	0	460	8,493,285 (V)
							Annual	303,192			62,291,214
								PROJECT TOTAL:			**62,291,214**

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
TEHACHAPI PASS (Kern)										
29. ARBUTUS 2691 Richer Ave., #114 Irvine, CA 92714										
	A. Pajuela Peak Wind Park	Bonus 65	(H)	225	65 kw @ 45 mph	1	40,500	0	231	6,761,190 (V)
						2	60,750	0	231	9,684,890 (V)
						3	45,600	0	231	5,495,849 (V)
						4	55,650	0	231	4,693,119 (V)
						Annual	202,500			26,635,048
		Windane 12	(H)	144	40 kw @ 30 mph	1	0	0	14	161,670 (V)
						2	0	0	14	139,240 (V)
						3	0	0	14	90,967 (V)
						4	0	0	14	58,080 (V)
						Annual	0			449,957
		Windtech 75	(H)	250	75 kw @ 35 mph	1	0	0	90	109,140 (V)
						2	0	0	5	123,870 (V)
						3	0	0	5	29,184 (V)
						4	0	0	5	801 (V)
						Annual	0			262,995
						PROJECT TOTAL:				**27,348,000**
30. 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	0	36	1,171,328 (V)
						2	0	0	36	1,020,870 (V)
						3	0	0	36	1,505,014 (V)
						4	0	0	36	976,932 (V)
						Annual	450,000			4,674,144
		CT-9000	(H)	117	100 kw @ 37 mph	1	0	0	44	276,028 (V)
						2	0	0	44	39,072 (V)
						3	0	0	44	62,666 (V)
						4	0	0	44	29,304 (V)
						Annual	266,000			407,070

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
TEHACHAPI PASS (Kern)										
30. CANNON FINANCIAL GROUP (Con't.)										
	A. Cameron Ridge Windpark (Con't.)	Micon 108	(H)	293	108	kw @ 28 mph				
						1	0	0	3	98,756 (V)
						2	0	0	3	247,257 (V)
						3	0	0	3	397,333 (V)
						4	0	0	3	167,619 (V)
						Annual	0			910,965
		Nordtank 150	(H)	330	150	kw @ 42 mph				
						1	0	0	102	6,566,436 (V)
						2	0	0	102	130,459 (V)
						3	0	0	102	7,736,355 (V)
						4	0	0	102	3,060,434 (V)
						Annual	5,200,900			17,493,684
		Nordtank 65/136	(H)	201	65	kw @ 35 mph				
						1	0	0	50	1,403,288 (V)
						2	0	0	50	1,120,861 (V)
						3	0	0	50	1,968,708 (V)
						4	0	0	50	820,233 (V)
						Annual	190,000			5,313,090
		Nordtank 90/16.6	(H)	216	75	kw @ 42 mph				
						1	0	0	340	13,983,246 (V)
						2	0	0	340	10,811,459 (V)
						3	0	0	340	17,988,008 (V)
						4	0	0	340	7,814,890 (V)
						Annual	276,000			50,597,603
						PROJECT TOTAL:				79,396,556
	B. Cannon Phase V	Micon 108	(H)	293	108	kw @ 28 mph				
						1	0	0	138	9,345,834 (V)
						2	0	0	138	12,676,087 (V)
						3	0	0	138	7,376,948 (V)
						4	0	0	138	356,829 (V)
						Annual	276,000			29,755,698
		Micon 250	(H)	452	250	kw @ 33 mph				
						1	0	0	1	0 (V)
						2	0	0	1	223,993 (V)
						3	0	0	1	126,218 (V)
						4	0	0	1	82,713 (V)
						Annual	0			432,924
						PROJECT TOTAL:				30,188,622

