GRANT AGREEMENT FOR
CUSTOM ENERGY TECHNOLOGY GRANT PROGRAM

ICE ENERGY HOLDINGS INC.

(Demand Response and Peak Shaving Advanced Energy Storage System)

THIS AGREEMENT is made and entered into this _____ day of _____ 2016 by and between the CITY OF RIVERSIDE, a California charter city and municipal corporation ("City"), through its Department of Public Utilities ("RPU"), and ICE ENERGY HOLDINGS INC., a Delaware corporation authorized to do business in California ("Recipient"), with reference to the following:

RECITALS

WHEREAS, California Public Utilities Code ("Code") Section 385 provides that a local publicly-owned utility shall establish a non-bypassable, usage-based charge on local distribution service to fund investments by the utility and other parties in (1) cost-effective, demand-side, management services to promote energy-efficiency and energy conservation; (2) new investment in renewable energy resources and technologies consistent with existing statutes and regulations which promote those resources and technologies; (3) research, development, and demonstration programs for public interest to advance science or technology which is not adequately provided by competitive and regulated markets; and (4) services provided for low-income electricity customers, including but not limited to, targeted energy efficiency and rate discounts;

WHEREAS, RPU has funds available pursuant to the requirements of Code Section 385 for the purpose of providing financial funding to its public and private post-secondary educational institution electric customers, whose primary activities are within the city limits of Riverside, for the purpose of promoting the development and demonstration of energy-efficiency, energy conservation, and investment in the advancement of renewable energy resource technology hereinafter referred to as the Custom Energy Technology Grant Program (the "Program").

WHEREAS, Recipient has submitted its Application and Proposal to RPU requesting funding from RPU's 2016-2017 Program, as set forth in Code Section 385 (the "Proposal").

WHEREAS, following screening by the RPU Program Committee and recommendation by the Board of Public Utilities and the City Council of the City of Riverside ("City Council"), the "Demand Response and Peak Shaving Advanced Energy Storage System" project ("Grant Project") was selected for funding.

NOW, THEREFORE, in consideration of the mutual covenants herein set forth and the mutual benefits to be derived therefrom, the City and Recipient mutually agree as follows:

1. Grant Award. City hereby allocates to Recipient the amount of $100,000 (the "Grant") for development and implementation of Recipient's Grant Project, for the purpose and subject to the terms hereinafter set forth. The Grant funds ("Grant Funds") will be paid from available RPU Program funds for the fiscal year 2016-2017.

2. Scope of Services. The Grant Funds shall be used in furtherance of the purposes set forth in Code Section 385 to develop and implement the Grant Project as more fully set forth in Recipient's Proposal attached hereto as Exhibit "A" and incorporated herein by this reference.

3. Independent Contractor.

a. Recipient is a California corporation and an electric customer whose primary activities are within the city limits of Riverside. All acts of Recipient and all others acting on behalf of Recipient relating to the performance of this Agreement shall be performed as independent contractors and not as agents, officers, or employees of City. Recipient, by virtue of this Agreement, has no authority to bind or incur any obligation on behalf of City. Recipient has no authority or responsibility to exercise any rights or power vested in City. No agent, officer, or employee of City is to be considered an employee of Recipient. It is understood by both Recipient and City that this Agreement shall not under any circumstances be construed or considered to create an employer-employee relationship or a joint venture.

b. Recipient is, and at all times during the term of this Agreement shall represent and conduct itself as, an independent contractor and not as an employee of City.

c. Recipient shall design, develop, and implement the Grant Project in its entirety. Recipient shall be responsible to City only for the requirements and results specified in the Proposal and, except as expressly provided in this Agreement, shall not be subjected to City's control

with respect to determination of the Grant Project, selection of materials or the methods for completion. However, Recipient agrees to be responsible to City for all of the foregoing with respect to the Proposal and description of the Grant Project under this Agreement.

d. If necessary, Recipient has the responsibility for employing other persons or firms at its sole cost to assist Recipient in fulfilling the terms and obligations under this Agreement.

e. If, in the performance of this Agreement, any third persons are employed by Recipient, such persons shall be entirely and exclusively under the direction, supervision, and control of Recipient. All terms of employment including hours, wages, working conditions, discipline, hiring, and discharging or any other term of employment or requirements of law shall be determined by Recipient.

f. It is understood and agreed that as an independent contractor and not an employee of City, neither Recipient nor Recipient's assigned personnel shall have any entitlement as a City employee, right to act on behalf of the City in any capacity whatsoever as an agent, or ability to bind the City to any obligation whatsoever.

g. It is further understood and agreed that Recipient must issue W-2 or other tax forms as required by law for income and employment tax purposes for all of Recipient's assigned personnel under the terms of this Agreement.

h. As an independent contractor, Recipient hereby indemnifies and holds City harmless from any and all claims that may be made against City based upon any contention by any third party that an employer-employee relationship exists by reason of this Agreement.

4. Effective Date and Funding of Grant.

a. This Agreement shall commence upon the date of its execution ("Effective Date") and shall terminate fifteen (15) months from the date of Grant Project Initiation, as defined in Section 4.b ("Termination Date"), unless extended pursuant to Section 4.c or Section 6.

b. City shall provide Recipient the Grant Funds in three installments in accordance to the Milestone Schedule below. Recipient must achieve each Milestone Deliverable on or prior to the corresponding Milestone Date to be eligible for funding:

Milestone Dates	Milestone Deliverables	Grant Funds
Milestone 1 – (September, 2016)	Project Initiation: Submit to City of Riverside a letter declaring project initiation with a detailed Project Plan to City of Riverside.	$50,000
Milestone 2 – (January, 2017)	Quarterly Report #1: Provide in writing a description of API (Application Programming Interface) - The collection of programmatic interfaces available to third-party software programs to collect data and control Ice Bear operations. Analysis of test data generated (from a modeled system as compared to physical hardware) status update of project plan with expected Quarterly Report No. 2 deliverables status update on laboratory improvements.	$25,000
Milestone 3 – (May, 2017)	Quarterly Report #2: Provide in writing a status update on Solar-Ice Bear API development efforts Laboratory testing status update Analysis of test data generated (actual hardware) Update on project plan including remaining deliverables for final report.	$25,000
Milestone 4 – Final Report (September, 2017)	Quarterly Report #3: Provide in writing a Final Report by contract expiration; Comprehensive Summary Report detailing the work performed, objectives defined and met and value to the City's existing Ice Bear program and overall grid stability. Deliver Solar-Ice Bear API documentation with examples. Demonstration of the Solar-Ice Bear API over a range of predefined environmental scenarios (several Ice Makes: Daytime & Evening Makes + Melts On-site Ice Bear demonstration in the Riverside laboratory of the Ice Bear being controlled via the developed Solar-Ice Bear programming interface.	N/A

c. If Recipient fails to achieve any one Milestone by the applicable Milestone Date therefor, Recipient shall immediately notify City of such failure and may request a Cure Period of up to thirty (30) days to achieve the missed Milestone. The requested Cure Period must be approved by City, and such approval shall not be unreasonably withheld, delayed or conditioned. For the avoidance of doubts, each Milestone Date in the Milestone Schedule may be extended by a maximum of thirty (30) days, and without prejudice to City's rights to terminate this Agreement under Section 19, all Milestone Dates subsequent to the missed Milestone Date as well as the

Termination Date of this Agreement shall be extended accordingly on a day-to-day basis, *provided* that in no event shall the Termination Date of this Agreement be extended.

d. The Grant Funds check will be issued to Recipient as named in the Grant Proposal attached hereto as Exhibit "A."

e. City reserves the right, in its discretion, to award a portion of the requested Grant Funds.

5. Performance.

a. Recipient shall perform in accordance to the Milestone Schedule in Section 4.b. Failure to promptly commence work and/or diligently pursue such work to completion may be grounds for termination of this Agreement.

b. Recipient shall be responsible to begin, proceed with, and complete the Grant Project according to the Milestone Schedule in Section 4.b and quarterly tasks completion deadline as set forth in the Project Timeline included in the Proposal.

c. For the Term of this Agreement, Recipient shall make its facility available for City's inspection of the Grant Project any time upon City's request.

d. If Recipient fails to meet a Milestone listed in the Milestone Schedule in Section 4.b by the end of the requested Cure Period, City may, at its sole discretion, terminate this Agreement pursuant to Section 19.a. In the event of such termination, Recipient agrees to return all previously released Grant Funds back to City within five (5) days of receipt of City's written termination notice.

e. Releasing of Grant Funds for the following Milestones will depend on Recipient meeting certain performance criteria detailed in Exhibit "D":

i) Milestone 1 – Project Initiation

ii) Milestone 2 - Quarterly Report #1

iii) Milestone 3 – Quarterly Report #2

6. Extension. This Agreement may be extended from time to time, with mutual consent from both Parties, by quarterly increments following the completion of Quarterly Report II, *provided,*

such extension shall be agreed upon, along with new Milestones for the duration of the extension, sixty (60) days prior to the original Termination Date.

7. Project Budget.

a. Recipient hereby certifies and agrees that the Grant Funds it receives shall be used entirely as set forth in the Project Budget attached hereto as Exhibit "B" and incorporated herein by this reference ("Budget").

b. The Grant Funds represents the City's total contribution to the Grant Project.

c. Recipient agrees that any amounts required to complete the Grant Project over and above the Grant Funds will be paid by Recipient

d. Recipient agrees funds over and above the Grant are available so as not to delay completion of the Grant Project due to insufficient Project funding.

e. Recipient agrees to keep within the Budget, and any variations from the Budget will be reported to RPU.

f. Recipient agrees to pay for all costs necessary to operate and maintain the Grant Project for the term of this Agreement.

