July 25, 2008

VIA E-MAIL AND US MAIL

Ms. Kristi Izzo, Secretary
New Jersey Board of Public Utilities
Two Gateway Center
Newark, New Jersey 07102

Re: Written Comments of Ice Energy, Inc. Regarding New Jersey's Draft Energy Master Plan

Grace S. Kurdian
Associate
T. 212.609.6815
F. 212.414.0341
GKurdian@mccarter.com

McCarter & English, LLP
245 Park Avenue
27th Floor
New York, NY 10167
T. 212.609.6800
F. 212.609.6921
www.mccarter.com

Dear Secretary Izzo:

Pursuant to the procedures established for receiving comments regarding New Jersey's Draft Energy Master Plan ("Draft EMP"), Ice Energy, Inc. ("Ice Energy") respectfully submits the following written comments. Ice Energy's comments are focused on several related goals stated in the Draft EMP: achieve reductions in energy consumption through energy efficiency, reduce peak demand for electricity, close the gap between the supply and demand of electricity, meet the State's electric needs from renewable sources, and develop "Green Collar" jobs, areas in which Ice Energy has an expertise. Ice Energy appreciates the opportunity to provide these comments, and looks forward to becoming more involved as New Jersey moves toward finalizing and implementing its EMP.

Ice Energy is an energy storage technology company focused on advanced hybrid cooling and permanent load shifting technologies that shift residential and non-residential air conditioning energy and demand to the off-peak, without relying upon a change in behavior, and importantly without increasing overall energy use.

Recognizing the difficult regulatory process involved in promulgating a plan to comprehensively address the energy needs for the State, Ice Energy commends the Board of Public Utilities ("BPU") as well as the other state agencies and stakeholders involved in this proceeding on their efforts thus far. The Draft EMP provides a solid framework for the State's energy plan by recognizing the main issues that New Jersey faces and offering proposed Action Items as means to address the issues and goals.

The Plan for Action, however, leaves a gap with regard to the means by which to address the issue of reducing and controlling weather-sensitive electric consumption and its associated peak demand. The Draft EMP clearly, thoroughly, and correctly indicates that weather related events (summer heat waves) are the root cause of the majority of New Jersey's issues including: poor load factors, system transmission and distribution constraints, reliability, reduced air quality, high energy market clearing prices, and escalating capacity costs.

Ice Energy's comments are intended, therefore, to bolster many of the contemplated Action Items. Specifically, Ice Energy recommends:

- Modifying the State's building energy efficiency code to include the metric known as the time and locational dependant valuation (TDV) of energy efficiency, and
- Including an Action Item for Permanent Load Shifting (PLS) technologies that shift weather sensitive air conditioning energy and demand to the off-peak.

Ice Energy respectfully requests that its comments be considered and included in the final EMP. The synergies offered by distributed energy storage resources suggest that the deployment of persistent, non-behavioral, peak load shifting technologies, including ice storage for both direct expansion and chilled water cooling will further the State's ability to meet its energy goals and mandates. During the public hearing held in Newark 7/10/08, the need for reduction of the peak load was raised by the BPU staff and echoed by several who provided comments.

The Case for Permanent Load Shifting

The following excerpt from a document developed by one of the Working Groups involved in this proceeding entitled *Electricity*[1] and posted on the NJ EMP website provides a backdrop for many of the system level benefits for Permanent Load Shifting of summer peak energy and associated demand.

"The high price periods generally coincide with the peak periods and accordingly the importance of peak load management. Reduction of the peak load has a direct correlation in reducing the marginal cost of electricity. In addition, peak load reduction can play a major role in reducing harmful environmental emissions. One commonly used measure of performance or efficiency of electricity use is the load factor. Load Factor is calculated as a ratio of the average load to the peak load during the period. The peakier the peak the worse the load factor. Since poor load factors coincide with peakier peaks it is clear that improvement of load factor should go a long way in reducing the marginal cost of electricity production. …While a number of load management techniques can be employed to increase the load factor, <u>those that reduce the peak without increasing overall energy use are preferable</u>."

The focus of the Draft EMP as to peak demand essentially provides three "Action Items" centered on sending pricing signals to the consumer, one Action Item that enables the first three, and one Action Item for continuous improvement. As laid out in the Draft EMP, therefore, <u>achieving reduction in peak demand will depend in large</u>

[1] *See* the Electricity Working Group's draft recommendations dated November 6, 2006, document Entitled *Electricity*, Page 18, Posted on the NJ, EMP Website http://www.nj.gov/emp/home/docs/pdf/061013e.pdf

part on whether consumers' ***behavior*** correlates to the pricing signals sent by these action items.

While there is an emphasis on the need to reduce peak demand, and the "Action Items" noted above provide a means to address this goal, there is silence in the Draft EMP as to the use of proven permanent and persistent Peak Load Shifting ("PLS") technologies that can be readily deployed and have immediate effects on the entire electrical system.

Ice Energy respectfully suggests that the addition of non-behavioral, technology based solutions into the list of Action Items such as ice storage will increase the probability of the State achieving its peak demand reduction goal. Rather than depending on individual consumers' behavior in response to pricing signals, the implementation of PLS technologies such as ice storage results in a proven, immediate, and measurable reshaping of the entire summer load curve. Simply said, "PLS normalizes the hot temperature effects of weather on the grid and dampens volatility in the energy markets." In-state, New Jersey benefits from off-peak energy resources, dominated by greenhouse gas free nuclear power plants, which transmit and distribute electrical energy to tens of thousands of buildings at night directly off-setting the need to import costly and fossil fuel consuming electrical energy. Efficiently storing that energy at night would avoid the need to import the offsetting electrical energy during the peak. Importantly, one feature of Ice Energy's technology is that the round trip site energy efficiency ratio is 1 to 1; meaning the storage mechanism itself is 100% efficient over a 24 hour period and throughout the cooling season. Thus you have the benefit of storage without the negative consequences resulting from parasitic and transformer losses.

The Value of Permanent Load Shifting and Market Adoption Rate

Market transformation through PLS is most likely to occur within a two to three year period, especially given the active participation of New Jersey's energy delivery, regulated distribution utilities. PLS equipment is located on or connected to the local electrical distribution system on the customer's side of the meter. The value of PLS equipment, however, inures to the benefit of the entire "electrical ecosystem" which includes: reducing the marginal cost of peak energy, reducing the cost of delivered energy (shifted to off-peak), reducing generator source fuel (fewer T&D losses and improved heat rates off-peak), reducing the need for and cost of capacity (reshapes the entire summer season load curve), improving transmission & distribution load factors, reducing T&D congestion, improving the overall NJ system load factor, increasing switchgear and transformer reliability, and reducing greenhouse gases, and other criteria emissions. Since PLS benefits inure throughout the system, authorized and prudently incurred investments should be recoverable in a utility's base distribution rates as a component of rate base. Cost recovery should include the recovery of depreciation, a return on investment, taxes, and other operating and maintenance expenses directly associated with the investment, net of any offsetting revenues received by the utility directly attributable to the investment. Recently, several States including New Hampshire[2] and Florida[3] have passed legislation enabling and encouraging their respective utility commissions to allow an incentive to the standard return on equity component as deemed appropriate, to encourage these types of alternative investments.

Involvement of Proponents of Ice Storage Air Conditioning and Other Proven Technologies in NEEP's Analysis and Coordination of Redesign of the State's Current Energy Efficiency Programs

As to evaluating and designing a new energy efficiency program for existing buildings and analyzing how energy efficiency efforts can be coordinated with demand response programs, Ice Energy recommends that the BPU consult not only with Northeast Energy Efficiency Partnership ("NEEP"), but also seek and consider input through a working group that involves stakeholders; particularly those proponents of PLS programs, such as ice storage, that have been successfully implemented in other states. Based on its in-depth experience implementing the ice storage technology through other states' regulatory proceedings, Ice Energy has gained a particular insight as to the parameters that have succeeded. Excited by its technology, its experience in other states, and its knowledge of the Northeast's electricity's needs, Ice Energy looks forward to participating further in the BPU's and NEEP's targeted analysis of how to create a successful PLS program that incorporates energy efficiency benefits and results in smooth implementation and immediate results for the State's ratepayers.

