DOCKETED

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DATE: October 1, 2015

TO: Interested Parties

FROM: Joseph Douglas, Compliance Project Manager

SUBJECT: **IVANPAH SOLAR ELECTRIC GENERATING SYSTEM (07-AFC-5C)**
Staff Analysis of Petition to Amend Updated Equipment Descriptions

On March 17, 2015, Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC (the project owners) filed a petition with the California Energy Commission (Energy Commission) requesting to amend the Air Quality Conditions of Certification for the Ivanpah Solar Electric Generating System project (ISEGS). The 370-megawatt project was certified by the Energy Commission on September 22, 2010, and began commercial operation in December of 2013**.** The facility is located in the Mojave Desert, near the Nevada border, in San Bernardino County.

The project owners are proposing minor alterations to the ISEGS **Air Quality** Conditions of Certification to revise the description of engines used for emergency generators and fire pumps to match the installed engines. The Mojave Desert Air Quality Management District (District or MDAQMD) has reviewed the proposed changes and has incorporated the revised descriptions into district permit language.

Energy Commission staff (staff) reviewed the petition and assessed the impacts of the proposal on environmental quality and on public health and safety. Staff's analysis of the proposed changes can be reviewed on the Energy Commission's website for this facility (see below). Staff is proposing to modify several **Air Quality** Conditions of Certification in the Energy Commission's Final Decision to allow ISEGS to revise the description of engines used for emergency generators and fire pumps to match the engines that were installed.

Staff has determined that, with the implementation of the revised conditions, the facility would remain in compliance with applicable laws, ordinances, regulations, and standards, and the proposed changes would not result in any significant adverse, direct, indirect, or cumulative impacts to the environment (Cal. Code Regs., tit. 20, § 1769). Staff intends to recommend approval of the petition at the November 2015 Business Meeting of the Energy Commission.

The Energy Commission's webpage for this facility, http://www.energy.ca.gov/sitingcases/ivanpah/, has a link to the petition and the Staff Analysis on the right side of the webpage in the box labeled "Compliance Proceeding." Click on the "Documents for this Proceeding (Docket Log)" option. After the Business

Meeting, the Energy Commission's Order regarding this petition will also be available from the same webpage.

This notice has been mailed to the Commission's list of interested parties and property owners adjacent to the facility site. It has also been e-mailed to the facility listserv. The listserv is an automated Energy Commission e-mail system by which information about this facility is e-mailed to parties who have subscribed. To subscribe, go to the Commission's webpage for this facility, cited above, scroll down the right side of the project webpage to the box labeled "Subscribe," and provide the requested contact information.

Any person may comment on the Staff Analysis. Those who wish to comment on the analysis are asked to submit their comments by 5:00 p.m., November 2, 2015. To use the Energy Commission's electronic commenting feature, go to the Energy Commission's webpage for this facility, cited above, click on the "Submit e-Comment" link, and follow the instructions in the on-line form. Be sure to include the facility name in your comments. Once submitted, the Energy Commission Dockets Unit reviews and approves your comments, and you will receive an e-mail with a link to them.

Written comments may also be mailed or hand-delivered to:

California Energy Commission
Dockets Unit, MS-4
Docket No. 07-AFC-5C
1516 Ninth Street
Sacramento, CA 95814-5512

All comments and materials filed with and approved by the Dockets Unit will be added to the facility Docket Log and become publicly accessible on the Energy Commission's webpage for the facility.

If you have questions about this notice, please contact Joseph Douglas, Compliance Project Manager, at (916) 653-4677, or by fax to (916) 654-3882, or via e-mail to joseph.douglas@energy.ca.gov.

For information on participating in the Energy Commission's review of the petition, please call the Public Adviser at (800) 822-6228 (toll-free in California) or send your e-mail to publicadviser@energy.ca.gov. News media inquiries should be directed to the Energy Commission Media Office at (916) 654-4989, or by e-mail to mediaoffice@energy.ca.gov.

Mail List 7255
Ivanpah Listserv

IVANPAH SOLAR ELECTRIC GENERATING SYSTEM (07-AFC-5C)

Petition to Amend Updated Equipment Descriptions Executive Summary

Joseph Douglas

INTRODUCTION

On March 17, 2015, Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC (the project owners) filed a petition with the California Energy Commission (Energy Commission) requesting to amend the **Air Quality** Conditions of Certification for the Ivanpah Solar Electric Generating System project (ISEGS). The modifications proposed in the petition would allow ISEGS to revise the description of engines used for emergency generators and fire pumps to match the engines that were installed.

The 370-megawatt project was certified by the Energy Commission on September 22, 2010, and began commercial operation in December of 2013**.** The facility is located in the Mojave Desert, near the Nevada border, in San Bernardino County.

The purpose of the Energy Commission's review process is to assess any impacts the proposed modifications would have on environmental quality and on public health and safety. The process includes an evaluation of the consistency of the proposed changes with the Energy Commission's Final Decision and an assessment of whether the project, as modified, would remain in compliance with applicable laws, ordinances, regulations, and standards (LORS) (Cal. Code Regs., tit. 20, § 1769).

Staff prepared an analysis of the proposed changes that is included below.

DESCRIPTION OF PROPOSED MODIFICATIONS

The project owners are proposing minor alterations to the ISEGS **Air Quality** Conditions of Certification (COCs) to revise the description of engines used for emergency generators and fire pumps to match the existing engines. The Mojave Desert Air Quality Management District (District or MDAQMD) has reviewed the proposed changes and has incorporated the revised descriptions into district permit language.

NECESSITY FOR THE PROPOSED MODIFICATIONS

The four emergency engines and four fire pump engines were listed in the most recent Energy Commission order approving changes to air quality conditions of certification (Order No. 12-0213-8, adopted February 13, 2013). These engines are not normally in operation; they are intended to operate only during emergencies. However, they must be tested routinely in order to ensure that they can operate when needed in an emergency.

The information about the engines contained in the project owners' previous submittals reflected the engine specifications contained in previous pre-construction permit applications submitted to the Energy Commission and the District.

Now that the engines have been installed, additional information is available. The purpose of this application is to update the equipment descriptions contained in the **Air Quality** CoCs to reflect the as-built engine information. Additionally, the District has made minor

changes to permit conditions, consolidating redundant conditions, eliminating obsolete conditions, and making minor simplifications and corrections – those changes will be reflected in the amended Decision.

STAFF'S ASSESSMENT OF THE PROPOSED PROJECT CHANGES

Energy Commission technical staff reviewed the petition for potential environmental effects and consistency with LORS. Staff's conclusions reached in each technical area are summarized in **Executive Summary Table 1**. Staff has determined that the technical or environmental areas of Biological Resources, Cultural Resources, Efficiency, Facility Design, Geological/Paleontological Resources, Hazardous Materials Management, Land Use, Noise and Vibration, Reliability, Socioeconomics, Soils and Water Resources, Traffic and Transportation, Transmission Line Safety and Nuisance, Transmission System Engineering, Visual Resources, Waste Management and Worker Safety and Fire Protection are not affected by the proposed changes.

