



Ice Energy, Inc.

March 17, 2009

*Statement in Support of
Raised S.B. 1129
And the
Electric Efficiency Partners Program*

ICE ENERGY®

CLEAN ENERGY DOESN'T
GET ANY COOLER THAN THIS.

Introduction to Testimony

Representative Nardello, Senator Fonfara and members of the Energy & Technology Committee, my name is Chris Tomasini and I am Manager of Business Development for Ice Energy, Inc. here in the Northeast. Thank you for the opportunity to testify today in support of Raised S.B. No. 1129. Ice Energy is a big supporter of the Connecticut Electric Efficiency Partners Program and we think it's important especially in this extremely challenging economy that we come before you and help you to understand why improving the Electric Efficiency Partner Program provides Connecticut with an important opportunity to support alternative energy technologies that are critical to promoting smart grids and a green jobs economy.

I have organized my testimony as follows. First, I will provide you with some brief background on Ice Energy and its technology so that you can consider the Electric Efficiency Partner Program in the context of real technologies that our company is prepared to deploy here in Connecticut. Second, I will explain our support for the legislative and regulatory process in Connecticut, starting with our support for the original Electric Efficiency Partner Program in Public Act 07-242. Next, I will comment on why we think the legislation is needed to help improve the program and make it more workable and successful. Finally, I have attached some detailed technical descriptions of our Ice Bear Products for your reference.

Background on Ice Energy

Ice Energy proposes the deployment of *distributed*, *dispatchable* and *efficient* Energy Storage units that will:

- Reduce peak demand equivalent to the supply of a 100MW power plant.
- Improve electric distribution company load factors by leveling peak demand and shifting consumption to off peak.
- Normalize the effects of hot weather temperatures on the supply network and dampen volatility in the energy markets, thereby insulating ratepayers from price volatility.
- Increase the value and efficacy of intermittent wind and solar PV generated power.
- Purchase and store low cost off-peak energy offsetting expensive on-peak energy.
- Reduce CO₂ and NO_x emissions by creating and storing energy at night when base-load power plants are running most efficiently and T&D infrastructure is least constrained.
- Stimulate economic activity and create green-collar jobs.
- Maintain or improve customer space cooling while requiring no change in consumer behavior or sacrifice in comfort.

Ice Energy is currently implementing Permanent Loading Shifting programs for Southern California Edison (in conjunction with Honeywell), and Pacific Gas and Electric (in conjunction with the Trane Company and Cypress Ltd.).

Ice Energy has deployed its Ice Bear units in nearly two dozen utility districts nationwide. In the aggregate, these units represent more than 2 million operating hours over a period of four years.

Ice Energy's Support for the Electric Efficiency Partners Program and Other Initiatives

Ice Energy testified in 2007 during the Legislature's consideration of Public Act 07-242 and urged the original creation of the Electric Efficiency Partners Program. After its enactment, Ice Energy participated in the Energy Conservation Management Board's review of various technologies and participated in the Department of Public Utility Control's Docket No. 07-06-59 to review the details and requirements for the implementation of the Electric Efficiency Partners program. In that case, the Department concluded

that Ice Energy's ice storage technology qualified for standard grants of \$950/ton as an eligible technology.

Ice Energy recently participated in the request for proposal process conducted by the Connecticut Energy Advisory Board in response to The Connecticut Light & Power Company's proposed transmission project known as the Greater Springfield Reliability Project and, in that process, the company explained that its technology would help CL&P provide smart grid technology and help build transmission to support regional deployment of renewable energy facilities. The CEAB recently issued a report finding that Ice Energy's project proposal has merit. That project is currently being reviewed by the Connecticut Siting Council.

Opportunities to Improve the Electric Efficiency Partners Program

Despite the support that we have received from the Energy Conservation Management Board, Department of Public Utility Control and the Connecticut Energy Advisory Board, all of which we appreciate, the Electric Efficiency Partners Program has some limitations that has hindered the successful deployment of technologies and solutions by partners. Presently, there are limitations in the program, including the mandated two-to-one payback ratio and how to implement it, and the fact that the electric distribution companies do not have an expressly-stated role to support the program.

