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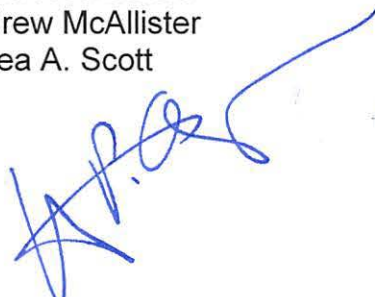
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## Memorandum

To: Chair Robert B. Weisenmiller  
Commissioner Karen Douglas  
Commissioner David Hochschild  
Commissioner Andrew McAllister  
Commissioner Janea A. Scott

Date: November 7, 2016

From: Robert P. Oglesby  
Executive Director



Subject: **Approval of the City of Riverside Emission Performance Standard Compliance Filing**

On November 2, 2016, the City of Riverside (Riverside) submitted a compliance filing requesting the Energy Commission find that Riverside's covered procurement for the proposed natural gas-fired Intermountain Power Project (IPP) Repowering Project (Project) be determined to be compliant with the Energy Commission's Greenhouse Gases Emission Performance Standard (EPS), pursuant to Title 20 of the California Code of Regulations, Section 2900, et seq.

SB 1368 EPS limits long-term investments in baseload generation by the state's utilities to power plants that meet an EPS jointly established by the Energy Commission and the California Public Utilities Commission. The emission rate limit is 1,100 pounds of carbon dioxide (CO<sub>2</sub>) per megawatt-hour (MWh). The EPS establishes a public process for determining the compliance of proposed utility investments. Utilities are required to submit a compliance filing upon committing to an investment that is required to meet the EPS.

Six California publicly owned utilities (Anaheim, Burbank, Glendale, Los Angeles, Pasadena, and Riverside) along with 23 Utah municipalities, and 6 rural electric cooperatives currently purchase power from IPP under a Power Sales Contract that was signed on July 11, 1980 and expires on June 15, 2027. The Intermountain Power Authority, a political subdivision of the State of Utah, is the owner of IPP.

On June 16, 2015, the Riverside City Council approved the Second Amendatory Power Sales Contract, which subsequently went into effect on March 16, 2016. This new contract allows for the repowering of IPP's 1,800 MW coal-fired generating units with up to 1,200 MW of EPS-compliant natural gas-fired combined cycle (NGCC) units by July 1, 2025. The Project will include two NGCC units, each with a design capacity of 600 MW and an expected CO<sub>2</sub> emission rate of approximately 800 pounds per MWh. Riverside's City Council has already set a participation limit of no more than 5 percent or 60 MW in the Project, an amount less than the share presented in Figure 2 of the Second Amendatory Power Sales Contract. Riverside also has an option to withdraw from the Project or reduce its entitlement by up to 20 percent by November 1, 2019. A subsequent EPS filing will be necessary if Riverside does not withdraw and the final design implementation is significantly different from the three options described in the filing.

Los Angeles Department of Water and Power (LADWP) previously submitted a compliance filing for the conversion of IPP from a coal-fired to a gas-fired power plant and was found compliant.

Riverside's compliance filing involves the exact same resource as LADWP and identifies the same three potential NGCC designs and vendor specifications. Based on this information, staff calculated the expected CO<sub>2</sub> emission rates at various loads using the higher and lower heat inputs and associated capacities provided. Staff was able to duplicate the CO<sub>2</sub> emission rates to within 0 to 2 percent. Table 1 summarizes the Engineering Office's review of the three proposed NGCC designs.

Staff has evaluated Riverside's compliance filing and concludes that the analysis conducted in reviewing LADWP's compliance filing holds here as well: staff concludes that the Second Amendatory Power Sales Contract is compliant with the EPS pursuant to Section 2902(a); specifically, that the proposed NGCC power plant design in the compliance filing is below the EPS limit of 1,100 pounds per MWh. The NGCC units specified in the Second Amendatory Power Sales Contract meet the EPS.