The Time and Locational Valuation (TDV) for Energy Efficiency

In 2005, Ice Energy and several of its industry partners submitted an application to the California Energy Commission (CEC) to request a newly-defined building energy efficiency category referred to as Ice Storage Air Conditioning. Since that time the application has been processed, the measure codified, and the category adopted by the Board of Commissioners. California is particularly plagued with weather related electrical system events, and found that while its building energy efficiency codes were among the most stringent in the nation, their peak energy demand was growing faster than the base and that energy prices and congestion were escalating. As we know, these concerns are not limited to California alone.

In the CEC 2005 Title 24 Building Energy Efficiency Code, California superseded the historical definition of energy efficiency, which focused primarily on conservation measures to reduce annual building kilowatt hour energy consumption, to the time and locational use of energy ("TDV"). The CEC recognized that kilowatt hours are

[2] Senate Bill 451 http://www.gencourt.state.nh.us/legislation/2008/SB0451.html
[3] House Bill 7135 Lines 591, 2320 and 5865
http://www.myfloridahouse.gov/Sections/Documents/loaddoc.aspx?FileName=_h7135er.xml&DocumentType=Bill&BillNumber=7135&Session=2008

not equally fungible and vary in their value based on when they are generated, when they are transmitted, and where and when they are consumed. California therefore created an hourly residential and non-residential building end use energy efficiency model that seeks to reduce, through the use of their building energy efficiency codes, summer peak energy demand and usage. The CEC also recognized that "high efficiency" air conditioners may not reduce summer peak day demand as they achieve their ratings using a seasonal average known as SEER. For example, most high efficiency residential A/C units employ a two stage compressor. Stage 1 is more efficient and is designed to be used during the shoulder months and on cooler summer days so it *is* more energy efficient on a calculated annual average. Unfortunately, the Stage 2 compressor kicks-in on the hottest days triggering a 200%+ increase in peak energy demand, worsening load factors at the worst possible times.

The TDV metric is unique in its ability to align the cost to deliver energy with building end use energy efficiency codes.[4] Also, the recently updated 2008 California Title 24 residential and non-residential building energy codes[5] are available on-line and include both Ice Storage Air Conditioner for direct expansion residential and non-residential buildings, as well as thermal energy storage for large building chilled water based cooling systems.

The adoption of the TDV metric in New Jersey will have positive impact on reducing the effects of weather sensitive air conditioning demand on the grid and in energy and capacity markets.

[4] The proceeding and background material is available on the CEC website, search (Time Dependent Valuation (TDV) Economics and/or Time Dependent Valuation (TDV) for Energy Standards.

[5] California Energy Commission Residential Compliance Manual http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/residential_manual.html

Example of the California TDV Metric and Ice Storage Air Conditioning

Climate Zone	Standard cooling energy (TDV KBtu/sqft-yr)	ISAC cooling energy (TDV Kbtu/sqft-yr)	Reduction in cooling energy
10	23.23	11.36	51%
11	22.09	10.68	52%
12	14.33	6.9	52%
13	31.93	15.77	51%
14	32.07	15.63	51%
15	74.25	37.89	49%

Source California Energy Commission Staff Report: CEC-400-2006-006-SF

Variable electricity cost

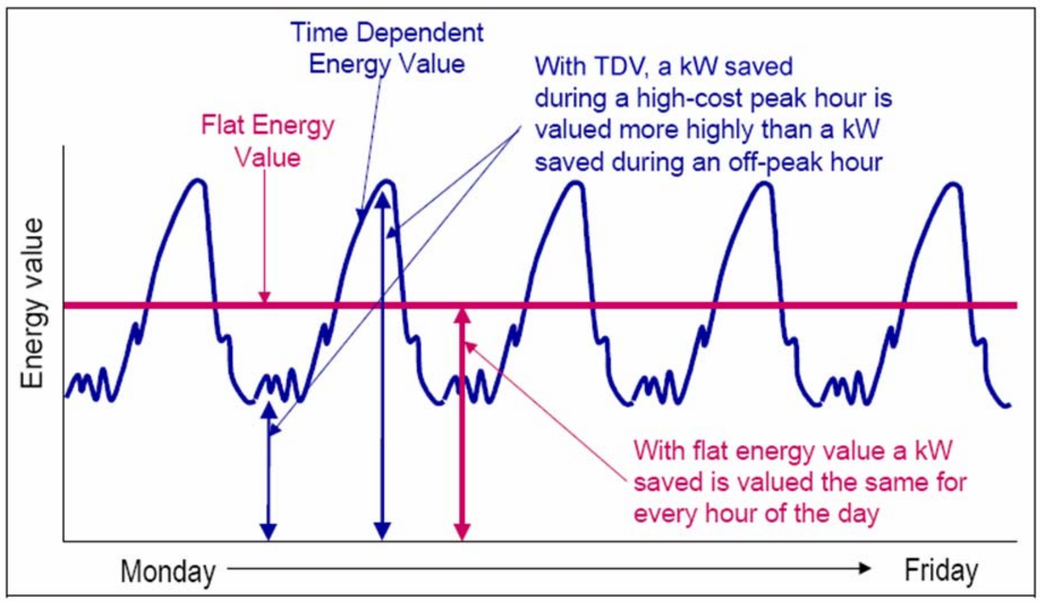


Figure 3 - TDV Costing Compared to Flat Costing – summer weekday

Source: Pacific Gas and Electric Company *Time Dependent Valuation (TDV) – Economics Methodology*

Ice Energy's Background and the Recognized Benefits of Ice Storage as a Permanent Load Shifting Technology

Ice Energy's technology offers a cost-effective approach to permanently reshape the NJ summer peak electrical demand load curve.

Ice Energy has proven experience in other states:

Connecticut recently established an Electric Efficiency Partners (EEP) Program through DPUC Docket 07-06-59. By Decision dated June 4, 2008, it created the parameters of the EEP Program and analyzed/included comments of the public in conjunction with a consultant in setting certain standards and parameters for becoming an EEP. Among the recognized technologies was the ice based thermal storage technology that had been proposed by Ice Energy during the proceedings. The final decision included Standard Grants for several approved technologies entitled "Standard Grants for Eligible Technologies" The Energy Conservation Management Board analyzed and approved Ice Based Thermal Storage for direct expansion air conditioners as an approved technology.

The California Public Utilities Commission ("CPUC") issued an "Order Adopting Changes to 2007 Utility Demand Response Programs," Decision No. 06-11-049, dated November 30, 2006 (the "California Decision"), in which it authorized improvements to existing demand response systems and endorsed PLS technologies, such as ice storage. In that docket, all three electric utilities and well recognized California intervenors supported load shifting programs as a way of improving system stability and reducing system costs. The CPUC found that "Ice Energy provides evidence that the technology has been successfully applied in other utility territories, both within California and in other states." Id. at 50. The CPUC recognized that new installations of PLS technologies accomplish the goal of reducing peak demand and directed the utilities to pursue RFPs or enter into bilateral agreements for PLS technologies within six months. While not endorsing any particular technology, the CPUC's decision contains a discussion of Ice Energy's proposal as the only ice storage proposal presented.

