

DOCKET
08-AFC-2
DATE _____
RECD. MAR 11 2010

State of California
Energy Resources Conservation and Development Commission

In the Matter of:)	Docket No. 08-AFC-2
)	
Application for Certification)	STAFF’S PREHEARING
<u>for the Beacon Solar Energy Project</u>)	CONFERENCE STATEMENT

In a notice dated February 26, 2010, the California Energy Commission’s (Energy Commission) committee overseeing the Beacon Solar Energy Project (“Beacon”) directed parties to file a prehearing conference statement for the March 15, 2010, prehearing conference. The Order stated that the Prehearing Conference Statements must be filed no later than March 11, 2010. This is Staff’s Prehearing Conference Statement.

1. TOPIC AREAS THAT ARE COMPLETE AND READY TO PROCEED TO EVIDENTIARY HEARING

Staff’s analyses in the following areas are complete and ready to proceed to hearing: Air Quality, Alternatives, Biology, Cultural Resources, Geologic Hazards, Socioeconomics, Visual Resources, Hazardous Materials, Geology and Paleontological Resources, Land Use, Noise, Traffic and Transportation, Public Health, Transmission Line Safety, Worker Safety, Transmission Systems Engineering, Facility Design, and Reliability, Soil and Water, and Waste Management.

2. TOPIC AREAS THAT ARE INCOMPLETE AND NOT YET READY TO PROCEED TO EVIDENTIARY HEARING

There are no topic areas that are incomplete.

3. TOPIC AREAS THAT REMAIN DISPUTED AND REQUIRE ADJUDICATION

BIOLOGICAL RESOURCES

In the area of biology, CURE has raised a number of issues that staff and the applicant are prepared to address. There may also be some details in staff’s proposed Conditions of Certification which have not been fully resolved. For example, in some cases staff requires a biologist to be onsite during certain construction activities while the applicant requests the biologist be available, but not necessarily on site.

CULTURAL RESOURCES

The primary dispute with Cultural Resources between staff and the applicant relates to the lead time needed for document submissions and whether 10% or 5% of the solar field should be subject to magnetometry studies.

HAZARDOUS MATERIALS

CURE has raised issues regarding the potential for heat transfer fluid (HTF) leaks and spills during operations. Both waste management and hazardous materials staff will be prepared to address CURE's concerns.

WATER RESOURCES

The applicant's decision to utilize recycled water for power plant cooling eliminates the need to adjudicate the use of on-site ground water for cooling or the use of dry cooling and photo-voltaic technologies. Consequently, attached as **Exhibit A** to this statement is a stipulation limiting the evidentiary testimony to issues relating to the use of recycled water for facility cooling. Some details of the monitoring plan described in Condition of Certification Soil and Water 1, remain in dispute. In addition staff will provide testimony supporting a version of the Tamarisk removal program proposed by the applicant.

VISUAL RESOURCES

For Visual Resources, staff concludes that, from two key observation points, the project will result in an unmitigable adverse significant impact. Staff believes the applicant will dispute this conclusion. Staff also believes that the Final Staff Assessment (FSA) provides support for the Committee to make findings of overriding considerations to approve the project despite the unmitigable visual impacts.

TRANSMISSION ENGINEERING

CURE has recommended Condition of Certification, TRANS-5 be modified. Cure also claims that the selected transmission line cannot carry the full load from the BEACON facility. Staff will be prepared to address CURE's concerns.

4. THE IDENTITY OF EACH WITNESS SPONSORED BY EACH PARTY

Staff will offer the Final Staff Assessment as an exhibit and proposes admitting staff's testimony in all uncontested areas into the record through the declarations included within the Final Staff Assessment. A representative of the Air District will be available by phone to confirm compliance with the District's rules and respond to any questions by the committee.

Staff offers the following witness to present direct testimony on the disputed technical area of Visual Resources and be available for cross examination. Witness qualifications are found in the Final Staff Assessment under preparation team.

1. Mark Hamlin will testify regarding the significant impacts to Visual Resources from the project's mirror field. Staff anticipates direct testimony to take 30 minutes. Mr. Hamlin will be present to testify.

To address potential questions by the Committee and issues raised by CURE and to participate in general discussion on conditions of certification, the following staff witnesses will be available in person or by phone.

1. Staff biologist Susan Sanders, CDFG biologist Julie Vance and USFWS biologist Judy Hohman. Staff anticipates direct testimony and general discussion on biological resources to take several hours when including responses from the applicant's team of biologists. All three biologists for staff will be present.
2. Soil and Water technical staff, Casey Weaver and John Fio. Staff anticipates direct testimony and general discussion to take one to two hours. Both staff members will be present.
3. A representative from the Lahontan Regional Water Quality Control Board may attend and provide testimony regarding water quality and waste discharge requirements.
4. A representative from the Rosamond Water District and California City will sponsor the two recycled water proposals to provide recycled water to the project and to respond to any questions. Staff anticipates direct testimony to take 30 minutes for both witnesses. Both witnesses will be present.
5. Cultural Resources technical staff Michael McGuirt. Staff anticipates direct testimony and discussion to take 45 minutes. Mr. McGuirt will be testifying by phone.
6. Hazardous Materials technical staff, Geoffrey Lesh and Waste Management staff, Ellen Townsend-Hough, will address the HTF spill issues raised by CURE. Staff anticipates direct testimony to take 20 minutes.
7. Transmission Engineering staff member, Sudath Edirisuriya will address the project's ability to connect to LADWP's transmission line. Staff anticipates direct testimony to take 20 minutes. Mr. Edirisuriya will be testifying by phone.

5. TOPIC AREAS UPON WHICH A PARTY DESIRES TO CROSS-EXAMINE WITNESSES

Staff anticipates needing to cross examine any witnesses offered by the applicant relating to Visual Resources and by CURE relating to biology. Staff anticipates taking 20 minutes to cross examine each witness. Staff reserves the right to cross examine

other witnesses, and to request a determination by the Committee as to whether the offered witness is an expert as defined in the California Evidence Code, section 720(a).

“A person is qualified to testify as an expert if he has special knowledge, skill, experience, training, or education sufficient to qualify him as an expert on the subject to which his testimony relates. Against the objection of a party, such special knowledge, skill, experience, training, or education must be shown before the witness may testify as an expert.”

6. A LIST OF IDENTIFYING EXHIBITS AND DECLARATIONS THAT EACH PARTY INTENDS TO OFFER INTO EVIDENCE

Staff identifies the following Exhibits:

Exhibit 500: the Final Staff Assessment available at <http://www.energy.ca.gov/sitingcases/beacon/documents/index.html>

Exhibit 501: post January 11, 2010, workshop Supplemental Soil and Water Conditions of Certification, with supplemental Appendix I and J available at <http://www.energy.ca.gov/sitingcases/beacon/documents/index.html>

Exhibit 502: post January 11, 2010, workshop Supplemental Biological Resources Conditions of Certification available at http://www.energy.ca.gov/sitingcases/beacon/documents/2010-02-09_Revisions_Biological_Resources_Conditions_of_Certification.pdf

Exhibit 503: post January 11, 2010, workshop Supplemental Cultural Resources Conditions of Certification available at http://www.energy.ca.gov/sitingcases/beacon/documents/2010-02-09_Supplemental_Conditions_of_Certification_Cultural_Resources.pdf

Exhibit 504: supplemental statement and Declaration by Geoffrey Lesh regarding HTF fluid leak prevention. Attached as **Exhibit B**

Exhibit 505: Statement and Declaration by Deputy Director Terry O'Brien regarding overriding considerations for Visual Resources. Attached as **Exhibit C**

7. TOPIC AREAS FOR WHICH THE APPLICANT WILL SEEK A COMMISSION OVERRIDE DUE TO PUBLIC NECESSITY AND CONVENIENCE PURSUANT TO PUB. RES. CODE § 25525.

Staff believes the applicant will seek a commission override in the area of Visual Resources.

8. PROPOSALS FOR BRIEFING DEADLINES

Staff does not anticipate the need for any briefs to be filed.

9. PROPOSED MODIFICATIONS TO THE PROPOSED CONDITIONS OF CERTIFICATION BASED UPON ENFORCEABILITY, EASE OF COMPREHENSION AND CONSISTENCY WITH THE EVIDENCE

Staff has reviewed suggested changes to various Conditions of Certification proposed by the applicant. Attached as Exhibits D-I are accepted changes in strike-out and underline format along with staff declarations. The following is a summary of the changes:

Facility Design, Table 2 all changes accepted. Attached as **Exhibit D**.

