BEFORE THE WASHINGTON

UTILITIES & TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION,

Complainant,

v.

AVISTA CORPORATION, d/b/a AVISTA UTILITIES

Respondent.

DOCKETS UE-160228 and UG-160229 (*Consolidated*)

DIRECT TESTIMONY OF BARBARA R. ALEXANDER (BRA-1T)

ON BEHALF OF

PUBLIC COUNSEL AND THE ENERGY PROJECT

AUGUST 17, 2016

DIRECT TESTIMONY OF BARBARA R. ALEXANDER (BRA-1T)
DOCKETS UE-160228 and UG-160229 (*Consolidated*)

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I. INTRODUCTION/SUMMARY

Q: Please state your name and business address.

A: My name is Barbara R. Alexander. I use the title of Consumer Affairs Consultant located at 83 Wedgewood Drive, Winthrop, ME 04364.

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

A: I am an independent consultant.

Q: On whose behalf are you testifying?

A**:** I am testifying on behalf of the Public Counsel Unit of the Washington Attorney General's Office (Public Counsel) and The Energy Project (Energy Project).

Q: Please describe your professional qualifications.

A: I opened my consulting practice in March 1996, after nearly ten years as the Director of the Consumer Assistance Division of the Maine Public Utilities Commission. While there, I managed the resolution of informal customer complaints for electric, gas, telephone, and water utility services, and testified as an expert witness on consumer protection, customer service quality, and low-income issues in rate cases and other investigations before the Maine Public Utilities Commission.

My current consulting practice focuses on regulatory and statutory policies concerning consumer protection, service quality and reliability of service, customer service, smart grid and advanced metering policies and cost-benefit analysis of such programs, and low-income program design and funding issues associated with both regulated utilities and retail competition markets. I have testified in rate cases, rulemaking proceedings, and investigations before over 15 United States and Canadian regulators. My recent clients include the state ratepayer public advocate offices in

Massachusetts, Illinois, Pennsylvania, Washington, Maryland, Maine, Arkansas, and West Virginia, as well as AARP in many states (e.g., Idaho, Montana, New Jersey, Maine, Mississippi, Ohio, Virginia, Illinois, Maryland, Nevada, Oklahoma, and the District of Columbia).

I have testified on proposals for advanced metering deployment in Oklahoma, Maryland, Michigan, California, and Maine. In those proceedings, I evaluated the costs and benefits proposed for these investments in formal testimony.

I testified on behalf of Public Counsel and the Energy Project concerning Avista's 2015 rate case proposal for full scale deployment of advanced metering (Dockets UE-150204 and UG-150205).

I am a graduate of the University of Michigan (1968) and I received a J.D. from the University of Maine School of Law (1976).

I have attached my resume with a list of my publications and testimony as Exhibit No. BRA-2.

Q: What exhibits are you sponsoring in this proceeding?

A:

Exhibit No. BRA-2	CV of Barbara R. Alexander
Exhibit No. BRA-3	Avista Response to Public Counsel and The Energy Project Data Request No. 40, Attachment A
Exhibit No. BRA-4	Avista Response to Public Counsel and The Energy Project Data Request No. 47, Attachment A
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Q: What is the subject matter of your testimony in this proceeding?

A: I have been asked to evaluate the proposal by Avista Utilities (Avista) to deploy Advanced Metering Infrastructure (AMI) throughout its Washington service territory and recover the costs for those investments from ratepayers. My evaluation has consisted of my review of Avista's testimony and accompanying exhibits, and discovery responses submitted to date in this proceeding. Additionally, because I testified in Avista's last general rate case, Dockets UE-150204 and UG-150205, I apply my familiarity with Avista's proposal in that case to my analysis in this case. The purpose of my evaluation in this case, as it was in the prior case, is to determine (1) whether Avista's proposed AMI investment will deliver benefits to customers in excess of the costs, and (2) whether other alleged and unquantified benefits justify the approval of this investment and recovery of costs from ratepayers. While I do not specifically address Avista's proposed

recovery of AMI costs in its proposed revenue requirement adjustments, my conclusions support an elimination of those costs from rates at this time.

Q: Please describe the AMI investment and deployment plans as proposed by Avista.

A: Ms. Heather L. Rosentrater, on behalf of Avista, supports the Company's proposal for AMI deployment in her direct testimony. According to Ms. Rosentrater, Avista has completed its plans for AMI deployment for all electric and gas customers in Washington, has entered into several contracts, and intends to enter into other contracts this year. The actual meter installation is scheduled to begin in 2017, and Avista plans to deploy smart meters to 253,000 electric and 155,000 natural gas customers over six years.

The project will include replacing all current electric meters with a new digital "smart" meter, and adding to existing natural gas meters a module called an "Encoder Receiver Transmitter." In addition, the project includes a new two-way communication system that will enable Avista to receive data from and send signals to the new meters, as well as technology and software to integrate the new metering data to a customer web portal, Avista's billing, and customer care systems (typically referred to as a meter data management system).

Ms. Rosentrater states that the expected lifetime benefits will exceed the lifetime costs of the project. She identifies a wide range of potential benefits in her testimony that are explained in more detail in the AMI Business Case attached to her testimony as Exhibit No. HLR-3. She states that Avista has "continued to update its estimates of the costs of deployment, which reflect up-to-date information on the capital and operating expenses required to support the system and to achieve the expected benefits for our Washington customers," but that Avista has not yet entered into the primary vendor

contracts.[1] The "current estimates" of capital expenditure costs included in her direct testimony is $166.7 million. Additionally, Avista expects to experience incremental operations and maintenance (O&M) costs of $123.4 million. As a result, Avista estimates that its AMI project will cost a total of $290.1 million (expressed as cash value).

Additionally, Avista estimates the cash value of the benefits as $510.7 million, which was applied in a lifetime cost / benefit analysis comparing the present value of the costs to the present value of the benefits. Avista concluded that the benefits will exceed the costs by $26.5 million. This is an increase from the $3.5 million in net benefits reflected in the amended business case relied upon by Avista in the 2015 rate case.[2]

Avista's "lifetime" analysis is conducted over a 21-year period, representing the six-year deployment period and the subsequent assumption for a 15-year life of the project. Avista's projected net benefit of $26.5 million is equal to 12.3% of the lifetime costs. In its analysis, Avista's estimated benefits reflect the following categories and amounts:[3]

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[1] Direct Testimony of Ms. Rosentrater, Exhibit No. HLR-IT at 19: 33-36.
[2] In my testimony on Avista's AMI proposal in the 2015 rate case, Dockets UE-150204 and UG-150205, I described the multiple and significant series of changes to Avista's estimates of the costs and benefits of this project that occurred prior to and during the pendency of the 2015 rate case.
[3] Rosentrater, Exhibit No. HLR-1T at 21:8-11 (Table 2).

TABLE 1: AVISTA'S BENEFITS CATEGORIES AND AMOUNTS

Area of Benefit	Total Benefit Value (Cash Value)	Total Benefit Value (Present Value)
Meter Reading and Meter Salvage	$162.0	$75.9
Remote Service Connectivity	$45.7	$24.3
Outage Management	$86.4	$40.3
Energy Efficiency	$127.2	$59.4
Energy Theft and Unbilled Usage	$62.8	$28.9
Billing Accuracy	$22.2	$10.7
Utility Studies	$4.4	$2.2
Total	**$510.7**	**$241.7**

Avista's projected net benefits depends in large part on estimates associated with several categories such as "outage management," (17% of the total benefit value), "energy efficiency" (25%), "remote service connectivity" (10%), and "energy theft and unbilled usage" (12%), which I will discuss in more detail below.

Q: Was Avista's request for a positive signal for its proposed AMI deployment in its 2015 rate case approved by the Commission?

A: No. In its Order on the 2015 rate case, the Commission determined that the AMI project was not ripe for any "guidance" or determination of prudence.[4] Additionally, there were significant issues of concern with Avista's business case due to frequent changes in the relationship between the estimated costs and benefits, as well as concerns raised by Staff and Public Counsel and Energy Project's analysis, stating:

The Company portrays AMI as another step in this technological and business

[4] *Wash. Utils. & Transp. Comm'n v. Avista Corp. d/b/a Avista Utils.*, Dockets UE-150204 and UG-150205 (*Consolidated)*, Order 05, Final Order Rejecting Tariff Filing, Accepting Partial Settlement Stipulation, Authorizing Tariff Filings ¶¶ 188 – 199 (Jan. 6, 2016) (footnotes omitted).

evolution of the utility as it adapts to changing circumstances. It has requested some "guidance" or a sense of the Commission's "general direction" toward AMI in this proceeding. However, we note that assessing such a far-reaching technology upgrade in a general sense in a briefing or workshop is a different matter than reviewing a detailed cost-benefit study in a specific rate case proceeding. AMI requires a large upfront capital investment, which Avista claims will be offset by the benefits cited in its business case. We view Avista's requests in this case as requests that the Commission take the first step towards a prudence determination prior to the Company even selecting a vendor to replace the meters, or for that matter, deciding on specific vendors for the meters, communications network, and related infrastructure supporting such a large project.

We decline Avista's requested action because this issue is not ripe for Commission determination. The Commission's longstanding practice is to review the prudence of a utility's investment in plant after that plant is placed in service and is used and useful. In contrast, this case discusses a proposal for a future investment that, if we took that first step towards a prudence determination, could be viewed as the Commission indicating pre-approval.

While we do not make a decision regarding the prudence of this project in this proceeding, we note the considerable uncertainty surrounding the business case analysis Avista prepared. During the pendency of this case, the Company modified both the estimated costs of the AMI deployment, by $20 million in capital costs, and the net benefits, from $7.5 million to $3.5 million. At hearing, Mr. Kopzcynski testified that the business case analysis was accurate with "plus-or-minus-50-percent type of uncertainty." The relatively small anticipated benefit of Avista's business case of $3.5 million out of a $227 million project, coupled with "plus-or-minus-50-percent" uncertainty in cost, demonstrates that significant uncertainty exists. While we are aware of the potential upside of AMI deployment, we must also recognize the potential costs to ratepayers if a "minus-50-percent" scenario prevails. The Commission cannot conclude on this record that deployment of AMI, under the business case that Avista presents in this case, is compelling at this time. We look forward to more refined cost-benefit analysis in a future proceeding, including a fuller discussion of "non-quantifiable benefits" suggested by Mr. Kopzcynski.

In conclusion, we decline to rule on the prudency of Avista's proposed AMI investment in this case because the issue is not ripe for our determination. This decision should not be interpreted as a rejection of AMI. The Company must decide what metering program provides ratepayers the most benefit at the least cost. If the Company decides to procure a new metering system, it may file a well-supported accounting petition on a timely basis to avoid a write-off. If the Company presents actual costs for AMI capital expenditures, either partial or full deployment, in a future rate case, the Commission will consider the prudence of Avista's investment at that time.[5]

[5] *Id*. ¶¶ 190, 191, 193, and 199.

Q: Does Avista present a request for cost recovery based on actual deployment of AMI or a request for a prudence determination as to costs and benefits based on its actual experience in this rate case filing?

A: No. Again, Avista is requesting approval for AMI deployment prior to formalizing all of the contracts required for the proposed metering system. Moreover, Avista cannot document that the AMI system has performed as predicted in its business case because the AMI system has yet to be deployed. Therefore, Avista is once again asking this Commission to make a determination of Avista's costs and benefits based on predictions and estimates without concrete and factual information based on actual performance.

