Exhibit No. ___ (MNL-1T)

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

DOCKET NO. UE-12_____

DIRECT TESTIMONY OF

MARK N. LOWRY

REPRESENTING AVISTA CORPORATION

I. INTRODUCTION

Q. Please state your name, business title, and business address.

A. My name is Mark N. Lowry. I am the President of Pacific Economics Group ("PEG") Research LLC. My business address is 22 East Mifflin St. Suite 302, Madison WI 53703. I am testifying on behalf of Avista Corporation.

Q. What are your responsibilities in your role as company president?

A. PEG Research is a company in the Pacific Economics Group consortium which specializes in regulatory economics and statistical research on the utility industry. The practice, which has four PhD economists with extensive utility experience, is international in scope. Projects have been undertaken in eleven countries. Our clients include utilities, regulators, consumer groups, and public agencies, and this has given us a reputation for objectivity and dedication to regulatory science. Alternatives to the traditional North American approach to regulation ("Altreg") are a company specialty.

My duties as President of PEG Research include the management of the firm, Altreg consultation, expert witness testimony, and the supervision of utility statistical research. I have testified numerous times on Altreg and utility cost and output trends. Venues for my testimony have included California, Colorado, Delaware, the District of Columbia, Georgia, Hawaii, Illinois, Kentucky, Maine, Maryland, Massachusetts, Missouri, Oklahoma, New Jersey, New York, Rhode Island, Vermont, Alberta, British Columbia, Ontario, and Quebec. I have for many years advised the Edison Electric Institute ("EEI") in Washington D.C. on Altreg issues.

A recent focus of my work has been Altreg remedies for the chronic attrition that many utilities face today under traditional regulation. EEI has recently published two white

papers that I wrote on this issue. These are entitled *Forward Test Years for U.S. Electric Utilities* (2010) and *Innovative Regulation*: *A Survey of Remedies for Regulatory Lag* (2011).

Q. Please tell us about your earlier professional work and your education.

A. Before assuming my present position I was a partner of Pacific Economics Group LLC for ten years and managed that company's Madison office. Before that, I worked for nine years at Christensen Associates in Madison, first as a Senior Economist and later as a Vice President. My career has also included work as an academic economist. I was for several years a professor of mineral economics at the Pennsylvania State University and was a visiting professor at the Ecole des Hautes Etudes Commerciales in Montreal.

In total, I have twenty-seven years of experience as a practicing economist, spending the last twenty-one years doing work on gas and electric utilities. I have numerous professional publications, been a referee for several scholarly journals, and chaired several conferences on Altreg and utility cost research. I hold an undergraduate degree in Ibero-American Studies and a PhD in applied economics from the University of Wisconsin.

Q. What is the purpose of your testimony?

A. My testimony addresses the challenge of chronic underearning that Avista ("the Company") faces today under the largely traditional approach to regulation that is used by the Washington Utilities and Transportation Commission ("WUTC" or "the Commission"). I will first explain the underearning problem in general terms. I then discuss my research to assess the attrition in Avista's Washington electric operations that will result through 2013 from new rates that are based solely on conventional rate setting methods.

Q. Please summarize your testimony.

A. Avista's rate of return from its Washington electric operations have been below the target set by this Commission for several years. The traditional approaches used to regulate Avista in Washington are part of the problem. The Company is engaged in a multi-year program of high capital spending ("capex") to modernize its infrastructure. Pursuant to state policy, Avista is also undertaking a demand-side management ("DSM") program that slows its revenue growth. The rate setting system under which Avista currently operates in Washington cannot provide it with the timely rate relief it needs to undertake these initiatives without chronic underearning. I estimate a revenue deficit of about $21 million in 2013, the first year new rates take effect, if the revenue increase granted in this case were to be limited to the traditional pro forma adjustments proposed by the Company. This calculation provides the basis for the Attrition Adjustment that Avista is proposing in this proceeding.

