

**STATE OF CALIFORNIA**

**Energy Resources Conservation and Development Commission**

In the Matter of:

APPLICATION FOR CERTIFICATION  
FOR THE IVANPAH SOLAR  
ELECTRIC  
GENERATING SYSTEM

DOCKET NO. 07-AFC-5

**DOCKET**  
**07-AFC-5**

DATE	DEC 22 2009
RECD.	DEC 23 2009

**INTERVENOR CENTER FOR BIOLOGICAL DIVERSITY**

**Revised Testimony of Curtis Bradley**

**Re: Project Description/Environmental Setting/Alternatives for the Proposed  
Ivanpah Solar Electric Generating System**

**Docket 07-AFC-5**

**Qualifications**

My qualifications are provided on my Resume attached to this Testimony and as discussed below.

I am the Geographic Information Systems (GIS) specialist at the Center for Biological Diversity. I hold a Bachelor of Sciences in mechanical engineering and a Master of Sciences in watershed management, both from the University of Arizona. I have training in several GIS software applications and over 10 years of experience in GIS analysis and cartography.

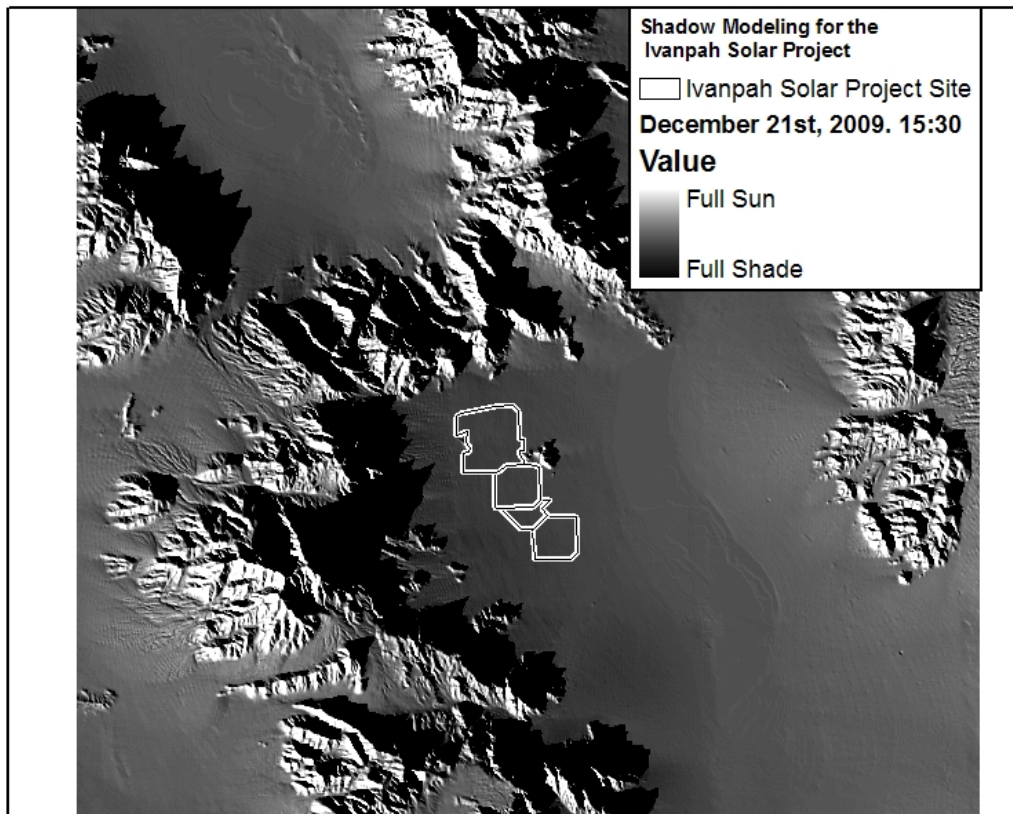
I prepared the maps below showing mountain shadows on the proposed Ivanpah solar site using GIS data and GIS software. I digitized (created a digital map of) the boundaries of the Ivanpah project from the project maps in the record. This allowed me to determine the longitude and latitude of the project site. I then entered these coordinates in the Astronomical Applications Department of the U.S. Naval Observatory website <http://aa.usno.navy.mil/data/docs/AltAz.php>. This website calculates the sun's altitude and azimuth for any given time and day of the year.

