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File No.: 04.02.16.02
Project No. 357891

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07-AFC-5

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Mr. John Kessler, Project Manager
California Energy Commission
Systems Assessment and Facilities Siting Division
1516 9th Street, MS 15
Sacramento, CA 95814-5504

RE: Data Response, Set 2KR
Ivanpah Solar Electric Generating System (07-AFC-5)

Dear Mr. Kessler:

On behalf of Solar Partners I, LLC, Solar Partners II, LLC, Solar Partners IV, LLC, and Solar Partners VIII, LLC (Applicant), please find attached one original, four hard copies and five CD-ROMs of Data Response Set 2KR, which provides an errata to the Revised Draft Closure and Revegetation Plan (Attachment DR125-3B). In reviewing the document, errors were found in some tables.

Please call me if you have any questions.

Sincerely,

CH2M HILL

John L. Carrier, J.D.
Program Manager

Enclosure
c: POS List
Project File

Ivanpah Solar Electric Generating System (ISEGS)

(07-AFC-5)

Data Response, Set 2KR

(Responses to Data Requests: Closure & Restoration – Errata)

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**

September 10, 2009

With Assistance from

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2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833

Introduction

Attached are Solar Partners I, LLC, Solar Partners II, LLC, Solar Partners IV, LLC, and Solar Partners VIII, LLC (Applicant) responses 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 May 8, 2008, as part of the discovery process for Ivanpah SEGS. 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. Attachments as well as new graphics or tables are numbered in reference to the Data Request number. For example, the first table used in response to Data Request 125 would be numbered Table DR125-1. The first figure used in response to Data Request 125 would be Figure DR125-1, and so on. The first Attachment would be numbered DR125-1A, if revised it would be DR125-1B; but a different attachment in response to that data request would be numbered DR125-2A.

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 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.

Closure and Restoration (125)

BACKGROUND

Section 5.2.11.1, Mitigation Measure 1 – Site Rehabilitation Plan, addresses closure of the project following the cessation of facility operations and discusses elements of a closure plan. Data Request 30 asked for description of the likely components of a closure plan addressing decommissioning methods, timing of any proposed habitat restoration and restoration performance criteria. Applicant's response suggests that each project owner file a closure plan for review and approval at least 12-months prior to commencing the closure activities. BLM believes that the applicant must prepare a plan that addresses closure and restoration activities and that waiting to address the issues at the end of the useful life of the facility, will not ensure satisfactory restoration of the site in the fragile desert environment. In addition, the project design and footprint may need to accommodate vegetation salvage and/or propagation study plots. Further, the plan needs to recognize that closure activities may not only occur at the end of a 30 or 50 year life of the facility, but could happen at intermediate times during the project life.

DATA REQUEST

125. BLM requests the applicant develop a plan that will guide site restoration and closure activities. Initially the plan will describe the anticipated methods applicant proposes for revegetation of disturbed areas using native plant species including perennials, and will include methods used to monitor restoration of and evaluate success of revegetation efforts. The initial site restoration and closure plan will evaluate existing information gathered by applicant and other relevant studies to determine if existing data is sufficient to guide restoration of disturbed lands or if additional research is necessary to determine the most effective means to restore and revegetate the site at closure. The plan must address preconstruction salvage and relocation of succulent vegetation from the site to either an onsite or nearby nursery facility for study and propagation of seed sources to reclaim the disturbed area. In the case of unexpected closure, the plan should assume restoration activities could possibly take place prior to the anticipated lifespan of the plant. Specifically the closure and restoration plan must address the following:

- Develop a revegetation research program based on information provided by a qualified expert in desert flora and revegetation. The program would include a review of available materials describing methods and success rates of revegetation programs in the Eastern Mojave Desert at similar elevations.

- A program to evaluate existing native plant vegetation data from the current inventories and identify proposed representative study plot locations within and adjacent to the project area for each of the four vegetative community subtypes cited in the AFC, Appendix 5.2B. This data will be used to identify dominant species to be used in revegetation. Baseline vegetation measurements from the project area and from surrounding non-disturbed areas must be established prior to any surface disturbing activities and will be used to evaluate and monitor vegetation trends and changing conditions over the life of the project that could be considered impediments to restoration activities (e.g. sustained drought). Prepare and submit a protocol to identify study plots and methodology to evaluate trends to BLM for review and approval prior to beginning studies.
- Identify the extent of succulent plant species to be salvaged and maintained in nursery areas either on site or in close proximity, that would be used for future transplanting and/or in propagation studies for seed sources.
- Monitoring and treatment of invasive species over the life of the project.
- Ground preparation procedures that would be needed to effectively reclaim the area.
- Implementation of monitoring programs after closure to verify revegetation results based upon the established goals for density and diversity.
- Provide yearly updates to agencies of progress achieved in connection to revegetation research.
- Identify, with justification, the vegetation considered unnecessary for revegetation or reclamation research that would be lost during construction that could be made available for public collection through plant salvage sales conducted by BLM.

