EXH. CPD-2
DOCKETS UE-22___/UG-22___
2022 PSE GENERAL RATE CASE
WITNESS: CURT D. PUCKETT

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY,** **Respondent.**	**Docket UE-22____** **Docket UG-22____**

FIRST EXHIBIT (PROFESSIONAL QUALIFICATIONS) TO THE PREFILED DIRECT TESTIMONY OF

CURT D. PUCKETT

ON BEHALF OF PUGET SOUND ENERGY

JANUARY 31, 2022

PUGET SOUND ENERGY

FIRST EXHIBIT (PROFESSIONAL QUALIFICATIONS) TO THE PREFILED DIRECT TESTIMONY OF CURT D. PUCKETT

Q. Please state your name and business address.

A. My name is Curt D. Puckett, and my business address is 179 Pinehill Lake Dr, Horton, MI 49246. I am employed by Det Norske Veritas ("DNV") as Vice President, Energy Systems, North America, Energy Insights, U.S.A., Analytics & Digitalization. DNV was hired by Puget Sound Energy ("PSE") to support the gas load research analysis filed in this proceeding as Exh. CDP-3.

Q. What are your duties as Vice President, DNV for PSE?

A. On this project I was the Project Sponsor, responsible for overseeing and approving the analytics conducted in support of the 2021 Gas Load Research project.

Q. Briefly describe your relevant employment experience.

A. I have more than 40 years of experience supporting the utility industry, primarily through statistical research and analysis. I am currently Vice President in the Analytics & Digitalization Group within the Markets & Risks department. In this role, I focus on emerging data analytics projects, such as end-use data development and expanding DNV's interval load analytics practice areas.

I spent my early career with Consumers Energy, formerly Consumers Power Company, located in Jackson, MI, in the areas of load research and energy efficiency/demand response evaluation. I was a key member of the DSM Working Group of the Michigan Electricity Options Study in 1986-1987. I was actively involved in the development of the company's demand-side management and integrated resource planning strategies, presenting expert testimony for the company on these issues in Case No. U-9172 and Case No. U-8871.

In 1989, I started *RLW Analytics* with Dr. Roger L. Wright, focusing on the growing need to evaluate the performance of energy efficiency and demand response programs using statistical techniques and engineering rigor. I began by establishing and managing the East Coast Operations with its primary office in Middletown, CT. In 2005, I was named President and Chief Executive Officer.

During my tenure at *RLW*, my primary focus was on the design and implementation of utility load research, end-use metering, marketing, and energy efficiency evaluation projects. I was responsible for the company's Load Research Service Bureau, directed at providing design and analysis services to gas and electric utility

clients. This included working on gas load research projects for several clients including Consumers Power, Public Service of Colorado (currently Xcel Energy), East Ohio Gas Company, Minnegasco, and Michigan Consolidated Edison Company (currently DTE Energy).

In 2009, KEMA (now DNV) acquired *RLW Analytics*. As Senior Vice President of Sustainable Use Services, I was responsible for overseeing North America's Eastern operations, which includes clients in Maine, Massachusetts, Connecticut, New York, Virginia, Michigan, Wisconsin, and Tennessee. In 2013, I was placed in charge of Key Initiatives, focused on expanding interval load analytics projects. This has included projects across the globe including Ireland, Nevis, St Kitts, Belize, and the Kingdom of Saudi Arabia (KSA). In KSA, I was one of the key architects of the world's largest electric end-use metering and forecasting projects that used non-intrusive load monitoring to isolate important end-use loads. In addition, I was one of the lead analysts on a Kingdom-wide water end-use project that used machine learning to isolate end-uses.

In 2021, DNV created the Analytics & Digitalization group, where I serve as a senior advisor with a continued focus on how best to leverage interval load data (either through traditional load research or AMI deployment) to a growing number of client business use cases.

In addition to the experience above, I have participated in professional industry groups such as the following:

- **US Department of Energy Technical Advisory Group**: I supported the evaluation of ARRA-funded consumer behavior projects.

- **Association of Edison Illuminating Companies ("AEIC")**: I have been an instructor at the AEIC Advanced Applications in Load Research workshop for the past few decades. In 2021 I was awarded the Lifetime Achievement Award in Load Research by the Load Research & Analytics Committee.

- **Western States Load Research Alliance**: I am a regular contributor to the Western States Load Research Alliance Spring and Fall conferences.