Traffic & Transportation, Condition of Certification TRANS 2 and TRANS 3, all changes accepted. Attached as **Exhibit E**.

Visual Resources, Condition of Certification VIS 6, all changes accepted. Attached as **Exhibit F**.

Hazardous Materials, Condition of Certification HAZ 5, all changes accepted. Attached as **Exhibit G**.

Paleontology, Condition of Certification PAL 4, all changes accepted. Attached as **Exhibit H**.

Soil and Water, Conditions of Certification S&W 6a includes accepted changes. Attached as **Exhibit I**.

Soil and Water, Conditions of Certification S&W 1 and Appendix I. Attached as **Exhibit J**.

Date: March 11, 2010

Respectfully submitted,

/s/ Jared J. Babula

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EXHIBIT A

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

**APPLICATION FOR CERTIFICATION FOR
THE BEACON SOLAR ENERGY PROJECT**

DOCKET NO. 08-AFC-2

STIPULATION REGARDING COOLING WATER AND ALTERNATIVES

This Stipulation Regarding Cooling Water Alternatives ("Stipulation") is entered into by and among Beacon Solar, LLC (Beacon) and the California Energy Commission Staff ("Staff") (collectively the "Parties"). In consideration of the decision by Beacon to change the cooling water source for the Project, the Parties agree to the following:

STIPULATION

1. Staff concluded in the Final Staff Assessment that Beacon's use of groundwater for cooling water violates California Energy Commission ("Commission") policy as adopted in the Commission's 2003 Integrated Energy Policy Report and State Water Resources Control Board Policy Number 75-58. Staff acknowledges that Beacon disagrees with these conclusions and that Beacon believes it has the legal right to use onsite groundwater for all power plant water needs, including cooling water.
2. Staff presented the following five alternatives to avoid the alleged violation of Commission policy noted above: obtaining recycled water from Rosamond Community Services District ("Rosamond"), obtaining recycled water from California City, developing a source of degraded ground water from around Koehn Lake, using a dry cooling system, and employing photovoltaic technology.
3. Staff acknowledges that Beacon disputes Staff's economic analysis and findings regarding the economic viability of utilizing dry cooling or photovoltaic technology.
4. For multiple reasons, Beacon has agreed to use recycled water for power plant cooling only and to implement a version of either Staff's Rosamond or California City recycled water options to supply power plant cooling water.
5. The Parties are not pursuing degraded water from Koehn Lake at this time because insufficient information is available to fully analyze the potential environmental impacts from using degraded water around Koehn Lake. Nothing in this stipulation prevents Beacon from investigating a Koehn Lake water alternative at some point in the future.
6. Under the water use limitations contained in Staff's recommended Conditions of Certification Beacon can use ground water for construction, for emergency, for mirror washing, for balance of plant needs, for potable demand, for backup supply for power

plant cooling pursuant to a phase in of recycled water under the California City option.
(See Condition of Certification Soil & Water-1, dated February 9, 2010.)

7. The Parties agree that because Beacon has decided to use one of the recycled water options presented by Staff in the Final Staff Assessment for power plant cooling, evaluations of dry cooling and photovoltaic technology do not need to be presented at the evidentiary hearings in this proceeding. Additionally, because dry cooling and photovoltaic technology will not be presented at the evidentiary hearing, Beacon's designated confidential financial information referenced in the Final Staff Assessment will not be submitted into evidence or provided to the Committee¹.
8. Although this stipulation does not bind the Committee, the Parties agree to recommend to the Committee that the Presiding Member's Proposed Decision (PMPD) focus solely on the two recycled water options. The PMPD's discussion of dry cooling and photovoltaic technology should be limited to a reference that those alternatives were evaluated by Staff as part of the California Energy Commission's California Environmental Quality Act functional equivalent process and that Beacon disputes Staff's findings.

IN WITNESS WHEREOF, Beacon and Staff have executed this Stipulation as of

March 3, 2010.

Beacon Solar, LLC



BY: _____

California Energy Commission Staff

BY: _____

¹ The Committee for this siting proceeding (Docket No.08-AFC-2) consists of Chair Douglas as Presiding Member and Commissioner Byron as the Associate Member.

EXHIBIT B

DECLARATION OF GEOFFREY LESH

I, **Geoffrey Lesh** declare as follows:

1. I am presently employed by the California Energy Commission in the **Engineering Office** of the Siting, Transmission and Environmental Protection Division as a **Mechanical Engineer**.
2. A copy of my professional qualifications and experience is attached to the Final Staff Assessment and incorporated by reference herein.
3. I helped prepare the staff testimony on the **Hazardous Materials Management Section and the Worker Safety and Fire Protection Section** for the **Beacon Solar Energy Project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. During a status conference held on December 1, 2009 the committee requested staff to provide additional information regarding HTF leak prevention during operations of the facility. The attached testimony supplements my testimony provided in the Final Staff Assessment and represents my response to the concerns raised by the committee specifically regarding Condition of Certification HAZ 7 isolation valves.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 2/16/10

Signed: /s/ Geoffrey Lesh

At: Sacramento, California

HAZARDOUS MATERIALS MANAGEMENT

Supplemental Testimony of Geoff Lesh, PE

(1) Comments for the Beacon Solar Hazardous Materials Management Section: Response to the Hearing Officer's question on the need to more tightly specify isolation valve requirements in HAZ-7:

The intent of HAZ-7 is to limit the potential size of a potential spill to prevent escalation of any fire that might occur. A large fire with potential for escalation could create unnecessary and more widespread damage to the facility and present greater hazards to its employees.

Because the HTF has low volatility and toxicity, even if it were to burn, it is unlikely to cause a significant off-site consequence. There is little risk of explosions, or of off-site consequences resulting from toxic smoke. A large pool fire would typically be allowed by fire responders to burn itself out.

The need for isolation valves in the solar field at any particular spacing is not driven so much by potential risks to the offsite public, is by the need to protect on-site workers and the assets of the facility. Any loss of containment of a large HTF spill must be prevented so that HTF does not leave the site. This would be accomplished by limiting potential spill sizes with active spill detection systems and remotely operable isolation valves placed within the solar field combined with berms surrounding the solar field that would prevent any spill from moving offsite.

The applicant must consider and model the number and placement of isolation valves because the addition of each valve degrades the efficiency and performance of the power plant by increasing the resistance to HTF flow throughout the solar field and increases the construction and O&M costs for the plant. Besides limiting spills, the valves allow sections of the solar field to be temporarily taken out of production for maintenance, while continuing to operate the other sections of the solar field. So, the applicant's statement in the AFC that there will be 8-12 isolation valves to isolate individual solar field loops is adequate when considered along with the low consequences and low probability of large spills. Most solar field HTF spills at various SEGS facilities over the last 15 years have been small (<250 gal) and have not resulted in injuries.

An HTF spill reported at SEGS VII in July 2007 resulted from a mechanical failure (breakage) of a valve. This spill occurred in the power block portion of the power plant

rather than in the solar field. Under very high pressure, the failed valve produced a high volume HTF “gusher” that released approximately 30,000 gallons of HTF before being shutdown. No fire or injuries occurred. The spilled HTF was confined to the facility. Cleanup efforts ensued and required removal of contaminated soils as per established protocols (King 2010).

Such a failure and resulting spill is not expected to reoccur as the design of this HTF flow section has been modified for the proposed Beacon Solar project to reduce its likelihood.

Reference: King 2010, Personal communication with Glen King, Compliance Specialist, SEGS VIII, February 22, 2010

EXHIBIT C

DECLARATION OF TERRENCE O'BRIEN

I, Terrence O'Brien declare as follows:

1. I am presently Deputy Director of the Siting, Transmission and Environmental Protection Division at the California Energy Commission.
2. I am personally familiar with the BEACON SOLAR ENERGY PROJECT currently under review by the Energy Commission staff. I have reviewed relevant sections of the Final Staff Assessment and have discussed the case with technical staff, siting management and legal staff. In addition to the BEACON project I reviewed the filings and staff's analysis regarding all the solar power projects currently filed with the Energy Commission.
3. I prepared the attached statement regarding the appropriateness of recommending a finding of overriding considerations in the area of Visual Resources. The statement is based on my independent analysis and review of the relevant documents submitted in the case, including information on visual impacts from the construction of the Beacon project and expected project benefits.
4. I am personally familiar with the facts and conclusions in my statement and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 3/11/10 Signed: /s/ Terrence O'Brien

At: Sacramento, California

TESTIMONY OF TERRENCE O'BRIEN

Energy Commission staff found that the construction of the Beacon Solar Power Project (BEACON) will result in significant adverse impacts to visual resources. Energy Commission staff also found that these impacts could not be reduced to levels less than significant through mitigation.