Response: In reviewing the tables in the Draft Closure, Revegetation and Rehabilitation Plan (Attachment DR125-3B) submitted as Data Response Set 2K, some errors were found in the following tables:

- Table 1-1, Detailed Breakdown of Ivanpah SEGS Components
- Table 1-2, Areas of Permanent Disturbance
- Table 1-3, Areas of Long-Term Disturbance
- Table 1-4, Areas of Temporary Disturbance
- Table 7-4, Construction Disturbance Areas at Ivanpah SEGS and Preliminary Estimated Seed Requirements

Corrections have been made to these tables and are shown in track changes mode, with the changes also shown in bold font. An "R" has been added to the table

number designating that the table has been revised; hence, Table 1-1 is now Table 1-1R.

Replacement pages are provided in double-sided format so that the original pages can be removed and replaced with the corrected pages.

1. **Permanently disturbed areas:** This includes those features that would remain after the project's 50-year span¹. They would include the Southern California Edison (SCE) substation and the paved portion of Colosseum Road from the Golf Club to the substation; the rerouted trails (i.e., the gravel road from the end of the paved portion of the rerouted Colosseum Road to where it connects with the Colosseum dirt road, the rerouted access tracks around the top of Ivanpah 3; and stabilized channel crossings.
2. **Long-term disturbance areas:** This includes facilities that will remain in place for the duration of the project. Examples include the solar plants, administration/warehouse building, water supply wells, monitoring well, and utility lines. Areas affected by these facilities will be revegetated following closure, which would be the same order as construction, with the exception that the shared facilities would be handled as part of the last phase that is closed.
3. **Temporary disturbance areas:** This includes areas that will be revegetated within 5 years from the time of disturbance. Facilities that fall into this category include the utility and roadway construction corridors and lightly graded areas within Ivanpah 2 and Ivanpah 3 (which will be revegetated within 1 year of completion of construction) and those areas within the Construction Logistics Area (CLA) that are used for construction (which will be revegetated once construction of all three solar plants is completed).

A breakdown of the project's permanent and long-term disturbance areas is presented in Tables 1-2 and 1-3. Most of the temporary disturbance will occur in the CLA between Ivanpah 1 and 2 (approximately 377 acres in size, see Appendix A, Figure 19) and the graded areas within Ivanpah 2 and Ivanpah 3 (see Appendix A, Figure 11, Overall Grading Plan). However it will include the SCE substation (permanent disturbance), the administration/warehouse building, and shared utilities (long-term disturbances). Portions of the CLA will be used during construction for staging, laydown, heliostat fabrication, and temporary offices. Once construction has been completed, only the shared facilities will remain in this area. In addition to the CLA, temporary impacts would occur to approximately 8.6 acres that will be used for construction of the gas line tap station at the existing Kern River Gas Transmission (KRGT) pipeline, construction of the approximately 2,000-foot-long gas pipeline north of Ivanpah 3, and construction of the gas metering set for Ivanpah 1 and 2. A breakdown of the temporary disturbance areas is provided in Table 1-4.

TABLE 1-2R
Areas of Permanent Disturbance

Components	Linear Feet	Acres
Ivanpah 3		
12' dirt road from gas line to trail 699226 (east side of Ivanpah 3)	6,752	1.86
12' dirt road from trail 699198 to asphalt road between Units 2 & 3	1,572	0.43
12' rerouted trail 699226 from gas line west side	6,906	1.90
30' asphalt road between Ivanpah Units 2 & 3	4,751	3.93

¹ The BLM right-of-way lease will be for 50 years, which includes construction and decommissioning/restoration. Therefore, the plant's operating life will be between 40 and 45 years.

TABLE 1-2R
Areas of Permanent Disturbance

Components	Linear Feet	Acres
12' dirt trail to mining claim	1,492	0.41
Ivanpah 2		
12' rerouted trail 699198 (along west side of Ivanpah 2)	3,115	0.86
CLA including improvements to Colosseum Road		
30' asphalt improved Colosseum Rd.	8,442	6.98
30' asphalt re-routed Colosseum Road	4,343	3.59
12' gravel road re-routed Colosseum to where it exits the CLA	2,452	0.68
24' access road to substation	1,761	1.21
Substation		16.10
Diversion berms & channel around Substation		8.30
TOTAL AREAS OF PERMANENT DISTURBANCE		46.25

