



Efficiency and Reliability – A Win/Win for Utilities and Consumers

Ice Energy & Our Ice Batteries

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Introduction to Ice Energy

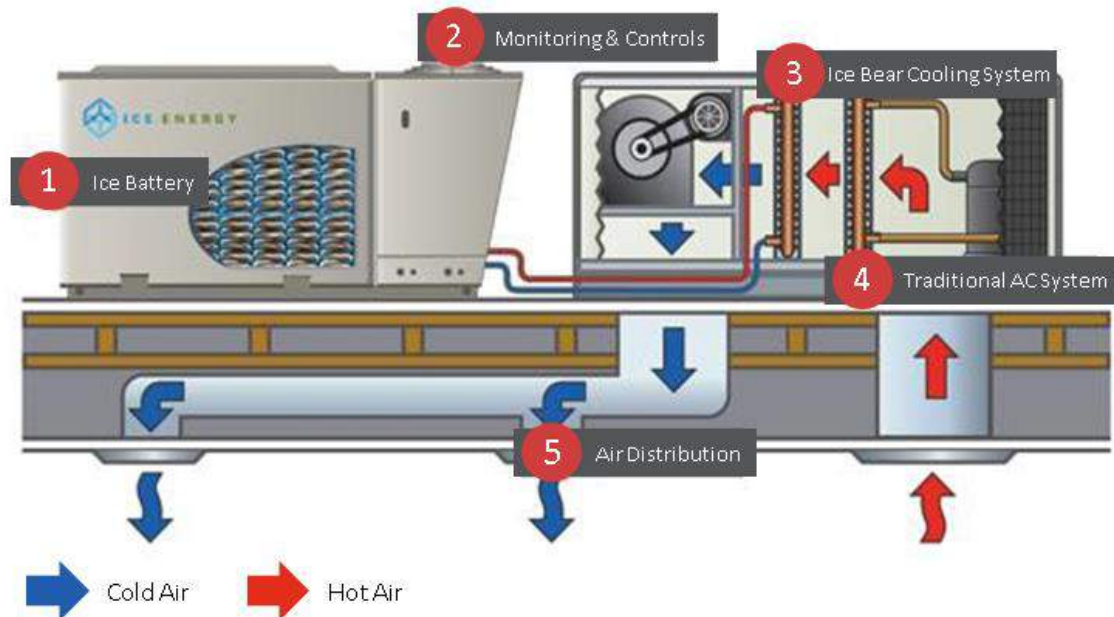
- Thermal energy storage company founded in 2003
- Headquartered in Santa Barbara California
 - Distribution and Application center in Costa Mesa, CA
 - R&D facility in Riverside, CA
 - Manufacturing in Hammondsport New York
- Our ice batteries, aka Ice Bears, enable the asset owner to decide when electricity is used to create cooling, and include the ability to use stored cooling to cool for 3 to 20 tons of cooling for up to 6 hours using 260 Watts
- Majority of our business is selling systems to utilities in MW scale, turning their problematic AC load into a clean, flexible and reliable grid asset.
 - 11 MWs installed to date
 - 41 MWs contracted to be installed
 - Moving into retail market, especially with new residential product

Ice Energy Mission

Transforming Air Conditioning, which is the
Principal Driver and Root Cause of Peak
Demand, Into a Clean Flexible and Reliable
Grid Resource for Utilities