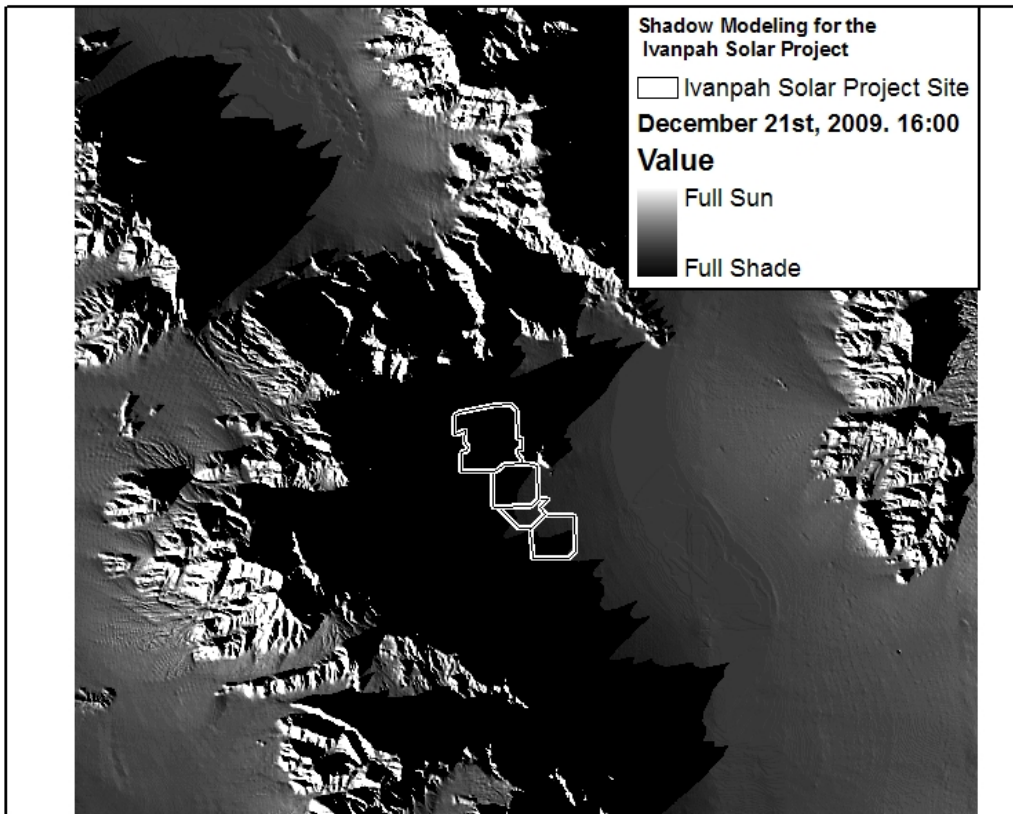
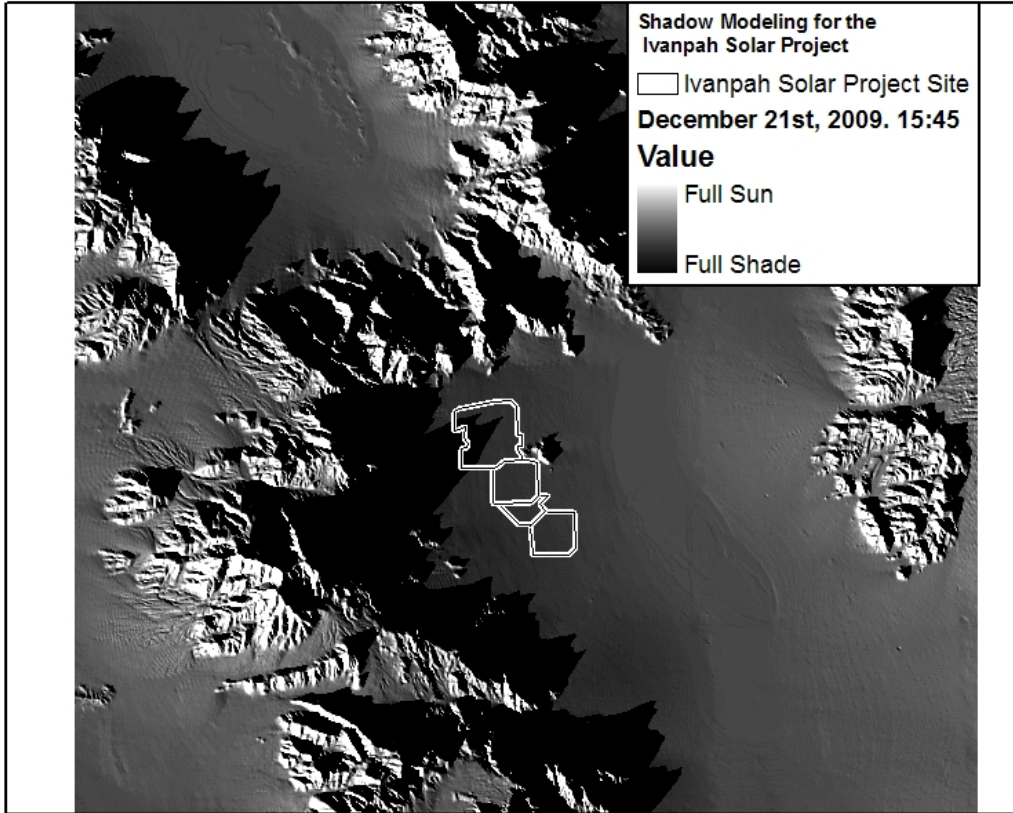
I used the altitude and azimuth information in my GIS software package, ArcGIS 9.3 (ESRI, 1999–2009), to create the shadow maps. This was done using the hillshade