TABLE 1-3R
Areas of Long-Term Disturbance

Components	Linear Feet	Acres
Kern River Gas Transmission Line (KRG T)		
Tap Station		0.34
12' dirt service road from tap point to top of Ivanpah 3	2,011	0.55
Ivanaph 3		
12' dirt road from trail 699226 to trail 699198	7,103	1.96
Ivanpah 3 Metering set		0.01
24' asphalt road to PB	3,872	2.67
Power block (PB)		14.96
Solar Power Towers		3.74
15' dirt road from PB to the four SPTs	10,300	3.55
12' dirt road from SPTs to corners	25,617	7.06
12' perimeter road around Ivanpah 3	40,778	11.23
Set back from property line		17.50
10' heliostat maintenance paths		210.98
Heliostat field		1150.18
Gen-tie towers from PB to top of Ivanpah 2		0.006
Ivanpah 3 fill stockpiles		3.98

TABLE 1-3R
Areas of Long-Term Disturbance

Components	Linear Feet	Acres
Ivanpah 2		
30' asphalt road from Ivanpah 3 to Colosseum	7,247	5.99
24' asphalt road to PB	2,229	1.54
Power block (PB)		13.17
12' dirt service road from PB to corners	15,176	4.18
Gen-tie towers along south side of Ivanpah 2		0.004
Ivanpah 3 gen-tie along west side of Ivanpah 2		0.007
Ivanpah 2 gen-tie from PB to end of Ivanpah 2 (4 tower footprints)		0.004
12' perimeter road around Ivanpah 2	24,167	6.66
Set back from property line		4.71
10' heliostat maintenance road	629,528	144.52
Heliostat field		606.16
12' dirt trail along southwest corner of Ivanpah 2	4,148	1.14
Ivanpah 2 channel crossings		0.31
Ivanpah 2 fill stockpiles		2.03
CLA including Improvements to Colosseum Road		
12' dirt service road for double-circuit gen-tie line	1,898	0.52
Double-circuit gen-tie towers (area of 4 tower footprints)		0.004
Gas meter set for Ivanpah 1 & 2		0.02
24' asphalt road from re-routed Colosseum to Ivanpah 1	2,153	1.48
Admin Building (incl. entrance road)		8.90
12' dirt service road for monitoring well	866	0.24
Monitoring well		0.002
12' dirt service road for production wells	1,075	0.30
Production wells		0.005
12' dirt service road from Ivanpah 1 to Substation	2,867	0.79
Gen-tie towers from Ivanpah 1 to Substation		0.005
40-acre succulent storage & stockpile area		40.00
CLA fill stockpile		0.91
Ivanpah 1		
24' asphalt road from edge of Ivanpah 1 to PB	3,361	2.31
Gas & water line corridor to PB	3,361	0.00

TABLE 1-3R
Areas of Long-Term Disturbance

Components	Linear Feet	Acres
Power block (PB)		<u>13.17</u>
Gen-tie towers from PB to Ivanpah 1 (area of 6 tower footprints)		0.005
12' dirt service road from PB to corners	12,020	3.31
12' perimeter road around Ivanpah 1	23,857	6.57
Set back from property line		8.79
10' heliostat maintenance road	636,325	146.08
Heliostat field		<u>730.30</u>
Ivanpah 1 fill stockpiles		1.57
TOTAL AREAS OF LONG-TERM DISTURBANCE		<u>3,184.43</u>

TABLE 1-4R
Areas of Temporary Disturbance

Components	Linear Feet	Acres
Kern River Gas Transmission Line (KRG T)		
Tap Station Construction Area		0.92
Gas Line from tap point to top of I-3	2,011	1.75
Ivanpah 3		
Gas Line Corridor 50' construction area (east side)	15,427	13.46
Construction corridor for 30' asphalt road between Units 2 & 3	4,751	1.53
Construction corridor for 24' asphalt road to PB	3,872	1.24
Gas line from metering set to PB	5,823	0.00
Water line from metering set to PB	5,785	0.00
Construction corridor for gas & water line	5,823	3.74
Gen-tie corridor from PB to top of Unit 2	4,065	0.36
Ivanpah 3 graded areas		380.00
Ivanpah 2		
Construction corridor for 30' asphalt road from Ivanpah 3 to Colosseum	7,247	2.33
Gas & water line corridor to PB	3,972	2.55
Construction corridor for 24' asphalt road to PB	2,229	0.72
Ivanpah 3 gen-tie along south side of Ivanpah 2	3,296	0.25
Ivanpah 3 gen-tie along west side of Ivanpah 2	5,371	0.38
Ivanpah 2 gen-tie from PB to end of Unit 2	2,322	0.20

