

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

DOCKET NO. UE-14_____

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 cost of service study performed for this proceeding. Additionally, I am sponsoring the electric revenue normalization adjustments to the test year results of operations and the proposed Retail

1 Revenue Credit rate to be used in the Energy Recovery Mechanism (ERM). A table of
 2 contents for my testimony is as follows:

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

10 A. Yes. I am sponsoring Exhibit No. __ (TLK-2), which shows the calculation
 11 of the proposed Retail Revenue Credit rate. Exhibit No. __ (TLK-3) includes a narrative of
 12 the electric cost of service study process, and Exhibit No. __ (TLK-4) presents the electric
 13 cost of service study summary results.

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

15 A. Yes, they were.

16

17 **II. REVENUE NORMALIZATION**

18 **Electric Revenue Normalization**

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

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

23 1 – The Commission Basis Results of Operations in column [A] of Exhibit No.
 24 __ (EMA-2), page 4 includes a Commission Basis weather normalization adjustment.

1 Revenues for this adjustment are based on rates that were in effect during the July 2012
2 through June 2013 test period.

3 2 – The Incremental Revenue Normalization Adjustment in column [D] of Exhibit
4 No.____(EMA-2), page 4 adjusts July 2012 through June 2013 test period customers and
5 usage for any known and measurable changes, then re-prices billed, unbilled, and weather
6 adjusted usage at the base tariff rates approved for 2013 as if the January 1, 2013 increase
7 had been in effect for the full twelve months of the period.

8 3 – The 2014 Temporary Rate Increase shown in column (f) of Exhibit
9 No.____(EMA-2), page 1 identifies the incremental revenue produced when the normalized
10 usage is re-priced at the base tariff rates approved for 2014.

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

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

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

18 A. The Company's electric weather normalization adjustment calculates the
19 change in kWh usage required to adjust actual loads during the twelve months ended June
20 2013 test period to the amount expected if weather had been normal. This adjustment
21 incorporates the effect of both heating and cooling on weather-sensitive customer groups.
22 The weather adjustment is developed from regression analysis of ten years of billed usage
23 per customer and billing period heating and cooling degree-day data. The resulting seasonal

1 weather sensitivity factors (use-per-customer-per-heating-degree day and use-per-customer-
2 per-cooling-degree day) are applied to monthly test period customers and the difference
3 between normal heating/cooling degree-days and monthly test period observed
4 heating/cooling degree-days.

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

7 A. Yes. The factors used in the weather adjustment are based on regression
8 analysis of monthly billed usage per customer from January 2002 through December 2011
9 which is the most recent completed analysis. Autoregressive terms were included in the
10 regressions in order to correct for autocorrelation in the data.

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

13 A. Normal heating and cooling degree days are based on a rolling 30-year
14 average of heating and cooling degree-days reported for each month by the National
15 Weather Service for the Spokane Airport weather station. Each year the normal values are
16 adjusted to capture the most recent year with the oldest year dropping off, thereby reflecting
17 the most recent information available at the end of each calendar year. The calculation
18 includes the 30-year period from 1983 through 2012.

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

21 A. Yes. The process for determining the weather sensitivity factors and the
22 monthly adjustment calculation are consistent with the methodology presented in Docket

1 No. UE-120436. This methodology has been used in every case and Commission Basis
2 Report since it was introduced in Docket No. UE-070804.

3 **Q. What was the change in kWhs resulting from weather normalization for**
4 **the twelve months ended June 2013 test year?**

5 A. Weather was warmer than normal from July through December of 2012, then
6 a colder than normal January 2013 was offset by a warmer than normal February through
7 June 2013. Since electric usage is impacted by both heating and cooling, weather
8 normalization reductions to usage in July and August 2012 were largely offset by additions
9 to usage September through December. Similarly, in 2013, the weather normalization
10 reduction to usage in January was largely offset by the additions to usage in February,
11 March and May, resulting in a very small annual adjustment. Overall, the adjustment to
12 normal required the addition of 281 heating degree-days during the heating season¹ and the
13 deduction of 124 cooling degree-days during the summer season². The annual total
14 adjustment to Washington electric sales volumes was a reduction of 1,841,566 kWhs, which
15 is approximately 0.03% of billed usage.

