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July 31, 2013

Christine Stora
Compliance Project Manager
Siting, Transmission and Environmental Protection Division
California Energy Commission
1516 Ninth Street, MS-2000
Sacramento, CA 95814-5512

Subject: **PALEN SOLAR HOLDINGS, LLC'S RESPONSE TO CEC STAFF DATA REQUEST SET 4 (73-89)**
PALEN SOLAR ELECTRIC GENERATING SYSTEM
DOCKET NO. (09-AFC-7C)

Dear Ms. Stora,

On behalf of Palen Solar Holdings, LLC, enclosed for filing with the California Energy Commission is the electronic version of **PALEN SOLAR HOLDINGS, LLC'S RESPONSE TO CEC STAFF DATA REQUEST SET 4 (73-89)**, for the Palen Solar Electric Generating System (09-AFC-7C).

Sincerely,

Scott A. Galati
Counsel to Palen Solar Holdings, LLC

RESPONSE TO CEC STAFF DATA REQUEST SET 4 (73-89)

In support of the

PETITION TO AMEND

for the

PALEN SOLAR ELECTRIC GENERATING SYSTEM

(09-AFC-7C)

Submitted to the:

California Energy Commission

Submitted by:

PALEN SOLAR HOLDINGS, LLC

Prepared by:

centerline

JULY 2013

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ATTACHMENTS

INTRODUCTION

Attached are Palen Solar Holdings, LLC's (PSH) responses to California Energy Commission (CEC) Staff Data Request Set No. 4 (73-89) for the Palen Solar Electric Generating System (PSEGS or Modified Project) Petition for Amendment (09-AFC-7C). Staff issued Data Request Set No. 4 (73-89) to PSH on July 10, 2013.

The Data Responses are grouped by individual discipline or topic area. Within each discipline area, the responses are presented in the same order as Staff presented them and are keyed to the Data Request numbers (73-89). Additional tables, figures, or documents submitted in response to a data request (e.g., supporting data, stand-alone documents such as plans, folding graphics, etc.) are found at the end of a discipline-specific section and are not sequentially page-numbered consistently with the remainder of the document, although they may have their own internal page numbering system.

For context, the text of the Background and Data Request precede each Data Response.

BIOLOGICAL RESOURCES (73-75)

BACKGROUND: AVIAN MITIGATION

In the Preliminary Staff Assessment (PSA)(CEC 2013), staff has presented Condition of Certification BIO-16a, Avian Enhancement and Conservation Plan. This is adapted, in part, from the project owner's Condition of Certification BIO-B (b)(Palen 2013a). This condition would require the project owner to annually fund conservation activities to benefit avian (as well as bat and insect) species potentially adversely impacted by collisions with project features, and would also mitigate for death or injury of wildlife from exposure to concentrated solar flux over the heliostat fields. This would be accomplished through funding an interest-bearing account. At the project's conclusion, the remaining balance would be returned to the project owner.

Staff has conferred with Renewable Energy Action Team (REAT) agencies' biologists to determine where conservation opportunities may exist, and have presented a preliminary shortlist of six entities typically performing habitat restoration and enhancement and other actions considered beneficial to species potentially impacted by the proposed project. These six opportunities are:

1. *California Wildlife Conservation Board: funding toward the Riparian Habitat Conservation Program;*
2. *U. S. Bureau of Land Management: funding toward implementation of strategic plan goals within migratory bird conservation Emphasis Area: 3: Habitat Management Maintenance, Enhancement, and Restoration;*
3. *California Migratory Bird Conservation Partnership;*
4. *U.S. Fish and Wildlife Service Joint Venture;*
5. *Ash Meadows National Wildlife Refuge: funding in support of Habitat Management Goal 2: funding for one Integrated Pest Management Coordinator/Botanist, biological technician, or part-time GIS specialist; and*
6. *Neotropical Migratory Bird Conservation Act. The projected annual annuity of $50,000 in funds could facilitate a grant of $200,000. In accordance with this act, for every federal dollar spent, three non-federal dollars are required in matching contributions.*

The project owner also identified the Migratory Bird Conservation Fund, under the control of the Migratory Bird Conservation Commission, as a likely funding recipient (Palen 2013a). Staff plans to discuss this mitigation approach with the project owner and public at forthcoming workshops; however, in the interests of further refining and

determining the specific approach, and presenting specifics for evaluation pursuant to the California Environmental Quality Act, staff requests the following:

Data Request 73. Please provide staff with a draft avian enhancement and conservation plan, based on the mitigation options presented in the PSA section, titled "Impacts to Flighted Species", and condition BIO-16a #2. Consult with at least one of the aforementioned six entities to determine which effort(s) to fund, and provide a draft avian enhancement and conservation plan. This draft plan should describe which entity the project owner has chosen to fund, and a list of preliminary list of conservation actions anticipated to occur during the first 5 years of project operation (commercial operation). The avian habitat enhancement and conservation actions should be clearly designed to benefit the species likely to occur at the site, including migrants that may utilize the site on a brief, seasonal basis; and the draft plan must clearly articulate how the mitigation would benefit species (birds and bats) likely to occur at the site. Please consider the uniquely high value of riparian habitat to all species—habitat improvement efforts in riparian habitat would be likely to be considered valuable to both rare migrants as well as year-round residents.

Data Response 73. **<u>BIO-16a Plan</u>**

At the Preliminary Staff Assessment (PSA) Workshop held on July 25, 2013 Staff and PSH agreed that it would best serve the avian species if the REAT agencies formed a committee to select and direct the funds to the avian programs. Therefore, Staff explained that it did not require the **BIO-16a** Plan requested in this Data Request.

Data Request 74. Please also provide contact information for a representative from the project owner's chosen funding recipient. Staff anticipates Palen Solar would have until start of commercial operations to either finalize the plan, or provide a concrete framework for how to choose a funding recipient for the remainder of the project's lifespan, based on results of operational monitoring.

Data Response 74. **<u>BIO-16a Plan Contact Information</u>**

Please see Data Response 73 above.

BACKGROUND: SPECIAL STATUS PLANT IMPACTS

As part of Responses to CEC Information Requests for Reconfigured Alternatives 2 and 3 (TN 58106) for the approved Palen Solar Power Project (PSPP), staff was provided with occurrence details for special status plant species documented within the PSPP

project disturbance area and buffer area. Please refer to Table 3 of the Palen Solar Power Project Biological Resources Data Package Addendum (TN 58106). In order to determine how impacts to special-status plants would be different for the Palen Solar Electric Generating System (PSEGS), staff requires the revised occurrence details for the PSEGS project footprint and buffer area (1 mile around project site and 1,000 feet along linear features) for all special status plant species detected to date. For ribbed cryptantha, it is not clear to staff how impacts would be different for the PSEGS. Impacts on ribbed cryptantha for the PSPP were estimated in terms of area (acres based on subsampling data from within the ribbed cryptantha population (calculated density of 2.2 plants per square meter, or 8,903 plants per acre).

Data Request 75. Please provide staff with occurrence details for all special status plant species documented for the proposed modified PSEGS project disturbance area and buffer area. This include providing detailed calculations of all special status plant species observations detected in 2009-2010 and 2013, including but not limited to Harwood's milkvetch (*Astragalus insularis var. harwoodii*), Harwood's woollystar (*Eriastrum harwoodii*), ribbed cryptantha (*Cryptantha costata*), California ditaxis (*Ditaxis californica*), California barrel cactus (*Ferocactus cylindraceus*), cottontop cactus (*Echinocactus polycephalus*), hedgehog cactus (*Echinocereus engelmannii*), that occur within the revised PSEGS project disturbance area and buffer area. Please provide impacts to ribbed cryptantha expressed in terms of estimated area (acres). Please provide maps and the electronic files (raw GIS data and metadata) for all special status plants mapped and include the boundary of the buffer area. All GIS data should include the scientific name for each species mapped.