Notwithstanding the unmitigable impacts, consideration needs to be given to the facts established in the record that the project is a solar power plant that will help California meet its renewable portfolio standard (RPS) of 33 percent in 2020 and AB 32 greenhouse gas emission reduction goals. As such, it will provide critical environmental benefits by helping the state reduce its greenhouse gas emissions, and these positive attributes must be weighed against the project's adverse impacts. It is because of these benefits and the concerns regarding the adverse impacts that global warming will have upon the state and our environment, including desert ecosystems, that staff believes it would be appropriate, and the evidentiary record supports, the Energy Commission making a finding of overriding considerations consistent with CEQA Guideline Section 15093 and section 1755 of the Energy Commission's siting regulations, if the Energy Commission adopts staff's proposed mitigation measures/conditions of certification.

Staff's position on the BEACON project should not be read as a blanket endorsement of all solar projects nor as an indication that we will consistently conclude that it is appropriate for the Energy Commission to adopt overriding considerations for unmitigable significant environmental impacts. Our determinations will be made on a case-by-case basis. As with all electricity infrastructure projects, site selection is a critical factor in determining impacts and staff's position on whether an Energy Commission override is appropriate or warranted. The fact that BEACON's project's site is disturbed agricultural lands and the project site is near development such as the Honda test track and is an important factor in reaching the conclusion that an override is appropriate in this case. Staff may not support an override for a project at a different site. Renewable energy development should predominantly occur in areas proximate to existing transmission infrastructure and load centers; it is important to protect the unique visual resources of the desert and to preserve the special qualities of remoteness and isolation that are inherent in the appeal of desert landscapes.

EXHIBIT D

**DECLARATION OF
Steve Baker**

I, **Steve Baker**, declare as follows:

1. I am presently employed by the California Energy Commission in the Engineering Office of the Siting, Transmission and Environmental Protection Division as a Senior Mechanical Engineer.
2. A copy of my professional qualifications and experience is found in the Final Staff Assessment hereto and incorporated by reference herein.
3. I assisted in the preparation of the staff testimony on **Noise and Vibration**, and supervised preparation of the staff testimony on **Power Plant Efficiency, Power Plant Reliability, Facility Design and Geology and Paleontology**, for the Beacon Solar Energy Project based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the attached testimony is valid and accurate with respect to the issues addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 11/17/09 Signed: /s/ Steve Baker

At: Sacramento, California

FACILITY DESIGN Table 2
Major Structures and Equipment List

Equipment/System	Quantity (Plant)
Steam Turbine Generator Foundation and Connections	1
Start-up Boilers Foundations and Connections	2
<u>Propane Storage Tanks and Associated Equipment</u>	<u>2</u>
GSU Transformer Foundation and Connections	1
Unit Auxiliary Transformers Foundations and Connections	2
SUS Transformers Foundations and Connections	4
Gas Storage Area Foundation and Connections	1
Cooling Tower Foundation and Connections	1
Raw & Fire Water Storage Tank Foundation and Connections	1
Firewater Pump House Foundation and Connections	1
Process Water Storage Tank Foundation and Connections	1
Process Water Pump Skid Foundation and Connections	4
Demineralized Water Storage Tank Foundation and Connections	1
Demineralized Water Pump Skid Foundation and Connections	1
Demineralized Water Treatment Facility Foundation and Connections	1
Water Treatment Building Foundation and Connections	1
Control and Administration Building Foundation and Connections	1
Feed Water Pumps Foundations and Connections	3
Condensate Pumps Foundations and Connections	3
Economizers Foundations and Connections	4
Reheaters Foundations and Connections	9
Evaporators Foundations and Connections	9
Superheaters Foundations and Connections	5
Expansion Storage Tanks Foundations and Connections	<u>226</u>
HTF Freeze Protection Heat Exchangers Foundations and Connections	2
HTF Circulation Pumps Foundations and Connections	6
Steam Blowdown Tank Foundation and Connections	1
Circulating Water Pumps Foundation and Connections	1
Neutralization Storage Tank Foundation and Connections	1
Solar Field Reflectors and Receivers Foundations and Connections	1 Lot

EXHIBIT E

DECLARATION OF DAVID FLORES

I, **David Flores** declare as follows:

1. I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection Division as a **Planner 2**.
2. A copy of my professional qualifications and experience is included in the Final Staff Assessment and incorporated by reference herein.
3. I prepared the staff testimony on **Traffic and Transportation** for the Beacon Solar Energy Project based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the attached testimony is valid and accurate and comports with my prior written testimony in the Final Staff Assessment.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 11/17/09 Signed: /s/ David Flores

At: Sacramento, California

TRAFFIC AND TRANSPORTATION

TRANS-2: Prior to start of construction of the pipeline site mobilization activities, the project owner shall prepare a mitigation plan for Neuralia Road and Mendiburu Road due to open cutting of the roadways for the installation of the tertiary water pipeline. The intent of this plan is to ensure that if these roadways are disturbed by project construction, they will be repaired and reconstructed to original or as near original condition as possible. This plan shall include:

- Documentation of the pre-construction condition of the following roadways:
 1. Neuralia Road from the project site south to Mendiburu Road and then east on Mendiburu Road where it reaches the California City waste water treatment plant.
- Prior to the start of construction of the pipeline site mobilization, the project owner shall provide to the CPM photographs or videotape of water line routes discussed above.
- Documentation of any portions of Neuralia Road and Mendiburu Road that may be inadequate to accommodate oversize or large construction vehicles and identification of necessary remediation measures;
- Provision for appropriate bonding or other assurances to ensure that any damage to Neuralia Road, and Mendiburu Road due to construction activity will be remedied by the project owner; and
- Reconstruction of portions of Neuralia Road, and Mendiburu Road that are damaged by project construction due to oversize or overweight construction vehicles.

Verification: At least 90 days prior to the start of pipeline construction site mobilization, the project owner shall submit a mitigation plan focused on restoring Neuralia Road and Mendiburu Road to its pre-project condition to Kern County and California City Public Works and Planning Department for review and comment and to the CPM for review and approval. Within 90 days following the completion of construction, the project owner shall provide photo/videotape documentation to the Kern County and California City Public Works and Planning Department and the CPM that the damaged sections of Neuralia Road, and Mendiburu Road have been restored to their pre-project condition.

TRANS-3 Prior to ~~start of construction of the pipelinesite mobilization activities~~, the project owner shall prepare a mitigation plan for Rosamond Boulevard, Sierra Highway, Sopp Road, Lone Butte Road, California City Boulevard Avenue, and Neuralia Road, due to open cutting of the roadways for the installation of the tertiary water pipeline. The intent of this plan is to ensure that if these roadways are disturbed by project construction, they will be repaired and reconstructed to original or as near original condition as possible. This plan shall include:

- Documentation of the pre-construction condition of the following roadways:
 1. Rosamond Boulevard, Sierra Highway, Sopp Road, Lone Butte Road, California Boulevard , and Neuralia Road.
- Prior to the start of ~~construction of the pipelinesite mobilization~~, the project owner shall provide to the CPM photographs or videotape of water line routes discussed above.
- Documentation of any portions of Rosamond Boulevard, Sierra Highway, Sopp Road, Lone Butte Road, California City Boulevard and Neuralia Road that may be inadequate to accommodate oversize or large construction vehicles and identification of necessary remediation measures;
- Provision for appropriate bonding or other assurances to ensure that any damage to Rosamond Boulevard, Sierra Highway, Sopp Road, Lone Butte Road, California City Boulevard and Neuralia Road due to construction activity will be remedied by the project owner; and
- Reconstruction of portions of Rosamond Boulevard, Sierra Highway, Sopp Road, Lone Butte Road, California City Boulevard , and Neuralia Road that are damaged by project construction due to oversize or overweight construction vehicles.

Verification: At least 90 days prior to the start of ~~pipeline constructionsite mobilization~~, the project owner shall submit a mitigation plan focused on Rosamond Boulevard, Sierra Highway, Sopp Road, Lone Butte Road, California City Boulevard, and Neuralia Road to its pre-project condition to Kern County and California City Public Works and Planning Department for review and comment and to the CPM for review

and approval. Within 90 days following the completion of construction, the project owner shall provide photo/videotape documentation to the Kern County and California City Public Works and Planning Department and the CPM that the damaged sections of Rosamond Boulevard, Sierra Highway, Sopp Road, Lone Butte Road, California City Boulevard, and Neuralia Road have been restored to their pre-project condition.