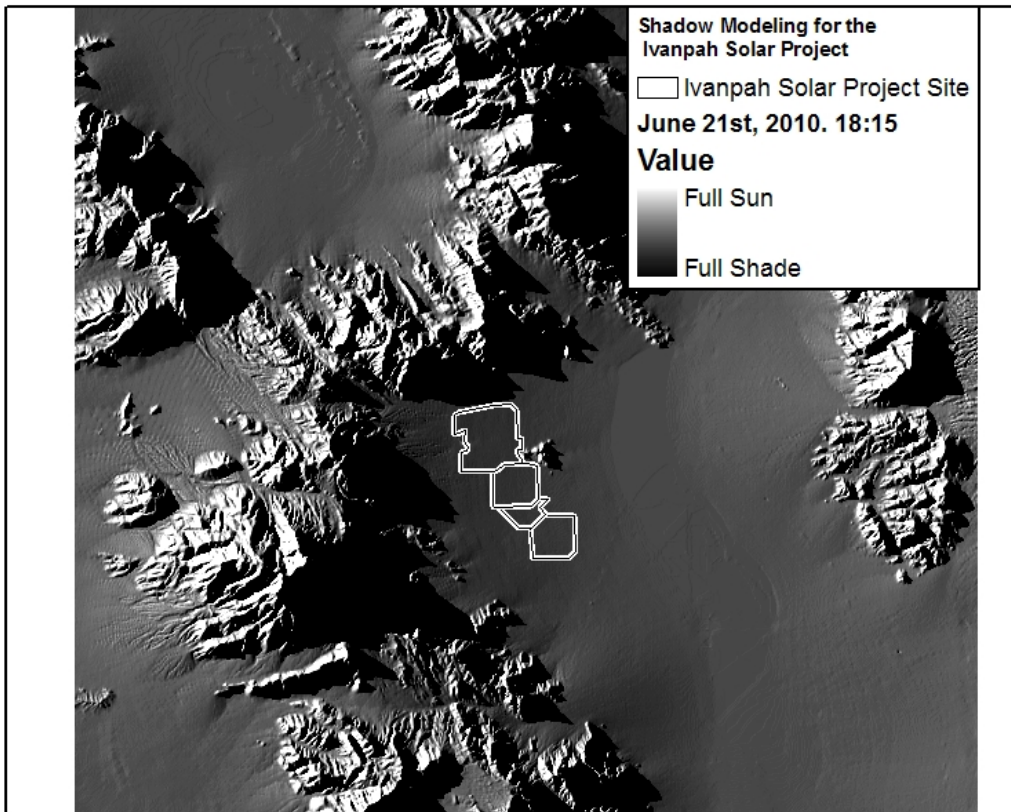
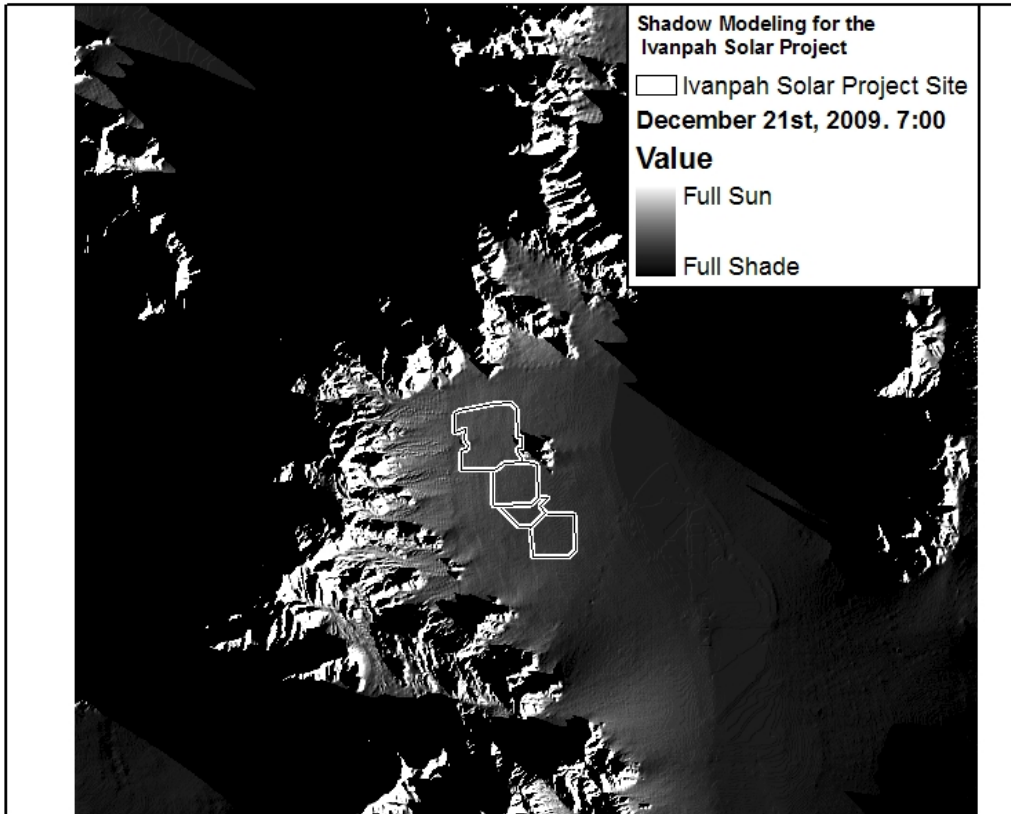
command in the spatial analyst extension with the ‘model shadows’ checkbox on using a 30 meter digital elevation model downloaded from the U.S. Geological Survey as the input surface. The resulting maps show the shadows at sunrise and sunset for summer and winter solstices along with the boundaries of the project.

