

Verification of Tier 1 & 2 Wind Turbine Shutdowns and Relocations

K. Shawn Smallwood

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During the Alameda County Scientific Review Committee (SRC) meeting of 5-7 February 2007, the issue was raised of what it means for the SRC to provide confirmed determinations certain mitigation measures were implemented by the Companies, as required or recommended under the 22 September 2005 Alameda County conditional use permits or the 7 November 2006 settlement agreement. Options discussed included direct verification by the SRC member, verification by a trusted third party, or trusting Company reports. The County of Alameda said it lacked sufficient budget to provide verification for the SRC. To test whether Company reports would suffice as verification, I surveyed the APWRA for the operational condition of wind turbines, a certain number of which was said to have been shut down and another number relocated.

During 3-5 April, I surveyed wind turbine in the APWRA visible from public roads and other vantage points where I had access. I carried maps of wind turbines I produced from a GIS data base. Based on visual observations, I recorded the operational status of each wind turbine I could see, except for those replaced or constructed in the Buena Vista and Diablo Winds repowering projects. I might have made a few errors due to some long-range surveys using binoculars, e.g., I might have recorded some turbines as operational when in fact they were broken.

As a first step, I must point out some of the wind turbines rated for collision threat to raptors (Smallwood and Spiegel 2005) were removed for repowering projects, i.e., Diablo Winds and Buena Vista. These turbines numbered at least 194 (this is the number in my data base, and another 130 removed turbines were not rated by Smallwood and Spiegel). They included 2 Tier 1 turbines and 14 Tier 2 turbines, so at least 16 Tier 1 and 2 turbines have not been available for shutdown since before the Alameda County Board of Supervisors approved conditional use permits on September 22, 2005 and before the settlement agreement of November 7, 2006. The available pool of Tier 1 and 2 turbines has not been 154, but rather 138.

Of the 97 Tier 1 & 2 wind turbine sites I could see last week, 79 (81%) were operational and only 18 (19%) were not (Table 1). Both the turbine and tower was removed from only 1 of these 18 non-operational Tier 1 & 2 turbine sites, whereas derelict towers occupied the other 17 sites.

The map of wind turbine status submitted to the SRC by the Companies (document P16) appeared mostly accurate for the Tres Vaqueros portion of the APWRA, including all turbines west of Vasco Road and north of the access road to Los Vaqueros Reservoir (see maps below). The map was often inaccurate throughout the rest of the APWRA, in terms of which wind turbines remained versus which had been removed.

As a point of interest, Table 2 demonstrates the dynamic nature of wind turbine operational status in the APWRA. Of the 2862 operational turbines during the 1998-2003 study that I could

see last week, 211 (7%) had since been shut down. However, of the 16 previously non-operational turbines that I could see last week, 12 (75%) are now operating. Of the 220 previously derelict towers, 170 (77%) are now operating. Of the 48 previously removed towers, 29 (60%) of these sites support operational turbines. Overall, it appears more of the old-generation wind turbines were made operational than were shut down since 1998-2003.

Table 1. Condition of APWRA wind turbines rated by Smallwood and Spiegel (2005) for their level of collision threat to raptors.

Tier	Tower sites not observed	Tower sites observed	Operational¹	Derelict tower	Broken turbine	Turbine/tower removed	Total shutdown
1	23	29	20	9	0	0	9
2	19	68	59	8	0	1	9
3	47	105	89	12	0	4	16
4-6	1301	2273	2090	101	5	77	183
Total	1390	2475	2258	130	5	82	217

