



State Staff Information Sharing “Surge” Call Summary

Energy Storage

March 24, 2017

NARUC’s Research Lab hosted a call on Friday, March 24, 2017 as part of our “surge” effort to help link state staffers to learn from each other on current events in energy regulation. The first call focused on energy storage and how various state commissions are incorporating storage into policy.

State staff from Hawaii, Washington, Oregon, and Arizona spoke on the call. Each commission is taking a slightly different approach to storage technology. While all commissions are at the beginning of what could be a multiyear process, staff shared what they had done so far. As each state differs in its approach and progress on storage policy, all four state staff were not able to answer every question.

Context: aggressive renewable goals

In Hawaii, storage is seen as augmenting the islands’ renewable resources at a cost well below the avoided cost of additional generation – which, in the past, has often been costly imported fuel oil. To both address emissions and high electricity costs, the state has a 100 percent Renewable Portfolio Standard (RPS), to be achieved by 2045. With approximately 15 percent of electric generation coming from renewables, Hawaii will be in need of substantial storage deployments to reach its RPS goal.

In July 2014, Washington awarded \$14.3 million in grants from the state’s Clean Energy Fund to three energy storage projects, based in part on research conducted at the Pacific Northwest National Laboratory. The lab

offered analytical and technical support to the commission as the projects were implemented. The state also has an RPS requiring 15 percent of generation to come from renewables by 2020.

Oregon passed a law in 2016 requiring a complete phase-out of coal-fired electricity by 2035, with at least 50 percent of electricity supplied by Pacific Power and Portland General Electric coming from renewable sources.

The Arizona Renewable Energy Standard and Tariff requires the state’s utilities to procure 15 percent of power from renewable sources by 2025. Further, 30 percent of this renewable power must come from distributed renewable resources.

How are states considering cost/benefit analysis for storage?

With those conditions in mind, storage in Hawaii occurs across three general categories, each with different considerations for costs and benefits: (1) grid-scale solar PV plus storage, (2) commercial customers, and (3) residential customers. Grid-scale solar must pass an avoided cost analysis to determine whether the cost of energy displaced exceeds the cost of the PV and storage systems on a kWh basis. Commercial customers consider storage’s ability to lower demand charges, and residential customers look to achieve bill savings via self-supply with rooftop solar PV.

Washington is looking to incorporate cost/benefit analysis of storage into its

integrated resource plan (IRP) process. The state has three vertically integrated utilities without access to ancillary services that submit IRPs every two years. Following a 2015 white paper, subsequent staff investigation, and public workshops, the commission asked sought comments on incorporating storage into the IRP process. The commission released a draft policy statement for comment in March 2017 with recommendations on how to change the IRP process, with particular focus on making sure utilities would be capable of valuing storage using sub-hourly monitoring in their IRPs.

Oregon relies heavily on hydropower, which typically supplies more than half of the state's electricity. In 2015, House Bill 2193 directed utilities to procure 5 megawatts of storage by 2020. Oregon is pursuing a strategy of mandating storage and looking for system evaluations and project proposals to reveal storage's true valuation.

Arizona has vertically integrated utilities looking at storage research and development for peak shaving. The state currently has a 10-megawatt battery in service.

What benefits are accounted for and how are they quantified?

Hawaii sees storage as having two main benefits: avoiding having to run costly thermal generation and integrating renewables. Further, storage can have the effect of unbundling ancillary services on an avoided cost basis.

Washington looks at storage as deferring additional investments in transmission and distribution, mitigating outages, and avoiding having to build new capacity. With stable electricity prices in the northwest, the challenge is getting utilities to consider the locational benefits of storage within the grid.

Oregon instructed utilities to include National Ambient Air Quality Standards (NAAQS) pollutant reduction under the Clean Air Act.

What use cases are proposed?

Oregon proposed bulk energy, ancillary services, transmission services, distribution services, and customer energy services. Hawaii prioritizes integration of renewables. Arizona cites ancillary benefits and opportunities for peak shaving.

How is the cost of storage included in rates?

In Hawaii, storage costs are reflected in power purchase agreements made with the islands' investor-owned utilities or electric cooperatives. Arizona is slightly different, primarily due to the fact that storage is not defined as a "renewable energy" technology under the state's current definition. Costs are recovered through two categories: grid management for renewables and energy storage for distribution.

Looking ahead

Each of these states is confronting different conditions and challenges in transitioning to cleaner generation, and each is at a different stage in factoring storage technologies into the discussion. What all four states have in common are commitments to procure more renewable generation. These goals will require thoughtful state policies, particularly as storage matures and grows cheaper.



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