Since that decision, the State's largest investor owned utilities, Pacific Gas and Electric and Southern California Edison, have executed contracts with Honeywell, Trane, and Cypress Ltd. to implement megawatt size PLS programs that are based on Ice Energy's products[6]. Furthermore, the California municipal utilities including Anaheim, Azusa, Burbank, Glendale, Imperial Irrigation District, Los Angeles

[6] SCE/Honeywell Night Shift Program, http://www.nightshiftprogram.com/
PG&E/Cypress Ltd, ShiftnSave Program, http://www.shiftnsave.com/
Anaheim Thermal Storage Incentive Program,
http://www.anaheim.net/utilities/adv_svc_prog/TES/TESIncentive.pdf

Department of Water and Power, Redding, and Riverside have each successfully tested Ice Energy's technology.

New Hampshire recently passed SB 451 an ACT authorizing rate recovery for electric public utilities investments in distributed energy resources with strong support from both the Governor's office and the Public Utilities Commission. The bill provides: "Prudently incurred investments shall be recoverable in a utility's base distribution rates as a component of rate base. Cost recovery shall include the recovery of depreciation, a return on investment, taxes, and other operating and maintenance expenses directly associated with the investment, net of any offsetting revenues received by the utility directly attributable to the investment." "Distributed energy resources" means electric generation equipment, including clean and renewable generation, energy storage, energy efficiency, demand response, load reduction or control programs, and technologies or devices located on or inter-connected to the local electric distribution system for purposes including but not limited to reducing line losses, supporting voltage regulation, or peak load shaving, as part of a strategy for minimizing transmission and distribution costs as provided in RSA 374-F:3, III.

Florida's HB 7135, which was recently signed by the Governor of Florida, provides that it is the policy of the State to reduce the need for new power plants by encouraging end-use efficiency, reduction in peak demand, and the reduction in, and control of, the growth rates of electric consumption and of weather-sensitive peak demand. The legislative record provided, in part, "The Legislature further finds and declares that ss. 366.80-366.85 and 403.519 are to be liberally construed in order to meet the complex problems of reducing and controlling the growth rates of electric consumption and reducing the growth rates of weather sensitive peak demand". Qualifying technologies that are listed specifically include energy storage systems such as thermal storage.

In summary, the ice storage technology offered by Ice Energy, such as *Ice Bear*® Hybrid Air Conditioning, is a recognized PLS technology that fits within and meets critical goals of the Draft EMP. Complementing the current Action Items, which focus on customers changing their behavior in response to pricing signals, Ice Energy suggests that the final EMP offer more comprehensive Action Items, not solely dependant on customer behavior, by (a) recognizing this proven technology, which offers an energy efficient, carbon neutral means of permanent reduction of the peak demand load by shifting load, and (b) encouraging the rapid deployment of technologies such as ice storage, which are proven means of reducing peak demand.

Ice Energy respectfully recommends that the Action Items be expanded to:

- Modify the State's building energy efficiency code to include the metric known as the time and locational dependant valuation (TDV) of energy efficiency, and
- Include an Action Item for Permanent Load Shifting (PLS) technologies that shift weather sensitive air conditioning energy and demand to the off-peak, without depending upon a change in behavior, and without increasing overall energy use.

Including Ice Storage Air Conditioning as a Means to Fulfill the Peak Demand Reduction and Energy Efficiency Goals in the Draft EMP

Different regulatory and administrative procedures in each state, some of which are still being established to encourage reduction of peak demand, and the lag time sometimes attendant to becoming approved by a state's energy commission can delay the approval and implementation of proven technologies offered by companies such as Ice Energy. It is beyond debate that the targets and goals set by New Jersey with regard to reduction of carbon emissions, increased use of renewable resources, reduction of the peak demand, and increased energy efficiency are aggressive. In order to offer a chance of meeting those targets, the EMP and the BPU's programs in implementing the EMP need to allow for a tiered or multi-faceted approach, reducing regulatory burdens and allowing for the more rapid deployment of technologies proven in other states, including Ice Energy's ice storage system, while maintaining a more thorough vetting of newer, unproven technologies. In order to achieve the goals set forth by the Draft EMP, as recognized during the public hearings, we respectfully request that the BPU develop a streamlined process that would ease some regulatory hurdles and allow for more efficient deployment of proven technologies. For example, where another state's public utility or service commission or an independent power or energy authority has already studied or authorized the use of a specific technology, there should be a presumption that it is unnecessary for the BPU or an independent third party in New Jersey to duplicate such study, as long as the proponent of that technology can provide sufficient information to the BPU demonstrating its managerial, technical, and financial capabilities through its recognized approval and deployment in other states.

Ice Energy recommends that the final EMP recognize that it is not necessary to conduct new economic analysis of any out-of-state studies or findings as to such proven technologies, including specifically ice storage, because requiring such studies would duplicate efforts and delay implementation of the Governor's and BPU's stated energy efficiency and conservation goals and incur unnecessary costs that could be focused on analyzing new, unproven technology. Moreover, when the acceptance of another state's findings in the spirit of full faith and credit would lead to a more rapid deployment and delivery of ratepayer benefits in New Jersey, Ice

Energy respectfully submits that the EMP should recognize and consider the groundwork of other jurisdictions in vetting such projects and provide a means for more rapid deployment of the proven technologies. In assessing market feasibility, Ice Energy suggests that evidence through experience in other states, such as a well-established, functional business and marketing plan, and national channel partner distribution agreements with substantial energy service providers, such as the agreements that Ice Energy has with Trane and Honeywell, should suffice to prove that the technology and proponent's business plan are feasible.

Ice Energy suggests that there are different means of considering the cost benefit analysis for PLS projects that uniquely include both persistent demand response and energy efficiency attributes. For ice storage, Ice Energy recommends that the BPU consider the overall project cost in the context of the value stream delivered to the entire "electrical ecosystem"[7] and in the context of the goals it is seeking to meet. For example, fully 40% of the costs of retrofit installing for example a 100 megawatt distributed PLS system go to locally sourced skilled "green collar" jobs and local material purchases, stimulating local economic development. So too are the positive impacts on the efficacy that ice storage brings to Solar PV investments for a distribution grid, the value of creating a market for predominately off-peak wind energy resources, and the value for contributing to the achievement of the goals of the Regional Greenhouse Gas Initiative ("RGGI"). While the total resource cost ("TRC") test can provide one important measure of cost effectiveness, it doesn't address the <u>*distribution*</u> of costs among parties in the region including the locational marginal impacts of highly distributed energy storage (PLS) system resources. For example, PLS may reduce the need for capacity investments, reduce the likelihood of shortages during peak periods, lower system costs overall by reducing the need for peaking units, provide an economic hedge against heat waves, while at the same time reducing the peak loading on numerous distribution circuits with varying degrees of congestion. There are a host of other PLS benefits that are also difficult to quantify but widely recognized to be of significant benefit including the impact on resource adequacy, reliability, hourly distribution circuit valuation, price elasticity, market power mitigation benefits, and externality costs for residual emissions.