Data Response 75. **<u>Special Status Plant Mapping</u>**

Please see Attachments DR 75-1, DR 75-2, and DR 75-3. The sources of the data are:

- AECOM. 2009. Palen Solar Power Project Botanical Survey Report. Riverside County, California. Submitted to Solar Millennium, LLC, Berkeley, CA and Chevron Energy Solutions, San Francisco, CA. 32 pp plus attachments.
- AECOM. 2009. Rare plant observations 2009. Spreadsheet. Provided by A. Crisp, CEC,
- AECOM. 2010. Special-status plant observations 2009-2010. Spreadsheet . Provided by A. Crisp, CEC, 25 July 2010.
- AECOM. 2010. Palen Solar Power Project (PSPP). Supplementary Information: Reconfigured Alternative 2 and Reconfigured Alternative 3.

Submitted to the California Energy Commission, Sacramento, CA. Docket No. TN 57442 07-02-10. 104 pp.

- Karl, A. 2013. Palen Solar Electric Generating System Supplemental Spring 2013 Biological Surveys. Prepared for Palen Solar Holdings, LLC, Oakland, CA. 114 pp.
- Palen Solar 1, LLC. 2010. Palen Solar Power Project Application for Certification. Responses to CEC Information Requests Reconfigured Alternatives 2 and 3 Biological Resources. Submitted to the California Energy Commission, Sacramento, CA. Docket No. TN 58106 08-18-10. 63 pp.

PALEONTOLOGICAL RESOURCES (76-77)

BACKGROUND

Paleontological resources have been documented within Pleistocene age sediments in the site vicinity. Similar sediments underlie the project site at an undetermined but potentially shallow depth. Existing studies indicate the sediments beneath the solar field are likely to contain Pleistocene age vertebrate fossils. As stated by the Society of Vertebrate Paleontology, "vertebrate fossils are significant nonrenewable paleontological resources that are afforded protection by federal, state and local environmental laws and guidelines".

Construction of the Approved Project was to be completed with extensive site grading and substantial excavations. It was noted in the Final Decision that soils classified as having a high sensitivity of containing significant fossils would be monitored and any fossils encountered would be collected and curated. This collection and curation of discovered fossils would further contribute to the scientific understanding of the paleo environment of the area.

The Final Decision of the Approved Project provided mitigation measures related to the discovery of fossils during traditional construction excavations, and acknowledged the loss of fossils in areas where drilled shaft foundations were proposed. This loss due to drilled shaft foundations was considered acceptable because it was thought the excavations and extensive site grading originally proposed would discover an abundance of paleontological resources that would otherwise not be discovered, and the overall number of drilled shaft foundations was relatively small compared to the area proposed for excavation. That logic does not apply to the currently proposed project.

The Modified Project proposes to vibro-insert approximately one hundred seventy thousand heliostat pedestals to support the mirrors with negligible opportunities to observe, identify, recover or collect encountered fossils beneath the extensive solar field. Based on the information staff currently has, the project would create an immitigable significant impact. Staff requests project owner provide further information to determine the extent of paleontological resources at the site.

Data Request 76. Please provide any additional information supplemental to the original AFC and the December 2012 Petition to Amend pertaining to the characterization of the paleontological resources, such as published reports and studies documenting the likelihood of existence, type and significance of the paleontological resources.

Data Response 76. **Paleontological Characterization**

PSH does not agree with the impact assumptions outlined in Staff's Background to this set of data requests. However, PSH has provided additional information relating to the potential fossil sensitivity of the site. Please see Attachment DR 76-1.

Data Request 77. Please provide a plan that would adequately characterize the paleontological resources beneath the site. A draft plan should be made available for staff's review prior to completion of the FSA. The final plan would have to be submitted to the Compliance Project Manager for review and approval at least 30 days prior to initiating any fieldwork. The characterization should be planned and conducted under the direction of a qualified paleontologist who is familiar with the site region and in accordance with the BLM's Potential Fossil Yield Classification (PFYC) system. At a minimum, the plan shall include the following:

a. A description of the methodology used to determine the statistically significant number of excavations (both normal construction and test excavations) required to adequately characterize the sites subsurface within the area where heliostat pylons are proposed.
b. The proposed depth of excavation.
c. A map that shows the locations of the proposed excavations. In order to minimize site disturbance and potentially expedite site construction, staff requests that applicant incorporate the locations of excavations required for site improvements (Utility poles, trenches, various foundation elements), and incorporate those locations into the site delineation plan
d. The methodology proposed to excavate.
e. The methodology proposed to log the excavations.
f. The methodology proposed to collect fossil specimens.
g. The methodology proposed to identify fossil specimens.
h. The methodology proposed to curate fossil specimens.
i. The methodology proposed to age date the fossil bearing stratigraphic units.
j. The methodology proposed to identify fossil specimens.
k. The methodology proposed to identify the elevation of the top of the excavation.
l. The methodology proposed to plot the locations of the excavations on a site map.
m. The methodology proposed to determine the density of fossils throughout the paleontological resource.
n. The methodology proposed to determine the sensitivity of the macrovertebrate fossils discovered.

o. The methodology proposed to determine the sensitivity of the microvertebrate fossils discovered.
p. The contents of a report capable of presenting the interpretation of the collected information that also provides conclusions and recommendations that will reduce the potential significant impacts to paleontological resources caused by heliostat pylon installation.

Data Response 77. <u>Paleontological Monitoring and Documentation</u>

As stated in Data Response 76, PSH does not agree with the assumptions made by Staff in its Background to this set of Data Requests and further does not believe that *less* disturbance by the vibration of pylons into place results in significant impacts. However, in order to address Staff's concerns, PSH proposes to modify the existing suite of Conditions of Certification to include paleontological monitoring of geotechnical borings that will be performed within the solar fields as part of the final geotechnical engineering report and final design. The data collected from that effort will be sufficient to provide the documentation Staff desires. Therefore PSH proposes to modify Condition of Certification **PALEO-5** as follows:

PAL-5 The project owner shall ensure that the PRS and PRM(s) monitor consistent with the PRMMP all construction-related grading, excavation, trenching, and augering in areas where potential fossil- bearing materials have been identified, both at the site and along any constructed linear facilities associated with the project. In the event that the PRS determines full-time monitoring is not necessary in locations that were identified as potentially fossil bearing in the PRMMP, the project owner shall notify and seek the concurrence of the CPM.

<u>In addition to the monitoring activities above, the PRS shall monitor, consistent with the PRMMP, at least twenty (20) of the borings performed as part of the final geotechnical evaluation of the subsurface properties within the solar fields.</u>

PUBLIC HEALTH (78-81)

BACKGROUND: HEALTH RISKS FROM MIRROR WASHING MACHINES, VEHICLE SYSTEMS OF MIRROR WASHING EQUIPMENT AND SITE SUPPORT VEHICLES

In applicant's health risk assessment (HRA) for facility operations, a total of 18 emitting units were modeled by the applicant for facility operations, including 2 auxiliary boilers, 2 night preservation boilers, 8 wet surface air condensers (WSAC) units, 3 emergency electric generator systems and 3 emergency fire pump systems. However, emissions of diesel particulate matter (DPM) from mirror washing activities and onsite operations support vehicles were not included in HRA, and these sources are listed with zero risk.

Data Request 78. *Please revise HRA for facility operations by including DPM from mobile sources (i.e. vehicle systems of mirror washing equipment and site support vehicles).*

Data Response 78. **HRA**

The revised HRA provided to the CEC on July 18, 2013 incorporates the DPM emissions from the mirror washing and onsite activities.

Data Request 79. *Please verify that the water source of WSAC for the currently-proposed project is the same groundwater. If not, please describe the new source of water and how and when it was tested for TACs.*

Data Response 79. **Water Quality Confirmation**

Based on data supplied by BrightSource Energy, the water quality results used in the HRA for the WSACs is different from that supplied in the 2009 AFC documentation. The water analysis supplied for the amended project shows only two (2) potential air toxics, i.e., copper and beryllium.

Data Request 80. *If groundwater is the same water source for WSAC as the approved project, please provide groundwater concentrations and emission rates for metals and other chemicals present in groundwater from the WSAC and conduct a revised health risk assessment including all metals and other chemicals detected in the groundwater samples.*

Data Response 80. **Water Quality for HRA**

See response to Data Request 79.

