



LEG 2015-0440  
May 29, 2015

**Sent Via E-mail – [DOCKET@energy.ca.gov](mailto:DOCKET@energy.ca.gov)  
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Dockets Office  
California Energy Commission  
1516 Ninth Street  
Sacramento, CA 95814-5512

California Energy Commission

**DOCKETED**

**15-HYDRO-01**

**TN # 7582H**

**MAY 29 2015**

**Re: Docket No. 15-HYDRO-01 - Monitoring Hydropower Production in  
Support of Governor's Drought Task Force  
Reply of Sacramento Municipal Utility District (SMUD)**

Dear Sir or Madam:

Enclosed is the reply of Sacramento Municipal Utility District (SMUD) to  
correspondence dated May 1, 2015, from Robert P. Oglesby requesting responses to questions  
related to hydroelectric generation in the current drought conditions.

Sincerely,

JOSEPH SCHOFIELD  
Assistant General Counsel

/tm  
Enclosure

cc: Steven K. Sorey  
James Leigh-Kendall  
Debra Warady  
Corporate Files

# Drought Hydropower Questions Publicly Owned Utilities 2015

Question 1: Please provide your publicly owned utility's (POUs) current estimate of total electric firm energy requirements in gigawatt hours (GWh) for calendar year 2015.

The Sacramento Municipal Utility District's total electric firm energy requirement for 2015 is 11,300 GWh.

Question 2: Please provide your POU's average annual hydroelectric energy procurement in GWh since 1970, including 2014. Please differentiate between generated and purchased hydro energy supplies, and specify the timeframe over which these averages were determined if fewer years than from publicly owned utility's (POUs) current estimate of total electric firm energy requirements in gigawatt hours (GWh) for calendar year 2015.

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
2014	771	597	30	1,398
Average	1,719 ('70-'14)	946 ('05-'14)	112 ('06-'14)	2,685 ('06-'14)

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 hydroelectric energy procurement in GWh during 2014, if different from that shown in Question 2. If the same, please state so explicitly.

The hydroelectric energy procurement in GWh during 2014 was 1,398 GWh, which is the same as the response provided for Question 2.

Question 5: Please provide your POU's most recent estimate of 2015 hydroelectric energy procurement (generation and purchases), both in GWh and as a percentage of this year's firm energy requirement.

	Hydro Generation	Purchased Hydro Energy Supplies		Total Hydro
	UARP	WAPA	EBMUD	
Actual (Jan-Apr)	144	56	6.0	206.0
Forecast (May-Dec)	376	350	6.8	732.8
Total GWh	520	406	12.8	938.8
Firm Energy Requirement (GWh)	11,300	11,300	11,300	11,300
Hydroelectric Energy as a % of Firm Energy Requirement	4.6%	3.6%	0.1%	8.3%

Question 6: 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. While SMUD's storage reservoirs are not expected to refill, SMUD will continue to minimize releases from storage so that we begin the next water year with sufficient storage to sustain another dry year, if necessary.

Question 7: Under what circumstances would the adverse effects of the drought create severe or critical operational concerns for your system's electric generation or for electricity deliveries in your service area?



The drought would need to continue beyond September 2017 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 8: 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. (Please highlight in yellow any information about specific costs, projected or potential, that are considered confidential or commercially sensitive. This could include potential impacts on rates that have not yet been considered for adoption by your local governing board. Such information, if provided and marked as confidential, will be protected from public disclosure through December 31, 2016.)

SMUD has financial mitigation structures in place to address both excess and deficit amounts of precipitation compared to median.

SMUD's annual budget assumes median precipitation. When there is greater precipitation, SMUD's hydro generation is greater than the plan, and the revenue from this additional generation is put aside in a savings account called the Hydro Rate Stabilization Fund (HRSF).

For 2012 – 2014 SMUD was able to rely on the HRSF to pay for the additional cost of replacement power and SMUD did not have a hydro surcharge. During 2015, the account balance was drawn down to \$0; beginning April 2015, a hydro surcharge was initiated.

Question 9: Please estimate any additional procurement of greenhouse gas allowances, in metric tons, that your POU has already incurred or that your POU expects will be necessary because of low hydro conditions in 2015. Please provide the assumptions used.

The low hydro conditions impact SMUD in two direct ways; lower production from our owned hydroelectric facilities (UARP), and lower purchases from the Western Area Power Administration hydroelectric facilities (WAPA). Our current estimate is that SMUD will lose about 1,450 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 633,012 MTeCO<sub>2</sub>. At today's market price for carbon

(\$12.50/MTeCO<sub>2</sub>), that increased carbon compliance obligation will cost SMUD about \$7.9 million.

Question 10: 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?

The drought will likely increase water pumping loads and SMUD has programs in place to encourage customers to improve their groundwater pump efficiency. This program, which is just over a year old, has already helped 2 water districts and 3 agricultural customers reduce energy use by over 500,000 kWh.

Question 11: Will water curtailments this year, such as by the State Water Resources Control Board, 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)?

SMUD's hydro generation will not be impacted by water curtailments this year, because SMUD is able to store water during the runoff season and release it during the summer when power demands peak.

Question 12: Did water curtailments in 2014 affect your POU's hydroelectric energy procurement or dispatch? If so, to what extent were supply resources affected and over what timeframe(s)? Did curtailments derate the capability to generate in megawatts (MW), and if so during what timeframes?

The water curtailments had minimal impacts last year, because SMUD was able to store most of the runoff and release it from storage during the summer when power demands peaked.

Question 13: Energy commission staff would like to know about any potential drought related issues that will or could affect electric systems and/or local reliability. For example, are there known or potential issues with water allocations or supplies to thermal plants (for example, 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.