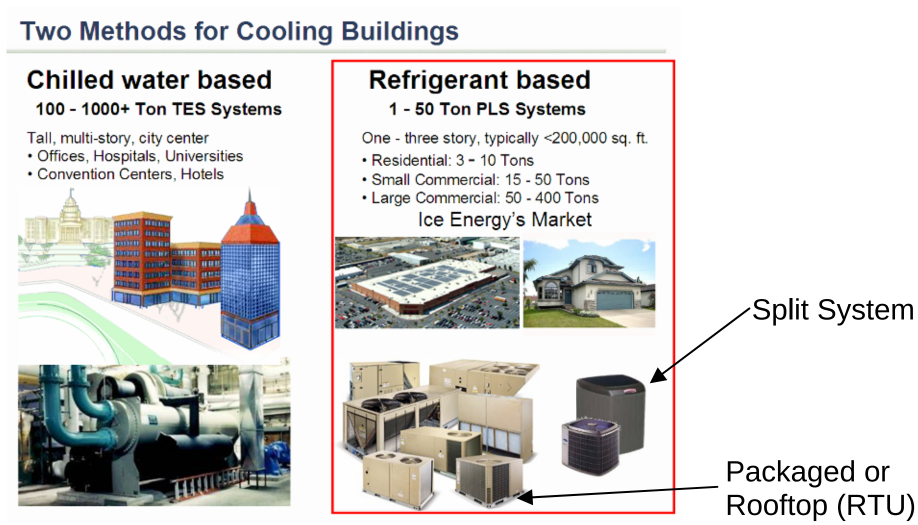
Stimulating Economic Development through the Creation of Green Collar Jobs

Ice Energy's building end-use storage technology is applied to new and/or existing buildings and complements and enriches the State's existing labor pool of skilled HVAC technicians, electricians, sheet metal workers, landscaping, and mechanical design workforce. <u>Approximately 40% of the costs of implementing a megawatt scale project are direct local labor and miscellaneous HVAC equipment related purchases.</u> Since packaged air conditioning is ubiquitous, the <u>economic opportunity is evenly distributed throughout the State of New Jersey</u>.

[7] *See* Page 3 herein.

Large Addressable Market & Building Types

There are two distinct ways to cool buildings; using large chillers circulating chilled water and using packaged air conditioners circulating refrigerant. Ice Energy's technology addresses buildings cooled by refrigerant based air conditioning units as well as small datacenters and telecom, which accounts for 98% of the total number of all NJ buildings and about 50% of the energy consumed for cooling. Large thermal energy storage systems, such as those manufactured by the widely recognized market leader, New Jersey based Calmac, services the remaining building types and potentially serves the balance of the cooling energy requirements.



The primary target building types for Ice Energy's technology include all one and two story buildings and some three and four story buildings. Calmac and others address the balance of city center and large hospitals, universities, sports centers and the like. Together, Ice Storage Air Conditioning and Thermal Energy Storage will permanently shift *thousands* of megawatts of summer peak energy to the far off peak, permanently reshaping the summer energy market.

Primary End-Use Customer Types:

The majority of Ice Energy's customers are found in office, food service, retail, education, public assembly, strip malls, government, military, light commercial manufacturing, grocery market segments, as well as small data centers, and telecom.

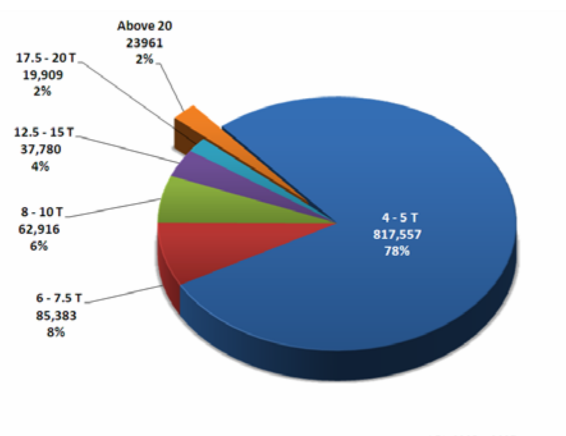
Cooling Equipment Type Match

70% of U.S. commercial buildings or 3.5 million buildings are a match for Ice Energy's Ice Bear 30 unit. These are buildings using Split* A/C, Split Heat Pumps, **Packaged A/C and Packaged Heat Pumps.

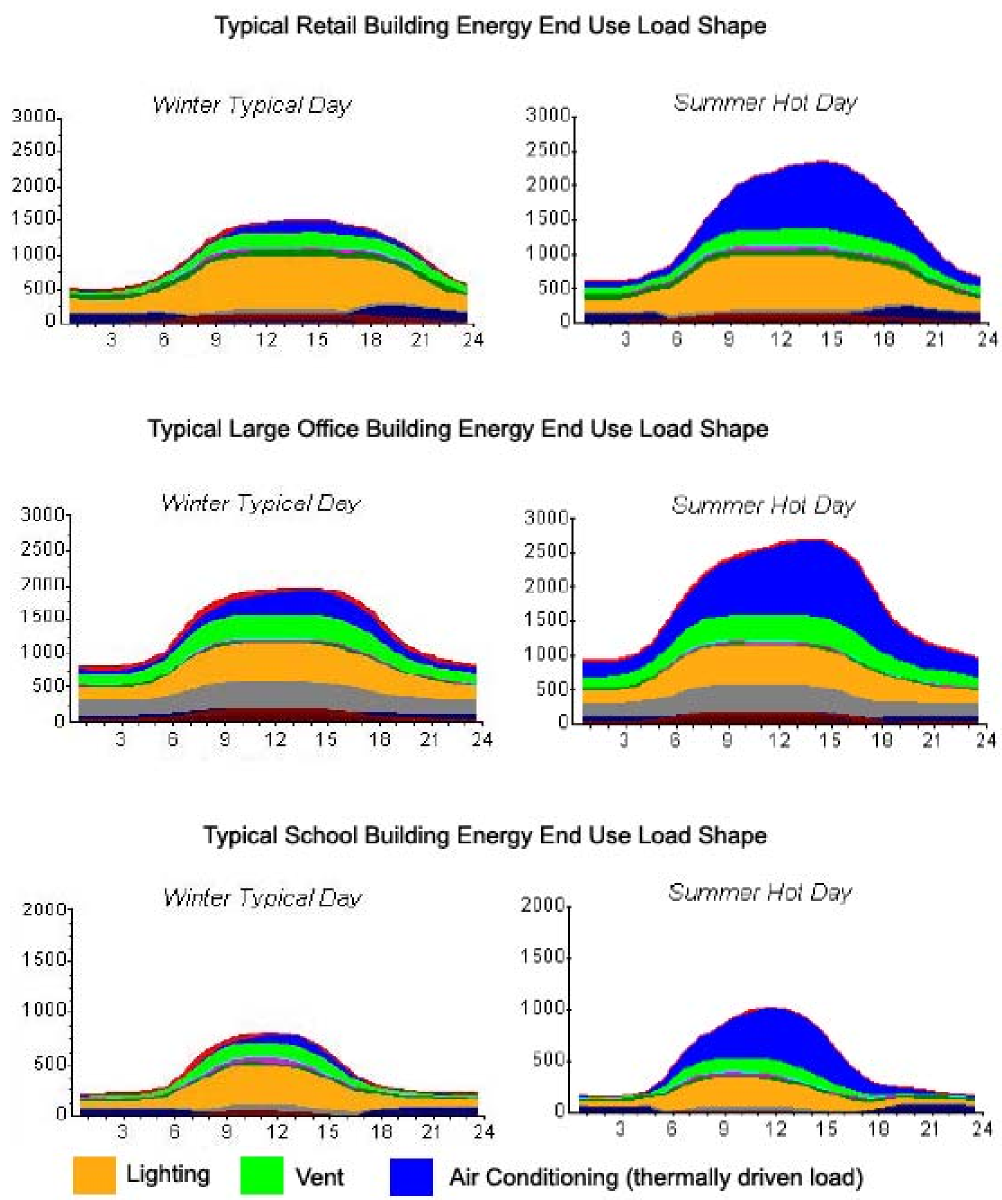
* Split = Condensing unit is mounted outside and fan/evaporator is mounted inside. **Packaged = condensing unit, fan/evaporator mounted in one box also referred to as a rooftop unit or RTU.

Cooling Equipment Size Match:

The Ice Bear unit is ideally sized to complement 4-5 Ton units through 15 Ton units which represent 96% of all compatible A/C domestic unit shipments.



