



455 Capitol Mall Suite 350  
Sacramento CA 95814  
Tel • 916.441.6575  
Fax • 916.441.6553



May 31, 2013

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

**Subject: JOSHUA TREE NATIONAL PARK VISUAL RESOURCES ANALYSIS REPORT  
PALEN SOLAR ELECTRIC GENERATING SYSTEM  
DOCKET NO. (09-AFC-7C)**

Enclosed for filing with the California Energy Commission is the electronic version of **JOSHUA TREE NATIONAL PARK VISUAL RESOURCES ANALYSIS REPORT**, for the Palen Solar Electric Generating System (09-AFC-7C).

Sincerely,

Marie Fleming

# TRUESCAPE

CONSULTING & VISUAL FACILITATION

---

**Statement of Methodology of  
Truescape Limited**

On behalf of

**BrightSource Energy  
Palen**

**May 2013**

---

## **Truescape Credentials**

Truescape has over 16 years of experience working in the 3D Photo and Video Simulations industry. Truescape has completed a wide range of different visualisation projects from photo-simulations for simple projects to full computer generated 3D video simulations for complex projects. Truescape's client base spans many industry sectors such as solar, wind, transmission and generation across New Zealand, Australia, and the US.

Truescape adopts a team approach for project completion as each type and phase of a project calls for a different mix of specialised skill sets. This expertise spans many disciplines including photography, engineering, architecture, surveying, landscape architecture, 3D computer modelling, evidence preparation and presenting evidence as expert witnesses. All members of our staff have either formal qualifications or have undergone professional training and have direct experience working in each these specialised areas.

Truescape simulations have been produced as evidence in forums such as the New Zealand Environment and High Courts, Australia's Victorian Civil and Administrative Tribunal, the Supreme Court and the Connecticut Siting Council. Members of Truescape's staff have presented evidence as expert witnesses in these Courts, where our work has been subjected to cross-examination and accepted as evidence.

Truescape has assisted in providing survey controlled simulations for the following developments:

- 2003 – Meridian Energy's Te Apiti Farm, Council Hearing;
- 2004 – Meridian Energy's White Hill Farm, Council Hearing;
- 2004 – Southern Hydro's Dollar Wind Farm South Australia, Panel Hearing;
- 2005 – Genesis Energy's Awhitu Wind Farm, Environment Court;
- 2005 – Unison Energy's Hawkes Bay Wind Farm, Environment Court;
- 2006 – Meridian Energy's Project West Wind, Environment Court;
- 2006 – Acciona Energy's Wind Farm South Australia, Panel Hearing;
- 2007 – Invenenergy, Moresville Wind Energy Park, New York; USA Permitting Hearing;

- 2007 – Transpower, Karapiro Crossing Transmission Project;
- 2008 – Bluewater Wind, Offshore Wind Farm, Maryland, USA; Permitting Hearing;
- 2008 – Goodmans – Highbrook Park Transmission Project;
- 2008 – Bluewater Wind, Offshore Wind Farm, New Jersey, USA; Permitting Hearing
- 2008 – Meridian Energy, Project Hayes, Environment Court;
- 2008 – Shell Wind Energy Inc, New York State, USA; Preliminary Planning;
- 2009 – Meridian Energy, Project Central Wind, Environment Court;
- 2010 – Meridian Energy, Project Mill Creek, Environment Court;
- 2011 – Altalink, Heartland Transmission Project, Alberta Utilities Commission Hearing;
- 2012 – Meridian Energy, Project Hurunui Wind, Environment Court
- 2013 – Dominion, Skiffs Creek 500kV Project, Virginia State Corporation Commission (SCC)

## **Scope of work**

BrightSource Energy engaged Truescape in February 2013 to provide:

- Night and Day Photo Simulations from 5 pre-determined key observation points (KOP)
- Reference photography of the Ivanpah Solar Facility (Currently under construction) at similar distances to the 5 KOP. It should be noted that the Ivanpah facility appeared to contain additional lighting associated with the construction
- An 11 x 17 booklet of all the simulations and reference photography of Ivanpah including cropped sections of the images that show the equivalent of a 50mm lens

There were significant safety concerns in accessing KOP 04 and 05 for the periods of time required to generate simulations. The reference photography of Ivanpah provides an indication of the potential visibility of a similar Solar Facility from similar distances.

## Validation of the Truescape methodology

We have attached below some post construction analysis of the Project West Wind wind farm that compared a simulation submitted at a Council hearing built using the construction layout plan against the completed project. These simulations demonstrate the accuracy of Truescape's simulations. In particular, it can be seen that the size and placement of the turbines in this simulation is identical to the wind farm that was constructed. It should be noted that the turbines in the simulation seem more obvious than the actual turbines in the photograph due to the atmospheric conditions experienced on the day the photograph was taken.

The simulation and photograph were produced 2 years and 7 days apart and both are taken at the same time of day so as to produce the same lighting and shadow conditions.



PHOTOPOINT 18 - GUN ENPLACEMENTS (LOOKING SOUTH TOWARDS WEST WIND)

**SIMULATION OF PROJECT WEST WIND PRE CONSTRUCTION (February 2008)**

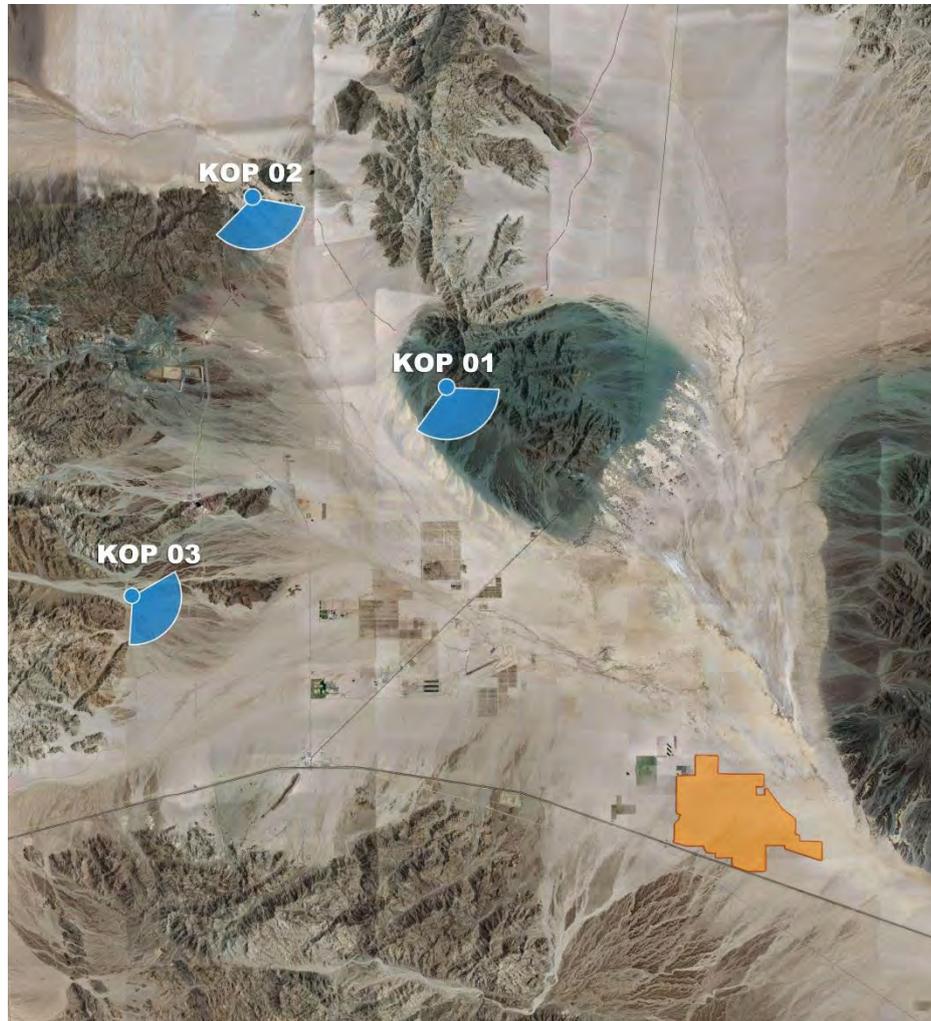


GUN ENPLACEMENTS (LOOKING SOUTH)

**PHOTOGRAPH OF PROJECT WEST WIND POST CONSTRUCTION (February 2010)**

## Key observation point locations

Location map depicting the KOP's which Photo Simulations have been created for.



