

Commenter	Page/reference	Comment	Resolution
Orloff	General/1	Report is too brief. Should be detailed enough to enable repetition of study methods.	Added detail on analysis methods.
Orloff	General/10	Recommend adding a glossary.	Glossary added.
Burger	General/4a	Missing: accuracy of company capacity data and explanations of discrepancies; discussions of why particular datasets were used.	Added text explaining lack of accuracy in capacity data and how this affected analyses and results.
Smallwood	General	MT made use of company-provided installed capacity data without ensuring soundness of data.	There is no way for MT to verify accuracy of company provided data.
Burger	General/4b	Should have discussed bird years rather than calendar years.	Used bird years in all analyses.
Smallwood	General	MT used calendar years rather than bird years.	Used bird years in all analyses.
Smallwood	General	It is not clear that operating data were used in this report, and SRC should not have been excluded from reviewing those data.	Operating data were not used in the report, and the report does not refer to operating data.
Smallwood	General	Turbine status data were not used nor posted to the SRC website.	Comment noted.
Smallwood	General	Revised data from the KB study were not shared with SRC.	SRC analysis subcommittee convened to review KB data. Small bird removal rates from KB data were not used in this report.
Burger	General/4c	SRC had agreed to use three methods to adjust data and to adjust for feather piles.	Small bird removal rates from KB data were not used in this report.
Smallwood	General	MT used sampling units inconsistent with sampling design.	Turbine string is the only sampling unit used in this report.
Smallwood	General	The report invents sampling units (operating groups) that differed from the sampling units in the 2005/2006 sampling design and does not make use of the original sampling design.	We used two analysis methods; one using strings only and the other using operating groups. The operating group idea is a good one, but it is not retained in this report.
Smallwood	General	MT used new scavenger removal rates, despite agreement that rates were essentially unchanged after recent reviews of the 48-hour search data (M32).	Small bird removal rates from KB data were not used in this report.
Smallwood	General	MT failed to use three methods to adjust for removal rates of feather piles.	Small bird removal rates from KB data were not used in this report.
Yee	General	Believe it would be informative to include raw fatality counts by focal species and other species groups.	Although not tabulated in table format, this information is provided in Figures 3-1 and 3-2.
Smallwood	General	MT included old carcasses in fatality rate estimates, excluded WRRS and incidental records, relied on carcass discovery dates rather than backdates in estimating monthly fatality rates, and excluded nonnative species.	WRRS records were excluded because they were not collected as part of the sampling scheme and were left in the field at monitored turbines after 2007. Nonnative species were excluded from most analyses because they are not protected under current law or regulation, are not of any management concern, and constitute a large enough percentage of the records to potentially influence some analyses. Carcass discovery date was only used to assess monthly patterns in fatalities, not in estimates of mortality rates.
Smallwood	General	The report represents years when no fatality monitoring occurred, and mischaracterizes search intervals and study duration in the baseline period.	Graphs were improved to more clearly show the break in monitoring activity and analyses now exclude all data from incomplete bird years. With respect to the search interval and study duration in baseline study, the data were made available to the public, and requests for data QA/QC were requested from all interested parties. All comments and corrections received were implemented, and the analyses re-done for the final version of the report.
Burger	General/4d	SRC had agreed to exclude Set 2 turbines because they were searched only twice.	The criteria used to create the common strings dataset excluded Set 2 turbines that were only searched twice.
Burger	General/4e	SRC had agreed that the MT would examine 1-2 months preceding and following shutdown for each year for data reflecting bird abundance.	Comment noted.
Yee	General	Dispute finding of no signal associated with winter shutdown. <i>[Refer to SRC Comments document.]</i>	The most recent analysis indicates a potential beneficial effect of the seasonal shutdown on red-tailed hawk fatalities and is included in the final report.
Smallwood	General	MT misapplied searcher detection and removal rates summarized in Smallwood (2007).	Corrected in final version of the report.
Smallwood	General	The report uses scavenger removal rates that are much slower than can explain the number of carcasses actually found using 2-day search intervals in the KB study.	Small bird removal rates from KB data were not used in this report.
Burger	General/4f	Differences in removal curves need to be accounted for.	Small bird removal rates from KB data were not used in this report.
Burger	General/4g	Missing: uniformly implemented explanations of why particular methods were used (for public transparency).	We reduced the number of various analyses that did not add insight into the evaluation of the 50% reduction goal or the efficacy of the seasonal shutdown.
Burger	General/4h	Years without available monitoring data should be excluded.	Graphs were improved to more clearly show the break in monitoring activity, and analyses now exclude all data from incomplete bird years.
Burger	General/4i	Missing a table of the overall design, with treatments.	Implemented in the final report.

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Burger	General/5	Lack of discussion of findings in light of biology of focal species, previous studies at APWRA, and literature in general.	Comment noted.
Burger	General/6	Report needs a summary or abstract; state objectives early and clearly.	Added in final report.
Orloff	General/11	Recommend adding an executive summary.	Added in final report.
Burger	General/7	Methods insufficient for transparency, as are descriptions of procedures (readers unfamiliar with APWRA should be able to follow discussion).	Revised text for clarity.
Burger	General/8	Should report focus on four focal species throughout, with “all fatalities” in an appendix?	Comment noted.
Burger	General/9	Add line numbers.	Because another draft will not be produced, line numbers were not added.
Burger	General/10	List ICF personnel and roles, including field personnel.	Appendix of field personnel added.
Estep	General	Addresses required conclusion regarding 50% reduction and the benefits of repowering.	Comment noted.
Estep	General	Need more detail regarding known and potential biases resulting from comparison between baseline and current studies. Discussion is good but issue may require a separate section with caveats.	Expanded text to elaborate on this point.
Estep	General	Need more detail regarding inconsistent implementation of management measures (shutdown, turbine removal); should note lack of other available measures that could reduce mortality.	Added detail on implementation of seasonal shutdown.
Estep	General	Need either a discussion of SRC-recommended alternative analyses that were not used or the addition of such.	Comment noted. Added analyses using maximum nameplate capacity for expansion in final report.
Estep	General	Missing: description, analysis, and conclusions regarding turbine removal/relocation.	Added description of tier and hazard turbine rating systems and their implementation.