TABLE 1-4R
Areas of Temporary Disturbance

Components	Linear Feet	Acres
Graded areas		123.00
CLA Including improvements to Colosseum Road		
Construction corridor for 30' asphalt improved Colosseum Rd.	8,442	2.71
Tire wash/concrete washout off Colosseum		1.04
Construction corridor for 30' asphalt re-routed Colosseum Road	4,343	1.40
Construction corridor for 24' access road to substation	1,761	0.57
Ivanpah 2 & 3 gen-tie to substation construction corridor	1,898	0.35
<u>Construction of double-circuit gen-tie line towers</u>		<u>0.20</u>
Construction area for gas meter set for Ivanpah 1 & 2		0.92
Construction corridor for 24' asphalt road from re-routed Colosseum to Ivanpah 1	2,153	0.69
<u>Construction corridor from supply wells to main line</u>	<u>1075</u>	<u>0.69</u>
Gen-tie line from Ivanpah 1 to Substation	2,867	0.53
Construction of gen-tie towers from Ivanpah 1 to Sub		0.32
Construction parking		1.53
Contractor Trailer area		18.57
Equipment Laydown		20.46
CLA area available for construction use		<u>247.19</u>
Ivanpah 1		
Construction corridor for 24' asphalt road from edge to PB	3,361	1.08
Construction of gen-tie towers from PB to end of Ivanpah 1		0.29
TOTAL AREAS OF TEMPORARY DISTURBANCE		<u>830.97</u>

1.3.1 Project Elements

Each of the three proposed solar plants will consist of heliostat fields surrounding a power block, which is supplied with the necessary utilities through a utility corridor (see Appendix A, Figure 15.). Each of the power blocks will be connected to SCE's planned step-up substation, which will in turn tie into SCE's electric-power transmission network (or grid) through an existing 115-kilovolt (kV) transmission line that runs through the CLA between Ivanpah 1 and Ivanpah 2. Construction of each project phase will result in temporary land disturbances, with site rehabilitation and revegetation in temporary-disturbance areas occurring as soon as practical upon completion of construction. Other project elements are associated with long-term facilities (e.g., structures and access roads, see Table 1-3), and site rehabilitation and revegetation of these areas will occur after closure and decommissioning following the planned 50-year period of operation. With few

exceptions for the permanent facilities, these impacted areas will require some degree of rehabilitation and revegetation.

The sections that follow describe each project element germane to this rehabilitation and revegetation plan, including the heliostat (mirror) fields and collectors, the power blocks, water supply and treatment facility, wastewater treatment facility, shared and individual (plant-specific) utility corridors, substation and switchyard, access roads and maintenance paths, and the administration and maintenance complex. The project specifically includes LID methods, which will reduce the rehabilitation effort that will be required to restore the sites.

Heliostat Fields

The 100-MW plants (Ivanpah 1 and 2) will each have heliostat arrays consisting of up to 55,000 heliostats. The 200-MW plant (Ivanpah 3) will have heliostat arrays consisting of up to 104,000 heliostats. The heliostat arrays would be arranged around a single centralized solar power tower (SPT). The heliostats would automatically track the sun during the day and reflect the solar energy to the boiler on top of the SPT.

Each of the heliostat mirrors is 7.2 feet high by 10.5 feet wide (2.2 meters by 3.2 meters) yielding a reflecting surface of 75.6 square feet (7.0 square meters). Each heliostat consists of two mirrors mounted on a single pylon, along with a computer-programmed aiming control system that directs the motion of the heliostat to track the movement of the sun. Communication cables connecting the heliostats between one another will be strung aboveground.

Heliostat Field Preparation. Consistent with the LID approach to this project, vegetation clearing in the heliostat fields will occur only where necessary to allow for equipment access and stormwater management. In areas where grading is not required for access or construction, the vegetation will not be removed.

An approximate 12-foot-wide linear swath of vegetation along the outer edge of each heliostat field will be cleared to create an internal perimeter path for installation and maintenance of the combined tortoise and security fence. Additional vegetation clearing will be performed in areas where the existing terrain will not permit access of installation equipment and materials during construction without leveling or grading. Appendix A, Figure 11 shows the areas where grading will likely occur. Elsewhere vegetation will remain, but will be cut to a height that will allow clearance for heliostat function while leaving the root structures intact. The vegetation will be cut with a flail-type mower mounted on skids that will be mounted on a low-ground pressure tractor (approximately 4.2 pounds per square inch [psi]). Figure 1-4, shows the type of equipment that may be used. Occasional cutting of the vegetation may be required to control plant regrowth that could affect heliostat mirror movement.