Data Request 81. *Please verify that Chloroform is not included in the HRA and provide the reason.*

Data Response 81. **No Chloroform**

Based on the available data, chloroform is not expected to be present in the WSAC circulation water due to the following: (1) chloroform is not present in the proposed water treatment chemicals, and (2) chloroform is not present in the current water analysis as supplied by the Applicant.

SOCIOECONOMIC RESOURCES (82-83)

BACKGROUND: Construction Workforce

Appendix 2-C *in the December 2012 Petition to Amend identifies the number of construction workers needed for the project.* ***Appendix 2-C*** *subheading* ***"non-craft workers"*** *identifies subcontractors, owners & others (non-manual), startup labor (non-manual), compliance support, transmission line, gas line, linear compliance support workers; the subheading* ***"off-site linear"*** *identifies transmission line, gas line, and compliance support workers.*

Staff would like to know whether workers identified in the subheadings listed above correspond to occupational classifications from Employment Development Department (EDD) employment projections so staff can determine whether there is sufficient labor supply within the Riverside/San Bernardino/Ontario metropolitan statistical area (MSA) to meet the project's construction labor needs.

Data Request 82. Please provide a list of **non-craft** and **off-site linear** construction workers needed for the PSEGS that is consistent with the U.S. Bureau of Labor Statistics Standard Occupational Classification (SOC) system that the Employment Development Department (EDD) uses in their employment projections by MSA, similar to what was provided in **Appendix 2-C** under subheading **Project Site Construction Craft Day Shift.**

Data Response 82. **Construction Worker Revised Table**

Please see Attachment DR 82-1.

BACKGROUND: Operations Workforce

The December 2012 Petition to Amend identifies the number of operations workforce that would be employed on the PSEGS, but no list of the types of workers was provided.

Staff would like to know the types of occupations needed for the project's operations workforce to correspond to occupational classifications from EDD employment projections so staff can determine whether there is sufficient labor supply within the Riverside/San Bernardino/Ontario MSA to meet the project's operational labor needs.

Data Request 83. Please provide a list of the types of occupations needed for the project's operational workforce that is consistent with the U.S. Bureau of Labor Statistics Standard Occupational Classification (SOC) system that the Employment Development Department uses in their employment projections by MSA, similar to what was provided for the construction

workforce in Appendix 2-C under subheading Project Site Construction Craft Day Shift**.**

Data Response 83. **Operational Workforce Table**

Please see Attachment DR 83-1.

WORKER SAFETY (84-89)

BACKGROUND

Recent incidences at a solar tower power plant in California have raised concerns about operating procedures within the tower, worker conditions, and emergency response to incidences in the solar power tower. Staff needs further information and clarification regarding how the project owner proposes to operate the two proposed Palen Solar Electric Generating System (PSEGS) towers in order to properly assess worker safety and fire protection at the proposed Modified Project.

Data Request 84. Please describe the means of access to the top of the inside of the tower by workers during construction and operations. Provide either design drawings or a schematic drawing of the inside of the tower that shows the elevator and/or stairs or ladder.

Data Response 84. **Tower Access**

A rack-and-pinion industrial-type elevator will be provided inside the concrete tower to access the Solar Receiver Steam Generator (SRSG) and intermediate tower levels from grade. A staircase will also run from ground level to the SRSG, fire-rated per applicable codes. The elevator pier will penetrate a reserved space in the SRSG structure, and include egress stops at working levels in the tower and SRSG. Grated platforms will be incorporated in the pipe pier as required to allow safe and convenient access to erect, operate, and maintain pipe hangers, cable tray, mechanical and electrical equipment and process instrumentation, over the life of the project. Neither detailed nor schematic drawings of the structures have been developed at this time. The final layout and design will meet all applicable LORS and be subject to review by the CBO.

Data Request 85. Please provide the following information about the tower elevators:

a) capacity in number of people and pounds
b) type of elevator (cage, enclosed, man-lift, etc.)
c) the dimensions of the elevator cage or enclosed structure
d) primary and secondary (emergency) power supply
e) emergency elevator recall system (manual on-site activation, remote from the control room, wired or wireless)

Data Response 85a. **Elevator Capacity**

The permanent elevator will be designed for a minimum of 3000 lbs (about 12 persons) capacity. After detailed work planning and analyzing manpower deployment requirements, the contractor may choose to erect additional, similar temporary elevator capacity to access work areas efficiently during construction operations.

Data Response 85b. **Type of Elevator**

The Elevator will be a cage type.

Data Response 85c. **Elevator Dimensions**

The nominal dimensions of the elevator will be 5 feet by 9 feet by 7 feet.

Data Response 85d. **Elevator Primary and Secondary Power Supply**

The elevators will be connected to both grid power and to the plant essential services bus bar, powered by an emergency backup diesel generator. The elevators will also have centrifugal braking in the drive unit upon power failure.

Data Response 85e. **Emergency Elevator Recall System**

The recall system will comply with ASME A.17.1 Part 4.1. Systems and procedures will be matched over time with: 1) Temporary construction and start-up staffing and operations; 2) Permanent operations manning of control stations and standby plans; 3) Emergency response plans agreed with authorities having jurisdiction.

Data Request 86. Describe fire detection and suppression systems (fixed and portable) within the tower and in the room at the top of tower behind the boiler.

Data Response 86. **Tower Fire Detection and Suppression Systems**

A fire detection system will be designed and erected per code in the Electrical Equipment Module (electrical room), which will also be equipped with a dry powder extinguisher. Detection system alarms will be generated to plant operation systems and personnel, and addressees as agreed with the Fire Marshal. A water-based fire suppression system is not needed as there are no especially flammable materials or unusual potential ignition sources in the tower and SRSG.

Data Request 87. Provide a diagram that describes and shows the room at the top of the tower, the boilers, and the materials that would be used to insulate the room at the top of the tower from solar flux.

Data Response 87. **Detail of Top of Tower and Boilers**

Detailed drawings of the room at the top of the boiler have not yet been developed. The final layout and design will meet all applicable LORS and be subject to review by the

CBO. The electrical equipment module is located inside the tower concrete shell, with a minimum concrete wall thickness of two feet, shielding it from solar flux. There are additional ceramic fiber board protection panels installed outside the concrete to protect the top thirty feet of the tower structure from flux spillage.

Data Request 88. Please state your intent to station workers in the room at the top of the tower during periods when the tower will be exposed to solar flux, the tasks they will perform, the equipment that will be present, and the expected durations and frequency of this need to have workers at the top of a tower.

Data Response 88. **Workers in Tower**

No workers will be stationed at the top of the tower during routine operation. However, the area may be accessed on occasion for maintenance (typically electrical or instrumentation work or checks, and occasionally circulation pump maintenance), as it is sheltered from solar flux as outlined above.

Data Request 89. Please provide a specific Emergency Response Plan that includes a fire suppression plan to respond to emergencies in the tower. Include the type of Personal Protective equipment (PPE) that would be available and required for workers both in a tower and those responding to an emergency in a tower to use in the event of a fire or smoke incidence.

Data Response 89. **Emergency Response Plan**

A detailed emergency response plan can only be created after detailed design of the tower and its internal systems are further developed. Based on the current conceptual design, however, we expect the emergency response plan for permanent plant operations to be based on elements of the following:

1. Permanent elevator access to and egress from work levels in the tower and SRSG, including emergency power supply back-up and emergency brake descent.
2. Parallel stair access to and egress from all areas of the tower and SRSG.
3. Emergency exit to top deck above SRSG drums, with possible helicopter evacuation.
4. External refuge for personnel at FAA beacon and solar field camera platform locations around tower circumference (250’ and 500’ above grade).

5. Plant emergency response team on site during solar operating hours, with first aid training and equipment and personnel evacuation equipment suited to the above egress alternatives.
6. Public emergency responders from Blythe, California.

