Storage as a Distributed Option for Grid Operations
Introduction to Ice Energy

- Thermal energy storage company
- Founded in 2003
- Our primary market is utilities
- Most recent win was an award of 16 long term, PPA-type contracts from Southern California Edison under their LCR RFO, totaling 25.6 MWs
Introduction to the Ice Bear
Distributed storage was considered something for utilities to study, not grid capacity
Questions about cost-effectiveness and reliability, especially batteries
The most successful distributed energy storage technologies for the grid, including ours, were limited to single digit MW pilot projects
California Mandate

• In 2013 California mandated that the IOUs procure not less than 1325 MWs of storage over the next 5 years
• While a surprise to most, this was foreshadowed by the CPUC approving a So Cal Edison LCR with the condition that they include a minimum of 50 MWs of storage
• After the State mandate, municipal utilities have been filing their own storage plans and appear to moving toward their own mandate, similar to what happened with RPS
SCE LCR

- Most expected SCE to procure exactly the mandated amount of storage and not a kW more
- Most expected SCE to spread the procurement over a large number of major storage (Battery) companies so that even the 50 MWs would end up looking more like a bundle of pilots rather than any grid scale storage project
- Most were wrong
- SCE procured 5X the mandate, making storage more than 10% of the total capacity purchased under their all resources RFO
- Only 4 storage companies were selected and 3 of us had major grid scale awards
- The big names were noticeably absent
The mandate and SCE have established distributed storage as a part of the grid in California.

Based on SCE, storage for the grid will far exceed the mandate.

The PPA contracts offered/required by SCE give storage companies the financeable vehicles traditional and renewable generation have enjoyed and that will enable scaling.
Issues

- Some of the storage winners in the SCE LCR bid not what they had but what they projected they would have 2-3 years from now, with aggressive cost reduction assumptions – that may give storage a black eye if these assumptions don’t pan out.
- Will California pull other parts of the country like they did with renewables – whether states follow the California model or develop their own, the future of renewable energy depends on grid scale storage.