Exhibit No. ___ (DN-1T)
Dockets UE-150204/UG-150205
Witness: David Nightingale

BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION

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

TESTIMONY OF

David Nightingale

STAFF OF
WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION

Recovery of Costs for Smart Grid

July 27, 2015

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I. INTRODUCTION

Q. Please state your name and business address.

A. My name is David Nightingale. My business address is 1300 S. Evergreen Park Drive S.W., P.O. Box 47250, Olympia, WA 98504.

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

A. I am employed by the Washington Utilities and Transportation Commission (Commission) as a Senior Regulatory Engineering Specialist in the Conservation and Energy Planning Section of the Regulatory Services Division. I have held that position since February 2009.

Q. What are your duties as a Senior Regulatory Engineering Specialist?

A. My duties involve the analysis of resource acquisition prudence, requests for proposals for acquisition of new resources, smart grid implementation, greenhouse gases emissions performance standard compliance, compliance with the energy conservation and renewable portfolio standards of the Energy Independence Act (EIA), and energy conservation program development and implementation.

Q. Please describe your education and relevant employment experience before you joined the Commission.

A. I hold a Bachelor of Arts degree in Business Administration from Western Washington University, Bellingham. I also hold a Bachelor of Science degree in

Energy Engineering from the University of Washington, Seattle, where my studies focused on fluid dynamics, thermodynamics, and alternative energy. I performed research and designed projects, including testing residential conservation standards in four fully-instrumented model homes, cost-effectiveness of residential solar hot water heating, and design of a small wind turbine system on Orcas Island.

From 1987 to 1991, I worked for RW Beck and Associates, an engineering consulting firm in Seattle. My responsibilities included county and state waste and recycling system planning, landfill development, and waste-to-energy (renewable biomass) project evaluation and analysis for clients in Washington and Alaska. From October 1991 through January of 2009, I worked for the Washington State Department of Ecology in various capacities; as a planner, engineer, technical unit supervisor, statewide technical-lead, and policy Staff. My projects included technical review and regulatory compliance of renewable biomass projects, such as landfill gas to energy projects, variously-fueled pyrolysis plants and proposals, and fluidized-bed and mass-burn waste-to-energy plants. I was also responsible for technical review and regulatory assistance for coal combustion products recycling and disposal options for TransAlta's Centralia power generation plant, as well as combustion products disposal for Avista's Kettle Falls wood-fueled electric generating plant.

In the past few years I have increasingly focused on smart grid technologies and issues of implementation for smart grid and variable resources. This has included:

- Spokane site visit with Avista staff to examine smart-grid installation sites that were part of their ARRA grants. This included tours of Avista's training center

and substation, meter shop, field installations of smart distribution devices, control center communications and software upgrades.

- Completed the winter-term 2015 graduate course "*Designing the Smart Grid for Sustainable Communities*" offered by Portland State University.
- Attended the September 2014 *Energy Storage System Peer Review Update* regarding stationary battery research and bench-scale and pilot projects sponsored by Dept. of Energy.
- Attended *Offshore Wind Conference* October 2014 sponsored by American Wind Energy Association.
- Attended February 25, 2015, *Pacific Northwest Demand Response Project Meeting* sponsored by the Northwest Power and Conservation Council.

II. SCOPE AND SUMMARY OF TESTIMONY

Q. Please explain the purpose of your testimony.

A. My testimony addresses the proposed Avista's request for cost recovery for the future acquisition of Advanced Meter Infrastructure (smart meters or AMI) through most of Avista's Washington system. This pro forma adjustment is also discussed in the testimony of Staff witness Mr. Hancock. I recommend the Commission hold a workshop to review the smart grid related elements of the 2007 Policy Statement in light of today's technologies and societal concerns.

