

## **Dissenting Opinion on Recommendation to Approve of the AWI Blade Painting Study**

Shawn Smallwood

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On 24 September 2007 a majority of the Alameda County SRC approved of the proposed AWI blade painting study. This study plan consisted of a proposed sample size of wind turbines to be treated and compared to a control group. AWI agreed to work with Lee Neher to intersperse the treated and control turbines. The SRC also advised AWI and the County to let the Alameda County monitoring team manage and analyze the data. All SRC members agreed with all these elements of the plan, but I dissented with the plan element consisting of the winter-time shutdown exemption of all 920 wind turbines operated by AWI.

I prepared this dissenting opinion even though the facilitator and the SRC majority felt that the SRC's meeting notes would suffice as a recommendation to the County. Past recommendations resulted in memos to the County. By leaving the recommendation to the meeting notes, however, I feel that my dissenting opinion may be inadequately expressed in the record. The SRC had agreed at its outset that dissenting members would be given the opportunity to explain their dissent. I feel that the County and the Parties to the Settlement Agreement of 7 November 2006 should know why I dissented with the SRC's approval of the blade painting study.

The Settlement Agreement established a goal of reducing wind turbine-caused raptor mortality by 50% measured over a three-year period from the effective date of the Agreement. This reduction was to be Altamont-wide, which has been interpreted to include all the Wind Companies, including non-settling parties. AWI owns and operates about 920 wind turbines in the APWRA, or nearly 20% of the turbines. Although AWI is a non-settling party, their operations of turbines are still subject to the conditional use permit approved by the Alameda County Board of Supervisors, along with required management actions intended to reduce raptor mortality. One of those required actions was winter-time shutdown of all of their wind turbines totaling 2.5 months this coming winter.

The SRC had recently recommended the winter-time shutdown be extended to four months, thereby encompassing the entire winter period. This action would give up about 15% of the APWRA's annual wind power generation, while sparing about 32% of the raptors otherwise killed annually.<sup>1</sup> Julie Yee estimated species-specific reductions in mortality, which varied, but which did not appear to deviate far from my estimate if pooled. The SRC also considered additional evidence, all indicating a relatively large reduction in raptor mortality resulting from a winter shutdown. The SRC agreed that the weight of evidence supports the conclusion that the winter-time shutdown is likely the most effective measure available for reducing raptor mortality in the APWRA in the near-term.

After deliberating the mitigation options in recent months, the SRC agreed the winter shutdown would contribute most toward achieving the 50% mortality reduction goal, but it also recognized this measure was insufficient by itself to achieve the goal. After its August meeting the SRC

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<sup>1</sup> See SRC document S19 (Smallwood, March 19, 2007)

issued a statement of concern that current trends in raptor mortality and in management actions suggest the 50% mortality reduction will not be achieved. I interpret this statement to mean something more needs to be done to achieve the goal, not something less.

But less is what the majority of the SRC recommended on 24 September 2007. The SRC majority approved the winter shutdown exemption requested by AWI for all of its 920 turbines. Assuming the 4 month shutdown would have reduced APWRA-wide raptor mortality 32%, the AWI shutdown exemption lessened this reduction to 26%,<sup>2</sup> and assuming the AWI shutdown would have been only 2.5 months pursuant to AWI's 2005 CUP, then the SRC's exemption lessened the expected reduction to 28%.<sup>3</sup> The SRC sacrificed between 12% and 19% of the effect it knew would be insufficient for achieving the 50% mortality reduction goal.<sup>4</sup> I do not believe it is possible for 170 wind turbines with one blade painted black to make up for this level of mortality the SRC exempted.

AWI reported that its 42 turbines with one black blade reduced mortality of target raptor species by 25%.<sup>5</sup> Thus, assuming AWI's analysis of WRRS data represent reality,<sup>6</sup> the settlement agreement's baseline mortality of 2.24 raptors per year (1300 fatalities divided by 580 MW of rated capacity) could be adjusted down to 1.68 raptors per year. Multiplying these estimates by the MW of 170 turbines with a black blade, and assuming all these turbines are 100-kW turbines, then the annual toll of these turbines on target raptor species would be 29 instead of 38. Nine target raptors might be saved, if AWI is correct. This would yield a 0.7% reduction in APWRA-wide mortality, which should be compared to the 6.1% mortality reduction that could have been achieved with a 4 month winter shutdown of the AWI turbines. Given these numbers and assuming WRRS yielded reliable data, then the winter shutdown would have been nearly 9 times more effective than the blade painting experiment. Furthermore, if the blade painting treatment was applied Altamont-wide, then the WRRS data indicates this measure would be less effective than the winter shutdown, reducing mortality 25% as compared to the 32% from the winter shutdown.