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

18 A. The Commission Basis weather normalization adjustment reduced revenues
19 by \$159,000 and, after revenue-related expenses and taxes, produced a decrease to net
20 income of \$99,000. The electric system monthly weather adjustment volumes were

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 provided to Company witness Mr. Johnson as an input to the Commission Basis Power
2 Supply analysis.

3 **Q. Moving on to the second revenue normalizing adjustment in the**
4 **Attrition Study. What is the purpose of the Incremental Revenue Normalization**
5 **adjustment?**

6 A. The purpose of the “Incremental Revenue Normalization” adjustment is to
7 restate revenue on a forward-looking basis. This is accomplished by re-pricing test year
8 normalized billing determinants (including unbilled and weather adjustments, as well as any
9 known and measurable changes to the test year loads and customers) to reflect revenues for
10 the July 2012 through June 2013 test period, as if the revenue increase effective January 1,
11 2013 had been in effect for the full twelve months of the test period.

12 Base rates do not include any of the adder schedules that are included in billed
13 revenues such as the Residential Exchange Credit Schedule 59, the Public Purpose Tariff
14 Rider Schedule 91, and Optional Renewable Power Schedule 95³. Therefore the
15 amortization expenses associated with the adder schedule revenues must be eliminated in
16 this adjustment for proper matching of revenues and expenses.

17 **Q. What is the impact of the Incremental Revenue Normalization**
18 **adjustment?**

19 A. The Incremental Revenue Normalization adjustment increases net revenue⁴
20 by \$7,484,000 which, after revenue-related expenses and taxes, increases Washington net

³ City Business and Occupation Taxes (Schedule 58) and Energy Recovery Mechanism (Schedule 93) revenues and expenses are eliminated in separate Commission Basis adjustments.

⁴ Net revenue refers to the change in revenue less the change in expense associated with the eliminated adder schedule revenue.

1 operating income \$4,844,000, as shown in column [D] on pages 4 and 5 of Exhibit
2 No.____(EMA-2)⁵.

3 **Q. Please describe the third revenue normalizing adjustment in the**
4 **Attrition Study.**

5 A. The “2014 Temporary Rate Increase” shown on page 1 of Exhibit
6 No.____(EMA-2) reflects the incremental change when the same normalized billing
7 determinants used in the Incremental Revenue Normalization adjustment are re-priced at the
8 base tariff rates in effect during the calendar year 2014⁶. This adjustment adds an
9 incremental \$14,054,000 of revenue over the 2013 base rates.

10 **Q. Are the same normalized restated revenues included in Ms. Andrews’**
11 **Pro Forma Cross Check Study shown as Exhibit No.____(EMA-4)?**

12 A. Yes. The presentation in the Pro Forma Cross Check Study is slightly
13 different because the first and second revenue normalizing adjustments discussed earlier are
14 incorporated into one 2013 Revenue Normalization adjustment. Therefore the weather
15 adjustment at restated rates is included with the annualization of test year revenue to 2013
16 base rates. The 2013 restating revenue normalization adjustment for the Pro Forma Cross
17 Check Study increases Washington net operating income by \$4,683,000, as shown in
18 adjustment column 2.10 on page 6 of Exhibit No.____(EMA-4). The 2014 Revenue
19 Normalization adjustment captures the 2014 Temporary Rate Increase of \$14,054,000 with
20 an increase to Washington net operating income of \$8,724,000, as shown in adjustment
21 column 4.07 on page 10 of Exhibit No.____(EMA-4).

⁵ Ms. Andrews explains the rate base adjustments shown in this column, which are unrelated to this revenue normalization adjustment.

⁶ Docket No. UE-120436 base rates effective 1/1/2014 – 12/31/2014.

