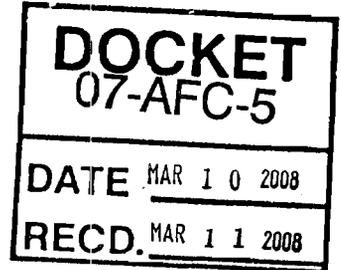




**CH2MHILL**

**CH2M HILL**  
2485 Natomas Park Drive  
Suite 600  
Sacramento, Ca 95833  
Tel 916-920-0300  
Fax 916-920-8483

March 10, 2008  
357891



Mr. Jack Caswell  
California Energy Commission  
Systems Assessment and Facilities Siting Division  
1516 9th Street, MS 15  
Sacramento, CA 95814-5504

RE: Data Response, Set 1C  
Ivanpah Solar Electric Generating System (07-AFC-5)

Dear Mr. Caswell:

On behalf of Solar Partners I, LLC, Solar Partners II, LLC, Solar Partners IV, LLC, and Solar Partners VIII, LLC, please find attached one original and 12 hard copies of Data Response, Set 1C, which provides a supplemental response to Staff's Data Request 23, dated December 12, 2007.

Please call me if you have any questions.

Sincerely,

CH2M HILL

John L. Carrier, J.D.  
Program Manager

Enclosure  
c: POS List  
Project File

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# Ivanpah Solar Electric Generating System (ISEGS)

(07-AFC-5)

## Data Response, Set 1C

(Response to Data Requests for: Biological Resources)

Submitted to the  
California Energy Commission

Submitted by  
Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners IV, LLC;  
and Solar Partners VIII, LLC

March 10, 2008

With Assistance from

**CH2MHILL**

2485 Natomas Park Drive  
Suite 600  
Sacramento, CA 95833

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# Introduction

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Attached are supplemental responses (Set 1B) by Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners IV, LLC; and Solar Partners VIII, LLC (Applicant) to the California Energy Commission (CEC) Staff's data requests for the Ivanpah Solar Electric Generating System (Ivanpah SEGS) Project (07-AFC-5). The CEC Staff served these data requests on December 12, 2007, as part of the discovery process for Ivanpah SEGS. As with Data Response, Set 1A, the responses are grouped by individual discipline or topic area. Within each discipline area, the responses are presented in the same order as CEC Staff presented them and are keyed to the Data Request numbers (1 through 116). New graphics or tables are numbered in reference to the Data Request number. For example, the first table used in response to Data Request 15 would be numbered Table DR15-1. The first figure used in response to Data Request 15 would be Figure DR15-1, and so on. AFC figures or tables that have been revised have "R1" following the original number, indicating revision 1.

Additional tables, figures, or documents submitted in response to a data request (supporting data, stand-alone documents such as plans, folding graphics, etc.) are found at the end of a discipline-specific section and may not be sequentially page-numbered consistently with the remainder of the document, though they may have their own internal page numbering system.

The Applicant looks forward to working cooperatively with the CEC and Bureau of Land Management (BLM) staff as the Ivanpah SEGS Project proceeds through the siting process. We trust that these responses address the Staff's questions and remain available to have any additional dialogue the Staff may require.

# Biological Resources (23)

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## Background

According to AFC section 5.2.9.2.4, approximately 34 percent of the estimated known acreage of creosote bush-white bursage-barrel cactus vegetation in California could be impacted by the project. This vegetation type is noted as worthy of consideration in the list of terrestrial natural communities developed for CDFG's California Natural Diversity Database, and BLM has expressed concerns regarding its loss and the availability of habitat compensation lands. The impact discussion noted a lack of information regarding its abundance and did not conclude whether impacts would be considered significant or require additional mitigation.

## Data Request

23. Please provide additional discussion on direct, indirect, and cumulative impacts to creosote bush-white bursage-barrel cactus vegetation.
  - a. Address the significance of these impacts as determined through discussions with BLM, CDFG, and USFWS biology staff.
  - b. Discuss the mitigation suggested by the above agencies to mitigate impacts.

**Response:** On February 15, 2008, representatives of the Applicant met with Dr. Todd Keeler-Wolf, CDFG senior vegetation ecologist. The objective of the meeting was to determine if the vegetation identified at the Ivanpah SEGS site met the definition of a creosote bush-white bursage-barrel cactus natural community type. The two highest barrel cactus densities at the Ivanpah SEGS site were 10 and 13 cacti per acre (or 25.5 and 31.3 per hectare). It should be noted that the highest density was along the gas pipeline corridor and the next highest was outside the project boundary between Ivanpah 3 and the limestone outcrop (see Figure DR23-1).