Smallwood	General	There was a dearth of reference to available scientific literature that could have helped with interpretation of patterns in the data.	Comment noted. Additional references added.
Estep	General	No discussion of bird use or abundance in the APWRA. It should at least be identified as a deficiency in the report.	Addressed this issue in the discussion.
Estep	General	There should be an analysis or description of other issues affecting mortality—especially geography/topography. Possibly beyond scope of report, but at least mention in the introduction.	Comment noted.
Orloff	General/2	Some information missing from tables/figures (e.g., adjusted/not adjusted; all string/common strings).	Simplified report for clarity by removing operating group analyses.
Orloff	General/3	Analysis in results at times inconsistent with methods text.	Comment noted.
Orloff	General/4	Many SRC recommendations not implemented: calendar vs. bird year, discovery date vs. backdate, using vs. excluding CEC data, using combined carcass removal curve vs. separate curves, omitting power output and operating time data from analyses. May not affect results, but these recommendations set precedents for future monitoring studies.	Bird year and backdate were used in the final report. Most of the CEC data was excluded from the analyses using the common strings dataset per SRC. No consensus was achieved regarding use of the KB data; as a result, removal rates from Smallwood (2007) were used in the final report.
Orloff	General/5	Needs a section on analysis limitations.	Limitations of analyses are discussed in the report’s results and discussions sections.
Orloff	General/6	Needs discussion of high-risk turbine removal; not mentioned in methods or analysis sections.	Added description of high risk and hazardous turbine removal programs.
Orloff	General/7	Needs mention of wind industry practices that could have inhibited reductions in mortality (e.g., derelict turbines left in rows, towers used as flight diverters at ends of rows, turbine attrition leaving gaps in strings).	This issue not addressed specifically, but we added information on the number of turbines removed in each tier and hazard ranking.
Orloff	General/8	Need more citations throughout.	Additional references included in final report.
Orloff	General/9	Missing: use of statistics tests.	Comment noted. The nature of the data precludes the valid use of statistical tests in many cases.
Smallwood	General	The report glosses over complications in the monitoring at Tres Vaqueros.	Comment noted.
<b>Chapter 1</b>			
Estep	p. 1-1	Expand discussion of SRC role (e.g., modification of seasonal shutdown and additional removal of high-risk turbines; approval of study methods, scaling factors, etc.). SRC workplan, charter, Settlement Agreement, and CUP Exhibit G-1 provide more detailed description.	Included more information on SRC activities.
Smallwood	p. 1-1, bullet 2	SRC’s role is broader than specified here: it includes making recommendations to the County on measures to reduce mortality rates and performing data analysis.	Included more information on SRC activities.
Orloff	p. 1-1, ¶1	Add normal attrition to list of factors that vary number of turbines over time.	Done.
Estep	p. 1-1, ¶2	Provide time of initial turbine installation. Provide additional background information on APWRA.	Done.
Estep	p. 1-1, ¶2	Add discussion of type/characteristics of turbines.	Done.
Burger	p. 1-2	Not clear that 50% reduction target referred to all raptors, but that monitoring focused on four species.	Changed wording to reflect that reduction referred to all raptors and monitoring focused on four focal species.
Burger	p. 1-2	SRC requested a table listing conditions during baseline and current studies (including when shutdowns occurred and BUOW/KE study).	Table of winter shutdown treatments and timing added to final report.

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Estep	p. 1-2, ¶1	<i>Partial</i> and <i>full</i> shutdown unclear and potentially misleading. There has never been a full shutdown because shutdown only applies to companies participating in the Settlement Agreement.	Clarified that companies not participating in settlement agreement did not shut down turbines. Deleted reference to partial and full shutdown.
Estep	p. 1-2, ¶2	Add “and the removal or relocation of turbines from high-risk locations” to management actions.	Done.
Smallwood	p. 1-2, ¶2	Repowering is not a management action.	Re-phrased the report so that re-powering is not referred to as a management action.
Smallwood	p. 1-2, ¶3	Suggest explaining the reason SRC recommended discontinuing the crossover winter shutdown design. Reactivation can kill many raptors. Also, the MT executed the design poorly (e.g., search intervals exceeding the duration of shutdown periods).	Comment noted.
Yee	p. 1-2, ¶3	To clarify, report should note that the crossover study reversed treatment assignments in the second year so that turbines receive opposite treatment (shutdown vs. no shutdown).	Done.
Yee	p. 1-2, ¶4	Crossover study ended in February 2007, not 2006.	Changed text to reflect this.
Smallwood	p. 1-2, ¶4	Report should explain that 2,548 turbines were selected systematically from the remaining pool of turbines after the first 1,526 were searched.	Comment noted
Estep	p. 1-2, ¶4	Should note that SRC’s recommendation for APWRA-wide 4-month winter shutdown was not implemented. Consequently, retaining the crossover design may have led to more interesting results, but SRC’s focus was on mortality reduction.	Recommendation for 4-month shutdown included in final report.
Orloff	p. 1-2, ¶4, 5	Need more detail for questioning and discontinuing winter shutdown sampling design. Discontinuing crossover is 2007, not 2006. Recommend chart depicting timeline of pertinent study events (i.e., shutdowns, hazardous turbine removals).	New table of shutdowns included, change of year from 2006 to 2007 made, and additional info concerning shutdowns included.
Estep	p. 1-3	There is no discussion in the introduction of the removal of high-risk turbines. Suggest discussion of timing of removal/relocation process and possible effects on the monitoring program’s ability to detect changes in mortality.	Added description of the tier and hazardous turbine raking systems and turbine removals. Added table depicting timing of various shutdown treatments.
Burger	p. 1-3	Add clear statement of objectives and format of report to end of chapter.	Done.
Estep	p. 1-3, ¶1	Note that 3-month shutdown was not consistent with SRC’s recommendation of 4 months.	Done.
Smallwood	p. 1-3, ¶2, Figure 1-3	Figure 1-3 should cite source of information. Disagree that installed capacity has changed to this degree. Company-provided data should be verified by companies explaining discrepancy between these data and data provided to CEC; by companies providing a written statement to MT and SRC vouching for data; MT using turbine status data to verify the alleged reduction in installed capacity. Repowering has not added to the overall MW capacity of APWRA.	Source of information identified in text. Changed text to clarify that repowering does not add to the overall installed capacity.
