



Arts & Innovation

UPDATE ON THE ICE ENERGY PEAK LOAD REDUCTION PILOT PROGRAM

ICE Energy

Board of Public Utilities

July 25th, 2016

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Energy Storage Background



- On 9/23/14 & 9/5/14 - AB2514 - CC & PUB – set zero MW storage target
- Grid Modernization Pilot to explore feasibility of ES technologies
- Thermal Energy Storage (TES), such as Ice Bear, still most cost-effective pilot
- Ice Bear - produce ice at night and use for cooling during peak hours
- Reduces peak energy usage
- Shifts load to off peak

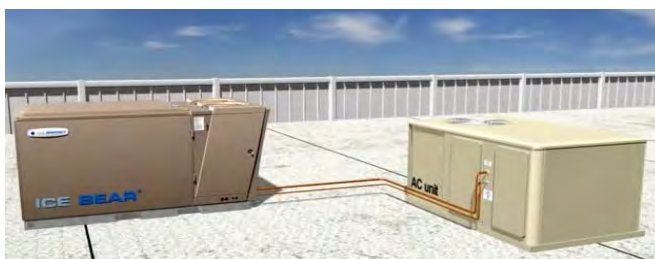
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Ice Bear Market Maturity

- CEC/CPUC - Ice Bear is a qualified AB 2514 - energy storage technology
- Anaheim, Glendale, Azusa use Ice Bear through SCPPA PPA (expired in 2014)
- SCE signed 16 contracts with Ice Energy (total of 25.6 MW)



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RPU's Ice Bear Pilot Program Goals

- City proactively supports State's energy storage goals
- Better understanding RPU's future use of TES technology
- Assess operational values and associated costs of TES technology
- Analyze and assess the benefits and impacts of Demand Response
- Report progress in RPU's AB 2514 mandated three-year review
- Foster collaboration between Power Resources, Public Benefits & Energy Delivery

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ICE Energy Product and Service

- Identify customers with potential to realize the most benefits
- 1-2-3 program
 - 1 Ice Bear unit
 - 2 ACs unit
 - 3 hours/day energy shifting
- PLR - at least 65% from load shifting
- Remaining PLR value from DR & EE
- 1MW of PLR/year (~40 Ice Bear units)



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Contract Term and Pricing

- Five years of PLR program starting 2015
- RPU annual option to cancel the program

Year	Price	Renewal Options
2015	\$1,360/kW	
2016	\$1,520/kW	(Optional)
2017	\$1,520/kW	(Optional)
2018	\$1,520/kW	(Optional if 2016 renewed)
2019	\$1,520/kW	(Optional if 2017 and 2018 renewed)

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License Agreement

- ICE Bear units - City-owned property
- Requires License Agreement to install on customer premise

The License Agreement defines:

- T&C of the PLR program
- Equipment ownership
- Optional Demand Response Participation
- Rights to property access
- License termination
- Remove equipment upon termination
- DR participation is optional



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Benefits to RPU and Its Customers

- PLR reduces energy consumption during peak time periods
- Relief to distribution system loading during peak hours
- Reduced electric costs to RPU customers
- More efficient HVAC systems result in customer savings
- Demand Response Capability for Curtailment Response, i.e. Aliso Cyn.

The PLR program is projected to generate a positive NPV return over a 20 year life-span by providing various system-wide benefits to the City.

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Funding Sources

- Public Benefits -
Non-residential A/C replacement incentives of \$300/ton
- Power Supply Costs
- GHG Allowances Proceeds -
Energy Storage Ice Bear project meets the permissible use of GHG allowance proceeds adopted by Board on April 18, 2014—consistent with CEC/CPUC guidelines/requirements.

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Customers Installed to Date

- City of Riverside
 - Airport
 - Arlington Library
 - Bordwell Park
 - Building Services and Fleet
 - Magnolia Police Substation
 - Bryant Park
 - Goeske Center
 - Villegas Park
- Commercial Customers
 - BMW Motorcycles
 - Bud's Tire
 - Gar Labs
 - Hertz
 - Singh Chevrolet
 - Fritts Ford
 - Bud's Tire
 - CBU (Gym install delayed at customer's request)

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Projected Results

- Focus on Circuit 1351 (Auto Center)
- 360.75 Tons of Ice Bears installed
- 196.25 Tons of Demand Response
- 298.5 Tons of new High Efficiency HVAC systems
- 165,000 annual kWh savings
- 36 Ice Bears installed to date
- Total Peak kW reduction- 1008.8 kW

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Economic Development Benefits

- Ice Energy R&D HQ moves to Riverside
- 5 new Ice Energy R&D/Admin positions
- 2 new local jobs created for Ice Bear PLR Pilot Project
- 26 subcontractor construction jobs created
- R &D collaboration with local Universities
- 2016 IEEP Red Tape to Red Carpet Award
- 2016 CALED Award of Merit

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Demand Response

- Year 1 installs include 347 kW of demand response
- Direct Load Control by RPU
- Up to 30 minutes at a time
- Up to 2 times per day
- Up to 15 days per year
- Ability to dispatch in assisting with possible Aliso Canyon related events
- RPU Staff Completing DR system testing

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Recommendation

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



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