I will discuss the lack of evidentiary support and failure to rely on realistic or appropriate assumptions throughout my testimony. But, the basic proposition sought by Avista in this proceeding has not changed from the proposal submitted and rejected as inappropriate for any determination of prudence or approval in the 2015 rate case.

Q: Please summarize your conclusions and recommendations concerning Avista's proposed AMI project?

A: Overall, I conclude it is highly likely that the costs of Avista's proposed AMI project will exceed the reasonable level of benefits that would actually appear in customer bills to offset the AMI costs. With regard to Avista's cost estimates, they are not known with sufficient certainty at this time, and the Company has not included all the costs that are likely to be incurred to implement AMI deployment. Most importantly, I disagree with Avista's identification and estimates of customer benefits included in its analysis of costs and benefits. In particular, Avista's estimated customer direct savings are illusory and should not be relied upon.

I will discuss the details with respect to my disagreement with Avista's estimated costs and estimated benefits in my testimony. In particular, I will refute Avista's attempt to justify this investment in several benefit categories relating to customer conservation, reliability of service, economic impacts in the community, and certain operational categories relating to remote disconnection of service and avoiding theft of service. As a result of my analysis, I conclude that a more realistic evaluation of the Company's assertions will result in a project whose costs will exceed its benefits by at least $20 million.

I recommend that the Commission reject Avista's AMI project at this time and exclude any associated costs from the revenue requirement the Company seeks in this rate case. Specifically, the costs for this project are neither known and measureable, nor used and useful. Moreover, the proposed AMI project is not prudent or cost-effective because the Company's benefits are, in many cases, illusory and without evidentiary support.

The Commission should provide guidance with respect to what is expected in the event that the Company decides to proceed with AMI deployment. The Commission should clearly state that the Company will need to meet its full burden of proof under a standard prudence determination in a future proceeding in order to recover any of the related program costs from customers. Any future prudence determination should rely on actual performance and not estimates based on Avista's use of averages from other utilities, unsupported assumptions, or undocumented assertions. Avista seeks to shift the risks of its proposed AMI deployment onto ratepayers. However, Avista should proceed,

if at all, with the risks of a future determination of imprudence squarely on its shareholders.

Q: Do you reach these conclusions based on any inherent disagreement with the AMI technology or opposition to "smart grid" investments generally?

A: No. I have evaluated Avista's costs and benefits as the Company has proposed and identified in its filing. My evaluation reflects the evidence that I will present to support my conclusions. My testimony is not intended to reflect opposition to AMI in particular or smart grid investments generally. Rather, I have viewed this significant expenditure that Avista seeks to recover from its customers in current and future rates in light of reasonable conclusions about whether the benefits are likely to exceed the costs in the short or long term, and I find the Company's conclusions are unsupportable. Unlike the Company's presentation, I do not recommend that Avista be allowed to pass along these significant costs to customers simply because other utilities are deploying AMI or because of a NARUC resolution.[6] It is my recommendation that the Commission evaluate this significant investment and potential costs to ratepayers in the same manner as any other utility investment.

Q: Are you ignoring the trend toward deployment of AMI by other utilities as reflected in Ms. Rosentrater's testimony?

A: Ms. Rosentrater essentially repeats the information presented by Avista in its 2015 rate case concerning deployment of AMI by other utilities. While the deployment of AMI may provide some lessons and context for the analysis of Avista's proposal, the

[6] As reflected in Ms. Rosentrater's Direct Testimony, Exhibit No. HLR-1T, at 14:11 – 17:17.

Commission should not approve this expensive investment simply because other utilities are deploying AMI.

Unlike virtually all other utilities, Avista does not seek to justify its AMI deployment based on specific customer demand response and time-varying rate programs that are designed to lower generation supply costs. Furthermore, the real surge in deployment of AMI occurred as a result of the significant grants that totaled $4 billion, pursuant to the American Reinvestment and Recovery Act (ARRA) in 2009, which gave up to 50% of the cost for AMI deployment to many electric utilities.[7] Finally, a few states have mandated AMI deployment by statutory directive and apparently without regard to costs and bill impacts.[8]

None of these scenarios are present in Avista's case. ARRA funds are no longer available. There is no mandate for smart meters in Washington.[9] This investment, discretionary on the part of the Company, will require ratepayers to fund 100% of the costs. I urge the Commission to carefully examine the costs and benefits of this proposed investment solely on its merits.

Q: Has Ms. Rosentrater's properly described the NARUC Resolution[10] that she quotes as supporting AMI deployment?

[7] Examples of states where utilities received ARRA funds for widespread smart meter deployment include Maine, Maryland, Delaware, Florida, and the District of Columbia.
[8] Examples of states with statutory mandates for smart meters include Pennsylvania and Texas. I note that California approved smart meter deployment for its electric and gas investor-owned utilities prior to the availability of ARRA funds based on litigated proceedings in which the cost-effectiveness of the proposed investments depended on operational savings relating primarily to meter reading and field operations that exceeded 90% of the benefit stream in most cases. These utilities also coupled their AMI deployment with proposals for specific peak load reduction and optional time varying rate programs.
[9] In fact, the Commission specifically rejected a mandate for smart meters in its Interpretive and Policy Statement Regarding Energy Policy Act of 2005, Standards for Net-Metering, Fuel Sources, Fossil Fuel Generation Efficiency, and Time-Based Metering, Docket UE-060649 ¶¶ 30-35 (Aug. 23, 2007).
[10] The NARUC Resolution is attached to Ms. Rosentrater's Direct Testimony as Exhibit No. HLR-4.

A: Not in my opinion. Ms. Rosentrater appears to suggest that NARUC has endorsed AMI deployment. This one-page resolution actually contains only one "resolve" to support the "movement toward an appropriate level of open architecture and interoperability of AMI to enable cost-effective investments, avoid obsolescence, and increase innovations in technology products."[11] I interpret this "resolve" as supporting "cost-effective" investments. The Resolution is not an absolute endorsement of AMI and does not contain any specific recommendation for AMI deployment. In fact, based on my experience, NARUC does not make specific recommendations for technologies or investments to state regulators because these issues are a reflection of state-specific mandates and policies, as well as the need for determination of prudence and cost-effectiveness in individual utility proceedings.

Q: Before discussing Avista's proposed costs and benefits in more detail, has Avista identified the potential bill impacts for its customers to pay for this investment?

A: Similar to its 2015 filing, Avista did not provide any information on the impact of this AMI investment on its future revenue requirement or customer bills for electric and gas service in its 2016 AMI filing. However, pursuant to discovery, Avista provided estimates for this information based on certain assumptions concerning the allocation of AMI costs and benefits to electric and gas customer classes.

Avista's calculations of the future revenue requirement and bill impact analysis assume that the majority of the AMI costs will be imposed on residential customers, reflecting their assumption that the costs of the new metering system should be primarily

[11] Exhibit No. HLR-4 at 2 (emphasis added).

allocated by the number of meters.[12] I do not at this time provide any recommendations on the manner in which AMI costs should be allocated to customer classes or the rate design that should be implemented to recover these costs in rates. Rather, my interest in this issue here is to highlight the lack of any testimonial recommendations by Avista on what the bill impacts will be or how costs should be recovered in rates. If Avista receives approval for its proposed AMI investment, bill impact and how costs should be recovered in rates are crucial considerations, and the lack of analysis from Avista raises a significant concern.

Using Avista's cost allocation and revenue requirement assumptions reflected in Exhibit No. BRA-3, Exhibit No. BRA-4, and Exhibit No. BRA-5, the following are the key observations:

- Avista's estimated impact of the AMI investment on future revenue requirements over the 21 years of its business case is labeled "hypothetical" and reflects "simplifying assumptions," such that any predicted impact is labeled "suspect."[13]
- Avista's analysis assumes that the revenue requirement will include a reduction in otherwise applicable AMI costs equal to its predicted operational cost reductions relating to Avista's current business case, but do not include any of the "direct" customer benefits relied upon in its business case that reflect customer actions on efficiency or imputed reliability values.
- Even under Avista's assumptions, the revenue requirement for both gas and electric customers will increase two percent or more through year six of the

[12] Exhibit No. BRA-3, Avista Response to Public Counsel/Energy Project Data Request No. 40, Attachment A (reflects the allocation of the various components of the AMI system to specific customer classes).
[13] Exhibit No. BRA-4, Avista's Response to Public Counsel/Energy Project Data Request No. 47, Attachment A (Revised) (uses the customer class allocation of AMI costs reflected in Exhibit No. BRA-3).

analysis, over 1.5% for years two through 10, and increases of less than one percent until year 15. As a result, customers will not see an actual rate decrease to reflect operational benefits until year 15 of the 21-year analysis.

- When asked for customer bill impacts, Avista stated that it did not endorse the analysis because it is "based on too many assumptions that will change."[14] Avista states that AMI costs should be recovered in a fixed monthly charge. Pursuant to this analysis, Avista's residential electric customers will see a monthly bill impact of an additional $2.17/month in year two and over $2/month through year seven, followed by lower bill impacts until year 15 when a small bill reduction associated with AMI is predicted for years 15 through 21. Natural gas residential customers will see similar results with an increase of $2/month in the early years. Again, this bill impact analysis, similar to the revenue requirement estimates, reflects Avista's predicted operational cost savings, but not any of the direct customer benefits that are crucial to their business case relating to energy efficiency and reliability benefits.

Q: As a result of the information regarding the impact of AMI costs on the future revenue requirement and customer bills, what is your primary observation?

A: Avista continues its unreasonable approach that seeks the Commission's endorsement of the AMI investment based on insufficient information. Information regarding the impact of Avista's proposed AMI investment on rates and bills is critical information for the Commission to consider.

[14] Exhibit No. BRA-5, Avista Response to Public Counsel/Energy Project Data Request No. 49, Attachment A (Revised).

Furthermore, as I will discuss later in my testimony, Avista does not make any enforceable promise to deliver its estimated benefits so that future recovery of actual costs is contingent on estimated benefits being realized. I have no doubt that Avista will attempt to document and include operational savings, but if they do not appear as predicted, Avista will surely seek inclusion of costs in future revenue requirements regardless. Additionally, Avista has not identified how future actual operational benefits will be documented and has not proposed specific data tracking and reporting methodologies. In short, it is not possible for the Commission to rely on Avista's estimates of AMI impacts on future revenue requirements and customer bills, as there is no basis for the assumption that the savings will occur as predicted. Revenue requirements and customer bill impacts are likely to be much higher than reflected in Avista's discovery responses. The Commission should require that any future Avista proposal for AMI include specific recommendations on how the AMI costs will be reflected in rates. Avista should present the bill impacts under a range of assumptions concerning costs and the realization of benefits.

Q: Please describe how the remainder of your testimony is organized.

A: I will discuss my detailed evaluation of Avista's proposed costs and benefits associated with its AMI proposal as follows:

- Part II: I will explain how many of the costs and savings, as reflected in Ms. Rosentrater's testimony and business case, are not reliable. Specifically, I will discuss the estimated costs, operational savings, and customer direct savings estimates included in the proposal. I will also discuss possible degradation of current consumer protection policies due to some of the cost savings assumptions.

- Part III: I highlight the unquantified, unsupported, and intangible benefits contained in Avista's analysis of its AMI proposal and why the Commission should not rely on the alleged benefits.
- Part IV: I explain how Avista's AMI proposal shifts the risks of nonperformance to customers and fails to include any performance standards.
- Part V: I conclude with a discussion summarizing my evidence to document the fact that Avista's AMI proposal should not be approved at this time.