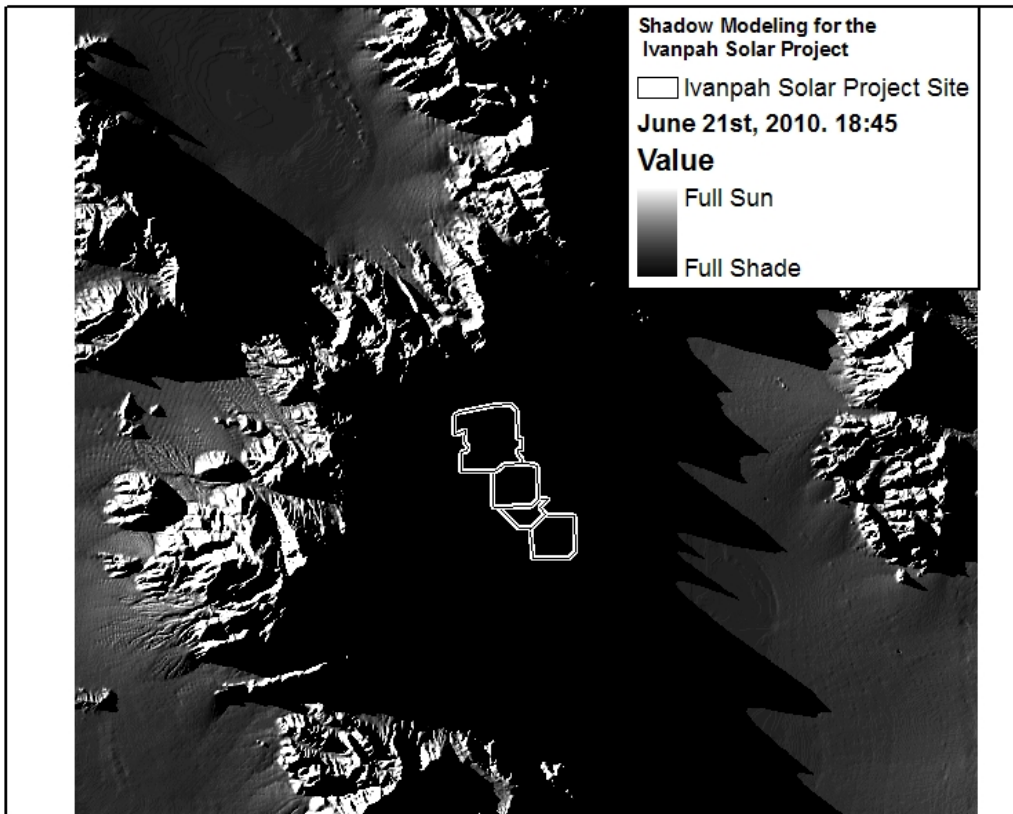
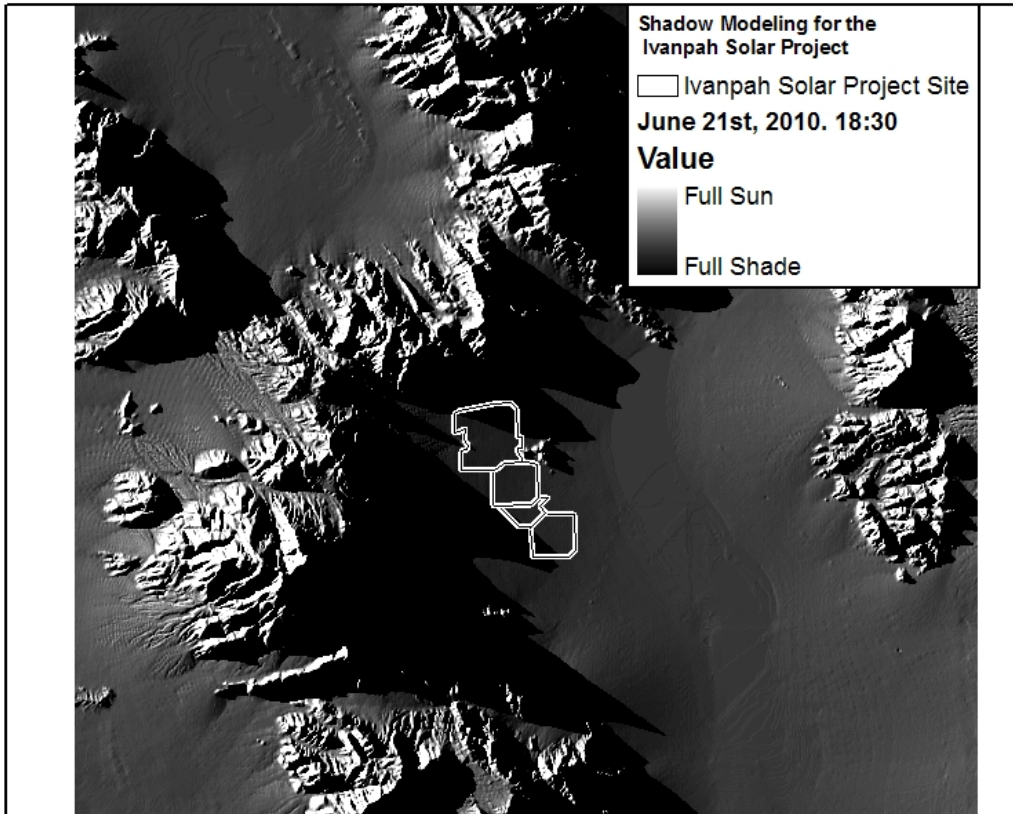
In my original testimony, I included shadow maps that were erroneous due to the fact that the DEM that they were calculated from reported elevations in feet instead of meters. This caused the shadow calculations to be incorrect because the horizontal units of the DEM were in meters. I corrected this error by converting the DEM elevations into meters so they were consistent the horizontal units and included the new maps with this document.

