BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

DOCKET NO. UE-200900

DOCKET NO. UG-200901

DOCKET NO. UE-200894

(Consolidated)

EXH. HR/LL-2

HEATHER L. ROSENTRATER

LARRY D. LA BOLLE

REPRESENTING AVISTA CORPORATION

Educational Background, Experience and Qualifications

Larry D. La Bolle

I earned a bachelor's degree in Fisheries Resources from the University of Idaho in 1980, and a M.S. degree in Fisheries Science from Oregon State University in 1984.

I was employed by the Idaho Department of Fish and Game from 1984 – 1990 as a research biologist and regional fishery manager.

I joined Avista (then, The Washington Water Power Company Company) in 1990, and served in a range of technical and project-management roles that included facility siting, public involvement and hydropower licensing. In subsequent assignments, I served as director of community and economic development, general manager of Avista/Chelan, LLC, and director of electric and natural gas operations, where I also formed and initially led the Company's asset management group. From 2005-2018 I served as director of federal and regional affairs, and since that time, have served in my current role leading the Company's electric reliability strategy. I have extensive experience in state and federal regulatory matters, including representing the Company in a variety of regulatory processes, preparation of reports, testimony and exhibits, sponsoring testimony as a witness in numerous rates proceedings, and more recently, considerable experience assisting with discovery in this proceeding.

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION STAFF
RESPONSE TO DATA REQUESTS

DATE PREPARED: May 13, 2021
DOCKETS: UE-200900-901/UE-200894
REQUESTER: Public Counsel

WITNESS: Amy I. White
RESPONDER: Amy I. White
TELEPHONE: 360-664-1247

REQUEST NO. 4:
RE: AMI

Please refer to Response Testimony of Amy I. White's, Exhibit AIW-1T at 7:10, which states, regarding a recent Commission decision regarding AMI, "Because PSE had not yet demonstrated AMI's benefits, the Commission authorized PSE to recover the return of its investment in AMI, but required it to continue to defer the return on that investment." Please refer also to the Response Testimony of Amy I. White's, at 8:21, which states, regarding AMI, "Avista's analysis (Joshua D. DiLuciano, Exhibit JDD-2) showed benefits in five of the six use cases with the sixth, data disaggregation, being integrated among the other benefits."

a) Confirm that "Avista's Analysis" (DiLuciano, Exhibit JDD-2) consists of benefit projections, and do not demonstrate actual AMI benefits delivered to customers currently. If this cannot be confirmed, please explain.

b) Ms. White's testimony implies that "Avista's Analysis" of AMI benefits satisfies the Commission precedent that AMI benefits must be demonstrated before a return on AMI investment is awarded. Please confirm this implication. If this implication is not confirmed, please explain any other basis for Ms. White's recommendation that Avista be awarded a return on capital as well as a return of capital (Ms. White's testimony generally, at 7–12, reflective of Ms. White's recommended adjustments) despite the fact that Avista has yet to demonstrate many AMI benefits claimed in its cost benefit analysis.

c) Please explain how Ms. White considers Avista AMI benefit projections (DiLuciano, Exhibit JDD-2) to constitute an adequate demonstration of AMI benefits.

RESPONSE:

a. Exhibit JDD-2 includes calendar years 2016 through 2037 which are detailed in the Company's workpaper 200900-200901-DiLuciano-AVA-JDD-WP-AMIBenefits-10-30-20.xlsx. Since the workpaper contains data from as early as 2016, at least four years' benefits have actually occurred and are reflected in Avista's calculations. Certainly, the reduction in meter reading staff; repairs to meter bases accomplished as meters were updated; actual savings from theft detection and unbilled usage, for example, are among the benefits that are known and measurable numbers over the time period 2016-2019. Regardless, given the way that the Commission applies the prudence standard, Staff does not believe that its review should ignore future benefit projections any more than it should ignore future projections of costs. For example, a utility investment that generates $100 in current benefits with future cost projections of $1,000,000,000 would seem to be imprudent.

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b. Staff's logic in allowing a return on investment relies on the following Commission orders:

1. Dockets UE-170327 and UG-170328 Order 01, ¶ 11 (Sept. 14, 2017): "First, as the Company's AMI project is deployed, certain components will begin to serve customers prior to full build-out, which creates an important distinction from most major plant additions – such as generation assets – that are not typically useful until fully constructed. The nature of the technology at issue here, which will become used and useful on a rolling basis, is distinguishable, and does not lend itself to traditional accounting treatment. Granting the Company's Amended Petition, which allows for deferral of only depreciation and carrying charges, will appropriately mitigate regulatory lag for a project that provides incremental benefits to customers." (emphasis added.)

2. Dockets UE-190529, UG-190530 et al, Final Order 08/05/03, ¶155-157 (July 8, 2020): "155 We share Public Counsel's concern, however, that PSE has not yet satisfactorily demonstrated the benefits of the AMI system as a whole. The Company represented at hearing that it is planning to pursue additional benefits, but it has yet to put forth any formal plan or proposal (emphasis added). Instead, the only benefits the Company has cited are billing functions, voltage management – which cannot yet be adequately demonstrated – and remote disconnection capability. As such, PSE has not yet made a showing that would justify authorizing the Company to recover a return on any portion of its AMI investment made thus far. Accordingly, we allow into rates the test year AMI costs, deferral for the return of, and pro forma adjustments through December 31, 2019, but continue to require PSE to defer recovery of the return on these investments in a deferral account, FERC Account 186 – Miscellaneous Deferred Debits for both Electric and Natural Gas Operations, per the terms of the Settlement Stipulation in the 2018 ERF.

156 Going forward, the Commission will evaluate the portion of AMI investment for which PSE seeks recovery in rates, but will require the continued deferral of the recovery of the return on each portion of the investment until the AMI project is complete (emphasis added). Our decision recognizes that PSE will not be able to demonstrate a significant portion of AMI benefits until the system is fully deployed. In light of these circumstances, we will reserve a final determination of prudency on the project as a whole until the AMI installation is complete and all customer benefits can be presented for evaluation. The final prudency determination

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> thus rests on PSE's ability to live up to its promises of multiple customer benefits.
>
> 157 At hearing, the Commission referred PSE to a Utility Dive article entitled "Most utilities aren't getting full value from smart meters, report warns," as well as the report the article referenced, which concluded that "[m]any utilities are underexploiting AMI capabilities and attendant benefits, thus missing a key tool to deliver value to their customers and systems."131 We expect PSE to take great strides to ensure that both the Company and its customers receive maximum value from its AMI system, and we expect PSE will be able to demonstrate that value to the Commission in the near future. We encourage the Company to carefully review the report referenced in the Utility Dive article, which examined whether utilities are leveraging AMI by capturing data on six use cases: time of use rates, real-time energy use feedback for customers, behavior-based programs, data disaggregation, grid-interactive efficient buildings, and CVR or volt/VAR optimization. The Commission is interested in PSE's analysis of the six use cases and whether or how they are applicable, as well additional information or metrics (emphasis added) that demonstrate AMI's benefits to customers. Although we share PSE's optimism about the benefits AMI will ultimately produce, we reiterate our expectation that PSE will maximize those benefits."

In contrast to PSE in its last general rate case, Avista has "put forth a formal plan or proposal" for studying and demonstrating benefits, and these benefits have already resulted in lower costs for customers.

Avista's AMI project is a material capital project with a significant lifespan. Only the upfront capital costs can be exactly known and measurable. Some cost reductions are exactly known and measurable as well, but future cost reductions must be projected based on the current level of savings. The future benefits to be gained as the system matures must also be projections at this point in time. The Commission ordered PSE to defer costs until the completion of its AMI project, a point that Avista has now reached. Finally, Avista's exhibits demonstrate the Company has thoughtfully analyzed not only the six use cases referenced in the Utility Dive article but also at least 24 other metrics pertinent to cost savings or potential benefits.

c. On reviewing Avista's workpaper titled 200900-200901-DiLuciano-AVA-JDD-WP-AMIBenefits-10-30-20, Staff classified the 30 items studied by the company as either projected cost savings, which Staff considers as based on actual, known costs, or projected new benefits, which are yet to mature as the AMI system becomes fully

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active. The projected cost savings have a net present value (NPV) of approximately $128 million. Staff believes these projected cost savings are highly likely to occur. With the NPV of $122.6 million in capital cost cited in Table 1-2 of Exh. JDD-2, it appears the project more than breaks even over time with the projected cost savings alone. The projected new benefits' NPV was about $91 million. Further, workpaper 200900-200901-DiLuciano-AVA-JDD-WP-AMIBenefits-10-30-20 does not include a further estimated benefit for time-of-use rates of approximately $19 million, which is delineated in Avista's 2020 Integrated Resource Plan. These estimates together total another $110 million; if only one-third came to fruition, additional benefits of at least $36 million would be realized. Staff certainly does not expect all projected benefits to be fully realized as of year one of the system's complete build-out and doubts the Commission will hold Avista to that standard either.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/02/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	David Howell
REQUESTER:	Public Counsel	RESPONDER:	David James
TYPE:	Data Request	DEPT:	Wildfire Resiliency
REQUEST NO.:	PC-074	TELEPHONE:	(509) 495-4185
		EMAIL:	dave.james@avistacorp.com

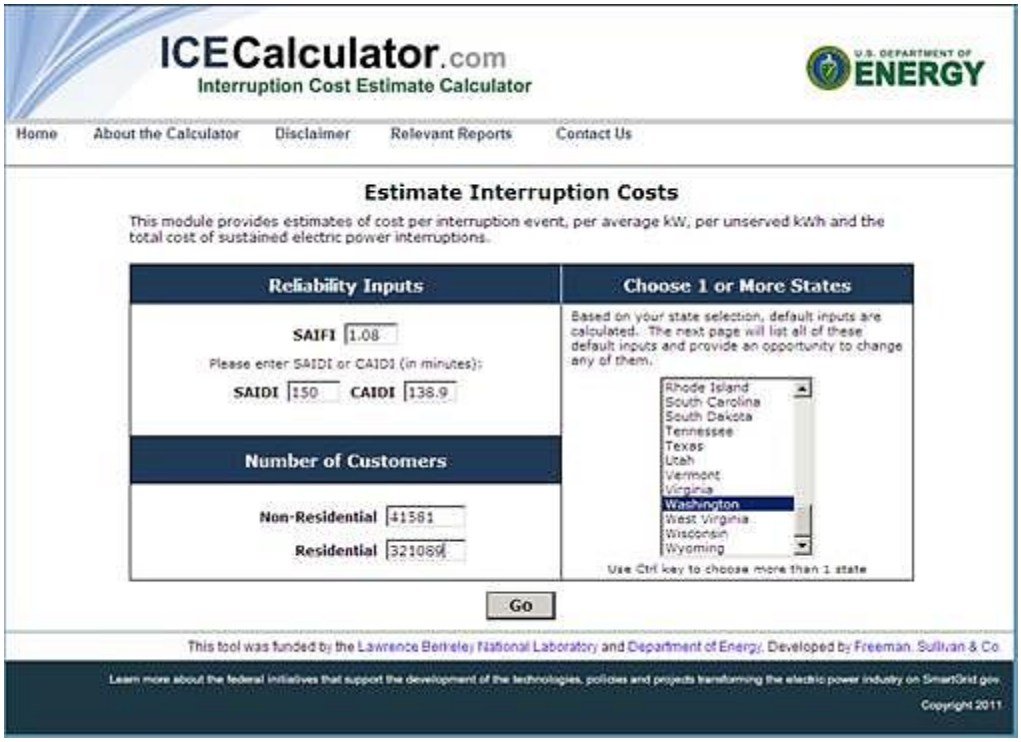
RE: Wildfire Plan

REQUEST:
Please refer to the footnote on David R. Howell, Exhibit DRH-2 at 14, which states "Based on Avista Asset Management Risk Analysis Standard (service interruption cost = $63 per customer* hour)". Provide all business cases, worksheets, workbooks, Cost-Benefit Analyses, models, or any other calculations, presentations, requests, standards, or other documentation in support of this "Asset Management Risk Analysis Standard" of $63 in service interruption cost per customer per hour. If any of these calculations are informed by the US Department of Energy's Interruption Cost Estimator tool, provide all values Avista input into the ICE tool.

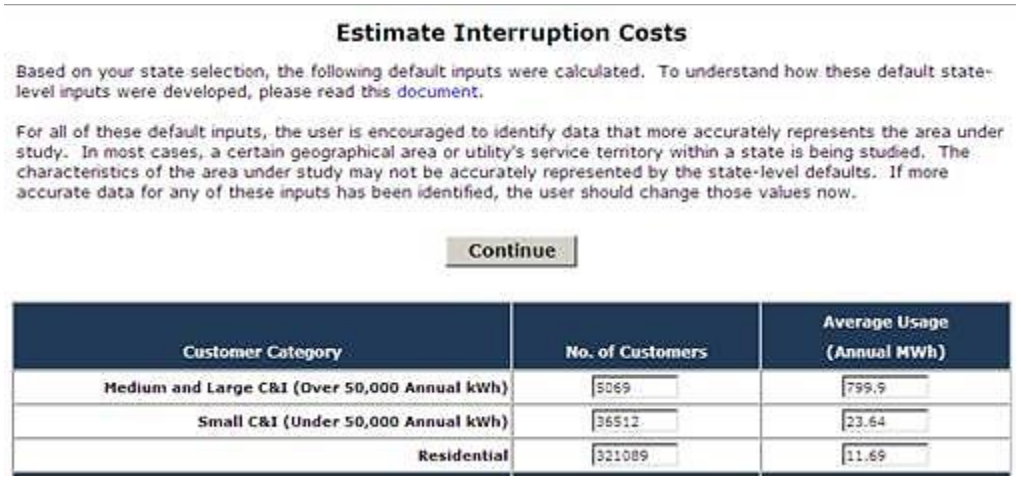
RESPONSE:
The average customer cost per outage hour of $63 used in the hypothetical example referenced in the request was developed by the Company as part of its Asset Management Standards using the Interruption Cost Estimator (ICE) tool. While the inputs to that early version of the model do not comport with later formats of the Interruption Cost Estimator model, the Company has made more recent estimates of the average customer cost per hour, such as the value of $91.24 reported in our 2016 Advanced Metering Business Case (Exhibit No. HLR-3, Appendix B, pages 12-17 / Dockets UE-160228 and UG-160229, Consolidated).

Estimating the avoided customer losses associated with reduced outage duration requires two principal steps. Initially, Avista estimated the expected reduction in the average duration of service outages, and next used the Department of Energy's "Interruption Cost Estimator" Model (ICE) to assign a financial value to the expected incremental reduction in outage duration.

To establish a reasonable expectation for a reduction in outage duration, Avista first researched the results reported by other utilities for similar improvements. Based on those results, combined with our experience of our electric system, service territory, and work practices, we elected to use a conservative value of 5% for the expected reduction in outage duration. This value was also reported in a 2011 study by The National Association of Regulatory Utility Commissioners (NARUC). To estimate the value associated with a 5% reduction in outage duration, Avista used the ICE model to quantify the cost to our customers based on our system and customer average outage frequency and duration. A screen shot, below, shows the initial model inputs used for this calculation. Note that the values shown are updated as the Company receives new information.



The next inputs are the number of Avista's electric customers by customer group, including the average annual use for each group, as shown below.



Customer Category	No. of Customers	Average Usage (Annual MWh)
Medium and Large C&I (Over 50,000 Annual kWh)	5069	799.9
Small C&I (Under 50,000 Annual kWh)	36512	23.64
Residential	321089	11.69

The next step involves the classification of the Company's Commercial and Industrial customers by business type as shown below.

C&I Industry Percentages	Medium and Large C&I	Small C&I
Agriculture, Forestry and Fishing	.27	1.54
Mining	1.35	.3
Construction	2.43	12.62
Manufacturing	16.17	4.29
Transportation, Communication & Utilities	5.66	4.86
Wholesale & Retail Trade	21.29	18.45
Finance, Insurance & Real Estate	5.93	11.07
Services	46.9	46.67
Public Administration	0.0%	0.0%
Unknown Industry	0	0.19
Total (must add to 100%)	100.0%	100.0%

Additional data is provided for the Company's commercial and industrial customers pertaining to the percentages having backup power supply and power quality equipment, as shown below.

Percent of C&I Customers with:	Medium and Large C&I	Small C&I
No or Unknown Backup Equipment	54.4%	70.4%
Backup Generation or Power Conditioning	37.2%	26.2%
Backup Generation and Power Conditioning	8.4%	3.4%
Total (must add to 100%)	100.0%	100.0%

Detailed information is also included for the Company's residential customers using applicable regional census data, as shown below.

Residential Customer Characteristics	Estimate	
Median Household Income	41223	
Residents per Household 0-6 Years Old	0.24	NOTE: These values are not percentages. These are the average number of residents per household within each age range.
Residents per Household 7-18 Years Old	0.44	
Residents per Household 19-24 Years Old	0.20	
Residents per Household 25-49 Years Old	0.96	
Residents per Household 50-64 Years Old	0.39	
Residents per Household 65+ Years Old	0.28	
Percent with Medical Equipment	5.1%	
Percent with Backup Generation	6.5%	
Percent with Recent Prolonged Outage	100	NOTE: Percent that have experienced an outage of longer than 5 minutes with the past year.

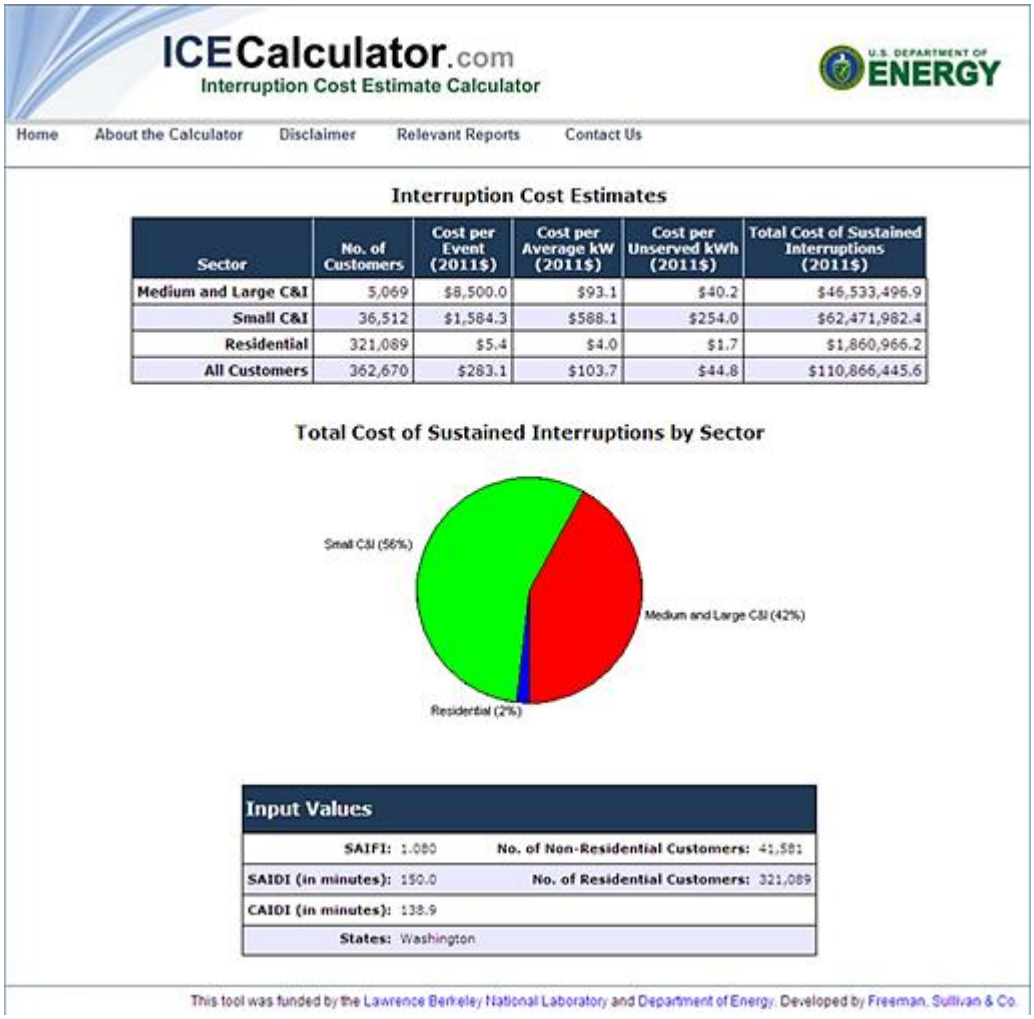
Additional inputs represent the percentage of housing types for residential customers, as shown below.