Q. Are you sponsoring any exhibits to be introduced in this proceeding?

A. Yes. I am sponsoring Exhibit Nos. ____ (MNL-1T) through _____ (MNL-5), all of which were prepared under my supervision and direction. Exhibit No. ____ (MNL-2) is my resume. Exhibit No. ____ (MNL-3) details the recent trends in the normalized costs of Avista's Washington electric operations. Exhibit No. ____ (MNL-4) shows some of the calculations used in my revenue growth projections. Exhibit No. ____ (MNL-5) presents results of my attrition projection.

Q. Are other Company witnesses providing testimony regarding issues you are addressing?

A. Yes. Mr. Norwood provides additional testimony on the underearning problem that Avista faces. Mr. DeFelice discusses the Company's capex program. Ms. Andrews incorporates the Attrition Adjustment that I am proposing.

II. THE UNDEREARNING PROBLEM

Q. Please explain the problem of chronic underearning that Avista faces today.

A. Utilities in Washington operate under a largely traditional approach to rate regulation. The base rates that recover most costs of capital, labor, materials, and services that utilities use are adjusted only in rate cases. Growth in a utility's base rate revenue is driven between rate cases solely by growth in billing determinants such as sales volumes, the number of customers, and general service peak demand. The need for rate relief therefore depends on the "horse race" between cost and billing determinants. When cost growth exceeds billing determinant growth, rates must rise for revenue to be compensatory.

Rate cases in Washington use "an average of monthly averages" rate base, historical test periods, and limited forward-looking pro forma adjustments. Since rate case filings take months to prepare and the rate cases themselves take nine to eleven months, new rates embody business conditions that are as much as two years older than those of the rate year. These rates provide a reasonable opportunity for a utility to earn its authorized return only if cost and billing determinant growth are fairly balanced in the two years between the historical test year and the year rates take effect.

My description of Washington regulation should make plain that its effectiveness varies with business conditions, and depends in particular on the balance between growth in cost and billing determinants. If balance prevails, the system works well because rate cases

are infrequent and the rates produced by rate cases give utilities a reasonable chance to earn their authorized returns. If growth in operating expenses and the rate base materially exceed growth in billing determinants, however, rate cases will be held quite frequently and the rates that they produce will tend to be uncompensatory.

Q. Please discuss the business conditions that determine the pace of cost and billing determinant growth.

A. Growth in the cost of a utility depends on diverse business conditions that include input price inflation, productivity growth, and growth in operating scale (a/k/a "output"). Economic research substantiates the following utility cost growth formula:

Growth Cost = growth Input Prices – growth Productivity + growth Outputs. This formula, which has been used on several occasions in utility regulation, states that cost will grow more rapidly the more rapid is input price inflation and growth in operating scale ("outputs") and the slower is productivity growth.

Productivity growth depends on diverse conditions that include technological change. High levels of capex can temporarily slow productivity growth and also stimulate input price inflation since the rate base is valued in historical dollars and the capex reflects construction costs that are substantially higher than those that were prevalent when the company's older plant was built. Important dimensions of output that drive the cost of base rate inputs for a vertically integrated electric utility include generation capacity and the number of customers served.

Input price inflation tends to exceed productivity growth in the utility industry, as in most sectors of the economy. A recent study by PEG Research of power distributors in the Northeastern U.S. showed, for instance, that inflation tends to exceed productivity growth

by about 250 basis points annually. Since, additionally, the output of utilities is typically growing, cost typically rises.

Utility earnings will remain stable in the face of cost growth provided that growth in billing determinants exceeds the growth in customers and the other dimensions of operating scale on average by the amount of the inflation-productivity "gap". The rate designs of most energy utilities collect most base rate revenue from volumetric charges. Volumetric charges to residential and smaller business customers are an especially important source of revenue. The tendency of revenue growth to keep pace with cost growth thus hinges on the tendency of volume growth to outpace growth in the number of customers and other scale dimensions. The trend in residential and commercial delivery volumes per customer (a/k/a "average use") is closely watched for this reason.

