Exh. JES-8
Dockets UE-170033/UG-170034
Witness: Jennifer E. Snyder

BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY,** **Respondent.**	**DOCKETS UE-170033 and UG-170034 (*Consolidated*)**

EXHIBIT TO
TESTIMONY OF

Jennifer E. Snyder

ON BEHALF OF STAFF OF
WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION

PSE response to Staff Data Request No. 247

June 30, 2017

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Dockets UE-170033 and UG-170034
Puget Sound Energy
2017 General Rate Case

WUTC STAFF DATA REQUEST NO. 247

WUTC STAFF DATA REQUEST NO. 247:

RE: Glacier Battery Storage System

Did PSE evaluate alternative battery chemistries for the Glacier Project? Please provide all internal documents that illustrate the decision-making process regarding the choice of lithium-ion phosphate battery chemistry for the Glacier Project.

Response:

Yes. Puget Sound Energy ("PSE") compared the lithium-iron phosphate battery recommended by RES Americas, its engineering, procurement and construction contractor ("EPC contractor"), to a vanadium flow battery offered by UniEnergy Technologies ("UET").

In November 2013, when the Washington State Department of Commerce issued a request for proposals ("RFP") for the Clean Energy Fund grant ("CEF grant"), PSE was still new to battery storage and engaged in performing preliminary feasibility analysis. Given the short turnaround time between issuance of the RFP on November 15, 2013 and the date three weeks later when proposals were due on December 5, 2013, PSE had limited time to complete its feasibility assessment, evaluate battery technologies and suppliers, and submit a proposal. To meet this compressed timeline, help minimize project risks, and improve PSE's chances for receiving a grant award that would substantially reduce the cost of the project, PSE issued a request for qualifications ("RFQ") seeking an EPC contractor. RES Americas was ultimately selected due, in part, to its experience evaluating and developing battery storage systems, and its ability to recommend a technology and supplier based on this experience in time to meet the CEF grant proposal deadline.

RES Americas proposed a turnkey project using lithium-iron phosphate batteries from BYD Company Ltd. ("BYD"). At the time of its proposal, RES Americas had evaluated more than 120 energy storage developers and manufacturers, representing a wide range of technologies including battery designs based on a variety of chemistries. RES Americas evaluates new technologies on an ongoing basis and tracks current pricing for most major vendors to maintain a current understanding of existing products and to recommend the best technologies for specific applications. At the time, RES Americas was using the same battery system for two other energy storage projects, one operational and one under construction for RES Americas ownership.

PSE also gave substantial consideration to UET, a Mukilteo firm commercializing a new form of vanadium flow battery, with engineering and construction to be performed by a contractor. These batteries were selected by Avista for a 1 MW/3.2 MWh battery storage system in Pullman, Washington and by Snohomish County Public Utility District No. 1 for a 2.2 MW/8 MWh facility located in Everett, Washington.

While both suppliers offered viable options, PSE ultimately selected the BYD batteries because BYD offered lower prices and a proven, commercially-ready technology that meets PSE's technical, operational and safety requirements. Additionally, warranty terms for the BYD batteries were more favorable, and BYD had demonstrated its ability to deliver a quality product as scheduled. PSE describes RES Americas' recommendation, the benefits of the selected technology, its comparative analysis of the BYD and UET batteries, and other considerations related to battery selection in the following materials:

- Clean Energy Fund application, provided as Attachment A to PSE's Response to WUTC Staff Data Request No. 252, pages 6-7; and

- PSE's presentation to management on November 6, 2013, provided as part of PSE's Response to WUTC Staff Data Request No. 251.

The evaluation matrix summarizing the results of PSE's EPC contractor RFQ has been provided as the Ninth Exhibit to the Prefiled Direct Testimony of Michael Mullally, Exhibit No.___(MM-10HC).