BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

UM 1751

In the Matter of PUBLIC UTILITY COMMISSION OF OREGON, Implementing Energy Storage Program Guidelines pursuant to House Bill 2193.	Staff Comments

Staff Comments on Section A and B of Order No. 16-316 in Docket UM 1751

Generally, Staff agrees with approach taken by the Commission in its Draft Guidelines and suggests some additions in an effort to help define the resource and the uniqueness of information necessary to evaluate energy storage. Staff believes that the Commission could be more prescriptive regarding information that must be included in the utility program proposal. Guidelines can be more prescriptive then rules, which tend to be broader given the nature of codification. Additionally, Staff believes the Commission has an opportunity to create resource specific guidelines, such that utilities and stakeholders better understand the extent of information the Commission needs to make decisions on storage proposals.

Project Guidelines

"Qualifying Energy Storage System"

Staff recommends the Commission include language in the Project Guidelines that will help ensure that programs typically categorized as demand response programs cannot be "qualifying" energy storage projects under House Bill 2193. Staff is concerned that the definition of "energy storage system" in House Bill 2193 is so broad that various types of demand response projects could be considered energy storage systems.[1] As an example, thermal energy storage such as pre-cooling of food storage facilities could be considered energy storage when traditionally such a strategy was deployed as a demand response program. Similarly, PGE's efforts to explore commercial and residential water heater demand response could under the current legislative definition be considered energy storage.

[1] House Bill 2193, Section 1(2) defines "energy storage" as "a technology that is capable of retaining energy, storing the energy for a period of time and delivering the energy after storage."

Recommendation:

Add language to the Project Guidelines specifying that "qualifying energy storage programs" under Section 3 of House Bill 2193 do not include demand response asset development, but such technologies may be contemplated as one of the many storage use cases or services.

Include as criteria for qualifying energy storage systems that the system must be a complete electricity storage system that can connect to the electric grid or operate in a stand-alone mode comprising two major subcomponents: storage and the power conversion infrastructure.

Proposal Guidelines

Scope of Utility Work to Evaluate Storage Potential

In Staff initial comments in UM 1751, dated June 22, 2016 Staff noted the phases of resource development: 1) emerging technology, 2) piloting to full or firm resource development, and 3) acquisition. At that time, Staff noted that the understanding of energy storage and therefore tool development for energy storage (modeling for system potential or cost effectiveness) follows a similar phased approach. Staff also noted that the pace of acquisition of storage and market maturity contemplated by HB 2193 places energy storage activity within or on the cusp of a resource piloting phase.

Staff believes it is important that the guidance given to the utilities and stakeholders as well the expectations for specificity of work product reflect the nature of the resource development phase. For example, the scope of a system evaluation and location assessments could require massive amounts of data for a small number of energy storage megawatts deployed. Identifying promising locations and therefore energy storage projects is one level of system evaluation that may be appropriate for a project authorized by the Commission under House Bill 2193. Another level of system evaluation that would require the utilities to systematically review each substation, each feeder and each power plant profile for the highest and best use case or combination of use cases may be too rigorous for the purposes of House Bill 2193.

Additionally, better defining the depth or the scope of work would aid the stakeholders in their efforts to guide the utilities to projects that meet all ratepayer interests. The guidelines can be adjusted as community knowledge and technology and intensity of energy storage resource acquisition matures.

Recommendation:

Include language in the Proposal Guidelines to ensure that assessment of energy storage potential and system evaluations is commensurate with the level of anticipated resource acquisition and technology maturity.

Requirements for utility proposals

Staff suggests the Commission add the phrase ", but not limited to;" to subsection (1) of Proposal Guidelines so that it reads, "Technical specifications for each project, including, but not limited to;". Staff believes the addition of this language will give the Commission additional discretion, or at least communicate that the following list of proposal information filing requirements is not comprehensive or exclusive.

Staff also recommends the Proposal Guidelines require greater specificity about energy storage characteristics and use cases. Staff believes that the utility proposal should discuss, where applicable, the storage characteristics and capabilities of the technology and project proposed. Staff believes that requiring this information in the proposals will obviate the need for the Staff or stakeholders to request this information through a time-consuming data request process. Additionally, by including this information in the proposal filing the utilities will help the Commission, Staff and stakeholders understand potential use cases and storage system application.

Recommendation:

Add the phrase ",but not limited to;" to Item 1 of Proposal Guidelines.

Require utilities to include the following information in proposals:

1. Storage System Power and Discharge Duration – When characterizing the rating of a storage system, the two key criteria to address are power and energy. Power indicates the rate at which the system can supply energy. Energy relates to the amount of energy that can be delivered to loads. The amount of energy stored determines the amount of time that the system can discharge at its rated power, hence the term discharge duration.
2. Storage Emergency Power Capability – Some types of storage systems can discharge at a relatively high rate for relatively short periods of time. For example Na/S batteries are capable of producing two times their rated output for relatively short periods of time. Such a feature is highly valuable and should be noted with any proposal as the Commission contemplates the proposed use case and value stacking.
3. Storage System Round-trip Efficiency – All energy transfers and conversion processes have losses. Storage system round-trip efficiency reflects the amount of energy that comes out of storage relative to the amount put into storage.

4. Charging Energy Costs – The energy cost for storage consist of all costs incurred to purchase energy used to charge the storage, including the cost to purchase energy needed to make up for (round trip) energy losses.
5. Lifetime Discharges – For some storage technologies the extent to which the system is discharged also affects the storage resource's useful life. To the extent that the storage medium degrades and must be replaced during the expected useful life of the storage system, the cost for that replacement must be added to the variable operating cost of the storage system.
6. Response time – Storage response time is the amount of time required to go from no discharge to full discharge.
7. Ramp Rate – Ramp rate is an important characteristic of storage and influences the viability of using the storage system for some types of applications.
8. Charge Rate – Charge rate is the rate at which storage can be charged and therefore important because often storage systems must be recharged so it can serve load or meet other demands requiring a discharge of energy.
9. Energy Retention – Energy retention is the amount of time that storage retains its charge. Energy retention is important because of the tendency of some types of storage to self-discharge or to otherwise dissipate energy while not in use.
10. Storage System Reactive Power Capability – Commonly referred to as VAR support is a capability that is not inherent in most energy storage systems, but is one that can be added at a small incremental cost.
11. Decommissioning and Disposal Needs and Costs – Decommission related costs should be included in the total cost to own and to operate storage.

This concludes Staff's comments.

Dated at Salem, Oregon, this 30th day of September, 2016

Jason Salmi Klotz
Senior Utility Analyst
Energy Resources and Planning Division