We think Raised S.B. 1129 offers some meaningful improvements to the program that include lowering the payback ratios, distinguishing between customer-side and grid-side partner programs, and providing appropriate opportunities for electric ratepayer supported grants and for the electric distribution companies in Connecticut to provide financing for Electric Efficiency Partners' technology deployments, with an allowance for a reasonable rate of return for such ratepayer-supported investments. These and other details provided for in Raised S.B. 1129 should help to improve the Electric Efficiency Partners Program. We urge the Committee to continue to support the Electric Efficiency Partners Program.

Thank you for the opportunity to testify today.

Description of the Ice Energy Technology

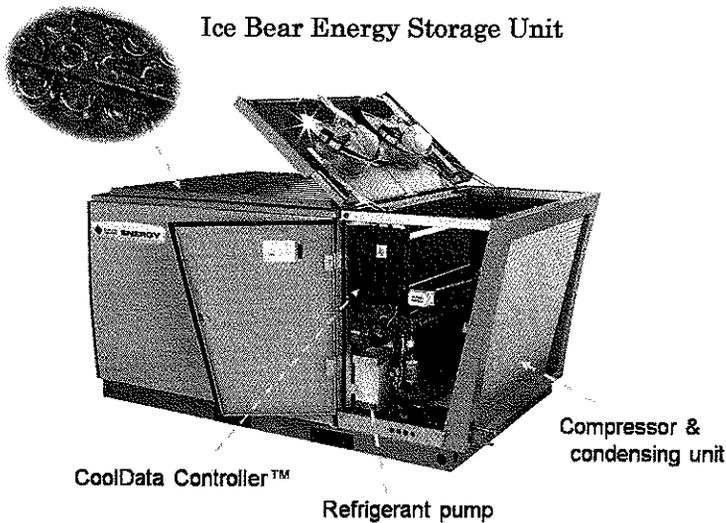
The Ice Bear® energy storage unit has been developed after nearly two decades of research, with two years of field trials sponsored by the Department of Energy and validated by the National Institute of Standards and Technology (NIST). Test data collected from numerous utility sponsored test installations has validated the performance, energy efficiency, and reliability of the technology.

Ice Energy's Ice Bear distributed energy resource is the first cost-effective and efficient energy storage unit designed for the light commercial customer and institutional market segments. It is a distributed, dispatchable and efficient utility-scale resource that can be widely deployed quickly and easily. It is the first commercially available point-of-use energy storage system to integrate the reduction of on-peak demand (kW) and on-peak energy consumption (kWh) with zero loss storage, all without requiring a change in customer behavior.

How Ice Bear Storage Improves Thermally Driven Load Shapes

Commercial building A/C load is traditionally viewed as non-price responsive, thermally driven, very "peaky" and served by on-peak fossil-fueled, poor capacity factor generation. As such, the unique ability of Ice Energy's distributed energy storage solution to shift and store building cooling energy without disrupting customer comfort, with zero loss storage, is market transformational.

Ice Storage section

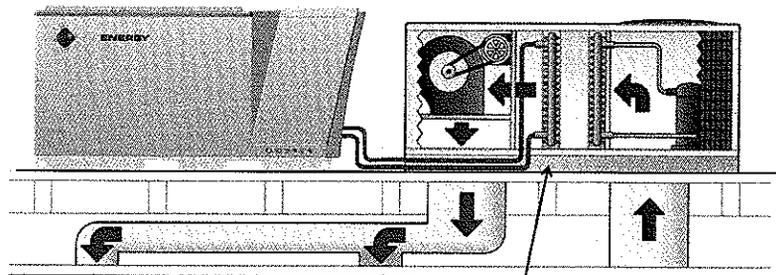


The Ice Bear energy storage unit consists of a Refrigerant Management System (RMS), CoolData controller and an ice-on-coil heat exchanger mounted within an insulated tank submerged in approximately 475 gallons of water.

The unit pairs with a conventional air conditioning unit and integrates energy storage with a high-efficiency compressor using R-410A, a non-ozone depleting refrigerant.