According to Dr. Keeler-Wolf, barrel cactus densities need to be in the order of 400 per hectare to meet the description of the creosote bush-white bursage-barrel cactus community type. The highest density level observed, which occurred along the gas pipeline, were 31.3 barrel cacti per hectare. This density is just 7.8 percent  $[31.3/400]$  of the 400 per hectare density required to be considered part of the creosote bush-white bursage-barrel cactus natural community type. In other words, the barrel cacti would have to be 12.8 times more dense than they are in the most densely populated segment of the Ivanpah SEGS site to reach the 400 per hectare threshold. Therefore, the Ivanpah SEGS project does not have the barrel cactus densities that are characteristic of the creosote bush-white bursage-barrel cactus natural community type. A copy of the Meeting Record of Conversation is provided as Attachment DR23-1. Included also are Figure DR23-1 and Table DR23-1.

**ATTACHMENT DR23-1  
MEETING CONVERSATION RECORD**

<b>ROUTING</b>				<b>DATE: February 15, 2008</b>
1		4		<b>FILE REFERENCE: ISEGS 357891.TM.DR</b>
2		5		
3		6		

NAME	ORGANIZATION NAME AND TELEPHONE NUMBER
<b>RE: Todd Keeler-Wolf Meeting</b>	Todd Keeler-Wolf – CDFG Vegetation Ecologist - Phone (916) 324-6857
<b>FROM:</b> Amy Hiss/CH2M HILL John Carrier/CH2M HILL Geof Spaulding/CH2M HILL	CH2M Hill/SAC. (916) 286-0282.

**SUBJECT: Ivanpah ISEGS – barrel cactus vegetation**

**MEETING SUMMARY**

We met with Dr. Todd Keeler-Wolf, CDFG senior vegetation ecologist, on 2/15/2008 (11:30 a.m.) to discuss vegetation identified at the Ivanpah SEGS project site. The objective of the meeting was to determine if the vegetation identified onsite met the definition of a creosote bush-white bursage-barrel cactus natural community type.

Using data collected during the 2007 Spring Survey, barrel cactus polygons were mapped by CH2M HILL using a Geographic Information System (GIS) and densities were calculated for areas of moderate and high barrel cactus. Exhibits documenting these results were provided to Dr. Keeler-Wolf during the meeting and are included with these meeting notes as Figure DR23-1 and Table DR23-1. Photographs of general site vegetation and other exhibits were also provided and discussed.