Orloff	p. 1-3, ¶3	Paragraph repeats footnote. Delete.	Deleted redundant portions of footnote.
<b>Chapter 2</b>			
Burger	p. 2-1	Provide glossary to identify all parts [of APWRA?]—e.g., Tres Vaqueros.	Glossary provided in final report.
Burger	p. 2-1	Provide general description of methods prior to discussion of differences.	Comment noted.
Burger	p. 2-1 (and elsewhere)	Include variance for numbers, particularly average search interval (e.g., 5.8 ± times). Applies to Table 2-1.	Done.
Burger	p. 2-1 (and elsewhere)	Cite papers from which data were taken.	Done.
Smallwood	p. 2-1, ¶1	Disagree with characterization that baseline study methods included no standard definition of what constitutes a fatality. Believes that any differences in written standards had little or no bearing in fatality rates between baseline and current studies.	No definition is given in written materials on the study. Report notes that these differences are minor.
Orloff	p. 2-1, ¶1, 2	Reverse sequence of minor and major differences to emphasize difficulty of comparison. Tabulate? Expand Table 2-1?	Comment noted.
Estep	p. 2-1, ¶2	Address potential biases from differences of study methods earlier in the report, as well as explain in the methods section how these differences were reconciled during data analysis.	Done.
Yee	p. 2-1, ¶2	Appendix A was not attached.	Reference to this appendix was not included in the final report.
Orloff	p. 2-1, ¶4	Baseline study: reference Smallwood and Thelander 2004.	Done.
Smallwood	p. 2-1, ¶5	NREL should be National Renewable Energy Laboratory. All statistics in this paragraph are incorrect, misapplied, or misleading.	Corrected. Baseline data was updated based on input from Smallwood and power companies.
Yee	p. 2-1, ¶5	Should include <i>per year</i> : “turbine strings were surveyed an average of 5.8 times <i>per year</i> with an average search interval of 52 days <i>per year</i> over a period of approximately 55 months.” Also pertains to p. 2-2, ¶4.	Done.
Burger	p. 2-2 (and elsewhere)	Use consistent tenses.	Corrected.
Burger	p. 2-2	Describe methods in greater detail (e.g., how many people, how long per day, data recorded). Should be precise enough for repeatability.	Provided field protocols (m1) included as an appendix.
Burger	p. 2-2	Where is evidence for decreasing search interval in current study?	Added figure showing decrease in search interval over time.
Burger	p. 2-2	Do WRRS data reflect entire APWRA or only sampled areas? Are mortalities from strings not searched by MT excluded?	Yes. Page 2-3 states that ALL incidental and WRRS records (except golden eagles) are excluded from analyses.

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Yee	p. 2-2	Identify range of dates analyzed. Database appears to contain records outside the range of dates provided for surveys. Do analyses only pertain to data through September 2009?	Corrected in final report by indicating that report only looks at data through September 2009.
Yee	p. 2-2, ¶1	Reconcile <i>plot</i> and <i>block</i> . Are the three named operating groups equivalent to the “medium” and “very small” turbine strata described in document R29 as being completely rather than partially surveyed? This is important.	Removed reference to <i>plot</i> and replaced with <i>block</i> . No, operating groups and blocks are not necessarily the same thing, and the Diablo Winds and Tres Vaqueros operating groups are large turbines, not medium. Identified operating groups are not the only operating groups with small turbines, thus the answer is no.
Orloff	p. 2-2, ¶1	Current study: need same level of detail as provided in Smallwood’s January 2010 report. Add flowcharts showing filtering criteria developed earlier (M25-7).	Comment noted. Instead of flowcharts, we provided a series of tables showing exactly how filtering criteria did not differentially affect the baseline and current study comparison.
Estep	p. 2-2, ¶1	Reconcile use of <i>plot</i> and <i>block</i> .	Corrected. See comment above.
Yee	p. 2-2, ¶2	Define <i>transect</i> ; may be confusing to unfamiliar readers.	Done.
Smallwood	p. 2-2, ¶2	Study design described inaccurately. All very small (40–65 kW) turbines, large (250–400 kW) turbines, and Diablo Winds turbines were searched. Only medium (95–200 kW) turbines were in randomly selected blocks, except for turbines owned by Northwind Energy, who declined to participate.	The study design was accurately described. The final report also reflects the design described in the comment.
Yee	p. 2-2, ¶3	Edit or omit terminal “from birds found during previous monthly searches.”	Done.
Orloff	p. 2-2, ¶5	Analysis Methods: first part is more about filtering databases than about analysis. Possibly add subheading “Baseline and Current Study Databases.” Need mention of using or not using CEC data.	Added info about subset of strings used to compare baseline and current study. Although the first part is about filtering data, it makes explicit comparisons to demonstrate that filtering does not result in a systematic bias between studies.
Estep	p. 2-2, ¶5	Suggest omitting discussion of WRRS since data were excluded from analysis. Potentially confusing to readers. Possibly include WRRS data as incidental finds and modify description of such accordingly.	Comment noted.
Burger	p. 2-3	What does “proportion of WRRS records was small” mean?	It means that the proportion of fatalities documented that were classified as WRRS records was a small percentage of overall fatalities.
Smallwood	p. 2-3, ¶1	Disagree with MT’s decision to exclude WRRS and incidental finds from the analysis. Such finds are frequently raptors, which would like remain long enough to be found by subsequent fatality search and can affect mortality rates.	In the current study, WRRS–recorded fatalities are left in the field at monitored turbines, so they can be detected by the MT field crew.
Smallwood	p. 2-3, ¶2	Disagree with MT’s decision to exclude nonnative species. Disagree with decision to include carcasses older than 90 days. Dispute that higher proportion of fatalities were estimated at >90 days in baseline study. <b>[Refer to SRC Comments document.]</b>	Comment noted. With respect to the claim that the percentages in Table 2-5 are not correct, we cannot duplicate the results presented in your comment. Your results must be from a different version of the database.
Estep	p. 2-3, ¶2	Suggest not excluding nonnative species entirely. Rather, conduct primary analysis using all bird data, then analysis excluding nonnatives.	Comment noted.
Estep	p. 2-3, ¶2	Insufficient discussion of the backdating process. Why is it unreliable, and what is the effect on results? Either include in Appendix A and cite here or describe in Methods.	Removed sentence about backdating. Added language to describe backdating and why it is difficult to estimate carcass age with precision.