Examples of Thermally Driven Building Load Shapes



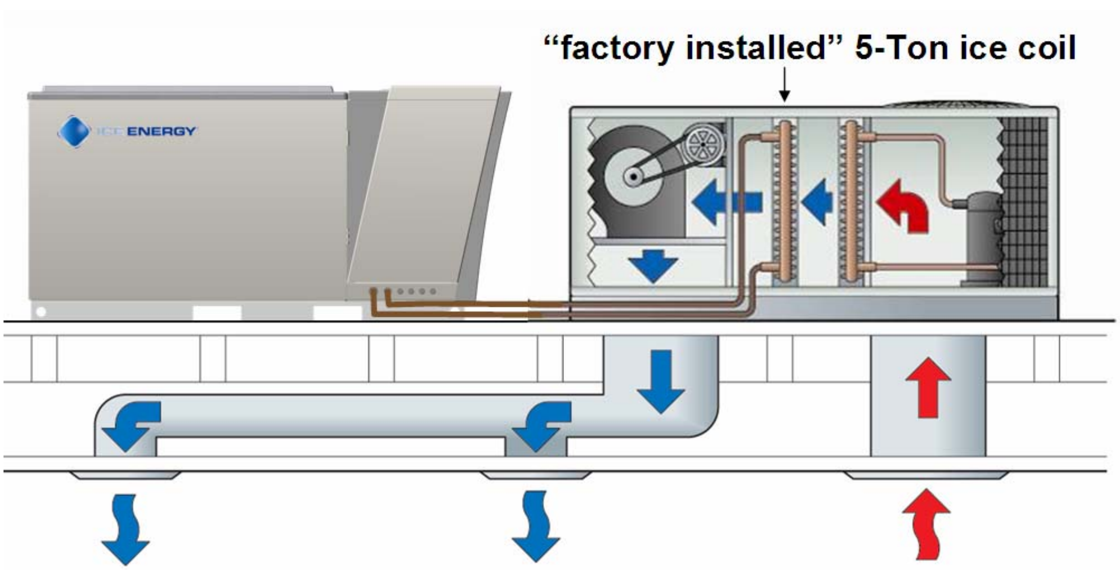
**How Ice Bear Permanent Load Shifting
Improves Thermally Driven Load Shapes**

This unique and relatively low cost energy storage technology is the first of its kind designed specifically for the residential through light commercial customer and institutional market segments. The rapidly deployable product is the first commercially available point of use energy storage system to integrate the reduction of on-peak kW demand and on-peak energy consumption with zero loss storage and without depending upon a change in customer behavior.

The Ice Bear® Hybrid Air Conditioner integrates energy storage with a high efficiency compressor using R-410A, a non-ozone depleting refrigerant.

The Ice Bear 30 consists of a Refrigerant Management System (RMS), CoolData controller and an ice-on –coil heat exchanger mounted within an insulated tank submerged in about four hundred and seventy five gallons of tap water.

The condensing unit runs during the coolest evening hours creating ice within the storage module. During the day, when the thermostat calls for cooling, a low energy pump circulates the ice cooled refrigerant to the evaporator coil/blower unit inside the home or business to provide immediate, efficient cooling.

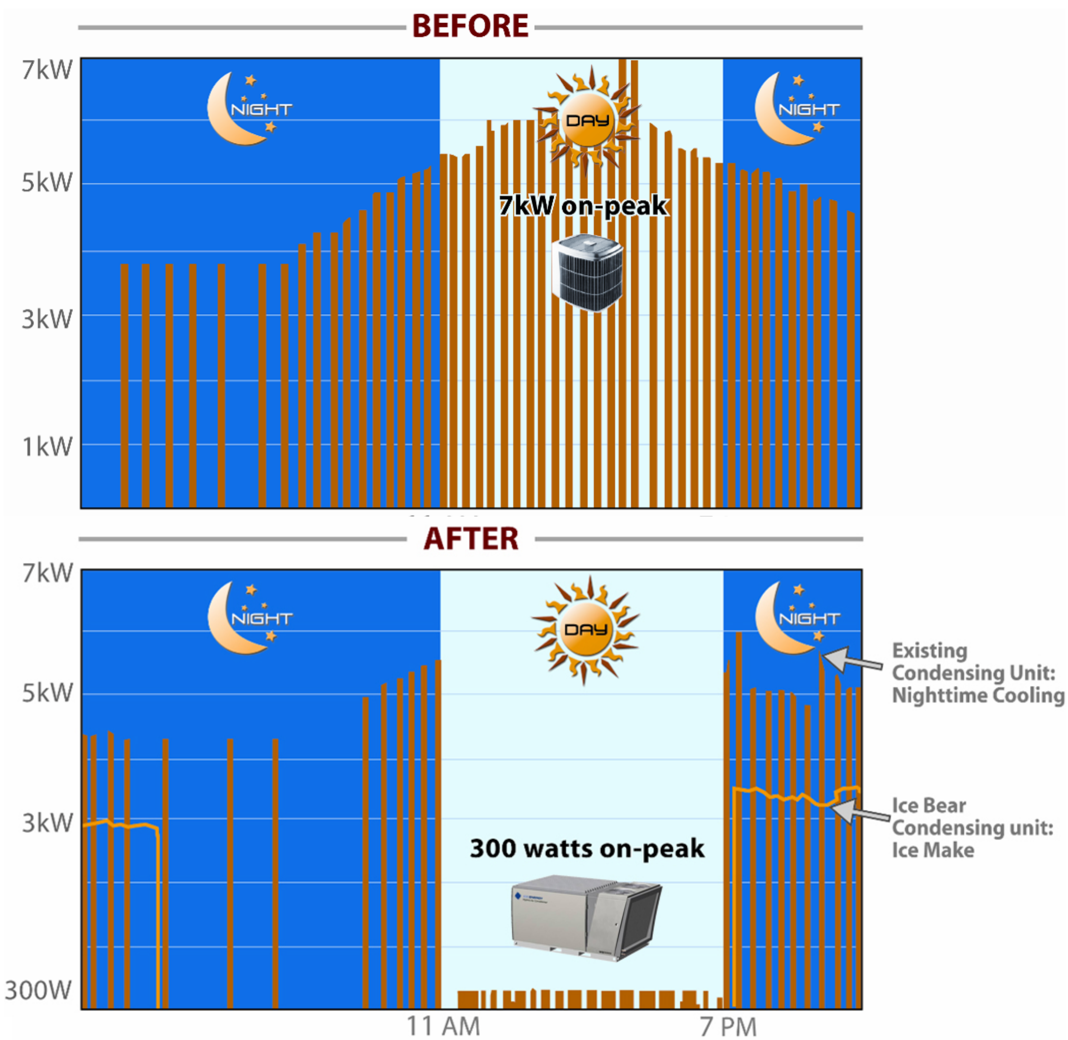


- Cooling capacity is created and stored during cooler evening temperatures
    - Lowest cost of energy
    - Highest condensing unit efficiency
- Ice Bear module provides daytime cooling
    - Uses only 300W during the day
    - Superior cooling performance

Picture of an Ice Bear 30 unit installed on an office building

Ice-On-Coil Storage

The effect of an Ice Bear unit on peak period energy consumption and peak demand can be seen in the following figure. This particular application, a firestation in Anaheim, CA, required 24-hour cooling for the fire personnel dormitory. An Ice Bear Hybrid A/C unit off-loaded an existing 5-ton rooftop unit, shifting 95% of the energy and demand to the far off-peak while reducing site annual kilowatt hours by 4%. The project received a national energy efficiency award from the American Public Power Association[8].



