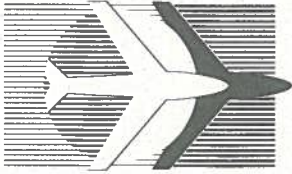


LAS VEGAS



McCARRAN INTERNATIONAL AIRPORT

DOCKET

07-AFC-5

DATE JAN 23 2009

RECD. FEB 04 2009

Department of Aviation

RANDALL H. WALKER
DIRECTOR

ROSEMARY A. VASSILIADIS
DEPUTY DIRECTOR

POSTAL BOX 11005
LAS VEGAS, NEVADA 89111-1005
(702) 261-5211

FAX (702) 597-9553

E-MAIL: webmaster2@mccarran.com

January 23, 2009

Che McFarlin, Project Manager
Ivanpah Solar Electric Generating System Project
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

**RE: COMMENTS ON THE PRELIMINARY STAFF ASSESSMENT FOR THE
PROPOSED IVANPAH SOLAR ELECTRIC GENERATING SYSTEM
PROJECT (07-AFC-5)**

Dear Mr. McFarlin:

The Clark County Department of Aviation (CCDOA) has reviewed the Preliminary Staff Assessment (PSA) for the proposed Ivanpah Solar Electric Generating System (ISEGS) and has identified several potential impacts to both the Jean Sport Aviation Center in Jean Nevada, and the proposed Southern Nevada Supplemental Airport (SNSA) which would be located in the Ivanpah Valley between Jean and Primm, Nevada. CCDOA owns and operates Jean Airport. CCDOA is also the sponsor of the planned SNSA. As you may know, the United States Senate has recognized that because of the severely constrained airspace in the region, constructing SNSA in the Ivanpah Valley is "the only option" that can accommodate the growing air traffic needs of the region. In 2000, Congress passed the Ivanpah Valley Airport Public Lands Transfer Act, which transferred to Clark County about 6,000 acres in the Ivanpah Valley to develop SNSA and directed the Federal Aviation Administration (FAA) and the Bureau of Land Management (BLM) to conduct a federal environmental review of the proposed action as joint lead agencies. In that capacity, FAA and BLM issued a draft alternatives working paper that concludes that, should SNSA be built, the Ivanpah Valley site is the only feasible and practical alternative. For these reasons, CCDOA is particularly concerned about potential impacts from the ISEGS to its air navigation facilities.

In brief, CCDOA has identified four key issues that merit further attention:

1. Glare

As the PSA reports, the ISEGS could adversely affect aviation operations at SNSA due to glare from the solar thermal arrays. The potential for adverse impacts from glare could also adversely affect operations at the existing Jean Airport. CCDOA strongly urges the Commission to study this issue in more detail with respect to both airports. As described



Clark County Board of Commissioners

Rory Reid, Chair • Susan Brager, Vice Chair

Larry Brown • Tom Collins • Chris Giunchigiani • Steve Sisolak • Lawrence Weekly

in the attached report, the glare could be a significant hazard to air navigation, particularly for SNSA because of the proximity of flight tracks to the ISEGS location. As the report notes: "The close proximity between the ISEGS and flight paths means it is likely that at some point the aircraft will be in line with reflective mirrors pointed at the receiver tower. Any 'spillage' of the beam would then be focused directly on the aircraft. This glare could then potentially blind a pilot during this critical phase of flight." The towers themselves would also be a source of glare that could create significant hazards. FAA has also expressed its concerns about the glare effects from the ISEGS. (See the attached scoping comments from FAA). These potentially serious effects should be fully analyzed in the Final Staff Assessment.

2. Thermal Effects

The thermal plumes from the ISEGS could also create hazards to air navigation. As noted in the attached report, the concentrated heat from the project may produce enough rising hot air to cause turbulence to overflying aircraft. This effect would impact the planned flight tracks to the SNSA, and would likely impact Visual Flight Rules (VFR) traffic in the area that currently tracks along the I-15 corridor en route to Jean Airport. FAA also raised this issue in its scoping comments. The PSA, however, makes no mention of thermal effects to air navigation. CCDOA recommends that this issue be examined fully in order to understand the potential impacts to air navigation.

