

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

DOCKET NO. UE-15_____

DIRECT TESTIMONY OF

TARA L. KNOX

REPRESENTING AVISTA CORPORATION

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I. INTRODUCTION

Q. Please state your name, business address and present position with Avista Corporation.

A. My name is Tara L. Knox and my business address is 1411 East Mission Avenue, Spokane, Washington. I am employed as a Senior Regulatory Analyst in the State and Federal Regulation Department.

Q. Would you briefly describe your duties?

A. Yes. I am responsible for preparing the electric regulatory cost of service model for the Company, as well as providing support for the preparation of results of operations reports.

Q. What is your educational background and professional experience?

A. I am a graduate of Washington State University with a Bachelor of Arts degree in General Humanities in 1982, and a Master of Accounting degree in 1990. As an employee in the State and Federal Regulation Department at Avista since 1991, I have attended several ratemaking classes, including the EEI Electric Rates Advanced Course that specializes in cost allocation and cost of service issues. I am also a member of the Cost of Service Working Group and the Northwest Pricing and Regulatory Forum, which are discussion groups made up of technical professionals from regional utilities and utilities throughout the United States and Canada concerned with cost of service issues.

Q. What is the scope of your testimony in this proceeding?

A. My testimony and exhibits will cover the Company's electric revenue normalization adjustments and the electric cost of service study performed for this proceeding. A table of contents for my testimony is as follows:

1	Description	Page
2	I. Introduction	1
3	II. Electric Revenue Normalization	2
4	III. Electric Cost of Service	7
5	Table No. 1 Base Case Results	14

6 **Q. Are you sponsoring any exhibits in this case?**

7 A. Yes. I am sponsoring Exhibit No. __ (TLK-2) which includes a narrative of
8 the electric cost of service study process, and Exhibit No. __ (TLK-3) presents the electric
9 cost of service study summary results.

10 **Q. Were these exhibits prepared by you or under your direction?**

11 A. Yes, they were.

12

13 **II. ELECTRIC REVENUE NORMALIZATION**

14 **Q. Would you please describe the electric revenue normalization**
15 **adjustments included in Company witness Ms. Andrews Attrition Study?**

16 A. Yes. There are three separate adjustments that normalize revenue as part of
17 the electric Attrition Study.

18 1 – The Commission Basis Results of Operations in column [A] of Exhibit No.
19 ____ (EMA-2), page 4, includes a Commission Basis weather normalization adjustment.
20 Revenues for this adjustment are based on rates that were in effect during the October 2013
21 through September 2014 test period.

22 2 – In addition to the weather normalization adjustment, the Commission Basis
23 Results of Operations in column [A] of Exhibit No. ____ (EMA-2), page 4, also includes an

1 Eliminate Adder Schedules adjustment which removes the impact of adder schedule
2 revenues and related expenses during the October 2013 through September 2014 test period.

3 3 – The Pro Forma Revenue Normalization Adjustment in column [D] of Exhibit
4 No.____(EMA-2), page 4, adjusts October 2013 through September 2014 test period
5 customers and usage for any known and measurable (pro forma) changes. The adjustment
6 then re-prices billed, unbilled, and weather adjusted usage at the base tariff rates approved
7 for 2015 as if the January 1, 2015 increase had been in effect for the full twelve months of
8 the test year.

9 **Q. Please begin with the first revenue normalizing adjustment in the**
10 **Attrition Study. What is the Commission Basis weather normalization adjustment?**

11 A. Weather normalization is a required element of Commission Basis reporting
12 pursuant to WAC 480-100-257. The intent of this adjustment is for Commission Basis
13 adjusted revenues (and power supply costs) to reflect operations under normal temperature
14 conditions during the reporting period.