Q. Please summarize your conclusions regarding the cost recovery of future expenditures to acquire smart meters?

A. I conclude that the Company's request for approval of expenditures for AMI is not ready. The Commission should exclude these yet-to-be-incurred expenses from this rate case because the AMI is not yet used and useful for service in Washington. Therefore, the request for AMI cost recovery in pro forma adjustment 4.02 is premature and should be excluded from the revenue requirement determined in this rate case.

III. COST RECOVERY FOR AMI

Q. What is Avista's proposal regarding AMI cost recovery in this rate case?

A. Avista's pro forma adjustment 4.02 includes the planned costs for deploying AMI in Washington.[1]

Q. Do you agree that Avista's estimated cost for AMI in pro forma adjustment 4.02 be allowed for recovery?

A. No. Avista's request for inclusion of the cost of AMI is not yet ripe for decision-making by the Commission because the equipment has not yet been purchased or put into service. No smart meters have been purchased or installed outside of the Pullman smart grid pilot project. In fact, the Company is still in the process of

[1] Avista's proposal in this case excludes the Pullman service territory, where AMI was previously installed as a pilot project.

developing a request for proposals to bring on board experts to assist the utility in procuring smart meters.

The Company's request for cost recovery is contrary to a fundamental principle embodied in statute at RCW 80.04.250(1) that calls for the Commission to "determine the fair value for rate making purposes the property of any public service company *used and useful* for service in this state ... ." The absence of any actual costs or even RFPs documenting projected costs shows that Company's proposal lacks sufficient evidence that the property is used and useful. The recovery of costs for AMI therefore should not be allowed into rates.

Q. How has the term "used and useful" been interpreted?

A. According to the Supreme Court of Washington, "RCW 80.04.250 empowers the Commission to determine, for rate making purposes, the fair value of property which is *employed for service in Washington and capable of being put to use for service in Washington.*"[2] If the property has not been "employed for service," such as AMI technology that has yet to be installed, it is not used and useful. Further, the Commission has explained that to meet the state's used and useful standard, the Company "must demonstrate tangible and quantifiable benefits to Washington of resources in the system before [the Commission] will include the resources in rates."[3] In particular, the test is "whether [the resource] provides *quantifiable direct*

[2] *People's Org. For Washington Energy Res. v. State of Wash. Utilities & Transp. Comm'n*, 101 Wn. 2d 425, 430, 679 P.2d 922, 925 (1984) (Emphasis added).
[3] *Wash. Utils. & Transp. Comm'n v. Pacific Power & Light Co.*, Docket UE-050684, Order 04 (Apr. 17, 2006), ¶ 68.

or indirect benefits to Washington commensurate with its cost."[4] Once a decision is made to include the cost of a resource in rate base, the "need, deliverability and least cost" criteria come into play.[5] These criteria determine whether a portion or all of the cost of a resource is included in rate base. Because the AMI proposal in this rate case anticipates future deployment, there have been no benefits, direct or indirect, accrued to Washington customers from AMI deployment. Consequently, those future deployments are not yet used and useful.

Q. In addition to Avista's inability to show that the AMI deployment is used and useful, are there problems in "determining the fair value" of the smart grid proposal as required in statute?

A. Yes. To approve cost recovery the Commission must be able to "determine the fair value" associated with a purchase.[6] Without a current purchase price for AMI through a competitive bid process, let alone the known and measurable costs of installation, as well as some maintenance history, it is not possible to determine the cost, benefits, or the fair value of AMI in this rate case.

Q. Can you provide an example of how the initial planning level estimated costs could present problems?

A. The AMI Business Case has a one line total for the preliminary estimated capital cost of the "Electric Meters," $33.8 million.[7] This estimate is not based on any actual

[4] Docket UE-050684, Order 04 ¶ 68.
[5] *Id.* footnote 89.
[6] RCW 80.04.250(1).
[7] Testimony of Don F. Kopczynski, Exhibit No.___(DFK-5T) at 22.

costs, as the Company has not yet received bids for this equipment. In this preliminary stage, the Company has only solicited responses from consultants to assist them in developing an AMI request for proposals. It is highly likely that the actual costs for these AMI meters will not be $33.8 million.