Q. How has the balance between cost and billing determinant growth changed over time?

A. Table 1 shows trends in the average use of electricity by residential and commercial customers in Washington and the United States as a whole. It can be seen that growth in average use in the United States was much more rapid in the 1970s and earlier decades of the twentieth century than it is today. As recently as the mid-1960s it averaged over 6% per annum. Since inflation was also typically slow before the late sixties, growth in average use was sufficient to offset the inflation-productivity gap in most years.

This was the era when traditional rate regulation was established and it worked well. Rate cases were rare and rate cases with historical test years tended to produce compensatory rates despite rapid growth in the operating scales of utilities. The conditions

Table 1

TRENDS IN ANNUAL ELECTRICITY USE BY U.S. RESIDENTIAL & COMMERCIAL CUSTOMERS, 1926-2010

Year	Residential		Commercial	
	U.S.	Washington	U.S.	Washington
1927-1930	7.06%	N/A	6.67%	N/A
1931-1940	5.45%	N/A	2.00%	N/A
1941-1950	6.48%	N/A	5.08%	N/A
1951-1960	7.53%	N/A	6.29%	N/A
1961-1970	6.13%	N/A	9.51%	N/A
1971-1980	2.45%	N/A	3.07%	N/A
1981-1990	0.63%	N/A	1.40%	N/A
1991-2000	1.15%	-0.61%	1.68%	1.03%
2001-2010	0.75%	-0.96%	0.23%	-0.51%

Sources: U.S. Department of Energy, Energy Information Administration, Form EIA-861, "Annual Electric Utility Report," and Form EIA-826, "Monthly Electric Utility Sales and Revenues Report with State Distributions," and EIA-0035, "Monthly Energy Review."

leant credibility to a "matching principle" whereby rates based on the costs and billing determinants in a test period were deemed a just and reasonable basis for rates in the rate effective year. An historical test period was preferred for this purpose because costs were verifiable. If an increase in one cost was considered for inclusion in rates without considering trends in billing determinants and all other costs, overearning was considered likely.

From the late sixties through the early 1980s, however, inflation was markedly higher while growth in average use trended downward. Cost growth was also accelerated (and productivity growth slowed) by the large-scale capex programs that many utilities pursued to meet expected load growth that often didn't materialize. Utilities filed rate cases frequently in this era but many nonetheless experienced chronic underearning. This was an

era when many regulatory commissions adapted more forward looking test years and made other reforms to the regulatory process.

In the years since the early 1980's, average use of electricity has grown sluggishly for the typical U.S. electric utility (and has in recent years declined materially for the typical gas distributor). Growth in average use of electricity has been especially sluggish, and sometimes negative, where large-scale DSM programs are underway. In Washington State, for example, average use of electricity by residential and commercial customers had a negative trend from 2001 to 2010. With slower growth in average use, the need for rate relief has been more sensitive to utility cost trends. In the 1990s and the early years of the present century, rate cases were less frequent because input price inflation was slow and many electric utilities experienced unusually slow rate base growth due to excess generation capacity. Since then, the cost growth of many utilities has tended to accelerate, due in part to increased levels of capex that stimulate growth in depreciation and rate base. The frequency of rate cases has increased markedly.

Q. What is the upshot of these trends?

A. Many utilities today face operating conditions that differ materially from those that gave rise to traditional regulation. Cost growth is much more likely to outpace growth in billing determinants. The problem is aggravated to the extent that a utility must contend with either high capex requirements or unusually sluggish or negative growth in average use. Utilities that must contend with these challenges under traditional regulation are likely to file annual rate cases and receive rate adjustments that are uncompensatory.

