BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION,
 	
       Complainant,
 	
   v.
 	
PUGET SOUND ENERGY,
 	
       Respondent.
	Docket UE-19____
	Docket UG-19____

PREFILED DIRECT TESTIMONY (NONCONFIDENTIAL) OF

DR. CHUN K. CHANG

ON BEHALF OF PUGET SOUND ENERGY

JUNE 20, 2019

PUGET SOUND ENERGY

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DR. CHUN K. CHANG**

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I.   INTRODUCTION

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Q.   Please state your name and business address.

A.   My name is Chun K. Chang, and my business address is 355 110th Avenue NE, Bellevue, Washington 98004. I was employed by Puget Sound Energy ("PSE") as a Regulatory Consultant in Pricing and Cost of Service when I was preparing this testimony. I retired from the position at PSE on June 10, 2019.

Q.   Have you prepared an exhibit describing your education, relevant employment experience, and other professional qualifications?

A.   Yes. Please see the First Exhibit to the Prefiled Direct Testimony of Dr. Chun K. Chang, Exh. CKC-2, for an exhibit describing my education, relevant employment experience, and other professional qualifications.

Q.   Please summarize the purpose of your testimony.

A.   The purpose of my testimony is to present the results of PSE's 2019 Class Load Research used to perform its electric cost of service study and rate design. PSE's 2019 Load Research Report is provided as the Second Exhibit to my Prefiled Direct Testimony, Exh. CKC-3.

II.   ELECTRIC LOAD RESEARCH

2   Q.   **Generally speaking, what is the electric load research performed by PSE and**

3   **how does PSE perform its electric load research?**

4   A.   PSE performs its electric load research to develop hourly load profiles by rate

5   class and to provide class hourly load estimates, non-coincident and coincident

6   peak demand estimates for a test year period to support its electric cost of service

7   study and rate design. The 15-minute interval load data are being collected from

8   about 1,600 metering device locations sampled for large and medium-size rate

9   classes and from the entire population of metering device locations for some small

10   rate classes. PSE validates and analyzes the interval load data collected for a test

11   year and develops class hourly load profiles by applying a variety of statistical

12   estimation and testing techniques to the data.

13   Q.   **Did PSE use the same load research methodology in this case as in its last**

14   **general rate case?**

15   A.   Yes. The methodology used in this case is the same load research methodology

16   PSE used in Dockets UE-170033 & UG-170034 (the "2017 GRC"), except that

17   the test year hourly loads estimated for the existing Schedule 40 customers were

18   moved to Schedules 24, 25, 26, 31 and Special Contract. This was necessary

19   because 93 of 129 Schedule 40 metering device locations are currently served

20   under a special contract, and PSE proposes to end Rate Schedule 40 and to move

21   the remaining Schedule 40 customers to other rate schedules according to their

22   demand sizes and usage characteristics. The load research methodology used by

1 PSE was not contested in the 2017 GRC.

2 **Q. Please describe how PSE's load research samples were selected for 15-minute**
3 **interval load readings.**

4 A. The class load research samples used in PSE's 2019 Load Research were selected
5 through a sample design and selection study performed in 2017. The historical
6 data and statistical methodology used for the 2017 sample design study are
7 explained in detail in Appendix A to Exh. CKC-3C. Appendix A is titled "2017
8 Class Load Research Sample Design and Deployment."

9 **Q. Please describe the statistical methodologies and the historical 15-minute**
10 **interval load data, energy sales and customer data used for PSE's 2019 Class**
11 **Load Research.**

12 A. PSE's 2019 Load Research Report includes detailed descriptions of the statistical
13 methodologies and validation tests performed and the historical data analyzed.

14 **Q. Please summarize the results of PSE's 2019 load research results.**

15 A. The 2019 load research results are summarized in forms of charts and tables in
16 Exh. CKC-3. For the test year ending December 31, 2018, the load research
17 results presented in Exh. CKC-3 include class hourly load shapes for the year,
18 class hourly loads during the system peak week, monthly non-coincident peak
19 demand by class and monthly coincident demand at the time of system peak by
20 class (class contributions to system peak), monthly load factors and coincidence
21 factors by class. In addition, statistical summary tables in the report also show

1 class monthly non-coincident peak and system coincident peak demand values

2 averaged for twelve months and four mid-winter months. Statistical validity and

3 accuracy test results are also presented in the report.

4   **III.   CONCLUSION**

5 **Q.   What do you recommend based on the 2019 load research performed by**

6 **PSE?**

7 A.   The load research results presented in Exh. CKC-3 were based on a thorough

8   analysis of the 15-minute interval load data by class, system hourly load data,

9   class sales, and customer data and were statistically validated for their accuracy

10   and reasonableness. I recommend that the load research results provided in

11   Exh. CKC-3 should be a basis for PSE electric cost of service study and rate

12   design in this proceeding.

13 **Q.   Does this conclude your testimony?**

14 A.   Yes, it does.