Energy storage regulations ngerulmud

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Energy storage not only enables the integration of increasing levels of variable renewable generation, it can make the transition to a cleaner grid more efficient, cost-effective, and inclusive. Clean Energy Group works with a diverse array of stakeholders across the country to develop coordinated state, regional and federal policies, programs, and regulations that will unlock the potential of energy storage and deliver benefits to every participant on the electric grid, from grid operators and utilities, to communities and individuals.

Provided energy storage policy and program development support to numerous states including Maine, Massachusetts, Vermont, Connecticut, New Jersey, Pennsylvania, Maryland, North Carolina, Minnesota, Oregon, Washington, New Mexico, Illinois, Hawaii, Colorado, and the District of Columbia.

Supported the development and implementation of the first battery-based virtual power plant-forming programs in multiple states, including Vermont, Massachusetts, Connecticut, Maine, Rhode Island and New Jersey.

Worked closely with state energy agencies and advocacy organizations to integrate energy storage into state energy efficiency plans, unlocking millions of dollars in funding for customer adoption of grid-connected energy storage systems in Massachusetts, Rhode Island, New Hampshire, Connecticut and Maine.

Supported the development of incentive and grant programs providing hundreds of millions of dollars to accelerate the development of energy storage demonstration projects showing how storage can lower peak demand, reduce reliance on fossil fuel power plants, reduce energy system costs, increase renewables integration, and strengthen community resilience in states such as Massachusetts, Connecticut, New Jersey, Maine, Vermont, Washington and Oregon.

Conducted independent analysis on energy storage policy best practices, opportunities and barriers, including such topics as energy storage benefit-cost analysis, interconnection barriers, winter reliability benefits, support for electrification, and opportunities to create virtual power plants.

The electric energy system in our country is undergoing dramatic changes, with new technologies and infrastructural investment occurring at a speed and scale unprecedented in our nation"s history. One manifestation of those changes is the introduction of new land uses into our communities, land uses whose risks, conflicts, and synergies with existing land uses are uncertain or unknown by the host communities.

This issue of Zoning Practice explores how stationary battery storage fits into local land-use plans and zoning regulations. It briefly summarizes the market forces and land-use issues associated with BESS development, analyzes existing regulations for these systems, and offers guidance for new regulations rooted in sound planning principles.

Energy can be stored using mechanical, chemical, and thermal technologies. Batteries are chemical storage of energy. Several types of batteries are currently used, and new battery chemistries are coming to market. The most used chemistry is the lithium-ion battery. These batteries are used in a variety of devices, from cell phones to electric vehicles to large-scale BESS.

Emerging battery chemistries that are not lithium based also present different risk/benefit profiles, including promising characteristics for stationary uses. These include iron-air batteries, zinc-air batteries, flow batteries, and solid-state batteries. Several of these technologies promise to be a good choice for stationary storage and grid integration as they have a longer performance period, showing no degradation for up to 30 years (IEA 2023).

Solid-state batteries are typically used in medical devices like pacemakers and other wearable devices, but over the last decade there has been significant research in this field to expand applicability to automotive, transportation, and other industrial uses (Weppner 2003). These batteries use a solid electrolyte instead of a liquid/polymer gel and could potentially prove to be safer, less flammable, and provide better cycling performance and strength (Ping et al. 2019).

Zinc-air batteries are another emerging technology that could be useful for utility-scale energy storage. Although they have not yet been tested for grid energy storage, these batteries may be safer and more environmentally friendly than lithium-ion batteries since they use water as a component and zinc is less destructive to mine (Proctor 2021).

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