1 **III. PROPOSED RETAIL REVENUE CREDIT RATE**

2 **Q. Company witness Mr. Johnson testifies that the proposed Retail Revenue**
3 **Credit rate to be used in the ERM represents the energy classified portion of the fixed**
4 **and variable production and transmission costs in this filing. How is that rate**
5 **determined?**

6 A. The Retail Revenue Credit rate is determined by computing the total
7 production and transmission related costs contained within Ms. Andrews' Washington
8 electric Pro Forma Cross Check Study analysis of results of operations⁷. The
9 production/transmission-related costs are then divided by the Washington normalized retail
10 load, in order to arrive at the average production and transmission revenue-per-kWh
11 included in proposed rates. This value is then multiplied by the ratio of energy-classified
12 production and transmission costs, versus total production and transmission costs, from the
13 cost of service study, to arrive at the proposed Retail Revenue Credit rate.

14 **Q. Do you have an exhibit that shows the calculation of the proposed Retail**
15 **Revenue Credit rate?**

16 A. Yes. Exhibit No. ____ (TLK-2) begins with the identification of the
17 production and transmission revenue, expense and rate base amounts included in each of
18 Ms. Andrews' actual, restating, and pro forma adjustments to results of operations in her Pro
19 Forma Cross Check Study analysis model. The "Pro Forma Total" at the bottom of page 1
20 shows the resulting production and transmission cost components.

⁷ The proposed revenue increase in this case is based on the Attrition Study. However, components from the Pro Forma Cross Check Study analysis are used for both the Retail Revenue Credit rate and the Cost of Service study in order to have the level of detail necessary to properly functionalize the costs. The Pro Forma Cross Check Study analysis includes an adjustment that brings total expenses and rate base into agreement with the attrition study.

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

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

6 A. Electric cost of service studies were presented to this Commission in Docket
7 No. UE-080416, Docket No. UE-090134, Docket No. UE-100467, Docket No. UE-110876
8 and Docket No. UE-120436.

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

10 A. An electric cost of service study is an engineering-economic study, which
11 separates the revenue, expenses, and rate base associated with providing electric service to
12 designated groups of customers. The groups are made up of customers with similar load
13 characteristics and facilities requirements. Costs are assigned or allocated to each group
14 based on (among other things), test period load and facilities requirements, resulting in an
15 evaluation of the cost of the service provided to each group. The rate of return by customer
16 group indicates whether the revenue provided by the customers in each group recovers the
17 cost to serve those customers. The study results are used as a guide in determining the
18 appropriate rate spread among the groups of customers. Exhibit No. ____ (TLK-3) explains
19 the basic concepts involved in performing an electric cost of service study. It also details the
20 specific methodology and assumptions utilized in the Company's Base Case cost of service
21 study.

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

1 A. The electric cost of service study provided by the Company as Exhibit
2 No.____(TLK-4) is based on the twelve months ended June 30, 2013 test year Pro Forma
3 Cross Check Study results of operations presented by Ms. Andrews in Exhibit
4 No.____(EMA-4). The Pro Forma Cross Check Study analysis was used for the cost of
5 service study to provide results at the comprehensive level of detail required by the cost of
6 service model. The Pro Forma Cross Check Study includes an adjustment that brings total
7 expenses and rate base into agreement with the Attrition Study, therefore it provides the
8 appropriate detailed cost basis for the cost of service study in this case.

9 **Q. Would you please explain the cost of service study presented in Exhibit**
10 **No. ____ (TLK-4)?**

11 A. Yes. Exhibit No. ____ (TLK-4) is composed of a series of summaries of the
12 cost of service study results. The summary on page 1 shows the results of the study by
13 FERC account category. The rate of return by rate schedule and the ratio of each schedule's
14 return to the overall return are shown on Lines 39 and 40. This summary was provided to
15 Company witness Mr. Ehrbar for his consideration regarding rate spread and rate design.
16 The results will be discussed in more detail later in my testimony.

17 Pages 2 and 3 are both summaries that show the revenue-to-cost relationship at
18 current and proposed revenue. Costs by category are shown first at the existing schedule
19 returns (revenue); next the costs are shown as if all schedules were providing equal recovery
20 (cost). These comparisons show how far current and proposed rates are from rates that
21 would be in alignment with the cost study. Page 2 shows the costs segregated into
22 production, transmission, distribution, and common functional categories. Line 44 on page
23 2 shows the target change in revenue which would produce unity in this cost study. Page 3

1 segregates the costs into demand, energy, and customer classifications. Page 4 is a summary
2 identifying specific customer related costs embedded in the study.