II. AVISTA'S ESTIMATED COSTS AND SAVINGS FOR THE AMI PROJECT ARE UNRELIABLE

Q: Please summarize Avista's changes to its business case compared to the 2015 proposal.

A: Avista has updated its estimated costs, added new benefit categories, and changed the amounts for other categories compared to the 2015 filing for approval of AMI deployment. The changes in cost estimates are due to more information from prospective vendors and Avista's determinations regarding labor resources needed for each activity.[15] The most significant changes relate to a wide range of benefit categories. Although some of the estimated benefits have decreased from the prior case, the overall result is that the estimated benefits increase from $191.4 million to $243.4 million, a 27% increase.[16] The estimates associated with Avista's AMI proposal continue to change dramatically, as we saw with the estimates during the 2015 rate case. It is troubling that Avista's business case can change so dramatically in less than a year, but these significant swings in identification and valuation of benefits is likely due to Avista's attempts to estimate

[15] Exhibit No. BRA-6, Avista Response to Public Counsel/Energy Project Data Request No. 7.
[16] Exhibit No. BRA-6. The detailed information about the changes to each of the benefit categories included in this paragraph is derived from this Response.

benefits as opposed to relying on either its own pilot program or the Company's actual performance once AMI is deployed.

With regard to the significant increase in estimated benefits, the Company's new estimates of "outage management," "conservation voltage reduction," and "energy theft and unbilled usage" account for the majority of the increases in estimated benefits:

TABLE 2: AVISTA'S INCREASED BENEFITS ESTIMATES

Area of Benefit	2016 Case	2015 Case	Percent Change
Meter Reading/Meters	$75.9 M	$63.4 M	20%
Outage Management	$40.3 M	$33.7 M	20%
Conservation--CVR	$56.8 M	$14.9 M	280%
Energy Theft/Unbilled	$28.8 M	$20.9 M	38%

The categories in which the Company has included a new area of benefit that was not included in the 2015 business case include the following:

TABLE 3: AVISTA'S NEW BENEFITS CATEGORIES

Benefit	Amount	Category
Net Metering	$4.6 M	(Meters)
Salvage Value	$.148 M	(Meters)
Local Economy Jobs	$1.8 M	(Meters)
Restoration Efficiencies	$3.2 M	(Outage)
Additional Conservation	$.4 M	(Conservation)

Q: Do you agree with the costs and benefits that Ms. Rosentrater outlines in her testimony?

A: Overall, I do not agree with Ms. Rosentrater's analysis that benefits will exceed costs, even in the long term. Under even the Company's analysis, costs will exceed the estimated benefits in the short term. In general, I do not criticize the estimated costs for meters, communication system, and meter data management system because this information is exclusively within the control of Avista and its contractual, or potential contractual, vendors. However, significant flaws in Avista's analysis exist.

For example, Avista has not included costs to develop and implement any time-varying rate, efficiency program, or demand response program. Furthermore, Avista's consumer education costs reflect an estimate for a consumer outreach and education program that has not yet been developed. The Company continues to deny that additional costs may be required to address cyber-security measures and address customer privacy aspects associated with the more detailed interval usage data.[17] Avista has not yet entered into contracts for the metering system itself and those estimated costs are, therefore, subject to change.[18]

My major concerns relate to the questionable estimates of several benefit categories that Avista claims will result in a positive cost/benefit ratio. Avista now claims that benefits will exceed costs by $26.5 million over a 21-year period. As I will discuss in detail below, I question Avista's estimated benefits in a number of categories.

[17] Exhibit No. BRA-7, Avista Response to Public Counsel/Energy Project Data Request No. 15. *See also*, Exhibit No. BRA-8, Avista Response to Public Counsel/Energy Project Data Request No. 17, and Exhibit No. BRA-9, Avista Response to Public Counsel/Energy Project Data Request No. 19. Avista states that the budget for cyber security is limited to the actual work to install security systems to support the AMI project, so I conclude that the Company intends to fund ongoing cyber security policies and programs through general rates.

[18] Exhibit No. BRA-10, Avista Response to Public Counsel/Energy Project Data Request No. 22 (Avista has entered into contracts for the software and installation of the meter data management system, but that it is in "contract negotiations" for an AMI solutions vendor).

Under my analysis, the benefits will not exceed costs over the 21-year life of the proposed project, and the AMI investment will not be cost-effective.

Q: Do you have any concern about how the Company allocated its estimated benefits in its cost/benefit analysis?

A: Yes. The Company estimated how its predicted benefit values would be realized and stated, "The values are escalated each year to account for the increase in the value of the cost avoided, as an example throughout the project life."[19] The Company also described its sensitivity analysis and acknowledges that there is a risk that the benefits will not occur or persist as predicted.[20]

Avista assumes that its predicted operational cost savings and other customer benefits would be distributed over the 21-year lifetime in a manner that is fraught with the potential for error. It is simply not realistic to assume that the Company could predict the actual annual level of cost reductions or realization of customer benefits for a 21-year period. In other words, their modeled cost/benefit analysis should not be interpreted as the presentation of how benefits will actually occur during the period that the Company will seek recovery of its AMI costs.

I have concerns about the impact of this proposed investment on future revenue requirements and customer bills because the predicted level of the customer benefits or operational cost reductions is a reflection of questionable assumptions. The Company will seek to recover costs as they are actually incurred, and there is no commitment from Avista to achieve the level of benefits or cost savings predicted or that such benefits or savings will offset the costs to be recovered in future rate proceedings.

[19] Exhibit No. BRA-11, Avista Response to Public Counsel/Energy Project Data Request No. 26.
[20] *See*, Exhibit No. HLR-3, Table 5; Exhibit No. BRA-11.

A. Avista's Estimated Operational Savings Reflect Questionable Assumptions and Will Result in Degradation of Current Consumer Protection Policies.

Q: Turning to Avista's estimated operational savings and benefits, please summarize the benefits the Company relies upon to justify this investment.

A: According to Ms. Rosentrater, the AMI investment will result in $241.7 million in identified benefits (present value over the 21 years of the analysis). According to the Company, the benefits impacting actual operating costs incurred by Avista (e.g., meter reading, remote service connectivity, billing improvements, and theft detection) will be incorporated in revenue requirement in future rate cases. Avista includes "direct" customer benefits, benefits associated with improved reliability derived from customer actions to achieve energy efficiency, in its lifetime cost-benefit analysis, but does not include such benefits in future estimates of revenue requirement necessary to fund the proposed AMI investment. Finally, while I will address this in more detail in Part VI of my testimony, Avista did not include any means by which the Commission could track operational savings or any of the predicted customer benefits. Nor does the Company make any enforceable commitment to only charge ratepayers for the AMI costs that exceed its predicted benefits.

Q: Will you provide testimony in opposition to all of these estimated savings predicted by Avista?

A: No. I agree that Avista will avoid some of the costs identified by and included in Ms. Rosentrater's lifetime cost/benefit analysis. For example, I have not evaluated in detail the avoided costs associated with eliminating manual meter reading, the largest category of reduced operational costs, but I assume that significant costs will be avoided in this benefit category. Nor do I address the categories of billing accuracy and utility

studies since they will have a very small impact on the overall cost-effectiveness analysis. With regard to "remote service connectivity," I also agree some of these savings are likely to occur, particularly with respect to the remote reconnection of service and the remote disconnection of service when a customer requests to terminate their account.

However, I do have concerns about some of the assumptions the Company has made, particularly associated with the change in treatment for premise visits for disconnection for non-payment, a portion of the overall savings predicted in this category. Additionally, I will address several areas where Avista has made questionable assumptions associated with the level of estimated savings, such as the claims of energy efficiency, the value of outage management, theft detection/unbilled revenues, and the attempt to impute a benefit relating to the economic impact of certain additional jobs for the AMI project.

1. Improper Benefit: Eliminating the Premise Visit for Disconnection for Non-payment.

Q: Please identify your major concern with Avista's projection of avoided operational costs associated with remote disconnection for non-payment.

A: My major concern with Avista's estimated operational savings in this area relates to the assumption that Avista will no longer make a premise visit to a customer's location to implement a disconnection for non-payment. Under Avista's assumed benefit analysis, Avista would remotely disconnect the customer's meter for non-payment after sending the required notices. Although remote disconnections based on voluntary customer requests can result in cost savings and benefits, I have serious concerns with using this functionality for remote disconnection for non-payment, which I will detail in my testimony below. The remote disconnection feature of Avista's business case represents

61.6% of the "remote service connectivity" lifetime benefit.[21] I recommend that the Commission eliminate the so-called benefit associated with remote disconnection for non-payment in Avista's AMI business case. This will reduce the lifetime benefit of this category from $12.2 million to $4.68 million.

Q: Please explain why the Commission should not rely on a business case that eliminates this significant consumer protection.

A: Under the current disconnection process, Avista makes a premise visit to the customer's location to physically turn off the electric or gas meter.[22] Under the Commission's current regulations, a utility employee who is dispatched to conduct the disconnection is required to accept payment from the customer at that time to avoid disconnection of service.[23] These regulations were adopted during a time when it was presumed that utilities had to make a premise visit to disconnect the meter.

Avista's proposal to implement remote disconnection for non-payment, without any consideration of the current regulations that assumed that a premise visit would occur, is unreasonable. The elimination of a premise visit to disconnect service for non-payment or other utility-directed actions raises important consumer protection issues and concerns. For example, whether or not Avista is required to "knock on the door" by this regulation, customers have an opportunity to interact with Avista's metering employees and offer payment or describe potential adverse health or welfare impacts if disconnection occurs as intended.

[21] Avista Response Public Counsel and The Energy Project Data Request No. 9, Supplemental 2 (Jul. 13, 2016).
[22] Based on my experience, combination electric and natural gas utilities such as Avista typically use a single balance bill and disconnect electric service for non-payment of natural gas service since the absence of electricity means that the natural gas appliances will also be shut off. As a result, this remote disconnect feature for electric service has significant implications for natural gas service as well.
[23] WAC 480-100-128 (6) (k).

In fact, when the Commission was considering potential changes to the current regulations that require the utilities to accept payment to avoid disconnection at the customer's premises, the utilities submitted evidence concerning the number of payments collected at the door to stop disconnections. According to the compilation of this information in that proceeding, Avista accepted between 5,000 and 6,000 payments at the door to stop disconnection of service during 2009-2012. These instances represented over 60% of the number of disconnections for non-payment reported by Avista in these years.[24] If Avista is allowed to use its AMI system to eliminate the premise visit and potential contact with customers, the option for the customer to pay to avoid disconnection at that point will be effectively eliminated and the volume of disconnections will certainly increase, with the potential for adverse impact on household health and safety.

Q: Did Avista make use of this remote disconnect for non-payment functionality during its Pullman pilot project and with what results?

A: Yes, Avista used this functionality to eliminate the premise visit and remote disconnect service for non-payment during its Pullman pilot project. This functionality was implemented in 2011, 2012, 2013, and 2014. However, it appears that Avista did not disconnect any customer during February 2015 through May 2015 due to the implementation of its new Customer Care and Billing System. As shown below in Table 3, disconnections on an involuntary basis increased with smart meters and remote disconnections as shown by comparing the number of involuntary disconnections that occurred during the pilot and the number of such disconnections prior to the pilot.

[24] Exhibit No. BRA-12, which is a compilation of utility information obtained in Docket UE-131087. Public Counsel obtained the compilation from the Commission's website.