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
TEHACHAPI PASS (Kern)										
31. CORAM ENERGY GROUP 1725 S. Douglass Road, Suite B Anaheim, CA 92806	A. Coram Taxvest Windfarms	Aeroman 12.5 Series I (H)	123	40 kw @ 30 mph		1	0	0	27	557,447 (V)
						2	0	0	27	801,395 (V)
Other Participant: Energy Conversion Technology, Inc.						3	0	0	27	523,072 (V)
						4	0	0	27	306,718 (V)
						Annual	160,000			2,188,632
						PROJECT TOTAL:				**2,188,632**
	B. Coram Taxvest Windfarms	Aeroman 12.5 Series I (H)	123	40 kw @ 30 mph		1	0	0	47	865,926 (V)
						2	0	0	47	1,048,834 (V)
Other Participant: Energy Conversion Technology, Inc.						3	0	0	47	658,854 (V)
						4	0	0	47	436,016 (V)
						Annual	160,000			3,009,630
						PROJECT TOTAL:				**3,009,630**
	C. Coram Taxvest Windfarms	Aeroman 12.5 series I (H)	123	40 kw @ 30 mph		1	0	0	109	1,821,762 (V)
						2	0	0	109	2,538,894 (V)
Other Participant: Energy Conversion Technology, Inc.						3	0	0	109	1,600,940 (V)
						4	0	0	109	1,073,267 (V)
						Annual	160,000			7,034,863
						PROJECT TOTAL:				**7,034,863**
	D. Coram Energy Group	Aeroman 12.5 Series I (H)	123	40 kw @ 30 mph		1	0	0	100	1,799,696 (V)
						2	0	0	100	2,846,591 (V)
Other Participant: Energy Conversion Technology, Inc.						3	0	0	100	1,843,210 (V)
						4	0	0	100	1,136,121 (V)
						Annual	1,600,000			7,625,618
						PROJECT TOTAL:				**7,625,618**

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
TEHACHAPI PASS (Kern)										
32. DOLLAR ENERGY SYSTEMS, CORP. 42850 W. 10 Mile Rd. Novi, MI 48050										
	A. The Mariah Wind Park	**FAILED TO FILE**				1				293,200 (UD)
		FAILED TO FILE				2				736,200 (UD)
		FAILED TO FILE				3				366,000 (UD)
		FAILED TO FILE				4				118,800 (UD)
							PROJECT TOTAL:			**1,514,200**
33. ENERGY UNLIMITED, INC. 1 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	151,330 (V)
						2	23,320	0	25	139,597 (V)
						3	12,464	0	25	45,232 (V)
						4	16,472	0	25	33,183 (V)
						Annual	80,000			369,342
							PROJECT TOTAL:			**369,342**
34. 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	5,613,117 (V)
						2	90,175	0	161	15,855,502 (V)
						3	46,249	0	161	4,802,078 (V)
						4	55,297	0	161	5,039,605 (V)
						Annual	251,562			31,310,302
		Flowind 19	(V)	340	250 kw @ 38 mph	1	115,641	0	122	1,609,350 (V)
						2	182,951	0	122	5,768,601 (V)
						3	90,982	0	122	5,163,158 (V)
						4	103,621	0	122	4,435,546 (V)
						Annual	493,195			16,976,655

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
TEHACHAPI PASS (Kern)										
34. FLOWIND CORPORATION (Con't.)										
	A. FloWind Cameron Ridge (Con't.)	Flowind 25	(V)	515	381 kw @ 44 mph	1	0	0	2	0 (V)
						2	0	0	2	0 (V)
						3	0	0	2	0 (V)
						4	0	0	2	0 (V)
						Annual	0			0
		Sumitomo H22	(H)	363	200 kw @ 30 mph	1	0	0	1	62,389 (V)
						2	0	0	1	97,515 (V)
						3	0	0	1	42,500 (V)
						4	0	0	1	9,661 (V)
						Annual	0			212,065
						PROJECT TOTAL:				**48,499,022**
	B. FloWind IV	Flowind 19	(V)	340	250 kw @ 38 mph	1	94,005	0	58	12,000 (V)
						2	165,917	0	58	2,475,480 (V)
						3	84,944	0	58	2,160,000 (V)
						4	84,562	0	58	1,861,824 (V)
						Annual	429,428			**6,509,304**
						PROJECT TOTAL:				**6,509,304**
35. MOGUL ENERGY CORPORATION 3501 Bernard #11C Bakersfield, CA 93306	A. Liberty Wind Park	Blue Max	(H)	97	40 km @ 34 mph	1	11,300	0	80	351,008 (NV)
						2	32,800	0	80	674,176 (NV)
						3	21,124	0	80	428,880 (NV)
						4	9,276	0	80	269,504 (NV)
						Annual	74,500			**1,723,568**
						PROJECT TOTAL:				**1,723,568**