Certain kinds of capex aggravate utility financial stress. Some capex programs involve assets that generate no revenue automatically and are not "lumpy" so that assets of

smaller but still sizable value become used and useful each year over a sequence of years. Examples include programs to replace aging distribution and transmission assets, to make small refurbishments to generating plants, and to install generation emissions equipment. For programs like these, utilities are compelled to file frequent rate cases to recover the early years of depreciation, return, and associated taxes on the finished investments. Under historical test periods, however, the capital costs of assets in the first year of operation are still typically lost even with annual rate cases. This is the year when the capital cost resulting from a dollar of capex is highest because plant is least depreciated.

A utility uses most of its base rate revenue to cover depreciation and pay its workforce, vendors of materials and services (including construction services), and tax authorities. The residual margin, called net operating income, is available to provide the company's bond holders and shareholders with a return on their investments. Any revenue shortfall that results from new rates that are uncompensatory has a much greater percentage impact on the return on rate base than it has on total cost. Under these circumstances, traditional rate cases can condemn the utility to chronic underearning.

Q. Is the importance of balance between cost and revenue growth in ascertaining the suitability of historical test years widely recognized?

A. Yes. The 2003 NARUC *Rate Case and Audit Manual* has an extensive discussion of this issue, for example. Mr. Norwood has several pertinent quotes from this document in his testimony.

Q. What are the consequences of not being able to earn the authorized rate of return?

A. Large capex programs require access to capital markets, and the cost of such programs is increased when capital cannot be raised on reasonable terms. On the equity side, dilution can occur. On the debt side, the financial metrics considered by rating agencies can deteriorate and credit ratings may fall, raising the cost of borrowing funds. The investment community pays close attention to a utility's ability to pay its creditors.

Q. Should utility investors be guaranteed the ability to earn the return on equity authorized by the commission?

A. No. A guarantee is undesirable, because of its incentive ramifications, but investors should, nevertheless, have a reasonable opportunity to realize the ROE target. In a period of high capex investors will, under today's operating conditions, not have a reasonable opportunity to realize the ROE deemed to be appropriate by the Commission.

Q. How does addressing the issue of chronic underearning benefit Avista's customers?

A. More timely recovery of capital costs will continue to allow a utility to attract, at a reasonable cost, the funds needed for capex. This is particularly important during a period of high capex since there is high borrowing activity. Utilities that expect to earn their authorized ROE with good cost management are also more comfortable making the large new investments that may be needed for a modern and reliable system.

Mitigation of underearning can also permit rate cases to be held less frequently. The costs to customers of rate cases are reduced. Executives will have more time to devote to the basic business of providing quality service cost-effectively. Regulators will have more time to focus on other issues that matter to customers. Mitigation of underearning also

sends customers better price signals about cost that helps them to make better consumption decisions.

Q. Please apply your analysis to the situation of Avista.

A. Avista is the largest provider of electric and natural gas services in eastern Washington and the second largest energy utility in the state. The Company's electric operations are vertically integrated.

Avista's retail rate designs in Washington collect most its base rate revenue there from volumetric charges. Use per customer has been sluggish in recent years due in part to DSM programs that are mandated by state statute. The Company forecasts a decline between 2011 and 2013 in the normalized average use of electricity by residential and small general service customers. On the gas side, Avista has experienced declines in average use by small volume customers for many years.

The Company, then doing business as Washington Water Power, filed rate cases for six consecutive years from 1980 to 1985 as it struggled to finance construction of its Colstrip and Kettle Falls generation capacity in a period of rapid input price inflation. Rate cases were infrequent thereafter for fifteen years as inflation slowed and capex roughly matched depreciation, so that the rate base was stable.

Frequent rate cases resumed in 2005 as Avista began a program of sustained higher capex that coincided with higher levels of DSM which are encouraged by state policies. Capex is well in excess of depreciation expenses and the rate base is growing briskly. As discussed more fully in the testimony of Mr. DeFelice, capex is forecasted to continue at high levels well beyond 2013, the year that new rates will be in effect. A sizable portion of

the capex generates no new revenue automatically and is producing a stream of newly used and useful assets over several years.