- **DA/DSM Europe**: I served on the conference committee for 1997-1999.

- **Association of Energy Service Professionals ("AESP")**: I served three years as a charter board member of the Association of Demand-Side Management Professionals, the predecessor of AESP.

- **Peak Load Management Alliance ("PLMA")**: I served two years as a charter member of the PLMA board of directors.

Q. Have you testified in utility rate proceedings?

A. Yes. I was a key member of the DSM Working Group of the Michigan Electricity Options Study, 1986-1987. I was actively involved in the development of the Company's demand-side management and integrated resource planning strategies, presenting expert testimony for the Company on these issues in Case No. U-9172 and Case No. U-8871.

In 2020, I testified as an expert in Load Research before the New Brunswick Energy Utility Board on behalf of New Brunswick Power Company. The testimony was in support of a Load Research Reinvigoration Project being conducted for the utility.

Below, see a table summarizing other relevant projects and roles I performed.

Projects

Puget Sound Energy, End-Use Data Development Project **2017 – Present**

Position:	Project Lead
Description:	Puget Sound Energy's Forecasting team asked DNV to help it manage the development of indigenous end-use data for use in a bottom's up forecasting strategy. DNV is supporting through the development and following a road map to generate end-use load shapes for cross department planning purposes.
Activities performed:	Mr. Puckett is leading the team of researchers on the application of system wide AMI data to various PSE business practices. The project has included conducting a residential conservation survey, using the resulting data to develop energy shares, and turning on AMI data to capture 8760 load profiles for customer segments with specific end-uses of interest.

Tennessee Valley Authority, Meter Data Utilization and Analytics Services **2017 – Present**

Position:	Project Lead
Description:	Tennessee Valley Authority asked DNV to help it manage the onslaught of AMI data being collected by the 154 local power companies. DNV is supporting a series of early demonstration projects to explore the value of advanced analytics to the local power company's operations.
Activities performed:	Mr. Puckett is leading the team of researchers on the application of system wide AMI data to the business practices of the local power companies. The project is working with the TVA IT team to develop a data lake, validation, editing and estimation process, and analytical framework for the future.

Electricity Co-Generation and Regulatory Authority (ECRA) of Saudi Arabia, Electricity End-use Data Development **2015 – 2018**

Position:	Key Researcher
Description:	With support from the Saudi Electric Company, ECRA asked DNV to develop electricity end-use data in support of a bottoms-up forecast for the Kingdom. The project uses a multi-tiered, nested sampling strategy that combined billing data with survey data, whole premise interval load and end-use metering through non-intrusive load monitoring.
Activities performed:	Mr. Puckett is one of the architects of the project, which focuses on developing hourly electric load information.

Tennessee Valley Authority, Evaluation of EnergyRight Solutions Energy Efficiency and Demand Response Portfolio **2013 – Present**

Position:	Project Sponsor
Description:	Tennessee Valley Authority asked DNV to conduct a multi-year impact and process evaluation of a wide-ranging portfolio of its offerings and from and local power companies. The portfolio includes residential, commercial, low-income, prepaid, renewable, and conservation voltage reduction programs.
Activities performed:	Mr. Puckett is part of the executive team leading the multi-year evaluation. The evaluations have spanned all customer classes and a wide array of measure groups. Multiple evaluation approaches including meter isolation have been used during the engagement.

2012 – Present

Southern Maryland Electric Cooperative, Load Research Services

Position:	Subject Matter Expert, Lead Consultant
Description:	DNV is providing load research support for Southern Maryland Electric Cooperative (SMECO). This initiative involves the sample design, data analysis, and reporting of all

rate classes in support of cost-of-service and rate design for use by PJM Interconnection LLC.

Activities performed: Mr. Puckett has been a consultant to SMECO since 2009 when he helped establish its load research initiative and became involved with the evaluation of its CoolSentry programmable thermostat demand response program.

New York Power Authority, Interval Load Analytics Services **2010 – Present**

Position: Subject Matter Expert, Lead Consultant

Description: New York Power Authority (NYPA) asked DNV to provide interval load analytics services.

Activities performed: Mr. Puckett has served interval load analytics consultant since 2010. Annually, he oversees DNV staff as they work with NYPA staff to secure, process, and analyze all the hourly interval load data for more than 1,100 of the Company's 11,000 accounts.