Attachment DR 75-1

Special Status Plant Table

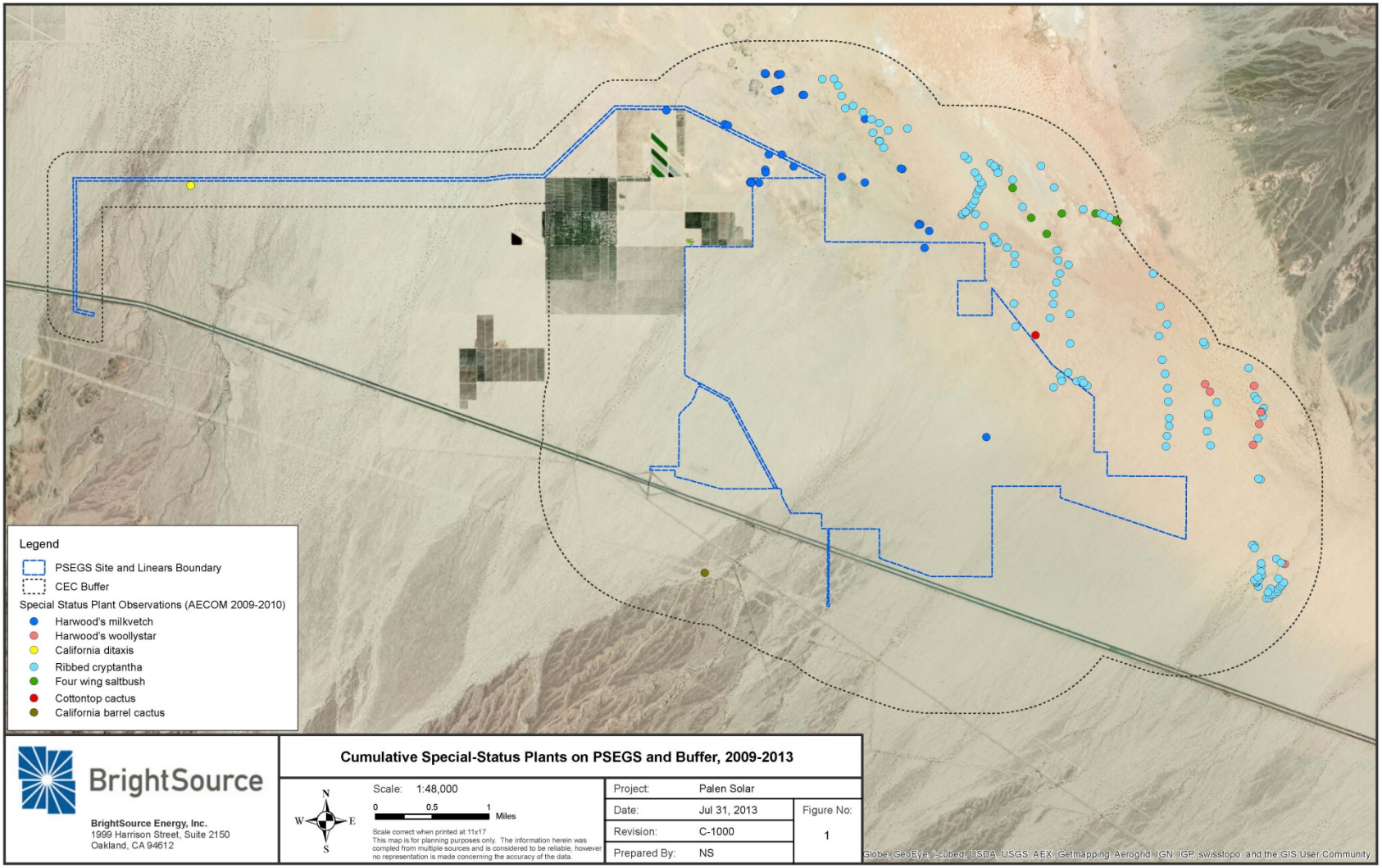
Table DR 75. Cumulative number of occurrences and individual plants on PSEGS and in the CEC buffer (one mile for the fenced site and 1000 feet for linears), from all surveys: 2009-2010.

Species	Inside PSEGS Boundary / Linear ROW							Outside PSEGS Boundary and Inside CEC Buffer	
	Total Number of Occurrences	Total Number of Plants	Solar Field # of Plants	Common Area # of Plants	Access Road # of Plants	Gen-Tie # of Plants	Gas Line # of Plants	Total Number of Occurrences	# Plants
Harwood's milkvetch	4	**6**	5			1		36	140
Harwood's woollystar								7	23
California ditaxis								1	2
Four-wing saltbush								7	920
Cottontop cactus								1	1
California barrel cactus								1	5
	Total Number of Occurrences	**Total Occupied Acreage/Total number of Plants**	**Solar Field Occupied Acreage/Total number of Plants**	**Common Area Occupied Acreage/Total number of Plants**	**Access Road Occupied Acreage/Total number of Plants**	**Gen-Tie Occupied Acreage/Total number of Plants**	**Gas Line Occupied Acreage/Total number of Plants**	**Total Number of Occurrences**	**Total Occupied Acreage/Total # Plants**
Ribbed cryptantha1	5	15.9/141,558	15.9/141,558					133	456.4/4,063,329

1. Per original calculations of ribbed cryptantha by AECOM, the estimated number of plants is assumed based on 8,903 plants per acre of occupied habitat.

Attachment DR 75-2

Special Status Plant Figure



BrightSource

BrightSource Energy, Inc.
1999 Harrison Street, Suite 2150
Oakland, CA 94612

Cumulative Special-Status Plants on PSEGS and Buffer, 2009-2013

N
W E
S

Scale: 1:48,000

0 0.5 1 Miles

Scale correct when printed at 11x17
This map is for planning purposes only. The information herein was compiled from multiple sources and is considered to be reliable, however no representation is made concerning the accuracy of the data.

Project:	Palen Solar
Date:	Jul 31, 2013
Revision:	C-1000
Prepared By:	NS

Figure No: 1

Attachment DR 75-3

GIS Shapefiles

(GIS data provided separately)

Attachment DR 76-1

Paleontological Resources Characterization

PALEONTOLOGICAL RESOURCES CHARACTERIZATION

In support of the

PETITION TO AMEND

for the

PALEN SOLAR ELECTRIC GENERATING SYSTEM

(09-AFC-7C)

Submitted to the:

California Energy Commission

Submitted by:

PALEN SOLAR HOLDINGS, LLC

Prepared by:

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JULY 2013

POTENTIAL FOR PALEONTOLOGICAL RESOURCES IN THE PALEN FOOTPRINT AREA

Paleontological remains have the potential to provide important information regarding paleoecological conditions and geological history of an area. Fossils may be produced by a variety of processes, including production of molds and/or casts, distillation, petrification, or preservation in the original condition. In general, several conditions must be met for the fossilization of organisms:

- The organism must possess body parts suitable for preservation. Bones and teeth are generally most likely to be preserved.
- The remains must undergo rapid burial in a suitable sedimentary medium, and to a sufficient depth to be beyond the lower limits of bioturbation and bacterial/fungal activity. Generally this medium consists of fine-grained sediments indicative of a relatively low-energy environment. Sediments deposited in high-energy environments such as alluvial fans, braided streams, colluvial deposits, etc., typically disarticulate, abrade, and/or crush finer-grained fossil remains. Sediments most suitable for preservation typically include lacustrine, marsh, spring, and some overbank alluvial deposits, especially along perennial streams.
- Fossils preserve best in relatively low-acidity environments. Extremes of pH (acidity) and Eh (oxidation/reduction potential) limit preservation potential.
- Fossilization typically occurs best in sediments that are consistently moist or dry. Alternating wet and dry conditions favor oxidation and other processes that tend to destroy fossils.

Those portions of Chuckwalla Valley in and near the footprint area can be generally characterized as 1) alluvial fan environments, including active washes, 2) aeolian depositional and erosional environments, and 3) ephemeral playa deposits related to dune-damming of Palen Dry Lake. No long-term pluvial lakes existed in the valley (Dohrenwend, et al. 1961, Nials 2013), although extensive playa deposits and shorelines were identified in the Ford Dry Lake sump (Kenney 2010).

Most of the project area is underlain to considerable depth by alluvial fan deposits not favorable for fossilization and preservation (see above). These deposits tend to be coarse-grained, and represent high-energy depositional environments. Infiltration from infrequent rainfall and runoff is rapid, and deposits are subjected to repeated wetting and drying. The water table lies well below any potential depth of excavation for construction of the project. Previous surface paleontological surveys of the footprint area yielded “no significant paleontological resources” (Corsetti 2009).

