Exhibit No. ___ (CRM-1T)
Dockets UE-150204/UG-150205
Witness: Chris R. McGuire

**BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **AVISTA CORPORATION dba AVISTA UTILITIES,** **Respondent.**	**DOCKETS UE-150204 and UG-150205** **(*Consolidated*)**

TESTIMONY OF

Chris R. McGuire

**STAFF OF
WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION**

Policy, Attrition Studies, and Overall Revenue Requirements

July 27, 2015

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I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Chris R. McGuire. My business address is The Richard Hemstad Building, 1300 S. Evergreen Park Drive S.W., Olympia, WA 98504.

Q. By whom are you employed and in what capacity?

A. I am employed by the Washington Utilities and Transportation Commission ("Commission") as a Regulatory Analyst in the Conservation and Energy Planning Section of the Regulatory Services Division.

Q. How long have you been employed by the Commission?

A. I have been employed by the Commission since May 2012.

Q. Would you please state your educational and professional background?

A. I graduated from the University of Washington in 2002 with a Bachelor of Science degree in Cell and Molecular Biology. I graduated from the University of Colorado in 2010 with Master's degrees in Business Administration and Environmental Studies. Prior to my employment with the Commission, I held various research and analysis positions at the University of Washington, the University of Colorado and the National Renewable Energy Laboratory's Strategic Energy Analysis Center.

Q. What are your responsibilities at the Commission?

A. My responsibilities at the Commission involve analysis of general ratemaking policies, utility earnings attrition, resource acquisition prudence, integrated resource planning, and compliance with the conservation and renewable portfolio standards of RCW 19.285, the Energy Independence Act.

Q. Have you previously testified before the Commission?

A. Yes. I testified as the Staff witness for Staff's attrition studies and overall revenue requirement in Avista's 2014 general rate case, Dockets UE-140188/UG-140189, and for Staff's policy recommendations on pro forma capital additions to rate base in PacifiCorp's 2013 general rate case, Docket UE-130043.

II. SCOPE AND SUMMARY OF TESTIMONY

Q. Please describe the scope of your testimony.

A. I present the policy guiding Staff's review of this case and I introduce the other Staff witnesses testifying in these dockets. I also present Staff's attrition studies and overall revenue requirement recommendations.

Q. What are the major features of the Company's case?

A. Through Mr. Morris as well as other Company witnesses, Avista presents the need to increase its revenue requirements for electric and gas operations by $33.2 million and

$12.0 million,[1] respectively. These proposed increases are driven mainly by the alleged necessity of an attrition allowance to provide the Company an opportunity to achieve a fair rate of return during a period of rapid plant investment.

Q. What has Staff concluded in its analysis?

A. Staff has concluded through its examination of the Company's testimony and supporting information that the revenue requirement for Avista's electric operations should decrease by $6.2 million. For natural gas operations, Staff's analysis concludes that Avista's revenue requirement should increase by $9.0 million.

Q. Can you please summarize what you consider to be the major reasons for Staff's recommendations?

A. Yes. Through its attrition study, Staff determined that rates calculated using a modified historical test year approach will likely be insufficient to provide the Company with a fair opportunity to earn the Settlement rate of return. The cause of prospective attrition is the differential rates of growth in revenues, expenses and rate base, primarily driven by Avista's ongoing investment in plant. Staff recommends that the Commission exercise its discretion and provide Avista with attrition allowances for electric and natural gas operations that are incremental to the revenue requirements calculated using Staff's modified historical test year analysis.

In Avista's "pro forma" presentation, the Company failed to apply the Commission's standard rate making principles and use of modified historical test year

[1] As I describe later in my testimony, in response to Staff Data Request 130, Avista revised its projected revenue shortfall to $10.0 million for electric service and $9.7 million for natural gas service.

approach in calculating a revenue requirement. I will discuss these rate making principles below and other Staff witnesses will provide details regarding the Company's lack of rigor or basic adherence to these rate making principles. Deficiencies are on display in almost every area of the Company's pro forma case: Costs associated with Project Compass were substantially over budget and were inadequately explained; cost increases related to the deployment of distribution plant, while substantial, are not given an adequate explanation as to why those cost increases are actually occurring; the requested investment in smart meters is premature as the meters have not been deployed and are thus not used and useful; certain pro forma adjustments lacked required information such as supporting contracts specifying future payments. In summary, the principles of "used and useful" and "known and measureable" were not met for many of Avista's major cost drivers.

Q. Does Staff support the multi-party partial settlement in these dockets?

A. Yes. As described in the joint testimony (Joint Testimony), Staff believes that the rate of return, power supply costs, and rate design embodied in the partial settlement (Settlement) are fair and in the public interest.

Q. Please introduce the other Staff witnesses testifying in this proceeding and the subjects of their testimony.

A. The following witnesses present testimony and exhibits for Staff:

- Mr. Christopher S. Hancock presents the criteria for considering pro forma plant adjustments in rates and applies those criteria to the revenue requirement calculation using a modified historical test year approach.
- Mr. David C. Gomez presents Staff's analysis of the prudence of certain plant additions as well as the reliability of the Company's claims of prospective capital expenditures and transfers to plant.
- Mr. Jason L. Ball presents Staff's recommendations for certain pro forma and restating expense adjustments as well as for the treatment of major maintenance expense for Colstrip and Coyote Springs 2.
- Ms. Juliana M. Williams presents Staff's recommendations regarding funding levels for Avista's low income programs.
- Mr. Bradley T. Cebulko presents the deficiencies in current reliability benchmarking practices and the need for a new approach for benchmarking.
- Mr. David Nightingale addresses Avista's request for cost recovery for the future acquisition of Advanced Meter Infrastructure.

Q. Have you prepared any exhibits in support of your testimony?

A. Yes. I prepared Exhibit No.___ (CRM-2) and Exhibit No.___ (CRM-3). These exhibits present my attrition analysis for electric and natural gas operations, respectively. These exhibits rely on the same models Avista supplied in response to Staff Data Request No. 130. My Exhibit Nos.___(CRM-2) and ___(CRM-3) are Staff's responses to Avista Exhibit Nos.___(EMA-2) and ___(EMA-3), respectively.

I also sponsor Exhibit Nos.___(CRM-4) and ___(CRM-5), which are Avista's revised attrition studies for electric service and natural gas service, respectively, as provided in response to Staff Data Request No. 130.

Exhibit No.___(CRM-6) contains excerpts from historical commission orders regarding utility earnings attrition.

III. SUMMARY OF REVENUE REQUIREMENTS

Q. Please summarize Staff's revenue requirement recommendation for Avista's electric and natural gas services for 2016.

A. Staff's revenue requirement recommendations are based on the Settlement rate of return of 7.29 percent with a common equity ratio of 48.5 percent and a 9.5 percent return on equity.

Electric Service. Staff is recommending an overall decrease in electric base revenues of $6.2 million, or 1.24 percent. The total electric revenue requirement is $493,773,000. This revenue requirement is based on Staff's modified historical test year approach but also includes an incremental attrition allowance of $14.7 million.

Natural Gas Service. Staff is recommending an overall increase in natural gas base revenues of $9.0 million, or 5.29 percent. The total natural gas revenue requirement is $179,954,000. This revenue requirement is based on Staff's modified historical test year approach but also includes an incremental attrition allowance of $5.4 million.

Q. Please explain how Staff determined Avista's revenue requirements for the 2016 rate year.

A. Staff's determination of the revenue requirements relies upon using an attrition study as a diagnostic tool to determine whether rates calculated using a modified historical test year approach are sufficient to cover costs in the rate year. Staff's attrition study uses as a base the fully restated, normalized results of operations, represented by Avista's December 31, 2014, Commission Basis Report, and develops growth factors to trend expenses, net plant, and non-retail revenues from the 2014 test period to the 2016 rate year. The attrition study estimates the revenue required to provide Avista with a fair opportunity to earn the settlement rate of return in 2016. If the revenue requirement determined using a modified historical test period is shown to be insufficient to cover the attrition-adjusted revenue requirement, Staff recommends adding an attrition allowance to the 2014 revenue basis.

For this case, Staff determined that the revenue requirement calculated using a modified historical test period was insufficient for both electric and natural gas service.[2] Therefore, Staff recommends the Commission exercise its discretion in setting rates and provide an attrition allowance for both electric and gas service.

Q. How did Staff arrive at an electric revenue requirement that is so much lower than that requested by Avista?

[2] Staff witness Mr. Hancock prepared Staff's pro forma revenue requirement analysis. Holding to the Commission's longstanding practice of using a modified historical test period with limited pro forma adjustments, his analysis generated a reduction in electric revenue requirement of $20.9 million and an increase in natural gas revenue requirement of $3.6 million.

A. Consider the following three facts and their impacts on Avista's 2016 revenue requirement relative to the rate year:

1. The Company over earned in the test year;

2. The Company received an additional rate increase in 2015; and

3. The Company's pro forma net power costs decreased substantially relative to the test year levels.

Referring to Mr. Hancock's Exhibit No.___(CSH-2), line 50, we can follow the revenue requirement impacts of each of these elements. In column R-Ttl, "Restated TOTAL," the restated results show Avista's revenue requirement should decrease by $14.7 million. In column 3.09, E-PREV, "Pro Forma Revenue Normalization," re-pricing loads for the rate increase in 2015 contributes to a further reduction of $16.4 million in revenue requirement. Finally, column 3.00, E-PPS, "Pro Forma Power Supply," shows that 2016 pro forma power supply costs are expected to be $13.2 million less than test year power supply costs.

The sum effect of these three factors is a net revenue surplus of $44.3 million. All else equal, the Company's 2016 electric revenue requirement should decrease by $44.3 million relative to test year levels.

Avista arrived at a proposed revenue requirement increase for 2016 largely by requesting recovery of all uncertain, speculative capital costs and related expenses through 2016. Staff does not support such an approach and, thus, arrives at a much different revenue requirement.

IV. POLICY ISSUES

Q. What do you address in this section of your testimony?

A. This section of my testimony focuses on three broad elements:

1) defining the basic parameters of the Commission's longstanding ratemaking standard, and Avista's failure to conform to those parameters,

2) the appropriateness of granting an attrition allowance to provide the Company with an opportunity to earn a fair rate of return in the rate year, and

3) a response to Avista's alleged drivers of attrition.

A. Commission's ratemaking standard

Q. Please describe the Commission's standard ratemaking practice.

A. The Commission's standard ratemaking practice requires companies filing for revised rates to start with an historical test year,[3] and typically with an average of monthly averages rate base balance. The Commission also allows pro forma adjustments to rate base and expenses that often extend beyond the end of the test year.[4] Such pro forma adjustments are what characterize Washington as a "hybrid" or "modified" historical test year state.

[3] *Wash. Utils. & Transp. Comm'n v. Avista Corp.,* Dockets UE-090134, UG-090135 and UG-060518, Order 10 at ¶ 41 (December 22, 2009) at ¶41.
[4] *Wash. Utils. & Transp. Comm'n v. Pacific Power & Light Co.,* Docket UE-140762, Order 08 (March 25, 2015) at ¶ 6.

Q. What factors typically qualify pro forma plant adjustments for inclusion in rate base?

A. Pro forma plant adjustments must be "known and measurable"[5] and "used and useful" for service in Washington State.[6]

Q. What is Staff's interpretation of "known and measurable?"

A. Staff interprets "known and measurable" to mean that a given transfer of a capital project to plant in service is known to have occurred and that final project costs are thus measurable. This implies that, in order to be included in rates, a plant must be "in service" and final project costs must be auditable. In order to audit final project costs in this filing, Staff uses an "in-service" cutoff date of June 30, 2015.

Q. Does this in-service cutoff date conflict with the Commission's rejection of a "bright line" in-service cutoff date for including pro forma plant in rate base?

A. No. Staff's use of an in-service cutoff date is merely a practical matter when processing a rate case. Given the procedural schedule and limited discovery period, Staff can only reasonably attest to plant that is in service as of June 30, 2015. Further, Staff witness Mr. Gomez testifies to the Company's inadequate documentation regarding major plant additions scheduled to be placed in service after June 30, 2015.

[5] WAC 480-07-510(3)(iii).
[6] *See Wash. Utils.& Transp. Comm'n v. Pacific Power & Light Co.,* Docket UE-050684, Order 04 (April 17, 2006) ¶49.

Q. How does the Commission define "used and useful?"

A. The Commission has defined "used and useful" to mean that, in order to be considered for inclusion in rates, a company must demonstrate "quantifiable" benefits to ratepayers in Washington for each and every resource to be included in rates.[7] Staff witness Mr. Gomez testifies to the "used and useful" nature of specific plant additions being considered for inclusion in rate base in this case.