Residential Housing Percentages	Estimated Percentage
Detached	66
Attached	5.6
Apartment / Condo	19.7
Mobile Homes	8.7
Manufactured Housing	0.0%
Other or Unknown	0
Total (must add to 100%)	100.0%

Finally, specific outage data from the actual outage events on Avista's system is input into the model, reflecting the distribution of outages throughout the day, the week, and the year, showing also those outage events that were preceded by some type of advance warning. This distribution data is shown below.

Distribution of Outages by Time of Day	Estimated Percentage
Morning (6 am to 12 pm)	53.7
Afternoon (12 pm to 5 pm)	25.9
Evening (5 pm to 10 pm)	10.4
Night (10 pm to 6 am)	10
Total (must add to 100%)	100.0%
Distribution of Outages by Time of Year	**Estimated Percentage**
Summer (Jun thru Sep)	35.7
Non-Summer (Oct thru May)	64.3
Total (must add to 100%)	100.0%
Distribution of Outages by Time of Week	**Estimated Percentage**
Weekday (Mon thru Fri)	84
Weekend (Sat/Sun/Holiday)	16
Total (must add to 100%)	100.0%
Distribution of Outages by Advanced Warning	**Estimated Percentage**
Advanced Warning Provided	35.7
Advanced Warning Not Provided	64.3
Total (must add to 100%)	100.0%

The ICE model uses this data to calculate the estimated value of customer losses associated with the outages on Avista's system as shown below. The average cost per outage event for medium and large commercial and industrial customers is $8,500; for small commercial and industrial customers is $1,584; and for residential customers is $5.40. The average cost for all customers of all types for each outage event they experience is $283.10.



ICECalculator.com
Interruption Cost Estimate Calculator

U.S. DEPARTMENT OF ENERGY

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Interruption Cost Estimates

Sector	No. of Customers	Cost per Event (2011$)	Cost per Average kW (2011$)	Cost per Unserved kWh (2011$)	Total Cost of Sustained Interruptions (2011$)
Medium and Large C&I	5,069	$8,500.0	$93.1	$40.2	$46,533,496.9
Small C&I	36,512	$1,584.3	$588.1	$254.0	$62,471,982.4
Residential	321,089	$5.4	$4.0	$1.7	$1,860,966.2
All Customers	362,670	$283.1	$103.7	$44.8	$110,866,445.6

Total Cost of Sustained Interruptions by Sector

Input Values			
SAIFI:	1.080	No. of Non-Residential Customers:	41,581
SAIDI (in minutes):	150.0	No. of Residential Customers:	321,089
CAIDI (in minutes):	138.9		
States:	Washington		

This tool was funded by the Lawrence Berkeley National Laboratory and Department of Energy. Developed by Freeman, Sullivan & Co.

The model results are used to calculate the average cost to all classes of Avista customers for 60 minutes of outage time, which is $91.24. Using the average of the 2010 through 2014 results for Avista's Customer Average Incident Duration Index (CAIDI) of 138.9 minutes, results in an average annual per customer cost of $211.22. Reducing this amount by 5% to account for the expected reduction in outage duration reduces the per customer annual cost to $200.66, for a savings of $10.56 per customer. Multiplying this per-customer savings by the number of our Washington electric customers produces an annual value for avoided financial losses of $2,622,924.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/01//2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Elizabeth Andrews
REQUESTER:	Public Counsel	RESPONDER:	Jeanne Pluth
TYPE:	Data Request	DEPT:	Regulatory Affairs
REQUEST NO.:	PC – 131 Revised	TELEPHONE:	(509) 495-2204
		EMAIL:	jeanne.pluth@avistacorp.com

SUBJECT: AMI
REQUEST:
Please refer to Joshua D. DiLuciano, Exhibit JDD, at 38, Table 3-1, which provides capital and operating expenses by year for the AMI deployment.
a) Estimate the Electric Revenue Requirement by year from the effective date of the current rate case through the date by which all Electric AMI assets are expected to be fully depreciated. Assume all AMI-related proposals Avista requests in the current rate case are approved by the Commission when developing this response. Provide worksheets in MS Excel format used to develop this response.
b) Estimate the Gas Revenue Requirement by year from the effective date of the current rate case through the date by which all Gas AMI assets are expected to be fully depreciated. Assume all AMI-related proposals Avista requests in the current rate case are approved by the Commission when developing this response.

RESPONSE:

a) Please see PC-DR-131 Revised Attachment A for the electric revenue requirement analysis, prepared from Table 3-1 in Exh. JDD-2 (Revised/Clean), which table has been included as part of this response, below. This analysis was prepared using updated data described above. The analysis calculates the revenue requirement for each year and does not calculate the incremental amount over what has been included in base rates in any previous year.

a) Please see PC-DR-131 Revised Attachment B for the electric revenue requirement analysis This analysis was prepared using updated data. The analysis calculates the revenue requirement for each year and does not calculate the incremental amount over what has been included in base rates in any previous year.

The Company has also provided PC-DR-131 Revised Attachment C, which details the costs of the AMI program and PC-DR-131 Revised Attachment D, which details the benefits of the AMI program.

Please see Avista's response to PC-DR-143, noting Avista's recent decision to read the meters of approximately 17,500 natural gas customers served in our "natural gas only" areas using mobile field collectors instead of the planned deployment of AMI fixed network communications. This decision had a nominal impact on the AMI project lifecycle capital and O&M costs and net financial benefits, as presented in Exh. JDD-2, and the Company has revised its business case to reflect this decision.

Avista believes it is in the interest of all parties to have the Company's AMI business case reflect as much actual and updated information as is practical right now, even though the impact to the overall net benefits is nominal. Accordingly, we have updated the project financials, which updates are reflected in revised

AMI Cost and Benefit Workbooks, and the revised report document itself, to be filed as Exh. JDD-2 (Revised).[1]

TABLE 3-1. ACTUAL AND ESTIMATED LIFECYCLE CAPITAL (CAP) AND EXPENSES (EXP), ON A NOMINAL BASIS IN $MILLIONS, FOR AVISTA'S ADVANCED METERING INFRASTRUCTURE PROJECT FOR EACH YEAR OF THE PROJECT LIFECYCLE, AS OF FEBRUARY 2021.

Year	Meter Data Management		Head End Systems		Collector Infrastructure		Data Analytics		Meter Deployment		Energy Efficiency		Amortized Meters		Totals	
	CAP	EXP	CAP	EXP	CAP	EXP	CAP	EXP	CAP	EXP	CAP	EXP	CAP	EXP	CAP	EXP
2015	$0.2		$0.1		$0.1				$0.3						$0.6	
2016	$9.4		$2.6		$0.7				$0.4		$1.7				$14.7	
2017	$11.3	$0.1	$9.4		$0.8		$0.2	0.1	$0.8		$0.6	$0.1			$23.0	$0.1
2018	$0.2	$0.3	$8.5	$0.2	$1.8	$0.2	$0.4	0.1	$9.2		$0.5	$0.1			$20.6	$1.1
2019		$0.3	$2.6	$0.7	$3.3	$0.7	$0.6	0.7	$43.8	$0.1	$0.3	$0.3			$50.7	$2.8
2020		$0.4	$0.8	$0.9	$1.3	$0.6	$0.6	$0.1	$25.4	$0.6	$0.1	$0.2			$28.2	$2.7
2021		$0.4	$0.4	$0.9	$1.1	$0.6	$0.1	$0.2	$0.8	$0.1	$0.2	$0.3		$2.0	$2.5	$2.6
2022		$0.4		$1.0		$0.6		$0.6		$0.1		$0.1		$2.0		$2.8
2023		$0.4		$1.0		$0.6		$0.6		$0.2		$0.1		$2.0		$2.9
2024		$0.4		$1.0		$0.6		$0.6		$0.2		$0.1		$2.0		$3.0
2025		$0.4		$1.1		$0.7		$0.7		$0.2		$0.1		$2.0		$3.1
2026		$0.4		$1.1		$0.7		$0.7		$0.2		$0.1		$2.0		$3.1
2027		$0.4		$1.1		$0.7		$0.7		$0.2		$0.1		$2.0		$3.2
2028		$0.4		$1.2		$0.7		$0.7		$0.2		$0.1		$2.0		$3.3
2029		$0.4		$1.2		$0.7		$0.7		$0.2		$0.1		$2.0		$3.4
2030		$0.5		$1.2		$0.8		$0.8		$0.2		$0.1		$2.0		$3.5
2031		$0.5		$1.3		$0.8		$0.8		$0.2		$0.1		$2.0		$3.6
2032		$0.5		$1.3		$0.8		$0.8	$0.6	$0.2		$0.1		$2.0	$0.6	$3.8
2033		$0.5		$1.3		$0.8		$0.8	$2.8	$0.2		$0.2		$2.0	$2.8	$3.9
2034		$0.5		$1.4		$0.9		$0.9	$3.3	$0.2		$0.2			$3.3	$4.0
2035		$0.5		$1.4		$0.9		$0.9	$3.4	$0.2		$0.2			$3.4	$4.1
2036		$0.6		$1.5		$0.9		$0.9	$0.8	$0.2		$0.2			$0.8	$4.2
2037		$0.1		$0.4		$0.2		$0.2		$0.1		$0.1				$0.1
Totals	$21.0	$8.4	$24.4	$21.3	$8.9	$13.5	$1.9	$12.4	$91.7	$3.7	$3.4	$3.0		$25.9	$151.2	$88.2

[1] Revisions of Exh. JDD-2 are to be filed in a 'redlined' form showing all changes to the document, noted as JDD-2 (Revised/Redlined) and in 'clean' form to facilitate easier reading, noted as Exh. JDD-2 (Revised/Clean).

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/01/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	E. Andrews/DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	J. Pluth/T. Bradley
TYPE:	Data Request	DEPT:	Regulatory Affairs
REQUEST NO.:	PC – 132 Revised	TELEPHONE:	(509) 495-2204
		EMAIL:	jeanne.pluth@avistacorp.com

SUBJECT: AMI
REQUEST:
Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 38, Table 3-1, which provides capital and operating expenses by year for the AMI deployment.

a) Provide a version of Table 3-1 for Electric only AMI capital and expense.
b) Provide a version of Table 3-1 for Gas only AMI capital and expense.
c) For each of the 7 types of assets listed, provide the depreciation period Avista will use for book accounting purposes.
d) For each of the 7 types of assets listed, provide the depreciation period Avista will use for tax accounting purposes.

REVISED RESPONSE:
As previously noted in the Company's responses to PC-DR-143, the Company has updated the financial costs and benefits in its AMI business case (Exh. JDD-2) based on its recent decision to not include approximately 17,500 natural gas meters in the AMI system, and to reflect Avista's responses to several data requests for updated financial information. The information provided in this response reflects revisions to Table 3-1, which revised table is provided in PC-DR-131 Revised, and which are included in revisions to Ex. JDD-2, soon to be filed in this case.[2]

a) Costs shown in the subject Table 3-1, for Meter Data Management, Head End Systems, Collection Infrastructure, Data Analytics, and Energy Efficiency are part of an integrated system that functions across the entire AMI solution, and which components were not established, allocated or tracked separately for natural gas and electric service. . For Meter Deployment, however, we tracked the capital costs for electric and natural gas installations separately, as provided in the table below.

	2015	2016	2017	2018	2019	2020	Total
Gas Deployment	$131,240	$149,869	$335,951	$3,664,771	$13,469,379	$5,155,137	$22,906,347
Electric Deployment	$196,860	$224,803	$503,926	$5,497,157	$30,373,716	$20,207,307	$57,003,770
Total Deployment	**$328,100**	**$374,671**	**$839,877**	**$9,161,928**	**$43,843,095**	**$25,362,444**	**$79,910,116**

b) Please see response in part (a) above.

c) The depreciation rates are set by plant FERC account and not by the functional group described in the AMI Report. Please see PC-DR-132-Revised Attachment A for a listing of the AMI FERC accounts and book depreciation rates.

[2] Revisions of Exh. JDD-2 are to be filed in a 'redlined' form showing all changes to the document, noted as JDD-2 (Revised/Redlined) and in 'clean' form to facilitate easier reading, noted as Exh. JDD-2 (Revised/Clean).

d) The tax depreciation rates fluctuate each year. The Company has provided the tax lives for each AMI plant FERC account in PC-DR-132 Revised Attachment A. The Company has also provided the IRS property tax rate tables by life in PC-DR-132 Revised Attachment B, at page 70 and page 74 for intangible 3-year life assets. The Company in its 2019 tax return began expensing meters for tax purposes.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/01/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	E. Andrews/ J. DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Jeanne Pluth Tamara Bradley
TYPE:	Data Request	DEPT:	Regulatory Affairs
REQUEST NO.:	PC – 133 Revised	TELEPHONE:	(509) 495-2204
		EMAIL:	jeanne.pluth@avistacorp.com

SUBJECT: AMI
REQUEST:
Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 38, Table 3-1, which provides capital and operating expenses by year for the AMI deployment, including operating expenses in each of seven areas for 2020.
In the case of Amortized Meters, operating expense is first reported in 2021.

a) Provide line-item detail for actual Electric and Gas expenses incurred in 2020 for "Meter Data Management".
b) Provide line-item detail for actual Electric and Gas expenses incurred in 2020 for "Head End Systems".
c) Provide line-item detail for actual Electric and Gas expenses incurred in 2020 for "Collector Infrastructure".
d) Provide line-item detail for actual Electric and Gas expenses incurred in 2020 for "Data Analytics".
e) Provide line-item detail for actual Electric and Gas expenses incurred in 2020 for "Data Analytics".
f) Provide line-item detail for actual Electric and Gas expenses incurred in 2020 for "Meter Deployment".
g) Provide line-item detail for actual Electric and Gas expenses incurred in 2020 for "Energy Efficiency".
h) Provide the detailed calculations behind the estimate for Electric and Gas meter amortization expense in 2021.

REVISED RESPONSE:

As previously noted in the Company's responses to PC-DR-143, the Company has updated the financial costs and benefits in its AMI business case (Exh. JDD-2) based on its recent decision to not include approximately 17,500 natural gas meters in the AMI system, and to reflect various updates including Avista's responses to several data requests for updated financial information. The information provided in this response reflects revisions to Table 3-1, which revised table is provided in PC-DR-131 Revised, and which are included in revisions to Ex. JDD-2, soon to be filed in this case.[3]

(a-g) The table below provides the capital and expenses for the requested categories for year 2020 - please note that parts (d) and (e) in the request are duplicative.

[3] Revisions of Exh. JDD-2 are to be filed in a 'redlined' form showing all changes to the document, noted as JDD-2 (Revised/Redlined) and in 'clean' form to facilitate easier reading, noted as Exh. JDD-2 (Revised/Clean).

Year	MDM*		Head End Systems		Collector Infrastructure		Data Analytics		Meter Deployment		Energy Efficiency	
2020	CAP	EXP	CAP	EXP	CAP	EXP	CAP	EXP	CAP	EXP	CAP	EXP
	$0	$350,422	$784,480	$937,194	$1,266,859	$580,057	$634,416	$36,000	$25,362,444	$621,346	$129,726	$175,255

*Costs for the meter data management system (MDM) are Washington allocated only.

h) Proposed amortization of the replaced electric meters and natural gas meter modules/ERTs is provided in Andrews' Adjustment 3.16, workpaper named "1) AMI Capital and Regulatory Asset," which includes the calculation of the amounts to be amortized. Annual amortization amounts reflected in Exh. JDD-2 (Revised) consist of the expected amortization balance as of May 2019, allocated over years 2021-2033, and adjusted for the Company's recent decision, as noted above, to exclude approximately 17,500 natural gas meters from inclusion in the AMI system.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/01/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Jim Corder
TYPE:	Data Request	DEPT:	Office of the CIO
REQUEST NO.:	PC – 134 Revised	TELEPHONE:	(509) 495-4445
		EMAIL:	jim.corder@avistacorp.com

SUBJECT: AMI
REQUEST:
Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 38, Table 3-1, which indicates that Avista expects to spend, in nominal terms, $11.1 million in capital and $17.8 million in operating expenses over 20 years to build and operate the meter data collection and communications infrastructure.
Provide any technical and economic analyses Avista has completed comparing the pros and cons of an owned network to the pros and cons of a network rented from public carriers such as AT&T and Verizon Wireless.

RESPONSE:
A technical analysis is maintained in our network strategy documentation, and relevant summary information is provided in the following paragraph.

> In this regard, Avista's network strategy document (Avista Enterprise Architecture Office | Utility Enterprise Network Strategy 2025, published on 9/30/2015) cites our preferred communication networks in classifying the digital services across our current and future utility landscape. For Customer and Back Office traffic, our general preference is to leverage leased carrier networks, such as AT&T and Verizon Wireless. Alternatively, our desires for Emergency and Control services are private Avista owned and operated networks. This model allows Avista to maintain a responsible mix of leased and owned network communication capabilities to provide agility and scalability with rapidly changing Customer and Back-Office use cases, while ensuring that we continue to manage the reliability and restoration priority of our Emergency and Control environments.

Avista did not prepare a formal economic analysis comparing the pros and cons of an owned network to the pros and cons of a network rented from public carriers such as AT&T and Verizon Wireless at the time we elected to move forward with the Washington AMI project. At that time, the Avista private Field Area Network (FAN) was not sufficiently developed to support the AMI system. An effort to extend the Field Area Network to the private Neighborhood Area Network (NAN) would have taken several years, and therefore, the only practical option for the Company was to lease the capacity needed for the Field Area Network from public carriers such as Verizon and AT&T, which was also consistent with the Company's network strategy, noted above. Thus the need for economic analysis was irrelevant.

Accordingly, the majority of the subject costs for the data collection and communications infrastructure is not associated with a FAN, but rather, is associated with the private NAN infrastructure required to capture electric meter and gas module reads. Please also note, the capital and O&M costs stated above have been revised lower to $8,872,313 and $13,505,540, respectively, due to the Company's decision to read the remaining meters in our natural gas only areas via mobile routes instead of relying on AMI fixed network communications, as described in the Company's response to PC-DR-143. The information provided in this

response reflects revisions to Table 3-1, which revised table is provided in PC-DR-131 Revised, and which are included in revisions to Ex. JDD-2, soon to be filed in this case.[4]

[4] Revisions of Exh. JDD-2 are to be filed in a 'redlined' form showing all changes to the document, noted as JDD-2 (Revised/Redlined) and in 'clean' form to facilitate easier reading, noted as Exh. JDD-2 (Revised/Clean).

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/06/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Joshua D. DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Dan Burgess
TYPE:	Data Request	DEPT:	Distribution Services
REQUEST NO.:	PC - 135	TELEPHONE:	(509) 495-2323
		EMAIL:	Dan.Burgess@avistacorp.com

SUBJECT: AMI

REQUEST:

Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 55, Table 4-1, which provides the estimated benefits Avista calculated in seven areas, both originally ("Expected NPV 2016") and currently ("Expected NPV 2020").

a. Provide the nominal benefits originally estimated in 2016 by year for each of the seven areas. (In effect, this means reproducing Table 4-2 on page 57, but for the original benefit estimates rather than the current benefit estimates provided in Table 4-2).

b. Provide the detailed calculations of nominal benefits originally estimated in 2016 by year for each of the seven areas as provided in response to subpart (a). Include the calculations in which these nominal benefits are discounted into present value.

RESPONSE:

a) Please see PC-DR-135 Attachment A – Avista Utilities Advanced Metering Project – Business Case for 2016. Table 17 of this report, found on page 41, lists the nominal or cash value of the subject seven areas of benefit by year.

b) The subject detailed calculations are provided in PC-DR-135 Attachment B, Avista's AMI Project Benefits Workbook for 2016. A detailed explanation of the process of calculating each benefit is provided in PC-DR-135 Attachment A (in Appendix B of the report). Net Present Values NPV are calculated in the formulae that reference the yearly nominal values for each benefit, found in the respective tabs for each area of benefit in PC-DR-135 Attachment B.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/01/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Dan Burgess/Tamara Bradley
TYPE:	Data Request	DEPT:	Electrical Engineering
REQUEST NO.:	PC – 136 Revised	TELEPHONE:	(509) 495-7896
		EMAIL:	Tamara.Bradley@avistacorp.com

SUBJECT: AMI
REQUEST:
Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 57, Table 4-2, which provides the nominal estimated benefits Avista calculated by year in seven areas as of August, 2020.

a. Provide the detailed calculations of nominal benefits estimated by year for each of the seven areas. Include the calculations in which these nominal benefits are discounted into present value.
b. Describe any commitments Avista is prepared to make regarding the achievement of the benefits estimated in Table 4-2. If Avista is unwilling to make such commitments, please explain why not.
c. Describe any annual performance reporting commitments Avista is prepared to make regarding the benefits estimated in Table 4-2. If Avista is unwilling to make any such commitments, please explain why not.