15 **Q. Please briefly summarize the electric weather normalization process.**

16 A. The Company's electric weather normalization adjustment calculates the
17 change in kWh usage required to adjust actual loads during the twelve months ended
18 September 2014 test period to the amount expected if weather had been normal. This
19 adjustment incorporates the effect of both heating and cooling on weather-sensitive
20 customer groups. The weather adjustment is developed from regression analysis of ten
21 years of billed usage per customer and billing period heating and cooling degree-day data.
22 The resulting seasonal weather sensitivity factors (use-per-customer-per-heating-degree day
23 and use-per-customer-per-cooling-degree day) are applied to monthly test period customers

1 and the difference between normal heating/cooling degree-days and monthly test period
2 observed heating/cooling degree-days.

3 **Q. Have the seasonal weather sensitivity factors been updated since the last**
4 **rate case?**

5 A. Yes. The factors used in the weather adjustment are based on regression
6 analysis of monthly billed usage per customer from January 2004 through December 2013
7 which is the most recent completed analysis. Autoregressive terms were included in the
8 regressions in order to correct for autocorrelation in the data.

9 **Q. What data did you use to determine “normal” heating and cooling**
10 **degree days?**

11 A. Normal heating and cooling degree days are based on a rolling 30-year
12 average of heating and cooling degree-days reported for each month by the National
13 Weather Service for the Spokane Airport weather station. Each year the normal values are
14 adjusted to capture the most recent year with the oldest year dropping off, thereby reflecting
15 the most recent information available at the end of each calendar year. The calculation
16 includes the 30-year period from 1985 through 2014.

17 **Q. Is this proposed weather adjustment methodology consistent with the**
18 **methodology utilized in the Company’s last general rate case in Washington?**

19 A. Yes. The process for determining the weather sensitivity factors and the
20 monthly adjustment calculation are consistent with the methodology presented in Docket
21 No. UE-140188. This methodology has been used in every case and Commission Basis
22 Report since it was introduced in Docket No. UE-070804.

1 **Q. What was the change in kWhs resulting from weather normalization for**
2 **the twelve months ended September 2014 test year?**

3 A. Weather was colder than normal during the 4th quarter of 2013, and February
4 of 2014 was extraordinarily cold. The spring and summer months were warmer than normal,
5 especially July and August. Since electric usage is impacted by both heating and cooling,
6 weather normalization required a reduction to usage for cold weather during the winter
7 (partially offset by the warm spring) and a further reduction to usage for the hot summer.
8 Overall, the adjustment to normal required the deduction of 107 heating degree-days during
9 the heating season¹ and the deduction of 199 cooling degree-days during the summer
10 season². The annual total adjustment to Washington electric sales volumes was a reduction
11 of 80,043,211 kWhs, which is approximately 1.4% of billed usage.

12 **Q. What was the impact of this adjustment on Commission Basis results of**
13 **operations?**

14 A. The Commission Basis weather normalization adjustment reduced revenues
15 by \$7,056,000 and, after revenue-related expenses and taxes, produced a decrease to net
16 income of \$4,375,000. The electric system monthly weather adjustment volumes were
17 provided to Company witness Mr. Johnson as an input to the Commission Basis Power
18 Supply analysis.

19 **Q. Moving on to the second revenue normalizing adjustment in the**
20 **Attrition Study. What is the purpose of the Eliminate Adder Schedules adjustment?**

¹ The heating season includes the months of January through June and October through December.

² The summer season includes the months of June through September. June is included in both seasons because both heating load and cooling load fluctuations occur during the month.

1 A. The Eliminate Adder Schedules adjustment removes both the revenues and
2 expenses associated with all adder schedule rates not accounted for in other adjustments.
3 These items are recovered/rebated by separate tariffs and therefore are not part of base rates.
4 The items eliminated from the test year include: Schedule 59 Residential Exchange credit,
5 Schedule 91 Demand Side Management rate adjustment, Schedule 92, Low Income Rate
6 Assistance Program rate adjustment, the unbilled portion of Schedule 93 Energy Recovery
7 Mechanism rate adjustment, Schedule 94 BPA Capacity Support rebate, and Schedule 95
8 Optional Renewable Power rate.

