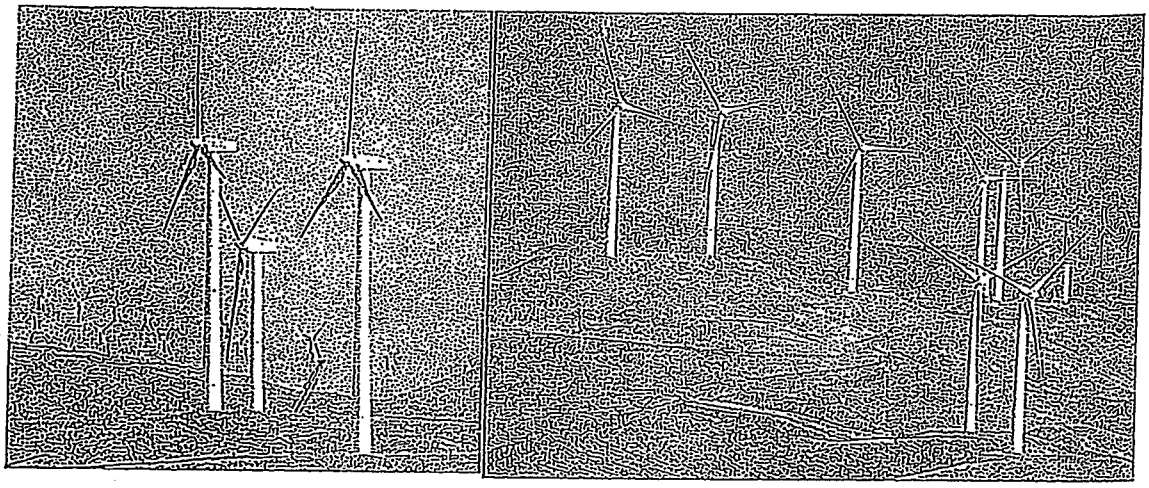
Figure 2. Vestas 660-kW turbines in Diablo Winds Energy Project, which replaced Flowind vertical axis turbines (left photo), and Mitsubishi 1-MW turbines in Buena Vista Wind Energy project that replaced Windmaster, Nordtank, and Danwin turbines (right photo).



Fatality rates were expressed as the number of fatalities per MW per year, where MW was the rated power output of the wind turbines composing a row of wind turbines, and the number of years or fractions of a year were the time spans over which searches were performed at that wind turbine row. Fatality rates were based on fatalities occurring ≤90 days before discovery, and 0.25 years was added to the number of years used in each fatality rate calculation to represent the time period when fresh carcasses could have accumulated prior to the first search. We adjusted fatality rates, F_A, for carcasses not found due to searcher detection error and scavenger removal [2]:

$$F_A = \frac{F_U}{p \times R_C}, \quad (1)$$

where F_U was unadjusted fatality rate, p was the average proportion of fatalities found by searchers during searcher detection trials across the U.S. [15], and R_C was the average cumulative proportion of carcasses remaining since the last fatality search, assuming wind turbines deposit carcasses steadily through the search interval. Preliminary R_C values were estimated using reports of scavenger removal trials across the U.S. [15]:

$$R_C = \frac{\sum_{i=1}^{I} R_i}{I}, \quad (2)$$

where R_i was the proportion of carcasses remaining by the ith day into a scavenger removal trial and corresponding with days since the last search during fatality monitoring, and I was the average search interval (days). We looked up R_C values in [15, App.], but we note that new approaches to scavenger removal trials have been generating faster removal rates (Smallwood *et al.*, manuscript in preparation). Searcher detection and scavenger removal rates varied across the U.S., but not nearly to the degree they varied by typical body size categories and by whether raptors or nonraptors [15]; nevertheless, multiple sources of error and bias have yet to be characterized.

3.2. Mapping Burrowing Owl and Mammal Burrows for Model Development

We mapped burrows of mammals and burrowing owls using a Trimble Pro-XR GPS within 90 m of 571 wind turbines composing 70 rows that were also monitored for bird fatalities during 1999–2003. We selected turbine rows to represent the existing variation in documented raptor fatality rates, physiographic conditions, and levels of effort directed toward ground squirrel control. We mapped the approximate centroids of ground squirrel burrow systems using a pacing method to separate burrow systems when continuity of sign rendered inter-burrow system distinctions difficult [16]. Ground squirrel burrow systems can contain multiple adults. We walked parallel transects 0, 15, 30, 45, 60, 75, and 90 m away from the turbine row, thus covering increasingly larger areas around the turbine rows.

Areas intervening turbine rows were also mapped in some turbine fields, including: (1) 66 ha with 131 Micon 65-kW turbines arranged in seven rows near Mountain House; (2) 57 ha with 120 Vestas 100-kW turbines in eight rows just south of Old Altamont Road in the central portion of the APWRA; (3) 21 ha with 29 Enertech turbines arranged in five rows near the Seawest office; (4) 14 ha with 18 Micon 65-kW wind turbines in five rows off Midway Road; (5) 15 ha with 15 Flowind 150-kW and Bonus 150-kW turbines in four rows on the Elworthy Ranch; (6) 26 ha with 24 Bonus 120- and 150-kW turbines in four rows on the Elworthy Ranch; and, (7) 32 ha with 30 Bonus 120-kW turbines in five rows on the Elworthy Ranch. Intervening areas were mapped between other turbine rows, as well, but these were relatively small areas.

Burrowing owl burrows were identified after burrowing owls flushed from the burrow or by sign. Sign included pellets, whitewash, shed feathers, and/or nest displays composed of cattle dung, toad skins, lizard carcasses, decapitated small mammals, and/or arranged sticks. Not all burrows mapped were nest burrows, but only 1 of ≥2 burrows was mapped when burrows occurred ≤25 m apart, which was closer than the closest inter-nest distance reported elsewhere [17].

3.3. Spatial Models to Predict Burrowing Owl Locations

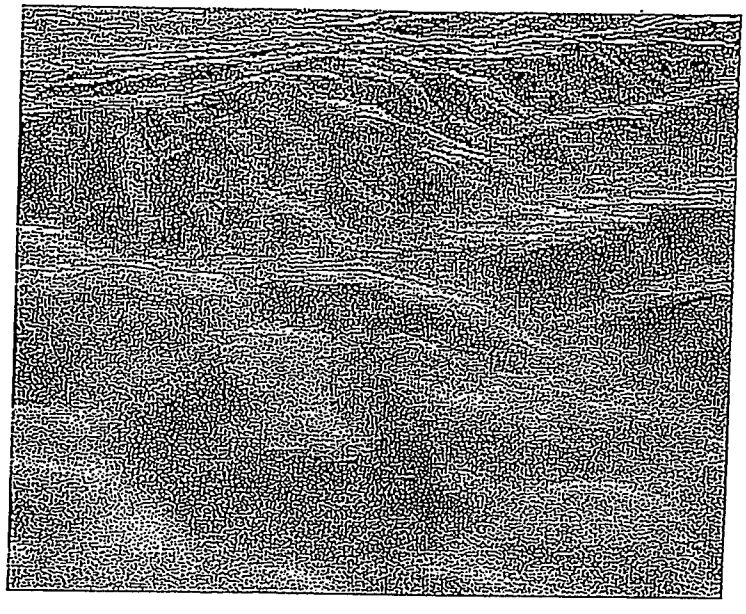
We mapped burrowing owl burrows as point features in ArcMap GIS layered onto a digital elevation model (DEM). We characterized the location of each burrowing owl burrow by slope aspect, slope grade, rate of change in slope, direction of change in slope, and elevation. These variables were also used to generate raster layers of the study area, one raster expressing the aspect of the corresponding slope (hereafter referred to as 'slope aspect'), and the other expressing whether the landscape feature was tending toward convex versus concave orientation. These features were defined using geoprocessing.

The United States Geological Survey (USGS) 10-m DEM was used as a starting point for characterizing the terrain of the Altamont Pass. To replace poorer quality data across about 25% of the study area, geo-referenced USGS 7.5' digital raster graphics (DRG) were used with GIS to capture the contour lines (hypsography). These contour vectors were then run through ESRI's Topograph tool to create a 10-m DEM, which was inserted into the existing USGS 10-m DEM. Elevation was assigned to each grid cell according to its centroid.

From the final DEM of the Altamont Pass region, the statistical analyses were limited (masked) to data within the areas searched for ground squirrel and burrowing owl burrows. The resulting analytical grid was composed of 187,908 10 × 10 m^2 cells. The analytical grid was used to develop and test

predictive models, which were later projected across the 2,281,169 grid cells composing the APWRA. The analytical grid was not selected randomly from within the APWRA because the focus of the burrow mapping was on raptor prey species nearby the wind turbines, most of which were placed along ridge crests and ridgelines between peaks and valley bottoms. Thus, some landscape features within the analytical grid were disproportional to their occurrence within the APWRA, such as ridge crests. Model predictions will be more reliable for landscape features represented within the analytical grid than for landscape features typically farther away from wind turbines.

Figure 3. Ridge and valley features expressed as blue and gold, respectively, and typical of convex-trending groups of DEM grid cells (ridges) and concave-trending groups of grid cells (valleys).

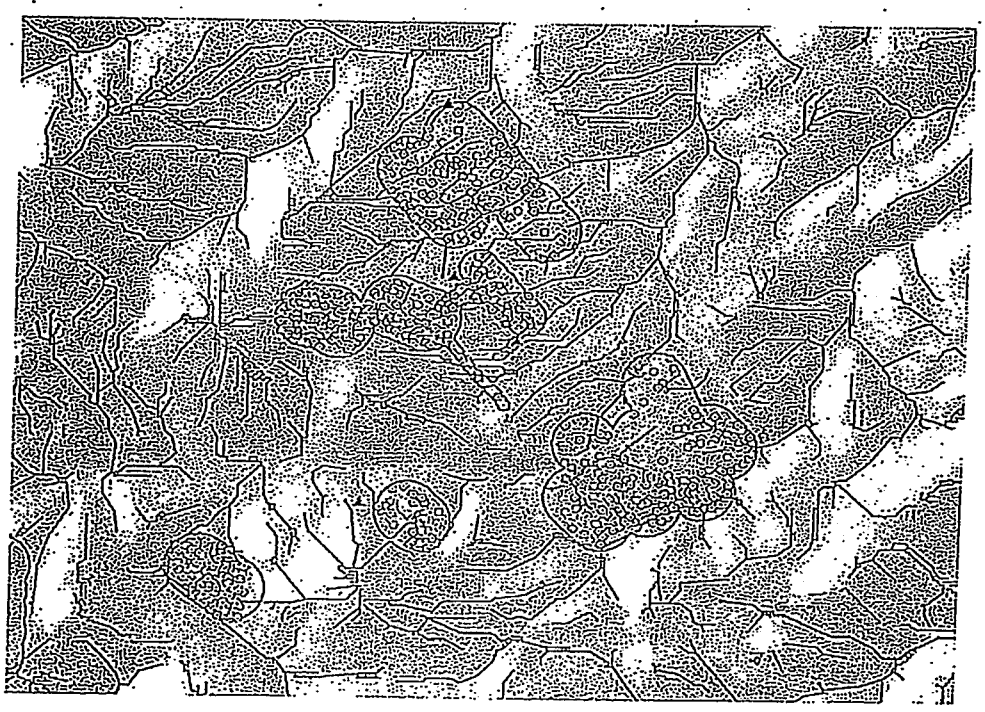


We used the Curvature function in the Spatial Analysis extension of ArcGIS 9.2 to calculate the curvature of a surface at each cell centroid. A positive curvature indicated the surface was upwardly convex at that cell, a negative curvature indicated the surface was upwardly concave, and a value of zero indicated the cell surface was flat. The curvature data (–51 to 38) were classified using the NaturalBreaks (Jenks) function with three classes of curvature–convex, concave and mid-range. The break values were visually adjusted to minimize the size of the mid-range class. We used a series of geoprocessing steps called 'expand,' 'shrink,' and 'regiongroup,' as well as 'majority filter tools' to enhance the primary slope curvature trend of a location. The result was a surface almost exclusively defined as either convex or concave (Figure 3). The convex surface areas consisted primarily of ridge crests and peaks, hereafter referred to as ridges, and the concave surface areas consisted primarily of valleys, ravines, ridge saddles and basins, hereafter referred to as valleys.

Line features representing the estimated average centers of ridge crests and valley bottoms (Figure 4) were derived from the following steps. ESRI's 'Flowdirection' function was used to create a flow direction from each cell to its steepest down-slope neighbor, and then the 'Flowaccumulation' function was used to create a grid of accumulated flow through each cell by accumulating the weight

of all cells flowing into each down-slope cell. A valley started where 50 upslope cells had contributed to it in the Flowaccumulation function, and a ridge started where 55 cells contributed to it. The flowdirection and flowaccumulation functions were applied to the ridges by multiplying the DEM by −1 to reverse the flow. Line features that represented ridges and valley bottoms were derived from ESRI's gridline and thin functions, which feed a line through the centers of the cells composing the valley or ridge. Thinning put the line through the centers of groups of cells ≥40 in the case of valleys.

Figure 4. Line coverages of ridge tops (orange) and valley bottoms (blue) following multiple geoprocessing steps assessing trends in neighboring DEM grid cells. Polygons enclose areas around wind turbines where burrow systems of ground squirrel (green) and burrowing owls (magenta) were mapped to develop predictive models.

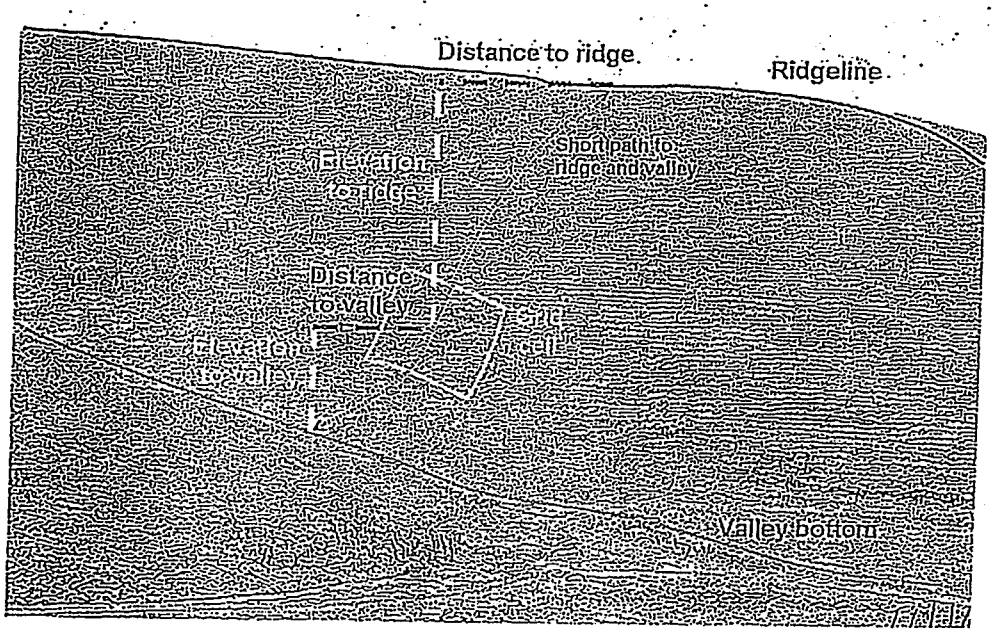


The horizontal distance (m) of each DEM grid cell was then measured from the nearest valley bottom and the nearest ridgeline, referred to as *distance to valley* and *distance to ridge*, respectively (Figure 5). These distances were measured from the DEM grid cell to the closest grid cell of a valley bottom or ridgeline, respectively, not including vertical differences in position. The total distance across the underlying slope was the sum of the distance to the valley bottom and the distance to the ridgeline, and expressed the size of the slope (*total slope distance*). The DEM grid cell's position in the slope was also expressed as the ratio of the distance to the valley and the distance to the ridge, referred to as the *distance ratio*. This expression of the grid cell's position on the slope removed the size of the slope as a factor.

The vertical differences between each DEM grid cell and the nearest valley bottom and nearest ridgeline were referred to as *elevation difference* (Figure 5), and this measure also expressed the size of the slope. In addition to the trend in slope grade at each DEM grid cell, the *gross slope* was measured as the ratio of *elevation difference* and *total slope distance* (Figure 5). The DEM grid cell's

position on the slope was also expressed as the ratio of the elevation differences between the grid cell and the nearest valley and the grid cell and the nearest ridge, referred to as *elevation ratio*.

Figure 5. Example depiction of how slope attributes were measured from 10 m^2 DEM grid cells. The *elevation difference* was the Elevation to valley + Elevation to ridge, and *elevation ratio* was Elevation to valley ÷ Elevation to ridge. *Total slope distance* was Distance to valley + Distance to ridge, and *distance ratio* was Distance to valley ÷ Distance to ridge. *Gross slope* was *elevation difference* ÷ *total slope distance*. The hypothetical grid cell overlaps a burrowing owl burrow located on another project site in the APWRA.



Each DEM grid cell was classified by *slope aspect* according to whether it faced north, northeast, east, southeast, south, southwest, west, northwest, or if it was on flat terrain. For analysis slope aspect was aggregated into five categories: northeast and east, southeast and south, southwest and west, northwest and north, and no aspect (flat terrain). Each grid cell was categorized as to whether its center on the landscape was windward, leeward or perpendicular to the prevailing southwest and northwest wind directions as recorded during earlier behavior observation sessions [9,18].

Log_{10} and natural log transformations were used to better fit normal distributions, and then chi-square tests for association and principal components analysis (PCA) were used to further understand how the variables related to burrowing owl burrow locations and to each other. To minimize the effects of confounding, no more than one predictor variable was selected from each principle component for any model developed to classify grid cells according to whether they supported burrowing owl burrows. The first modeling approach used discriminant function analysis (DFA), and the second used fuzzy logic [19-20]. Both produced likelihood surface areas, one referred to as the DFA surface and the other as FL surface. The performance of each model was based on the lowest number of predictor variables, the smallest portion of the study area occurring within the

likelihood surface area, and the most number of mapped burrows occurring within the likelihood surface.

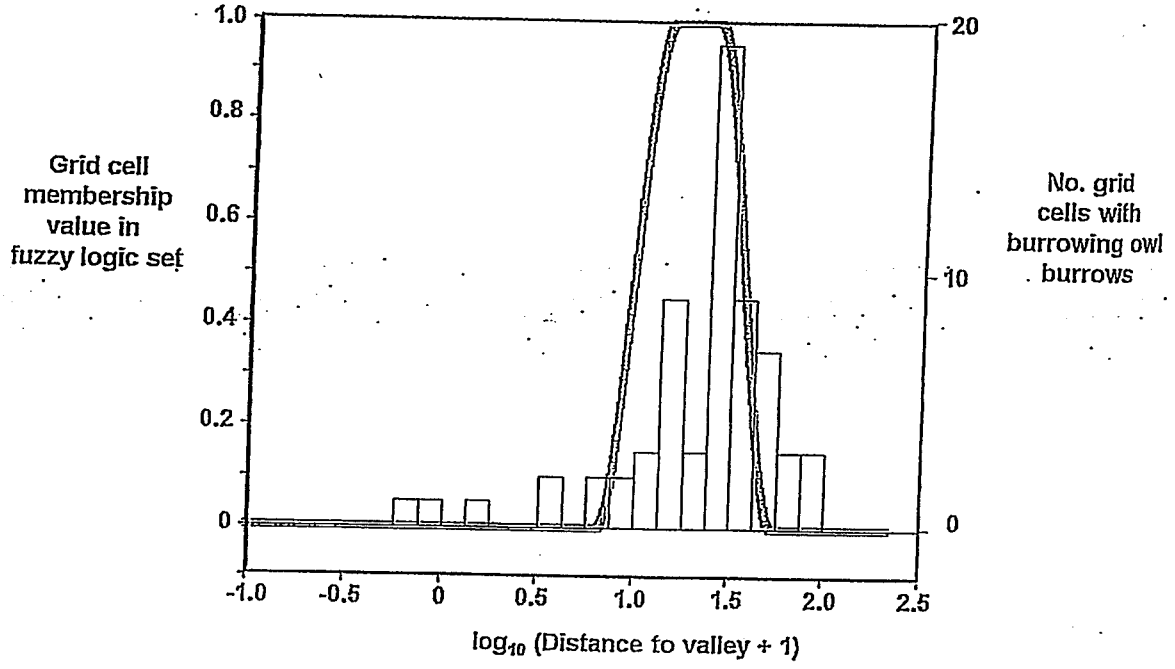
Log_{10} *distance to valley* and *elevation difference* were the two variables used in fuzzy logic to predict the likelihood of each grid cell containing a burrowing owl burrow (Table 1). These two variables were selected from a pool of candidates, based on relatively larger magnitudes of differences between mean values where burrowing owls were and were not found, and based on their relatively lower level of shared variation as judged from examination of a correlation matrix and the output from principal components analysis.

Table 1. Fuzzy logic membership functions of grid cells belonging to the set of cells with burrowing owl burrows, based on a sample of 187,908 10 × 10 m^2 grid cells. For log_{10} distance to valley, mean = 1.27302, SE = 0.11455, and SD = 0.46176, and for elevation difference, mean = 7.5846 and SE = 0.97564.

Value of variable Y for *i*th grid cell	Basis of membership function	Membership function of grid cell belonging to set with a burrowing owl burrow
Y = log_{10} distance to valley		
$1.15847 < Y < 1.38757$	Within 1 SE of mean	1
$0.81126 \leq Y \leq 1.15847$	1 SD to 1 SE < mean	$0.5 \times (1 - \cos(\pi \times (Y - 0.81126) \div (1.15847 - 0.81126)))$
$1.73478 \geq Y \geq 1.38757$	1 SD to 1 SE > mean	$0.5 \times (1 + \cos(\pi \times (Y - 1.38757) \div (1.73478 - 1.38757)))$
$Y < 0.81126$ or $Y > 1.73478$	>1 SD away from mean	0
Y = elevation difference		
$5.63332 < Y < 9.53588$	Within 1 SE of mean	1
$3.68204 \leq Y \leq 5.63332$	Within 4 × SE; 2 × SE < mean	$0.5 \times (1 - \cos(\pi \times (Y - 3.68204) \div (5.63332 - 3.68204)))$
$11.48716 \geq Y \geq 9.53588$	Within 4 × SE; 2 × SE > mean	$0.5 \times (1 + \cos(\pi \times (Y - 9.53588) \div (11.48716 - 9.53588)))$
$Y < 3.68204$ or $Y > 11.48716$	>4 SE; away from mean	0

Based on log_{10} distance to valley, the grid cell's membership value in the burrowing owl burrow set was multiplied by 2.55 × 100, and based on elevation difference it was multiplied by 100 in order to obtain a value range that was easier to report and interpret. These two products were added and all sum values >70 were used to obtain the fuzzy logic surface because 70 appeared to be a natural break in the frequency distribution.

Figure 6. Example distribution of membership values in fuzzy logic set (red line), in this case for grid cells containing burrowing owl burrows as a function of $\log_{10}$ distance to valley.



3.4. Spatial Model Validation Using Burrowing Owl Locations in Vasco Caves

From August through November 2006, we used a Trimble Geo-XT GPS to map the approximate centers of burrow systems of burrowing owls, ground squirrels, and other mammals in Vasco Caves Regional Preserve [14]. We used the pacing method described earlier along transects spaced about 12 to 15 m apart on 381 ha (70%) of the Preserve. Burrowing owl burrows mapped included burrows used for both nesting and refuge.

A separate effort was made to specifically map burrowing owl nesting burrows. Biologists searched for burrowing owls and their nest burrows from 33 observation points in 2006 and 39 points in 2007, using 10 × 40 binoculars and a 25 × 60 spotting scope from both inside and outside an automobile. They performed 15 surveys (54 hours) from 24 May to 2 August 2006, and 11 surveys (44 hours) from 3 April to 27 June 2007. Each year, 11 surveys were initiated during morning, generally lasting from about 08:00 hours to 13:00 hours. Nest burrows had a breeding pair in attendance during repeat surveys. To represent nest productivity, the maximum number of emergent juveniles between 2 and 4 weeks old was recorded. Results from both the general burrow mapping survey and the nesting owl burrow survey were used in this analysis.

Mapped burrowing owl burrows were characterized as point features in ArcMap GIS and layered onto our DEM of the study area. The location of each burrow was examined for overlap with our predictive models developed using data from other parts of the APWRA. The analytical grid for the burrow mapping area in the Vasco Caves study area consisted of 38,139 10 × 10 m^2 cells.

3.5. Non-Spatial Models to Predict Burrowing Owl Fatalities

We developed a simple rating system to score the collision hazard of each of the 4,074 wind turbines searched for fatalities during 1998–2003. We selected specific conditions to be rated for collision hazard following chi-square tests for association between fatalities and measured environmental variables and wind turbine attributes [9]. Test results leading to conditions we rated were those that were (1) significant, (2) based on expected χ^2 cell values mostly >5, (3) exhibited sensible gradients in measures of effect (i.e., relating observed to expected values) along a continuum such as elevation or rotor diameter, and (4) reasonably orthogonal.

Using magnitudes of observed ÷ expected ratios from the χ^2 tests, we scored wind turbines for their collision hazard to four raptor species that are the most often killed in the APWRA, because these species were the foci of mitigation measures required by Alameda County's conditional use permits issued to the wind turbine companies (Table 2). Burrowing owls contributed to this scoring system, but the other three species obviously also affected the scores. The sum scores were aggregated into 4 groups per species, and then the aggregated scores were subjected to conditional statements (Table 3). The conditional statement considered natural breaks in ranges of sum scores specific to each species.

Table 2. Rating system to score APWRA wind turbines for collision hazard to four select species of raptor.

Wind Turbine Condition	Score
Rotor plane swept/s < 2,142 m^2	1
Supporting tower is tubular or vertical axis	1
Non-functional or next to derelict turbine or vacant tower	1
Not part of a wind wall	1
At the end of a turbine row	1
In a canyon	1
At or below 235 m elevation	2
In valley (trending toward upwardly convex)	1
Burrowing owl sum score	_____ (10 possible)
Low reach of blades 8 to 9.6 mabove ground	1
Fewer than 24 other turbines within 300 meters	1
At the edge of a local cluster of turbines	1
Not part of a wind wall	1
At the end of a turbine row	1
On a ridgeline	1
In a canyon	1
On steep slopes, >14°	1
On slopes windward to one prevailing wind direction (NW or SW) and perpendicular to the other direction	1
Golden eagle sum score	_____ (9 possible)
At the end of a turbine row	1
Fewer than 13 other turbines within 300 meters	1
At the edge of a local cluster of turbines	1

Table 2. *Conti.*

In a canyon	1
On a ridgeline or ridge saddle	1
On a northwest- or south/southeast-facing slope	1
At or above 385 m elevation	-1
Red-tailed hawk sum score	_____ (6 possible)
Rotor plane swept/s > 3,285 m^2	1
On ridgeline or ridge saddle	1
Below 135 m or above 385 m elevation	1
American kestrel sum score	_____ (3 possible)

Table 3. Conditional statements applied to the rating system for collision hazard to identify tiers of wind turbines grading from most hazardous (Tier 1) to least hazardous (Tier 5), where GOEA = golden eagle, RTHA = red-tailed hawk, BUOW = burrowing owl, and AMKE = American kestrel.

Index scores							Tier	No. of turbines
GOEA	Operator	RTHA	Operator	BUOW	Operator	AMKE		
4	and	4	and	≥1	and	≥1	1	22
≥1	or	≥1	and	≥3	and	≥3	1	124
≥3	or	≥3	and	≥4	or	≥4	1	75
4	and	≥3	and	---	and	---	2	45
---	and	---	and	≥3	and	≥2	2	235
≥3	and	≥3	and	≥2	and	≥1	3	149
≥2	and	≥3	and	≥1	and	---	3	323
≥3	or	≥3	or	≥3	and	---	4	603
Else the turbine was assigned to Tier 5							5	2,498

4. Results

4.1. Landscapes Used to Develop and Validate Predictive Spatial Models

Principal components analysis, using a correlation matrix and varimax rotation, explained 82% of the variation in predictor variables measured among APWRA-wide grid cells masked for model development, and it also explained 82% of the variation in predictor variables measured among the grid cells in Vasco Caves used for model validation (Table 4).

Table 4. Principal Components following varimax rotation in PCA, showing only those rotated factor loadings >0.1.

Variable	Component 1		Component 2		Component 3	
	APWRA	Vasco	APWRA	Vasco	APWRA	Vasco
ln Distance ratio	0.984	0.979				
ln Elevation ratio	0.907	0.921			0.133	
$\log_{10}$ Distance to ridge	−0.872	−0.851			0.312	0.332
$\log_{10}$ Distance to valley	0.800	0.807			0.480	0.472
Gross slope			0.908	0.909	0.175	
Elevation difference			0.831	0.775	0.440	0.549
Slope (percentage)	−0.119		0.829	0.745		
Elevation	0.214	0.437	0.627	0.234	−0.191	−0.211
$\log_{10}$ Total slope distance			0.159		0.927	0.959

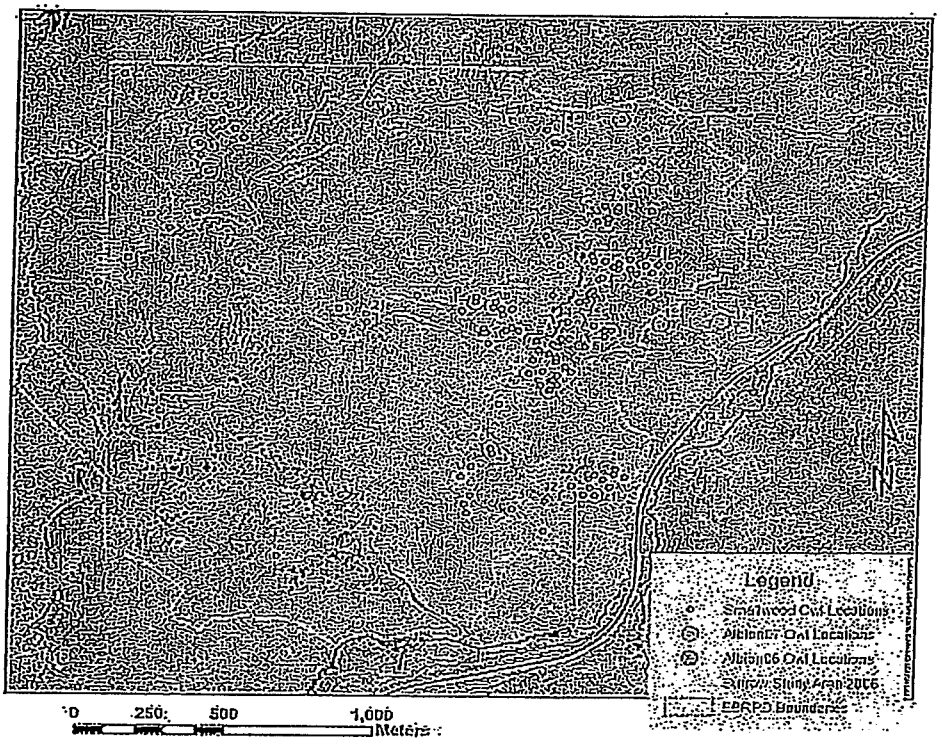
Component 1 can be interpreted as position on the slope, which loaded stronger on *elevation* at Vasco Caves. Component 2 can be interpreted as the slope's rate of change, i.e., steepness. Component 3 can be interpreted as the slope's size. Only one variable with a high loading was used from each component for subsequent predictive model development, though all variables and transformed variables were tested for a relationship with burrowing owl burrows.

4.2. Burrowing Owl Burrows Contributing to Model Development and Validation

We mapped the locations of 65 burrowing owl burrows found during systematic searches of plots throughout the eastern, central, and southern portions of the APWRA in 1999–2003. While mapping mammal burrows in Vasco Caves during fall 2006, we detected 143 burrowing owl burrows used for nesting and refuge (Figure 7). Biologists performing directed breeding pair surveys determined burrowing owls were nesting in 25 (76%) of 33 burrows in use by pairs in 2006, and in 21 (54%) of 39 burrows in use in 2007 (Figure 7). Breeding pair density of burrowing owls on the project site was ≥4.61 per 100 ha in 2006 and 3.87 per 100 ha in 2007, both within the confidence interval predicted by an empirical model [3]. One or more young emerged from 19 of 25 breeding pairs for nest success of 76% in 2006, and one or more young emerged from 12 of 21 breeding pairs for nest success of 57% in 2007. Productivity was 3.44 juveniles/pair (N = 86 young) in 2006 and 1.95 juveniles/pair (N = 41 young) in 2007.

A year of fatality monitoring among the 21.9 MW of wind turbines in Vasco Caves detected 10 burrowing owl fatalities, all at turbines we rated as Tier 1 and Tier 2 (most hazardous). We estimated 17.7 burrowing owls were killed annually in Vasco Caves (Smallwood *et al.* manuscript in prep.), or about 13% to 21% of the total annual population at Vasco Caves. However, we do not know whether or to what degree this level of fatalities affects the local population.

Figure 7. Distribution of burrowing owl burrows used in Vasco Caves Regional Preserve for nesting in 2006 (green circles) and 2007 (orange circles), and for refuge in 2006 and 2007 (maroon circles).



4.3. Burrowing Owl Relationships with Ground Squirrels and Slopes

Compared to the average grid cell, those with ground squirrel burrow systems and burrowing owl burrows were successively lower on the slope (Table 5, Figure 8), on successively smaller slopes (Figure 9A) and on successively shallower slopes (Figure 9B). Burrowing owls did not occupy ground squirrel burrows at random, but rather selected burrows within a relatively narrow range of topographic conditions.

Nearly all measured slope attributes differed between sets of grid cells with and without burrowing owl burrows (Table 6). Grid cells with both nest and refuge burrows averaged about half the *distance to valley* compared to grid cells without burrows, and grid cells with nest burrows in Vasco Caves averaged 59% of *distance to valley* compared to other grid cells. Differences in multiple other measured variables indicated that burrowing owl burrows were on average nearer the valley bottoms than they were the ridge crests, at lower elevations than where burrowing owl burrows were not found, and were on smaller, shallower slopes (Table 6).

Table 5. Mean comparisons among sets of grid cells with ground squirrel burrow systems, burrowing owl burrows, and neither ground squirrel nor burrowing owl burrows (empty cells) in the portions of the APWRA used to develop predictive models of burrowing owl burrow locations. Post-hoc least significant difference tests were denoted by *a* for tests between empty cell and ground squirrel, *b* for empty cell and burrowing owl, and *c* for ground squirrel and burrowing owl, and the overall ANOVA df = 1,187,907. Sample sizes were n = 185,077 for empty cells, n = 2,766 for cells with ground squirrels, and n = 65 for cells with burrowing owls.