For the technical area of **Public Health**, staff has determined that the modified project would continue to comply with applicable LORS and no changes to any conditions of certification are necessary to ensure impacts remain less than significant.

Staff is proposing to modify several **Air Quality** COCs in the Energy Commission's Final Decision to allow ISEGS the revise the description of engines used for emergency generators and fire pumps to match the engines that were installed.

Executive Summary Table 1
Summary of Impacts for Each Technical Area

TECHNICAL AREAS REVIEWED	STAFF RESPONSE			Revised Conditions of Certification Recommended
	Technical Area Not Affected	No Significant Environmental Impact or LORS Inconsistency*	Process As Amendment	
Air Quality			X	X
Biological Resources	X			
Cultural Resources	X			
Efficiency	X			
Facility Design	X			
Geological/ Paleontological Resources	X			
Hazardous Materials Management	X			
Land Use	X			
Noise and Vibration	X			
Public Health		X		
Reliability	X			
Socioeconomics	X			
Soil and Water Resources	X			

TECHNICAL AREAS REVIEWED	STAFF RESPONSE			Revised Conditions of Certification Recommended
	Technical Area Not Affected	No Significant Environmental Impact or LORS Inconsistency*	Process As Amendment	
Traffic and Transportation	X			
Transmission Line Safety and Nuisance	X			
Transmission System Engineering	X			
Visual Resources	X			
Waste Management	X			
Worker Safety and Fire Protection	X			

*There is no possibility that the proposed modifications may have a significant effect on the environment, and the modifications will not result in a change in or deletion of a condition adopted by the Commission in the Final Decision, or make changes that would cause project noncompliance with any applicable laws, ordinances, regulations, or standards (Cal. Code Regs., tit. 20, § 1769 (a)(2)).

STAFF RECOMMENDATIONS AND CONCLUSIONS

The proposed project amendment would not change any project mitigation measures designed to reduce potential air quality impacts from the project to less-than-significant levels. All the air quality impacts would be lower than applicable federal and state standards except for PM10 since the background PM10 concentrations already exceed the state standard. With the proposed changes to the **Air Quality** COCs, staff expects no cumulative adverse impacts would occur as a result of the proposed changes to the ISEGS project.

The facility owner revised the estimated NOx short term impacts based on scaled emission rates of the proposed engine sizes in order to demonstrate the proposed facility changes do not cause a violation of any ambient air quality standard. Staff reviewed the adjusted maximum scaled impacts provided by the facility owner. Staff believes the facility owner has provided conservative impacts analysis for the increase in emergency readiness testing from thirty (30) minutes to one (1) hour.

Staff analyzed the annual impacts from the facility after considering the proposed changes. The adjusted scaled annual impacts are not expected to change from previous amendments due to an annual limit for testing and maintenance.

The requested project changes would comply with applicable federal, state, and MDAQMD laws, ordinances, regulations, and standards. Compliance with all District rules and regulations was demonstrated to the District's satisfaction in the modified FDOC Revision E with the proposed changes. The amended project would not cause significant air quality impacts, provided that all conditions of certification (COCs) from the original Commission Decision continue to apply with the following revised **Air Quality** COCs.

Staff also concludes that the following required findings, mandated by Title 20, California Code of Regulations, section 1769 (a)(3), can be made, and staff recommends approval of the petition by the Energy Commission:

- The proposed modification(s) would not change the findings in the Energy Commission's Decision pursuant to Title 20, California Code of Regulations, section 1755;
- There would be no new or additional unmitigated, significant environmental impacts associated with the proposed modifications;
- The facility would remain in compliance with all applicable LORS. The modifications proposed in the petition would have no additional significant impacts beyond those identified in the Commission Decision for ISEGS;
- The proposed modifications would be beneficial to the project owner and the public because it would allow the project owner to optimize operations and maximize solar electricity output; and
- The proposed modifications are justified because there has been a substantial change in circumstances since the Energy Commission certification as the experience of actual operation has demonstrated how to make the best use of the equipment.

IVANPAH SOLAR ELECTRIC GENERATING SYSTEM (07-AFC-5C)

Petition to Amend Updated Equipment Descriptions

AIR QUALITY

Jacquelyn Record

SUMMARY OF CONCLUSIONS

Staff finds that with the adoption of the attached revised Conditions of Certification, the modified Ivanpah Solar Electric Generating System (ISEGS or project) would comply with applicable federal, state and Mojave Desert Air Quality Management District (MDAQMD or District) laws, ordinances, regulations and standards (LORS), and that the modified ISEGS would not result in significant air quality-related impacts.

INTRODUCTION

On March 16, 2014, the California Energy Commission (Energy Commission) received Petition to Amend from Sierra Research, Inc. on behalf of Solar Partners I, L.L.C., Solar Partners II, L.L.C., and Solar Partners VIII, L.L.C. (project owners), to modify the Decision for ISEGS, originally certified by the Energy Commission on September 22, 2010 (CEC 2010b). The word “unit” is defined as an individual power plant. Power plant unit 1 is rated at a nominal 120 MW and units 2 and 3 are rated at a nominal 125 MW each. The word “facility” will be herein defined as all three power plant units combined (370 MW). The Energy Commission Compliance Project Manager (CPM) issued a letter authorizing the start of construction on October 8, 2010. Commercial operations at the facility began in December, 2013.

In a previous amendment, the project owners were approved to increase maximum allowable daily emissions, increase the size of the auxiliary boilers, add three nighttime preservation boilers, reduce the size of the emergency generators and add emergency engines and a fire pump to the site (CEC 2013, Order No. 12-0213-8, adopted February 13, 2013). In another previous amendment the project owners were approved to increase annual fuel use (CEC 2014, Order No. 14-0821-10, adopted September 2014).

The project owners are now proposing revisions to the Conditions of Certification to:

- Delete requirement that natural gas usage be measured in standard cubic feet (change to be made in Condition of Certification **AQ-3**);
- Revise source test methods for annual compliance testing in Condition of Certification **AQ-5** and **AQ-6**, which would not affect emissions, only the methodology;
- Delete **AQ-11** due to its redundancy to Condition of Certification **AQ-7**;
- Change rating and descriptions of engines to match the engines that were installed (No changes to Condition of Certification, only equipment description specifications before the Conditions of Certification); and
- Change daily limit on engine testing for fire pumps and emergency generator engines to one (1) hour, vs. thirty (30) minutes currently (changes to be made in Conditions of Certification **AQ-16**, **AQ-24**, **AQ-39**, and **AQ-45**).