TABLE 4: DISCONNECTIONS ON AN INVOLUNTARY BASIS

Smart Meters with Involuntary Disconnections							
	Prior to Pilot		During Pilot (Meters installed Mar 2011)				
	2009	2010	2011	2012	2013	2014	2015
Jan	51	63	29	94	64	74	85
Feb	73	52	50	89	76	78	0*
Mar	64	38	38	93	92	60	0*
Apr	74	73	39	67	86	69	0*
May	100	57	33	76	107	65	0*
Jun	68	70	39	50	50	51	
Jul	62	42	47	67	82	65	
Aug	52	50	25	40	49	38	
Sep	34	43	25	37	37	44	
Oct	46	45	28	36	71	39	
Nov	35	23	49	50	54	62	
Dec	42	42	56	63	53	54	

Q: Have other states recognized the importance of the premise visit in these circumstances and rejected remote disconnection for non-payment in considering AMI deployment?

A: Yes. Several states have rejected proposals to eliminate these consumer protections, even though such rejection has resulted in lower savings associated with AMI, on the grounds that the disconnection of residential customers may result in dangerous health and safety conditions due to the loss of essential electricity service. Indeed, the very foundation of the current consumer protection rules is the notion that disconnection of electricity carries important health and safety consequences. State commissions have routinely adopted consumer protections and policies designed to make disconnection the last resort and not the first resort to respond to non-payment. The following states are offered as examples:

- **New York.** A 2007 decision of the New York Public Service Commission explicitly provided that current consumer protections relating to disconnection would be

retained in the event that smart metering was implemented, thus preventing New York utilities from relying on any savings associated with remote disconnection of service.[25]

- **Ohio.** Duke Energy filed for a series of waivers from Ohio's consumer protection rules to accommodate its smart grid pilot. The Company requested exemption from the rules requiring a premise visit from company personnel on the day of disconnection for non-payment. The rules require a written notice be delivered to the named customer or an adult at the home, or posting of a notice providing information on assistance programs and other options to delay disconnection. Most importantly, the utility representatives are required to accept payment on the account in order to stop the disconnection. The latter requirement is also a part of Ohio statutory law.

The Ohio commission responded by denying this waiver request:

> In considering Duke's request, the Commission is aware of the purpose of Rule 4901:1-18-05(A)(5), O.A.C, which is to notify the occupants at the premise of the pending disconnection and allow the customer one last chance to prevent disconnection by making payment. Without personal notification, or the display of notice, it is possible that customers may be unaware of the pending disconnection, or may believe that the lack of service is the result of an outage. Moreover, the Commission agrees with OPAE's concern that customers who have not paid their utility bill may not have immediate access to text or electronic messaging, despite their selection of such means of notification at an earlier date. Therefore, while the Commission may be willing to discuss alternative notice processes in the future, at this time, the Commission finds that the processes set forth in this rule should remain in force. Accordingly, the Commission finds that

[25] The New York Commission stated, "Finally, we remind the companies that termination of service for nonpayment is subject to Home Energy Fair Practices Act (HEFPA) regardless of whether that disconnection is performed by physical (on site) or electronic (remote) service shut off. No utility may utilize AMI for remote disconnection of service for nonpayment unless it has taken all of the prerequisite steps required by HEFPA, including the requirement of 16 NYCRR §11.4(a)(7) that customers must be afforded the opportunity to make payment to utility personnel at the time of termination. This process requires a site visit, even where a remote device is utilized." *See, Consolidated Edison Co. of N.Y. and Orange Rockland Utils.*, Case Nos. 94-E-0952, 00-E-0165, and 02-M-0454, Order Requiring Filing of Supplemental Plan at 23 (State of N.Y. Pub. Serv. Comm'n Dec. 17, 2007).

Duke's request for a waiver of Rule 4901:1-18-05(A)(5), O.A.C, should be denied.[26]

- **Maryland.** Baltimore Gas & Electric, Potomac Electric Co., and Delmarva filed applications for AMI deployment and included the potential savings from relying on remote disconnection for non-payment in their business cases to support this investment. The Maryland Public Service Commission rejected this proposal and required the utilities to continue to conform to the current regulation that requires the utilities to conduct a premise visit and attempt to contact the customer (and accept payment where offered via credit card) to avoid disconnection where possible.[27]
- **California.** The California Office of Ratepayer Advocate documented a significant increase in involuntary disconnections after installation of smart meter and the use of remote disconnection.[28] While the California Commission has allowed remote disconnection for non-payment with AMI deployment for most situations, the Commission has required a premise visit and attempt to contact be conducted by electric and gas utilities in certain circumstances where there is evidence of an adverse medical condition in the household pursuant to a program that provides lower

[26] *Application of Duke Energy Ohio for a Waiver of Certain Sections of the Ohio Admin. Code for Smart Grid1 Pilot Programs*, Case No. 10-249-EL-WVR, Entry ¶ 29 (Pub. Utils. Comm'n of Ohio Jun. 2, 2010).
[27] In approving BGE's AMI proposal, the Maryland Commission stated, "We note that we have not approved any exemption from our regulations concerning termination of service for non-payment, and that nothing in this Order should be construed as changing this Commission's policies or regulations regarding termination of service for non-payment." *Baltimore Gas & Elec. Co. For Authorization to Deploy a Smart Grid Initiative and to Establish a Surcharge for the Recovery of Cost,* Case No. 9208, Order No. 83531 at 19 (Pub. Serv. Comm'n of Md. Aug. 13, 2010).
[28] According to a study by the California Division of Ratepayer Advocates, the rate of disconnection of residential customers increased in PG&E's service territory once the remote disconnection switch was used with the new metering system. The increase in smart meter shutoffs appears to be disproportionately large compared to shut-offs of homes with traditional meters. Div. of Ratepayer Advoc., Calif. Pub. Utils. Comm'n (CPUC), Status of Energy Service Disconnection in California (Nov. 2009) (available at: http://www.dra.ca.gov/WorkArea/DownloadAsset.aspx?id=633).

rates for such customers.[29] This "medical baseline" program in California is a more robust program that enrolls hundreds of thousands of customers by California electric and gas utilities.

- **Massachusetts.** In its Order requiring Massachusetts electric distribution utilities to prepare grid modernization plans that included an analysis of AMI deployment, the Commission specifically stated that the cost/benefit analysis for AMI should reflect compliance with the current regulations requiring the utilities to conduct a premise visit prior to disconnection for non-payment: "We emphasize strongly that the Commonwealth is absolutely committed to current consumer protection policies, and we will sanction no degradation of those policies."[30]

2. Unsubstantiated and Overestimated savings relating to "energy theft."

Q: Please discuss your concern with Avista's reliance on its estimate of increased revenues due to the detection of energy theft.

A: I believe the estimates of savings for elimination of energy theft is likely overstated.

Avista claims a savings equal to 0.4% of its total revenues (0.375% for electric revenues and 0.1875% for natural gas revenues) based on the elimination of energy theft. This amount is based on Avista's experience and a range of estimates from the utility industry" including a "range of opportunity between 1 and 3 percent of total utility

[29] *Order Instituting Rulemaking on the Comm'n's Own Motion to Address the Issue of Customers' Elec. and Nat. Gas Service Disconnection*, Rulemaking 10-02-005, Interim Decision Implementing Methods to Decrease the Number of Gas and Electricity and Electric Utility Service Disconnections at 1-4, 11, 12 (CPUC Jun 17, 2010) (available at: http://docs.cpuc.ca.gov/PublishedDocs/EFILE/PD/119404.PDF.)

[30] *Investigation by the Dept. of Pub. Utils. on Its Own Motion into Modernization of the Elec. Grid*, Docket D.P.U. 12-76-B, Order at 15 (Mass. Dept. of Public Utils. Jul. 12, 2014).

revenue" identified by some utilities.[31] Avista's revenue loss due to service diversion has historically been one-fourth of this estimate.

To support its estimate of increased revenue as compared to its actual experience, Avista points to its review of what other utilities have anecdotally reported with their experience in detecting energy theft with AMI deployment. Most of these utilities have vastly different service territories (urban and rural), rates, and demographics compared to Avista.[32] Nor has Avista explained why it choose a revenue enhancement equal to 0.4% compared to any other number within the range reported by other utilities. As a result, Avista has estimated an avoided loss of revenues that is not based on its own experience in any meaningful way and reflects an estimate that is highly questionable because of the lack of any methodology other than choosing a number that falls within a range reported by other utilities.

Another concern with this unsupported estimate of increased revenue is that Avista has failed to take into account the fact that the AMI metering system comes with an alarm feature that will alert Avista to any attempt to tamper the meter.[33] As a result, while there may be a one-time benefit in finding and preventing energy theft during the AMI deployment period, there is no basis for assuming that this level of energy theft will occur or be prevented in the future or over the 21-year project analysis as reflected in Avista's business case. In fact, when confronted with this concern, Avista's response is that the proposed benefit in the form of energy savings is not necessarily based on a

[31] Exhibit No. BRA-13, Avista Response to Public Counsel/Energy Project Data Request No. 32.
[32] The list of what level of reported theft by utilities listed in Exhibit No. BRA-13 includes utilities in Detroit, MI, Austin, TX, California, and reliance on unnamed surveys and reports, many of which appear to repeat the same estimate from unnamed surveys.
[33] Exhibit No. BRA-14, Avista Response Public Counsel/Energy Project Data Request No. 58 (confirms that the metering system that Avista will purchase includes this feature).

recurring incidence of a specific level of energy theft, but on the annualized allocation of its reduction in energy theft over the life of the project. Avista expects that "new instances of energy theft will be likely to arise with sufficient frequency or magnitude that the capability of the advanced metering system will continue to be useful in quickly identifying and stopping these cases."[34] In my opinion, Avista has over-estimated the impact of energy theft over the 21 years of the project analysis, as the recent level of theft is neither likely to continue, nor will it result in the predicted annual savings that are embedded in the business case.

3. Significant increases in energy conservation impacts of AMI alone in the form of voltage reduction are questionable.

Q: Please discuss your concern with Avista's significant increase in savings resulting from Conservation Voltage Reduction (CVR).

A: A second example of a questionable operational savings is Avista's estimate of savings relating to conservation voltage reduction (CVR). Avista has substantially increased its predicted level of savings due to CVR compared to the 2015 rate case with estimates of the potential voltage reduction (and resulting usage reduction) using the AMI metering and communication system alone as opposed to the impact of the automated CVR on circuits with both AMI and grid modernization investments. In the prior 2015 business case, Avista relied on its estimate of expected savings to use the AMI system to further optimize the already installed conservation voltage reduction technology in some of its circuits, explaining that Avista can rely on the actual voltage at the customer's premises rather than relying on transformer voltage readings to reduce feeder voltage and continue to meet minimum requirements. The incremental estimate associated with the AMI

[34] Exhibit No. BRA-14.

system to further lower the voltage levels on circuits with installed CVR technologies was estimated at a present value of $14.9 million in the 2015 filing, but is now estimated at $55 million. Avista now claims that it can implement CVR results using the AMI metering system alone on circuits without CVR technology installed on the distribution system. Avista estimates a reduced voltage level of four percent for circuits equipped with both grid modernization (automated CVR) and AMI and a voltage reduction of two percent for those 96 circuits not equipped with grid modernization technologies, but that will be equipped with AMI.[35]

While the impact of the grid modernization and automated CVR technologies on certain feeders was documented in the Pullman project, that project did not specifically study the impact of relying on the AMI system alone to achieve voltage reduction.[36] Avista bases this estimate of the AMI-impact alone on CVR on its own modeling of additional savings that could be achieved by relying on voltage readings taken at each customer's service meter as the basis for further lowering the voltage on the feeder.[37]

Q: Did Avista provide any studies or reports from other utilities to support its evaluation of CVR results relying on AMI readings alone?