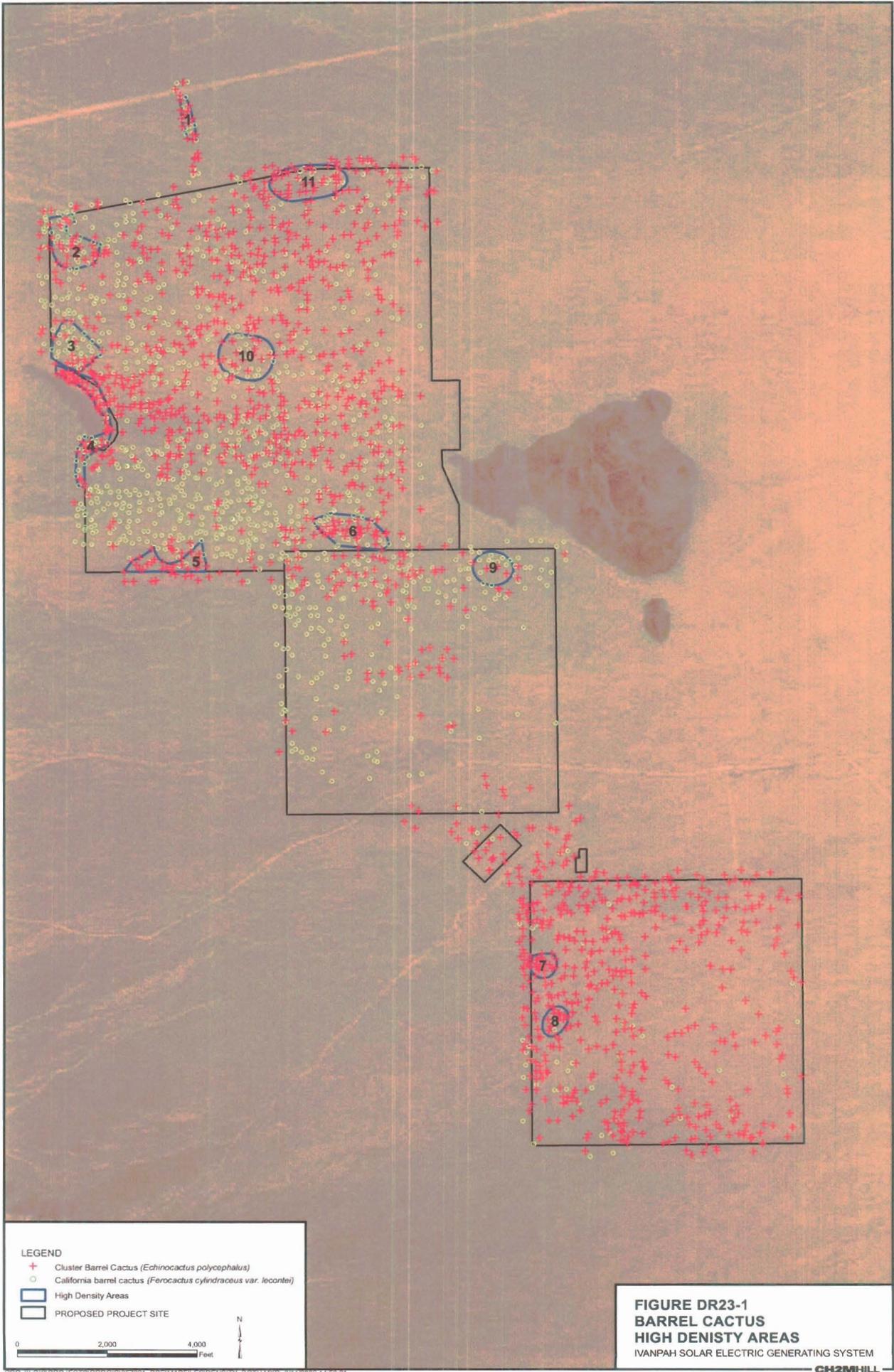
Attendees: Todd Keeler-Wolf/CDFG; John Carrier (PM – CH2M HILL); Ann Howald (GANDA, contractor to CH2M HILL); Amy Hiss (CH2M HILL); Geof Spaulding (CH2M HILL, via phone).

**Summary**

Dr. Keeler-Wolf described CDFG’s sampling program in the Mojave Desert, which included the creosote bush-white bursage-barrel cactus natural community type. He described that the communities were generally sampled along environmental gradient transects and described according to species composition and percent coverage values. Percent cover values for about 3,000 plots or using 1,000 square meter plots that were part of a stratified sampling effort were analyzed in the Mojave Desert. Based on these findings, CDFG has a pretty good understanding of Mojave Desert vegetation types. CDFG has sampled and identified this natural community type in the Clark Mountains, at higher elevations and to the west of the Ivanpah SEGS site.

The highest barrel cactus densities at the Ivanpah SEGS site were 10 and 13 cacti per acre [or 25.5 and 31.3 per hectare]. CDFG’s findings suggest that barrel cactus densities need to be in the order of 400 per hectare to meet the description of the creosote bush-white bursage-barrel cactus community type (approximately 12.8 times more dense than the levels observed at the Ivanpah SEGS site). A useful visual guide to this natural plant community type would be to determine if barrel cactus are in equal proportion to the other shrub species that are dominants or common in the community.

Dr. Keeler-Wolf noted that the vegetation at the Ivanpah SEGS site supported a relatively high perennial plant diversity – and more barrel cactus than you would normally see in the average Mojave creosote bush scrub plant community – because it was on the transitional gradient between low-diversity scrub typical of lower elevations and the creosote bush-white bursage-barrel cactus community found at higher elevations and rockier substrates (e.g., 3,000 to 4,000 feet) in the Clark Mountains.



**LEGEND**

- + Cluster Barrel Cactus (*Echinocactus polycephalus*)
- California barrel cactus (*Ferocactus cylindraceus* var. *lecontei*)
- High Density Areas
- PROPOSED PROJECT SITE