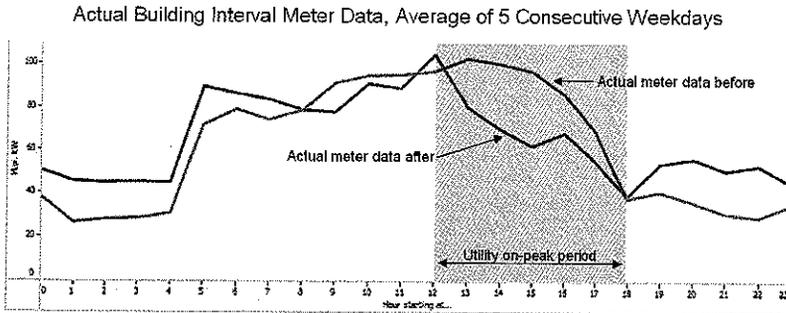
The ice-make (recharge) condensing unit runs during the coolest evening hours, creating ice within the storage module. During the day, when the thermostat calls for cooling, the energy consuming compressor and condensing fan of the conventional air conditioner are locked out and a low energy pump within the Ice Bear circulates the ice cooled refrigerant to a specially modified evaporator coil/blower unit inside the conventional unit to provide immediate and efficient cooling.

Because the condensing unit remains off during the day, the Ice Bear unit reduces building peak energy demand associated with cooling by as much as 90%, requiring only 300W during peak periods, compared to conventional systems that may require 7,000W or more of site energy.



Each Ice Bear distributed energy storage unit will reduce 7.2 KW of source equivalent peak demand on average for 6 hours daily, shifting 35 KW-hours of on-peak energy to far off-peak. The breakthrough technology features of the Ice Bear unit includes zero loss storage, unlimited deep discharging, unlimited storage cycles, very low maintenance, no chemicals or heavy metals, and a 20 year asset life.

The graphic below illustrates the load-shifting benefits of Ice Bear units on peak demand. This graph represents actual before and after building meter data from a multiple Ice Bear implementation on a small manufacturing facility in Anaheim, California.



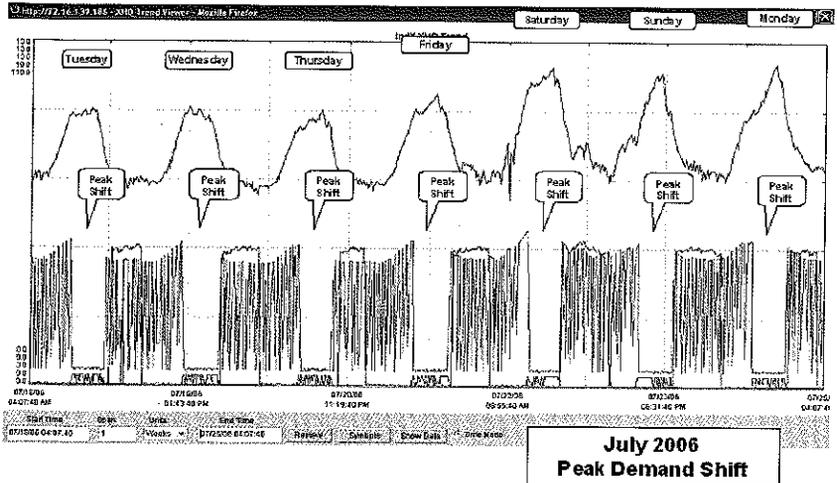
Cooling capacity is created and stored during cooler evening temperatures