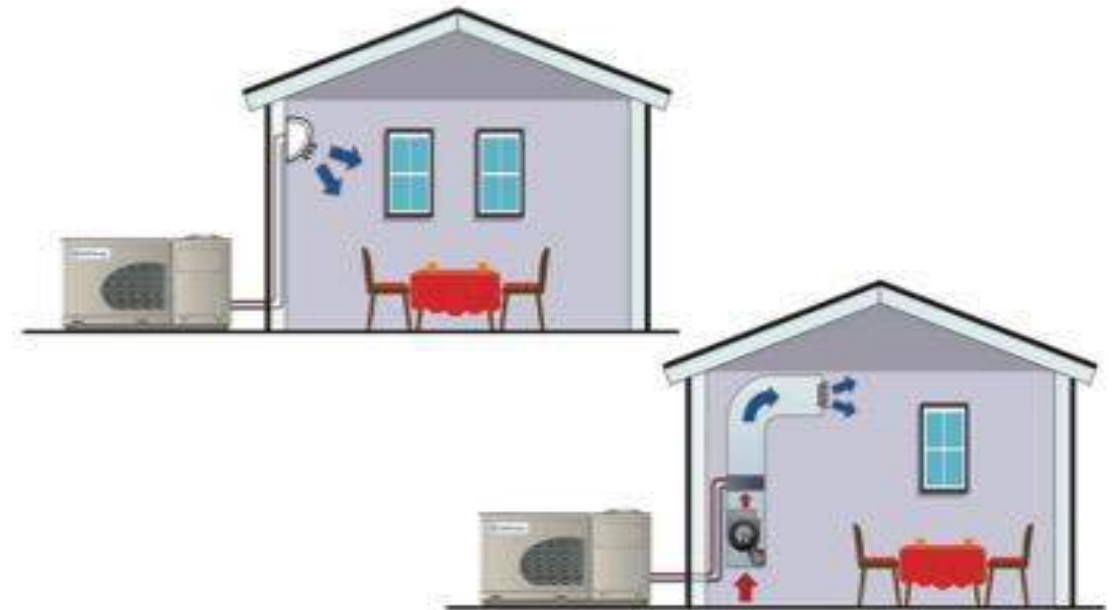
Example Applications

Ice Bear Commercial Application



- Ice Bears are combined with package AC units 3 to 20 tons
- The Ice coils are inserted into the package AC units
- One Ice Bear can support multiple package AC units

Ice Bear Residential Application



- Direct cooling mode: enables AC unit replacement of 4 and 5 ton AC compressors
- Can support residential applications that use ductless mini splits and traditional ducted systems

The Ice Bear 10 & 20 Residential Energy Storage Air Conditioners

- Replaces standard 2.5 to 5 ton AC condensing unit
- Ice Bear 20 Officially released in Q1, 2016
- IB-10 will release in Q1, 2018
- 20 year life battery, AC system + Heating