Installation of Heliostats. The heliostats will be installed in two steps. Initially, the support pylons will be installed using a sonic (vibratory) technology, and then the mirrors and aiming system are mounted to the pylon. The vibratory installation allows the 6-inch diameter pylons to be embedded in the ground without the use of conventional drilling techniques or generation of drill cuttings. As a result of the LID, a majority of the project site will maintain the original grades and natural drainage features, and therefore construction

TABLE 1-1R
Detailed Breakdown of Ivanpah SEGS Components

Components	Linear Feet	Acres			Total	Comments
		Temp	Long-Term	Permanent		
AREA NORTH OF IVANPAH 3						
Tap Station			0.34		0.34	Tap Station is 100' x 150'.
Tap Station Construction Area		0.92			0.92	Construction area is 200' x 200'
Gas Line from tap point to top of I-3	2,011	1.75			1.75	50' construction area corridor along gas line, less 12' dirt service road = 38' revegetated
Gas Line from tap point to top of I-3	2,011		0.55		0.55	12' dirt service road
SUBTOTAL AREA NORTH OF IVANAPH 3		2.67	0.90	0.00	3.57	
Ivanpah 3						
Gas Line Corridor 50' construction area (east side)	15,427	13.46			13.46	50' construction area corridor along gas line east side, less 12' dirt road = 38' revegetated
Gas Line Corridor (east side)	6,752			1.86	1.86	12' dirt road from gas line to trail 699226
Gas Line Corridor (east side)	7,103		1.96		1.96	12' dirt road from trail 699226 to trail 699198
Gas Line Corridor (east side)	1,572			0.43	0.43	12' dirt road from trail 699198 to asphalt road between Units 1 & 2
12' rerouted trail 699226 from gas line west side	6,906			1.90	1.90	12' dirt road from gas line to trail 699226 (west side of Ivanpah 3). No construction corridor since trail is just mowed.
Ivanpah 3 Metering set			0.01		0.01	Ivanpah 3 metering set 10' x 40' (construction area within the 50' construction area for gas & water line)
30' asphalt road between Ivanpah 2 & 3	4,751			3.93	3.93	SE corner of Ivanpah 3 to asphalt road going to PB (30'asphalt and 3' shoulder each side)
Asphalt road construction corridor	4,751	1.53			1.53	Between Units 2 & 3: 50' Corridor (30' road + 3' shoulder = 7' construction area on each side – 14' revegetated)
24' asphalt road to Power block (PB)	3,872		2.67		2.67	24' road + 3' shoulder on each side = 30' roadway

TABLE 1-1R
Detailed Breakdown of Ivanpah SEGS Components

Components	Linear Feet	Acres			Comments	
		Temp	Long-Term	Permanent		Total
Asphalt road construction corridor	3,872	1.24			1.24	14' corridor (30' roadway +3' shoulders = 7' construction area on each sides of road)
Power block (PB)			14.96		14.96	Includes road around PB, diversion berm and channel
Solar Power Towers			3.74		3.74	4 SPTs in the heliostat field
15' dirt road from PB to the four SPTs	10,300		3.55		3.55	
12' dirt road from SPTs to corners	25,617		7.06		7.06	
12' perimeter road	40,778		11.23		11.23	
Set back from property line			17.50		17.50	Undeveloped set back from any property line
10' heliostat maintenance paths (estimated at 15.5% of heliostat field) ⁹	NA		210.98		210.98	Detailed information is not available.
Heliostat field			1,150.18		1,150.18	Remaining area within Ivanpah 3
Gas line from metering set to PB	5,823	0.0			0.00	Line will follow dirt road. No Additional Impact
Water line from metering set to PB	5,785	0.0			0.00	Line will follow dirt road. No Additional Impact
Construction corridor for gas & water line	5,823	3.74			3.74	40' construction corridor for gas & water line (40' corridor – 12' dirt road = 28' revegetation corridor)
Gen-tie corridor from PB to top of Ivanpah 2	4,065	0.36			0.36	Gen-tie line will follow asphalt road. 2 turning towers, 5 embedded towers
Gen-tie towers			0.006		0.006	Area of the tower footprints
Graded areas		380.00			380.00	Includes rock relocation area
Fill stockpiles			3.98		3.98	4' high fill stockpile, for use in decommissioning

⁹ Heliostat maintenance paths for Ivanpah 1 and 2 comprise about 16.5 percent of the heliostat field. Because of the larger area of Ivanpah 3, greater distance between some heliostat rows, and unused areas 15.5 percent was determined to be a reasonable assumption.