8. Use of Grant.

a. The Grant Funds shall be used exclusively for costs of the Grant Project as set forth in the Proposal and the Budget.

b. Grant Funds shall not be used for any other purpose, including within limitation:

(i) As security or to guarantee payments for any non-Program obligations, nor as loans for non-Program activities; or

(ii) To pay for entertainment, meals, or gifts.

9. Intellectual Property Provisions. Recipient and RPU agree that all patents, software and copyrightable material shall be subject to terms of Exhibit "C" attached hereto and incorporated herein by this reference.

10. No Assignment or Transfer of Grant Funds. The Grant Funds are personal to Recipient, based upon the unique qualification of Recipient set forth in the Proposal and are for the

purpose of accomplishing the goals set forth in the Proposal. Recipient shall not assign any right or obligation under this Agreement, and any such purported Assignment shall be void *ab initio*.

11. Transfer of Project Equipment.

a. For any Grant Proposal that provides for the development, purchase, or installation of equipment paid for in whole or in part by Grant Funds:

(i) Recipient shall install and operate the equipment only at Recipient's business location within City's utility service territory;

(ii) Recipient shall not remove or transfer any equipment developed, purchased, or installed, in whole or in part, with Grant Funds within five (5) years of the Effective Date, without the express written consent of City. City reserves the right to withhold such consent.

b. Recipient agrees that if it removes or transfers such equipment without City's consent as required herein, Recipient shall reimburse City the costs of equipment purchased, developed, or installed by Grant funding, proportionately as follows:

(i) Transfer or removal within first year from Effective Date—100%

(ii) Transfer or removal within second year from Effective Date—80%

(iii) Transfer or removal within third year from Effective Date—60%

(iv) Transfer or removal within fourth year from Effective Date—40%

(v) Transfer or removal within fifth year from Effective Date—20%

12. Final Report. Recipient shall prepare and submit to City a final report on or prior to the Termination Date. The final report shall include: title page, introduction and background, project objectives, project performance (including results of energy-savings monitoring), project expenses (including receipts) and project time line, conclusions, and recommendations.

13. Interim Grant Project Changes. Recipient shall promptly notify City in writing of any and all proposed Grant Project changes. Grant Project changes must be pre-approved by RPU and must be consistent with the purpose and scope of the Grant Project. A detailed description of Grant Project changes and impacts to the project schedule and/or Budget must be provided to RPU and approved prior to any changes to all or art of the Grant Project.

14. Program Monitoring.

a. Recipient shall maintain financial, programmatic, statistical, and other supporting records of the Grant Project feasibility study, design, development, installation, implementation, purchase of equipment, and energy-saving results. In addition, Recipient shall prepare and maintain the following records and reports to assist City in maintaining its record keeping requirements:

(i) Documentation of Grant Project expenses;

(ii) Documentation of energy use and energy cost-saving information, including a comparison of Recipient's energy consumption prior to implementation of the Grant Project, future estimated energy consumption, and estimated energy cost savings over a one-year period and a five-year period, as well as documentation of developmental concepts promoting energy conservation;

(iii) Quarterly progress reports on Grant Project deadlines as defined in Proposal; and

(iv) Any other related records and reports as City shall require from time to time.

b. Failure to keep and provide such records and reports may result in demand for return of Grant Funds to City.

15. Audits.

a. The Recipient's records in connection with the Grant Project shall be open to inspection and audit by an authorized City representative.

b. Said records shall be retained for no less than three (3) years after completion of the Grant Project.

c. Records which relate to (i) complaints, claims, administrative proceedings, or litigation arising out of the performance of this Agreement or (ii) costs and expenses of this Agreement to which City or any other governmental agency takes exception, shall be retained beyond the three (3) years until resolution or disposition of such appeals, litigation claims, or exceptions.

16. Taxes and License. Recipient understands and agrees that City has no obligation to pay or withhold state or federal taxes or to provide workers' compensation or unemployment insurance. Recipient, as an independent contractor, shall be responsible for any and all taxes that apply to it as an employer.

17. General Compliance with Laws. Recipient shall keep fully informed of federal, state, and local laws and regulations which in any manner affect the performance of services by Recipient pursuant to this Agreement and shall at all times observe and comply with all such laws and regulations.

18. Non-Discrimination. Except as provided in Section 12940 of the California Government Code, during Recipient's performance of this Agreement, Recipient shall not discriminate on the grounds of race, religious creed, color, national origin, ancestry, age, physical disability, mental disability, medical condition including the medical condition of Acquired Immune Deficiency Syndrome (AIDS) or any condition related thereto, marital status, sex or sexual orientation, genetic information, gender, gender identity, or gender expression, in the selection and retention of employees and subcontractors and the procurement of materials and equipment. Contractor shall also comply with the requirements of the Americans with Disabilities Act in the performance of the Agreement.

19. Termination.

a. In the event of a substantial failure of performance by Recipient, City may terminate this Agreement upon a ten (10) day written notice to Recipient. The ten-day notice period shall be used by both parties in an attempt to negotiate resolution of disputes and remedy any breach.

b. In the event of a material breach of this Agreement by Recipient, City may terminate this Agreement and Recipient agrees to refund the Grant Funds to City within five (5) days of receipt of the City's written notice of such termination. Recipient agrees that any of the following, individually or collectively, shall be conclusively deemed a material breach or breaches of the Agreement:

(i) Recipient's fraudulent misrepresentation as to Recipient's use of the Grant Funds or as to any material matter in the Grant application and Proposal;

(ii) Delay in beginning, development, or completion of the Grant Project without written approval of extensions by RPU's General Manager; or

(iii) Substantial changes in the Grant Project or use of Grant Funds.

20. Contract Administration. A designee of City will be appointed in writing by City's Public Utilities General Manager to administer this Agreement on behalf of City and shall be referred to herein as Contract Administrator.

21. Certifications. Recipient certifies to City that Recipient will select equipment or products on the basis of Recipient's own investigation including without limitation as to the effectiveness, merchantability, and fitness of the equipment or products for the Grant Project and that Recipient has not relied on any statement by City or an agent of City in making such selection.

22. Amendments. This Agreement may be modified or amended only by a written agreement executed by the City and Recipient.

23. Venue. Any action at law or in equity brought by either of the parties hereto for the purpose of enforcing a right or rights provided for by this Agreement shall be tried in a court of competent jurisdiction in the County of Riverside, State of California, and the parties hereby waive all provisions of law providing for a change of venue in such proceedings to any other county.

24. Notices. Service of any notices, bills, invoices, or other documents required or permitted under this Agreement shall be sufficient if sent by one party to the other by United States mail, first class postage prepaid and addressed as follows:

City of Riverside	Recipient
Department of Public Utilities Attention: Lynn Callandrillo Scott, Account Manager/Producer 3750 University Avenue Riverside, CA 92501	Ice Energy Holdings Inc. Attention: Chris B. Tillotson 710 Palmyrita Avenue, Suite A Riverside, CA 92507

Either party may change such address by giving notice to the other party in writing herein.

25. Assignment. It is mutually understood and agreed that this Agreement shall not be assigned to any third party by either City or Recipient.

26. Severability. Each provision, term, condition, covenant, and/or restriction, in whole and in part, in this Agreement shall be considered severable. In the event any provision, term, condition, covenant, and/or restriction in this Agreement is declared, in whole and/or in part, invalid, unconstitutional, or void for any reason, such provision or part thereof shall be severed from this Agreement and shall not effect any other provision, term, condition, covenant, and/or restriction of this Agreement, and the remainder of the Agreement shall continue in full force and effect.

27. Authority. The individuals executing this Agreement and the instruments referenced herein on behalf of Recipient each certifies that they have the legal power, right, and actual authority to bind Recipient to the terms and conditions hereof and thereof.

28. Entire Agreement. This Agreement constitutes the final, complete, and exclusive statement of the terms of the agreement between the parties pertaining to the subject matter of this Agreement and supersedes all prior and contemporaneous understandings or agreements of the parties. Neither party has been induced to enter into this Agreement by, and neither party is relying on, any representation or warranty outside those expressly set forth in this Agreement.

29. Exhibits. The following exhibits attached hereto are incorporated herein to this Agreement by this reference:

Exhibit "A" – Recipient's Proposal
Exhibit "B" – Project Budget
Exhibit "C" – Intellectual Property Provisions
Exhibit "D" – Performance Standards

(Signatures on Following Page)

IN WITNESS WHEREOF City and Recipient have caused this Grant Agreement for Custom Energy Technology Grant Program for Demand Response and Peak Shaving Advanced Energy Storage System to be duly executed on the day and year first above written.

CITY OF RIVERSIDE, a California charter city and municipal corporation, through its Department of Public Utilities

By: _____
City Manager

Attest: _____
City Clerk

ICE ENERGY HOLDINGS INC., a Delaware corporation authorized to do business in California

By: [signature] / Marcel Christians

Its: Director, Research & Development.

