

Memo Regarding Decision on FPLE credit

By Julie Yee

August 13, 2007

My reasons for granting FPLE credit on July 20, 2007, are primarily based on the issue of whether the 96 turbines proposed for credit had equivalent or greater risk than the 51 Tier 1 and 2 turbines. There were an additional 9 Tier 1-2 turbines that FPLE had agreed to remove, so the comparison is only with the 51, not the 60, Tier 1-2 turbines towards which FPLE originally requested to apply the credit. I looked at the following fatality numbers from the WRRS provided by FPLE. I considered these numbers during February when there were 51 Tier 1-2, and again in July when the number of remaining Tier 1-2 turbines had dropped to 38 due to attrition.

Table 1. Fatality counts in WRRS.

	Turbines requested for credit	Tier 1-2 turbines as of February request	Tier 1-2 turbines as of July decision
Number of turbines	96	51	38
Number of fatalities (WRRS data)	62	26	14
Fatalities per turbine	0.646	0.510	0.368

If the WRRS fatality counts can be trusted to reflect mortality risks, then it appears that the 96 turbines had a mortality risk exceeding those of the remaining Tier 1-2 turbines. Since the WRRS data contains incidental finds, and is therefore not from a scientifically-controlled survey, I hesitated to rely on just these simple comparisons.

Reliability of data and possibility of biases. I was concerned that there could be unseen biases that would cause more fatalities to be reported to WRRS at a greater rate in the turbines requested for credit compared to the Tier 1-2 turbines, which would inflate the difference or even show an opposite difference than what is actually occurring. Biases can occur intentionally or unintentionally by visiting one group of turbines more frequently than the other, and any suggestion of bias is not intended to suggest deception. After I requested for FPLE to provide additional data indicating which fatalities were found from controlled surveys, then they responded that they did not have this information but they provided data indicating the reporting party. They also indicated whether the reporting party reported only incidental finds (WIND, ACDA, UCI, USFWS, and SCBG) or both incidental and survey finds (WEST, BSA, CCWD, CEC, JHA)¹. Although this information does not allow for rigid analysis, I felt that a comparison of reporting rates by different parties could provide some indication of whether biases might have occurred. In other words, if any of the reporting parties differed in their relative reporting rates for the two groups of turbines, then this would confirm for me that relative reporting rates were not always consistent. This kind of finding would be consistent with having biases in the data, because the comparison between turbines is dependent on who

¹ Acronyms are from P24F: WIND=Field maintenance personnel, ACDA=county agency, UCI=construction contractor, SCBG=Hunt radio tag GOEA study, CCWD=Contra Costa Water District, and JHA=Judd Howell Associates.

reported the fatalities. The converse is not true; a lack of difference in relative reporting rates among companies does not mean that the data is unbiased, because it is possible for all parties to share the same bias. So, this analysis effort can be considered as an attempt to find biases, and not to rule it out. For statistical analysis and testing, I grouped the reporting parties into two separate groups according to whether they conducted surveys, and found no difference in their relative reporting rates. Both groups reported between 69% and 71% of their fatalities in the turbines requested for credit (Fisher's exact test², p-value = 1.000). I also conducted the test without grouping, so that the individual parties were compared to one another, and I did find some significant difference among reporting parties (Fisher's exact test, p-value = 0.0391). The difference seemed to be related to CCWD, which reported all 7 of its reported fatalities at the turbines requested for credit. After omitting the CCWD data and repeating the analysis, no significant difference was found among the remaining nine parties (Fisher's exact test, p-value=0.1037). These results do not confirm strong biases, since the CCWD contributed very little data. I surmise that, if there are any biases in the data, then it is either a consistent bias across reporting parties, or that the biases are with one or few parties that contributed too few data to substantially affect the patterns in Table 1.

Table 2. Fatality counts in WRRS, by reporting party.