Predictor variable	Mean			ANOVA F-value	Least-significant differences
	Empty cell	Ground squirrel	Burrowing owl		
Distance to valley	61.80	46.38	29.25	466.80**	abc
Distance to ridge	42.12	46.69	45.09	63.31**	a
Total slope distance	103.93	93.06	74.34	353.47**	abc
Distance ratio	5.40	3.33	1.45	92.27**	ab
Elevation	192.55	140.75	143.43	774.58**	ab
Elevation difference	17.12	12.98	7.71	176.64**	abc
Elevation ratio	5.43	2.86	1.20	274.78**	ab
Gross slope (%)	15.87	13.28	9.14	112.26**	abc
Slope at grid cell (%)	18.89	17.12	13.38	57.23**	abc
Principal component 1	0.0049	−0.3128	−0.5301	146.83**	ab
Principal component 2	0.0053	−0.3433	−0.6078	178.02**	abc
Principal component 3	0.0027	−0.1650	−0.7678	57.53**	abc

Figure 8. Mean and SE of percent of elevation from the bottom to the top of the slope on which the grid cell is located within Vasco Caves Regional Preserve. On average, ground squirrel burrow systems were lower on the slope than the average grid cell, and burrowing owl burrows, including nest burrows, were lower yet.

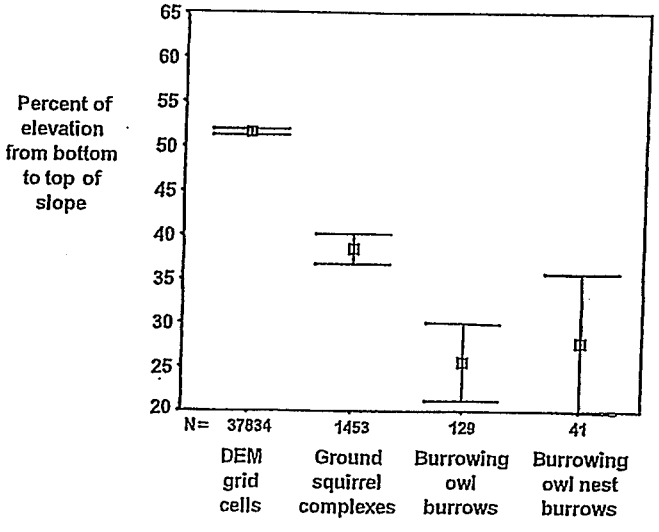


Figure 9. Compared to the average empty grid cell, those with ground squirrel burrows were relatively low on the slope (A), those with burrowing owl burrows were lower still (A), and those with ground squirrel burrows were on shallower slopes (B), and burrowing owl burrows were on even shallower slopes (B).

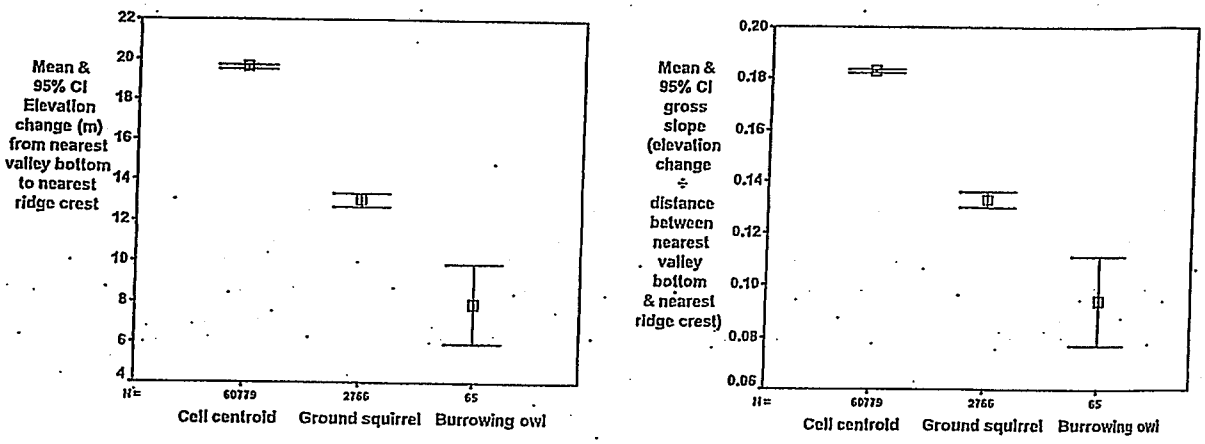


Table 6. Mean comparisons between sets of grid cells where burrowing owl burrows were not found and where they were found. Significance of ANOVA tests was denoted by *for $P < 0.05$ and ** for $P < 0.005$.

Predictor variable	Burrowing owl burrows				ANOVA F-value
	Not found		Found		
	Mean	SD	Mean	SD	
Refuge & nest burrows APWRA-wide					
Distance to valley (m)	61.58	37.29	29.25	19.12	48.84**
Distance to ridge (m)	42.19	29.94	45.09	18.40	0.61
Total slope distance (m)	103.77	30.16	74.34	22.01	61.86**
ln Distance ratio	0.46	1.63	−0.53	1.18	23.69**
Elevation (msl)	191.79	97.35	143.43	38.18	16.04**
Elevation difference (ridge − valley)	17.06	12.18	7.71	8.02	38.30**
Gross slope (%)	16	10	9	7	30.85**
Slope at grid cell (%)	18.86	12.19	13.38	8.17	13.12**
ln Elevation ratio	0.60	1.67	−0.27	0.87	17.52**
PC 1, position on slope	0.00	1.00	−0.53	0.62	18.27**
PC 2, slope steepness	0.00	1.00	−0.61	0.63	24.02**
PC3, slope size	0.00	1.00	−0.77	0.93	38.34**
Refuge & nest burrows in Vasco Caves					
Distance to valley (m)	59.07	40.60	34.73	23.97	47.02**
Distance to ridge (m)	59.53	41.89	85.80	28.90	51.40**
Total slope distance (m)	118.60	40.99	120.53	33.89	0.29
ln Distance ratio	0.01	1.82	−1.12	1.00	50.71**
Elevation (msl)	199.10	45.87	147.02	26.43	168.75**
Elevation difference (ridge − valley)	25.74	14.88	21.47	11.69	10.76*
Gross slope (%)	22	10	18	8	17.26**
Slope at grid cell (%)	27.07	12.55	23.87	9.75	8.50*

Table 6. *Cont.*

ln Elevation ratio	0.10	1.95	−1.17	1.25	55.85**
PC 1, position on slope	0.00	1.00	−0.74	0.55	72.33**
PC 2, slope steepness	0.00	1.00	−0.47	0.74	29.26**
PC 3, slope size	0.00	1.00	0.27	0.74	9.48*
Nest burrows in Vasco Caves					
Distance to valley (m)	59.00	40.58	43.27	33.31	6.16*
Distance to ridge (m)	59.60	41.88	83.37	32.73	13.19**
Total slope distance (m)	118.60	40.97	126.64	40.76	1.58
ln Distance ratio	0.01	1.82	−1.01	1.57	12.83**
Elevation (msl)	198.98	45.90	143.56	21.39	59.77**
Elevation difference (ridge – valley)	25.73	14.87	24.83	12.67	0.15
Gross slope (%)	22	10	20	7	1.74
Slope at grid cell (%)	27.06	12.54	24.61	10.63	1.56
ln Elevation ratio	0.10	1.95	−1.03	1.36	13.74**
PC 1, position on slope	0.00	1.00	−0.70	0.75	19.98**
PC 2, slope steepness	0.00	1.00	−0.34	0.69	4.66*
PC 3, slope size	0.01	1.00	−0.21	0.96	6.55*

4.4. Spatial Model to Predict Burrowing Owl Locations

The most efficient DFA models were comprised of fewer variables that correctly classified a higher percentage of grid cells where burrowing owl burrows were found (Table 7). *Elevation difference* contributed to the most efficient models, as did *total slope distance* and natural log *elevation ratio*. Slope size contributed most to the DFA model developed from the PCA scores, followed by slope steepness and position on the slope. According to this model, grid cells predicted to overlap burrowing owl burrows also overlapped smaller and shallower slopes closer to the valley bottom.

The most reliable assessment of each model in Table 7 was the percent correct classification of grid cells with burrowing owl burrows, because grid cells without burrowing owl burrows could have had owl burrows in the past and might have them in the future (see Figure 7). Burrowing owls shift burrow locations occasionally, and population turnover will also result in a dynamic spatial distribution of burrows.

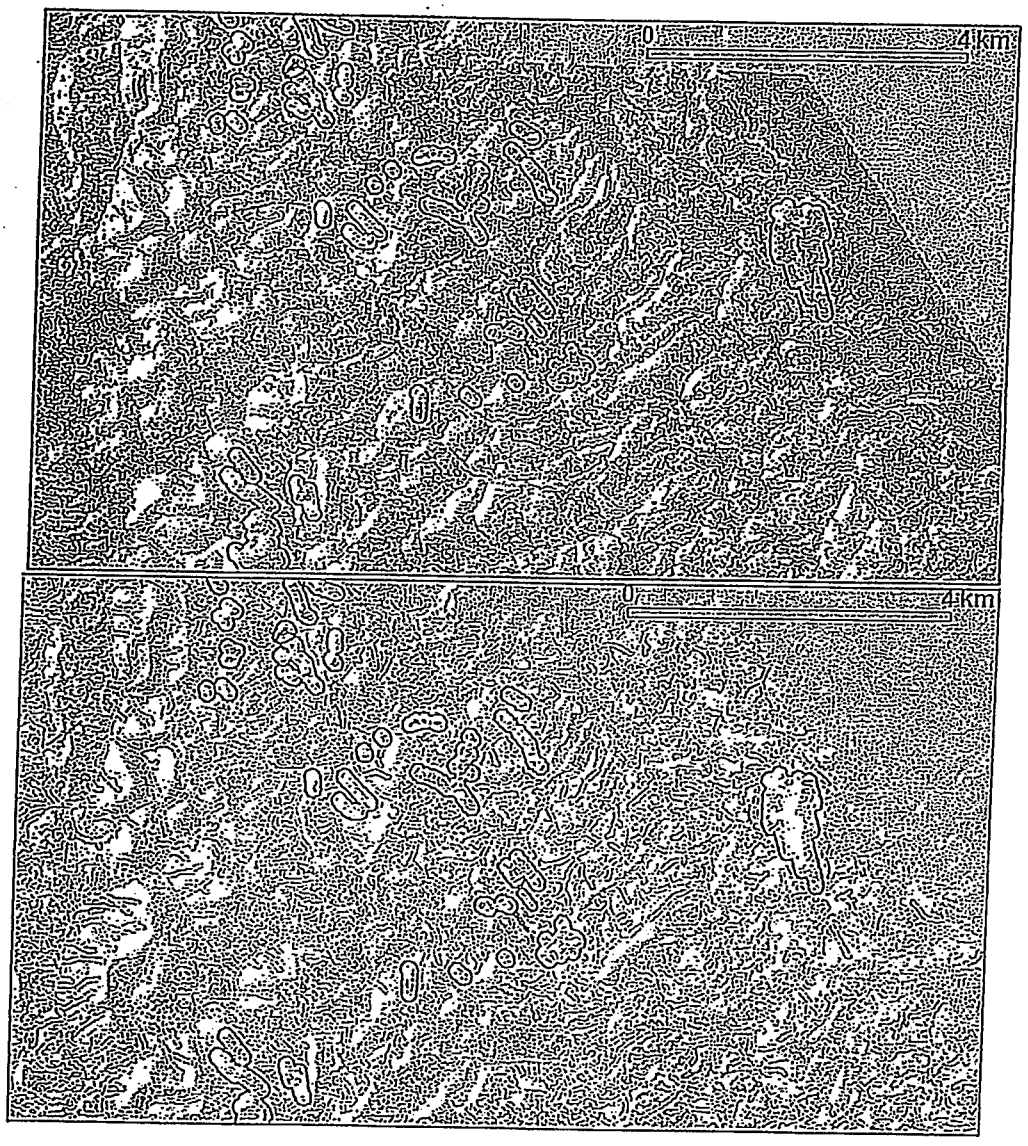
Table 7. The most efficient discriminant function models of grid cells predicted to include burrowing owl burrows, as well as a DFA model estimated from the PCA scores. All three models were significant ($P < 0.0001$).

Discriminant Functions (standardized canonical discriminant function coefficients)	Percent correct classification of grid cells	
	Where burrowing owl burrows were found	Total
Total slope distance (0.77), Elevation difference (0.35)	84.6	67.4
Elevation difference (0.82), ln Elevation ratio (0.50)	87.7	62.3
Position on slope (0.48), Slope steepness (0.55), Slope size (0.69)	72.3	72.8

The DFAs performed reasonably well by correctly predicting 72% to 88% of the grid cells with burrowing owl burrows, but large numbers of grid cells were predicted to overlap burrowing owl

burrows. One DFA model correctly predicted 88% of known burrow sites, but also predicted that 38% of the study area would contain burrowing owl burrows (Figure 10A).

Figure 10. Areas within part of the APWRA predicted to be selected by burrowing owls for burrow locations based on a Discriminant Function Model (A, magenta) and based on a Fuzzy Logic Model and surface values >70 (B), where the darker orange depict strongest prediction (bottom). Boundaries of some burrow mapping areas are shown by dark lines.



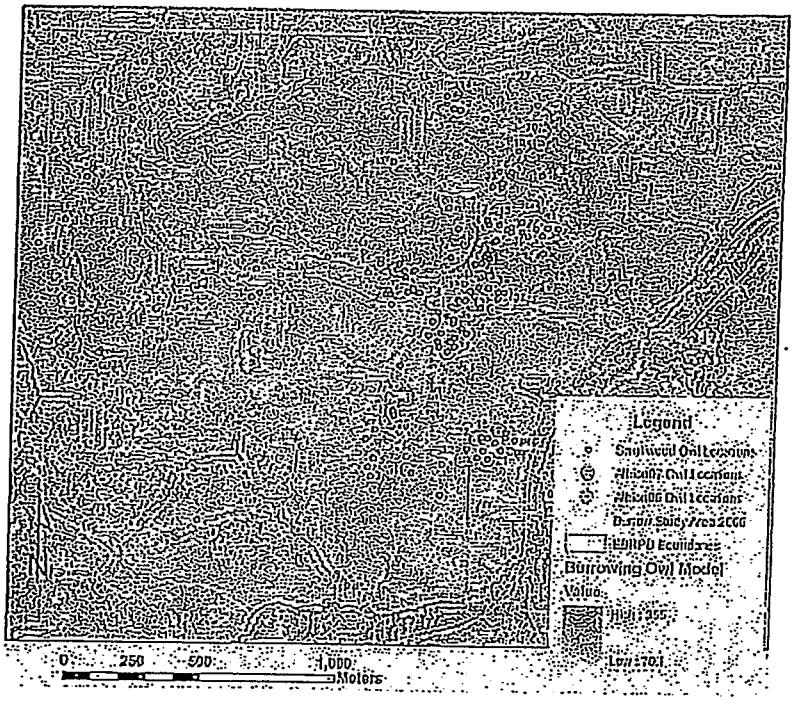
Based on our DFA model, the combinations of variables in Table 7 performed about as well as *elevation difference* and $\log_{10}$ *distance to valley* using fuzzy logic. These were selected from different PCs and shared little variation ($r = 0.27$), so they were reasonably orthogonal. Of the 65 burrowing owl burrows in the APWRA study area, 57 (88%) were located on the FL surface based on FL values >10, composing 52% of the study area. Burrowing owl burrows were associated with the fuzzy logic surface ($\chi^2 = 33.17$, df = 1, $P < 0.001$), and were mapped in it 1.69 times other than expected, i.e., Observed ÷ Expected = 1.69.

Of the 65 burrowing owl burrows compared to GIS raster layers, 53 (81.5%) were located in the FL surface with values >70. This likelihood surface was 43.2% of the study area (Figure 10B). Burrowing owl burrows were associated with the fuzzy logic surface ($\chi^2 = 38.18$, df = 1, $P < 0.001$), and were mapped in the FL surface 1.89 times other than expected.

4.5. Spatial Model Validation Using Burrowing Owl Locations in Vasco Caves

The FL surface developed from data collected in other parts of the APWRA correctly predicted the locations of most of the burrowing owl burrows found in Vasco Caves (Figure 11). The FL surface covered 40.9% of the burrow study area in Vasco Caves, but overlapped 69% of burrowing owl burrows found during foot searches in 2006. These burrows overlapped the FL surface 1.68 times other than expected. Of the nest burrows that were mapped, 63% overlapped the FL surface, or 1.55 times other than expected. Additionally, 61% of the juveniles produced from monitored nest burrows were from the FL surface, or nearly 1.5 times other than expected.

Figure 11. Most of the mapped burrowing owl burrows at Vasco Caves overlapped the fuzzy logic surface depicted here in shades of purple.



4.6. Relation of Predicted Burrowing Owl Locations to Wind Turbine Fatalities

Among all APWRA wind turbines, 16.4% (89.6 MW) were in and 83.6% (456.2 MW) were out of the DFA surface area, and the same percentages characterized the turbines that were searched. Burrowing owl fatalities were on the DFA surface 1.77 times other than expected (Table 8). The DFA surface also associated with disproportionately more wind turbine-caused fatalities of red-tailed hawk, mallard, western meadowlark, and mourning dove (Table 8), indicating turbines moved from this surface would benefit multiple species.

Among all APWRA wind turbines, 27.3% (149.7 MW) were in and 72.7% (398.0 MW) were out of the FL surface area based on surface values >70 (this value chosen as a natural break in surface values). Among searched wind turbines, 22% of the rated capacity was in the FL surface, and burrowing owl fatalities were in the FL surface 1.95 times other than expected (Table 8). The FL surface also associated with disproportionately more wind turbine-caused fatalities of western meadowlark and mourning dove (Table 8).

Adjusted fatality rate estimates were greater for most bird species within the FL surface during both 1998–2003 and 2005–2007 (Table 9). The fatality rates of burrowing owls and all raptors as a group were twice as high on the FL surface compared to off the FL surface in 1998–2003, but these differences lessened in 2005–2007.

Table 8. Fatalities off and on the sampled portions of the DFA and FL (values >70) surfaces across the APWRA, where the rated wind power capacity of turbines was 364.6 MW (84%) off the DFA surface and 71.5 MW (16%) on the DFA surface, and 340.0 MW (78%) off the FL surface and 97.8 MW (22%) on the FL surface. Significance of chi-square values were denoted by *t* for 0.10 > P > 0.05, * for P < 0.05, and ** for P < 0.005.

		Likelihood surface					
		Discriminant function analysis			Fuzzy logic		
Species		Observed fatalities	Obs ÷ Exp fatalities	Chi-square	Observed fatalities	Obs ÷ Exp fatalities	Chi-square
Golden eagle	Off	46	1.04		36	0.92	
	On	7	0.81	0.39	18	1.27	1.09
Red-tailed hawk	Off	166	0.94		146	0.95	
	On	46	1.32	4.38*	67	1.18	2.03
American kestrel	Off	47	0.95		37	0.87	
	On	12	1.24	0.68	22	1.44	3.31 t
Burrowing owl	Off	49	0.85		34	0.73	
	On	20	1.77	8.00**	35	1.95	17.78**
Barn owl	Off	39	0.95		33	0.92	
	On	10	1.25	0.58	16	1.28	1.10
Great horned owl	Off	12	0.84		11	0.83	
	On	5	1.80	2.11	7	1.58	1.65
Mallard	Off	20	0.72		21	0.86	
	On	13	2.41	12.76**	12	1.49	2.30
Horned lark	Off	21	1.09		15	0.90	
	On	2	0.53	0.99	8	1.36	0.87
Western meadowlark	Off	70	0.88		57	0.84	
	On	25	1.61	6.85*	39	1.56	8.42**
Mourning dove	Off	16	0.58		16	0.66	
	On	17	3.15	29.74**	18	2.17	13.01**
Raptors	Off	403	0.94		331	0.89	
	On	111	1.32	10.20**	186	1.38	20.92**
Birds	Off	828	0.86		695	0.84	
	On	321	1.71	112.03**	461	1.55	101.66**

Table 9. Comparisons of adjusted fatality rate estimates within and outside fuzzy logic likelihood surfaces.

Species	Fatality rates (Fatalities/MW/yr)							
	1998–2003				2005–2007			
	Off FL surface		On FL surface		Off FL surface		On FL surface	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Burrowing owl	0.805	0.354	1.630	0.697	1.731	0.300	2.363	0.408
Golden eagle	0.088	0.046	0.121	0.056	0.210	0.044	0.228	0.111
Red-tailed hawk	0.299	0.066	0.270	0.070	0.703	0.096	0.810	0.129
American kestrel	0.839	0.251	2.414	1.355	0.724	0.187	0.751	0.184
Barn owl	0.050	0.015	0.064	0.029	0.194	0.037	0.300	0.093
Great horned owl	0.013	0.006	0.010	0.005	0.053	0.028	0.094	0.034
Mallard	0.075	0.030	0.081	0.041	0.120	0.070	0.049	0.037
Mourning dove	0.000	0.000	0.000	0.000	0.089	0.042	0.126	0.086
Western meadowlark	3.261	1.379	2.073	0.668	2.960	0.435	3.567	0.691
Raptors	2.102	0.745	4.517	2.217	3.818	0.812	4.680	1.048
Birds	12.510	6.004	12.405	5.706	15.001	3.839	19.970	5.643

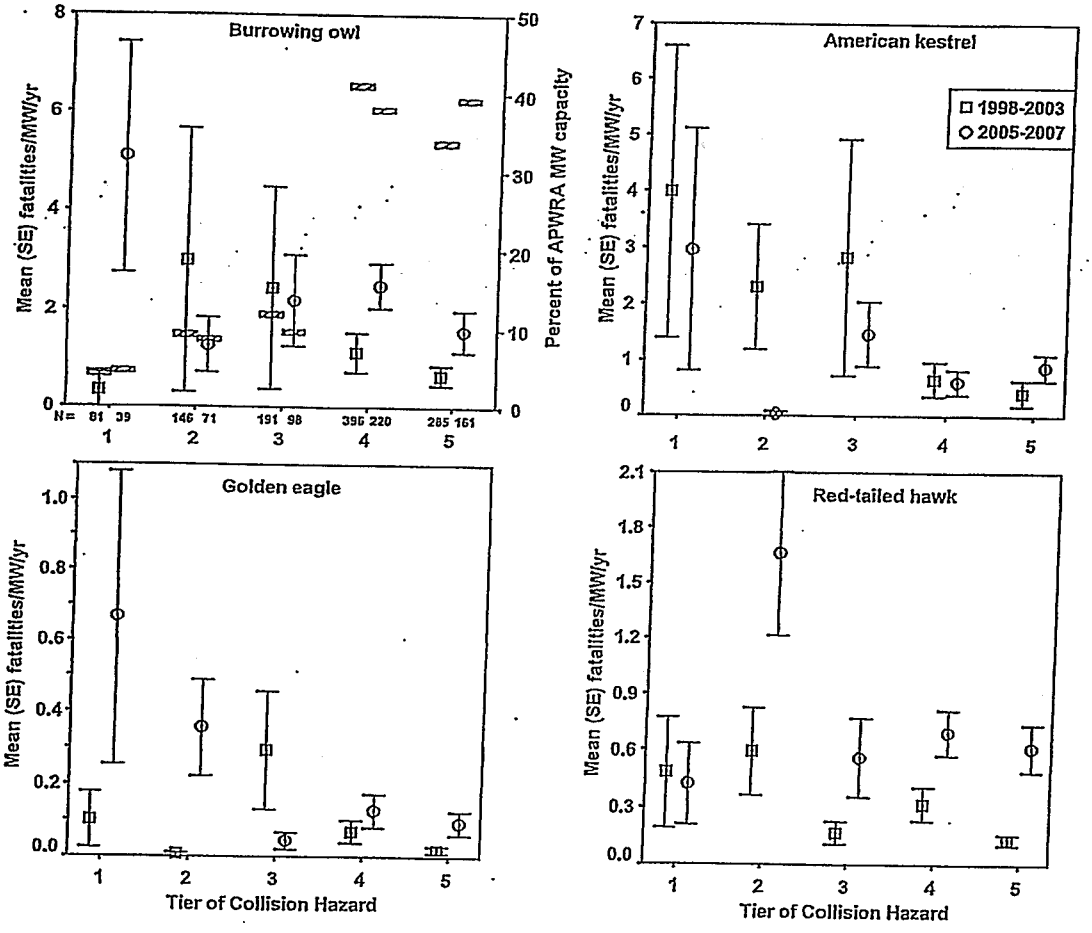
4.7. Non-Spatial Models to Predict Burrowing Owl Fatalities

Estimated fatality rates corresponded with Tier classifications assigned to wind turbines based on collision hazard ratings for 3 of the 4 raptor species that were used to develop the Tiers (Figure 12). Fatality rates of burrowing owl were highest in Tier 2 and 3 turbines in 1998–2003, and were highest in Tier 1 turbines in 2005–2007. Fatality rates of American kestrel were highest in Tier 1–3 turbines in 1998–2003 and in Tier 1 and 3 turbines in 2005–2007. Fatality rates of golden eagle were highest in Tier 3 turbines in 1998–2003 and in Tier 1 and 2 turbines in 2005–2007. Fatality rates of red-tailed hawks were highest in Tier 2 turbines in 2005–2007. Turbines in Tiers 1–3 caused the highest fatality rates of these four raptor species, and composed 22% to 26% of the APWRA's installed capacity.

5. Discussion

Both discriminant function analysis and fuzzy logic approaches produced predictive models of burrowing owl locations, and their likelihood surfaces were also where wind turbines killed disproportionate numbers of burrowing owls. The fuzzy logic approach was more predictive of burrowing owl fatalities, whereas the DFA approach was more predictive of fatalities of other bird species. Therefore, focused planning to minimize burrowing owl fatalities by carefully repowering the APWRA would benefit from using the FL approach combined with the rating system, whereas planning to minimize the fatalities of a larger suite of species would benefit from using the DFA approach combined with the rating system.

Figure 12. Mean fatality rates by collision hazard Tier classification for burrowing owl, American kestrel, golden eagle, and red-tailed hawk estimated from fatality monitoring in 1998–2003 and 2005–2007 in the Altamont Pass Wind Resource Area. Hatched bars in the top left graph represent percentages of the APWRA's installed capacity in each Tier, e.g., Tier 1 turbines represented 4.4% and 4.7% of the APWRA's installed capacity in 1998-2003 and 2005–2007, respectively.



Although burrowing owls rely heavily on ground squirrels for constructing their burrows, they were selective about which of the available ground squirrel burrow systems they used. Burrowing owls selected ground squirrel burrows on shallower, smaller slopes than average ground squirrel burrow locations, and toward the bottoms of slopes, but usually just above the flatter portions of terrain normally regarded as valley bottoms. In the APWRA burrowing owl burrows usually occur on portions of slopes where an ill-defined boundary exists between the valley bottom and the slope of the hill, an area we term the valley transition zone. The hypothetical grid cell in Figure 5 exemplifies the valley transition zone selected by burrowing owls.

Possible reasons for selecting squirrel burrows towards the bottoms of shallower, smaller slopes include improved visibility for predator detection, improved auditory detection of approaching predators, improved predator escape opportunities, and improved foraging opportunities. The locations selected by burrowing owls appeared to offer superior views of the valley bottom, which are often

patrolled by mammalian carnivores. These sites are also protected from the much stronger and noisier winds on the upper slopes and ridge crests of the APWRA. Declivity winds are those pushed up the slope, hence passing over the higher terrain under greater pressure. Burrowing owls located low on the slope might hear approaching terrestrial predators or volant raptors more often without the distracting, camouflaging noise of the declivity winds. Similar predation pressure on ground squirrels may explain why they too have a tendency to site burrow complexes off the upper reaches of ridges. Locations low on the slope also provide burrowing owls opportunities to find refuge in many neighboring ground squirrel burrows, but because they are not on the valley bottom and likely receiving more winds than at the valley bottom, they are likely more capable of getting lift upon takeoff. Finally, prey items might be more abundant lower on the slope, and this zone might form somewhat of a catch for large flying insects. Further, focused research of burrowing owls in the APWRA might reveal why burrowing owls select the lower aspects of shallower, smaller slopes.

The burrowing owl fatality rate at wind turbines in the valley transition zone was twice the fatality rate outside of it. Wind turbine-caused fatalities of other bird species were also associated with the valley transition zone, including all raptors as a group and all birds as a group. The generally greater collision hazard in this zone might be due to the disproportionate number of end-of-row turbines, which have repeatedly been associated with more fatalities [1,3,9]. Also, birds often fly through the APWRA using the lowest portions of the landscape, which happens to coincide with the valley transition zone and valley bottoms. Raptors might often perform predatory attacks in the valley transition zone because this is where most of the ground squirrel burrows occur, along with many of their prey items. We speculate that while foraging, raptors may be more susceptible to colliding with wind turbines because foraging raptors are momentarily fixated on prey items, which may reduce their cognizance of wind turbines [21].

Another possible reason for greater collision hazard in the valley transition zone relates to wind turbine density. The APWRA-wide DEM averaged 430.3 grid cells per old-generation wind turbine, including 843.5 within the valley transition zone, and 255.4 outside the valley transition zone. The density of wind turbines in the valley transition zone has been 3.3 times lower than outside the valley transition zone. In 1998–2003, lower density turbine fields associated with disproportionately more raptor fatalities [9,18], which was consistent with our finding here.

Based on our results and assuming turbine location strongly influences collision hazard, we predict that moving wind turbines off the FL surface could reduce the fatality rate of burrowing owls 10%–22%, golden eagles 3%–9%, American kestrels 1%–34%, all raptors 6%–24%, and all birds 0%–9% (Table 10).

Table 10. Calculated shifts in fatality rates if all wind turbines on DFA or FL surfaces were moved off the surface.

Species	Percent change in annual APWRA fatalities if all turbines were moved to:			
	Off FL surface		Tier 4 and 5 locations	
	1998–2003	2005–2007	1998–2003	2005–2007
Burrowing owl	–22	–10	–27	–5
Golden eagle	–9	–3	–37	–27

Table 10. *Cont.*

Red-tailed hawk	+3	−4	−13	−9
American kestrel	−34	−1	−51	−13
Barn owl	−7	−14	−55	−7
Great horned owl	+7	−14	−34	−11
Raptors	−24	−6	−36	−7
Birds	0	−9	−16	−8

Relocating turbines rated in Tiers 1, 2 and 3 to locations where they would rate as Tier 4 and 5 turbines could reduce fatality rates of burrowing owls 5%–27%, golden eagles 27%–37%, red-tailed hawks 9%–13%, American kestrels 13%–51%, all raptors 7%–36%, and all birds 8%–16%. The wind turbine rating system performed better than the hazard mapping approach, especially after factoring in the wind turbine capacity involved in the relocations (Table 11). However, the rating system is more difficult to implement than the FL or DFA surface maps because moving turbines changes the spatial arrangement of former and new neighboring turbines, thereby changing ratings of multiple turbines with every turbine removal or relocation. Nevertheless, relocating Tier 1–3 wind turbines to safer situations in addition to relocating all turbines from the FL or DFA surface should more substantially reduce annual fatality rates of burrowing owls and other raptor species. More effective yet would be careful repowering, where repowered turbines are sited outside the FL or DFA surface and away from locations associated with Tier 1–3 classifications. After 1.5 years of fatality monitoring at the 38 MW Buena Vista Wind Energy project, no burrowing owl fatalities were found [10], and after 2.5 years of monitoring at the 20.5 MW Diablo Winds Energy Project, burrowing owl fatalities were reduced 24% [2]. An important caveat is that golden eagle fatalities have remained relatively numerous at Buena Vista, but all eagles killed to date were killed by turbines located in ridge saddles.

The greater efficacy of the turbine Tier classification over the hazard map approach revealed part of the complexity of factors contributing to avian collisions in the APWRA. Our results support the finding that burrowing owl fatalities at wind turbines increase with the number of burrowing owl burrows located nearby the wind turbines [13], but many burrowing owl fatalities also occur at wind turbines relatively far from burrowing owl burrows.

Table 11. Calculated percent reductions in annual fatalities per MW of wind turbines relocated from more hazardous to less hazardous parts of the APWRA.

Species	Percent fatality reduction per MW of turbines moved to:			
	Off FL surface		Tier 4 and 5 locations	
	1998–2003	2005–2007	1998–2003	2005–2007
Burrowing owl	0.14	0.06	0.18	0.04
Golden eagle	0.06	0.01	0.25	0.21
Red-tailed hawk	−0.02	0.03	0.09	0.07
American kestrel	0.21	0.01	0.35	0.10
Barn owl	0.05	0.08	0.38	0.05
Great horned owl	−0.04	0.11	−0.23	−0.08
Raptors	0.15	0.04	0.25	0.06
Birds	0.00	0.05	0.11	0.06

One of us (KSS) visited the APWRA during evening hours and observed burrowing owls moving up-slope after sunset to hover and kite in declivity winds as a foraging strategy. Some of the observed hovering and kiting behaviors were performed at wind turbines, thereby heightening burrowing owl vulnerability to wind turbine collision. Additional research to identify those portions of the landscape where burrowing owls most often forage during evening hours would likely generate a superior collision hazard map that could be more effectively used to relocate existing old-generation wind turbines and guide the installation of new turbines as part of repowering projects. Such research should be performed on similar landscape settings with and without wind turbines to learn whether wind turbines attract burrowing owls for foraging or other reasons.

Additional research is also needed to determine what fraction of the burrowing owl fatalities detected at wind turbines was caused by predation, and to what degree the wind turbines contributed to successful predation of burrowing owls. Predation rates might be higher in certain landscape settings that are also favored for wind turbine installation, thus falsely attributing some burrowing owl fatalities to wind turbines. A focused study of burrowing owl behavior and predation in the APWRA could remove uncertainty over cause of death and more effectively guide wind turbine relocations and installations to reduce burrowing owl fatalities.

Complex ecological relationships influence adverse biological impacts of wind energy generation, requiring extensive investigations to identify hazardous settings of wind turbines. As California pursues its 33% RPS and as wind energy generation expands worldwide, ecological investigations will be needed to identify patterns of behavior and fatalities so that more extensive least-hazards maps can be developed ahead of wind turbine installations. Otherwise, the environmental cost of wind energy generation may far exceed the benefits this renewable energy brings, especially considering the vast areas of wildlife habitat needed to generate a fraction of projected future energy demand. For example, repowering the APWRA can add 1,000 GWh toward California's 33% RPS, assuming the new turbines would share the same capacity factors as the Diablo Winds turbines achieved in 2006 (37%), but this extra energy would remove only 1.2% of California's renewable resource gap. Relying on wind energy to close much of the remainder of the renewable resource gap could threaten many thousands of raptors annually.