Yee	p. 2-3, ¶2	Clarify that fatalities >125 m from turbines were excluded not because of their small number but because of the variable and uncertain detection coverage at that range. The small number provides assurance that exclusion would not be significant.	Done.
Smallwood	p. 2-4, bottom of page	Another major factor affecting estimates of fatality rates likely includes crippling bias, but at this time we have no means of addressing this quantitatively.	Comment noted.
Estep	p. 2-4, ¶2	Re: “It has become common practice to apply equation (1) to Altamont fatalities.” This is a narrow explanation. Were alternatives considered? Is this equation only used in the APWRA or in other WRAs? Suggest deleting incomplete explanatory statements and discuss debate over detection probability in Discussion section.	Cited 3 studies in the APWRA by Smallwood using this equation.
Burger	p. 2-5	Recommend a table of different studies reflecting adjustment factors. Also see comment 4c.	Small bird removal rates from KB data were not used in this report. Added table of adjustment factors used and their source.
Orloff	p. 2-5	Carcass removal rate estimates: need to define <i>small birds</i> . Need reference/definition of <i>scavenger swamping</i> .	Comment noted.
Estep	p. 2-5	Add study periods for scavenger removal trials and KB study.	Small bird removal rates from KB data were not used in this report.
Yee	p. 2-5	Carcass removal rate estimates: suggest clarifying that <i>survival time</i> means <i>persistence of fatality evidence</i> .	Done.
Estep	p. 2-5, ¶1	Add (searcher efficiency) to “detected by an observer.”	Text removed.
Smallwood	p. 2-5, ¶1	Searcher efficiency: MT misapplied searcher detection rates reported in Smallwood (2007). Correct rates that should have been used were large raptors—100%, small raptors—75%, medium and large nonraptors—80%, rock pigeons—78%, and small nonraptors—51%.	Used rates from Smallwood (2007) in final report, except for medium and large raptor carcass removal rate, which we estimated from the scavenger removal trial data.
Estep	p. 2-5, ¶2	For consistency, add <i>pi</i> after the heading “Searcher Efficiency” and rename as “Searcher Efficiency Estimates.”	Small bird removal rates from KB data were not used in this report.
Estep	p. 2-5, ¶4	Does the report address the implications of increasing search intervals during the scavenger removal trials?	No, but persistence was so high that it made no difference.
Smallwood	p. 2-5, ¶5	Clarify parenthetical statement about inclusion of carcasses if found following two previous searches.	Small bird removal rates from KB data were not used in this report.

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Yee	p. 2-5, ¶5	Could be misleading to say that data were censored. Survival times can be censored, but available data up to the censor time are completely included.	Small bird removal rates from KB data were not used in this report.
Yee	p. 2-5, ¶6	Elaborate on “regular but increasing intervals.”	Done.
Smallwood	p. 2-5, ¶7	Disagree that using found carcasses avoids biases because it fails to account for carcasses already removed by scavengers.	Changed wording to “minimize.”
Yee	p. 2-5, ¶8	Correction: should be “Kaplan-Meier product <i>limit</i> estimator.”	Done.
Yee	p. 2-5, ¶8	Same criticism of this survival analysis as in previous review of M32. A least squares regression on survival point estimates, K-M or not, is probably not appropriate because the survival estimates are not independent from each other. My concern is that this approach allows a regression to be drawn with an arbitrarily high or low amount of error depending on the number and location of survival point estimates used. To handle the independence issue, it would be better to derive the curve and its standard errors directly from an appropriately fitting parametric survival time model and bypass the least squares regression altogether.	Removed the kb small bird removal curve and used Smallwood instead.
Burger	p. 2-6	General paucity of references to literature. Especially “It has become common practice ...”	Included references.
Burger	p. 2-6	Provide table of definition of different MW capacity designations.	Included glossary that defines terms.
Orloff	p. 2-6, ¶1	If it is common practice, it needs a reference. Not sure that using turbine strings is a common practice.	Included references.
Estep	p. 2-6, ¶1	Question the utility of Operating Group as a basis for estimating mortality rates. Geography, turbine type, operation?	Eliminated operating groups as unit of analysis. It is better in my opinion because it better represents geography and avoids taking average over a dataset completely dominated by zeros, but the point of this document is to compare baseline and current studies, not estimate total mortalities with highest precision.
Smallwood	p. 2-6, ¶2	Dispute use of installed capacity for extrapolating mortality rates APWRA-wide. Using nameplate capacity would have been preferable.	Using nameplate capacity overestimates mortality because most turbine removals occur at non-monitored turbines. Agree that installed capacity underestimates mortality. Included both expansions in final report.
Orloff	p. 2-6, ¶2	<i>Installed capacity</i> definition is inadequate; sounds the same as <i>nameplate capacity</i> .	Clarified definitions and changed <i>nameplate capacity</i> to <i>maximum nameplate capacity</i> to further clarify the difference.
Yee	p. 2-6, ¶2	Discussion of definitions and uses of installed vs. nameplate capacity. <b>[Refer to SRC Comments document.]</b>	Done. Clarified definitions. Using nameplate capacity overestimates mortality because most turbine removals occur at non-monitored turbines. Agree that installed capacity underestimates mortality. Included both expansions in final report.
Yee	p. 2-6, ¶3	At string level, was the average across strings weighted? Weighting by nameplate capacity for each string would be appropriate. Did the same kind of averaging and expansion occur at operating group level?	String-level averages were not weighted. Operating group-level analyses were removed from the final report.
Yee	p. 2-6, ¶3	Detailed information (description and table) should be provided about how operating groups were paired.	Operating group-level analyses were removed from the final report.
Smallwood	p. 2-6 ¶3	Dispute method of estimating mortality rates. Averaging of fatalities by operating group was inconsistent with sampling design.	Operating group-level analyses were removed from the final report.
Smallwood	p. 2-6 ¶4	Text suggests that calendar years were used. SRC recommended using bird years.	All analyses use bird years.
Orloff	p. 2-6, ¶4	Define <i>year</i> as bird year or calendar year.	All analyses use bird years.
Orloff	p. 2-6, ¶5	First sentence should read: “Two sets of searches from both the baseline and current studies were used ...”	“That’s fantastic and I apologize.” Corrected.