- **Key Observation Point 1** - Desert Lily Sanctuary Entrance/Parking Area looking Southeast
- **Key Observation Point 2** - I-10 Interchange at Desert Center (Aztec Ave) looking East
- **Key Observation Point 3** - I-10 Interchange at SW corner of Project looking Northeast

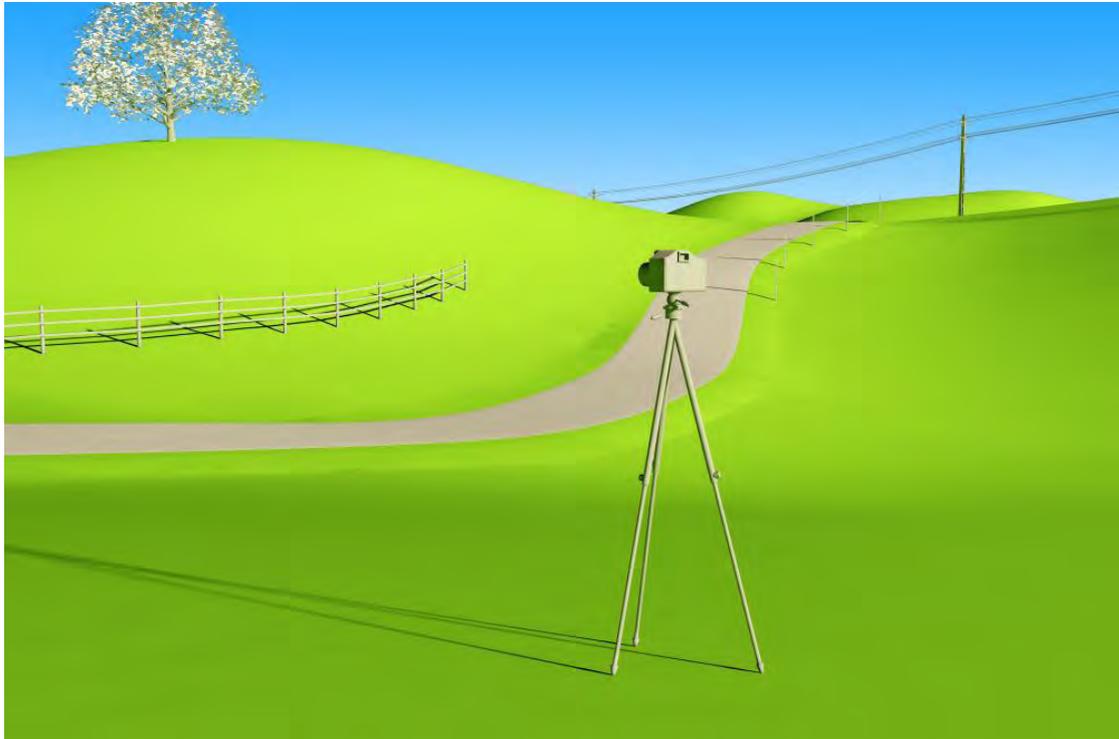
## Key observation point locations

Location map depicting the KOP's which reference photography of the under construction Ivanpah Solar Facility has been captured.



## Methodology

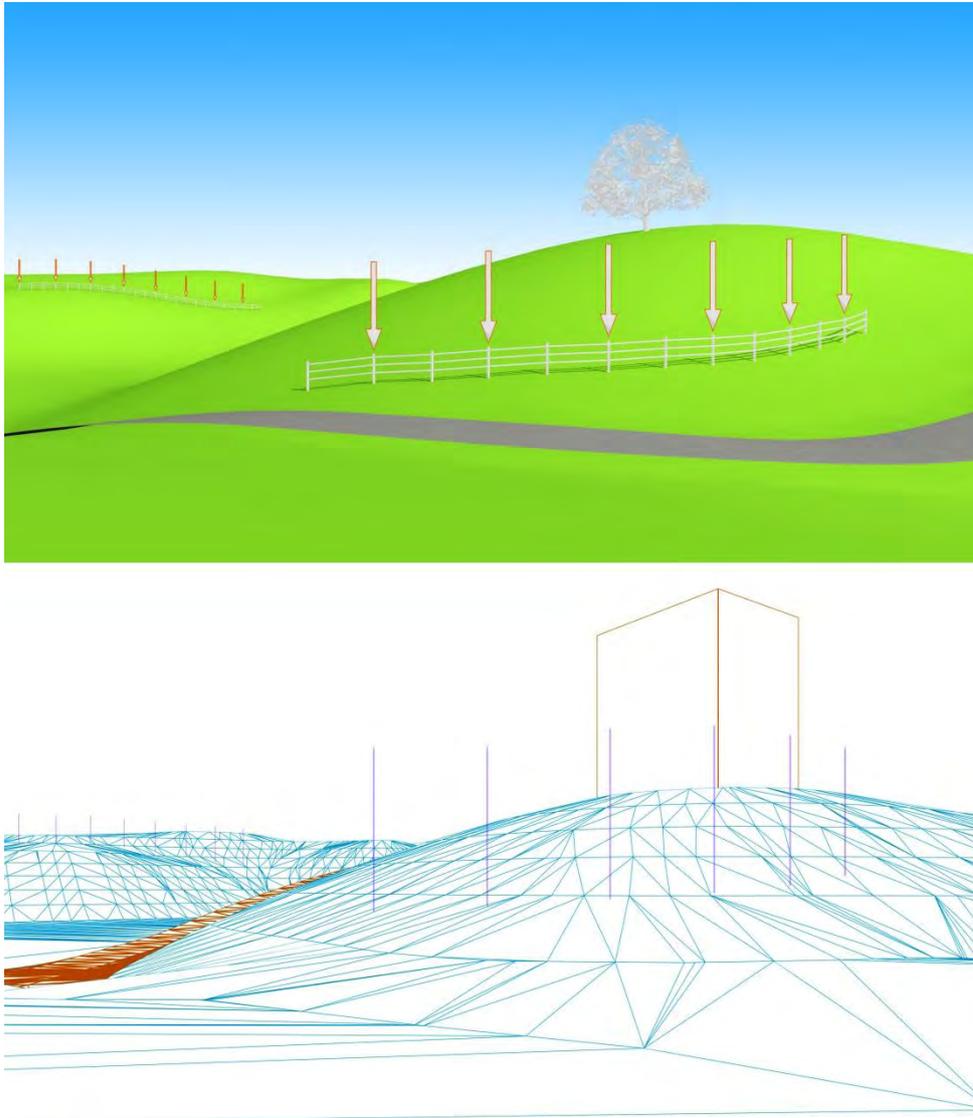
### The site visit



The site visit is undertaken to capture the necessary photography. A digital SLR 1:1 22.3 mega pixel camera is used to take the photography. This camera produces photographs at a resolution and clarity as good as current technology will allow when generating simulations.