Some portions of the footprint area near the northern boundary and Palen Dry Lake do have increased potential for fossilization and *in situ* preservation. These include some parts of the Chuckwalla Sand Corridor (CSC) and Palen Dry Lake playa deposits. Although the bulk of the sand in the CSC was initially deposited prior to *ca*. 5,000 years ago, much has been eroded and re-deposited into dunes and aeolian landforms of relatively modern age (Kenney 2010). Relict dunes and sand sheets comprise parts of the CSC, and these deposits have some potential for fossil content. Late Pleistocene pluvial lakes appear never to have formed in the project footprint area (Nials 2013), but there appears to be a long history of ephemeral playa lakes in Chuckwalla Valley, and Smith recorded more than 600 feet of playa sediments in cores from the Palen Dry Lake basin. Near-shoreline playa and littoral deposits are favorable environments for fossilization and preservation in some situations. Locations where relict aeolian sediments or Palen Dry Lake playa-related deposits potentially lie within 5 feet or less of the surface are quite limited in the project area and are confined to the northern and northeastern boundaries. Older, potentially fossiliferous, Plio-Pleistocene lacustrine/marine/estuarine sediments of the Bouse Formation are extensively present well below the modern surface in most areas of the Colorado River Valley, and outcrop in some mountain ranges north of Chuckwalla Valley. Bouse Formation deposits do not outcrop within the project area, and appear to have been tectonically lowered to several hundreds of feet or more below the modern surface in Chuckwalla Valley and nearby bolsons.

Several practical considerations should be evaluated in assessing the potential damage to significant paleontological resources during construction of the solar generation facility. Heliostat pylons are to be 8 inches in diameter, and will extend into underlying sediments to depths of 4 feet in most areas, and 8 feet in areas of potential scour. The pylons will be vibrated into position, and no recoverable cores or cuttings will be produced. It has been stated that “the site is mantled by at least 1.5 feet of Holocene deposits expected to have a very low yield of vertebrate fossils,

but that Pleistocene sediments *considered to have a high probability of containing fossils* [emphasis added] occur beneath that thin veneer" (Weaver, et al. 2013:1). Two 200-feet long trenches were recently excavated in the power block areas to depths of 4 feet each. Theses trenches exposed Pleistocene alluvial fan sediments at depths varying from 28-40 inches below the existing surface. These sediments are highly oxidized high-energy sediments that have been modified by pedogenesis (soil formation). A zone of calcium carbonate accumulation resulting from pedogenesis is present 6-14 inches below the eroded upper surface of the deposits. The combination of pedogenesis, oxidation, soluble salt movement and precipitation indicate that the Pleistocene sediments have a low probability of vertebrate fossil preservation, in contrast to Weaver et al.'s (2013) suggestion cited above. Examination of the geological and stratigraphic relationships in natural exposures in the general area show that the vast majority of the project area contains fanglomerates at the surface or at shallow depths, and that there are few, if any, locations within the project footprint where "Pleistocene sediments considered to have a high probability of containing fossils" lie within 1.5 feet of the surface.

It was further stated that "the method of pylon construction using vibro-insertion methodology would damage any fossils the pylon encountered without knowing what was being damaged" (Weaver, et al. 2013:1). It is correct to say that fossils could be encountered by the pylons without knowledge of encounter or damage. At first perusal this seems to be an important consideration. Consider, however, the following: emplacement of the 8-inch diameter pylons for the entire field will disturb a total surface area of only1.4 acres. The disturbance over the total area of the project is thus less than 0.04 % of the total facility area. Further, it is conservatively estimated that less than 20 % of the total project area has any possibility of encountering anything other than coarse-grained fanglomerates within a depth of 4-8 feet. Thus, less than 0.01 % of the pylons have any realistic probability of encountering significant fossils. Given the frequency of fossil recovery in the previous paleontological survey, the probability of damaging buried fossil remains is astronomically small.

In conclusion, there are a number of theoretical reasons why one should expect to encounter few significant fossil remains in most of the project area. These considerations, coupled with the observed on-site frequency of fossil remains, suggest that extensive exploration for paleontological resources in most of the proposed Palen footprint is unlikely to be productive, onerously expensive, and time-consuming.

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1991 Quaternary geology of the Basin and Range Province in California. *In* The Geology of North America Vol. K2, Quaternary Nonglacial Geology: Conterminous U.S. Geological Society of America, Boulder. P. 321-352.

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2013 Report of Conversation June 17, 2013, CEC Docketed Document 09-AFC-7C.

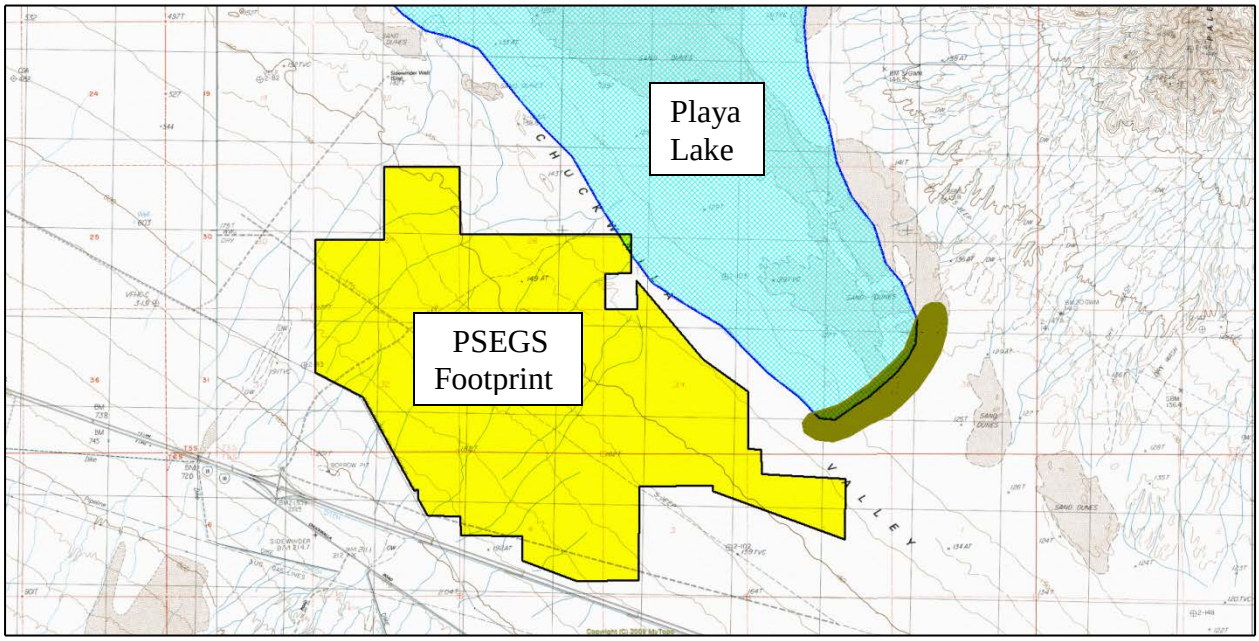

Figure 1. Hypothetical playa lake shown in relation to revised footprint. This assumes a single lake with a surface elevation of approximately 440 feet msl created by dune damming of surface runoff from the Palen Dry Lake drainage basin. Location of the dune dam (shown in green) is hypothetical, but would require a continuous dune accumulation 25 feet high or greater, and water depth within the lake would necessarily be in excess of 15-20 ft. These conditions would favor the formation and preservation of fossils, but there is no evidence of a continuous Mid-Pleistocene or younger playa lake at this or similar level levels in the Palen Dry Lake sub-basin of Chuckwalla Valley.