	Turbines requested for credit	Tier 1-2 turbines as of Feb 2007 request	Relative reporting rate at turbines requested for credit
Total Fatalities	62	26	70.45%
<i>Parties Reporting Only Incidental Finds</i>			
	52	22	70.27%
ACDA	3	1	75%
SCBG	7	1	87.5%
UCI	0	0	--
USFWS	1	1	50%
WIND	41	19	68.33%
<i>Parties Reporting Survey and Incidental Finds</i>			
	9	4	69.23%
BSA	0	2	0%
CCWD	7	0	100%
CEC	2	0	100%
JHA	0	0	--
WEST	0	2	0%
<i>Unknown</i>	1	0	100%

Considerations towards supporting the credit. I decided a conservative approach would be to compromise with partial credit. I would credit the 96 turbines for half of the fatalities reported in the WRRS, or 31 instead of 62. This still exceeds the 26 fatalities

² All tests were at the 0.05 type I error level, therefore differences are considered significant when the p-value < 0.05.

from the 51 Tier 1-2 turbines, and further exceeds (more than double) the 14 fatalities from the 38 turbines remaining as of the July 20, 2007 decision. Thus, even if there were a four-fold bias in the WRRS data, I would still consider the 96 turbines that were removed to have satisfied the criteria of exceeding the risk of the remaining Tier 1-2 turbines.

Considerations towards denying the credit. Other SRC members raised important reasons for supporting or denying credit. One cited the reason of supporting proactive effort, while another doubted whether the company intended to be proactive. Since the two views could sway my opinion in opposite directions, I decided not to dwell on what FPLE's reasons for removing those turbines might have actually been.

Towards denial of credit, I felt there was some validity to two points brought up by other SRC members for conditioning or withholding the credit, for purposes of better meeting mortality reduction goals. The first reason was to link the credits to a commitment that FPLE participate in a study on another management strategy, and the other was to deny credit because of doubt that the companies will reach the 50% reduction goals without more mitigation.

I could almost accept the linkage approach, because I viewed it as a trade of information. Since FPLE was unable to provide the level of information to confidently assess the comparison, then perhaps they could provide valuable information elsewhere. It would be an agreement to give FPLE the benefit of the doubt on the possibility of unknown survey biases, in exchange for an opportunity to collect data on a potential management strategy for which we currently lack information. However, I was also concerned about the fairness of bartering one mitigation strategy in exchange for another, especially if the 96 removed turbines had truly matched or exceeded the 51 Tier 1-2 turbines in mortality risk. One could counter-argue that the FPLE credit decision is also a type of bartering. To me, it is not the same kind of thing because it involves one type of mitigation, and it was stipulated in the settlement. In the end, I decided to try to assess the credit without the linkage, and if I felt I could support credit without the linkage, then it would be unfair of me to condition for that commitment from FPLE.

The ability (or lack thereof) to achieve 50% reduction was another important consideration. Shawn Smallwood has issued memos indicating that reductions could fall far short of the 50% goals³. Based on the language of the settlement agreement, the credit decision is the only item on which the SRC is allowed any authority. I considered withholding credit based on this reason. However, I also felt that it was appropriate to make my considerations without prejudice of the fact that FPLE has already removed 96 turbines. I felt that if FPLE had not already removed those turbines and were now asking credit for them prior to their removal, then I would not be using this reason to deny credit. Also I did not consider that denying the credit, which would cause FPLE to

³ One of these memos (see P41) states that it would be necessary to achieve an average 75% reduction over the next two years in order to achieve the overall goal of a 3-yr average annual 50% reduction. During the July 20 conference call, I disagreed with the calculation because I misinterpreted it to mean that two successive annual reductions of 75% would be required to meet the goal, or in other words a cumulative reduction of 94%. This clearly was not the intended meaning, and I have tried to resolve the confusion it caused and withdraw the disagreement (see P45). There are lingering questions about how to measure change when mitigation is ongoing, which will be addressed in a separate agenda. In any case, the actual annual reductions needed to meet the reduction goal are irrelevant to the reasons behind my credit vote.

remove the 38 turbines (less than 1% of the total turbines in Altamont), would create enough of a substantial impact in meeting the 50% reduction goals.

Decision to support the credit. My reasons for supporting the credit outweighed my reasons for denying it, and I ended up in support of the credit at the July 20 conference call. My only remaining reservations were with the comparability of data, but as we have moved forward in time and as more and more of the Tier 1-2 turbines have gone into non-operating status, then the comparison has increasingly moved more in favor of credit.