Old Dominion Electric Cooperative, Load Research Support **2001 – Present**

Position: Subject Matter Expert, Lead Consultant

Description: DNV was asked to provide load research support to Old Dominion Electric Cooperative (ODEC). This involves sample design, data analysis, and reporting at the Cooperative level of all rate classes in support of cost-of-service and rate design efforts.

Activities performed: Mr. Puckett has been helping ODEC with its load research program since 2001. In addition, he has been involved with evaluation of ODEC's growing portfolio of energy efficiency and demand response programs, and he supported their last two residential saturation surveys and their last commercial survey.

Xcel Energy (Public Service Company of Colorado), Saver Switch Program Residential Program Impact Evaluation **1999 – Present**

Position: Project Manager

Description: Xcel Energy asked DVN GL to conduct an impact evaluation of its residential Saver Switch program. Excel's Saver's Switch program directly controls the air conditioning load of residential customers using a standard or a "smart" thermostat control switch.

Each year, an evaluation is conducted to determine estimated load relief, energy conservation, and payback produced by the program on the control days. DNV estimates the forecasted load relief and payback the program will produce under system peaking conditions; determines the control execution and contributing load relief rates; estimates the forecasted load relief under alternative cycling strategies, i.e., 75% and 100%; and estimates the forecasted energy savings associated with participation.

Activities performed: Mr. Puckett has led the DNV team conducting the annual evaluation of the Saver Switch Program since 2000.

DNV Research, Smart Energy Technologies Residential Battery-Storage Demand Reduction Impacts **2016 – 2017**

Position: Subject Matter Expert, Project Manager

Description: DNV is invested in advancing the state-of-the-art knowledge about impacts of residential battery storage on demand response programs.

Activities performed: Mr. Puckett lead a team of DNV researchers that examined the added demand reduction achieved by augmenting smart virtual peak demand response software with residential battery storage. The project examined the impact of conventional demand response of air conditioning and water heating with those supported by battery storage.

Tennessee Valley Authority (TVA), Residential GridSmart Appliance Project Energy Impacts **2013 – 2014**

Position: Project Manager

Description: Tennessee Valley Authority (TVA) asked DNV to examine the energy impacts of "Grid Smart" appliances from General Electric within a time-of-use pilot offered by Glasgow Electric Power Board (GEPB). This project involves the instrumentation of 30 homes (20

test and 10 control). The loads under monitor include HVAC, DHW, washer, dryer, dishwasher, range, refrigerator, and the home's internal temperature.

Activities performed: Mr. Puckett led the DNV project team.

Multiple Clients, Development of Customer Baseline Load Methodologies **2013 – 2014**

Position: Subject Matter Expert

Description: Several clients (confidential) asked DNV to examining the appropriateness of customer baseline load (CBL) methodologies including work for PJM Interconnection, New York Independent System Operator, and Australian Grid Operator. These projects focus on the issues surrounding the development of accurate baselines including:

- Accuracy and bias of a variety of CBL methods
- Feasibility of administering each CBL method for all market participants
- The identification of objective criteria to associate a customer load with a specific CBL method if this will result in significantly improved accuracy, less bias and less variability

Activities performed: Mr. Puckett oversaw the investigation of appropriate baselines and key performance indicators for market-based demand response programs.

US Department of Energy, Technical Advisory Group Support **2012 – 2013**

Position: Team Member

Description: The US Department of Energy asked DNV to participate in a Technical Advisory Group (TAG) helping to advise American Recovery and Reinvestment Act (ARRA) recipients on the development of Consumer Behavior studies. The projects have spanned from relatively simple time-of-use pricing experiments to more complex consumer engagements replete with enabling technologies including in-home displays and programmable, controllable thermostats. The TAG has been responsible for several Guidance documents covering a wide array of topics.

Activities performed: Mr. Puckett participated in TAG helping to oversee the work completed by Oklahoma Gas and Electric (technology enabled coupled with time-of-use rates) and Lakeland Utilities (time-of-use).

Massachusetts Program Administrators, Statewide Impact Evaluation of Large Commercial and Industrial Programs **2010 – 2012**

Position: Project Team Lead

Description: Massachusetts Program Administrators asked DNV to conduct a multi-year (2010-2012) statewide impact evaluation of its large commercial and industrial energy efficiency programs.

Activities performed: Mr. Puckett was responsible for the successful planning, execution, and delivery of all evaluation activities for this project.