Acknowledgments

Our project was funded by the Public Interest Energy Research Program administered by the California Energy Commission and the East Bay Regional Park District. We thank Linda Spiegel (CEC) and J. Rasmussen (EBRPD) for administrative support, and Judy Woo and Dora Yen for administrative help, and Lawrence-Livermore National Lab for its cooperation. We thank Lynn Wilder for her assistance with the geographical information system, access to aerial imagery, and discussion of the topic. We also thank Ken Bogen for help with the statistical analysis, as well as for his critical comments. We thank Jack Barclay, Lindsay Harmon, Brian Karas, Heather Snively, Sara Snyder, Steve Anderson, and Madeline Rowan for field data collection. We thank Richard Podolsky for his discussions of research approach during the earliest phase of this project. Finally, we thank Jeffrey A. Manning, Linnea Hall, Anthony J. Krzysik, Alberto Palleroni, Janet Linthecum and Grainger Hunt for

PCL XL Error
Subsystem: I/O
Error: InputReadError
Operator: EndPage
Position: 2895997

ADAMS BROADWELL JOSEPH & CARDOZO
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
601 GATEWAY BOULEVARD, SUITE 1000
SOUTH SAN FRANCISCO, CA 94080-7037

TEL: (650) 589-1660
FAX: (650) 589-5062
apember@adamsbroadwell.com

MILA A. BUCKNER
DANIEL L. CARDOZO
CHRISTINA M. CARO
THOMAS A. ENSLOW
TANYA A. GULESSERIAN
MARC D. JOSEPH
RACHAEL E. KOSS
NATALIE B. KUFFEL
LINDA T. SOBCZYNSKI

SACRAMENTO OFFICE
520 CAPITOL MALL, SUITE 350
SACRAMENTO, CA 95814-4721
TEL: (916) 444-6201
FAX: (916) 444-6209

August 29, 2017

Via Email and Overnight Delivery

Mr. John F. Tavaglione, Chair
Honorable Members of the Board of Supervisors
Ms. Kecia Harper-Ihem, Clerk of the Board
Riverside County
County Administrative Center
4080 Lemon Street - 5th Floor
Riverside, California 92501
Email: cob@rcbos.org; district1@rcbos.org; district2@rcbos.org; district3@rcbos.org; district4@rcbos.org; district5@rcbos.org

Mr. Russell Brady, Planner
Mr. Larry Ross, Principal Planner
Mr. Steve Weiss, Planning Director
Riverside County Planning Department
4080 Lemon Street, 12th Floor
P.O. Box 1409
Riverside, CA 92502-1409
Email: rbrady@rctlma.org

Re: Action Item 4992 / Public Hearing Item – CUP03684, PUP00916, DA00086, EIR00532: Palo Verde Mesa Solar Project (CUP No. 3684 and PUP No. 916) / Final Environmental Impact Report

Dear Chair Tavaglione, Honorable Members of the Board of Supervisors, Ms. Harper-Ihem, Mr. Brady, Mr. Ross, Mr. Weiss:

On behalf of Citizens for Responsible Solar ("Citizens"), we hereby submit the attached comments of biologist Scott Cashen, M. S. regarding the Final Environmental Impact Report ("FEIR") for the Palo Verde Mesa Solar Project ("Project"). These comments supplement our FEIR comments of August 25, 2017 and August 28, 2017. Please place them in the record of proceedings for the Project.

Sincerely,

Christina M. Caro

CMC:acp

3447-019acp

4992
8/29/17 17.5

2017-8134735

Maxwell, Sue

From: Alisha C. Pember <apember@adamsbroadwell.com>
Sent: Tuesday, August 29, 2017 10:13 AM
To: COB; Supervisor Jeffries - 1st District; District2; District3; District 4 Supervisor V. Manuel Perez; District5; Brady, Russell
Cc: Tanya A. Gulesserian; Christina Caro; Linda T. Sobczynski
Subject: Action Item 4992/Public Hearing Item - CUP3684, PUP00916, DA00086, EIR00532: Palo Verde Mesa Solar Project (CUP No. 3684 and PUP No. 916)/Final Environmental Impact Report
Attachments: 3447-019acp - 2017 08 29 CRS Cashen Comments Cover Letter.pdf; 2017 08 29 Cashen PVMSP FEIR comments - without attachments.pdf

Good morning,

Please find attached consultant, Scott Cashen's Comments.

The attachments to his letter will be distributed at this morning's hearing.

If you have any questions, please contact Christina Caro.

Thank you.

Alisha Pember

Alisha C. Pember
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080
(650) 589-1660 voice, Ext. 24
apember@adamsbroadwell.com

Scott Cashen, M.S.—Independent Biological Resources Consultant

August 29, 2017

Ms. Christina Caro
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080

Subject: Comments on the Final Environmental Impact Report Prepared for the Palo Verde Mesa Solar Project

Dear Ms. Caro:

I submitted an extensive comment letter in response to the Draft Environmental Impact Report ("DEIR") prepared for the Palo Verde Mesa Solar Project ("Project") by Riverside County ("County"). That comment letter established my professional qualifications and described the actions I took to evaluate the DEIR and underlying analyses. The subsequent comments address the Final Environmental Impact Report ("FEIR") that has been prepared for the Project. I specifically address the Response to Comments ("RTC") section of the FEIR. The numbering associated with the comments below is consistent with the numbering used in the FEIR.

Given the number and magnitude of issues associated with the FEIR (and associated documents), and the extremely short duration of time between release of the FEIR and the Board of Supervisor's meeting for final approval of the Project, I retained the services of Dr. Shawn Smallwood to assist me with the preparation of comments. Dr. Smallwood has prepared a separate comment letter, which accompanies this letter. I have reviewed Dr. Smallwood's comment letter and concur with the findings therein.

Burrowing Owl Impacts Analysis (O3-2)

The FEIR states: "[b]ased on the CDFW guidance for implementation of a monitoring program, the Project would not have potentially significant impacts to the burrowing owl."[1] This conclusion is ridiculous. Surrounding occupied burrows with industrial development is a potentially significant impact. Passive relocation (eviction) of owls is a potentially significant impact. Installation of solar arrays, O&M buildings, fencing, and transmission lines that provide perch sites for predators is a potentially significant impact. Elimination of habitat in a region that supports a core population of burrowing owls is undoubtedly a significant impact. Indeed, the DEIR acknowledged there are many ways in which the Project could have significant impacts on burrowing owls and their habitat—even after implementation of the proposed BMPs.[2] Implementation of the monitoring program referenced in the County's response does not eliminate those potentially significant impacts because monitoring in itself does nothing to eliminate the factors causing the impact(s). For example, monitoring does not prevent predators from perching on Project structures, nor does it prevent risks associated with forcing owls to move into unfamiliar and perhaps less preferable habitats. Potentially significant impacts to

[1] FEIR, p. 2-185.
[2] DEIR, pp. 3.4-39 and -40.

3264 Hudson Avenue, Walnut Creek, CA 94597

burrowing owls (due to habitat loss, reduced reproductive rates, and potentially mortality) are inevitable regardless of the monitoring program.

Geographic Scope of Cumulative Impacts Analysis (O3-16, O3-88)

The DEIR failed to clearly define the geographic scope of the County's cumulative impacts analysis.[3] It also failed to justify eastern Riverside County as being the appropriate geographic scope for cumulative impacts analyses, as opposed to the entire ecoregion subarea (i.e., the Cadiz Valley and Chocolate Mountains ecoregion subarea).
As the FEIR acknowledges, CEQA Guidelines indicate the lead agency should define the geographic scope of the area affected by the cumulative effect and provide a reasonable explanation for the geographic limitation used.[4]

According to the FEIR: (a) the geographic context for the County's cumulative impacts analysis encompassed the home ranges of the species that would be impacted by the Project; and (b) the geographic scope is limited to that area where the Project could result in direct or indirect effects because, beyond that area, Project impacts could not combine with the incremental effects of other projects to cause or contribute to cumulative impacts.[5] Based on the comment above pertaining to home range, the County appears to believe the Project could only impact the local animals. This is false. If the County knows nothing of the population structure, it is not possible for the County to dismiss the potential for negative effects. For example, without knowing the population structure, the County has no knowledge of whether the Project would affect a small, isolated population segment; a movement corridor; or a metapopulation.

The County still has not provided a specific definition of the geographic scope that was applied to its analysis (nor data on the home ranges for most of the species that would be impacted by the Project). This precludes the ability to independently analyze the statements and conclusions provided in the DEIR and FEIR.

Characterization of Open Space (O3-43)

RTC O3-41 presents the County's argument that "the Project's incremental impact to wildlife habitat and vegetation communities would not be cumulatively considerable because, unlike most of the solar projects on the cumulative projects list, the project is not proposed Primarily on open space." This conclusion is clearly at odds with RTC O3-43, which acknowledges the entire Project site provides wildlife habitat (including habitat for wildlife movement), and that "a variety of special-status wildlife are present or could be present." Even if the term "open space" refers only to undisturbed native habitat (as the County claims), the extent of Project impacts to "open space" relative to other solar projects is irrelevant to whether or not the Project's incremental contribution to significant cumulative impacts is cumulatively considerable.

The County's argument appears to be based on the premise that the Project's impact on wildlife habitat is a "drop in a bucket" compared to other solar projects in the region. This approach has been rejected by the Courts, and fails to comply with CEQA's requirement that a project mitigate

[3] Comment O3-88.
[4] FEIR, RTC O3-16.
[5] FEIR, RTC O3-16.

impacts that are cumulatively considerable. The Project would impact approximately 3,400 acres of wildlife habitat, of which 776.3 acres are comprised of natural vegetation communities.[6] Elimination of this habitat would have a significant impact on wildlife, and it constitutes a significant contribution to cumulative impacts.

Indirect Cumulative Impacts (O3-44)

The County's response to Comment O3-44 misses the point, which is that the Project would contribute to significant indirect impacts to wildlife habitat by promoting fugitive dust, invasive weeds, benefits to predator populations, and numerous other impacts that are independent of the habitat types associated with the Project footprint. It is inevitable that the Project would have at least some contribution to these indirect impacts (no other solar project in the region has been able to completely eliminate these indirect impacts, despite BMPs and mitigation).[7] Whereas indirect impacts may appear insignificant when viewed in isolation, the cumulative effects are known to be significant.

Survey Data (O3-71 and O3-113)

RTC O3-71 states: "[t]he fact that other equally valid methods may be available to collect baseline data does not render the method selected in this case to be inadequate."[8] It also does not render the method used to be adequate (or even valid). It is well known that a general reconnaissance survey is only useful—for any study—to gain an initial understanding of the geography and vegetation of a project (study) area; it helps you decide what effort will be needed to implement an appropriate study. Additionally, while it is standard practice to gather and examine data previously collected in surrounding areas, those data only provide a general idea of what you might encounter at a specific project area and at the current time. Thus the Project proponents only took an initial step, and cannot substitute a general reconnaissance survey for a valid survey. The reason various agencies establish sampling protocols is to prevent the very minimal and insufficient 'sampling' undertaken by the Project proponents. Approval of any project based on the work conducted by the Project proponents will make a sham of the permitting process.

Instead of analyzing data collected from the Project site, the DEIR relies on survey data collected for other solar projects in the region. Use of data collected at other locations is not a reliable approach for assessing Project impacts or formulating effective mitigation. Moreover, the data presented in the DEIR are outdated and do not reflect the current composition, abundance, and distribution of plant and animal species at the Project site and in the surrounding region.[9] The FEIR argues: (a) the DEIR did not rely on survey data collected for other projects because the Applicant's biological resources consultant, Power Engineers Inc. ("Power"), conducted a reconnaissance survey to assess the potential for the Project site to support special-status species based on reported habitat preferences and past occurrences of species within the region; and (b)

[6] FEIR, p. 2-207.
[7] *For example, see* compliance monitoring reports for Blythe, Genesis, Abengoa, and Ivanpah solar projects.
[8] FEIR, RTC O3-95.
[9] Comment O3-71.

the data presented in the DEIR are legally sufficient because they were acquired within two years of the Notice of Preparation.[10] Evidence in the record contradicts both arguments.

First, evidence in the record supports the argument that the DEIR did indeed rely on survey data collected for other projects. According to the Applicant's Bird and Bat Conservation Strategy ("BBCS"):

> By reviewing vegetation, soils and surveys conducted by other projects in the area, biologists were able to determine where focused surveys were required and where recently acquired existing data may be able to be used for a species inventory instead... Once a complete list was developed of potential species that could occur within the Project area, POWER conducted a general reconnaissance survey... In addition, a 2013 burrowing owl protocol survey is being conducted by POWER biologists.[11]

Thus, the analysis and conclusions presented in the BBCS rely on survey data collected for other projects, and an incomplete burrowing owl survey. The BBCS is a key component of the DEIR's mitigation strategy, and the analysis therein is referenced extensively in the DEIR and FEIR.

Second, most of the survey data used for analysis in the DEIR (and BBCS) were acquired before issuance of the NOP. These include data regarding the presence of desert tortoise (2010),[12] golden eagle nest sites (2010 and 2011),[13] special-status plants (2011),[14] and burrowing owl (2011).[15] U.S. Fish and Wildlife Service ("USFWS") and California Department of Fish and Wildlife ("CDFW") survey protocols indicate those data are outdated and should not longer be considered valid, especially for impacts assessments and the formulation of mitigation.[16]

Mojave Fringe-toed Lizard Baseline (O3-73)

The DEIR failed to describe the distribution and status of Mojave fringe-toed lizard populations in the region. This precluded the public and decision makers from being able to evaluate the relative significance of Project impacts to the local and regional (i.e., Chuckwalla Valley) Mojave fringe-toed lizard populations. The FEIR fails to resolve this issue.

Mojave fringe-toed lizard populations are believed to be decreasing.[17] In addition, the Mojave fringe-toed lizards in the Project area are in the southeasternmost portion of the species' range.[18]

---

[10] RTC O3-71.
[11] BBCS, pp. 9 and 10.
[12] DEIR, p. 3.4-14.
[13] DEIR, p. 3.4-21.
[14] DEIR, p. 3.4-9.
[15] DEIR, p. 3.4-39.
[16] Pagel JE, DM Whittington, GT Allen. 2010 Feb. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service. 27 pp. *See also* California Department of Fish and Game. 2012 Mar 7. Staff Report on Burrowing Owl Mitigation. 34 pp. *See also* California Department of Fish and Game. 2009. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. 7 pp. *See also* U.S. Fish and Wildlife Service. 2010. Preparing for any action that may occur within the range of the Mojave desert tortoise (*Gopherus agassizii*): 2010 Field Season. Available at: <https://www.fws.gov/carlsbad/PalmSprings/DesertTortoise/DT%20Pre-project%20Survey%20Protocol_2010%20Field%20Season.pdf>.
[17] Cablk ME, JS Heaton. 2002 Nov. Mojave Fringe-Toed Lizard surveys at the Marine Corps Air Ground Combat Center at Twentynine Palms, California and nearby lands administered by the Bureau of Land Management.

Mojave fringe-toed lizards exhibit a metapopulation structure. As a result, the Project could cause a substantial reduction in the overall range of the species. The DEIR and FEIR failed to disclose any of this information, which precluded the public and decision makers from understanding the relative severity of Project impacts to the species.

Couch's Spadefoot Baseline (O3-24 and O3-74)

RTC O3-24 acknowledges the Project site contains potential habitat for the Couch's spadefoot (including temporarily ponded water, which may provide breeding habitat). The County further acknowledges that the Applicant did not conduct surveys to determine whether Couch's spadefoots occur at the site.

RTC O3-74 claims I did not provide evidence that the Couch's spadefoot toad can be found on the Project site, nor did I provide evidence that the DEIR lacks scientific evidence to support its findings. I provided evidence that: (a) the Project site lies within the geographic range of the Couch's spadefoot; (b) the Project site contains the habitat elements required by the Couch's spadefoot; and (c) the species has been detected at sites with conditions comparable to those at the Project site.[19]

The DEIR concluded that the Couch's spadefoot has a "low" potential for occurrence at the Project site, and thus, the County excluded this species from its impact analyses. As discussed in my previous comment letter, the DEIR's conclusion was not supported by scientific evidence. According to the criteria used in the DEIR, species with a "high" potential for occurrence are those species for which "suitable habitat was expected to be present, and species is known to occur within the vicinity."[20] RTC O3-24 acknowledges the Project site contains suitable habitat for the Couch's spadefoot (including temporarily ponded water, which may provide breeding habitat). In addition, the Couch's spadefoot is known to occur in the vicinity of the Project site.[21] Therefore, the DEIR's conclusion that the Couch's spadefoot has a "low" potential for occurrence at the Project site is not consistent with the criteria established in the DEIR, and it highlights the arbitrary nature of the conclusions presented in the DEIR.[22]

Even if one accepts the premise that the Couch's spadefoot has a "low" potential to occur at the Project site, the County had no basis for excluding the species from impact analyses (i.e., because "low potential" is not equivalent to "no potential"). Substantial evidence indicates the species could occur at the Project site, and that the Project could have significant impacts on the species.[23]

California: Marine Corps Air Ground Combat Center. Report M67399-00-C-0005. 115 p. *See also* Jennings MR, MP Hayes. 1994. Amphibian and reptile species of special concern in California. Rancho Cordova, CA: California Dept. of Fish and Game, Inland Fisheries Division, p. 94.

[18] *Ibid.*

[19] Comment O3-74.

[20] DEIR, Table 3.4-4, footnote 2.

[21] California Natural Diversity Database, Biogeograhic Data Branch, Department of Fish and Wildlife. 2014 Jul 1 (Version 5). *See also* California Energy Commission. 2010 June. Revised Staff Assessment for the Blythe Solar Power Project. p. C.2-32.

[22] *See also* comments from Dr. Shawn Smallwood in Comment Letter O4.

[23] California Energy Commission. 2010 June. Revised Staff Assessment for the Blythe Solar Power Project. pp. C.2-69 and -70.

The FEIR fails to incorporate mitigation for Project impacts to the Couch's spadefoot. Mitigation Measure BIO-1 is insufficient to prevent direct mortality to spadefoots because bi-weekly monitoring during daylight hours is incapable of detecting the species (which occurs primarily belowground and is nocturnal). In addition, the FEIR does not require the Applicant to avoid potential breeding sites, nor does it require the Applicant to provide compensation for impacts to Couch's spadefoot habitat (as was required for the adjacent Blythe Solar Power Project).[24] As a result, the Project would have a potentially significant, unmitigated impact on the Couch's spadefoot.

Golden Eagle Baseline (O3-75)

I commented that the DEIR relied on golden eagle nest surveys that were done for other projects five or more years ago (now six or more year ago). In addition to being outdated, those surveys were extremely limited, did not adhere to the USFWS survey protocol, and were deemed unsatisfactory by the USFWS. RTC O3-75 points to the field survey methods section of Power's Biological Survey Report ("BSR") in an attempt to support the County's claim that my comments were incorrect. However, as RTC O3-75 acknowledges, Power's efforts were limited to "a field survey *to assess the potential* to support special-status species based on the reported habitat preferences and past occurrences of species within the region."[25] Thus, the BSR clearly establishes that Power did not conduct point counts or any other focused surveys to collect data on golden eagle use of the Project site. It also clearly establishes that Power did not conduct focused surveys (e.g., helicopter surveys) to identify golden eagle nest sites within 10 miles of the Project site, per USFWS guidelines.[26]

Gila Woodpecker Baseline (O3-77)

RTC O3-77 states: "[g]iven the lack of detection and general lack of habitat, this species [Gila woodpecker] was not analyzed in the Draft EIR." The County's rationale is not justified. Power did not conduct any point-count surveys or make any other focused efforts to detect Gila woodpeckers at the Project site, even though it acknowledged habitat is present.[27] Consequently, the "lack of detection" does not justify the County's conclusion. Gila woodpeckers have been detected at the Blythe Solar Power Project ("BSPP"), which is located immediately adjacent to the Project site. Gila woodpeckers are associated with desert riparian and desert wash habitats, although they are also found in orchard-vineyard and urban habitats, particularly in shade trees and date palm groves.[28] The Project site contains 181.8 acres of Desert Dry Wash Woodland and 395.9 acres of orchard.[29] The County has no basis for characterizing this as a "general lack of habitat."

---

[24] California Energy Commission. 2013. Presiding Member's Proposed Decision. Mitigation Measure BIO-26.
[25] FEIR, RTC O3-75. [emphasis added].
[26] Pagel JE, DM Whittington, GT Allen. 2010 Feb. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service. 27 pp.
[27] BSR, Table 4.
[28] California Wildlife Habitat Relationships System. 2000. Gila Woodpecker Life History Account. California Department of Fish and Game. California Interagency Wildlife Task Group. CWHR version 8.1 personal computer program. Sacramento, CA.
[29] DEIR, Tables 3.4-1 and 3.4-2.

RTC O3-77 states that the identification of Gila woodpeckers closer to the Project site than previously known does not affect the adequacy of the analysis or the conclusion reached. This statement is illogical, because as RTC O3-77 acknowledges, this species was not analyzed in the DEIR.

RTC O3-77 goes on to argue that: "although Mr. Cashen's opinions about Gila woodpecker may differ from those of the biologists who prepared the Biological Survey Report for the Project, the biologists who prepared the Draft EIR (including the County of Riverside's biologists who reviewed and provided input on the Draft EIR), are well qualified experts and a disagreement among experts does not make an EIR inadequate (CEQA Guidelines Section 15151)." This is a spurious argument for two reasons. First, the majority of the information presented in my comments is comprised of facts. Thus, the only apparent difference of "opinion" is whether the County was justified in concluding the species has a low potential of occurring at the Project site. Second, it ignores the main issue, which is that the DEIR failed to analyze the species (a fact).

Gila Woodpecker Mitigation (O3-21)

The County claims mitigation measures BIO-1 (bi-weekly monitoring), BIO-7 (preconstruction surveys), and BIO-10 (preparation of a Biological Resources Mitigation Implementation and Monitoring Plan or "BRMIMP") would reduce any potential impacts to the Gila woodpecker to a less than significant level.[30] Very little Gila woodpecker habitat remains in California. As a result, any direct or indirect impacts to Gila woodpecker habitat are significant. BIO-1, BIO-7, and BIO-10 do nothing to mitigate the Project's direct and indirect impacts to Gila woodpecker habitat. As a result, the County has no basis for its claim that BIO-1, BIO-7, and BIO-10 would reduce any potential impacts to the Gila woodpecker to a less than significant level.

The Gila woodpecker is protected under the California Endangered Species Act ("CESA"). CESA requires full mitigation for impacts to listed species. This generally entails habitat compensation in conjunction with habitat enhancement measures that increase carrying capacity, survivorship, or reproductive success. The FEIR fails to incorporate habitat compensation and other measures needed to fully mitigate Project impacts to the Gila woodpecker. As a result, the mitigation proposed in the FEIR fails to satisfy the provisions of CESA.

Bats (O3-78)

The Applicant failed to identify all significant bat roosts within one mile of the Project's boundaries in accordance with the Northern and Eastern Colorado Desert Coordinated Management ("NECO") Plan.[31] The FEIR fails to resolve this issue, although it makes the unsubstantiated claim that: "*surveys were conducted* in accordance with NECO Plan requirements, contrary to the commenter's claims."[32] The database and literature searches referenced in the County's response do not constitute *surveys*. The BSR and BBCS clearly establish that Power did not conduct any focused surveys for bats. Indeed, according to the BBCS: "[b]ased on the results of the reconnaissance survey and lack of suitable habitat, no

[30] FEIR, p. 2-199.
[31] Comment O3-78.
[32] FEIR, Response to Comment O3-78. [emphasis added].

focused surveys [for bats] are recommended."[33] Even if one accepts the premise that the Project site lacks suitable roosting habitat for bats, it does not resolve the fact that Power did not identify all significant bat roosts within one mile of the Project's boundaries in accordance with the NECO Plan.

RTC O3-78 states the BBCS would minimize bat mortality during both construction and operation of the Project. This statement is incorrect. The BBCS fails to incorporate any conservation measures for bats. In addition, neither the BBCS nor the FEIR incorporates mitigation to avoid impacts to bat roosts during construction and operation of the Project. As explained in my previous comment letter, some of the habitats on and adjacent to the Project site provide suitable roosting habitat for bats.

The availability of suitable roost sites is the limiting factor for most bat populations.[34] Bats have low fecundity and are extremely sensitive to noise and other types of anthropogenic disturbance, especially during the reproductive season and during hibernation.[35] As a result, the loss of, or disturbance to, bat roosts is the primary reason for the decline of most bat species in the Western United States.[36] A single disturbance event can lead to roost abandonment, and if poorly timed, mortality of pups.[37]

RTC O3-78 indicates early coordination and pre-consultation with the USFWS, CDFW, BLM, and County was conducted for the Project. According to RTC O3-78:

> Given this coordination, both the County and BLM have been provided with enough information needed to evaluate impacts to bats. In addition, as conditions change on the site, the BBCS will be reviewed, modified, and updated as necessary and, thus, any bats encountered during construction will be properly dealt with according to the provisions set forth in this plan.

These statements are not supported by evidence. Neither the DEIR nor FEIR contained any analysis of Project impacts to bats. Furthermore, the BBCS fails to establish any provisions for bats encountered during construction.

Habitat loss, noise, vibration, and human activity associated with the Project would have potentially significant direct and indirect impacts on special-status bats.[38] In addition, the Project would contribute to significant cumulative impacts to bats. At a minimum, the Project site provides foraging habitat for special-status bat species.[39] California Energy Commission ("CEC") Staff concluded that the loss of foraging habitat at the BSPP, which is located immediately adjacent to the Project site, "would be a substantial contributor to the cumulative

---

[33] BBCS, p. 25.

[34] Western Bat Working Group. 2005 (Update). Species Accounts. Available at: <http://wbwg.org/western-bat-species/>.

[35] *Ibid. See also* Gruver J, D Keinath. 2006. Townsend's Big-eared Bats (*Corynorhinus townsendii)*: A technical conservation assessment. USDA Forest Service, Rocky Mountain Region, p. 4.

[36] *Ibid.*

[37] *Ibid.*

[38] *Ibid.*

[39] Table 3.4-4.

loss of habitat for the NECO planning area's biological resources, including habitat for these special-status bats."[40] That same conclusion should apply to the Project.

The bi-weekly monitoring (BIO-1) proposed in the FEIR would not mitigate the Project's potentially significant impacts on special-status bats. For most bat species, specialized techniques (e.g., acoustic monitors or thermal imaging cameras) are required to detect roost sites.[41] BIO-1 does not require those techniques, nor does it outline minimum standards for protecting bat roosts should the Lead Biologist incidentally detect them during the bi-weekly monitoring. Furthermore, the FEIR does not require any compensatory mitigation for Project impacts to special-status bat species habitat. As a result, the Project would have potentially significant, unmitigated impacts on special-status bats.

Connectivity (O3-79)

According to the DEIR:

> The California Desert Connectivity Project, sponsored by Science and Collaboration for Connected Wildlands, provides land management agencies with information on optimal areas to maintain or restore ecological connectivity within California deserts. The closest planned linkage to the Project area is one between the Palen McCoy and Little Pichaco Wilderness Areas (South Coast Wildlands ND) (POWER, 2012). This planned linkage would be located southwest of the Project area.[42]

I provided evidence that the information presented in the DEIR is incorrect. Specifically, I provided a map that shows the Project would partially block a linkage "where maintenance or restoration of ecological connectivity is essential for conserving the unique biological diversity of California's deserts."[43]

RTC O3-79 states: "given the map size it is unclear whether the Project site actually falls into this linkage." It further argues that if the Project site is within the linkage it overlaps "only a small portion" of the linkage and would not block connectivity essential for conserving the unique biological diversity of California's deserts. I believe the size of the map provided in my comment letter is sufficient to enable the County to see that the Project site falls within a portion of the linkage. However, my comment letter provided a web link to BIOS, which is the source of the map. BIOS is a system that enables the visualization of the spatial distribution of biological data generated by the CDFW and its Partner Organizations.[44] Therefore, if the County found the map to be too small, it could have accessed BIOS to adjust the map to a different scale. In addition, the County could have downloaded the GIS data from BIOS, such that it could use its own GIS to compare the linkage boundaries with the boundaries of the Project site. Because the DEIR did not include any GIS data, I was unable to generate a map that depicted the Project boundaries in relation to the linkage.

---

[40] California Energy Commission. 2010 June. Revised Staff Assessment for the Blythe Solar Power Project. p. C.2-74.

[41] *Ibid. See also* Comment O4-51.

[42] DEIR, p. 3.4-22.

[43] Comment O3-79.

[44] California Department of Fish and Wildlife. 2016-2017. About BIOS [web page]. Available at: <https://www.wildlife.ca.gov/Data/BIOS/About>.

The County's conclusion that the Project would not block connectivity appears to be based on the assumption that connectivity would be maintained because the Project would not block the entire linkage corridor. This is not necessarily a valid assumption. A particular species' use of a corridor is dependent on many factors. The first is the particular attributes of the corridor itself. Some species avoid habitat edges, and will only use corridors with a wide band of habitat unscathed by edge effects. Other features such as length, bottlenecks (i.e., narrowings), gaps, and the presence of predators or aggressive competitors contribute to a particular corridor's viability.[45] The County did not conduct an assessment of any of these features. Instead, it simply assumed space between the Project fence and the opposing edge of the linkage would provide a viable corridor for motile species. Research studies have that demonstrated *potential* mobility does not always translate into *realized* mobility.[46] For example, Diamond (1972, 1973) concluded that certain tropical forest birds were reluctant to even approach edges, much less fly across non-forest gaps. Diamond's study (and others that followed) demonstrated that just because an organism *can* move from one location to another, doesn't mean that it *will*. Consequently, use of particular species' *potential* mobility to support corridor use is inappropriate and does not enable the County to derive the conclusion that Project impacts to the linkage would be insignificant.

In summary, the County's response fails to resolve the issue I raised, which is that the DEIR provided false information. Linkage design includes consideration of width. The Project would reduce the width of an established linkage. The County failed to analyze how reducing the linkage width, and development of a solar energy facility immediately adjacent to the linkage, might affect various wildlife species.

Failure to Analyze All Species (O3-80)

The DEIR failed to provide any analysis of Project impacts to Couch's spadefoot, Nelson's bighorn sheep, and special-status bats.[47] RTC O3-80 claims these species were evaluated in the BSR and are discussed in Table 3.4-4 of the DEIR.

The BSR concluded the Couch's spadefoot and Nelson's bighorn sheep are absent from the Project area even though suitable habitat is present (i.e., ponded water for spadefoot and movement habitat for bighorn).[48] Thus, the BSR did not "evaluate" these two species beyond arbitrarily concluding they were absent from the Project area.

Table 3.4-4 of the DEIR does indeed provide a few sentences of discussion regarding Couch's spadefoot, Nelson's bighorn sheep, and special-status bats. The DEIR, however, failed to provide any analysis of Project impacts to these species. This includes analysis of the potential effects of the Project on bighorn sheep movement corridors. As a result, RTC O3-80 fails to resolve the issues I raised.

---

[45] Lidicker WZ Jr, WD Koenig. 1996. Responses of Terrestrial Vertebrates to Habitat Edges and Corridors. Pages 85-109 in DR McCullough, editor. Metapopulations and Wildlife Conservation. Island Press, Washington (DC).
[46] *See* studies cited in Lidicker WZ Jr, WD Koenig. 1996. Responses of Terrestrial Vertebrates to Habitat Edges and Corridors. Pages 85-109 in DR McCullough, editor. Metapopulations and Wildlife Conservation. Island Press, Washington (DC).
[47] Comment O3-80.
[48] BSR, Table 4.

Yellow-headed Blackbird

Power's burrowing owl survey report, which was only recently released (i.e., with the FEIR), identifies additional special-status species that occur at the Project site, but that were not disclosed or analyzed in the DEIR or FEIR. Specifically, the burrowing owl survey report indicates the yellow-headed blackbird was one of the "more frequently observed wildlife during surveys."[49] Indeed, Power observed yellow-headed blackbirds during the latter three of its four burrowing owl surveys.[50] The presence of these birds during the breeding season (i.e., between mid-April and late July) strongly suggests they were nesting nearby.[51] However, Power apparently made no attempt to locate the nest sites, or to determine whether the yellow-headed blackbirds were nesting on the Project site. Power's burrowing owl surveys were conducted in 2013. This provided the Project proponents and County with ample time to disclose the presence yellow-headed blackbirds at the Project site. Incredibly, neither the DEIR, FEIR, nor BSR provided any mention of the yellow-headed blackbirds at the Project site.

The yellow-headed blackbird is a California Species of Special Concern. Habitat loss is the main threat to this species.[52] Yellow-headed blackbirds are known to nest at ponds and drainage ditches, which are present in the Project area.[53] Nevertheless, I suspect the County will argue that the presence of yellow-headed blackbirds at the Project site does not affect the analysis provided in the DEIR because the DEIR concluded Project impacts to birds (in general) were potentially significant. This argument is not justified, because unlike the other bird species analyzed in the DEIR, the yellow-headed blackbird nests in colonies (sometimes consisting of hundreds of nests). As a result, the loss of a single nest colony can have very significant effects on the overall population (i.e., due to the loss of a "nursery site").

Impacts Conclusion

RTC O3-80 indicates that impacts to Couch's spadefoot, Nelson's bighorn sheep, and special-status bats would be less than significant. The County has no basis for this conclusion, because as the County has acknowledged, it did not analyze these species "given the low probability of occurrence." Low probability is not equivalent to zero probability. Because Power did not conduct surveys to determine whether any of these species occur on the Project site, the County must assume they are present, as it did for the desert tortoise.

RTC O3-80 points to Mitigation Measures BIO-1 (bi-weekly construction monitoring), BIO-7 (BBCS), and BIO-10 (preparation of a Biological Resources Mitigation Implementation and Monitoring Plan) in an attempt to justify the County's conclusion that Project impacts to these species would be less than significant. The three measures referenced in the County's response

[49] FEIR, Appendix C, p. 14.
[50] FEIR, Appendix B to Appendix C.
[51] *Ibid. See also* Shuford WD, T Gardali. Editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Western Field Ornithologists and California Department of Fish and Game.
[52] Shuford WD, T Gardali. Editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Western Field Ornithologists and California Department of Fish and Game.
[53] California Natural Diversity Database. 2017 Aug 2. RareFind 5. California Department of Fish and Wildlife. *See also* FEIR, Appendix C, p. 7.

would do very little to mitigate Project impacts. First, construction monitoring every two weeks (BIO-1) is insufficient to avoid "take" of special-status species that may occur on the Project site. Even if the biologist uses appropriate techniques to clear the entire Project site of special-status animals prior to construction, most animals exhibit an intrinsic homing response and would (or could) return to the Project site within a few hours or days (thus making them susceptible to being killed by construction activities while the biologist is away). Second, the BBCS (BIO-7) does not incorporate any measures (e.g., pre-construction surveys) to avoid direct impacts to bat roosts. Furthermore, it allows the Applicant to kill 1,350 bats per year without any compensation for the significant impacts that extreme level of mortality would have on bat populations. Third, the County cannot rely on a future plan (BIO-10) that would establish mitigation, monitoring, and compliance requirements as the basis for its conclusion that impacts would be mitigated to insignificant levels. CEQA specifically prohibits that type of deferred mitigation, especially if the lead agency has not established specific performance criteria for the mitigation. The FEIR fails to establish the requisite performance criteria.