3. Military Training Routes

Again, as noted in the attached report, there are several military training routes in the vicinity. The ISEGS will clearly have an impact to these routes and any development must therefore be coordinated with the military.

4. Ivanpah Lands Act

Traffic and Transportation Table 1 omits mention of a critical federal law that contains several relevant obligations. Specifically, in the Ivanpah Valley Airport Public Lands Transfer Act (Public Law 106-362), Congress concluded that the shortage in airspace in the Las Vegas region was so critical that, before any land in the Ivanpah Valley could be transferred to the County for purposes of constructing and operating SNSA, CCDOA must: (1) "develop an airspace management plan for the Ivanpah Valley Airport that, to the maximum extent practicable and without adversely affecting safety considerations, restricts aircraft arrivals and departures over the Mojave Desert Preserve in California" and (2) "ensure access to the Las Vegas Basin under visual flight rules at a level that is equal to or better than existing access." In accordance with that mandate, CCDOA prepared a study (the Airspace Feasibility Study), and the FAA Administrator certified the study. The Airspace Feasibility Study demonstrates that the introduction of new traffic patterns would minimize impacts to the Mojave, would not create additional pressures/strains on the national airspace, and would not adversely affect the flow of VFR traffic.

Che McFarlin, Project Manager

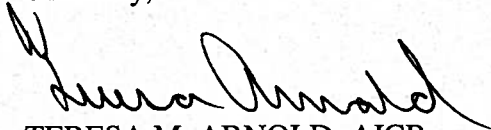
January 23, 2009

Page 3

As a result, the Commission should examine the degree to which the proposed ISEGS facility conflicts (or does not conflict) with the Airspace Feasibility Study, and with the FAA's statutory obligations to ensure VFR access to the Las Vegas Basin at a level that is equal to or better than existing access and to minimize impacts to the Mojave.

I appreciate your attention to these concerns. Please feel free to contact Robert Tweedy of my staff directly at (702) 261-5175 regarding this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Teresa M. Arnold". The signature is fluid and cursive, with a large initial "T" and "A".

TERESA M. ARNOLD, AICP
Airport Planning Manager

Encl.

cc: Randall Walker
Rosemary Vassiliadis
Robert Tweedy



Aeronautical Services • 4255 Pheasant Ridge Dr. Ste 402 • Minneapolis, MN 55449
 Ph: 763-786-9582 • Fax: 763-784-5896

Draft Memo

To: Charles Hall, Pam Adams, Robert Tweedy, Teresa Arnold
 From: Robert Varani, Rylan Juran
 CC:
 Date: January 23, 2009
 Re: IVP Solar Electric Generating System Impacts

ASRC, under contract with the Clark County Department of Aviation has been asked to determine what, if any, impact the Ivanpah Solar Electric Generating System (ISEGS) proposed by BrightSource Energy will have on the Proposed Ivanpah airport. To complete this task, an analysis of the tower locations was conducted considering FAA design standards and criteria including, FAA Order JO 7110.65S *Air Traffic Control* and FAA Order JO 7400.2G *Procedures for Handling Airspace Matters*, 8260.3B *United States Standard for Instrument Procedures (TERPS)*, and 8260.44A *Civil Utilization of Area Navigation (RNAV) Departure Procedures*. Tower location data was obtained from seven FAA 7460 forms retrieved from the FAA. The only data supplied by BrightSource were the FAA 7460 numbers. ASRC was informed that there were originally 13 towers proposed, but that number has been changed to seven. The following table depicts the FAA study number, location, and height of each structure. **Exhibit 1** depicts the proposed solar towers in relation to the Ivanpah Airport.

