FOR IMMEDIATE RELEASE
November 18, 2020

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Innovative Distributed Energy Storage Technology Provides Critical Grid Support During California's August Heatwave

By shifting power demand to non-peak hours, cost-effective and sustainable energy storage systems increased grid resiliency in periods of high grid strain during the August heatwave in Orange County

Costa Mesa— Thule Energy Storage's (TES) network of Ice Bear™ energy storage units played a crucial role in supporting Orange County's electricity grid during California's August heatwave. TES' energy storage system supplied five megawatts of critical system capacity from 340 Ice Bear™ units throughout August 2020. On both August 14th and August 15th, when grid strain was at its peak, TES eliminated over four hours of energy use for cooling across 79 sites without any interruption to the comfort of the buildings.

"This is a demonstration of what can be done with distributed thermal storage on a grid-wide basis," said Evan Berger, Chief Operating Officer of TES. "It is perfectly scalable anywhere that you have air conditioning."

TES' Ice Bear™ energy storage units use patented technology to make ice overnight that then enable a building's air conditioning units to use this stored thermal energy to cool the units and the building during peak demand periods during the heat of the day.

The demand for electricity to cool homes and businesses was a significant contributor to California's blackouts in August. Demand for electricity for cooling is expected to increase in the coming years as temperatures continue to rise and extreme events increase in frequency. By the year 2050, there could be 22 days of extreme heat in Los Angeles, according to research from UCLA, and by the same year, one-third of peak electricity demand is forecast to come from demand for air conditioning, according to the IEA. Technologies and effective solutions that can shift the demand for electricity to non-peak hours will become an increasingly essential tool in supporting the grid and avoiding dangerous blackouts due to increased peak energy use.

"With this proven technology we are supporting a sustainable transition to a clean energy future while alleviating the impacts of extreme heat events," said Berger. "Our units are the only cooling technology on the market that can provide these benefits to low- and medium-rise buildings, keeping residents cool during the day while also reducing their energy bills."

In addition to reducing strain on the grid, the units conferred significant cost-saving benefits. Electricity is less expensive during periods of low demand; installing an Ice Bear™ unit can cut utility costs for cooling by up to 40%. TES technology also allows customers to optimize their

carbon footprint by shifting their electricity consumption to greener hours, when renewable energy makes up a larger portion of the electricity supply on the grid. Implementing Ice Bears™ also avoids or delays the need to build additional electrical substation and distribution reinforcement infrastructure.

“It’s only going to get hotter. To keep Californians safe and comfortable during heatwaves, and to ensure that power outages do not further endanger our communities, we must do everything that we can to expand the use of distributed energy storage cooling technologies, which increase both affordability and efficiency,” Berger said.

As recommended in the October 6, 2020, Preliminary Root Cause Analysis prepared jointly by the California Independent System Operator (CAISO), California Public Utilities Commission (CPUC), and California Energy Commission (CEC), there is an urgent need to expedite the regulatory and procurement processes for shovel-ready energy storage projects that can be online by August 2021. Doing so will ensure increased resiliency and flexibility ahead of next year’s cooling season and heatwaves.

“We must begin preparing for next year’s heatwaves today. Making use of innovative technologies that support grid resiliency during the hours when capacity is most needed is key to providing Californians with consistent and reliable renewable power,” Berger said. “We understand the stakes are high for Californians, and we believe that our technology can play a crucial role in avoiding future disruptions in service, while lowering costs, improving efficiency, and cutting the greenhouse gas emissions that are driving heatwaves and wildfires across our state.”

(Images of the storage technology and a graphic case study showing the shift in energy use for a building are available on request.)

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About Thule Energy Storage

TES is an energy storage platform, which offers a scalable solution that harnesses the simplicity of ice to store thermal energy, delivering smart, cost-effective and sustainable products using proven technology. TES is both an owner and operator of a grid-scale fleet of thermal energy storage units and a supplier of thermal energy storage units to customers who want to harness the benefits of distributed energy storage products and retain TES to monitor and manage their units.

TES acquired the industry leading Ice Bear™ thermal energy storage technology and product line earlier in 2020, and has been implementing projects with end-use customers. Through the Ice Bear™ product line, TES offers proven, cost-effective and high efficiency thermal energy storage solutions with the capability to meet the energy storage needs of all customer types including utility, commercial, industrial and residential customers.

About the Ice Bear™ Product Line

The Ice Bear™ product enables customers to be strategic about their electricity consumption from air conditioning as they can take advantage of times when utility rates are lowest to both save money and reduce their carbon footprint. The Ice Bear™ has an installed base of over 1,500 Ice Bear™ systems, providing over 20 MW of behind-the-meter energy storage in over 40 utility service territories across the United States. Critically, using an Ice Bear™ storage unit with air conditioning equipment lowers the charges of a typical utility bill, resulting in savings of up to 40% depending upon the application, while allowing customers to optimize their carbon footprint by shifting their AC consumption to greener hours.

It is now easier and more cost-effective than ever to get an Ice Bear™ of your own. You can qualify for tax credits and state energy storage incentives, while having the ability to finance your Ice Bear™ for its long-term useful life. Please contact TES for more details.

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