A: No.[38] As a result, it is reasonable to question Avista's predictions for the application of this technology to achieve CVR results by relying on the AMI system alone (and without

[35] Exhibit No. HLR-3, Appendix B at 29-32. *See also*, Exhibit No. BRA-15, Avista Response to Public Counsel/Energy Project Data Request No. 28 (explains the various scenarios and assumptions for the CVR benefit estimate in the business case).
[36] Exhibit No. BRA-16, Avista Response to Public Counsel/Energy Project Data Request No. 59, Attachment A (reported the CVR results from the Pullman pilot project. There was no discussion in this report on the impact of the AMI system on these results).
[37] Exhibit No. BRA-17, Avista Response to Public Counsel/Energy Project Data Request No. 61 (Revised).
[38] Public Counsel/Energy Project Data Request No. 61 specifically asked for studies or reports conducted by other utilities concerning the impact of AMI systems alone on CVR results and the only information provided in Avista's response was derived from its internal tests. Exhibit No. BRA-17.

the technologies installed on the circuits in the grid modernization program). The lack of any reports or studies that document that this approach will work or will persist in the manner predicted by Avista gives rise to reasonable concerns about whether this greatly increased benefit level should be relied upon.

Q: What is your opinion concerning this newly identified benefit that Avista has included in its business case?

A: I am not an engineer and cannot comment on the nature of the test or the reliability of the results relied upon by Avista for this estimate. However, I am concerned and urge the Commission to consider that Avista's approach to finding this new benefit amount is not supported by other utility studies or reports. While there is a wide variety of reports and studies relating to CVR, they appear to primarily discuss the more traditional methodology relied upon by Avista that is documented in the impact evaluation of CVR conducted as part of Avista's Pullman pilot project, and they do not typically identify or discuss the incremental impact associated with relying on AMI alone without circuit CVR technologies. The fact that Avista was explicitly asked to provide any study or report that confirms or addresses its claims associated with relying on AMI to achieve an average two percent voltage reduction on circuits without grid modernization or automated CVR systems and failed, should be taken into account in the Commission's review of Avista's AMI business case. I cannot recommend that the Commission rely on a novel test with results that have not been widely reported as being achieved elsewhere.

4. Avista's claim of benefits from "local economy jobs" should be rejected.

Q: Please discuss your concern with the new category of benefits relating to "local economy jobs."

A: Avista's 2016 business case for AMI includes a new estimated benefit for "local economy jobs" that projects a benefit of $1.8 million in Avista's nine-county Washington service area.[39] This calculation reflects adding 13 jobs during the deployment phase for AMI and relies on a model from the Washington State Employment Security Department that measures the "gravitational flows" relating to certain jobs and their impact on the local communities. However, this attempt to attach an economic benefit for certain new jobs that the AMI system might require during the six-year deployment period fails to recognize that the key to the operational cost savings for the Company's business case is the loss of jobs for meter reading and field work that is required with the current metering system. Avista fails to include the impact on the economy due to this loss of jobs.[40] Furthermore, attempting to inject a social value associated with specific employment that might occur with AMI deployment does not reflect the typical cost-benefit analysis for other investments that must be included in rates in Washington, and the benefits, should they occur, have no impact on the rates that customer must pay to ensure a reliable and affordable electric and natural gas public utility system. I recommend that the Commission eliminate this benefit from Avista's business case.

5. Avista's reliance on "restoration efficiencies" associated with outages should be rejected.

Q: Does Avista claim reduced expenses due to the impact of AMI on "restoration efficiency" during major storms and outage events?

A: Yes. In another new benefit category, Avista claims that it will improve its restoration of service by 10% during major storm events and that this operational efficiency will result

[39] Exhibit No. HLR-3, Appendix B at 4 (Avista AMI Business Case Report).
[40] Even if some of the current meter reading employees are retained in some other capacity, it is highly unlikely that they would do so with the current level of salary and benefits.

in a 10% reduction in the category of restoration costs relating to labor, meals, lodging, transportation, and equipment. Since these cost categories represent 59.5% of major storm restoration expenses, Avista has included a benefit equal to 5.9% (10% reduction) of the major storm restoration costs in its business case analysis.[41]

However, this contorted calculation relies entirely on anecdotal information about two utilities that are referenced in a U.S. Department of Energy (DOE) report that included information from the government's smart grid grant program evaluations.[42] This report does not include any statistically valid information that would allow a reader to determine that this reported result is valid for other utilities or that it would be capable of replication for a 21-year cost benefit analysis.

It is very unreliable for a utility to rely on such casual and informal information to predict that it will routinely improve storm restoration efficiency by 10%. Furthermore, Avista then chooses a predicted result of 10% without any basis other than the Company "believes that for our practices and system an estimate of 10% improvement in storm restoration time is reasonable."[43] Finally, Avista cannot identify any metric that will allow for any proof that such a result will occur in future storm restoration activities, stating:

> Measuring and tracking this benefit represents a challenge because after the system has been installed it will require a thoughtful methodology to objectively measure what the outage duration results *would have been* had the AMI system not been placed into operation. Avista is continuing to research the methods used by other utilities, as well as to develop its own methodologies to measure and track the value of this benefit.[44]

[41] Exhibit No. BRA-18, Avista Response to Public Counsel/Energy Project Data Request No. 67.
[42] Exhibit No. HLR-3, Appendix B at 23-25 (Avista AMI Business Case Report).
[43] Exhibit No. HLR-3 at 24.
[44] Exhibit No. HLR-3, Appendix B at 17 (emphasis in original).

As a result, Avista has predicted a significant addition to its AMI business case based on anecdotal information from two utilities and for which it cannot propose any methodology to actually track and prove that this predicted result will have the 10% reduction in costs.

I am not aware of any other AMI business case that has relied on this type of calculation by any state regulatory commission in its analysis of an AMI business case. Major storms are unique in their cause, impact, and restoration experience. I acknowledge that the AMI system allows Avista to "ping" the meter to determine if the customer's meter is operational or whether service has had service restored, thus allowing a more targeted approach to restoration activities. This feature also allows the Company to avoid extra visits to a specific location to determine if service has been restored following restoration activities in the area. However, major storms that cause widespread damage will find this particular feature a minor part of what is required to actually repair the poles and wires caused by tree damage on the wires, or fix a substation that has been damaged due to flooding or lightning. I recommend that the Commission eliminate this benefit (or, alternatively, most of this predicted dollar amount of benefit) from the analysis of the business case.

B. Avista's Estimated Customer Direct Savings are Unsupported and Should be Rejected.

Q: Please summarize Avista's "customer direct benefits" included in its business case for AMI deployment.

A: Avista claims that there are two programs included in its AMI proposal that will provide direct customer benefits and that are crucial to its prediction that benefits will exceed costs. However, these customer benefits are not included in its proposed "operational"

savings that will be offset by the costs implementing the AMI investment in future revenue requirements. These two programs are: (1) incremental energy efficiency actions to reduce usage as a result of learning more about hourly energy usage through Avista's web portal and participating in energy efficiency programs, and (2) a calculation of customer value associated with reduced outage hours. As I will document below, these so-called "customer savings" program estimates cannot be justified and the assumed savings should be rejected.

1. Avista's estimated customer-initiated usage reductions due to AMI are not supported.

Q: Please explain your objection to Avista's alleged customer benefit in the form of reduced bills as a result of actions undertaken by customers who are exposed to the AMI interval usage information.

A: According to Ms. Rosentrater, customers will save money on their bills by being exposed to the hourly interval data on Avista's web portal that will include "energy conservation tips." Avista assumes that customers will then take steps to reduce their energy usage.[45] Specifically, Avista estimates that three percent of its customers will take additional steps to save energy as a result of their access to AMI interval usage data on the web portal and that these actions will result in a three percent average energy consumption reduction. The Company's lifetime benefit analysis assumes that this level of consumption reduction will persist throughout the 21-year analysis. The Company has included $3.8 million in lifetime customer savings in its business case for this benefit category.[46] There

[45] Rosentrater, Exhibit No. HLR-1T at 19:16-18.
[46] Exhibit No. HLR-3 at 47-48 (AMI Business Case).

are several reasons why this benefit category should be eliminated from the evaluation of Avista's AMI business case.

First, Avista's own Pullman pilot program failed to document any statistically valid usage reduction or conservation actions for customers with AMI meters and exposure to a web portal that the Company is relying upon for this benefit at full-scale deployment. Avista's own consultant[47] concluded:

> Regression models were fit to estimate both average monthly reductions and average monthly percentage reductions in both electricity and natural gas consumption. No models produced evidence of a decrease in electricity consumption. However, the percentage reduction model produced estimates of statistically significant reductions in monthly natural gas consumption. The local average treatment effect estimate is 44%. While this effect is very large, and the impact is significantly different from zero, the estimate is very imprecise. The 95% confidence interval for impacts for customers who accessed the website range from 83% to 5%. So, while these results suggest there may have been an effect of exposure to interval information at the website, it may be quite small and may be a statistical anomaly.
>
> . . . .
>
> For the most part, neither customers who received access to interval data nor those who did not reported making any changes in the way they used electricity on the basis of information presented by the Energy Analyzer feature; 65 percent of exit survey respondents reported that they did not or were not sure if the Energy Analyzer inspired any changes in how they use electricity.
>
> There is similarly no evidence offered by the initial and final surveys to suggest that common actions that customers can take to save energy were more likely to be taken by those who had access to interval data. During the course of the demonstration project, significantly more customers reported taking the following actions in the exit survey than the initial survey, but these increases in energy efficient activity and investment were consistent across treatment and control customers:
>
> - Install weather seals on doors and windows;
> - Insulate water pipes;
> - Install low-flow water heads;

[47] Exhibit No. BRA-19, Michael J. Sullivan, et. al., Freeman Sullivan & Co., Avista Smart Grid Demonstration Project Study and Analysis of Customer Energy Usage 2-4 (Oct. 22, 2013). The quotations are from the Executive Summary.

- Reduce water heater temperature;
- Replace incandescent lights with compact fluorescents; and
- Install insulation in walls or ceilings.

. . . .

Focus group discussions suggest that the current website has several serious design flaws that undermine its usefulness for informing and educating customers about energy use in their household. They are:

- The energy use-related information is not intuitively located on the landing page. As a result, very few customers were exposed to the interval usage information made available by Avista's advanced meters, undermining the experiment. The tile where the advanced meter-based usage information can be accessed appears to many users as a marketing crawl, much like those found on the right-hand side of Yahoo!, Google and other commercial websites. Others thought the smart meter tile content was actually about the meter installation program. No one reported understanding that the tile contained smart meter data.

- Customers only reported using the Energy Analyzer once or twice before determining there was no useful information there and subsequently ignoring it. They did not comprehend the underlying logic of the tool, and thus did not understand the necessary order to properly experience the Energy Analyzer.

- Most customers have no motivation for accessing the information and tools provided on the website and find the information provided on the website to be of little use. It is not that some are not hungry for information about their energy use; it is that they are not hungry for the kind of information currently provided. Consequently, most customers do no consult the energy use information on the website more than once. Part of the problem is that they really have no need for most of the information that is provided.