By: C. B. Tillotson
Chris B. Tillotson

Its: CIO

Approved as to Form:

By: [signature]
Assistant City Attorney

CA #16-1005 SW 07/12/16
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EXHIBIT "A"

Recipient's Proposal

Exhibit A

IceEnergy

IDEALAB

innovation\design\engineering\application

Riverside Public Utilities

Custom Energy Technology Grant Proposal

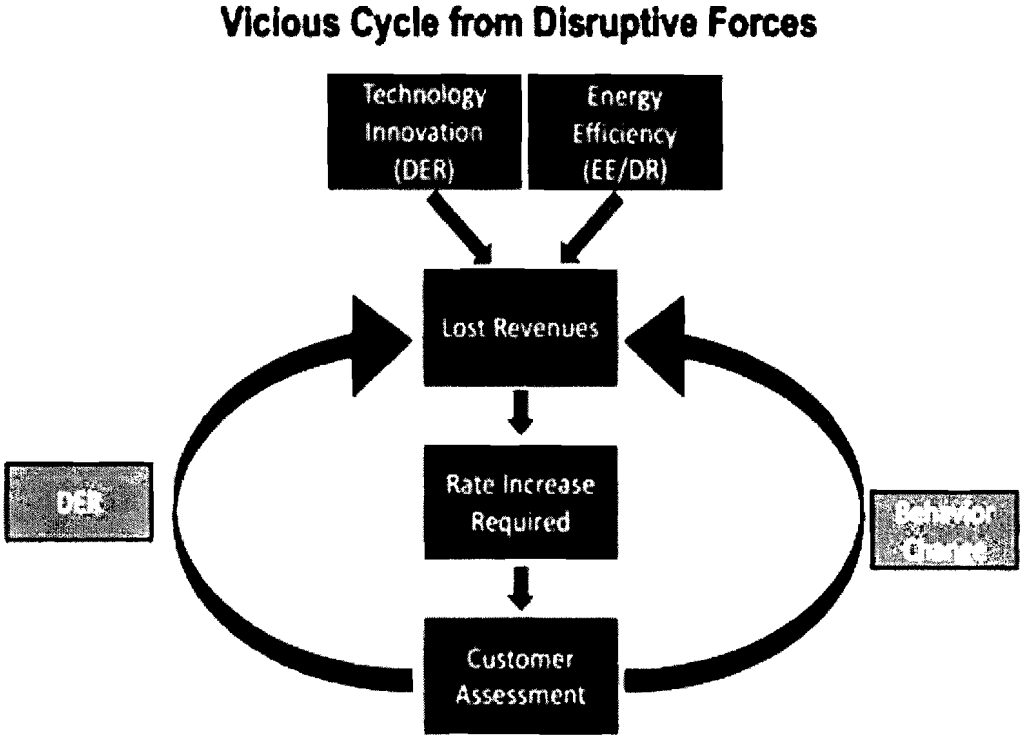
Managing Intermittent
Renewable Energy Generation
with
Responsive and Reflexive
Ice Storage Control Systems

Contents

1 Executive Summary

Renewable Portfolio Standards, the federal solar Investment Tax Credit (ITC) and cost reductions and efficiency improvements in the distributed solar industry and industry analysts' predictions of the 'duck curve' daily load pattern require that utilities prepare for increased grid penetration of renewable energy sources. The obvious benefits of renewable and distributed energy resources (DER) are well understood. Less understood are the significant and potentially destabilizing challenges inherent with adequately managing intermittent renewable resource availability, declining grid load growth, net energy metering and potential revenue erosion.

In 2013 the Edison Electric Institute published a report titled **Disruptive Challenges: Financial Implications and Strategic Responses to a Changing Retail Electric Business**.

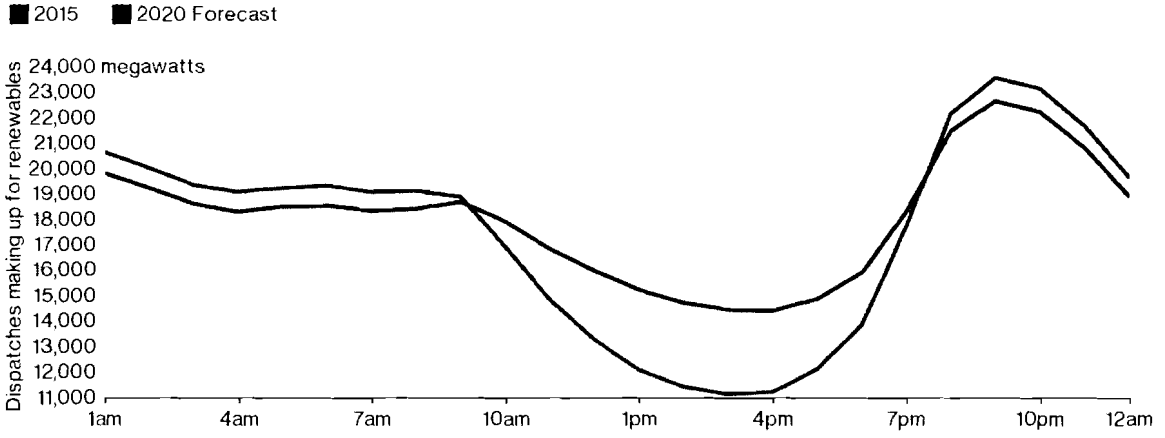


(from the Edison Electric Institute's paper on challenges facing electric utilities)

This basic flow chart extracted from the EEI report shows how poorly managed innovation and energy efficiency measures directly lead to revenue erosion requiring rate increases. These rate increases drive customers to more broadly adopt renewable, distributed energy resources and further change behavior to reduce energy use. The report deems this the 'vicious cycle'.

The California Duck Curve

The power California has to dispatch to make up for intermittent renewables surges in the late afternoon hours, creating a curve resembling the profile of a duck.



Source: California ISO

In the three years after the publication of the EEI report we have seen unprecedented growth in DER, particularly solar, and many of the 'disruptive challenges' anticipated in the report are materializing. Perhaps the most informative example of the disruptive challenges inherent with ambitious and aggressive renewable energy policies is Germany's Energiewende (energy transition) initiative.

Energiewende has drawn worldwide attention initiating considerable critical analysis from all sectors of the energy industry. The Energiewende policies which aimed to eliminate the use of nuclear energy, reduce retail energy prices and CO_2 emissions have to date had the opposite effect. Energy prices and CO_2 emissions have risen considerably due to unintended consequences, increased infrastructure costs to support broad scale, rapid addition of distributed energy resources and the displacement of lower cost energy sources which proved to be incompatible with the intermittent renewable energy sources. There is a growing lobby working to reverse several of the Energiewende initiatives.

In the United States we are seeing an increased number of utilities challenge or attempt to limit the practice of net energy metering (NEM). The math simply does not add up. Retail energy price stability requires a predictable load and revenue base coupled with stable and consistent grid infrastructure improvement costs. Widespread implementation of distributed solar intermittently reduces load, reduces revenue and increases grid infrastructure and management costs.

A consistent criticism of the Energiewende initiatives was the lack of energy storage mandates corresponding with the aggressive renewable energy objectives. Ryan Carlisle, an energy policy critic stated "Photovoltaic solar has a fundamental flaw for large-scale generation in the absence of electricity storage. Large scale PV solar is unmanageable without equally large scale grid storage."

Ice Bear Thermal Storage Solution

Ice Energy's existing Ice Bear technology reduces thermally-driven peak energy demand by shifting air conditioning energy usage to off-peak. Up to 70% of peak demand during a standard summer day is due to the use of office and home air conditioning.

The current Ice Bear technology can store up to 30 T-hours of thermal energy, which can be dispatched to provide up to six hours of peak shifting at a constant instantaneous cooling rate of 5T. Distributed use of Ice Bear technology improves the operating capabilities of the grid and reduces the need for higher cost infrastructure investments.

Objective

The main objective of this study is to develop responsive and reflexive control systems to harness and extend the combined benefits of photovoltaic solar energy and Ice Bear thermal energy storage. These control interfaces will give utilities the ability to remotely monitor, manage and programmatically control their Ice Bear resources to best support the utility's need to manage the intermittent availability of renewable energy sources.

2 Background

Energy storage systems are essential to address issues with the intermittent production of renewable energy, transmission, and dispatch of electricity, while also regulating the quality and reliability of the power generated by traditional and variable sources of power. In the past few years, the urgency of energy storage requirements has become a more pressing issue that is expected to continue growing over the next decade, seeing as:

1. The California Public Utilities Commission determined that Southern California Edison should procure 50 MW of energy storage capacity by 2021 in the LA region, based on a 2010 California state law requiring the CPUC to establish appropriate energy storage procurement targets (Department of Energy, 2013).
2. The increasing penetration of renewable energy on the grid to meet renewable portfolio standards (RPS) needs to be linked with greater deployment of energy storage. Storage can "smooth" the delivery of power generated from wind and solar technologies; in effect, this increases the value of renewable power. Additionally, when energy storage is used with distributed generation, it can improve the reliability of those assets by providing power-conditioning value, and enables increased renewable penetration to help contribute to meeting state RPS (Wilkinson, 2013).
3. Energy storage can reduce the need for major new transmission grid construction upgrades as well as augment the performance of existing transmission and distribution assets. The Department of Energy (2013) estimates that 70% of transmission lines are 25 years or older, 70% of power transformers are 25 years or older, and 60% of circuit breakers are more than 30 years old. Extending the capability of the transmission grid by installing energy storage makes the grid more secure, reliable, and responsive. Additionally, distributed storage can reduce line-congestion and line-loss by moving electricity usage to off-peak times, reducing the need for overall generation during peak times. By reducing peak loading (and overloading) of transmission and distribution lines, storage can extend the life of existing infrastructure.

Energy storage technologies, such as pumped hydro, compressed air energy storage, various types of batteries (including thermal), flywheels, electrochemical capacitors, provide energy storage solutions for multiple applications: energy management, backup power, load leveling,

frequency regulation, voltage support, and grid stabilization. Importantly, not every type of storage is suitable for every type of application, and the energy storage solution used on the demand side, at a residential level, will be vastly different to a solution developed for use at a distribution (regional) level.