## Methodology

### Aligning the surveyed reference points

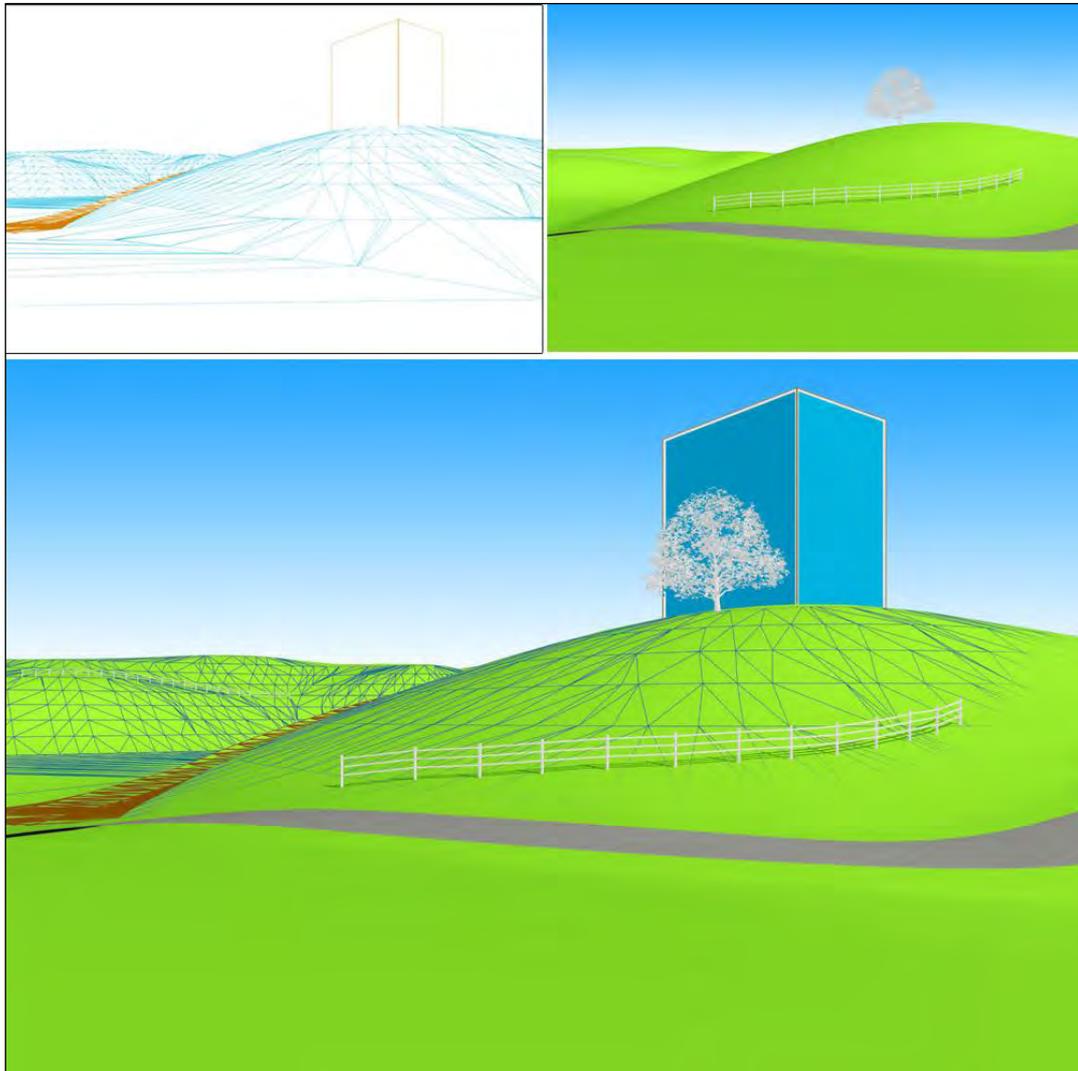


The next step is to construct the 3D computer model. Using Autodesk® 3ds Max® 3D computer simulation software the photo and reference points are imported into the 3D model. A “computer camera” is created to simulate the camera that captured the original photographs, including matching the focal length. The simulated “computer camera” is then positioned at the same location as the physical viewpoint position.

The photographs are then incorporated into the computer model. This is done by correctly aligning the “computer camera” to match the surveyed reference points to the reference objects, and to the terrain if required.

## Methodology

### Building the proposed project in 3D

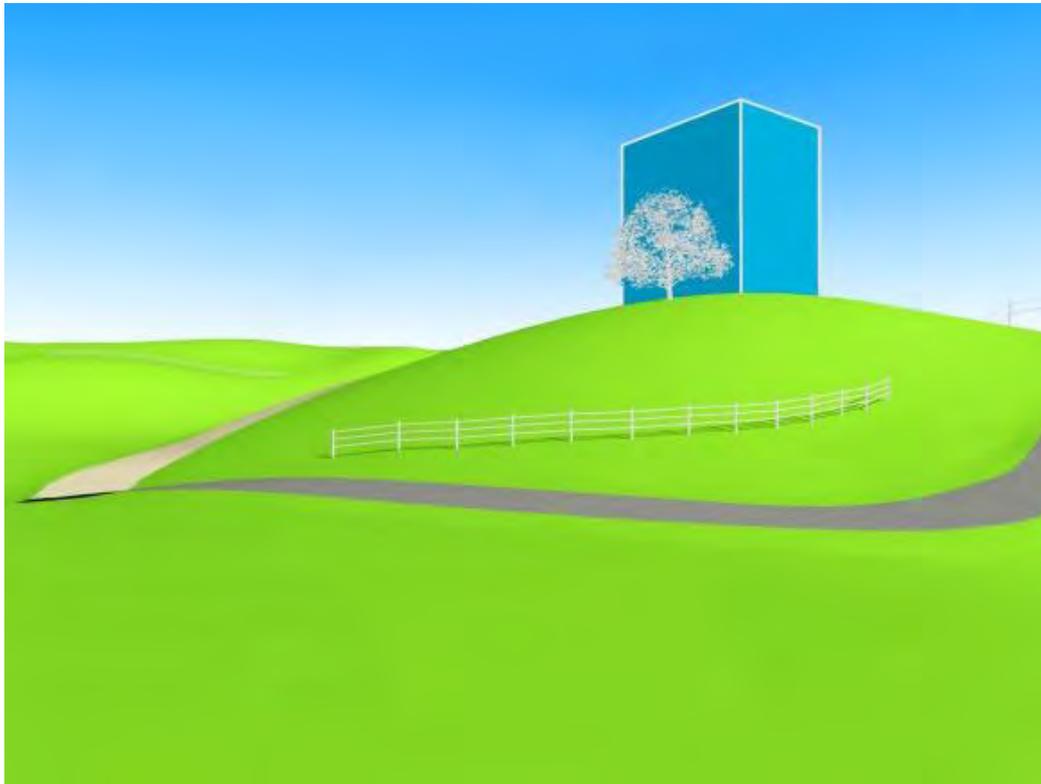


The 3D terrain model of the site has been generated using the land contour data. The proposed Palen Solar Project has been modelled in 3D and is now imported and positioned accurately into the scene.

The simulation software allows the sun to be simulated at the precise time the original photography was captured. This ensures the lighting of the structures as well as the shadows they cast are an accurate depiction of how the Project would appear in the photograph at the same time of day and reflecting the same climatic conditions as those experienced at the time the photograph was taken.

## Methodology

### The final simulation



In order to correctly place existing objects that are in front of the 3D model of the development these foreground objects are overlaid, from the original photograph, onto the computer generated image using photo editing software.

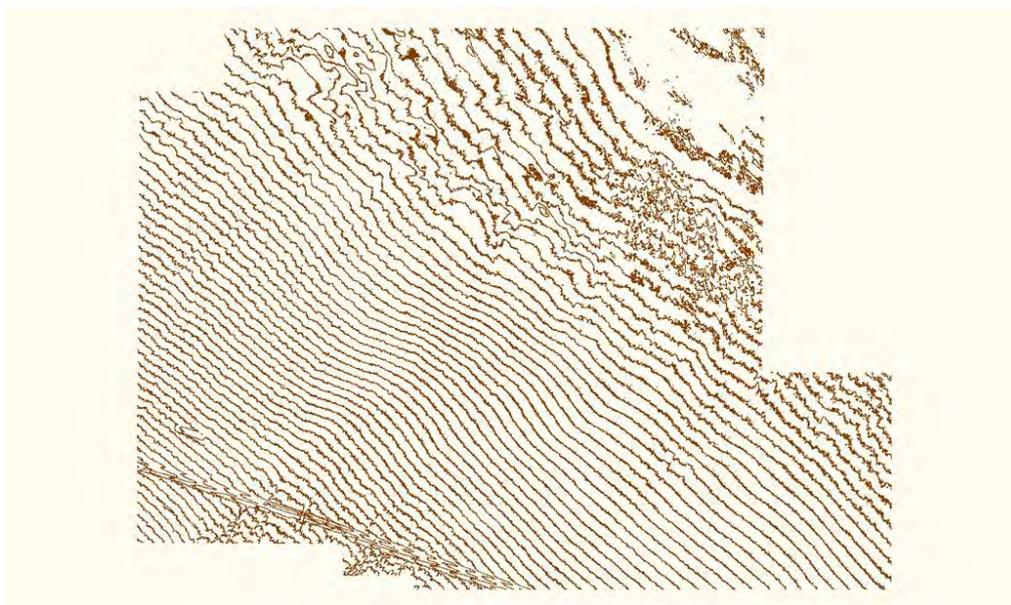
To accurately simulate the night time lighting effects, accurate lighting models were constructed to manufacturers specifications and then the simulations were calibrated against real world light sources such as the Ivanpah Solar Facility when viewed at similar distances.

Our extensive experience in researching has determined that the lens type is irrelevant when generating such simulations. The key factors are the aligning of the raw photographs in 3D, the size that the simulations are output at, and the viewing distance.