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
TEHACHAPI PASS (Kern)										
36. NATURAL RESOURCE VENTURES 23241 Ventura Blvd., Suite 216 Woodland Hills, CA 91364										
Other Participant: CalWind Resources, Inc.	A. Wind Resource I	Nordtank 65/13	(H)	201	65 kw @	35 mph	1	33,215	0	134	4,172,000 (V)
							2	41,760	0	134	5,144,000 (V)
							3	28,320	0	134	3,048,000 (V)
							4	21,480	0	134	1,988,000 (V)
							Annual	124,775			14,352,000
							PROJECT TOTAL:				14,352,000
37. OAK CREEK ENERGY SYSTEMS P.O. Box 469 Tehachapi, CA 93581										
	A. Oak Creek Energy Systems	Blue Max	(H)	108	50 kw @	27 mph	1	0	0	54	0 (V)
							2	0	0	54	0 (V)
							3	0	0	54	0 (V)
							4	0	0	54	0 (V)
							Annual	0			0
		Bonus	(H)	200	65 kw @	27 mph	1	0	0	51	1,029,460 (V)
							2	0	0	51	1,726,923 (V)
							3	0	0	51	943,597 (V)
							4	0	0	51	544,914 (V)
							Annual	103,000			4,244,894
		Carter	(H)	75	25 kw @	27 mph	1	0	0	70	0 (V)
							2	0	0	70	5,117 (V)
							3	0	0	70	54,480 (V)
							4	0	0	70	64,040 (V)
							Annual	76,000			123,637
		Flowind	(V)	0	120 kw @	27 mph	1	0	0	1	0 (V)
							2	0	0	1	0 (V)
							3	0	0	1	0 (V)
							4	0	0	1	6,424 (V)
							Annual	0			6,424

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
TEHACHAPI PASS (Kern)										
37. OAK CREEK ENERGY SYSTEMS (Con't.)	A. Oak Creek Energy Systems (Con't.)	Lolland	(H)	184	75 kw@ # mph	1	0	0	21	147,557 (V)
						2	0	0	21	271,746 (V)
						3	0	0	21	153,802 (V)
						4	0	0	21	109,774 (V)
						Annual	113,000			682,879
		Lolland	(H)	288	110 kw@ 27 mph	1	0	0	50	1,771,993 (V)
						2	0	0	50	2,447,304 (V)
						3	0	0	50	1,643,976 (V)
						4	0	0	50	1,113,399 (V)
						Annual	166,880			6,976,672
		Micon	(H)	293	110 kw@ # mph	1	0	0	50	975,503 (V)
						2	0	0	50	1,312,487 (V)
						3	0	0	50	766,106 (V)
						4	0	0	50	520,276 (V)
						Annual	154,000			3,574,372
		Micon	(H)	200	65 kw@ 27 mph	1	0	0	66	737,724 (V)
						2	0	0	66	841,133 (V)
						3	0	0	66	396,767 (V)
						4	0	0	66	261,971 (V)
						Annual	89,400			2,237,595
		Nordtank	(H)	200	65 kw@ 27 mph	1	0	0	66	1,018,511 (V)
						2	0	0	66	2,455,044 (V)
						3	0	0	66	1,734,953 (V)
						4	0	0	66	993,285 (V)
						Annual	132,000			6,201,793
		Vestas	(H)	200	65 kw@ # mph	1	0	0	7	207,841 (V)
						2	0	0	7	309,056 (V)
						3	0	0	7	177,050 (V)
						4	0	0	7	95,115 (V)
						Annual	133,000			789,062

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
TEHACHAPI PASS (Kern)										
37. OAK CREEK ENERGY SYSTEMS (Con't.)										
A.	Oak Creek Energy Systems (Con't.)	Wecs-Tec	(H)	0	100 kw @ 27 mph	1	0	0	1	0 (V)
						2	0	0	1	0 (V)
						3	0	0	1	0 (V)
						4	0	0	1	0 (V)
						Annual	0			0
		Wecs-Tec	(H)	0	65 kw @ 27 mph	1	0	0	29	0 (V)
						2	0	0	29	0 (V)
						3	0	0	29	0 (V)
						4	0	0	29	0 (V)
						Annual	0			0
						PROJECT TOTAL:				**24,837,328**
38. SEAWEST ENERGY GROUP 1455 Frazee Road, Suite 300 San Diego, CA 92108										
A.	Difwind VI/Viking I	Danwin 23/160	(H)	423	160 kw @ 34 mph	1	120,000	0	91	7,645,981 (V)
						2	240,500	0	91	17,102,881 (V)
						3	162,000	0	91	13,783,146 (V)
						4	114,000	0	91	3,942,977 (V)
						Annual	636,500			42,474,985
		MWT-250	(H)	491	250 kw @ 31 mph	1	130,000	0	20	2,738,225 (V)
						2	240,500	0	20	4,014,097 (V)
						3	149,500	0	20	3,207,993 (V)
						4	130,000	0	20	1,386,022 (V)
						Annual	650,000			11,346,337
		Micon 110 US	(H)	300	108 kw @ 30 mph	1	70,700	0	251	12,083,895 (V)
						2	137,800	0	251	23,717,492 (V)
						3	85,700	0	251	27,021,235 (V)
						4	78,200	0	251	6,997,095 (V)
						Annual	372,400			69,819,717