REVISED RESPONSE:
As previously noted in the Company's response to PC-DR-143, the Company has updated the financial costs and benefits in its AMI business case (Exh. JDD-2) based on a recent decision to not include approximately 17,500 natural gas meters in the AMI system, and to reflect Avista's responses to several data requests for updated financial information. In the Company's initial response to this request in part (a) below, we provided as an attachment the Avista AMI Benefits Workbook filed in support of Exh. JDD-2. This workbook has now been revised, which changes are reflected in Table 4-2 of Ex. JDD-2 (Revised), soon to be filed in this case.[5] The Revised AMI Benefits Workbook is provided here as PC-DR-136 Revised Attachment A.

a. Please see the Company's response to PC-DR-135 for a description of the calculation of AMI benefits in our 2016 business case, including the nominal and present value for each by year. This description is useful for reviewing the similar calculation of benefits for each area of benefit shown in Table 4-2, which detail is provided in Avista's AMI Benefits Workbook, PC-DR-136 Revised Attachment A.

b. The prudence or cost effectiveness of Avista's AMI deployment is not dependent on additional reporting requirements.

c. Please see our response to part (a) above.

[5] Revisions of Exh. JDD-2 are to be filed in a 'redlined' form showing all changes to the document, noted as JDD-2 (Revised/Redlined) and in 'clean' form to facilitate easier reading, noted as Exh. JDD-2 (Revised/Clean).

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/08/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Robb Raymond
TYPE:	Data Request	DEPT:	Electrical Engineering
REQUEST NO.:	PC - 137	TELEPHONE:	(509) 495-4695
		EMAIL:	robb.raymond@avistacorp.com

SUBJECT: AMI
REQUEST:
Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 57, Table 4-2, which provides the nominal estimated benefits Avista calculated by year in seven areas as of August, 2020.

a) Provide line-item detail for actual Electric and Gas meter reading department expenses incurred by year from 2016 through 2020.
b) Provide the number of Electric meters read via the AMI system in December, 2020.
c) Provide the number of Gas meters read via the AMI system in December, 2020.
d) Provide line-item detail for actual Electric and Gas meter services department expenses incurred by year from 2016 through 2020.
e) Provide the number of Electric meters by which service can be remotely disconnected and reconnected as of December 31, 2020.
f) Provide the amount of Electric and Gas theft billed by year from 2016 through 2020.
g) Provide the amount of Electric and Gas theft collections by year from 2016 through 2020.

RESPONSE:

a) Please see the table below.

Category	2016	2017	2018	2019	2020
Burden Cost	$1,657,542	$1,533,759	$1,512,192	$1,435,414	$873,008
Inventory	$6,564	$13,374	$6,893	$7,409	$2,334
Labor Cost	$1,925,623	$1,936,009	$1,982,582	$1,852,997	$941,491
Purchase Invoices (Mileage and Incidentals)	$47,288	$48,356	$52,000	$48,653	$14,390
Usage Cost (Fleet)	$542,878	$461,174	$469,385	$425,662	$46,034
	$4,179,896	**$3,992,673**	**$4,023,052**	**$3,770,135**	**$1,877,257**

b) In December 2020, 259,099 electric meters were read via AMI.

c) In December 2020, 151,854 natural gas meters were read via AMI.

d) Aggregate expenses by department for Washington jurisdiction only are shown in the tables below.

Natural Gas Expenses					
Category	2016	2017	2018	2019	2020
Contractor	$4,358	$27,009		$7,460	$890
Employee Expenses	$182			$377	$522
Labor	$24,625	$9,034	$2,466	$5,001	$8,855
Material	$38,039	$37,230	$8,521	$18,212	$93,953
Vehicle	$241				$206
Voucher	$3,365	$32,718	$11,789	$8,549	($75,601)
	$70,810	**$105,991**	**$22,776**	**$39,599**	**$28,825**

Electric Expenses					
Category	2016	2017	2018	2019	2020
Centralized Assets	$995	$53	$116		
Contractor	$616	$437	$2,523	$1,311	$441
Employee Expenses	$609,199	$621,768	$656,669	$769,578	$644,525
Labor	$89	$36			$392
Labor Adjustments	$1,732	$1,050	$360		
Material	($4,841)	$2,900	$5,465	$5,530	$4,850
	$607,789	**$626,244**	**$665,133**	**$776,419**	**$650,208**

e) As of December 2020, Avista has the capability to remotely connect and disconnect 243,100 electric meters.

f) Please see the table below.

Year	Theft Billed
2016	$3,543
2017	$3,990
2018	$1,186
2019	$2,140
2020	$2,980
	$13,839

g) Please see the table below.

Year	Theft Payments
2016	$3,015
2017	$12,942
2018	$1,351
2019	$1,008
2020	$2,257
	$20,572

34489AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/11/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Heather Rosentrater
REQUESTER:	Public Counsel	RESPONDER:	Larry La Bolle
TYPE:	Data Request	DEPT:	Transm Ops/System Planning
REQUEST NO.:	PC - 138	TELEPHONE:	(509) 495-4710
		EMAIL:	larry.labolle@avistacorp.com

SUBJECT: AMI

REQUEST:

Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 65–66, section "The High Cost of Service Outages".

a) Footnote 72 implies that Avista used the values employed by the ICE model to estimate the value of reliability benefits, but not the online software tool itself. Please confirm. If this cannot be confirmed, provide all inputs into the ICE online software tool Avista used to estimate the value of reliability benefits.
b) Provide a citation for the claim that 39 utility value of service "studies" were employed in the ICE model. Identify the utilities and years these "studies" were completed, and cite the source for this information.
c) Avista claims that the average weighted hourly cost (of a service outage) for all customers and all outage events on Avista's system was $116.15. Provide the calculations for this estimate, including all assumptions for the cost of service interruptions by customer class and outage duration.
d) Confirm that Avista estimated reductions in customer minutes out from its AMI deployment by year, and then multiplied those by $116.15 to get the benefit estimates in dollars provided in the "Outage Management" column of Table 4-2 on Exh. JDD-2 pages 57 and 58. If this cannot be confirmed, please explain and provide the calculations by year for the "Outage Management" column of Table 4-2.
e) Regardless of calculation method, convert the customer minutes out (or similar calculation input) described in response to subpart (d) into Avista system-wide SAIDI and SAIFI improvements Avista expects from its AMI deployment, both including and excluding Major Event Days as defined by IEEE. Provide worksheets in support of the conversion from Avista calculation inputs into system-wide SAIDI and SAIFI improvements. (Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 70, for Avista's representations regarding reliability improvements including Major Event Days.).
f) Describe any commitments Avista is prepared to make regarding the achievement of system-wide SAIDI and SAIFI improvements provided in response to (e). If Avista is unwilling to make such commitments, please explain.

RESPONSE:

a) For the subject estimate of the value of reduced outage duration, as enabled by advanced metering, Avista used the online Interruption Cost Estimator. Variables used in the online calculator (icecalculator.com) were as input as follows:

i. Since Avista is not estimating interruption costs generally as a benefit of AMI-enabled outage improvement (which integrates both the number and duration of outages) and is estimating the value of a particular reliability improvement, we selected the model tab labeled "Estimate Value of Reliability Improvement."

ii. For the tab labeled Select States, we entered Washington and Idaho to represent our electric service area.

iii. For Non-Residential Customers we entered the value 43,289.

iv. For Residential Customers we entered the value 350,873.

v. For Investment Information we entered the value of 15 years for Expected Lifetime of Improvement.

vi. For SAIFI Without Improvement we entered the five-year average value of 0.86. This value represented outages that excluded those for planned or maintenance events, as explained in Exh. JDD-2, page 63. This value also excluded outages associated with major events, which decision the Company is still evaluating as described in Exh. JDD-2, page 70.

vii. For SAIDI Without Improvement we entered the average value of 120.93 minutes. As in (vi) above, this value is a five-year average based on outage events that exclude planned and maintenance outages and those associated with major event days.

viii. FOR SAIFI WITH Improvement we entered the average value of 0.86. We used the same value for SAIFI because the expected reliability improvement is not based on a reduction in number of outages, but on a reduction in outage duration alone.

ix. For SAIDI WITH Improvement we entered the value of 108.84 minutes. This value reflects the total improvement in outage duration expected from both the 'earlier outage notification' of 6% (Exh. JDD-2, pages 67-70) and the benefit of 'reduced outage duration from more efficient restoration processes' of 4% (Exh. JDD-2, pages 70-72).

x. We selected the tab labeled Run the Model in the lower left-hand corner.

xi. Next, we selected the gear-shaped icon on the left-hand side, about mid-page, that is used to update the model parameters with Avista-specific information for Number of Customers, Annual Usage, and Power Interruption. Input values used were as follows:
    i. # of Customers: Small C&I: 34,489; Med/Large C&I: 8,800, Residential: 350,873.
    ii. Annual Usage: Residential: 10.733 MWh; Small C&I: 12.135 MWh; Medium and Large C&I 568.504.
    iii. Power Interruption: Morning: 50.3 (%); Afternoon: 23.1; Evening: 13.7; Night: 12.9; Summer: 40.1.

xii. We then selected the first-year Total Benefit value in dollars, which is equal to the [Without Improvement (Baseline)] value minus the [With Improvement] value, and reduced this first-year value to represent the financial value for only our Washington electric customers (which annual value was $5,317,783 from our model runs in summer of year 2020).

xiii. That value was then partitioned into the two areas of benefit as described above in part (ix). The first-year value for the benefit of 'earlier outage notification' of 6% (Exh. JDD-2, pages 67-70) was, and the benefit of 'reduced outage duration from more efficient restoration processes' of 4% (Exh. JDD-2, pages 70-72) was $2,127,113.

xiv. Next, the first-year value for earlier outage notification of $3,190,670 was imported into the AMI Benefits Workbook in Exh. JDD-2, under the tab labeled "Earlier Outage Notification."

xv. In the next step, Avista adjusted downward the first year benefits in 2020 by 80% (included only 20% of the first-year value for that year). Likewise, the value for year 2021 was adjusted downward by 60%. The value for year 2022 was reduced by 40%. The value for 2023 was reduced by 20%. Accordingly, Avista is not counting the full value of this benefit until year 2024, taking the very conservative approach of providing time to improve our internal processes and tools in the achievement of these savings.

xvi. Next, the first-year value for reduced outage duration from more efficient restoration processes of $2,127,113 was imported into the AMI Benefits Workbook in Exh. JDD-2, under the tab labeled "More Rapid Restoration."

xvii. As described earlier in part (xv), above, Avista adjusted downward the first year benefits in 2020 by 80% (included only 20% of the first-year value for that year). Likewise, the value for year 2021 was adjusted downward by 60%. The value for year 2022 was reduced by 40%. The value for 2023 was reduced by 20%. Accordingly, Avista is not counting the full value of this benefit until year 2024, taking the very conservative approach of providing time to improve our internal processes and tools in the achievement of these savings.

xviii. The lifecycle financial value for customers, for both the earlier outage notification process improvement, and the reduced outage duration from more efficient restoration processes, are shown in their respective categories in the AMI Benefits Workbook in Exh. JDD-2, on the summary page tab, labeled "Summary Realization Schedule."

b) The subject citation of 39 is an inadvertent error for the cited number of 34 studies. The list of utilities that performed these value of service studies is not publicly available and the individual responses from the studies have been anonymized to create the meta-analysis dataset of more than 100,000 electric utility customers. While the list of utilities participating in these studies is not publicly available, the Company does understand from personal communication with the developers of the tool that studies do include utility customers in the State of Washington.

c) The subject calculation of the weighted average hourly cost of $116.15, is a generalized value for Avista's customers used to represent the integrated cost they experience for both outage events and outage duration. The subject calculation was performed as follows using the online tool icecalculator.com:

i. We selected the model tab labeled "Estimate Interruption Costs."

ii. For the tab labeled Select States, we entered Washington and Idaho to represent our electric service area.

iii. For Non-Residential Customers we entered the value 43,289.

iv. For Residential Customers we entered the value 350,873.

v. For SAIFI we entered the five-year average value of 0.98.

vi. For SAIDI we entered the five-year average value of 143.4 minutes.

vii. We selected the tab labeled Run the Model in the lower left-hand corner.

viii. Next, we selected the gear-shaped icon on the left-hand side, about mid-page, that is used to update the model parameters with Avista-specific information for Number of Customers, Annual Usage, and Power Interruption. Input values used were as follows:
   i. # of Customers: Small C&I: 34,489; Med/Large C&I: 8,800, Residential: 350,873.
   ii. Annual Usage: Residential: 10.733 MWh; Small C&I: 12.135 MWh; Medium and Large C&I 568.504.
   iii. Power Interruption: Morning: 50.3 (%); Afternoon: 23.1; Evening: 13.7; Night: 12.9; Summer: 40.1.

ix. We then selected the Cost per Unserved kWh for each customer class, including the weighted average cost per Unserved kWh, shown in the table below, which was $43.66 from our runs in summer of year 2020. The weighted average value of $116.15 from the values shown in the table.

Cost Per Unserved kWh	Total Cost	sum of Kwh	Annual Kwh/Customer	Hourly Usage	Hours / Month	Monthly KwH Usage	Cost/Hour	% Customers	Weighted Cost per Unserved kWh
$2.49	$2,552,830.89	3,765,894,142	10,733	1.22522	720	882.158348	$3.05	0.8901746	$2.72
$384.84	$43,808,891.59	418,508,230	12,135	1.385222	720	997.359642	$533.09	0.0874996	$46.65
$46.10	$62,857,810.98	5,002,833,462	568,504	64.89769	720	46726.3399	$2,991.78	0.0223258	$66.79
$43.66	**$109,219,533.46**	**9,187,235,835**							**$116.15**

x. An alternative method of determining weighted hourly costs for customers is to use the calculated total cost of all outages from the calculator, shown in the table above of $109,219,533, divided by the corresponding five-year average of system total customer outage hours of 911,155, which is equal to a weighted average hourly cost of $119.87. In Avista's experience, expressing costs as the cost per unserved kWh is somewhat more conservative.

d) This portion of the request posits a method of calculated where outage minutes based on improvement would be multiplied by the value of $116.15. This is NOT how the outage benefits for AMI enabled reductions in outage duration were calculated. The subject financial benefits were calculated as described in part (a), above.

e) Please see the system values for SAIFI and SAIDI used to calculate the subject benefit described in part (a) above. SAIDI and SAIFI values used to estimate the Company's expected outage benefits for customers *based on the inclusion of outages associated with major events*, which Avista believes is a reasonable approach, as explained in Exh. JDD-2, page 70, are 1.13 and 3.77 (226.2 minutes), respectively. The values for SAIFI and SAIDI with improvement were 1.13 and 3.39 (203.68 minutes), respectively.

****Note**, for the calculation of our five-year averages, we excluded results from year 2015, which were unusually high and would have, in the view of the Company, unnecessarily increased the magnitude of the value of financial estimated for our customers. **Of particular note is our decision to exclude outages associated with major events in 2015, where the annual value of SAIDI with major events was 50.92 hours (or 3,055 minutes) for the year.**

f) Avista believes that maintaining a focus on achieving these outage benefits is of key importance in achieving the objectives our Electric Service Reliability Strategy. At this point, barring any other conflicting reporting requirements, Avista plans to report out its annual customer outage hours avoided through its AMI-enabled outage improvements, as described in Exh. JDD-2, as part of its annual reporting on electric service reliability to the Commission.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/11/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Heather Rosentrater
REQUESTER:	Public Counsel	RESPONDER:	Larry La Bolle
TYPE:	Data Request	DEPT:	Transm/System Operations
REQUEST NO.:	PC - 139	TELEPHONE:	(509) 495-4710
		EMAIL:	larry.labolle@avistacorp.com

SUBJECT: AMI

REQUEST:

Please refer to *WUTC v. Avista Corp.*, Docket UE-160228, Heather L. Rosentrater, Exhibit HLR-3, at 6, Table 5 (Feb. 19, 2016) (Avista's original business case for AMI).

a) Provide detailed calculations by year for the column "Outage Management". To the extent the calculations relied on the ICE online software tool, provide all inputs. To the extent the calculations relied on the ICE tool values for the cost of service interruptions, provide all assumptions for the cost of service interruptions by customer class and outage duration utilized in the calculations. Please refer also to Joshua D. DiLuciano, Exh. JDD-2, at 69–70, for the relevance of Avista's original AMI business case to the Company's current instant Petition.

b) Regardless of calculation method, convert the customer minutes out (or similar calculation input) described in response to subpart (d) into Avista system-wide SAIDI and SAIFI improvements Avista originally expected from its AMI deployment as presented in the 2016 business case, both including and excluding Major Event Days as defined by IEEE. Provide worksheets in support of the conversion from Avista calculation inputs into system-wide SAIDI and SAIFI improvements if applicable.

RESPONSE:

a) Please see the Company's response to PC-DR-074 for the detailed description of the inputs, process steps, and outputs of the interruption cost estimator used to develop the then-estimated benefits for earlier outage notification as enabled by AMI.

b) Please refer to part (a), above, to find the subject IEEE system values used in the estimation of benefits. Unlike the discussion of outage benefits discussed in Exh. JDD-2, where we presented values based on outage statistics that both excluded and included outages associated with major events, in our 2016 case the Company provided an estimate of the value based only upon the set of system values shown in PC-DR-074.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/10/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Vern Malensky / Tamara Bradley
TYPE:	Data Request	DEPT:	AMI Program
REQUEST NO.:	PC - 140	TELEPHONE:	(509) 495-7896
		EMAIL:	Vern.Malensky@avistacorp.com

SUBJECT: AMI Program

REQUEST:

Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 43–44, section "Product Maturity Challenges of the RIVA™ Metering System".

a) Provide a copy of Itron marketing materials for the RIVA system.
b) List and describe each feature and benefit offered by the RIVA system not available from "other systems" as understood by Avista.
c) Of the features listed in response to subpart (b), identify those functioning fully, and delivering anticipated benefits, as of December 31, 2020.
d) Identify other utilities with which Itron has contracted to deploy the RIVA system, along with contract execution dates.
e) Provide a copy of Avista's executed contract with Itron to acquire the RIVA system and components.

RESPONSE:
Please see Avista's **CONFIDENTIAL** response to data request PC-DR-140C. Please note that Avista's response to PC-DR-140C is **Confidential per Protective Order in UTC Dockets UE-200900 and UG-200901**.

a. Please see the attached document provided in PC-DR-140 Attachment A.

b. It was understood by Avista that the Itron RIVA solution offered the following capabilities not available by other systems providers:

- "Open" standards network capable of connecting IoT devices.
- "Adaptive Communications Technology" ACT - Communications utilizes both "Mesh" network and "Powerline Carrier" capabilities on the same chip set. Continuously monitors network for best communication path. Assures connectivity at highest available speed. Performance to support "Edge" applications.
- ACT network capabilities with dynamic modulation of frequencies to obtain best in class coverage with reduced network device counts, reducing upfront and ongoing communication costs.

- Network devices capable of supporting both gas only and electric mesh devices from one single device.

- Programmable software in the meter capable of supporting the "Edge" applications.
- Availability of "Edge" applications for use on the meter that would support Diversion Detection, Outage Detection and Response, High Impedance Fault Detection.

c. The following benefits are fully functioning:

- "Open" standards network capable of connecting IoT devices.

- "Adaptive Communications Technology." Communications utilizes both "Mesh" network and "Powerline Carrier" capabilities on the same chip set.

- ACT network capabilities with dynamic modulation of frequencies to obtain best in class coverage with reduced network device counts, reducing upfront and ongoing costs.

- Network devices capable of supporting both gas only and electric mesh devices from one single device.

Capability exists via the architecture of the meter and the operating systems for supporting "Edge" applications, however, this capability is not being used at this time. Itron has not delivered "Edge" applications at this time in support of Diversion Detection, Outage Detection and Response, High Impedance Fault Detection.

d. Avista has neither tracked or monitored other utilities' selections of metering systems providers, nor does the Company have insight to the details of their contracts.

e. Please see PC-DR-140C Confidential Attachments A-C.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/10/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Curt Kirkeby
TYPE:	Data Request	DEPT:	Distribution Services
REQUEST NO.:	PC - 141	TELEPHONE:	(509) 495-4763
		EMAIL:	Curt.Kirkeby@avistacorp.com

SUBJECT: AMI

REQUEST:

Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 43, and the statement "Avista weighed the value of implementing the new system with enabling characteristics key to our Grid Edge strategy with the potential costs that could be incurred with delays in a first-generation system . . . ."

a) Describe Avista's "Grid Edge strategy". Provide any and all documents, presentations, reports, studies, descriptions, product concepts, and other materials Avista has prepared regarding the Grid Edge strategy.
b) Describe the "enabling characteristics" critical to the Grid Edge Strategy.
c) Describe the "value" of the Grid Edge strategy to Avista and its customers. Provide any and all documents, presentations, reports, studies, descriptions, product concepts, and other materials Avista has prepared to estimate this value in quantitative or qualitative terms.