In this analysis, staff evaluated the associated hourly and annual impacts of the modified facility using the requested revised items from above, and staff evaluated these changes already incorporated into the District permits.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) COMPLIANCE

The Commission Decision certifying the ISEGS facility concluded that the facility would comply with all applicable LORS. The facility, as modified, is subject to all the applicable LORS in the October, 2009 Final Staff Assessment (FSA) (CEC 2009) and Order No.12-0213-8 (CEC 2013) amending various Air Quality Conditions of Certification, and Order No. 14-0821-10 (CEC 2014), amending fuel use by the facility.

SETTING

Since the preceding air quality amendment Order No. 14-0821-10 (CEC 2014), federal and state ambient air quality attainment status designations have not changed significantly. The currently applicable state and federal Ambient Air Quality Standards (AAQS) are listed in **Air Quality Table 1**. As indicated in this table, the averaging times for the various standards (the duration over which they are measured) range from hourly to annually. The standards are read as a concentration, in parts per million (ppm) or parts per billion (ppb), or as a weighted mass of material per volume of air, in milligrams or micrograms of pollutant per cubic meter of air (mg/m^3 and µg/m^3).

Air Quality Table 2 summarizes the attainment status of the project area in the Mojave Desert Air Basin (MDAB) for various currently-applicable state and federal AAQS. The San Bernardino County portion of the MDAB is designated as nonattainment for the state ozone standard, and both state and federal PM10 standards. The MDAB is designated as attainment or unclassified for state and federal CO, NO_2, SO_2, and PM2.5. The U.S. Environmental Protection Agency (U.S. EPA) recently designated West Mojave Desert Portion of the San Bernardino County as nonattainment for the federal ozone standard (U.S. EPA 2014a). However, the facility site is located in the attainment or unclassified portion of the area.

Air Quality Table 1
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O_3)	8 Hour	0.075 ppm (147 µg/m^3)	0.070 ppm (137 µg/m^3)
	1 Hour	—	0.09 ppm (180 µg/m^3)
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 Hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual	53 ppb (100 µg/m^3)	0.030 ppm (57 µg/m^3)
	1 Hour	100 ppb (188 µg/m^3)[a]	0.18 ppm (339 µg/m^3)
Sulfur Dioxide (SO_2)	24 Hour	—	0.04 ppm (105 µg/m^3)
	3 Hour	0.5 ppm (1300 µg/m^3)	—
	1 Hour	75 ppb (196 µg/m^3)[b]	0.25 ppm (655 µg/m^3)
Respirable Particulate Matter (PM10)	Annual	—	20 µg/m^3
	24 Hour	150 µg/m^3	50 µg/m^3
Fine Particulate Matter (PM2.5)	Annual	15 µg/m^3	12 µg/m^3
	24 Hour	35 µg/m^3 [c]	—

Sulfates (SO_4)	24 Hour	—	25 µg/m^3
Lead	30 Day Average	—	1.5 µg/m^3
	Rolling 3-Month Average	0.15 µg/m^3	—
Hydrogen Sulfide (H_2S)	1 Hour	—	0.03 ppm (42 µg/m^3)
Vinyl Chloride (chloroethene)	24 Hour	—	0.01 ppm (26 µg/m^3)
Visibility Reducing Particulates	8 Hour	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

Source: ARB 2012a
[a] To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average must not exceed 100 ppb.
[b] To attain this standard, the 3-year average of the 99th percentiles of the daily maximum 1-hour average must not exceed 75 ppb.
[c] To attain this standard, the 3-year average of the 98th percentile of the daily concentrations must not exceed 35 µg/m^3.
ppm= parts per million

Air Quality Table 2
Federal and State Attainment Status Project Area in Mojave Desert Air Basin

Pollutant	Attainment Status	
	Federal	State
Ozone	Unclassifiable/Attainment [a]	Nonattainment
CO	Unclassifiable/Attainment	Unclassifiable/Attainment
NO_2	Unclassifiable/Attainment [b]	Attainment
SO_2	Unclassified	Attainment
PM10	Nonattainment	Nonattainment
PM2.5	Unclassified/Attainment	Unclassified [a]

Source: ARB 2011, U.S. EPA 2012a
[a] For the project site area only, not the entire MDAB.
[b] On February 17, 2012 U.S. EPA designated all of California as "unclassifiable/attainment" for the short-term NO_2 standard.

Since the adoption of the ISEGS Commission Decision in 2010 (CEC 2010b) and previous amendments Energy Commission Order No. 12-0213-8 (CEC 2013) and 14-0821-10 (CEC 2014), respectively, additional ambient air quality data have become available. **Air Quality Table 3** reflects the most recent ambient air quality data for the last five years. Values above the applicable limiting standards are shown in bold and shaded in the table. The 1-hour ozone concentration has decreased to below the state standard; the 8-hour ozone concentration and the 24-hour PM10 concentration are each still above their respective state standards, which is the same situation as in October, 2009 FSA, and previous amendments.

As in the October, 2009 FSA, all ozone, PM10, and PM2.5 data are from the Jean, Nevada, monitoring station located approximately 17 miles northeast of the facility site; all CO data are from the Barstow monitoring station located approximately 100 miles west southwest of the facility site; all SO_2 data are from the Trona-Athol and Telegraph monitoring station located approximately 110 miles west northwest of the facility site.

In the October 2009 FSA, staff used the NO_2 background data at Jean, Nevada, station. However, the NO_2 data at the Jean station became unavailable after 2007. The project owners submitted a supplemental analysis regarding NO_2 background concentrations, and have proposed to use a monitoring station that is located 10 miles from the ISEGS project site called J.D. Smith Monitoring Station in Clark County Nevada (Sierra 2015b). Staff

compared the NO_2 data at the Jean station before 2007 and those at the J.D. Smith Monitoring Station. Staff concluded that stations have similarities; both are in contiguous valleys, located between north-south mountain ranges, but with no significant intervening geographical features. The J.D. Smith monitoring site may experience elevated NO_2 concentrations relative to ISEGS due to Las Vegas traffic (Sierra 2015b); the use of this data would still yield a conservative background value to characterize the peak background NO_2 concentrations at ISEGS. Thus staff concurs with the use of the alternative monitoring station in Clark County to conservatively and reasonably represent the project site.

Staff recommends the background ambient air concentrations in **Air Quality Table 4** for use in the amendment impact analysis. The recommended background concentrations are based on the maximum criteria pollutant concentrations from the past three years of available data collected at the most representative monitoring stations surrounding the facility site.

The background 24-hour concentration of PM10 is above the most restrictive existing AAQS, while the background concentrations for other pollutants and averaging times are all below the most restrictive existing AAQS, which is the same as in the most recent amendment approved in March 2014.