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
TEHACHAPI PASS (Kern)										
38. SEAWEST ENERGY GROUP (Con't.)										
	A. Difwind VI/Viking I (Con't.)	Nordtank 150S	(H)	330	150 kw @ 35 mph	1	77,300	0	62	2,983,899 (V)
						2	150,400	0	62	7,010,285 (V)
						3	93,500	0	62	7,628,625 (V)
						4	85,400	0	62	2,055,077 (V)
						Annual	406,600			19,677,886
							PROJECT TOTAL:			**143,318,925**
	B. Mojave 17	MWT-250	(H)	610	250 kw @ 29 mph	1	0	0	0	0 (V)
						2	0	0	0	0 (V)
						3	0	0	0	0 (V)
						4	130,000	100	100	1,344,000 (V)
						Annual	130,000			1,344,000
							PROJECT TOTAL:			**1,344,000**
39. SOUTHERN CALIFORNIA SUNBELT 701 S. Parker St., Suite 7300 Orange, CA 92668										
	A. Mojave Wind Park	Airmaster	(H)	16	100 kw @ 40 mph	1	0	0	10	0 (V)
						2	0	0	10	0 (V)
						3	0	0	10	0 (V)
						4	0	0	10	0 (V)
						Annual	0			0
		Windmatic 17S	(H)	227	95 kw @ 34 mph	1	28,061	0	95	1,802,362 (V)
						2	57,957	0	95	3,697,488 (V)
						3	47,453	0	95	580,222 (V)
						4	0	0	95	1,134,200 (V)
						Annual	133,471			7,214,272
							PROJECT TOTAL:			**7,214,272**

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
TEHACHAPI PASS (Kern)										
40. WINDFARMS MANAGEMENT 2509 Thousand Oaks Blvd., Suite 197 Thousand Oaks, CA 91362										
	A. Cache Creek Wind Farm	**FAILED TO FILE**				1				206,000 (UD)
		FAILED TO FILE				2				620,000 (UD)
		FAILED TO FILE				3				430,000 (UD)
		FAILED TO FILE				4				326,000 (UD)
							PROJECT TOTAL:			1,582,000
41. WINDLAND, INC. 2141 Palomar Airport Rd., Suite 360 Carlsbad, CA 92009										
	A. Windland Wind Park (Boxcar I)	Bonus 120/20	(H)	296	120 kw @ 40 mph	1	78,000	0	11	415,381 (V)
						2	157,000	0	11	1,033,320 (V)
						3	78,500	0	11	622,713 (V)
						4	78,500	0	11	493,856 (V)
						Annual	392,000			2,565,270
		Carter 25	(H)	77	25 kw @ 30 mph	1	15,300	0	39	206,675 (V)
						2	30,700	0	39	706,216 (V)
						3	15,300	0	39	458,209 (V)
						4	15,300	0	39	294,406 (V)
						Annual	76,600			1,665,506
		Carter 250/300	(H)	332	250 kw @ 38 mph	1	120,000	0	13	500,922 (V)
						2	240,000	0	13	1,445,363 (V)
						3	120,000	0	13	873,605 (V)
						4	120,000	0	13	480,573 (V)
						Annual	600,000			3,300,463
		Storm Master 12	(H)	113	40 kw @ 42 mph	1	18,000	0	10	79,421 (V)
						2	36,000	0	10	74,302 (V)
						3	18,000	0	10	57,472 (V)
						4	18,000	0	10	51,657 (V)
						Annual	90,000			262,852
							PROJECT TOTAL:			7,794,091

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
TEHACHAPI PASS (Kern)										
41. WINDLAND, INC. (Con't.)										
B.	Windland Wind Park (Boxcar II)	Bonus 65/13	(H)	181	65 kw @ 40 mph	1	37,200	0	4	62,240 (V)
						2	74,400	0	4	79,867 (V)
						3	37,200	0	4	43,122 (V)
						4	37,200	0	4	37,681 (V)
						Annual	186,000			222,910
		Enertech 44/60	(H)	180	60 kw @ 35 mph	1	0	0	12	207,935 (V)
						2	0	0	12	297,785 (V)
						3	0	0	12	167,962 (V)
						4	0	0	12	96,685 (V)
						Annual	0			770,367
		Vestas V25	(H)	491	200 kw @ 30 mph	1	125,000	0	20	2,649,826 (V)
						2	125,000	0	20	3,602,348 (V)
						3	125,000	0	20	2,430,918 (V)
						4	125,000	0	20	1,919,634 (V)
						Annual	500,000			10,602,726
							PROJECT TOTAL:			**11,596,003**
42. WINDRIDGE 406 East Tehachapi Blvd. Tehachapi, CA 93561										
A.	Willowind	**FAILED TO FILE**				1				910,000 (UD)
		FAILED TO FILE				2				1,234,000 (UD)
		FAILED TO FILE				3				774,000 (UD)
		FAILED TO FILE				4				590,000 (UD)
							PROJECT TOTAL:			**3,508,000**