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

6 **Q. Given that the specific details of this methodology are described in the**
7 **narrative in Exhibit No. ____ (TLK-3), would you please give a brief overview of the key**
8 **elements and the history associated with those elements?**

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

16 Distribution costs are classified and allocated by the basic customer theory⁸ that was
17 derived directly from the methodology approved for Puget in Docket No. UE-920499.
18 Administrative and general costs are first directly assigned to production, transmission,
19 distribution, or customer relations functions. The Commission found this process acceptable
20 in Avista’s Docket No. UE-991606. The remaining administrative and general costs are
21 categorized as common costs and have been allocated by a variety of factors as approved by
22 this Commission for Puget in Docket No. UE-920499. The specific factors and items they

⁸ Basic customer theory classifies only meters, services and street lights as customer-related plant; all other distribution facilities are considered demand-related.

1 are applied to are described in detail in Exhibit No. ____ (TLK-3) on page 5 and listed by
2 account on page 9.

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

5 A. Yes. The methodology presented in this case is the same as that used in the
6 studies presented in Docket Nos. UE-120436 and UE-110876.

7 **Q. You mentioned a revision to the Avista-specific peak credit analysis**
8 **accepted by the Commission in 2005. Has Avista proposed the same revision in recent**
9 **cases?**

10 A. Yes. In developing its cost of service study in Docket No. UE-100467, the
11 Company examined the Avista-specific peak credit classification methodology applied to
12 production and transmission functional costs. It was determined that the prior methodology
13 was complicated to compute and apply, unrelated to the actual usage of the system, and has
14 a tendency to shift costs back and forth between energy and demand with changes in the cost
15 of natural gas to fuel combustion turbines. The peak credit method proposed by Avista in
16 that Docket provided a less complex way to determine a fair apportionment of production
17 and transmission costs between energy and demand, is directly related to our electrical
18 system, and is expected to be stable both during the pendency of a case and over time from
19 case to case.

20 While a revision to the peak credit classification of production and transmission
21 costs was proposed in both Docket No. UE-100467 and Docket No. UE-110876, the cost of
22 service methodology change was specifically not part of the settlements in either case. In
23 Docket No. UE-120436, while Commission staff provided testimony supportive of the

1 Company's load factor based peak credit methodology, and no other parties addressed it, the
2 revision to the electric cost of service methodology was not mentioned at all in the
3 settlement or the Commission Order. Therefore the "Prior Methodology" continues to refer
4 to the study methodology last presented in Docket No. UE-090134.

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

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

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

16 A. In this case the Company is proposing to use the system load factor to
17 determine the proportion of the production function that is demand-related.⁹ This single
18 peak credit ratio is then applied uniformly to all production costs. This is the same method
19 the Company proposed in its recent rate filings, as discussed earlier.

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

⁹ One minus the load factor equals the demand percentage or peak credit ratio.

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

3 A. There are several benefits to the system load factor approach for identifying
4 the demand-related proportion of production costs: 1) It is simple and straightforward to
5 calculate; 2) it is directly related to the system and test year under evaluation; and 3) the
6 relationship should remain relatively stable from year to year.

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

8 A. The net effect of this change is to slightly decrease the overall production and
9 transmission costs that are classified as demand-related. Using the prior method,
10 approximately 32.57% of total production and transmission costs (31% of total production
11 costs and 42% of total transmission costs) were classified as demand-related. Under the
12 proposed method, 31.27% of total production and transmission costs are classified as
13 demand-related. In this circumstance, costs are shifted away from the low load factor
14 residential class, and to all the other classes, but the difference is very minor.

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

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

1 **Table No. 1**

<u>Customer Class</u>	<u>Rate of Return</u>	<u>Return Ratio</u>
Residential Service Schedule 1	4.50%	0.65
General Service Schedules 11/12	13.19%	1.92
Large General Service Schedules 21/22	9.41%	1.37
Extra Large General Service Schedule 25	5.86%	0.85
Pumping Service Schedules 31/32	6.28%	0.91
Lighting Service Schedules 41 - 49	<u>6.36%</u>	<u>0.92</u>
Total Washington Electric System	<u>6.88%</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.