Q. Are there any other factors the Commission considers when allowing pro forma plant in rates?

A. Yes. Historically, the Commission has considered only "major" plant additions for inclusion in rate base.[8] Thus, to the extent pro forma plant does not meet a materiality threshold, Staff does not consider the plant for inclusion in rates. Staff witness Mr. Hancock discusses Staff's method for determining whether specific pro forma plant adjustments meet a reasonable definition of "major."

Beyond simply establishing a materiality threshold, considering only major plant additions for inclusion in rate base has a practical basis as well. It is impossible for parties to assess the prudency of hundreds of pro forma plant adjustments during the review period of a rate case. In its initial filing of the present case, Avista included 433 individual pro forma plant adjustments.

[7] *Wash. Utils. & Transp. Comm'n v. Pacific Power & Light Co.,* Docket UE-140762, Order 08 (March 25, 2015) at ¶ 166. *See also Wash. Utils. & Transp. Comm'n v. Pacific Power & Light Co.,* Docket UE-050684, Order 04 (April 17, 2006) ¶ 51.

[8] *Wash. Utils. and Transp. Comm'n v. Pacific Power & Light Co.,* Docket UE-140762, Order 08 at ¶ 170 (March 25, 2015).

Q. Please summarize the basic parameters for establishing pro forma plant adjustments to be appropriate for inclusion in rates under the Commission's traditional, modified historical test year ratemaking approach.

A. The criteria Staff used for consideration of pro forma plant adjustments in rates can be summarized according to the following. Pro forma plant must:

1. Be in service as of June 30, 2015;
2. Meet a reasonable definition of "major";
3. Demonstrate "quantifiable" benefits to ratepayers in Washington State; and
4. Include only costs that were prudently incurred.

Staff witness Mr. Hancock testifies to items 1 and 2, and Staff witness Mr. Gomez testifies to items 3 and 4.

Q. Please summarize the results of Staff's application of these criteria on its evaluation of Avista's pro forma case?

A. First, it is important to point out that the Company's "pro forma cross check" is substantively a future test year approach. Calling it a "pro forma cross check" inaccurately suggests that the Company's pro forma case is similar in nature to a standard modified historical test period approach. It is not. Accordingly, Staff's own pro forma cross check is substantially different than the Company's future test year presentation. Staff had to bend and whittle the Company's pro forma case to conform to the parameters of the Commission's standard modified historical test year.

Using these parameters, Staff determined that 14 pro forma plant adjustments were appropriate to consider for inclusion in rates.[9] These were the projects that met a reasonable definition of "major" and that were in service as of June 30, 2015.

B. Attrition Allowances and an Opportunity to Earn a Fair Rate of Return

Q. Please describe the Commission's obligation to provide utilities with an opportunity to earn a fair rate of return.

A. The Commission's statutory duty is to balance the needs of the public to have safe and reliable service at reasonable rates with the financial ability of the utility to provide such service prospectively. In fulfilling its statutory duty, the Commission must establish rates that are "fair, just, reasonable and sufficient."[10] The rates must be fair to both customers and the utility; just, in that the rates are based solely on the record in the case following the principles of due process of law; reasonable, in light of the range of potential outcomes presented in the record; and sufficient, to meet the financial needs of the utility to cover its expenses and attract capital on reasonable terms.[11] Thus, the Commission must set rates that provide utilities with an opportunity to earn a fair rate of return.

[9] *See* Hancock, Exhibit No.___(CSH-1T), Table 4, for a list of these 14 "expenditure requests," or ERs.
[10] RCW 80.28.010(1); RCW 80.28.020.
[11] *Federal Power Commission v. Hope Natural Gas,* 320 U.S. 591 (1944); *Bluefield Water Works & Improvement Company v. Public Service Commission of West Virginia,* 262 U.S. 679 (1923). *See People's Organization for Washington Energy Resources v. Wash. Utils. & Transp. Comm'n*, 104 Wn.2d 798, 807-13, 711 P.2d 319 (1985) (describing rate setting process in Washington).

Q. When is it appropriate to provide a utility with an attrition allowance?

A. The Commission has historically allowed attrition where extraordinary circumstances beyond the regulated company's control will cause the relationship between revenues, expenses, and rate base to change in a manner that impedes the company's opportunity to earn a fair return.[12] The Commission historically has provided attrition allowances to companies during times of rapid growth in utility plant.

Q. Is Avista facing the type of extraordinary circumstances that merit consideration of an attrition allowance?

A. Avista's low load growth is well-documented and its net plant has increased in recent years, a period that includes several general rate cases where the Commission has approved rates with consideration of the Company's capital expenditures. This documented relationship between low revenue growth and the recent increases in capital expenditures can create the circumstances where under-recovery is possible, as the Commission has previously affirmed.[13] However, the attrition evidence presented by the Company does not conclusively demonstrate that the circumstances currently facing the Company are sufficient to warrant an attrition allowance. On the other hand, my attrition analysis shows that the Company will likely under-recover in the rate year at rates established using only a modified historical test period approach.

[12] I provide a comprehensive, detailed discussion of Commission precedent on attrition later in my testimony. *See infra* pp. 28-34.
[13] *See infra* pp. 29-30.

Should the Commission decide that an attrition adjustment is necessary to provide the Company a reasonable opportunity to earn a fair rate of return, I provide a properly performed attrition study which considers growth in all components of the rate making formula. My analysis and conclusions will follow below.

Q. How should the Commission assess the likelihood and amount of attrition?

A. The Commission's assessment should rely on a properly performed attrition study.[14] An attrition study evaluates historical rates of growth in revenues, expenses and rate base to assess how the relationships of these elements are likely to evolve between the test year and the rate-effective period.

If a properly performed attrition study demonstrates that the rates established using a modified historical test period are unlikely to provide revenues sufficient to cover legitimate costs in the rate year, the Commission should consider providing the Company with an attrition allowance calculated such that the prospective rate year net operating income is sufficient to allow the opportunity to earn a specified, fair rate of return.

Q. Why does Staff believe that an attrition study is an acceptable basis upon which to calculate rates?

A. An attrition study is an acceptable basis upon which to calculate rates since historical data provide evidence of how fundamental ratemaking relationships are likely to behave over limited future time periods. This enables the Commission to exercise its judgment with respect to determining rates consistent with statutory requirements.

[14] *Wash. Utils. & Transp. Comm'n v. Pacific Power & Light Co.*, Docket UE-140762, Order 08 (March 25, 2015) at ¶ 146.

C. Response to Avista's Alleged Drivers of Attrition

Q. In its direct case, does the Company allege earnings attrition is likely to occur in the rate year?

A. Yes. Specifically, Mr. Morris states that, "net plant investment and operating expenses… are growing at a faster pace [than revenues]"[15] and that "because annual costs are growing at a faster pace than revenues, it is necessary to increase retail rates each year so that total revenues are equal to total costs."[16] Mr. Morris indicates that growth in net plant is the primary driver of increases in expenses, noting that "net plant investment in recent years has grown at a relatively rapid pace," [17] and that the "level of retail rates is influenced heavily by changes in net plant investment over time." [18]

The Company's underlying policy narrative appears to be that high capital expenditures and, to some extent, low load growth are contributing to projected under-recovery, and that an attrition allowance is the best regulatory tool to address this perceived problem.

Q. Does Avista's attrition study demonstrate that its recent level of plant investment warrants extraordinary rate treatment?

A. No. As I describe later in my testimony, Avista's attrition study erroneously used the Company's speculative future test year results as the basis for its growth factors for net

[15] Morris Direct, Exhibit No.___(SLM-1T) at 10:13-14.
[16] Morris Direct, Exhibit No.___(SLM-1T) at 10:18-19.
[17] Morris Direct, Exhibit No.___(SLM-1T) at 6:15-16.
[18] Morris Direct, Exhibit No.___(SLM-1T) at 5:6-7.

plant and depreciation. As a result, the Company significantly overstated its projected attrition. Avista's attrition study essentially asks the Commission to accept Company witness Ms. Schuh's estimates of future capital additions which, as Mr. Gomez describes, do not satisfy any rational interpretation of the known and measurable standard.

The rapid growth in Avista's net plant in service may be cause for extraordinary rate treatment, but Avista's attrition study is not performed in the objective manner necessary for being useful in determining whether that is indeed the case.

Q. What does Mr. Morris describe as the cause for the rapid growth in net plant?

A. Mr. Morris does not provide much detail on *why* net plant has been growing at a relatively rapid pace. Generically, he states that "Avista's obligation to serve all customers with safe, reliable service, and maintain a high level of customer satisfaction, demands continued investment in facilities."[19]

Mr. Morris does discuss the increasing price of equipment over time. He states: "Part of Avista's recent new plant investment is related to replacing some of the plant and equipment from the 1950s and 1960s, which is now 50 to 60 years old, and the cost to replace those facilities is substantially higher than the original cost of installation."[20]

Q. Is Mr. Morris's observation that the cost to replace facilities is substantially higher than the original facility costs particularly noteworthy?

A. No. Facilities now are more expensive than they were 50 years ago just as facilities 10 years ago were more expensive than they were 50 years before that. Further, it is

[19] Morris Direct, Exhibit No.___(SLM-1T) at 10:14-16.
[20] Morris Direct, Exhibit No.___(SLM-1T) at 6:16-19.

logically inconsistent for one Company witness to suggest that high inflation presents unique circumstances requiring extraordinary rate treatment while another Company witness claims that the current low-interest rate (and therefore, low inflation) environment supports increased borrowing.[21]

D. Concerns Regarding Distribution Plant Growth

Q. Does Staff hold any other concerns relating to the cause of Avista's alleged attrition?

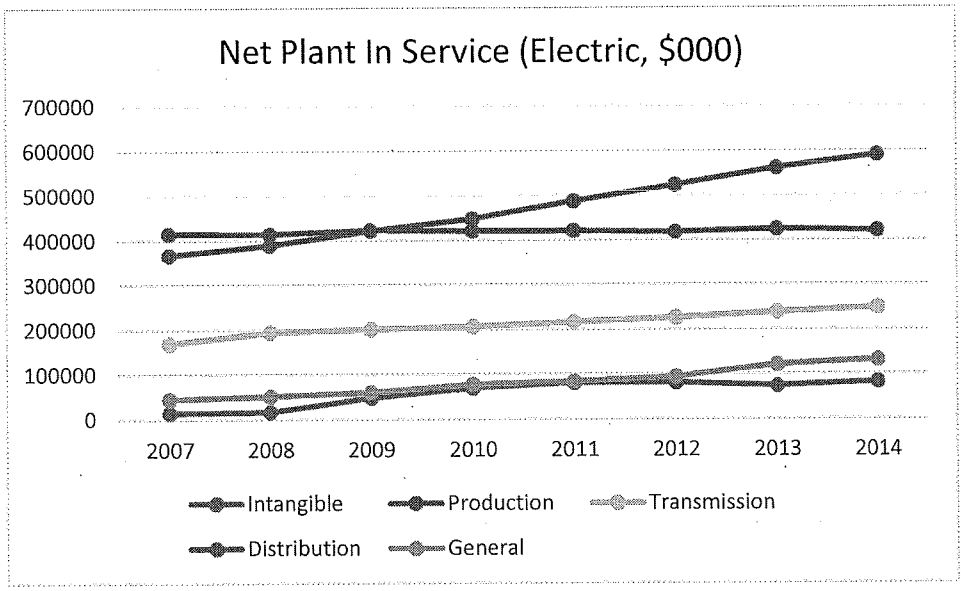
A. Yes. As I touch on above, it is not clear in Mr. Morris's policy testimony *why* the Company's capital expenditures have been accelerating unusually in recent years. In evaluating the Company's capital spending habits, it is important that the Commission first note two things: 1) Avista's growth in net plant is being driven largely by growth in distribution plant (see charts below), and 2) the Company provides as a rationale for continued plant investment its "obligation to serve all customers with safe, reliable service, and maintain a high level of customer satisfaction."[22] [Emphasis added]. Thus, granting Avista's current rate request implies an acceptance of the magic word "reliability" as a singular, justified basis for rapidly growing distribution plant. However, the mere utterance of the term "reliability" does not remove a regulated company's obligation to demonstrate quantifiable benefits to ratepayers.

[21] *Compare* Morris Direct, Exhibit No. ___ (SLM-1T) at 6 *and* Thies Direct, Exhibit No. ___ (MTT-1T) at 12:7-17.
[22] Morris Direct, Exhibit No.___(SLM-1T) at 10:14-16.

