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Technical Support Document
Title V Permit Renewal
Salt River Project - Desert Generating Station
Permit # V20658.000

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This technical support document (TSD) summarizes some of the main items analyzed for this facility's original permit. More in-depth discussion can be found in previous TSDs.

1. APPLICANT

Salt River Project Agricultural Improvement and Power District
P.O. Box 52025, PAB 352
Phoenix, Arizona 85072-2025

2. BACKGROUND

2.1 SOURCE LOCATION

This permit renewal pertains to an existing electricity generating station owned and operated by Salt River Project (SRP) on the outskirts of Casa Grande, Arizona. The facility location lies in the central desert basin of Arizona, about 39 miles from Superstition Wilderness, and 61 miles from Saguaro National Monument. These areas are designated as Federal PSD Class I areas which are afforded special protection from environmental impacts under the CAA. Although it does not qualify for the Class I area protections under the CAA, the BLM's Table Top Wilderness lies about 17 miles from the facility. The Gila Indian Reservation lies about 7 miles north of the facility, and the Ak Chin Indian Reservation lies about 10 miles to the northwest.

The area is designated as nonattainment for PM10 and attainment for all other criteria pollutants. The attainment designation includes carbon monoxide (CO), oxides of nitrogen (NOx), particulate matter 2.5 ($PM_{2.5}$), oxides of sulfur (SOx), and ozone (O_3). The West Central Pinal PM2.5 area lies approximately 5 miles to the west of the project and additional ozone, CO and particulate nonattainment areas commence at the Pinal County/Maricopa County line, lying about 21 miles due north of the project.

2.2 PROCESS DESCRIPTION

The facility's SIC Code is 4911.

The existing facility consists of a natural-gas-fired, two-on-one combined cycle electrical generating plant. The primary power generating equipment consists of two combined cycle combustion turbine (CTG) generating sets[1] (Siemens Westinghouse Model 501F) and two heat recovery steam generators (HRSG). Each HRSG unit is equipped with an auxiliary duct burner. The respective CTG/HRSG units each have a separate exhaust stack. The HRSG units both feed a single steam turbine generator. The CTG and HRSG units fire natural gas exclusively.

Each CTG has a heat input capacity[2] of 1932 mmBtu/hr. The duct burners in each HRSG have a heat input capacity of 456 mmBtu/hr. Each CTG has a nominal base-load generating capacity of 160 MW. The steam turbine generator has a nominal base-load generating capacity of 260 MW.

The facility also includes a 263 horsepower diesel-driven emergency water pump; and a mechanical draft cooling tower to reject waste heat from the steam cycle to the atmosphere.

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[1] These units are also referred to as "combustion turbine generators," or "CTG" units."

[2] Based on the higher heating value of the fuel.

This facility constitutes a "major emitting source"for Prevention of Significant Deterioration (PSD) since the permit-allowable emissions for at least one criteria pollutant exceeds 250 tpy, and allowable emissions for at least one criteria pollutant also exceeds 100 tpy, and the facility constitutes one of the 28 specifically listed "categorical" sources. Specifically, the facility is a fossil fuel-fired steam electric generating station with a heat input capacity exceeding 250 million British thermal units per hour.

When originally permitted, this project went through "PSD review" for NOx, PM/PM_{10}, CO, and VOC. The BACT Top Down analysis can be found in the TSD for V20610.000.

See the technical support prepared for the original permit, V20610.000, and subsequent permit revisions/renewals for more detailed information.

This renewal does not propose physical changes or changes in the method of operation other than the addition of a propane emergency generator. This permit action also seeks to move an existing emergency fire pump from the list of insignificant activities to permitted activities since it is now subject to applicable requirements, incorporates emission rates for greenhouse gases (GHGs) and PM2.5, and resolves rule citation references.

2.3 PERMITTING HISTORY

The following is a list of permits issued to this facility since the original Title V:

Table 1: Permit History

Permit/Revision	Type	Issuance	Reason for Revision
V20610.000	Title V permit	9/10/1999	New Title V permit
V20610.R01	Minor Modification	8/23/2000	Discrepancies on initial design.
V20610.R02	Significant Revision	12/2/2003	Revised PTE for CO
V20610.A03	Administrative Amendment	12/2/2003	Name change
V20610.R04	Minor Revision	5/24/04	Clarified CO startup emissions
V20620.000	Title V Renewal	9/1/2004	Renewal and Admin. Changes
V20636.000	Title V Renewal	11/17/2009	Renewal and Admin. Changes
V20636.A01	Administrative Amendment	9/8/2010	Correct references to Duct Burners on/off
V20636.R02	Significant Revision	5/21/12	Clarifies definitions for aborted shutdowns

2.4 COMPLIANCE/ENFORCEMENT HISTORY

Inspections are regularly conducted at this facility to ensure compliance the applicable permit conditions. SRP is currently in compliance with the permit conditions cited in V20636.R02. The

facility is inspected at least bi-annually. The following table summarizes the recent inspections that have been conducted on the source.