Under these circumstances, it is not surprising that the Company has now filed rate cases for six consecutive years. Notwithstanding the frequency of its rate cases, Avista's Washington electric operations have underearned for at least the last five years.

III. ATTRITION STUDY

Q. Let's turn now to your attrition study. Please explain the basic idea of an attrition study and provide a brief history of their role in Washington regulation.

A. As the term is used in Washington State, an attrition study has the goal of estimating the revenue deficiency that a general rate case is expected to produce in the year that rates take effect. WUTC staff witness Mr. Elgin acknowledged in recent testimony that attrition of this kind is due to different growth rates of cost and revenue, stating that "the term [attrition] typically is used to refer to the erosion of a company's rate of return over time when the historical test period relationship in the revenues, expenses, and rate base accepted by the Commission in a rate case does not hold during a future rate year".[1]

In the early 1980s Avista [d/b/a Washington Water Power ("WWP")] had three rate cases in which attrition studies were filed and the Commission accepted attrition calculations and granted attrition adjustments to the revenue requirement (U-81-15 & U-81-16, U-82-10 & U-82-11, and U-83-26). The attrition calculations accepted by the Commission for Avista were, in all cases, prepared by witnesses for WUTC Staff.

[1] Testimony of Kenneth L. Elgin in WUTC Dockets UE-111048 and UG-111049 (consolidated), December 7, 2011, at p. 64.

The approaches used by Staff witnesses to calculate attrition were broadly similar in these three cases. Staff's proposed revenue requirement in the rate case was the base for both revenue and cost projections. Net operating income before income taxes in the rate effective year [Revenue – (O&M expenses + depreciation + taxes other than income taxes)] was projected from this base. The income taxes due on this amount were then calculated and the net (post tax) operating income was compared to that needed to earn the authorized rate of return on the projected rate base. The difference was converted to a pre-tax amount using the appropriate "tax rate" [adjustment factor]. This figure was the estimate of expected attrition in the rate year. The deficiency was then reduced by the amount of expected sales growth to obtain the indicated attrition adjustment.

Q. How were costs and revenues projected?

A. Since forecasted test years have never been sanctioned in Washington, projections based on WWP's historical trends were favored in most instances. The revenue projection was in two cases based, for example, on the trend in the Company's total sales volume. The Commission stated in its decision in Cause U-83-26 that:

> The parties use growth factors to derive the projected 1984 results. These factors are calculated by Commission staff and the company with the company using Box-Jenkins analysis and trended growth rates while the Commission staff relies on historical trends…The Commission agrees with the Commission staff historical trend analysis for measuring attrition.[2]

Mr. Elgin stated in his more recent aforementioned testimony that, "An attrition adjustment analyzes actual historical trends in the growth rates of revenues, expenses, and rate base to estimate the erosion in rate of return caused by disparate growth in these categories." (See Dockets UE-111048 and UG-111049 at page 67.) However, in Cause No. U-83-26, Staff

[2] WUTC Fifth Supplemented Order, Cause No. U-83-26, January 19, 1984, at pages 29-30.

witness Mr. Lott used the Company's short term forecast of growth in its sales volume to project future revenue in his attrition calculation.

Q. Please provide additional details of the cost trend calculations in attrition studies that this Commission accepted.

A. The base cost subject to escalation was, as just mentioned, Staff's restated and pro formed total cost for the Company in the historical test year, as proposed in the rate case. Pro forma adjustments, then as now, were not applied to all costs in fashioning the proposed revenue requirement. Labor costs, for example, were much more likely to be adjusted than other O&M expenses. Costs subject to pro forma adjustments therefore needed to be itemized so that they could be escalated for a period of time that was different than that appropriate for other cost items. The degree of itemization was extensive in these early attrition studies, and each itemized cost was typically assigned its own growth trend. [3]

Q. Are there grounds for using different methods in a modern attrition study?

A. In some cases, yes. I have tried to conform to past practices accepted by the WUTC by relying primarily on Avista's historical trends in making my attrition calculation. However, the passage of time has resulted in the availability of new kinds of data and some useful new methods for measuring the impact of trends in business conditions on the rate of return. I take advantage of some of these innovations in my calculations.