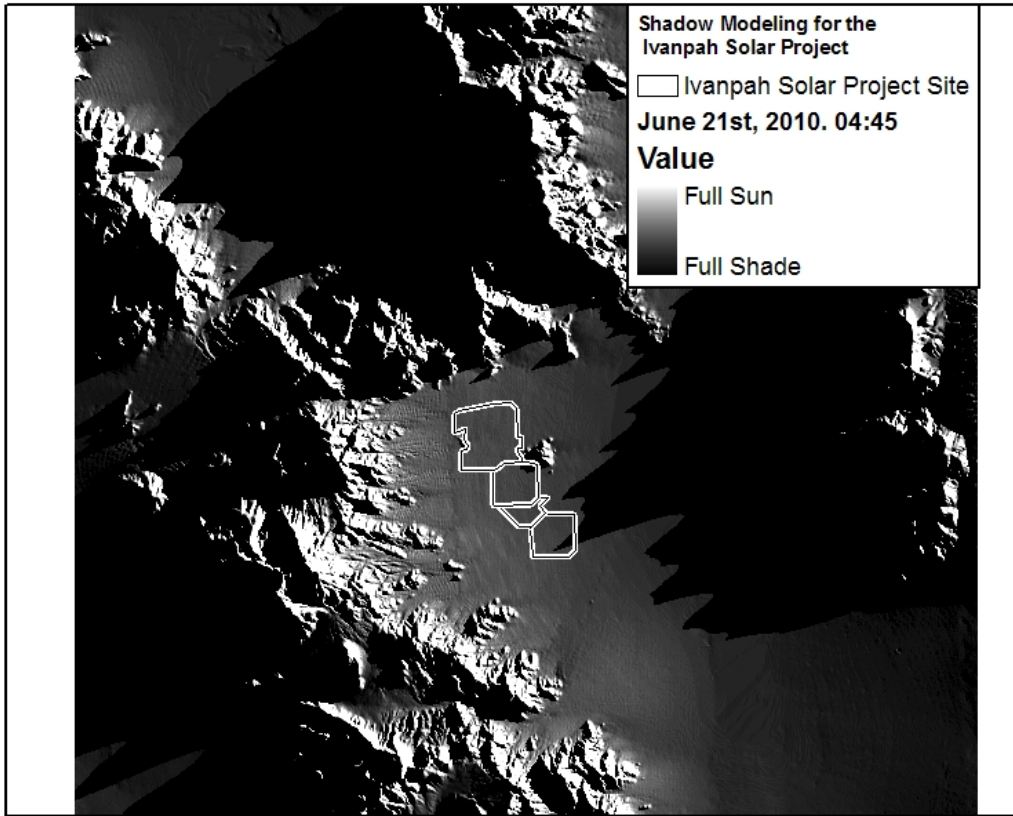
### Maps of Mountain Shadows on the Proposed Project Site