## Model input data

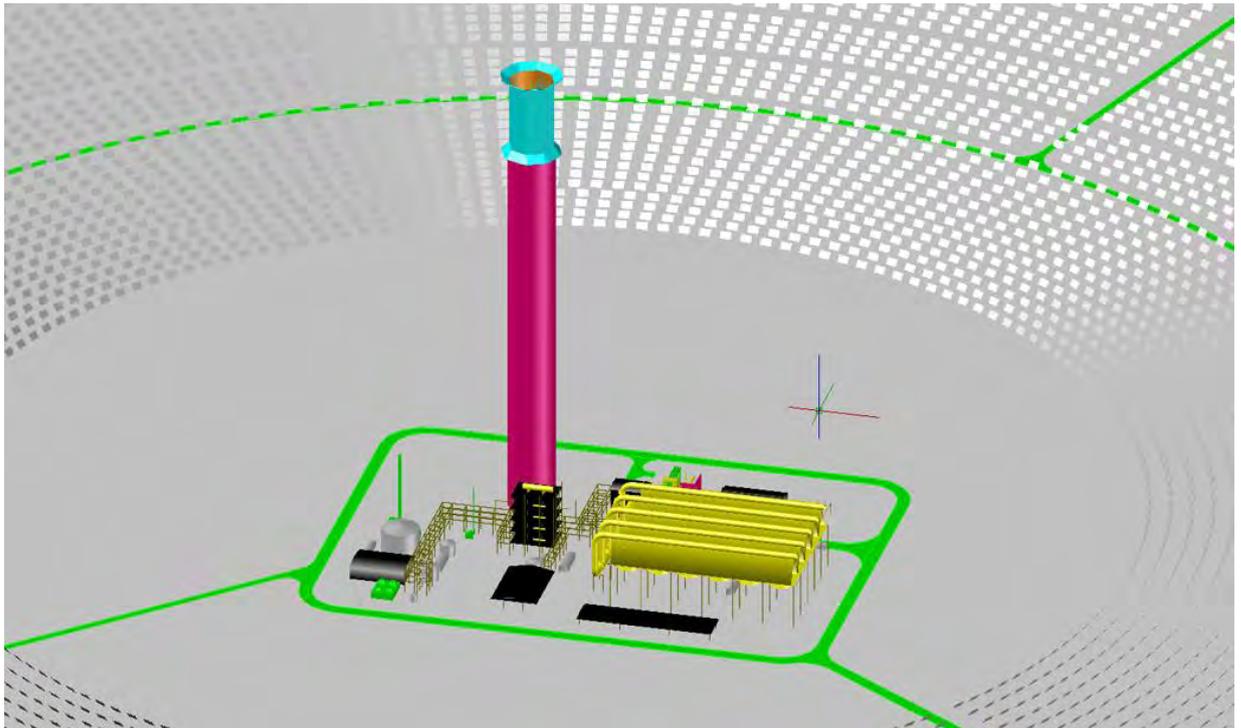


Site Plan supplied by BrightSource Energy.



5ft Contour Data for Site area provided by BrightSource Energy.

## Model input data

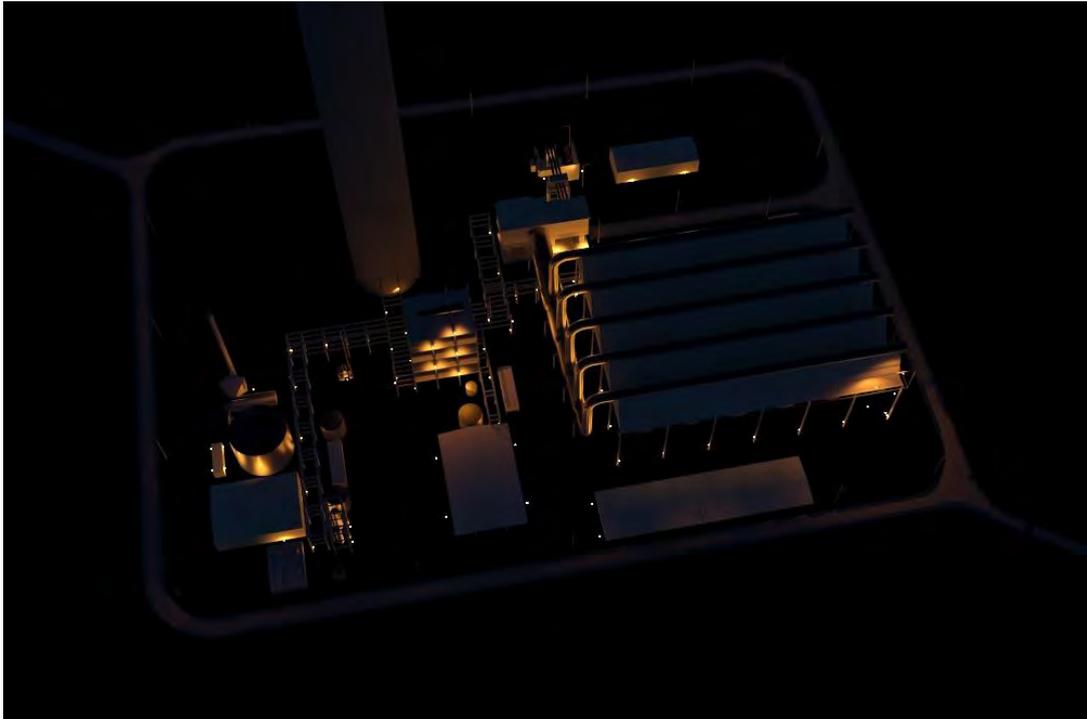


The 3D model as supplied by BrightSource Energy.

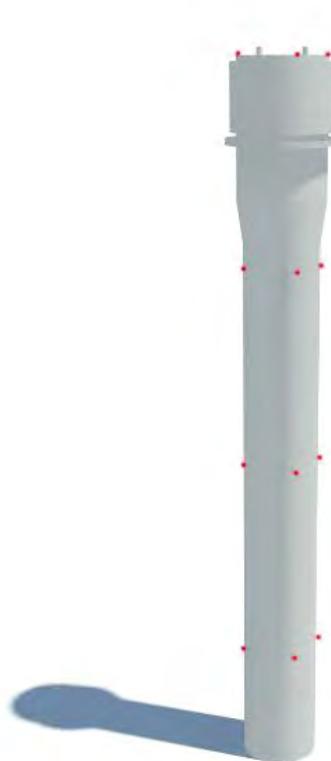


The 3D model as supplied by BrightSource Energy.

## Lighting input data

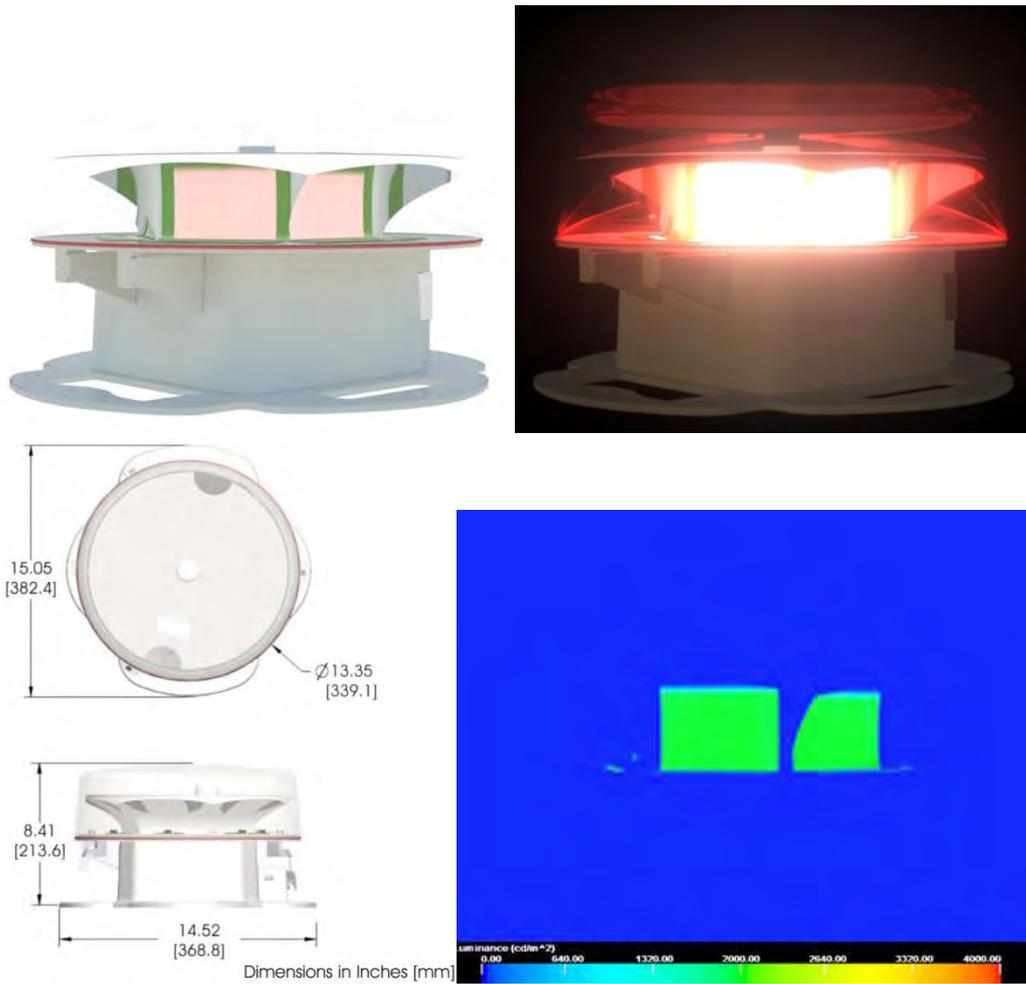


Light plan supplied by BrightSource Energy.



FAA light spacing on tower supplied by BrightSource Energy.

## Lighting input data



The FAA lighting has been modelled on a Dialight Vigilant LED Based L-864 Red Medium Intensity Beacon with an intensity of 2000 candela.

## Site Conditions

Simulations from KOP 4 and KOP 5 were not generated and in substitute of this reference photography was captured of the Ivanpah solar facility (currently under construction) at similar distances to these KOP's. There were significant safety concerns to access these distant points for the periods of time required to generate simulations and in the case of KOP 4 the proposed project is not visible directly. The reference photography of Ivanpah provides an indication of the potential visibility.