As shown Figure 1, the adoption of solar power generation is growing across both commercial and residential applications, mainly due to avoiding peak charges and rates (commercial) and increasing self-consumption (residential).

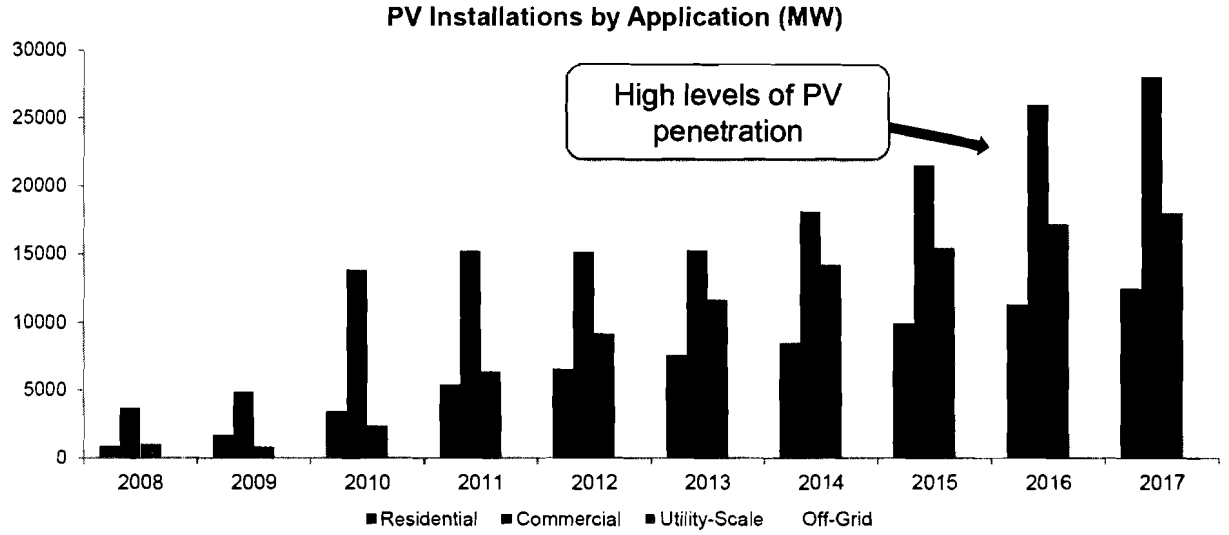


Figure 1: Photovoltaics Installations by Application (MW)

Furthermore, for the end-user, solar power installation has become more cost-effective with the addition of a PV-based distributed generation system with energy storage, as shown in Figure 2.

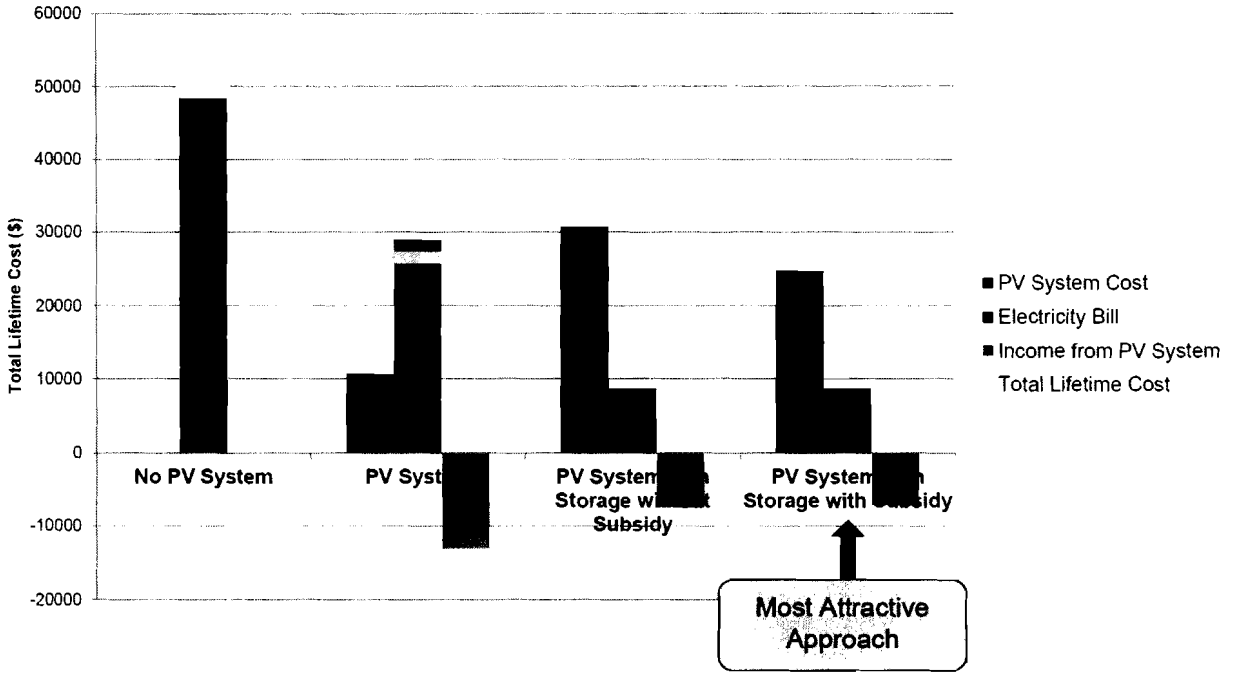


Figure 2: Total Lifecycle System Cost for a PV based distributed power generation system

Traditionally, high prices for chemical batteries have been, and continue to be, the largest barrier for the PV energy storage market. However, it is possible to refocus and redefine the term 'Energy Storage' by analyzing the demand. During the cooling season, up to 70% of *peak* demand is due to the use of office and home air conditioning.

Ice Energy's Ice Bear technology helps reduce thermally-driven peak energy demand by shifting air conditioning energy usage to off-peak, as shown in Figure 3.

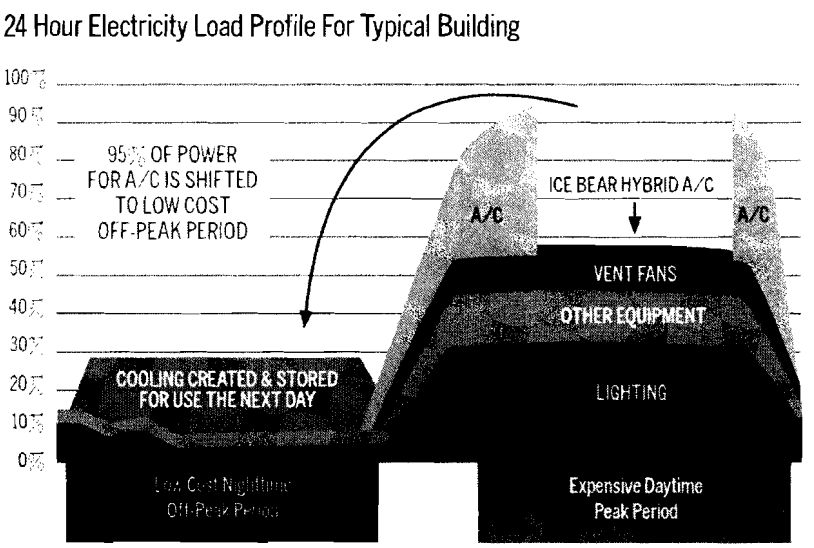


Figure 3: 24 Hour Electricity Load Profile for a typical building

As mentioned above, storage can regulate the delivery of power generated from wind and solar technologies; additionally, when energy storage is used with distributed generation, it can improve the reliability of those assets by providing power-conditioning value, enables increased renewable penetration and decreases peak demand further, as shown on Figure 4.

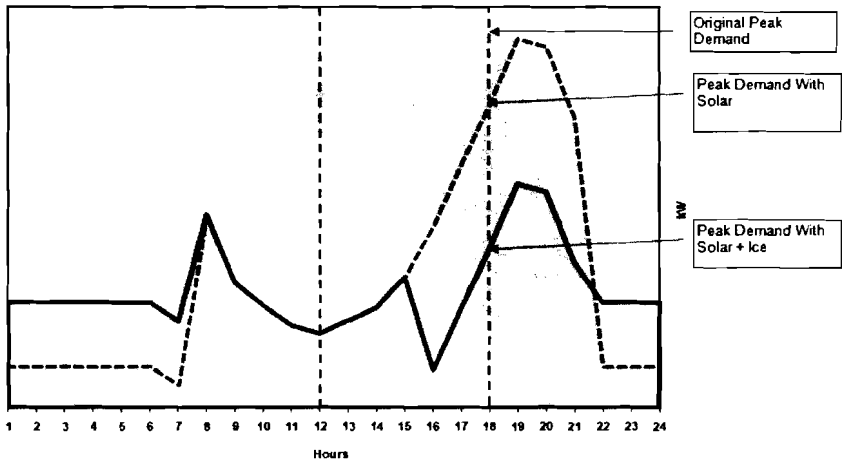


Figure 4: Effect of Ice Storage and Solar power generation on a daily load profile

When installing an Ice Bear the end-use Customer receives a new, "ice-ready" high efficiency unitary air conditioner to replace their aged equipment. The combined upgrade (new packaged DX systems with the Ice Bear) yields an annual reduction in kWh usage while also enabling load shifting to off-peak hours.

