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March 14, 2014
GM 14-043

Robert P. Oglesby
California Energy Commission
1516 Ninth Street, MS 39
Sacramento, CA 95814-5512

SUBJECT: Docket #14-HYDRO-01

Dear Mr. Oglesby:

Attached, please find the Sacramento Municipal Utility District's (SMUD) responses to your questions related to the severe drought conditions that have had a statewide impact. We appreciate the opportunity to provide information on this critical issue. We hope that our responses, along with those of other entities, will prove useful in understanding and managing the long-term effects of this situation.

If you have any questions on this issue, please contact Paul Lau at (916) 732-6252 or paul.lau@smud.org. Secondarily, you may contact Steve Sorey at (916) 732-6521 or steve.sorey@smud.org.

Sincerely,

John Di Stasio
General Manager and Chief Executive Officer

Enclosure

cc: CEC Docket's Office – MS 14

Drought Hydropower Questions

Question 1: Please provide your POU's current estimate of total electric firm energy requirements in GWh for 2014.

- The Sacramento Municipal Utility District's total electric firm energy requirement for 2014 is 11,041 GWh.

Question 2: Please provide your POU's average annual hydroelectric energy procurement in GWh since 1970. Please differentiate between generated and purchased hydro energy supplies, and specify the timeframe over which these averages were determined if fewer years than from 1970 were used.

- The Table below provides the annual and average hydro energy supplies from SMUD's Upper American River Project (UARP), Western Area Power Administration purchases and East Bay Municipal Utility District purchases.

	SMUD Hydro Generation	SMUD Purchased Hydro Energy Supplies		Total Hydro Supply (GWh)
	Upper American River Project (UARP)	Western Area Power Administration (WAPA) –Record begins in '05	East Bay Municipal Utility District (EBMUD) – Contract Began In 2005, Record begins in '06	
1970	1,893			1,893
1971	1,664			1,664
1972	1,591			1,591
1973	1,853			1,853
1974	2,584			2,584
1975	2,023			2,023
1976	1,038			1,038
1977	209			209
1978	1,705			1,705
1979	1,673			1,673
1980	2,595			2,595
1981	1,267			1,267
1982	3,187			3,187
1983	3,369			3,369
1984	2,196			2,196
1985	1,348			1,348
1986	2,621			2,621
1987	951			951
1988	775			775
1989	1,203			1,203
1990	1,052			1,052
1991	962			962

1992	812			812
1993	2,162			2,162
1994	738			738
1995	3,039			3,039
1996	2,557			2,557
1997	2,180			2,180
1998	2,816			2,816
1999	2,315			2,315
2000	1,943			1,943
2001	415			415
2002	1,409			1,409
2003	1,575			1,575
2004	1,259			1,259
2005	2,236	883		3,119
2006	2,804	1,793	227	4,824
2007	1,056	826	45	1,927
2008	886	790	43	1,719
2009	1,442	694	118	2,254
2010	1,926	815	165	2,906
2011	2,823	1,192	240	4,255
2012	1,425	918	81	2,424
2013	1,015	952	59	2,026
Average	1,741 ('70-'13)	984 ('05-'13)	122 ('06-'13)	

Question 3: Please provide your POU's lowest hydroelectric energy procurement in GWh during the same time period used in Question 2, and identify the year in which this occurred. Please provide figures for both POU-owned/controlled hydroelectric generation and hydroelectric energy supply contracts.

- The lowest hydroelectric energy procurement occurred in 1977. Only 209 GWh were generated during 1977 from SMUD's UARP.

Question 4: Please provide your POU's most recent estimate of 2014 hydroelectric energy procurement (generation and purchases), both in GWh and as a percentage of this year's firm energy requirement.

- The expected 2014 hydroelectric energy volumes are included in the table below.