The conditions on site were such that one could read of an A4 piece of paper and see clear shadows on the ground due to the brightness of the moon. At the distance of 35 miles the Ivanpah site was obstructed by the local geography. No visible glare could be seen in the sky or on the distant haze.

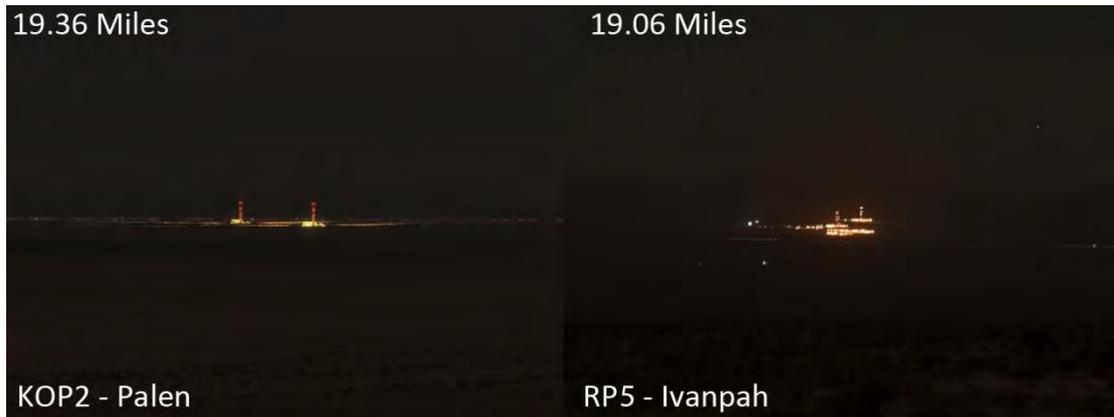
It has to be noted that the Ivanpah site still contains construction lighting which will make the site brighter than what it would be once the project is complete. Our simulations compensate for this eventuality. We have been advised that construction lighting sits at the site offset to the left of tower 02 (labelled "Lights 002" on the image below), therefore when in direct comparison to the simulations, the simulations do not appear to be as bright around the base of the towers and facilities.



Note: The image above has been captured with low exposure to help define individual lights.

The right hand side images on the next page are representative of what the field technician actually saw out on site.

## Reference Photography



The 4 images above are showing night time simulations of the Palen Project on the left compared to the night time reference photos of the Ivanpah Solar Facility on the right which currently is still under construction.

## Survey Reference



Known survey points (depicted with green cylinders) along Interstate 10 as well as digital terrain (depicted in wire frame mode) which was sourced from GIS databases have been used to accurately align the 3D-model of the Palen Project within the photography.

# TRUESCAPE

CONSULTING & VISUAL FACILITATION

## Brightsource Palen Solar



Photo Simulations

---

May 2013

# Key Observation Point Locations

KOP 01 - Looking Southeast  
Off Desert Center Rice Road

KOP 02 - Looking Southeast  
Near Eagle Mountain

KOP 03 - Looking Southeast  
South of Eagle Mountain





**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Key Observation Point 1**  
 Near Desert Center  
 Looking Southeast

- Key Observation Point
- Proposed Facility



Latitude: 33.848735  
 Longitude: -115.341666  
 Elevation of Viewpoint Position (ft): 721.20  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 17, 2013 at 4:00 pm  
 Orientation of View: SE  
 Lens type: 28mm  
 Horizontal Field of View: 65°  
 Vertical Field of View: 46°  
 Distance to nearest tower (mi): 12.38

Camera location has been captured using a handheld GPS device.  
 This image was captured with a full frame 28mm lens and should be viewed at a distance of 10.9 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Key Observation Point 1** - Near Desert Center - Looking Southeast - *Existing View Taken at 4:00 pm*



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Key Observation Point 1**  
 Near Desert Center  
 Looking Southeast

- Key Observation Point
- Proposed Facility



Latitude: 33.848735  
 Longitude: -115.341666  
 Elevation of Viewpoint Position (ft): 721.20  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 17, 2013 at 4:00 pm  
 Orientation of View: SE  
 Lens type: 28mm  
 Horizontal Field of View: 65°  
 Vertical Field of View: 46°  
 Distance to nearest tower (mi): 12.38

Camera location has been captured using a handheld GPS device.  
 This image was captured with a full frame 28mm lens and should be viewed at a distance of 10.9 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Key Observation Point 1 - Near Desert Center - Looking Southeast - *Proposed View Taken at 4:00 pm***



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Key Observation Point 1**  
 Near Desert Center  
 Looking Southeast

- Key Observation Point
- Proposed Facility



Latitude: 33.848735  
 Longitude: -115.341666  
 Elevation of Viewpoint Position (ft): 721.20  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 17, 2013 at 4:00 pm  
 Orientation of View: SE  
 Lens type: 50mm Equivalent  
 Horizontal Field of View: 40°  
 Vertical Field of View: 27°  
 Distance to nearest tower (mi): 12.38

Camera location has been captured using a handheld GPS device.  
 This image has been cropped and enlarged to display the equivalent of a full frame 50mm lens and should be viewed at a distance of 19.4 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Key Observation Point 1** - Near Desert Center - Looking Southeast - *Proposed View Taken at 4:00 pm*



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Key Observation Point 1**  
 Near Desert Center  
 Looking Southeast

- Key Observation Point
- Proposed Facility



Latitude: 33.848735  
 Longitude: -115.341666  
 Elevation of Viewpoint Position (ft): 721.20  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 17, 2013 at 10:00 pm  
 Orientation of View: SE  
 Lens type: 28mm  
 Horizontal Field of View: 65°  
 Vertical Field of View: 46°  
 Distance to nearest tower (mi): 12.38

Camera location has been captured using a handheld GPS device.  
 This image was captured with a full frame 28mm lens and should be viewed at a distance of 10.9 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Key Observation Point 1 - Near Desert Center - Looking Southeast - Existing View Taken at 10:00 pm**



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Key Observation Point 1**  
 Near Desert Center  
 Looking Southeast

- Key Observation Point
- Proposed Facility



Latitude: 33.848735  
 Longitude: -115.341666  
 Elevation of Viewpoint Position (ft): 721.20  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 17, 2013 at 10:00 pm  
 Orientation of View: SE  
 Lens type: 28mm  
 Horizontal Field of View: 65°  
 Vertical Field of View: 46°  
 Distance to nearest tower (mi): 12.38

Camera location has been captured using a handheld GPS device.  
 This image was captured with a full frame 28mm lens and should be viewed at a distance of 10.9 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Key Observation Point 1** - Near Desert Center - Looking Southeast - *Proposed View Taken at 10:00 pm*



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Key Observation Point 1**  
 Near Desert Center  
 Looking Southeast

- Key Observation Point
- Proposed Facility



Latitude: 33.848735  
 Longitude: -115.341666  
 Elevation of Viewpoint Position (ft): 721.20  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 17, 2013 at 10:00 pm  
 Orientation of View: SE  
 Lens type: 50mm Equivalent  
 Horizontal Field of View: 40°  
 Vertical Field of View: 27°  
 Distance to nearest tower (mi): 12.38

Camera location has been captured using a handheld GPS device.  
 This image has been cropped and enlarged to display the equivalent of a full frame 50mm lens and should be viewed at a distance of 19.4 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Key Observation Point 1 - Near Desert Center - Looking Southeast - *Proposed View Taken at 10:00 pm***



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Key Observation Point 2**  
 Near Eagle Mountain  
 Looking Southeast

- Key Observation Point
- Proposed Facility



Latitude: 33.921240  
 Longitude: -115.428565  
 Elevation of Viewpoint Position (ft): 524.03  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 19, 2013 at 4:00 pm  
 Orientation of View: SE  
 Lens type: 28mm  
 Horizontal Field of View: 65°  
 Vertical Field of View: 46°  
 Distance to nearest tower (mi): 19.36

Camera location has been captured using a handheld GPS device.  
 This image was captured with a full frame 28mm lens and should be viewed at a distance of 10.9 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Key Observation Point 2 - Near Eagle Mountain - Looking Southeast - Existing View Taken at 4:00 pm**



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Key Observation Point 2**  
 Near Eagle Mountain  
 Looking Southeast

- Key Observation Point
- Proposed Facility



Latitude: 33.921240  
 Longitude: -115.428565  
 Elevation of Viewpoint Position (ft): 524.03  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 19, 2013 at 4:00 pm  
 Orientation of View: SE  
 Lens type: 28mm  
 Horizontal Field of View: 65°  
 Vertical Field of View: 46°  
 Distance to nearest tower (mi): 19.36

Camera location has been captured using a handheld GPS device.  
 This image was captured with a full frame 28mm lens and should be viewed at a distance of 10.9 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Key Observation Point 2 - Near Eagle Mountain - Looking Southeast - *Proposed View Taken at 4:00 pm***



