



**April 3, 2017**

**Mr. Steven V. King  
Executive Director and Secretary  
Washington Utilities and Transportation Commission  
1300 South Evergreen Park Drive  
Olympia, WA 98504-7250**

**Re: Comments of Climate Solutions on Dockets UE- 161024, Draft Report and Policy Statement on Treatment of Energy Storage Technologies in Integrated Resource Planning and Resource Acquisition**

Dear Mr. Steven King,

Climate Solutions appreciates the opportunity to provide comments on docket UE-161024, Draft Report and Policy Statement on Treatment of Energy Storage Technologies in Integrated Resource Planning and Resource Acquisition. We applaud the Commission for its commitment and enthusiasm in ensuring that storage resources are fairly evaluated during the planning and resource acquisition processes.

Climate Solutions is a Northwest-based clean energy nonprofit advocacy organization with the mission of accelerating practical and profitable solutions to global warming. The Northwest has emerged as a center of climate action, and Climate Solutions is at the center of the movement as a catalyst, advocate, and campaign hub. For almost 20 years, we have cultivated political leadership in the Northwest for the proposition that clean energy and broadly-shared economic prosperity go hand-in-hand, building a powerful constituency for local, regional, and national action on climate and clean energy.

When properly valued, storage has the potential to accelerate the transition to a clean electric grid, while maintaining reliability, increasing resiliency, and lowering costs to customers. As policies and regulations put increasing pressure on the electric and transportation sectors to reduce greenhouse gas emissions and other toxic air pollutants, storage will facilitate growing levels of variable renewable energy resources and new sources of mobile demand. Climate Solutions supports the framework that the Commission has outlined in the draft policy statement, and sees this framework as a critical step to overcoming the overarching barriers that exist for energy storage.

### **Changing Planning Paradigms**

The draft policy statement provides a very balanced approach provides necessary guidance for Washington investor-owned utilities. We agree with the requirement for utilities to demonstrate that they have fully analyzed storage as a potential resource during any new resource acquisition

process. Due to their inability to recognize the multiple value streams of storage, traditional utility models often fail to select storage, even when cost-effective. In a rapidly changing electricity sector with increased penetration of variable sources of energy, a rise in customer-sited generation, and projected growth in transportation electrification, flexible resources like storage that provide benefits for multiple systems that make up the grid can optimize the grid's performance at a lower cost and lower risk than traditional fossil fuel resources.

Washington has given clear direction that decarbonizing the state's energy sources is in the public interest. Maturing regulations, recent renewable energy and storage policies, and advances in storage technologies have resulted in greater deployments of storage in the U.S., which is projected to reach 1.7 GW by 2020.<sup>1</sup> As a result, the costs of storage have declined significantly, making storage an increasingly viable option for procurement. Storage holds great promise to avoid the need for additional investments in fossil fuels and can put Washington on the pathway to meeting the renewable energy and carbon reduction goals of the state. This framework put forth by the Commission can help Washington maintain a leadership role in the clean energy sector, while providing a logical structure that can be replicated in other jurisdictions wishing to advance the deployment of clean energy resources.

As acknowledged by the Commission, utilities must move beyond resource planning that occurs in distinct silos in order to fully evaluate and model the multiple services and value streams of energy storage. The distribution, transmission, and generation sectors of utility planning and operations are increasingly intertwined in a changing utility landscape. Storage plays a much larger role than simply charging and discharging, and therefore must move beyond the lens of being analyzed simply as generation. A study completed by Lazard identified only few scenarios in which storage is currently cost effective when analyzing the value of a single service.<sup>2</sup> However, if an entity is able to model and monetize multiple services and value streams, storage technologies are more likely to be identified as cost-effective. A more cohesive planning framework that integrates the distribution, transmission, and generation systems will be much more capable of analyzing resources that can optimize the grid at the lowest reasonable cost. In a changing paradigm, planning in silos will leave benefits of technologies like storage unrealized, leading to resource selections that may not be in the public's best interest.

## **Modeling Guidelines**

Climate Solutions supports the Commission's encouragement to transition to subhourly modeling. Furthermore, we applaud Avista and PSE for moving forward with new models that have the capability to model their systems on a more granular level. While we acknowledge the complexity of subhourly modeling, it is important to not underestimate the long-term benefits that in-depth modeling tools will provide, including more accurate modeling of renewable energy integration and other valuable services that energy storage can provide and that may be left unrealized in traditional models. Utilities will need flexibility and time to fully utilize new models, so we support the net-cost approach as an interim step to assessing the stacked benefits of storage.

---

<sup>1</sup> <https://www.greentechmedia.com/articles/read/us-energy-storage-market-grew-243-in-2015-largest-year-on-record>

<sup>2</sup> Lazard, Levelized Cost of Energy Storage 2.0, 2016.

The net-cost approach will be useful for valuing distinct services of storage, but we believe that utilities would benefit from guidance on a minimum set of well-known benefits that should be included in analyses. In most cases, storage will provide multiple services, sometimes more reliably and at a lower cost than a new power plant. Hence, storage should not be evaluated on the basis of a single use. These benefits include, but are not limited to peaker plant replacement, frequency regulation, spinning and non-spinning resources, voltage support, transmission and distribution upgrade deferral, transmission congestion relief, and resource adequacy. Beyond the grid services that storage provides, it is also important that utilities consider the potential greenhouse gas reduction benefits that storage can offer. Many of the identified services could avoid new investments in fossil fuels or reduced dispatch of the most inefficient power plants, resulting in real reductions that are in the public interest. In implementing the energy storage program in Oregon, staff's recommendation contained a list of applications that must be considered for evaluation.<sup>3</sup> As the Commission finalizes the draft policy statement, we recommend that it provide similar direction to utilities on the set of value streams expected to be analyzed under the net-cost framework.