Air Quality Table 3
Criteria Pollutant Summary
Maximum Ambient Concentrations (ppm or µg/m^3)

Pollutant	Averaging Period	Units	2010	2011	2012	2013	2014	Limiting AAQS
Ozone	1 hour	ppm	0.082	0.085	0.087	0.085	0.078	0.09
Ozone	8 hours	ppm	**0.075**	**0.083**	**0.077**	**0.085**	**0.075**	0.070
PM10	24 hours	µg/m^3	49	**79**	**137**	**127**	**134**	50
PM10 [a]	Annual	µg/m^3	8.5	11.8	13.1	*	*	20
PM2.5	24 hours	µg/m^3	10.1	8.6	12.5	9.3	8.6	35
PM2.5 [a]	Annual	µg/m^3	3.5	3.7	5.0	4.2	3.6	12
CO	1 hour	ppm	1.3	4.4	0.9	0.9	*	20
CO	8 hours	ppm	0.9	1.4	0.7	0.6	*	9
NO_2	1 hour	ppm	0.065	0.069	0.068	0.061	0.059	0.18
NO_2	1 hour federal	ppm	0.056	0.048	0.059	0.054	0.051	0.10
NO_2	Annual[b]	ppm	0.005	0.005	0.005	0.006	*	0.030
SO_2	1 hour	ppm	0.008	0.011	0.011	0.001	*	0.075
SO_2	24 hours	ppm	0.003	0.006	0.003	0.008	0.001	0.04
SO_2	Annual	ppm	0.001	0.001	0.001	*	*	0.030

Source: U.S. EPA 2015b; ARB 2015b
* = No Data
Values above the applicable limiting standards are shown in bold and shaded.
Notes:
[a] Annual average data is federal data and may not exactly represent California annual average.
b Annual data was not available at the J.D. Smith Station, data shown is from the Trona-Athol and Telegraph monitoring station

Air Quality Table 4
Staff Recommended Background Concentrations (µg/m^3)

Pollutant	Averaging Time	Recommended Background	Limiting Standard	Percent of Standard
NO_2	1 hour	130	339	38%
	1 hour federal	111	188	59%
	Annual	11	57	19%
PM10	24 hour	**137**	**50**	**274%**
	Annual	13.1	20	65%
PM2.5	24 hour	12.5	35	36%
	Annual	5.0	12	41%
CO	1 hour	5,430	23,000	23%
	8 hour	1,730	10,000	17%
SO_2	1 hour	31	655	4%
	24 hour	22.6	105	21%
	Annual	2.8	80	3%

Source: Energy Commission previous amendment Staff Analysis (CEC 2014), and the maximum criteria pollutant concentrations from the past three years

ANALYSIS

Delete Requirement of Fuel to be Measured in Standard Cubic Feet (AQ-3)

The project owners have installed meters that measure gas usage in pounds. The project owners use fuel gas specifications provided by the gas supplier to calculate and record natural gas usage in standard cubic feet for comparison with the usage limit in **AQ-12** and **AQ-34**, each of which limit annual fuel use for the auxiliary boiler and nighttime preservation boiler combined to 525 million British Thermal Units (BTU) per power plant unit. This change in measurement method would have no effect on emissions.

Revise Source Test Methods for Annual Compliance Test (AQ-5 and AQ-6)

The project owner requests the removal of the reference to U.S. Environmental Protection Agency (EPA) Method 20, *Determination of Nitrogen Oxides, Sulfur Dioxides, and Diluent Emissions from Stationary Gas Turbine*. These conditions, **AQ-5** and **AQ-6**, apply to the auxiliary boiler but Method 20 is not applicable to boilers. The methods that are typically used for measuring NOx in stationary source emissions using continuous emissions monitoring system (CEMS) and converting to emission rates are EPA Methods 7E and 19. Similarly, the project owners have requested that Method 5 be added as an alternative to Method 201A, and that EPA Method 202 be added as a required test method. Method 5 is a generally accepted method and is a conservative test method for measuring non-condensable particulate matter, and was approved for this purpose in the original Energy Commission license for the initial compliance test. Method 202 is a necessary supplement to the other method in order to measure condensable particulate matter. These changes to

the test methodology would not affect emissions in any way, and were likely cited in error. Staff agrees with the replaced test methods.

Delete AQ-11

Condition of Certification **AQ-11**, which requires compliance with recordkeeping and reporting requirement of NSPS Db, is redundant to Condition **AQ-7**, which requires compliance with all applicable requirements of NSPS Db. The project owners requests that **AQ-11** be deleted. Staff agrees with the deletion due to its redundancy and agrees compliance can be shown with **AQ-7** alone.

Change ratings and descriptions of engines to match the engines installed.

Information about the emergency engines and the fire pump engines is now available and was not available at the time that permits were issued. Engine ratings and fuel consumption rates of the engines are different, and are shown and **Air Quality Table 5**. The changes in rating result in slight annual emissions increases as shown in **Air Quality Table 7**.

Air Quality Table 5
Equipment Description Changes

Equipment Desciption						Emission Rates g/bhp-hr (lb/hr)				
PTO #	Year	Tier	BHP	Facility	Unit	NOx+ NMHC	NOx[1]	VOC[2]	CO	PM
E010379	2010	2	~~2,250~~ **2,206**	ISEGS 1	Emergency Engine	4.3 (20.9)	4.1 (19.9)	0.22 (1.05)	0.9 (4.4)	0.1 (0.5)
E010381	2010	2	~~2,250~~ **2,206**	ISEGS 2	Emergency Engine	4.3 (20.9)	4.1 (19.9)	0.22 (1.05)	0.9 (4.4)	0.1 (0.5)
E010382	2010	2	~~2,250~~ **2,206**	ISEGS 3	Emergency Engine	4.2 (20.4)	4.0 (19.4)	0.21 (1.02)	0.7 (3.4)	0.1 (0.5)
E011546*	~~2010~~ **2011**	3	~~333~~ **398**	Common Area	Emergency Engine	3.0 (2.1)	2.8 (2.0)	0.15 (0.11)	2.6 (2.3)	0.15 (0.1)
E010378	~~2011~~ **2010**	3	~~240~~ **316**	ISEGS 1	Fire Pump	2.5 (1.74)	2.4 (1.65)	0.13 (0.09)	0.4 (0.28)	0.08 (0.1)
E010380*	~~2010~~ **2011**	3	~~240~~ **316**	ISEGS 2	Fire Pump	3.0 (2.1)	2.8 (2.0)	0.15 (0.11)	2.6 (1.8)	0.15 (0.1)
E010384*	~~2011~~ **2012**	3	~~240~~ **316**	ISEGS 3	Fire Pump	3.0 (2.1)	2.8 (2.0)	0.15 (0.11)	2.6 (1.8)	0.15 (0.1)
E011547	~~TBD~~ **2011**	4	~~106.5~~ **157**	Common Area	Fire Pump	2.5 (0.87)	2.4 (0.82)	0.13 (0.04)	1.1 (0.38)	0.19 (0.07)

Notes:

[1] NOx is equivalent to 95% of the NOx+NMHC value
[2] VOC is equivalent to 5% of the NOx+NMHC value
[*] The project owners did not include a CARB-certified emission rating; therefore, an EPA standard rate was used to conservatively calculate emissions in lb./hr.