RESPONSE:

a. The Avista Grid Edge strategy was developed as a part of a deep dive analysis conducted in early 2017, focused on understanding the technical, environmental, regulatory and customer drivers that would be critical in shaping a strategy for providing service at the grid edge. The final report and the grid edge strategy road map are provided as PC-DR-141 Attachments A and B, respectively.

b. One of the prime drivers for Avista grid edge strategy was to enable the realization of a carbon free future, with the collaborative participation of our customers. The strategy focuses primarily on two objectives: 1) customer participation/influence, and 2) grid utilization. Customers should be able to influence the choice of what power is generated (type of resource), where it comes from, and from whom they acquire that energy. To meet those objectives, operational transactions need to be executed with local objectives taken into consideration. Current operational systems are centralized, monolithic, proprietary and inherently not capable of delivering new functionality in a timely manner. Avista envisions a grid edge enabled operating platform that is open, flexible, services based, peer communication capable, and customer accessible. Intelligent devices must be able to participate and collaborate with other connected devices to meet customer and grid objectives. One example can be equated to a rush hour scenario we all have experienced. Too many cars are navigating a particular intersection with too few lanes of traffic. In the utility case this energy is flowing through a specific piece of equipment which is too small to handle the flow. A grid edge enabled solution would enable the challenged equipment to "publish" the need for relief while other connected devices "subscribe" to the published message, assessing local objectives and then taking remedial action that honors grid and customer objectives while providing relief. Success results in

better grid utilization, leveraging existing investments, deferring future capacity investments and providing customer participation opportunities. Each intelligent device that participates, increases the opportunity for success.

c. The grid edge strategy is informed by the past as well as the future. Avista has demonstrated the value of grid modernization in terms of distribution efficiency and increased reliability for many years as a result of the ARRA funded projects awarded in 2009. Avista has also realized the shortcomings of many existing technologies and the value that might be left on the table without grid edge capability. The biggest opportunity or "value" the grid edge strategy provides is non-wire alternatives that enhance flexibility, facilitate customer participation and maximize grid utilization. Meeting carbon free goals might not be possible without a grid edge strategy. Controllable loads, distributed energy resources, smart grid devices can increase the life of existing assets and reduce the need for new capacity. More importantly as electrification efforts accelerate, grid edge capabilities can drive customer participation in ways that are grid complimentary. The AMI business case includes distribution efficiencies that are possible given better measurements at the customer connection. The Avista grid edge strategy is a journey whereby the benefits are established as the technologies are tested, evaluated, and demonstrated. The strategy is just that, a strategy from which tactical plans/projects are derived based on business cases developed. The strategy has driven Avista to participate in the development and testing of an open source distributed operating platform that delivers grid edge intelligence. The Scott Morris Energy Innovation Center within the South Landing Eco-District, contains a testing facility that allows for extensive simulation, analysis, evaluation, and demonstration (hardware in the loop) of grid edge solutions. As each strategic component is evaluated, projects are identified and funded as appropriate in the Avista capital budget. In summary, "value" is determined, specifically for each strategic component. Numerous projects are underway or being planned to further evaluate grid edge opportunities funded by the Washington State Clean Energy Fund and the U.S. Department of Energy.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/03/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Vern Malensky/Tamara Bradley
TYPE:	Data Request	DEPT:	Electrical Engineering
REQUEST NO.:	PC - 142	TELEPHONE:	(509) 495-7896
		EMAIL:	Tamara.Bradley@avistacorp.com

SUBJECT: AMI

REQUEST:

Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 43, and the statement "The RIVA system, unlike others, will allow Avista to maximize potential applications."
a) Describe the "potential applications" RIVA will enable that other systems would not.
b) Describe how RIVA provides maximization opportunities for these potential applications that other systems would not.

RESPONSE:

a. At the time of Avista's RFP, the Itron OpenWay RIVA system was the only known system to provide not only basic advanced metering capabilities (meter reads/interval data/remote service connectivity), but also edge computing capabilities in the meter to provide potential additional benefits in outage, theft detection, load disaggregation, etc, in ways that would be much more efficient and effective than using third party applications.

b. Itron OpenWay RIVA had internal computing capabilities in the meter that allowed these activities to occur much more efficiently, at the edge, rather than waiting for a third-party application to perform computing day(s) after the data had been returned and processed. In addition, the network capacity, efficiency, and bandwidth offered by the Itron RIVA system was best suited to handle the potential future computing needs of these edge applications, which would allow for additional future benefits above and beyond what was currently known and quantified within the business case.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/10/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Robb Raymond
TYPE:	Data Request	DEPT:	AMI Program
REQUEST NO.:	PC - 143	TELEPHONE:	(509) 495-4695
		EMAIL:	robb.raymond@avistacorp.com

SUBJECT: AMI

REQUEST:

Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 44, section "Meter Deployment".

a) Provide the number of electric customers, by class, which have received (or which are about to receive) an AMI meter.
b) Provide the number of gas customers which have received (or which are about to receive) a natural gas meter communications module.
c) Provide a count of "gas only" customers as of 12/31/2020.
d) Provide a count of "electric only" customers as of 12/31/2020.
e) Provide a count of combination (electric and gas) customers as of 12/31/2020.
f) Describe the meter reading system in place for electric only customers in place prior to the AMI system.
g) Describe the meter reading system in place for gas only customers in place prior to the AMI system.
h) Describe the meter reading system (or systems) in place for combination (electric and gas) customers in place prior to the AMI system.
i) For the new AMI system, describe the differences in data communications methods for (i) electric only customers; (ii) combination customers; and (iii) gas only customers.
j) Explain the "less than expected" communications capabilities of the (RIVA?) natural gas communications modules (Joshua D. DiLuciano, Exhibit JDD-2, at43). Explain the relevance of these deficiencies the deployment and use of the communications network (or networks) in "gas only" service areas.
k) Explain the "additional . . . communication and programming requirements for natural gas modules" (Joshua D. DiLuciano, Exhibit JDD-2, at 45) as they relate to the "less than expected" communications capabilities explained in response to subpart (g).

RESPONSE:

a) As of the subject date, 260,589 electric meters have been deployed*.

Electric Meter Type	Deployed Service Points
Cellular Electric Meter	227
Commercial Electric Meter	12,196
Residential/Commercial Electric Meter	248,166
	260,589

b) As of the subject date, 152,868 natural gas meters have been deployed*.

Gas Meter Type	Deployed Service Points
Commercial Gas Module	3,560
Residential Gas Module	149,308
	152,868

**These figures represent service points, thus a customer may have multiple meters.*

c) As of the subject date, Avista had 26,583 service points** in the "natural gas only" areas of its service territory.

d) As of the subject date, the Company had 114,069 service points** in the "electric only" portions of its service area.

e) As of the subject date, Avista had 143,584 service points** in our combination electric and natural gas service areas.

***Note that the data is presented by physical premise and that a customer can be the account owner on more than one.*

f) Prior to deployment of advanced metering, Avista used the following methods to obtain reads from electric customer meters.
   i. Meter readers manually reading meters via walked routes.
   ii. Meter readers using an electronic collection device and reading wirelessly by passing by customer premise.
   iii. Meter reading via utilizing wireless communications devices mounted on utility poles to read meters in a geographic area electronically. (called Fixed Network AMR)
   iv. Two Way Automatic Communication technology called TWACS which are meters that communicate via power line carrier via utility power lines back to a transformer which in turn communicates back to a head end system.
   v. Meter reading via a cellular meter solution called MV-90 which mostly serves industrial customers.

g) Prior to deployment of advanced metering, Avista used the following methods to obtain reads from customers' meters in our natural gas only areas.
   i. Meter readers manually reading meters via walked routes
   ii. Meter readers using an electronic collection device and reading wirelessly by passing by customer premise.

h) Prior to deployment of advanced metering, Avista used the following methods to obtain reads from customers' meters in our electric and natural gas combination areas.
   i. Meter readers manually reading meters via walked routes.
   ii. Meter readers using an electronic collection device and reading wirelessly by passing by customer premise.
   iii. Meter reading via utilizing wireless communications devices mounted on utility poles to read meters in a geographic area electronically. (called Fixed Network AMR)

i) Differences in data communication methods for electric only customers, combination customers and natural gas only customers, are explained below.
   i. Electric meters communicate amongst each other either using 900Mhz wireless radio or via Power Line Carrier (PLC) if the electric meters share the same transformer. This creates a mesh network of electric meters that eventually communicate via 900Mhz wireless radio to a Connected Grid Router located on a utility pole. In remote areas where the distance between meters is too great, a meter with a cellular radio can be implemented.
   ii. Where we serve natural gas and electric customers in the same area, gas meters communicate directly with electric meters via 900Mhz radio frequency as stated above. Natural gas modules are referenced as a leaf node to an electric mesh network.
   iii. In areas with only natural gas modules, the modules communicate directly with a specific Connected Grid Router (CGR) that is designed specifically for natural gas communications. This is referred to as a STAR network since gas modules do not communicate with each other and all communicate directly with the CGR.

j) Avista recently made the decision to read the meters of approximately 17,500 natural gas customers served in our "natural gas only" areas using mobile field collectors instead of the planned deployment of AMI fixed network communications. This decision was based on delays in the release of software and firmware updates needed for natural gas modules to communicate reliably in our natural gas only areas. This decision will have nominal impacts on the AMI project lifecycle capital and O&M costs and net financial benefits, as presented in Exh. JDD-2, and the Company is currently revising its business case to reflect this decision.

   In addition to these changes in planned metering in our natural gas only areas, Avista has received several recent data requests asking the Company to provide actual results for AMI costs and benefits in year 2020, which of course were not available when the report was filed and revised in the summer and fall of 2020. Avista believes it is in the interest of all parties to have the Company's AMI business case reflect as much actual and updated information as is practical right now, even though we expect only a nominal impact to the overall net benefits. Accordingly, we are updating the project financials, which will be reflected in revised AMI Cost and Benefit Workbooks, to be available in the next two weeks, which will be followed by our revision of the report document itself, Exh. JDD-2.

k) Avista learned after completion of design phase workshops that additional hardware/software would be required to communicate with and program natural gas modules. As noted above in part (j) Avista experienced delays in the release of software and firmware updates that were necessary for natural gas modules to communicate reliably in our natural gas only areas, leading to the Company's decision explained above.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/06/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Kelly Magalsky
REQUESTER:	Public Counsel	RESPONDER:	Tamara Bradley
TYPE:	Data Request	DEPT:	AMI/EAM
REQUEST NO.:	PC – 144C	TELEPHONE:	(509) 495-7896
		EMAIL:	tamara.bradley@avistacorp.com

SUBJECT: AMI

REQUEST:

Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 45, which refers to the Executive Technology Steering Committee.
Provide a copy of every presentation the Executive Technology Steering Committee received regarding the AMI deployment from January 2016 through December 2020.

RESPONSE:

The attachments provided with PC-DR-144C are **Confidential per the Protective Order in UTC Dockets UE-200900 and UG-200901**.

See PC-DR-144C Confidential Attachments A-E.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/11/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Larry La Bolle Tamara Bradley
TYPE:	Data Request	DEPT:	Electrical Engineering
REQUEST NO.:	PC - 145	TELEPHONE:	(509) 495
		EMAIL:	larry.labolle@avistacorp.com

SUBJECT: AMI

REQUEST:

Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 47, which refers to the internal development of software applications for outage management and theft/diversion of service capabilities.

a) Provide the internal project/product specifications document approved for the Information Technology department to begin developing the outage management application.

b) Is the outage management application, and its use of AMI meters, functional in all aspects of the project/product specifications document provided in response to subpart (a) as of 12-31-2020? If not, please explain non-functioning aspects and plans to rectify.

c) Provide the internal project/product specifications document approved for the Information Technology department to begin developing the theft/diversion of service application.

d) Is the theft/diversion of service application, and its use of AMI meters, functional in all aspects of the project/product specifications document provided in response to subpart (c) as of 12-31-2020? If not, please explain non-functioning aspects and plans to rectify.

RESPONSE:

a) Avista ultimately chose to not purchase the subject grid applications from Itron, but as Explained in Exh. JDD-2, pages 65-73, the Company focused on developing its own applications for capturing the customer value associated with reduced outage duration.

b) Please see subpart (a), above.

c) Avista planned to purchase grid applications from Itron to support benefits related to theft/diversion of service. In June 2018, Itron informed Avista that the communications necessary to support these applications would be delayed for release until early 2020. As a result of this delay, and the impact it would have had on our ability to begin delivering some of our customer benefits, Avista did not purchase Itron's theft applications, but instead, as explained in Exh. JDD-2, page 47, and elsewhere, the Company developed its own applications.

d) The AMI Data Analytics Project is currently tracking theft/diversion/failed and slowing meters through the use of the "Case" functionality in our Customer Care & Billing system. Once a case is created, it ties in the Premise and SPID, the Start Data, and the percent of usage that was in question. Over time, the actual billed usage is used along with the percent of usage factor to determine a value of usage that would not have been appropriately charged. This approach measures the value of revenue at risk more accurately than using an average based on an estimated value. An SQL query was created to gather the values quarterly for tracking purposes.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/06/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Joshua DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Matt Halloran
TYPE:	Data Request	DEPT:	Products and Services
REQUEST NO.:	PC - 146	TELEPHONE:	(509) 495-4170
		EMAIL:	matt.halloran@avistacorp.com

SUBJECT: AMI

REQUEST:

Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 47, and the statement "Customers' energy use data is also available for them to safely and securely download and share with third-party service providers of their choice."

a) Confirm that the download capability complies with Green Button's "Download My Data" standard. If this cannot be confirmed, please explain.

b) Confirm that the capability to share data with third parties complies with Green Button's "Connect My Data" standard. If this cannot be confirmed, please explain.

RESPONSE:

Avista offers three distinct options for our customers to access their data. All three require customer authentication on our customer facing website 'myavista.com' prior to being able to access their account specific information.

a) Avista supports Green Button 'Download My Data.' A screenshot of our customers' view in our production website is shown below. Of note, related to the Green Button download, is that of all applications developed under the 2012 'Apps for Energy' challenge, Avista is only aware of 1 application that remains available for general public use. That is why our explanation for Green Button identifies 'Energy Star's Yardstick Tool' in our customer facing explanation.

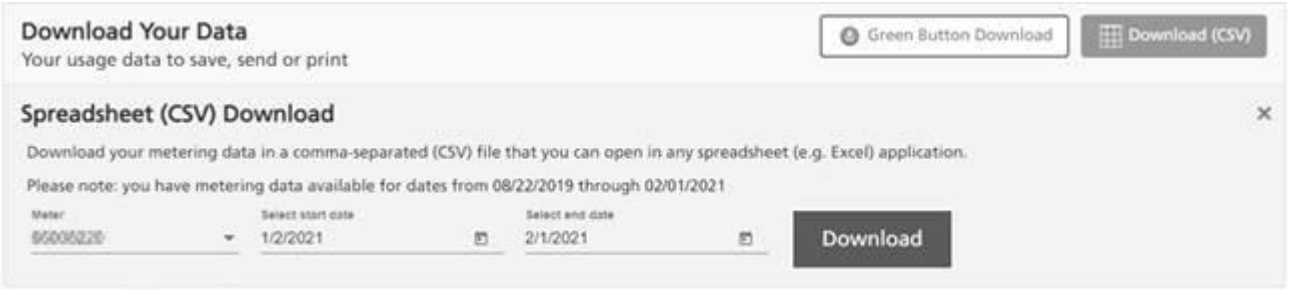
b) Green Button 'download my data' is available for both electric and natural gas customers. Customer use of the 'Green Button Download' over the course of the last 4 years is as follows: *2017* = 320; *2018* = 201; *2019* = 214; *2020* = 590

Avista does not currently support automated customer requested data integrations as defined by Green Button 'Connect My Data' standards. Due to Avista's relatively new AMI deployment, we have prioritized development and delivery of more important customer facing functionalities ahead of the 'Green Button Connect My Data' capability. These functionalities include, but are not limited to the following:

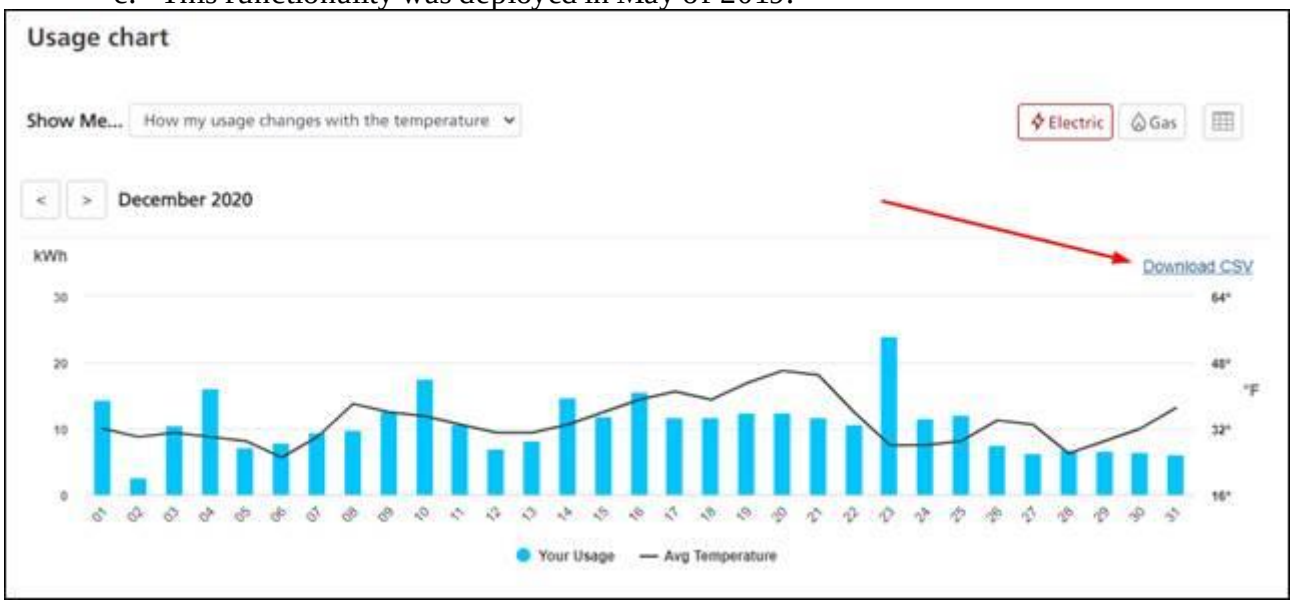
i. *Usage Charts* - AMI data represented on charts for customers on myavista.com
ii. '*Bill to date'* functionality – allowing a customer with AMI to view their 'bill to date' at any point in the bill cycle, prior to their bill being generated.
iii. *Budget Alerts* – Allowing a customer to set a personalized bill threshold and be alerted if Avista predicts/estimates that threshold will be exceeded.
iv. *AMI Based Load Disaggregation* – Avista has chosen to partner with the 3rd party vendor Bidgely to deliver our customers personalized energy savings insights based on AMI derived load disaggregation that will be accessible to all AMI customers via myavista.com, with an *estimated* delivery date in late 2021.

Avista will continue to monitor the 'Green Button Connect My Data' 3rd party applications market maturity as well as Avista customer demand for automated data integration functionality. Concurrently, Avista is continuing to research, develop and deploy Energy Management tools that are enhanced by our AMI deployment and the data that is made available through the system.

Avista also offers a date range configurable download option that allows a customer to download and view their AMI data, as presented in the screenshot below. This allows for compatibility with any spreadsheet or data analytics platform the customer chooses. This download option exports 5 min data for electric customers, and one hour data for natural gas customers. This functionality was deployed in July of 2020.



2. **<u>Usage Chart and Usage Chart Download</u>**
   a. Avista offers our customer the ability to view all their AMI on the 'view your usage' page on myavista.com. This allows the customer to view up to 2 years of AMI data. The customer can view their usage at the monthly, daily, hourly and 5 minute interval levels.
   b. Avista also offers our customers the ability to download data as it's displayed in our 'myavista.com usage charts.'
   c. This functionality was deployed in May of 2019.



AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/04/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Robb Raymond
TYPE:	Data Request	DEPT:	Electrical Engineering
REQUEST NO.:	PC - 147	TELEPHONE:	(509) 495-4695
		EMAIL:	robb.raymond@avistacorp.com

SUBJECT: AMI

REQUEST:
Please refer to Joshua D. DiLuciano, Exh. JDD-2, at 60–61, regarding the Meter Socket Repair benefit. Provide the number of meter base and socket repairs Avista ordered customers to complete, or which Avista completed, by year, from 2016 through 2020.

