



RIVERSIDE PUBLIC UTILITIES

Board Memorandum

BOARD OF PUBLIC UTILITIES

DATE: JULY 25, 2016

ITEM NO: 7

SUBJECT: UPDATE ON THE ICE ENERGY PEAK LOAD REDUCTION PILOT PROGRAM

ISSUES:

The item for Board of Public Utilities consideration is to receive an update on the Ice Energy Peak Load Reduction Pilot Program with Ice Energy Holdings, Inc. (Ice Energy) for implementation of the PLR pilot program using Ice Bear thermal energy storage (TES) for 2016.

RECOMMENDATIONS:

That the Board of Public Utilities receive and file this update on the Ice Energy Peak Load Reduction Pilot (Peak Load Reduction) Program.

BACKGROUND:

Assembly Bill (AB) 2514, signed into law on September 29, 2010, mandated that California publicly owned electric utilities consider establishing procurement targets for cost-effective energy storage technologies/devices by October 1, 2014. On September 5, 2014, and September 23, 2014, respectively, the RPU Board recommended and City Council approved, adoption of a zero megawatt energy storage procurement target, as none of the viable applications for energy storage solutions were cost-effective for the City at the time. Staff continued to investigate the various energy storage technologies available in the market.

In 2015, Staff structured an agreement with Ice Energy to establish a Peak Load Reduction program using thermal energy storage, which was approved by the Board on January 23, 2015, and subsequently by City Council on March 3, 2015. The term of the Ice Energy agreement is five years. The Board requested that staff report back to the Board on the Peak Load Reduction program nine-months prior to the renewal of the agreement as to the effect of the agreement on peak-load reduction. The first opportunity to not renew the agreement occurs on September 30, 2016, which is 90 days prior to the start of calendar year 2017.

Ice Energy is a privately-held company headquartered in Santa Barbara, California, and has recently moved its Operations, Research and Development Center to Riverside. Ice Energy provides TES-based energy storage solutions for utility applications. Its proprietary TES technology, Ice Bear, makes ice at night (off peak) and releases the stored thermal energy during peak hours for use in the cooling cycle of air conditioning (A/C) units.

The Peak Load Reduction program was structured for five consecutive years starting in 2015. Each year, one Megawatt (MW) of peak load reduction is to be achieved. The City benefits from this program through: a) reduction of electricity peak demand and associated energy consumption; b) the consequential reduction in power procurement costs in the form of reduced electric capacity purchases during peak hours and reduced electric energy purchase costs due to lower priced electricity during off-peak compared to the on-peak hours; and c) relief to RPU's distribution peak system loading. In addition, RPU customers participating in the pilot program also benefit from improved energy efficiency

as a result of free high efficiency A/C replacement, as well as from reduced energy consumption during peak demand hours, both of which translate into lower utility bills.

The Peak Load Reduction program has the following objectives:

- 1) To better understand the TES technology and impacts to RPU's overall system;
- 2) To assess the operational values and the associated costs of TES technology; and
- 3) To demonstrate the City's proactive support of the State's energy storage goals

2015 PLR PROGRAM STATUS:

At the January 23, 2015, Board of Public Utilities' meeting, Board Members requested staff to report back on the progress of the PLR program. Attachment 2 is a summary report of the first year's progress of the 36 Ice Bear units. A total of 1,009 kW PLR capacity was projected in the first year's deployment, with 347 kW of Demand Response. Eight (8) License Agreements were executed by RPU customers, including multiple auto dealerships, GAR Labs, California Baptist University, and nine (9) City facilities. These customers also received a combined 298 tons of high efficiency A/C replacement as part of the pilot program.

2016 PEAK LOAD REDUCTION PROGRAM CONTINUATION:

Based on the successful implementation of the PLR Program during the first year, staff recommends continuing the program with Ice Energy to deploy another 1MW of PLR Program throughout the City at a cost of \$1.52 million plus applicable sales tax. Reasons for the renewal are as follow:

Potential Storage Mandate: Although the City adopted a zero megawatt energy storage target in 2014, this target must be revisited every three years (in 2017). With mounting pressure in Sacramento to impose a hard energy storage mandate on the Public-Owned Utilities (POUs) to match those of the Investor-Owned Utilities (IOUs), the likelihood of a POU-specific energy storage requirement in the coming years is high. Staff recommends expanding this existing TES program in preparation for potential mandates and to demonstrate Riverside's continued support of the state-wide energy storage agenda.

A/C Replacement Benefit: As part of the Ice Bear program, 41 older, inefficient HVAC units were identified and replaced. In addition to the capability for these units to shift usage away from peak hours, it is calculated that the newer HVAC equipment will save more than 165,000 kWh annually due to greater energy efficiency.

First-Year Customer Satisfaction/ Growing Interest to Participate in the PLR Program

During the first year of implementation, there has been very positive feedback from our commercial customers that have participated in the Ice Bear program. The first year of the program primarily targeted a single circuit (Circuit 1351, Auto Center) with some exceptions primarily due to the limited scope of the pilot project. Customer Relations conducted a Key Account Customer event held in January, 2016 at Ice Energy's new Research and Development facility located in Hunter Business Park. Ice Energy representatives made a presentation on the Ice Bear product benefits and the Peak Load Reduction program. As a result, there has been an increased interest by our largest customers to participate in subsequent years of the program.

Importance of Demand Response and Power Partners Program Collaboration With the possibility of a shortage of natural gas supplies in Southern California, threatening system reliability this summer, and the potential for requesting our largest customers to curtail their usage through the Power Partners Program, the integration of Ice Bears with the ability to dispatch demand response by RPU will be of great benefit by allowing RPU direct load control of participating Ice Bear enabled HVAC units. Installation of Ice Bear units and replacement of old HVAC package units can be used as an important incentive to encourage Key Account customers to participate in the Power Partners Program this summer

Economic Development and Local Job Creation To date, Peak Load Reduction program has created two (2) new local jobs and has resulted in twenty six (26) local subcontractor construction jobs related to the installation of Ice Bear TES units and new AC units. In addition, with Ice Energy moving its Research and Development facility to Riverside, they have created an additional five new jobs at the new R&D facility. RPU and Ice Energy were awarded the 2016 California Association of Local Economic Development Award of Merit and the 2016 Inland Empire Economic Partnership Red Tape to Red Carpet Award for this new R&D facility business attraction project.

FISCAL IMPACT:

The total annual cost for the Peak Load Reduction program is \$1.52 million, plus applicable sales tax. Sufficient funding is budgeted in Fiscal Year 2016-17 and Fiscal Year 2017-18 in Power Supply costs Account No. 6120100-422915. Budget will be allocated to the ICE Bear capital account (6130000-470821) as project costs are incurred.

Funding of the program will be a combination of a) Public Benefit funds (non-residential air conditioning replacement Incentives of \$300 per ton, not to exceed \$90,000 per year) in Account No. 6020100-456004; b) permissible use of proceeds from the sale of Greenhouse Gas allowances, as available, pursuant to the policy approved by the Board on April 18, 2014; and/or c) unrestricted, undesignated Electric reserves.

The remaining contract costs will be included in future budgets.

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Attachments: 1. Goods and Services Contract (with all Exhibits and Attachments)
2. Summary Report of Year 1 PLR Program
3. Presentation