Table 2: Inspection History

Inspection Date	Type of Inspection	Results
2/17/11 and 4/20/11	Compliance inspections	NOV, Settled 8/18/11
6/7/13	Compliance Inspection	In compliance

3. EMISSIONS

3.1 ACTUAL EMISSIONS

For 2013, the facility reported the following emissions:

CO – 154.8 tpy;
NOx – 36.9 tpy;
SOx - 2.1 tpy;
PM_{10} – 12.2 tpy;
PM2.5 – 9.9 tpy
VOC – 8.6 tpy;
HAP – 3.4 tpy;
NH3 – 7.2 tpy.

3.2 PROJECT EMISSIONS

This renewal proposes to add a propane emergency generator and incorporate GHG and PM2.5 emission rates for all applicable emission sources. A diesel emergency fire pump is also being moved from insignificant activities to permitted activities. The fire pump emissions were accounted for in previous permit transactions. The propane emergency generator adds less than one ton per year for each criteria pollutant and less than 40 tons of GHGs. Since the additional emissions are less than the PSD significance levels this renewal is not subject to PSD review. Additionally since the emission increase does not jeopardize any existing limitation the renewal maintains all the allowable emissions authorized in the current permit. The following tables show the proposed propane emergency generator emission rates and the site wide GHG and PM2.5 emission rates.

Table 3: Proposed Propane Emergency Generator Emissions

Source	Pollutant	Emissions (lb/hr)	Emissions (TPY)
Propane Emergency Generator	NOx	2.85	0.71
	CO	3.47	0.87
	SOx	5.48E-04	1.37E-04
	VOCs	8.38E-02	0.021
	PM10	4.50E-02	0.011
	PM2.5	4.50E-02	0.011
	HAPs	7.54E-02	0.019
	GHGs	129.72	32.43

Table 4: Proposed Site-Wide GHG and PM2.5 Emissions

Source	Pollutant	Emissions (lb/hr)	Emissions (TPY)
CTG/HRSG	PM2.5	46.00	154.14
	GHG	559,255	2,037,008

Cooling Tower	PM2.5	0.19	0.83
Propane Emergency Generator	PM2.5 GHG	4.50E-02 129.72	1.13E-02 32.43
Diesel Emergency Fire Pump	PM2.5 GHG	0.58 301.21	0.14 75.30
Total	**PM2.5** **GHG**		**155.10** **2,037,116**

3.4 GREENHOUSE GASES

This renewal serves to quantity the GHG emissions for this facility in accordance with Greenhouse Gas Tailoring Rule (75FR 17004). The facility is also subject to the Mandatory Greenhouse Gas reporting rule (40 CFR 98). This reporting rule is currently not included in the definition of applicable requirement in 40 CFR 70.2 or 71.2. Even though the requirements contained in the GHG reporting rule are not considered applicable requirements under the title V regulations and accordingly will not be listed in the Title V operating permit, the source is not relieved from the requirement to comply with the GHG reporting rule separately from compliance with their title V operating permit.

4. AIR QUALITY IMPACTS ANALYSIS

Since the applicant is not proposing a significant emission increase for the facility, a new air quality impact analysis is not required.

5. TITLE V PERMIT ANALYSIS

The only items discussed below are pertaining to changes in the permit.

5.1 APPLICABLE REQUIREMENTS - GENERAL

Within the meaning of 40 CFR Part 70, this constitutes a "major source" that requires an operating permit, as contemplated by Part 5 of the CAA. Such permits are commonly known as "Title V" permits.

5.1.1 NSPS JJJJ

(Standards of Performance for Stationary Spark Ignition Internal Combustion Engines)

The proposed propane emergency generator is subject to NSPS JJJJ since it is model year 2007 or later. Accordingly the applicable requirements from NSPS JJJJ will be added to the permit as part of this renewal.

5.1.2 NESHAP ZZZZ

(National Emission Standards for Harzardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines)

Since the diesel emergency fire pump was constructed before June 12, 2006 and it is located at an area source of HAPS it is subject to NESHAP ZZZZ. Accordingly the

applicable requirements from NESHAP ZZZZ will be added to the permit as part of this renewal

5.2 ADMINISTRATIVE PERMIT CHANGES

5.2.1 Rule Citation References

The renewal updates or corrects several rule citation references.

6. CONCLUSION

Based on the information supplied by Applicant and analyses conducted by PCAQCD, PCAQCD concludes that this permit revision will not cause or contribute to a violation of any federal ambient air quality standard or cause any applicable PSD increment to be exceeded. Therefore, PCAQCD intends to issue the permit revision.