The end-user Customer continues to operate their HVAC systems using a building automation system or by adjusting the temperature set point using the existing building thermostat. Cooling is always provided when the end-use Customer asks for it. However, the Ice Bear controls the source of cooling; either from power provided from the electric grid for normal HVAC operation or from cooling stored the night before that was created using off-peak energy. Regardless of the cooling source, the end-use customers' building demand for cooling is not adversely impacted.

The current design of Ice Bears generally provides up to 30T-hours of capacity through load-shifting. However, it can also be operated to enable other load management techniques such as demand response.

The concept of load-shifting is different to other capacity management tools such as load-shed and demand response (DR). The load-shifting technique aims to move a customer's electric load from peak to non-peak times through energy storage or other technology. Conversely, demand response generally aims to prevent the peak load from occurring in the first place. A graphic comparison of various demand and load management techniques is shown below.

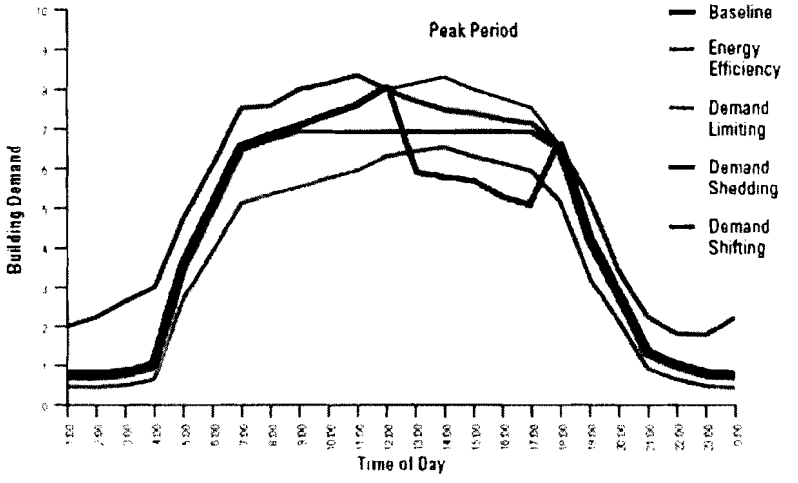


Figure 5: Impact of Load Shed versus Load Shift Profile

3 Technology Background

3.1 The Ice Bear

The Ice Bear IB30 hybrid air conditioner is a low cost, off-the-shelf distributed energy storage system for air conditioning that dramatically reduces on-peak electrical demand. The IB30 system shifts approximately 30 Ton-hours of energy consumption to off-peak, the equivalent to running a 5-ton air conditioner at full load for 6 hours.

The Ice Bear is a water-filled thermal battery, which is charged by an internal refrigeration unit. The Ice Bear's refrigerant management system and the CoolData Controller work together to govern the flow of refrigerant throughout the system. The Ice Bear system is capable of operating in two modes, as illustrated in Table 1 and Figure 6 below:

Table 1: Ice Bear IB30 operating modes

Ice Make	Charging for approximately 10 hours of compressor run time	Off-peak power usage for ~ 10 hours of ~3.7 kW
Ice Melt	Discharging for 5-6 hours of water and refrigerant pump time	On-peak power usage of ~0.3 kW

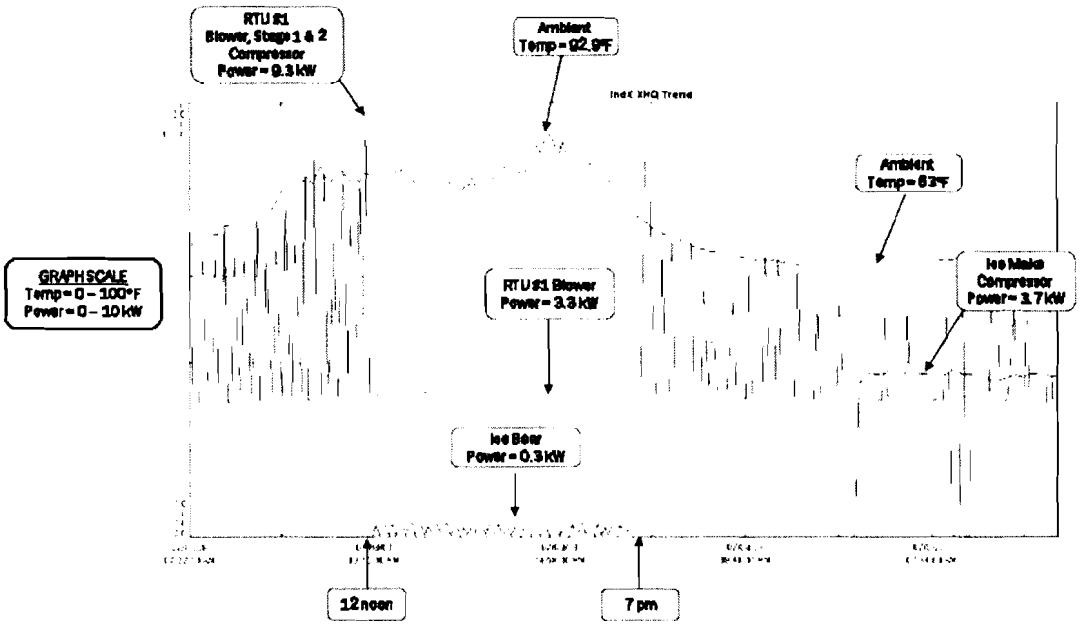


Figure 6: Ice Make/Charge and Ice Melt-Discharge Cycle

The Ice Bear uses its refrigeration equipment to freeze water in the ice storage tank at night when energy is available during off-peak. During the day, when the thermostat calls for cooling, R-410a refrigerant is circulated through coils in the ice. The chilled refrigerant is then pumped from the Ice Bear to cooling coils in the building's air conditioning system to provide supplemental building cooling. The diurnal cycle repeats itself each 24 hour period.

The Ice Bear system and its components are illustrated in the figures below.