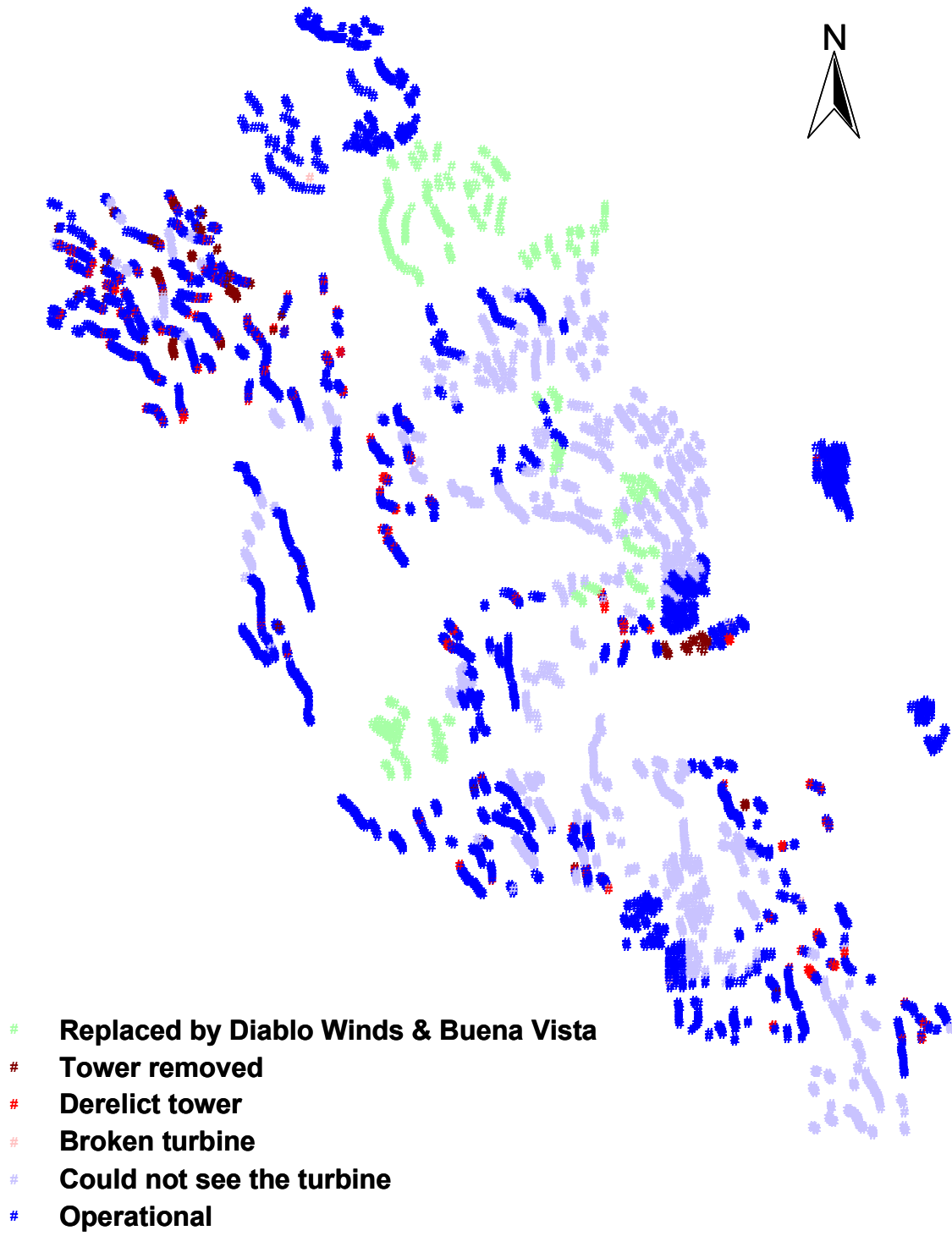
Table 2. Condition of wind turbines in 2007 compared to condition in 1998-2003.

Status in 1998-2003	Status in 2007						
	Tower sites not observed	Tower sites observed	Operational²	Derelict tower	Broken turbine	Turbine/tower removed	Total shutdown
Operational	1659	2862	2651	136	5	70	211
Non-operational	13	16	12	4	0	0	4
Derelict tower	139	220	170	33	0	17	50
Tower removed	14	48	29	3	0	16	19
Total	1825	3146	2862	176	5	103	284

I also noticed that specific wind turbines I had previously been told were shut down were in fact still intact and still operating. I had been told an entire string of turbines was removed from the north side of a turbine field previously owned by Enron and then Santa Clara. This turbine string had killed many raptors during the 1998-2003 study, and appeared to serve as a good example of using multiple sources of information to make decisions about which turbines to remove or shut down. Since September I had been under the impression these turbines were all shut down. My misunderstanding of the status of these turbines probably resulted from a miscommunication, but this miscommunication, in my opinion, further demonstrates the need for verification of mitigation measures through the SRC's own observations or those of trusted third parties.