Q. How aggressively has Avista been investing in electric distribution plant?

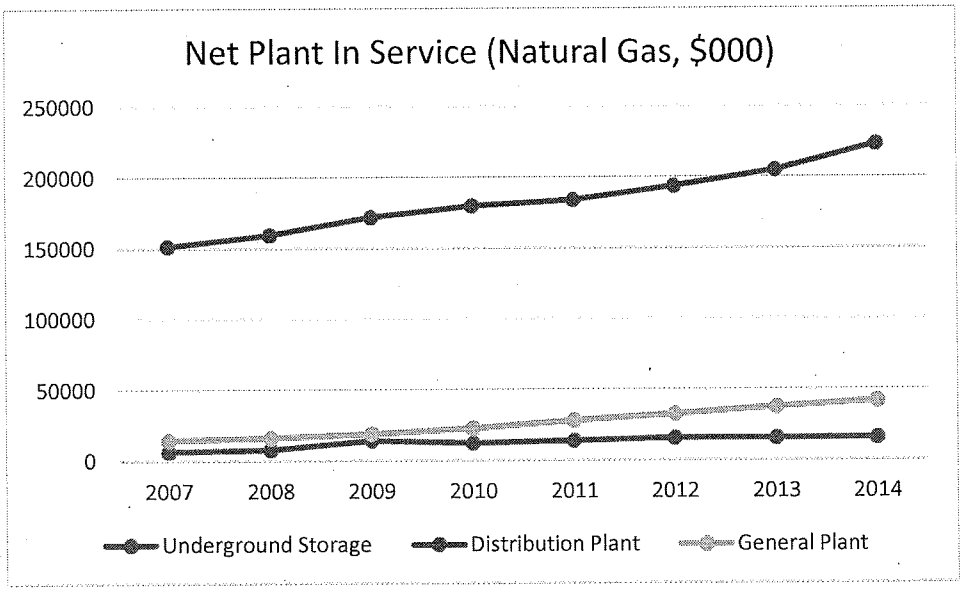
A. As shown below, in 2010, Avista's net electric distribution plant in service for the first time exceeded its net electric production plant in service. Beyond 2010, Avista has continued to invest aggressively in distribution plant such that, by 2014, electric distribution net plant represented 40 percent ($590,073,000) of total electric net plant in service.

The following chart shows Avista's electric distribution plant assets as compared to other categories of plant assets.



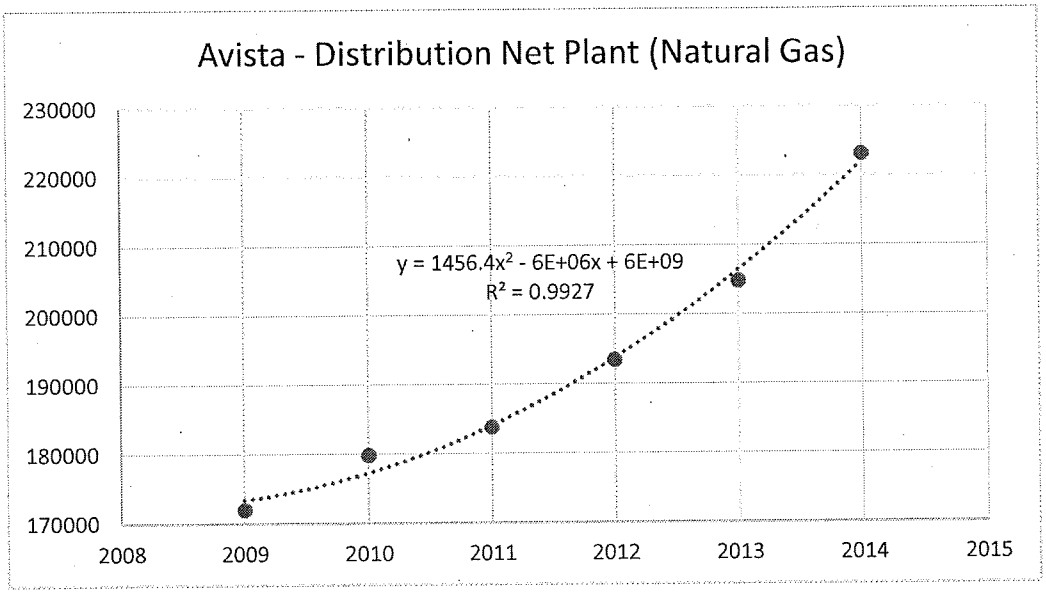
Q. How aggressively has Avista been investing in natural gas distribution plant?

A. As shown below, Avista's net gas distribution plant in service is by far the largest and fastest growing category of plant. The following chart shows Avista's distribution plant assets as compared to other categories of plant assets.



The relative size of Avista's natural gas distribution plant compared to other categories of plant is not altogether surprising because Avista is after all a local natural gas distribution company. However, what is concerning is that Avista's natural gas distribution net plant in service is growing at an accelerating pace at a time when the Company is experiencing almost no load growth.

The following chart shows the recent accelerated growth in Avista's natural gas distribution plant.



Q. Why is distribution plant growing at such a rapid pace?

A. Staff has no idea. Avista invokes "reliability" but does not provide any substantive explanation or analysis of what "reliability" means, nor does it include any meaningful cost-benefit analysis.

Q. Does Staff hold any other concerns regarding Avista's accelerating growth in distribution plant?

A. Yes. The Company has provided no evidence, in this case or otherwise, supporting the need to invest heavily in improved reliability. Avista's ongoing reliability performance is currently assessed only in relation to its SAIDI and SAIFI scores from 2005. As Staff witness Mr. Cebulko further explains in his testimony, Staff has no way of knowing whether Avista's reliability performance in 2005 was good or bad or, by extension, whether Avista's current level of reliability is appropriate.

Staff has performed some peer group comparisons for Avista, but notes that peer group comparisons are severely limited due to the fact that they do not adequately control for unique service territory characteristics such as line miles per customer, percent undergrounding, or topographic variation.

Without knowing where Avista *should* be in terms of its reliability performance, it is not possible to know whether improved "reliability" is a remotely acceptable cause for significant and continued investment in distribution system enhancements. It is entirely possible that, given the unique characteristics of Avista's service territory, it has already invested far too heavily in distribution system enhancements. It is also possible that Avista should be scoring better on its reliability metrics and so is underinvesting in distribution system enhancements. As it is, we simply do not know.

Q. How do you recommend the Company's growth in distribution plant be evaluated?

A. I recommend that the Commission order the development of an econometric benchmarking study specifically related to distribution plant. In his testimony, Mr. Cebulko describes the need for meaningful benchmarks for SAIDI and SAIFI, and Staff's inability to properly evaluate reliability without them. I propose here to expand that study to include benchmarking of distribution O&M and distribution net plant in service. Avista is simply investing too heavily in distribution infrastructure for Staff and the Commission to continue to operate blindly when trying to determine whether that investment is providing worthwhile benefit to the Company's ratepayers.

This issue is relevant to all utilities, so Avista should not bear this burden alone. All utilities can be benchmarked using the same study.

Q. Please describe in more detail the distribution system benchmarking study you are proposing.

A. An econometric benchmarking study would use data from all regulated utilities around the country to quantify the relationships of distribution plant spending to specific service territory characteristics. For example, a company's distribution plant in service and distribution O&M should be related to service territory characteristics such as number of line miles, average age of distribution infrastructure, weather severity, etc. Once the relationships are quantified (i.e. once we understand how these factors influence reliability and distribution system spending, on average), we can then begin to determine what level of distribution system spending is appropriate given the specific characteristics of a utility's service territory, and whether improved "reliability" is indeed a legitimate reason for heavy investment in distribution system enhancements. Mr. Cebulko provides additional commentary on econometric benchmarking in his testimony.

Q. Is Staff recommending the Commission take any additional action regarding evaluation of Avista's capital expenditures?

A. Yes. Staff witness Mr. Gomez Staff recommends the Commission order a further expansion of Avista's current compliance reporting requirements for capital. Along with reporting of capital expenditures, CWIP balances and transfers to plant, Mr. Gomez recommends the Commission require Avista to file supporting documentation and work papers for its planned and ongoing major capital additions. Mr. Gomez also recommends the Commission require Avista to evaluate its capital expenditure and transfer to plant

forecasts from the previous period's report and account for variances in its current period compliance report.

V. ATTRITION

A. Summary of Staff's Attrition Studies

Q. At the rates currently in place (in 2015), what is Staff's estimate of Avista's 2016 rates of return for electric and natural gas service?

A. As shown in Exhibit No.__ (CRM-2), page 1, column (c), line 5, at 2015 base rates, Staff expects Avista's rate of return for electric service in 2016 to be approximately 7.57 percent. As shown in Exhibit No.__ (CRM-3), page 1, column (c), line 5, at 2015 base rates, Staff expects Avista's rate of return for natural gas service in 2016 to be approximately 5.39 percent.

Q. What are Staff's attrition-adjusted revenue requirements for the 2016 rate year?

As shown in Exhibit No.__ (CRM-2), page 1, column (c), line 10, Avista has a total attrition-adjusted revenue requirement for electric service for the 2016 rate year of $493,773,000. Relative to the base rates currently in place (for 2015), the attrition revenue requirement for 2016 represents a decrease of $6.2 million for electric service.

As shown in Exhibit No.__ (CRM-3), page 1, column (c), line 10, Avista has a total attrition-adjusted revenue requirement for natural gas service for the 2016 rate year of $179,954,000. Relative to the base rates currently in place (for 2015), the attrition

revenue requirement for 2016 represents an increase of $9.0 million for natural gas service.

Q. Using a modified historical test period approach, what does Staff calculate to be Avista's revenue requirement in 2016 for electric and natural gas operations?

A. Staff witness Mr. Hancock presents Staff's pro forma revenue requirement analysis. Holding to the Commission's longstanding practice of using a modified historical test period with limited pro forma adjustments, Avista's 2016 electric and gas revenue requirements are $478,945,000 and $174,529,000, respectively. These pro forma revenue requirements, taken alone, represent a decrease of $20.9 million for electric operations and an increase of $3.6 million for natural gas operations.

Q. Comparing these pro forma revenue requirement results to Staff's attrition analyses, does it appear rates calculated using a modified historical test period will provide Avista with a reasonable opportunity to earn the settlement rate of return?

A. No. For electric service, the modified historical test year approach generated a revenue requirement of $479,047,000 which is $14.7 million lower than Staff's 2016 attrition-adjusted revenue requirement of $493,773,000. Therefore, the revenue requirement calculated using a modified historical test period approach is insufficient to provide Avista's electric operations with a fair opportunity to earn the Settlement rate of return of 7.29 percent.

For natural gas service, the modified historical test year approach generated a revenue requirement of $174,519,000 which is $5.4 million lower than Staff's 2016

attrition-adjusted revenue requirement of $179,954,000. Therefore, the revenue requirement calculated using a modified historical test period approach is insufficient to provide Avista's natural gas operations with a fair opportunity to earn the Settlement rate of return of 7.29 percent.

Q. Does Staff recommend that the Commission provide Avista with an attrition allowance in the calculation of 2016 rates?

A. Yes. Given that the rates calculated using a modified historical test year generate revenues that fall short of those necessary to provide Avista with a reasonable opportunity to earn a fair rate of return, Staff recommends the Commission provide Avista with an attrition allowance of $14.7 million for electric operations and $5.4 million for natural gas operations. This dollar amount corresponds to the difference between Staff's pro forma revenue requirement and the revenue requirement calculated using Staff's attrition analysis.

B. Definition of Attrition and Commission Policy on Attrition Adjustments

Q. What is attrition?

A. In ratemaking, the term "attrition" typically refers to the erosion of a company's rate of return over time because the historical test period relationship in revenues, expenses and rate base does not hold during a future rate year. If this erosion occurs, it can deprive the utility of a reasonable opportunity to earn a fair rate of return. As the Commission has observed:

> Attrition is the change in relationships among revenues, expenses, and rate base over time, in which growth in expenses exceeds growth in revenues from factors beyond the company's control.[23]

In other words, if load growth is insufficient to generate the revenues necessary to cover growth in expenditures (including return on rate base) between the historical test year and the rate year, attrition is likely to occur.