9 **Q. What was the impact of the Eliminate Adder Schedule adjustment on**
10 **Commission Basis results of operations?**

11 A. The Commission Basis Eliminate Adder Schedule adjustment results in an
12 equal and offsetting reduction to both revenue and expense and has no impact on net
13 income. The billed portion of Schedule 93 is eliminated in the Eliminate WA Power Cost
14 Deferral adjustment 2.13 and Schedule 58 Municipal Tax Adjustment is eliminated in the
15 Eliminate B&O Taxes adjustment 2.01. After these adjustments the Commission Basis
16 Restated Total General Business revenue represents weather normalized base rate revenue
17 received during the 12 months ended September 30, 2014 test period.

18 **Q. Please describe the third revenue normalizing adjustment in the**
19 **Attrition Study. What is the purpose of the Pro Forma Revenue Normalization**
20 **adjustment?**

21 A. The purpose of the Pro Forma Revenue Normalization adjustment is to
22 restate revenue on a forward-looking basis. This is accomplished by re-pricing test year
23 normalized billing determinants (including unbilled and weather adjustments, as well as any

1 known and measurable changes to the test year loads and customers) to reflect revenues for
2 the October 2013 through September 2014 test period, as if the revenue increase approved in
3 Docket No. UE-140188 effective January 1, 2015 had been in effect for the full twelve
4 months of the test period.

5 **Q. What is the impact of the Pro Forma Revenue Normalization**
6 **adjustment?**

7 A. The Pro Forma Revenue Normalization adjustment increases revenue by
8 \$16,361,000 which, after revenue-related expenses and taxes, increases Washington net
9 operating income \$10,144,000, as shown in column [D] on pages 4 and 5 of Exhibit
10 No. ____ (EMA-2).

11 **Q. Are the same normalized restated revenues included in Company witness**
12 **Ms. Smith's Pro Forma Cross Check Study shown as Exhibit No. ____ (JSS-2)?**

13 A. Yes. The Weather Normalization adjustment is shown as adjustment 2.10
14 and the Eliminate Adder Schedule adjustment is shown as adjustment 2.11 on page 6 of
15 Exhibit No. ____ (JSS-2). The Pro Forma Revenue Normalization adjustment is shown as
16 adjustment 3.06 on page 9 of Exhibit No. ____ (JSS-2).

17

18 **III. ELECTRIC COST OF SERVICE**

19 **Q. Please briefly summarize your testimony related to the electric cost of**
20 **service study.**

21 A. I believe the Base Case cost of service study presented in this case is a fair
22 representation of the costs to serve each customer group. The Base Case study shows
23 Residential Service Schedule 1, Extra Large General Service Schedule 25, Pumping Service

1 Schedules 30/31/32 and Street and Area Lighting Service Schedules 41 - 49 provide less
2 than the overall rate of return under present rates. General Service Schedules 11/12 and
3 Large General Service Schedules 21/22 provide more than the overall rate of return under
4 present rates.

5 **Q. Please identify the Company's electric cost studies presented to this**
6 **Commission in the last five years as required by WAC 480-07-510 (6).**

7 A. Electric cost of service studies were presented to this Commission in Docket
8 No. UE-090134, Docket No. UE-100467, Docket No. UE-110876, Docket No. UE-120436
9 and Docket No. UE-140188.

10 **Q. What is an electric cost of service study and what is its purpose?**

11 A. An electric cost of service study is an engineering-economic study, which
12 separates the revenue, expenses, and rate base associated with providing electric service to
13 designated groups of customers. The groups are made up of customers with similar load
14 characteristics and facilities requirements. Costs are assigned or allocated to each group
15 based on (among other things), test period load and facilities requirements, resulting in an
16 evaluation of the cost of the service provided to each group. The rate of return by customer
17 group indicates whether the revenue provided by the customers in each group recovers the
18 cost to serve those customers. The study results are used as a guide in determining the
19 appropriate rate spread among the groups of customers. Exhibit No. ____ (TLK-2) explains
20 the basic concepts involved in performing an electric cost of service study. It also details the
21 specific methodology and assumptions utilized in the Company's Base Case cost of service
22 study.