Habitat loss, fragmentation, and degradation are the primary threats to Couch's spadefoot, Nelson's bighorn sheep, and special-status bats. The FEIR does not incorporate mitigation requiring habitat compensation for impacts to these species, nor does it provide evidence that Project impacts to habitat would be insignificant. As a result, the County's conclusion regarding the insignificance of Project impacts is not justified and Project impacts to Couch's spadefoot, Nelson's bighorn sheep, and special-status bats remain potentially significant.

Effects to Populations (O3-81)

The DEIR concluded the Project would not substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of an endangered, rare, or threatened species. However, the DEIR failed to provide any evidence or analysis to support these conclusions.[54] The FEIR fails to resolve this issue.

I and the other commenters have provided substantial evidence that the Project could in fact: (a) cause a wildlife population to drop below self-sustaining levels (e.g., golden eagle and burrowing owl), or (b) substantially reduce the number or restrict the range of a special-status species (e.g., Mojave fringe-toed lizard and Couch's spadefoot).

Golden Eagle Impact Analysis (O3-83)

I raised issues pertaining to the golden eagle impact and risk assessments provided in the DEIR and BBCS.[55] The FEIR fails to resolve those issues.

RTC O3-83 states:

> Although no nests have been identified in the Project area, the analysis assumes that a nest could be built between the time of the analysis and the initiation of construction activities that could [*sic*] and so required the implementation of Mitigation Measure BIO-7 to reduce potential impacts to less than significant levels by requiring pre-construction

[54] Comment O3-81.
[55] Comment O3-83.

> surveys prior to construction activities taking place during the bird breeding season to locate active nests and establish avoidance buffers to avoid and minimize potential impacts. Additional protective measures have been identified in the BBCS that would be implemented to reduce potential impacts to avian species during construction, operation, and maintenance of the gen-tie line and solar array facility.

These statements contradict evidence in the record. The DEIR and FEIR failed to analyze how the Project would affect golden eagles at the nest that the County assumed "could be built between the time of the analysis and the initiation of construction activities." Most notably, the County failed to disclose and analyze how the loss of foraging habitat at the Project site could affect the eagles that occupy that nest. As discussed in my previous comment letter, the loss, degradation, or fragmentation of golden eagle foraging habitat in proximity to a nest site can lead to "take" as defined under the federal Bald and Golden Eagle Protection Act.[56]

The pre-construction surveys proposed in BIO-7 are insufficient to avoid impacts to golden eagle nest sites. Specifically, BIO-7 does not require surveys that adhere to the golden eagle inventory and monitoring protocols established by the USFWS.[57] Adherence to those protocols is required to reliably detect golden eagle nest sites. In addition, BIO-7 only requires surveys within 1,200 feet of the construction zone. This is inconsistent with USFWS guidelines, which indicate "due diligence surveys" should be conducted within two miles of a construction activity to locate any potential nests.[58]

BIO-7 indicates a 1,200-foot buffer will be established around raptor nests. This is inconsistent with USFWS guidelines, which recommend a buffer size of one mile for construction activities near eagle nests (two miles for blasting or other loud, intermittent noises).[59] It also is inconsistent with the BBCS, which recommends a buffer of five miles around active golden eagle nest sites.[60] The DEIR and FEIR provide no evidence that a buffer distance that is 23% of the distance recommended by the USFWS, and 4.5% of the distance recommended in the BBCS, would be sufficient to avoid impacts to golden eagle nests.

RTC O3-83 suggests the BBCS contains additional protective measures to reduce potential impacts to golden eagles during construction, operation, and maintenance of the gen-tie line and solar array facility. Some of the measures listed in the BCCS conceivably would accomplish that objective. Ultimately, however, the BBCS allows the Project to kill eagles without any obligation to provide compensatory mitigation, and without any obligation to implement remedial actions to halt or minimize the take.[61]

Even if the Project kills only one eagle, the loss of that eagle would be a significant impact, especially when considering lost recruitment (i.e., the addition of new individuals to the population through reproduction). Monitoring data indicate golden eagle populations are

---

[56] Comment O3-75.
[57] Pagel JE, DM Whittington, GT Allen. 2010 Feb. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service. 27 pp.
[58] Email communication with H Beeler, Eagle Permit Coordinator, USFWS Pacific Southwest Region on 24 Jun 2015.
[59] *Ibid.*
[60] BBCS, p. 23.
[61] *See* Comment O3-118.

declining throughout the western United States.[62] The USFWS has determined that golden eagle populations might not be able to sustain any additional unmitigated mortality, and thus it has established a zero take threshold for the species.[63] This means that any new authorized take of golden eagles must be at least equally offset by compensatory mitigation (specific conservation actions to replace or offset project-induced losses). The FEIR fails to require the Applicant to provide any compensatory mitigation if the Project kills an eagle (which would be unauthorized without a Take Permit).

Desert Tortoise Impact Analysis (O3-84)

The FEIR fails to resolve the issues I raised regarding Project impacts to desert tortoise habitat.[64]

American Badger Impact Analysis (O3-85)

The FEIR fails to resolve the issues I raised regarding Project impacts to the American badger.[65]

RTC O3-85 states: "[t]hrough coordination with CDFW, mitigation would appropriately protect the American badger from habitat loss, fragmentation, and degradation." The County's response does not address the issue, which is that the mitigation proposed in the DEIR does not address all of the potentially significant impacts listed in the DEIR (including habitat loss, fragmentation, and degradation). Coordinating with CDFW does nothing to mitigate habitat loss, fragmentation, and degradation. Furthermore, the FEIR does not require the Applicant to coordinate with CDFW regarding impacts to badger habitat, nor does it require the Applicant to implement any mitigation recommended by the CDFW through coordination with that agency.[66]

Desert Kit Fox Impact Analysis (O3-86)

The FEIR fails to resolve the issues I raised regarding Project impacts to the desert kit fox.[67]

Impacts to Connectivity/Wildlife Corridors (O3-87)

RTC O3-87 claims: "[t]here are few existing barriers to wildlife movement within the Project area. Therefore, as determined by Impact BIO-4, implementation of the Project, including its fencing, would not substantially restrict wildlife movement." A major problem with this claim is the County's lumping of all animals into the generic category "wildlife." The scientific literature is clear that all movements must be considered on a species-specific basis. Furthermore, there is no basis for the claim that the Project "would not substantially" restrict movement. This issue is exacerbated by the County's failure to quantify what it considers a "substantial restriction."

---

[62] United States Fish and Wildlife Service. 2009. Final Environment Assessment – Proposal to Take Provided Under the Bald and Golden Eagle Protection Act. Prepared by the Branch of Policy, Permits and Regulations: Division of Migratory Bird Management.
[63] U.S. Fish and Wildlife Service. 2013 Apr. Eagle Conservation Plan Guidance: Module 1—Land-based Wind Energy, Version 2.
[64] *See* Comment O3-84.
[65] *See* Comment O3-85.
[66] DEIR, p. 3.4-41.
[67] *See* Comment O3-86.

RTC O3-87 indicates I appear to have a misunderstanding of the cumulative impacts map (i.e., Figure 3-1). It suggests: "[t]he scale of the figure (where 1 inch equals 10 miles) could be the culprit in this misunderstanding in that the fence lines of these several projects (with the exception of McCoy and the BSPP) are not in fact connected." According to the scale bar that accompanies the map provided in the DEIR, 1 inch equals 5 miles (not 10 miles as stated in the County's response). Nevertheless, the FEIR does not provide a revised map or any other information substantiating the County's claim that the boundaries depicted on the map are not accurate. I reviewed the maps provided in environmental documents for the BSPP; those maps suggest Figure 3-1 in the DEIR accurately depicts the boundary of the proposed Project with respect to the boundary of the BSPP.

Even if the various projects do not touch (as shown on the map), the gap is undoubtedly very narrow (probably a BLM road separating one project from the other). The scientific literature is clear that anytime animals are forced into a narrow area (i.e., "corridor") there is a substantial risk of increased mortality through predation. Predators learn where animals occur in abundance, hence any concentration will increase predation and potentially inhibit movements. At the Project site, small vertebrates will be exposed to the gauntlet of ravens perched on the Project fence, and to the coyotes that prowl the roads between facilities. Those that survive will be exposed to heightened mortality from vehicle traffic and the spraying of soil stabilizers.

Connectivity (O3-89)

The response to Comment O3-89 is irrational because it claims most of the Project site is not "open space." To imply that the Project does not involve open space is nonsense. Additionally, the County completely ignores the fact that the Project will, indeed, force animals to change movement patterns. The County first admits that there is an increasing impact on the environment, and hence animals, given the rapidly expanding energy development in the desert.[68] The County then circles back and claims that because the Project is not impacting "open space" to a substantial degree, movements of animals would not be harmed. Open space is irrelevant because, except for heavily developed locations (e.g., tracks of housing, large commercial developments), animals will attempt to move through the desert environment despite the potential negative consequences of increased predation and vehicle traffic. The County provides no data on species-specific movements to support its conclusions. It is nonsense to imply that the Project will not add to cumulative impacts, because any Project (of any type) that removes existing land area and compromises animal movements (as explained above), will add to the overall degradation of the desert.

CUMULATIVE IMPACTS

Avian (O3-92)

Comment O3-92 pertained to cumulative impacts to birds and the DEIR's failure to incorporate mitigation to offset the residual cumulative impacts identified in the DEIR. RTC O3-92 alleges I did not provide evidence to support the claim that "mitigation measures incorporated in the Draft EIR are limited to minimization measures that do not offset the residual cumulative impacts (e.g., habitat loss and degradation, displacement, collision mortality)." Under CEQA, the lead

[68] FEIR, p. 2-237.

agency is responsible for demonstrating that mitigation incorporated into the CEQA document would reduce potentially significant impacts to insignificant levels. The DEIR and FEIR fail in this regard.

RTC O3-92 identifies two BMPs that would enable the Applicant to avoid impacts to migratory birds *to some extent*. Therefore, by the County's own admission, those two BMPs are insufficient to offset the residual cumulative impacts identified in the DEIR. RTC O3-92 identifies only one other measure (i.e., BIO-7) that has been incorporated to mitigate cumulative impacts to birds. RTC O3-92 states:

> Implementation of Mitigation Measure BIO-7 would reduce the potential direct and indirect impacts to migratory birds during construction to less than significant levels by requiring pre-construction surveys prior to construction activities taking place during the bird breeding season to locate active nests and establish buffers to avoid and minimize potential impacts. In addition, the draft BBCS, which is discussed further in O3-78, would be finalized and implemented to protect migratory birds.

A pre-construction survey and nest buffer do nothing to offset habitat loss that will occur as soon as fledglings vacate their nests. Furthermore, the BBCS allows the Applicant to kill up to 1,800 native birds and 135 raptors annually without any remedial mitigation measures. This would undeniably contribute to significant cumulative impacts to bird populations.

The DEIR acknowledged the Project would result in the loss and degradation of avian habitat, and that it would contribute incrementally to cumulative avian impacts.[69] The FEIR fails to provide mitigation for these impacts. For example, it is undeniable that the Project would result in the net loss of over 3,000 acres of avian habitat, and that it would displace most of the birds that occupy that habitat (albeit after they are done nesting for the season). As a result, the administrative record is clear that the FEIR does not incorporate mitigation that offsets the Project's cumulatively considerable contribution to significant cumulative impacts.

Golden Eagle (O3-93)

Comment O3-93 discussed several issues pertaining to the County's conclusion that cumulative impacts to golden eagles would be less than significant. The FEIR fails to resolve the issues I raised.

RTC O3-93 states: "[t]he commenter does not provide any evidence that the mitigation measures and BMPs do not mitigate the Project's contribution to golden eagle habitat loss, degradation, and fragmentation, in particular to foraging." The County's response is pseudoscience because it is based on the "argument of ignorance."[70] RTC O3-93 acknowledges that the DEIR concluded that the availability of suitable foraging habitat on the Project site would be reduced or lost with implementation of the Project. The loss of golden eagle foraging habitat at the Project site constitutes a potentially significant impact. The FEIR does not require the Applicant to provide any compensation for that potentially significant impact.

---

[69] DEIR, pp. 3.4-52 and -53.

[70] *See* <https://en.wikipedia.org/wiki/Pseudoscience#Over-reliance_on_confirmation_rather_than_refutation> *and* <https://en.wikipedia.org/wiki/Argument_from_ignorance>.

RTC O3-93 further states: "Mitigation Measure BIO-7, which requires the BBCS, *would identify* additional protective measures to reduce potential impacts to avian species during construction, operation, and maintenance of the proposed Project."[71] The County does not have the basis for concluding that measures identified in the future would mitigate impacts to less than significant levels unless it: (a) identifies a suite of feasible mitigation measures that would, based on substantial evidence in the record, be adequate to reduce impacts to less than significant levels; (b) establishes specific performance criteria for the mitigation; and (c) explains why it was impractical for the County to identify the mitigation details in the EIR. The FEIR fails to satisfy these three requirements of CEQA.

RTC O3-93 states: "golden eagle use of the site would be expected to be rare and incidental." The County does not have the basis for this assumption because Power did not conduct the golden eagle nest and site utilization surveys prescribed by the USFWS.[72]
The USFWS has established the *minimum* inventory and monitoring efforts that "are essential components" to avoiding and minimizing disturbance and other kinds of take of golden eagles.[73] Power did not even make an attempt to satisfy those efforts.

According to RTC O3-93:

> The commenter states that cumulative analysis did not adhere to USFWS guidelines; however, the analysis presents information from the BBCS, which, as described in Response O4-98 and O4-99, was prepared in accordance with USFWS guidelines (USFWS Region 8 Interim Guidelines for the Development of a Project-specific Avian and Bat Protection Plan for Solar Energy Plants and Related Transmission Facilities).

There are two critical flaws with the County's response. First, the BBCS *was not* prepared in accordance with USFWS Region 8 Interim Guidelines for the Development of a Project-specific Avian and Bat Protection Plan for Solar Energy Plants and Related Transmission Facilities ("Interim Guidelines"). For example, the Interim Guidelines identify seven different types of surveys that should be conducted to inform development of the BBCS (formerly referred to as an Avian and Bat Protection Plan).[74] Power did not conduct any of those surveys.

Second, the Interim Guidelines do not establish the USFWS's guidelines for cumulative effects analysis for golden eagles. The Interim Guidelines state: "[t]he geographic area and time frame of the [cumulative impacts] analysis will depend upon the species affected."[75] For eagles, the USFWS states:

> To ensure that impacts are not concentrated in particular localities to the detriment of locally-important eagle populations, cumulative effects need to be considered at the population management level—*Service Regions* for Bald Eagles and *Bird Conservation*

---

[71] FEIR, RTC O3-93. [emphasis added].
[72] U.S. Fish and Wildlife Service. 2011 Jan. Draft Eagle Conservation Plan Guidance. Appendix C: Stage 2—Site-Specific Assessment Recommended Methods and Metrics. *See also* Pagel JE, DM Whittington, GT Allen. 2010 Feb. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service. 27 pp.
[73] Pagel JE, DM Whittington, GT Allen. 2010 Feb. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service. p. 2.
[74] U.S. Fish and Wildlife Service, Pacific Southwest Region. 2010. Region 8 Interim Guidelines for the Development of a Project-Specific Avian and Bat Protection Plan for Solar Energy Plants and Related Transmission Facilities. p. 3.
[75] *Ibid.*

> *Regions* for Golden Eagles—and, especially for project-specific analyses, at local area population levels (the population within the average natal dispersal distance [140 miles] of the nest or nests under consideration).[76]

The DEIR failed to consider cumulative effects at the "population management level" or at the "local are population level." Therefore, the County's cumulative impacts analysis failed to adhere to USFWS guidelines.

Remedial Actions

RTC O3-93 states:

> The commenter is incorrect that the Draft EIR fails to require remedial actions if an eagle is injured or killed by the Project's transmission lines, security fence, or other infrastructure. As described in Section 3.2.1, Collision, on page 20 of the BBCS, in the unlikely event that eagle fatalities are observed in the Project site, appropriate mitigation (as described in Section 6.2 regarding fatality thresholds and Section 6.3 regarding adaptive management) would be implemented and additional consultation with USFWS to determine the appropriate procedure would take place. Thus, remedial actions would occur with the implementation of Mitigation Measure BIO-7.

There are several flaws with the County's response. First, the BBCS presents uncertainty as to what remedial actions would occur if the Project kills an eagle, or if remedial actions would be implemented at all. According to the BBCS:

> If events are demonstrated to exceed any of the identified thresholds, and upon consultation with USFWS, adaptation *may be triggered.* Adaptation will include investigation, evaluation of the factors associated with the fatalities, exploration of engineering solutions, consideration of available avoidance and minimization measures, and *likely implementation* of one or more appropriate avoidance and minimization measure.[77]

Second, although the BBCS claims the Applicant would perform "appropriate mitigation," it fails to identify what that "appropriate mitigation" would be. Whereas "investigation, evaluation of the factors associated with the fatalities, exploration of engineering solutions, and consideration of available avoidance and minimization measures" are appropriate actions, those actions do not compensate for the taking of eagles. The USFWS has identified retrofitting of high-risk power poles as one way to compensate for the take of eagles.[78] The BBCS does not require the Applicant to retrofit power poles or implement any other compensatory mitigation if the Project kills eagles.

Third, Mitigation Measure BIO-7 requires the Applicant to prepare a BBCS. However, BIO-7 does not require the Applicant to implement remedial actions if the Project kills eagles. This issue is exacerbated because BIO-7 defers critical aspects of the BBCS (e.g., the conservation

---

[76] Pagel JE, DM Whittington, GT Allen. 2010 Feb. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service, p. 3. *See also* U.S. Fish and Wildlife Service, Division of Migratory Bird Management. 2009. Final Environmental Assessment, Proposal to Permit Take. Provided Under the Bald and Golden Eagle Protection Act. Washington: Dept. of Interior. p. 30.

[77] BBCS, p. 30.

[78] U.S. Fish and Wildlife Service. 2013. Eagle Conservation Plan Guidance: Module 1 – Land-based Wind Energy, Version 2. 103 pp.

measure the Applicant would implement, the process to monitor and mitigate bird and bat fatalities, and the adaptive management framework).

Due to the issues described above, the Project could have significant, unmitigated impacts on the golden eagle.

Mojave Fringe-toed Lizard (O3-94)

The County acknowledges the projects analyzed under the cumulative impacts scenario would have cumulative impacts on the MFTL. However, the County has concluded the Project's incremental contribution to this significant cumulative effect "would not be cumulatively considerable because it would not materially affect the scope, nature or extent of the cumulative impact." As a result, the County argues: "[a]s there would be no cumulatively considerable contribution, no mitigation is required."[79]

According to the DEIR: "[s]uitable Mojave fringe-toed lizard habitat is located throughout the gen-tie line corridor and potential habitat was detected on approximately three percent of the main Project area (creosote bush scrub habitat)."[80] This equates to approximately 812 acres of habitat that could be directly or indirectly impacted by the Project, exclusive of the potential habitat on the BLM parcels discussed in Comment A6-16 from the USFWS.[81]

The Project would have the same types of impacts as the other cumulative projects listed in the DEIR (many of which are other solar projects). As a result, the County has no basis for arguing the Project would not materially affect the *scope or nature* of the cumulative impact. Similarly, the County has no basis for arguing the Project would not materially affect the *extent* of the cumulative impact because impacts due to the Project would be comparable to, or exceed, those of other projects. For comparison, the BSPP, which has the same technology and infrastructure as the proposed Project, had direct impacts on 37 to 58 acres of MFTL habitat. After conducting quantitative analysis, the CEC Staff correctly concluded this *extent* of impacts "would contribute to cumulative impacts to this species within the NECO planning area."[82] Indeed, the extent of the Project's impacts are worse than many of the other projects identified in the DEIR because the Project could reduce the overall geographic range of the species (i.e., because it would impact the isolated population segment that occurs in the southeasternmost portion of the species' range).

Le Conte's Thrasher, Loggerhead Shrike, American Badger, Desert Kit Fox (O3-95)

RTC O3-95 acknowledges that Project impacts would contribute incrementally to significant impacts to the Le Conte's thrasher, loggerhead shrike, American badger, and desert kit fox. Nevertheless, the County concludes the Project would not materially affect the scope, nature, or extent of the cumulative impact to these species. According to the County's response, this

[79] FEIR, RTC O3-94.
[80] DEIR, p. 3.4-38.
[81] *See* DEIR, Tables 3.4-1 and 3.4-2.
[82] California Energy Commission. 2010 June. Revised Staff Assessment for the Blythe Solar Power Project. p. C.2-69. *See also* California Energy Commission. 2010 July. Supplemental Staff Assessment for the Blythe Solar Power Project.

conclusion is based on the expectation that mitigation measures would reduce the potential for direct impacts to individuals of these species to a level below significance, and that direct Project impacts to native habitat would be minimal relative to other cumulative projects. The County's rationale is nonsense. The other cumulative projects have implemented the same (or more rigorous) mitigation measures as those proposed for the Project (e.g., pre-construction surveys). Furthermore, the Project would have direct impacts on up to 776.3 acres of "native" habitat, and indirect impacts to many more acres of native habitat.[83] These impacts are substantial from a biological perspective and cannot be considered "minimal." The County's argument is based on the premise that the Project's impact on wildlife habitat is a "drop in a bucket" compared to other solar projects in the region. This approach has been rejected by the Courts, and fails to comply with CEQA's requirement that a project mitigate impacts that are cumulatively considerable.

According to CEQA Guidelines Section 15130:

> A project's contribution is less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact. The lead agency shall identify facts and analysis supporting its conclusion that the contribution will be rendered less than cumulatively considerable.

The FEIR does not require the Applicant to implement or fund its fair share of a mitigation measure to alleviate the cumulative impact to the Le Conte's thrasher, loggerhead shrike, American badger, desert kit fox, and other sensitive biological resources that would be significantly impacted by cumulative projects. In addition, the County fails to identify *facts* and *analysis* supporting its conclusion that the Project's contribution will be rendered less than cumulatively considerable. As a result, the County does not have the basis for its conclusion that the Project's contribution to cumulative impacts would not be cumulatively considerable.

Mitigation (O3-96)

Comment O3-96 pertained to the DEIR's failure to establish: (a) success standards for the proposed mitigation measures, (b) a definitive enforcement mechanism that ensures those standards are met; (c) the contingency or remedial action measures that will triggered if success standards are not achieved; (d) the measures that will be implemented to ensure the long-term protection and management of sensitive biological resources; and (e) the required monitoring program, including the monitoring techniques, effort, and frequency. RTC O3-96 claims this is an unsubstantiated opinion because I did not provide any specific examples.

The DEIR's failure to establish the variables listed above is a fact—not an opinion. Furthermore, I provided specific examples in my comments regarding the proposed burrowing owl mitigation.[84] The DEIR's failure to establish the variables listed above is so pervasive that I did not believe additional examples were needed. However, additional examples include, but are not limited to:

1. The DEIR fails to establish any success criteria for the Weed Management Plan. Success criteria applied to other projects include thresholds for the composition, abundance, and distribution of weeds within the area of potential effect. The DEIR fails to establish the minimum geographic scope of the Applicant's weed control efforts. The DEIR fails to

[83] FEIR, RTC O3-88.
[84] Comments O3-106 through 108.

establish a monitoring and reporting mechanism that assures the Applicant maintains its pledge to control weeds. The DEIR fails to establish remedial actions that will be required if the Applicant's weed control efforts do not achieve success criteria. The DEIR fails to establish how long the Applicant would be required to monitor, control, and submit reports on weeds in the Project area.

2. The DEIR fails to establish performance standards for burrowing owl use of artificial burrows and the compensation site. The DEIR fails to establish an enforcement mechanism that ensures performance standards are achieved (the Burrowing Owl Monitoring and Mitigation Plan only requires submittal of a monitoring memo to the maintenance contractor). The duration of the monitoring program is unclear: the FEIR suggests the Plan incorporates a three-year monitoring program; however, the Plan itself indicates only a two-year monitoring program.[85]

3. The specific mitigation required for Project impacts to the Mojave fringe-toed lizard ("MFTL") remains unclear. The FEIR indicates: "the Applicant shall provide compensatory mitigation at a 3:1 ratio, which *may include* compensation lands purchased in fee or in easement in whole or in part, for impacts to stabilized or partially stabilized desert dune habitat (i.e., dune, sand ramp, or fine-sandy wash habitat)...*If* compensation lands are acquired..."[86] However, the FEIR fails to establish how mitigation would be accomplished if the Applicant elects not to purchase compensation lands (in fee or in easement). This issue is exacerbated by the County's failure to establish the amount of desert dune habitat that would be impacted by the Project, and thus, the amount of compensatory mitigation that is being required. The FEIR fails to establish any performance standards for the compensatory mitigation, including occupancy of the mitigation site by MFTL. The FEIR fails to establish remedial actions that would be required if the mitigation site does not achieve performance standards. The FEIR fails to require a monitoring and reporting program for the proposed mitigation.

4. The FEIR fails to establish any performance standards for the Trash Abatement Plan. The FEIR fails to establish remedial actions that would be required if the Trash Abatement Plan does not achieve performance standards.[87] Although this may appear trivial, compliance with trash regulations has been an ongoing problem at numerous solar facility sites throughout the desert.[88]

5. The FEIR fails to establish any performance standards for cleanup and restoration of the site after decommissioning. The FEIR fails to establish an enforcement mechanism that ensures the Project operator achieves minimum standards for cleanup and restoration of the site after decommissioning.[89]

6. The FEIR fails to establish performance standards for perch deterrents, nest deterrents, and flight diverters along the gen-tie line. The FEIR fails to require replacement of these devices (or other remedial actions) if they fall off or break.[90] The FEIR fails to

---

[85] FEIR, p. 3-7. *See also* Burrowing Owl Monitoring and Mitigation Plan, p. 13.
[86] FEIR, p. 3-9. [emphasis added].
[87] DEIR, p. 2-38.
[88] *For example, see* Monthly Compliance Reports prepared for the Abengoa Mojave Solar Project. Available at: <http://www.energy.ca.gov/sitingcases/abengoa/compliance/submittals>.
[89] DEIR, p. 2-38.
[90] *See* Dwyer JF, KW Doloughan. 2014. Testing systems of avian perch deterrents on electric power distribution poles in sage-brush habitat. Human-Wildlife Interactions 8(1):39-55.

incorporate a monitoring and reporting program that ensures perch deterrents, nest deterrents, and flight diverters effectively mitigate Project impacts to less than significant levels.

Flight Diverters (O3-97)

The County has acknowledged that the Project's gen-tie line poses a potentially significant collision and electrocution hazard to birds.[91] I commented that the DEIR failed to provide evidence that the installation of flight diverters on the gen-tie line would reduce impacts on birds to a less than significant level.[92]

RTC O3-97 fails to resolve the issues I raised. It first points to the BBCS as "evidence" that the County is not relying on flight diverters (i.e., BMP-12) to support its conclusion that impacts to birds would be less than significant. However, nothing in the BBCS ensures Project impacts to birds due to the gen-tie line would be less than significant. Indeed, the BBCS acknowledges Power did not even collect the data needed to formulate a prediction on the number of birds that might be killed by the gen-tie line.[93] Thus, the BBCS does not support the County's conclusion.

The County's response to the issues I raised in Comment O3-97 is then limited to the following statements:

> The commenter is correct that bird flight diverters do not prevent birds from colliding with transmission and shield wire lines; however, they do significantly reduce avian mortality impacts. With the implementation of the BMPs noted and based on the professional expertise of the biologists who drafted the EIR, the analysis and conclusions in the Draft EIR are supported by substantial evidence.

As described below, there are several flaws with these statements.

First, the statement that flight diverters significantly reduce avian mortalities could be misinterpreted because the term "significant" has a different meaning in statistics than it does in CEQA documents. Just because statistical hypothesis testing has shown flight diverters significantly reduce avian mortalities does not mean impacts would be less than significant under CEQA. As discussed in my previous comment letter, flight diverters have been shown to cause a *small* (but statistically significant) decrease in the number of casualties. Thus, flight diverters significantly reduce avian mortalities in the statistical sense, but the total number of avian mortalities at lines with flight diverters may still be significant under CEQA.[94]

Second, the County's response only references the BMP pertaining to flight diverters (i.e., BMP-12). None of the other BMPs would have any effect on the collision and electrocution hazard to birds. Therefore it is misleading for the County to suggest the Applicant would implement multiple BMPs to address the collision and electrocution hazard.

---

[91] FEIR. RTC Comment O3-97.
[92] Comment O3-97.
[93] BBCS, p. 18.
[94] Barrientos R, C Ponce, C Palacin, CA Martin, B Martin, JC Alonso. 2012. Wire Marking Results in a Small but Significant Reduction in Avian Mortality at Power Lines: A BACI Designed Study. PLoS ONE 7(3):e32569.. *See also* Savereno AJ, LA Savereno, R Boettcher, SM Haig. 1996. Avian Behavior and Mortality at Power Lines in Coastal South Carolina. Wildlife Society Bulletin 24(4):636-648.

Third, the County has not established the professional expertise of the biologists who drafted the EIR. Therefore, the opinion of those biologists does not constitute substantial evidence.

In summary, the "substantial evidence" that the County claims to have provided is limited to: (a) the opinion of biologists with unknown expertise, and (b) flight diverters, which based on scientific studies, do not ensure insignificant levels of avian mortality.

Perch Deterrents (O3-98)

I commented that the DEIR lacks substantial evidence supporting its findings that perch deterrents would reduce predation on the Mojave fringe-toed lizard and desert tortoise to a less than significant level. The County's response states:

> A qualified biologist would be on site during all construction and would be responsible for overseeing compliance with desert tortoise protective measures and for coordination the FCR [Field Contact Representative]. This would include locating ravens in the Project area and detecting any increases in raven activity. The coordination between the qualified biologist, FCR, and USFWS ensure raven activity is monitored and reported to USFWS, as necessary. Thus, there would be measures in addition to BMP-12 that would help reduce predation pressures on special-status species.

These claims are not supported by evidence. The FEIR does not require a biologist to be on site during *all* construction; it only requires bi-weekly monitoring (i.e., twice a month) during ground disturbing construction activities.[95] The FEIR does not require the biologist to monitor raven activity at the site, nor does it require any monitoring (e.g., of raven activity) after construction activities terminate. Furthermore, the FEIR fails to establish how the biologist would be able to use incidental observations made during bi-weekly monitoring to "detect any increases in raven activity." Due to inherent temporal and spatial variability in biological systems, systematic monitoring or sampling would be required to provide reliable inferences on any increases in raven activity. The FEIR does not require the biologist to submit reports on raven activity to the USFWS. Coordination, monitoring, and reporting do not resolve increases in raven activity that could occur due to the Project. The FEIR fails to establish remedial actions that would be required if the biologist detects an increase in raven activity.

The DEIR indicates: "Gen-tie line support structures and other facility structures shall be designed in compliance with current standards and practices to discourage their use by raptors for perching or nesting (e.g., by use of anti-perching devices). This design would also reduce the potential for increased predation of special-status species, such as the desert tortoise."[96] I commented that the DEIR provided no evidence that "current standards and practices" reduce predation pressures on desert tortoise and other special-status species. In addition, I cited scientific literature that provides evidence that the County does not have the basis to conclude perch deterrents would reduce predation on the Mojave fringe-toed lizard and desert tortoise to a less than significant level.[97] The County's response was that:

> Given that these sources were prepared 7 to 10 years ago, "current standards and

[95] DEIR, p. 3.4-57.
[96] DEIR, pp. 3.4-31 and -32.
[97] Comment O3-98.

practices" could have advanced since the time these studies were prepared. Thus, the commenter provides no evidence that the BMPs and mitigation measures proposed by the Draft EIR would not deter raven and raptor perching or reduce predation impacts on special-status species to a less-than-significant level. Substantial evidence supports the Draft EIR's analysis and conclusions regarding predation impacts to special-status species.

The County's assertion that claims that have not been proven false must therefore be true is a classic example of pseudoscience.[98] Moreover, I did indeed provide scientific evidence (in the form of several scientific publications) demonstrating the BMPs and mitigation measures proposed in the DEIR would not deter raven and raptor perching or reduce predation impacts on special-status species to a less-than-significant level.

The County's response argues current standards and practices *could have advanced* over the past 7 to 10 years. However, the County provided no evidence that standards and practices have indeed advanced over the 7 to 10 years, nor did it provide any evidence that any advances have significantly improved the efficacy of perch deterrents. This issue is confounded by the County's failure to identify the specific perch deterrent product(s) that would be installed on the gen-tie lines, and the County's failure to require the Applicant to install a modern product (which the County's response suggests might be more effective than the products analyzed in the 2007 and 2010 studies I cited).

The County dismisses the scientific studies cited in my comment letter because the studies were published 7 to 10 years ago (i.e., in 2007 and 2010). However, the County failed to cite any more recent studies that refute the information provided in the 2007 and 2010 studies. Nevertheless, I conducted an additional search of the scientific literature to determine whether there are more recent publications. I found one: Dwyer and Doloughan (2014). The results of Dwyer and Doloughan's (2014) study are not only consistent with the studies cited in my previous comment letter, but they also raise new issues that were not analyzed in the DEIR or FEIR. Specifically,

1. Dwyer and Doloughan cited a study (i.e., Slater and Smith 2010) that reported a problem with perch deterrents falling off, which subsequently resulted in birds perching on the structures.[99] The FEIR fails to require long-term monitoring of perch deterrents installed on the gen-tie lines and replacement of any deterrents that fall off or break.
2. Dwyer and Doloughan reported: "[p]erch deterrents are likely to be least effective for the smallest species, such as corvids [crows and ravens] and American kestrels. It seems that no deterrent strategy is likely to substantially influence perching by the species because they readily perch on wires. In these species, and for potential avian predators of grouse in general, the best deterrent will be to eliminate perches completely by removing discussed overhead power lines wherever possible."[100] The County has acknowledged that the Project would provide new, elevated perching sites (including the structures, the gen-tie lines, perimeter fencing, and support structures) for ravens, and that ravens increase predation pressure on Mojave fringe-toed lizards, desert tortoises, and burrowing

[98] *See* <https://en.wikipedia.org/wiki/Pseudoscience#Over-reliance_on_confirmation_rather_than_refutation>.
[99] *See* Dwyer JF, KW Doloughan. 2014. Testing systems of avian perch deterrents on electric power distribution poles in sage-brush habitat. Human-Wildlife Interactions 8(1):39-55.
[100] *Ibid*, p. 52.

owls.[101] Because perch deterrents are ineffective for ravens, BMP-12 (perch deterrents) would not reduce predation pressure on these special-status species to less-than-significant levels.