	SMUD Hydro Generation	SMUD Purchased Hydro Energy Supplies		Total Hydro Supply (GWh)
	UARP	WAPA	EBMUD	
Hydro Energy Supply	999	631	43	1,673
Firm Energy Requirement	11,041	11,041	11,041	11,041
Hydroelectric Energy as a % of Firm Energy Requirement	9.0%	5.7%	0.3%	15.1%

Question 5: Does your POU expect that low hydro conditions (or the drought more generally) will raise any system or local reliability concerns? Please explain.

- No, the low hydro conditions will not raise any system or local reliability concerns. The total storage at our 3 main storage reservoirs is currently above the historical average, and while the runoff range that we are presently forecasting is still quite large, our current, median runoff case does indicate full storage by the end of June.

Question 6: Under what circumstances would the effects of the drought create severe or critical operational concerns?

- The drought would need to continue beyond September 2015 for critical operational concerns to arise. Critical operational concerns do not arise earlier because of SMUD's current storage volumes and SMUD's local, natural gas-fired power plants. During dry periods, SMUD's natural gas-fired plants can provide ancillary services that are typically provided by the UARP, thus reducing water releases from storage.

Question 7: At what value of annual hydro generation this year (in GWh) would the effects of drought result in significant or substantial financial concerns? Please estimate additional costs your POU may incur because of low hydro conditions. Please provide the assumptions used.

- Based on rainfall to date, and reasonable expectations for the remainder of the year, the drought should not be a significant concern because SMUD has both insurance and balancing accounts to purchase power for this year. SMUD is expecting about 1,100 GWh less energy from hydroelectric resources, which increases SMUD's costs by about $55 million, assuming power prices of $50/MWh.

Question 8: Please estimate any additional procurement of GHG allowances, in metric tons, that your POU expects will be necessary because of low hydro conditions. Please provide the assumptions used.

- The low hydro conditions impact SMUD in three direct ways; lower production from our owned hydroelectric facilities (UARP), lower purchases from the Western Area Power Administration hydroelectric facilities (WAPA), and lower purchases from the East Bay MUD hydroelectric facilities. Our current estimate is that SMUD will lose

about 1,100 GWh of non-carbon producing power. This power will need to be replaced to meet customer load. The most likely sources of replacement energy are energy purchases from the Pacific Northwest and increased dispatch of SMUD-owned natural gas fueled power plants. Both options have similar carbon compliance obligations. If one assumes CARB's unspecified power import factor of .428 metric tonnes of carbon per MWh for replacement power, and adjust for losses (2%), the dry hydro conditions will increase SMUD's carbon compliance obligation by 480,216 MTeCO2. At today's market price for carbon ($11.70/MTeCO2), that increased carbon compliance obligation will cost SMUD about $5.6 million.

Question 9: Does your POU expect that low hydro conditions (or the drought more generally) will have any other local impacts beyond local reliability? If so, are efforts underway to address these impacts?

- Low hydro conditions and concerns about water supply have prompted water districts and local jurisdictions to increase groundwater pumping, often requiring SMUD to make electrical infrastructure enhancements to meet the new power loads. SMUD is working to complete these electrical projects on a faster timeline to help reduce the drought's impact on SMUD customers.

Question 10: Will water curtailments this year, such as by SWRCB, affect your POU's hydroelectric energy procurement or dispatch (either utility-controlled hydro generation or purchases)? If so, to what extent will these supply resources be affected in terms of GWh, and over what timeframe(s)?

- Water curtailments this year are not expected to impact SMUD's hydroelectric energy procurement or dispatch.

Question 11: Energy Commission staff would like to know about any potential drought related issues that will or could affect system and/or local reliability. For example, are there known or potential issues with water allocations or supplies to thermal plants (e.g., power plant cooling)? This is an open-ended question and we hope that your POU can, to the extent possible, provide us with information regarding your POU's overall assessment regarding how drought conditions may affect reliability in your local communities.

- There are no potential drought related issues that will or could impact system and/or local power reliability. Water supplies required for

operating SMUD's thermal plants are expected to remain in place throughout this drought.