If these estimated costs were approved in rates now, and the estimates proved to be inaccurate, either the Company or its customers would bear the risk associated with the actual costs. For example, to the extent that actual costs are estimated too low, the Company is at risk of having to cover excess costs, or attempt to recover cost over-runs from customers at a later date. If the estimated costs prove to be too high when compared to actual costs, customers are at risk of paying more than needed in rates. Consequently, the cost estimates presented by the Company are too speculative to be useful for ratemaking purposes. When the project's e actual costs are determined, and Staff and other parties have had the opportunity to fully analyze these costs, the decision can be made as to whether the AMI project's costs are known and measureable.

Q. What else, besides costs, need to be considered in determining the fair value of the AMI proposal?

A. To determine the fair value of any equipment purchase or smart grid investment, the benefits also need to be considered. Just as with costs, Avista presented an initial planning level estimate of the multiplicity of potential benefits that the Company might expect. Nonetheless, as no equipment has been selected, purchased, or

installed, it is again premature for the Commission to consider the speculative benefits of full-scale AMI deployment.

Q. How and when are the expected benefits likely to be realized for AMI in comparison to a traditional generating resource investment?

A. A traditional generating resource provides quantifiable benefits immediately upon going into service. The energy output of traditional utility-scale thermal and wind systems consists of mature technology whose output is easily characterized and modeled financially, providing a high level of certainty at the point of facility acceptance.

The estimated AMI benefits shown by Mr. Kopczynski's direct testimony, in his Illustration No. 6, are split between company and customer benefits.[8] The majority of Company estimated system benefits are due to three AMI functions: reduced meter reading costs, the ability to remotely connect and disconnect customer meters, and the ability to reduce costs by more efficient outage management. The customer benefits are primarily related to reduced after-hours service tariff fees and energy efficiency improvements.[9] These benefits will only be realized over time as the system operates in a new, more efficient way. In fact, the full AMI deployment is scheduled for a six year roll out from 2015 to 2019.[10]

[8] Kopczynski, Exhibit No. ___ (DFK-1T) at 15:11-20.
[9] Kopczynski, Exhibit No. (DFK-1T) at 15:11-20.
[10] Kopczynski, Exhibit No. (DFK-1T) at 19:14-22.

Q. What sort of factors will influence the realization of AMI benefits?

A. The nature of the AMI benefits will depend on the diligence with which Avista follows through with implementing all the planned smart grid technology applications and related communications tools on their grid. Importantly, these applications and tools must interface effectively and efficiently with customers to produce the projected benefits over time. On the other side of the meter, a customer must be willing and able to take advantage of the advanced services offered by the Company. Without affirmative action on both sides of the meter, the potential benefits of AMI may never be realized.

This is different from generating resources where traditional technologies provide known quantities of energy with known reliability once the project is completed. With AMI technology, as an emerging technology reliant on operator and customer interactions with the grid, the benefits are less certain to be immediately available or as reliable. As a result, AMI benefits are less well understood and will take time to verify after implementation. Further, AMI benefits depend on the economy of scale created by the coordination and synchronization of many pieces effectively communicating in an integrated network.

All of this taken together illustrate the variable nature, complexity, and overall difficulty in accurately predicting benefits of AMI deployment as compared to traditional utility-scale generating resources. The actual benefits may fall short, meet, or exceed expectations. While pilot projects, up-front performance and financial risk mitigation can narrow the variance, the results will only be known after

the AMI upgrades have been implemented and operating results have been verified using actual AMI performance.

Q. Does Mr. Kopczynski characterize the state of knowledge regarding costs and benefits the AMI project as uncertain?

A. Yes, he does. Mr. Kopczynski's direct testimony is supported by his Exhibit DFK-5T, the Washington Advanced Metering Project Business Case, (AMI Business Case) and related workpapers. Mr. Kopczynski characterizes this report as only providing "initial estimates" of capital and operating costs.[11] In short, Avista's AMI Business Case is essentially a planning level report that summarizes national trends, and Avista's limited experience with smart grid deployment and AMI to date.