**Declaration of Curtis Bradley**

**Re: Mountain Shadows on the Proposed Ivanpah Solar Electric Generating System**

**Docket 07-AFC-5**

I, Curtis Bradley, declare as follows:

- 1) I am currently employed as the GIS Specialist at the Center for Biological Diversity, a position I have held for 9 years.
- 2) My relevant professional qualifications and experience are set forth in the attached resume and the attached testimony and are incorporated herein by reference.
- 3) I prepared the testimony and maps attached hereto and incorporated herein by reference, relating to the impacts of the Project on bighorn sheep.
- 4) I prepared the testimony and maps attached hereto and incorporated herein by reference relating to the proposed Project in the Ivanpah Valley in San Bernardino County.
- 5) It is my professional opinion that the attached testimony and maps are true and accurate with respect to the issues that they address.
- 6) I am personally familiar with the facts and conclusions described within the attached testimony and if called as a witness, I 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: 12-18-09

Signed: Curtis Bradley

At: Tucson, Arizona

# Curtis M Bradley

## *Profile:*

- \* GIS project manager that solves unique problems daily.

## *Relevant Experience and Accomplishments:*

### **GIS/Geography Experience**

- \* Produced hundreds of cartographic products.
- \* Managed and supervised several individuals.
- \* Extensive use of ArcInfo, ArcView and digital orthographic images for map production and correction.

## *Employment History:*

### **Jan 2001 – Present. GIS Specialist, Center for Biological Diversity, Tucson, Arizona.**

Managed databases, produced cartographic products, charts, reports, graphics and performed spatial analysis for a staff of over 60 scientists and attorneys including spatial database design, population, programming, and digitizing.

### **Dec 2006 - Present. Information Technology Director, Center for Biological Diversity, Tucson, AZ.**

Performed and supervised in house technical support of all computer and phone systems for staff. Performed software and hardware upgrades and purchases and directed duties including help desk support.

### **June 1999 – Jan 2001. GIS Specialist, Sky Island Alliance, Tucson, Arizona**

Produced maps, edited, managed databases of the Sky Island Wildlands Network and proposed wilderness of Southeast Arizona.

## *Education and Training:*

Masters of Science, Watershed Management  
University of Arizona, AZ. 2003.

Bachelor of Science, Mechanical Engineering  
University of Arizona, AZ. 1992

Microsoft Certified Systems Engineer, 1999.