RESPONSE:
To date we have inspected over 99.9 percent of our electric meter base/sockets and we have completed 7,741 repairs, representing 1.9% of the total new meters installed.

Year	QTY
2016	1,295
2017	1,986
2018	47
2019	2,498
2020	1,915
Total	7,741

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/01/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Liz Andrews
REQUESTER:	Public Counsel	RESPONDER:	Jeanne Pluth
TYPE:	Data Request	DEPT:	Regulatory Affairs
REQUEST NO.:	PC – 148 Revised	TELEPHONE:	(509) 495-2204
		EMAIL:	jeanne.pluth@avistacorp.com

SUBJECT: AMI

REQUEST:
Please refer to Elizabeth M. Andrews, workpaper "200900-200901-Andrews 1) AMI Capital and Regulatory Asset.xlsx".

a) Provide a live version of this workbook with no pasted values and all formulae working, intact, and available for review.
b) Please refer to cells B28 and C28 in tab "Adjustment", which represent "Net O&M Offset" dollars for Electric and Gas, respectively. Provide detailed calculations on how these amounts were estimated.
c) Please refer to cells B16 and C16 in tab "Adjustment", which represent deferred depreciation on the AMI electric and gas investments, respectively. Provide documentation of Commission authorization for this accounting treatment. If such documentation is not available, justify this adjustment and collection as part of the amortization of the net book value of meter assets stranded by the AMI project.

RESPONSE:
The Company's initial response to this request included the AMI Benefits Workbook, filed in support of Exh. JDD-2, and provided as PC-DR-148 Attachment A. As described in the Company's response to PC-DR-136 Revised, the AMI Benefits Workbook has been revised and included as PC-DR-136 Revised Attachment A.

a) The workpaper called "200900-200901-Andrews 1) AMI Capital and Regulatory Asset.xlsx" that was provided when the case was filed is an excel spreadsheet with formulae intact. Any numbers that are hardcoded are from source systems, like the general ledger or plant records, so there is no other way to include the data than entering it into the spreadsheet.

   See Avista's response to Staff-DR-107 Supplemental 2 – 3.16-Attachment A – C for updated balances and workpapers to support the revised AMI Adjustment 3.16. This revision was to adjust 2020 capital additions to actual and to revise the forecasted 2021 capital additions for revised amounts.

b) Revised O&M offsets were provided in PC-DR-131 Revised Attachment D.

c) As stated in Andrews' testimony at page 45 (Exhibit EMA-1T), "Per Order 01 in Dockets UE-170327 and UG-170328, the Commission approved the deferral of depreciation expense for the Company's investment in its AMI project." The order has been provided as PC-DR-148-Revised Attachment A and PC-DR-148-Revised Attachment B.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/06/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Heather Rosentrater
REQUESTER:	Public Counsel	RESPONDER:	Larry La Bolle
TYPE:	Data Request	DEPT:	Planning/Transm Operations
REQUEST NO.:	PC - 149	TELEPHONE:	(509) 495-4710
		EMAIL:	larry.labolle@avistacorp.com

SUBJECT: AMI

REQUEST:

Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 63, 69, regarding the estimation of reliability improvement benefits.
The description on page 63 appears to indicate that in the current business case, Avista multiplied an estimated improvement in reliability by the cost per customer minute to estimate the reliability improvement benefit. From the description on page 69, it appears Avista used the Interruption Cost Estimator online software model to estimate the value of reliability improvements in its 2016 business case.

a) Confirm that Public Counsel's understanding of the change in methodology is accurate. If this cannot be confirmed, please provide a correction to Public Counsel's understanding.
b) If Public Counsel's understanding of the change in methodology is confirmed, provide a rationale for the change in methodology.

RESPONSE:

a) Avista could find no reference to the customer benefits of reliability improvement in Exh. JDD-2, page 63. The subject statement regarding the suggested method for determining the customer value of outage improvements in the current case, as stated previously in response to PC-DR-138, part (d), is not correct. The subject statement about Avista's use of the Interruption Cost Estimator to estimate the value for its 2016 AMI business case is correct. For the detailed description of the determination of customer benefits in our current business case, please see our response to PC-DR-138, part (a). For the detailed description of the calculation of benefits in our 2016 business case, please see our response to PC-DR-139.

b) Please see part (a), above.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/09/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Heather Rosentrater
REQUESTER:	Public Counsel	RESPONDER:	Larry La Bolle
TYPE:	Data Request	DEPT:	Planning/Transm Operations
REQUEST NO.:	PC - 150	TELEPHONE:	(509) 495-4710
		EMAIL:	larry.labolle@avistacorp.com

SUBJECT: AMI

REQUEST:

Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 69, and the statement, regarding the difference in annual reliability improvement benefits from the 2016 business case to the 2019 business case, "The first change reduced the total benefits from $4.5 million to $3.8 million and eliminating planned outages from the analysis further reduced the annual value to our stated level of $3.2 million."
Provide all calculations used to develop each of the two methodological changes described on page 69.

RESPONSE:

For calculation of the value of $4.5 million, please see our response to PC-DR-138, part (c)(ix, x). As explained in Exh. JDD-2, this scenario assumes the calculation of customer value based on a percentage reduction of overall outage costs experienced by our customers for all types of outage events. In this approach, which the Company employed in its 2016 business case, and which was not used to determine the value of customer benefits in our current case, the overall outage hours as stated in PC-DR-138 (c)(x) are multiplied by 0.06 for the 6% improvement, then multiplied by the weighted average cost per unserved kWh ($116.15), and then reduced for our Washington only electric customers to a value of $4.5 million.

For the calculation of the value of $3.8 million, please refer to our response in PC-DR-138, part (a). As explained in Exh. JDD-2, page 69, the value of $3.8 million, which was not used by the Company to estimate the customer value of reduced outage duration in this current case, does not exclude outages associated with planned/maintenance events. To calculate this value, follow the detailed instructions provided in PC-DR-138, part (a), however, for the value of SAIFI with and without improvement, use the five-year average value of 0.98, for the value of SAIDI without improvement, use the five-year average value of 143.4 minutes, and for the value of SAIDI with improvement, use the five-year average value of 129.

For the calculation of the value of $3.2 million, as relied upon for the subject benefit in the case, please see our response to PC-DR-138 (a).

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/08/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Jeff Potter
TYPE:	Data Request	DEPT:	Distribution Operations
REQUEST NO.:	PC - 151	TELEPHONE:	(509) 495-2543
		EMAIL:	jeff.potter@avistacorp.com

SUBJECT: AMI

REQUEST:

Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 76–77, regarding reductions in Avista's estimate of conservation benefits available from voltage reduction.

a) Provide a count of feeders with open secondary lines operating on it.
b) Of the feeder count provided in response to subpart (a), provide a count of feeders Avista has disqualified from the CVR program.
c) Of the feeders counted in response to (b), identify the feeder that is most susceptible to voltage variations. For this feeder, provide (i) the energy (in MWh) consumed on the feeder in 2020; (ii) the energy (in MWh) consumed by customers served by open secondary lines in 2020; and (iii) the count of customers served by open secondary lines.
d) On the feeder identified in subpart (c), estimate (i) a count of (or percent of) customers that would be negatively affected by application of a CVR program, and (ii) the number of additional voltage regulators required to enable CVR on that feeder.
e) Of the feeders counted in response to (b), identify the feeder that is least susceptible to voltage variations. For this feeder, provide (i) the energy (in MWh) consumed on the feeder in 2020; (ii) the energy (in MWh) consumed by customers served by open secondary lines in 2020; and (iii) the count of customers served by open secondary lines. f) On the feeder identified in subpart (e), estimate (i) a count of (or percent of) customers that would be negatively affected by application of a CVR program, and (ii) the number of additional voltage regulators required to enable CVR on that feeder.
g) Provide a count of the distribution feeders operated by Avista as of 12/31/2020.
h) Provide the criteria Avista uses to categorize a feeder as "rural", and provide a list of those feeders.
i) Of the feeders listed in subpart (h), identify the feeders Avista has disqualified from the CVR program.
j) Of the feeders listed in subpart (i), identify the feeder that is most susceptible to voltage variations. Provide the number of additional voltage regulators required to enable CVR on the feeder.
k) Of the feeders listed in subpart (i), identify the feeder that is least susceptible to voltage variations. Provide the number of additional voltage regulators required to enable CVR on the feeder.

RESPONSE:

a) Approximately 120 of the 211 feeders located principally in Washington.

b) Approximately 70 of the 120.

c) We chose Southeast 12F2 due to its large percentage of open wire secondary relative to the overhead circuit miles of the feeder.
   i. 45,079 MWh
   ii. We estimate 30% of the feeder has open wire secondary. The overhead circuit miles for SE12F2 is 117,000 feet. 30% of that would be 35,000 feet.

iii. There were 3115 customers on SE12F2 in 2020. If we estimate 30% of the feeder has open wire secondary, then 935 customers were served by open wire secondary.

d) i) Not knowable at this time without two years of actual customer meter voltage data. ii) If we assume the average open wire secondary district is 600 feet and divide that into the total estimate for open wire secondary for SE12F2, we get 35,000/600 = 58 open wire secondary districts where an additional secondary voltage regulator would be required for each district.

e) We chose Northeast 12F3 due to its low percentage of open wire secondary relative to the overhead circuit miles of the feeder.
   i. 18506 MWh
   ii. We estimate 5% of the feeder has open wire secondary. The overhead circuit miles for NE12F3 is 111,000 feet. 5% of that would be 5,500 feet.
   iii. There were 1,264 customers on NE12F3 in 2020. If we estimate 5% of the feeder has open wire secondary, then 63 customers were served by open wire secondary.

f) i) Not knowable at this time without two years of actual customer meter voltage data. ii) If we assume the average open wire secondary district is 600 feet and divide that into the total estimate for open wire secondary for NE12F3. We get 5,500/600 = 9 open wire secondary districts where an additional secondary voltage regulator would be required for each district.

g) 211 electric distribution feeders in Washington as of 12/31/2020.

h) Avista classifies a rural feeder as having 50 or fewer customers per mile. 111 of our feeders are designated as rural, as listed below.

ARD12F1	ARD12F2	CHW12F1	CHW12F2	CHW12F3	CHW12F4	WAK12F4	CLV12F2
CLV12F3	CLV12F4	CLV34F1	GIF34F1	GIF34F2	GRN12F1	GRN12F2	GRN12F3
KET12F1	KET12F2	ORI12F1	ORI12F2	ORI12F3	SPI12F1	SPI12F2	VAL12F1
VAL12F2	VAL12F3	SUN12F5	DVP12F2	FOR12F1	FOR2.3	HAR12F1	HAR12F2
LF34F1	LL12F1	ODS12F1	RDN12F1	RDN12F2	WIL12F1	WIL12F2	SUN12F4
CFD1211	SLK12F3	DRY1209	SLK12F2	SLK12F1	SIP12F5	SIP12F3	L&R511
L&R512	LIN711	SIP12F2	OTH502	OTH503	OTH505	SIP12F1	RIT732
ROX751	SE12F4	SOT522	SOT523	SPR761	WAS781	DIA231	DIA232
ECL221	NE12F5	EWN241	GAR461	LAT421	LAT422	LEO612	PAL311
PAL312	ROK451	RSA431	SPA442	NE12F3	SPU122	MLN12F2	SPU124
SPU125	TKO411	TKO412	TUR111	TUR112	MLN12F1	MEA12F2	LOO12F2
LOO12F1	TVW131	LIB12F4	LIB12F3	INT12F2	H&W12F2	H&W12F1	GRA12F2
GLN12F2	EFM12F2	3HT12F8	EFM12F1	DEP12F2	9CE12F3	DEP12F1	AIR12F1
COB12F2	AIR12F3	COB12F1	CHE12F4	BEA12F3	BEA12F4	BKR12F2	

i) Subject feeders are listed below.

CLV12F2	CLV12F4	ODS12F1	LIN711	OTH502	OTH503	OTH505	ROX751
SOT522	SOT523	SPU122	SPU124	SPU125	TUR111	TVW131	SE12F4
NE12F5	NE12F3	GRA12F2	GLN12F2	3HT12F8	9CE12F3	BEA12F3	BEA12F4
ARD12F1	ARD12F2	CLV12F3	GRN12F2	KET12F1	KET12F2	ORI12F1	ORI12F2
ORI12F3	VAL12F1	VAL12F2	VAL12F3	FOR12F1	RDN12F1	RDN12F2	SPR761
WAS781							

j) Not knowable at this time without two years of actual customer meter voltage data.

k) Not knowable at this time without two years of actual customer meter voltage data.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/08/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Jeff Potter
TYPE:	Data Request	DEPT:	Distribution Operations
REQUEST NO.:	PC - 152	TELEPHONE:	(509) 495-2543
		EMAIL:	jeff.potter@avistacorp.com

SUBJECT: AMI

REQUEST:

Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 76–77, regarding reductions in Avista's estimate of conservation benefits available from voltage reduction, and in particular, the rationale of open secondary lines as precluding CVR.
Public Counsel is aware that additional voltage regulators could be installed to mitigate the issue Avista describes. Provide any analyses Avista has completed which indicates that the combination of additional voltage regulators with CVR on open secondary lines does not constitute a "cost-effective conservation measure" as described in the Clean Energy Transformation Act, RCW 19.405.040.6. If Avista has not performed such an analysis, please so state.

RESPONSE:

The combination of additional CVR on open wire secondary was evaluated using general design guidelines and found not to be a "cost-effective conservation measure," as explained below.

Open wire secondary is grouped around a single-phase overhead transformer into a secondary district. This district can serve on average from six to sixteen customers spread out along three to five overhead poles with a length of open wire secondary from 400 to 800 feet. Voltage issues arise as the length of the open wire secondary increases from the transformer to the customer. The CVR solution would require each transformer to have a regulator to ensure proper customer service voltage. The installed cost of this regulator would depend on the peak load of the customers within the district and would range between approximately $4,000 to $6,000. This solution would also introduce additional losses from the regulator itself, which would also contribute to defeating this proposal as a cost effective alternative.

An alternative solution would be to install additional transformers on the existing poles within the secondary district to reduce the number of customers within the district and shorten the length of open wire secondary serving each customer. The average installed cost of an overhead transformer would range between $3,000 and $5,000. This solution would reduce overall losses due to the shorter secondary service lines.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/06/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	L. Andrews/J. DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Jeanne Pluth
TYPE:	Data Request	DEPT:	Regulatory Affairs
REQUEST NO.:	PC - 153	TELEPHONE:	(509) 495-2204
		EMAIL:	jeanne.pluth@avistacorp.com

SUBJECT: AMI
REQUEST:
Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 12, which details $119.2 million in AMI capital cost. Please refer also to Elizabeth M. Andrews, workpaper "200900-200901-Andrews 1) AMI Capital and Regulatory Asset.xlsx", tab "Adjustment", which identifies electric and gas rate base capital additions totaling $144.1 million for AMI (cells B3 and C3).

a) Explain the difference between the estimate of capital cost in JDD-2 and the amounts requested by Ms. Andrews as rate base additions in the rate case.
b) Explain why the business case uses an AMI capital estimate which is 17 percent lower than what Avista is asking to recover in rates.
c) Provide a reconciliation of the difference between the estimate of capital cost in JDD-2 and the amounts requested by Ms. Andrews as rate base additions in the rate case.

RESPONSE:
As shown on page 12 of Exhibit JDD-2, the capital costs of $119.2 million represent "net present value". Footnote 13 on page 12 states, "Total of the actual and forecast lifecycle capital costs of $156.6 million and operating (O&M) costs of $101.7 million on a nominal (cash) basis, as summarized in Table 3-1."

A summary of the capital costs from Table 3-1 that detail the $156.6 million of lifecycle costs, follows:

Year	MDM	HE	CI	DA	M	EE	TOTAL
2015	$ 0				$ 0		$ 1
2016	8.3	0.1	0.7		0.4	1.7	11.2
2017	10	2.6	0.8	0.2	0.8	0.6	15
2018	0.2	9.4	1.8	0.4	9.2	0.5	21.5
2019		10	3.3	0.6	43.8	0.3	58
2020		2	3.7	0.7	28.5	0.5	35.4
2021		0.1	0.8	0.4	2.3	0.5	4.1
Total Costs Pro Formed	18.7	24.2	11.1	2.3	85.3	4.1	145.7
2032					0.6		0.6
2033					2.8		2.8
2034					3.3		3.3
2035					3.4		3.4
2036					0.8		0.8
Future Costs	0	0	0	0	10.9	0	10.9
Total Project Costs	$ 18.7	$ 24.2	$ 11.1	$ 2.3	$ 96.2	$ 4.1	$ 156.6

Of the total capital costs of $156.6 million, $145.7 million will be in service by 2021, which represents the amount pro formed in the case. This is approximately $1.6 million greater than the actual amount of $144.1 million of capital costs pro formed, due to changes in estimates.

The use of the net present value of the capital costs was discussed in Exhibit JDD-2 at page 11, as follows:

> For purposes of this report, though we sometimes refer to costs and benefits in nominal (or cash) amounts, we predominantly state them as the net present value (NPV) of the stream of annual costs and customer benefits over the project lifecycle (2016 – Q1 2037). The use of net present value normalizes the time value of customer costs and benefits to ensure a meaningful forecast of the cost effectiveness of the investment regardless of when expenditures are made and when benefits are realized. Here, we express net present value in 2016 dollars in order to facilitate a direct comparison with results from our initial business case.

Please see Avista's response to PC-DR-143. Avista recently made the decision to read the meters of approximately 17,500 natural gas customers served in our "natural gas only" areas using mobile field collectors instead of the planned deployment of AMI fixed network communications. This decision will have nominal impact on the AMI project lifecycle capital and O&M costs and net financial benefits, as presented in Exh. JDD-2, and the Company is currently revising its business case to reflect this decision.

Avista believes it is in the interest of all parties to have the Company's AMI business case reflect as much actual and updated information as is practical right now, even though we expect only a nominal impact to the overall net benefits. Accordingly, we are updating the project financials, which will be reflected in revised AMI Cost and Benefit Workbooks, to be available in the next two weeks, which will be followed by our revision of the report document itself, Exh. JDD-2. After the AMI Cost and Benefit Workbooks are available, the Company will supplement this response with revised information.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	02/08/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Joshua D. DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Mark W. Gustafson
TYPE:	Data Request	DEPT:	Avista Edge, Inc.
REQUEST NO.:	PC - 154	TELEPHONE:	(509) 495-2640
		EMAIL:	mark.gustafson@avistacorp.com

SUBJECT: AMI

REQUEST:
Please refer to Joshua D. DiLuciano, Exhibit JDD-2, at 35, Figure 3-1, "Diagram of AMI interconnection with customers". Note the box labeled "Wide Area Network (Communications Backhaul)".

a) Describe the extent to which Avista Corporation subsidiary Avista Edge could provide communication backhaul services to Avista for AMI.
b) Describe the extent to which Avista Edge provides communications backhaul services to Avista today (for any purpose).
c) Provide the invoiced amounts, if any, Avista Edge billed to Avista Corporation's regulated electric and gas utility business in 2020.
d) Describe any policies, processes, or other protections which ensures that Avista Edge will be forced to compete with third party service providers (such as Verizon and AT&T).

RESPONSE:

a) None.
b) None.
c) $0.00
d) As an unregulated subsidiary, any contract for services Avista Edge, Inc. (Avista Edge) might provide to Avista Utilities must be approved by the WUTC. Avista Edge is not contracted to provide services to Avista Utilities. Avista Edge is providing networking technology and service to municipal electric utilities to allow them to serve retail internet to their municipal electric customers.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/02/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Elizabeth Andrews
REQUESTER:	Public Counsel	RESPONDER:	Jeanne Pluth
TYPE:	Data Request	DEPT:	Regulatory Affairs
REQUEST NO.:	PC - 192	TELEPHONE:	(509) 495-2204
		EMAIL:	jeanne.pluth@avistacorp.com

SUBJECT: AMI

REQUEST:
Refer to Attachments A and B provided by Avista in response to Public Counsel Data Request No. 131, tabs "Elec Rev Req" and "Gas Rev Req".
Note that these Attachments only proceed through year 2034, while benefits detailed on other schedules, such as Attachment A provided by Avista in response to Public Counsel Data Request No. 148, proceed through year 2037. Note also that balances remain on many line items subject to additional depreciation and amortization in year 2034, which leads Public Counsel to conclude that Attachments A and B do not comply with Public Counsel Data Request No. 131 (which asks for revenue requirements for electric and gas customers until AMI assets are expected to be fully depreciated). At a minimum, incremental O&M expenses related to AMI will continue through 2037 as well. Provide revised Attachments A and B in response to Public Counsel Data Request No. 131 which proceed through 2037, thereby providing consistency to the benefit period.