Smallwood	p. 2-6 ¶5	First approach to estimating baseline mortality rates appears inconsistent with SRC recommendation to exclude Set 2 turbines.	Use of criteria agreed to by the SRC and stated in the methods section results in the removal of most if not all set 2 turbines from the common strings dataset.
Yee	p. 2-6, ¶5	Need additional detail on subsets of data: number of fatalities for each species group for all strings and common strings datasets. Description of common strings dataset is not precise: how were strings handled when monitored with a mixture of <60 and >60-day search intervals over 3 consecutive but incomplete years? Also, identify common strings in the database.	Comment noted.
Burger	p. 2-7	Provide caveat regarding comparisons of different turbine types (e.g., repowering); there are mortality differences between smaller turbine types.	Comment noted.
Smallwood	p. 2-7	Seasonal shutdown: disagree with backdate of 90 days for carcasses characterized as >90 days in baseline study. Many appeared to have been dead for one to several years. Inclusion of these finds likely introduced noise to the analysis of the effectiveness of the winter shutdown.	Comment noted.
Orloff	p. 2-7, ¶1	Suggest describing all ways comparisons were made (all strings, operating group, common strings, APWRA-wide).	Eliminated the operating group analysis to simplify comparisons. So there is only the comparison of baseline to current study using all data and using common strings dataset.
Yee	p. 2-7, ¶1	Calculated as “most conservative” in what sense?	Changed wording and added text to clarify and expand on description.
Yee	p. 2-7, ¶2	Did this index use adjusted or unadjusted fatalities? Is it correct to assume that “fatalities” always means unadjusted fatalities? Please state explicitly.	Unadjusted. Made the statement unequivocal.
Orloff	p. 2-7, ¶2	Suggest: “these were trends in the <i>adjusted estimates of fatalities</i> per year” (to match “Trends in Fatalities over Time” in Results section).	Entire section was rewritten.

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Estep	p. 2-7, ¶3	Backdating is key issue. As noted above, need a clear description.	Added description of the problems with backdating.
Yee	p. 2-7, ¶3	Could not find backdate data in the database. If details are omitted, please provide sufficient references.	Several ways of estimating backdate are now in the database.
Orloff	p. 2-7, ¶3, 4	Suggest saying that analyses used only common turbines (to match Results section). Also: why was discover date used in some of these analyses? SRC did not recommend doing so.	We only used discovery date for analyses in which only the current study was involved because we thought that repeated surveys in current study would make errors from dating minor. We used backdate in all situation where we compared baseline to current study. In final report, we used backdate exclusively.
Yee	p. 2-7, ¶4	Report defines winter as Nov–Jan; we agreed on Nov–Feb to cover range of seasonal shutdown months. Results cite Nov–Feb.	Text corrected.
Yee	p. 2-7, ¶4	Question use of fatalities backdated 90 days when search interval is 60. <b>[Refer to SRC Comments document.]</b>	Fatalities greater than 90 days were excluded from analyses in final report.
Yee	p. 2-7, ¶5	Clarify description of repowering analysis: were Diablo rates compared with common strings dataset for current study only? Table 3-9 refers to all strings. <b>[Refer to SRC Comments document.]</b>	Text corrected. All strings dataset was used.
Estep	p. 2-7, ¶5	This is the only place where Operating Group appears to be meaningful.	Comment noted.
Orloff	p. 2-7, ¶5, 6	States that common strings dataset was used; however, Table 3-9 states “all monitored strings.”	Text corrected.
Yee	p. 2-7, ¶6	Unclear how an APWRA-wide annual fatality rate was calculated using just the Diablo Winds rates.	Clarified wording to indicate that we expanded Diablo rates to installed capacity of APWRA.
Yee	Table 2-1	What do the minimum and maximum values of the Strings Searched column represent? Different calendar years? Bird years? Months?	Clarified in table.
Burger	Table 2-2	When is baseline period (NREL and CEC?)?	The baseline period encompasses both the NREL and CEC data collection efforts.
Burger	Tables 2-2, 2-3, 2-4	Include data for raptors, not just general avian fatalities.	Comment noted.
Orloff	Figure 2-1	Needs label for each map.	Maps are labeled with years depicted.
Yee	Figure 2-1	Dates on figure contribute to confusion. Bird years? Report was to analyze full bird years beginning with 1998 (Oct 98–Sep 99). Why is 1997 included?	Only complete bird years were used in the final report.
Smallwood	Figure 2-1	Years depicted are incorrect. Representation of sampling effort is misleading.	Comment noted.
Burger	Figure 2-2	Seems unnecessary. Replace with table.	Comment noted.
Yee	Figure 2-2	Figure title is unclear: does the pie represent only nonraptor fatalities? Suggest “Proportion of Non-Raptor Fatalities Comprising Native and Nonnative Species.”	Figure and figure title changed in final report.
Burger	Figure 2-3	Define baseline and current study periods in the legend.	Defined in the text.
<b>Chapter 3</b>			
Orloff	p. 3-1	Seasonal variation: spike in January makes sense, but why a spike in October before shutdown?	Comment noted.
Orloff	p. 3-1	Carcass removal rate estimates: move discussion to Methods.	Done.
Estep	p. 3-1, ¶1	80% should be 75%.	Corrected.
Yee	p. 3-1, ¶1	Text is inaccurate. Small birds do not constitute a majority in either study; raptor:nonraptor ratios were not the same. Large birds in Table 3-2, current study, should be 39%.	Section rewritten in final report.
Estep	p. 3-1, ¶1 and Table 3-1	Text says proportions of raptors and non-raptors were the same between the two studies; Table 3-1 indicates reverse. Reconcile.	Section rewritten in final report.
Orloff	p. 3-1, ¶1	Clarify that 3,452 is from both studies.	Section rewritten.
Smallwood	p. 3-1 ¶2	Seasonal variation: disagree with decision to use discovery dates rather than backdates in month comparisons. Fatality counts per month appear to be unadjusted for searcher detection and scavenger removal error. Suggest that monthly counts are potentially misleading and of limited utility.	Adjusting fatality counts by month, especially when the search interval is greater than a month, is highly problematic. We only used discovery date in analyses based on the current study only. Only backdates are used in the final report.