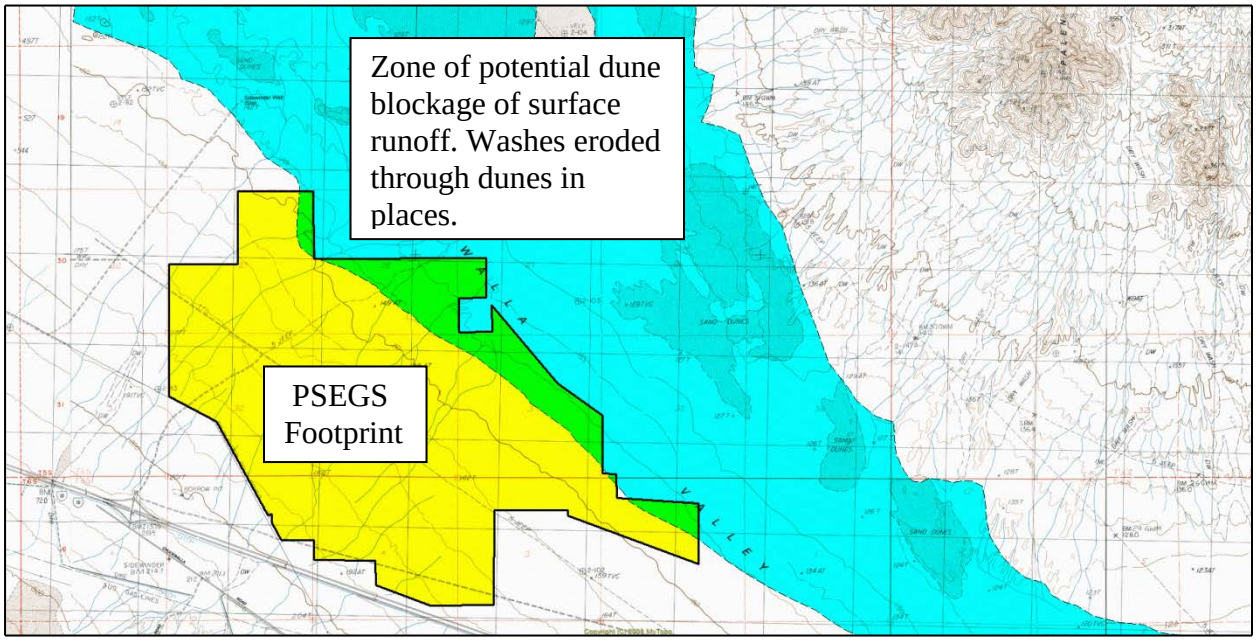

Figure 2. Map showing PSEGS footprint in relation to the distribution of zone (shown in blue) where dunes could potentially have "captured" runoff from adjacent fans at various times in the past to form localized, very ephemeral, shallow impoundments. Ephemeral washes flowing across aeolian landforms within the PSEGS footprint have locally eroded through wind-blown sediments to expose alluvial fan deposits below. Elsewhere in the valley bottom, deflation and erosion by running water expose eroded dune roots and localized playa deposits of late Holocene to Modern age. That portion of the zone that overlaps the PSEGS footprint (shown in green) occupies less than 500 acres.

Attachment DR 82-1

Revised Construction Workforce Table

DOCKETED

Docket Number:	09-AFC-07C
Project Title:	Palen Solar Power Project - Compliance
TN #:	200036
Document Title:	PSH LLC's Advance Response to Data Request 82
Description:	N/A
Filer:	Marie Fleming
Organization:	Galati | Blek LLP
Submitter Role:	Applicant's Representative
Submission Date:	7/24/2013 11:02:33 AM
Docketed Date:	7/24/2013

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July 24, 2013

California Energy Commission
Dockets Unit
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: **PALEN SOLAR HOLDINGS, LLC'S ADVANCE RESPONSE TO DATA REQUEST 82**
PALEN SOLAR ELECTRIC GENERATING SYSTEM
DOCKET NO. (09-AFC-7C)

Enclosed for filing with the California Energy Commission is the electronic version of **PALEN SOLAR HOLDINGS, LLC'S ADVANCE RESPONSE TO DATA REQUEST 82**, for Palen Solar Electric Generating System (09-AFC-7C).

Sincerely,

Marie Fleming

Construction Personnel by Month[1]

CLIENT: BrightSource Industries Israel
PROJECT: Palen Solar Electric Generating System
DOCUMENT: 459892-PSEGS-DOC-006