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Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Cum.	Electricity Produced (kWh)
TEHACHAPI PASS (Kern)										
43. ZOND SYSTEMS, INC. 112 South Curry Tehachapi, CA 93561										
A.	Project '81 and '82 Stormaster	Stormaster	(H)	113	40 kw @ 35 mph	1	33,796	0	3	140,326 (V)
						2	49,154	0	3	55,295 (V)
						3	29,260	0	3	12,661 (V)
						4	27,790	0	3	8,966 (V)
						Annual	140,000			217,248
							PROJECT TOTAL:			**217,248**
B.	Project '82 Pool PO1, 1983 Pool PO2	Polenko	(H)	254	100 kw @ 35 mph	1	76,771	0	15	215,236 (V)
						2	111,659	0	15	657,096 (V)
						3	66,467	0	15	530,974 (V)
						4	63,128	0	15	353,245 (V)
						Annual	318,025			1,756,551
							PROJECT TOTAL:			**1,756,551**
C.	Project '82 Pool VO1, 1983 Pool VO2	Vestas 15	(H)	184	65 kw @ 35 mph	1	51,865	0	66	647,202 (V)
						2	75,434	0	66	779,648 (V)
						3	44,903	0	66	335,013 (V)
						4	42,648	0	66	230,471 (V)
						Annual	214,850			1,992,334
							PROJECT TOTAL:			**1,992,334**
D.	Project '82 Pool WO1, 1983 Pool WO2	Windmatic 14S	(H)	165	65 kw @ 35 mph	1	51,491	0	30	647,202 (V)
						2	74,890	0	30	779,648 (V)
						3	44,580	0	30	335,013 (V)
						4	42,340	0	30	230,471 (V)
						Annual	213,301			1,992,334
							PROJECT TOTAL:			**1,992,334**

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
TEHACHAPI PASS (Kern)										
43. ZOND SYSTEMS, INC. (Con't.)										
	E. Project '82 Stormaster	Stormaster	(H)	113	40 kw @ 35 mph	1	33,796	0	2	60,654 (V)
						2	49,154	0	2	76,265 (V)
						3	29,260	0	2	48,205 (V)
						4	27,790	0	2	33,305 (V)
						Annual	140,000			218,429
						PROJECT TOTAL:				218,429
	F. Project '83 Pool VO2, ZO1 & ZO2, '84 Pool VO4	Vestas 15	(H)	184	65 kw @ 35 mph	1	57,442	0	95	1,825,683 (V)
						2	83,545	0	95	2,392,763 (V)
						3	49,732	0	95	1,393,996 (V)
						4	47,233	0	95	1,114,180 (V)
						Annual	237,952			6,726,622
						PROJECT TOTAL:				6,726,622
	G. Project '84 Pool VO4, '85 Pool VO7	Vestas 15	(H)	184	65 kw @ 35 mph	1	37,440	0	45	1,041,903 (V)
						2	35,559	0	45	679,995 (V)
						3	43,244	0	45	1,335,827 (V)
						4	62,895	0	45	1,803,934 (V)
						Annual	179,138			4,861,659
						PROJECT TOTAL:				4,861,659
	H. Project '84 Pool VO4, '85 Pool VZ1	Vestas 15	(H)	184	65 kw @ 35 mph	1	47,786	0	97	2,675,135 (V)
						2	69,502	0	97	3,371,210 (V)
						3	41,372	0	97	1,804,861 (V)
						4	39,294	0	97	1,261,270 (V)
						Annual	197,954			9,112,476
						PROJECT TOTAL:				9,112,476
	I. Project '84 Pool VO4, VO5 '85 Pool VO7, VZ1	Vestas 15	(H)	184	65 kw @ 35 mph	1	37,440	0	45	1,041,903 (V)
						2	37,440	0	45	1,041,903 (V)
						3	37,440	0	45	1,041,903 (V)
						4	37,440	0	45	1,041,903 (V)
						Annual	149,760			4,167,612
						PROJECT TOTAL:				4,167,612