TABLE 1-1R
Detailed Breakdown of Ivanpah SEGS Components

Components	Linear Feet	Acres			Comments	
		Temp	Long-Term	Permanent		Total
12' dirt trail to mining claim	1,492			0.41	0.41	
SUBTOTAL IVANPAH 3		400.33	1,427.81	8.53	1,836.68	Includes 1836.3 ac for Ivanpah 3 and 0.41 ac for mining access (less heliostat field)
			-1,150.18			
Ivanpah 3 Revegetation Area		400.33	277.64		677.97	
Ivanpah 2						
30' asphalt road from Ivanpah 3 to Colosseum Road	7,247		5.99		5.99	30' asphalt + 3' shoulder on either side = 36' roadway
Asphalt road construction corridor	7,247	2.33			2.33	50' construction corridor - 36' roadway = 7' construction area on each side of road =14' revegetation
Gas & water line corridor to PB	3,972	2.55			2.55	40' construction corridor - 12' dirt access road from PB to corner = 28' revegetation
24' asphalt road to PB	2,229		1.54		1.54	From re-routed Colosseum Rd to PB (24' road + 3' shoulders = 30' roadway)
Asphalt road construction corridor	2,229	0.72			0.72	44' construction corridor -30' roadway = 7' construction area on each side = 14' revegetation
Power block (PB)			13.17		13.17	Includes road around PB, diversion berm and channel
12' dirt service road from PB to corners	15,176		4.18		4.18	
Ivanpah 3 gen-tie along south side of Ivanpah 2	3,296	0.25			0.25	Construction corridor for 1 turning tower + 4 embedded towers (access along dirt perimeter road)
Ivanpah 3 gen-tie along south side of Ivanpah 2			0.004		0.004	Area of the 5 tower footprints
Ivanpah 3 gen-tie along west side of Ivanpah 2	5,371	0.38			0.38	Access along dirt perimeter road
Ivanpah 3 gen-tie along west side of Ivanpah 2			0.007		0.01	Area of the 8 tower footprints

TABLE 1-1R
Detailed Breakdown of Ivanpah SEGS Components

Components	Linear Feet	Acres			Total	Comments
		Temp	Long-Term	Permanent		
Ivanpah 2 gen-tie from PB to junction with Ivanpah 3 gen-tie	2,322	0.20			0.20	Construction corridor for 1 turning tower +3 embedded towers (access along paved road)
Ivanpah 2 gen-tie from PB to junction with Ivanpah 3 gen-tie			0.004		0.004	Area of the 4 tower footprints
12' perimeter road	24,167		6.66		6.66	
Set back from property line			4.71		4.71	undeveloped set back from property line
10' heliostat maintenance paths	629,528		144.52		144.52	
Heliostat field			606.16		606.16	Remaining area within Ivanpah 2 (includes graded area)
12' dirt trail along west side of Ivanpah 2	3,115			0.86	0.86	Rerouted trail 699198
12' dirt trail along southwest corner of Ivanpah 2	4,148		1.14		1.14	12' dirt road around west perimeter from trail 699198 to relocated Colosseum Road
Channel crossings			0.31		0.31	
Graded areas		123.00			123.00	
Fill stockpiles			2.03		2.03	4' high fill stockpile, for use in decommissioning
SUBTOTAL IVANPAH 2		129.43	790.43	0.86	920.72	
(less heliostat field)			-606.16			
Ivanpah 2 Revegetation Area		129.43	184.27		313.70	
Construction Logistics Area (incl. improvements to Colosseum Road)						
30' asphalt improved Colosseum Rd.	8,442			6.98	6.98	From Golf Club to T-intersection at Ivanpah 2 (30' asphalt road + 3' dirt shoulders = 36' roadway)
Asphalt road construction corridor	8,442	2.71			2.71	50' construction corridor - 36' roadway = 7' construction area each side = 14' revegetation

TABLE 1-1R
Detailed Breakdown of Ivanpah SEGS Components

Components	Linear Feet	Acres			Total	Comments
		Temp	Long-Term	Permanent		
Tire wash/concrete washout, off Colosseum Road		1.04			1.04	Area for turnouts and wash areas
30' asphalt re-routed Colosseum Road	4,343			3.59	3.59	From T-intersection with Colosseum around south end of Ivanpah 2 to road to PB (30' asphalt road + 3' dirt shoulders = 36' roadway)
Asphalt road construction corridor	4,343	1.40			1.40	50' construction corridor - 36' roadway = 7' construction area each side = 14' revegetation
12' gravel road to re-routed Colosseum trail	2,452			0.68	0.68	From end of asphalt section to where it exits the CLA on to connect to Colosseum dirt road
24' asphalt road to substation	1,761			1.21	1.21	24' asphalt + 3' dirt shoulders = 30' roadway
Asphalt road construction corridor	1,761	0.57			0.57	44' construction corridor - 30' roadway = 7' construction area on each side = 14' revegetation
Substation				16.10	16.10	Will remain post-project
Diversion berms & channel for substation				8.30	8.30	Will remain post-project
Ivanpah 2 & 3 T-line to substation construction corridor	1,898	0.35			0.35	20' construction corridor for double-circuit T-line -12' service road = 8' revegetation
12' dirt service road for dbl-circuit t-line	1,898		0.52		0.52	From Ivanpah 2 to Substation
Construction of double-circuit towers		0.20			0.20	Construction corridor for 1 turning tower + 3 embedded towers (access along dirt road)
Double-circuit gen-tie towers			0.004		0.004	Area of the 4 tower footprints
Gas meter set for Ivanpah 1 & 2			0.02		0.02	20' x 40' area on southeast corner of Ivanpah 2
Gas meter set construction area		0.92			0.92	200' x 200'
24' asphalt road from re-routed Colosseum Road to Ivanpah 1	2,153		1.48		1.48	24' asphalt from Ivanpah 2 to Ivanpah 1 + 3' dirt shoulders ea. side = 30' roadway

