State of California
Department of Fish and Game

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Memorandum

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From: Jeffrey R. Single, Ph.D., Regional Manager
Department of Fish and Game – Central Region

Subject: Review of Beacon Solar Energy Project (08-AFC-2) Preliminary Staff Assessment (PSA)

The Department of Fish and Game (Department) has reviewed the PSA for the proposed 250-megawatt Beacon Solar Energy Project. The 2,012-acre Project site is located in eastern Kern County, approximately 4 miles northwest of California City's northern boundary. Project implementation would result in construction of approximately 1,266 acres of parabolic trough collectors which would concentrate solar energy and through a series of actions convert this into electricity. The parabolic trough collectors would surround a centrally located power block facility which would house the majority of the electrical generation equipment and related systems, with the exception of the solar field. There would also be construction of a land farm for remediation of contaminated soils, an administration building and warehouse, and site access and maintenance roads. The majority of the 2,012-acre Project site is barren or sparsely vegetated due to past agricultural practices, but there are approximately 430 acres of degraded desert habitat on-site. Approximately 8,150 feet of Pine Tree wash, which traverses the center of the site, would be rerouted to the perimeter of the southern and eastern boundaries of the site. The Project proposes to use "wet cooling" which would consume 1,600 acre feet of potable water per year supplied from on-site ground water wells and would require, according to the California Energy Commission's (CEC) analysis in the PSA, 40 to 61 acres of evaporation ponds. Project construction would take 26 months and approximately 5,200,000 cubic yards of soil would need to be moved. The Project would also require installation of a 17.6 mile off-site natural gas pipeline to serve the auxiliary boilers, and connection to the Los Angeles Department of Water and Power's Barren Ridge Switching Station by a 2.3 to 3.5 mile long (depending on route selected) off-site transmission line, which would traverse intact desert habitat.

We appreciate the extensive coordination that has occurred between CEC staff and the Department on this Project. Because of this close coordination, most of our input and concerns have already been addressed and captured in the PSA, and we only have limited comments, which follow.

Wet Cooling and Evaporation Ponds
The Project description initially provided by the applicant included three 8.3-acre evaporation ponds, for a total of 25 acres of evaporation ponds. However, some preliminary calculations that reevaluated evaporation rates and the amount of blowdown water produced during Project

operation indicated that the size of the evaporation ponds as initially proposed were too small and that they would need to be at least 40 acres in size, and potentially as large as 61 acres, depending on Project alternative.

Biological Resources page 4.2-2 states that the applicant has addressed biological concerns related to evaporation ponds with Project design features. A minimum water depth of 2 feet and a side slope of 3:1 will help discourage, but not prevent, use by shorebirds; shorebirds have been routinely observed using the edges and feeding in similarly designed evaporation ponds in the southern San Joaquin Valley. The PSA also correctly acknowledges that such design features do not preclude waterfowl from landing directly on the open water. Hazing methods such as use of air cannons appear to be most useful for dabbling ducks, but less effective on shorebirds; shorebirds are known to become accustomed to such hazing techniques. Further, given the larger evaporation ponds necessary for the Project, it is unclear that the water levels and side slopes can be as easily maintained in the configuration (side slope and water depth) initially proposed. Given these considerations, as well as the fact that the larger evaporation ponds have yet to be designed, we do not agree that these concerns have been adequately addressed at this time, and we concur with the PSA that these issues are unresolved. As a result, it is uncertain at this time whether or not the Project could comply with Laws, Ordinances, Regulations, and Standards (LORS) specifically related to the Federal Migratory Bird Treaty Act (MBTA) and Fish and Game Code Sections 3503 and 3513.

In addition, Proposed Condition of Certification BIO-14 (BIO-14) requires that an Evaporation Pond Design, Monitoring, and Management Plan (Plan) be developed, and that a final version of the Plan, which has been reviewed by the Compliance Project Manager (CPM) in consultation with the United States Fish and Wildlife Service, the Regional Water Quality Control Board (RWQCB), and the Department be provided at least 60 days prior to the start of any ground-related disturbance. We are concerned that this Plan, which has yet to be fully assembled in draft form, and components of which were not reviewed in the context of the larger, yet to be fully designed evaporation ponds, is described as the mechanism by which potential evaporation pond related impacts to migratory birds will be mitigated to less than significant levels. We cannot concur at this time that this yet to be developed Plan would result in impacts being mitigated to less than significant levels. In addition, this measure seems to defer development of specific avoidance, minimization, and mitigation measures to a later date and potentially post-CEC Project approval. In the event that a "wet cooling" alternative continues to be pursued by the applicant, we recommend that the Plan be a requirement of the Final Staff Assessment rather than a pre-ground-disturbing requirement so that potential Project-related impacts to biological resources can be fully disclosed and analyzed in the context of the Plan, as opposed to developing a Plan post-impact analysis with goals that may not actually be attainable. The Department was initially comfortable with the approach proposed in BIO-14, since remedial actions such as pond netting, in the event of salt toxicosis or Selenium (Se) exposure to birds that resulted in acute or chronic effects, would be feasible. However, it is not clear that such "full avoidance" remedies are feasible with the size of evaporation ponds that now appear to be necessary for the Project. As a result, the potential Project-related impacts to resident and migratory birds could be much greater than initially anticipated.

The Soil and Water Resources section of the PSA discusses the option of using lower quality water, such as brackish water near Koehn Lake, as opposed to potable water, and states that there is no compelling evidence that using this water would be environmentally undesirable. However, if this lower quality water is used in a wet cooling scenario where evaporation ponds are necessary, because of higher salinity, and/or higher levels of or different trace elements of concern (Se), potential impacts to migratory birds posed by evaporation ponds could be more significant than those considered in the PSA, depending on how the water is treated prior to use and disposal into the evaporation ponds. However, if lower quality water is used in a dry cooling or "zero liquid discharge" scenario where evaporation ponds will not be necessary, or if the water is treated such that constituents of concern are removed prior to discharge into the evaporation ponds, we encourage the use of lower quality water.

We continue to advocate that the dry cooling alternative be pursued so that the need for evaporation ponds and all of the potentially significant impacts associated with evaporation ponds would be eliminated.

Cultural Resource Investigation
Because of the cultural resources identified within the Project site, there will likely be subsequent, potentially extensive, ground-disturbing activities conducted to recover and characterize some of these resources prior to Project construction and operation. The Department is unclear as to whether or not these ground-disturbing activities would occur pre- or post-CEC Project approval. If some or all of these ground-disturbing activities could occur prior to final CEC Project approval, then avoidance measures for potential impacts to State-listed species and other biological resources would need to be developed and followed; "take" coverage under the California Endangered Species Act is not be conferred until final CEC Project approval. In either case, the overall Project avoidance and minimization measures that were developed for biological resources should be applied to ground-disturbing activities necessary for cultural resource investigation and characterization. Department staff is willing to assist CEC staff in developing some additional avoidance and minimization measures so that the cultural resources can be properly addressed while minimizing impacts to biological resources.

Project Description
It is unclear if the pending modified design of the rerouted wash and the expanded size and pending modified design of the evaporation ponds would result in changes within and adjacent to the Project site footprint such that impacts could be different or more significant than those already considered. We may have additional comments once the full Project description has been developed.

Miscellaneous Comment
The PSA defines the life of the Project as both 40 and 30 years, depending on the PSA section.

Thank you for the opportunity to comment on the PSA. If you have any questions regarding these comments, please contact Julie Vance, Senior Environmental Scientist, at 1234 East Shaw Avenue, Fresno, California 93710 or at 559 243-4014, extension 222.