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
TEHACHAPI PASS (Kern)										
43. ZOND SYSTEMS, INC. (Con't.)										
J.	Project '84 Pool VO4, VO5, '85 Pool VO7, '85 VZ1	Vestas 15	(H)	184	65 kw @ 35 mph	1	45,004	0	87	2,321,078 (V)
						2	65,455	0	87	3,060,848 (V)
						3	38,964	0	87	1,557,747 (V)
						4	37,006	0	87	1,069,833 (V)
						Annual	186,429			8,009,506
						PROJECT TOTAL:				**8,009,506**
K.	Project '84 Pool VO6	Vestas 17	(H)	227	90 kw @ 35 mph	1	59,142	0	4	201,026 (V)
						2	86,018	0	4	243,075 (V)
						3	51,204	0	4	128,816 (V)
						4	48,632	0	4	91,108 (V)
						Annual	244,996			664,025
						PROJECT TOTAL:				**664,025**
L.	Project '84 Pool WO3, WO4	Windmatic 15S	(H)	184	65 kw @ 35 mph	1	29,736	0	9	99,977 (V)
						2	43,249	0	9	161,531 (V)
						3	25,745	0	9	61,773 (V)
						4	24,452	0	9	32,701 (V)
						Annual	123,182			355,982
						PROJECT TOTAL:				**355,982**
M.	Project '84 Pool WO4	Windmatic 15S	(H)	184	65 kw @ 35 mph	1	0	0	1	0 (V)
						2	0	0	1	0 (V)
						3	4,427	0	1	3,824 (V)
						4	6,587	0	1	5,144 (V)
						Annual	11,014			8,968
						PROJECT TOTAL:				**8,968**
N.	Project '85 Pool V13	Vestas 15	(H)	184	65 kw @ 35 mph	1	0	0	8	148,362 (V)
						2	0	0	8	218,411 (V)
						3	0	0	8	112,238 (V)
						4	0	0	8	81,184 (V)
						Annual	0			560,195
						PROJECT TOTAL:				**560,195**

Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
TEHACHAPI PASS (Kern)										
43. ZOND SYSTEMS, INC. (Con't.)										
O.	Project '85 Pool V14, V18 & V20	Vestas 15	(H)	184	65 kw @ 35 mph	1	37,181	0	41	839,772 (V)
						2	54,077	0	41	1,158,785 (V)
						3	32,190	0	41	587,525 (V)
						4	30,573	0	41	418,759 (V)
						Annual	154,021			3,004,841
						PROJECT TOTAL:				**3,004,841**
P.	Project '85 Pool V19, V21 & V26	Vestas 17	(H)	227	65 kw @ 35 mph	1	47,574	0	41	1,384,456 (V)
						2	69,193	0	41	1,727,427 (V)
						3	39,783	0	41	1,074,235 (V)
						4	39,119	0	41	820,264 (V)
						Annual	195,669			5,006,382
						PROJECT TOTAL:				**5,006,382**
Q.	Project '85 Pool V22, '86 Pool V25, '87 Pool V26	Vestas 17	(H)	227	65 kw @ 35 mph	1	53,527	0	34	1,383,878 (V)
						2	77,852	0	34	1,865,159 (V)
						3	46,106	0	34	1,159,564 (V)
						4	44,015	0	34	938,832 (V)
						Annual	221,500			5,347,433
						PROJECT TOTAL:				**5,347,433**
R.	Project '85 Windsystem Partners	Vestas 17	(H)	227	65 kw @ 35 mph	1	55,809	0	160	5,065,560 (V)
						2	92,300	0	160	6,018,115 (V)
						3	30,051	0	160	3,162,494 (V)
						4	60,341	0	160	2,576,324 (V)
						Annual	238,501			16,822,493
		Vestas 17	(H)	227	65 kw @ 35 mph	1	55,809	0	240	9,515,920 (V)
						2	92,300	0	240	11,285,468 (V)
						3	30,051	0	240	5,936,629 (V)
						4	60,341	0	240	5,098,930 (V)
						Annual	238,501			31,836,947
						PROJECT TOTAL:				**48,659,440**