Change daily limit on engine testing for fire pumps and emergency generator engines to one hour (AQ-16, AQ-24, AQ-39, AQ-45)

The project owners propose to increase engine testing procedure from thirty (30) minutes per test to one (1) hour per test. As shown in **Air Quality Table 6** and **Air Quality Table 7**, this would cause an increase in maximum hourly emission from each engine. There would also be an increase in facility impacts when compared with the impacts modeled during initial licensing[1]. The result of testing for one hour would not cause or contribute to an exceedance of any ambient air quality standards as seen in **Air Quality Table 8** "ISEGS Operation Impacts."

During initial permitting, a daily limit of thirty (30) minutes for engine testing was imposed on each emergency generator and fire pump engine. This limit was proposed because dispersion modeling indicated that NO_2 impacts from the engines[2] driving the large 2,500 kW (kilowatt) or 2,206 bhp (brake horsepower per hour) emergency generator and fire pump engine could, when combined with worst-case background NO_2 concentrations, exceed the state 1-hour standard for NO_2. In order to account for a longer testing time from thirty (30) minutes to one (1) hour, the project owners have downsized the large emergency generator to 1,500 kW (2,206 bhp).

SUMMARY OF EMISSIONS

In **Air Quality Table 6** and **Air Quality Table 7**, staff compares calculated emissions during operation for the whole project as currently approved to emissions after incorporating the proposed project changes. ~~Strikethrough~~ is used to indicate emissions in the Commission Decision, **underline and bold** is used to represent emissions after incorporating the proposed changes.

In the October 2009 FSA and Commission Decision and previous amendment analyses, staff assumed that only one of the three emergency generators would operate one hour for testing purposes simultaneously with other emission sources during an hour. In addition, staff assumed the emergency fire pumps would not operate for testing during the same hour when one of the emergency generator engines is operating for testing. Thus the maximum hourly emissions from emergency fire pumps were not accounted for in the total maximum hourly emissions but were accounted for in the total maximum annual emissions. However, in the previous FSA and Commission Decision testing was only for (30) minutes and not for the requested (1) one hour of readiness testing.

For this amendment, staff added the emissions from one emergency generator engine in each of the power plant units along with the emergency generator engine in the common area in the maximum hourly emissions; similarly staff accounted for the hourly emissions of fire pumps in each of the power plant units and the fire pump in the common area when computing maximum hourly emissions in order to evaluate the simultaneous testing of the fire pumps and emergency generators.

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[1] The original modeling was based on 30 minutes of operation of larger emergency engines that was proposed to be installed at the time of the Commission Decision.

[2] The compliance demonstration considered the combined impact of simultaneous operation of the three auxiliary boilers plus and engine; however, the boilers' contribution to the maximum impact was less than 5 percent of the total.

The annual emissions include emissions from all the sources in each category from the proposed changes. For example, the emergency generator engines include all three emergency engines in the power blocks and the emergency engine in the common area. Staff kept the emissions from the maintenance vehicles and employee and delivery vehicles at the same levels as approved in the Commission Decision.

Air Quality Table 6 shows the total maximum hourly emissions from the proposed changes would be greater than those permitted in the Commission Decision and previous amendments' for this project, due to the proposed request increasing the engine testing procedure from thirty (30) minutes per test to one (1) hour. An annual limit is currently set for emergency readiness testing to no more than fifty (50) hours per year in Conditions of Certifications **AQ-16**, **AQ-24**, **AQ-39**, and **AQ-45** to ensure compliance with California Air Toxic Control Measure (ATCM) for diesel emergency engines. Thus, as seen in **Air Quality Table 7** below, annual emission are expected to increase only slightly from what is currently permitted. All other sources remain the same as in previous amendments. Similarly, greenhouse gas emissions from the proposed testing hourly increase of emergency equipment onsite would not be expected to increase greenhouse gases on an annual basis.

Air Quality Table 6
ISEGS Operation – Maximum Hourly Emissions

	Maximum Hourly Emissions (lbs/hr)					
Emission Source	**NOx**	**SOx[1]**	**CO**	**VOC**	**PM10**	**PM2.5**
Boilers	8.44	2.22	14.82	4.09	5.44	5.44
Emergency Generator Engines[2]	~~13.0~~ **23.0**	~~0.01~~ **0.06**	~~7.4~~ **6.7**	~~0.43~~ **2.1**	~~0.43~~ **0.6**	~~0.43~~ **0.6**
Emergency Fire Pump Engines[2]	~~2.3~~ **2.8**	~~0.006~~ **0.01**	~~1.9~~ **2.7**	~~0.38~~ **0.15**	~~0.12~~ **0.17**	~~0.12~~ **0.17**
Maintenance Vehicles (all types)	2.32	0.02	1.48	0.18	14.60	3.13
Employee and Delivery Vehicles (offsite)	3.62	0.03	19.15	1.88	1.40	0.37
Cooling Systems	-	-	-	-	0.01	0.01
Total Maximum Hourly Emissions	~~27.38~~ **40.18**	~~2.28~~ **2.34**	~~42.85~~ **44.85**	~~6.57~~ **8.4**	~~21.88~~ **22.2**	~~9.38~~ **9.7**
Net Hourly Emissions Change	**+12.8**	**+0.05**	**+2.0**	**+1.83**	**+0.32**	**+0.32**

Source: CEC 2010b, CEC 2013, CEC 2014, Sierra 2015a
1 Values for SOx are from Sierra 2015a Table 3 per power plant unit.
2 One of the three power plant unit engines and the single engine from the common area are combined for the value shown

Air Quality Table 7
ISEGS Operation – Maximum Annual Emissions

	Annual Emissions (tons/year)[2]					
Emission Source	**NOx**	**SOx[1]**	**CO**	**VOC**	**PM10**	**PM2.5**
Boilers	5.5	1.4	10.9	2.7	3.5	3.5
Emergency Generator Engines	1.8	0.0	1.0	0.0	0.1	0.1
Emergency Fire Pump Engines	~~0.1~~ **0.2**	0.0	~~0.1~~ **0.2**	0.0	0.0	0.0
Maintenance Vehicles (all types)	2.3	0.0	1.5	0.2	14.6	3.1
Employee and Delivery Vehicles (offsite)	1.8	0.0	17.1	1.7	1.2	0.3
Cooling Systems	-	-	-	-	0.0	0.0
Total Annual Emissions	~~11.5~~ **11.6**	1.4	~~30.6~~ **30.7**	4.6	19.4	7.0
Net Annual Emissions Change	**+0.1**	0.0	**+0.1**	0.0	0.0	0.0

Source: CEC 2010b, CEC 2013, CEC 2014, Sierra 2015a
1 Values for SOx are from Sierra 2015a Table 3 per power plant unit.
2 Annual emissions are from Sierra 2015a, Table 4 Yearly PTE (tpy)

OPERATION IMPACTS

The facility owner revised estimated NOx short term impacts based on scaled emission rates of the proposed engine sizes in order to demonstrate the proposed facility changes do not cause a violation of any ambient air quality standard. Staff reviewed the adjusted maximum scaled impacts provided by the facility owner. Staff found that the majority of the total hourly emissions are dominated by the emergency generator diesel engines. Staff evaluated how many of these diesel engines could be simultaneously tested without causing an exceedance of a short-term ambient air quality standard. Based on scaled impacts, the project owner could feasibly test two emergency generators and two fire pumps to attain the values that are shown in **Air Quality Table 8**.