BY: CH2M HILL
REV: 1
DATE: 24 Jul 2013

Month	Month →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	
	↓ SOC ↓	10/13	11/13	12/13	1/14	2/14	3/14	4/14	5/14	6/14	7/14	8/14	9/14	10/14	11/14	12/14	1/15	2/15	3/15	4/15	5/15	6/15	7/15	8/15	9/15	10/15	11/15	12/15	1/16	2/16	3/16	4/16	5/16	6/16	TOTAL
PROJECT SITE																																			
Craft Day Shift																																			
Boilermaker	47-2011	0	0	4	4	5	7	9	11	11	11	12	14	30	33	45	53	64	84	110	139	163	192	191	179	152	126	98	73	53	38	30	26	16	**1,967**
Carpenters	47-2031	1	3	8	10	16	30	50	57	67	79	82	93	88	90	87	82	78	73	69	63	53	52	44	36	33	28	23	17	13	11	9	8	5	**1,453**
Cement Finisher	47-2051	0	3	1	2	2	5	7	8	10	12	13	13	13	13	13	13	13	11	10	9	7	7	6	5	4	4	3	2	1	1	1	1	1	**213**
Electrician	47-2111	1	4	5	8	10	20	34	38	37	34	36	38	45	60	70	76	85	106	136	173	209	255	250	240	220	191	159	119	93	76	60	51	31	**2,939**
Iron Worker	47-2221	0	0	0	5	10	3	13	18	26	35	41	49	53	59	64	67	72	77	81	82	76	75	65	52	53	42	33	24	17	13	11	11	7	**1,227**
Laborer	47-2061	4	6	13	15	23	37	58	67	74	80	93	95	90	91	83	80	80	81	81	77	65	59	49	41	42	36	30	21	18	15	13	13	8	**1,630**
Millwright	49-9044	0	0	0	2	3	5	1	1	1	0	2	2	21	27	42	50	55	64	73	81	87	95	101	97	89	75	62	48	35	30	26	26	16	**1,201**
Equipment Operator	47-2073	1	4	8	10	13	23	34	40	41	44	47	52	52	53	51	53	56	62	67	71	70	71	65	58	52	43	35	26	19	16	13	13	8	**1,263**
Pipefitter	47-2152	0	0	11	13	17	33	41	46	51	57	63	69	80	89	104	119	141	179	226	272	314	368	361	339	294	247	200	146	110	88	67	59	36	**4,204**
Teamster	53-3032	1	3	3	3	4	7	10	13	13	13	14	16	17	18	17	17	18	19	20	20	19	18	16	14	12	10	8	6	5	4	4	4	2	**366**
Craft-Day Shift Subtotal		**8**	**23**	**53**	**72**	**103**	**170**	**257**	**299**	**331**	**365**	**403**	**441**	**489**	**533**	**576**	**610**	**662**	**756**	**873**	**987**	**1063**	**1192**	**1148**	**1061**	**951**	**802**	**651**	**482**	**364**	**292**	**234**	**212**	**130**	**16,463**
Non-craft Day Shift[2]																																			
Project Manager	11-9021	3	4	3	4	5	6	6	6	7	7	7	8	8	8	8	10	11	10	10	11	12	16	14	12	10	9	8	6	5	5	4	2	1	**245**
Construction Manager	11-9021	10	12	12	14	17	21	24	25	25	27	29	31	32	32	32	38	43	38	40	41	46	62	55	45	38	34	32	24	21	19	15	9	6	**943**
PM Assistant	11-9021	6	6	6	7	9	11	12	12	12	12	14	14	15	16	16	16	19	22	19	20	21	23	31	27	22	19	17	16	12	11	9	8	5	3	**473**
Support	43-3031	18	21	14	20	26	32	37	40	41	43	46	49	51	51	52	61	69	62	65	66	74	100	88	72	61	54	52	39	34	30	24	15	9	**1,507**
Support Assistant	43-9199	33	39	23	31	41	52	58	61	62	67	70	75	77	79	79	94	106	95	100	102	115	156	138	113	94	85	83	61	53	47	38	24	14	**2,351**
Engineer	17-2000	10	14	14	14	23	30	33	36	37	38	41	44	45	46	46	55	62	55	58	59	66	89	78	64	54	48	46	35	30	27	22	13	8	**1,332**
Time Keeper	43-3051	2	2	2	2	2	3	3	3	3	4	4	4	4	4	4	5	6	5	5	5	6	8	7	6	5	4	4	3	3	2	2	1	1	**123**
Administrator	43-1011	7	7	5	5	7	8	9	10	10	11	11	12	12	12	12	15	17	15	16	16	18	24	21	17	15	13	12	9	8	7	6	4	2	**371**
Surveyor	17-1022	16	16	16	12	8	6	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	2	2	2	2	1	1	1	1	0	**157**
Non-craft Day Shift Subtotal		**105**	**121**	**95**	**109**	**138**	**169**	**186**	**197**	**201**	**215**	**226**	**242**	**249**	**252**	**253**	**301**	**340**	**303**	**318**	**325**	**364**	**490**	**432**	**354**	**298**	**266**	**255**	**191**	**166**	**147**	**120**	**74**	**44**	**7,502**
TOTAL PROJECT SITE DAY SHIFT		**113**	**144**	**148**	**181**	**241**	**339**	**443**	**496**	**532**	**580**	**629**	**683**	**738**	**785**	**829**	**911**	**1,002**	**1,059**	**1,191**	**1,312**	**1,427**	**1,682**	**1,580**	**1,415**	**1,249**	**1,068**	**906**	**673**	**530**	**439**	**354**	**286**	**174**	**23,965**
Craft Swing Shift																																			
Boilermaker	47-2011	0	0	0	0	2	2	2	3	3	3	3	4	9	11	14	17	22	30	40	51	61	72	72	67	66	54	42	31	22	16	13	12	7	**744**
Carpenters	47-2031	1	1	4	5	7	9	13	16	20	24	26	32	33	33	32	31	31	30	29	27	23	23	20	17	14	12	10	7	6	5	4	4	2	**549**
Cement Finisher	47-2051	0	1	1	1	1	1	2	2	3	3	3	4	4	4	4	5	4	4	4	4	3	2	2	2	2	1	1	1	1	1	1	1	1	**73**
Electrician	47-2111	0	1	2	3	5	9	14	16	17	16	18	18	23	27	31	34	37	44	57	72	86	104	102	97	94	82	67	51	40	33	25	22	13	**1,247**
Iron Worker	47-2221	0	0	0	0	5	19	22	25	27	33	35	35	38	40	42	44	46	48	51	51	49	51	46	40	23	18	14	10	7	6	5	4	2	**834**
Instrument Tech	49-9012	0	0	0	0	0	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	0	0	0	0	0	0	0	0	0	**228**
Laborer	47-2061	2	5	6	6	8	3	12	16	18	21	25	27	28	29	27	27	27	28	30	28	24	23	18	15	18	15	13	10	8	7	6	6	4	**536**
Millwright	49-9044	0	0	0	0	1	9	10	10	10	10	10	11	16	18	24	26	28	32	36	40	42	46	48	46	38	32	27	21	15	13	12	12	7	**643**
Equipment Operator	47-2073	0	2	3	4	6	6	11	13	14	15	17	19	19	21	21	21	23	26	29	31	30	31	28	26	22	18	15	11	9	7	6	5	3	**509**
Pipefitter	47-2152	0	0	6	7	9	2	9	11	13	15	20	21	24	28	35	40	48	64	81	100	119	140	137	126	124	107	86	64	47	37	29	24	14	**1,573**
Teamster	53-3032	0	0	1	1	2	2	3	4	4	4	6	6	6	6	6	6	6	7	7	8	7	7	6	5	5	4	3	2	2	2	1	1	1	**130**
Craft-Day Shift Subtotal		**3**	**10**	**23**	**27**	**46**	**74**	**110**	**128**	**141**	**156**	**175**	**189**	**212**	**229**	**248**	**263**	**284**	**325**	**376**	**424**	**456**	**511**	**491**	**453**	**406**	**343**	**278**	**208**	**157**	**127**	**102**	**91**	**54**	**7,066**
Non-craft Swing Shift[2]																																			
Project Manager	11-9021	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	2	2	1	1	1	1	1	0	**51**
Construction Manager	11-9021	1	2	3	3	4	5	6	7	7	8	9	9	9	10	10	10	11	12	12	13	15	17	16	15	13	11	11	8	7	6	5	3	2	**278**
PM Assistant	11-9021	1	1	2	2	3	4	5	5	5	6	7	7	7	7	7	7	8	8	9	9	11	12	12	11	9	8	8	6	5	4	4	2	1	**202**
Support	43-3031	1	3	4	5	7	9	9	10	11	11	12	12	13	13	13	13	17	17	19	19	21	24	23	21	18	16	15	11	9	8	7	4	3	**395**
Support Assistant	43-9199	1	2	4	5	6	8	9	9	10	11	11	11	12	12	12	12	15	15	16	17	20	22	21	20	17	14	14	10	8	8	6	4	2	**362**
Engineer	17-2000	1	2	2	3	4	5	5	6	6	7	8	8	8	8	8	8	9	10	10	11	12	15	14	12	11	9	9	7	6	5	4	3	2	**236**
Time Keeper	43-3051	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	1	1	1	1	1	1	0	0	**35**
Administrator	43-1011	0	0	0	0	1	2	2	2	2	2	3	3	3	3	3	3	3	3	3	4	4	5	5	4	3	3	3	2	2	2	1	1	1	**77**
Non-craft Swing Shift Subtotal		**7**	**12**	**17**	**20**	**27**	**35**	**38**	**41**	**43**	**47**	**53**	**53**	**55**	**56**	**56**	**56**	**66**	**68**	**72**	**76**	**87**	**100**	**96**	**87**	**74**	**64**	**63**	**46**	**39**	**35**	**29**	**18**	**11**	**1,636**
TOTAL PROJECT SITE SWING SHIFT		**10**	**22**	**40**	**47**	**73**	**109**	**148**	**169**	**184**	**203**	**228**	**242**	**267**	**285**	**304**	**319**	**350**	**393**	**448**	**500**	**543**	**611**	**587**	**540**	**480**	**407**	**341**	**254**	**196**	**162**	**131**	**109**	**65**	**8,702**
SUBTOTAL ONSITE		**123**	**166**	**188**	**228**	**314**	**448**	**591**	**665**	**716**	**783**	**857**	**925**	**1,005**	**1,070**	**1,133**	**1,230**	**1,352**	**1,452**	**1,639**	**1,812**	**1,970**	**2,293**	**2,167**	**1,955**	**1,729**	**1,475**	**1,247**	**927**	**726**	**601**	**485**	**395**	**239**	**32,667**
OFFSITE LINEARS																																			
Electrician	47-2111	0	0	0	0	4	15	18	14	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**67**
Laborer	47-2061	0	0	0	0	2	4	4	2	2	2	0	0	0	0	0	0	0	0	4	4	4	4	4	2	0	0	0	0	0	0	0	0	0	**38**
Equipment Operator	47-2073	0	1	1	1	4	8	8	6	1	1	0	0	0	0	0	0	1	1	4	4	4	4	4	2	0	0	0	0	0	0	0	0	0	**55**
Pipelayer	47-2151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3	3	0	0	0	0	0	0	0	0	0	**18**
Teamster	53-3032	0	2	2	2	2	4	4	2	1	1	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	**28**
Support	43-3031	0	0	0	0	2	4	5	4	2	2	2	1	0	0	0	0	0	0	6	6	6	6	7	4	4	4	0	2	0	0	0	0	0	**67**
TOTAL OFFSITE LINEARS		**0**	**3**	**3**	**3**	**14**	**35**	**39**	**28**	**10**	**10**	**6**	**5**	**0**	**0**	**0**	**0**	**2**	**2**	**18**	**18**	**18**	**18**	**19**	**12**	**4**	**4**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**273**
TOTAL WORKFORCE		**123**	**169**	**191**	**231**	**328**	**483**	**630**	**693**	**726**	**793**	**863**	**930**	**1,005**	**1,070**	**1,133**	**1,230**	**1,354**	**1,454**	**1,657**	**1,830**	**1,988**	**2,311**	**2,186**	**1,967**	**1,733**	**1,479**	**1,247**	**929**	**726**	**601**	**485**	**395**	**239**	**32,940**