Solar Tower Data

7460	Lat	Long	Site elev.	Structure Height	Total (AMSL)
2008-AWP-3209-OE	35 32 06.38	115 27 05.73	2890	469	3359
2008-AWP-3210-OE	35 33 23.18	115 28 12.49	3041	469	3510
2008-AWP-3211-OE	35 34 32.25	115 28 56.53	3188	469	3657
2008-AWP-3212-OE	35 34 06.47	115 29 17.43	3278	469	3747
2008-AWP-3213-OE	35 34 15.47	115 28 28.17	3086	469	3555
2008-AWP-3214-OE	35 34 57.05	115 28 33.12	3106	469	3575
2008-AWP-3215-OE	35 34 52.73	115 29 23.50	3304	469	3773

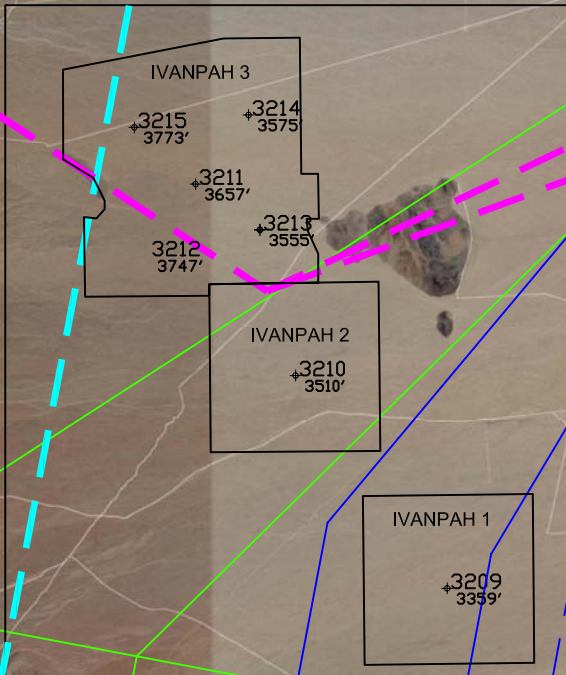
KEY

RNAV ARRIVAL FLIGHT TRACK	
RNAV DEPARTURE FLIGHT TRACK	
ILS RNAV OBSTACLE CLEARANCE SURFACE	
ILS RADAR OBSTACLE CLEARANCE SURFACE	

IVP AIRPORT

PRIMM, NV

PROPOSED SOLAR TOWERS



DWN BY: RMJ	DATE: 01-23-09	
CHK BY:	DATE:	



IVANPAH SOLAR ANALYSIS ORIENTATION

EXHIBIT 1

FAA Part 77 Surfaces

FAA Part 77 surfaces provide a means for identifying obstacles to air navigation. Depending on which surface is penetrated, offending obstacles must be removed, altered, or lighted. It was found that none of the proposed solar towers will penetrate the Part 77 surfaces. In fact, the proposed towers do not lie beneath the Part 77 surfaces.

IFR Departures

FAA Order 8260.3b *The United States Standard for Terminal Instrument Procedures* (TERPS) discusses design criteria and protection surfaces required for aircraft departing under IFR conditions.

Diverse Departure

Diverse Departure areas are evaluated for penetrations to an Obstacle Clearance Surface. If no penetrations to this surface exist, unrestricted diverse departure may be authorized. If penetrations do exist, they may be mitigated through departure segments and/or climb gradients. One of the proposed towers, 2008-AWP-3215-OE, for the ISEGS penetrates this Diverse Departure OCS for Runway 18R by approximately 15'. This could be a problem if not for the fact that terrain to the north, west, and southwest penetrates this same surface by 1000' and up to 3000'. The surrounding terrain will have a greater impact on diverse departure than will the proposed ISEGS.

RNAV Route Departure

8260.44A *Civil Utilization of Area Navigation (RNAV) Departure Procedures* discusses design criteria and protection surfaces required for departing aircraft using an RNAV Standard Instrument Departure. An obstacle clearance surface is used to define an area around a flight path that requires protection from obstacle penetration. For a departure surface, this area expands outward from the Departure End of the Runway (DER) to a maximum width. The surface rises at a slope of 40:1. Any obstacle, whether it is terrain, a building, or a tower which penetrates the surface may require an imposed climb gradient on that flight path. Climb gradients are expressed in feet per Nautical Mile (ft/NM).