Staff believes the facility owner along with staff's own conservative scaled value has provided a conservative impacts analysis for the increase in emergency readiness testing from thirty (30) minutes to one (1) hour. Staff concludes that the worst case short term impact would only occur during simultaneous operations of more than two emergency generators. However, the likelihood of wind direction alignment with the emergency generators and concurrent readiness testing of a third generator is extremely low. Furthermore, the NOx emissions from the upwind generators would be well dispersed during travel to the third downwind generator and staff concludes that the impacts assessed in **Air Quality Table 8** are reasonable estimates of worst case short term impacts.

Air Quality Table 8 compares anticipated impacts from the facility after considering the proposed changes to relevant ambient air quality standards. The adjusted scaled annual impacts are not expected to change from previous amendments due to an annual limit for a total of 50 hours per year for testing and maintenance in Conditions of Certifications **AQ-16**, **AQ-24**, **AQ-39**, and **AQ-45**. Because the maximum annual impacts for all pollutants are less than 0.05 $\mu g/m^3$ these values have been round down to 0.0 $\mu g/m^3$ and are unchanged

from the original air quality impact values. For all other criteria pollutants besides NOx, staff scaled the *Current Facility Impacts* by the proposed change in engine sizes and emission rates to calculate the *Adjusted Maximum Scaled Impacts* from the facility. Finally, these *Adjusted Maximum Scaled Impacts* were then added to the staff recommended *Background* data from **Air Quality Table 4**.

Air Quality Table 8[a]
ISEGS Operation Impacts

Pollutants	Avg. Period	Current Facility Impacts ($\mu g/m^3$)	Adjusted Maximum Scaled Impacts ($\mu g/m^3$)[b]	Background[c] ($\mu g/m^3$)	New Total Impacts ($\mu g/m^3$)	Standard ($\mu g/m^3$)	Percent of Standard
NO_2	1-hr	99.1	181.7	130	311.7	339	92%
	1-hr Federal [d]	25	44	111	155	188	82%
	Annual [e]	0.0	0.0	11	11	57	19%
PM10	24-hr	0.4	0.4	**137**	**137.4**	**50**	**274%**
	Annual [e]	0.0	0.0	13.1	13.1	20	65%
PM2.5	24-hr	0.4	0.4	12.5	12.9	35	37%
	Annual [e]	0.0	0.0	5	5	12	42%
CO	1-hr	80	214	5,430	5644	23,000	24%
	8-hr	3.5	3.5	1,730	1733.5	10,000	17%
SO_2	1-hr	3	3	31	34	665	5%
	24-hr	0.0	0.3	22.6	22.9	105	22%
	Annual [e]	0.0	0.0	2.8	2.8	80	3%

Source: Sierra 2015a, staff's independent analysis

[a] Short-term impacts for NOx are from *ISEGS Application for Permit Amendment*, March 2015. The District permit application was an attachment to the Petition to Amend (PTA) submitted to the Energy Commission in February, 2015. Short-term impacts for all other pollutants have been scaled for the proposed amendment request.

[b] Adjusted modeled annual impacts reflect the estimated impacts from the change in emergency equipment sizes. Because the maximum annual impacts for all pollutants are less than 0.05 $\mu g/m^3$, they round down to 0.0 $\mu g/m^3$ and are unchanged from original values.

[c] Energy Commission staff-recommended background values from **Air Quality Table 4**.

[d] Three-year average of 98th percentile of daily maximum 1-hour modeled facility impacts combined with staff-recommended background values from **Air Quality Table 4**.

[e] Annual emissions did not change, current annual facility impacts are from modeling performed during evaluation of the February, 2012 PTA.

All of the total impacts are below applicable state and federal AAQS except the 24-hour PM10 value. It should be noted that existing 24-hour average PM10 background concentrations already exceed the state AAQS. Any small increment of the PM10 impact is considered to be significant by staff under the California Environmental Quality Act (CEQA) and must be mitigated. Condition of Certification **AQ-SC6** in the Commission Decision is used to mitigate on-site maintenance vehicle emissions and Condition of Certification **AQ-SC7** is used to mitigate operating period fugitive dust emissions. Continued use of these conditions would ensure that the potential PM10 CEQA impacts are mitigated to be less than significant during the operation of the facility.

CUMULATIVE IMPACTS

A commercial vehicle enforcement facility on Interstate 15 has been under construction and is expected to complete construction by mid-September 2015. This station is approximately 1 to 2 miles southeast of the project. The most recent meteorological (weather) data, collected at the Jean, Nevada monitoring station located 16 miles northeast of the project

site, was for 2001 through 2002 time period. The measured wind data are graphically represented by quarterly wind roses, provided in the AFC Figures 5.1-1 and 5.1-2 (BSE 2007a). These wind roses show that for most of the year, winds are from the west-southwest, although between November through March, winds are predominately from the northeast.

Based on staff's experience, due to prevailing wind directions and the distances, there would not likely be a plume overlap of any exhausts from diesel trucks waiting for testing at the commercial vehicle enforcement facility Interstate15 and the emergency diesel engines undergoing readiness testing at the ISEGS project. Therefore, all air quality impacts would be lower than applicable federal and state standards except for the state PM10 standard since the background PM10 concentrations already exceed the state standard. Staff expects no cumulative adverse impacts would occur as a result of the proposed changes to the ISEGS project after implementation of the mitigation measures approved by the Commission Decision.

CONCLUSIONS AND RECOMMENDATIONS

The requested project changes would comply with applicable federal, state, and MDAQMD laws, ordinances, regulations, and standards. Compliance with all district rules and regulations was demonstrated to the District's satisfaction in the modified FDOC Revision E with the proposed changes. The amended project would not cause significant air quality impacts, provided that all conditions of certification (COCs) from the original Commission Decision continue to apply with the following revised COCs as shown below.

PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION

Below is a list of those Conditions of Certification that must be revised from those in effect as of the Commission Decision (CEC 2010b) and prior amendments Order No.12-0213-8 (CEC 2013) amending various Air Quality Conditions of Certification, and Order No. 14-0821-10 (CEC 2014), amending fuel use for this facility. These changes will be consistent with current MDAQMD permit requirements (MDAQMD 2012b). ~~Strikethrough~~ is used to indicate deleted language and **underline and bold** is used for new language.

Only changed conditions of certification are listed below. Attachment A contains a complete list of all conditions of certification, without markup or strikethrough. They would all apply if these changes are adopted by the Energy Commission.

