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PASADENA WATER AND POWER

California Energy Commission

**DOCKETED**

**15-HYDRO-01**

TN 75836

JUN 01 2015

May 26, 2015

Dockets Unit  
California Energy Commission  
1516 Ninth Street, MS 4  
Sacramento, CA 95814

Via E-mail: [docket@energy.ca.gov](mailto:docket@energy.ca.gov)

RE: DOCKET 15-HYDRO-01

Dear Mr. Oglesby,

Pasadena Water and Power, as a publicly owned electric utility, offers the following information in response to the questions posed in your letter dated May 1, 2015 as to the ongoing effects of the drought on the electricity sector and utilities that provide power to California, specifically related to hydroelectric generation.

A handwritten signature in blue ink that reads "Leesa Nayudu".

Leesa Nayudu  
Resource Planning Manager

## Pasadena Water & Power Response to CEC Drought Hydropower Questions – 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.

**Answer:** 1,105 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 1970 were used.

**Answer:** PWP's average annual hydroelectric energy procurement over the last several years has been approximately 57 GWh. The quantity includes 4 GWh generated from the Azusa Hydro project (owned by PWP), calculated from data between 1996 and 2014, and 48.8 GWh purchased from the WAPA Boulder Canyon Project at Hoover Dam, based on data between 2002 and 2014. The table below illustrates the annual energy production in GWh.

Year	Azusa Hydro (Generation)	Hoover (Purchases)	TOTAL
1996	8.536	N/A	
1997	8.433	N/A	
1998	8.214	N/A	
1999	9.200	N/A	
2000	4.319	N/A	
2001	7.676	N/A	
2002	1.045	61.307	62.352
2003	0	55.237	55.237
2004	1.679	53.060	54.739
2005	2.492	48.870	51.362
2006	2.733	54.498	57.231
2007	.060	52.298	52.358
2008	2.053	51.879	53.932
2009	5.021	52.363	57.384
2010	0	49.783	49.783
2011	10.370	49.526	59.896
2012	4.488	54.375	58.863
2013	0	52.270	52.270
2014	0	51.511	51.511
AVERAGE	4.017	52.844	56.861
MINIMUM	0	48.870	49.783

**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.

	Azusa Hydro	Hoover
GWh	0	48.87
Year	2003, 2010, 2013, 2014	2005

**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 so state so explicitly.

	Azusa Hydro	Hoover
GWh	0	51.511

**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.

	Azusa Hydro	Hoover
GWh	0	51.5
%	0%	4%

**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.

**Answer:** State- and region-wide low-hydro conditions may potentially affect local reliability depending on the response of regulatory and water agencies. Approximately 10% of PWP's generation portfolio consists of hydroelectric generation which, if curtailed or shut down due to low hydro conditions, normally would be offset by PWP's fossil fuel generating resources. However, PWP's fossil fuel generating units/entitlements also rely on the availability of water for cooling and emissions control processes. If, under severe drought conditions water allocations to these generators or all generators in the region are curtailed or cut completely, Pasadena's ability to offset reduced or cut hydroelectric generation may or may not be possible by calling upon fossil fuel generation.

**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?

**Answer:** Pasadena has developed a diverse portfolio mix of local generation and imports, including fossil fuel, nuclear, hydroelectric, and solar renewable resources. Pasadena's ability to weather the effects of the drought will depend wholly upon the curtailments implemented by the state's water regulatory entities on fossil fuel generating plants.



**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.)

**Answer:** Without performing a regional integrated analysis of all generation in the state and perhaps the entire drought-affected Southwest region, it would be impossible to determine a specific value of local hydroelectric generation which would trigger unknown additional costs that might create a significant financial burden. The drought is a regional phenomenon which may cause reductions in both hydroelectric and fossil fuel generation throughout the Southwest resulting in unforeseeable spikes in power and capacity costs.

**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.

**Answer:** There were no additional procurements of greenhouse gas allowances incurred or that are expected in 2015 due to the low hydro conditions.

**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?

**Answer:** Unknown

**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 timeframes(s)?

**Answer:** Water supplies for PWP's hydroelectric generating resources are not under the control of the State Water Resources Control Board. PWP's hydroelectric generating resources normally are derated as a result of water levels behind the dam falling below minimum levels.

**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 timeframe?

**Answer:** There were no curtailments of water deliveries to PWP's hydroelectric generation resources in 2014 other than insufficient water due to the drought. PWP's hydroelectric procurement and dispatch were driven solely by the availability and water levels. PWP's Hoover Dam Power entitlement has been derated for the past few years from 20MW to 14MW due to the low water level at Hoover Dam. PWP's Azusa Hydro Generator has ceased generating electricity due to water levels that have dropped below minimum levels.

**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.

**Answer:** The ongoing drought is a regional issue and without an integrated analysis of renewable, hydroelectric, fossil fuel, and even nuclear generating resources it would be difficult to determine all the potential issues with water allocations. Pasadena is a relatively small electric (and water) utility and will participate in any such analyses to ensure that its needs will be met.