At this stage of deployment, we recognize that the full range of services that storage can provide will be challenging to quantify prior to additional analysis on existing and future projects. We appreciate the Commission's flexibility and acknowledgement that projects that are reasonably competitive may still be deemed prudent, even if not the least cost alternative identified by the analysis.

### **Cost Assumptions**

We thank the Commission for acknowledging the importance of learning cost curves for emerging technologies, such as storage. There are legitimate challenges in accurately estimating the true cost of emerging technologies, but applying an adequate learning curve for emerging technologies can help safeguard against assumptions based on outdated data. Wind energy costs have declined by 90% since the 1980s<sup>4</sup> and installed solar costs have declined by over 50% since 2010.<sup>5</sup> With the expanding penetration of renewable energy, emerging storage policies, and increasing pressure to reduce fossil generation, storage prices are rapidly declining and industry participants project another 40% decline in costs by 2020.<sup>6</sup> With a wide range of storage technologies and chemistries, it is important to note that each technology will have distinct cost declines and some may be falling at a sharper rate than others.

We appreciate the guidance from the Commission to rely on cost data from reliable, independent third parties, but want to ensure that the data has been recently updated. It is clear that using data that is even slightly out-of-date will have substantial implications for evaluating the cost-effectiveness of storage, so the Commission should provide further guidance that cost

---

<sup>3</sup> UM 1751, Staff recommendation adopted in the matter of PUC of Oregon Implementing Energy Storage Program Guidelines pursuant to House Bill 2193. <http://apps.puc.state.or.us/orders/2017ords/17-118.pdf>

<sup>4</sup> <http://www.awea.org/falling-wind-energy-costs#CostofWindEnergy>

<sup>5</sup> Lawrence Berkeley National Lab, Utility-Scale Solar 2015: An Empirical Analysis of Project Cost, Performance, and Pricing Trends in the United States, 2015.

<sup>6</sup> Lazard, Levelized Cost of Energy Storage 2.0, 2016

assumptions must be from recent data. Furthermore, it is critical that utilities are clear and transparent about cost assumptions so that stakeholders and other industry representatives can provide the most accurate and useful data for resource planning models.

We again want to highlight that transportation electrification has quickly gained traction in recent years. After a battery no longer meets the requirements necessary to power an electric vehicle, up to 80% of the battery capacity remains, creating an opportunity for deploying recycled batteries on the grid as a storage option. Aggregating recycled batteries from EVs or other electric fleets could provide an additional cost-effective option for utility-scale or distributed storage, which should be incorporated into cost assumptions when analyzing various storage technologies. Utilities could engage in innovative partnerships with large fleet owners on the front-end of vehicle purchases, for example owning and leasing on-board batteries to operators for their first-life use, to better share the cost of battery assets and accelerate transition to electrified transit.

### **Pursuing other funding streams**

The Clean Energy Fund has been an extremely effective tool for deploying new and innovative projects in Washington State. With an emphasis on storage and other emerging smart grid technologies, utilities across the state have been able to pilot different technologies and analyze their effectiveness. Pilot projects to incorporate emerging technologies into utility portfolios provide a great opportunity for utilities to learn and better understand how various technologies can be integrated into their systems. To the extent that a project has above market costs, we support the Commission's encouragement for utilities to pursue energy storage funding opportunities that may facilitate additional deployment.

### **Rate Design**

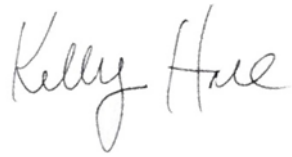
Climate Solutions appreciates the flexibility and openness for new rate designs to reflect the cost of serving customers during high-demand periods. Giving utilities the ability to adjust electricity prices is an effective tool for encouraging energy behaviors that can reduce overall system costs, avoid capital upgrades to the grid, and manage the existing infrastructure more efficiently. While we are agnostic on behind-the-meter storage versus grid storage, we believe that rate design is an effective tool for encouraging customer-use patterns that can enhance optimization of the grid. The flexibility around rate design in the draft policy statement is consistent with the direction of the Commission's guidance for the transportation sector as well. We are very supportive of innovative thinking around rate design for optimizing the grid, and see this as an opportunity to reduce costs for customers.

### **Conclusion**

We again thank the Commission for their direction and guidance on incorporating energy storage into utility planning processes. We believe that this framework is a balanced and logical step for reducing existing barriers to fully valuing storage. With a wide range of benefits, energy storage may be a cost effective means for avoiding costly upgrades to the system, integrating renewables, and reducing carbon emissions from the grid. This policy statement aligns with the

long-term vision of Washington State to be a leader in clean energy resources and achieve deep carbon reductions. We look forward to continued engagement with the Commission and utilities on integrating energy storage in utility planning processes.

Sincerely,

A handwritten signature in cursive script that reads "Kelly Hall".

Kelly Hall  
Washington Policy Manager  
Climate Solutions

A handwritten signature in cursive script that reads "V. Gutman-Britten".

Vladimir Gutman-Britten  
Washington Director  
Climate Solutions