[8] Application of a Small Thermal Energy Storage System
www.anaheim.net/utilities/adv_svc_prog/RDnD/SmTESFinlRpt.pdf

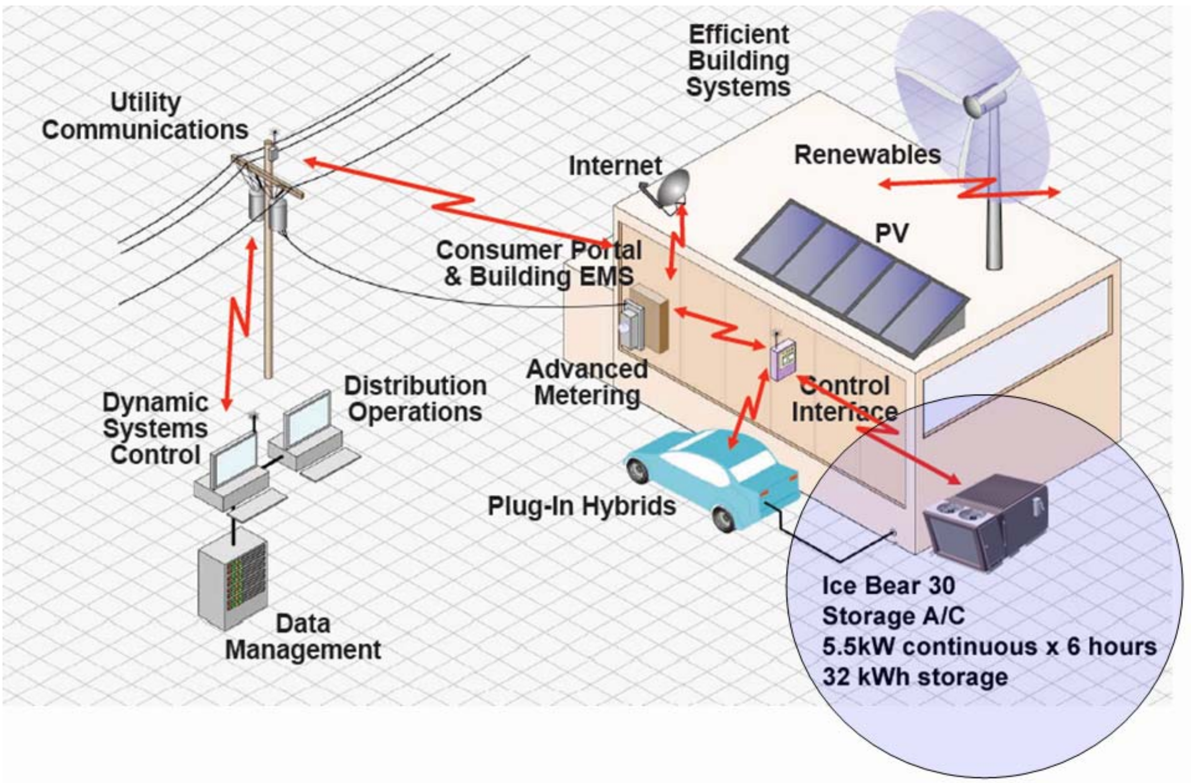
Low Risk and High Rates of Customer Satisfaction

Ice Energy's storage is site energy consumption neutral, the storage is used every day for about six hours, cycling and the number of deep discharges does not degrade the asset life, the installation requires but a simple over-the-counter permit, it is safe for utility workers, it cannot damage customer owned electronic equipment, it is highly distributed and therefore highly available and reliable, As importantly, it improves customer satisfaction and building comfort while providing true ratepayer relief against the rising cost of summer peak electrical energy. Each unit shifts 95% of the peak demand and energy consumption of an A/C unit to the far off-peak. The storage medium is simple tap water and the refrigerant is non-ozone depleting R-410A mandated for use in new all new packaged and split HVAC equipment after 2010. Asset life is 20 years and the system is maintained and serviced as part of a building's normal HVAC maintenance schedule.

Permanent Load Shifting as a part of a "smart" utility network

Each Ice Bear unit includes a CoolData® controller designed and manufactured by Ice Energy. The primary role of the CoolData controller is to provide local control of the Ice Bear unit itself and to store and report the on/off status and values of current, pressure, and temperature sensors for measurement and verification. For example compressor current and compressor on/off status during peak hours are types of data that are stored by the controller. The CoolData controller is a highly secure Internet connected device that periodically transmits historically collected data back to a highly scalable OSIsoft PI Enterprise database licensed to Ice Energy. The PI System is designed to collect, analyze, and share real-time and historical information, and insure that business-critical data is always online. (www.osisoft.com).

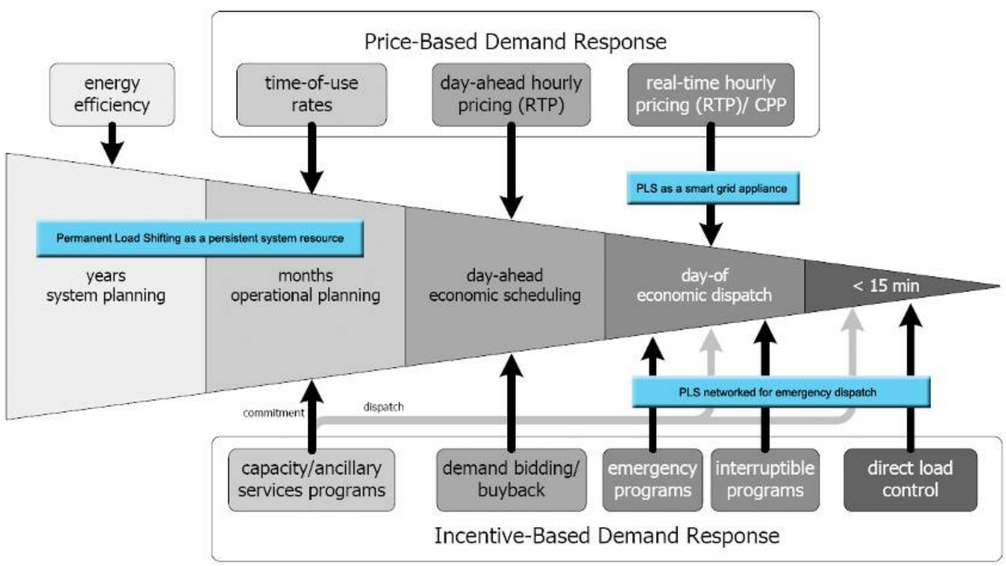
The CoolData controller is extensible and is designed to be a part of a highly responsive "smart grid" network. As part of a "smart grid" network, the CoolData controller can be used to perform direct load control and to monitor the performance of other customer assets. For example if the wholesale off-peak electricity market prices fall to near zero, Ice Energy can energize thousands of building air conditioners to pre-cool building space offsetting the use of the late morning mid-merit market. Aggregated sets of distributed ice energy storage assets can be dispatched based on a real-time weather pattern, seasonal schedule, day-ahead schedule, within five minutes to respond to an unplanned event, or as quick response asset in a remedial action scheme.



Permanent Load Shifting as Part of a "Smart Grid" Architecture

Permanent Peak Load Shifting & Emergency Response Direct Load Control

Ice Bear unit PLS is a persistent measure, like other energy efficiency measures, but it is scheduled like a demand side resource, and it is available to perform real time direct load control like demand response. PLS increases the adoption of time of use rates, leverages investments in smart meters and related infrastructure, and insulates the wires and transformers from the damaging effects of extreme summer heat conditions. In a networked configuration, the storing of energy or the use of stored energy can be controlled and is a useful tool to the grid operator for day-of < 15 minute direct load control. This functionality might be exercised in the case of unplanned system events such as the loss of a substation transformer, the loss of a transmission line or a significant generator trip. Since the customer still receives cooling, grid control operators can use the capability more liberally than traditional direct load. control.

