

Old-Generation Wind Turbines Rated for Raptor Collision Hazard by Alameda County Scientific Review Committee in 2010, an Update on those Rated in 2007, and an Update on Tier Rankings

Shawn Smallwood

26 April 2010

In support of the upcoming Alameda County Scientific Review Committee (SRC) meeting, I reviewed the ratings that Jim Estep and I made during March 2010. I helped the monitoring team with error checking, and I tallied the wind turbines given various ratings. I also reviewed the 2007 SRC ratings for hazard level to golden eagle, red-tailed hawk, and American kestrel, and found what I believe were a few data entry or interpretation errors. Finally, I used 25 August 2009 imagery posted by Google Earth to review the turbine/tower status of all old-generation wind turbines in the Altamont Pass Wind Resource Area (APWRA), and I tallied the status classification of turbines by their 2005 Tier rankings for relative hazard levels to raptors (including burrowing owls in this case).

These tallies are by no means final, and should not be interpreted outside the context in which the ratings were made. They are only intended to assist with the SRC's discussion on the issue of ratings, as well as an eventual SRC report. The hazard ratings, after all, were often based on the functional status of neighboring wind turbines, and those situations have not been expressed in my tallies of rated turbines. Whereas attribute data were recorded by me and Jim while we rated the turbines in March 2010, I do not yet have these data in spreadsheet form, so the context, or the underlying reason of the rating, is often missing from these tallies.

I understand the monitoring team also produced tallies of the SRC's ratings, but my effort differs from the monitoring team's tallies because mine are more expansive. Furthermore, I believe that the SRC needs to report on its own ratings, and so I view my tallies and the monitoring team's tallies as beginnings to that end. The monitoring team's help with the March 2010 rating effort was much appreciated.

Table 1 presents tallies of March 2010 hazard ratings, broken down by turbine and tower status and company. Table 2 presents tallies of November-December 2007 hazard ratings, broken down by turbine and tower status observed in Google Earth imagery dated 25 August 2009. Table 3 presents tallies of June 2005 (Smallwood and Spiegel 2005) Tier rankings of collision hazard, broken down by turbine and tower status observed in Google Earth imagery. Please be aware that some of my interpretations of turbine status based on Google Earth imagery could have been wrong, and should not serve as a final substitute for on the ground observations and information from the wind companies.

Reference

Smallwood, K. S. and L. Spiegel. 2005. Combining biology-based and policy-based tiers of priority for determining wind turbine relocation/shutdown to reduce bird fatalities in the APWRA. Unpublished CEC staff report, June 1. 9 pp.

Table 1. SRC ratings of hazard levels posed by wind turbines visited in March 2010.

SRC Rating	No. of turbines	Intact	Broken turbine	Vacant tower	Vacant address
All companies					
<7	1825	1733	4	18	70
7	339	324	2	7	6
7.5	320	312	1	3	4
8	158	150	0	2	6
8.5	65	55	1	4	5
9	19	18	0	0	1
9.5	2	2	0	0	0
10	7	5	0	0	2
Total	2735	2599	8	34	94
NextEra					
<7	819	748	0	15	56
7	163	155	0	5	3
7.5	134	130	0	2	2
8	75	74	0	0	1
8.5	41	39	0	2	0
9	12	12	0	0	0
9.5	1	1	0	0	0
10	5	4	0	0	1
Total	1250	1163	0	24	63
AWI					
<7	261	253	0	0	8
7	53	50	0	0	3
7.5	76	75	0	0	1
8	20	15	0	0	5
8.5	7	3	0	0	4
9	4	3	0	0	1
9.5	0	0	0	0	0
10	1	0	0	0	1
Total	422	399	0	0	23
AES Seawest					
<7	396	388	3	2	3
7	71	67	2	2	0
7.5	52	52	0	0	0
8	20	18	0	2	0
8.5	11	7	1	2	1
9	0	0	0	0	0
9.5	1	1	0	0	0
10	0	0	0	0	0
Total	551	533	6	8	4
Altamont Power					
<7	3	3	0	0	0

7	0	0	0	0	0
7.5	0	0	0	0	0
8	0	0	0	0	0
8.5	0	0	0	0	0
9	0	0	0	0	0
9.5	0	0	0	0	0
10	0	0	0	0	0
Total	3	3	0	0	0
EnXco					
<7	342	338	1	1	2
7	52	52	0	0	0
7.5	58	55	1	1	1
8	43	43	0	0	0
8.5	6	6	0	0	0
9	3	3	0	0	0
9.5	0	0	0	0	0
10	1	1	0	0	0
Total	505	498	2	2	3

Table 2. Status of wind turbines in August 2009, organized by SRC hazard ratings in 2007.