The ISEGS does not penetrate the 40:1 RNAV surface. In addition, terrain and ATC driven climb gradients are likely to be higher, and so the ISEGS is not a significant impact to RNAV route departures.

Precision Approach

A precision approach is an instrument flight procedure that provides both horizontal and vertical guidance, such as an Instrument Landing System (ILS). A precision approach's design is described in FAA Order 8260.3B *The United States Standard for Terminal Instrument Procedures* (TERPS). These approaches are protected by a surface that begins 200 feet from the runway threshold and extends to the Precision Final Approach Fix (PFAF). At the PFAF, the intermediate approach segment extends to the Intermediate Fix (IF). Two of the proposed towers lie under this intermediate surface. The first lies under the Intermediate primary surface, and a second lies under the intermediate secondary surface. It was determined using the Instrument Approach Procedure Automation (IAPA) FAA tool that these towers do not penetrate the Obstacle Clearance Surfaces for the intermediate segment.

Minimum Vectoring Altitude

There is also some concern for the ability of air traffic controllers to vector aircraft within the Ivanpah valley. Vector areas to the south of the proposed airport are already limited due to terrain and the

proximity to the Mojave nature preserve. A Minimum Vectoring Altitude (MVA) chart is designed to ensure that any aircraft vectored within a given sector are clear of terrain and any other obstacles. A Required Obstacle Clearance (ROC) of 2000' is applied to the highest obstacle within a sector designated as mountainous terrain to determine the sector's MVA. These amounts may be lowered as required to achieve compatibility with terminal routes or to permit vectoring to an instrument approach procedure.

Previous efforts determined that the sectors overlying the proposed ISEGS have associated altitudes of 4800' and 6900'. Since the highest MSL altitude of any proposed ISEGS tower is 3773', these MVA sectors will be unaffected.

VFR Flyways

Currently, there is a VFR Flyway serving McCarran International Airport that allows VFR traffic to avoid Class B airspace. This flyway is detailed on the Las Vegas Charted VFR Flyway Planning Chart. This flyway follows Interstate-15 south from Las Vegas into and through the Ivanpah valley. The altitude requirement for this flyway through the Ivanpah valley is below 5000'. This highest proposed obstacle is 3773'. If a VFR ROC of 500' is applied, the lowest altitude available for VFR traffic on this flyway is 4,300'. This leaves 700 feet of vertical separation available for traffic on this route.

Military Training Routes

There are numerous Military Training Routes in the vicinity and over the top of the ISEGS. These include Instrument Routes IR-213, IR-217, and IR-252. Routes IR-213 and IR-217 extend from 200' AGL to 8,000' and 7,000', respectively. IR-252 extends from the surface to 8000' AGL. The VFR route, VR-222 is also in the vicinity and extends from 100' AGL to 1,500' AGL. The proposed ISEGS will clearly have an impact to these routes and any development must be coordinated with the military.

Glare

Glare from the heliostat mirrors could be a significant hazard to air navigation. The towers are located between approximately 2.3 and 4.6NM from the proposed runway centerline. Westbound RNAV Departures from Runways 18L and 18R fly directly over the ISEGS. Arrivals to Runways 36L and 36R may overfly or be directly pointed at the ISEGS while turning to make a final approach. **Exhibit 1** shows RNAV flight tracks and ILS obstacle clearance surfaces in relation to the ISEGS. The close proximity between the ISEGS and flight paths means it is highly likely that at some point the aircraft will be in line with reflective mirrors pointed at the receiver tower. Any "spillage" of the beam would then be focused directly on the aircraft. This glare could then potentially blind a pilot during this critical phase of flight. It is also likely that at some time, one or more of the heliostat mirrors will not be pointing at the receiver. This could be due to malfunction, cleaning, or scheduled maintenance, or by design to regulate the temperature of the receiver. There is a potential for the beam of light to be pointed not at the receiver tower, but directly into the flight path.