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Location/Operator	Project	Turbine Specification: Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed: New	Turbines Installed: Cum.	Electricity Produced (kWh)
TEHACHAPI PASS (Kern)										
43. ZOND SYSTEMS, INC. (Con't.)										
S.	Project '86 Pool V23	Vestas 23	(H)	0	0 kw @ 35 mph	1	68,226	0	1	111,799 (V)
						2	99,230	0	1	143,316 (V)
						3	59,069	0	1	77,773 (V)
						4	56,101	0	1	63,347 (V)
						Annual	282,626			396,235
							PROJECT TOTAL:			**396,235**
T.	Project '86 Pool V26	Vestas 17E	(H)	0	0 kw @ 35 mph	1	51,557	0	1	54,684 (V)
						2	74,987	0	1	79,963 (V)
						3	0	0	1	54,194 (V)
						4	42,395	0	1	38,548 (V)
						Annual	168,939			227,389
							PROJECT TOTAL:			**227,389**
U.	Project Zond '87	Vestas 15	(H)	184	65 kw @ 35 mph	1	51,557	0	2	77,745 (V)
						2	74,987	0	2	119,179 (V)
						3	43,650	0	2	77,685 (V)
						4	42,395	0	2	54,703 (V)
						Annual	212,589			329,312
		Vestas 15	(H)	184	65 kw @ 35 mph	1	51,557	0	3	138,593 (V)
						2	74,987	0	3	186,521 (V)
						3	47,301	0	3	113,862 (V)
						4	42,395	0	3	76,987 (V)
						Annual	216,240			515,963
		Vestas 17	(H)	227	65 kw @ 35 mph	1	51,557	0	47	2,810,669 (V)
						2	74,987	0	47	3,897,020 (V)
						3	47,189	0	47	2,570,817 (V)
						4	42,395	0	47	1,954,858 (V)
						Annual	216,128			11,233,364
		Vestas 17	(H)	227	65 kw @ 35 mph	1	46,523	0	54	2,883,285 (V)
						2	76,755	0	54	4,290,890 (V)
						3	44,091	0	54	2,840,834 (V)
						4	4,394	0	54	2,110,658 (V)
						Annual	171,763			12,125,667

WIND PROJECT PERFORMANCE REPORTING SYSTEM, 1989 ANNUAL

Location/Operator	Project	Turbine Specification Model	Axis	Rotor (M2)	Size (kW)		Projected Prod./Turb. (kWh)	Turbines Installed New	Turbines Installed Cum.	Electricity Produced (kWh)
TEHACHAPI PASS (Kern)										
43. ZOND SYSTEMS, INC. (Con't.)		Vestas 17	(H)	227	65 kw @ 35 mph	1	48,221	0	59	2,516,012 (V)
						2	75,680	0	59	3,582,977 (V)
						3	40,884	0	59	2,206,667 (V)
						4	42,787	0	59	1,645,176 (V)
						Annual	207,572			9,950,832
		Vestas 17	(H)	227	65 kw @ 35 mph	1	51,557	0	62	3,856,191 (V)
						2	74,987	0	62	5,089,080 (V)
						3	48,736	0	62	3,363,450 (V)
						4	42,395	0	62	2,722,014 (V)
						Annual	217,675			15,030,735
		Vestas 15	(H)	184	65 kw @ 35 mph	1	51,557	0	13	652,346 (V)
						2	74,987	0	13	989,755 (V)
						3	49,455	0	13	660,346 (V)
						4	42,395	0	13	479,714 (V)
						Annual	218,394			2,782,161
							PROJECT TOTAL:			**51,968,034**

APPENDIX A
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.

	MANUFACTURER/DISTRIBUTOR	COUNTRY OF ORIGIN	TURBINE BRAND NAME(S)	PROJECT(S) WHERE TURBINE IS USED
1.	Airmaster c/o Basin Petroleum Service P.O. Box 1161 Powell, WY 82435 "No Longer Active"	U.S.	Airmaster	39A
2.	American M.A.N. West Coast Office 303 Hegenberger Rd., Ste. 402 Oakland, CA 94621	West Germany	Aeroman	31A-D
3.	Arizona Micro-Utilities 1890 E. Greenway Tempe, AZ 85282	Switzerland	Wenco	23A
4.	Bonus Wind Turbines, Inc. Fabriksvej 4 DK 7330, Brande DENMARK	Denmark	Bonus	3B, 4E, 5B, 17A, 20A, 29A, 37A, 41A-B
5.	Bouma Wind Turbines P.O. Box 79483 Houston, TX 77024	Holland	Bouma	30A
6.	Carter Wind Systems, Inc. Route 1, Box 405A Burkburnett, TX 76364	U.S.	Carter	14A, 15A, 20A, 27C , 33A, 37A, 41A
7.	Century Design, Inc. 3635 Afton Road San Diego, CA 92123 "No Longer Active"	U.S.	Century (CT)	30A

