MEMORANDUM

TO: **UTILITIES ADVISORY COMMISSION**

FROM: **UTILITIES DEPARTMENT**

DATE: **JANUARY 13, 2016**

4

SUBJECT: **Solar Hot Water Heating Program**

The attached informational report was provided to the Utilities Advisory Commission (UAC) for its December 2, 2015 meeting, but was not agendized for discussion. At that meeting, the UAC requested that the item be agendized for discussion; therefore, the report is provided to enable that discussion.

ATTACHMENT:

A. December 2, 2015 Report to the UAC: Information on City of Palo Alto Utilities' Solar Water Heating Program

PREPARED BY: **JANE RATCHYE**, Assistant Director, Resource Management

APPROVED BY:

ED SHIKADA
Assistant City Manager/Interim Director of Utilities

MEMORANDUM

TO: **UTILITIES ADVISORY COMMISSION**

FROM: **UTILTIES DEPARTMENT**

DATE: **December 2, 2015**

SUBJECT: **Information on City of Palo Alto Utilities' Solar Water Heating Program**

This is an informational report and requires no action by the Utilities Advisory Commission (UAC).

SUMMARY

At its October 2015 meeting, the UAC requested information about the City of Palo Alto Utilities' (CPAU's) Solar Water Heating Program (SWHP). This report contains information presented to the UAC and/or City Council in previous reports. New program achievements will be included in the Fiscal Year 2015 Demand-Side Management Report.

BACKGROUND

CPAU offered a solar water heating program in the early 1980's, including a very successful group buy program that lowered costs for participants. More recently, CPAU discussed plans to implement a solar water heating incentive program in the City's Ten-Year Energy Efficiency Portfolio Plan, which was approved by the City Council in April 2007 (Staff Report 216:07). In October 2007, the State Legislature enacted California's Solar Water Heating and Efficiency Act of 2007 (AB 1470), which requires publicly-owned utilities like CPAU to adopt, implement and finance a solar water heating system incentive program.

CPAU's SWHP provides incentives to residential and non-residential customers who install qualifying solar water heating systems that offset energy used by an existing water heater or boiler. The program also provides necessary education and training to stakeholders. The program is available to all CPAU natural gas and electricity customers. CPAU's SWHP is administered by the Center for Sustainable Energy.[1]

DISCUSSION

CPAU's Solar Water Heating Program (SWHP) has made little progress in achieving its goal of 30 installed systems per year, since low natural gas prices make the return on investment for SWH systems unattractive.

[1] The original contract with the Center for Sustainable Energy was approved by Council in April 2008 (Staff Report 174:08). The current contract was approved in May 2013 (Staff Report 3692).

Detailed SWHP activity is provided in the Demand Side Management Achievements for Fiscal Year 2014 report, which was provided to the UAC in February 2015, and to the Council in May 2015 (Staff Report 5708). That report included a count of solar water heating systems installed to date as shown below:

Customer-Side Solar Water Heating Systems Program Achievements versus Goals

Year	SWH Systems Goal	SWH Systems Installed
FY 2009	30	7
FY 2010	30	17
FY 2011	30	10
FY 2012	30	1
FY 2013	30	1
FY 2014	30	11
Total		**43**

As part of the cost-effectiveness of electrification options for residential appliances and vehicles, the cost effectiveness of solar water heating was presented in a report provided to the UAC in July 2015 and to the Council in August 2015 (Staff Report 5971). The relevant section from that report is provided below:

> Solar Water Heating: Wet versus Dry
>
> A solar PV system combined with a HPWH [Heat Pump Water Heater] ("dry solar water heating") is more cost-effective than installing a solar thermal water heating system ("wet solar water heating"). Using the base case assumptions above, the 20-year cost of ownership for a solar thermal water heating system with electric back-up is estimated to be $9,000. By contrast, the 20-year net cost of ownership for retrofitting a home to install a HPWH plus installing one kilowatt of solar PV at $4.50 per Watt—the amount of capacity needed to provide electricity for all HPWH usage—is approximately $7,000. Therefore, dry solar water heating is currently more cost-effective in Palo Alto given available net energy metering and federal incentives.

RESOURCE IMPACT

Production of this memorandum is not part of CPAU's work plan, but is being provided as requested by the UAC, and required 6 hours of staff time.

PREPARED BY: **LINDSAY JOYE,** Marketing Engineer
REVIEWED BY: **JANE RATCHYE,** Assistant Director, Resource Management

APPROVED BY:

VALERIE O. FONG
Director of Utilities