3. Dwyer and Doloughan provided evidence that birds sometimes struggle to balance on perch deterrents. This resulted in movements (e.g., broad wing-flaps) that would likely have led to electrocution if energized wires were present.[102] The authors noted: "electrocution risks for raptors may be exacerbated if all possible perch locations on a pole are fitted with perch deterrents."[103] As a result, they concluded: "[i]f all horizontal surfaces of energized poles should be outfitted with equipment to deter perching, then all energized equipment on the pole, including the center phase and any pole-mounted equipment, also must be thoroughly insulated or isolated to prevent avian electrocutions."[104] The FEIR fails to disclose and analyze the heightened electrocution risk associated with perch deterrents. In addition, the FEIR fails to require all energized equipment to be thoroughly insulated or isolated to prevent avian electrocutions.
4. Dwyer and Doloughan cited sources supporting the inference that electrocution causes population level effects even in carefully managed species, that it may cause disruptive effects to social ecology, and that it can be particularly problematic to very large species such as the golden eagle.[105]

BIO-1: Bi-weekly Construction Monitoring (O3-99)

I commented that bi-weekly monitoring (BIO-1) is insufficient to avoid and minimize potentially significant impacts to sensitive species during construction and decommissioning of the Project.[106] RTC O3-99 correctly notes that I did not provide substantial evidence to support this claim. I did not provide substantial evidence because it should be obvious that there is great potential for wildlife mortality to occur during unsupervised grading and other construction activities involving ground disturbance. Indeed, monitoring reports reveal that mortality is an inevitable consequence of industrial-scale solar energy development even when full-time biological monitors are present.[107] Nevertheless, full-time construction monitoring by biologists helps reduce wildlife mortality and inadvertent destruction of sensitive resources.

Many species (including desert tortoise and desert kit fox) have strong homing instincts that cause them to return to the construction area after they are moved from a site.[108] Indeed, the homing instinct of desert kit foxes is so strong that biologists have observed them climbing over

[101] DEIR, pp. 3.4-37, -39, -40 and -43.
[102] *Ibid*, pp. 49 and 50.
[103] *Ibid*, p. 53.
[104] *Ibid.*
[105] *Ibid.*
[106] Comment O3-99.
[107] *See* Monthly Compliance Reports prepared for the Abengoa Mojave Solar Project. Available at: <http://www.energy.ca.gov/sitingcases/abengoa/compliance/submittals>.
[108] Germano JM, PJ Bishop. 2008. Suitability of amphibians and reptiles for translocation. Conservation Biology 23(1):7-15. *See also* Brand LA, ML Fransworth, J Meyers, BG Dickson, C Grouios, AF Scheib, RD Scherer. 2016. Mitigation-driven translocation effects on temperature, condition, growth, and mortality of Mojave desert tortoise (*Gopherus agassizii*) in the face of solar energy development. Biological Conservation 200:104-11.

(or digging under) exclusion fences in an attempt to return to their burrows.[109] Therefore, even if the biologist uses appropriate techniques to clear the entire Project site of special-status animals prior to construction, some of those animals inevitably would return to the Project site within a few hours or days (depending on the species and how far they are moved).[110] Those animals would then be susceptible to being killed by construction activities during each 14-day stretch that the biologist is away from the site.

BIO-3: American Badger (O3-100)

The DEIR and BSR provide inconsistent information on the extent of suitable habitat for badgers within the Project area.[111] As a result, it is unclear which portions of the Project area would be subject to the pre-construction badger surveys required in Mitigation Measure BIO-3.[112] The FEIR fails to resolve this issue.

RTC O3-100 acknowledges badgers could move onto the Project site (through immigration or homing instinct) during the 30 days between the pre-construction clearance survey and the initiation of construction activities. However, it subsequently concludes the bi-weekly monitoring prescribed in Mitigation Measure BIO-1 would be sufficient to minimize potentially significant impacts to badgers. This conclusion contradicts common sense. As discussed above, bi-weekly monitoring makes animals susceptible to being killed by construction activities during each 14-day stretch that the biologist is away from the site.

BIO-4: Desert Kit Fox (O3-101)

RTC O3-101 is nearly identical to RTC-100. Consequently, it suffers the same flaws as those discussed above for American badger.

Compensatory Mitigation (O3-102)

According to the County, the Applicant would provide habitat-based mitigation or "other appropriate mitigation" to mitigate impacts to special-status species.[113] However, the County failed to identify what that "other appropriate mitigation" might be. This precludes the ability to validate the County's conclusion that "other," non-habitat-based options would effectively mitigate impacts to less-than-significant levels. The County's failure to commit to specific mitigation—or at least to identify the menu of feasible options that would mitigate the impacts—results in uncertain mitigation measures and violates the provisions of CEQA.

---

[109] *See* Monthly Compliance Reports prepared for the Abengoa Mojave Solar Project. Available at: <http://www.energy.ca.gov/sitingcases/abengoa/compliance/submittals>.

[110] Hinderle D, RL Lewison, AD Walde, D Deutschman, WI Boarman. 2015. The effects of homing and movement behaviors on translocation: Desert tortoises in the western Mojave Desert. Journal of Wildlife Management 79:137–147.

[111] DEIR, Table 3.4-4 and BSR, p. 40.

[112] Comment O3-100.

[113] Comment O3-102 and RTC O3-102.

RTC O3-102 states:

> The proposed compensation lands in question are specifically intended for burrowing owl. Mitigation Measure BIO-6 requires that the mitigation lands be approved by CDFW and the County prior to ground disturbance to ensure the suitability of the compensation lands.

The County's response confirms the compensation lands may not have any value to the other special-status species that would be (or could be) significantly impacted by the Project. As a result, I maintain my original comment, which was that the County's conclusion is not supported by substantial evidence.

The County's response suggests that approval of the mitigation lands by the CDFW and the County after the CEQA process terminates would "ensure the suitability of the compensation lands." The County cannot rely on the future analysis of another agency to conclude the mitigation lands would mitigate impacts to burrowing owl habitat to less than significant levels unless it: (a) explains why it was not practical to define the mitigation in the EIR, *and* (b) the lead agency establishes performance criteria for the mitigation.[114] The EIR fails to establish performance criteria for the mitigation lands. Furthermore, the 146 acres of mitigation lands proposed in the EIR are *the exact same lands* that were incorporated as mitigation for the Blythe Mesa Solar Project (which was approved by the County in May 2015). Thus, it was practical for the County and Applicant to determine CDFW's approval of the proposed mitigation lands because they have had over two years to do so.

Desert Tortoise Habitat Compensation (O3-103)

RTC O3-103 claims the portion of the Project subject to the NECO Plan (gen-tie corridor) is not required to provide compensatory mitigation per NECO Plan guidelines. In an attempt to substantiate that claim, RTC O3-103 points to a memo issued by the USFWS for the Blythe Mesa Solar Project ("BMSP") in 2012. The memo concluded the gen-tie line for the BMSP was "not likely to incidentally take or otherwise adversely affect desert tortoise."

There are two problems with the County's rationale. First, the memo says nothing about the Applicant's obligations under the NECO Plan, nor was it required to. As the implementing agency, the BLM holds the responsibility for ensuring any permittee complies with the terms and conditions of the NECO Plan. This includes the Plan's approved mitigation measures. Approved mitigation for impacts to desert tortoise habitat includes: "[a] mitigation fee based on the amount of acreage disturbed *shall be required* of proponents of new development."[115]

Second, the County's rationale ignores Comment A6-13 from the USFWS. That comment casts doubt on the validity of the County's use of the memo as evidence. Indeed, it specifically states that the BLM and USFWS are reassessing potential impacts of the BMSP's gen-tie and the need to initiate formal section 7 consultation for that project.

---

[114] Alling CE. 2011. Deferring Mitigation Measure Details: What Is and Is Not Allowed by CEQA? Available at: <http://ascentenvironmental.com/files/5513/7228/7439/Deferring_Mitigation_Measure_Details_-_What_is_and_is_not_Allowed_By_CEQA.pdf>. (Retrieved 2017 Feb 23).

[115] U.S. Bureau of Land Management. 2002. Northern and Eastern Colorado Desert Coordinated Management Plan and Final Environmental Impact Statement, Appendix D: Desert Tortoise Mitigation Measures. p. D-2. [emphasis added].

Raven Management (O3-104)

RTC O3-104 argues:

> A stand-alone Raven Monitoring, Management, and Control Plan and per acre fees are not required to ensure less than significant impacts because the measures included in the Draft EIR sufficiently address predator subsidies to reduce potential raven activity within desert tortoise habitat.

The only conceivable measure the FEIR incorporates to address ravens is the installation of perch deterrents, which have been shown to be relatively ineffective for corvids (ravens and crows).[116] However, even if one accepts the County's unsubstantiated claim that the measures included in the DEIR sufficiently address ravens, the Desert Managers Group has concluded additional mitigation is required because it is not possible to completely exclude ravens from using project infrastructure (i.e., solar structures, transmission lines and towers, buildings, fences, etc.) as nesting, perching, and roosting substrates. The USFWS, BLM, National Park Service, Department of Defense, and Department of Agriculture formulated that conclusion after extensive analysis, including preparation of an Environmental Assessment ("EA").[117] RTC O3-104 fails to provide any evidence that refutes the analysis performed by those agencies. As a result, the FEIR fails to resolve the issues I raised in Comment O3-104.

Burrowing Owl Habitat Compensation (O3-106)

The DEIR concluded that potential direct and indirect impacts to burrowing owls and their habitat would remain potentially significant prior to the implementation of Mitigation Measure BIO-6.[118] The cornerstone of BIO-6 is the Applicant's pledge to dedicate 146 acres of *existing compensation lands* to the County, an entity acceptable to the County, or the CDFW.[119] As RTC O3-106 acknowledges, the 146-acre parcel of land proposed as mitigation for Project impacts to burrowing owls and their habitat is the same 146-acre parcel that was incorporated as mitigation for impacts to burrowing owls from the Blythe Mesa Solar Project ("BMSP"). The BLM and County approved that project in 2015. The FEIR provides no evidence that the 146-acre parcel that was established as mitigation for the BMSP provides habitat above and beyond what was required to mitigate the impacts of that project on burrowing owls. Thus, the County has no basis for concluding the 146-acre parcel would also mitigate the proposed Project's impacts on burrowing owls.

The proposed Project and the BMSP would collectively eliminate over 5,000 acres of burrowing owl habitat.[120] In exchange, they would provide 146 acres of compensation habitat. This would

---

[116] Dwyer JF, KW Doloughan. 2014. Testing systems of avian perch deterrents on electric power distribution poles in sage-brush habitat. Human-Wildlife Interactions 8(1):39-55.

[117] Desert Managers Group. 2010 Nov. Renewable Energy Development in the California Desert: Common Raven Predation on the Desert Tortoise, November 2010 Summary. 8 pp.

[118] DEIR, p. 3.4-40.

[119] FEIR, p. 3-7.

[120] The Burrowing Owl Monitoring and Mitigation Plan for the BMSP concluded that project would directly impact approximately 1,970 acres of suitable burrowing owl nesting and foraging habitat. However, it excluded alfalfa fields, which it acknowledged: "provide suitable forage areas for burrowing owls." The Burrowing Owl Monitoring and Mitigation Plan for the PVMSP failed to quantify impacts to burrowing owl habitat. However, if orchards are

undeniably accelerate the decline of the species and threaten the viability of the burrowing owl population that occurs west of Blythe. According to CDFW's 2012 Staff Report on Burrowing Owl Mitigation ("Staff Report"):

> the current scientific literature supports the conclusion that mitigation for permanent habitat loss *necessitates replacement with an equivalent or greater habitat area* for breeding, foraging, wintering, dispersal, presence of burrows, burrow surrogates, presence of fossorial mammal dens, well drained soils, and abundant and available prey within close proximity to the burrow.[121]

Thus the mitigation proposed in the FEIR, and the mitigation approved for the BMSP, equate to less than 3% of what is needed to mitigate impacts to burrowing owl habitat. This violates CEQA's provisions for mitigation that is roughly proportional to the level of impacts This issue is exacerbated by the County's failure to ensure that the mitigation land even provides 'habitat' for burrowing owls. Specifically, habitat is properly defined as an area with a combination of resources (e.g., food, water, and cover) and environmental conditions (e.g., temperature, presence or absence of predators and competitors) that support occupancy by individuals of a given species and allows those individuals to survive and reproduce.[122] Thus, an area that is not occupied by the species is not habitat, regardless of the area's physical and biological characteristics. The FEIR fails to provide evidence that the 146-acre parcel is occupied by burrowing owls, nor does it require other compensation lands that may be approved by the County and CDFW to be occupied by owls. The provision of "potential" habitat does not mitigate the loss of actual habitat.

Comment O3-106 discussed several additional issues associated with Mitigation Measure BIO-6. The FEIR fails to resolve those issues.

Buffers (O3-107)

RTC O3-107 refers me to RTC O3-50 concerning: (a) the adequacy of the burrowing owl buffers proposed in the DEIR, and (b) the proposal to reduce buffer distances if visual screens (e.g., hay bales) are installed. RTC O3-50 cites the following statement from CDFW's Staff Report as evidence that the proposed mitigation is consistent with CDFW guidelines: "[i]f burrowing owls and their habitat can be protected in place on or adjacent to a project site, the use of buffer zones, visual screens or other measures while project activities are occurring can minimize disturbance impacts." RTC O3-50 omits the next sentence in the Staff Report, which states: "[c]onduct site-specific monitoring to inform development of buffers (see Visibility and sensitivity above)." The mitigation proposed in the FEIR does not require the Applicant to conduct site-specific monitoring prior to reducing the buffers recommended in the Staff Report. It also fails to satisfy the Staff Report's provision that: "if it is decided to allow activities closer than the setback distances recommended, a broad-scale, long-term, scientifically-rigorous monitoring program

---

excluded, the development of the solar facility site would impact approximately 2,989 acres of burrowing owl habitat.

[121] California Department of Fish and Game. 2012 Mar 7. Staff Report on Burrowing Owl Mitigation, p. 8. [emphasis added].

[122] Morrison ML. 2002. Wildlife Restoration: Techniques for Habitat Analysis and Animal Monitoring. Island Press: Washington (DC). *See also* Hall L, P Krausman, M Morrison. 1997. The Habitat Concept and a Plea for Standard Terminology. Wildlife Society Bulletin 25(1):173-182. *See also* Morrison ML, BG Marcot, and RW Mannan. 2006. Wildlife-Habitat Relationships: Concepts and Applications. 3rd ed. Washington (DC): Island Press. p. 10.

ensures that burrowing owls are not detrimentally affected by alternative approaches."[123] As a result, the proposed mitigation is inconsistent with CDFW guidelines.

Burrowing Owl Success Criteria (O3-108)

Comment O3-108 pertained to the DEIR and Burrowing Owl Monitoring and Mitigation Plan's lack of clear, measurable performance standards and contingency plans to ensure the proposed mitigation measures are successful. RTC O3-108 fails to resolve the issues raised in my comment.

Artificial Burrows (O3-109)

RTC O3-109 fails to resolve the issue I raised regarding the cleaning and maintenance or artificial burrows.

Clearance Surveys (O3-110)

As discussed in Dr. Smallwood's comments on the FEIR, "take avoidance surveys" are not an acceptable substitute for "detection surveys." Detection surveys consist of four independent survey visits with 1) at least one site visit between 15 February and 15 April, and 2) a minimum of three survey visits, at least three weeks apart, between 15 April and 15 July, with at least one visit after 15 June.[124] The Staff Report's recommendation for an initial take avoidance survey no less than 14 days prior to initiating ground disturbance activities assumes detection surveys have already been conducted to provide reliable information on the distribution, abundance, seasonal use patterns, and behavior of burrowing owls at a project site. That information is then supposed to be used to inform the development of take avoidance and minimization measures (among other mitigation measures). The final step is the take avoidance surveys, which are intended to confirm that the distribution and abundance of burrowing owls at the site have not changed since the detection surveys. An initial take avoidance survey "no less than 14 days prior to initiating ground disturbance activities" provides the lead agency and CDFW with sufficient time to revise the mitigation strategy, and if necessary, to re-circulate the CEQA document before ground disturbance is imminent. As noted in the Staff Report: "[a]ny new burrowing owl colonizing the project site after the CEQA document has been adopted may constitute changed circumstances that should be addressed in a re-circulated CEQA document."[125]

As explained in Dr. Smallwood's comment letter, Power failed to conduct burrowing owl "detection surveys" across most of the Project site. This renders the "take avoidance surveys" proposed in the EIR relatively ineffective because Power has no idea where burrowing owls occur on the Project site, how many owls to expect during the take avoidance surveys, and how those owls behave in response to anthropogenic activity. Power also has no knowledge of the seasonal use patterns exhibited by owls at the Project site., which precludes Power (or another biologist) from knowing whether additional take avoidance surveys are required as seasons

[123] *Ibid*, pp. 9 and 10.
[124] *Ibid*, p. 28.
[125] *Ibid*, p. 10.

shift.[126] Given these issues, the pre-construction surveys proposed in the FEIR would be incapable of assuring take avoidance.

The issues described above are exacerbated by the County's failure to establish minimum requirements for the take avoidance survey, including the: (a) time of day the survey should be conducted; (b) methods that should be used to search for owls and their sign; (c) search area, including the amount of the surrounding buffer zone that should be surveyed; and (d) minimum qualifications of the biologist conducting the survey. The FEIR fails to rectify this issue. Instead, it argues the County, CDFW, and BLM would approve the resumé of the proposed biologist, which would ensure that the biologist has the expertise to properly conduct the required pre-construction surveys for burrowing owls. Under CEQA, the lead agency is obligated to establish minimum requirements that are mandatory conditions of approval, and upon which the conclusion of insignificance is based. In this case, the County has not established the minimum requirements for the take avoidance survey, nor has it explained why it was infeasible to do so in the EIR. This includes the minimum qualifications of the biologist that is delegated authority to decide the survey area and methods. In essence, the County's argument relies on the premise that because it would later decide the necessary expertise of the biologist, the biologist would inherently have the expertise necessary to ensure he or she properly conducts the pre-construction surveys. This constitutes flawed reasoning and violates CEQA.

Disturbance to Occupied Burrows (O3-111)

The FEIR fails to rectify the issue I raised in Comment O3-111.

BBCS Approach (O3-114)

The FEIR fails to resolve the issues I raised in Comment O3-114.

RTC O3-114 argues: "predicting the abundance of species is not required in the BBCS or to form determinations in the CEQA analysis." This statement is inconsistent with the information presented in the BBCS. For example, the BBCS reports: "the more birds that are present, the higher the potential to have a collision with power lines."[127] Consequently, Power applied its prediction of avian abundance (i.e., that the Project occurs on lands that are "unlikely to concentrate avian or bat activity" and that "migratory birds would only incidentally use the Project site for forage land") to support its conclusion that the Project presents a "low risk," and thus, minimal mitigation is required (e.g., the Project does not require post-construction monitoring by a biologist).[128]

Estimating abundance is also important to the determinations in CEQA analysis. As stated in my previous letter, estimating abundance is important because abundance affects the relative magnitude of Project impacts. For example, the County used a habitat-based approach to predict a high potential for the Le Conte's thrasher to occur at the site.[129] However, neither Power nor the County conducted bird surveys to determine how many Le Conte's thrashers occur at the site,

[126] Burrowing Owl Monitoring and Mitigation Plan, p. 8.
[127] BBCS, p. 17.
[128] BBCS, p. 25.
[129] DEIR, Table 3.4-4.

and consequently, how many thrashers would be impacted by the Project. Thus, the public, resource agencies, and decision makers have no idea whether the Project would affect 1 thrasher (a relatively minor impact to the overall population), or 100 thrashers (a relatively severe impact to the overall population). The County clearly has no idea either, which invalidates its conclusion that the measures proposed in the EIR would mitigate Project impacts to insignificant levels (i.e., regardless of how many thrashers are affected). For example, what if pre-construction survey data reveal the Project site supports the highest known abundance of thrashers in the world? According to the County, that data would be inconsequential to its CEQA analysis and its conclusion that no habitat compensation is required to mitigate impacts to the species to a less-than-significant level.

Risk Assessment (O3-116)

The County's response to Comment 03-116 is circular; it states: "please refer to comment Response 03-116."[130]

Comment 03-116 pointed out how the Applicant failed to adhere to USFWS guidelines for risk assessments, and how the DEIR lacks substantial evidence to presume the Project poses a "low" risk to birds and bats. Because the County did not acknowledge or address these issues directly in any other responses, they remain unresolved.

Adaptive Management and Monitoring (O3-12, O3-112, and O3-117)

The DEIR, FEIR, and associated mitigation plans (e.g., BBCS and Burrowing Owl Monitoring and Mitigation Plan) make numerous references to "adaptive management" in an attempt to assure the public, resource agencies, and decision makers that any unanticipated impacts would be adequately addressed and mitigated. However, as RTC O3-117 acknowledges, the County is applying Power's definition of adaptive management, which is: "an iterative process in which impact minimization and mitigation measures are continuously reevaluated in order to improve them." As discussed in my previous comment letter, the process outlined in Power's definition does not constitute true adaptive management.

Even if one is willing to accept Power's distorted definition of adaptive management, the approach proposed in the FEIR and associated mitigation plans would be incapable of accomplishing it. Most notably, it is simply not possible to continuously reevaluate impact minimization and mitigation measures (in order to improve them) over the 25-year lifespan of the Project if only three years of post-construction monitoring are conducted. The County exacerbates this issue by suggesting there are feasible ways to improve the efficacy of the minimization and mitigation measures, should adaptive management reveal improvements are needed. The FEIR identifies no such ways. As highlighted in Comment A6-11 from the USFWS, once a PV facility begins operation, there are few options for effective adaptive management measures and other design modifications sufficient to avoid incidental take.

Triggers for Adaptive Management (O3-68 and O3-118)

The FEIR fails to resolve the issues I raised regarding the adaptive management triggers

[130] FEIR, RTC 2-253.

proposed in the BBCS. RTC O3-68 confirms that the Project proponent would be allowed to kill up to 1,800 native birds, 135 raptors, and 1,350 bats per year without any requirement to implement remedial measures or adaptive management. This equates to 45,000 native birds, 3,375 raptors, and 33,750 bats over the 25-year lifespan of the Project. The FEIR fails to provide any information substantiating its conclusion that mortality at those levels would be insignificant to the afflicted species. Indeed, scientific information indicates mortality at those levels would have significant impacts on the populations of the afflicted species, potentially to the point of causing local extinctions.[131]

BBCS Monitoring (O3-119)

RTC O3-199 states that mortality monitoring will be ongoing for the life of the Project. This conflicts with the FEIR, which only requires a three-year post-construction monitoring study.[132]

RTC O3-199 fails to resolve the issues I raised regarding the proposed mortality monitoring program.

Recommended Mitigation (O3-120)

Comment O3-120 identified two scientific publications that contained information on techniques for minimizing avian collisions at PV facilities. The techniques described in these sources could substantially reduce the significant impacts of the Project on birds. The FEIR failed to provide any response to this comment.

My comment identified several ways to improve the mortality monitoring program proposed in the BBCS. The FEIR failed to provide a response to that comment. The current recommendations for mortality monitoring at solar energy facilities is:

- Huso M, T Dietsch, C Nicolai. 2016. Mortality monitoring design for utility-scale solar power facilities: U.S. Geological Survey Open-File Report 2016-1087. 44 pp. Available at: <http://dx.doi.org/10.3133/ofr20161087>.

BIO-8 MFTL (O3-122)

RTC O3-122 argues that CEQA does not require the DEIR to provide substantial evidence that mitigation the County has required for other projects has been successful in mitigating impacts. The County has served as the lead agency for numerous past projects, some of which were required to provide mitigation for impacts to the Mojave fringe-toed lizard, burrowing owl, and other species addressed in the EIR for the proposed Project. If those mitigation efforts were successful, why is the County afraid to provide evidence of their success?

[131] Klem Jr., D. 1990. Collisions between birds and windows: mortality and prevention. Journal of Field Ornithology 61:120-128. *See also* Longcore T, C Rich, P. Mineau et al. 2012. An Estimate of Avian Mortality at Communication Towers in the United States and Canada. PLoS One 7(4):e34025.

[132] FEIR, p. 3-36.

Whereas the County's response may technically be correct, CEQA requires evidence supporting the lead agency's conclusions in the EIR. If the lead agency concludes the mitigation proposed in the EIR would reduce potentially significant impacts to less-than-significant levels, CEQA requires evidence that the proposed mitigation is feasible and reasonably likely to result in success. One way to accomplish that requirement is by providing evidence that mitigation comparable to the mitigation proposed in the EIR has been successfully implemented by the lead agency in the past. Whereas there are other ways to accomplish the requirement, the EIR provides *no evidence* that the mitigation proposed in BIO-8 is feasible and reasonably likely to result in success. This issue is exacerbated by the County's failure to incorporate any success criteria for the mitigation proposed in BIO-8.

Comment A6-16 from the USFWS identified the presence of potential habitat for the Mojave fringe-toed lizard in the BLM parcels within (but excluded from) and adjacent to the Project site. As a result, the USFWS recommended the Applicant survey those parcels to analyze the direct or indirect effects the Project would have on populations of fringe-toed lizards. The County's response was that surveys are not needed because the survey results would not change the DEIR's conclusion that direct and indirect impacts to the species are potentially significant. As described below, the County's response suffers numerous flaws.

First, CEQA requires a good faith effort at full disclosure. The EIR failed to disclose the presence of potential habitat for the Mojave fringe-toed lizard in the BLM parcels. It also failed to disclose the potential direct and indirect impacts that the Project would have on the lizard populations that may occur in those parcels. Indeed, the EIR provided no mention of the biological resources that could be affected in the BLM parcels.

Second, the County's response relies on the premise that survey data are inconsequential to the EIR's analysis and function as an informational document. This defies common sense. For example, survey data might reveal that the BLM parcels support robust "source populations," which are essential to the persistence of other populations.

Third, the County's response ignores the value of data in impacts analyses, specifically the role of data in assessing the relative severity of Project impacts to the species. For example, "potentially significant" impacts to 1,000 MFTL is clearly more severe than "potentially significant" impacts to 10 MFTL. The County circumvents this issue by making the blanket claim that the proposed mitigation would make impacts insignificant no matter how many MFTL there might be on the Project site and BLM parcels. Because the County refuses to collect survey data, it has not provided a good faith effort to inform the public, resource agencies, and decision makers of the relative severity of Project impacts to MFTLs (and other sensitive species).

Fourth, the FEIR fails to require compensatory mitigation for Project impacts to potential MFTL habitat on the BLM parcels, even though the County's response acknowledges the potential for impacts to that habitat, and that compensatory mitigation is required to reduce Project impacts to MFTL habitat to less-than-significant levels.

Fifth, the County still has not identified how it quantified potential habitat for the MFTL at the Project, nor does it provide any maps that depict the location of potential habitat in relation to

Project features that would (or could) affect the habitat. This precludes the ability to validate the County's claim that potential habitat is limited to approximately 3% of the solar facility site, and that potential habitat within the solar facility site would be avoided.[133] RTC O3-73 suggests the County's determination of potential habitat was based on the presence of creosote bush scrub, which is not the appropriate variable for determining MFTL habitat. MFTLs are not limited to creosote bush scrub vegetation communities. As the FEIR acknowledges, MFTLs occur in stabilized or partially stabilized desert dune habitat (which may or may not have creosote bush scrub vegetation).[134]

Finally, the DEIR acknowledged the Project would have potentially significant direct, indirect, and cumulative impacts to MFTL at both the solar facility site and gen-tie line corridor. However, the compensatory mitigation incorporated into the FEIR is limited to compensation for direct impacts to habitat due to construction of the gen-tie line.[135] The FEIR fails to incorporate any compensatory mitigation for indirect impacts, which can be as detrimental to the species as direct impacts.[136] The FEIR also fails to incorporate any compensatory mitigation for cumulative impacts.

Availability of Mitigation Sites (O3-123)

RTC O3-123 fails to address the issues I raised regarding the availability of suitable mitigation sites in the Chuckwalla Valley.

Funding (O3-124)

RTC O3-124 fails to resolve the issues I raised regarding funding and the amount of the in-lieu fee.

Perimeter Fence (A5-5)

RTC A5-5 suggests the Applicant is proposing a wildlife-friendly perimeter fence design. However, according to the DEIR the perimeter fence would have three strands of barbed wire along the top of it. Barbed-wire fencing poses a mortality hazard to sensitive species that occur in the Project area, including the burrowing owl, prairie falcon, and bighorn sheep.[137] Therefore, unless the Applicant incorporates a fence design with a smooth wire at the top, the fence is not "wildlife friendly."

Avian Mortality (03-64, 3-92, 03-113 through 03-120, 04-86, among others)

The responses in the FEIR ignore the abundant evidence that avian collisions with solar panels, and other Project features, will be significant, especially considering the relatively large size of the proposed Project. The County's core argument is that:

[133] FEIR, p. 3-24 and RTC O3-73.
[134] FEIR, p. 3-9.
[135] FEIR, p. 3-24.
[136] Comment O3-122.
[137] Allen GT. 1990. A review of Bird Deaths on Barbed-Wire Fences. Wilson Bulletin. 102:553-58.

> While data collection at some PV solar array-type facilities has documented individual instances of avian mortality resulting from collisions, the best available scientific information to date does not suggest a significant increased risk of avian mortality occurring at facilities such as the Project. Currently available data indicates relatively low mortality due to direct impacts with the types of facilities included in the Project, particularly PV panels. For example, at Desert Sunlight, current data suggests that avian mortality was associated with direct contact with panels, and non- panel facilities that are not unique to solar facilities such as fences, project buildings, transmission lines, and unknown or possible background causes (Kagen et al., 2014). Hence, it is likely that a low level of avian impacts can be anticipated at the proposed facility, whether from PV panels, fences, buildings, or other infrastructure associated with the Project.[138]

These claims contradict the evidence. For example, the County claims that data from the Desert Sunlight Project indicate "relatively low mortality," and thus, data from this single project suggest all PV facilities do not pose a significant increased risk of avian mortality. Interpreting the data that way violates basic principles of good science.

The Desert Sunlight Project has completed only one year of mortality monitoring.[139] Clearly, taking data from one project that has undergone only a single year of mortality monitoring is not "the best available scientific information." The best available scientific information would include consideration of *all* available data, including data from the numerous other solar facilities operating in California.

Furthermore, data from the Desert Sunlight Project *do not* indicate "relatively low mortality," as the County claimed. As discussed in Comment A6-6 from the USFWS, the Desert Sunlight Project is estimated to have killed >1,300 birds during its first year. The USFWS has concluded that: "[b]ased on the available information regarding bird fatalities, cumulative impacts to migratory birds would potentially be significant for various species (especially water-associated birds and federally listed species)."[140] I concur with this conclusion. I also concur with the USFWS's conclusion that the DEIR failed to acknowledge or adequately analyze the potentially significant cumulative effects of bird fatalities at utility-scale solar facilities throughout Riverside County and beyond.[141] The FEIR fails to resolve these issues.

The DEIR concluded:

> The anticipated low level of avian mortality associated with the construction and operation of the Project is expected to result in a less than significant impact to avian species. Based on available information, significant impacts to migratory birds are not expected, and no mitigation is recommended.[142]

As discussed above, the DEIR's recommendation for "no mitigation" is predicated on false information from one solar facility. Incredibly, the County made minimal revisions to the

---

[138] DEIR, p. 3.4-45.
[139] Comment A6-6.
[140] Comment A6-8.
[141] Comment A6-8.
[142] DEIR, p. 3.4-45.

analysis presented in the DEIR.[143] However, to avoid addressing the mitigation measures recommended by the USFWS, the County now claims the BBCS would mitigate potentially significant impacts to birds to insignificant levels. However, the BBCS offers no new mitigation measures beyond what the County analyzed when it concluded: "significant impacts to migratory birds are not expected, and no mitigation is recommended." Thus, the County's revised conclusion is arbitrary and not supported by evidence.

The USFWS's comments describe, in detail, how impacts to migratory birds will be significant, and it describes examples of specific measures that should be incorporated *prior to CEQA certification* of the Project. The County's responses fail to acknowledge the impacts described in the USFWS's comment letter, nor do they incorporate the Agency's recommendations as part of the CEQA process. Instead the County defers to future actions that would be triggered, according to the BBCS, by highly unscientific and randomly assigned thresholds that would incur unacceptably high rates of injury and mortality prior to adopting the necessary mitigation measures. Meanwhile, the remedial actions that would triggered if thresholds are exceeded remain vague and undefined, thus improperly deferring analyses of mitigation that the County claims would somehow mitigate impacts to less-than-significant levels.

Specifically, the BBCS states that: "[t]he identification of fatality thresholds to trigger mitigation is an unavoidably arbitrary process ... Most solar energy facilities are unlikely to significantly impact populations of most species."[144] These erroneous and scientifically naive statements underscore the Applicant's lack of understanding of avian impacts at solar facilities and how they are mitigated.

Additionally, the assumption that "uncertainty" supports a fair argument of a less than significant impact from bird strikes to the facilities (due to the lake effect and other impacts) is in error for several reasons, the first being that some level of uncertainty – as is inherent in most scientific analysis until theories have been rigorously tested for decades – does not equate an inability to detect a high degree of impacts. The available data regarding bird strikes to solar facilities, including those caused specifically by the solar arrays, provides adequate evidence to conclude impacts to birds can be and has been significant (see evidence detailed below).

Any uncertainty in the analysis of impacts to birds and bats is partly due to the negligence of the Applicant in its refusal to conduct relevant, focused, and species-specific surveys during migration or any other season. To reiterate, Power failed to conduct the site-specific wildlife surveys recommended by the USFWS, so much so that their effort was limited to a habitat assessment and reconnaissance survey conducted over five years ago (October 25 through October 27, 2011).