RESPONSE:
Please see the Company's revised response provided in PC-DR-131 Revised.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/03/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Elizabeth Andrews
REQUESTER:	Public Counsel	RESPONDER:	Jeanne Pluth / Tamara Bradley
TYPE:	Data Request	DEPT:	Regulatory Affairs / AMI
REQUEST NO.:	PC - 193	TELEPHONE:	(509) 495-2204
		EMAIL:	jeanne.pluth@avistacorp.com

SUBJECT: AMI
REQUEST:
Please refer to the revised Attachments A and B related to original Public Counsel Data Request No. 131, which Avista will provide in response to Public Counsel Data Request No. 192.

a) Provide these Attachments with no pasted values and all formulae active and available for review. To the extent these formulae refer to external worksheets, provide these worksheets (or refer to worksheets already provided as appropriate).
b) Refer to Tab "O&M Savings" on both worksheets. Explain what the line item "Revenue Requirement Reductions" is intended to represent.
c) Refer to Tab "O&M Savings" on both worksheets. Explain what the line item "Expected Savings to be Redeployed" is intended to represent.
d) Public Counsel notes that while "Expected Savings to be Redeployed" does not constitute a reduction in the revenue requirement, it is included among the benefits counted by Avista in its benefit-cost analysis (Attachment A provided by Avista in response to Public Counsel Data Request No. 148, tab "Revenue Requirement Reductions". Explain how a "savings" item which Avista does not expect will reduce the revenue requirement can also be considered by Avista as a benefit in a benefit-cost analysis.

RESPONSE:

a) All formulae are active in the attachments to PC-DR-131. The electric and natural gas worksheets use data provided in Staff-DR-107, which is the revised Andrews Pro Forma Adjustment 3.16 for AMI. The Company has not linked various spreadsheets, due to the number of spreadsheets and the linking problems that have occurred in the past with linking numerous spreadsheets. All data is clearly labeled and can be easily found in the spreadsheets.
b) The subject line item refers to savings related to 'activities' that will not contribute to the Company's revenue requirement.
c) The subject line item refers to savings related to activities that will no longer be part of the Company's revenue requirement, but which departmental costs will not be correspondingly reduced because some of the savings will provide offsets against known increases in costs for other activities in the same part of the organization (department).
d) The Company's revenue requirement is composed of many types of costs supporting various functions that are dynamic over time. A reduction in one activity may or may not necessarily translate into a one-for-one reduction in the budget for that department. In the latter case this occurs because the reduction in costs may help offset increasing costs that would otherwise have shown up as a one-for-one increase in revenue requirement (but now they do not). The savings shown as redeployed are true hard dollar savings because they are ultimately reflected in a total aggregated revenue requirement, which is lower than it would otherwise have been by the total amount of those stated savings.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/04/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Elizabeth Andrews
REQUESTER:	Public Counsel	RESPONDER:	Jeanne Pluth
TYPE:	Data Request	DEPT:	Regulatory Affairs
REQUEST NO.:	PC - 194	TELEPHONE:	(509) 495-2204
		EMAIL:	jeanne.pluth@avistacorp.com

SUBJECT: AMI

REQUEST:
Please refer to Attachments A and B provided by Avista in response to Public Counsel Data Request No. 131, Tab "O&M Costs", line "Total". Please refer also to Joshua D. DiLuciano, Exh. JDD-2, at 38, Table 3-1, which provides operating expenses by year for the AMI deployment.
Public Counsel notes that in the "Totals – EXP" column of Table 3-1, O&M expenses amount to $86.7 million from 2021 through 2034. In Attachments A and B provided by Avista in response to Public Counsel Data Request No. 131, Tab "O&M Costs", line "Total", O&M expenses over this same time period amount to only $53.4 million.

a) Explain why the O&M costs in the response to Public Counsel Data Request No. 131 (Revenue Requirements) should be different from the O&M costs in Table 3-1.
b) Provide all cost calculations, assumptions, worksheets, and other details by year and line item for Table 3-1 on page 38 of Exh. JDD-2. Ensure there are no pasted values, with all formulae working and available for Public Counsel review.
c) Provide corrected versions of Attachments A and B provided by Avista in response to Public Counsel Data Request No. 131 if necessary.

RESPONSE:

a) Table 3-1 on page 38 of Exh. JDD-2 has been updated and is provided in response to PC-DR-131 Revised. The subject table includes the amortization of the old meters. The calculations in PC-DR-131 Attachments A and B include the amortization of the old meters in a separate line item, which is not included with O&M costs.

b) The revised Avista AMI Costs Workbook supporting the revised Table 3-1, as explained in Avista's response to PC-DR-131 Revised, has been provided as PC-DR-131 Revised Attachment C.

c) Updated versions of Attachments A and B, are provided as PC-DR-131 Revised Attachments A and B.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/03/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Elizabeth Andrews
REQUESTER:	Public Counsel	RESPONDER:	Jeanne Pluth/Tamara Bradley
TYPE:	Data Request	DEPT:	Regulatory Affairs/AMI
REQUEST NO.:	PC - 195	TELEPHONE:	(509) 495-2204
		EMAIL:	jeanne.pluth@avistacorp.com

SUBJECT: AMI

REQUEST:
Please refer to Attachments A and B provided by Avista in response to Public Counsel Data Request No. 131, Tabs "Elec Rev Req" and "Gas Rev Req" respectively.
On line "Proposed rate of return", 7.43 percent is used. Please refer also to Attachment A provided by Avista in response to Public Counsel Data Request No. 148. While most benefits appear to be discounted into present value using a rate of 6.43 percent, many appear to be using the 2016 business case amount of 6.58 percent.

a) Provide versions of all attachments provided in response to Public Counsel Data Request Nos. 131, 135, 136, and 148 with no pasted values and all formulae intact and available for Public Counsel review.
b) Explain why Avista would use anything other than the rate of return requested in this rate case to discount nominal values into present value.
c) Provide corrected versions of all responses to Public Counsel AMI DRs involving present value, likely including Attachments to Public Counsel Data Request Nos. 131, 136, and 148 as appropriate, which use 7.43 percent as the discount rate for conversion of nominal values into present values.
d) Provide corrected versions of Mr. DiLuciano's testimony and Exh. JDD-2 as appropriate.

RESPONSE:

a) All formulae are active in the attachments to PC-DR-131. The electric and natural gas worksheets use data provided in Staff-DR-107, which is the revised Andrews Pro Forma Adjustment 3.16 for AMI. The Company has not linked various spreadsheets, due to the number of spreadsheets and the linking problems that have occurred in the past with linking numerous spreadsheets. All data is clearly labeled and can be easily found in the spreadsheets.

b) In this application it only makes sense to use the tax affected discount rate, which for Avista is in the range of 6.5%. A higher discount rate, academically speaking, used for both costs and benefits, would have a nominal impact to project net benefits, even though it would not be appropriate in this instance.

c) Please see the response to part (b), above.

d) Please see the response to part (b), above.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/01/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Robb Raymond
TYPE:	Data Request	DEPT:	Electrical Engineering
REQUEST NO.:	PC - 196	TELEPHONE:	(509) 495-4695
		EMAIL:	robb.raymond@avistacorp.com

SUBJECT: AMI

REQUEST:
Please refer to Avista's response to Public Counsel Data Request No. 137, in which Avista provides historical electric and gas spending detail for meter reading (PC-137, subpart (a)) and meter services (PC-137, subpart (d)) departments by year from 2016 through 2020.

a) Provide 2020 meter reading departmental spending detail by month for both electric and gas.
b) Provide 2020 meter services departmental spending detail by month for both electric and gas.
c) Does Avista maintain a separate department for Credit Collections Connections? If so, provide electric and gas spending detail for the Credit Collections Connections department by year from 2016 through 2020.
d) If Avista maintains a separate department for Credit Collections Connections, provide 2020 electric and gas spending detail by month.
e) Provide the number of Electric meters read via the AMI system in December, 2019.
f) Provide the number of Gas meters read via the AMI system in December, 2019.

RESPONSE:

a) Please see the table below for meter reading spending detail by month for both electric and natural gas service.

Category	202001	202002	202003	202004	202005	202006	202007	202008	202009	202010	202011	202012	Grand Total
Burden Cost USD	$82,166	$68,091	$72,375	$89,608	$373,500	$51,644	$19,678	$15,833	$18,163	$34,964	($159)	$47,145	$873,008
Inventory USD	$287	$310	$319		$5	$600		$21		$240		$552	$2,334
Labor Cost USD	$98,230	$98,309	$86,555	$75,466	$187,078	$80,241	$56,201	$99,627	$32,065	$51,689	$37,929	$38,101	$941,491
Purchase Invoices	$2,499	$3,806	$1,670	$3,487	$1,720	$774	$120	$57			$217	$40	$14,390
Usage Cost USD	$23,726	$22,151							$123		$34		$46,034
Grand Total	**$206,907**	**$192,667**	**$160,920**	**$168,562**	**$562,302**	**$133,259**	**$75,999**	**$115,537**	**$50,351**	**$86,893**	**$38,022**	**$85,838**	**$1,877,257**

b) Please see the tables below for meter service spending by month in 2020 for electric and natural gas service.

Gas Shop Expenses													
Category	202001	202002	202003	202004	202005	202006	202007	202008	202009	202010	202011	202012	Grand Total
Contractor					$890								$890
Employee Expenses					$430	$92							$522
Labor	$470		$1,112	$1,693	$2,080	$1,064	$664	$1,605	$166				$8,855
Material	$10,227	$263	$44,871		$4,083		$17,577	$4,074	$12,858				$93,953
Vehicle				$206									$206
Voucher	$189	$149		$1,298	$143	$240	$2,292		$456	($80,907)	$394	$146	($75,601)
	$10,886	**$412**	**$45,983**	**$3,196**	**$7,625**	**$1,396**	**$20,534**	**$5,679**	**$13,480**	**($80,907)**	**$394**	**$146**	**$28,825**

Electric Shop Expenses													
Category	202001	202002	202003	202004	202005	202006	202007	202008	202009	202010	202011	202012	Grand Total
Employee Expenses	$75	$183			$15		$75				$92		$441
Labor	$50,649	$52,931	$47,710	$30,226	$48,709	$39,497	$53,997	$50,735	$51,414	$92,957	$66,222	$59,478	$644,525
Material										$392			$392
Voucher	$42		$3,213		$250	$47	$594	$132	$360	$108	$105		$4,850
	$50,766	**$53,114**	**$50,924**	**$30,226**	**$48,975**	**$39,543**	**$54,666**	**$50,867**	**$51,774**	**$93,457**	**$66,419**	**$59,478**	**$650,208**

c) Avista does not maintain a separate department for Credit Collections Connections. The costs are included in meter reading expenses communicated in PC-137 item a) which is included for reference in the table below.

Category	2016	2017	2018	2019	2020
Burden Cost	$1,657,542	$1,533,759	$1,512,192	$1,435,414	$873,008
Inventory	$6,564	$13,374	$6,893	$7,409	$2,334
Labor Cost	$1,925,623	$1,936,009	$1,982,582	$1,852,997	$941,491
Purchase Invoices (Mileage and Incidentals)	$47,288	$48,356	$52,000	$48,653	$14,390
Usage Cost (Fleet)	$542,878	$461,174	$469,385	$425,662	$46,034
	$4,179,896	**$3,992,673**	**$4,023,052**	**$3,770,135**	**$1,877,257**

d) Avista does not maintain a separate department for Credit Collections Connections and the costs are included in meter reading expenses provided in part (a) above.

e) Avista read 137,478 electric meters by AMI in December 2019.

f) Avista read 81,261 natural gas modules by AMI in December 2019.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/03/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Robb Raymond
TYPE:	Data Request	DEPT:	Electrical Engineering
REQUEST NO.:	PC – 197	TELEPHONE:	(509) 495-4695
		EMAIL:	robb.raymond@avistacorp.com

SUBJECT: AMI

REQUEST:

Please refer to Avista's response to Public Counsel Data Request No. 137, in which Avista provides historical electric and gas spending detail for meter reading (PC-137, subpart (a)) and meter services (PC-137, subpart (d)) departments by year from 2016 through 2020. Public Counsel is interested in the historical, current, and proposed organizational charts for all departments related to meter reading, meter services, credit collections connections, meter shop, meter communications network operations, and any other departments devoted to meter operations. For each of these named departments, and for any other departments Avista identifies as "meter related", provide the actual or anticipated department organization charts as of:

a) December 31, 2016, (intended to represent historical organizational structures and staffing levels in each of these departments)
b) December 31, 2020, (intended to represent current organizational structures and staffing levels in each of these departments)
c) Anticipated for December 31, 2021, (intended to represent the organizational structures and staffing levels anticipated upon full deployment of AMI)

RESPONSE

Please see the table below showing information for departments that are "meter related" and full-time employee equivalent (FTE) counts for 2016, 2021, and forecasted to the future. Some of the departments shown provide support to meter reading but are not dedicated to meter reading functions only, as they are a "shared service." Comments have been provided where applicable clarifying the role or change in conditions that support the effort and expenses reported.

Department	Role	2016 FTE	2020 FTE	Forecasted FTE	Comment
Meter Reading	Dedicated	50	11	5	The meter reading department consists of meter readers and management of meter reading and credit/collections. Five are forecasted to be needed in part due to reading opt-out customers, customers that cannot receive AMI due to rural location, and customers in Avista's WA Gas Only areas.
Credit/Collections Field Personnel	Dedicated	10	0	6	2020 and 2021 FTEs account for WUTC mandated changes in requirements for customer prior notification regarding account disconnects, however they have not performed these activities in 2020 due to COVID restrictions mandating no credit/collections disconnects.
Electric Meter Techs	Dedicated	17	15	17	Meter techs support all meter forms for all Avista's service territory. Meter operations analysts and management are also included in this group.
Electric Meter Engineering	Dedicated	1	3	3	Electric metrology engineering management is also included in this group.
Meter Operations (Gas and Elect)	Dedicated	5	6	6	1 FTE utilized to manage AMI Operations
Gas Shop	Shared	17	17	17.8	Relative to AMI, the gas shop plays only a small role as the meter is managed separately from the billing module. 2021 growth includes student helpers.
Billing	Shared	33	33	35	Billing is a shared service and part of the role is the analysis of patterns and identification of anomalies that trigger action to investigate. 2 FTEs are forecasted pending the business need due to AMI activity.
Network Support	Shared	5	5	5	.8 FTE is currently being used for AMI network optimization activities.
Network Operations Center	Shared	0	5	5	The Network Operations Center (NOC) was formed as a shared service to the company to provide 24x7 monitoring of our critical systems. ~.25 FTE is dedicated to AMI
Applications Operations	Shared	5	7	7	2 FTEs are utilized for AMI support

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/23/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Larry La Bolle
TYPE:	Data Request	DEPT:	Transm Ops/System Planning
REQUEST NO.:	PC – 198 Revised	TELEPHONE:	(509) 495-4710
		EMAIL:	larry.labolle@avistacorp.com

SUBJECT: AMI Enabled Outage Benefits

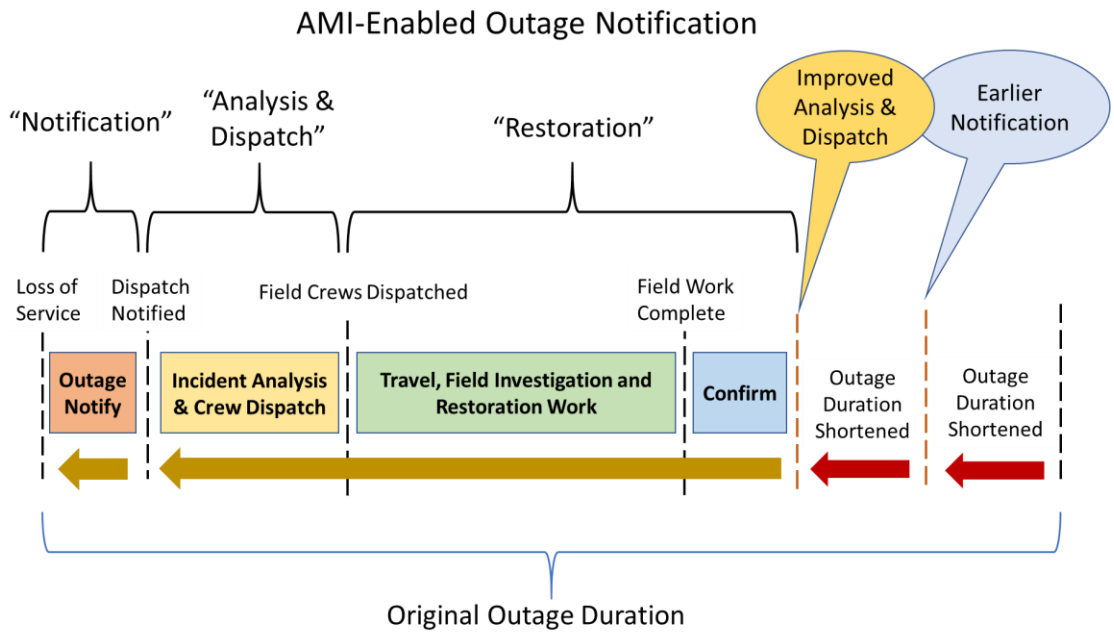
REQUEST:

Refer to Avista's response to Public Counsel Data Request No. 138, regarding the use of the ICE calculator to estimate the economic benefits of AMI-related reliability improvements.

a) In response to (a), confirm that the data inputs described in (i) to (xi) are meaningless to the computation of reliability benefits, and instead, the financial value provided in (xii)—an annual value of $5,317,783 for Washington electric customers (only)—is the relevant data point.
b) If Public Counsel's understanding in response to subpart (a) is correct, provide *each and every* data element Avista input into the ICE tool (including inflation rates, discount rates, and all other inputs) such that the ICE tool returns a Washington electric customer value of $5,317,783. If Public Counsel's understanding cannot be confirmed, please correct such understanding.
c) Confirm that from benefit year 1 on, Avista does not use ICE tool benefit calculations. Confirm that instead, Avista used the ICE tool year 1 valuation of $5,317,783, compounded annually by inflation and load growth, to get future years' benefits (as indicated in Tabs "Earlier Outage Notification" and "More Rapid Restoration" in Attachment A of Avista's response to Public Counsel Data Request No. 148), subject to the 20 percent annual "roll-in" benefit increase from 2020 to 2024. If this cannot be confirmed, please explain.
d) Confirm that the $116.15 cost per hour is for information purposes only and is not used in any reliability improvement benefit calculations. If this cannot be confirmed, please explain where and how this value is used in benefit calculations.

RESPONSE:

Avista believes the AMI-enabled outage benefits estimated in its business case represent a significant value for customers, which the Company is committed to achieving over the life of the project. To deliver and fully-maximize these benefits, Avista has developed and implemented new information systems and technology tools that use AMI data to expedite the processes of being notified of a customer outage and analyzing the outage information needed to properly dispatch crews to perform the restoration. In its AMI business case, Avista has estimated customer financial benefits for avoided outage duration that are derived from improvements in these two processes, as shown in the diagram below for "notification" and "analysis and dispatch." The diagram represents how AMI-enabled improvements on the 'front end' of the outage process result in a shorter overall outage duration experienced by our customers.



Not included in these current benefits are the improvements Avista expects to capture in the field restoration processes, shown above in the diagram under "Restoration." We have already developed tools that will help reduce this restoration time, in addition to the value already identified for earlier notification and more rapid analysis and dispatch. Avista is committed to a continuing process of improvement and creating new ways to use AMI data to reduce the duration of outages experienced by our customers. To that end, the Company has already committed to reporting out its progress in achieving such benefits in its reliability report submitted annually to the Commission. And, finally, regarding the decision by the Company to conservatively include financial benefits, as noted below in part (a)(xvii), Avista believes it will substantially outpace the achievement of benefits included in the business case through year 2024 and beyond as we make every effort to fully maximize the customer value delivered from the Washington AMI system.

a) As part of its response to PC-138 Revised part (a) Avista confirmed it had used the Interruption Cost Estimator model (icecalculator.com) to determine the customer financial value for its AMI-enabled outage improvements. And, when further asked in the request to "…provide all inputs into the ICE online software tool Avista used to estimate the value of reliability benefits," the Company provided such details. In its response to PC-138 Revised part (a) Avista provided each of the interruption cost estimator inputs and process steps, listed as subparts (i) through (xviii), which it used to determine the subject value noted in this request.