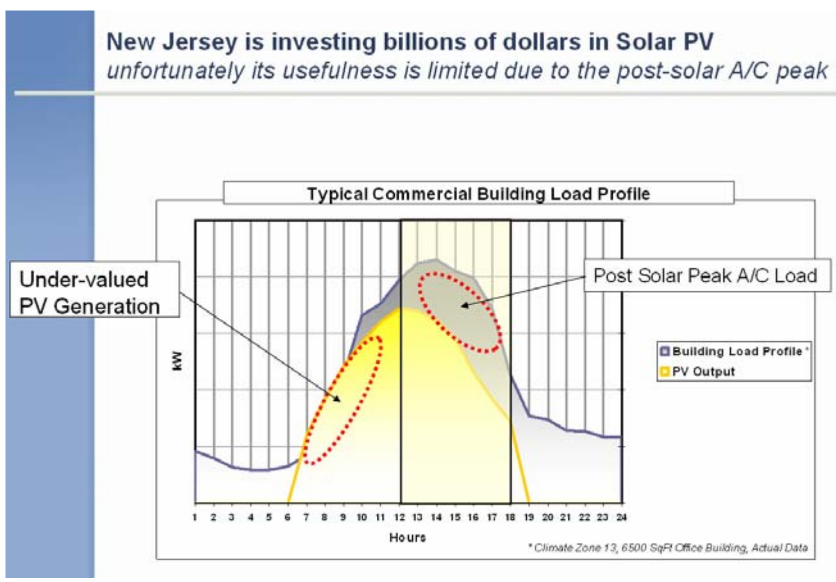


Ice Bear units, Energy Efficiency and Direct Load Control

Ice Energy's Technology Improves the Efficacy and Economic Value of Building Solar PV Renewable Energy Investments

The Ice Bear A/C energy storage module is also a natural complement to building solar PV investments. Simply stated, solar generation peaks with the sun at midday, while utility demand peaks between 4 and 7 pm, driven by demand for air conditioning comfort, which follows the solar thermal gain accumulating during the afternoon. By shifting late afternoon air conditioning load to off-peak hours, the Ice Bear system levels the post-solar peak, enables consumers to avoid expensive TOU peak rates for cooling energy during the hottest part of the day, and dramatically improves the payback on PV systems.

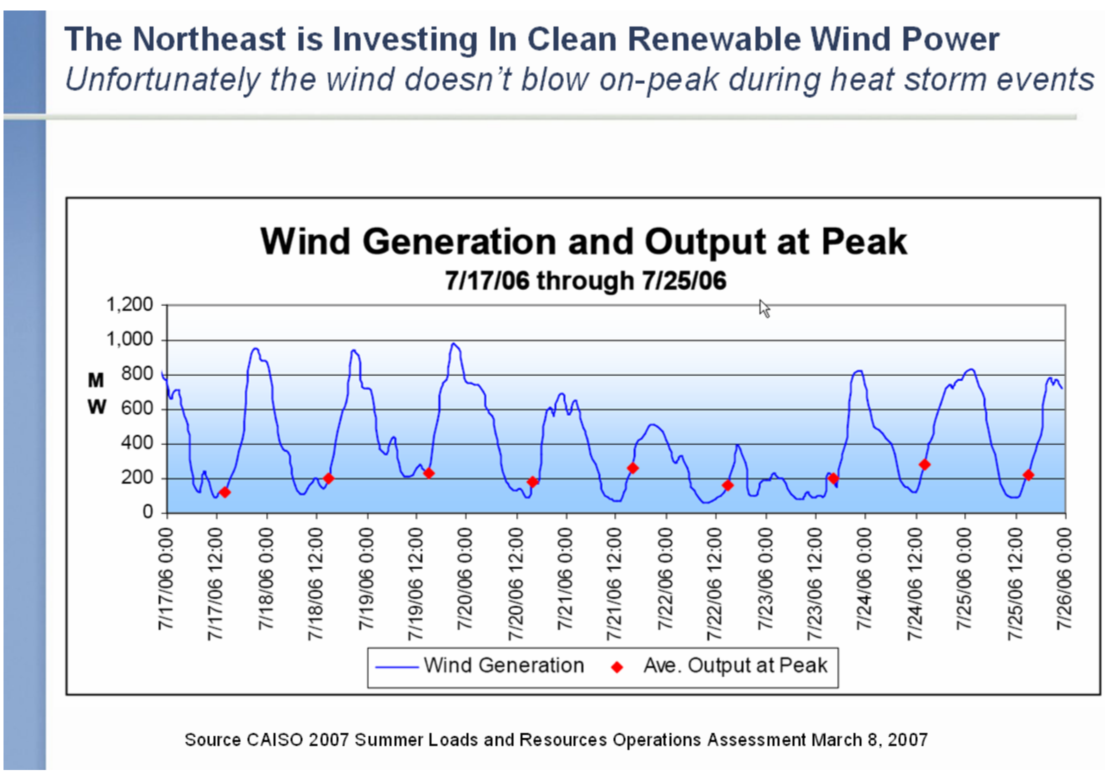
The timing mismatch between building load profiles and SolarPV output, referred to as the Post-Solar Peak, eliminates any potential value of building SolarPV to the overall distribution system. Without A/C storage for late afternoon building A/C, the local distribution wires and transformers "see" the same peak loading on its circuits and transformers.



Ice Energy's Technology Improves the Efficacy and Economic Value of Wind Powered Renewable Energy Investments

Because it stores energy at night for use during the day, Ice Bear storage is a natural complement to wind power, which otherwise generates only about 5% of its useful output during peak demand periods. Storing nighttime, off-peak wind power and leveraging it to offset peak daytime demand increases its value as a reliable, higher value power source and bolsters the market for off-peak wind.

As New Jersey continues to explore the possibility of adding more wind powered investments in the State, ice storage tecnology should be considered as part of these projects because of the additional value and synergies it adds to the overall distribution system.



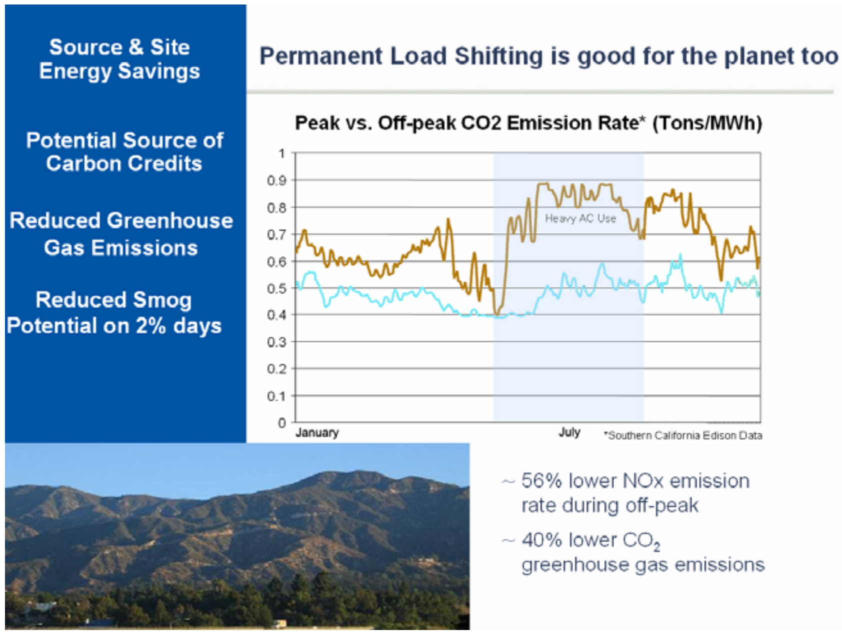
Permanent Load Shifting Reduces Greenhouse Gas Emissions

Generating, transmitting and storing cooling energy during off-peak periods also reduces the overall consumption of generation source fuel by 20% to 50%. This is a result of the relative greater efficiency (better heat rates) of base-load plants and other off peak resources (such as nuclear and wind) versus the considerably lower efficiency (poorer heat rates) from the mix of on-peak generation sources.[9] When combined with lower nighttime transmission and distribution line losses of approximately 6% versus the on peak T&D losses which can reach 20% on peak days, storage delivers the compelling benefit of reducing emissions. Using less fuel to produce the same amount of daytime cooling brings an associated reduction in emissions. Recent studies by Southern California Edison indicate a 40% reduction of carbon emissions and a 55% reduction in NOx in peak versus off-peak generation. A report by the California Energy Commission entitled Source Energy and Environmental Impacts of Thermal Energy Storage indicate it has the potential to be one of the greatest resources for reducing power plant emissions.