In their response to comments, the County repeatedly refers to the BBCS and BMPs by inferring they will summarily mitigate impacts to below significant levels. However, it is impossible to make this conclusion when the DEIR itself has not provided ground-truthed, species-specific data regarding what may be onsite, nesting, breeding, foraging, migrating though, or the abundance of these species. Because major impacts may be caused to birds migrating over the site (see details below), the minimum requirement to assess any degree of impact would include

[143] FEIR, pp. 3-25 through -29.
[144] PVMSP Appendix D Biological Resources, p 29.

specific avian surveys conducted throughout migratory periods, in addition to focused breeding and non-breeding season surveys, as well as raptor surveys. Lists of species with "potential to occur" estimates based on cursory habitat assessments conducted during a very brief time period provide only a partial picture of what is necessary to develop baseline mitigation plans. For instance, a mitigation protocol that is effective for one to a dozen individuals of a certain taxonomic family (e.g.. passerines, or raptors) on a given site may be very different, and thus ineffective, for a site that hosts a special-status species that has several hundred or more individuals. Furthermore, there may be species-specific responses to habitat fragmentation due to infrastructure. For instance, some species have been noted to be more vulnerable to panel and/or wire strikes (loons, grebes, rails, warblers, raptors; see Attachment A),[145] while others use the facilities for nesting and are increasingly prone to predators attracted to those facilities (see Figures 1 - 24). A site with very low annual occurrence and density of certain species will incur impacts not analyzed or mitigated by the EIR and its mitigation measures. Finally, as per the Project's pre-construction BMP, having a biologist conduct surveys just one week prior to construction in no way compensates for the data and knowledge gained from the comprehensive surveys needed to formulate appropriate mitigation for impacts incurred throughout construction and the life of the project. If this approach was adequate, no applicants anywhere would bother with conducting the various focused surveys that are standard practice for CEQA review of impacts to biological resources.

In response to Comment 03-92, the County states I did not provide any evidence to support the claim that the DEIR mitigation measures do not go beyond mere minimization. It then refers to BMP-10, BMO-12, and BIO-7 as adequate mitigation. Because BMP-10 refers to weed abatement, it is unclear how this would mitigate avian fatalities. BMP-12 refers to mechanisms (e.g., anti-perching devices) that would be installed to reduce impacts of the gen-tie line. These BMPS will certainly not reduce direct or cumulative impacts caused by the attractive nature of the 'lake effect' associated with reflective panels (a now widely accepted as opposed to merely theoretical phenomenon, see details below). This is especially true considering that the proposed Project would be one more solar project that, once the proposed projects nearby are complete, will have the additive effect of creating a massive array of reflective panels stretching 19 miles and effectively dissecting a flyway corridor from the Colorado River to the Salton Sea.

It is recommended that the County re-read the full extent of comments, and after doing so, explain how lack of compensatory mitigation can offset breeding habitat for nesting and foraging species with high natal site fidelity (e.g., many passerines, raptors, burrowing owls), that may be onsite and whose habitat will be destroyed. Creating avoidance buffer zones does not compensate for lost nesting or foraging habitat; neither does mortality reporting, nor avoidance of direct avian impacts during construction. Furthermore, how would these practices mitigate deaths of migrating species whose breeding or foraging habitats are not onsite, but are known to incur significant impacts over time due to the presence of the facility (see Attachment A)? It is undeniable the Project would cause habitat loss and degradation, displacement, and deaths that will go unmitigated by BMPs and BIO-7. Simply assuming presence of a special-status species and concluding "potentially significant" impacts to that species is clearly a cop-out. It is certainly inadequate for mitigation planning, which needs to be species and site-specific to be effective.

[145] R. Owens, Senior Biologist and Mortality Monitor, Sage Wildlife Biology, pers. comm. Aug 23, 2017/

With respect to avian mortality at solar facilities, the DEIR and FEIR claim there is uncertainty because: "in most cases, the cause of death is not clear."[146] To the contrary, there is a high level of confidence that many of the observed mortalities were due to collision with an anthropogenic feature (e.g., solar panel, transmission line, or fence).[147,148] Avian biologists who conducted mortality surveys on various solar installations in the Sonoran Desert (ISEC West, ISEC South, Genesis) report that dead and injured birds found among the arrays often showed clear signs of trauma from impact with a panel or wire. Evidence included the type of trauma to the bird, the location of the bird, and disturbance to dust on the solar panels where the dead bird was found (see Figures 1 - 24).[149]

The County's 'uncertainty' justification infers that these "unclear" deaths could be caused by something unrelated to the facility. A recent study on background avian mortality by USFWS, BLM, and USGS biologists addressed this very question. The researchers reported a median annual mortality rate of 0.6 to 1.7 birds per acre at solar facilities, which would amount to 2,040 to 5,780 birds annually for the proposed Project.[150] They furthered reported a background mortality rate of 0.024 birds per acre, or 81 birds for an area equivalent to that of the Project footprint. This led to the conclusion that: "[w]hen compared to mortality rates from solar projects, background mortality does not appear to be a significant factor and could easily be accounted in the sampling design error rates."

The claim by the DEIR that "avian surveys are time consuming" is specious in its inference that mortality surveys are somehow incapable of being predictive due to being potentially labor intensive. The methodology and statistical analysis used for mortality surveys have been formulated to accommodate for the reality that data collection can be "time consuming," a fact generally well understood by scientists who comprehend the nature of experimental design and statistical analyses as tools used to overcome such common data collection challenges.

Further undermining the County's use of uncertainty to support its determination that the Project poses a "low" potential to adversely affect avian populations is the comment from the USFWS, which states that data from nearby and various other solar projects do not create uncertainty, but to the contrary, are "informative and appropriate for assessing potential impacts to birds at the Palos Verde Mesa project."[151]

The following is further evidence to support the reality that:

(a) The Project's impacts to birds by solar panels and related structures are underestimated;
(b) The Project will result in potentially significant impacts to migratory and resident birds;
(c) The Project does not adequately mitigate such impacts; and,

---

[146] FEIR, p. 3-26.
[147] Walston, L. et. al. 2016. A preliminary assessment of avian mortality at utility-scale solar energy facilities in the United States. *Renewable Energy*. 92: 404-414. doi:10.1016/j.renene.2016.02.041
[148] Kagan RA, TC Viner, PW Trail, EO Espinoza. 2014. Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis. National Fish and Wildlife Forensics Laboratory. 28 pp.
[149] R. Owens, P. Hord, avian biologists at Sage Wildlife Biology, Ultrasystems; pers. comm. Aug 23, 2017.
[150] Fesnock, A., Huso, M., and Allison, L. 2016. Background Avian Mortality across the California Desert Region: A Pilot Study. BLM Avian Solar Symposium, August 2017. Available at: <http://blmsolar.anl.gov/program/avian-solar/symposium/doc/Fesnock_Background_Mortality.pdf>.
[151] RTC USFWS comments p. 3, A6-6

(d) The County has no basis for its assertion that avian impacts have been adequately analyzed and mitigated.

1. Attachment A summarizes a partial review of avian mortality reports submitted to the state and federal Fish and Wildlife agencies between 2011 and 2016, depending on the report. Appendix A shows just a partial summary that underscores these impacts to Federal ESA, California ESA, California Species of Special Concern, and Migratory Bird Treaty Act species that have been killed by collision deaths as Southern California desert solar facilities. The data therein demonstrate not only the importance of scientific, methodical data collection to determine mortality for *more than* the Project BBCS's proposed three years, it provides undeniable evidence that solar facilities specifically attract and kill birds across many groups; resident birds are not the only ones affected. For instance:

(A) The California Valley Solar Ranch Project (CVSR) is located in the California desert region primarily on former land designated as agricultural, not unlike the proposed Project, although it covers a third less area than the proposed PVMSP and supplies approximately half the MW energy proposed by the PVMSP. Over the course of two years, 703 bird mortalities were reported at CVSR, including three burrowing owls (this despite burrowing owl mitigation measures in place). This predicts a mortality of 10,545 birds for the life of a 30-year facility, including 45 burrowing owls (a state protected species) for a project that is one third smaller than the proposed PVMSP facility.

(B) Campo Verde Solar is a solar facility in the Sonoran desert in an agricultural landscape. It is much smaller in scope that the Project, where PVMSP as proposed is 3.2 times larger than Campo Verde in MW production and 2.7 times larger in area than Campo Verde. Campo Verde Solar reported 322 bird deaths over the course of 28 months, on average this rate of mortality would result in over 4,000 birds for the life of the project. Even loosely extrapolating these rates of avian mortality for sites located in similar bioregions, one can predict avian deaths caused by the PVMSP to be between 15,000 and 25,000 birds. The County needs to address this impact as truly significant with requisite appropriate mitigation.

2. McCrary et. al., in a peer reviewed study published three decades ago, reported: "We studied avian mortality at an operating solar central receiver power plant in the Mojave Desert of southern California. During 40 wks of study we documented the deaths of 70 birds (26 species). The estimated mortality rate was 1.9-2.2 birds per week. 81% of birds of 20 species died from collisions with Solar One structures, mainly the mirrored surfaces of heliostats."[152] The study goes on to further distinguish collision deaths with reflective panels as separate from other collision deaths, "Avian Collisions are an inevitable by-product off almost all man-made structures (see Avery et al., FWS/OBS-80/54, 1980). Reflective surfaces are especially prone to collisions (Klem, Ph.D. thesis, Southern Illinois Univ., Carbondale,1979), and it is not surprising that collisions with mirrored heliostats occur on a somewhat regular basis considering the reflective surface area of Solar One".[153]

---

[152] Mccrary, M. Mckernan, Schreiber, R., Wagner, W., and Sciarrotta, T. 1986. Avian Mortality at A Solar Energy Power Plant. *J. Field Ornithology*, 57(2): 135-141.
[153] *Ibid.*

3. Research on power line collisions demonstrates that impacts can be affected by many variables, including degree of fencing, proximity to roads or roosts, wind conditions, and migration micro-pathways.[154] USGS biologists point out that: "Numerous animal species use polarized light for orientation and navigation purposes (Horváth and Varjú 2004). Therefore, the potential exists for polarized light pollution (PLP) to disrupt the orientation and migration abilities of desert wildlife, including those of sensitive species. In the review by Horváth and colleagues (2009)… they highlighted the fact that anthropogenic products that produce PLP can appear to be water bodies to wildlife and can become ecological traps for avian species. Therefore, utility-scale solar energy facilities at which photovoltaic technology is used in the desert Southwest **could have profound but unquantified effects on the ecological community surrounding the solar facility**."[155] (Emphasis added.)

4. In their preliminary assessment of avian mortality at utility-scale solar energy facilities in the United States, Walston et. al. (2016)[156] summarize their findings on impacts to birds as follows: "Utility-scale solar energy facilities in the United States require large spatial footprints (between 1.4 and 6.2 ha of land per MW of electric production) **and are projected to require a total of 370,000 - 1,100,000 ha of land by 2030, mostly in the arid regions of the southwestern states**... Recent studies have suggested that utility-scale solar developments may represent a source of mortality for wildlife such as birds. There are currently 2 known types of direct solar energy-related bird mortality: 1. Collision-related mortality - mortality resulting from the direct contact of the bird with a solar project structure(s). This type of mortality has been documented at solar projects of all technology types…. different solar technologies and project designs may influence avian mortality risk. For example, project designs that utilize solar collectors that reflect polarized sunlight in such a way so as to be perceived as waterbodies, may attract birds and their prey (e.g., insects), thereby increasing the risk of bird collisions with project structures." This summary underscores the cumulative impact that current and proposed desert solar projects will have on birds in the desert southwest. Using Fesnock et. al.'s findings[157] on bird deaths per acre at California desert solar facilities, and the projected acreage slated for development by 2030, bird deaths would number between 548,000 and over 4,347,000. A fraction of these deaths within one species could incur significant impact to an entire population, especially of species already rare or declining.

The report also makes recommendations to better assess avian impacts caused by industrial solar sites: "There is a need for more standardized, consistent, and science based avian monitoring protocols ... Standardized monitoring methodologies will improve the scientific certainty of conclusions about avian mortality. As efforts get under way to improve the quality of avian mortality data collected from USSE facilities, researchers should focus on development of more effective inventory and monitoring techniques."[158]

---

[154] Brown, W. M., & Drewien, R. C.. (1995). Evaluation of Two Power Line Markers to Reduce Crane and Waterfowl Collision Mortality. *Wildlife Society Bulletin (1973-2006)*, *23*(2), 217–227.

[155] Lovich, J. E., & Ennen, J. R.. (2011). Wildlife Conservation and Solar Energy Development in the Desert Southwest, United States. *Bioscience*, *61*(12), 982–992.

[156] Walston, L. et. al. 2016. A preliminary assessment of avian mortality at utility-scale solar energy facilities in the United States. *Renewable Energy*. 92: 404-414. doi:10.1016/j.renene.2016.02.041

[157] Fesnock, A., Huso, M., and Allison, L. 2016. Background Avian Mortality across the California Desert Region: A Pilot Study. BLM Avian Solar Symposium, August 2017. http://blmsolar.anl.gov/program/avian-solar/symposium/doc/Fesnock_Background_Mortality.pdf

[158] *Ibid.*

As such all industrial solar facilities, PVMSP included, should be required to adopt a bird and bat monitoring program much more rigorous than the incorporated into the FEIR. It should include scientific data collection of avian injury and mortality for the life of the project, collected by not only to assess long term and cumulative impacts, but to contribute to a much-needed database to enhance future mitigation strategies. The Project's proposal that such data will be collected incidentally by project personnel[159] is completely useless. Such personnel are not qualified to conduct the necessary research even with a standard worker training program. Additionally, once complete and in operation, industrial solar facilities are run by a very small number of regular onsite personnel (typically 2 to 10), whose job responsibilities do not include them walking around the outside infrastructure or along the extensive arrays looking for injured or dead animals.

5. The U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy and the U.S. Department of the Interior's Bureau of Land Management published their Solar Energy Development Programmatic EIS PEIS, which concluded that: "Since birds are prone to collisions with reflective surfaces, it would be expected that a utility-scale solar energy project could cause significant bird mortality. Glare could possibly disorientate a bird in flight and cause it to collide with solar energy project facilities or other objects."[160] This conclusion by the federal government agencies responsible for overseeing wildlife impact mitigation on public lands further exemplifies the accepted reality that bird collision risks are created and enhanced by the presence of reflective solar arrays at solar industrial projects, regardless of differences in design of the panels between projects.

6. In their comments to the PVMSP DEIR, the USFWS confirms that there is growing evidence of the impacts from what is known as the "lake effect", especially for water-associated birds and other species seeking migratory stopover habitat, and that projects in proximity to this project's site are among those reporting the highest mortality of water-associated birds.[161] They conclude that cumulative impacts to birds could be significant for various species, and would warrant project-specific systematic monitoring and mitigation via the BBCS. They go on to suggest some strategies that should be incorporated into the BBCS. However, in their response to this comment, the County simply defers the creation or addition of such mitigation specifics to a future date, saying they may consider recommendations from USFWS for the BBCS. This statement provide no assurances or clear goals for mitigation success, nor does it acknowledge to any extent what kind of impacts would be mitigated specifically, since the DEIR makes the claim that the author considers impacts to migratory birds to be less than significant. One cannot attempt to determine the adequacy of a deferred, theoretical mitigation protocol, therefore this conclusion by the County that BIO-7 will mitigate significant impacts is inadequate in meeting CEQA requirements. Not having details, including methodology and potential efficacy, in mitigation measures precludes the Applicant from correctly claiming that such measures will indeed reduce potential impacts to below significant. Such has not been assured or provided in this DEIR to any extent, therefore it cannot be determined if proposed mitigation measures will effectively reduce potential impacts to migratory birds to below significant, or if proposed

---

[159] PVSSP BBCS p. 25

[160] DOE, DOI. Final Solar Programmatic Environmental Impact Statement. 2012. Retrieved from: http://solareis.anl.gov/index.cfm (p 5- 82).

[161] RTC p. 3, A6-6

measures are truly feasible, efficacious, and within the capabilities or expertise of the staff on hand to carry them out.

7. In the 2015 National Renewable Energy Laboratory's review of avian monitoring and mitigation information at existing utility-scale solar facilities, the report summarized their findings of 7 solar sites by stating, "One commonality among utility-scale solar facilities of all technology types is that they occupy relatively large spatial footprints to capture the sun's energy. The development of utility-scale solar facilities, therefore, represents a large human land use in the environment, which has the potential to affect birds and bird communities in a number of ways and during all project phases (construction, operations, and decommissioning). The range of potential impacts from utility-scale solar projects on birds and other wildlife has been evaluated in the literature (e.g., Lovich and Ennen 2011; Hernandez et. al. 2014) and in the *Final Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States* (BLM and DOE 2012). Like all industrial activities, utility-scale solar energy development has the potential to directly and indirectly impact birds and bird communities in a number of ways. This report summarizes existing information of direct avian fatality at utility-scale solar facilities, which represents one of several impact factors. There are currently two known types of direct solar-related bird fatalities (McCrary et. al.1986; Hernandez et al. 2014; Kagan et al. 2014): 1. Collision-related fatality—fatality resulting from the direct contact of the bird with a project structure(s). This type of fatality has been documented at solar projects of all technology types. "[162]

The review further summarizes, "Collisions may occur at any facility (solar or otherwise) with aboveground structures. In the case of solar plants these may include transmission lines, cooling towers, PV panels and poles, trough systems, heliostats, fencing, and buildings. At PV and CSP facilities, collision hazards to birds are greatest among the solar field arrays...PV facilities may attract some species of birds through what has been called the "lake effect" (Kagan et al. 2014), whereby migrating birds perceive the reflective surfaces of PV panels as bodies of water and collide with project structures as they attempt to land on the panels"(emphasis added).[163]

The review's data collected from monitoring seven solar site reports 1,384 bird mortality detections over the course of 6 months to three years, depending on the individual project report, with 11.2% of those being water dependent birds, and the majority reported as potentially collision related. All project sites were characterized by various types of desert scrub habitats native to California desert systems.

8. A California Department of Fish and Wildlife (CDFW) grant proposal, written in cooperation by the USFWS and USGS, makes the determination that:

"Utility-scale solar projects, totaling many tens of thousands of acres, have been approved and are currently proposed within the range of Yuma Clapper Rail. Photovoltaic, solar thermal trough, and solar thermal power tower technologies reflect ambient light during the day and night, producing a "lake effect" that attracts numerous water-associated birds, including numerous rails... Since no water-associated birds were reported in pre-project avian surveys in

[162] Walston, L. et. al. 2015. Review of Avian Monitoring and Mitigation Information at Existing Utility-Scale Solar Facilities. Retrieved from: http://www.evs.anl.gov/downloads/ANL-EVS_15-2.pdf p. 10
[163] *Ibid.* p.30

desert scrub habitat on these project sites, and suitable habitats were not present, we conclude these solar technologies pose an "attractive nuisance" to which rails and other water-associated birds are particularly vulnerable. In addition to collision with solar panels, rails and other water-associated birds have died by collisions with fences and transmission lines, and entanglement in netting over water evaporation ponds. As such, existing and proposed utility-scale solar projects and their associated infrastructure introduce new sources of mortality to dispersing rails, which **cumulatively could be significant enough to function as population sinks for the life of these projects."**[164] (Emphasis added). This statement reinforces the fact that bird collisions to the facility may not only cause significant impacts to birds of many types (sensitive and endangered species, residents, migrants, passerines, water dependent birds, etc.), but could significantly impact birds at the population level.

This conclusion is supported by the fact that the project will be one of several large solar facilities covering a stretch of approximately 19 miles once all proposed facilities are constructed, and this project site is geographically located close to the major flyways of the Colorado River. Not only that, by having this vast array of solar facilities creating a massive "lake effect" west of the Colorado River flyway and just Northeast of the Salton Sea, this project could create the appearance of a major water stopover between the River and the Salton Sea, thus having a high potential for actually creating an major attractant to some of the millions of birds that use the Pacific flyway to reach the Salton Sea as a stopover and seasonal destination. For example, bird hot spots have identified with over 150 species along a flyway between the project site and the Salton Sea.[165] As such the County needs to acknowledge that the DEIR, including the BBCS as proposed, in no way adequately addresses how it will mitigate to less than significant the potential impacts specifically to non-resident species, especially water-associated birds recorded as consistently striking reflective solar arrays (e.g., loons, grebes, rails).

9. Fourteen Wildlife and other Governmental state and federal Agencies are coordinating to address what they call "emerging issues related to potential avian-solar impacts" under the umbrella of the Multiagency Avian-Solar Collaborative Working Group.[166]

In doing so the agencies involved have produced a draft Plan[167] that includes justification and details regarding reduction of impacts caused by bird strikes to solar panels. One part of this justification is in response to the bird mortality reports outlined in Attachment A, among others. The complete list of agencies in this Working Group include: Arizona Game & Fish Department, Bureau of Indian Affairs, Bureau of Land Management, California Department of Fish & Wildlife, California Energy Commission, California Public Utilities Commission, National Park Service, Nevada Department of Wildlife, U.S. Department of Energy, U.S. Department of Defense, U.S. Department of the Interior, Solicitor's Office, U.S. Fish & Wildlife Service, U.S. Geological Survey. Given the fact that all of these federal agencies have deemed bird collisions at solar sites to be significant enough to devote resources to its further investigation, and in light of the evidence provided above, the County cannot support a conclusion that impacts to birds are

[164] CDFW, 2016. Demographic tool for assessing the impact of increased mortality rates on Yuma Clapper Rail (*Rallus longirostris yumanensis*), recently renamed Yuma Ridgway's Rail (*Rallus obsoletus yumanensis*); and California Clapper Rail (*R. l. obsoletus*); recently renamed California Ridgway's Rail (*R. o. obsoletus*) populations. Unpub. ESA Section 6 Grant.

[165] See http://ebird.org/ebird/hotspots

[166] See http://blmsolar.anl.gov/program/avian-solar/

[167] See http://blmsolar.anl.gov/program/avian-solar/docs/Draft_Avian-Solar_Science_Plan.pdf

so "uncertain" as to be less than significant, or can adequately mitigate other impacts to birds by a vaguely described BBCS that uses nonsensical and unscientific thresholds, measured by inadequate and unskilled personnel, to determine what and how mitigation will be carried out without addressing bird strike mortalities.

The reports referenced above provide further evidence that the risks of PV panel avian collisions are real and are indeed significant, and have been observed by scientific methodologies incorporated into bird and bat monitoring protocols. It is without a doubt that birds do die from striking panels of various heights, configurations, and over various project acreage footprint sizes. The one common variable in these collision strike reports is the presence of reflective panels. In light of the evidence provided thus far, and in previous comments, the County cannot accurately deny the need for compensatory mitigation to avian impacts as necessary to completely reduce impacts to less than significant.

Other significant impacts to breeding birds are not considered by the DEIR or County Responses: It is important to understand for the sake of mitigation adequacy that avian impacts have repeatedly been underestimated and minimized in environmental impact analyses for solar projects, resulting in a lack of impact mitigation due to too many Projects Applicants and lead agencies ignoring the Precautionary Principle, and current available evidence.

For example, avian biologist Renée Owens (Sage Wildlife Biology) has witnessed a previously unreported unknown impact during solar site facility monitoring at Mojave and Sonoran desert solar facilities bordered by both agricultural and native scrub habitats. She and her colleagues observed that ground nesting birds that are attracted to areas dominated by bare or rocky ground, sand, or soils are attracted to the shaded microhabitats underneath and bordering the solar panel arrays.[168] However these species have not evolved to anticipate the hazards of these areas as nesting sites, which include collision with utility vehicles and enhanced susceptibility to hyperthermia due to the heat generated by the panels and related infrastructure. The birds choose these nest sites in the cooler weeks of spring, but as summer heats up they not only have to deal with the natural heat stress that increases as the season temperatures rise, but they also must deal with the unanticipated additional heat compounded by the presence of the solar panels. The high heats appear to exceed their limits of tolerance, indicated by an unusually high rate abandonment of nests and scrapes containing eggs (figures 15-17). There is no doubt this behavior (abandonment) negatively impacts the species' fecundity and contributes to potential negative impacts.

In the southwest desert bioregion birds observed to be prone to this include species like nighthawks, killdeer, black-necked stilt, and doves, among others[169]; all are species protected during nesting season under the Migratory Bird Treaty Act (MBTA). Thus far this phenomenon has not been described in the literature, not surprisingly because so few studies have been conducted that include long-term observations of industrial solar facilities' impacts to wildlife aside from mortality monitoring. This is one major reason why mitigation must include professional, statistically significant mitigation monitoring during the life of the Project, conducted by biologists, not "site personnel."

---

[168] Owens. R. Dec. 2016. The Unpleasant Secrets of Clean Solar Energy. *The Desert Report.* http://www.desertreport.org/wp-content/uploads/2016/12/DR-Winter2016.pdf

[169] R. Owens, pers. comm., Aug 26, 2017.

Figures 1 - 24 illustrate some examples of birds (and other wildlife) using solar facility equipment and roads to nest, roost, stopover, and perch resulting in higher than normal likelihood of hazards affecting breeding, including strikes, overheating, increased vulnerability to predation, and electrocution. (Photo credits Renée Owens, Patrick Hord).

This concludes my comments on the FEIR.

Sincerely,

Scott Cashen, M.S.
Senior Biologist

ADAMS BROADWELL JOSEPH & CARDOZO

A PROFESSIONAL CORPORATION

ATTORNEYS AT LAW

601 GATEWAY BOULEVARD, SUITE 1000
SOUTH SAN FRANCISCO, CA 94080-7037

TEL: (650) 589-1660
FAX: (650) 589-5062
apember@adamsbroadwell.com

SACRAMENTO OFFICE

520 CAPITOL MALL, SUITE 350
SACRAMENTO, CA 95814-4721
TEL: (916) 444-6201
FAX: (916) 444-6209

MILA A. BUCKNER
DANIEL L. CARDOZO
CHRISTINA M. CARO
THOMAS A. ENSLOW
TANYA A. GULESSERIAN
MARC D. JOSEPH
RACHAEL E. KOSS
NATALIE B. KUFFEL
LINDA T. SOBCZYNSKI

August 29, 2017

Via Email and Overnight Delivery

Mr. John F. Tavaglione, Chair
Honorable Members of the Board of Supervisors
Ms. Kecia Harper-Ihem, Clerk of the Board
Riverside County
County Administrative Center
4080 Lemon Street - 5th Floor
Riverside, California 92501
Email: cob@rcbos.org; district1@rcbos.org; district2@rcbos.org; district3@rcbos.org; district4@rcbos.org; district5@rcbos.org

Mr. Russell Brady, Planner
Mr. Larry Ross, Principal Planner
Mr. Steve Weiss, Planning Director
Riverside County Planning Department
4080 Lemon Street, 12th Floor
P.O. Box 1409
Riverside, CA 92502-1409
Email: rbrady@rctlma.org

Re: Action Item 4992 / Public Hearing Item – CUP03684, PUP00916, DA00086, EIR00532: Palo Verde Mesa Solar Project (CUP No. 3684 and PUP No. 916) / Final Environmental Impact Report

Dear Chair Tavaglione, Honorable Members of the Board of Supervisors, Ms. Harper-Ihem, Mr. Brady, Mr. Ross, Mr. Weiss:

On behalf of Citizens for Responsible Solar ("Citizens"), we hereby submit the attached comments of biologist Scott Cashen, M. S. regarding the Final Environmental Impact Report ("FEIR") for the Palo Verde Mesa Solar Project ("Project"). These comments supplement our FEIR comments of August 25, 2017 and August 28, 2017. Please place them in the record of proceedings for the Project.

Sincerely,

Christina M. Caro

CMC:acp

3447-019acp

Scott Cashen, M.S.—Independent Biological Resources Consultant

August 29, 2017

Ms. Christina Caro
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080

Subject: Comments on the Final Environmental Impact Report Prepared for the Palo Verde Mesa Solar Project

Dear Ms. Caro:

I submitted an extensive comment letter in response to the Draft Environmental Impact Report ("DEIR") prepared for the Palo Verde Mesa Solar Project ("Project") by Riverside County ("County"). That comment letter established my professional qualifications and described the actions I took to evaluate the DEIR and underlying analyses. The subsequent comments address the Final Environmental Impact Report ("FEIR") that has been prepared for the Project. I specifically address the Response to Comments ("RTC") section of the FEIR. The numbering associated with the comments below is consistent with the numbering used in the FEIR.

Given the number and magnitude of issues associated with the FEIR (and associated documents), and the extremely short duration of time between release of the FEIR and the Board of Supervisor's meeting for final approval of the Project, I retained the services of Dr. Shawn Smallwood to assist me with the preparation of comments. Dr. Smallwood has prepared a separate comment letter, which accompanies this letter. I have reviewed Dr. Smallwood's comment letter and concur with the findings therein.

Burrowing Owl Impacts Analysis (O3-2)

The FEIR states: "[b]ased on the CDFW guidance for implementation of a monitoring program, the Project would not have potentially significant impacts to the burrowing owl."[1] This conclusion is ridiculous. Surrounding occupied burrows with industrial development is a potentially significant impact. Passive relocation (eviction) of owls is a potentially significant impact. Installation of solar arrays, O&M buildings, fencing, and transmission lines that provide perch sites for predators is a potentially significant impact. Elimination of habitat in a region that supports a core population of burrowing owls is undoubtedly a significant impact. Indeed, the DEIR acknowledged there are many ways in which the Project could have significant impacts on burrowing owls and their habitat—even after implementation of the proposed BMPs.[2] Implementation of the monitoring program referenced in the County's response does not eliminate those potentially significant impacts because monitoring in itself does nothing to eliminate the factors causing the impact(s). For example, monitoring does not prevent predators from perching on Project structures, nor does it prevent risks associated with forcing owls to move into unfamiliar and perhaps less preferable habitats. Potentially significant impacts to

[1] FEIR, p. 2-185.
[2] DEIR, pp. 3.4-39 and -40.

3264 Hudson Avenue, Walnut Creek, CA 94597

burrowing owls (due to habitat loss, reduced reproductive rates, and potentially mortality) are inevitable regardless of the monitoring program.

Geographic Scope of Cumulative Impacts Analysis (O3-16, O3-88)

The DEIR failed to clearly define the geographic scope of the County's cumulative impacts analysis.[3] It also failed to justify eastern Riverside County as being the appropriate geographic scope for cumulative impacts analyses, as opposed to the entire ecoregion subarea (i.e., the Cadiz Valley and Chocolate Mountains ecoregion subarea).
As the FEIR acknowledges, CEQA Guidelines indicate the lead agency should define the geographic scope of the area affected by the cumulative effect and provide a reasonable explanation for the geographic limitation used.[4]

According to the FEIR: (a) the geographic context for the County's cumulative impacts analysis encompassed the home ranges of the species that would be impacted by the Project; and (b) the geographic scope is limited to that area where the Project could result in direct or indirect effects because, beyond that area, Project impacts could not combine with the incremental effects of other projects to cause or contribute to cumulative impacts.[5] Based on the comment above pertaining to home range, the County appears to believe the Project could only impact the local animals. This is false. If the County knows nothing of the population structure, it is not possible for the County to dismiss the potential for negative effects. For example, without knowing the population structure, the County has no knowledge of whether the Project would affect a small, isolated population segment; a movement corridor; or a metapopulation.

The County still has not provided a specific definition of the geographic scope that was applied to its analysis (nor data on the home ranges for most of the species that would be impacted by the Project). This precludes the ability to independently analyze the statements and conclusions provided in the DEIR and FEIR.

Characterization of Open Space (O3-43)

RTC O3-41 presents the County's argument that "the Project's incremental impact to wildlife habitat and vegetation communities would not be cumulatively considerable because, unlike most of the solar projects on the cumulative projects list, the project is not proposed Primarily on open space." This conclusion is clearly at odds with RTC O3-43, which acknowledges the entire Project site provides wildlife habitat (including habitat for wildlife movement), and that "a variety of special-status wildlife are present or could be present." Even if the term "open space" refers only to undisturbed native habitat (as the County claims), the extent of Project impacts to "open space" relative to other solar projects is irrelevant to whether or not the Project's incremental contribution to significant cumulative impacts is cumulatively considerable.

The County's argument appears to be based on the premise that the Project's impact on wildlife habitat is a "drop in a bucket" compared to other solar projects in the region. This approach has been rejected by the Courts, and fails to comply with CEQA's requirement that a project mitigate

[3] Comment O3-88.
[4] FEIR, RTC O3-16.
[5] FEIR, RTC O3-16.

impacts that are cumulatively considerable. The Project would impact approximately 3,400 acres of wildlife habitat, of which 776.3 acres are comprised of natural vegetation communities.[6] Elimination of this habitat would have a significant impact on wildlife, and it constitutes a significant contribution to cumulative impacts.

Indirect Cumulative Impacts (O3-44)

The County's response to Comment O3-44 misses the point, which is that the Project would contribute to significant indirect impacts to wildlife habitat by promoting fugitive dust, invasive weeds, benefits to predator populations, and numerous other impacts that are independent of the habitat types associated with the Project footprint. It is inevitable that the Project would have at least some contribution to these indirect impacts (no other solar project in the region has been able to completely eliminate these indirect impacts, despite BMPs and mitigation).[7] Whereas indirect impacts may appear insignificant when viewed in isolation, the cumulative effects are known to be significant.

Survey Data (O3-71 and O3-113)

RTC O3-71 states: "[t]he fact that other equally valid methods may be available to collect baseline data does not render the method selected in this case to be inadequate."[8] It also does not render the method used to be adequate (or even valid). It is well known that a general reconnaissance survey is only useful—for any study—to gain an initial understanding of the geography and vegetation of a project (study) area; it helps you decide what effort will be needed to implement an appropriate study. Additionally, while it is standard practice to gather and examine data previously collected in surrounding areas, those data only provide a general idea of what you might encounter at a specific project area and at the current time. Thus the Project proponents only took an initial step, and cannot substitute a general reconnaissance survey for a valid survey. The reason various agencies establish sampling protocols is to prevent the very minimal and insufficient 'sampling' undertaken by the Project proponents. Approval of any project based on the work conducted by the Project proponents will make a sham of the permitting process.

Instead of analyzing data collected from the Project site, the DEIR relies on survey data collected for other solar projects in the region. Use of data collected at other locations is not a reliable approach for assessing Project impacts or formulating effective mitigation. Moreover, the data presented in the DEIR are outdated and do not reflect the current composition, abundance, and distribution of plant and animal species at the Project site and in the surrounding region.[9] The FEIR argues: (a) the DEIR did not rely on survey data collected for other projects because the Applicant's biological resources consultant, Power Engineers Inc. ("Power"), conducted a reconnaissance survey to assess the potential for the Project site to support special-status species based on reported habitat preferences and past occurrences of species within the region; and (b)

[6] FEIR, p. 2-207.
[7] *For example, see* compliance monitoring reports for Blythe, Genesis, Abengoa, and Ivanpah solar projects.
[8] FEIR, RTC O3-95.
[9] Comment O3-71.

the data presented in the DEIR are legally sufficient because they were acquired within two years of the Notice of Preparation.[10] Evidence in the record contradicts both arguments.