Following the recent approval of LADWP's compliance filing for this facility, staff recommends the Energy Commission find that the covered procurement described in Riverside's filing complies with the Energy Commission's EPS, Title 20, Section 2900 et seq., of the California Code of Regulations.

Attachment

**Table 1: Supporting Greenhouse Gas Emission Calculations**

GE 2x1 7F.04

Load	GHG Emission Factor (lb/MMBtu)	Heat Input (MMBtu/h [LHV])	Heat Input (MMBtu/h [HHV])	GHG Emissions from LHV (lb/h)	GHG Emissions from HHV (lb/h)	Capacity (MW)	Calculated GHG Emission Rate from LHV (lb/MWh)	Calculated GHG Emission Rate from HHV (lb/MWh)	Manufacturer Provided GHG Emission Rate (lb/MWh)	Difference (%)
50%	117	1,908	2,099	223,236	245,560	300	744	819	811	1%
60%	117	2,192	2,411	256,464	282,110	360	712	784	776	1%
70%	117	2,501	2,751	292,617	321,879	420	697	766	759	1%
80%	117	2,828	3,111	330,876	363,964	480	689	758	751	1%
85%	117	2,981	3,279	348,777	383,655	508	687	755	748	1%
90%	117	3,214	3,535	376,038	413,642	540	696	766	759	1%
100%	117	3,669	4,036	429,273	472,200	600	715	787	780	1%

Selimens 2x1 SCC6-5000F

Load	GHG Emission Factor (lb/MMBtu)	Heat Input (MMBtu/h [LHV])	Heat Input (MMBtu/h [HHV])	GHG Emissions from LHV (lb/h)	GHG Emissions from HHV (lb/h)	Capacity (MW)	Calculated GHG Emission Rate from LHV (lb/MWh)	Calculated GHG Emission Rate from HHV (lb/MWh)	Manufacturer Provided GHG Emission Rate (lb/MWh)	Difference (%)
40%	117	2,203	2,423	257,751	283,526	310	831	915	918	0%
50%	117	2,430	2,673	284,310	312,741	361	788	866	870	0%
60%	117	2,646	2,911	309,582	340,540	411	753	829	832	0%
70%	117	2,864	3,150	335,088	368,597	461	727	800	803	0%
80%	117	3,093	3,402	361,881	398,069	511	708	779	782	0%
90%	117	3,342	3,676	391,014	430,115	563	695	764	767	0%
100%	117	3,619	3,981	423,423	465,765	616	687	756	759	0%

Mitsubishi 2x1 M501GAC

Load	GHG Emission Factor (lb/MMBtu)	Heat Input (MMBtu/h [LHV])	Heat Input (MMBtu/h [HHV])	GHG Emissions from LHV (lb/h)	GHG Emissions (lb/h)	Capacity (MW)	Calculated GHG Emission Rate from LHV (lb/MWh)	Calculated GHG Emission Rate from HHV (lb/MWh)	Manufacturer Provided GHG Emission Rate (lb/MWh)	Difference (%)
50% @ 12 °F	117	2,716	2,988	317,772	349,549	427	744	819	834	-2%
100% @ 12 °F	117	4,492	4,941	525,564	578,120	765	687	756	772	-2%
55% @ 47 °F	117	2,552	2,807	298,584	328,442	401	745	819	836	-2%
100% @ 47 °F	117	4,150	4,565	485,550	534,105	714	680	748	764	-2%
55% @ 95 °F	117	2,348	2,583	274,716	302,188	360	763	839	854	-2%
100% @ 95 °F	117	3,606	3,967	421,902	464,092	616	685	753	770	-2%
55% @ 105 °F	117	2,276	2,504	266,292	292,921	351	759	835	850	-2%
100% @ 105 °F	117	3,480	3,828	407,160	447,876	595	684	753	768	-2%