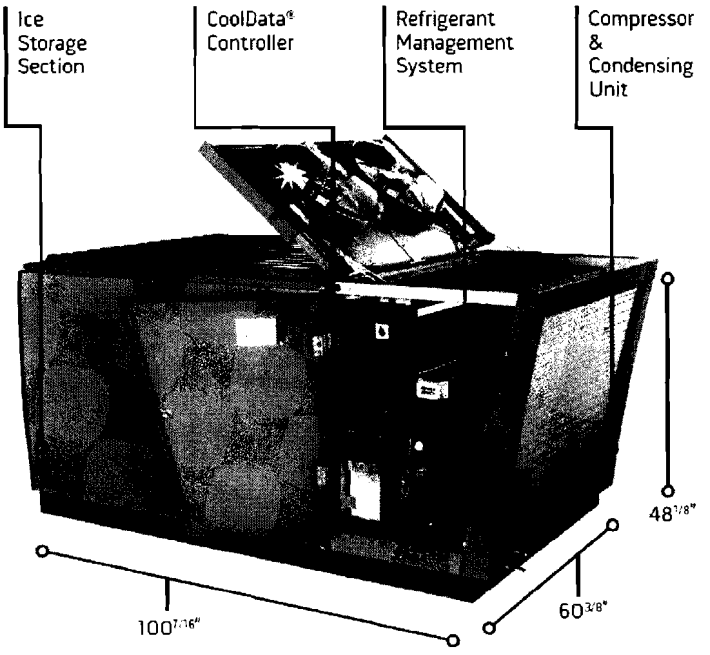


Figure 7: Ice Bear®30 Main System Functions

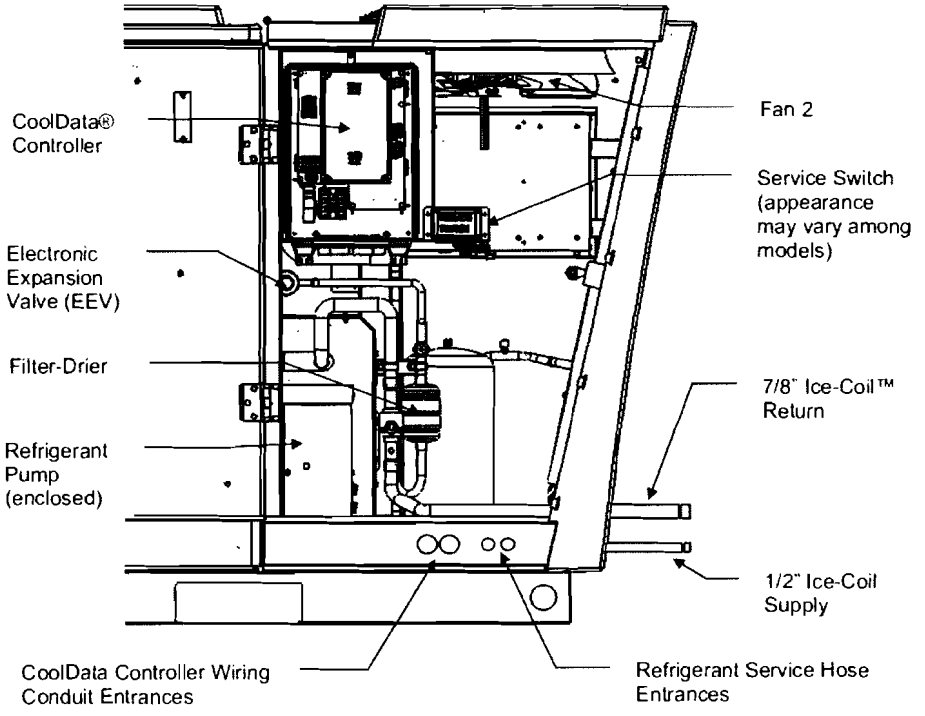


Figure 8: Ice Bear®30 Left Side

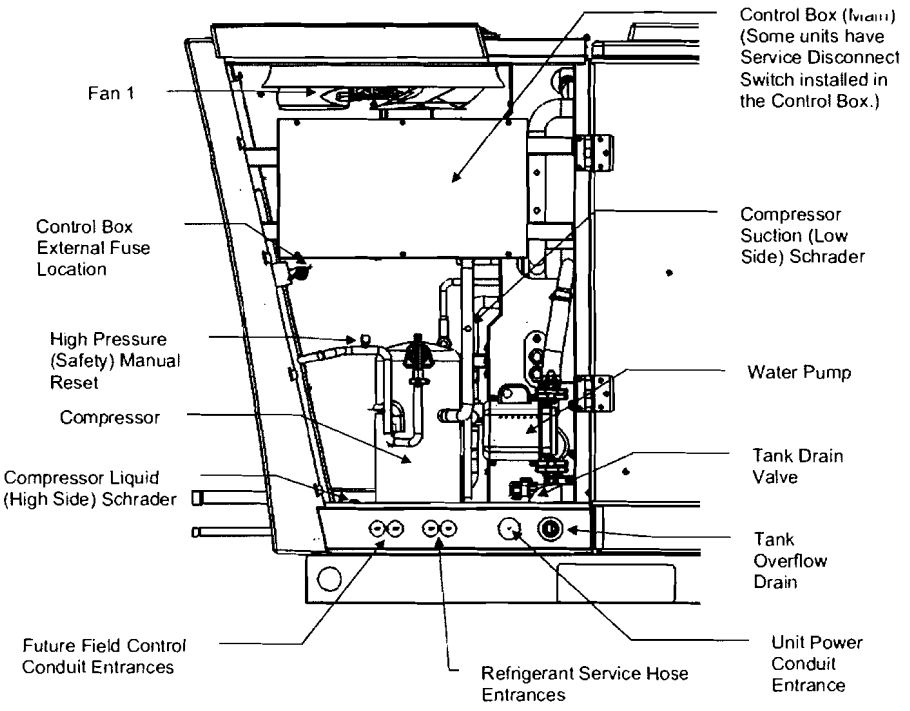


Figure 9: Ice Bear®30 Right Side

3.2 Theory of Operation

The Ice Bear is a cool thermal energy storage system whose storage temperature is above 25°F and well suited for application involving roof-top air-conditioning systems, packaged DX and split type systems. The storage medium is classified as latent type, in which the storage media is mostly ice. The storage technology is classified as static, where ice is built up and stored on the surfaces of the heat exchanger coils. The Ice Bear uses refrigerant for charging and discharging.

The two main components of the system are the storage section and the charging module, which typically houses the refrigeration equipment dedicated to building ice. These components are connected by a refrigerant management system that directs refrigerant flow according to operating mode. During charging, the compressor, expansion device, and condenser fans are active components.

Typically, a separate packaged unitary AC system is used to provide facility cooling during the Ice Bear charging cycle. During discharging, when the Ice Bear provides cooling, these

components are inactive and refrigerant is supplied to a separate evaporator coil using a small refrigerant pump. During "charging" mode, the Ice Bear refrigerant unit is used to freeze up to 450 gallons of water, depending on the required load. The ice is stored until cooling energy is needed to replace traditional HVAC cooling demands.

During charging, the Ice Bear circulates refrigerant through a liquid overfeed heat exchanger submersed in a tank of water. The water remains in the tank. Charging (ice making) and discharging (ice melting) are accomplished by circulating the refrigerant. Ice forms on the heat exchanger in the tank during charging and is melted during the cooling mode. The heat exchanger is typically constructed of copper, and the entire water volume between heat exchanger tubes is frozen.

The storage tank is never completely frozen, and a water jacket surrounds the ice at all times. The ice-making (charging) mode shares the benefits of internal melt systems. Ice forms directly on the heat exchanger surface and gradually accumulate outward until the charge is complete. Average refrigerant temperatures during charge periods are approximately 27°F. The integral charging module's compressor is fully loaded throughout the ice-making period and, once the ice inventory is completely restored, is deactivated until the next required charge cycle.

The Ice Bear may use both internal and external melt during discharge. These processes are designed to occur in parallel as a self-balancing system, allowing for minimal delivered refrigerant temperature variation throughout the discharge process. These systems also use liquid overfeed evaporator coils in the unitary system to provide facility cooling.

Figure 10: Internal Ice Making Coils

External melt ice-on-coil storage system build ice on exterior surfaces of a heat exchanger coil submerged in a water tank. The ice is generated by the refrigerant coolant circulating through the coils, which absorbs the heat of the water, while the discharging is accomplished by circulating the water surrounding the heat exchanger where ice melts from outside in. The heat transfer fluid and phase-change material is water.

4 Utility and End Customer Value

4.1 Utility

- Better grid asset utilization – Improved load factor of Generation/RPS assets
- Avoided CapEx investment on constrained infrastructure (subs/distribution)
- Improved Grid System Energy Efficiency
- Reduced GHG – energy shift and grid efficiency improvements
- Turnkey program service minimizes utility resource requirements
- Economic Development for the Community
  - 40-50% of project investment creates opportunity for local business/contractors

4.2 End Customer

- Low cost Hybrid AC replacement integrated with thermal energy storage
- Utility rebate offsets project investment
- Improved facility energy efficiency using Hybrid TES and Air Conditioning
- Improved cooling performance for employee and customer comfort without sacrifice
- Qualifies for PACE financing to eliminate capital investment requirements
- Quicker return on investment than traditional HVAC replacement investment

4.3 Ice Bear Success Case Studies

There are already 1000 IB-30 units deployed in North America across 40 different utilities. This translates to 30,000,000+ hours of operation. Significant projects under contract include 39 MW of Energy Storage:

- Glendale Water and Power, 2 MW
- Redding Electric Utility, 6 MW
- Southern California Edison, 25.6 MW
- Riverside Public Utility Program, 5 MW
- Self-Generation Incentive Proposal

An independent study of the Ice Bear by independent consulting firm Arup included interviews with existing end users. Information on this survey is available upon request.

4.4 Benefits of Thermal Ice Storage and Over-Generation Integration

- **Allows utilities to bank excess capacity**: overcapacity in the grid can be better managed to minimize the cost of bringing new methods of energy production on- and offline. Ice Bears can be run to store ice during the middle of the day to make ice and essentially provide free cooling, as those power sources would have been otherwise disconnected.
- **Enables the shift of the electrical demand on the grid from peak hours to night**: providing end-users with the capability of making ice at night allows a larger share of load to be shifted to off-peak cooling, which increases the possibility of shifting electrical demand from peak hours to nighttime. This allows stressed electric systems to fully utilize the solar power generated during the day while phasing the cooling peak load to evening hours.
- **Due to lower ambient temperatures at night, better cooling efficiency**: an HVAC unit's efficiency is heavily dependent on the outdoor air temperature. The warmer it is, not only does the efficiency of the unit decrease, but so does the achievable delivered cooling capacity. An Ice Bear running at night benefits from decreased evening temperatures, which increases both efficiency and ice charging rate.
- **Lowers risk of blackouts during the day**: shifting the cooling load from peak to off-peak enables the elimination of up to 70% of the peak demand from an end-user, allowing more overall demand to come online at any given peak moment.
- **Safe method of storing both renewable and non-renewable energy**: None of the active components on the Ice Bear are flammable or corrosive. Both R-410a refrigerant and water are nonflammable, and chemically stable. This means that the storage capacity will neither degrade with time nor with temperature. This is opposed to lithium or other chemical batteries, which are prone to over-heating during charging (a leading cause of fire in these batteries), do not operate well at temperature extremes, chemically degrade over time leading to a loss in storage capacity and, in the event of a leak, are extremely corrosive.

- **Monitored Energy Storage**: Ice Energy's communication architecture enables remote diagnostics, control and equipment performance monitoring, as well as maintenance scheduling.

4.5 Incremental Value to Existing Ice Bear Customers

The technology developed as part of this proposal will be designed to work with the existing IB30 product currently being deployed to a number of the Riverside Public Utilities commercial customers. Ice Energy will work with RPU to determine which of the existing Ice Bear customers would benefit from the newly developed technologies.

5 Research Plan

5.1 Proposal Objectives

The current Ice Bear technology can store up to 30 T-hours of thermal energy, which can provide up to six hours of peak shifting at a constant instantaneous cooling rate of 5T. Due to the high cost and other current pitfalls of chemical battery technology, storing thermal energy for use in cooling during solar over-generation can lead to tangible immediate benefits for both utilities and end customers.

The objectives of this project are:

1. Develop a condition-based predictive control methodology that maximizes benefit for both end-user and utility customers.
2. Develop responsive and reflexive control systems to harness and extend the combined benefits of photovoltaic solar energy and Ice Bear thermal energy storage. These control interfaces will give utilities the ability to remotely monitor, manage and programmatically control their Ice Bear resources to best support the utility's need to manage the intermittent availability of renewable energy sources.