Thermal Energy Storage
+ Direct Cooling

14.5 SEER – Direct Cooling Mode
150 EER – Ice Cooling Discharge Mode



Thermal Energy Storage
+ Direct Cooling + Heating



Communication Infrastructure Services

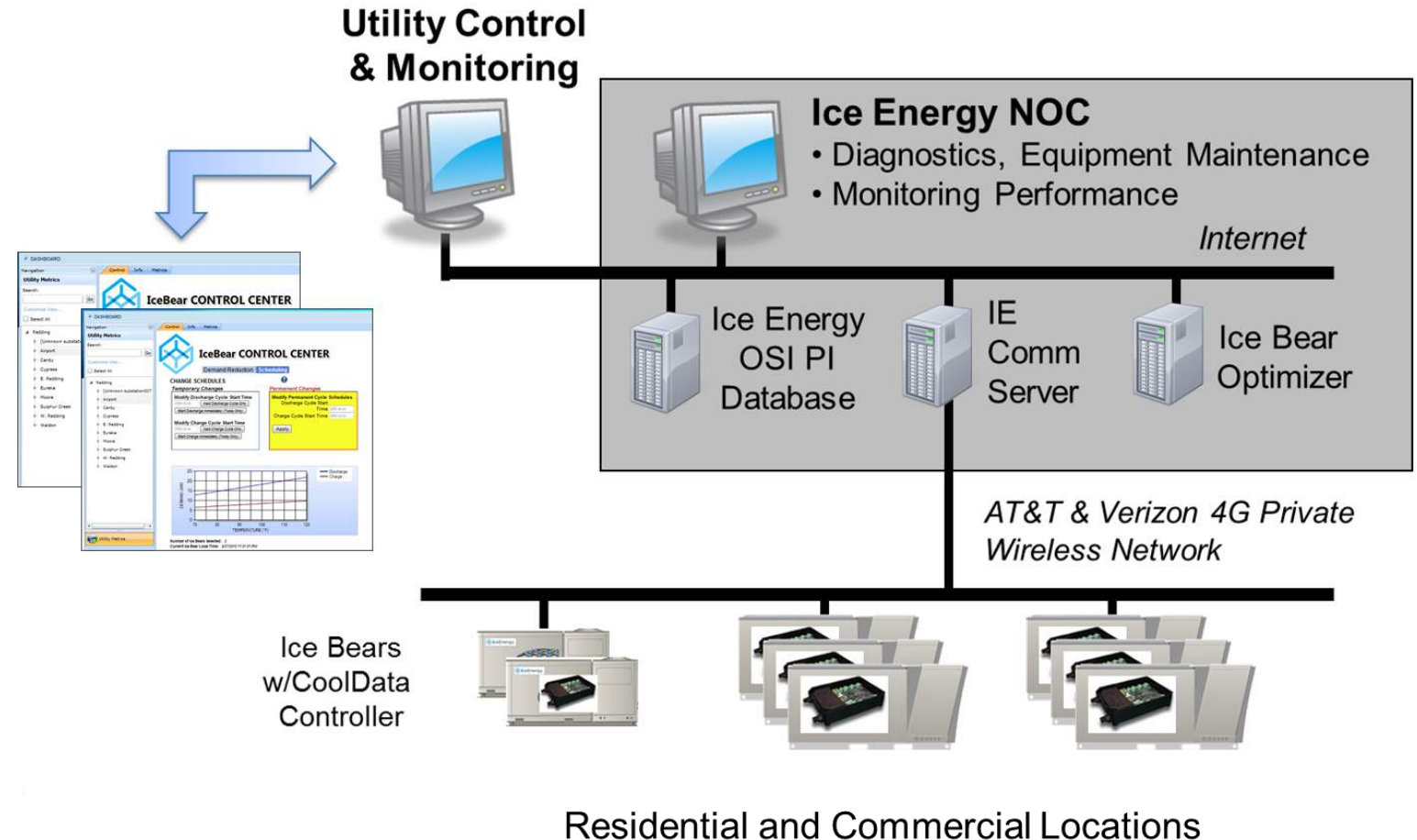
Aggregate, Schedule/Dispatch and M&V

- Aggregate and manage large fleets distributed across utility infrastructure

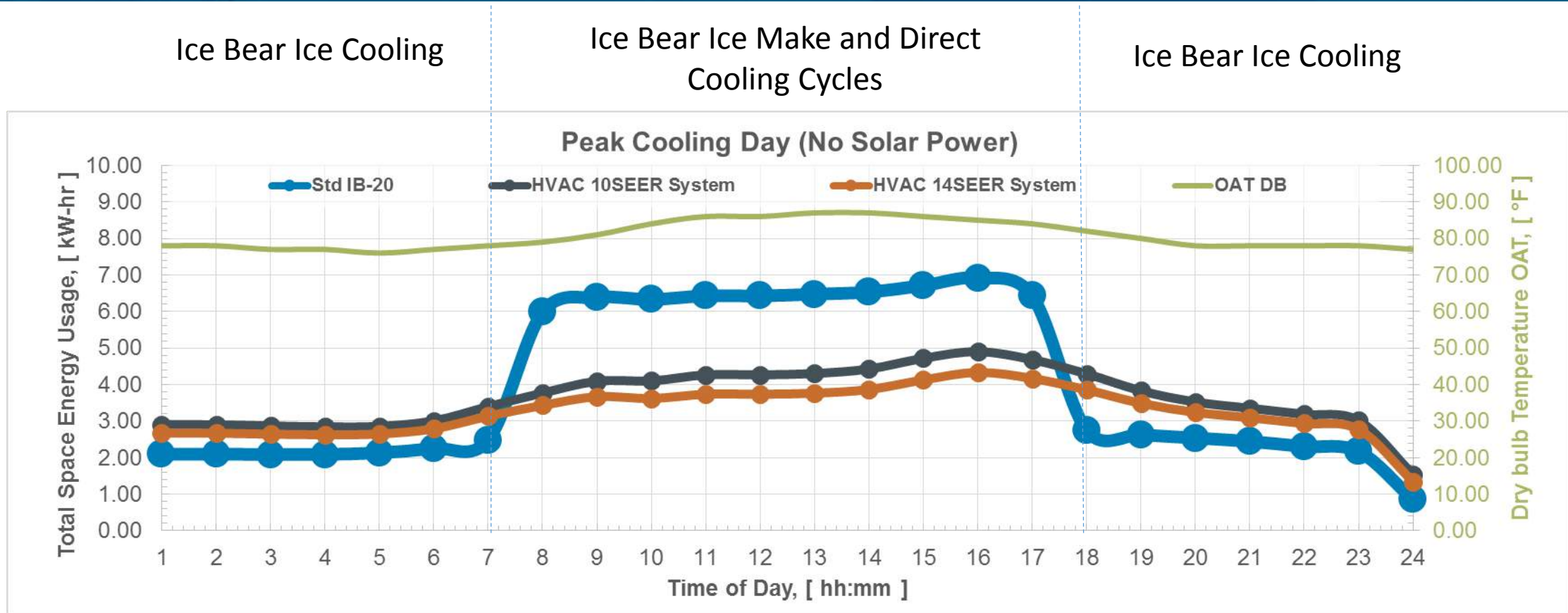
- Connectivity offers remote service access for maintenance and to ensure reliability

- Navigate, Schedule, Dispatch, and Monitor TES and DR asset Performance

1. TES – one or two daily discharge cycles with control of off peak charge cycle start time (tech advancements)
2. DR – two interrupt cycles (30 min each, or other)
3. Utility owns or retains scheduling/dispatch rights for TES and DR assets defined in customer license/program agreement



Residential Application with Ice Bears Storing Energy and cooling during peak day and cooling during evening peaks. Objective is to absorb Solar PV generation



Energy patterns includes air handler energy, Ice Bear 10 consumes 250 watts during Ice discharge/cooling cycle

Utility Use Cases:

- Redding Electric Utility – 6 MW
 - Free Ice Bear equipment, designed, installed, maintenance
- Riverside Public Utility – 5 MW
 - Free Ice Bear equipment, designed, installed, maintenance, 40% Discounted HVAC equipment
- Southern California Edison – 26 MW