With respect to new data, the Company has, pursuant to Commission directives, for more than a decade prepared Commission Basis Reports ("CBRs") that include normalized

[3] The Staff witness Mr. Louiselle states on p. 58 of his 1981 testimony (Exhibit T-70) that "…I have divided expenses into eleven categories. This was done so that individually applicable growth rates could be applied to the specific time periods."

cost and revenue data for Avista's Washington electric operations. These data are useful for establishing Avista's historical cost trends, inasmuch as they have been normalized using approved methods and have been previously filed with the Commission. The CBR data are available for itemized cost categories, but the detail is less extensive than that needed to separately project the growth of the itemized pro formed costs proposed by the Company or Staff in this rate case filing. For example, there is no detail on Washington expenses for salaries and wages, pensions, or fringe benefits that would make it possible to project these cost categories separately from other O&M expenses. It makes sense, then, to project the 2013 costs of Avista's non-energy inputs using the 2011 normalized CBR costs as the base, rather than the pro formed cost proposed by the Company or Staff in the rate case filing. It also makes sense to escalate these base costs using CBR cost trends.

Energy-related costs and sales for resale revenues merited a different approach in my study. To explicitly trend these items would have added extra complexity that was not warranted for items that have their own power supply model to determine power supply related revenues and expenses in general rate cases. In addition, a proper escalation of net energy cost is difficult to do working from historical trends, because it is unusually dependent on market conditions and generation dispatch order. These calculations are best left to models dedicated to this task.

My method for handling these items was to first remove all energy related cost and revenues (*e.g.* fuel, purchased power, sales for resale revenues) from the 2011 CBR values. After escalating the non-energy cost, I added back the energy costs and sales for resale revenue produced by the Aurora model as elsewhere discussed in the Company's current rate case filing. These values reflect future fuel prices and market conditions, but do not

include the cost associated with incremental load growth from 2011 to 2013. I therefore took the final step of adding the extra energy cost associated with load growth.

With respect to new research methods, the earlier attrition studies escalated the proposed revenue requirement for growth in the total sales volume, even though the Company's revenue is more sensitive to trends in the volumes of some services than to those for others, and revenue also depends on other billing determinants such as the number of customers served and the peak demand of general service customers. It is a well-established result of the theory of economic indices that the growth in a utility's revenue is the sum of the growth in revenue-weighted indices of its rates and billing determinants. In an attrition study, rates are held constant so that growth in retail revenue must equal the growth in the billing determinant index and not simply the growth in total retail sales.

I accordingly projected Avista's revenue growth between 2011 and 2013 using a billing determinant index to measure the average growth in normalized billing determinants. In calculating this index, the revenue weights for the individual billing determinants were obtained from the Company's revenue model spreadsheets which calculate the revenue impact of current and proposed rates by rate element and service class. Forecasts of growth in billing determinants from their normalized 2011 values were also obtained from the Company.

Another area where methods were upgraded in my study is in the level of detail at which decisions were made on how Avista's costs should be trended. Selection of growth trends for a large number of detailed cost categories can be time consuming. Moreover, costs tend to be more volatile at a high level of detail than they are for more aggregated costs. This invites controversy over the selection of cost trends.

Detailed costs are, in addition, especially sensitive to changes in allocation of cost between itemized categories. One example is that Avista has recently changed the way non-income taxes are allocated to different accounts such that it is more difficult to calculate an appropriate trend in taxes allocated to Administrative and General Services. An aggregated treatment of taxes is superior to the detailed treatment, because it is not impacted by the accounting change.

Based on my many years of cost trend research, I therefore recommend that cost trends for Avista be based on costs that are somewhat more aggregated than in the past. I have chosen for this purpose aggregated non-energy O&M expenses, depreciation, taxes other than income taxes, and rate base. Once the trend for, say, the aggregated non-energy O&M expenses is established, I apply this same trend to all O&M expense subcategories.

