Battery storage is the main technology driving the energy storage market today. Cumulative battery storage capacity increased fivefold since 2013, from 241 MW to 1,224 MW at the end of the first quarter (Q1) of 2019.

148 MW of battery storage were deployed in Q1 of 2019. Wood Mackenzie estimates an additional 498 MW of battery storage capacity will be installed Q2-4, an increase of more than 200 percent from 2018.

Since 2015, approximately two thirds of total capacity-based investment in battery storage technology came from electric companies.

Data for thermal and flywheel deployment in Q1 of 2019 were not available. No new pumped storage has been deployed in 2019 to date.

**Our Take**

**Electric Companies Help Maximize the Benefits of Energy Storage**

Electric companies are critical partners for advancing a robust, sustainable energy storage industry given their unique ability to maximize the value of energy storage for the benefit of all customers.

- **Electric companies use energy storage to help enhance energy grid reliability and resiliency for customers.** Electric companies prioritize the safety, reliability, and optimal operation of the energy grid for their customers, and energy storage owned by electric companies directly supports these operations. Electric companies also ensure system planning and visibility with the primary objective of enhancing reliability and optimizing performance in a cost-effective manner. Energy storage provides electric companies with valuable tools to deliver reliable and affordable energy to customers. Electric companies are well positioned to maximize the value that energy storage provides to customers and thereby they facilitate its robust deployment.

- **Electric companies efficiently provide and enable energy solutions for customers.** Because of electric companies long-standing and direct relationship with customers, they are well positioned to develop and strategically deploy a suite of integrated energy solutions benefiting all customers directly, as well as indirectly by optimizing the operation of the energy grid.

- **Electric companies deploy energy storage to benefit all customers.** Electric companies have played, and will continue to play, a vital role in demonstrating the potential of emerging storage technologies, reducing costs, and increasing use of energy storage, particularly batteries and other advanced forms of energy storage.

- **Electric companies maximize the value of energy storage and deploy solutions efficiently.** Electric companies have a unique ability to optimize the location of energy storage assets on their transmission and distribution systems and optimize their operations while ensuring that the solutions deployed are cost effective.

**Policy Update**

**Selected State and Federal Policies**

- **Maryland**—Enacted May 13, the Energy Storage Pilot Project Act (SB 573) codifies a PC-44 Storage Working Group business model proposal for pilot projects, enabling the state’s electric companies to own and operate pilot energy storage projects in the wholesale markets. In the proposal to the Commission, a pilot project owned and operated by electric companies has to be coupled with a third-party owned and operated project.

- **New Mexico**—Enacted March 12, SB 489 will transition New Mexico to 100 percent clean energy by 2045. In phasing out fossil fuels, electric companies may install energy storage as a type of replacement capacity. The bill enables the electric company to operate, maintain, and control energy storage, subject to applicable laws and rules.

- **Virginia**—The VA Solar Energy Development and Energy Storage Authority released an interim report prepared by Strategen. The report found a near-term energy storage potential of 43-137 MW, providing an annual net benefit of $5-11 million. That potential could grow to 370-1240 MW over the next decade with annual net benefits of $23-77 million. The report recommends a deployment target of 1,000 MW of storage by 2030, among other recommendations.

- **New York**—On March 11, NYSERDA published the Energy Storage Market Acceleration Incentives Implementation Plan under Docket 18-E0130, allocating $130 million for BTM and FTM grid-connected retail storage under 5 MW and $150 million for bulk storage greater than 5 MW AC on the transmission or distribution systems that provide wholesale market/ancillary services.

- **South Carolina**—Enacted May 16, HB 3659 directs the Commission to revise interconnection standards to address the impact of energy storage additions and to direct electric companies to consider storage in IRPs.
The following demonstration projects highlight the variety of solutions energy storage provides to customers as well as to the energy grid.

**SOUTHERN CALIFORNIA EDISON (SCE) – HYBRID ELECTRIC GAS TURBINE AND STORAGE BATTERY**

In 2017, partnering with General Electric and Wellhead Power Solutions, Southern California Edison (SCE) launched the world’s first 50 MW LM6000 aeroderivative Hybrid Electric Gas Turbine (Hybrid EGT), coupled with a 10 MW/4.3 MWh lithium-ion battery at its two peaker plants. The battery enables instantaneous response capability while the upgraded gas turbine is ramping up. Using its immediate response ability allows the battery and EGT hybrid system to fill the gaps in renewable generation.

**COMED – BRONZEVILLE COMMUNITY MICROGRID WITH SOLAR AND STORAGE**

The Bronzeville Community Microgrid demonstration project is part of ComEd’s Community of the Future initiative that aims to find new ways of leveraging smart grid technologies and services for community benefit. The microgrid is being built in two phases; 0.5 MW of lithium-ion battery energy storage and 750 kW of solar PV were installed in 2018, with the entire project scheduled for completion by the end of 2019. The project was funded in part by the U.S. Department of Energy. ComEd announced a successful test of the system in April.

**CONSUMERS ENERGY – LUDINGTON PUMPED STORAGE**

Built in 1973 for $327 million (1973 dollars), the Ludington Pumped Storage Plant sits on a 1,000-acre site along the Lake Michigan shoreline. Jointly owned by Consumers Energy and DTE Energy, and operated by Consumers Energy, Ludington is one of the world’s largest energy storage projects and can provide power at a moment’s notice. The system runs by moving water from a 27-billion-gallon reservoir through a set of six turbines that drive electric generators. The plant can generate up to 1,872 MW—roughly enough electricity to serve a community of 1.4 million residential customers. In 2013, a six-year, $800 million upgrade project commenced. The upgrade will extend the plant’s life by at least 40 years, as well as uprate the generating capacity from 1,872 MW to 2,172 MW upon completion in 2020.
NV Energy – Villa Trieste Energy Storage Project

Using a grant from the U.S. Department of Energy from 2009 to 2015, the University of Nevada Las Vegas partnered with NV Energy and Pulte Homes to develop Villa Trieste—a 185-home LEED Platinum residential community. The homes were equipped with smart meters; demand responsive thermostats; automated intelligent agents; a home display of energy consumption; 2 kW private rooftop solar systems; battery storage; and energy efficient appliances, windows, and a building envelope. The project became operational in 2013 and reduced peak demand by more than 65 percent.

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