One reason cited for approving the winter shutdown exemption was the hope that the blade painting experiment would reveal another effective measure, which could then be implemented if the APWRA's wind companies continue to operate their old-generation wind turbines for another 10 to 15 years. This outcome would not contribute to the settlement goal of reducing mortality by 50% over the defined three-year program, of which only two years remain. In fact, the SRC used this rationale on August 20-22, 2007, to recommend against repowering as a near-term solution to raptor mortality in the APWRA. Just as repowering cannot contribute to the 50% mortality reduction goal over the three-year monitoring period, neither can the blade

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<sup>2</sup> The estimated loss of 6.1% of the reduction was derived by multiplying the proportional reduction due to the winter shutdown by the proportion of the turbines being monitored and which are owned by AWI, and then expressing the product as a percentage. So, the calculation was  $0.322 \times 0.19 = 0.061$ , or 6.1%. AWI owns 18% of the APWRA turbines, and their turbines compose about 19% of the sample undergoing fatality monitoring.

<sup>3</sup> To estimate the loss of 4% of the reduction, I multiplied the previous product by 0.644, which is the 2.5 month shutdown as a proportion of the SRC's recommended 4 month shutdown, or  $2.5 \div 4.0$ . So, the calculation was  $0.322 \times 0.19 \times 0.644 = 0.0394$ .

<sup>4</sup> The 12% figure was  $4\% \div 32\%$ , and the 19% figure was  $6.1\% \div 32\%$ .

<sup>5</sup> See SRC document P47.

<sup>6</sup> I do not endorse this assumption, but others have put stock in it so I'll use it to illustrate my point.

painting experiment. By the time the experiment yields useful results, and by the time the companies would be able to paint blades on a meaningful number of turbines, the three-year program defined by the settlement agreement will be over.

Furthermore, AWI holds the patent for the blade painting pattern at issue. I have seen no indication AWI intends to allow other companies in the APWRA to use the patent, and I have seen no evidence that any of the other companies are interested in painting blades of their turbines in the fashion covered by AWI's patent. I am not convinced the effectiveness of the black-blade painting scheme will result in reduced raptor mortality over the long term, let alone the short term, and I think it was inconsistent of the SRC to use the long term argument after rejecting repowering as a near-term measure.

I also doubt whether the black blade treatment will be effective with the larger, new-generation wind turbines. A raptor that has approached to within 10 meters of a new-generation wind turbine probably could not even see the rotor plane in its entirety, so the black blade will not be viewed in contrast to the white blades. Other SRC members appear to agree with my assessment of the black blade treatment on larger wind turbines, so this was apparently not a factor in the majority's decision, but I feel it is important to point this out. The long-term effectiveness of the black blade treatment would likely be restricted to the continued operation of old-generation wind turbines in the APWRA.

Another reason cited for approving the winter shutdown exemption was because AWI said it would not perform the blade painting experiment without the exemption. Not only did AWI state they would not perform the experiment, but on 21 August 2007 its principal warned the SRC that if it recommended a four month winter shutdown, AWI would sue the County and each and every member of the SRC. The SRC was unable to reach consensus on the four month shutdown during that meeting, although it appeared it was close to doing so before the threat was made. Consensus was not reached until the 12-13 September 2007 meeting, but AWI was granted an exemption to the shutdown on 24 September 2007.

I think it was inappropriate for SRC members to negotiate with AWI, and to recommend a change to the CUP approved by the Alameda County Board of Supervisors in 2005. The SRC should be evaluating the science associated with the monitoring effort, and it should be relying on the best available scientific data and analytical tools to recommend management actions to achieve the 50% reduction goal stated in the Settlement Agreement. In this case, however, the SRC gave up the measure the SRC itself established as the most scientifically defensible and the most potentially effective, and it did so based on AWI's assurance the deal was off otherwise. Whether the deal was off should have been left to a discussion between AWI and the County.

After one year of no reduction in raptor mortality, and with only two years remaining to achieve the 50% reduction in mortality and the recognition that it will take multiple measures to achieve the goal, there is no time to spare on experiments. The average annual mortality estimate to be compared to the baseline estimate will need to average 75% mortality reduction per year for the next two years to achieve the target:<sup>7</sup>

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<sup>7</sup> See SRC documents P41, P43 and P44.

$$50\% \text{ Reduction} = \frac{0\% + 75\% + 75\%}{3}.$$

Only a combination of serious management actions can possibly reduce mortality enough to have any hope of meeting the settlement agreement goal. The SRC is giving experimentation too much priority, and has been too willing to grant exemptions and credits to this end. The SRC's primary responsibility is to recommend management actions to reduce raptor mortality so that there are fewer, not greater, violations of the Migratory Bird Treaty Act, among other laws. I recommend that the County of Alameda rejects the SRC's recommendation that AWI's conditional use permit be modified to eliminate the winter shutdown.