## *GIS Software:*

ArcGIS 9.x, 8.x, ArcToolBox, ArcCatalog, other functionalities of ArcGIS 9.x  
ArcView 3.x, ArcINFO 7.x, ArcINFO  
3D, Network, and Spatial Analyst(s), ArcIMS

## *Programming/Databases/Other:*

ArcINFO with AMLs, Visual Basic for Applications.  
MS Excel, MS Access., Python scripting



California Energy Resources Conservation and Development Commission

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DOCKET NO. 07-AFC-5

DECLARATION OF SERVICE

I, Lisa T. Belenky, declare that on December 22, 2009, I served and filed copies of the attached **Revised Testimony of Curtis Bradley** dated December 18, 2009. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: [www.energy.ca.gov/sitingcases/ivanpah]. The document has been sent to the other parties in this proceeding (as shown on the Proof of Service list by email as agreed by the parties) and to the Commission’s Docket Unit, in the following manner:

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 by personal delivery or by depositing in the United States mail at 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

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

OR

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1516 Ninth Street, MS-4  
Sacramento, CA 95814-5512  
[docket@energy.state.ca.us](mailto:docket@energy.state.ca.us)

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

  
\_\_\_\_\_  
Lisa T. Belenky

**Sent via email to:** [sdeyoung@brightsourceenergy.com](mailto:sdeyoung@brightsourceenergy.com); [tstewart@brightsourceenergy.com](mailto:tstewart@brightsourceenergy.com); [jcarrier@ch2m.com](mailto:jcarrier@ch2m.com); [jdh@eslawfirm.com](mailto:jdh@eslawfirm.com); [e-recipient@caiso.com](mailto:e-recipient@caiso.com); [tom\\_hurshman@blm.gov](mailto:tom_hurshman@blm.gov); [Raymond\\_Lee@ca.blm.gov](mailto:Raymond_Lee@ca.blm.gov); [dfgpalm@adelphia.net](mailto:dfgpalm@adelphia.net); [tgulesserian@adamsbroadwell.com](mailto:tgulesserian@adamsbroadwell.com); [mjconnor@westernwatersheds.org](mailto:mjconnor@westernwatersheds.org); [gloria.smith@sierraclub.org](mailto:gloria.smith@sierraclub.org); [devorah.ancel@sierraclub.org](mailto:devorah.ancel@sierraclub.org); [joanne.spalding@sierraclub.org](mailto:joanne.spalding@sierraclub.org); [gssilliman@csupomona.edu](mailto:gssilliman@csupomona.edu); [jbasofin@defenders.org](mailto:jbasofin@defenders.org); [atomicoadranch@netzero.net](mailto:atomicoadranch@netzero.net); [gsuba@cnps.org](mailto:gsuba@cnps.org); [thansen@cnps.org](mailto:thansen@cnps.org); [granites@telis.org](mailto:granites@telis.org); [bbrizze@cc.sbcounty.gov](mailto:bbrizze@cc.sbcounty.gov); [jbyron@energy.state.ca.us](mailto:jbyron@energy.state.ca.us); [jboyd@energy.state.ca.us](mailto:jboyd@energy.state.ca.us); [pkramer@energy.state.ca.us](mailto:pkramer@energy.state.ca.us); [jkessler@energy.state.ca.us](mailto:jkessler@energy.state.ca.us); [dratliff@energy.state.ca.us](mailto:dratliff@energy.state.ca.us); [publicadviser@energy.state.ca.us](mailto:publicadviser@energy.state.ca.us); [docket@energy.state.ca.us](mailto:docket@energy.state.ca.us)

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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

APPLICATION FOR CERTIFICATION  
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GENERATING SYSTEM*

DOCKET No. 07-AFC-5  
PROOF OF SERVICE  
(Revised 11/23/09)

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Greg Suba, Tara Hansen & Jim Andre

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[thansen@cnps.org](mailto:thansen@cnps.org)

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**DECLARATION OF SERVICE**

I, \_\_\_\_\_, declare that on \_\_\_\_\_, 2009, I served and filed copies of the attached, \_\_\_\_\_ dated, \_\_\_\_\_, 2009. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: **[[www.energy.ca.gov/sitingcases/ivanpah](http://www.energy.ca.gov/sitingcases/ivanpah)].**

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

\_\_\_\_\_