Mr. Kopczynski's testimony is consistent with a planning level estimate as it fails to address how the Company would accomplish these various objectives, including the specific steps necessary to ensure completion on time and on budget. He does not address the mitigation of risks facing the Company as it attempts to accomplish these tasks. Each task carries with it a specific set of risks that could delay or increase the cost of the project. He likewise does not address what circumstances might result in shortcomings in projected benefits after implementation or how such shortcomings might be mitigated.

He states that the AMI Business Case is a report that summarizes the project and "describes the expected benefits associated with the project, and provides an initial estimate of the project capital investments and operating costs."[12] For

[11] Kopczynski, Exhibit No. ___ (DFK-5T), page 22.
[12] *Id.* at page 12, lines 10-11.

purposes of ratemaking, *estimated* benefits are not enough to warrant any level of approval - let alone approval of the full build-out of the Company's proposal over a period of many years.

Q. If Mr. Kopczynski described how Avista plans to mitigate the risks associated with the project, would that be sufficient for Staff to recommend allowance of AMI into this rate setting proceeding?

A. No. The projected costs and benefits would still be too speculative for Staff to recommend AMI cost recovery in this rate case as they cannot be reliably estimated prior to implementation.

Q. How does Avista's document called "Capital Project Business Case" describe the business risk of the Washington AMI project?

A. The Company describes the business risk for the Washington AMI project as "[m]oderate certainty around cost, schedule and resources."[13] Even the moderate risk of failure raises significant questions as to the efficacy of the Company's proposal, and these questions were not addressed by the Company.

Q. Are there examples elsewhere in this case where the Company's estimates of expected costs or benefits have proven unreliable?

[13] Avista response to Staff Data Request 63 at 1.

A. Yes, as shown by Staff witnesses Mr. Gomez and Mr. Hancock, prior company projected expenses have been exceeded by significant amounts on various projects. Project Compass, for example, has experienced large cost over-runs.

Q. In the past, when have rates been approved for new plant for Avista?

A. Most recently, in 2012 Avista brought a fully-executed power purchase agreement with buy-out options to the Commission for approval in Docket UE-120436. All costs and benefits were known and measurable when this new generating resource was allowed into rates.[14]

Q. What do you recommend regarding Avista's request for AMI cost recovery?

A. I recommend that the Commission reject pro forma adjustment 4.02 for AMI for the reasons stated above, this request is not ripe for decision-making by the Commission.

Q. Looking ahead, if Avista chooses to implement AMI in Washington, what might they expect to demonstrate to be allowed to recover the associated costs?

A. To recover costs from AMI expenditures, the Company needs to demonstrate known and measurable costs and benefits that can be verified as cost-effective after deployment. In addition, I would also expect the Company to provide evidence consistent with Commission policy as described further in the next section of my testimony.

[14] *Wash. Utils. & Transp. Comm'n v. Avista Corp.*, Docket UE-120436, Exhibit No.__CT (DN-1CT), at 5:19 through 6:7.

IV. COMMISSION POLICY STATEMENT REGARDING AMI COST RECOVERY

Q. What prior policy statements has the Commission made regarding smart meters?

A. In 2007 the UTC Commission issued an Interpretive and Policy Statement in Docket UE-060649 (2007 Policy Statement).[15] In the 2007 Policy Statement, the Commission addressed the "broad range of factors" it would consider when "examining advanced metering and rate design proposals."[16]

While the Commission did not identify any specific mandatory method to evaluate smart meter investments, it recognized that:

> The factors most pertinent to any case, and the manner in which such factors are appropriately evaluated, will depend on the specific details of proposals and may change over time with changing circumstances, loads and technologies.[17]