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Key Observation Point 2**  
 Near Eagle Mountain  
 Looking Southeast

- Key Observation Point
- Proposed Facility



Latitude: 33.921240  
 Longitude: -115.428565  
 Elevation of Viewpoint Position (ft): 524.03  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 19, 2013 at 4:00 pm  
 Orientation of View: SE  
 Lens type: 50mm Equivalent  
 Horizontal Field of View: 40°  
 Vertical Field of View: 27°  
 Distance to nearest tower (mi): 19.36

Camera location has been captured using a handheld GPS device.  
 This image has been cropped and enlarged to display the equivalent of a full frame 50mm lens and should be viewed at a distance of 19.4 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Key Observation Point 2 - Near Eagle Mountain - Looking Southeast - *Proposed View Taken at 4:00 pm***



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Key Observation Point 2**  
 Near Eagle Mountain  
 Looking Southeast

- Key Observation Point
- Proposed Facility



Latitude: 33.921240  
 Longitude: -115.428565  
 Elevation of Viewpoint Position (ft): 524.03  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 19, 2013 at 10:00 pm  
 Orientation of View: SE  
 Lens type: 28mm  
 Horizontal Field of View: 65°  
 Vertical Field of View: 46°  
 Distance to nearest tower (mi): 19.36

Camera location has been captured using a handheld GPS device.  
 This image was captured with a full frame 28mm lens and should be viewed at a distance of 10.9 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Key Observation Point 2 - Near Eagle Mountain - Looking Southeast - Existing View Taken at 10:00 pm**



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Key Observation Point 2**  
 Near Eagle Mountain  
 Looking Southeast

- Key Observation Point
- Proposed Facility



Latitude: 33.921240  
 Longitude: -115.428565  
 Elevation of Viewpoint Position (ft): 524.03  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 19, 2013 at 10:00 pm  
 Orientation of View: SE  
 Lens type: 28mm  
 Horizontal Field of View: 65°  
 Vertical Field of View: 46°  
 Distance to nearest tower (mi): 19.36

Camera location has been captured using a handheld GPS device.  
 This image was captured with a full frame 28mm lens and should be viewed at a distance of 10.9 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Key Observation Point 2 - Near Eagle Mountain - Looking Southeast - *Proposed View Taken at 10:00 pm***



**BrightSource Energy**

**Palen Solar  
Electric Generating System**

**Key Observation Point 2**  
Near Eagle Mountain  
Looking Southeast

- Key Observation Point
- Proposed Facility



Latitude: 33.921240  
 Longitude: -115.428565  
 Elevation of Viewpoint Position (ft): 524.03  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 19, 2013 at 10:00 pm  
 Orientation of View: SE  
 Lens type: 50mm Equivalent  
 Horizontal Field of View: 40°  
 Vertical Field of View: 27°  
 Distance to nearest tower (mi): 19.36

Camera location has been captured using a handheld GPS device.  
 This image has been cropped and enlarged to display the equivalent of a full frame 50mm lens and should be viewed at a distance of 19.4 inches when printed at 11x17.

**TRUESCAPE**  
CONSULTING & VISUAL FACILITATION

**Key Observation Point 2 - Near Eagle Mountain - Looking Southeast - *Proposed View Taken at 10:00 pm***



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Key Observation Point 3**  
 South of Eagle Mountain  
 Looking Southeast

- Key Observation Point
- Proposed Facility



Latitude: 33.771322  
 Longitude: -115.481469  
 Elevation of Viewpoint Position (ft): 524.03  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 16, 2013 at 4:00 pm  
 Orientation of View: SE  
 Lens type: 28mm  
 Horizontal Field of View: 65°  
 Vertical Field of View: 46°  
 Distance to nearest tower (mi): 15.56

Camera location has been captured using a handheld GPS device.  
 This image was captured with a full frame 28mm lens and should be viewed at a distance of 10.9 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Key Observation Point 3 - South of Eagle Mountain - Looking Southeast - Existing View Taken at 4:00 pm**



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Key Observation Point 3**  
 South of Eagle Mountain  
 Looking Southeast

- Key Observation Point
- Proposed Facility



Latitude: 33.771322  
 Longitude: -115.481469  
 Elevation of Viewpoint Position (ft): 524.03  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 16, 2013 at 4:00 pm  
 Orientation of View: SE  
 Lens type: 28mm  
 Horizontal Field of View: 65°  
 Vertical Field of View: 46°  
 Distance to nearest tower (mi): 15.56

Camera location has been captured using a handheld GPS device.  
 This image was captured with a full frame 28mm lens and should be viewed at a distance of 10.9 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Key Observation Point 3 - South of Eagle Mountain - Looking Southeast - *Proposed View Taken at 4:00 pm***



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Key Observation Point 3**  
 South of Eagle Mountain  
 Looking Southeast

- Key Observation Point
- Proposed Facility



Latitude: 33.771322  
 Longitude: -115.481469  
 Elevation of Viewpoint Position (ft): 524.03  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 16, 2013 at 4:00 pm  
 Orientation of View: SE  
 Lens type: 50mm Equivalent  
 Horizontal Field of View: 40°  
 Vertical Field of View: 27°  
 Distance to nearest tower (mi): 15.56

Camera location has been captured using a handheld GPS device.  
 This image has been cropped and enlarged to display the equivalent of a full frame 50mm lens and should be viewed at a distance of 19.4 inches when printed at 11x17.

**Key Observation Point 3 - South of Eagle Mountain - Looking Southeast - *Proposed View Taken at 4:00 pm***



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Key Observation Point 3**  
 South of Eagle Mountain  
 Looking Southeast

- Key Observation Point
- Proposed Facility



Latitude: 33.771322  
 Longitude: -115.481469  
 Elevation of Viewpoint Position (ft): 524.03  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 16, 2013 at 10:00 pm  
 Orientation of View: SE  
 Lens type: 28mm  
 Horizontal Field of View: 65°  
 Vertical Field of View: 46°  
 Distance to nearest tower (mi): 15.56

Camera location has been captured using a handheld GPS device.  
 This image was captured with a full frame 28mm lens and should be viewed at a distance of 10.9 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Key Observation Point 3 - South of Eagle Mountain - Looking Southeast - Existing View Taken at 10:00 pm**



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Key Observation Point 3**  
 South of Eagle Mountain  
 Looking Southeast

- Key Observation Point
- Proposed Facility



Latitude: 33.771322  
 Longitude: -115.481469  
 Elevation of Viewpoint Position (ft): 524.03  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 16, 2013 at 10:00 pm  
 Orientation of View: SE  
 Lens type: 28mm  
 Horizontal Field of View: 65°  
 Vertical Field of View: 46°  
 Distance to nearest tower (mi): 15.56

Camera location has been captured using a handheld GPS device.  
 This image was captured with a full frame 28mm lens and should be viewed at a distance of 10.9 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Key Observation Point 3 - South of Eagle Mountain - Looking Southeast - *Proposed View Taken at 10:00 pm***



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Key Observation Point 3**  
 South of Eagle Mountain  
 Looking Southeast

- Key Observation Point
- Proposed Facility



Latitude: 33.771322  
 Longitude: -115.481469  
 Elevation of Viewpoint Position (ft): 524.03  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 16, 2013 at 10:00 pm  
 Orientation of View: SE  
 Lens type: 50mm Equivalent  
 Horizontal Field of View: 40°  
 Vertical Field of View: 27°  
 Distance to nearest tower (mi): 15.56

Camera location has been captured using a handheld GPS device.  
 This image has been cropped and enlarged to display the equivalent of a full frame 50mm lens and should be viewed at a distance of 19.4 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Key Observation Point 3 - South of Eagle Mountain - Looking Southeast - *Proposed View Taken at 10:00 pm***

# Reference Point Locations

Reference Point 01 - Looking Southeast  
29.3 Miles from plant - Pahrump Valley Rd

Reference Point 02 - Looking Southeast  
34.9 Miles from plant - Pahrump Valley Rd