EXHIBIT F

**DECLARATION OF
MARK HAMBLIN**

I, **Mark Hamblin** declare as follows:

1. I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection Division as a **Planner 2**.
2. A copy of my professional qualifications and experience is included in the Final Staff Assessment and incorporated by reference herein.
3. I prepared the staff testimony on **VISUAL RESOURCES** for the Beacon Solar Energy Project based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the attached testimony is valid and accurate and comports with my prior written testimony in the Final Staff Assessment.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 2/24/10 Signed: Mark Hamblin /s/

At: Sacramento, California

VISUAL RESOURCES

VIS-6 The project owner shall provide a comprehensive landscaping and irrigation plan for the project site in accordance with the requirements of Chapter 19.86 of the Kern County Zoning Ordinance. Landscaping shall be installed or bonded prior to the start of commercial operation.

An alternative, in whole or in part, to providing a comprehensive landscaping and irrigation plan for the project site, the project owner may provide to the CPM a copy of the receipt demonstrating payment of equivalent cost of the landscaping of the developed area of the project site excluding the solar field and power block to the Kern County Parks and Recreation District, a Kern County public school or other non-profit organization in the County of Kern prior to the start of commercial operation.

The project owner shall submit to the Director of the Kern County Planning Department for comment a comprehensive landscaping and irrigation plan, or shall discuss with the Director the alternative described above to a landscaping and irrigation plan.

The applicant shall allow the Director of the Kern County Planning Department up to 6045 calendar days to review the comprehensive landscaping and irrigation plan and provide written comments to the project owner. The project owner shall provide a copy of the Director of the Kern County Planning Department's written comments on the landscaping and irrigation plan or the alternative to the CPM for review and approval.

The project owner shall not implement the landscaping and irrigation plan until the project owner receives approval of the plan from the CPM. The planting ~~must be completed by the start of commercial operation, and the planting must~~ should occur during the optimal planting season, but if not, the owner will be responsible to replace landscaping that does not survive the first year.

Verification: Prior to commercial operation and at least 45 days prior to installing the landscaping, the project owner shall provide a copy of the landscaping and irrigation plan to the Director of the Kern County Planning Department for review.

The project owner shall provide to the CPM a copy of the transmittal letter submitted to the Director of the Kern County Planning Department requesting their review of the submitted landscaping and irrigation plan, or alternative.

The project owner shall notify the CPM within seven days after completing installation of the landscaping and irrigation that the landscaping and irrigation is ready for inspection.

In-lieu of the filing of a landscaping and irrigation plan, prior to the start of commercial operation, the property owner shall provide to the CPM a copy of the receipt demonstrating payment to the Kern County Parks and Recreation District, a Kern County public school or other non-profit organization in the County of Kern.

EXHIBIT G

DECLARATION OF GEOFFREY LESH

I, **Geoffrey Lesh** declare as follows:

1. I am presently employed by the California Energy Commission in the Engineering Office of the Siting, Transmission and Environmental Protection Division as a Mechanical Engineer.
2. A copy of my professional qualifications and experience is attached to the Final Staff Assessment and incorporated by reference herein.
3. I helped prepare the staff testimony on the **Hazardous Materials Management Section and the Worker Safety and Fire Protection Section** for the **Beacon Solar Energy Project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony and attached changed Conditions of Certification is valid and accurate and comports with my prior written testimony in the Final Staff Assessment.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 2/25/10 Signed: /s/ Geoffrey Lesh

At: Sacramento, California

	facilities that use or store certain hazardous materials to submit information to the DHS so that a vulnerability assessment can be conducted to determine what certain specified security measures shall be implemented.
State	
California Health and Safety Code, section 25531 to 25543.4	The California Accidental Release Program (Cal-ARP) requires the preparation of a Risk Management Plan (RMP) and Off-site Consequence Analysis (OCA) and submittal to the local Certified Unified Program Authority (CUPA) for approval.
Title 8, California Code of Regulations, Section 5189	Requires facility owners to develop and implement effective safety management plans to ensure that large quantities of hazardous materials are handled safely. While these requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the RMP process.
<u>Process Safety Management:</u> <u>Title 8 CCR Section 5189</u>	<u>Requires facility owners to develop and implement effective process safety management plans when toxic, reactive, flammable, or explosive chemicals are maintained on site in quantities that exceed regulatory thresholds.</u>
California Health and Safety Code, Sections 13240 – 13243.6	California Propane Storage and Handling Safety Act adopts regulations setting for safety standards for siting and construction of fixed propane storage systems, fire safety compliance requirements, and training requirements
California Health and Safety Code, Section 41700	Requires that “No person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property.”
California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)	Prevents certain chemicals that cause cancer and reproductive toxicity from being discharged into sources of drinking water.
Title 24, California Code of Regulations,	2007 California Building Code
LOCAL	
Uniform Fire Code, Kern County Code Section 17.32.010	Adopts the Uniform Fire Code, 2000 Edition, into Kern County regulations.

of life and/or significant property damage in the vicinity of the leak. However, the probability of such an event is extremely low if the storage facility is constructed according to present standards.

The applicant conducted a worst-case offsite consequence analysis (OCA) (DB 2009r). Staff believes the worst case scenario for an off-site LPG impact is a large rupture of one of the tanks caused by improper use of heavy equipment near the tank. This worst case scenario would possibly result in a significant asphyxiation hazard until it disperses since LPG gas is heavier than air, although the more likely hazard would be that of a vapor cloud explosion should the cloud find a source of ignition before it disperses to the atmosphere. Staff agrees with the applicant's modeling which conforms to EPA's RMP Off-Site Consequence Analysis Guidance document. The resulting maximum distance of significant impact (blast damage) was less than 600 meters. Thus significant impact from the worst case scenario would not extend beyond the facility fence line. The worst case scenario is primarily a safety hazard to on-site employees. The storage facility will be built in conformance with State and Federal regulations to lower the probability of this occurring and Staff considers the potential for such an event to be very low, as the mean time to catastrophic failure of similar pressurized tanks is 10,500 years. Staff considers the potential impact to the public as a result of propane storage at BSEP to be less than significant.

Therminol VP-1

Therminol VP1 is the HTF that will be used in the solar panels to collect solar heat and transfer it in order to generate steam to run the steam turbine. Approximately 1.3 million gallons of HTF will be contained in the pipes and heat exchanger. Therminol is a mixture of 73.5 percent diphenyl ether and 26.5 percent biphenyl, and is a solid at temperatures below ~54 °F. Because nighttime temperatures during the winter often drop below 54 °F in the high desert, auxiliary heating is provided to keep Therminol liquid. Therminol can therefore be expected to remain liquid if a spill occurs. While the risk of off-site migration is minimal, Therminol is highly flammable and fires have occurred at other solar generating stations that use it. Staff has assessed the properties of Therminol, and reviewed the record of its use at Solar Electric Generating Stations 8 and 9 at Harper Lake, California. Past leaks, spills, and fires involving this HTF were examined and discussed. It appears that the placement of additional isolation valves in the HTF pipe loops throughout the solar array would add significantly to the safety and operational integrity of the entire system by allowing a loop to be closed if a leak develops in a ball joint, flex-hose, or pipe, instead of closing off the entire HTF system and shutting down the plant. Applicant has proposed including isolation valves for this purpose in the project description (BS 2008a, section 2.5.3.1). Staff therefore proposes Condition of Certification **HAZ-7**, which would require the project owner to install a sufficient number of isolation valves that can be either manually or remotely activated. Additionally, the Cal-OSHA Process Safety Management (PSM) standard will apply and thus staff proposes a requirement be included in proposed Condition of Certification **HAZ-2**.

PROPOSED CONDITIONS OF CERTIFICATION

HAZ-1 The project owner shall not use any hazardous materials not listed in **Appendix A**, below, or in greater quantities than those identified by chemical name in **Appendix A**, unless approved in advance by the Compliance Project Manager (CPM).

Verification: The project owner shall provide to the CPM, in the Annual Compliance Report, a list of hazardous materials contained at the facility.

HAZ-2 The project owner shall concurrently provide a Hazardous Materials Business Plan (HMBP) and a Process Safety Management Plan (PSMP) to the Kern County Environmental Health Services Department (KCEHSD) and the CPM for review. After receiving comments from the KCEHSD and the CPM, the project owner shall reflect all recommendations in the final documents. Copies of the final Hazardous Materials Business Plan and Process Safety Management Plan shall then be provided to the KCEHSD for information and to the CPM for approval.

Verification: At least 60 days prior to receiving any hazardous material on the site for commissioning or operations, the project owner shall provide a copy of a final Business Plan to the CPM for approval.