Q. Has Staff conducted a review of historical Commission orders discussing attrition and attrition allowances?

A. Yes. Staff reviewed several orders relevant to this topic issued by the Commission between 1975 and 1992. Excerpts of these orders are provided in Exhibit No.___(CRM-6). Although the term "attrition" was not mentioned in a Commission order until 1980, ratemaking remedies to the factors we now refer to as contributing to earnings erosion are evident in the record at least as far back as 1975. In the late 1970s, the Commission on at least three occasions granted utilities construction work in progress (CWIP) in rate base to combat what appears to have been unusual growth in plant.[24] Rapid growth in plant was seen as cause to create an exception to the historic definition of rate base. In 1977, the Commission also authorized a pro forma adjustment to sales revenues in response to declining sales.[25] Thus, by 1980, both rapid growth in plant and declining sales revenues

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[23] *Wash. Utils. & Transp. Comm'n v. Wash. Natural Gas Co.,* Docket UG-920840, 4th Supplemental Order (September 27, 1993), at 29.
[24] *Wash. Utils. & Transp. Comm'n v. Pacific Power & Light Co.,* Cause U-75-24, 2nd Suppl. Order at 5; *Wash. Utils. & Transp. Comm'n v. Puget Sound Power & Light Co.,* Cause U-78-21, 2nd Suppl. Order at 13-18; *Wash. Utils. & Transp. Comm'n v. Puget Sound Power & Light Co.,* Cause U-80-10, 5th Suppl. Order at 7.
[25] *Wash. Utils. & Transp. Comm'n v. Cascade Natural Gas Co.,* Cause U-77-83, 2nd Suppl. Order at 10.

were identified as factors warranting extraordinary rate treatment. These are the primary factors Avista alleges are confronting the Company today.

The 4th Supplemental Order in Cause U-80-25/27 was the first order to use the word "attrition."[26] In that case, the company cited regulatory lag as the cause and requested end-of-period rate base which the Commission ultimately denied. The first year that inflation was singularly identified as a cause of attrition was also 1980. In the 3rd Supplemental Order of Cause U-80-111, the Commission authorized a "price inflation adjustment"[27] to reflect the effect of inflation on specific maintenance expenses in the rate year. However, although high inflation continued into the early 1980s, inflation itself did not appear to be the primary rationale for granting extraordinary rate treatment in any Commission order besides the 3rd Supplemental Order of Cause U-80-111. Indeed, in two orders in this time period, the Commission rejected inflation adjustments outright.[28]

The first year the Commission granted an "attrition allowance" was 1981.[29] In that case, and in the nine subsequent cases between 1982 and 1986 in which it authorized an attrition allowance,[30] the Commission did so in an apparent effort to combat

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[26] *Wash. Utils. & Transp. Comm'n v. Washington Natural Gas Co.,* Cause U-80-25/27, 4th Suppl. Order at 5.
[27] *Wash. Utils. & Transp. Comm'n v. Washington Natural Gas Co.,* Cause U-80-111, 3rd Suppl. Order at 18-19.
[28] *Wash. Utils. & Transp. Comm'n v. Puget Sound Power & Light Co.,* Cause U-81-41, 2nd Suppl. Order at 19-20; *Wash. Utils. & Transp. Comm'n v. Washington Natural Gas Co.,* Cause U-82-22/37, 3rd Suppl. Order at 14. In Cause U-81-41 the inflation adjustment was called an "attrition adjustment" but it is clear in the language of the order that the proposed attrition adjustment was related specifically to inflation.
[29] *Wash. Utils. & Transp. Comm'n v. Washington Water Power Co.,* Cause 81-15/15, 2nd Suppl. Order at 21-22.
[30] *Wash. Utils. & Transp. Comm'n v. Washington Water Power Co.,* Cause U-82-10/11, 2nd Suppl. Order at 31-32; *Wash. Utils. &Transp. Comm'n v. Pacific Power & Light Co.,* Cause U-82-12/35, 4th Suppl. Order at 30-31; *Wash. Utils. & Transp. Comm'n v. Puget Sound Power & Light Co.,* Cause U-82-38, 3rd Suppl. Order at 29; *Wash. Utils. & Transp. Comm'n v. Washington Water Power Co.,* Cause U-83-26, 5th Suppl. Order at 29-30; *Wash. Utils. & Transp. Comm'n v. Washington Natural Gas Co.,* Cause U-83-27, 2nd Suppl. Order at 9; *Wash. Utils. & Transp. Comm'n v. Pacific Power & Light Co.,* Cause U-83-33, 2nd Suppl. Order at 30; *Wash. Utils. & Transp. Comm'n v. Pacific Power & Light Co.,* Cause U-84-65, 4th Suppl. Order at 34-36; *Wash. Utils. & Transp. Comm'n v. Puget*

differential growth in revenues, expenses and rate base, primarily due to unusual growth in plant investment.

Q. Has the Commission rejected a proposed attrition allowance?

A. Yes. The Commission has rejected attrition allowances in its past on the grounds that the requesting utilities were not at the time presented with extraordinary circumstances.[31] The final year that this Commission explicitly approved an attrition allowance was 1986. It should also be noted that on at least one occasion, the Commission accepted a negative attrition allowance;[32] that is, the differential rates of growth indicated the company would likely over earn in the rate year, so the Commission ordered a rate decrease.

Q. What has the Commission done in recent cases with respect to its policy regarding the use of an attrition allowance?

A. In its recent policy statement on decoupling, the Commission stated that it would consider an attrition adjustment in the ratemaking process to address earnings attrition:

> The guidance provided in this policy statement does not imply that the Commission would not consider other mechanisms in the context of a general rate case, including an appropriate attrition adjustment designed to protect the company from lost margin to any reason.[33]

In Puget Sound Energy's 2011 general rate case, the Commission stated it was open to considering:

Sound Power & Light Co., Cause U-85-53, 2nd Suppl. Order at 57; and *Wash. Utils. & Transp. Comm'n v. Pacific Power & Light Co.*, Cause U-86-02, 2nd Suppl. Order at 33.

[31] *Wash. Utils. & Transp. Comm'n v. Washington Water Power Co.*, Cause U-84-28, 2nd Suppl. Order at 20; *Wash. Utils. and Transp. Comm'n v. Washington Natural Gas Co.*, Docket UG-920840, 4th Suppl. Order at 29-30.

[32] *Wash. Utils. & Transp. Comm'n v. Puget Sound Power & Light Co.*, Cause U-85-53, 2nd Suppl. Order at 57.

[33] *Report and Policy Statement on Regulatory Mechanisms, Including Decoupling, to Encourage Utilities to Meet or Exceed Their Conservation Targets*, Docket U-100522 (November 4, 2010), 22, ¶ 34.

> "Comprehensive expense adjustments based on an overall measurement of the projected shortfall of earnings in the rate year (e.g., attrition allowance based on an attrition study)." [34]

Most recently, in approving the settlement agreement in Avista's 2012 general rate case, the Commission stated:

> The Commission finds, on the basis of the evidence presented, that consideration of attrition in setting rates for 2013 is appropriate. [35]

Q. Has the Commission in recent years provided any specific guidance with respect to attrition allowances?

A. No. While both Avista and Staff presented attrition studies in Avista's 2012 and 2014 general rate cases, both cases were eventually settled. However, in its order accepting the multi-party settlement agreement in Avista's 2012 general rate case, the Commission indicated its intention to further examine the issue of attrition:

> Given the two different attrition methodologies both Staff and Avista employ to arrive at their respective adjustments, and the lack of exploration in the merits of the different approaches, we do not take a position on either but will open an inquiry into this issue to allow for further examination.[36]

Additionally, in the Final Order in Avista's 2014 general rate proceeding,[37] the Commission noted a clear consensus among the settling parties regarding the need for a formalized discussion of attrition along with other possible ratemaking mechanisms that may address the effects of attrition on earnings.[38] Although the Commission subsequently

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[34] *Wash. Utils. &Transp. Comm'n v. Puget Sound Energy,* Dockets UE-111048/UG-111049, Order 08 (May 7, 2012) at ¶491.
[35] *Wash. Utils. & Transp. Comm'n v. Avista Corp.,* Dockets UE-120436/UG-120437 and UE-110876/UG-110877, Order 09 (December 26, 2012), 4, ¶10.
[36] *Id.* at 3, ¶ 4.
[37] *Wash. Utils. & Transp. Comm'n v. Avista Corp.,* Dockets UE-140188 and UG-140189, Order 05 (November 25, 2014).
[38] *Id.* at ¶ 50.

held a workshop on utility earnings attrition on April 16, 2015, it has yet to provide definitive guidance on the use of an attrition allowance when setting rates.

Q. Do the Commission's orders approving attrition allowances in the early 1980s provide guidance on attrition study methodology?

A. A little, yes. The Commission has endorsed the use of growth factors applied to test year levels of revenues, expenses and rate base.[39] Further, these growth factors should be calculated using a historical trend analysis.[40] The Commission has stated unequivocally that: "Such historical analysis is what distinguishes an attrition adjustment from the use of a future test year."[41] An attrition analysis is therefore an exercise in inferential statistics, whereby inferences regarding rates of growth are made through empirical analysis of recorded observations. Such an analysis should be scientifically objective and free from bias. Speculative future expenses and plant balances do not qualify as observations and are entirely inappropriate to include as data points in an objective statistical analysis.

C. Staff's Attrition Analysis

1. General Approach

Q. Please describe generally how to measure attrition.

[39] *See Wash. Utils. &Transp. Comm'n v. Pacific Power & Light Co.,* Cause U-82-12/35, 4th Supplemental Order.
[40] *Wash. Utils. & Transp. Comm'n v. Washington Water Power Co.,* Cause U-83-26, 5th Supplemental Order at 30.
[41] *Wash. Utils. & Transp. Comm'n v. Puget Sound Energy,* Dockets UE-111048/UG-111049, Order 08 (May 7, 2012), 181, footnote 673.

A. An attrition study evaluates prevailing rates of growth in in revenue, expenses and rate base to determine if there is evidence to indicate whether those relationships, known and measured in the test period, are likely to be materially different than those in the rate-effective period.

Q. Please describe your attrition analysis in this case.

A. I apply growth factors to test year levels of revenues, expenses and net plant to estimate the rate year revenue requirement sufficient to allow the Company a reasonable opportunity to earn the Settlement rate of return. This "attrition-adjusted" revenue requirement is compared to the revenue requirement calculated using a modified historical test period approach to determine if those rates are sufficient to cover attrition-adjusted rate year expenses.

Q. Please summarize how Staff calculated its growth factors.

A. I calculated growth factors using historical rates of growth. To calculate historical growth rates in non-retail revenues, expenses and net plant, I used information from the Commission Basis Reports Avista has filed with the Commission pursuant to WAC 480-100-257 (electric) and WAC 480-90-257 (natural gas). These reports show Avista's financial performance under normalized operating conditions and adjusting items based upon prior Commission orders for expenses, net plant, and certain non-retail revenue data for prior years. I calculated rates of growth for these items for the period 2009-2014.

The "base case," or the "escalation base" for my attrition study is the Commission Basis Report for the 12 months ending December 31, 2014.

Q. Why did you use the Commission Basis Report for 12-months-ending December 31, 2014, as the basis for your attrition analysis, rather than the 12 months ending September 30, 2014, which Avista used?

A. The 12-months-ending December 2014 Commission Basis Report is preferable for several reasons. First, the full 2014 CBR incorporates three more recent months (October-December, 2014) of actuals into the "test year." Second, it enables incorporation of calendar year 2014 into the historical trend analysis. Because Avista did not include all of calendar year 2014 in its test year, the Company actually excluded all of 2014 from its trend analysis. The final year of Avista's trend analysis was 2013.

Lastly, the Company made several significant changes to its business at the end of 2012 in an effort to reduce operating expenses.[42] As a result, operating expenses ending in 2013 tell us nothing about year-over-year growth subsequent to the institution of the Company's expense reduction programs. Thus, operating expense data for 2014 are critical in evaluating the "new," year-over-year rate of growth in operating expenses.

2. Analysis of Growth in Revenue

Q. Please explain how you calculated retail revenue for the rate year 2015 in your attrition study.

A. With one exception (described below), I used the same data and methodology Avista used to estimate retail revenue for the rate year 2016, which is derived from the

[42] *See* Morris Direct, Exhibit No.___(SLM-1T) at 12-13.

Company's 2016 load forecast. The revenue escalation factor was calculated using Avista's expected growth rate of individual billing determinants between September 2014 and December 2016.[43]

In response to Staff Data Request No. 146, the Company confirmed that its projected decrease in residential natural gas (Schedule 101) loads from September 2014 to December 2016 was an artifact of its weather normalization process. The Company states that "The unexpectedly high normalized average usage during 2014 is probably due to the inability of the weather normalization methodology not fully adjusting *[sic]* for the extreme weather conditions that occurred in February." The Company continues, "If this anomaly in the normalized historical data had not occurred, usage in the test year would have been lower than the expected 2016 rate year." [Emphasis added.] In other words, the load forecast for Schedule 101 should be positive, not negative.