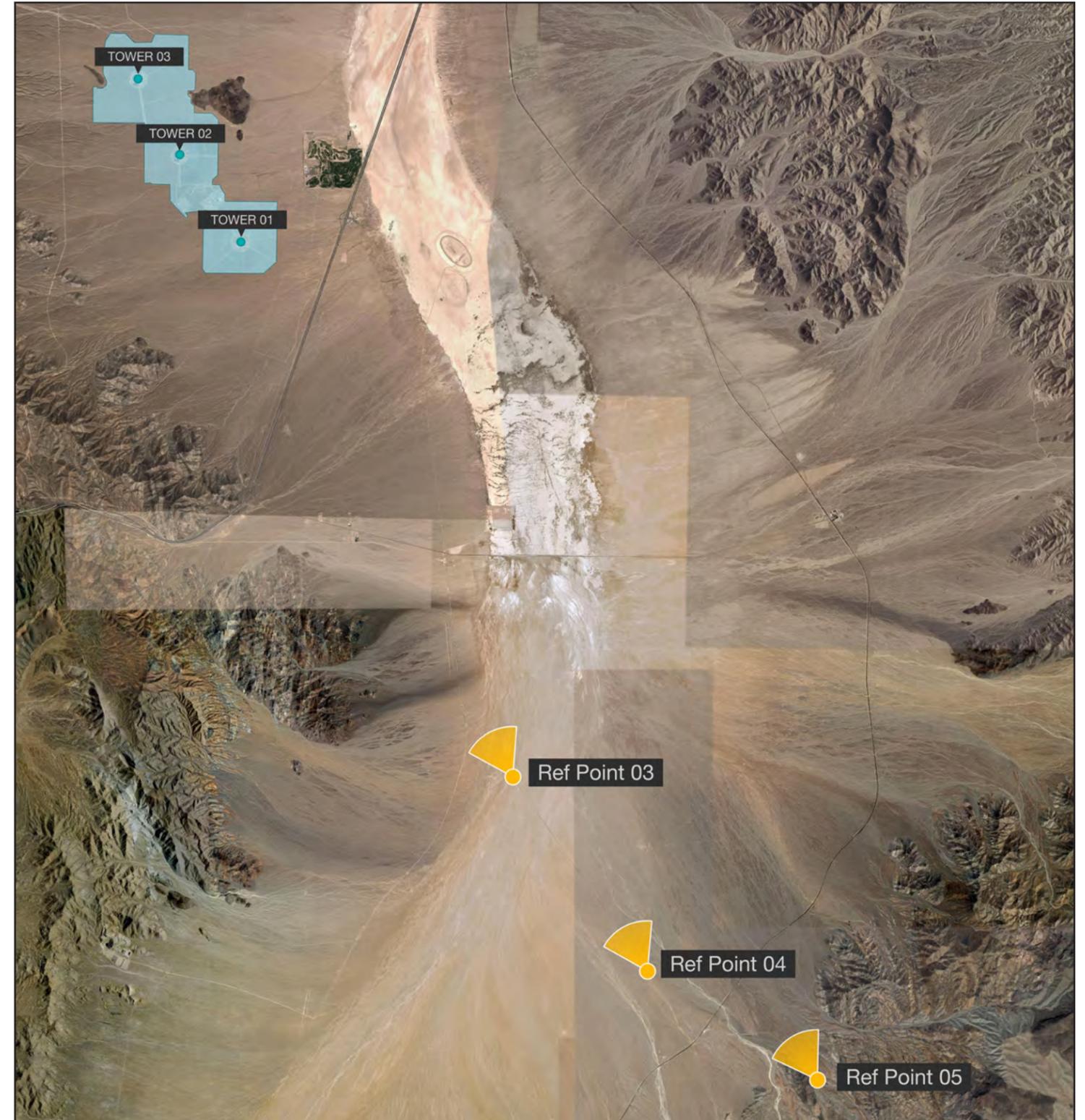


# Reference Point Locations

Reference Point 03 - Looking Northwest  
12 Miles from plant - Ivanpah Rd

Reference Point 04 - Looking Northwest  
16 Miles from plant - Ivanpah Rd - Looking Northwest

Reference Point 05 - Looking Northwest  
19.2 Miles from plant - Ivanpah Rd





**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Reference Point 1**  
 Pahrump Valley Rd  
 Looking Southeast

**Reference Photography**

- Key Observation Point
- Proposed Facility



Latitude: **36.015152**  
 Longitude: **-115.67367**  
 Elevation of Viewpoint Position (ft): **3815.6**  
 Height of Camera Above Ground (ft): **5.4**  
 Date of Photography: **May 22, 2013 at 12:06 am**  
 Orientation of View: **SE**  
 Lens type: **28mm**  
 Horizontal Field of View: **65°**  
 Vertical Field of View: **46°**  
 Distance to nearest tower (mi): **29.3**

Camera location has been captured using a handheld GPS device.  
 This image was captured with a full frame 28mm lens and should be viewed at a distance of 10.9 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Reference Point 1 - 29.3 Miles from plant - Pahrump Valley Rd - Looking Southeast - Reference Photography Taken at 12:06 am**



**BrightSource Energy**

**Palen Solar  
Electric Generating System**

**Reference Point 1  
Pahrump Valley Rd  
Looking Southeast**

**Reference Photography**

- Key Observation Point
- Proposed Facility



Latitude: **36.015152**  
 Longitude: **-115.67367**  
 Elevation of Viewpoint Position (ft): **3815.6**  
 Height of Camera Above Ground (ft): **5.4**  
 Date of Photography: **May 22, 2013 at 12:06 am**  
 Orientation of View: **SE**  
 Lens type: **50mm Equivalent**  
 Horizontal Field of View: **40°**  
 Vertical Field of View: **27°**  
 Distance to nearest tower (mi): **29.3**

Camera location has been captured using a handheld GPS device.  
 This image has been cropped and enlarged to display the equivalent of a full frame 50mm lens and should be viewed at a distance of 19.4 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Reference Point 1 - 29.3 Miles from plant - Pahrump Valley Rd - Looking Southeast - Reference Photography Taken at 12:06 am**



**BrightSource Energy**

**Palen Solar  
Electric Generating System**

**Reference Point 2  
Pahrump Valley Rd  
Looking Southeast**

**Reference Photography**

- Key Observation Point
- Proposed Facility



Latitude: 36.069957  
Longitude: -115.763644  
Elevation of Viewpoint Position (ft): 3395.7  
Height of Camera Above Ground (ft): 5.4  
Date of Photography: May 21, 2013 at 11:50 pm  
Orientation of View: SE  
Lens type: 28mm  
Horizontal Field of View: 65°  
Vertical Field of View: 46°  
Distance to nearest tower (mi): 34.9

Camera location has been captured using a handheld GPS device.  
This image was captured with a full frame 28mm lens and should be viewed at a distance of 10.9 inches when printed at 11x17.

**TRUESCAPE**  
CONSULTING & VISUAL FACILITATION

**Reference Point 2 - 34.9 Miles from plant - Pahrump Valley Rd - Looking Southeast - Reference Photography Taken at 11:50 pm**



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Reference Point 2**  
Pahrump Valley Rd  
Looking Southeast  
**Reference Photography**

- Key Observation Point
- Proposed Facility



Latitude: 36.069957  
Longitude: -115.763644  
Elevation of Viewpoint Position (ft): 3395.7  
Height of Camera Above Ground (ft): 5.4  
Date of Photography: May 21, 2013 at 11:50 pm  
Orientation of View: SE  
Lens type: 50mm Equivalent  
Horizontal Field of View: 40°  
Vertical Field of View: 27°  
Distance to nearest tower (mi): 34.9

Camera location has been captured using a handheld GPS device.  
This image has been cropped and enlarged to display the equivalent of a full frame 50mm lens and should be viewed at a distance of 19.4 inches when printed at 11x17.

**TRUESCAPE**  
CONSULTING & VISUAL FACILITATION

**Reference Point 2 - 34.9 Miles from plant - Pahrump Valley Rd - Looking Southeast - Reference Photography Taken at 11:50 pm**



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Reference Point 3**  
 Ivanpah Rd  
 Looking Northwest

**Reference Photography**

- Key Observation Point
- Proposed Facility



Latitude: 35.402765  
 Longitude: -115.369355  
 Elevation of Viewpoint Position (ft): 2759.2  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 22, 2013 at 2:10 am  
 Orientation of View: NW  
 Lens type: 28m  
 Horizontal Field of View: 65°  
 Vertical Field of View: 46°  
 Distance to nearest tower (mi): 12

Camera location has been captured using a handheld GPS device.  
 This image was captured with a full frame 28mm lens and should be viewed at a distance of 10.9 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Reference Point 3 - 12 Miles from plant - Ivanpah Rd - Looking Northwest - Reference Photography Taken at 2:10 am**



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Reference Point 3**  
 Ivanpah Rd  
 Looking Northwest  
**Reference Photography**

- Key Observation Point
- Proposed Facility



Latitude: **35.402765**  
 Longitude: **-115.369355**  
 Elevation of Viewpoint Position (ft): **2759.2**  
 Height of Camera Above Ground (ft): **5.4**  
 Date of Photography: **May 22, 2013 at 2:10 am**  
 Orientation of View: **NW**  
 Lens type: **50mm Equivalent**  
 Horizontal Field of View: **40°**  
 Vertical Field of View: **27°**  
 Distance to nearest tower (mi): **12**

Camera location has been captured using a handheld GPS device.  
 This image has been cropped and enlarged to display the equivalent of a full frame 50mm lens and should be viewed at a distance of 19.4 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Reference Point 3 - 12 Miles from plant - Ivanpah Rd - Looking Northwest - Reference Photography Taken at 2:10 am**



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Reference Point 4**  
 Ivanpah Rd  
 Looking Northwest  
**Reference Photography**