**FIGURE DR23-1  
BARREL CACTUS  
HIGH DENSITY AREAS**

IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

CH2M HILL

**Table DR23-1.  
Cactus Density Calculations**

<b>Polygon Number</b>	<b>Number of Points <sup>1</sup></b>	<b>Population Size</b>	<b>Polygon Size (square feet)</b>	<b>Polygon Size (acres)</b>	<b>Number of Cactus (per acre)</b>	<b>Polygon Size (Hectares)</b>	<b>Number of Cactus (per hectare)</b>
1	25	62	213,145	4.9	13	2.0	31.3
2	65	167	848,237	19.5	9	7.9	21.2
3	53	90	811,980	18.6	5	7.5	11.9
4	87	185	781,590	17.9	10	7.3	25.5
5	29	44	625,520	14.4	3	5.8	7.6
6	65	103	960,306	22.0	5	8.9	11.5
7	18	28	275,963	6.3	4	2.6	10.9
8	12	42	297,010	6.8	6	2.8	15.2
9	14	36	557,319	12.8	3	5.2	7.0
10	38	46	1,075,182	24.7	2	10.0	4.6
11	44	71	1,138,323	26.1	3	10.6	6.7

**Notes**

Number of points refers to the number of map symbols (point, cross) on the map. There may be multiple cacti present at each point.

**BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE  
STATE OF CALIFORNIA**

**APPLICATION FOR CERTIFICATION  
FOR THE IVANPAH SOLAR ELECTRIC  
GENERATING SYSTEM**

**DOCKET No. 07-AFC-5**

**PROOF OF SERVICE  
(Revised 1/11/08)**

**INSTRUCTIONS: All parties shall 1) send an original signed document plus 12 copies OR 2) mail one original signed copy AND e-mail the document to the web address below, AND 3) all parties shall also send a printed OR electronic copy of the documents that shall include a proof of service declaration to each of the individuals on the proof of service:**

CALIFORNIA ENERGY COMMISSION  
Attn: Docket No. 07-AFC-5  
1516 Ninth Street, MS-14  
Sacramento, CA 95814-5512  
[docket@energy.state.ca.us](mailto:docket@energy.state.ca.us)

**APPLICANT**

Solar Partners, LLC  
John Woolard, Chief Executive Officer  
Alicia Torre, Project Manager  
1999 Harrison Street, Suite #500  
Oakland, CA 94612  
[ATorre@BrightSourceEnergy.com](mailto:ATorre@BrightSourceEnergy.com)

Steve De Young  
Ivanpah Solar Electric Generating System  
Project Manager  
4155 Arbolado Drive Walnut Creek, CA 94598  
[steve4155@astound.net](mailto:steve4155@astound.net)

**APPLICANT'S CONSULTANTS**

John L. Carrier, J. D.  
2485 Natomas Park Dr. #600  
Sacramento, CA 95833-2937  
[jcarrier@ch2m.com](mailto:jcarrier@ch2m.com)

**COUNSEL FOR APPLICANT**

Jeffrey Harris  
Ellison, Schneider & Harris L.L.P.  
Attorney's at Law  
2015 H Street  
Sacramento, CA 95814-3109  
[jdheslawfirm.com](mailto:jdheslawfirm.com)

**INTERVENORS**

\* California Unions for Reliable Energy ("CURE")  
Tanya A. Gulesserian  
Marc D. Joseph  
Adams Broadwell Joseph & Cardozo  
601 Gateway Boulevard, Suite 1000  
South San Francisco, CA 94080  
[tgulesserian@adamsbroadwell.com](mailto:tgulesserian@adamsbroadwell.com)

**INTERESTED AGENCIES**

Larry Tobias  
Ca. Independent System Operator  
151 Blue Ravine Road  
Folsom, CA 95630  
[LTobias@caiso.com](mailto:LTobias@caiso.com)

Electricity Oversight Board  
770 L Street, Suite 1250  
Sacramento, CA 95814  
[esaltmarsh@eob.ca.gov](mailto:esaltmarsh@eob.ca.gov)

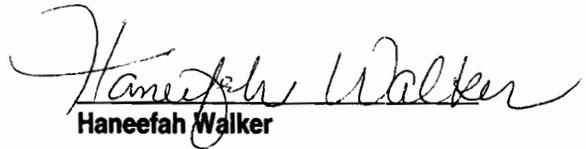
Tom Hurshman, Project Manager  
Bureau of Land Management  
2465 South Townsend Ave.  
Montrose, CO 81401  
[tom\\_hurshman@blm.gov](mailto:tom_hurshman@blm.gov)

Sterling White, Field Manager  
Bureau of Land Management  
2465 South Townsend Ave.  
Montrose, CO 81401  
[tom\\_hurshman@blm.gov](mailto:tom_hurshman@blm.gov)

**DECLARATION OF SERVICE**

I, Haneefah Walker, declare that on March 10, 2008, I deposited copies of the attached Data Response, Set 1C in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above.

I declare under penalty of perjury that the foregoing is true and correct.

  
**Haneefah Walker**