Yee	p. 3-1, ¶2	Attribution of fatality spike in January is not a complete association because January is the post-shutdown month for only one of the four winters (2007–08). Other years should be considered separately. Also, because north and south areas had different shutdown periods during the first two winters, that should be factored into analysis.	Attribution of fatality spike in January was removed from the final report.
Estep	p. 3-1, ¶2	Does <i>all birds</i> refer to all <i>native birds</i> ? Clarify.	Yes.
Estep	p. 3-1, ¶3	Reference KB study.	Comment noted.
Estep	p. 3-1, ¶3	What is a <i>traditional carcass</i> ?	Reference to traditional carcass removal curve removed in final report.
Burger	p. 3-2	Text is too brief and should summarizing findings more clearly for each species.	Comment noted.
Burger	p. 3-2	(And Figures 3-5 through 3-7). Graphs do not reflect possible differences in bird abundance. Consider graphing mortality by month for each year for each species.	Comment noted.

Commenter	Page/reference	Comment	Resolution
Yee	p. 3-2	Comparison of Baseline and Current Mortality Rates: SRC recommended reporting unadjusted rates not using them as estimates for rates of birds killed. This section reports both, describing them equally as estimates of mortality. This can lead to misinterpretation by readers who may try to use unadjusted values as estimates. E.g., the lower range for burrowing owls killed is given as 62, which is an unadjusted rate.	Removed estimates of number of turbine related avian fatalities based on unadjusted rates in final report.
Estep	p. 3-2, ¶1	Because there was substantial overlap between the three curves, it may be appropriate to combine them. But because the issue may not have been entirely resolved, we may want to provide separate calculations using the different curves, or address limitations/consequences in Discussion.	Small bird removal rates from KB data were not used in this report. Small bird adjustment factors were obtained from Smallwood (2007).
Yee	p. 3-2, ¶2	Because text compares removal rates to those of Smallwood (2007), Smallwood’s curve should also be shown in Figure 3-4.	Small bird removal rates from KB data were not used in this report. Smallwood (2007) curves included in figure in final report.
Orloff	p. 3-2, ¶3	“Using the all strings dataset <i>and</i> the strings-level analysis method...” Sounds like two different methods. Replace “and” with “with.”	Operating group-level analyses removed from final report so <i>string-level</i> analysis terminology was not used in final report.
Orloff	p. 3-2, ¶3	Delete “much” from “much less pronounced.” Still a notable increase between baseline and current.	Done.
Estep	p. 3-2, ¶5	What is the implication of higher unadjusted estimates using Common Strings dataset? It’s a subset of All Strings used to make comparisons between baseline and current studies. Why does Common Strings result in a mortality rate 20% higher for raptors, while comparison with All Strings shows no difference for non-raptors?	The two datasets use different sets of turbines that differ geographically. The differences obtained between the two datasets reflects differences in the geographic distribution and abundance of fatalities.
Orloff	p. 3-2, ¶5	Suggest adding that increase from baseline to current was almost double using common dataset. Explain highest mortality rates using this dataset, and the lowest using operating group level.	Operating group level analyses removed from final report. Included discussion of biases introduced by sub setting the datasets due to differences in the geographic distribution of fatalities.
Burger	p. 3-3	There was a similar decline in the baseline years; this should be mentioned as it shows further variability in the data.	Done.
Estep	p. 3-3, ¶1	May suggest that geographic differences in kestrel use of APWRA associated with Operating Group analysis may have an influence. Consider correlating with bird use data.	Operating group level analyses removed from final report. Bird use data not yet available for analysis.
Orloff	p. 3-3, ¶3	Disagree with characterization of GE mortality estimate trends tracking for different datasets. No spike at beginning of baseline study for operation group level.	Comment noted. Rewrote entire section.
Yee	p. 3-3, ¶3, 7	Dispute attribution of spikes in Figures 3-3–3-7 to clearing searches. Spike at beginning of current study appears for (bird year) 2006, the second year for most of the turbines in the current study. Question value of including fatalities found during clearing searches in the analysis.	Comment noted. Rewrote entire section.
Orloff	p. 3-3, ¶5	Disagree with characterization of all-string analysis of GE as a substantial peak nor the following 3 years a decline.	Comment noted. Rewrote entire section.
Orloff	p. 3-3, ¶7	Disagree with characterizations of trends as flat. Disagree with conclusion that fatalities per search index contradicts average annual mortality rates and estimated fatalities.	Comment noted. Rewrote entire section.
Yee	p. 3-4	Seasonal Shutdown assessment: <b>[Refer to SRC Comments document.]</b>	Comment noted. Rewrote entire section.
Orloff	p. 3-4, ¶1	Questions use of raw fatalities in this analysis. Should use adjusted fatalities as well. Use of discovery date is inappropriate. Revise Table 3-7 to show mortality by year (baseline to current).	Cannot adjust fatalities on a monthly basis, especially when the search interval is greater than 1 month. Disagree that use of discovery date is inappropriate when only using the current study data. However, final report uses only backdate.
Orloff	p. 3-4, ¶1	It is a stretch to say that GE fatalities increased if it is only by one. Should support with statistical tests.	Comment noted. Rewrote entire section.
Yee	p. 3-4, ¶2	Question decline of red-tailed hawk fatalities in Nov–Dec in current vs. baseline study.	Comment noted.
Orloff	Table 3-1	Define size class in Methods.	Comment noted.
Burger	Tables 3-1, 3-2	Any way to compare numbers statistically? (Goodness of fit?)	Not really since numbers are unadjusted and there is such variation in search effort and timing.
Estep	Tables 3-1, 3-2	Include “native species” in table titles.	Comment noted.
Estep	Table 3-2	Current percentages total 108%.	Corrected in final report.
Yee	Tables 3-3 through 3-6	a) Indicate what the error values represent (e.g., standard deviations, standard errors).	Corrected in final report.
		b) In view of discussions regarding search interval variations and potential for bias, the proportional effect of adjustment on fatality rates is surprisingly similar between the two studies and the four species. <b>[Refer to SRC Comments document.]</b>	Analyses were completely redone for the final report.
		c) Why is there no operating-group level analysis using common strings dataset?	The number of permutations of the analyses was getting too large and we didn’t think it would add significant new information. We removed all analyses using operating groups in the final report.
		d) Numerical typos in Table 3-6 for Total Focal Species and Total Raptors under All Strings/String-Level. 341 should be 541, 792 should be 925, 309 should be 456, and 728 should be 882.	Corrected in final report.