Second, Avista's business case fails to include the costs for the development of any future efficiency programs that might be developed to make use of the more granular usage data associated with AMI.[48] This is particularly of concern because Avista develops and has approved a portfolio of efficiency programs that are required to pass a cost-effectiveness test to be included in rates. The vagueness and lack of specificity of

[48] Exhibit No. BRA-20, Avista Response to Public Counsel and Energy Project Data Request No. 31 (states that the Company will develop "new approaches" and that customers will take actions to make their appliances more efficient. None of these statements are accompanied by any evidence or a description of specific future programs).

showing customers their hourly usage information as compared to showing them their monthly usage and monthly bill impacts to stimulate customer interest in efficiency programs is an important defect in Avista's alleged benefit in this regard. In my opinion, customers care about the bottom line impact on their monthly bill and the lack of any rate program offered by Avista now or in the future that would rely on a customer's awareness of hourly usage information means that this primary motivation that focuses on the total monthly usage and bill will continue with or without AMI.

Third, much of the literature and studies that Avista relied upon to make this asserted level of impact are not applicable to Avista's business case, as I explain further below.

Q: Since Avista did not justify its estimates of customer efficiency based on its own pilot project, how did the Company justify its estimates for this category?

A: The Company's explanation for this value in its business case appears to be a reflection of what they have derived from utility publications that recite anecdotal results alleged to be the result of customer exposure to AMI interval usage data.[49] However, it is inappropriate and unreasonable for Avista to suggest a significant level of customer bills savings from the very same program that its own pilot program determined did not exist.

Furthermore, the studies cited by Avista are wildly different and it would be inappropriate to claim reliance on studies that include a customer's use of in-home devices or that fail to distinguish the use of the AMI web portal from other direct feedback and educational messages to customers to reduce usage. For example, the BC Hydro document that is listed as being relied upon by Avista is not a study or analysis of

[49] Exhibit No. BRA-21, Avista's Response to Public Counsel/Energy Project Data Request No. 29 (lists the publications relied upon for its estimate).

relying on AMI interval usage data that has resulted in lower customer usage. Rather, this document is BC Hydro's own AMI business case in which the utility provides the basis for its estimate based on other publications and its own proposal to couple AMI with in-home devices and other programs that will reduce customer usage.[50] As a result, I question Avista's reliance on this document in particular because it does not reflect any actual analysis or results conducted by BC Hydro and the BC Hydro estimate of the future impact of their AMI investment relies on programs (such as an optional time-varying rate and providing customers with in-home devices) that Avista has not included in its business case. Another example is that many of the studies relied upon by Avista reflect "real time" feedback to customers via in-home devices, which again is a program that is not applicable to Avista's proposal. Some of these studies took place in different countries with vastly different electricity rates and rate designs. Finally, it is not clear whether any of these studies reflect a statistically valid analysis of the impact of relying on a utility's web portal alone (i.e., without an accompanying rate program) to stimulate customer usage behavior.

Q: Does Avista already implement a customer feedback program to seek customer usage reduction?

A: Yes. Avista implements an efficiency program operated by OPower that provides feedback to customers concerning their usage without relying on the utility's web portal.[51] Avista states in this Response that this program has resulted in an overall energy savings of 1.7%. Avista is also exploring how to improve this program and link it to its current rebate programs to achieve an even higher usage reduction result. This program

[50] Exhibit No. BRA-22, Avista Response to Public Counsel/Energy Project Data Request No. 50, Attachment A.
[51] Exhibit No. BRA-23, Avista Response to Public Counsel/Energy Project Data Request No. 89.

is described as successful by Avista without any reference to AMI interval usage data or requirement that the customer access their usage information via the web portal. In my opinion, this program and any others derived from it are far more likely to be cost effective compared to Avista's proposed AMI investment. If Avista seeks to reduce customer usage in the amount it claims will result from its AMI deployment, it could pursue this objective through the existing efficiency program policies. I recommend that the Commission eliminate this unsupported benefit amount from its consideration of the AMI Business Case.

2. Avista's calculations of "avoided costs" due to reduced outages should be eliminated from the AMI Business Case.

Q: Please discuss your concerns with Avista's reliance on certain monetary values associated with outage reductions in its AMI business case.

A: Avista's other "direct customer benefit" program relies on an estimated "value" that it ascribes to customer benefits as a result of reducing the length of outages that the Company alleges will occur with AMI deployment and the interconnections between the AMI system and the Outage Management System (OMS). Avista has estimated that its annual Customer Average Interruption Duration Index (CAIDI)[52] will improve by five percent as a result of AMI, and it is this predicted input that was used to calculate the avoided costs that appear in the Company's outage management benefits.[53] My testimony does not address the Company's assumptions about the impact of AMI on statistically valid outage duration levels because some improvement in outage restoration performance is likely to occur, primarily as a result of additional distribution investments

[52] It is important to note that CAIDI is calculated by eliminating major storms and is a reflection of "normal" outages.
[53] Exhibit No. BRA-18.

coupled with the AMI system.[54] I have not, however, examined the degree to which AMI alone might impact outage restoration performance.

More importantly for my analysis, is that the most significant defect in Avista's prediction of customer "savings" in its AMI business case relates to the calculation of the dollar amount of value that is multiplied by the number of estimated outage minute reduction that is assumed will result from AMI deployment. These customer dollar values are derived from an Interruption Cost Estimator (ICE) "calculator" that the DOE uses in it evaluations of smart grid projects. The ICE model relies on survey results that seek to determine the "value" that customers assign to avoiding an outage of a certain length. These surveys have been completed in a variety of service territories over the last 10-15 years. The surveys distinguish responses by customer class and length of outage. DOE's model uses an average of these survey results.[55]

Q: Will Avista's customers experience direct savings associated with estimated outage reductions on their bills?

A: No. The "direct savings" are actually a reflection of a hypothetical "avoided cost" that is derived from survey responses. Customers will not experience any savings on their bill as a result of monetizing estimated outage reductions.

Q: Should the Commission rely on the DOE's Interruption Cost Estimator (ICE) method of calculating customer value associated with reduced outages in an AMI business case?

A: No. In my opinion, use of this methodology for this purpose should be rejected because

[54] Exhibit No. BRA-24, Avista Response to Public Counsel/Energy Project Data Request No. 6 (documents improvements in reliability of service on those circuits treated with grid modernization investments).
[55] Exhibit No. BRA-25, Avista Response to Public Counsel/Energy Project Data Request No. 78 (describes how the model works in more detail).

while the model may calculate the inputs correctly (i.e., the model correctly computes the mathematical equations), the result is not useful or appropriate for including in a cost/benefit analysis to justify AMI. First, the ICE calculator is not one that has been used by state regulatory commissions pursuant to any litigated or evidentiary consideration of the methodology or the reliance of the results in the context of retail electric utility ratemaking decisions for an AMI investment. The DOE methodology was never adopted pursuant to any adjudicatory or formal proceeding so it has not been "tested" in a formal hearing with evidence and argument. Rather, this DOE method of calculating the benefits of its smart grid projects funded by ARRA (and used to presumably justify the results of DOE's grid modernization grants) has no force or effect on state regulatory commissions.

Second, the methodology multiplies a hypothetical value derived from multiple surveys asking the question as to what the individual would agree to pay or what value to assign to avoiding an outage of a specified length. The DOE ICE calculator averages the results of these surveys undertaken by utilities throughout the U.S. and ascribes a value for each customer class. This average value is then multiplied by the predicted level of outage reduction to derive a dollar amount. The result of this calculation does not have any relationship to the bill the customer receives for utility service. Nor does the customer actually experience any "savings" outside the utility bill unless the customer actually experiences fewer outages and can translate that increased reliability into income, profits, or avoid incurring expenditures that would otherwise be required for the specific outage duration. In most cases, residential customers cannot actually identify avoided expenses for an outage of an hour or so. I question whether Avista's customers

would actually be able to identify a five percent reduction in the annual CAIDI if asked to do so. In fact, under Avista's proposal, customer bills will increase because: (1) they will be required to pay for the AMI system; and (2) electric bills will increase to pay for the power used during minutes that would otherwise be subject to outages. Obviously, outages are not a positive for residential customers, but to equate the hypothetical value that residential customers might identify in response to a survey question with actual bill savings as Avista has done is unreasonable. Finally, there are significant defects in the studies that DOE relied upon to make use of this calculator, as discussed below.

Q: Please explain the background of DOE's ICE calculator.

A: This calculator was originally developed based on a 2009 Report published by the Lawrence Berkeley National Laboratory that summarized the results of utility surveys of customers that sought to determine what dollar amount of value different customer groups would assign to avoiding an outage. This report summarized other studies that had attempted to place a value on improving customer reliability of service.[56] This report was not done in connection with Smart Grid or AMI investments.

Based on the summary of the survey results in several states, the report concluded that interruption costs per event for residential customers are higher in the summer than in the winter and significantly higher on weekends than on weekdays. But the report emphasized that "caution must be used in interpreting the point estimates as different groups of customers responded to different combinations of scenario attributes."[57] The report also presented the results of some of the surveys that had gathered demographic

[56] Exhibit No. BRA-26, Michael J. Sullivan et. al., Lawrence Berkeley National Laboratory, Estimating Value of Service Reliability for Electric Utility Customers in the U.S. (Jun. 2009) (referred to as the "2009 Berkeley Report").
[57] Exhibit No. BRA-26, 2009 Berkeley Report at 59.

data on the respondents. Of particular importance, the data showed a distinct difference for lower income customers compared to higher income customers. The difference between a low-income (defined as those with average income of less than $25,000) household and a high-income (defined as those with average income of greater than $100,000) household ranges from $3.40 to $4.40 for a one-hour interruption to $9.40 to $11.90 for an eight-hour interruption. Overall, the models show average one-hour summer afternoon interruption costs for residential customers in the $2 to $5 range.

Q: Has the 2009 Berkeley Report been updated recently?

A: Yes. In January 2015 the Berkeley Laboratory published, "Updated Value of Service Reliability Estimates for Electric Utility Customers in the United States."[58] The purpose of this report was to include additional survey results in the value of service estimates for each customer class. This report did not include the more detailed discussion of the demographics, particularly the low-income customer results that were included in more detail in the 2009 Berkeley Report. In my testimony, I will refer to this report as the "2015 Updated Berkeley Report." There is no suggestion in the 2015 Updated Berkeley Report that the more extensive discussion of these issues in the 2009 Berkeley Report has changed. Rather, the purpose of the 2015 Updated Berkeley Report is to update the survey results and provide more statistical analysis of how the 34 sets of survey data should be manipulated to make conclusions.

Q: Does the 2009 Berkeley Report recognize the controversy about assigning a value that customers would be willing to pay to avoid outages based on survey data?

[58] Exhibit No. BRA-27, Michael J. Sullivan, et. al., Lawrence Berkeley National Laboratory, Updated Value of Service Reliability Estimates for Electric Utility Customers in the United States (Jan. 2015) ("2015 Updated Berkeley Report"). This publication is available at: https://emp.lbl.gov/sites/all/files/value-of-service-reliability-final.pdf.pdf. (Note: The 2015 Updated Berkeley Report was funded by the Department of Energy.)