5.2 Deliverables

This project will be developed at Ice Energy's Riverside R&D center located at 710 Palmyrita Avenue, Suite A in Riverside and will deliver the following:

1. **Programmatic interface providing real-time utility control and access** to data points including current ice cooling available capacity, time required to fully recharge ice storage based on local current and predicted weather conditions for the purposes of algorithmic control of Ice Bear assets to respond to intermittent renewable generation challenges. Deliverable to provide configurable, reflexive demand response approaches incorporating real-time weather and renewable availability.
2. **Ice Bear controller and programmatic interface to**:

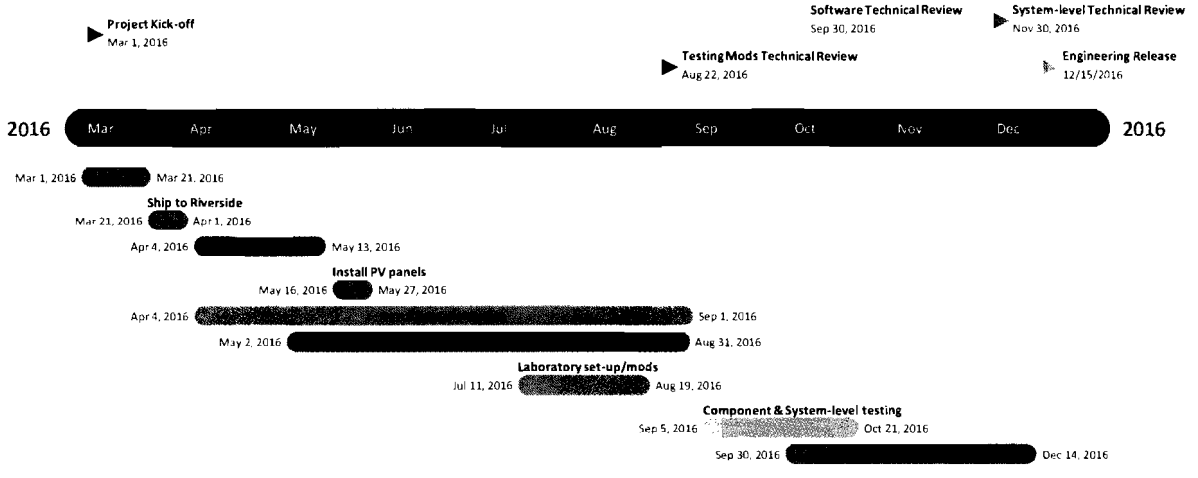
- Mitigate revenue erosion by using off-peak grid energy to address morning demand peak anticipated by duck curve.
- Address solar over-generation by providing ice cooling in the afternoon demand peak anticipated by duck curve using solar generated ice storage.

3. **Provide upgrade path** to retrofit controller and firmware technology into existing IB-30 and IB-20 solutions.
4. **Demonstrate proof of concept** at the Ice Energy IDEA Lab Riverside, CA; Ice Energy will demonstrate an Ice Bear 30 operating with the new controller and taking advantage of solar over-generation to charge at peak solar-irradiation.

The controller is the piece of equipment that effectively acts as the brains of the Ice Bear. The controller has an embedded PLC (programmable logic controller) on which the control algorithm (usually written in a programming language such as C/C++) reads a combination of analog and digital signals from the Ice Bear and sends control signals to the different hardware components.

The delivered controller, in addition to controlling the standard operation of the Ice Bear, would be able to control the use cases as described above.

5.3 Timeline



5.4 Funding Requirements

Updated as requested in Question 4 of Lynn's email to Chris dated 12/28/2015.

The funding has been separated into two tables. The first table summarizes the costs requested from Riverside Public Utility, while the second describes the costs borne by Ice Energy for the project. The following key personnel – detailed biographical sketches of each person are available in Section 5.6 below – will be involved in this project:

Dr. Marcel Christians Principal Project Personnel, Hardware	R&D Engineering Control logic development Vapor/compression system and hardware design Experimentation design
John Reed Principal Project Personnel, Controls & Firmware	Firmware designer Translation of control logic into algorithm API development Test design
Joseph Condon	Hardware development Hardware & electrical modifications Applications documentation
Mark Garcia	Test setup, instrumentation & calibration Test execution Test hardware modifications
Austin Colomaio	Drawings generation API documentation

5.4.1 Requested funding from RPU

	Allocation[1]	9-month Cost	Total
A. Personnel			
Marcel Christians	25%	108,750.00	27,050.50
John Reed	25%	71,250.00	17,812.50
Joseph Condon	10%	63,750.00	6,375.00
Mark Garcia	19%	30,000.00	5,625.00
B. Other Personnel (salaried and non-salaried)			
None	0%	0.00	0.00
C. Principal Equipment Needs			

[1] "Allocation" is the percentage of time the assets will devote to this project in the 9-month period it is expected to last (sum of RPU + Ice Energy)

Intellastar controller + hardware	2	3,500.00	7,000.00
Ice Bear 30	1	10,000.00	10,000.00
National Instruments High Voltage Terminal Block	1	3,375.00	3,375.00
DC/3-Phase power meter	1	3,301.00	3,301.00
CoolData hardware	3	2,000.00	6,000.00
IB-30 compressor (Copeland Scroll)	1	350.00	350.00
Temperature Sensors (RTDs)	4	340.00	1,360.00
High Accuracy Pressure Sensors (Sensotec FP-2000)	3	917.00	2,751.00
D. Travel			
Domestic			
John Reed visit to Riverside	9	1,000.00	9,000.00
Foreign			
None			0.00
E Other Direct Costs			
None			0.00
F. Subcontract			
None			0.00
TOTAL PROJECT COST:			**100,000.00**

5.4.2 Funds match from Ice Energy

	Allocation	9-month Cost	Total
A. Personnel			
Marcel Christians	10%	108,750.00	10,875.00
John Reed	10%	71,250.00	7,125.00
Joseph Condon	10%	63,750.00	6,375.00
Mark Garcia	10%	30,000.00	3,000.00
B. Other Personnel (salaried and non-salaried)			
Austin Colomaio	20%	45,000.00	9,000.00
C. Principal Equipment Needs			
430 ft^2 of PV cells + control equipment	1	10,000.00	10,000.00
E. Travel			
Domestic			
None			0.00
Foreign			
None			0.00
F. Other Direct Costs			
None			0.00
G. Subcontract			
None			0.00

TOTAL PROJECT COST BORNE BY ICE ENERGY	**46,375.00**

5.5 References

Department of Energy. (2013). *Grid Energy Storage.* Washington, D.C.: D.O.E.

Miller, G. (2015). *Addressing Grid Utility Infrastructure & Resource Requirements with Ice Energy Solutions.* Santa Barbara: Ice Energy.

Southern California Public Power Authority. (2014). *Technical Review of Ice Energy's Thermal Energy Storage.* Los Angeles: Arup NA.

Wilkinson, S. (2013). *The Potential for Energy Storage in the PV Industry.* London: IHS Inc.

5.6 Biographical Sketch

Marcel Christians is the Director of Research and Development at Ice Energy. He holds a Ph.D. in Mechanical Engineering from the Ecole Polytechnique Fédérale de Lausanne in Switzerland, specializing in two-phase heat transfer and refrigeration. Prior to joining Ice Energy, Marcel worked at UTC Building Industrial Systems (commonly known as Carrier Corporation) where he led the R&D liquid to liquid Heat Exchanger team, which focuses on brazed plate and shell and tube heat exchangers, system integration and other advanced technologies.

John Reed is a Principal Engineer responsible for Firmware at Ice Energy. He holds an Electrical Engineering degree from Valparaiso University in Indiana. He has thirty years of industry experience, including startups and larger companies such as General Dynamics, Ericsson, HP and Intel. He was part of the team that produced HP's first ever all-in-one InkJet flatbed device and he contributed to the technology that became the first Microsoft optical mouse. His area of expertise is in embedded systems.

Joseph Condon is a Senior Applications Technician and Lab Manager at Ice Energy. He holds an HVAC program from Victor Valley College and is a certified C-20 contractor. His current responsibilities include overseeing the lab's day-to-day activities and personnel, developing, testing and reporting new field application solutions. He is also directly involved in the design of new hardware as well as incremental improvements to existing Ice Bear solutions. He started

working with Ice Energy since 2007 as a field technician and has held positions of increasing responsibility, culminating in his present one.

Mark Garcia is a Laboratory Technician at the Riverside lab. Before joining the Riverside team, he worked for a company out of Rancho Cucamonga, CA. as a field technician installing energy management devices for Southern California Edison. He is involved in the development of new products as well as supporting the development of new application solutions for the existing Ice Bear. He obtained is HVAC-R certificate from Mount San Antonio College in the city of Walnut, CA.

Austin Colomaio is a Mechanical Engineer at Ice Energy specializing in refrigeration and 3D design. He is finishing the last semester of his Bachelor's degree in Mechanical Engineering Technology at Alfred University in New York. He began working for Ice Energy as an engineering intern in June 2015. His current responsibilities include product design, various engineering load calculations, and aiding in manufacturing engineering change orders.

Ian Ellis is the Director of Production overseeing Ice Energy's Contract Manufacturing efforts in Hammondsport, NY. He studied at Colorado State University with a concentration in construction/business management, and upon completion began a career in Fire Fighting. In 2008, Ian returned to the Windsor CO area where he joined the Ice Energy team as a Production Technician. Over the next 7 years he has held positions of increasing responsibility, culminating in his current position.

Chris Tillotson serves as the Chief Information Officer at the Ice Energy and manages the Research & Development, Software Engineering and Information Systems teams and is based at Ice Energy's Riverside, CA research & development facility. Chris is a seasoned executive with 25 years software engineering, hardware testing and leadership experience. He has a diverse background in both university, corporate and high technology startup environments. From 2011-2014 he served as CEO of Parking Research Enterprises, a parking industry software company which holds a patent co-invented by Chris. Chris received his M.A. in Applied Mathematics from the University of California, Santa Barbara.