TABLE 1-1R
Detailed Breakdown of Ivanpah SEGS Components

Components	Linear Feet	Acres			Total	Comments
		Temp	Long-Term	Permanent		
<u>24'</u> Asphalt road construction corridor	2,153	0.69			0.69	44' Construction Corridor - 30' roadway = 7' construction area on ea. side = 14' revegetation
Gas & water line corridor to Unit 1	2,153				0.00	Runs along 24' asphalt road, no additional Impact
Administration/warehouse Building			8.90		8.90	Includes entrance road
12' dirt service road for monitoring well	866		0.24		0.24	12' road is just mowed, no construction area
Monitoring well			0.002		0.002	10' x 10' area
12' dirt service road for production wells	1,075		0.30		0.30	12' road is just mowed, no construction area
<u>Construction corridor from production wells to main line</u>	1,075	0.69			0.69	<u>28' wide construction corridor (40' – 12' dirt access road)</u>
Production wells			0.005		0.005	10' x 10' area for each well
T-line from Ivanpah 1 to Substation	2,867	0.53			0.53	20' construction corridor for T-line. -12' service road = 8' reveg
12' service road from Ivanpah 1 to Sub	2,867		0.79		0.79	12' road is just mowed, no construction area
Construction of gen-tie towers		0.32			0.32	Construction corridor for 2 turning towers + 4 embedded towers (access along dirt road)
Gen-tie towers			0.005		0.005	Area of the 6 tower footprints
Construction parking		1.53			1.53	Assume 12' x 20' area for 39, 15-passenger vans & 192 personal vehicles + 20% additional area for access
Contractor Trailer area		18.57			18.57	Includes construction parking area
Equipment Laydown		20.46			20.46	Does not include tire wash, which is above
Area available for construction use		247.19			247.19	Additional area that can be used if needed
40-ac succulent storage & stockpile area			40.00		40.00	
Fill stockpiles			0.91		0.91	4' high fill stockpile, for use in decommissioning
SUBTOTAL CLA & Colosseum Rd		297.16	53.18	36.85	387.19	Includes CLA (377.5 ac) + Colosseum Road (9.69 ac)

TABLE 1-1R
Detailed Breakdown of Ivanpah SEGS Components

Components	Linear Feet	Acres			Comments	
		Temp	Long-Term	Permanent		Total
Ivanpah 1						
24' Asphalt road from edge to PB	3,361		2.31		2.31	Portion within Ivanpah 1 (24' road + 3' dirt shoulders = 30-roadway)
Asphalt road construction corridor	3,361	1.08			1.08	44' construction corridor - 30' roadway = 7' construction area on each side = 14' revegetation
Gas & water line corridor to PB	3,361		0.00		0.00	Road corridor used to construct utilities on each side
Power block (PB)			<u>13.17</u>		<u>13.17</u>	Includes road around PB, diversion berm and channel
Gen-tie line from PB to end of Ivanpah 1	3,510				0.00	Asphalt road can be used as service access for transmission line
Construction of gen-tie towers		0.29			0.29	Construction corridor for 1 turning tower + 5 embedded towers
Gen-tie towers			0.005		<u>0.005</u>	Area of the 6 tower footprints
12' dirt service road from PB to corners	12,020		3.31		3.31	
12' perimeter road	23,857		6.57		6.57	
Set back from property line			8.79		8.79	undeveloped set back from property line
10' heliostat maintenance paths	636,325		146.08		146.08	
Heliostat field			<u>730.30</u>		<u>730.30</u>	Remaining area within Ivanpah 1
Fill stockpiles			1.57		1.57	4' high fill stockpile, for use in decommissioning
SUBTOTAL IVANPAH 1		<u>1.37</u>	<u>912.11</u>	0.0	913.49	
(less heliostat field)			<u>-730.30</u>			
Ivanpah 1 Revegetation Area		<u>1.37</u>	<u>181.81</u>			

Note: These numbers are based on the best available information at the time of preparation and are subject to change in the final design drawings.

