



City of Arts & Innovation

City Council Memorandum

TO: HONORABLE MAYOR AND CITY COUNCIL DATE: SEPTEMBER 6, 2016

FROM: PUBLIC UTILITIES DEPARTMENT WARDS: ALL

SUBJECT: AGREEMENT FOR CUSTOM ENERGY TECHNOLOGY GRANT PROGRAM FOR THE RIVERSIDE PUBLIC UTILITIES CUSTOM ENERGY TECHNOLOGY GRANT WITH ICE ENERGY HOLDINGS, INC. TO FUND RESEARCH AND DEVELOPMENT FOR MANAGING INTERMITTENT RENEWABLE ENERGY GENERATION WITH RESPONSIVE AND REFLEXIVE ICE STORAGE CONTRAL SYSTEMS - IN THE AMOUNT OF \$100,000

ISSUE:

Approve the Grant Agreement For Custom Energy Technology Grant Program for the Public Utilities Custom Energy Technology Grant to Riverside Public Utilities' commercial customer, Ice Energy Holdings, Inc., to fund the research and development of Managing Intermittent Renewable Energy Generation with Responsive and Reflexive Ice Storage Control Systems, in the amount of \$100,000.

RECOMMENDATIONS:

That the City Council:

1. Approve the Grant Agreement For Custom Energy Technology Grant Program to Ice Energy Holdings, Inc., to fund the research and development of Managing Intermittent Renewable Energy Generation with Responsive and Reflexive Ice Storage Control Systems, in the amount of \$100,000; and
2. Authorize the City Manager, or his designee, to execute the Grant Agreement for Custom Energy Technology Grant Program with Ice Energy Holdings, Inc., including making minor and non-substantive changes.

BOARD RECOMMENDATION:

On August 8, 2016, the Board of Public Utilities with seven members present, unanimously approved to forward the recommendation to City Council to approve the Grant Agreement For Custom Energy Technology Grant Program with Ice Energy Holdings, Inc., in the amount of \$100,000, for Managing Intermittent Renewable Energy Generation with Responsive and Reflexive Ice Storage Control Systems.

BACKGROUND:

One of Riverside Public Utilities' (RPU) programs funded from Public Benefits Funds is the Custom Energy Technology Grant (CETG) program. The program was created to provide RPU business electric customers with the opportunity to request funding for the advancement of renewable energy resource technology projects, research, development, and demonstration programs. Program guidelines are included in Attachment 1. Winning proposals selected should address the changes that the advancement of technology has brought into the utility industry in the last five years. RPU continuously looks for partnerships to explore ways to utilize technologies available today to make cleaner energy more reliable.

DISCUSSION:

In November of 2015, Ice Energy Holdings, Inc. (Ice Energy) submitted a proposal to apply for grant funding through the CETG program. RPU's Grant Review Team is composed of RPU engineering staff and other staff members. They selected this project for funding by focusing on its direct effect on the utility, its operations, its potential impact to RPU's electric system, and its benefit to the community. RPU electric grants are awarded for energy-efficiency projects that are unique to a business or manufacturing process. The Team selected the Ice Energy proposal for meeting these qualifications.

Research and development projects are also eligible under this program. The use of the grant funds must comply with the relevant portions of California Public Utilities Code Section 385(a)(3) related to the use of Public Benefits Funds, which specifies that such funds can be used for "Research, development and demonstration programs for the public interest to advance science or technology which is not adequately provided by competitive and regulated markets." RPU is unaware of any such research being funded by competitive and regulated markets.

The amount of grant funding awarded is up to 75% of the project cost with a maximum of \$100,000 (whichever is less) per project. There is a 25% matching fund requirement associated with this program. Ice Energy Holdings, Inc. will contribute more than \$46,000 in equipment and staff time for research and development to meet this requirement.

Ice Energy proposes enhancing their existing Ice Bear product line with the development of sophisticated 'solar aware' monitoring and control mechanisms. The City of Riverside and several RPU customers are using the Ice Bear solution to make ice and deliver cooling on strict daily schedules. Using the technology in this manner solves a challenging problem of grid expansion to meet increased electric load by dramatically reducing peak load by shifting energy usage from day to night. The current Ice Bear Technology can store up to 30 T-hours (ton hours) of thermal energy, which can provide up to six hours of peak shifting at a constant instantaneous cooling rate of 5T. The main objective of Ice Energy's research is to develop hardware and software solutions for the existing Ice Bear that integrates with distributed solar power generation and maximize solar power usage that enables the largest amount of flexibility for utilities while also maximizing end user benefit.

Funding for research on the proposed enhancements will allow RPU to better manage the expansion of photovoltaic solar on the grid by scheduling ice storage and ice cooling based on a variety of real-time factors including the cost of energy and solar energy availability. It will give RPU the additional ability to programmatically determine when individual Ice Bear units make ice and provide cooling. Through the ability to control how and when energy is stored in our Ice Bear solution, RPU will be able to easily absorb and manage the expansion of solar energy. For

example excess solar energy could be used to make a portion of the ice needed by the Ice Bear solution and the remainder of the ice required could be made when energy availability is at its highest and least costly.

RPU customers will benefit from the availability of a flexible and responsive storage resource by being able to respond to momentary changes in energy cost and availability. The proposal's technology is expected to successfully manage renewable expansion and grid stability.

More information on this project is in the proposal "Managing Intermittent Renewable Energy Generation with Responsive and Reflexive Ice Storage Control Systems" attached as Exhibit A of the agreement (Attachment 2).

FISCAL IMPACT:

The total grant award is \$100,000 to be paid in three installment payments. Funds are available in Fiscal Year 2016-17 Public Benefits Funds - Custom Energy Technology Grant Program – Non-Residential Account No. 6020100-456049.

Prepared by:	Girish Balachandran, Public Utilities General Manager
Certified as to availability of funds:	Scott G. Miller, Chief Financial Officer/Treasurer
Approved by:	John A. Russo, City Manager
Approved as to form:	Gary G. Geuss, City Attorney

Attachments:

1. Custom Energy Technology Grant Program Guidelines
2. Grant Agreement For Custom Energy Technology Grant Program
3. August 8, 2016, Board of Public Utilities Minutes