HAZ-3 The project owner shall develop and implement a Safety Management Plan for delivery of liquid hazardous materials. The plan shall include procedures, protective equipment requirements, training and a checklist. It shall also include a section describing all measures to be implemented to prevent mixing of incompatible hazardous materials. This plan shall be applicable during construction, commissioning, and operation of the power plant.

Verification: At least sixty (60) days prior to the delivery of any liquid hazardous material to the facility, the project owner shall provide a Safety Management Plan as described above to the CPM for review and approval.

HAZ-4 At least thirty (30) days prior to commencing construction, a site-specific Construction Site Security Plan for the construction phase shall be prepared and made available to the CPM for review and approval. The Construction Security Plan shall include the following:

1. Perimeter security consisting of fencing enclosing the construction area;
2. Security guards;
3. Site access control consisting of a check-in procedure or tag system for construction personnel and visitors;
4. Written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on-site or off-site;
5. Protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency; and

HAZ-5 The project owner shall prepare a site-specific Security Plan for the operational phase and shall be made available to the CPM for review and approval. The project owner shall implement site security measures addressing physical site security and hazardous materials storage. The level of security to be implemented shall not be less than that described below (as per NERC 2002).

The Operation Security Plan shall include the following:

1. Permanent full perimeter fence or wall, at least eight feet high around the Power Block and Solar Field;
2. Main entrance security gate, either hand operable or motorized;
3. Evacuation procedures;
4. Protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency;
5. Written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on-site or off-site;
6.
 - a. A statement (refer to sample, attachment "A") signed by the project owner certifying that background investigations have been conducted on all project personnel. Background investigations shall be restricted to ascertain the accuracy of employee identity and employment history, and shall be conducted in accordance with state and federal law regarding security and privacy;
 - b. A statement(s) (refer to sample, attachment "B") signed by the contractor or authorized representative(s) for any permanent contractors or other technical contractors (as determined by the CPM after consultation with the project owner) that are present at any time on the site to repair, maintain, investigate, or conduct any other technical duties involving critical components (as determined by the CPM after consultation with the project owner) certifying that background investigations have been conducted on contractor personnel that visit the project site.
7. Site access controls for employees, contractors, vendors, and visitors;
8. a statement(s) (refer to sample, **Attachment C**), signed by the owners or authorized representative of ~~hazardous materials transport~~ Liquefied Petroleum Gas (propane) vendors, certifying that they have prepared and implemented security plans in

compliance with 49 CFR 172.802, and that they have conducted employee background investigations in accordance with 49 CFR Part 1572, subparts A and B;

9. Closed Circuit TV (CCTV) monitoring system, recordable, and viewable in the power plant control room and security station (if separate from the control room) capable of viewing, at a minimum, the main entrance gate; and the LPG storage tanks, and
10. Additional measures to ensure adequate perimeter security consisting of either:
 - a. Security guard present 24 hours per day, seven days per week, **OR**
 - b. Power plant personnel on-site 24 hours per day, seven days per week and **all one** of the following:
 - 1) The CCTV monitoring system required in number 9 above shall include cameras that are able to pan, tilt, and zoom (PTZ), have low-light capability, are recordable, and are able to view 100% of the perimeter fence, the outside entrance to the control room, and the front gate from a monitor in the power plant control room; **AND**
OR
 - 2) Perimeter breach detectors **or** on-site motion detectors.

The project owner shall fully implement the security plans and obtain CPM approval of any substantive modifications to the security plans. The CPM may authorize modifications to these measures, or may require additional measures, such as protective barriers for critical power plant components (e.g., transformers, gas lines, compressors, etc.) depending on circumstances unique to the facility or in response to industry-related standards, security concerns, or additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electrical Reliability Council, after consultation with appropriate law enforcement agencies and the applicant.

Verification: At least 30 days prior to the initial receipt of hazardous materials on-site, the project owner shall notify the CPM that a site-specific Operations Site Security Plan is available for review and approval. In the Annual Compliance Report, the project owner shall include a statement that all current project employee and appropriate contractor background investigations have been performed, and updated certification statements are appended to the Operations Security Plan. In the Annual Compliance Report, the project owner shall include a statement that the Operations Security Plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations.

EXHIBIT H

DECLARATION OF
Testimony of Dal Hunter, Ph.D., C.E.G.

I, **Dal Hunter, Ph.D., C.E.G.**, declare as follows:

1. I am presently employed as a subcontractor to Aspen Environmental Group, a contractor to the California Energy Commission, Systems Assessment and Facilities Siting Division, as an engineering geologist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I helped prepare the staff testimony on **GEOLOGY AND PALEONTOLOGY** for the proposed **Beacon Solar Energy Project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony and changed Condition of Certification is valid and accurate and comports with my prior written testimony in the Final Staff Assessment.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 3/3/10 Signed: /s/ Dal Hunter

At: Black Eagle Consulting, Inc.
Reno, Nevada

GEOLOGY AND PALEONTOLOGY

PAL-4

Prior to ground disturbance and for the duration of construction activities involving ground disturbance, the project owner and the PRS shall prepare and conduct weekly

CPM-approved training for the following workers: project managers, construction supervisors, foremen, and general workers involved with or who operate ground-disturbing equipment or tools. Workers shall not excavate in sensitive units prior to receiving CPM-approved worker training. Worker training shall consist of an initial in-person PRS training, or may utilize a CPM-approved video or other presentation format, during the project kick off for those mentioned above. Following initial training, a CPM-approved video or other approved training presentation/materials, or in-person training may be used for new employees. The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or other areas of interest or concern. No ground disturbance shall occur prior to CPM approval of the Worker Environmental Awareness Program (WEAP), unless specifically approved by the CPM.

The WEAP shall address the possibility of encountering paleontological resources in the field, the sensitivity and importance of these resources, and legal obligations to preserve and protect those resources.

The training shall include:

1. A discussion of applicable laws and penalties under the law;
2. Good quality photographs or physical examples of vertebrate fossils for project sites containing units of high paleontological sensitivity;
3. Information that the PRS or PRM has the authority to halt or redirect construction in the event of a discovery or unanticipated impact to a paleontological resource;
4. Instruction that employees are to halt or redirect work in the vicinity of a find and to contact their supervisor and the PRS or PRM;
5. An informational brochure that identifies reporting procedures in the event of a discovery;
6. A WEAP certification of completion form signed by each worker indicating that he/she has received the training; and

7. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

Verification:

1. At least 30 days prior to ground disturbance, the project owner shall submit the proposed WEAP, including the brochure, with the set of reporting procedures for workers to follow.
2. At least 30 days prior to ground disturbance, the project owner shall submit the ~~training program presentation/materials script and final video~~ to the CPM for approval if the project owner is planning to use a presentation format other than an in-person trainer for a video for interim training.
3. If the owner requests an alternate paleontological trainer, the resume and qualifications of the trainer shall be submitted to the CPM for review and approval prior to installation of an alternate trainer. Alternate trainers shall not conduct training prior to CPM authorization.
4. In the monthly compliance report (MCR), the project owner shall provide copies of the WEAP certification of completion forms with the names of those trained and the trainer or type of training (in-person or other approved presentation format video) offered that month. The MCR shall also include a running total of all persons who have completed the training to date.

EXHIBIT I

**DECLARATION OF
Vince C. Geronimo, PE**

I, Vince Geronimo, declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Office of the Energy Facilities Siting Division as a Soil & Water Resources Specialist.
2. A copy of my professional qualifications and experience is attached to the Final Staff Assessment and incorporated by reference herein.
3. I helped prepare the staff testimony on Soil & Water Resources, for the Beacon Solar Energy Project based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the changes made to Soil & Water Condition of Certification 6(a) are consistent with the analysis and prepared testimony in the Final Staff Assessment.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 2/26/10 Signed: /s/ Vince Geronimo

At: Sacramento, California

Proposed Changes to Soil & Water Resources Conditions of Certification

- SOIL&WATER-6:** In accordance with Kern County's Floodplain Management Ordinance and 44 CFR 65.12, the project owner shall prepare all necessary engineering plans and documents to support a Conditional Letter of Map Revision (CLOMR) application submittal to FEMA. The project shall not commence construction in the SFHA until Kern County receives from FEMA an approved CLOMR. Following construction, the Project Owner shall prepare all necessary documents required for a final Letter of Map Revision (LOMR). The project owner shall use FEMA's Guidelines and Specifications for Mapping Partners for guidance. The project owner shall:
- a. Prepare hydrologic analyses to estimate the ~~10-, 2-,~~ 1-, ~~and 0.2~~ percent annual chance flood events for the Pine Tree Creek watershed. The analyses shall be conducted using numerical models approved by FEMA;

EXHIBIT J

SOIL AND WATER - APPENDIX I

GROUNDWATER MITIGATION PLAN

Groundwater Monitoring

This groundwater monitoring program was provided in Attachment 5 of the Project Design Refinements (DB2009r) submitted to the CEC by the applicant in June 2009. As proposed by the applicant, the following describes the groundwater mitigation plan to be incorporated if the use of site groundwater is approved by CEC for power plant operation.