Estep	Table 3-4	Addition errors, common strings/string level, current study, non-raptors	Corrected in final report.
Orloff	Table 3-4, 3-6	Addition errors—see Estep comment.	Corrected in final report.

Commenter	Page/reference	Comment	Resolution
Smallwood	Tables 3-5, 3-6	Kestrel and burrowing owl fatality rates are suspect; likely biased low due to scavenger removal adjustments. Removal curves in Figure 3-4 differ from those shown the SRC previously. MT found 16 small raptor fatalities during 48-hr searches during the KB study and 4 during the 30-day searches at the same turbines, suggesting a larger annual number of fatalities than that estimated by the MT. <b>[Refer to SRC Comments document.]</b>	Small bird removal rates from KB data were not used in the final report.
Estep	Table 3-6	Addition errors in all strings/string level, total focal, total raptors.	Table revised completely.
Orloff	Figures 3-5 through 3-8	Include "adjusted rates" to figure titles.	Done.
Smallwood	Table 3-9	Specify in notes that estimates were derived from Diablo Winds.	Diablo group is identified in table column titles. "Diablo Winds Operating Group" added to title in final report.
Estep	Table 3-9	Indicate in table that these comparisons reflect differences between new and old generation turbines.	Comment noted.
Burger	Figures 3-1, 3-2	Provide indication of variance. Should be a number with variance rather than a bar (since there are several years in the study). Lumping data for all years conceals year-to-year differences. For all species, bars could indicate percent that were feather spots.	Error bars added to figures in final report.
Orloff	Figures 3-1, 3-2	Seasonal variation: compare against monthly baseline fatalities; don't use discovery date for either.	Combined baseline and current study on same graph, changed graph type, added error bars, and used backdate in final report.
Orloff	Figures 3-2, 3-9, 3-10	Fig 3-2 does not match current study values in Figs 3-9 and 3-10. Need to clarify and explain reason for discrepancy: discovery date? Backdate? Adjusted vs. unadjusted? Dataset?	The MT believed use of discovery date for current study dataset more accurately represents monthly fatality patterns due to problems with estimating backdate. However, it is not possible to make valid comparisons between the baseline and current studies using discovery date because of the way sampling was conducted in the baseline study. Therefore, we used discovery date in Figure 3-2 and backdate in Figure 3-9 when comparing the baseline to the current study. Only backdate was used in the final report.
Yee	Figure 3-2, 3-9, 3-10	Figure 3-2 is not consistent with 3-9 and 3-10.	The MT believed use of discovery date for current study dataset more accurately represents monthly fatality patterns due to problems with estimating backdate. However, it is not possible to make valid comparisons between the baseline and current studies using discovery date because of the way sampling was conducted in the baseline study. Therefore, we used discovery date in Figure 3-2 and backdate in Figure 3-9 when comparing the baseline to the current study. Only backdate was used in the final report.
Yee	Figure 3-3	Why have these curves changed so much since last draft of M32?	Small bird removal rates from KB data were not used in the final report.
Estep	Figures 3-3, 3-4	Move to precede Table 3-3.	Small bird removal rates from KB data were not used in the final report.
Smallwood	Figure 3-5	Years are incorrect. No fatality searches were conducted in 1997. Golden eagle fatalities are incorrect. Appears that MT estimated fatalities by calendar year rather than bird year and included strings searched only twice in the baseline study, inconsistent with SRC direction.	Changed graph and updated analysis.
Orloff	Figure 3-6	Why is yearly mortality pattern using operating group level so different from other analyses for GE and AK?	Removed all analyses using operating groups from final report.
Smallwood	Figure 3-9	Should use error bars.	Combined baseline and current study on same graph, changed graph type, added error bars, and used backdate in final report.
Estep	Figures 3-9, 3-10	Move to precede Table 3-9.	Comment noted. Rewrote entire section.
Orloff	Figures 3-9, 3-10	Are these raw fatalities at common turbines? Are they backdated? Labels are needed. If these are raw fatalities, adjusted numbers should also be presented. Show years separately for both baseline and current studies.	Comment noted. The MT believed use of discovery date for current study dataset more accurately represents monthly fatality patterns due to problems with estimating backdate. However, it is not possible to make valid comparisons between the baseline and current studies using discovery date because of the way sampling was conducted in the baseline study. Therefore, we used discovery date in Figure 3-2 and backdate in Figure 3-9 when comparing the baseline to the current study. Only backdate was used in the final report.
<b>Chapter 4</b>			
Smallwood	p. 4-1 ¶1	Disagree with expectation and reasons for it. Disagree that installed capacity declined. Disagree that the crossover shutdown design should have resulted in reduced fatalities. Report failed to mention end-of-row derelict towers used as flight diverters and that SRC feels these towers to increase hazards for raptors.	Comment noted.

Commenter	Page/reference	Comment	Resolution
Orloff	p. 4-1, ¶1	Suggest discussion possible reasons for mortality not decreasing: e.g., only about 50% of hazardous turbines (rated 7–10) were removed; turbine attrition has resulted in may gaps in turbine rows; vacant towers at row ends that were used as flight diverters have not been removed; derelict turbines are still abundant.	Comment noted. While these are all valid reasons to explain the lack of a decline, they do not explain why fatalities would not decline with a reduction in installed capacity. MT felt that analytical problems with comparing baseline and current study datasets that were collected in such disparate ways in conjunction with high variability in bird use was a more parsimonious explanation.
Yee	p. 4-1, ¶1	There are no error estimates to help determine whether the “marked increase” from baseline to current survey period is statistically significant. To examine this increase better, I converted my model for shutdown season into a model for comparing between the two periods. I expanded the dataset to include the baseline as well as the current survey period. I used two versions of this data, one with all strings and the second with common strings. (My set of common strings is probably a little different than the one analyzed in the M21 report. I could not find a common strings identifier in the database, so I constructed my own definition. I used strings which were surveyed at least 10 times during each the baseline and current survey periods, counting only the string searches that were <60 day intervals.). I continued to analyze focal species separately, although it was clear that only the BUOW and RTHA species had sufficient data to be analyzed this way. Both the BUOW and RTHA showed increases, however the standard errors were relatively large and none of the increases were statistically significant. By the way, I analyzed the data for other trends including trends within the current survey period. I found a very interesting and statistically significant 50–60% decrease in BUOW and RTHA fatalities from the biennial period 2005–2006 to 2007–2008. This is worth discussing.	Comment noted. The MT felt that the objective of the analysis was to evaluate whether or not the 50% reduction criteria was achieved. This was made much more clear in the final report. The annual report due in March will include all the data from the 2009 bird year and will evaluate the 3-year rolling average discussed by the SRC.