DISTRICT CONDITIONS OF CERTIFICATION

THE FOLLOWING CONDITIONS ARE APPLICABLE TO IVANPAH 1, 2, AND 3 (THREE (3)) AUXILIARY BOILERS, MDAQMD APPLICATION NUMBERS/PERMIT NUMBERS: 00009311 (B010375), 00009314 (B010376), AND 00009320 (B010377)~~, EACH CONSISTING OF~~:

Rentech D-type water tube boilers, each equipped with Todd-Coen Ultra Low-NOx Burners rated at a maximum heat input of 249 MMBTU/hr, and flue gas recirculation (FGR or EGR), fueled exclusively on utility grade natural gas. Equipment shall use-242,500 cu-ft/hr of fuel and provide 75,000 lb/hr of steam. Each boiler is equipped with a stack that is 130 feet high and 60 inches in diameter.

AQ-3 This boiler shall use only natural gas as fuel and shall be equipped with a meter measuring fuel consumption**.** ~~in standard cubic feet~~.

Verification: As part of the Annual Compliance Report (**COMPLIANCE-7**), the project owner shall include proofs that only pipeline quality or Public Utility Commission regulated natural gas are used for the boilers.

AQ-5 Not later than 180 days after initial startup, the owner/operator shall perform an initial compliance test on this boiler in accordance with the District Compliance Test Procedural Manual. This test shall demonstrate that this equipment does not exceed the following emission maximums:

Pollutant	ppmvd	Lb/MMBtu	Lb/hr	
*NOx	9.0	0.011	2.7	(Per USEPA Methods **7E and** 19 ~~and 20~~)
SO2	1.7	0.003	0.7	
*CO	25.0	0.018	4.6	(Per USEPA Method 10)
VOC	12.6	0.005	1.3	(Per USEPA Methods 25A and 18)
PM10	n/a	0.007	1.7	(Per USEPA Method**s 5 or** 201A**, and 202**)

*corrected to 3% oxygen, on a dry basis, averaged over one hour
Opacity shall be conducted per Method 9; Flue gas flow rate shall be quantified in dscf per USEPA Methods 1 through 5. **As indicated in the District Compliance Manual, the District may approve alternatives, modifications and /or deviations to the methods specified in this condition.**

Verification: The project owner shall notify the District and the CPM within fifteen (15) working days before the execution of the compliance test required in this condition. The test results shall be submitted to the District and to the CPM within 60 days of the date of the tests.

AQ-6 The project owner shall perform annual compliance tests in accordance with the District Compliance Test Procedural Manual. Prior to performing these annual tests, the boiler shall be tuned in accord with the manufacturer's specified tune-up procedure, by a qualified technician. Subsequent tests shall demonstrate that this equipment does not exceed the following emission maximums:

Pollutant	ppmvd	Lb/MMBtu	Lb/hr	
*NOx	9.0	0.011	2.7	(Per USEPA Methods **7E and** 19 ~~and 20~~)
SO2	1.7	0.003	0.7	
*CO	25.0	0.018	4.6	(Per USEPA Method 10)
VOC	12.6	0.005	1.3	(Per USEPA Methods 25A and 18)
PM10	n/a	0.007	1.7	(Per USEPA Method**s 5 or** 201A**, and 202**)

*corrected to 3% oxygen, on a dry basis, averaged over one hour
Opacity shall be conducted per Method 9; Flue gas flow rate shall be quantified in dscf per USEPA Methods 1 through 5.

Verification: The project owner shall notify the District and the CPM within fifteen (15) working days before the execution of the compliance test required in this condition. The test results shall be submitted to the District and to the CPM within 60 days of the date of the tests.

AQ-11 **Delete** The owner/operator shall comply with all applicable recordkeeping and reporting requirements of NSPS Db.

Verification: During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or CEC staff.

THE FOLLOWING *CONDITIONS* ***ARE***[3] *APPLICABLE TO IVANPAH* ***1*** *~~I~~,* ***2*** *~~II~~, AND* ***3*** *~~III~~ EMERGENCY FIRE PUMPS, MDAQMD APPLICATION NUMBERS/PERMIT NUMBERS; 00009312 (E010380), 00009315 (E010378), AND 00009319 (E010384):*

E010380: Year of Manufacture ~~2010~~**2011**, Tier III, ~~One Clarke~~**John Deere**, Diesel fired internal combustion engine, Model No. ~~JU6H-UF62~~**6068HFC48B**, and Serial number ~~tbd~~**PE6068L185615**, After Cooled, Direct Injected, Turbo Charged, producing ~~240~~**316** bhp with 6 cylinders at ~~2,600~~**2,350** rpm (or equiv.) while consuming a maximum of ~~10~~**12.2** gal/hr. This equipment powers a pump.

E010378: Year of Manufacture 2010, Tier III, One John Deere, Diesel fired internal combustion engine, Model No. 6068HFC48B, and Serial number PE6068L117510, After Cooled, Direct Injected, Turbo Charged, producing 316 bhp with 6 cylinders at 2,350 rpm (or equiv.) while consuming a maximum of 12.2 gal/hr. This equipment powers a pump.

E010384: Year of Manufacture 2012, Tier III, One John Deere, Diesel fired internal combustion engine, Model No. 6068HFC48B, and Serial number PE6068L228488, After Cooled, Direct Injected, Turbo Charged, producing 316 bhp with 6 cylinders at 2,350 rpm (or equiv.) while consuming a maximum of 12.2 gal/hr. This equipment powers a pump.

Condition **AQ-16** applies separately to the three emergency fire pump engines unless otherwise specified.

AQ-16 This unit shall be limited to use for emergency power, defined as in response to a fire or when commercially available power has been interrupted. In addition, this unit shall be operated no more than ~~0.5~~ **1.0** hours per day for a total of 50 hours per year for testing and maintenance. The 50 hour limit can be exceeded when the emergency fire pump assembly is driven directly by a stationary diesel fueled CI engine when operated per and in accord with the National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 1998 edition. This requirement includes usage during emergencies. [[District Rule 1302(C)(2)(a) and Rule 1304 (D)(1)(a)] and 17 CCR 93115.3(n)] [Hours allowed by federal regulation 40 CFR 60.42(f) streamlined out as these permit requirements are more stringent than the federal regulatory requirements.]

Verification: During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or Energy Commission staff.

THE FOLLOWING *CONDITIONS* ***ARE*** *APPLICABLE TO IVANPAH* ***1*** *~~I~~,* ***2*** *~~II~~, AND* ***3*** *~~III~~ (THREE - 3) EMERGENCY GENERATORS, MDAQMD APPLICATION NUMBERS/PERMIT NUMBERS; 00009313 (E010381), 00009316 (E010379), AND 00009317 (E010382~~), EACH CONSISTING OF~~:*

[3] Verb tense for this condition and the similar ones that follow is correct because only the changed conditions are shown here. There is more than one condition in the full set of conditions.