Proposed Groundwater Monitoring Program

To provide for land owner protection and participation in evaluation of project impacts, a Fremont Valley Groundwater Monitoring Committee will be formed. The committee will include a representative from the following:

- California City
- Community of Cantil
- Rancho Seco
- Honda
- Beacon Solar LLC

The monitoring committee's function will be to implement and oversee the groundwater monitoring program and to verify that there are no unacceptable impacts to groundwater levels or quality in water supply wells adjacent to the BSEP.

Gather Historic Water Level and Water Quality Data

- ~~Secure access, if authorized by the land owner, for the purpose of monitoring of water levels and water quality for those water supply wells predicted by the numerical groundwater model to experience a change of 5 feet or more in its water level by comparison to the "No" non-Project condition at the end of construction and at the end of 5 years of operation over the term of the project (30 years).~~ Initially identify representative water supply wells in the potentially impacted area predicted by the groundwater model, and secure access to those wells to allow monitoring of groundwater levels and water quality. Wells shall be identified by comparison to the "No" Project and Project pumping simulations. The potentially impacted area shall be defined as the area model results project a water level change of 5 feet or more at the end of construction and after the first five years of operation. Wells identified in the potentially impacted area will be included in the monitoring network. Additional wells located outside the potentially impacted area ("background" wells) shall also be included in the monitoring network to discern between background trends and changes caused by Project pumping. Wells representing

background conditions shall be selected from outside the area indicated by the groundwater-flow model as having a water level change of 1 foot or more at the end of construction and after the first five years of operation.

- Through the access agreement, obtain all historic water level and water quality data for each water supply well identified by the model. Additionally, obtain well completion information, historic well performance data, including pumping and non-pumping water levels and pump specifications for each well to be monitored.
- Update the application for certification (AFC) water level and geochemical and water level database with all new information.
- Prepare time series graphs (i.e., trend plots) for water level and total dissolved solids (TDS) data, as information is available for each well.
- Perform statistical trend analysis using Mann-Kendall Trend Test and Sen's Slope Estimator for water levels and the TDS data. The Mann-Kendall Trend Test and the Sen's Slope Estimator are proposed to statistically analyze the data because they are the accepted non-parametric trend analysis methods for data that are not normally distributed. Use trend analysis to determine the significance of an apparent trend and to estimate the magnitude of that trend. Further, use adjacent well data to evaluate local affects from pumping in water level trends.

Establish Pre-Project Baseline Water Quality and Water Level Database

- To the extent possible, prior to project construction collect groundwater levels from the off-site and on-site wells to evaluate groundwater levels in the area of wells that could be impacted by project pumping as indicated by the model. Additionally, collect groundwater samples to provide baseline TDS data for both on-site and off-site wells. Analyze TDS samples using Standard Methods 2540C by a California Certified Analytical Laboratory.
- Map TDS data and groundwater levels within the Koehn Sub-basin from the groundwater data collected prior to construction. Update trend plots and statistical analyses, as data is available.

Groundwater Monitoring During Construction

- During construction, collect water levels on a quarterly basis for a period of one year or on a quarterly basis through the construction period, and collect TDS data at the end of the construction period and prior to site operations.

Groundwater Monitoring During Operation

- On a quarterly basis for the first five years, collect water level measurements from the wells and collect TDS data to evaluate operational influence from the project. Additionally, monitor quarterly operational parameters (i.e., pumping rate) of the water supply wells.
- After a period of five years, on a well-by-well basis, evaluate the data and determine if the sampling frequency and TDS sampling should be revised or eliminated.
- Subsequently, evaluate the data set every five years and determine if the sampling frequency and TDS sampling should be revised or eliminated.

Proposed Mitigation Options

Water Level Offset Mitigation Options

Based on the results of the statistical trend analyses, determine if the project pumping has induced a drawdown in the water supply at a level of ten feet or more below the baseline trend. If water levels have been lowered below pre-site operational trends, then implement any of the following options, as appropriate and considering the cost effectiveness of each option.

- Electrical cost reimbursement – If the pumping water level falls below a depth of 5 feet from an average of the baseline measurements, the well owner will be compensated for the additional electrical costs commensurate with the additional lift required to pump. The water level in the well will be assessed relative to the pumping rate during pre-site operational period.
- Pump lowering – In the event that groundwater is lowered and existing pumps are day lighted, pumps can be lowered to maintain production in the well.
- Deepening of wells – If the groundwater is lowered enough that there is insufficient water in the well and pump lowering is not an option, then wells can be deepened.

Groundwater Storage Mitigation Options

Maximum expected groundwater usage during BSEP operation is estimated to be no more than 153 acre feet per year (AFY) (excluding annual emergency allotment of 47 acre-feet). Initially, the applicant proposed to use 1,388 AFY of groundwater for power plant operation and provided options to offset that water consumption which included implementation of a partial ZLD and tamarisk removal program, which are described in the Project Design Refinements (DB 2009r).

The applicant now proposes to use recycled waste water for power plant cooling. The recycled wastewater will be provided by either Rosamond Community Services District or California City. Both option will provide approximately 1,400 AFY of recycled wastewater.

If the California City option is selected, existing residential on-site septic systems would be connected to the City sewer system. This connection to the City sewer system would reduce recharge to the City aquifer. The reduction in groundwater recharge would result from diversion of septic system recharge due to diversion of septic system discharge that would otherwise

percolate into the groundwater basin. Model results show that a reduction in recharge to the CA City area influences water levels beneath the City.]

To minimize the potential impact of reduced recharge to the California City aquifer, the project owners shall provide funding to California City for the implementation of a tamarisk removal program to address infestation within and or upgradient of the City in the initial amount of \$100,000 at the start of construction and \$10,000 on the commercial operation date (COD) and for a period of 4 years thereafter on the anniversary of the COD. ~~shall develop in coordination with Bureau of Land Management and other stakeholders, a voluntary tamarisk removal program designed to offset the collection of return flows from conversion of individual septic disposal systems in California City for the project recycled water supply. This program will initially identify areas of tamarisk infestation, provide annual funding for tamarisk eradication and will be implemented in the Fremont Valley Groundwater Basin.~~

This payment shall be provided to remove a sufficient number of trees that would otherwise consume 1,400 AFY of groundwater. Assuming that each mature salt cedar tree consumes approximately 200 gallons of groundwater per day and the average mature salt cedar tree has a canopy area of 176.7 square feet, 25.3 acres of salt cedar tree canopy would need to be removed.

PROPOSED CONDITIONS OF CERTIFICATION

SOIL&WATER-1: Groundwater Water Use For Project Construction: The project owner may use up to 8,086 acre feet of onsite groundwater for project construction. Groundwater use and potential impacts will be monitored and mitigated as outlined in items A. and B. and C. below.

Groundwater Use For Project Operation: The project owner may use up to 153 acre feet per year (AFY) of onsite groundwater to meet non-cooling operational needs. The project owner may also use 47 AFY of groundwater for emergency purposes. For the purpose of this condition, the term “emergency” shall mean the inability for BSEP to receive, or for the recycled water supplier to deliver, recycled water to BSEP due to Acts of God, natural disaster or other circumstances beyond the control of the project owner in a quantity sufficient for BSEP to operate at its normal operational level for the season in which the emergency occurred.

The project owner shall use recycled water for all power plant cooling needs. On a temporary basis, groundwater may only be used for cooling purposes while the California City recycled water option, discussed below, is being developed and until it becomes fully implemented. Groundwater use and potential impacts will be monitored and mitigated as outlined in items A. and C. below.

California City Recycled Water Supply – If the California City Recycled Water supply is developed for project operation, then groundwater may be used in accordance with the table presented below:

Operations Water Use – California City Alternative

California City Collection System Construction Year	Maximum Volume of Site Groundwater Extracted for BSEP Operation ^{1,2}
1 (end of month 12)	1,353AFY
2 (end of month 24)	1,053 AFY
3 (end of month 36)	753 AFY
4 (end of month 48)	453 AFY
5 (end of collection system construction)	153 AFY

¹ Includes potable demand

²Excludes yearly emergency supply

Rosamond Community Services District Recycled Water Supply – If the Rosamond Community Services District Recycled Water Supply is developed for project use groundwater shall be limited to a volume of no more than 153 AFY.

