



## Agenda Report

18-1069

Agenda Date: 9/18/2018

### REPORT TO COUNCIL

#### SUBJECT

Action on a Strategic Partnership Agreement with Battelle Memorial Institute, Pacific Northwest Division, to Study the Effectiveness of Heat Pumps in Existing Homes

#### BACKGROUND

In accordance with California Public Utilities Code (PUC) Section 385, covering Public Benefits Charge, and the City's Public Benefits Program Policy Statement adopted by Council on May 12, 1998, Silicon Valley Power (SVP) charges a non-bypassable usage charge in order to fund cost-effective energy efficiency services and other activities. Staff has developed a wide range of cost-effective energy efficiency and renewable energy programs for customers. Staff frequently searches for new technologies which will provide additional efficiency opportunities for residents.

In order to expand its programs, SVP periodically participates in research and development efforts to investigate new technologies or ways to improve the energy efficiency achieved through technology solutions. SVP partners in larger efforts undertaken regionally or nationally to economically leverage the expertise and investment by other industry partners. Battelle Memorial Institute manages the U.S. Department of Energy's Pacific Northwest National Laboratory and its laboratory homes used to research new technologies.

SVP, along with other utilities, has been investigating the addition of ductless mini-split heat pumps (DHP) into its energy efficiency program portfolio. These DHP systems have several advantages: 1) they are highly effective at heating individual rooms or zones within a home, allowing for heating or cooling of only occupied rooms; 2) they allow flexibility in placement options, including wall mounted, ceiling mounted, or placed in a drop ceiling; 3) they are easy to install because no duct work is required; 4) they are more efficient than ducted systems because up to 30% of heat is lost through leaking ducts; and 5) they can be customized with built-in timers, sleep functions. However, sample post-installation studies in the Bonneville Power Administration and Efficiency Maine territories have shown that these units are not reaching their full potential because the previous existing heating system continues to operate in parallel with the DHP. Energy savings associated with a more reliable control system is one potential solution. Prior to developing a program, Silicon Valley Power is interested in understanding how to maximize the use of an efficient DHP unit in an existing home through cost effective control strategies.

#### DISCUSSION

Bonneville Power Administration (BPA) and the Northwest Energy Efficiency Alliance (NEEA) initiated a study that determined that the energy savings from DHP systems are not being fully realized in homes where the previous existing heating system continues to be operational. Additional funding is required to test control strategies between the DHP system and the original heating system. The

testing will occur in the Pacific Northwest National Laboratory's lab homes managed by Battelle Memorial Institute to validate energy savings capabilities and model the energy savings potential in 13 climate zones, including Santa Clara's climate zone. If Council approves the Strategic Partnership agreement with Battelle Memorial Institute, SVP, the Northeast Energy Efficiency Project, Washington State University, and Efficiency Solutions will collaborate with BPA and NEEA on this effort to determine the appropriate control strategies to maximize energy efficiency from the DHP technology and improve energy efficiency program design. Results from this work will guide the design of a DHP program for Silicon Valley Power's residential customers.

### **ENVIRONMENTAL REVIEW**

The action being considered does not constitute a "project" within the meaning of the California Environmental Quality Act ("CEQA") pursuant to CEQA Guidelines section 15378(a) as it has no potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.

### **FISCAL IMPACT**

The total cost of the Agreement with Battelle Memorial Institute, Pacific Northwest Division shall not exceed \$174,284. Sufficient funds are available in the Electric Department Public Benefits Operating Budget.

The research is also eligible for the American Public Power Association's Demonstration of Energy and Efficiency Development (DEED) grant program if the Strategic Partnership Agreement is approved. Any such grant money would offset the amount of funding required from the Electric Department.

### **COORDINATION**

This report has been coordinated with the Finance Department and City Attorney's Office.

### **PUBLIC CONTACT**

Public contact was made by posting the Council agenda on the City's official-notice bulletin board outside City Hall Council Chambers. A complete agenda packet is available on the City's website and in the City Clerk's Office at least 72 hours prior to a Regular Meeting and 24 hours prior to a Special Meeting. A hard copy of any agenda report may be requested by contacting the City Clerk's Office at (408) 615-2220, email [clerk@santaclaraca.gov](mailto:clerk@santaclaraca.gov) <<mailto:clerk@santaclaraca.gov>> or at the public information desk at any City of Santa Clara public library.

### **RECOMMENDATION**

Approval of a Strategic Partnership Projects Agreement No. 72173 with Battelle Memorial Institute, Pacific Northwest Division in an amount not to exceed \$174,284 to provide a study on maximizing the energy efficiency from ductless mini-splits heat pumps in existing homes.

Reviewed by: John C. Roukema, Chief Electric Utility Officer

Approved by: Deanna J. Santana, City Manager

### **ATTACHMENTS**

1. Strategic Partnership Projects Agreement No. 72173 with Battelle Memorial Institute, Pacific Northwest Division