 - Free Ice Bear equipment, designed, installed, maintenance, 40% Discounted HVAC equipment
- Mass DOER/Nantucket Island – Undersea Transmission Cable Non Wires Alternative Project
 - Ice Bear 20
- SGIP, LADWP, NY ConEd, FPL TES Incentive programs
 - Ice Bear incentives in PG&E, SCE, SDG&E service territory
 - SGIP incorporated in recent Kohls Ice Energy/HVAC proposals
- Federal Solar/Energy Storage ITC.
 - 30% tax credit for solar integrated with thermal energy storage systems

Ice Battery Storage: Transforms AC load into clean, flexible, reliable & efficient grid assets

Lowest cost - now even lower cost than gas fired peaking power plants

Most reliable - 98%+ availability over 34 million operating hours, 1000+ units deployed, 40+ utility projects

Environmentally Friendly & Safe – no fire or hazardous or chemical risks. Storage medium is tap water, all parts are recyclable.

20 year life – no battery replacements, repowers, no degradation, no cycling limitations, Financeable.

Fast deployment – no utility interconnection or complex construction permitting, only HVAC building permit

High efficiency - 100% effective efficiency, 85 & 95% product line round-trip efficiencies, Ice Bear 20, 14.5 SEER

Economic development - up to 40% of project cost flows back into local economy, installed and maintained by local HVAC industry

Thank You



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