MANUFACTURER/DISTRIBUTOR	COUNTRY OF ORIGIN	TURBINE BRAND NAME(S)	PROJECT(S) WHERE TURBINE IS USED
8. Danish Wind Technology Marsk Stiysvey 4 DK 8800, Viborg DENMARK	Denmark	Windane	29A
9. Danish Windpower A/S P.O. Box 14 DK 4999, Nakskov DENMARK	Denmark	Lolland	37A
10. Danwin A/S Industrivej 12 DK-3000, Helsingor DENMARK	Denmark	Danwin (H)	5B, 22E, 38A
11. Wind Turbine Industries, Corp. 16801 Industrial Circle, S.E. Prior Lake, MN 55872	U.S.	Jacobs	16A, 19A, 27D-E
12. Enertech Corporation P.O. Box 1085 Norwich, VT 05055 "No Longer Active"	U.S.	Enertech	7A, 13A, 18A, 22A,D, 26C, 41B
13. Energy Sciences, Inc. 7791 Fitch Irvine, CA 92714 "No Longer Active"	U.S.	ESI	7C, 8A, 19A
14. Fayette Manufacturing Corp. P.O. Box 1149 Tracy, CA 95376	U.S.	Fayette	4A-I
15. FloWind Corporation 1183 Quarry Lane Pleasanton, CA 94566	U.S.	FloWind (F)	5A-B, 39A-B, 37A

MANUFACTURER/DISTRIBUTOR	COUNTRY OF ORIGIN	TURBINE BRAND NAME(S)	PROJECT(S) WHERE TURBINE IS USED
16. Hall Machinery 1401 Airport Drive Bakersfield, CA 93308 "No Longer Active"	U.S.	Blue Max	35A, 37A
17. HMZ Belgium N.V. Rellestraat 3 Industrie Zone 5 3800 Sint-Truiden BELGIUM	Belgium	HMZ	10A
18. Holec Power Systems, Inc. P.O. Box 2227 Livermore, CA 94550	Denmark	Polenko (WPS)	3A, 43B
19. James Howden and Company 195 Scotland Street Glasgow C5 9PJ SCOTLAND	Scotland	Howden (HWP)	6A
20. Micon Wind Turbines, Inc. 2352 Research Drive Livermore, CA 94556	Denmark	Micon	4B, E, 7B,D-G, 12A 20A, 22B-D, 25A, 27B-C,F, 30A-B, 37A, 38A
21. Mitsubishi c/o SeaWest Industries, Inc. 1455 Frazee Road, Ste. 300 San Diego, CA 92108	Japan	MWT	38A-B
22. Nordtank Energy Group Nyballevej 8 DK-8444 Balle DENMARK	Denmark	Nordtank (NTV)	27A-B,D,F, 30A, 36A, 37A,38A
23. Starwind Maintenance 103 N. Hwy 101, Ste. 2001 Encinitas, CA 92024	U.S.	Starwind	23A

MANUFACTURER/DISTRIBUTOR	COUNTRY OF ORIGIN	TURBINE BRAND NAME(S)	PROJECT(S) WHERE TURBINE IS USED
24. Sumitomo Machinery Corp. 2143 E. "D" Street Ontario, CA 91764	Japan	Sumitomo	34A
25. U.S. Windpower 6952 Preston Ave. Livermore, CA 94550	U.S.	U.S. Windpower (USW)	9A-E
26. Vestas P.O. Box 42 DK 6940, Lem DENMARK	Denmark	Vestas	11A, 28A-B, 37A 41B, 43C,F-K,N-U
27. Villas Styria Grossfolz 1-A 8790 Eisenerz, Austria	Austria	Floda	20A
28. Wecs-Tec "No Longer Active"	U.S.	Wecs-Tec	37A
29. Wincon Energy Systems 3942 Valley Ave. Pleasanton, CA 94566	U.S.	Wincon	25A
30. Wind Energy Group, Ltd. 345 Ruislip Rd. Southall, Middlesex, UB1 2QX ENGLAND	England	Wind Energy Group (WEG)	9C
31. Wind Harvest Co. 80 Lincoln Dr. Ventura, CA 93001	U.S.	Windstar	27D
32. Windmatic 17900 Sky Park Circle Suite 106 Irvine, CA 92714	U.S.	Windmatic	3A, 23A, 39A, 43D,L-M

MANUFACTURER/DISTRIBUTOR	COUNTRY OF ORIGIN	TURBINE BRAND NAME(S)	PROJECT(S) WHERE TURBINE IS USED
33. Wind Power Systems 9279 Cabot Drive San Diego, CA 92126 "No Longer Active"	U.S.	Storm Master	41A, 43A,E
34. Windtech Inc. P.O. Box 837 Glastonbury, CT 06033	U.S.	Windtech	39A

APPENDIX B

REGULATIONS
CALIFORNIA ADMINISTRATIVE CODE
TITLE 20, CHARTER 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 nonrecourse 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^2)": 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^2) 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^2)
(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 Purchase

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 purchasers 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 a 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.