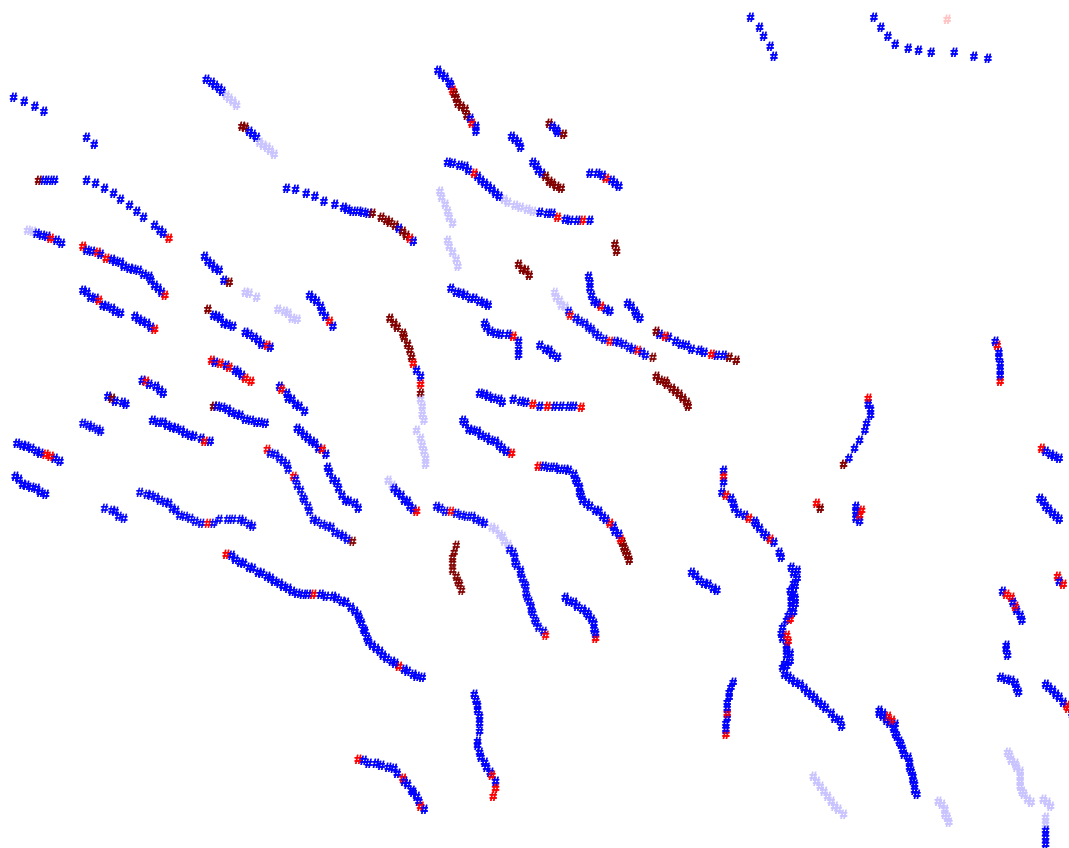
¹ Based on my observations from vantage points in the APWRA. I cannot confirm that all wind turbines I identified as operational were actually operational because it is possible the rotors of some turbines that were non-operational continued to move in response to the wind.

² Based on my observations from vantage points in the APWRA. I cannot confirm that all wind turbines I identified as operational were actually operational because it is possible the rotors of some turbines that were non-operational continued to move in response to the wind.





East of Los Vaqueros Reservoir



- # Replaced by Diablo Winds & Buena Vista
- # Tower removed
- # Derelict tower
- # Broken turbine
- # Could not see the turbine
- # Operational



References

- Smallwood, K. S. and L. Spiegel. 2005a. Assessment To Support An Adaptive Management Plan For The APWRA. Unpublished CEC staff report, January 19. 19 pp.
- Smallwood, K. S., and C. Thelander. 2004. Developing methods to reduce bird mortality in the Altamont Pass Wind Resource Area. Final Report to the California Energy Commission, Public Interest Energy Research – Environmental Area, Contract No. 500-01-019. Sacramento, California. 531 pp.
- WEST, Inc. 2006. Wildlife monitoring at Altamont Pass, Winter 05 –early Fall 06: Preliminary draft results. Unpubl. report to Alameda County Scientific Review Committee, Alameda County Community Development Agency, Planning Department, 224 W. Winton Avenue, Rm. 111, Hayward, California. 55 pp.