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***Via Electronic Filing***

September 25, 2015 Mr. Steven V. King

Executive Director and Secretary

Washington Utilities and Transportation Commission

P.O. Box 47250

1300 S. Evergreen Park Drive S.W. Olympia, WA 98504-7250

## RE: Comments on Docket UE-151069, Modeling Energy Storage in Integrated Resource Planning

Dear Mr. King:

Attached for filing in docket UE-151069 are the **Comments of the Interstate Renewable Energy Council, Inc. Responding to the UTC’s Notice of Opportunity to Comment Issued August 7, 2015.**

Thank you for your assistance. Sincerely,

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## BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

**Docket UE-151069**

**COMMENTS OF THE INTERSTATE RENEWABLE ENERGY COUNCIL, INC. RESPONDING TO THE UTC’S NOTICE OF OPPORTUNITY TO COMMENT ISSUED AUGUST 7, 2015**

**September 25, 2015**

1. **INTRODUCTION**

The Interstate Renewable Energy Council, Inc. (“IREC”) appreciates the opportunity to file these comments and the attached report in response to the Utilities and Transportation Commission’s August 7, 2015 Notice of Opportunity to Submit Comments regarding modeling energy storage in integrated resource planning. IREC was not able to participate in the workshop in this docket held on August 25, but has reviewed the Staff White Paper.

As discussed below, IREC’s focus is on the potential for customer-sited storage, and a proposed methodology for valuation of customer-sited storage coupled with solar energy. The Staff White Paper and the UTC’s call for comments do not appear to contemplate this option, and IREC urges the Commission to consider it. Siting utility-controlled storage at customers’ premises allows the significant benefit of back-up power for customers during utility outages, while providing all of the other benefits that centrally located storage can provide.

IREC is a 501(c)(3) non-partisan, non-profit organization working nationally to expand and simplify consumer access to reliable and affordable distributed clean energy by: (1) developing and advancing regulatory policy innovations; (2) generating and promoting national model rules, standards, and best practices; and (3) providing workforce training, education, and credentialing. IREC works independently from renewable energy industries, trade associations, technologies, and advocacy organizations; and, though we promote the creation of robust, competitive clean energy markets, IREC does not have a financial stake in those markets.

Grounded in the latest research and objective analysis, IREC’s work helps inform and guide fact- based regulatory decision-making and workforce development efforts. Through collaborative

partnerships with diverse stakeholders, IREC seeks to build consensus and achieve workable solutions to create a sustainable and economically strong clean energy future. The scope of IREC's work includes expanding programs that facilitate consumers’ ability to host a renewable energy system to directly self-supply energy needs or provide energy to the grid, and implementing shared renewable energy programs to expand options for consumers that cannot host a renewable energy system.

IREC looks forward to further participation in this docket.

## Customer-Sited Energy Storage Has Inherent Advantages

Staff’s White Paper provides a thorough overview of storage valuation, but does not appear to contemplate customer-sited storage. As well, the call for comments does not address the issue, though item A(3) asks for modeling of the benefit of “outage mitigation,” which could include the value of back-up power. IREC suggests that customer-sited storage has the inherent added benefit of back-up power and can provide all of the other services that centralized storage can, and should be the first preference. In particular, customers with net metered solar arrays can add storage behind a single inverter, and have the potential for operation during extended outages.

In other jurisdictions, a utility preference for centralized storage has been premised on the notion that the utility can control energy storage facilities on their own property, but cannot rely on storage sited on customer property to be available when needed. This notion is incorrect – it is certainly possible to give the utility full control of customer-sited storage facilities, other than to let the customer rely on the stored energy during outages.

As one example, Sunverge installs utility-owned storage facilities at customers’ sites, with hundreds of systems in place around the world. IREC suggests that storage facilities do not fall under the rubric of natural monopolies, and therefore is not promoting the Sunverge model, but the existence of Sunverge is proof that customer-sited storage can work. Instead, IREC suggests that customers can own storage facilities themselves, or lease them from third parties, as is done by customers do with solar arrays.

The advantages of customer-sited storage go beyond back-up power. First, the customer provides the site for the storage facility, relieving the utility from using or acquiring land for

siting. Second, centralized storage entails line losses both delivering the energy to the facility and discharging the energy from the facility and delivering it to customers. And third, one hundred facilities capable of storing 10 kWh each (such as the Tesla Powerwall) totaling a megawatt are collectively more reliable than a single one MW storage facility. With a very high degree of confidence, at least 95 out of the one hundred small facilities will be operable at any given time, while the large facility can have a malfunction that results in no functionality.

## Customers with Solar Facilities Are the Most Likely Early Adopters

Across the country, very few net metered solar facilities are coupled with storage, though it appears likely that will change over the coming decade. IREC does not have recent data from Washington, but several years ago, the state had a much higher percentage of net metered customers than in other parts of the country. Roughly, in Washington, over 5% of net metered customers also had batteries, while the figure nationally is below 1%. Presumably, this relates to the likelihood of outages in remote, wooded areas.

IREC is not aware of residential use of battery-only systems, though there are storage facilities for commercial customers as a means of controlling demand charges. Residential customers desiring back-up power almost universally rely on generators. In general, from conversations with companies that provide commercial storage, it appears that most systems are co-located with solar facilities, though controlling utility demand charges with storage is independent of use of solar facilities.

Solar customers are the most likely early adopters of energy storage for two reasons.

First, they have the interest in self-generation that led them to install a solar array, making them the group most likely to consider related options. As has often been reported, customers tend to become more aware and interested in their energy consumption after installing a solar facility. And second, solar customers require an inverter, disconnects, wiring, and permit approvals already, making the addition of storage fairly simple. While an inverter capable of two-way power flows is required for storage facilities, which is a bit more expensive than an inverter for the output of a solar array, the cost of storage is lower for solar customers than for others.

## IREC’s Solar Plus Storage Valuation Report

Attached to these comments is a report commissioned by IREC and conducted by Clean Power Research (CPR) to establish a valuation methodology for distributed solar coupled with storage, based on an assumption of utility control of the stored energy. The report focuses on Hawaii and gives preliminary value estimates for Hawaii that are not relevant to Washington, but the methodology is generally applicable. Hawaii has very high electricity rates, very high capacity costs, and experiences system peaks after sunset, making it attractive to install storage. For the purposes of demonstrating the application of the methodology, the report provides an example using the assumption that the utility will discharge the customer-sited energy storage on the 90 highest load periods of the year.

For Hawaii in the aforementioned sample run of the methodology, the report finds that energy storage adds 7.9 cents per kWh of energy generated by the solar array; that is, a solar plus storage facility costs more than a solar-only facility and actually produces less energy, after accounting for losses in energy storage. However, the report finds that the levelized value per kWh generated is 10.3 cents greater with the addition of storage than the value per kWh for

solar-only facilities. For Hawaii, it appears that adding storage to a solar array adds a net 2.4 cents of value per kWh.

Realistically, storage is likely to cost as much in Washington as in Hawaii, but have less value in Washington. Still, energy storage costs are coming down and utility rates are likely to continue to rise, making storage a viable option for Washington in the future. To plan for that eventuality, IREC suggests that the Commission consider the methodology in the IREC/CPR report, and the general premise outlined in these comments regarding the advantages of customer-sited energy storage.

## IV. CONCLUSION

IREC appreciates the opportunity to participate in the Commission’s consideration of the role that energy storage can play in integrated resource planning, and looks forward to continued involvement in this docket.

Respectfully Submitted on September 25, 2015.

By:

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# Attachment:

Valuation of Solar + Storage in Hawaii: Methodology