In the natural gas revenue growth model, Staff modified the load growth rate for weather-sensitive rate schedules by considering Avista's load forecast it used for its 2014 rate case, Dockets UE-140188 and UG-140189. See below Avista's load forecasts for Schedules 101, 111/112, and 121/122 from its 2014 rate case and the current rate case.

Projected Natural Gas Load Growth

	2014 GRC (annual)	**2015 GRC (annual)**	**Staff Used (annual)**
Schedule 101	0.78%	-0.46%	0.39%
Schedule 111/112	0.83%	0.08%	0.46%
Schedule 121/122	1.88%	1.59%	1.74%

[43] *See* Andrews Direct, Exhibit No.___ (EMA-2) at p. 10, *and* Andrews Direct, Exhibit No.___ (EMA-3).

For Schedules 111/112 and 121/122, the growth rate Staff used in its analysis was the average of the projected growth rate from Avista's 2014 and 2015 GRCs. For Schedule 101, Staff used the average of zero and the growth rate from the 2014 rate case. Zero was appropriate to use in this case because Avista stated explicitly that the negative growth rate was incorrect.

3. Analysis of Growth in Rate Base, Expenses and Other Non-Retail Revenue

Q. How did you develop your growth rates and projections for rate base, expenses and other non-retail revenue?

A. I relied upon historical, normalized data from the Commission Basis Reports from 2009 to 2014 to estimate rates of growth for: 1) net plant after deferred income taxes; 2) operating expense; 3) total depreciation/amortization; 4) taxes other than income; and 5) other non-retail revenue. Once I developed these rates of growth, I applied them to the escalation base (*i.e.* the normalized test-year levels from the December 2014 Commission Basis Report) for each corresponding category.

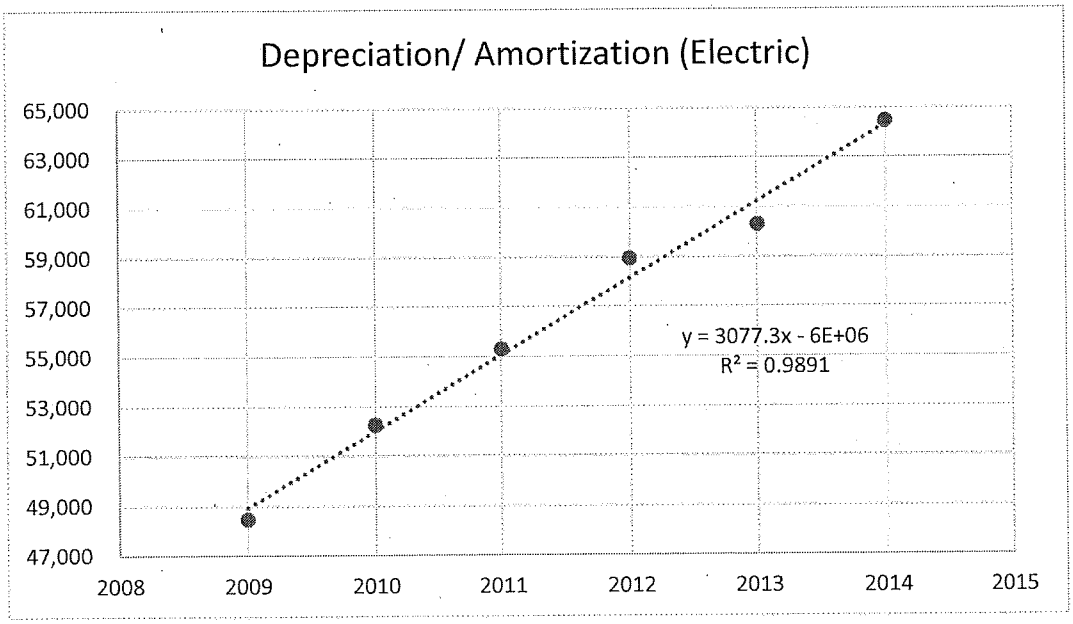
Q. Why did you use the period 2009-2014 for your historical growth rate analysis?

A. In response to Staff Data Request 147, Avista reported that it changed its weather normalization methodology on three occasions between 2007 and 2009. Since 2009, however, the weather normalization methodology has been consistent for all Commission Basis Reports. To avoid statistical complications caused by changes in normalization

methodology, Staff chose to perform its analysis across a time series it knew to be consistently normalized.

Q. Please explain how you calculated rates of growth for expenses, net plant and non-retail revenues.

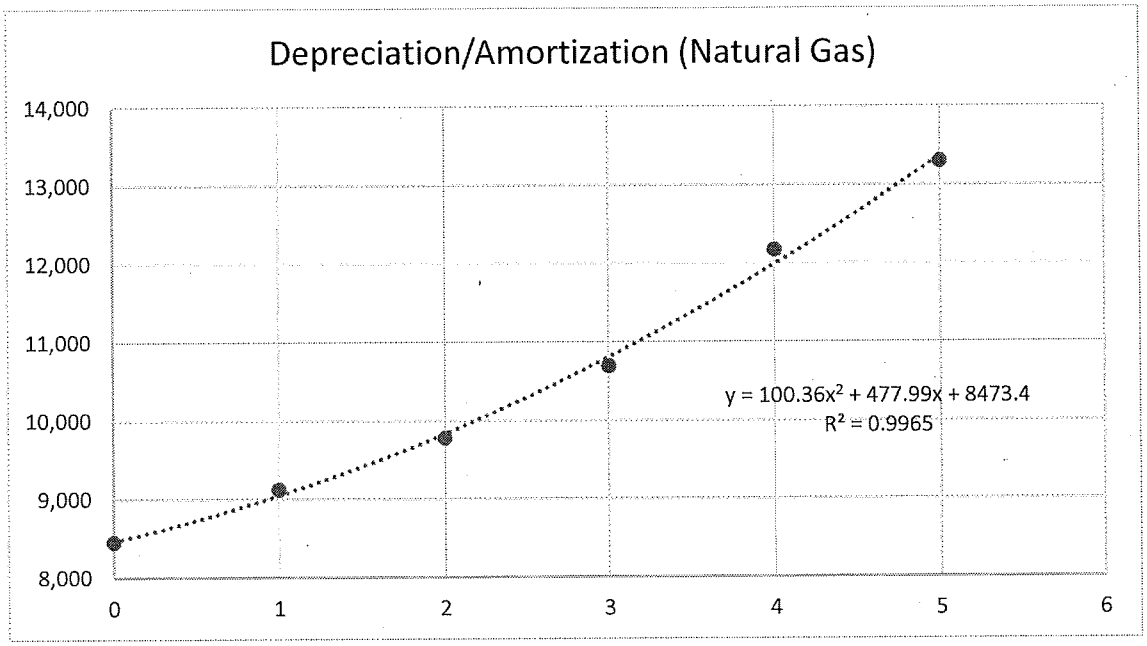
A. I calculated the rates of growth by fitting a model best representative of the underlying historical data. For electric service, the data across the period 2009-2014 were largely linear. Therefore, I calculated rates of growth using a simple least-squares linear regression across those six years of data. For example, see the chart below showing the linear rate of growth for electric depreciation/ amortization.



Q. Was the process the same for calculating natural gas service rates of growth?

A. Yes. For natural gas service, though, the data do not fit a linear model. Rather, the data across the period 2009-2014 appear to show an accelerating rate of growth (see below).

Therefore, I calculated the growth factors by first plotting a second-order polynomial (i.e. quadratic) function across those six years of data. To determine the appropriate growth factors, I used the first derivative of the quadratic function to calculate the instantaneous (annual) rate of growth at the test year. This rate of growth was multiplied by two to get the two-year growth factor (from 2014 to 2016).



Q. How did you evaluate growth in operating expenses?

A. I compared the Company's proposed 3.00 percent annual growth rate with the most recent (2013 to 2014) year-over-year rate of growth. This year-over-year rate of growth is critical to understanding the "new" growth rate subsequent to the Company's cost-cutting measures instituted after 2012, as discussed in detail by Company witness Mr. Morris. Data prior to 2013 tell us nothing about growth in operating expense under the new expense management strategy.

Q. What was the year-over-year percent change in adjusted operating expenses from 2013 to 2014 for electric and natural gas service?

A. The year-over-year rates of growth were 1.82 percent for electric service and 1.34 percent for natural gas service. This compares to the 3.00 percent annual rate of growth Avista is requesting for operating expense.

Q. What rate of growth did you use for your escalation factor for operating expense?

A. Avista did not produce work papers supporting the proposed 3.0 percent annual growth rate in operating expense. Instead, in response to multiple Staff data requests, the Company produced only anecdotal explanations for why it expects growth in operating expenses to accelerate beyond 2014. Staff therefore could not determine whether the proposed 3.0 percent growth rate was reasonable or unreasonable. Rather than use either just the proposed 3.0 percent growth rate, or just the actual growth rate between 2013 and 2014, Staff decided to use the average of these two values as the growth rate for operating expenses in its attrition analysis. The resulting annual growth rates, 2.42 percent for electric service and 2.17 percent for natural gas service, are fair to the Company and ratepayers.

Q. How are power supply expenses and revenues treated within your electric attrition model?

A. I removed all normalized energy-related costs and revenues from the base case (i.e., the 12-months-ending December 2014 results of operations) so that only non-energy costs and revenues are trended to the 2016 rate period. To incorporate net energy costs into the

revenue requirement calculation, I added the pro forma December 2016 net energy costs back to the attrition model. My Exhibit No.__(CRM-2), pages 4-5, columns [B] and [I] includes the removal of 2014 net energy costs and the addition of 2016 pro forma net energy costs, respectively.

Q. Did you make any adjustments to 2015 energy costs within your electric attrition model?

A. Yes. I incorporated into my attrition model the results of the Company's updated 2016 pro forma power supply costs.[44] Due largely to an error in the power supply cost calculation in the Company's direct case, the updated 2016 pro forma power supply costs reduced the annual revenue requirement by $16.4 million.[45]

Q. How are gas costs and revenues treated within your natural gas attrition model?

A. Consistent with the treatment of energy costs and revenues in the electric attrition model, I removed all normalized gas-related costs and revenues from the base case (12 months ending December 2014 results of operations) so that only non-energy costs and revenues are trended to the 2016 rate period. To incorporate net gas costs in the revenue requirement calculation, I added the December 2014 net gas costs back to the attrition model after escalating non-gas costs and revenues. My Exhibit No.__(CRM-3), pages 4-5, columns [D] and [I] includes the removal of December 2014 net gas costs and the reintroduction of December 2014 net gas costs, respectively.

[44] The effect of this correction was included in Avista's response to Staff Data Request No. 130.
[45] This is explained further in Section V(D), below.

In the natural gas attrition model, the gas expenses and revenues added back after other components are trended are identical to the gas expenses and revenues removed prior to trending other components. Updates to projected gas costs are made outside of a general rate case in the Company's annual purchased gas adjustment (PGA) filing, so I did not pro form gas expenses and revenues in the attrition analysis.

4. Results – Electric Attrition Study

Q. Please summarize the results of your attrition study for Avista's electric operations.

A. As shown in the table below, absent a rate change (i.e. at the rates effective in 2015) I estimate Avista's 2016 rate of return for electric operations would be 7.57 percent. Using a modified historical test year approach, Staff witness Mr. Hancock determined the Company would need a revenue decrease of $21 million.

However, my attrition study finds that with a $21 million reduction in revenues, the Company would not have a fair opportunity to earn the Settlement rate of return of 7.29 percent. Rather, my attrition study finds that rates should be reduced by only $6.2 million (relative to 2015 base rate revenues).

Relative to Mr. Hancock's electric pro forma revenue requirement, I recommend the Commission provide Avista with an attrition allowance of $14,726,000, which is the difference between ($20,937,000) and ($6,209,000), below.

2016 Electric Revenue Requirement Calculations

	At Current (2015) Rates	Modified Historical Test Period Approach	Attrition Study Results
Business Revenues	$499,982,000	$479,047,000	$493,773,000
Rate of Return	7.57 %	6.65%	7.29%
Incremental Revenue Requirement (vs. 2015)	--	($20,935,000)	($6,209,000)
Attrition Allowance			$14,726,000

5. Results – Natural Gas Attrition Study

Q. Please summarize the results of your attrition study for Avista's natural gas operations.

A. As shown in the table below, absent a rate change from those rates currently in effect in 2015, I estimate Avista's 2016 rate of return for natural gas operations would be 5.29 percent. Using a modified historical test year approach, Staff witness Mr. Hancock determined the Company would need a revenue increase of $3.6 million.