- Key Observation Point
- Proposed Facility



Latitude: 35.354878  
 Longitude: -115.327634  
 Elevation of Viewpoint Position (ft): 3241.5  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 22, 2013 at 2:22 am  
 Orientation of View: NW  
 Lens type: 28mm  
 Horizontal Field of View: 65°  
 Vertical Field of View: 46°  
 Distance to nearest tower (mi): 16

Camera location has been captured using a handheld GPS device.  
 This image was captured with a full frame 28mm lens and should be viewed at a distance of 10.9 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Reference Point 4** - 16 Miles from plant - Ivanpah Rd - Looking Northwest - **Reference Photography Taken at 2:22 am**



**BrightSource Energy**

**Palen Solar  
Electric Generating System**

**Reference Point 4**  
Ivanpah Rd  
Looking Northwest

**Reference Photography**

- Key Observation Point
- Proposed Facility



Latitude: 35.354878  
 Longitude: -115.327634  
 Elevation of Viewpoint Position (ft): 3241.5  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 22, 2013 at 2:22 am  
 Orientation of View: NW  
 Lens type: 50mm Equivalent  
 Horizontal Field of View: 40°  
 Vertical Field of View: 27°  
 Distance to nearest tower (mi): 16

Camera location has been captured using a handheld GPS device.  
 This image has been cropped and enlarged to display the equivalent of a full frame 50mm lens and should be viewed at a distance of 19.4 inches when printed at 11x17.

**TRUESCAPE**  
CONSULTING & VISUAL FACILITATION

**Reference Point 4 - 16 Miles from plant - Ivanpah Rd - Looking Northwest - Reference Photography Taken at 2:22 am**



**BrightSource Energy**  
**Palen Solar**  
**Electric Generating System**

**Reference Point 5**  
 Ivanpah Rd  
 Looking Northwest

**Reference Photography**

- Key Observation Point
- Proposed Facility



Latitude: 35.328634  
 Longitude: -115.275322  
 Elevation of Viewpoint Position (ft): 3923.9  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 22, 2013 at 2:33 am  
 Orientation of View: NW  
 Lens type: 28mm  
 Horizontal Field of View: 65°  
 Vertical Field of View: 46°  
 Distance to nearest tower (mi): 19.2

Camera location has been captured using a handheld GPS device.  
 This image was captured with a full frame 28mm lens and should be viewed at a distance of 10.9 inches when printed at 11x17.

**TRUESCAPE**  
 CONSULTING & VISUAL FACILITATION

**Reference Point 5 - 19.2 Miles from plant - Ivanpah Rd - Looking Northwest - Reference Photography Taken at 2:33 am**



**BrightSource Energy**

**Palen Solar  
Electric Generating System**

**Reference Point 5**  
Ivanpah Rd  
Looking Northwest

**Reference Photography**

- Key Observation Point
- Proposed Facility



Latitude: 35.328634  
 Longitude: -115.275322  
 Elevation of Viewpoint Position (ft): 3923.9  
 Height of Camera Above Ground (ft): 5.4  
 Date of Photography: May 22, 2013 at 2:33 am  
 Orientation of View: NW  
 Lens type: 50mm Equivalent  
 Horizontal Field of View: 40°  
 Vertical Field of View: 27°  
 Distance to nearest tower (mi): 19.2

Camera location has been captured using a handheld GPS device.  
 This image has been cropped and enlarged to display the equivalent of a full frame 50mm lens and should be viewed at a distance of 19.4 inches when printed at 11x17.

**TRUESCAPE**  
CONSULTING & VISUAL FACILITATION

**Reference Point 5 - 19.2 Miles from plant - Ivanpah Rd - Looking Northwest - Reference Photography Taken at 2:33 am**



**BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT  
COMMISSION OF THE STATE OF CALIFORNIA  
1516 NINTH STREET, SACRAMENTO, CA 95814  
1-800-822-6228 – WWW.ENERGY.CA.GOV**

**PALEN SOLAR ELECTRIC  
GENERATING SYSTEM AMENDMENT**

**Docket No. 09-AFC-7C  
PROOF OF SERVICE  
(Revised 05/23/2013)**

**SERVICE LIST:**

**APPLICANT**

Palen Solar Holdings, LLC  
Clay Jensen  
410 South Rampart Blvd., Suite 390  
Las Vegas, NV 89145  
cjensen@brightsourceenergy.com

Palen Solar Holdings, LLC  
Charlie Turlinski  
1999 Harrison Street, Suite 2150  
Oakland, CA 94612  
cturlinski@brightsourceenergy.com

Palen Solar Holdings, LLC  
\*Amanda McCoy  
1999 Harrison Street, Suite 2150  
Oakland, CA 94612  
amccoy@brightsourceenergy.com

**APPLICANT'S CONSULTANT**

Centerline  
Andrea Grenier  
1420 E. Roseville Parkway  
Suite 140-377  
Roseville, CA 95661  
andrea@agrenier.com

**APPLICANT'S COUNSEL**

Scott Galati, Esq.  
Marie Fleming  
Galati/Blek, LLP  
455 Capitol Mall, Suite 350  
Sacramento, CA 95814  
sgalati@gb-llp.com  
mfleming@gb-llp.com

**INTERESTED AGENCY**

California ISO  
e-recipient@caiso.com  
County of Riverside  
Office of Riverside County Counsel  
Tiffany North  
3960 Orange Street, Suite 500  
Riverside, CA 92501  
tnorth@co.riverside.ca.us

**INTERVENORS**

Center for Biological Diversity  
Lisa T. Belenky, Senior Attorney  
351 California St., Suite 600  
San Francisco, CA 94104  
lbelenky@biologicaldiversity.org  
Center for Biological Diversity  
Ileene Anderson  
Public Lands Desert Director  
PMB 447, 8033 Sunset Boulevard  
Los Angeles, CA 90046  
ianderson@biologicaldiversity.org

Basin and Range Watch  
Kevin Emmerich  
Laura Cunningham  
P.O. Box 153  
Baker, CA 92309  
atomictoadranch@netzero.net  
bluerockiguana@hughes.net

Californians for Renewable Energy  
Alfredo Acosta Figueroa  
424 North Carlton Avenue  
Blythe, CA 92225  
lacunadeaztlan@aol.com

California Unions for Reliable Energy  
Tanya A. Gulesserian  
Elizabeth Klebaner  
Adams Broadwell Joseph & Cardoza  
601 Gateway Boulevard, Suite 1000  
South San Francisco, CA 94080  
tgulesserian@adamsbroadwell.com  
eklebaner@adamsbroadwell.com

Hildeberto Sanchez, Eddie Simmons,  
and Laborers' International Union of  
North America, Local Union No. 1184  
c/o Richard T. Drury  
Christina M. Caro  
Lozeau|Drury LLP  
410 12th Street, Suite 250  
Oakland, CA 94607  
richard@lozeaudrury.com  
christina@lozeaudrury.com

**ENERGY COMMISSION STAFF**

Christine Stora  
Project Manager  
christine.stora@energy.ca.gov  
Jennifer Martin-Gallardo  
Staff Counsel  
jennifer.martin-gallardo@energy.ca.gov

**ENERGY COMMISSION –  
PUBLIC ADVISER**

Blake Roberts  
Assistant Public Adviser  
publicadviser@energy.ca.gov

**COMMISSION DOCKET UNIT**

California Energy Commission  
Docket Unit  
Attn: Docket No. 09-AFC-7C  
1516 Ninth Street, MS-4  
Sacramento, CA 95814-5512  
docket@energy.ca.gov

**OTHER ENERGY COMMISSION  
PARTICIPANTS (LISTED FOR  
CONVENIENCE ONLY):**

*After docketing, the Docket Unit  
will provide a copy to the persons  
listed below. Do not send copies of  
documents to these persons  
unless specifically directed to do  
so.*

KAREN DOUGLAS  
Commissioner and Presiding Member

DAVID HOCHSCHILD  
Commissioner and Associate  
Member

Kenneth Celli  
Hearing Adviser

Galen Lemei  
Adviser to Presiding Member

Jennifer Nelson  
Adviser to Presiding Member

Gabe Taylor  
Adviser to Associate Member

Eileen Allen  
Commissioners' Technical  
Adviser for Facility Siting

**DECLARATION OF SERVICE**

I, Marie Fleming, declare that on May 31, 2013, I served and filed copies of the attached **JOSHUA TREE NATIONAL PARK VISUAL RESOURCES ANALYSIS REPORT**, dated May 2013. This document is accompanied by the most recent Proof of Service, which I copied from the web page for this project at: <http://www.energy.ca.gov/sitingcases/palen/compliance/>.

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

**(Check one)**

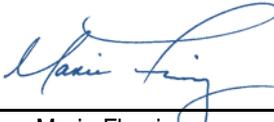
**For service to all other parties and filing with the Docket Unit at the Energy Commission:**

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

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

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

Dated: May 31, 2013

  
\_\_\_\_\_  
Marie Fleming