A fourth change in the methodology was to project Avista's *total* need to increase revenue in 2013 rather than confining my calculation to the attrition from a specific revenue requirement proposal. This is accomplished by trending the normalized Washington retail electric revenues reported in the Avista's 2011 CBR as adjusted for the retail rate increase implemented in early 2012. The incremental attrition resulting from the rates produced from conventional rate adjustments in this proceeding is then calculated residually as the difference between the projected total revenue deficit for 2013 and the rate increase that would result solely from the conventionally restated and pro formed cost of service.

Q. Does your study produce results that are as reliable or more reliable than those used in studies that the Commission has previously accepted?

A. Yes. My study relies more on trends than on forecasts, as the Commission has preferred in past decisions, but also uses better data and better methods and eliminates

unnecessary complexity and controversy in the calculations. I am confident that the results provide a sound basis for the requested attrition allowance.

Q. Please discuss the results of your research on Avista's cost trends.

A. Data on Avista's normalized Washington electric expenses and rate base from 2000 to 2011 are presented in Exhibit MNL-3. The exhibit includes three panels. The first panel presents the CBR costs for each year. Costs are itemized here at the highest level of disaggregation that the CBRs afford. Results are also presented for the aggregated non-energy O&M expenses, depreciation, taxes other than income taxes, and rate base that I use in my trend calculations. In these calculations, all energy-related costs and DSM expenses are removed from O&M expenses and the impact of the residential exchange credit has also been removed. For the years 2004 and 2006, the CBR data already included DSM and residential exchange adjustments, so additional adjustments were not required.

The second panel presents the annual growth rates in the aggregated subtotals. Growth rates are calculated logarithmically. The third panel presents *average* annual growth rates for the subtotals. All possible trends that end in 2011 are presented in this panel. Each trend is the average of the annual growth rates starting in the specified year and ending in 2011.

Inspecting the results, it can be seen that the growth in all four of Avista's major cost categories has tended to be higher since 2007. Based on my review of the Company's situation, including its plan for sustained high capex, I believe that it is appropriate to use the average annual growth rates, for the 2008-2011 period in rate base and depreciation expenses. However, continued brisk growth in O&M expenses and taxes other than income taxes seem less likely. The trends for the latter two cost categories are set instead at their

much slower 2002-2011 average annual growth rates. In the case of non-energy O&M, this period yields the *slowest* of all possible historical growth trends that end in 2011. I also use this longer sample period to trend other operating revenues.

Q. Please discuss the results of your research on revenue trends.

A. The calculation of the projected growth in Avista's billing determinant index from 2011 to 2013 is presented in Exhibit MNL-4. Data were gathered for each billing determinant for each schedule of electric service. The associated revenues under 2011 rates were used to determine the relative importance of each billing determinant in generating revenue. The 2013 values of each determinant were obtained from the Company and the expected growth was calculated. The growth in the billing determinant index is a weighted average of the growth in the individual billing determinants with the weights being determined by how much revenue each element generated in 2011. This was calculated by taking the product of the growth rate times the weight for each billing determinant and then summing the results.

Inspecting the results in Exhibit MNL-4, it can be seen that volumetric charges accounted in totality for a substantial 87% of the total revenue. Thus, the tendency of revenue in 2013 to rise above the revenue requirement is driven primarily by volume growth. Revenue is especially sensitive to growth in the volumes delivered to customers of Schedules 1 (Residential) and 21 and 22 (Large General Service). About 9% of revenue depends on growth in general service peak demand and only 4% depends on growth in the number of customers served.

With respect to the growth in billing determinants from 2011 to 2013, it can be seen that growth in normalized volumes under the extra large general service, pumping, and street

and area lighting schedules is expected to be quite brisk, but these volumes account for only a small share of revenue. Meanwhile, the residential and (small) general service customers that account for around half of total revenue account are forecasted to grow at annual rates of only 1% and the peak demands of the general service customers are expected to decline. Growth in the normalized average use by residential and (small) general service customers is also forecasted to be negative.