Monitoring and Mitigation for Groundwater Use

The project owner shall also develop and implement a groundwater ~~impact~~ monitoring and mitigation program. The monitoring and mitigation program shall be consistent with the intent of **Soil & Water APPENDIX I**, attached to this FSA. The primary objective for the monitoring is to establish pre-construction and project related water level trends that can be quantitatively compared against observed and simulated trends near the project pumping wells, at the property boundary, and near potentially impacted existing wells. Specifically, the project owner shall do all of the following:

A. Prior to construction:

- 1 In accordance with the provisions set forth in **Soil & Water Appendix I**, create the Fremont Valley Groundwater Monitoring Committee to monitor project pumping impacts during construction and (if recycled water is incrementally delivered to the site) the “phase-in” period during initial project operation. The purpose of the Fremont Valley Groundwater Monitoring Committee is to provide for land owner protection and include stakeholder participation in evaluation of project impacts. The monitoring committee’s function will be to implement and oversee the project owner’s groundwater monitoring program and to confer with the CPM to verify that there are no unacceptable impacts to groundwater levels, water quality or well performance in water supply wells affected by the proposed pumping during construction of the BSEP and during project operation. The committee will review the applicability of the groundwater monitoring and mitigation program on a recurring 5 year basis following project construction. During their review of the monitoring data, the committee will recommend to the CPM whether the program should be expanded or if some or all of the monitoring should be terminated. In the event that a committee cannot be formed or maintained the CPM will continue to implement and oversee the groundwater monitoring program.
- 2 Prior to construction identify and secure access to representative water supply wells in the potentially impacted area predicted by the groundwater model, and secure access to those wells to allow monitoring of groundwater levels and water quality. of those wells Wells shall be identified by comparison to the “No” Project and Project pumping simulations. The potentially impacted area shall be defined as the area model results project a water level change of 5 feet or more at the end of construction and after the first five years of operation. Wells identified in the potentially impacted area will be included in the monitoring network. Any new wells within the potentially impacted area not previously identified shall also be included in the monitoring network. Abandoned wells, or wells no longer in use, that are accessible and provide reliable water level data within the potentially impacted monitoring area may also be included as part of the monitoring network. Additional wells located outside the potentially impacted area (“background” wells) shall also be included in the monitoring network to discern between background trends and changes caused by Project pumping. Wells representing background conditions shall be selected from outside the potentially impacted area indicated by the groundwater-flow model. For example, wells located outside the area indicated by the groundwater-flow model as having a water level change of 1 foot or less at the end of

construction and after the first five years of operation are potential candidates for background wells. The final selection of background wells shall be subject to approval by the CPM.

- 3 In addition to the potentially impacted area discussed above, identify available wells between the BSEP site and California City, in both the Koehn and California City sub-basins, and include representative wells into the monitoring network. Inclusion of these wells into the monitoring network is necessary to assess the potential changes in hydraulic gradients and subsurface flow between basins. Some candidate wells in the Koehn and California City sub-basin may already be monitored as part of other water management programs. This condition does not intend to duplicate those efforts, but instead requires in these circumstances the integration of data from the other relevant activities and including this information in analyses and reports submitted to the CPM.

~~In addition to the Zero Recharge wells discussed above, identify all available wells between the BSEP site and California City, in both the Koehn and California City sub-basins, and include representative wells into the monitoring network. Inclusion of these well into the monitoring network is necessary to assess the potential changes in hydraulic gradients and subsurface flow between sub-basins.~~

- 4 At least 30-days prior to project construction, accessible abandoned or unused wells within the monitoring network shall be instrumented with recorders to track groundwater levels during project construction. The water level recorders shall continuously collect and store the data every four hours and shall be serviced at least quarterly.
- 5 Obtain all historic water level and water quality data for each water supply well within the monitoring network as defined by the groundwater model where access to monitor groundwater conditions can be obtained. Additionally, conduct a well reconnaissance and identify all wells within the monitoring area as defined by the groundwater model. Obtain well construction information (completion depth, well screen depth interval, and pump intake depth), historic well performance data, including pumping and non-pumping water levels, and pump specifications for each of those wells.
- 6 Update the groundwater database presented in the AFC, and updated in January 2009, with all new information obtained from the wells where access to monitor groundwater conditions has been obtained.
- 7 Prepare time series graphs for water level and total dissolved solids (TDS) concentrations data for each well within the monitoring network where information is available.
- 8 Perform statistical trend analysis using Mann-Kendall Trend Test and Sen's Slope Estimator for water levels and the TDS data to statistically analyze the data. Determine the significance of an apparent trend and estimate the magnitude of that trend.
- 9 At least once prior to construction, collect groundwater levels from the off-site and on-site monitoring network wells and collect and analyze groundwater samples for TDS

concentrations to provide baseline and background groundwater levels and TDS concentrations for both on-site and off-site monitoring network wells. Groundwater samples shall be analyzed for TDS by a California Certified Analytical Laboratory in accordance with Standard Methods 2540C.

- 10 Map TDS data and groundwater levels within the Koehn and California City Sub-basins from the groundwater data collected prior to construction. Update trend plots and statistical analyses, as data is available.

B. During Construction:

- 1 Collect static water levels and TDS data from the monitoring network wells on a quarterly basis throughout the construction period, and at the end of the construction period. The continuous monitoring discussed in Condition **SOIL & WATER-1.A.4**, above shall continue a minimum of 30-days after completion of project construction. Perform statistical trend analysis using Mann-Kendall Trend Test and Sen's Slope Estimator for water levels and the TDS data to statistically analyze the data. Determine the significance of an apparent trend and estimate the magnitude of that trend.

C. During Operation:

- 1 On a quarterly basis, collect static water level measurements and TDS data from the wells in the groundwater monitoring network to evaluate operational influence from the project. Quarterly operational parameters (i.e., pumping rate) of the water supply wells shall be monitored. Additionally, quarterly groundwater-use in the Koehn sub-basin shall be estimated and the values submitted to the Fremont Valley Basin Groundwater Monitoring Committee for evaluation and consultation with the CPM.
- 2 On an annual basis, perform statistical trend analyses using Mann-Kendall Trend Test and Sen's Slope Estimator for water levels and the TDS data to statistically analyze the data. The significance of an apparent trend shall be determined and the magnitude of that trend estimated. Based on the results of the statistical trend analyses, the project owner shall determine if the project pumping has induced a drawdown (i.e. reduction in the static water level) in the water supply at a level of ten feet or more below the background trend.
- 3 If water levels have been lowered below pre-site operational trends, and monitoring data provided by the project owner show the water level changes are different from background trends and are solely caused by project pumping, then the project owner shall provide mitigation to the well owner(s) consistent with the following **SOIL & WATER-1.C.3.a** through **C.3.i**. Mitigation shall be provided if the CPM's inspection of the well monitoring data confirms changes to water levels and water level trends relative to measured pre-project water levels, and the well yield has been lowered by project pumping. The type and extent of mitigation shall be determined by the amount of water level decline and site specific well construction and water use characteristics. The mitigation of impacts will be determined as follows:

- a. If project pumping has lowered water levels and increased pumping lifts by 10 feet or more, increased energy costs shall be calculated in accordance with item **SOIL & WATER-1.C.3.e** below. The compensation and payment schedule for the increased costs shall be provided at the option of the affected well owner as provided in **SOIL & WATER-1.C.3.g**.
- b. If groundwater monitoring data indicate project pumping has lowered water levels below the top of the well screen, and the well yield is shown to have decreased by 10-percent or more of the average seasonal yield, compensation shall be provided for the diagnosis and maintenance to treat and remove encrustation from the well screen. Reimbursement shall be provided at an amount equal to the customary local cost of performing the necessary diagnosis and maintenance for well screen encrustation.

Should the well yield reductions be reoccurring, the project owner shall provide payment or reimbursement for periodic maintenance throughout the life of the Project. If with treatment the well yield is incapable of meeting 110% of the well owner's maximum daily demand, dry season demand, or annual demand the well owner should be compensated by reimbursement or well replacement as described under Condition **SOIL&WATER-1.C.3.c**.