- Lowest cost of energy
- Highest condensing unit efficiency

Ice Bear module provides daytime cooling

- Uses only 30KW during the day
- Provides superior cooling performance

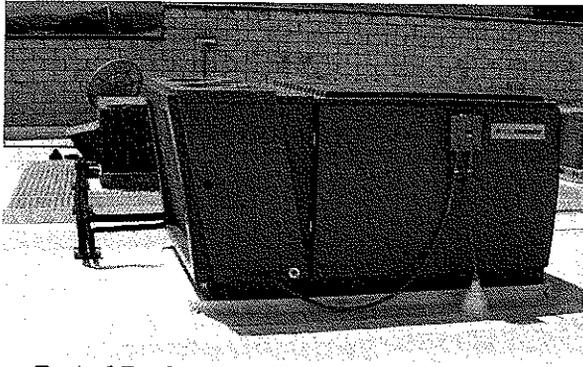
The Ice Bear's consistent daily performance during California's 2006 heat storm is demonstrated in the graphic below. The y-axis depicts temperature up to 110° F and electrical demand; the x-axis depicts time over a 7-day period. The blue line represents ambient temperature, the green line the conventional air conditioning unit's demand, the red line Ice Bear unit's demand during cooling (ice melt) mode, and the purple line the Ice Bear unit's demand during recharge (ice make).



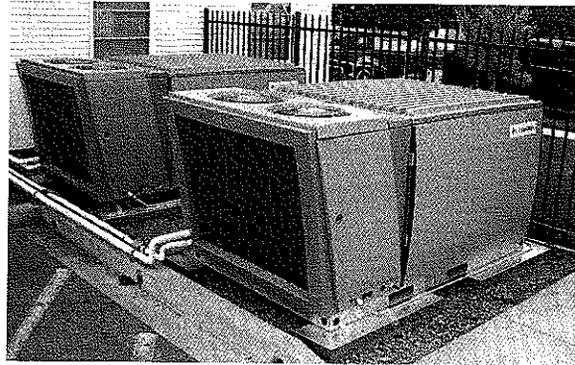
Repeatedly and reliably, the Ice Bear unit lowers air conditioning peak demand, as shown by the drop in the green line each day during the peak period. Note also how conventional air conditioning demand (green line) increases as temperature (blue line) increases. Without the Ice Bear units, the demand of the conventional air conditioner would have continued to grow as ambient temperatures continued to rise during the peak period.

Ice Energy's technology is applicable to a large percentage of a utility customer base, generally all buildings under three stories served by conventional refrigerant-based packaged rooftop or split system central air conditioners. The Ice Bear unit is a non-engineered, "plug-and-play" product that is compatible with and can be added to most retail and commercial businesses, data centers, telecom facilities, or cell towers, in new construction, end of lifecycle A/C unit replacement, or retrofit to existing buildings.

The technology is as simple and effective, typically requiring only an over the counter permit, installed in partnership between Ice Energy and nationally recognized companies such as Johnson Controls, Honeywell, and Trane by using certified local HVAC contractors. The project does not require an interconnection agreement, does not require an emission permit, is safe for utility workers, and delivers a comfortable, productive and cool environment for commercial establishments.



Typical Rooftop Installation



Typical Ground-mount Installation

Description of Technical Resources (*Please See "Technical Reports"*)

Awards - Ice Energy and its Ice Bear energy storage technology have received numerous technical, green product, and business awards including:

▪ **Most Innovative Green Building Product Award, 2009**

Ice Energy has received advance notification that the company has been awarded the prestigious Most Innovative Green Building Product Award from the American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE) and the Air Conditioning Research Institute (ARI) at the upcoming 2009 AHR Expo.

▪ **BUILDINGS MAGAZINE – Top 100 Products Award - 2008**

▪ **Flex Your Power Award, California Public Utilities Commission, 2007**

▪ **Red Herring 100, Red Herring magazine, 2006**

▪ **BuildingGreen: Top-10 Green Building Product of 2005**

This award, announced at the U.S. Green Building Council's Greenbuild Conference in Atlanta, recognizes the most exciting products added to the GreenSpec Directory during the past year.

▪ **Most Promising Company Award, Energy Venture Fair, 2005, 2006**

▪ **Most Innovative Energy Management Product Award, 2004**

Ice Energy received the prestigious Most Innovative Energy Management Product Award from the American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE) and the Air Conditioning Research Institute (ARI) at the 2004 AHR Expo

▪ **World's Best Technology, Gold Award, 2004**

The Ice Bear was selected for the Gold Award by the Federal Laboratories Consortium for Technology Transfer and the National Association of Seed and Venture Funds World's Best Technology Symposium in 2004.