First, evidence in the record supports the argument that the DEIR did indeed rely on survey data collected for other projects. According to the Applicant's Bird and Bat Conservation Strategy ("BBCS"):

> By reviewing vegetation, soils and surveys conducted by other projects in the area, biologists were able to determine where focused surveys were required and where recently acquired existing data may be able to be used for a species inventory instead... Once a complete list was developed of potential species that could occur within the Project area, POWER conducted a general reconnaissance survey... In addition, a 2013 burrowing owl protocol survey is being conducted by POWER biologists.[11]

Thus, the analysis and conclusions presented in the BBCS rely on survey data collected for other projects, and an incomplete burrowing owl survey. The BBCS is a key component of the DEIR's mitigation strategy, and the analysis therein is referenced extensively in the DEIR and FEIR.

Second, most of the survey data used for analysis in the DEIR (and BBCS) were acquired before issuance of the NOP. These include data regarding the presence of desert tortoise (2010),[12] golden eagle nest sites (2010 and 2011),[13] special-status plants (2011),[14] and burrowing owl (2011).[15] U.S. Fish and Wildlife Service ("USFWS") and California Department of Fish and Wildlife ("CDFW") survey protocols indicate those data are outdated and should not longer be considered valid, especially for impacts assessments and the formulation of mitigation.[16]

Mojave Fringe-toed Lizard Baseline (O3-73)

The DEIR failed to describe the distribution and status of Mojave fringe-toed lizard populations in the region. This precluded the public and decision makers from being able to evaluate the relative significance of Project impacts to the local and regional (i.e., Chuckwalla Valley) Mojave fringe-toed lizard populations. The FEIR fails to resolve this issue.

Mojave fringe-toed lizard populations are believed to be decreasing.[17] In addition, the Mojave fringe-toed lizards in the Project area are in the southeasternmost portion of the species' range.[18]

---

[10] RTC O3-71.
[11] BBCS, pp. 9 and 10.
[12] DEIR, p. 3.4-14.
[13] DEIR, p. 3.4-21.
[14] DEIR, p. 3.4-9.
[15] DEIR, p. 3.4-39.
[16] Pagel JE, DM Whittington, GT Allen. 2010 Feb. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service. 27 pp. *See also* California Department of Fish and Game. 2012 Mar 7. Staff Report on Burrowing Owl Mitigation. 34 pp. *See also* California Department of Fish and Game. 2009. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. 7 pp. *See also* U.S. Fish and Wildlife Service. 2010. Preparing for any action that may occur within the range of the Mojave desert tortoise (*Gopherus agassizii*): 2010 Field Season. Available at: <https://www.fws.gov/carlsbad/PalmSprings/DesertTortoise/DT%20Pre-project%20Survey%20Protocol_2010%20Field%20Season.pdf>.
[17] Cablk ME, JS Heaton. 2002 Nov. Mojave Fringe-Toed Lizard surveys at the Marine Corps Air Ground Combat Center at Twentynine Palms, California and nearby lands administered by the Bureau of Land Management.

Mojave fringe-toed lizards exhibit a metapopulation structure. As a result, the Project could cause a substantial reduction in the overall range of the species. The DEIR and FEIR failed to disclose any of this information, which precluded the public and decision makers from understanding the relative severity of Project impacts to the species.

Couch's Spadefoot Baseline (O3-24 and O3-74)

RTC O3-24 acknowledges the Project site contains potential habitat for the Couch's spadefoot (including temporarily ponded water, which may provide breeding habitat). The County further acknowledges that the Applicant did not conduct surveys to determine whether Couch's spadefoots occur at the site.

RTC O3-74 claims I did not provide evidence that the Couch's spadefoot toad can be found on the Project site, nor did I provide evidence that the DEIR lacks scientific evidence to support its findings. I provided evidence that: (a) the Project site lies within the geographic range of the Couch's spadefoot; (b) the Project site contains the habitat elements required by the Couch's spadefoot; and (c) the species has been detected at sites with conditions comparable to those at the Project site.[19]

The DEIR concluded that the Couch's spadefoot has a "low" potential for occurrence at the Project site, and thus, the County excluded this species from its impact analyses. As discussed in my previous comment letter, the DEIR's conclusion was not supported by scientific evidence. According to the criteria used in the DEIR, species with a "high" potential for occurrence are those species for which "suitable habitat was expected to be present, and species is known to occur within the vicinity."[20] RTC O3-24 acknowledges the Project site contains suitable habitat for the Couch's spadefoot (including temporarily ponded water, which may provide breeding habitat). In addition, the Couch's spadefoot is known to occur in the vicinity of the Project site.[21] Therefore, the DEIR's conclusion that the Couch's spadefoot has a "low" potential for occurrence at the Project site is not consistent with the criteria established in the DEIR, and it highlights the arbitrary nature of the conclusions presented in the DEIR.[22]

Even if one accepts the premise that the Couch's spadefoot has a "low" potential to occur at the Project site, the County had no basis for excluding the species from impact analyses (i.e., because "low potential" is not equivalent to "no potential"). Substantial evidence indicates the species could occur at the Project site, and that the Project could have significant impacts on the species.[23]

California: Marine Corps Air Ground Combat Center. Report M67399-00-C-0005. 115 p. *See also* Jennings MR, MP Hayes. 1994. Amphibian and reptile species of special concern in California. Rancho Cordova, CA: California Dept. of Fish and Game, Inland Fisheries Division, p. 94.

[18] *Ibid.*

[19] Comment O3-74.

[20] DEIR, Table 3.4-4, footnote 2.

[21] California Natural Diversity Database, Biogeograhic Data Branch, Department of Fish and Wildlife. 2014 Jul 1 (Version 5). *See also* California Energy Commission. 2010 June. Revised Staff Assessment for the Blythe Solar Power Project. p. C.2-32.

[22] *See also* comments from Dr. Shawn Smallwood in Comment Letter O4.

[23] California Energy Commission. 2010 June. Revised Staff Assessment for the Blythe Solar Power Project. pp. C.2-69 and -70.

The FEIR fails to incorporate mitigation for Project impacts to the Couch's spadefoot. Mitigation Measure BIO-1 is insufficient to prevent direct mortality to spadefoots because bi-weekly monitoring during daylight hours is incapable of detecting the species (which occurs primarily belowground and is nocturnal). In addition, the FEIR does not require the Applicant to avoid potential breeding sites, nor does it require the Applicant to provide compensation for impacts to Couch's spadefoot habitat (as was required for the adjacent Blythe Solar Power Project).[24] As a result, the Project would have a potentially significant, unmitigated impact on the Couch's spadefoot.

Golden Eagle Baseline (O3-75)

I commented that the DEIR relied on golden eagle nest surveys that were done for other projects five or more years ago (now six or more year ago). In addition to being outdated, those surveys were extremely limited, did not adhere to the USFWS survey protocol, and were deemed unsatisfactory by the USFWS. RTC O3-75 points to the field survey methods section of Power's Biological Survey Report ("BSR") in an attempt to support the County's claim that my comments were incorrect. However, as RTC O3-75 acknowledges, Power's efforts were limited to "a field survey *to assess the potential* to support special-status species based on the reported habitat preferences and past occurrences of species within the region."[25] Thus, the BSR clearly establishes that Power did not conduct point counts or any other focused surveys to collect data on golden eagle use of the Project site. It also clearly establishes that Power did not conduct focused surveys (e.g., helicopter surveys) to identify golden eagle nest sites within 10 miles of the Project site, per USFWS guidelines.[26]

Gila Woodpecker Baseline (O3-77)

RTC O3-77 states: "[g]iven the lack of detection and general lack of habitat, this species [Gila woodpecker] was not analyzed in the Draft EIR." The County's rationale is not justified. Power did not conduct any point-count surveys or make any other focused efforts to detect Gila woodpeckers at the Project site, even though it acknowledged habitat is present.[27] Consequently, the "lack of detection" does not justify the County's conclusion. Gila woodpeckers have been detected at the Blythe Solar Power Project ("BSPP"), which is located immediately adjacent to the Project site. Gila woodpeckers are associated with desert riparian and desert wash habitats, although they are also found in orchard-vineyard and urban habitats, particularly in shade trees and date palm groves.[28] The Project site contains 181.8 acres of Desert Dry Wash Woodland and 395.9 acres of orchard.[29] The County has no basis for characterizing this as a "general lack of habitat."

---

[24] California Energy Commission. 2013. Presiding Member's Proposed Decision. Mitigation Measure BIO-26.
[25] FEIR, RTC O3-75. [emphasis added].
[26] Pagel JE, DM Whittington, GT Allen. 2010 Feb. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service. 27 pp.
[27] BSR, Table 4.
[28] California Wildlife Habitat Relationships System. 2000. Gila Woodpecker Life History Account. California Department of Fish and Game. California Interagency Wildlife Task Group. CWHR version 8.1 personal computer program. Sacramento, CA.
[29] DEIR, Tables 3.4-1 and 3.4-2.

RTC O3-77 states that the identification of Gila woodpeckers closer to the Project site than previously known does not affect the adequacy of the analysis or the conclusion reached. This statement is illogical, because as RTC O3-77 acknowledges, this species was not analyzed in the DEIR.

RTC O3-77 goes on to argue that: "although Mr. Cashen's opinions about Gila woodpecker may differ from those of the biologists who prepared the Biological Survey Report for the Project, the biologists who prepared the Draft EIR (including the County of Riverside's biologists who reviewed and provided input on the Draft EIR), are well qualified experts and a disagreement among experts does not make an EIR inadequate (CEQA Guidelines Section 15151)." This is a spurious argument for two reasons. First, the majority of the information presented in my comments is comprised of facts. Thus, the only apparent difference of "opinion" is whether the County was justified in concluding the species has a low potential of occurring at the Project site. Second, it ignores the main issue, which is that the DEIR failed to analyze the species (a fact).

Gila Woodpecker Mitigation (O3-21)

The County claims mitigation measures BIO-1 (bi-weekly monitoring), BIO-7 (preconstruction surveys), and BIO-10 (preparation of a Biological Resources Mitigation Implementation and Monitoring Plan or "BRMIMP") would reduce any potential impacts to the Gila woodpecker to a less than significant level.[30] Very little Gila woodpecker habitat remains in California. As a result, any direct or indirect impacts to Gila woodpecker habitat are significant. BIO-1, BIO-7, and BIO-10 do nothing to mitigate the Project's direct and indirect impacts to Gila woodpecker habitat. As a result, the County has no basis for its claim that BIO-1, BIO-7, and BIO-10 would reduce any potential impacts to the Gila woodpecker to a less than significant level.

The Gila woodpecker is protected under the California Endangered Species Act ("CESA"). CESA requires full mitigation for impacts to listed species. This generally entails habitat compensation in conjunction with habitat enhancement measures that increase carrying capacity, survivorship, or reproductive success. The FEIR fails to incorporate habitat compensation and other measures needed to fully mitigate Project impacts to the Gila woodpecker. As a result, the mitigation proposed in the FEIR fails to satisfy the provisions of CESA.

Bats (O3-78)

The Applicant failed to identify all significant bat roosts within one mile of the Project's boundaries in accordance with the Northern and Eastern Colorado Desert Coordinated Management ("NECO") Plan.[31] The FEIR fails to resolve this issue, although it makes the unsubstantiated claim that: "*surveys were conducted* in accordance with NECO Plan requirements, contrary to the commenter's claims."[32] The database and literature searches referenced in the County's response do not constitute *surveys*. The BSR and BBCS clearly establish that Power did not conduct any focused surveys for bats. Indeed, according to the BBCS: "[b]ased on the results of the reconnaissance survey and lack of suitable habitat, no

[30] FEIR, p. 2-199.
[31] Comment O3-78.
[32] FEIR, Response to Comment O3-78. [emphasis added].

focused surveys [for bats] are recommended."[33] Even if one accepts the premise that the Project site lacks suitable roosting habitat for bats, it does not resolve the fact that Power did not identify all significant bat roosts within one mile of the Project's boundaries in accordance with the NECO Plan.

RTC O3-78 states the BBCS would minimize bat mortality during both construction and operation of the Project. This statement is incorrect. The BBCS fails to incorporate any conservation measures for bats. In addition, neither the BBCS nor the FEIR incorporates mitigation to avoid impacts to bat roosts during construction and operation of the Project. As explained in my previous comment letter, some of the habitats on and adjacent to the Project site provide suitable roosting habitat for bats.

The availability of suitable roost sites is the limiting factor for most bat populations.[34] Bats have low fecundity and are extremely sensitive to noise and other types of anthropogenic disturbance, especially during the reproductive season and during hibernation.[35] As a result, the loss of, or disturbance to, bat roosts is the primary reason for the decline of most bat species in the Western United States.[36] A single disturbance event can lead to roost abandonment, and if poorly timed, mortality of pups.[37]

RTC O3-78 indicates early coordination and pre-consultation with the USFWS, CDFW, BLM, and County was conducted for the Project. According to RTC O3-78:

> Given this coordination, both the County and BLM have been provided with enough information needed to evaluate impacts to bats. In addition, as conditions change on the site, the BBCS will be reviewed, modified, and updated as necessary and, thus, any bats encountered during construction will be properly dealt with according to the provisions set forth in this plan.

These statements are not supported by evidence. Neither the DEIR nor FEIR contained any analysis of Project impacts to bats. Furthermore, the BBCS fails to establish any provisions for bats encountered during construction.

Habitat loss, noise, vibration, and human activity associated with the Project would have potentially significant direct and indirect impacts on special-status bats.[38] In addition, the Project would contribute to significant cumulative impacts to bats. At a minimum, the Project site provides foraging habitat for special-status bat species.[39] California Energy Commission ("CEC") Staff concluded that the loss of foraging habitat at the BSPP, which is located immediately adjacent to the Project site, "would be a substantial contributor to the cumulative

---

[33] BBCS, p. 25.

[34] Western Bat Working Group. 2005 (Update). Species Accounts. Available at: <http://wbwg.org/western-bat-species/>.

[35] *Ibid. See also* Gruver J, D Keinath. 2006. Townsend's Big-eared Bats (*Corynorhinus townsendii)*: A technical conservation assessment. USDA Forest Service, Rocky Mountain Region, p. 4.

[36] *Ibid.*

[37] *Ibid.*

[38] *Ibid.*

[39] Table 3.4-4.

loss of habitat for the NECO planning area's biological resources, including habitat for these special-status bats."[40] That same conclusion should apply to the Project.

The bi-weekly monitoring (BIO-1) proposed in the FEIR would not mitigate the Project's potentially significant impacts on special-status bats. For most bat species, specialized techniques (e.g., acoustic monitors or thermal imaging cameras) are required to detect roost sites.[41] BIO-1 does not require those techniques, nor does it outline minimum standards for protecting bat roosts should the Lead Biologist incidentally detect them during the bi-weekly monitoring. Furthermore, the FEIR does not require any compensatory mitigation for Project impacts to special-status bat species habitat. As a result, the Project would have potentially significant, unmitigated impacts on special-status bats.

Connectivity (O3-79)

According to the DEIR:

> The California Desert Connectivity Project, sponsored by Science and Collaboration for Connected Wildlands, provides land management agencies with information on optimal areas to maintain or restore ecological connectivity within California deserts. The closest planned linkage to the Project area is one between the Palen McCoy and Little Pichaco Wilderness Areas (South Coast Wildlands ND) (POWER, 2012). This planned linkage would be located southwest of the Project area.[42]

I provided evidence that the information presented in the DEIR is incorrect. Specifically, I provided a map that shows the Project would partially block a linkage "where maintenance or restoration of ecological connectivity is essential for conserving the unique biological diversity of California's deserts."[43]

RTC O3-79 states: "given the map size it is unclear whether the Project site actually falls into this linkage." It further argues that if the Project site is within the linkage it overlaps "only a small portion" of the linkage and would not block connectivity essential for conserving the unique biological diversity of California's deserts. I believe the size of the map provided in my comment letter is sufficient to enable the County to see that the Project site falls within a portion of the linkage. However, my comment letter provided a web link to BIOS, which is the source of the map. BIOS is a system that enables the visualization of the spatial distribution of biological data generated by the CDFW and its Partner Organizations.[44] Therefore, if the County found the map to be too small, it could have accessed BIOS to adjust the map to a different scale. In addition, the County could have downloaded the GIS data from BIOS, such that it could use its own GIS to compare the linkage boundaries with the boundaries of the Project site. Because the DEIR did not include any GIS data, I was unable to generate a map that depicted the Project boundaries in relation to the linkage.

---

[40] California Energy Commission. 2010 June. Revised Staff Assessment for the Blythe Solar Power Project. p. C.2-74.

[41] *Ibid. See also* Comment O4-51.

[42] DEIR, p. 3.4-22.

[43] Comment O3-79.

[44] California Department of Fish and Wildlife. 2016-2017. About BIOS [web page]. Available at: <https://www.wildlife.ca.gov/Data/BIOS/About>.

The County's conclusion that the Project would not block connectivity appears to be based on the assumption that connectivity would be maintained because the Project would not block the entire linkage corridor. This is not necessarily a valid assumption. A particular species' use of a corridor is dependent on many factors. The first is the particular attributes of the corridor itself. Some species avoid habitat edges, and will only use corridors with a wide band of habitat unscathed by edge effects. Other features such as length, bottlenecks (i.e., narrowings), gaps, and the presence of predators or aggressive competitors contribute to a particular corridor's viability.[45] The County did not conduct an assessment of any of these features. Instead, it simply assumed space between the Project fence and the opposing edge of the linkage would provide a viable corridor for motile species. Research studies have that demonstrated *potential* mobility does not always translate into *realized* mobility.[46] For example, Diamond (1972, 1973) concluded that certain tropical forest birds were reluctant to even approach edges, much less fly across non-forest gaps. Diamond's study (and others that followed) demonstrated that just because an organism *can* move from one location to another, doesn't mean that it *will*. Consequently, use of particular species' *potential* mobility to support corridor use is inappropriate and does not enable the County to derive the conclusion that Project impacts to the linkage would be insignificant.

In summary, the County's response fails to resolve the issue I raised, which is that the DEIR provided false information. Linkage design includes consideration of width. The Project would reduce the width of an established linkage. The County failed to analyze how reducing the linkage width, and development of a solar energy facility immediately adjacent to the linkage, might affect various wildlife species.

Failure to Analyze All Species (O3-80)

The DEIR failed to provide any analysis of Project impacts to Couch's spadefoot, Nelson's bighorn sheep, and special-status bats.[47] RTC O3-80 claims these species were evaluated in the BSR and are discussed in Table 3.4-4 of the DEIR.

The BSR concluded the Couch's spadefoot and Nelson's bighorn sheep are absent from the Project area even though suitable habitat is present (i.e., ponded water for spadefoot and movement habitat for bighorn).[48] Thus, the BSR did not "evaluate" these two species beyond arbitrarily concluding they were absent from the Project area.

Table 3.4-4 of the DEIR does indeed provide a few sentences of discussion regarding Couch's spadefoot, Nelson's bighorn sheep, and special-status bats. The DEIR, however, failed to provide any analysis of Project impacts to these species. This includes analysis of the potential effects of the Project on bighorn sheep movement corridors. As a result, RTC O3-80 fails to resolve the issues I raised.

---

[45] Lidicker WZ Jr, WD Koenig. 1996. Responses of Terrestrial Vertebrates to Habitat Edges and Corridors. Pages 85-109 in DR McCullough, editor. Metapopulations and Wildlife Conservation. Island Press, Washington (DC).
[46] *See* studies cited in Lidicker WZ Jr, WD Koenig. 1996. Responses of Terrestrial Vertebrates to Habitat Edges and Corridors. Pages 85-109 in DR McCullough, editor. Metapopulations and Wildlife Conservation. Island Press, Washington (DC).
[47] Comment O3-80.
[48] BSR, Table 4.

Yellow-headed Blackbird

Power's burrowing owl survey report, which was only recently released (i.e., with the FEIR), identifies additional special-status species that occur at the Project site, but that were not disclosed or analyzed in the DEIR or FEIR. Specifically, the burrowing owl survey report indicates the yellow-headed blackbird was one of the "more frequently observed wildlife during surveys."[49] Indeed, Power observed yellow-headed blackbirds during the latter three of its four burrowing owl surveys.[50] The presence of these birds during the breeding season (i.e., between mid-April and late July) strongly suggests they were nesting nearby.[51] However, Power apparently made no attempt to locate the nest sites, or to determine whether the yellow-headed blackbirds were nesting on the Project site. Power's burrowing owl surveys were conducted in 2013. This provided the Project proponents and County with ample time to disclose the presence yellow-headed blackbirds at the Project site. Incredibly, neither the DEIR, FEIR, nor BSR provided any mention of the yellow-headed blackbirds at the Project site.

The yellow-headed blackbird is a California Species of Special Concern. Habitat loss is the main threat to this species.[52] Yellow-headed blackbirds are known to nest at ponds and drainage ditches, which are present in the Project area.[53] Nevertheless, I suspect the County will argue that the presence of yellow-headed blackbirds at the Project site does not affect the analysis provided in the DEIR because the DEIR concluded Project impacts to birds (in general) were potentially significant. This argument is not justified, because unlike the other bird species analyzed in the DEIR, the yellow-headed blackbird nests in colonies (sometimes consisting of hundreds of nests). As a result, the loss of a single nest colony can have very significant effects on the overall population (i.e., due to the loss of a "nursery site").

Impacts Conclusion

RTC O3-80 indicates that impacts to Couch's spadefoot, Nelson's bighorn sheep, and special-status bats would be less than significant. The County has no basis for this conclusion, because as the County has acknowledged, it did not analyze these species "given the low probability of occurrence." Low probability is not equivalent to zero probability. Because Power did not conduct surveys to determine whether any of these species occur on the Project site, the County must assume they are present, as it did for the desert tortoise.

RTC O3-80 points to Mitigation Measures BIO-1 (bi-weekly construction monitoring), BIO-7 (BBCS), and BIO-10 (preparation of a Biological Resources Mitigation Implementation and Monitoring Plan) in an attempt to justify the County's conclusion that Project impacts to these species would be less than significant. The three measures referenced in the County's response

[49] FEIR, Appendix C, p. 14.
[50] FEIR, Appendix B to Appendix C.
[51] *Ibid. See also* Shuford WD, T Gardali. Editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Western Field Ornithologists and California Department of Fish and Game.
[52] Shuford WD, T Gardali. Editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Western Field Ornithologists and California Department of Fish and Game.
[53] California Natural Diversity Database. 2017 Aug 2. RareFind 5. California Department of Fish and Wildlife. *See also* FEIR, Appendix C, p. 7.

would do very little to mitigate Project impacts. First, construction monitoring every two weeks (BIO-1) is insufficient to avoid "take" of special-status species that may occur on the Project site. Even if the biologist uses appropriate techniques to clear the entire Project site of special-status animals prior to construction, most animals exhibit an intrinsic homing response and would (or could) return to the Project site within a few hours or days (thus making them susceptible to being killed by construction activities while the biologist is away). Second, the BBCS (BIO-7) does not incorporate any measures (e.g., pre-construction surveys) to avoid direct impacts to bat roosts. Furthermore, it allows the Applicant to kill 1,350 bats per year without any compensation for the significant impacts that extreme level of mortality would have on bat populations. Third, the County cannot rely on a future plan (BIO-10) that would establish mitigation, monitoring, and compliance requirements as the basis for its conclusion that impacts would be mitigated to insignificant levels. CEQA specifically prohibits that type of deferred mitigation, especially if the lead agency has not established specific performance criteria for the mitigation. The FEIR fails to establish the requisite performance criteria.

Habitat loss, fragmentation, and degradation are the primary threats to Couch's spadefoot, Nelson's bighorn sheep, and special-status bats. The FEIR does not incorporate mitigation requiring habitat compensation for impacts to these species, nor does it provide evidence that Project impacts to habitat would be insignificant. As a result, the County's conclusion regarding the insignificance of Project impacts is not justified and Project impacts to Couch's spadefoot, Nelson's bighorn sheep, and special-status bats remain potentially significant.

Effects to Populations (O3-81)

The DEIR concluded the Project would not substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of an endangered, rare, or threatened species. However, the DEIR failed to provide any evidence or analysis to support these conclusions.[54] The FEIR fails to resolve this issue.

I and the other commenters have provided substantial evidence that the Project could in fact: (a) cause a wildlife population to drop below self-sustaining levels (e.g., golden eagle and burrowing owl), or (b) substantially reduce the number or restrict the range of a special-status species (e.g., Mojave fringe-toed lizard and Couch's spadefoot).

Golden Eagle Impact Analysis (O3-83)

I raised issues pertaining to the golden eagle impact and risk assessments provided in the DEIR and BBCS.[55] The FEIR fails to resolve those issues.

RTC O3-83 states:

> Although no nests have been identified in the Project area, the analysis assumes that a nest could be built between the time of the analysis and the initiation of construction activities that could [*sic*] and so required the implementation of Mitigation Measure BIO-7 to reduce potential impacts to less than significant levels by requiring pre-construction

[54] Comment O3-81.
[55] Comment O3-83.

> surveys prior to construction activities taking place during the bird breeding season to locate active nests and establish avoidance buffers to avoid and minimize potential impacts. Additional protective measures have been identified in the BBCS that would be implemented to reduce potential impacts to avian species during construction, operation, and maintenance of the gen-tie line and solar array facility.

These statements contradict evidence in the record. The DEIR and FEIR failed to analyze how the Project would affect golden eagles at the nest that the County assumed "could be built between the time of the analysis and the initiation of construction activities." Most notably, the County failed to disclose and analyze how the loss of foraging habitat at the Project site could affect the eagles that occupy that nest. As discussed in my previous comment letter, the loss, degradation, or fragmentation of golden eagle foraging habitat in proximity to a nest site can lead to "take" as defined under the federal Bald and Golden Eagle Protection Act.[56]

The pre-construction surveys proposed in BIO-7 are insufficient to avoid impacts to golden eagle nest sites. Specifically, BIO-7 does not require surveys that adhere to the golden eagle inventory and monitoring protocols established by the USFWS.[57] Adherence to those protocols is required to reliably detect golden eagle nest sites. In addition, BIO-7 only requires surveys within 1,200 feet of the construction zone. This is inconsistent with USFWS guidelines, which indicate "due diligence surveys" should be conducted within two miles of a construction activity to locate any potential nests.[58]

BIO-7 indicates a 1,200-foot buffer will be established around raptor nests. This is inconsistent with USFWS guidelines, which recommend a buffer size of one mile for construction activities near eagle nests (two miles for blasting or other loud, intermittent noises).[59] It also is inconsistent with the BBCS, which recommends a buffer of five miles around active golden eagle nest sites.[60] The DEIR and FEIR provide no evidence that a buffer distance that is 23% of the distance recommended by the USFWS, and 4.5% of the distance recommended in the BBCS, would be sufficient to avoid impacts to golden eagle nests.

RTC O3-83 suggests the BBCS contains additional protective measures to reduce potential impacts to golden eagles during construction, operation, and maintenance of the gen-tie line and solar array facility. Some of the measures listed in the BCCS conceivably would accomplish that objective. Ultimately, however, the BBCS allows the Project to kill eagles without any obligation to provide compensatory mitigation, and without any obligation to implement remedial actions to halt or minimize the take.[61]

Even if the Project kills only one eagle, the loss of that eagle would be a significant impact, especially when considering lost recruitment (i.e., the addition of new individuals to the population through reproduction). Monitoring data indicate golden eagle populations are

---

[56] Comment O3-75.
[57] Pagel JE, DM Whittington, GT Allen. 2010 Feb. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service. 27 pp.
[58] Email communication with H Beeler, Eagle Permit Coordinator, USFWS Pacific Southwest Region on 24 Jun 2015.
[59] *Ibid.*
[60] BBCS, p. 23.
[61] *See* Comment O3-118.

declining throughout the western United States.[62] The USFWS has determined that golden eagle populations might not be able to sustain any additional unmitigated mortality, and thus it has established a zero take threshold for the species.[63] This means that any new authorized take of golden eagles must be at least equally offset by compensatory mitigation (specific conservation actions to replace or offset project-induced losses). The FEIR fails to require the Applicant to provide any compensatory mitigation if the Project kills an eagle (which would be unauthorized without a Take Permit).

Desert Tortoise Impact Analysis (O3-84)

The FEIR fails to resolve the issues I raised regarding Project impacts to desert tortoise habitat.[64]

American Badger Impact Analysis (O3-85)

The FEIR fails to resolve the issues I raised regarding Project impacts to the American badger.[65]

RTC O3-85 states: "[t]hrough coordination with CDFW, mitigation would appropriately protect the American badger from habitat loss, fragmentation, and degradation." The County's response does not address the issue, which is that the mitigation proposed in the DEIR does not address all of the potentially significant impacts listed in the DEIR (including habitat loss, fragmentation, and degradation). Coordinating with CDFW does nothing to mitigate habitat loss, fragmentation, and degradation. Furthermore, the FEIR does not require the Applicant to coordinate with CDFW regarding impacts to badger habitat, nor does it require the Applicant to implement any mitigation recommended by the CDFW through coordination with that agency.[66]

Desert Kit Fox Impact Analysis (O3-86)

The FEIR fails to resolve the issues I raised regarding Project impacts to the desert kit fox.[67]

Impacts to Connectivity/Wildlife Corridors (O3-87)

RTC O3-87 claims: "[t]here are few existing barriers to wildlife movement within the Project area. Therefore, as determined by Impact BIO-4, implementation of the Project, including its fencing, would not substantially restrict wildlife movement." A major problem with this claim is the County's lumping of all animals into the generic category "wildlife." The scientific literature is clear that all movements must be considered on a species-specific basis. Furthermore, there is no basis for the claim that the Project "would not substantially" restrict movement. This issue is exacerbated by the County's failure to quantify what it considers a "substantial restriction."

---

[62] United States Fish and Wildlife Service. 2009. Final Environment Assessment – Proposal to Take Provided Under the Bald and Golden Eagle Protection Act. Prepared by the Branch of Policy, Permits and Regulations: Division of Migratory Bird Management.
[63] U.S. Fish and Wildlife Service. 2013 Apr. Eagle Conservation Plan Guidance: Module 1—Land-based Wind Energy, Version 2.
[64] *See* Comment O3-84.
[65] *See* Comment O3-85.
[66] DEIR, p. 3.4-41.
[67] *See* Comment O3-86.

RTC O3-87 indicates I appear to have a misunderstanding of the cumulative impacts map (i.e., Figure 3-1). It suggests: "[t]he scale of the figure (where 1 inch equals 10 miles) could be the culprit in this misunderstanding in that the fence lines of these several projects (with the exception of McCoy and the BSPP) are not in fact connected." According to the scale bar that accompanies the map provided in the DEIR, 1 inch equals 5 miles (not 10 miles as stated in the County's response). Nevertheless, the FEIR does not provide a revised map or any other information substantiating the County's claim that the boundaries depicted on the map are not accurate. I reviewed the maps provided in environmental documents for the BSPP; those maps suggest Figure 3-1 in the DEIR accurately depicts the boundary of the proposed Project with respect to the boundary of the BSPP.

Even if the various projects do not touch (as shown on the map), the gap is undoubtedly very narrow (probably a BLM road separating one project from the other). The scientific literature is clear that anytime animals are forced into a narrow area (i.e., "corridor") there is a substantial risk of increased mortality through predation. Predators learn where animals occur in abundance, hence any concentration will increase predation and potentially inhibit movements. At the Project site, small vertebrates will be exposed to the gauntlet of ravens perched on the Project fence, and to the coyotes that prowl the roads between facilities. Those that survive will be exposed to heightened mortality from vehicle traffic and the spraying of soil stabilizers.

Connectivity (O3-89)

The response to Comment O3-89 is irrational because it claims most of the Project site is not "open space." To imply that the Project does not involve open space is nonsense. Additionally, the County completely ignores the fact that the Project will, indeed, force animals to change movement patterns. The County first admits that there is an increasing impact on the environment, and hence animals, given the rapidly expanding energy development in the desert.[68] The County then circles back and claims that because the Project is not impacting "open space" to a substantial degree, movements of animals would not be harmed. Open space is irrelevant because, except for heavily developed locations (e.g., tracks of housing, large commercial developments), animals will attempt to move through the desert environment despite the potential negative consequences of increased predation and vehicle traffic. The County provides no data on species-specific movements to support its conclusions. It is nonsense to imply that the Project will not add to cumulative impacts, because any Project (of any type) that removes existing land area and compromises animal movements (as explained above), will add to the overall degradation of the desert.

CUMULATIVE IMPACTS

Avian (O3-92)

Comment O3-92 pertained to cumulative impacts to birds and the DEIR's failure to incorporate mitigation to offset the residual cumulative impacts identified in the DEIR. RTC O3-92 alleges I did not provide evidence to support the claim that "mitigation measures incorporated in the Draft EIR are limited to minimization measures that do not offset the residual cumulative impacts (e.g., habitat loss and degradation, displacement, collision mortality)." Under CEQA, the lead

[68] FEIR, p. 2-237.

agency is responsible for demonstrating that mitigation incorporated into the CEQA document would reduce potentially significant impacts to insignificant levels. The DEIR and FEIR fail in this regard.

RTC O3-92 identifies two BMPs that would enable the Applicant to avoid impacts to migratory birds *to some extent*. Therefore, by the County's own admission, those two BMPs are insufficient to offset the residual cumulative impacts identified in the DEIR. RTC O3-92 identifies only one other measure (i.e., BIO-7) that has been incorporated to mitigate cumulative impacts to birds. RTC O3-92 states:

> Implementation of Mitigation Measure BIO-7 would reduce the potential direct and indirect impacts to migratory birds during construction to less than significant levels by requiring pre-construction surveys prior to construction activities taking place during the bird breeding season to locate active nests and establish buffers to avoid and minimize potential impacts. In addition, the draft BBCS, which is discussed further in O3-78, would be finalized and implemented to protect migratory birds.

A pre-construction survey and nest buffer do nothing to offset habitat loss that will occur as soon as fledglings vacate their nests. Furthermore, the BBCS allows the Applicant to kill up to 1,800 native birds and 135 raptors annually without any remedial mitigation measures. This would undeniably contribute to significant cumulative impacts to bird populations.

The DEIR acknowledged the Project would result in the loss and degradation of avian habitat, and that it would contribute incrementally to cumulative avian impacts.[69] The FEIR fails to provide mitigation for these impacts. For example, it is undeniable that the Project would result in the net loss of over 3,000 acres of avian habitat, and that it would displace most of the birds that occupy that habitat (albeit after they are done nesting for the season). As a result, the administrative record is clear that the FEIR does not incorporate mitigation that offsets the Project's cumulatively considerable contribution to significant cumulative impacts.

