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STATE OF CALIFORNIA
Energy Resources
Conservation and Development Commission

In the matter of:

Amendment for the **PALEN SOLAR
ELECTRIC GENERATING SYSTEM**

DOCKET NO. 09-ACF-7C

COLORADO RIVER INDIAN TRIBES

Testimony of Ted Swendra

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STATEMENT

Question: What is your name and position, how long have you held your position, and what is your background and expertise?

My name is Ted M. Swendra. I am the Airport Manager at the Avi Suquilla Airport in Parker, Arizona. I have worked here as the Airport Manager since October 1, 2007.

I have been a pilot since 1973 and have flown both military fighter aircraft and civil aircraft as well as working as an avionics technician. I graduated from Northern Arizona University in 1976. I have worked in the field of Airport and Fixed Base Operator management since 1984 and have been an executive member of the American Association of Airport Executives including 23 years as an executive member of the Arizona Airports Association (AzAA). As a member of AzAA I have served on the Board of Directors and various subcommittees. I have also served on Project Advisory Committees assisting the Arizona Department of Transportation, Aeronautics with projects and state-wide aviation studies.

As an Airport Manager, my duties include airport planning, managing airport development / construction projects and budgets, managing staff in the accomplishment of airport operations, safety and maintenance as well as interaction with the community regarding off-airport planning and development. Over the years, I have responded to many FAA requests for comments regarding proposed development and construction projects in the vicinity of airports as submitted on the FAA Form 7460, Notice of Proposed Construction.

Question: Are there aspects of Palen Solar Electric Generating System (PSEGS) that you believe may pose a hazard to aircraft operators or passengers?

Yes, as discussed below, I am concerned that the glare from the Facility's two 750-foot towers has the potential to cause a hazardous distraction to pilots.

Question: Do you believe you understand the nature of the PSEGS?

Yes, PSEGS would use a solar tower technology to create steam to run the electricity generator by using a field of 85,000 elevated mirrors known as heliostats. Each heliostat is guided by a sun-tracking system designed to focus the sun's rays on a solar receiver steam generator (SRSG) atop a 750-foot solar tower located near the center of each solar field. The PSEGS would include two operational units, each consisting of one solar field, one tower, and a power block capable of producing approximately 250 MW of electricity.

Question: What is the proximity of PSEGS to nearby airports and airways?

The PSEGS lies relatively close to at least three general aviation airports, the Parker Airport, located northeast of the planned solar facility, the Blythe Airport, located due east of the solar facility, and the Desert Center Airport, located just west of the solar facility.

It is important to understand though that it is not just the presence of these airports but the airways connecting the airports. An airway is a designated route in the air. They are equivalent

to highways in the sky with segments that connect fixed geographic terminals (including airports) that emit electronic signals that aircraft can track and follow. The terminals are referred to as VORs or VORTACs. These VORTACS are mapped on world aeronautical charts. While pilots do not have to follow the airways, the FAA's designation of those airways tends to concentrate air traffic along the paths of airways. For this reason, it is important to locate any obstructions or equipment, that could potentially cause problems for pilots, away from designated airways.

As the attached section (CG-18) of the FAA's world aeronautical chart shows, the PSEGS facility is sited immediately adjacent to airway Victor-16 (V-16). V-16 runs between Phoenix and Los Angeles and it is my understanding that it is one of, if not the most heavily traveled airways in the southwest corner of the continental U.S.

Question: Why can't pilots fly further away from the PSEGS?

While one might expect that pilots could simply select a different flight path, and avoid potentially hazardous situations, this is not necessarily the case. A pilot can choose to take shortcuts between airways using a combination of pilotage and his/her onboard electronic navigation devices to navigate to their intended destination. But no matter where potentially hazardous facilities are located, they may be problematic for pilots. It is just a matter of the number of pilots that might fly over, or near, these facilities. Here, the risk is very much elevated because of the proximity of PSEGS to a very busy airway.

Question: The PSEGS has been under consideration for a while, why are you now concerned?

I only just learned that the Ivanpah Solar Facility, which uses the SRSG technology, was recently the subject of pilot complaints. One pilot of a small transport plane "experienced a very bright, intense light from three solar complexes which interfered with his ability to scan for traffic," according to the Federal Aviation Administration's Aviation Safety Reporting System (ASRS) filing. The ASRS filing is attached. That pilot stated that he and the co-pilot were distracted and momentarily blinded by the sun reflecting off of the solar facility's mirrors. He called the reflection from the mirrors "hazardous to flight" explaining that it was like looking into the sun and it filled about 1/3 of the co-pilots front windshield. In a second ASRS filing, several pilots complained to the FAA with one pilot stating that the reflection from the Ivanpah facility was "nearly blinding." *Id.* These alarming facts caused me to question whether the CEC has evaluated the potential for this hazardous situation at the Palen facility.

After hearing about the ASRS complaints, I was surprised to learn that the CEC staff actually determined the potential for these super-heated SRSGs to appear brilliantly white at close distances. CEC staff concluded that the SRSGs would appear very bright and distracting, dominating the landscape when in the field of view, demanding visual attention and that this light is visible from relatively small-scale existing facilities at vantage points 25 miles from the towers.

These statements, coupled with the incidents from the Ivanpah solar plant, lead me to believe that a great many pilots flying through the very busy airway near the Palen facility could be exposed to hazardous operations.

Questions: What has been the FAA's role in this project?

That's a good question. Given the proximity of the PSEGS facility to Victor-16, I assume the company owner would have completed FAA Form 7460 Notice of Proposed Construction (notice to the FAA is required if a new or altered structure that will be more than 200 feet above the ground). I researched this, and could find no indication that the company owner completed this form.

The FAA could be involved in other ways as well. According to the Solar Industry Magazine, the FAA has commissioned the development of a "Solar Glare Hazard Analysis Tool" (SGHAT), developed by the Department of Energy's Sandia National Laboratories, for assessing potential glare impacts from projects. A copy of an article entitled "Glare Factor: Solar Installations and Airports," from the Solar Industry Magazine is attached. The solar glare tool calculates the retinal irradiance and subtended angle (size/distance) of the glare source to predict potential ocular hazards, ranging from a temporary after-image to retinal burn. It produces a color-coded display of the potential for the glare to result in an ocular impact. I can find no indication that this glare hazard tool has been employed for the Palen facility.

I also question whether the FAA, or any other responsible agency, has conducted "real-life" tests. While there may have been a lack of empirical evidence historically about a solar project's potential to result in glare, now that the Ivanpah facility is operational, the Palen company owner could commission an over-flying operation of the Ivanpah site while recording the intensity and duration of the phenomena. Such an investigation, which would have to be overseen by the FAA to ensure integrity, should be conducted before the Energy Commission considers permitting the PSEGS.

Exhibit 8031	Testimony of Ted Swendra
Exhibit 8032	FAA World Aeronautical Chart section CG-18
Exhibit 8033	The Ivanpah ASRS Report
Exhibit 8034	"Glare Factor: Solar Installations and Airports," Solar Industry Magazine

Testimony of Ted Swendra

I, Ted Swendra, declare as follows:

- 1) I am currently the Airport Manager at the Avi Suquilla Airport in Parker, Arizona.
- 2) My relevant professional qualifications and experience are set forth in the attached testimony.
- 3) I assisted with the preparation of the attached testimony relating to the proposed Amendment to the Palen Solar Electric Generating System.
- 4) It is my professional opinion that the attached testimony is true and accurate with respect to the issues that are addressed.
- 5) 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: June 19, 2013

AT: Parker, AZ



Ted Swendra