1 **Q. What is the basis for the electric cost of service study provided in this**
2 **case?**

3 A. The electric cost of service study provided by the Company as Exhibit
4 No.____(TLK-3) is based on the twelve months ended September 30, 2014 test year Pro
5 Forma Cross Check Study results of operations presented by Ms. Smith in Exhibit
6 No.____(JSS-2). The Pro Forma Cross Check Study analysis was used for the cost of service
7 study to provide results at the comprehensive level of detail required by the cost of service
8 model. The Pro Forma Cross Check Study includes an adjustment that brings total expenses
9 and rate base into agreement with the Attrition Study, therefore it provides the appropriate
10 detailed cost basis for the cost of service study in this case.

11 **Q. Would you please explain the cost of service study presented in Exhibit**
12 **No. ____ (TLK-3)?**

13 A. Yes. Exhibit No. ____ (TLK-3) is composed of a series of summaries of the
14 cost of service study results. The summary on page 1 shows the results of the study by
15 FERC account category. The rate of return by rate schedule and the ratio of each schedule's
16 return to the overall return are shown on Lines 39 and 40. This summary was provided to
17 Company witness Mr. Ehrbar for his consideration regarding rate spread and rate design.
18 The results will be discussed in more detail later in my testimony.

19 Pages 2 and 3 are both summaries that show the revenue-to-cost relationship at
20 current and proposed revenue. Costs by category are shown first at the existing schedule
21 returns (revenue); next the costs are shown as if all schedules were providing equal recovery
22 (cost). These comparisons show how far current and proposed rates are from rates that
23 would be in alignment with the cost study. Page 2 shows the costs segregated into

1 production, transmission, distribution, and common functional categories. Line 44 on page
2 2 shows the target change in revenue which would produce unity in this cost study. Page 3
3 segregates the costs into demand, energy, and customer classifications. Page 4 is a summary
4 identifying specific customer related costs embedded in the study.

5 The Excel model used to calculate the cost of service and supporting schedules has
6 been included in its entirety both electronically and in hard copy in the workpapers
7 accompanying this case.

8 **Q. Given that the specific details of this methodology are described in the**
9 **narrative in Exhibit No. ____ (TLK-2), would you please give a brief overview of the key**
10 **elements and the history associated with those elements?**

11 A. Yes. In general, the cost study follows the methodology established in
12 Docket No. UE-920499 for Puget Sound Power and Light (now Puget Sound Energy).
13 Production and transmission costs are classified into energy-related or demand-related by a
14 peak credit analysis. The definitions of “peaks” and “peak credit” specific to Avista were
15 accepted by the Commission for Avista in Docket No. UE-991606 and confirmed in Docket
16 No. UE-050482. As I will discuss later in my testimony, the electric cost of service study
17 presented in this case includes a revision to the Avista-specific peak credit analysis.

18 Distribution costs are classified and allocated by the basic customer theory³ that was
19 derived directly from the methodology approved for Puget in Docket No. UE-920499.
20 Administrative and general costs are first directly assigned to production, transmission,
21 distribution, or customer relations functions. The Commission found this process acceptable
22 in Avista’s Docket No. UE-991606. The remaining administrative and general costs are

³ Basic customer theory classifies only meters, services and street lights as customer-related plant; all other distribution facilities are considered demand-related.

1 categorized as common costs and have been allocated by a variety of factors as approved by
2 this Commission for Puget in Docket No. UE-920499. The specific factors and items they
3 are applied to are described in detail in Exhibit No. ____ (TLK-2) on page 5 and listed by
4 account on page 9.

5 **Q. Does the Company's electric Base Case cost of service study follow the**
6 **methodology filed in the Company's last electric general rate case in Washington?**

7 A. Yes. The methodology presented in this case is the same as that used in the
8 studies presented in Docket Nos. UE-140188, UE-120436 and UE-110876.

9 **Q. What is the Company proposing in this case with regard to the peak**
10 **credit methodology?**

11 A. In this case the Company is proposing to use the system load factor to
12 determine the proportion of the production function that is demand-related.⁴ This single
13 peak credit ratio is then applied uniformly to all production costs. This is the same method
14 the Company proposed in its recent rate filings.