Equipment Description:

Year of Manufacture 2010, Tier II, ~~One~~ **Three** Caterpillar, Diesel fired internal combustion engine**s**. Model No. 3512C, and Serial No**s**. ~~tbd~~ **EBG00874, EBG00875, and EBG00864**, After Cooled, Direct Injected, Turbo Charged, producing ~~2250~~**2,206** bhp with 16 cylinders at 1,800 rpm while consuming a maximum of 105 gal/hr. This equipment powers a Generator.

Condition **AQ-24** applies separately to the three emergency fire pump engines unless otherwise specified.

AQ-24 This unit shall be limited to use for emergency power, defined as in response to a fire or when commercially available power has been interrupted. In addition, this unit shall be operated no more than ~~0.5~~ **1.0** hours per day for a total of 50 hours per year [NSR and 17 CCR 93115] [Hours allowed by 60.42(f) streamlined out.]

Verification: During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or Energy Commission staff.

THE FOLLOWING *CONDITIONS* ***ARE*** *APPLICABLE TO COMMON AREA EMERGENCY GENERATOR, MDAQMD APPLICATION NUMBER/PERMIT NUMBER; MD100000061 (E011546),* ~~*CONSISTING OF*~~*:*

Equipment Description:

Year of Manufacture ~~2010~~**2011**, Tier III, Located in the Common Logistics Area; One ~~TBD~~**Caterpillar**, Diesel fired internal combustion engine Model No. ~~TBD~~**C9** and Serial No. ~~TBD~~**S9L03837**, producing ~~333~~**398** bhp with ~~TBD~~**6** cylinders at ~~TBD~~**1,800** rpm while consuming a maximum of ~~TBD~~**19.4** gm/bhp-hr.

Condition **AQ-39** applies separately to the three emergency fire pump engines unless otherwise specified.

AQ-39 This unit shall be limited to use for emergency power, defined as in response to a fire or when commercially available power has been interrupted. In addition, this unit shall be operated no more than ~~0.5~~ **1.0** hrs per day for a total of 50 hours per year for testing and maintenance. [NSR and 17 CCR 93115] [Hours allowed by 60.42(f) streamlined out.]

Verification: During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or Energy Commission staff.

THE FOLLOWING *CONDITIONS* ***ARE*** *APPLICABLE TO THE COMMON AREA EMERGENCY FIRE PUMP, MDAQMD APPLICATION NUMBER/PERMIT NUMBER; MD100000062 (E011547),* ~~*CONSISTING OF*~~*:*

Equipment Description:

Year of Manufacture ~~TBD~~**2011**, Tier III; Located in the Common Logistics Area; One ~~Clarke (or equiv.)~~ **John Deere,** Diesel fired internal combustion engine Model No. **4045HFC28A,B,C,D** and Serial No. ~~tbd~~ **PE4045L162845**, Direct Injected, producing ~~106.5~~**156.9** bhp with 4 cylinders at 1760 rpm while consuming a maximum of 8.~~5~~**9** gal/hr.

Condition ***AQ-45*** *applies separately to the three emergency fire pump engines unless otherwise specified.*

AQ-45 This unit shall be limited to use for emergency power, defined as in response to a fire or when commercially available power has been interrupted. In addition, this unit shall be operated no more than ~~0.5~~ **1.0** hrs per day for a total of 50 hours per year for testing and maintenance. The 50 hour limit can be exceeded when the

emergency fire pump assembly is driven directly by a stationary diesel fueled CI engine operated per and in accord with the National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 1998 edition. This requirement includes usage during emergencies. [[District Rule 1302(C)(2)(a) and Rule 1304 (D)(1)(a)] and 17 CCR 93115.3(n)] [Hours allowed by federal regulation 40 CFR 60.42(f) streamlined out as these permit requirements are more stringent than the federal regulatory requirements.]

Verification: During site inspection, the project owner shall make all records and reports available to the District, ARB, U.S. EPA or Energy Commission staff.

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CEC 2013, California Energy Commission, Order Approving a Petition to Modify Air Quality Conditions of Certification for Ivanpah Solar Electric Generating System (07-AFC-5), Order No. 12-0213-8, TN 69908, March 2013.

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Sierra 2015a, Sierra Research, Petition to Amend Air Quality Conditions of Certification for Ivanpah Solar Electric Generating System (07-AFC-5C), March 2015.

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IVANPAH SOLAR ELECTRIC GENERATING SYSTEM (07-AFC-05C)

Petition to Amend Updated Equipment Descriptions

Public Health

Huei-An (Ann) Chu, Ph.D.

INTRODUCTION

March 2015, Solar Partners filed a PTA for the ISEGS Project. The purpose of this PTA is to update the equipment descriptions contained in the **Air Quality** Conditions of Certification to reflect the as-built engine information, and to incorporate additional minor changes to permit conditions. The changes affect four emergency engines and four fire pump engines. These engines are not normally in operation; they are intended to operate only during emergencies. However, they must be tested routinely in order to ensure that they can operate when needed in an emergency (Solar Partners 2015, p. 1).

CONSTRUCTION

The four emergency engines and four fire pump engines are already installed. Therefore, no concerns of public health effects would be expected during the construction phase.

OPERATION

The following modifications have been requested by the project owner. The changes related to Public Health include (Solar Partners 2015, p. 16):

- Changing the size of diesel engines; and
- Changing the maximum duration of an engine test from 30 minutes to one hour.

Changing the size of the diesel engines would result in a small increase in annual emissions because the combined horsepower of the engines is larger.

The project owner conducted the analysis of health risk prioritization scores for the entire facility. The analysis included the combined toxic air emissions from all the boilers and all of the emergency engines. According to **Table 5** in the petition, all the Prioritization Scores (the Cancer Priority Score, Chronic Non-Cancer Priority Score, and Acute Non-Cancer Priority Score) are low (Solar Partners 2015, p. 18). The risk prioritization score for the entire facility remains “Low” for all health impacts, meaning that the increased emissions still have a very small impact offsite.

Staff has reviewed the project owner’s Revised Petition to Amend for potential environmental effects and consistency with applicable LORS. Based on this review, staff does not expect any significant adverse cancer, or short- or long-term noncancer health effects from changes to the project’s toxic air emissions that would result from the modification to the project. Therefore, staff concludes that the proposed project modifications would not result in a significant adverse impact to Public Health or cause the project to be noncompliant with applicable LORS.

CONCLUSIONS

Staff has analyzed potential public health risks associated with construction and operation of the modifications stated in the PTA for the ISEGS Project and does not expect any significant adverse cancer, short-term, or long-term health effects to any members of the public, including low income and minority populations, from project toxic emissions. Staff also concludes that no change to conditions of certification in **Public Health** are needed.

REFERENCES

Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners VIII, LLC. 2015 Petition to Amend Air Quality Conditions of Certification. Submitted to CEC/Docket Unit on 03/17/2015.