“In many California TES installations, 40 percent to 80 percent of the annual kWhs of electricity use for air conditioning will be shifted from day to night. In such installations the official Energy Commission methodology, the Incremental Energy method, showed large source energy savings. The savings per kWh shifted range from 36 percent to 43 percent for SCE and 20 percent to 30 percent for PG&E. The savings from the Marginal Plant method were lower but still substantial—12 percent to 24 percent for SCE and 8 percent to 10 percent for PG&E.” “TES has demonstrated impressively large energy and air emission savings like other energy efficiency programs. But unlike most energy efficiency measures, TES also measurably improves load factor and provides cost savings that help both energy users and energy suppliers be more competitive.”[10]

[9] By these comparisons of efficiency, Ice Energy is not advocating for a move to 100% renewable energy as some participants in the proceeding have requested. Rather, Ice Energy suggests that the use of this ice storage technology can make *all* generation resources more efficient.

[10] California Energy Commission entitled Source Energy and Environmental Impacts of Thermal Energy Storage http://www.energy.ca.gov/reports/500-95-005_TES-REPORT.PDF


Source & Site Energy Savings
Potential Source of Carbon Credits
Reduced Greenhouse Gas Emissions
Reduced Smog Potential on 2% days
Permanent Load Shifting is good for the planet too
Peak vs. Off-peak CO2 Emission Rate* (Tons/MWh)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Heavy AC Use
January
July
*Southern California Edison Data
~ 56% lower NOx emission rate during off-peak
~ 40% lower CO_2 greenhouse gas emissions

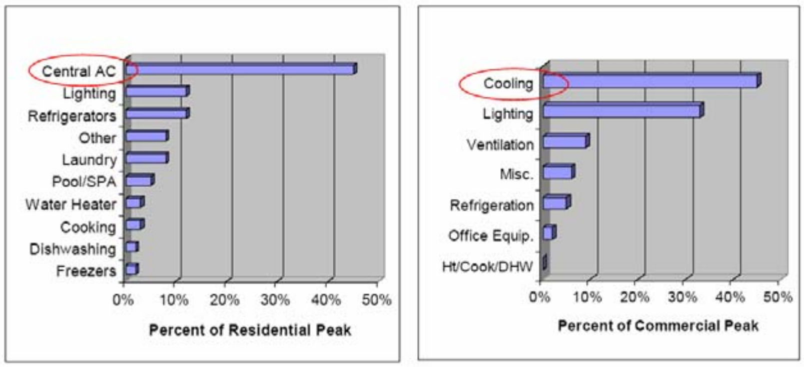
**Improving Poor System Load Factors in New Jersey
Achieving True Ratepayer Relief**

"The 1991 Energy Master Plan alluded to the fact that the average load factor for New Jersey utilities was well below the national average of over 60%. In 1990 the average load factor was 53%. As shown in the figure, the average load factor in New Jersey has deteriorated to below 50%."[11] The ominous trend is forecast to continue as the peak is growing faster than the base. The use of PLS organically improves system load factors by eliminating the source of the imbalance at the source, building, telecom, and data center cooling. Improving the load factor of buildings directly translates into improvements within the entire electrical ecosystem. Once buildings are transformed from a roughly 53% load factor to a roughly 80% load factor, they are positioned to move to Time of Use rates which will spur incremental adoption of classical energy efficiency investments. Ice Energy has witnessed this first hand with its customers in the Anaheim Municipal Utility district, where the utility offers a time-of-use rate to customers who install and operate Ice Storage Air Conditioners. In addition, the utility rebates the cost of the equipment. Customers save money on a time of use rate by shifting their consumption to off-peak. Moving the A/C load to the off-peak tips the equation to the favor of the customer reducing expensive peak energy consumption delivered at prices below the utility's true cost to deliver, to cheaper off peak energy consumption delivered at prices above a utility's true cost of delivery. The remaining peak, which is predominately lighting, is now an easy target for cost reduction.

[11] *See* Electricity Working Group document dated November 6, 2006 entitled *Electricity*, Page 18, Posted on the NJ, EMP Website
http://www.nj.gov/emp/home/docs/pdf/061013e.pdf

Ms. Kristi Izzo, Secretary
July 25, 2008
Page 26

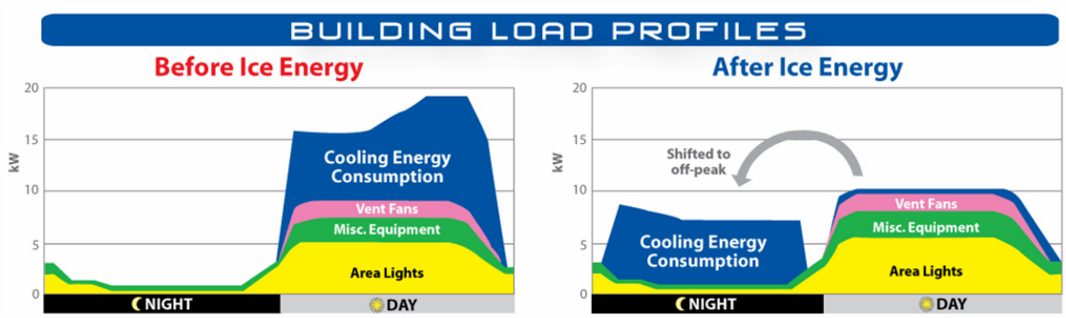
Peak Demand Growth is Driven by Building A/C Especially During Heat Waves



Source: PG&E Program Advisory Group for Energy Efficiency: HVAC PAG White Paper, Proctor Engineering

Most Buildings Have a Poor Load Factor ~ 53%

<u>Manage customer load by efficiently shifting A/C energy to the off-peak</u>



Low capacity factor High capacity factor

- ***Enabling Technology for TOU rate switching***
  - ***Consume low cost, off-peak energy***
  - ***Reduce expensive on-peak demand and on-peak energy***
  - ***Zero loss storage measured at building meter***

Conclusion

Ice Energy applauds the efforts of the BPU, the Governor's office, and the numerous coordinated agencies that have taken the lead in creating a Draft Energy Master Plan for the State. Ice Energy appreciates the opportunity to submit these comments for consideration and respectfully requests that the BPU consider and include these comments in preparing the final Energy Master Plan, which is expected to be issued in the fall of 2008. If the regulatory parameters are established to encourage recognized technologies, such as the ice storage system offered by Ice Energy, to be rapidly implemented in the State, experience shows that the proponents of such proven technology will seek to become active partners as the State moves toward the challenge of meeting its energy goals and legislative mandates. Ice Energy looks forward to offering its experience, working with the BPU, NEEP, other agencies, stakeholders, utilities and suppliers alike, to help bring a marked reduction to peak energy demands by encouraging the rapid deployment of proven technologies such as ice storage systems so that New Jersey's customers receive the immediate beneficial effects of such innovative technology.

Please do not hesitate to contact the undersigned if you have any questions or require any additional information in connection with these filed Comments.

Respectfully Submitted,

Grace S. Kurdian

Enclosure

cc: Gregory W. Tropsa, President, Ice Energy
Stephen J. Humes, Esq.