However, my attrition study finds that with a $3.6 million reduction in revenues, the Company would not have a fair opportunity to earn the Settlement rate of return of 7.29 percent. Rather, my attrition study finds that rates should be increased by $9.0 million (relative to 2015 base rate revenues).

Relative to Mr. Hancock's natural gas pro forma revenue requirement, I recommend the Commission provide Avista with an attrition allowance of $5,435,000 (this is the difference between $3,605,000 and $9,040,000, below).

2016 Natural Gas Revenue Requirement Calculations

	At Current (2015) Rates	Modified Historical Test Period Approach	Attrition Study Results
Business Revenues	$170,914,000	$174,519,000	$179,954,000
Rate of Return	5.29%	6.14%	7.29%
Incremental Revenue Requirement (vs. 2015)	--	$3,605,000	$9,040,000
Attrition Allowance			$5,435,000

VI. STAFF RESPONSE TO AVISTA'S ATTRITION ANALYSIS

Q. Do you have any preliminary comments regarding Avista's attrition analyses that the Commission should consider as it is evaluating the Company's case?

A. Yes, there are two major issues with Avista's attrition analysis that that the Commission should be aware of before it evaluates the Company's case.

First, the Company's direct case contained significant errors which caused a dramatic overstatement of the rate year revenue requirement, especially for electric service. Those errors are discussed in further detail below. After the Company corrected its errors and incorporated the terms of the proposed settlement into the model, the Company's electric revenue requirement went from $33.2 million to $10.0 million and its natural gas revenue requirement went from $12.0 million to $9.7 million. Therefore, the

attrition studies provided in Avista's direct case are obsolete. The Commission should consider only the updated, corrected attrition studies as they represent what Avista should have provided in its direct case. Avista provided those updated, corrected attrition studies in response to Staff Data Request 130, which I have included as Exhibit Nos. CRM-4 and CRM-5.

Second, although the Company refers to its case as an "attrition" case, it is in reality a re-branded future test year case. Rather than perform an objective trending analysis to ascertain prevailing rates of growth in the business, Avista developed future test year results for both a) net plant and b) depreciation/amortization, and then circularly calculates its "attrition" growth rates to reproduce those future test year results. Avista in no way actually uses Dr. Forsyth's calculated attrition growth rates for net plant and depreciation/amortization in its attrition studies. If Avista had used Dr. Forsyth's (i.e. the Company's own witness's) growth rates for net plant and depreciation/amortizations, the revenue requirement increases are only $404,000 for electric service and $8,220,000 for natural gas service.

It's worth emphasizing here that the Company's *entire* proposed electric revenue requirement increase is due to rejecting Dr. Forsyth's growth rates for net plant and depreciation/amortization and instead using speculative future test year levels for those two items.

A. Corrections to Avista's Direct Case

Q. What test period does Avista use in its direct case?

A. Avista's direct case used the 12-months-ending September 30, 2014, for the test period. However, the Company's response to Staff Data Request No. 130 provided updated attrition studies that used the 12-months-ending December 31, 2014, for the test period.

Q. Please summarize the results of Avista's electric and natural gas attrition studies.

A. Again, it is critical that the Commission be aware that, in response to Staff Data Request 130, Avista submitted revised attrition studies that produced substantially different results from those presented in the direct case. Based on Avista's own corrections in discovery, the attrition studies provided in the Company's direct case are not accurate representations of the rate year revenue requirements. The Commission should disregard the revenue requirements proposed in the direct case and instead should focus on the Company's responses to Staff Data Request No. 130 as they are more accurate representations of the Company's actual requests in these dockets.

Q. Please compare the results of Avista's direct case and its corrected case provided in response to Staff Data Request 130.

A. Avista's attrition analyses in its direct case produced a 2016 rate of return of 6.05 percent for its electric operations and 4.85 percent for its natural gas operations (at 2015 rates).[46] The revenue requirement to achieve the Company's initial proposed rate of return of 7.46 percent was thus presented as $533,211,000 for electric operations and $170,914,000 for natural gas operations. The corresponding attrition allowances initially proposed were $33,229,000 and $12,021,000, respectively.

[46] Andrews Direct, Exhibit No.___ (EMA-1T) at 4:11.

Avista's attrition analyses in response to Staff Data Request 130 produced a 2016 rate of return of 6.85 percent for its electric operations and 5.16 percent for its natural gas operations.[47] The revenue requirement to achieve the settlement rate of return of 7.29 percent was presented as $489,945,000 for electric operations and $180,627,000 for natural gas operations. The corresponding updated attrition allowances produced were $10,037,000 and $9,713,000, respectively.

Below is a side-by-side comparison of the Company's direct case and its response to Staff Data Request 130:

Avista Electric Attrition Studies

	Avista Direct Case	Avista Response to Staff DR 130
Revenue Requirement	$533,211,000	$489,945,000
Attrition (Rev. Shortfall)	$33,229,000	$10,037,000

Avista Natural Gas Attrition Studies

	Avista Direct Case	Avista Response to Staff DR 130
Revenue Requirement	$182,935,000	$180,627,000
Attrition (Rev. Shortfall)	$12,021,000	$9,713,000

Q. Please summarize the key differences between the Company's direct case and its response to Staff DR 130 (shown above).

A. The initial difference is the starting point (i.e. the test year) for the attrition analyses. Avista's response to Staff DR 130 uses calendar year 2014 as the test year, rather than the split test year of October 2013 to September 2014 Avista used in its direct case.

[47] *See* my exhibits, McGuire, Exhibit Nos.___(CRM-4) and McGuire, (CRM-5) for Avista Response to Staff Data Request 130 for electric and natural gas, respectively.

Additionally, the incorporation of data from October through December of 2014 allowed for incorporation of the full calendar year 2014 into the trend analysis; the Company's direct case used data only through 2013 in its trend analysis.

As noted previously, Avista's response to Staff DR 130 also included a series of major revisions to the Company's attrition analysis.[48] The net impact of all adjustments to Avista's revenue requirement calculation was a reduction of $23,192,000 for electric operations, and a reduction of $2,308,000 for natural gas operations.

B. Comparing and Contrasting the Attrition Analyses of Staff and Avista

Q. Please summarize the key differences between your attrition study and the Company's attrition study.

A. The key differences are the timeline and growth factors. As I explained earlier in this testimony, I relied upon Commission Basis Report restated totals for the year ending December 2014, while the Company relied upon Commission Basis Report restated totals for the year ending September 2014. I also built my attrition model off of the Company's 2016 attrition model that used the 12 months ending December 2014 as the test period, which it provided in response to Staff Data Request 130. In addition, I developed growth rates in a significantly different manner than the Company.

[48] A summary of the changes to Avista's attrition studies are provided in my exhibits McGuire, Exhibit No.___(CRM-4) at 2-4, and McGuire, Exhibit No.___(CRM-5) at 2-3.

Q. Please list the primary differences between how you applied your calculated growth rates and how the Company applied its calculated growth rates in the attrition studies.

A. Although the Company calculated growth rates using historical data from the period 2007-2013 (and 2007-2014 in response to Staff Data Request 130), it did not actually use those growth rates as escalation factors for either net plant or depreciation/amortization in its attrition studies. The Company simply supplanted the historical rates of growth with rates of growth that reproduce a speculative future test year.

For example, in its attrition analysis the Company calculated the annual growth rate for electric net plant to be 5.42 percent. The Company then disregarded the 5.42 percent growth rate and instead used an annual growth rate of 7.66 percent, simply because that was the rate which produced the speculative 2016 net plant in service generated by the Company's future test year cross check, which included speculative transfers to plant through the rate year.

The Company's claim that its pro forma and attrition analyses are separate, independent analyses is false.[49] The Company's attrition results are clearly dependent on its pro forma results.

Q. Had the Company actually used the historical rates of growth it calculated, were those rates of growth calculated in an objective manner?

A. No. Even if the Company had used its calculated growth rates in its analysis, those rates were inappropriate. The Company made no attempt to fit a growth curve to the actual

[49] Andrews direct, Exhibit No.___(EMA-1T) at 38:16-17.

data. Instead, the Company forced a compounding curve to data that clearly are not growing in a compounding manner.

Q. Please list the primary differences between how you <u>calculated</u> growth rates and how the Company calculated growth rates in the attrition studies.

A. First, whereas the Company used a compounding growth function between 2007 and 2013, I applied a best fit trend function to all years from 2009 through 2014. In the case of the electric attrition analysis, the best fit trends were linear functions. In the case of the natural gas attrition analysis, the best fit trends were quadratic functions.

Second, as mentioned above, the Company artificially adjusted its growth rates to align with future test year results. The growth rates that the Company adopted in its attrition studies for net plant and depreciation/amortization expense effectively use imaginary 2016 values as actual data points. Further, the growth rates that the Company adopted abandon analytical objectivity altogether. The Company simply designs a rate of growth that fits a desired outcome.

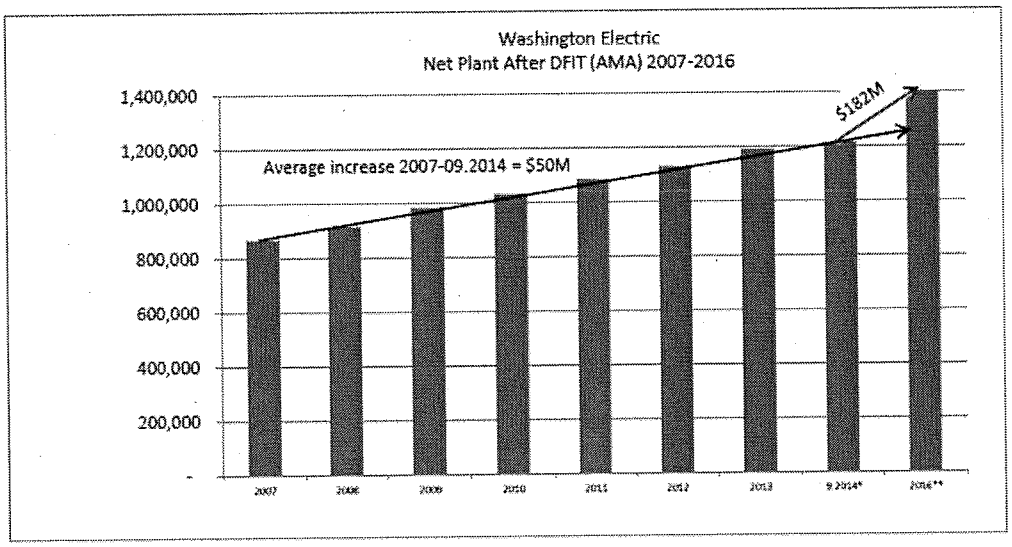
Q. Should the Commission accept the Company's use of compounding growth rates?

A. No. But, again, it is important the Commission recognize that Avista is not asking the Commission to accept the compounding growth rates that Dr. Forsyth presents for either net plant or depreciation/amortization. For those categories, the Company is asking the Commission to accept the growth rates that reproduce the Company's speculative future test year.

However, the Company did apply its compounding growth rate factors to taxes (other than income). For this category, the Commission certainly should reject the use of compounding functions. Compounding functions are in no way related to the shape of the underlying data.