The revenue-weighted average growth in Avista's normalized electric billing determinants in Washington is forecasted to be 2.4% between 2011 and 2012, or about 1.2% per annum. This is the result that I use to trend retail revenue to 2013. Note that the normalized total delivery volume is, in contrast, forecasted to grow by 3.5% per annum between the two years. The billing determinant index therefore adds a considerable amount of precision to the revenue growth projection.

Q. Please discuss the revenue deficit projections that result from your analysis.

A. The revenue deficit projection using my recommended cost and billing determinant trends can be found in Exhibit MNL-5. Column A of the spreadsheet presents the normalized income statement for Washington electric operations, with the full cost and revenue detail that is found in Avista's filed 2011 CBR. It can be seen that this produced a rate of return on rate base of about 6.56%. Using the 8.25% rate of return on rate base proposed in the proceeding, there was a revenue shortfall of around $ 31 million.

Column B of the table removes the normalized 2011 energy costs and sales for resale revenue. Column C removes DSM and the residential exchange from cost and revenue (since these items are recovered/rebated by separate tariffs and do not affect attrition) and

adds Avista's 2012 electric revenue increase granted in its last general rate case. The residual (non-energy) cost is then escalated using common escalators for the rate base and the various categories of O&M expenses, depreciation, and taxes other than income taxes. The two year escalation rates for these cost categories are shown in Column E to be 12.55%, 9.48%, 14.81%, and 8.25%.

The Company's latest Aurora model projections of its sales for resale and fuel and purchased power expenses in 2013 are inserted in Column H. In Column I, an imputation for the extra energy cost of serving growth in the sales volume is added and retail revenue is escalated for the forecasted growth in the billing determinant index. Other operating revenues are escalated by a 0.82% 2-year escalation rate. The forecasted growth trends in retail billing determinants and other operating revenues, reported in Column E, can be seen to be far below the growth trends in all four major cost categories. Wherever adjustments are made to Avista's revenues in these calculations, small adjustments are made to its revenue-sensitive expenses for gross receipts taxes, commission fees, and uncollectibles.

The right-hand column (J) shows the projected 2013 income statement and other financial results that are produced by this exercise. It can be seen that net operating income is projected to be about $79 million (line 30) in 2013. The full allowed return on the projected rate base at the Company's proposed 8.25% rate of return is about $106 million (line 51). There is thus an after-tax operating income deficiency of about $26 million. This is grossed up for income taxes and other revenue effects and then reduced by the amount by which revenue in 2013 would likely exceed the revenue requirement due to billing determinant growth. The end result is a total revenue deficit of about $42 million (line 56). The Company is requesting a rate increase of $21 million in this rate case before adding an

attrition adjustment, which is approximately one half of the total deficit. If the Company's full rate increase request is granted, but without an attrition adjustment, my calculations indicate that its revenue requirement will still fall short of the Company's needs by about $21 million in 2013.

Q. What are the implications of your calculations for the appropriate revenue requirement in this proceeding?

A. I believe that my research substantiates the Attrition Adjustment that the Company has incorporated in its revenue requirement. Avista has filed frequent rate cases in recent years and has underearned in the year that new rates are implemented. The traditional rate case process used in Washington is a likely cause of the problem. This Commission has suggested that it would entertain a credible attrition study for purposes of addressing chronic underearning. I have prepared an attrition study that combines methods used to support previously approved attrition adjustments with some upgrades where better data and research advances have become available since the early 1980s. My research demonstrates that Avista's cost will grow much more rapidly than its billing determinants between 2011 and 2013. This undermines the validity of the matching principle and suggests that this rate case will produce continued underearning absent the proposed Attrition Adjustment.

Q. Does that conclude your pre-filed direct testimony?

A. Yes it does.