Exhibit 2: Solar 2

The tower itself is another source of glare. When describing a solar tower in Seville, Spain which is based on the same technology, a BBC reporter said it was, "painful to look at." Depending on how bright the tower glows, it may pose a risk regardless of the sun's position. **Exhibit 2** is a picture of Solar Two,

on which the ISEGS is based, and shows the glow of the receiver tower and reflectance of heliostat mirrors. It should be noted that Sandia National Laboratories, the organization responsible for Solar One and Solar Two, does not believe it will be bright enough to affect air traffic. It should also be noted they have not indicated that they have done any aircraft testing near the facility.

Heat Island

An additional consideration is the possibility of a “heat island” being generated by this facility. According to Brightsource Energy’s website, water in the receiver is heated to 1,000°F. This concentrated heat source may produce enough rising hot air to cause turbulence to over flying aircraft. This guaranteed source of turbulence may not be desirable in close proximity to arriving and departing flight paths. Sandia National Laboratories does not believe the heat escape will be enough to affect air traffic. They did not indicate they have done any testing to prove this.

Limitation of Analysis

This analysis only covers impacts to airspace previously developed for the Ivanpah airport. There is an effort currently underway within the FAA to provide additional airspace alternatives for the Ivanpah airport. It is unknown how the ISEGS will affect these alternatives.

Summary

Given the above analysis and limitations, It has been determined that the Ivanpah Solar Electric Generating System is not likely to exceed criteria pertaining to instrument operations at the proposed Ivanpah Airport. However, as detailed above, there are many other issues that may have a significant impact on the National Airspace System and the operation of the Ivanpah Airport.



U.S. Department
of Transportation
**Federal Aviation
Administration**

Western-Pacific Region
Airports Division

P.O. Box 92007
Los Angeles, CA 90009-2007

January 2, 2008

George R. Meckfessel
Planning and Environmental Coordinator
Needles Field Office
Bureau of Land Management
1303 South U.S. Highway 95
Needles, California 92363

Dear Mr. Meckfessel:

Subject: Proposed Ivanpah Solar Electric Generating System

This letter is in response to your Notice of Intent to prepare an Environmental Impact Statement for three concentrating solar-powered steam, electricity generating plants and related facilities in San Bernardino County, 4.5 miles southwest of Primm Nevada. Under the *National Environmental Policy Act of 1969*, the Federal Aviation Administration (FAA) and the Bureau of Land Management (BLM) are in the process of preparing an Environmental Impact Statement (EIS) for a supplemental commercial service airport in the Ivanpah Valley, alongside Interstate 15 near Jean Nevada. The *Ivanpah Valley Airports Land Transfer Act of 2000, (Public Law 106-362)* requires the FAA and the BLM to jointly prepare the EIS. The project proponent is Clark County, Department of Aviation.

FAA is concerned about the potential glare and thermal plume effects from the proposed project on aircraft using the airports at or around Jean, Searchlight, and Pahrump Nevada. Further, FAA is concerned about the proposed project's affects to the proposed Southern Nevada Supplemental Airport, just northeast of the proposed facility in Nevada.

Please be advised that the FAA requires information on the heights of the proposed towers to determine if the proposed towers are a hazard to air navigation. We are providing you a copy of FAA Form 7460-1, Notice of Proposed Construction or Alteration for the proponent to complete and submit to the FAA. We recommend this form be completed and filed with FAA immediately so we can evaluate the proposed facility's effect on the safe and efficient use of navigable airspace. Please provide information on how individual mirrors will be positioned when not in use or when being serviced. FAA requires this information to determine if the proposed facility would be a hazard to air navigation.

If you have any questions, please contact Mr. David B. Kessler, Environmental Protection Specialist at 310-725-3615.

Sincerely,

**ORIGINAL SIGNED BY
MIA PAREDES RATCLIFF**

Mia P. Ratcliff
Manager, Planning & Programming Branch

cc: Jeffrey G. Steinmetz, BLM, Las Vegas Field Office