Golden Eagle (O3-93)

Comment O3-93 discussed several issues pertaining to the County's conclusion that cumulative impacts to golden eagles would be less than significant. The FEIR fails to resolve the issues I raised.

RTC O3-93 states: "[t]he commenter does not provide any evidence that the mitigation measures and BMPs do not mitigate the Project's contribution to golden eagle habitat loss, degradation, and fragmentation, in particular to foraging." The County's response is pseudoscience because it is based on the "argument of ignorance."[70] RTC O3-93 acknowledges that the DEIR concluded that the availability of suitable foraging habitat on the Project site would be reduced or lost with implementation of the Project. The loss of golden eagle foraging habitat at the Project site constitutes a potentially significant impact. The FEIR does not require the Applicant to provide any compensation for that potentially significant impact.

---

[69] DEIR, pp. 3.4-52 and -53.

[70] *See* <https://en.wikipedia.org/wiki/Pseudoscience#Over-reliance_on_confirmation_rather_than_refutation> *and* <https://en.wikipedia.org/wiki/Argument_from_ignorance>.

RTC O3-93 further states: "Mitigation Measure BIO-7, which requires the BBCS, *would identify* additional protective measures to reduce potential impacts to avian species during construction, operation, and maintenance of the proposed Project."[71] The County does not have the basis for concluding that measures identified in the future would mitigate impacts to less than significant levels unless it: (a) identifies a suite of feasible mitigation measures that would, based on substantial evidence in the record, be adequate to reduce impacts to less than significant levels; (b) establishes specific performance criteria for the mitigation; and (c) explains why it was impractical for the County to identify the mitigation details in the EIR. The FEIR fails to satisfy these three requirements of CEQA.

RTC O3-93 states: "golden eagle use of the site would be expected to be rare and incidental." The County does not have the basis for this assumption because Power did not conduct the golden eagle nest and site utilization surveys prescribed by the USFWS.[72]
The USFWS has established the *minimum* inventory and monitoring efforts that "are essential components" to avoiding and minimizing disturbance and other kinds of take of golden eagles.[73] Power did not even make an attempt to satisfy those efforts.

According to RTC O3-93:

> The commenter states that cumulative analysis did not adhere to USFWS guidelines; however, the analysis presents information from the BBCS, which, as described in Response O4-98 and O4-99, was prepared in accordance with USFWS guidelines (USFWS Region 8 Interim Guidelines for the Development of a Project-specific Avian and Bat Protection Plan for Solar Energy Plants and Related Transmission Facilities).

There are two critical flaws with the County's response. First, the BBCS *was not* prepared in accordance with USFWS Region 8 Interim Guidelines for the Development of a Project-specific Avian and Bat Protection Plan for Solar Energy Plants and Related Transmission Facilities ("Interim Guidelines"). For example, the Interim Guidelines identify seven different types of surveys that should be conducted to inform development of the BBCS (formerly referred to as an Avian and Bat Protection Plan).[74] Power did not conduct any of those surveys.

Second, the Interim Guidelines do not establish the USFWS's guidelines for cumulative effects analysis for golden eagles. The Interim Guidelines state: "[t]he geographic area and time frame of the [cumulative impacts] analysis will depend upon the species affected."[75] For eagles, the USFWS states:

> To ensure that impacts are not concentrated in particular localities to the detriment of locally-important eagle populations, cumulative effects need to be considered at the population management level—*Service Regions* for Bald Eagles and *Bird Conservation*

---

[71] FEIR, RTC O3-93. [emphasis added].
[72] U.S. Fish and Wildlife Service. 2011 Jan. Draft Eagle Conservation Plan Guidance. Appendix C: Stage 2—Site-Specific Assessment Recommended Methods and Metrics. *See also* Pagel JE, DM Whittington, GT Allen. 2010 Feb. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service. 27 pp.
[73] Pagel JE, DM Whittington, GT Allen. 2010 Feb. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service. p. 2.
[74] U.S. Fish and Wildlife Service, Pacific Southwest Region. 2010. Region 8 Interim Guidelines for the Development of a Project-Specific Avian and Bat Protection Plan for Solar Energy Plants and Related Transmission Facilities. p. 3.
[75] *Ibid.*

> *Regions* for Golden Eagles—and, especially for project-specific analyses, at local area population levels (the population within the average natal dispersal distance [140 miles] of the nest or nests under consideration).[76]

The DEIR failed to consider cumulative effects at the "population management level" or at the "local are population level." Therefore, the County's cumulative impacts analysis failed to adhere to USFWS guidelines.

Remedial Actions

RTC O3-93 states:

> The commenter is incorrect that the Draft EIR fails to require remedial actions if an eagle is injured or killed by the Project's transmission lines, security fence, or other infrastructure. As described in Section 3.2.1, Collision, on page 20 of the BBCS, in the unlikely event that eagle fatalities are observed in the Project site, appropriate mitigation (as described in Section 6.2 regarding fatality thresholds and Section 6.3 regarding adaptive management) would be implemented and additional consultation with USFWS to determine the appropriate procedure would take place. Thus, remedial actions would occur with the implementation of Mitigation Measure BIO-7.

There are several flaws with the County's response. First, the BBCS presents uncertainty as to what remedial actions would occur if the Project kills an eagle, or if remedial actions would be implemented at all. According to the BBCS:

> If events are demonstrated to exceed any of the identified thresholds, and upon consultation with USFWS, adaptation *may be triggered.* Adaptation will include investigation, evaluation of the factors associated with the fatalities, exploration of engineering solutions, consideration of available avoidance and minimization measures, and *likely implementation* of one or more appropriate avoidance and minimization measure.[77]

Second, although the BBCS claims the Applicant would perform "appropriate mitigation," it fails to identify what that "appropriate mitigation" would be. Whereas "investigation, evaluation of the factors associated with the fatalities, exploration of engineering solutions, and consideration of available avoidance and minimization measures" are appropriate actions, those actions do not compensate for the taking of eagles. The USFWS has identified retrofitting of high-risk power poles as one way to compensate for the take of eagles.[78] The BBCS does not require the Applicant to retrofit power poles or implement any other compensatory mitigation if the Project kills eagles.

Third, Mitigation Measure BIO-7 requires the Applicant to prepare a BBCS. However, BIO-7 does not require the Applicant to implement remedial actions if the Project kills eagles. This issue is exacerbated because BIO-7 defers critical aspects of the BBCS (e.g., the conservation

---

[76] Pagel JE, DM Whittington, GT Allen. 2010 Feb. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Birds, United States Fish and Wildlife Service, p. 3. *See also* U.S. Fish and Wildlife Service, Division of Migratory Bird Management. 2009. Final Environmental Assessment, Proposal to Permit Take. Provided Under the Bald and Golden Eagle Protection Act. Washington: Dept. of Interior, p. 30.

[77] BBCS, p. 30.

[78] U.S. Fish and Wildlife Service. 2013. Eagle Conservation Plan Guidance: Module 1 – Land-based Wind Energy, Version 2. 103 pp.

measure the Applicant would implement, the process to monitor and mitigate bird and bat fatalities, and the adaptive management framework).

Due to the issues described above, the Project could have significant, unmitigated impacts on the golden eagle.

Mojave Fringe-toed Lizard (O3-94)

The County acknowledges the projects analyzed under the cumulative impacts scenario would have cumulative impacts on the MFTL. However, the County has concluded the Project's incremental contribution to this significant cumulative effect "would not be cumulatively considerable because it would not materially affect the scope, nature or extent of the cumulative impact." As a result, the County argues: "[a]s there would be no cumulatively considerable contribution, no mitigation is required."[79]

According to the DEIR: "[s]uitable Mojave fringe-toed lizard habitat is located throughout the gen-tie line corridor and potential habitat was detected on approximately three percent of the main Project area (creosote bush scrub habitat)."[80] This equates to approximately 812 acres of habitat that could be directly or indirectly impacted by the Project, exclusive of the potential habitat on the BLM parcels discussed in Comment A6-16 from the USFWS.[81]

The Project would have the same types of impacts as the other cumulative projects listed in the DEIR (many of which are other solar projects). As a result, the County has no basis for arguing the Project would not materially affect the *scope or nature* of the cumulative impact. Similarly, the County has no basis for arguing the Project would not materially affect the *extent* of the cumulative impact because impacts due to the Project would be comparable to, or exceed, those of other projects. For comparison, the BSPP, which has the same technology and infrastructure as the proposed Project, had direct impacts on 37 to 58 acres of MFTL habitat. After conducting quantitative analysis, the CEC Staff correctly concluded this *extent* of impacts "would contribute to cumulative impacts to this species within the NECO planning area."[82] Indeed, the extent of the Project's impacts are worse than many of the other projects identified in the DEIR because the Project could reduce the overall geographic range of the species (i.e., because it would impact the isolated population segment that occurs in the southeasternmost portion of the species' range).

Le Conte's Thrasher, Loggerhead Shrike, American Badger, Desert Kit Fox (O3-95)

RTC O3-95 acknowledges that Project impacts would contribute incrementally to significant impacts to the Le Conte's thrasher, loggerhead shrike, American badger, and desert kit fox. Nevertheless, the County concludes the Project would not materially affect the scope, nature, or extent of the cumulative impact to these species. According to the County's response, this

[79] FEIR, RTC O3-94.
[80] DEIR, p. 3.4-38.
[81] *See* DEIR, Tables 3.4-1 and 3.4-2.
[82] California Energy Commission. 2010 June. Revised Staff Assessment for the Blythe Solar Power Project. p. C.2-69. *See also* California Energy Commission. 2010 July. Supplemental Staff Assessment for the Blythe Solar Power Project.

conclusion is based on the expectation that mitigation measures would reduce the potential for direct impacts to individuals of these species to a level below significance, and that direct Project impacts to native habitat would be minimal relative to other cumulative projects. The County's rationale is nonsense. The other cumulative projects have implemented the same (or more rigorous) mitigation measures as those proposed for the Project (e.g., pre-construction surveys). Furthermore, the Project would have direct impacts on up to 776.3 acres of "native" habitat, and indirect impacts to many more acres of native habitat.[83] These impacts are substantial from a biological perspective and cannot be considered "minimal." The County's argument is based on the premise that the Project's impact on wildlife habitat is a "drop in a bucket" compared to other solar projects in the region. This approach has been rejected by the Courts, and fails to comply with CEQA's requirement that a project mitigate impacts that are cumulatively considerable.

According to CEQA Guidelines Section 15130:

> A project's contribution is less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact. The lead agency shall identify facts and analysis supporting its conclusion that the contribution will be rendered less than cumulatively considerable.

The FEIR does not require the Applicant to implement or fund its fair share of a mitigation measure to alleviate the cumulative impact to the Le Conte's thrasher, loggerhead shrike, American badger, desert kit fox, and other sensitive biological resources that would be significantly impacted by cumulative projects. In addition, the County fails to identify *facts* and *analysis* supporting its conclusion that the Project's contribution will be rendered less than cumulatively considerable. As a result, the County does not have the basis for its conclusion that the Project's contribution to cumulative impacts would not be cumulatively considerable.

Mitigation (O3-96)

Comment O3-96 pertained to the DEIR's failure to establish: (a) success standards for the proposed mitigation measures, (b) a definitive enforcement mechanism that ensures those standards are met; (c) the contingency or remedial action measures that will triggered if success standards are not achieved; (d) the measures that will be implemented to ensure the long-term protection and management of sensitive biological resources; and (e) the required monitoring program, including the monitoring techniques, effort, and frequency. RTC O3-96 claims this is an unsubstantiated opinion because I did not provide any specific examples.

The DEIR's failure to establish the variables listed above is a fact—not an opinion. Furthermore, I provided specific examples in my comments regarding the proposed burrowing owl mitigation.[84] The DEIR's failure to establish the variables listed above is so pervasive that I did not believe additional examples were needed. However, additional examples include, but are not limited to:

1. The DEIR fails to establish any success criteria for the Weed Management Plan. Success criteria applied to other projects include thresholds for the composition, abundance, and distribution of weeds within the area of potential effect. The DEIR fails to establish the minimum geographic scope of the Applicant's weed control efforts. The DEIR fails to

[83] FEIR, RTC O3-88.
[84] Comments O3-106 through 108.

establish a monitoring and reporting mechanism that assures the Applicant maintains its pledge to control weeds. The DEIR fails to establish remedial actions that will be required if the Applicant's weed control efforts do not achieve success criteria. The DEIR fails to establish how long the Applicant would be required to monitor, control, and submit reports on weeds in the Project area.

2. The DEIR fails to establish performance standards for burrowing owl use of artificial burrows and the compensation site. The DEIR fails to establish an enforcement mechanism that ensures performance standards are achieved (the Burrowing Owl Monitoring and Mitigation Plan only requires submittal of a monitoring memo to the maintenance contractor). The duration of the monitoring program is unclear: the FEIR suggests the Plan incorporates a three-year monitoring program; however, the Plan itself indicates only a two-year monitoring program.[85]

3. The specific mitigation required for Project impacts to the Mojave fringe-toed lizard ("MFTL") remains unclear. The FEIR indicates: "the Applicant shall provide compensatory mitigation at a 3:1 ratio, which *may include* compensation lands purchased in fee or in easement in whole or in part, for impacts to stabilized or partially stabilized desert dune habitat (i.e., dune, sand ramp, or fine-sandy wash habitat)...*If* compensation lands are acquired..."[86] However, the FEIR fails to establish how mitigation would be accomplished if the Applicant elects not to purchase compensation lands (in fee or in easement). This issue is exacerbated by the County's failure to establish the amount of desert dune habitat that would be impacted by the Project, and thus, the amount of compensatory mitigation that is being required. The FEIR fails to establish any performance standards for the compensatory mitigation, including occupancy of the mitigation site by MFTL. The FEIR fails to establish remedial actions that would be required if the mitigation site does not achieve performance standards. The FEIR fails to require a monitoring and reporting program for the proposed mitigation.

4. The FEIR fails to establish any performance standards for the Trash Abatement Plan. The FEIR fails to establish remedial actions that would be required if the Trash Abatement Plan does not achieve performance standards.[87] Although this may appear trivial, compliance with trash regulations has been an ongoing problem at numerous solar facility sites throughout the desert.[88]

5. The FEIR fails to establish any performance standards for cleanup and restoration of the site after decommissioning. The FEIR fails to establish an enforcement mechanism that ensures the Project operator achieves minimum standards for cleanup and restoration of the site after decommissioning.[89]

6. The FEIR fails to establish performance standards for perch deterrents, nest deterrents, and flight diverters along the gen-tie line. The FEIR fails to require replacement of these devices (or other remedial actions) if they fall off or break.[90] The FEIR fails to

[85] FEIR, p. 3-7. *See also* Burrowing Owl Monitoring and Mitigation Plan, p. 13.
[86] FEIR, p. 3-9. [emphasis added].
[87] DEIR, p. 2-38.
[88] *For example, see* Monthly Compliance Reports prepared for the Abengoa Mojave Solar Project. Available at: <http://www.energy.ca.gov/sitingcases/abengoa/compliance/submittals>.
[89] DEIR, p. 2-38.
[90] *See* Dwyer JF, KW Doloughan. 2014. Testing systems of avian perch deterrents on electric power distribution poles in sage-brush habitat. Human-Wildlife Interactions 8(1):39-55.

incorporate a monitoring and reporting program that ensures perch deterrents, nest deterrents, and flight diverters effectively mitigate Project impacts to less than significant levels.

Flight Diverters (O3-97)

The County has acknowledged that the Project's gen-tie line poses a potentially significant collision and electrocution hazard to birds.[91] I commented that the DEIR failed to provide evidence that the installation of flight diverters on the gen-tie line would reduce impacts on birds to a less than significant level.[92]

RTC O3-97 fails to resolve the issues I raised. It first points to the BBCS as "evidence" that the County is not relying on flight diverters (i.e., BMP-12) to support its conclusion that impacts to birds would be less than significant. However, nothing in the BBCS ensures Project impacts to birds due to the gen-tie line would be less than significant. Indeed, the BBCS acknowledges Power did not even collect the data needed to formulate a prediction on the number of birds that might be killed by the gen-tie line.[93] Thus, the BBCS does not support the County's conclusion.

The County's response to the issues I raised in Comment O3-97 is then limited to the following statements:

> The commenter is correct that bird flight diverters do not prevent birds from colliding with transmission and shield wire lines; however, they do significantly reduce avian mortality impacts. With the implementation of the BMPs noted and based on the professional expertise of the biologists who drafted the EIR, the analysis and conclusions in the Draft EIR are supported by substantial evidence.

As described below, there are several flaws with these statements.

First, the statement that flight diverters significantly reduce avian mortalities could be misinterpreted because the term "significant" has a different meaning in statistics than it does in CEQA documents. Just because statistical hypothesis testing has shown flight diverters significantly reduce avian mortalities does not mean impacts would be less than significant under CEQA. As discussed in my previous comment letter, flight diverters have been shown to cause a *small* (but statistically significant) decrease in the number of casualties. Thus, flight diverters significantly reduce avian mortalities in the statistical sense, but the total number of avian mortalities at lines with flight diverters may still be significant under CEQA.[94]

Second, the County's response only references the BMP pertaining to flight diverters (i.e., BMP-12). None of the other BMPs would have any effect on the collision and electrocution hazard to birds. Therefore it is misleading for the County to suggest the Applicant would implement multiple BMPs to address the collision and electrocution hazard.

---

[91] FEIR, RTC Comment O3-97.
[92] Comment O3-97.
[93] BBCS, p. 18.
[94] Barrientos R, C Ponce, C Palacin, CA Martin, B Martin, JC Alonso. 2012. Wire Marking Results in a Small but Significant Reduction in Avian Mortality at Power Lines: A BACI Designed Study. PLoS ONE 7(3):e32569.. *See also* Savereno AJ, LA Savereno, R Boettcher, SM Haig. 1996. Avian Behavior and Mortality at Power Lines in Coastal South Carolina. Wildlife Society Bulletin 24(4):636-648.

Third, the County has not established the professional expertise of the biologists who drafted the EIR. Therefore, the opinion of those biologists does not constitute substantial evidence.

In summary, the "substantial evidence" that the County claims to have provided is limited to: (a) the opinion of biologists with unknown expertise, and (b) flight diverters, which based on scientific studies, do not ensure insignificant levels of avian mortality.

Perch Deterrents (O3-98)

I commented that the DEIR lacks substantial evidence supporting its findings that perch deterrents would reduce predation on the Mojave fringe-toed lizard and desert tortoise to a less than significant level. The County's response states:

> A qualified biologist would be on site during all construction and would be responsible for overseeing compliance with desert tortoise protective measures and for coordination the FCR [Field Contact Representative]. This would include locating ravens in the Project area and detecting any increases in raven activity. The coordination between the qualified biologist, FCR, and USFWS ensure raven activity is monitored and reported to USFWS, as necessary. Thus, there would be measures in addition to BMP-12 that would help reduce predation pressures on special-status species.

These claims are not supported by evidence. The FEIR does not require a biologist to be on site during *all* construction; it only requires bi-weekly monitoring (i.e., twice a month) during ground disturbing construction activities.[95] The FEIR does not require the biologist to monitor raven activity at the site, nor does it require any monitoring (e.g., of raven activity) after construction activities terminate. Furthermore, the FEIR fails to establish how the biologist would be able to use incidental observations made during bi-weekly monitoring to "detect any increases in raven activity." Due to inherent temporal and spatial variability in biological systems, systematic monitoring or sampling would be required to provide reliable inferences on any increases in raven activity. The FEIR does not require the biologist to submit reports on raven activity to the USFWS. Coordination, monitoring, and reporting do not resolve increases in raven activity that could occur due to the Project. The FEIR fails to establish remedial actions that would be required if the biologist detects an increase in raven activity.

The DEIR indicates: "Gen-tie line support structures and other facility structures shall be designed in compliance with current standards and practices to discourage their use by raptors for perching or nesting (e.g., by use of anti-perching devices). This design would also reduce the potential for increased predation of special-status species, such as the desert tortoise."[96] I commented that the DEIR provided no evidence that "current standards and practices" reduce predation pressures on desert tortoise and other special-status species. In addition, I cited scientific literature that provides evidence that the County does not have the basis to conclude perch deterrents would reduce predation on the Mojave fringe-toed lizard and desert tortoise to a less than significant level.[97] The County's response was that:

> Given that these sources were prepared 7 to 10 years ago, "current standards and

[95] DEIR, p. 3.4-57.
[96] DEIR, pp. 3.4-31 and -32.
[97] Comment O3-98.

practices" could have advanced since the time these studies were prepared. Thus, the commenter provides no evidence that the BMPs and mitigation measures proposed by the Draft EIR would not deter raven and raptor perching or reduce predation impacts on special-status species to a less-than-significant level. Substantial evidence supports the Draft EIR's analysis and conclusions regarding predation impacts to special-status species.

The County's assertion that claims that have not been proven false must therefore be true is a classic example of pseudoscience.[98] Moreover, I did indeed provide scientific evidence (in the form of several scientific publications) demonstrating the BMPs and mitigation measures proposed in the DEIR would not deter raven and raptor perching or reduce predation impacts on special-status species to a less-than-significant level.

The County's response argues current standards and practices *could have advanced* over the past 7 to 10 years. However, the County provided no evidence that standards and practices have indeed advanced over the 7 to 10 years, nor did it provide any evidence that any advances have significantly improved the efficacy of perch deterrents. This issue is confounded by the County's failure to identify the specific perch deterrent product(s) that would be installed on the gen-tie lines, and the County's failure to require the Applicant to install a modern product (which the County's response suggests might be more effective than the products analyzed in the 2007 and 2010 studies I cited).

The County dismisses the scientific studies cited in my comment letter because the studies were published 7 to 10 years ago (i.e., in 2007 and 2010). However, the County failed to cite any more recent studies that refute the information provided in the 2007 and 2010 studies. Nevertheless, I conducted an additional search of the scientific literature to determine whether there are more recent publications. I found one: Dwyer and Doloughan (2014). The results of Dwyer and Doloughan's (2014) study are not only consistent with the studies cited in my previous comment letter, but they also raise new issues that were not analyzed in the DEIR or FEIR. Specifically,

1. Dwyer and Doloughan cited a study (i.e., Slater and Smith 2010) that reported a problem with perch deterrents falling off, which subsequently resulted in birds perching on the structures.[99] The FEIR fails to require long-term monitoring of perch deterrents installed on the gen-tie lines and replacement of any deterrents that fall off or break.
2. Dwyer and Doloughan reported: "[p]erch deterrents are likely to be least effective for the smallest species, such as corvids [crows and ravens] and American kestrels. It seems that no deterrent strategy is likely to substantially influence perching by the species because they readily perch on wires. In these species, and for potential avian predators of grouse in general, the best deterrent will be to eliminate perches completely by removing discussed overhead power lines wherever possible."[100] The County has acknowledged that the Project would provide new, elevated perching sites (including the structures, the gen-tie lines, perimeter fencing, and support structures) for ravens, and that ravens increase predation pressure on Mojave fringe-toed lizards, desert tortoises, and burrowing

[98] *See* <https://en.wikipedia.org/wiki/Pseudoscience#Over-reliance_on_confirmation_rather_than_refutation>.
[99] *See* Dwyer JF, KW Doloughan. 2014. Testing systems of avian perch deterrents on electric power distribution poles in sage-brush habitat. Human-Wildlife Interactions 8(1):39-55.
[100] *Ibid*, p. 52.

owls.[101] Because perch deterrents are ineffective for ravens, BMP-12 (perch deterrents) would not reduce predation pressure on these special-status species to less-than-significant levels.

3. Dwyer and Doloughan provided evidence that birds sometimes struggle to balance on perch deterrents. This resulted in movements (e.g., broad wing-flaps) that would likely have led to electrocution if energized wires were present.[102] The authors noted: "electrocution risks for raptors may be exacerbated if all possible perch locations on a pole are fitted with perch deterrents."[103] As a result, they concluded: "[i]f all horizontal surfaces of energized poles should be outfitted with equipment to deter perching, then all energized equipment on the pole, including the center phase and any pole-mounted equipment, also must be thoroughly insulated or isolated to prevent avian electrocutions."[104] The FEIR fails to disclose and analyze the heightened electrocution risk associated with perch deterrents. In addition, the FEIR fails to require all energized equipment to be thoroughly insulated or isolated to prevent avian electrocutions.
4. Dwyer and Doloughan cited sources supporting the inference that electrocution causes population level effects even in carefully managed species, that it may cause disruptive effects to social ecology, and that it can be particularly problematic to very large species such as the golden eagle.[105]

BIO-1: Bi-weekly Construction Monitoring (O3-99)

I commented that bi-weekly monitoring (BIO-1) is insufficient to avoid and minimize potentially significant impacts to sensitive species during construction and decommissioning of the Project.[106] RTC O3-99 correctly notes that I did not provide substantial evidence to support this claim. I did not provide substantial evidence because it should be obvious that there is great potential for wildlife mortality to occur during unsupervised grading and other construction activities involving ground disturbance. Indeed, monitoring reports reveal that mortality is an inevitable consequence of industrial-scale solar energy development even when full-time biological monitors are present.[107] Nevertheless, full-time construction monitoring by biologists helps reduce wildlife mortality and inadvertent destruction of sensitive resources.

Many species (including desert tortoise and desert kit fox) have strong homing instincts that cause them to return to the construction area after they are moved from a site.[108] Indeed, the homing instinct of desert kit foxes is so strong that biologists have observed them climbing over

[101] DEIR, pp. 3.4-37, -39, -40 and -43.
[102] *Ibid*, pp. 49 and 50.
[103] *Ibid*, p. 53.
[104] *Ibid.*
[105] *Ibid.*
[106] Comment O3-99.
[107] *See* Monthly Compliance Reports prepared for the Abengoa Mojave Solar Project. Available at: <http://www.energy.ca.gov/sitingcases/abengoa/compliance/submittals>.
[108] Germano JM, PJ Bishop. 2008. Suitability of amphibians and reptiles for translocation. Conservation Biology 23(1):7-15. *See also* Brand LA, ML Fransworth, J Meyers, BG Dickson, C Grouios, AF Scheib, RD Scherer. 2016. Mitigation-driven translocation effects on temperature, condition, growth, and mortality of Mojave desert tortoise (*Gopherus agassizii*) in the face of solar energy development. Biological Conservation 200:104-11.

(or digging under) exclusion fences in an attempt to return to their burrows.[109] Therefore, even if the biologist uses appropriate techniques to clear the entire Project site of special-status animals prior to construction, some of those animals inevitably would return to the Project site within a few hours or days (depending on the species and how far they are moved).[110] Those animals would then be susceptible to being killed by construction activities during each 14-day stretch that the biologist is away from the site.

BIO-3: American Badger (O3-100)

The DEIR and BSR provide inconsistent information on the extent of suitable habitat for badgers within the Project area.[111] As a result, it is unclear which portions of the Project area would be subject to the pre-construction badger surveys required in Mitigation Measure BIO-3.[112] The FEIR fails to resolve this issue.

RTC O3-100 acknowledges badgers could move onto the Project site (through immigration or homing instinct) during the 30 days between the pre-construction clearance survey and the initiation of construction activities. However, it subsequently concludes the bi-weekly monitoring prescribed in Mitigation Measure BIO-1 would be sufficient to minimize potentially significant impacts to badgers. This conclusion contradicts common sense. As discussed above, bi-weekly monitoring makes animals susceptible to being killed by construction activities during each 14-day stretch that the biologist is away from the site.

BIO-4: Desert Kit Fox (O3-101)

RTC O3-101 is nearly identical to RTC-100. Consequently, it suffers the same flaws as those discussed above for American badger.

Compensatory Mitigation (O3-102)

According to the County, the Applicant would provide habitat-based mitigation or "other appropriate mitigation" to mitigate impacts to special-status species.[113] However, the County failed to identify what that "other appropriate mitigation" might be. This precludes the ability to validate the County's conclusion that "other," non-habitat-based options would effectively mitigate impacts to less-than-significant levels. The County's failure to commit to specific mitigation—or at least to identify the menu of feasible options that would mitigate the impacts—results in uncertain mitigation measures and violates the provisions of CEQA.

---

[109] *See* Monthly Compliance Reports prepared for the Abengoa Mojave Solar Project. Available at: <http://www.energy.ca.gov/sitingcases/abengoa/compliance/submittals>.

[110] Hinderle D, RL Lewison, AD Walde, D Deutschman, WI Boarman. 2015. The effects of homing and movement behaviors on translocation: Desert tortoises in the western Mojave Desert. Journal of Wildlife Management 79:137–147.

[111] DEIR, Table 3.4-4 and BSR, p. 40.

[112] Comment O3-100.

[113] Comment O3-102 and RTC O3-102.

RTC O3-102 states:

> The proposed compensation lands in question are specifically intended for burrowing owl. Mitigation Measure BIO-6 requires that the mitigation lands be approved by CDFW and the County prior to ground disturbance to ensure the suitability of the compensation lands.

The County's response confirms the compensation lands may not have any value to the other special-status species that would be (or could be) significantly impacted by the Project. As a result, I maintain my original comment, which was that the County's conclusion is not supported by substantial evidence.

The County's response suggests that approval of the mitigation lands by the CDFW and the County after the CEQA process terminates would "ensure the suitability of the compensation lands." The County cannot rely on the future analysis of another agency to conclude the mitigation lands would mitigate impacts to burrowing owl habitat to less than significant levels unless it: (a) explains why it was not practical to define the mitigation in the EIR, *and* (b) the lead agency establishes performance criteria for the mitigation.[114] The EIR fails to establish performance criteria for the mitigation lands. Furthermore, the 146 acres of mitigation lands proposed in the EIR are *the exact same lands* that were incorporated as mitigation for the Blythe Mesa Solar Project (which was approved by the County in May 2015). Thus, it was practical for the County and Applicant to determine CDFW's approval of the proposed mitigation lands because they have had over two years to do so.

Desert Tortoise Habitat Compensation (O3-103)

RTC O3-103 claims the portion of the Project subject to the NECO Plan (gen-tie corridor) is not required to provide compensatory mitigation per NECO Plan guidelines. In an attempt to substantiate that claim, RTC O3-103 points to a memo issued by the USFWS for the Blythe Mesa Solar Project ("BMSP") in 2012. The memo concluded the gen-tie line for the BMSP was "not likely to incidentally take or otherwise adversely affect desert tortoise."

There are two problems with the County's rationale. First, the memo says nothing about the Applicant's obligations under the NECO Plan, nor was it required to. As the implementing agency, the BLM holds the responsibility for ensuring any permittee complies with the terms and conditions of the NECO Plan. This includes the Plan's approved mitigation measures. Approved mitigation for impacts to desert tortoise habitat includes: "[a] mitigation fee based on the amount of acreage disturbed *shall be required* of proponents of new development."[115]

Second, the County's rationale ignores Comment A6-13 from the USFWS. That comment casts doubt on the validity of the County's use of the memo as evidence. Indeed, it specifically states that the BLM and USFWS are reassessing potential impacts of the BMSP's gen-tie and the need to initiate formal section 7 consultation for that project.

---

[114] Alling CE. 2011. Deferring Mitigation Measure Details: What Is and Is Not Allowed by CEQA? Available at: <http://ascentenvironmental.com/files/5513/7228/7439/Deferring_Mitigation_Measure_Details_-_What_is_and_is_not_Allowed_By_CEQA.pdf>. (Retrieved 2017 Feb 23).

[115] U.S. Bureau of Land Management. 2002. Northern and Eastern Colorado Desert Coordinated Management Plan and Final Environmental Impact Statement, Appendix D: Desert Tortoise Mitigation Measures. p. D-2. [emphasis added].

Raven Management (O3-104)

RTC O3-104 argues:

> A stand-alone Raven Monitoring, Management, and Control Plan and per acre fees are not required to ensure less than significant impacts because the measures included in the Draft EIR sufficiently address predator subsidies to reduce potential raven activity within desert tortoise habitat.

The only conceivable measure the FEIR incorporates to address ravens is the installation of perch deterrents, which have been shown to be relatively ineffective for corvids (ravens and crows).[116] However, even if one accepts the County's unsubstantiated claim that the measures included in the DEIR sufficiently address ravens, the Desert Managers Group has concluded additional mitigation is required because it is not possible to completely exclude ravens from using project infrastructure (i.e., solar structures, transmission lines and towers, buildings, fences, etc.) as nesting, perching, and roosting substrates. The USFWS, BLM, National Park Service, Department of Defense, and Department of Agriculture formulated that conclusion after extensive analysis, including preparation of an Environmental Assessment ("EA").[117] RTC O3-104 fails to provide any evidence that refutes the analysis performed by those agencies. As a result, the FEIR fails to resolve the issues I raised in Comment O3-104.

Burrowing Owl Habitat Compensation (O3-106)

The DEIR concluded that potential direct and indirect impacts to burrowing owls and their habitat would remain potentially significant prior to the implementation of Mitigation Measure BIO-6.[118] The cornerstone of BIO-6 is the Applicant's pledge to dedicate 146 acres of *existing compensation lands* to the County, an entity acceptable to the County, or the CDFW.[119] As RTC O3-106 acknowledges, the 146-acre parcel of land proposed as mitigation for Project impacts to burrowing owls and their habitat is the same 146-acre parcel that was incorporated as mitigation for impacts to burrowing owls from the Blythe Mesa Solar Project ("BMSP"). The BLM and County approved that project in 2015. The FEIR provides no evidence that the 146-acre parcel that was established as mitigation for the BMSP provides habitat above and beyond what was required to mitigate the impacts of that project on burrowing owls. Thus, the County has no basis for concluding the 146-acre parcel would also mitigate the proposed Project's impacts on burrowing owls.

The proposed Project and the BMSP would collectively eliminate over 5,000 acres of burrowing owl habitat.[120] In exchange, they would provide 146 acres of compensation habitat. This would

---

[116] Dwyer JF, KW Doloughan. 2014. Testing systems of avian perch deterrents on electric power distribution poles in sage-brush habitat. Human-Wildlife Interactions 8(1):39-55.

[117] Desert Managers Group. 2010 Nov. Renewable Energy Development in the California Desert: Common Raven Predation on the Desert Tortoise, November 2010 Summary. 8 pp.

[118] DEIR, p. 3.4-40.

[119] FEIR, p. 3-7.

[120] The Burrowing Owl Monitoring and Mitigation Plan for the BMSP concluded that project would directly impact approximately 1,970 acres of suitable burrowing owl nesting and foraging habitat. However, it excluded alfalfa fields, which it acknowledged: "provide suitable forage areas for burrowing owls." The Burrowing Owl Monitoring and Mitigation Plan for the PVMSP failed to quantify impacts to burrowing owl habitat. However, if orchards are