Q. Do you have an example of where the Company's attempt to apply a compounding growth curve is unreasonable?

A. Yes. For example, Company witness Ms. Andrews (at EMA-2, pg. 10) provides an illustration of the unreasonableness of using compounding growth curves in this case by presenting the following figure:

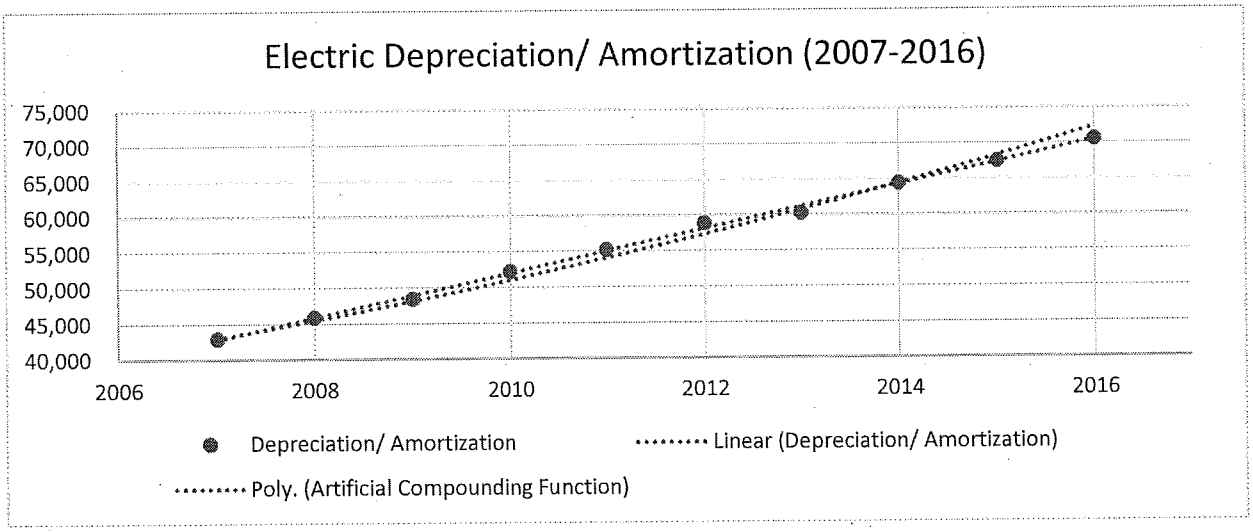


In this figure, the Company shows that electric net plant after DFIT has grown in an extremely linear manner from 2007 to 2014. The Commission should also note that the bar on the far right of the chart, for 2016, represents speculative future plant transfers, and 2015 data is absent. Moreover, the average rate of growth of $50 million annually shown by the black line above is nearly identical to the growth rate I used in my attrition study.

The growth rate function that the Commission ultimately accepts should fairly and objectively represent the data being analyzed. The chart above demonstrates that a compounding rate is neither fair nor objective.

Q. Do you have another example?

A. Yes. As another example, consider the Company's depreciation/amortization expenses for the period 2007-2014. For electric expenses (see the chart below), the data follow a linear trajectory, as shown by the blue trend line. An artificial compounding rate trend line, shown in red below, is generated by applying a compounding rate calculated by using only the first and last data points (2007 and 2014).

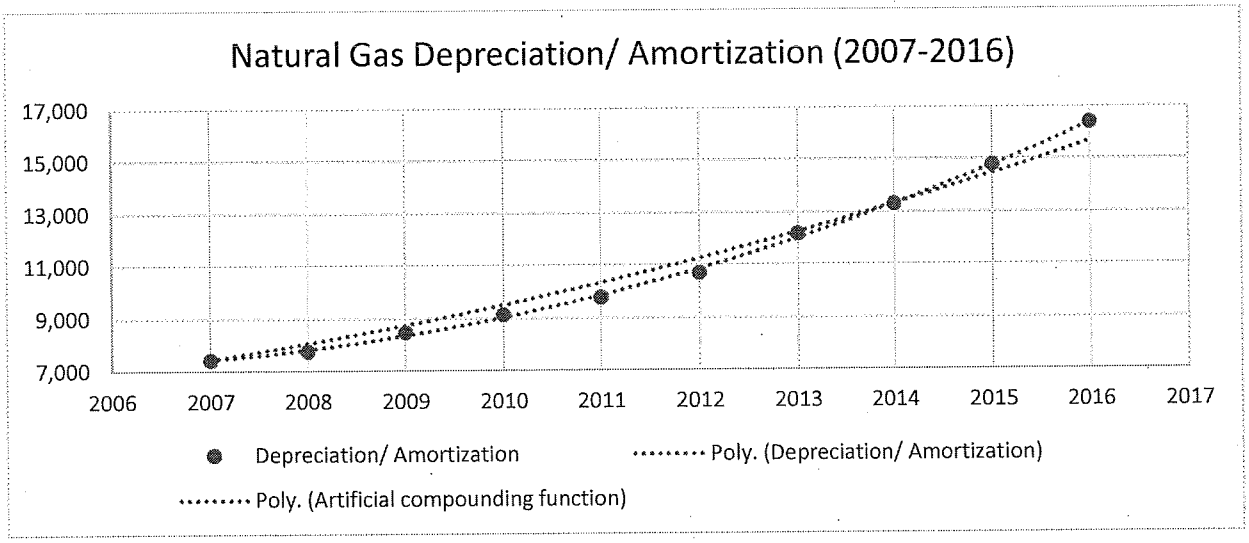


What is notable about these trend lines is the rates of growth as you approach the test year (2014). As the trend lines approach 2014, the compounding rate (shown in red) has a steeper rate of growth than the linear rate (shown in blue). Thus the projected rate year (2016) expenses calculated by forcing an artificial compounding rate will be larger

than those calculated using the linear rate. In practical terms, applying a compounding growth rate to linear data artificially inflates projected rate year expenses.

Q. Do compounding functions always project a larger level of expense than Staff's "best fit" functions?

A. No. It is not always the case that the function that best fits the data will project a level of expense in the rate year that is lower than use of a compounding function. Consider the following chart of the depreciation/amortization expenses for Avista's natural gas operations.



For natural gas expenses, the data follow a polynomial trajectory, as shown by the blue trend line. The artificial compounding rate trend line (red) is again generated by applying a compounding rate calculated by using only the 2007 and 2014 data points. Staff's polynomial rate of growth is clearly greater than the compounding rate of growth as you approach the test year (2014). The 2016 level of depreciation/amortization

expense is thus higher using the best fit polynomial function than using a compounding function.

Q. Please explain how the Commission should review and apply growth rates in an attrition study.

A. The Commission should focus on analytical objectivity. When choosing a shape for describing historical growth rates, it is important to choose a shape that is appropriate for the underlying data. The underlying data include all relevant and actual data points. The Company's practice in this case to set a curve on the basis of projected, imaginary data points is not an objective analysis. From the charts above, it is clear that the data are not best described using compounding curves.

Beyond demonstrating that compounding functions are not honest representations of the underlying data in this case, my purpose in showing the above charts is to demonstrate Staff's adherence to analytical objectivity. I am merely letting the data speak for themselves.

Q. Are there any other notable differences between the Company's and your incremental revenue requirement calculations?

A. Yes. I provide Avista with an after-attrition adjustment for Project Compass. That is, I allow for recovery in rates the capital costs associated with Project Compass beyond what would be implied by use of growth factors. However, I am only recommending recovery of the amount deemed prudent by Staff witness Mr. Gomez.

I determined that this was appropriate because Project Compass appears to be an abnormality with respect to the Company's ongoing capital growth pattern. Consider that the calculated rate of growth for electric net plant between 2009 and 2014 was approximately $50 million per year. Next, consider that the Company's actual electric transfers to plant was $45 million in February 2015 alone (the month Project Compass was placed in service). February transfers will not be the only plant placed in service in 2015 and, so, implying that it will be by only using my $50 million annual growth rate will likely lead to stranded capital costs and a higher probability of earnings attrition. Treating Project compass as an abnormality by including it as an after-attrition adjustment addresses this issue.

VII. DETAILED EXPLANATIONS OF EXHIBITS

A. Detailed Explanation Exhibit No.__ (CRM-2) – Staff's Attrition Analysis for Electric Operations

Q. Do you have any general remarks before you provide a detailed explanation of your electric attrition study in Exhibit No.__ (CRM-2)?

A. Yes. I developed Exhibit No.__ (CRM-2) from the attrition model Avista provided in response to Staff Data Request 130. This revised attrition study conforms very closely to the structure of the attrition study in Avista's direct case in Exhibit No.__ (EMA-2). As a result, the description that follows here is largely repetitive, in many cases verbatim, of the description provided in Company Exhibit No.__ (EMA-1T).

However, there are significant differences, primarily regarding the different test period Staff used, as well as differences in the analytical approach for certain components of the attrition studies. I described those differences when I critiqued the Company's attrition study.[50]

Q. Please explain what is shown on page 1 of Staff's Electric Attrition Study, Exhibit No.__(CRM-2).

A. Exhibit No.__(CRM-2), page 1, shows the calculation of the electric general revenue requirement, based on Staff's Electric Attrition Study, to earn the 7.29 percent settlement rate of return.

Column (c), line 10, shows the attrition-adjusted 2016 revenue requirement of $493,773,000; column (c), line 12, shows the revenue requirement results of Mr. Hancock's pro forma study; and column (c), line 13, shows Staff's recommended attrition allowance, which is the difference between the attrition-adjusted revenue requirement and Staff's pro forma revenue requirement.

Column (a) of page 1, labeled "Attrition Balances," shows the electric Attrition Net Operating Income and Attrition Rate Base balances from page 5 of Exhibit No.__(CRM-2),[51] column [K], lines 31 and 49.

Column (b) of page 1, labeled "Revenue Growth Factor," shows the revenue growth factor of 1.013115, reflecting application of rates to the 12-months-ending September 30, 2014, test period billing determinants.

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[50] *See supra* pp. 49-56

[51] Page 5 of my exhibit McGuire, Exhibit CRM-2 is labeled "2016 Electric Attrition Revenue Requirement" and included in the Attrition 09.2014 to 2016 tab on the electronic version

Column (c), labeled "Attrition Study Results," shows the calculation of the $493,773,000 revenue requirement, based on the Electric Attrition Study "Attrition Rate Base" and "Attrition Net Operating Income" balances in column (a) adjusted for the revenue growth factor in column (b). The $6,209,000 overall reduction in revenue requirement represents a 1.24 percent reduction in revenues relative to 2015 base rate revenues.

Q. Please explain page 2 of Exhibit No.__(CRM-2).

A. Page 2, titled "Multipart Settlement – Cost of Capital" and included in the ROR tab on the electronic version, shows the proposed cost of capital and capital structure embodied in the Settlement Stipulation, resulting in a weighted average cost of capital of 7.29 percent.

Q. Please explain page 3 of Exhibit No.__(CRM-2).

A. Page 3, titled "Revenue Conversion Factor" and included in the ROR tab on the electronic version, shows the derivation of the electric net-operating-income-to-gross-revenue conversion factor.

Q. Please explain pages 4 and 5 of Exhibit No.__(CRM-2).

A. Pages 4 and 5, titled "2016 Electric Attrition Revenue Requirement" and included in the Attrition 09.2014 to 2016 tab on the electronic version, present the normalized income statement and rate base for Washington electric operations, with the cost, revenue and rate base detail that is found in Avista's December 2014 Commission Basis Report.

These pages show the escalation of December 2014 Commission Basis Report results of operations to the 2016 rate year.

Column [A], labeled "12.2014 Commission Basis Report Restated Totals," provides the results of the December 2014 Commission Basis Report that includes normalized cost and revenue data for Avista's Washington electric operations for the period twelve-months-ended December 31, 2014. Line 50 shows that on a Commission Basis Report normalized basis for this historical test period, the Company's earned rate of return for its Washington electric operations was 7.96 percent.

Column [B], labeled "12.2014 Normalized Net Power Supply," is subtracted from column [A], removing all normalized energy related cost and revenues from the December 2014 Commission Basis Report values (pro forma level net power supply costs are added back later, as I discuss further below.) This removal ensures only non-energy costs are trended to the 2016 rate period.

Column [C], labeled "Deferred Debit/Credit & Reg. Amorts Adjs," is an addition to column [A], restating Deferred Debits and Credits to December 2016 AMA balances. Deferred Debits and Credits are adjusted to reduce debit and credit balances according to expected amortization balances for the 2016 rate period. No escalation of Deferred Debits and Credits occurs in the attrition study because they do not grow from year to year in a predictable manner.

Column [D], labeled "Pro Forma Revenue Normalization Adjustment," adjusts the Commission Basis normalized revenue to the revenue produced by the test year billing determinants re-priced at 2015 rates.

Column [E], labeled "December 2014 Escalation Base," is the sum of the previous columns [A] through [D], providing the December 2014 escalation base rate base and costs excluding net energy costs. This escalation base provides the balances from which the growth factors are applied to determine the 2016 final attrition revenue requirement.

Column [F], labeled "Escalation Factor," shows the two year escalation rates for revenues, expenses and net plant. .

Column [G], labeled "Non-Energy Cost Escalation Amount," shows the incremental change between the December 2014 escalation base and the 2016 rate year levels, calculated by multiplying the December 2014 base amounts from column [E] by the escalation factors in column [F].

Column [H], labeled "Trended 2016 Non-Energy Cost," shows the 2016 trended amounts prior to including the impact of pro formed net power supply and 2016 revenue growth, and is calculated by adding the non-energy cost escalation amount in column [G] to the December 2014 base amounts in Column [E].