Q. What specific factors were mentioned in the 2007 Policy Statement?

A. "Examples of relevant factors the Commission may consider include, but are not limited to:

- Meter and installation costs.
- Administration costs including data storage, billing, and other associated functions to enable time-of-use pricing.
- Communication and marketing costs.
- Administrative savings associated with meter reading or other utility functions.
- System capacity and energy benefits: Value of operational changes in utilization of generation, transmission and distribution resources as a result of

[15] *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 (August 23, 2007) ("2007 Policy Statement").
[16] 2007 Policy Statement, at 10-11.
[17] *Id.* at 10.

direct utility load-control, or reasonably expected customer actions to conserve or shift the timing of energy usage.

- Equity in the distribution of any bill savings or costs among the customer classes, including the costs and benefits incurred or received by customers changing energy use patterns in response to time-of-use rate programs.
- Economic benefits that may be associated with the integration of new end-use loads such as recharging batteries in electrically powered vehicles.
- Economic benefits that may be associated with deferring investments in new delivery or generation capacity.
- Economic benefits that may be associated with additional information gathered through time-of-use metering systems (e.g., load research data).
- Environmental effects, positive or negative, of utility direct load-control programs, or customer load-shifting and conservation in response to time-of-use programs.
- Effects, if any, from advanced metering capability on existing consumer protection policies and programs relying on direct utility contact with customers.
- Protection of customer information and privacy."[18]

Q. If this list were developed today, would this list likely expand to include other factors?

A. Yes. The list would likely include cyber-security issues and other factors that depend on the specific smart technology being considered or evaluated. The 2007 Policy Statement directs utilities to prepare for changing circumstances, loads, and technologies. There are many new opportunities and challenges associated with emerging smart grid technologies and applications. For instance, in evaluating the potential benefits of energy storage batteries and synchrophasers a utility would need to consider the benefits of grid voltage regulation and grid stability respectively.

[18] *Id.* at 10-11.

Q. Did the Commission's 2007 Policy Statement determine that electric utilities under its jurisdiction should install smart meters?

A. No, it did not. Rather, the Commission found that in 2007 the current state of technology and costs when examined along with the demonstrated benefits did not motivate the Commission to generally require installation of time-based meters and communications devices so that customers could participate in time-based pricing rate schedules.[19] However, it did not close the door to investments in AMI, and concluded that the Commission "will continue to evaluate smart metering and time-of-use rates on a case-by-case basis ...."[20]

Q. Should this list of factors or an amended list of factors dissuade Avista from consideration of AMI or other smart technologies?

A. No. In fact, this list of factors provides useful guidance to Avista as it examines the costs and benefits of smart grid technologies that are potentially useful and cost-effective to implement in some or all of Avista's Washington service territory.

V. RECOMMENDATIONS

Q. What does staff recommend regarding Avista's inclusion of cost recovery in pro forma adjustment 4.02 regarding AMI in this docket?

A. Because AMI technology has yet to be purchased or installed and costs and benefits are not known, Staff recommends exclusion of pro forma adjustment 4.02 as AMI is

[19] *Id.* at 10: 31.
[20] *Id.* at 12: 35.

not yet shown to be used and useful. This is in support of Mr. Hancock's Staff testimony.

Q. What does staff recommend regarding Avista's future smart grid planning, implementation, and prudency evaluation?

A. Staff recommends that the Commission initiate a workshop to review the smart grid related elements identified in its prior 2007 Policy Statement in light of today's technologies and societal concerns. This recommendation is intended to support the ongoing exploration and implementation of cost-effective smart grid technologies and programs.

Topics which may be useful to consider in such a workshop could include:

1) The potential to extend or modify annual smart grid technology report requirements under WAC 480-100-505, which is set to expire in 2016; and

2) Requirements for utilities to issue RFPs for a smart grid potential assessment that serves the same function as the conservation potential assessment described in WAC 480-109-100(2),

Q. Does this conclude your testimony?

A. Yes.