- c. If project pumping has lowered water levels to significantly impact well yield below property water supply requirements or cause casing collapse, payment or reimbursement of an amount equal to the cost of deepening or replacing the well shall be provided to accommodate these effects. Compensation shall be at an amount equal to the customary local cost of deepening the existing well or constructing a new well. The demand for water, which determines the required well yield, shall be determined on a per well basis using historic seasonal yield data, well owner interviews and field verification of property conditions and historical seasonal water requirements compiled as part of the pre-project well reconnaissance. Well yield shall be considered significantly impacted if it is incapable of meeting 110-percent of the well owner's maximum daily demand, dry-season demand, or annual demand – assuming the pre-project well yield documented by the well reconnaissance met or exceeded these yield levels.
- d. Electrical cost reimbursement – Through a statistical analysis of the water level data, if the pumping water level falls below a depth of 10 feet from the background trend, and is shown to be caused by project pumping, the well owner shall be compensated by the project owner for the additional electrical costs commensurate with the additional lift required to pump. The water level in the well will be assessed relative to the pumping rate established during the pre-site development period.
- e. Where it is determined by the CPM that the project owner shall reimburse a private well owner for increased energy costs, the project owner shall calculate the compensation owed to the owner of any impacted well as described below.

Increased cost for energy = change in lift/total system head x total energy

consumption x costs/unit of energy

Where:

change in lift (ft) = calculated change in water level in the well resulting from project pumping

total system head (ft) = elevation head + discharge pressure head

elevation head (ft) = difference in elevation between wellhead discharge pressure gauge and water level in well during pumping.

discharge pressure head (ft) = pressure at wellhead discharge gauge (psi) X 2.31

f. The project owner shall notify all owners of the impacted wells within one month of CPM approval of the compensation analysis for increased energy costs.

g. Compensation shall be provided on an annual basis, as described below:

Annual Compensation Compensation provided on an annual basis shall be calculated prospectively for each year by estimating energy costs that will be incurred to provide the additional lift required as a result of the project. With the permission of the impacted well owner, the project owner shall provide energy meters for each well or well field affected by the project, as described under 3e above. The impacted well owner to receive compensation must provide documentation of energy consumption in the form of meter readings or other verification of fuel consumption. For each year after the first year of operation, the project owner shall include an adjustment for any deviations between projected and actual energy costs for the previous calendar year.

h. Pump lowering – If pumps are exposed but well screens remain submerged, the pumps shall be lowered to maintain production in the well. All costs associated with lowering pumps shall be borne by the project owner. Reimbursement shall be provided at an amount equal to the customary local cost of performing the lowering of the pump.

i. Deepening of wells – If the groundwater is lowered enough that the well screen is exposed, and lowering of the pump cannot be done to maintain well yield above a level of significance described in **SOIL & WATER-1.C.3c**, the well shall be deepened or a new well constructed. The well shall be completed in a manner that provides water to the property in consideration of historic seasonal use requirements. All costs associated with deepening existing wells or constructing new wells shall be borne by the project owner. Reimbursement shall be provided at an amount equal to the customary local cost of installing a new well.

4 During or after the first five-year operational and monitoring period, the CPM, after consultation with the Fremont Valley Basin Groundwater Monitoring Committee, shall evaluate the data and determine if the monitoring program water level measurements

and TDS sampling frequencies should be revised or eliminated. Revision or elimination of any monitoring program elements shall be based on the consistency of the data collected. The determination of whether the monitoring program should be revised or eliminated shall be made by the CPM after consultation with the Fremont Valley Basin Groundwater Monitoring Committee.

- 5 At the end of each subsequent five-year monitoring period, the collected data shall be evaluated by the CPM after consultation with the Fremont Valley Basin Groundwater Monitoring Committee and the CPM shall determine if the sampling frequency and TDS sampling should be revised or eliminated.
- 6 If the project owner elects to utilize the California City option, groundwater monitoring results, whether conducted by the project owner or by another entity as part of basin water management activities (for example, monitoring wells in the California City area), shall be analyzed and reported to the CPM. This is necessary because of the expected reduction in groundwater recharge resulting from diversion of septic system recharge resulting from diversion of septic system discharge that otherwise percolated into the groundwater basin. ~~monitoring of groundwater in the California City area shall be required due to the anticipated reduction in groundwater recharge resulting from collection and elimination of return flows from leachfields.~~ The the project owner shall also compensate California City for implementation of a Tamarisk Removal Program as described in Appendix I. The Tamarisk Removal Program shall target the species commonly referred to as Salt Cedar.
- 7 If the Rosamond option is implemented, all off site groundwater monitoring will likely be eliminated within the five year post construction period. Consideration of the need to continue the groundwater monitoring program will be in accordance with item **SOIL & WATER - 1.C.4** above.
- 8 If the California City option is implemented, all off site groundwater monitoring will likely be eliminated within the five year post construction period. Consideration of the need to continue the groundwater monitoring program will be in accordance with item **SOIL & WATER-1.C.4** above.
- 9 Comply with Condition of Certification **SOIL & WATER -19**, which requires metering of water used for power plant construction and operation.

Verification: The project owner shall do all of the following:

- 1 At least 60 days prior to start of construction, the project owner shall submit to the CPM a list identifying the members of the Fremont Valley Basin Groundwater Monitoring Committee and each member's written agreement to participate in accordance with the Committee's stated purpose and function and assist the project owner in implementing the groundwater monitoring program.

- 2 At least 30 days prior to project construction, the project owner shall submit to the CPM, a comprehensive report presenting all the data and information required in items **SOIL & WATER –1.A.2** through **-1.A.10**.

The project owner shall submit to the CPM all calculations and assumptions made in development of the report data and interpretations, along with comments to the draft report made by Committee members or well owners within the monitoring network on the data, calculations and assumptions used in development of the report. The project owner shall also provide documentation of communications and negotiation for securing access and inclusion of a well in the monitoring program. Further, documentation shall be provided that shows adequate inquiry of each well owner in the monitoring network, and any subsequent refusal by the well owner to be included in the monitoring network.

- 3 During project construction, the project owner shall submit to the CPM quarterly reports presenting all the data and information required in items **SOIL & WATER –1.B.1** through **-1.B.2**.

The project owner shall submit to the CPM all calculations and assumptions made in development of the report data and interpretations, along with comments to the draft report made by Committee members or local well owners within the monitoring network on the data, calculations, and assumptions used in development of the report.

- 4 No later than March 31 of each year of construction and 60 days following completion of construction, the project owner shall provide to the CPM for review and approval, documentation showing that any mitigation to private well owners during project construction was satisfied, based on the requirements of the property owner as determined by the CPM.

- 5 During project operation, the project owner shall submit to the CPM, applicable quarterly and annual reports presenting all the data and information required in items **SOIL & WATER – 1.C.1** through **-1.C.8**.

The project owner shall submit to the CPM all calculations and assumptions made in development of report data and interpretations, along with any agreement or dissenting opinions voiced by Committee members or local well owners on the data, calculations, and assumptions used in development of any reports.

- 6 After the first five year operational and monitoring period, the project owner shall submit a 5 year monitoring report to the Fremont Valley Basin Groundwater Monitoring Committee and to the CPM that submits all monitoring data collected and provides a summary of the findings. After consultation with the Fremont Valley Basin Groundwater Monitoring Committee, the CPM will determine if the water level measurements and TDS sampling frequencies should be revised or eliminated.

- 7 The project owner shall provide mitigation as described in **SOIL & WATER-1.C.3**, if the CPM's inspection of the monitoring information confirms changes to water levels and water level trends relative to measured pre-project water levels, and well yield has been

lowered by project pumping. The type and extent of mitigation shall be determined by the amount of water level decline and site specific well construction and water use characteristics. The mitigation of impacts will be determined as set forth in **SOIL & WATER-1.C.3**.

- 8 Eliminated, redundant with #4
- 9 During the life of the project, the project owner shall provide to the CPM and Fremont Valley Basin Groundwater Monitoring Committee, all monitoring reports, complaints, studies and other relevant data within 30 days of being received by the project owner.
- 10 In accordance with Appendix I, the applicant shall provide to the CPM appropriate documentation (notes, diagrams, photographs and other records) on a quarterly basis that clearly demonstrates the success of the Tamarisk Removal Program. This documentation shall provide the mapped location, pre and post eradication photographs, a description of the areal extent of salt cedar removed and the percent completion of the removal program.



**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 *BEACON SOLAR ENERGY
PROJECT*

Docket No. 08-AFC-2

PROOF OF SERVICE
(Revised 2/8/10)

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DECLARATION OF SERVICE

I, Janet Preis, declare that on March 11, 2010, I served and filed copies of the attached, Staff's Prehearing Conference Statement, dated March 11, 2010. 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: [\[http://www.energy.ca.gov/sitingcases/beacon/index.html\]](http://www.energy.ca.gov/sitingcases/beacon/index.html).

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:

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

 x 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:

 x 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. 08-AFC-2
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.

/s/ Janet Preis