Column [I], labeled "12.2014 Pro-Formed Net Energy Cost," adds the pro forma net energy costs produced by the Aurora model. These values reflect expected fuel prices and market conditions for the 2016 rate year. Per the Settlement Stipulation, Avista will update its pro forma net energy costs prior to rates going into effect.

Column [J], labeled "Revenue Growth," reflects Avista's revenue growth between the test year and the 2016 rate year, calculated by multiplying the retail revenue in column [E] times the weighted revenue growth escalation factor in column [F], and then adjusted for incremental power supply expense.

Column [K], labeled "After Attrition Adj – CS2/Colstrip Incremental O&M Exp," reflects Staff's recommendation regarding normalization of major maintenance expense for Coyote Springs 2 and Colstrip. Staff witness Mr. Ball testifies to this adjustment.

Column [L], labeled "After Attrition Adj – Project Compass," reflects Staff's recommendation that Project Compass be accounted for outside of Staff's trending analysis. I discussed this adjustment in Section VI(B) of my testimony.

Column [M], labeled "2016 Revenue and Cost," is the sum of the trended 2016 non-energy cost in column [H], pro-formed net energy cost in column [I], revenue growth in column [J], and the after-attrition adjustment in columns [K] and [L]. This is the final column of the 2016 electric Attrition Study calculation, providing the 2016 attrition net operating income of $104,513,000 and attrition total rate base of $1,380,143,000, at lines 31 and 49, respectively. These totals are brought forward to page 1, column (a), of Exhibit No.__(CRM-2).

Q. Please describe pages 6-7 of Exhibit No.__(CRM-2).

A. Pages 6-7, labeled as "NET PLANT" and included on the Plant Trends tab in the electronic version, show the relative levels and growth for each category of electric net plant in service for the period 2009-2014.

Q. Please describe pages 8 through 10 of Exhibit No.__(CRM-2).

A. Pages 8-10 of Exhibit No.__(CRM-2), which are included as the Net Plant, Dep-Amort, and Adj Taxes tabs in the electronic version, show the derivation of the escalation factors

used for escalating net plant after deferred income taxes, depreciation/amortization, and adjusted taxes other than income.

As I explained earlier in my testimony, each growth rate is calculated using the best-fit trend line across the period 2009-2014. I converted the slope of each regression (in thousands of dollars) to an annual growth rate by dividing by the 2014 level. As the rate of growth is linear, to arrive at the escalation factor to apply to 2014 levels for derivation of 2016 levels, the calculated annual rate of growth is multiplied by two (years). These escalation factors are carried forward to column [F] of page 4 of Exhibit No.__(CRM-2).

Q. Please describe page 11 of Exhibit No.__(CRM-2).

A. Page 11 of Exhibit No.__(CRM-2), included as the Adj Operating Exp tab in the electronic version, shows the derivation of the escalation factor used for escalating adjusted operating expense.

I calculated the growth rate as the arithmetic average of a) the year-over-year growth rate between 2013 and 2014 (which was 1.82 percent), and b) the annual rate of growth of 3.00 percent proposed by Avista. To arrive at the escalation factor to apply to 2014 levels for derivation of 2016 levels, I multiplied the calculated annual rate of growth by two (years). This escalation factor is carried forward to column [F] of page 4 of Exhibit No.__(CRM-2).

B. Detailed Explanation of Exhibit No.__(CRM-3) – Staff's Attrition Study for Natural Gas

Q. Do you have any general remarks before you provide a detailed description of your gas attrition study in your Exhibit No.__(CRM-3)?

A. Yes. My Exhibit No.__(CRM-3) was developed from the 2016 natural gas attrition model that Avista provided in response to Staff Data Request 130. This revised attrition study conforms very closely to the structure of the attrition study provided in Avista's direct case as Exhibit No.__(EMA-3). As a result, the description that follows here is largely repetitive of the description provided in Company Exhibit No.__(EMA-1T).

However, as with the electric attrition studies, there are significant differences, primarily regarding the different test period Staff used, as well as differences in the analytical approach for certain components of the attrition studies. I described these differences when I critiqued the Company's attrition study.[52]

Q. Please explain what is shown on page 1 of Staff's Natural Gas Attrition Study, Exhibit No.__(CRM-3).

A. Exhibit No.__(CRM-3), page 1, titled "Commission Staff 2016 Natural Gas Attrition Study" and included as the Summary tab in the electronic version, shows the calculation of the natural gas general revenue requirement, based on Staff's Natural Gas Attrition Study, to earn the 7.29 percent settlement rate of return.

Column (c), line 10, shows the attrition-adjusted 2016 revenue requirement of $179,954,000; column (c), line 12, shows the revenue requirement results of Mr.

[52] *See supra* pp. 49-56.

Hancock's pro forma study; and column (c), line 13, shows Staff's recommended attrition allowance, which is the difference between the attrition-adjusted revenue requirement and Staff's pro forma revenue requirement.

Column (a) of page 1, labeled "Attrition Balances," shows the natural gas Attrition Net Operating Income and Attrition Rate Base balances from page 5 of Exhibit No.__(CRM-3),[53] column [M], lines 31 and 47.

Column (b) of page 1, labeled "Revenue Growth Factor," shows the revenue growth factor of 1.011566, reflecting application of rates to the 12-months-ending September 30, 2014, test period billing determinants.

Column (c), labeled "Attrition Study Results," shows the calculation of the $179,954,000 revenue requirement, based on the Natural Gas Attrition Study "Attrition Rate Base" and "Attrition Net Operating Income" balances in column (a) adjusted for the revenue growth factor in column (b). The $9,040,000 overall increase in revenue requirement represents a 5.29 percent increase in revenues relative to 2015 base rate revenues.

Q. Please explain page 2 of Exhibit No.__(CRM-3).

A. Page 2, titled "Multiparty Settlement – Cost of Capital and included in the ROR tab of the electronic version, shows the proposed cost of capital and capital structure embodied in the Settlement Stipulation, resulting in a weighted average cost of capital of 7.29 percent.

[53] Page 5 is labeled "2016 Natural Gas Attrition Revenue Requirement" and included in the Attrition 09.2014 to 2016 tab of the electronic version of CRM-3.

Q. Please explain page 3 of Exhibit No.__(CRM-3).

A. Page 3, titled "Revenue Conversion Factor" and included in the ROR tab of the electronic version, shows the derivation of the electric net-operating-income-to-gross-revenue conversion factor.

Q. Please explain pages 4 and 5 of Exhibit No.__(CRM-3).

A. Pages 4 and 5, titled "2016 Natural Gas Attrition Revenue Requirement" and included as the Attrition 09.2014 to 2016 tab in the electronic version, present the normalized income statement and rate base for Washington natural gas operations, with the cost, revenue and rate base detail that is found in Avista's December 2014 Commission Basis Report. These pages show the escalation of December 2014 Commission Basis Report results of operations to the 2016 rate year.

Column [A], labeled "12.2014 Commission Basis Report Restated Totals," provides the results of the December 2014 Commission Basis Report that includes normalized cost and revenue data for Avista's Washington natural gas operations for the period twelve-months-ended December 31, 2014. This column shows that on a Commission Basis Report normalized basis for this historical test period, the Company's earned rate of return for its Washington natural gas operations was 5.76 percent.

Column [B], labeled "Regulatory Amorts Adjs" is an addition to column [A], reflecting the effect of the deferral of 2015 Project Compass costs per the settlement agreement in Docket UG-140189.

Column [C], labeled "Pro Forma Revenue Normalization Adjustment," adjusts the Commission Basis normalized revenue to the revenue produced by the test year billing determinants re-priced at 2015 rates.

Column [D], labeled "Exclude Normalized Gas Costs and Revenue," is subtracted from column [A], removing all normalized gas costs and revenues from the December 2014 Commission Basis Report values. (Pro forma levels of gas costs and revenues are added back later, as discussed further below.) This removal ensures only non-gas costs and revenues are trended to the 2016 rate period.

Column [E], labeled "December 2014 Escalation Base," is the sum of the previous columns [A] through [D], providing the December 2014 escalation base rate base and costs excluding normalized gas costs and revenues. This escalation base provides the balances from which the growth factors are applied to determine the 2016 final attrition revenue requirement.

Column [F], labeled "Escalation Factor," shows the two year growth ("escalation") rates for revenues, expenses and net plant.

Column [G], labeled "Escalation Amount," shows the incremental change between the December 2014 escalation base and the 2016 rate year levels, calculated by multiplying the December 2014 base amounts from column [E] by the escalation factors in column [F].

Column [H], labeled "Trended 2016 Non-Energy Cost," shows the 2016 trended amounts prior to including the impact of pro formed gas costs and revenues and 2016 revenue growth, and is calculated by adding the non-gas cost escalation amount in column [G] to the December 2014 base amounts in Column [E].

Column [I], labeled "12.2014 Pro-Formed Gas Cost/Revenue," adds the gas costs and revenues from the Company's most recent purchased gas adjustment filing.

Column [J], labeled "Revenue Growth," reflects Avista's revenue growth between the test period and the 2016 rate year, calculated by multiplying the general business and transportation revenue in column [E] plus the pro formed gas cost/revenue in column [I] times the corresponding weighted revenue growth escalation factors in column [F].

Column [K], labeled "After Attrition Adj – Project Compass," reflects Staff's recommendation that Project Compass be accounted for outside of Staff's trending analysis. I discussed this adjustment in Section VI(B) of my testimony.

Column [L], labeled "After Attrition Adj – Atmos Testing," represents atmospheric testing expenses not included in the December 31, 2014, normalized Commission Basis results. Staff did not contest this adjustment. Rather, it moved the adjustment from the page 1 Summary to the attrition revenue requirement calculation on pages 6-7.

Column [M], labeled "2016 Revenue and Cost," is the sum of the trended 2016 non-gas cost in column [H], the pro-formed gas cost and revenue in column [I], the revenue growth in column [J], and the after-attrition adjustments in columns [K] and [L]. This is the final column of the 2016 natural gas Attrition Study calculation, providing the 2016 attrition net operating income of $16,127,000 and attrition total rate base of $299,015,000, at lines 31 and 47, respectively. These totals are brought forward to page 1, column (a), of Exhibit No.__(CRM-3).

Q. Please describe pages 6-7 of Exhibit No.__(CRM-3).

A. Pages 6-7, labeled "NET PLANT" and included as the Plant trends tab in the electronic version, show the relative levels and growth for each category of natural gas net plant in service for the period 2009-2014.

Q. Please describe pages 8 through 10 of Exhibit No.__(CRM-3).

A. Pages 8-10 of Exhibit No.__(CRM-3), included as the Net plant, Dep Amort, and Taxes (other than income) tabs in the electronic version, show the derivation of the escalation factors used for net plant after deferred income taxes, depreciation/amortization, and adjusted taxes other than income.

As I explained earlier in my testimony, each growth rate is calculated using the best-fit function across the period 2009-2014. For the Company's natural gas business, the best fit trend was a second-order polynomial, or quadratic, function. The annual rate of growth is given as the instantaneous rate of growth at 2014, calculated as the first derivative of the quadratic function at $x = 2014$. To arrive at the escalation factor to apply to 2014 levels for derivation of 2016 levels, the calculated annual rate of growth is multiplied by two (years). These escalation factors are carried forward to column [F] of page 4 of Exhibit No.__(CRM-3).

Q. Please describe page 11 of Exhibit No.__(CRM-3).

A. Page 11 of Exhibit No.__(CRM-3), included as the Op Exp tab in the electronic version, shows the derivation of the escalation factor used for escalating adjusted operating expense.

I calculated the growth rate as the arithmetic average of a) the year-over-year growth rate between 2013 and 2014 (which was 1.34 percent), and b) the annual rate of growth of 3.00 percent proposed by Avista. To arrive at the escalation factor to apply to 2014 levels for derivation of 2016 levels, I multiplied the calculated annual rate of growth by two (years). This escalation factor is carried forward to column [F] of page 4 of Exhibit No.__(CRM-2).

Q. Please describe page 12 of Exhibit No.__(CRM-3).

A. Page 12 of Exhibit No.__(CRM-3), titled as "Billing Determinant Index" and included as the Weighted Revenue Growth tab in the electronic version, shows the weighted revenue growth calculation using test year and projected rate year billing determinants. I provide this page in my exhibit because my calculation differs from that of the Company, particularly for the load growth for Schedules 101, 111/112, and 121/122. I described how my calculation differs in Section V(C)(2) of my testimony.

Q. Does this conclude your testimony?

A. Yes.