Estep	p. 4-1, ¶2	Should indicate that bird use data have been collected in APWRA but not analyzed for this report. Major issue, and deficiency in this report should be noted.	Comment noted.
Orloff	p. 4-1, ¶2	Suggest adding that operating time likely fluctuates each year, contributing to difficulty in detecting trends over time. Where are references to operating data?	Operating data for the baseline period was not adequate to conduct a valid analysis.
Orloff	p. 4-1, ¶3	Disagree with statement that selection of turbine strings was not designed to produce estimates of APWRA-wide fatalities: that was one of the stated goals.	Re-worded in final report to make clear that the statement only applied to the baseline study.
Orloff	p. 4-1, ¶3	Where [why?] was the CEC dataset excluded from the analysis?	The CEC dataset was not excluded from all analyses; it was only excluded from the analyses using the common strings dataset.
Orloff	p. 4-1, ¶3	How does the use of the common dataset minimize differences in sampling intensity?	It excludes strings that were only sampled twice using a large search interval.
Orloff	p. 4-1, ¶3	How much smaller was the number of baseline fatalities after parsing data?	This number is presented in the final report.
Yee	p. 4-1, ¶3	Agree that turbine string selection in baseline study is not conducive to APWRA-wide estimates; disagree that this is true for current study.	Reworded in final report to make clear that the statement only applied to the baseline study.
Orloff	p. 4-1, ¶4	Disagree with this discussion. Being more efficient doesn’t necessarily equate to finding more birds. Learning curve is steep in the beginning then tapers off. Unless baseline crews were changing every 6 months, detection probabilities would not be substantially greater in current study.	Comment noted. This part of the discussion was removed from the final report.
Estep	p. 4-1, ¶4	Assertion that search crews have become more efficient leading to higher detection probability is unsubstantiated absent further discussion of differences in study methods.	Comment noted. This part of the discussion was removed from the final report.
Orloff	p. 4-1, ¶4, 5	These paragraphs are better suited to seasonal shutdown discussion.	Comment noted. This section was completely rewritten in the final report.
Orloff	p. 4-1, ¶5	Clarify that the carcass removal rate for small birds was lower than that proposed by Smallwood (2007).	Small bird removal rates from KB data were not used in the final report.
Yee	p. 4-1, ¶5 (and following)	Discussion regarding baseline fatalities detected during searches with longer search intervals needs clarification. What is <i>traditional</i> carcass removal curve? Smallwood curve? What is meaning of <i>under-adjusted</i> ? That it is incorrectly too low an adjustment or that it is not adjusted as high as the traditional curve?	Comment noted. This section was completely rewritten in the final report.
Burger	p. 4-2	Re: “using carcass removal rates reported in Smallwood (2007) would lessen the differences between the two studies, but would also result in fatality estimates that cannot be considered realistic.” Requires more explanation and discussion.	Comment noted. This section was completely rewritten in the final report.
Burger	p. 4-2	Re: suggestion that surrounding development has forced birds into a smaller area, increasing risk of collision. Needs more explanation and clarity. Should suggest that potential increases in raptor populations may result in higher mortality rates regardless of management measures. (Still uncomfortable excluding bird data from the region.)	Comment noted. This section was completely rewritten in the final report. Hypothesis about effects of surrounding development was postulated by the SRC but removed from the final report.
Orloff	p. 4-2, ¶2	Disagree that there is a conflict between raptor fatalities per search and adjusted mortality estimates.	Comment noted. This section was completely rewritten in the final report.
Smallwood	p. 4-2 ¶3	Disagree that it is difficult to explain inability to detect declining fatality rates; mitigation actions were marginal at best and unlikely to result in noticeable effect.	Comment noted. This section was completely rewritten in the final report.
Smallwood	p. 4-2 ¶6	Disagree with suggestion that surrounding development could crowd raptors into APWRA and hence increase mortality.	Comment noted. This section was completely rewritten in the final report. Hypothesis about effects of surrounding development was postulated by the SRC but removed from the final report.
Smallwood	p. 4-2 ¶7	Assessment of seasonal shutdown: disagree that lack of signal is a surprising result. <b>[Refer to SRC Comments document.]</b>	Comment noted.
Estep	p. 4-2, ¶7	Consider expanding on issue: lack of consistency in shutdown period, application of shutdown in terms of shutoff and startup, no implementation of SRC-recommended 4-month shutdown.	Added discussion/description to introduction of problems with application of shutdown treatments and hazardous/tier turbine removal.

Commenter	Page/reference	Comment	Resolution
Orloff	p. 4-2, ¶7	Discuss why these are confounding factors.	Comment noted. Discussion completely rewritten in final report.
Estep	p. 4-2, ¶8	All factors are entirely speculative.	Comment noted. Discussion completely rewritten in final report.
Burger	p. 4-3	Winter shutdown was not adequately studied in view of two treatment types. Time period was insufficient in view of inherent variability of mortality data. Did not implement 4-month shutdown in all years, but inconsistently from year to year.	Comment noted. Discussion completely rewritten in final report.
Orloff	p. 4-3	Conclusions: need a caveat: without incorporating bird abundance and operating data, these are preliminary findings.	Comment noted. Section rewritten. Final report makes clear that objective of the report is to evaluate 50% reduction goal. With respect to this goal, the findings would not be considered preliminary.
Smallwood	p. 4-3	Conclusions: disagree with methods and many statements of MT, but agree with conclusions.	Comment noted.
Estep	p. 4-3	Conclusions: add statement regarding effects of removal/relocation?	Comment noted.
Orloff	p. 4-3, ¶2	Were burrowing owls also an exception to reduced annual mortality at the Buena Vista site?	No. Burrowing owl mortality went down at the Buena Vista operating group.