Contrary to the assertion of Public Counsel in part (a) of this request, PC-DR-198 Revised, that "… the data inputs described in (i) to (xi) are meaningless to the computation of reliability benefits…", Avista has demonstrated that the subject value and the revised of $5,835,048 could not have been derived without use of the interruption cost estimator, and particularly, without the input values Avista relied upon and presented in response to PC-DR-138 Revised part (a), including subsequent process steps performed by the Company. In its response below, Avista recapitulates these process steps and restates the input values provided in response to PC-138 Revised part (a), demonstrating how these inputs are ESSENTIAL and NECESSARY for deriving the revised subject value in the manner explained by the Company using the interruption cost estimator model. For ease of reference, in addition to restating the input values and process steps, we also provide an additional brief explanation of why each input is either essential and necessary and/or how it improves the

quality of the estimate provided by the interruption cost estimator model, and how Avista relied upon the output from the model to calculate the financial value or each of the AMI-enabled outage improvements presented in Exh. JDD-2 Revised.

From Avista's Response to PC-DR-138 Revised part (a), with additional 'Explanation' narrative.

g) For the subject estimate of the value of reduced outage duration, as enabled by advanced metering, Avista used the online Interruption Cost Estimator. Variables used in the online calculator (icecalculator.com) were as input as follows:

i. Since Avista is not estimating interruption costs generally as a benefit of AMI-enabled outage improvement (which integrates both the number and duration of outages) and is estimating the value of a particular reliability improvement, we selected the model tab labeled "Estimate Value of Reliability Improvement."

Explanation for this Input: *Avista chose this model option because, in the Company's opinion, it provides a more accurate and conservative estimate of the financial value for customers of the AMI-enabled outage improvements described in Exh. JDD-2 Revised.*

ii. For the tab labeled Select States, we entered Washington and Idaho to represent our electric service area.

Explanation for this Input: *Avista entered the States where we provide electric service because the region of the country where service is provided has a direct bearing in the model on the magnitude of the financial impact experienced by customers for electric service outages. We also entered both states into the model for this analysis because we relied on "System" values for the inputs that follow, including data for reliability indices, customers, electricity usage, etc.*

iii. For Non-Residential Customers we entered the value 61,636. The number of non-residential customers is derived from the customer data and calculations provided in PC-DR-198 Revised Attachment A, parts (B, D, E 3).

Explanation for this Input: *Use of the Interruption Cost Estimator requires the user to input the number of electric customers in its system, initially, according to two broad customer classes. Entering the number of electric customers is an essential step in the determination of the customer value associated with an outage improvement because the magnitude of the customer outage costs for the utility in question and the proper quantification of the financial value of the improvement cannot be determined without knowing the utility's number of electric customers and the broad composition of those customers. Composition of customers (e.g. residential, commercial, industrial) is of critical importance because of the great disparity in financial costs experienced by customers of different classes.*

iv. For Residential Customers we entered the value 330,717. This number is derived from the customer data and calculations provided in PC-DR-198 Revised Attachment A, parts (B, D, E 2).

Explanation for this Input: *Please see the parallel explanation just above.*

v. For Investment Information we entered the value of 15 years for Expected Lifetime of Improvement, and a starting year of 2020.

Explanation for this Input: *Use of the Interruption Cost Estimator asks the user to state the expected lifetime of the investment, which Avista entered as 15 years. Further, in the calculation of customer value as reported in Exh. JDD-2 Revised, described in detail below, the Initial Year of Improvement was set at 2020, and Avista did not adjust the default setting for the inflation rate of 2 percent, and did not adjust the default discount rate of 6 percent.*

vi. For SAIFI Without Improvement we entered the five-year average value of 0.86. This value represented outages that excluded those for planned or maintenance events, as explained in Exh. JDD-2 Revised, page 63. This value also excluded outages associated with major events, which decision the Company is still evaluating as described in Exh. JDD-2 Revised, page 70.

Explanation for this Input: *Use of the Interruption Cost Estimator for Estimating the Value of a Reliability Improvement, requires the user to establish a base value for the annual number of customer outages, combined with the number of customers served, expressed the form of the IEEE index SAIFI. Any expected improvement in SAIFI will be measured against this baseline in the model's evaluation of the anticipated reliability improvement. The interruption cost estimator model cannot calculate the value of the reliability improvement being evaluated without this input value.*

vii. For SAIDI Without Improvement we entered the average value of 120.93 minutes. As in (vi) above, this value is a five-year average based on outage events that exclude planned and maintenance outages and those associated with major event days.

Explanation for this Input: *Use of the Interruption Cost Estimator for Estimating the Value of a Reliability Improvement, requires the user to establish a base value for the annual number of customer outage hours, combined with the number of customers served, expressed the form of the IEEE index SAIDI. Any expected improvement in SAIDI will be measured against this baseline in the model's evaluation of the anticipated reliability improvement. The interruption cost estimator model cannot calculate the value of the reliability improvement being evaluated without this input value.*

viii. FOR SAIFI WITH Improvement we entered the average value of 0.86. We used the same value for SAIFI because the expected reliability improvement is not based on a reduction in number of outages, but on a reduction in outage duration alone.

Explanation for this Input: *Use of the Interruption Cost Estimator for Estimating the Value of a Reliability Improvement, requires the user to establish an expected improvement compared with the base value for the annual number of customer outages, combined with the number of customers served, expressed*

the form of the IEEE index SAIFI. The expected improvement in SAIFI will be measured against the baseline described above in the model's evaluation of the anticipated reliability improvement. Because, as explained in part (viii) above, Avista's AMI enabled outage improvements do not include any expected reduction in the number of outages experienced by our customers, the Company input the same base value used in part (vi), above. The interruption cost estimator model cannot calculate the value of the reliability improvement being evaluated without this input value.

ix. For SAIDI WITH Improvement we entered the value of 108.84 minutes. This value reflects the total improvement in outage duration expected from both the 'earlier outage notification' of 6% (Exh. JDD-2 Revised, pages 67-70) and the benefit of 'reduced outage duration from more efficient restoration processes' of 4% (Exh. JDD-2 Revised, pages 70-72).

Explanation for this Input: *Use of the Interruption Cost Estimator for Estimating the Value of a Reliability Improvement, requires the user to establish an expected improvement compared with the base value for the annual number of customer outage hours, combined with the number of customers served, expressed the form of the IEEE index SAIDI. The expected improvement in SAIDI is measured against the baseline described above in the model's evaluation of the anticipated reliability improvement. Because, as explained in part (ix) above, Avista's AMI enabled outage improvements are expected to reduce the duration of outages experienced by our customers, we input the value for SAIDI of 108.84 minutes, which represents a reduction of 12 minutes and 6 seconds of outage duration per customer per year on our electric system. Also, as noted above in part (ix), Avista combined the reduction in outage duration for its two different approaches described in Exh. JDD-2, an expected reduction of 7 minutes and 15 seconds per customer resulting from 'earlier outage notification,' and a reduction of 4 minutes and 50 seconds per customer for the year resulting from 'more efficient restoration processes. NOTE: Avista could also have run the interruption cost estimator for each benefit separately (and resulting number of outage minutes) but chose to combine them to simplify the review of our analysis during this case. The interruption cost estimator model cannot calculate the value of the reliability improvement being evaluated without the input value provided for SAIDI with Improvement.*

x. We selected the tab labeled Run the Model in the lower left-hand corner.

Explanation for this Input: *Use of the Interruption Cost Estimator provides the user the option to perform the initial calculation of the reliability benefit once the base information, as described above in parts (ii-ix) have been entered. The interruption cost estimator model cannot calculate the value of the reliability improvement being evaluated without selecting the Run the Model tab. When this step is performed, the interruption cost model produces an initial first-year estimate (including following years) of the financial value for the improvement being modeled.*

xi. Next, we selected the gear-shaped icon on the left-hand side, about mid-page, that is used to update the model parameters with Avista-specific information for

Number of Customers, Annual Usage, and Power Interruption. ****Please Note that applying the Avista-specific information served to substantially reduce the amount of the financial benefits from the initial calculation performed in part (x), above.**

Explanation for these Inputs: *The Interruption Cost Estimator provides the user the option of entering additional information to be used in the calculation of the value of the reliability improvement, which information is specific to the utility company's service characteristics and customer base. Including this Avista-specific information allows the interruption cost estimator to produce a more representative estimate of the financial value of the reliability improvement, taking into account more detailed information on our customer composition, the annual aMWh used by customers on average for the classes entered, and specific information about the composition of the service outages experienced by our customers, pertaining to time of day and general seasonality. All of these variables impact the final calculation of the financial value of the reliability improvement.*

Revised input values used were as follows:

1. # of Customers: Small C&I: 54,739; Med/Large C&I: 6,897, Residential: 330,717. The derivation of these numbers of customers is provided in PC-DR-198 Revised Attachment A, parts (B, D, E 4,5).

Explanation for these Inputs: *Please see part (xi) above. These input values allow the cost interruption model to take into account the significant differences in usage among two broad classes of non-residential customers, as well as their numeric composition, in calculating the customer value of the reliability improvement. Including this Avista-specific information allows the interruption cost estimator to produce a more representative estimate of the financial value of the reliability improvement, by relying on more detailed information on the composition of Avista's electric customers.*

2. Annual Usage: Residential: 10.99 MWh; Small C&I: 18.58 MWh; Medium and Large C&I 579.72. The derivation of these input values is provided in PC-DR-198 Attachment A, parts (A, C, E 6-8).

Explanation for these Inputs: *Please see part (xi) above. These input values allow the cost interruption model to rely on the average annual usage for the customer classes listed in part (xi)(1), above. Including this Avista-specific information allows the interruption cost estimator to produce a more representative estimate of the financial value of the reliability improvement, taking into account more detailed information on the average annual usage for Avista's electric customers, as entered in part (xi)(2).*

3. Power Interruption: Morning: 50.3 (%); Afternoon: 23.1; Evening: 13.7; Night: 12.9; Summer: 40.1.

Explanation for these Inputs: *Please see part (xi) above. These input values allow the cost interruption model to rely on the actual composition of outages*

experienced by the Company's electric customers for the year, as well as the general seasonality of outage events. Because the cost impact to customers varies with the time of day of the outage event, and generally with the season, including Avista-specific information allows the interruption cost estimator to produce a more representative estimate of the financial value of the reliability improvement.

xii. We then selected the first-year Total Benefit value in dollars, which Revised amount is $8,703,965. This first-year value is equal to the [Without Improvement (Baseline)] value minus the [With Improvement] value for Avista's Washington and Idaho electric customers. Avista then reduced this first-year value to represent the financial value for only our Washington electric customers, which Revised annual value is $5,835,048.

Explanation of this Process Step: *Once the additional Avista-specific information has been entered, the interruption cost estimator automatically updates the estimate of the financial value for customers for the subject reliability improvement, which value was produced as described above in part (ix) for the combined reduction of 12 minutes and 6 seconds of outage duration per customer per year, which total included the reduction in outage duration of 7 minutes and 15 seconds per customer resulting from 'earlier outage notification,' and the reduction of 4 minutes and 50 seconds per customer resulting from 'more efficient restoration processes.' Because, as noted above in part (ii), the value estimate is based on Avista's electric "System" data, the annual value for the first year produced by the interruption cost estimator of $*8,703,965 *had to be reduced in order the reflect the benefit provided to the Company's Washington-only customers. That value, as explained in Avista's response to PC-DR-138 Revised part (a)(xii) was $5,835,048, which was derived by ($*8,703,965**0.670). The allocation factor of 0.670 was derived as the average of the percentage of Washington number of electric customers (256,931/392,353)*[6] *and the percentage of Washington electric loads in kWh (5,664,851,064/8,648,358,526).*

xiii. That value was then partitioned into the two areas of benefit as described above in part (ix). The first-year value for the benefit of 'earlier outage notification' of 6% (Exh. JDD-2 Revised, pages 67-70) was *$3,501,029* and the benefit of 'reduced outage duration from more efficient restoration processes' of 4% (Exh. JDD-2 Revised, pages 70-72) was $2,334,019.[7]

Explanation of this Process Step: *As explained above in part (ix) and in the Explanation of the Inputs for that section, the financial value estimated by the interruption cost estimator for both of Avista's AMI-enabled improvements combined, of $5,835,048 was divided into the two benefit categories based on their relative contribution to overall customer value estimated for the combined AMI-enabled outage improvements. Earlier outage notification (0.6*$5,835,048*

[6] As provided in PC-DR-198 Revised Attachment A.

[7] Which Revised values have not been updated in Exh. JDD-2 Revised, or in the subject Avista AMI Benefits Workbook, because, as explained in response to PC-DR-259, Avista is not including any additional financial benefits in its AMI business case at this point in time, for the increase in the subject Revised benefits for AMI-enabled outage improvements.

*= $3,501,029), and more efficient restoration processes (0.4*$5,835,048 = $2,334,019).*

xiv. Next, the first-year value for earlier outage notification of $3,501,029 was imported into the AMI Benefits Workbook in Exh. JDD-2 Revised,[8] under the tab labeled "Earlier Outage Notification."

Explanation of this Process Step: *The interruption cost estimator calculates the financial value for customers for a given reliability improvement for each individual year of the period specified in the model (e.g. Avista used a value of 15 years). Each annual financial value of course, varies with the inputs set in the model for inflation rate, etc. for the amount of improvement specified in SAIFI and SAIDI. Avista used the first year financial value form the interruption cost model as the initial value in its AMI benefits workbook, and then escalated that first-year value over the years of the project lifecycle to approximate the cumulative value (over the 15 years) calculated by the interruption cost estimator model.*

Avista performed this step of importing the first-year value into the AMI Benefits Workbook in order to promote greater visibility into the processes used by the Company to estimate the lifecycle value of the AMI-enabled reliability improvements. Without this step, and without the parties in our case all having access to the same 'model run' of the interruption cost estimator, there would be no way for participant to understand how the annual and cumulative financial value was determined. Additionally, since the Interruption Cost Estimator is a dynamic model, there is no way to 'go back in time' to precisely replicate previous model runs. Each run of the model, in Avista's experience, provides a calculation of customer value based on the inputs provided and based on the time the calculation is performed. Accordingly, the manner in which Avista imported the first year value from the interruption cost estimator into the AMI Benefits Workbook, provides the parties a fixed value for the initial year of improvement, gives visibility into how Avista determined the annual and cumulative financial value, and provided the means to decrement the expected financial value as Avista has done for the first three years of the project lifecycle (described in part (xv) below), and to reflect the impact of those decrements on the cumulative nominal value and net present value.

All that said, Avista plans to re-run the interruption cost estimator at the end of each year to update the estimate of financial benefits based on actual results measured for current-year improvements in "earlier outage notification" and "more efficient restoration processes" as described in Exh. JDD-2 Revised. Results of these updated benefit calculations will be reported, as already noted by the Company's response to PC-DR-138 Revised part (f), in our annual electric service reliability report to the Commission.

xv. In the next step, Avista adjusted downward the first-year benefits in 2020 by 80% (included only 20% of the first-year value for that year). Likewise, the value for year 2021 was adjusted downward by 60%. The value for year 2022 was

[8] Ibid.

reduced by 40%. The value for 2023 was reduced by 20%. Accordingly, Avista is not counting the full value of this benefit until year 2024, taking the very conservative approach of providing time to improve our internal processes and tools in the achievement of these savings.

Explanation of this Process Step: *As noted in Exh. JDD-2 Revised, page 66, the Company took a conservative approach for calculating the financial value to customers for AMI-enabled reduced outage duration, by phasing in the inclusion of the full value of the first year estimated benefit over the years 2020-2023. We believe this approach, combined with our commitment to measure performance and to recalculate the annual financial value, as stated above in the* ***Explanation*** *narrative for part (xiv), provides the Commission with a fair and balanced statement of the expected financial value for customers in its determination of prudence for the AMI project today.*

xvi. Next, the first-year value for reduced outage duration from more efficient restoration processes of $2,334,019 was imported into the AMI Benefits Workbook in Exh. JDD-2 Revised,[9] under the tab labeled "More Rapid Restoration."

Explanation of this Process Step: *Please see the parallel explanation above in part (xiv).*

xvii. As described earlier in part (xv), above, Avista adjusted downward the first-year benefits in 2020 by 80% (included only 20% of the first-year value for that year). Likewise, the value for year 2021 was adjusted downward by 60%. The value for year 2022 was reduced by 40%. The value for 2023 was reduced by 20%. Accordingly, Avista is not counting the full value of this benefit until year 2024, taking the very conservative approach of providing time to improve our internal processes and tools in the achievement of these savings.

Explanation of this Process Step: *Please see the parallel explanation above in part (xv).*

xviii. The lifecycle financial value for customers, for both the earlier outage notification process improvement, and the reduced outage duration from more efficient restoration processes, are shown in their respective categories in the AMI Benefits Workbook Revised in Exh. JDD-2 Revised, on the summary page tab, labeled "Summary Realization Schedule."[10]

h) Avista is perplexed as to why, if it were to confirm Public Counsel's assertion in part (a) that the steps (i-xi) were "meaningless to the computation of reliability benefits," it would then be requested to provide all these meaningless data inputs as used in the interruption cost estimator model. Avista reaffirms, as stated above in part (a) that Public Counsel's understanding is incorrect and is contrary to the facts provided by the Company.

[9] Ibid.
[10] Ibid.

i) As explained in the Company's response to PC-DR-138 Revised part (a) Avista did not state the subject value, nor its revised value of $5,835,048 in any of its AMI workbook tabs. For an explanation of how this revised subject value was derived using the stated input values in the interruption cost estimator, see our response to part (a) above in sections (i-xiii). For the explanation of how the subsequent individual values for each of the two outage benefits were included in their respective tabs in the AMI Benefits Workbook, please see our response to part (a) above, in sections (xiv-xviii) of this subject request.[11]

j) Avista has explained its use of the subject value in Exh. JDD-2 Revised, has further provided the step-by-step details of its derivation in response to PC-DR-138 Revised, and has also discussed its potential applicability in PC-DR-177, in which it has also stated clearly its application in this case. As also stated clearly, this value was neither used, as previously asserted by Public Counsel, to determine the financial value for customers associated with the AMI-enabled outage improvements described in the Company's current business case, nor was it "ignored" as asserted by Public Counsel in PC-DR-199 for determining the same.

[11] Ibid.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/03/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Larry La Bolle
TYPE:	Data Request	DEPT:	Transm Ops/System Planning
REQUEST NO.:	PC - 199	TELEPHONE:	(509) 495-4710
		EMAIL:	larry.labolle@avistacorp.com

SUBJECT: AMI Enabled Outage Benefits

REQUEST:

Please refer to Avista's response to Public Counsel Data Request No. 139, which references Avista's response to Public Counsel Data Request No. 74, regarding the methodology used to estimate the economic benefits from reliability in Avista's 2016 AMI proposal.

a) Public Counsel understands that in contrast to the approach used to estimate the economic benefits of reliability improvements in the 2020 AMI proposal, in which the $116.15 cost per hour was ignored in benefit calculations, the 2016 estimate was based on an outage cost per hour of $91.24 as indicated in response to Public Counsel Data Request No. 74. If this cannot be confirmed, please explain.

b) Confirm that, instead of the $5,317,783 used to calculate annual economic reliability improvements (once full effectiveness is achieved) representing a 10 percent AMI-related reliability improvement in the 2020 AMI proposal, the 2016 AMI proposal used $2,622,924 to calculate annual economic reliability improvements representing a five percent AMI-related reliability improvement. If this cannot be confirmed, please explain.

c) Confirm that, as with reliability benefits estimated in the 2020 AMI proposal, the ICE tool was not used to calculate reliability benefits beyond the baseline year in the 2016 AMI proposal. Instead, in the 2016 AMI Plan as in the 2020 AMI Plans, Avista used the year 1 valuation provided by the ICE tool, compounded annually by inflation and load growth, to get future years' benefits (as indicated in Tab "OutageMgmt CustomerAvoided Costs" in Attachment B of Avista's response to Public Counsel Data Request No. 135). If this cannot be confirmed, please explain.

d) Describe any commitments Avista is prepared to make regarding a 10 percent improvement in SAIDI from AMI by 2024 as estimated in Attachment A provided in response to Public Counsel Data Request No. 148 (combined Tabs "Earlier Outage Notification" and "More Rapid Restoration"). If Avista is unwilling to make such a commitment, please explain why not.

e) If Avista is willing to commit to a 10 percent improvement in SAIDI by 2024, provide a performance-based compensation penalty (for example, rate of return reduction) to which Avista is willing to submit for each one percent reduction in SAIDI improvement Avista fails to improve by 2024. If Avista is willing to commit to SAIDI improvements, but not performance-based penalties for failure to achieve SAIDI improvement projections, please explain why not.