SRC ratings in 2007		Wind turbine status on 25 Aug 2009			
Rating	No. of turbines	Intact	Vacant tower or broken turbine	Vacant address	Percent removed
All companies					
<7	163	143	6	14	37
7	43	41	0	2	5
7.5	67	61	3	3	4
8	78	46	8	24	31
8.5	100	39	4	57	57
9	60	22	2	36	60
9.5	41	14	0	27	66
10	57	16	4	37	65
Total	609	382	27	200	33
NextEra					
<7	60	47	4	9	52
7	9	8	0	1	11
7.5	33	27	3	3	9
8	48	28	8	12	25
8.5	51	2	0	49	96
9	33	4	0	29	88
9.5	27	5	0	22	81
10	29	1	0	28	97
Total	290	122	15	153	53
AWI					
<7	64	55	2	7	44
7	9	9	0	0	0
7.5	14	14	0	0	0
8	18	16	0	2	11
8.5	39	37	2	0	0
9	18	17	1	0	0
9.5	11	9	2	0	0
10	17	15	2	0	0
Total	190	172	9	9	5
AES Seawest					
<7	10	10	0	0	0
7	2	2	0	0	0
7.5	6	6	0	0	0
8	2	2	0	0	0
8.5	2	0	2	0	0
9	0	0	0	0	
9.5	2	0	0	2	100
10	0	0	0	0	
Total	24	20	2	2	8

		EnXco			
<7	31	31	0	0	0
7	23	22	0	1	4
7.5	14	14	0	0	0
8	10	0	0	10	100
8.5	6	0	0	6	100
9	9	1	1	7	78
9.5	3	0	0	3	100
10	9	0	0	9	100
Total	105	68	1	36	34

Table 3. Status of wind turbines on 25 August 2009, based on aerial imagery depicted in Google Earth, and grouped by Tier ratings made in 2005 (Smallwood and Spiegel 2005).

2005 Tier ratings		25 August 2009			
Tier	No. of turbines	Intact	Vacant tower or broken turbine	Vacant address or partial tower	Percent removed
All companies					
1	54	18	0	36	67
2	101	48	0	53	52
3	152	87	0	65	43
4	296	197	11	88	30
5	1323	993	61	269	20
6	2132	1745	68	319	15
Total	4058	3088	140	830	20
NextEra					
1	28	9	0	19	68
2	33	18	0	15	45
3	95	60	0	35	37
4	136	78	7	51	38
5	660	413	44	203	31
6	880	573	46	261	30
Total	1832	1151	97	584	32
AWI					
1	10	0	0	10	100
2	20	10	0	10	50
3	30	26	0	4	13
4	37	32	3	2	5
5	228	205	15	8	4
6	261	247	9	5	2
Total	586	520	27	39	7
Northwind					
1	8	8	0	0	0
2	18	18	0	0	0
3	0	0	0	0	0
4	26	26	0	0	0
5	67	67	0	0	0
6	10	8	2	0	0
Total	129	127	2	0	0
AES Seawest					
1	0	0	0	0	0
2	2	2	0	0	0
3	0	0	0	0	0
4	22	20	1	1	5
5	172	158	1	13	8
6	418	396	10	12	3

Total	614	576	12	26	4
		Pattern Energy			
1	2	0	0	2	100
2	14	0	0	14	100
3	0	0	0	0	
4	23	0	0	23	100
5	30	0	0	30	100
6	81	71	0	10	12
Total	150	71	0	79	53
		Altamont Power			
1	0	0	0	0	
2	1	0	0	1	100
3	1	0	0	1	100
4	4	0	0	4	100
5	2	0	0	2	100
6	19	3	0	16	84
Total	27	3	0	24	89
		EnXco			
1	6	1	0	5	83
2	13	0	0	13	100
3	26	1	0	25	96
4	48	41	0	7	15
5	164	150	1	13	8
6	463	447	1	15	3
Total	720	640	2	78	11