EXHIBIT "B"

Project Budget

The funding has been separated into two tables. The first table summarizes the costs requested from Riverside Public Utility, while the second describes the costs borne by Ice Energy for the project. The following key personnel – detailed biographical sketches of each person are available in Section 5.6 below – will be involved in this project:

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John Reed Principal Project Personnel, Controls & Firmware	Firmware designer Translation of control logic into algorithm API development Test design
Joseph Condon	Hardware development Hardware & electrical modifications Applications documentation Test setup, instrumentation & calibration
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John Reed	25%	71,250.00	17,812.50
Joseph Condon	10%	63,750.00	6,375.00
Mark Garcia	19%	30,000.00	5,625.00
B. Other Personnel (salaried and non-salaried)			
None	0%	0.00	0.00
C. Principal Equipment Needs			

[1] "Allocation" is the percentage of time the assets will devote to this project in the 9-month period it is expected to last (sum of RPU + Ice Energy)

IceEnergy

Intellastar controller + hardware	2	3,500.00	7,000.00
Ice Bear 30	1	10,000.00	10,000.00
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Temperature Sensors (RTDs)	4	340.00	1,360.00
High Accuracy Pressure Sensors (Sensotec FP-2000)	3	917.00	2,751.00
D. Travel			
Domestic			
John Reed visit to Riverside	9	1,000.00	9,000.00
Foreign			
None			0.00
E Other Direct Costs			
None			0.00
F. Subcontract			
None			0.00
TOTAL PROJECT COST:			**100,000.00**

5.4.2 Funds match from Ice Energy

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C. Principal Equipment Needs			
430 ft^2 of PV cells + control equipment	1	10,000.00	10,000.00
E. Travel			
Domestic			
None			0.00
Foreign			
None			0.00
F. Other Direct Costs			
None			0.00
G. Subcontract			
None			0.00

EXHIBIT "C"

Intellectual Property Provisions

INTELLECTUAL PROPERTY PROVISIONS

(1) Recipient Rights, Responsibilities, and Indemnity

a. Patent rights for inventions conceived and first actually reduced to practice in performance of this Grant, whether actually patented or unpatented, will be the property of the Recipient whose employees or researchers are inventors of such inventions pursuant to U.S. Patent law. The Recipient shall grant a non-exclusive, non-commercial license to any patented invention to the sponsor, the City of Riverside. Recipients must obtain Agreements to effectuate the government use license with all persons or entities, except for the U.S. Department of Energy (DOE), obtaining ownership interest in such patent rights. Upon the perfecting of a patent application for subject inventions, Recipient will fill out and sign a Uniform Commercial Code (UCC.1) Financing Statement that documents the City of Riverside's use license.

The Recipient will disclose to the City of Riverside on a confidential basis all inventions, software, and copyrightable material that was first conceived or first actually reduced to practice in performance of this Grant.

Recipient and all persons and/or entities obtaining an ownership interest in invention(s) shall include within the specification of any United States patent application, and any patent issuing thereon covering a Subject Invention, the following statement:

"This invention was made with support from the City of Riverside. The City of Riverside has certain rights to this invention."

b. All software and copyrightable material first produced under this Grant shall be the property of the Recipient. The Recipient shall grant a non-exclusive, non-commercial license to any such software or copyrightable material to the sponsor, the City of Riverside.

c. Recipient shall provide the City of Riverside with a copy of all technical, generated, and deliverable data produced under this Agreement. Recipient does not have to copy and submit data the City has identified as being unusable for City purposes. For instance, some data may not warrant routine copying and shipping because the raw data is too disaggregated or voluminous for practical application. Recipient shall retain such data at the Recipient's facility for inspection, review, and possible copying by the City.

d. To the extent permitted by law, Recipient will defend and indemnify the City of Riverside from and against any claim, lawsuit, or other proceeding, loss, cost, liability, or expense (including court costs and reasonable fees of attorneys and other professionals) to the extent arising out of any third party claim solely arising out of the negligent act(s) or omission(s) by the Recipient, its employees, or agents, in connection with intellectual

property claims against either deliverables or the Recipient's performance under this Agreement.

e. In no event will the City of Riverside be liable for any special, incidental, or consequential damages based on breach of warranty, breach of contract, negligence, strict tort, or any other legal theory for the disclosure of Recipient's confidential information, even if the City of Riverside has been advised of the possibility of such damage. Damages that the City of Riverside will not be responsible for include, but are not limited to, loss of profit; loss of savings or revenue; loss of goodwill; loss of use of the product or any associated equipment; cost of capital; cost of any substitute equipment, facilities, or services; downtime; the claims of third parties including customers; and injury to property.

(2) City of Riverside Rights and Responsibilities

a. For all inventions that were first conceived and first actually reduced to practice in the performance of this Grant, the City of Riverside retains a no-cost, nonexclusive, nontransferable, irrevocable, perpetual, royalty-free, paid-up worldwide nonexclusive license to use or have practiced such rights for or on behalf of the City of Riverside for governmental purposes to the degree that is consistent with Federal law. The City retains the right to file a Uniform Commercial Code (UCC.1) Financing Statement on all subject inventions that are patented in order to document the City of Riverside's right to use such items for governmental purposes. Previously documented (whether patented or unpatented under the patent laws of the United States of America or any foreign country) inventions are exempt from this provision.

b. For software first developed in performance of this Grant, the Recipient shall grant the City of Riverside-a royalty-free, no-cost, nonexclusive, irrevocable, nontransferable, world-wide, perpetual license to produce and use for governmental purposes.

c. For copyrightable material first produced in performance of this Grant, the Recipient shall grant the City of Riverside a royalty-free, no-cost, nonexclusive, irrevocable, nontransferable, worldwide, perpetual license to produce translate, publish, use and dispose of, and to authorize others to produce, translate, publish, use and dispose of all copyrightable material.

d. The City of Riverside shall not purposefully enter into competition with Recipient's Licensee or take affirmative actions intended to effectively destroy the commercial market where a Licensee has introduced a Licensed Product.

e. Data provided to the City of Riverside by Recipient, which data the City has not already agreed to keep confidential and which Recipient seeks to have designated as confidential, or is the subject of a pending application for confidential designation, shall not be disclosed by the City except as provided in Title 20 CCR, Sections 2506 and 2507 (or as they may be amended), unless disclosure is ordered by a court of competent jurisdiction.

f. It is the City of Riverside's intent to use and release project results such as deliverables and data in a manner calculated to further the intent of California Public Utilities Code, Section 385, while protecting proprietary or patentable interests of the parties. Therefore, the City agrees not to disclose confidential data or the contents of reports containing data considered by Recipient as confidential, without first providing a copy of the disclosure document for review and comment by Recipient. Recipient shall have no less than ten (10) working days for review and comment and, if appropriate, to make an application for confidential designation on some or all of the data. The City of Riverside shall consider the comments of Recipient and use professional judgment in revising the report, information or data accordingly.

EXHIBIT "D"

Performance Standards

In accordance to Section 4.b and Section 5.e in the Agreement, Recipient must meet certain Performance Standards applicable to each of the following Milestones before City releases the corresponding Grant Fund installment:

A. Milestone 1 - Project Initiation: At Project Initiation submit to City a letter declaring project initiation with a detailed Project Plan to City of Riverside in order to receive $50,000 installment payment. Failure to deliver letter of declaration will be deemed as non-performance and may be subject to reduced Grant Fund payments based on the following schedule:

90 – 100% Accuracy = 100% Grant Fund Release
80 – 89% Accuracy = 90%
70 – 79% Accuracy = 75%
60 – 69% Accuracy = 50%
50 – 59% Accuracy = 30%
< 50% Accuracy = 0%

B. Milestone 2 - Quarterly Report #1: Due by January 31, 2017. Submit to City a description of API (Application Programming Interface) the collection of programmatic interfaces available to third-party software programs that collect data and control Ice Bear operations. Provide an analysis of test data generated from a modeled system as compared to physical hardware status, update of project plan with expected Quarterly Report II deliverables, and status update on laboratory improvements in order to receive $25,000 installment payment. Failure to deliver the above mentioned items required for Quarterly Report #2, will be deemed non-performance and may be subject to reduced Grant Fund Payments based on the following schedule:

90 – 100% Accuracy = 100% Grant Fund Release
80 – 89% Accuracy = 90%
70 – 79% Accuracy = 75%
60 – 69% Accuracy = 50%
50 – 59% Accuracy = 30%
< 50% Accuracy = 0%

C. Milestone 3 - Quarterly Report #2: Due by May 31, 2017. Submit a status update on Solar-Ice Bear API development efforts, laboratory testing status update, analysis of test data generated (actual hardware), and update on project plan including remaining deliverables for final report in order to receive $25,000 final installment payment. Failure to deliver the above mentioned items required for Quarterly Report I!, will be deemed non-performance and may be subject to reduced Grant Fund Payments based on the following schedule:

90 – 100% Accuracy = 100% Grant Fund Release
80 – 89% Accuracy = 90%
70 – 79% Accuracy = 75%
60 – 69% Accuracy = 50%
50 – 59% Accuracy = 30%
< 50% Accuracy = 0%

D. Milestone 4 Final Report - Quarterly Report #3: Submit to City a Final Report by contract expiration detailing the work performed, objectives defined and met and value to the City's existing Ice Bear program and overall grid stability. Certify delivery of Solar-Ice Bear API documentation with examples. Demonstrate the Solar-Ice Bear API over a range of predefined environmental scenarios (several Ice Makes: Daytime & Evening Makes + Melts On-site Ice Bear demonstration in the Riverside laboratory of the Ice Bear being controlled via the developed Solar-Ice Bear programming interface)