15 In Washington, transmission costs have traditionally been treated as an extension of
16 the generation system, therefore, the revised peak credit ratio has also been applied to
17 transmission costs in this study.

18 **Q. What are the benefits of using the system load factor to determine the**
19 **peak credit ratio?**

20 A. There are several benefits to the system load factor approach for identifying
21 the demand-related proportion of production costs: 1) It is simple and straightforward to

⁴ One minus the load factor equals the demand percentage or peak credit ratio.

1 calculate; 2) it is directly related to the system and test year under evaluation; and 3) the
2 relationship should remain relatively stable from year to year.

3 **Q. How was the prior peak credit methodology determined and applied?**

4 A. In the Company's cost of service studies prior to 2010, Avista's electric
5 system resource costs were classified to energy and demand using a comparison of the
6 replacement cost per kW of the Company's peaking units to the replacement cost per kW of
7 the Company's thermal and hydro plants (separately). This analysis created separate peak
8 credit ratios applied to thermal plant and hydro plant. Transmission costs were assigned to
9 energy and demand by a 50/50 weighting of the thermal and hydro peak credit ratios. Fuel
10 and load dispatching expenses were classified entirely to energy, and peaking plant related
11 costs were classified entirely to demand.

12 **Q. What is the net effect of the proposed change in the peak credit method?**

13 A. The net effect of this change is to slightly increase the overall production and
14 transmission costs that are classified as demand-related. Using the prior method,
15 approximately 32.16% of total production and transmission costs (30% of total production
16 costs and 42% of total transmission costs) were classified as demand-related. Under the
17 proposed method, 34.83% of total production and transmission costs are classified as
18 demand-related. In this circumstance, costs are shifted toward the low load factor residential
19 class, and away from all the other classes, but the impact on the cost study results is
20 relatively minor.

1 **Q. Did the Company use recent load research for demand-related cost**
2 **allocations in the electric cost of service study in this case?**

3 A. Yes. The Company contracted with DNV-GL to develop hourly load
4 estimates by rate class for cost of service demand allocation purposes. The study was
5 completed in December of 2014 with the final report provided in January 2015. The new
6 load research study, included with the Company's workpapers in this filing, utilized sample
7 metering in place from the last load study (discussed in Docket No. UE-100467, the
8 Company's 2010 general rate case) augmented by additional sample sites added during the
9 intervening years. The study is based on data collected over the period July 1, 2013 through
10 June 30, 2014.

11 **Q. Did the 2014 load study show any major changes in usage across the**
12 **customer classes?**

13 A. No, there were no major changes. The study did capture the impact of
14 schedule shifting from Schedule 21 to Schedule 11 that occurred several years ago and the
15 residential class shows a slightly lower contribution to the peaks than in the 2009 study. In
16 general the results were consistent.

17 **Q. What are the results of the Company's electric cost of service study**
18 **presented in this case?**

19 A. The following table shows the rate of return and the relationship of the
20 customer class return to the overall return (relative return ratio) at present rates for each rate
21 schedule:

1 **Table No. 1**

<u>Customer Class</u>	<u>Rate of Return</u>	<u>Return Ratio</u>
Residential Service Schedule 1	3.51%	0.58
General Service Schedules 11/12	11.83%	1.95
Large General Service Schedules 21/22	8.91%	1.47
Extra Large General Service Schedule 25	5.63%	0.93
Pumping Service Schedules 31/32	5.95%	0.98
Lighting Service Schedules 41 - 49	<u>5.00%</u>	<u>0.83</u>
Total Washington Electric System	<u>6.05%</u>	<u>1.00</u>

9 As can be observed from the above table, Residential service Schedule 1 shows
10 significant under-recovery of the costs to serve them. The Extra Large General service
11 Schedule 25, the Pumping service schedule (31/32) and the Lighting service schedules (41-
12 49) all show moderate under-recovery. However, the General and Large General service
13 schedules (11/12 and 21/22) show significant over-recovery of the costs to serve them. The
14 summary results of this study were provided to Mr. Ehrbar for consideration in the
15 development of proposed rates.

16 **Q. Does this conclude your pre-filed direct testimony?**

17 A. Yes.