Construction Personnel by Month[1]

CLIENT: BrightSource Industries Israel | BY: CH2M HILL
PROJECT: Palen Solar Electric Generating System | REV: 1
DOCUMENT: 459892-PSEGS-DOC-006 | DATE: 24 Jul 2013

Month	Month →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	
	↓ SOC ↓	10/13	11/13	12/13	1/14	2/14	3/14	4/14	5/14	6/14	7/14	8/14	9/14	10/14	11/14	12/14	1/15	2/15	3/15	4/15	5/15	6/15	7/15	8/15	9/15	10/15	11/15	12/15	1/16	2/16	3/16	4/16	5/16	6/16	TOTAL
Car Pool % (Day-shift Only)[3]	**7.5%**																																		
Worker (day shift)		76	102	115	143	193	280	378	427	461	504	550	598	651	696	740	805	883	953	1079	1198	1299	1510	1428	1291	1144	975	816	606	472	387	312	260	159	**21,254**
Worker Vehicles		70	94	106	132	178	259	349	395	427	467	508	553	602	644	685	745	816	881	998	1108	1202	1398	1321	1194	1059	901	755	560	436	358	288	241	147	**19,660**
Monthly Truck Traffic																																			**TOTAL**
Equipment & Materials		35	35	440	440	420	407	472	438	411	112	120	133	148	141	137	165	171	135	127	122	98	94	91	65	55	43	36	28	28	10	8	6	4	**5,136**
Concrete[4]		0	20	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	10	10	10	10	5	5	0	0	0	0	0	0	0	0	0	**130**
Heliostat Components		0	0	0	0	245	245	245	245	245	245	246	246	246	246	246	246	246	245	245	245	245	245	245	0	0	0	0	0	0	0	0	0	0	**4,662**
TOTAL TRUCK TRAFFIC		**35**	**55**	**480**	**440**	**665**	**652**	**717**	**683**	**656**	**357**	**366**	**379**	**394**	**387**	**383**	**411**	**417**	**400**	**382**	**377**	**353**	**349**	**341**	**70**	**55**	**43**	**36**	**28**	**28**	**10**	**8**	**6**	**4**	**9,928**
Average Daily Trucks (rounded)		**2**	**3**	**30**	**28**	**42**	**41**	**45**	**43**	**41**	**22**	**23**	**24**	**25**	**24**	**24**	**26**	**26**	**25**	**24**	**24**	**22**	**22**	**21**	**4**	**3**	**3**	**2**	**2**	**2**	**1**	**1**	**0**	**0**	**623**

Notes: [1] Based on revised Hidden Hills Project Data submitted to CEC on 1 October 2012

[2] Non-craft workers are the non-union superintendents and construction personnel on site.

[3] Car Pool includes Day-shift Craft Workers + 65% of Day-shift Non-craft Workers

[4] Concrete deliveries based on concrete deliveries from an onsite concrete batch plant from months 4 to 17.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
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PALEN SOLAR ELECTRIC GENERATING SYSTEM AMENDMENT

Docket No. 09-AFC-07C
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(Revised 07/09/2013)

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Hearing Adviser

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Adviser to Presiding Member

Jennifer Nelson
Adviser to Presiding Member

Gabriel D. Taylor
Adviser to Associate Member

Eileen Allen
Commissioners' Technical
Adviser for Facility Siting

DECLARATION OF SERVICE

I, Marie Fleming declare that on July 24, 2013, I served and filed copies of the attached PALEN SOLAR HOLDINGS, LLC'S ADVANCE RESPONSE TO DATA REQUEST 82, dated July 24, 2013. This document is accompanied by the most recent Proof of Service, which I copied from the web page for this project at: http://www.energy.ca.gov/sitingcases/palen/compliance/.

The document has been sent to the other persons on the Service List above in the following manner:

(*Check one*)

For service to all other parties and filing with the Docket Unit at the Energy Commission:

_X_ I e-mailed the document to all e-mail addresses on the Service List above and personally delivered it or deposited it in the U.S. mail with first class postage to those parties noted above as "hard copy required";

OR

____ Instead of e-mailing the document, I personally delivered it or deposited it in the U.S. mail with first class postage to all of the persons on the Service List for whom a mailing address is given.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that I am over the age of 18 years.

Dated: July 24, 2013

Marie Fleming

Attachment DR 83-1

Revised Operation Workforce Table

Operational Personnel

CLIENT:	BrightSource Industries Israel	BY:	CH2M HILL
PROJECT:	Palen Solar Electric Generating System	REV:	0
DOCUMENT:	459892-PSEGS-DOC-006.1	DATE:	25 Jul 2013

Description	SOC	Total
Solar Fields & Power Block Workers (24)		
Operating Engineers and Other Construction Equipment Operators	47-2073	24
Technicians (16)		
Electrical and Electronics Repairers, Powerhouse, Substation & Relay	49-2095	10
Control and Valve Installers and Repairers	49-9012	2
Maintenance Workers, Machinery	49-9043	4
		16
Operators (15)		
First-Line Supervisors of Production & Operating Workers	51-1011	3
Power Plant Operators	51-8013	12
		15
Warehouse and Maintenance Personnel (13)		
Janitors & Cleaners	37-2011	1
Stock Clerks and Order Fillers	43-5081	2
Electrical and Electronics Repairers, Powerhouse, Substation & Relay	49-2095	2
Mobile Heavy Equipment Mechanics	49-3042	4
Maintenance Workers, Machinery	49-9043	4
		13
Administrative Personnel (12)		
General & Operations Manager	11-1021	1
Electrical Engineer	17-2071	1
Mechanical Engineer	17-2141	1
Secretaries and Administrative Assistants	43-6014	2
Office and Administrative Support Workers	43-9199	2
First-Line Supervisors of Mechanics, Installers and Repairers	49-1011	5
		12
Miscellaneous Support (20)		
Bus & Truck Mechanics and Diesel Engine Specialists	49-3031	2
First-Line Supervisors of Mechanics, Installers and Repairers	49-1011	2
Electrical and Electronics Repairers, Powerhouse, Substation & Relay	49-2095	4
Control and Valve Installers and Repairers	49-9012	2
Maintenance Workers, Machinery	49-9043	2
Mobile Heavy Equipment Mechanics	49-3042	2
Secretaries and Administrative Assistants	43-6014	2
Office and Administrative Support Workers	43-9199	2
Power Plant Operators	51-8013	2
		20
TOTAL		100

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PALEN SOLAR ELECTRIC GENERATING SYSTEM AMENDMENT

Docket No. 09-AFC-07C
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(Revised 07/09/2013)

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Adviser to Presiding Member

Gabriel D. Taylor
Adviser to Associate Member

Eileen Allen
Commissioners' Technical
Adviser for Facility Siting

DECLARATION OF SERVICE

I, Marie Fleming, declare that on July 31, 2013, I served and filed copies of PALEN SOLAR HOLDINGS, LLC'S RESPONSE TO CEC STAFF DATA REQUEST SET 4 (73-89), dated July, 2013. The most recent Proof of Service List, which I copied from the web page for this project at: http://www.energy.ca.gov, is attached to this Declaration.

(*Check one*)

For service to all other parties and filing with the Docket Unit at the Energy Commission:

X I successfully uploaded the document to the Energy Commission's e-filing system and I personally delivered the document or deposited it in the US mail with first class postage to those persons for whom a physical mailing address but no e-mail address is shown on the attached Proof of Service List. [The e-filing system will serve the other parties and Committee via e-mail when the document is approved for filing.]

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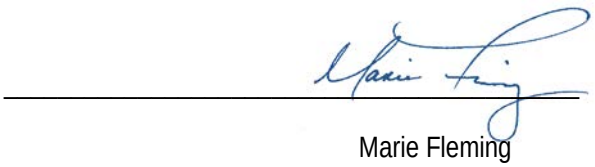
I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that I am over the age of 18 years.

Dated: July 31, 2013



Marie Fleming