

## Core Turbine Analysis

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It has been suggested in the past that one possible method of comparison (as it relates to avian mortality) between the Baseline study data and the Current study data would be the use of these *randomly* selected “core turbines”. Core turbines were turbines monitored in both studies and thus were suggested as a good comparison sample set. Unfortunately upon some basic review this would be a very inaccurate comparison as the “core turbines” are a very poor representation of the turbines types in the Altamont Pass Wind Resource Area (APWRA) or the wind operators mitigation efforts.

Table 1 breaks out the core turbines (best estimate, since it has not been made available for review) by site and turbine type. The core turbines referenced in Smallwood and Karas 2009 paper on this topic totaled 81.63MW, yet our review showed 82.5MW (any difference is likely insignificant and due to minor errors). The information in Table 1 clearly demonstrates a lack of turbine type representation in the core turbine set versus the turbines in the APWRA (Original Construction Capacity was used since the current capacity was not available as of yet - % would not shift significantly were I to use current operational turbines). As only one example the Kenetech 56-100 (100KW) turbines only represented 21.5% of the core turbines, yet represent close to 60% of the turbines in the APWRA. The Smallwood and Karas 2009 paper states that these core turbines from the Baseline study were “selected randomly for the 2005-2007 fatality monitoring and so were directly comparable between monitoring periods”. This statement, while not false, is very disingenuous. This analysis shows there is nothing random about this approach, and quite frankly one that the paper should not have represented as such.

As for geographic representation, the core turbines also demonstrate a weak relationship. Most of the core turbines represent distinct and isolated geographic regions. Areas of the north, west, and south APWRA are poorly represented.

The core turbines also do not represent a fair distribution of the mitigation measures completed by the various wind operators. First, the 40KW Enertech turbines have been historically shutdown in the winter well before 1998, thus the winter shutdowns instituted by the wind companies would conceivably have no effect on avian mortality on those turbines. Yet these turbines represent 7% of the core turbines while only 1% of the turbines in the APWRA. Second, of the 177 Kenetech 56-100 turbines in the core turbine set only 7 “high risk turbines” (those turbines ranked 1-3 using the Smallwood June Tier ranking, 8-10 in the SRC’s Dec 2007 ranking, or high risk turbines which FPLE removed and was given credit against its permit conditions by the SRC) have been removed, or 3.95% (of those 4 were ranked as 8, 2 turbines as 9, and one as 9.5, no turbines ranked in the highest tiers of either risk rankings). In 1998, NextEra wind projects had approximately 2264 Kenetech 56-100s in operation. Since that time we have removed 293 high risk turbines or 12.9% of our turbines (this does not include the 425 other 56-100 turbines that were not rated as high risk, yet removed since 1998). Obviously the core turbine comparisons approach under estimates the avian mortality mitigation done to this point.

I have described 3 very significant biases represented by the attempted analysis of this core turbine comparison approach. Use of this approach has a significant bias against avian mortality reduction in the APWRA between the two study periods. This core turbine comparison approach while at first seems reasonable, with even a minimal amount of research is shown to be wholly inaccurate.

ProjectSiteName	Capacity_kW	Data	Total	% Capacity of Core Turbines	% of Original Capacity of APWRA
AC	65	Sum of Capacity_kW	8515	10.3%	2.1%
		Count of TurbineLabel	131		
AIC	100	Sum of Capacity_kW	17700	21.5%	60.0%
		Count of TurbineLabel	177		
	400	Sum of Capacity_kW	6400	7.8%	2.7%
		Count of TurbineLabel	16		
ALTECH	40	Sum of Capacity_kW	5760	7.0%	1.0%
		Count of TurbineLabel	144		
DIFWIND IX	120	Sum of Capacity_kW	2640	3.2%	0.5%
		Count of TurbineLabel	22		
	150	Sum of Capacity_kW	6450	7.8%	2.7%
		Count of TurbineLabel	43		
DIFWIND VII	120	Sum of Capacity_kW	14040	17.0%	4.3%
		Count of TurbineLabel	117		
GB	65	Sum of Capacity_kW	3380	4.1%	*
		Count of TurbineLabel	52		
SANTA CLARA	95	Sum of Capacity_kW	12255	14.9%	3.3%
		Count of TurbineLabel	129		
TAXVEST	65	Sum of Capacity_kW	780	0.9%	0.1%
		Count of TurbineLabel	12		
VENTURE	65	Sum of Capacity_kW	1690	2.0%	0.3%
		Count of TurbineLabel	26		
	100	Sum of Capacity_kW	1200	1.5%	0.2%
		Count of TurbineLabel	12		
VIKING	65	Sum of Capacity_kW	1690	2.0%	0.3%
		Count of TurbineLabel	26		
Total Sum of Capacity_kW			82500	100.0%	77.5%
Total Count of TurbineLabel			907		

\*AC/GB represent 2.11% of the original capacity of the APWRA

Table 1