A: The 2009 Berkeley Report recognizes the controversial nature of relying on such data for public policy decisions:

> There has been a long simmering debate about the validity and reliability of customer reported interruption costs measured using survey techniques. There are two central criticisms of the use of survey methods to estimate customer interruption costs. The first applies generally to interruption cost surveys that use hypothetical interruptions as a framework within which to ask questions about interruption costs. In particular, there is concern that cost estimates based on hypothetical circumstances may over or under estimate the costs that occur under real conditions. There is no empirical evidence one way or another as to whether this concern is justified. A second concern applies principally to the measurements of interruption costs for residential customers that rest on what are called contingent valuation methods or stated preference methods. Contingent valuation studies have been the subject of considerable controversy – particularly as applied to the measurement of damage arising from environmental problems. The validity and reliability of various approaches to damage cost measurement using contingent valuation have been discussed at length in the literature. We cannot do it justice in the space available in this format. Those interested in this debate should see Mitchell and Carson (1989) or Horowitz and McConnell (2002).[59]

Furthermore, as stated in the report's discussion of the data available on residential customer value of service reliability:

> The most important difference is that most residential studies of interruption costs or value of service do not focus on direct worth or cost estimates; rather they utilize willingness to pay or willingness to accept measures. Developing these measures generally involves describing a scenario to a residential customer and then asking them what they would be willing to pay to avoid this specific interruption or what they would be willing to accept as compensation (usually described as a credit on their bill) in order to put up with the interruption. The primary reason for using these alternatives to direct cost is the assumption that much of the "cost" of an interruption for residential customers is associated with the hassle, inconvenience, and personal disruption of the interruption, rather than direct out-of-pocket expenses, like buying candles or flashlight batteries. In this situation, customers may be able to more accurately represent the value of reliability by expressing their willingness to pay to avoid an

[59] Exhibit No. BRA-26, 2009 Berkeley Report at xviii, n.3.

interruption (or their willingness to accept some type of credit to accept an interruption) rather than calculate an out of pocket cost or savings.[60]

Q: Did the 2015 Updated Berkeley Report include a discussion of the Study's limitations?

A: Yes. The 2015 Updated Berkeley Report stated:

> As in the 2009 study, there are limitations to how the data from this meta-analysis should be used. It is important to fully understand these limitations, so they are further described in this section. First, certain very important variables in the data are confounded among the studies we examined. In particular, region of the country and year of the study are correlated in such a way that it is impossible to separate the effects of these two variables on customer interruption costs. Thus, for example, it is unclear whether the higher interruption cost values for the southwest are purely the result of the hot summer climate in that region or whether those costs are higher in part because of the particular economic and market conditions that prevailed during the year when the study for that region was done. The same logic applies to the 2012 west study, which was the only survey to include power interruption scenarios of more than 12 hours, which makes it difficult to separate the effect of region and year from the effect of the relatively long interruption duration.
>
> There is further correlation between regions and scenario characteristics. The sponsors of the interruption cost studies were generally interested in measuring interruption costs for conditions that were important for planning for their specific systems. As a result, interruption conditions described in the surveys for a given region tended to focus on periods of time when interruptions were more problematic for that region. Unfortunately, the time periods when the chance of interruptions is greatest are not identical for all sponsors of the studies we relied upon, so interruption scenario characteristics tended to be different in different regions. Fortunately, most of the studies we examined included a summer afternoon interruption, so we could compare that condition among studies.
>
> A further limitation of our research is that the surveys that formed the basis of the studies we examined were limited to certain parts of the country. No data were available from the northeast/mid-Atlantic region, and limited data were available for cities along the Great Lakes. The absence of interruption cost information for the northeast/mid-Atlantic region is particularly troublesome because of the unique population density and economic intensity of that region. It is unknown whether, when weather and customer compositions are controlled, the average interruption costs from this region are different than those in other parts of the country.
>
> Another caveat is that around half of the data from the meta-database is from surveys that are 15 or more years old. Although the intertemporal analysis in the 2009 study showed that interruption costs have not changed significantly over time, the outdated vintage of the data presents concerns that, in addition to the limitations above, underscore the need for a coordinated, nationwide effort that

[60] Exhibit No. BRA-26, 2009 Berkeley Report at 59.

> collects interruption cost estimates for many regions and utilities simultaneously, using a consistent survey design and data collection method.
>
> Finally, as described in Section 1, although the revised model is able to estimate costs for interruptions lasting longer than 8 hours, it is important to note that the estimates in this report are not appropriate for resiliency planning. This meta-study focuses on the direct costs that customers experience as a result of relatively short power interruptions of up to 24 hours at most. In fact, the final models and results that are presented in Sections 3 through 5 truncate the estimates at 16 hours, due to the relatively few number of observations beyond 12 hours (scenarios of more than 12 hours account for around 2% to 3% of observations for all customer classes). For resiliency considerations that involve planning for long duration power interruptions of 24 hours or more, the nature of costs change and the indirect, spillover effects to the greater economy must be considered. These factors are not captured in this meta-analysis. [61]

Q: Does either the 2009 Berkeley Report or the 2015 Updated Berkeley Report recommend this "value of service" calculation be relied upon by state regulators when considering the lifetime costs and benefits of an AMI investment?

A: No. As noted above in the "limitations" identified in the 2105 Updated Berkeley Report, the analysis should not be used for resiliency planning for longer outage events and the results are applicable to relatively short outage events of 24-hours or less. Nor does either report include any reference or support for the proposition that this type of analysis should be relied upon to support an investment in AMI.

Q: Can you document the controversy concerning the reliance on a contingent valuation method that is relevant to how the Commission should treat this type of analysis?

A: Yes. An article published in the Journal of Economic Perspectives by a Professor of Economics at MIT debunks the "contingent valuation" method (used in the ICE calculator) as a means to obtain reliable data to input value into certain public policy

[61] Exhibit No. BRA-27, 2015 Updated Berkeley Report at 48-49.

decisions.[62] One of the key aspects of this method is the assumption that what customers say they will pay is a predictor of what customers actually do. According to the author, respondents to these surveys cannot be relied upon to provide a meaningful indication of the actual preferences (what they will do as opposed to what they say they will do or value in a hypothetical survey question) and that such surveys do not take into account the budget needs of respondents.

Q: How do you respond to the Company's claim that the vast majority of the avoided costs in the ICE model are derived from surveys and interviews in which actual costs associated with outages were identified and relied upon?

A: Avista claims that most of the "avoided costs" are based on commercial and industrial customer "direct financial losses" identified in responses to surveys and interviews and are not based on the "contingent valuation" methodology (asking customer for a hypothetical dollar amount the customer would pay to avoid an outage) used for residential customer surveys. As a result, Avista states that the residential survey results reflect only 3.6% of the overall customer costs in the ICE model and that Avista's business case estimates that residential customer outage losses were less than two percent of the total estimated losses.[63] If in fact this benefit category is primarily applicable to commercial and industrial customers, it would seem logical to assign the AMI costs in a manner that reflects this value to those customers and not, as Avista assumes in its proposed revenue requirement and bill impact analysis, assign 50% or more of the AMI

[62] Exhibit No. BRA-28, Jerry Hausman, *Contingent Valuation, From Dubious to Hopeless*, 26, J. of Econ. Persp. 43, 43-56 (Fall 2012) (available at: http://www.ingentaconnect.com/content/aea/jep/2012/00000026/00000004/art00003).
[63] Avista Response to Public Counsel/Energy Project Data Request No. 10.

costs to residential customers. Avista's justification for this benefit category is not reflected in its proposed cost allocation for this AMI investment.

Q: **Please summarize additional reasons why you urge the Commission to reject any reliance on the ICE calculation to ascribe direct customer benefits from Avista's AMI proposal.**

A: I offer the following additional concerns about relying on such survey data to determine whether Washington residential customers are willing to pay a specific dollar amount per kWh to avoid an interruption of service, thereby justifying Avista's business case for AMI deployment:

- The multiplication of any dollar amount of "value" by an estimated number of outage hours or events that will be avoided due to AMI deployment is fraught with questionable assumptions not only about the dollar amount assigned as the "value," but the Company's estimation of the results of AMI deployment in customer outage impacts. In other words, the mathematical model (multiplying the value times the number of outage hours avoided) assumes that the Company's estimates of the impacts of its projects on reducing outage hours are correct. In this case, Avista's estimate of lowering CAIDI by five percent has no basis in actual experience, but is a reflection of anecdotal information from various utilities.
- None of the survey instruments (to evaluate how questions were asked or worded and in what context) in the Berkeley Report are available for public review and analysis. According to Avista, the surveys reflect a wide range of geographical areas, including the Northwest. According to the 2015 Updated Berkeley Report, the only survey

information available from the northwest region are from 1989 and 1999[64] and the identity of those utilities and the nature of their survey instruments are unknown. None of the surveys can be examined in detail and none of them can be determined to reflect Avista's service territory, rate structure, customer base, or outage experience.

- The assigned value assumes every customer will experience the benefits of these investments and avoid the outages predicted but that is not correct. Both the 2009 Berkeley Report and 2015 Updated Berkeley Report confirm that there is a significant difference among all customer classes between summer and non-summer outage events. Avista has not offered any information in its AMI business case as to when outages will be avoided due to AMI or their length. The calculation fails to reflect the fact that not all customers will benefit from these investments, but all customers will pay for them under Avista's cost recovery proposal. In other words, under Avista's valuation methodology, all customers would have to pay for the AMI investment, but whether all customers experience the predicted outage related benefits to the same degree or frequency is not likely. The use of the dollar value derived from the averages reported in the various survey results as proposed by Avista fails to take into account the lack of knowledge of the survey respondents about the actual implications of agreeing to a numerical value when they may not experience the benefits associated with the higher degree of reliability.
- There are no comparable survey results available for natural gas service to support the Company's estimates of "value" for a cost benefit analysis for the natural gas service investments.

[64] Exhibit No. BRA-27, 2015 Updated Berkeley Report at 17.

- The "value of service" approach does not take into account the choices that customers may make when confronted with otherwise applicable bill increases, mandates and surcharges to pay for renewable energy, efficiency programs, and universal service programs, etc. In other words, the surveys solely focus on reliability and fail to ask the key questions about choices customers would need to make to pay for all the mandated requirements associated with regulated electric utility service in Washington or elsewhere.

Q: Are you aware of any other state that has accepted this valuation methodology to approve AMI investments?

A: No. While I believe that some utilities include this type of analysis in distribution reliability investment plans or to compare the potential value of one set of reliability investments to other options, I cannot recommend that the Commission make use of such a methodology to assign a hypothetical dollar amount of benefit to offset costs in an AMI business case for the reasons I have set forth here.

Q: Has the Washington Commission raised concerns about relying on this type to justify utility investments?

A: Yes. Another regulated Washington utility, Puget Sound Energy, included this type of calculation in a recent Integrated Resource Plan (IRP), attempting to justify certain investments with their purported reliance on the value assigned to improved reliability. The Commission's acknowledgement of Puget Sound Energy's filing rejected the Company's cost-benefit of reliability analysis and specifically questioned the validity or value of the DOE's ICE calculations, specifically questioning the value of data that reflects older national survey results and fails to reflect utility-specific information or

results.[65]

III. THE COMMISSION SHOULD NOT RELY ON UNQUANTIFIED AND "INTANGIBLE" FUTURE BENEFITS TO APPROVE AMI

Q: Ms. Rosentrater recommends that the Commission look beyond measurable benefits and rely on potential or unquantified benefits to support AMI deployment and cost recovery. Do you agree with her recommendation?