TABLE 7-2
Native Seed Vendors Potentially Servicing the Southwest United States

Company	Name	City	State	Web Site
	Constance Vadheim	Redondo Beach	CA	www.nativeseednetwork.org/viewuser?id=10696
Arkansas Valley Seed	Richard Avila	Denver	CO	avseeds.com
Armenta Seed	Ray Armenta	Gilbert	AZ	
Autumn Seeds, LLC	Roger Williamson	Spokane Valley	WA	www.autumnseeds.com
Clearwater Seed	Mark Mustoe	Spokane	WA	
Comstock Seed	Ed Kleiner	Gardnerville	NV	www.comstockseed.com
Detwiler's Native Grass Seed Co.	Joe Detwiler	Bonham	TX	
Granite Seed Company	Daryle Bennett	Lehi	UT	www.graniteseed.com
Great Basin Seed	Jason Stevens	Ephraim	UT	www.greatbasinseeds.com
Intermountain Seed Co.	Eric Christensen	Ephraim	UT	
Los milagros de Lara	A. Subero	Loxahatchee	FL	
Mimbres Valley Sweetwater Farms	Brooke Feldman	Mimbres	NM	
Native and Xeric Plants	Stew Churchwell	Emmett	ID	www.nxplants.com
Native Seed Network	Rob Fiegenger	Corvallis	OR	
Noorani Seeds	Usman Hayat	Hyderabad Sindh, Pakistan		www.nooraniseeds.com
RECON Native Plants	Ryan West	San Diego	CA	www.reconnativeplants.com
Seeds Trust, High Altitude Gardens	Bill McDorman	Cornville	AZ	seedstrust.com
S&S Seeds	Jodi Miller	Carpinteria	CA	www.ssseeds.com
Stevenson Intermountain Seed, Inc.	Ron Stevenson	Ephraim	UT	www.stevensonintermountainseed.com
Stock Seed Farms, Inc	John Shipp	Murdock	NE	www.stockseed.com
Stover Seed Company	Stephen Knutson	Los Angeles	CA	www.stoverseed.com

Source: <http://www.nativeseednetwork.org/>

TABLE 7-3
Preliminary Seeding Plan for Ivanpah SEGS, Temporarily Disturbed Areas

Scientific Name	Common Name	Bulk lbs/ Acre	~Live Seeds/ Bulk lb	Total Live Seeds/Acre	Total Live Seeds/m ²
<i>Ambrosia eriocentra</i>	Wooly bursage	2	30,000	60,000	14.8
<i>Atriplex canescens</i>	Four-wing saltbush	10	26,000	260,000	64.2
<i>Crysothamnus paniculatus</i>	Desert rabbitbrush	1	65,000	65,000	16.1
<i>Eriogonum fasciculatum</i> ssp. <i>polifolium</i>	California buckwheat	3	35,000	105,000	25.9
<i>Hymenoclea Salsola</i>	Cheesebush	6	35,000	210,000	51.9
TOTAL		22		700,000	173.0

TABLE 7-4R
Construction Disturbance Areas at Ivanpah SEGS and Preliminary Estimated Seed Requirements

Project Component/ Phase	Temporary Disturbance (Reclamation within 5 Years, Acres)	Seed Requirement for Temporary Impact Area (Total Bulk lbs)*	Long-term Disturbance (Reclamation after Decommissioning, Acres)	Seed Requirement for Long-term Impact Area (Total Bulk lbs)	TOTAL AREA (Temporary + Long-term)	TOTAL SEED
KRGT Line Area	2.67	59	0.90	20	3.57	79
Ivanpah 3	400.33	8807	277.64	6108	<u>677.97</u>	14915
Ivanpah 2	129.43	2848	184.27	4054	<u>313.70</u>	6901
CLA	<u>297.16</u>	<u>6538</u>	53.18	1170	<u>350.34</u>	<u>7707</u>
Ivanpah 1	1.37	30	<u>181.81</u>	<u>4000</u>	<u>183.19</u>	<u>4030</u>
TOTAL	<u>830.97</u>	<u>18281</u>	<u>697.79</u>	<u>15351</u>	<u>1528.76</u>	<u>33633</u>

* Assumes seeding rate of 22 pounds per acre.



**BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
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APPLICATION FOR CERTIFICATION
FOR THE *IVANPAH SOLAR ELECTRIC
GENERATING SYSTEM*

DOCKET No. 07-AFC-5
PROOF OF SERVICE
(Revised 7/20/09)

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DECLARATION OF SERVICE

I, Mary Finn, declare that on September 10, 2009, I served and filed copies of the attached, Data Response Set 2KR dated September 10, 2009. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: [www.energy.ca.gov/sitingcases/ivanpah].

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(Check all that Apply)

FOR SERVICE TO ALL OTHER PARTIES:

sent electronically to all email addresses on the Proof of Service list;

by personal delivery or by depositing in the United States mail at Sacramento** with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses **NOT** marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (*preferred method*);

OR

depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION

Attn: Docket No. 07-AFC-5
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

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



Mary Finn

**or by other delivery service, e.g., Fed Ex, UPS, courier, etc.

*indicates change