A: No. The Company has submitted a long list of potential benefits that might result from AMI deployment in the future.[66] This is the same list of unquantified or intangible benefits that the Company submitted in the 2015 rate case. Most or all of these potential benefits would require Avista to incur additional costs that are not identified in this proceeding or included in the estimated costs identified in the business case. For example, Avista would not be able to design, implement, and undertake consumer education and outreach for any demand response program, time-varying rate option, or prepay electric service without additional costs to integrate such programs into its billing system and conduct the necessary outreach and education that naturally flows from such programs. Furthermore, other benefits are so minor as to not be worthy of significant consideration to justify AMI deployment.[67] It would not be fair or reasonable to approve this expensive AMI investment based on vague and undefined benefits that are not actually being proposed or for which incremental costs have not been identified. The issue of unknown costs is particularly a concern since, as I have documented, the costs of AMI will exceed a reasonable calculation of benefits in this proceeding. It might be

[65] *Puget Sound Energy's 2015 Elec. & Nat. Gas Integrated Resource Plan*, Dockets UG-141169 & UE-141170, Acknowledgement Letter to Puget Sound Energy regarding Integrated Resource Plan (May 9, 2016).
[66] Exhibit No. HLR-3 at 54-56 (AMI Business Case).
[67] For example, text alerts on customer usage which Avista is going to implement whether or not AMI is installed.

appropriate to identify future potential programs and benefits in a proceeding where the quantified benefits clearly and conclusively exceed the costs, but that is not the case here.

Q: Included in this list of unquantified and undefined benefits are demand response programs, time varying rate options, and prepay electric service. What is your opinion of these programs in light of Avista's AMI proposal?

A: Unlike most utilities that propose AMI deployment, Avista is not including any specific demand response or other time-varying rate options.[68] Rather, Avista claims that the AMI system is "the necessary foundation" for future billing options.[69] Nor does Avista rely on any such programs to deliver potential customer benefits that might reduce not only individual customer bills who participate in these programs (by earning credits for demand response actions or shifting usage to take advantage of lower off-peak prices), but could also reduce electricity prices for all customers (by reducing the cost of electricity generated or purchased in the wholesale market). This is because, according to Avista, there are no apparent benefits for its Washington customers to justify the implementation of such programs at this time because, as I understand it, the current peak load is already managed due to the Company's reliance on hydropower. Since the primary benefit of direct load control, demand response, and time-varying rate programs is to reduce peak demand (not energy efficiency per se) and Avista has no immediate plans to design and offer such programs, it would not be appropriate for the Commission to "count" this type of benefit when considering the AMI business case.[70]

[68] Exhibit No. BRA-29, Avista Response to Public Counsel/Energy Project Data Request No. 55; Exhibit No. BRA-30, Avista Response to Public Counsel/Energy Project Data Request No. 56; and Exhibit No. BRA-31, Avista Response to Public Counsel/Energy Project Data Request No. 92.
[69] Exhibit No. BRA 29.
[70] Exhibit No. BRA 32, Ahmad Faruqui et. al., Regulatory Assistance Project, Time Varying and Dynamic Rate Design (July 2012) (Excerpt). The full paper is available at: http://www.raponline.org/wp-

In fact, Avista conducted an assessment of whether a time of use rate option would be valuable or cost-effective over 10 years ago, and concluded that it could not be justified in terms of benefits in generation supply costs.[71] As a result, Avista's current suggestion that ratepayers should pay for an expensive AMI investment on the slim possibility that such programs might be determined to be valuable in the future is unsubstantiated.

Finally, Avista's mention of prepay electric service is of significant concern since these programs represent a degradation of service for low income and payment troubled customers who suffer involuntary and unrecognized disconnection of essential electric service. These customers also forego the consumer protections built into the current regulatory system that ensures proper notice, opportunity for payment arrangements, retention of service with medical certifications, and other protections that are designed to prevent disconnection where possible or when it is likely to cause significant adverse impacts on household health and welfare. As a result, there is no benefit in my opinion to suggest that AMI systems might result in large-scale prepay electric service programs.

IV. AVISTA'S AMI PROPOSAL SHIFTS THE RISKS OF NONPERFORMANCE TO CUSTOMERS AND FAILS TO INCLUDE ANY PERFORMANCE STANDARDS TO MEASURE EITHER COSTS OR BENEFITS

Q: Does Avista's AMI proposal include any performance measurements or guarantees that either its estimated costs or estimated benefits are accurate?

content/uploads/2016/05/rap-faruquihledikpalmer-timevaryingdynamicratedesign-2012-jul-23.pdf. This report states, "Moreover, as the dynamic pricing pilots around the United States and elsewhere are consistently demonstrating, retail responsiveness to price rarely manifests itself as overall reductions in energy use, but almost entirely in the shifting of use in time—that is, it mostly affects demand for capacity, not demand for energy." Foreword at 6.

[71] Docket UE-060649, Avista Comments on the PURPA Standards at 2 (Aug. 11, 2006).

A: No. Avista has proposed to implement its AMI deployment and recover its costs without any commitment to ensure that its estimated costs will not be higher or that its estimated benefits will actually occur in the amount identified in its business case. While Avista has identified "key metrics" for each of its benefit categories, the actual definition of how these metrics would be developed and reported is not included. More importantly, Avista refuses to link its proposed cost and benefit estimates to its future recovery of costs.[72] As a result, customers will bear 100% of the risk that this project will be cost-effective and actually benefit customers. As I have documented throughout my testimony, the risk that costs will exceed the estimated benefits is extremely high due primarily to the unsubstantiated and unrealistic assumptions for some benefit categories for Avista's AMI proposal.

Q: Do you recommend reporting requirements and performance standards for AMI deployment by Avista?

A: I cannot reasonably recommend reporting requirements and performance standards for an investment that I have documented will not be cost-effective and for which the costs will significantly exceed any reasonable estimate of customer benefits. In other words, reporting requirements and performance standards will not cure this AMI proposal in my opinion. Moreover, Avista's request for approval of its proposed AMI investment is premature for a decision from this Commission, and reporting requirements and performance standards would not cure this defect.

[72] Exhibit No. BRA-33, Avista Response to Public Counsel/Energy Project Data Request No. 48 (asked the Company if it was proposing to recover the AMI revenue requirement with the offset equal to the estimated benefits identified in the business case and Avista responded by refusing to provide such an assurance, stating, "All costs and benefits derived from the implementation of AMI will be included in the derivation of future revenue requirements for subsequent rate periods.").

I can identify state regulatory commissions that have required reporting requirements and performance guarantees for AMI deployment, but in those situations the utility's business case documented benefits that greatly exceeded the predicted costs primarily due to the associated peak load reduction programs that relied on AMI for implementation.[73] Unfortunately, I can also document states where the regulatory commission responded to significant cost overruns for AMI deployment by subsequently allowing the utility to pass through those excess costs to ratepayers.[74] I do not recommend that the Commission start down a path of allowing Avista to recover AMI costs without a predetermined method of tracking costs and benefits and linking Avista's ability to recovery its AMI costs to actual performance. Shareholders and not ratepayers should bear the risk that costs and benefits will not appear as predicted. Of course, in this particular proposal, the benefits associated with AMI as estimated by Avista should not be relied upon to assume that the project would be cost-effective.

V. CONCLUSION

Q: Please summarize your recommendations with respect to what changes should be adopted in the AMI business case to properly reflect reasonable costs and benefits for Avista's AMI investment.

A: Based on my analysis and review of certain of the Company's alleged benefits used in its analysis for the AMI business case, I recommend that the Commission, at a minimum,

[73] For example, the Maryland Public Service Commission refused to allow cost recovery for AMI from ratepayers until its electric utilities agreed to a stakeholder driven set of reporting requirements and performance metrics to track the costs and benefits that were set forth in the respective AMI business case. An example of the quarterly reporting required for Baltimore Gas & Electric can be reviewed at the Maryland PSC's website for Case 9208: http://webapp.psc.state.md.us/Intranet/Casenum/NewIndex3_VOpenFile.cfm?ServerFilePath=C:\Casenum\9200-9299\9208\287.pdf.

[74] Oncor in Texas and PG&E in California each had significant cost overruns due to the installation of metering and/or communication equipment that was later determined not to meet required functionalities and the additional costs were passed through to ratepayers.

significantly reduce or eliminate the following benefits:

TABLE 5: RECOMMENDATIONS

Benefit	**Avista**	**Alexander**
Energy Theft	$19,768,167	$4.9 million (75% reduction)
Restoration Efficiencies	$3,158,142	0
Remote Disconnection	$12.2 million	$4.68 million (61.6% reduction)
Customer Conservation	$4,270,246	0
Avoided Outage Costs	$32,817,495	0

Q: What impact on the overall cost/benefit analysis would result from these recommendations?

A: The result of my recommended changes to Avista's estimated benefits will reduce the Company's estimated lifetime benefits from $241.7 million to $195 million. As a result, the estimated present value of the costs of $215.2 million will exceed the more realistic estimates of benefits by $20.2 million. These recommendations do not reflect my concerns as highlighted in my testimony with the questionable CVR benefit level that Avista has significantly increased for this AMI business case compared to its 2015 version, but I do recommend that the Commission not accept the Company's untested assertions in their entirety. Even if the Commission were to allow some portion of the benefit categories that I have recommended be disallowed in their entirety, it is highly unlikely that the benefit stream predicted by Avista can be relied upon to exceed the costs imposed on ratepayers.

Q: Based on your analysis and evaluation, should the Commission approve Avista's proposed AMI deployment and recovery of costs from ratepayers?

A: No. Avista's AMI proposal suffers from serious defects and constant revisions that do not reflect sound reasoning or reliable evidentiary support. Avista's failure to propose specific mechanisms by which its estimated costs and benefits will be tracked and linked directly to its future recovery of costs is particularly troubling. It is likely that Avista's costs will significantly exceed the benefits identified by Avista in several key categories that I have discussed in detail in my testimony and summarized above. Finally, the actual costs of AMI deployment are still not known with certainty. Under a reasonable set of assumptions that reduces the projected benefits, Avista's estimated costs as identified in this filing will exceed benefits by over $20 million. In such a situation, to rely on unquantified and undeveloped future programs and policies would be unreasonable.

Q: Is it important to consider that Avista is not proposing AMI deployment in its service territory in Idaho or Oregon?

A: Yes. As documented in the 2015 rate case, Avista is not proposing AMI deployment in those states because it would not be cost-effective due to the prior investment in Automated Meter Reading (AMR) in those jurisdictions, thus eliminating much of the potential savings of AMI associated with remote meter reading. While Avista proposed AMR for its Washington service territory at one time, this proposal was withdrawn. I recommend that the Commission at least require Avista to compare the costs and benefits of AMR with AMI prior to considering any further approval of AMI costs. Furthermore, it is also possible that in the future the costs of AMI for all three jurisdictions could be more cost-effective and less expensive for ratepayers if this technology was considered on a Company-wide basis. However, at this time there is no evidentiary basis for concluding that this AMI investment, as proposed, will provide sufficient value or

benefits to Washington customer to "go it alone."

Q: Is your recommendation that the Commission reject AMI technology generally?

A: No. My testimony is a reflection of the business case that Avista has submitted in this proceeding to justify imposing over $290 million for capital and O&M costs on ratepayers in return for benefits that are unlikely to offset these costs in the amount estimated. Avista has the option to proceed with AMI deployment as designed. However, Avista's shareholders should bear the risk that the costs are prudently incurred and that the operational cost savings will occur as predicted to offset the costs. Until Avista can provide evidence of actual performance and link its recovery of costs to this performance, I recommend that the Commission eliminate AMI costs from rates and reject the Company's assertion that the benefits will exceed the costs.

Q: Does this conclude your testimony at this time?

A: Yes, it does.