RESPONSE:

a) The Company's use of the weighted average hourly customer cost per unserved kWh of $116.15 has been discussed in the Company's responses to PC-DR-138, where the derivation of the value was documented, in PC-DR-150 and in PC-DR-198. Avista has plainly described in these responses why the cost information was developed, has provided the inputs used in the interruption cost

estimator model to determine this value, and has explained how it has been used. Consistent with these explanations, Avista has not "ignored" any such value in the calculation of any benefits in this case. For the detailed description of how AMI-enabled outage improvements were determined for the Company's 2020 AMI business case, presented in Exh. JDD-2 (Revised), please see the Company's response to PC-DR-138 part (a) and PC-DR-198 part (a). Details of Avista's calculation of AMI-enabled outage benefits in it 2016 general rate case have been provided in response to PC-DR-074, PC-DR-177, PC-DR-138, PC-DR-139, and PC-DR-150.

b) The value of $5,317,783 was not used, as stated in the request above, "…to calculate annual economic reliability improvements…". Rather, AMI-enabled reliability improvements were evaluated and implemented as described in Exh. JDD-2 (Revised), and the determination of the financial benefit to customers was calculated using the Interruption Cost Estimator model as described by the Company in response to PD-DR-138 (a) and PC-DR-198 part (a). The subject value of $2,622,924, calculated in support of the Company's 2016 AMI business case, has been extensively discussed and documented by the Company as demonstrated in response to part (a) above.

c) To Avista's knowledge, there was neither a methodology available in the interruption cost estimator model in 2015 to Estimate the Value of a Reliability Improvement, nor the availability of calculated reliability benefits over a given period of time. The several advantages of Avista's use of first year benefits from the interruption cost estimator as the initial value in the AMI Benefits Workbook for the 2020 AMI business case are described in response to PC-DR-198 in part (a) (xiv).

d) Please see Avista's responses to PC-DR-138 part (f) and PC-DR-198 in part (a) (xiv). Avista's commitment is to drive as much value as possible from our AMI deployment, and to annually report out on our progress in achieving AMI-enabled improvements in reducing outage duration. That said, as noted in response to PC-DR-136 Revised part (b), the prudence or cost effectiveness of Avista's AMI deployment is not dependent on additional reporting requirements.

e) Please see part (d) above, which would include the assessment of penalties.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/04/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Larry La Bolle
TYPE:	Data Request	DEPT:	Transm Ops/System Planning
REQUEST NO.:	PC - 200	TELEPHONE:	(509) 495-4710
		EMAIL:	larry.labolle@avistacorp.com

SUBJECT: AMI Enabled Outage Benefits

REQUEST:

Please refer to Joshua D. DiLuciano, Exh. JDD-2, at 69, which states "To date, the Company has documented an average advanced notice on the order of 20 minutes."
Please provide the data, such as reduction in SAIDI on circuits with AMI, which supports the notion that a 20-minute improvement in notice will deliver a 20 minute (or even six minute) reduction in SAIDI.

RESPONSE:

Given the variability in reliability performance every utility experiences each year, whether on portions of feeders, entire feeders, at the level of an operating area (like Avista's Colville district) and even at the system level, both with and without consideration of major events, it is not possible to evaluate one years' reliability data, looking for an X percent reduction in annual SAIDI as measured against the results for SAIDI in a prior year(s). Avista's approach to this limitation is to document the reductions in outage duration we achieve using the AMI-enabled tools described in Exh. JDD-2 (Revised), measured as reductions in process time that translate directly to reductions in outage duration experienced by our customers. In this way, the cumulative avoided hours of outage duration, measured as reduced process time will be compared against total outage duration for the year to calculate a percentage improvement.

In this example of reduced process time through AMI-enabled early notification, the Company records the difference in time between receipt of the AMI outage alarm and the first customer calls alerting Avista of the outage. To the degree that the measured time for advanced notification is translated to a reduced dispatch time, that improvement will be tracked over the year and ultimately compared with the outage duration hours for that year to derive the percentage improvement. Records of the outages for October 2020, where the AMI system provided an advanced notification for the outage event, is provided in PC-DR-200 Attachment A. In the table, each outage is identified by an incident key, and the Lead Time in minutes for the early notification for each incident is calculated by subtracting the time of the First Outage Report (conventional outage notification from customers through the contact center, IVR or Avista outage app) from the time of the First PON (AMI Outage Notification).

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/03/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Larry La Bolle
TYPE:	Data Request	DEPT:	Transm Ops/System Planning
REQUEST NO.:	PC - 201	TELEPHONE:	(509) 495-4710
		EMAIL:	larry.labolle@avistacorp.com

SUBJECT: AMI Enabled Outage Benefits

REQUEST:

Please refer to Joshua D. DiLuciano, Exh. JDD-2, at 72, which states "Currently, Avista conservatively expects to reduce overall outage duration by an additional four percent based on more efficient restoration processes."
Please provide the data, such as reduction in SAIDI on circuits with AMI, which indicates Avista will secure a four percent reduction in SAIDI from more efficient restoration processes.

RESPONSE:

Similar to the example provided in PC-DR-200, for the AMI-enabled benefits of early outage notification, the Company has implemented the Alarm Viewer, which in addition to providing the earlier notification of an outage, is now being used to aggregate meter alarms to provide a near-instantaneous view of the outages associated with an incident. Conventionally, the Company would receive the first customer call, and know the location of the single outage from our Outage Management System, but not know the extent of the outage (number of customers and points on the system), or the likely causes or locations to patrol until more customers called in their outages. The manual processes performed by the dispatcher are now being automated and the time requirement collapsed, including waiting several minutes or longer for additional customer calls, and checking for outage reports coming in on different platforms (IVR, Outage App, etc.), to provide better intelligence, and evaluating the likely failure points on the system, and the manual steps required to create an outage incident. Additional tools developed in support of capturing this benefit and other benefits, like the meter pinging capability and auto generator, are already in initial service and the Company is actively evaluating the best ways to measure the efficiencies being gained by their use.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/03/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Larry La Bolle
TYPE:	Data Request	DEPT:	Transm Ops/System Planning
REQUEST NO.:	PC - 202	TELEPHONE:	(509) 495-4710
		EMAIL:	larry.labolle@avistacorp.com

SUBJECT: AMI Enabled Outage Benefits

REQUEST:

Please refer to Joshua D. DiLuciano, Exh. JDD-2, at 65–72 generally, regarding Avista's estimate that SAIDI will improve 10 percent due to AMI.
Please provide any available studies, analyses, or research which indicates that AMI has improved SAIDI by 10 percent for any utility which has implemented AMI.

RESPONSE:

Avista's estimates of the reduction in outage duration are based on its many years' experience using its Outage Management System to dispatch and manage electric service outages. The Company experienced real improvements in outage management when we first developed and deployed our outage system, which was integrated with electric system features in GIS in the mid-2000s. Even with the outage management system improvements we have experience with persistent inefficiencies in the service restoration processes, ranging from customer notification of outages, having better immediate intelligence on the extent and likely causes of outages, creating efficient outage incidents for crew dispatch, and the management of crews in the field during and following service restoration. Avista's estimates of the AMI-enabled reduction in outage duration for our customers is based on our own experience with AMI, and our outage management and distribution management systems, etc. The Company has not surveyed industry literature for results reported by other utilities as part of estimating the benefits we expect to achieve.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/04/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Vern Malensky Tamara Bradley
TYPE:	Data Request	DEPT:	Electrical Engineering
REQUEST NO.:	PC - 203	TELEPHONE:	(509) 495-7896
		EMAIL:	Tamara.Bradley@avistacorp.com

SUBJECT: AMI

REQUEST:

Please refer to Avista's response to Public Counsel Data Request No. 140, which indicates that the AMI meters Avista installed were equipped with "Programmable software in the meter".
Please provide the incremental cost per meter of this option. (Public Counsel is interested in what would the cost per meter have been without the programmable software in the meter.).

RESPONSE:

In the Company's subject response, we briefly described several capabilities of the Itron RIVA metering system, which among them was the programmable software in the meter, that qualified it as the best optimized solution for our Washington AMI project. The RIVA meter was not available from Itron without the programmable software capability, and, consequently, Avista did not request any separate bid for such a meter. The Itron RIVA metering system has been successfully deployed by the Company in a manner demonstrated to be prudent and cost-effective for our customers. And, the subject capability of the RIVA meter provides the future potential to further expand the net financial benefits of the project.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/04/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Jeff Potter
TYPE:	Data Request	DEPT:	Distribution Operations
REQUEST NO.:	PC - 204	TELEPHONE:	(509) 495-2543
		EMAIL:	jeff.potter@avistacorp.com

SUBJECT: AMI-Enabled CVR Benefits

REQUEST:

Please refer to Avista's response to Public Counsel Data Request No. 151.

a) Provide a list of all 211 circuits with identifiers (names or numbers)
b) For each circuit listed in response to subpart (a), indicate (i) the length of the circuit (in miles or feet); (ii) the number of customers served by the circuit as of 12-31-2020; (iii) the energy distributed by the circuit in 2020; (iv) the setting (in volts) of the voltage regulator or tap changer at the head-end of the circuit as of 12-31-2020; (v) whether the circuit serves any open secondary lines; and (vi) whether the circuit meets Avista's definition of "rural".
c) For each circuit listed in response to subpart (b) which is identified as serving at least one open secondary line, identify those which are among the approximately 70 Avista has determined are inappropriate for CVR per Avista's response to Public Counsel Data Request No. 151, subpart (b). For each one of these circuits identified as inappropriate for CVR, provide the details and/or evaluation, including voltage drop calculations, of the line conditions and/or circumstances which led Avista to conclude that CVR should not be installed on the circuit.
d) For each circuit listed in response to subpart (b) which is identified as serving at least one open secondary line, provide the distance from the substation to the closest open secondary attachment on the primary circuit.
e) For each circuit listed in response to subpart (b) which is identified as serving at least one open secondary line, provide the distance from the substation to the farthest open secondary attachment on the primary circuit.
f) For each circuit listed in response to subpart (b) which is identified as serving at least one open secondary line, provide the primary and secondary voltage.
g) On each circuit listed in response to subpart (b) which is identified as serving at least one open secondary line, confirm that only open secondary circuits at or near the end of the primary line would be negatively impacted by the application of CVR. If this cannot be confirmed, please explain.
h) If the response to subpart (g) is confirmed, explain why a single voltage regulator installed on the primary line, somewhere towards the end of the primary line, would not solve the open secondary customer voltage issue.

RESPONSE:

a) Please see the spreadsheet containing the information responsive to parts (a) and (b), provided as PC-DR-204 Attachment A.

b) Please see part (a), above.

c) For each circuit listed in response to subpart (b) the determination that a feeder is inappropriate for CVR is a preliminary projection based on a feeder having open wire secondary and/or other issues that would likely prevent the voltage from being lowered at the feeder regulators. Before rendering a final determination on a feeder's capability to implement CVR an evaluation of each feeder is to be completed. That process is currently ongoing. Once the evaluation is complete, a final determination will be made of the amount the base setting for the feeder regulator can be lowered.

d) The Company has not conducted any such evaluation that would be needed to determine the requested information. Please see our response to part (c) above pertaining to the evaluations Avista plans to perform in the future on such feeders.

e) Please see part (d) above.

f) The primary voltage for each feeder is provided in PC-DR-204 Attachment A. Voltage on all open secondary lines is 120/240 volts.

g) Information of this type will not be available until the evaluations described in part (c) above, have been completed.

h) Please see part (g) above.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/03/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Jeff Potter
TYPE:	Data Request	DEPT:	Distribution Operations
REQUEST NO.:	PC - 205	TELEPHONE:	(509) 495-2543
		EMAIL:	jeff.potter@avistacorp.com

SUBJECT: AMI-Enabled CVR

REQUEST:

Please refer to Avista's responses to Public Counsel Data Request No. 151, subparts (d) and (f). These responses indicate that two years of customer-specific voltage data would be required to estimate the number (or percent) of customers served by secondary lines which would be negatively impacted by CVR, implying that such data is not available. However, Avista's response to Public Counsel Data Request No. 151, subpart (b) indicates that sufficient data is available to determine that CVR could be implemented on about 50 of the 120 circuits which serve open secondary lines.

a) Explain how Avista had sufficient data to determine that CVR could be implemented on 50 of the 120 circuits, but insufficient data to determine the number of customers which might be negatively impacted by CVR on the other 70 circuits serving open secondary lines.

b) For each of the 50 circuits serving open secondary lines which Avista believes CVR could be implemented, provide the details and/or evaluation of circuit conditions and/or circumstances which led Avista to conclude that CVR could be installed on the circuit.

RESPONSE:

a) For each circuit listed in response to PC-DR-151 part (b) the determination that CVR could be implemented on a feeder, which serves customers using open secondary lines, is based on a preliminary projection knowing a feeder to contain: 1) a minimal amount of open wire secondary, and 2) no other apparent factors that would prevent the voltage from being lowered at the feeder regulators. Before making a final determination on a feeder's capability to implement CVR, an evaluation of each feeder, as noted in PC-DR-204 part (c) will be completed. That process is currently ongoing. Once the evaluation is complete a determination as to the amount the feeder regulator base setting can be lowered will be made. Similarly, the subject 70 feeders were identified as having substantial open wire secondary and/or other factors that would limit the potential of CVR savings on those feeders. Clearly, the Company will have empirical data on customer level voltages that will either confirm the initial assessment or identify opportunities for potential CVR savings, which are not reported as part of the Company's current AMI business case.

b) For each circuit listed in response to PC-DR-151 part (b) the determination that CVR could be implemented on a feeder which serves customers using open secondary lines is based on a preliminary projection based on a feeder having 1) a minimal amount of open wire secondary, and 2) no other apparent factors that would not allow the voltage to be lowered at the feeder regulators. Before making a final determination on a feeder's capability to implement CVR, an evaluation of each feeder, as noted in PC-DR-204 part (c) will be completed. That process is currently ongoing. Once the evaluation is complete a determination as to the amount the feeder regulator base setting can be lowered will be made.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/03/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Jeff Potter
TYPE:	Data Request	DEPT:	Distribution Operations
REQUEST NO.:	PC - 206	TELEPHONE:	(509) 495-2543
		EMAIL:	jeff.potter@avistacorp.com

SUBJECT: AMI-Enabled CVR Savings

REQUEST:

Refer to Avista's response to Public Counsel Data Request No. 152 regarding the use of voltage regulators to address the low-voltage concerns regarding the use of Conservation Voltage Reduction (CVR) in the presence of open secondary lines.

a) From its response, Avista is claiming that a voltage regulator is needed for each transformer serving open secondary lines. Avista responses to Public Counsel Data Request No. 151, subparts (d) and (f) also indicate a voltage regulator is needed for each transformer. This claim appears to assume that a voltage regulator can only be placed on the secondary voltage side of these transformers. Explain why just one (or perhaps two) voltage regulators at an appropriate point (or points) along the primary circuit voltage line wouldn't be adequate to address voltage issues for customers served by open secondary lines in the event CVR is implemented on that circuit.

b) The response states "The combination of additional CVR on open wire secondary was evaluated using general design guidelines and found not to be a 'cost-effective conservation measure'". Provide all analyses, worksheets, calculations, benefit-cost analyses, Utility Cost Test, or any other details of the evaluation cited/completed, either by circuit or collectively, which found additional CVR "not to be a cost-effective conservation measure" on circuits with open wire secondary lines.

RESPONSE:

In the Company's AMI business case, provided as Exh. JDD-2 (Revised), Avista significantly revised downward its forecasted estimates of the financial savings for customers based on broader preliminary evaluations of CVR potential on the Company's feeders. The excerpt, below, from the subject exhibit on page 76 generally explains the open wire secondary issues encountered by the Company.

> Avista found the potential to reduce feeder voltages in the Spokane operations area was minimal, even though pilot studies suggested an additional 2% savings was achievable on these feeders. The reason for this difference is that the locale where additional CVR savings were studied and validated is characterized by customers served by individual secondary service lines from the transformer. In the Spokane area, it is very common for customers to be served from "open secondary" districts. In this design, groups of customers are served from an extended secondary voltage system. It is an efficient and effective way to serve customers as a historical utility practice. The problem for conservation voltage reduction is that line voltage can drop substantially over the open wire secondary system, leaving little, if any, capacity to reduce the voltage on the feeder to achieve conservation voltage savings. This limited capacity in the area of our highest electric loads resulted in a 40% reduction in Avista's initial estimate of potential savings.

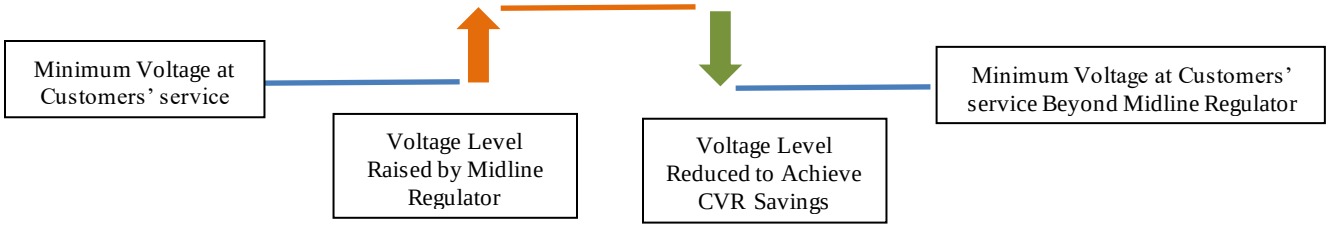
Further, as reported in Exh. JDD-2 on page 77, the Company noted another factor identified in broader preliminary evaluations of the CVR potential on the Company's feeders, which contributed to the reduced potential for CVR savings now reported by Avista. That issue, related to the voltage output range of many rural power transformers, is described in the excerpt below.

> Another limiting finding is related to the characteristics of power transformers installed in our rural substations. Rural feeders are typically much longer (circuit miles) than urban and suburban feeders; typically, the longer the feeder, the greater the voltage drop experienced at the end of the line. As a result, Avista's historic practice was to set the voltage output of the power transformer in the substation at a high level to ensure the line voltage met the minimum requirements for the last customers served on the line. Because of this practice, it became standard to install power transformers set for higher voltage output, which has limited the flexibility to reduce voltage levels. While this practice made good engineering and utility sense, it means that the voltage on many of the Company's rural feeders cannot be reduced to achieve conservation voltage reduction savings. This barrier has also substantially reduced our initial estimate of potential savings.

A third key limiting factor identified has to do with the limited effectiveness of pursuing CVR on feeders for customers that are served beyond midline voltage regulators. The brief excerpt from Exh. JDD-2 page 77 describing this issue is provided below.

> Another issue that impacts the savings potential on rural feeders (those without substation transformer limitations) is the moderating impact of midline voltage regulators on longer feeders. The midline regulators typically serve to boost voltage along the line, again, to ensure customers at the end receive the minimum-allowable service voltage. Customers served on the feeder beyond the midline regulator are already typically at the minimum voltage level, so any conservation voltage reduction would not materially lower the voltage on the portion of the feeder 'downstream' from the midline regulator. Avista determined that approximately 6% of its customers are served on feeder sections beyond midline regulators, so the value of the initial CVR savings estimate was also reduced by an equivalent percentage.

Ironically, this last key limiting factor is at the center of the repeated assertions of Public Council, as is stated above in part (a) of this request, that Avista could deploy mid-line regulators to boost feeder voltage (beyond the regulator) as a way to improve CVR potential, in particular on open wire secondary, but beyond a midline regulator, generally. That general assertion fails the test of common sense as illustrated in the diagram below.



In short, the suggested solution in the request part (a), above, requires installation of a midline regulator (which costs customers money to purchase and install and which itself consumes electricity to operate) to raise the line voltage, which itself consumes more electricity, and then to reduce the voltage back to the starting level and to claim that reduction as CVR savings. This "solution" would cost our customers more money than simply operating the feeder in the manner we do today.

As described above, the Company has substantially reduced the financial benefits it expects to achieve for customers through AMI-enabled CVR, in an effort to reflect a conservative and fair approach for measuring the net financial benefits likely to be produced by the deployment of AMI. As explained in response to PC-DR-204, 205, and in other responses on this topic, Avista has used broader preliminary projections developed since its initial business case to reduce its expected CVR savings based on a feeder having open wire secondary or other issues (such as described in the excerpts above) that would likely prevent the voltage from being (COST EFFECTIVELY) lowered at the feeder regulators. We have also stated that before rendering a final determination on a feeder's capability to implement CVR, a more in-depth evaluation of each feeder will be completed. That process is currently ongoing. Once the evaluation is complete, a final determination will be made of the amount (if any) the base setting for the feeder regulator can be lowered to achieve CVR savings. The bottom line is that Avista has a fundamental interest in saving our customers money and improving the cost effectiveness of our AMI project, through the prudent deployment of cost-effective measures needed to achieve CVR savings. We will implement all cost effective CVR measures in keeping with our own principles, and in compliance with Washington State law.

a) The voltage issues for customers served from open secondary lines is related to the voltage drop on the secondary side of the transformer. The voltage drop on the primary conductor is relatively small compared with the drop in voltage level on the secondary side of the transformer. As an example, even a customer situated near the substation could have voltage problems if the voltage drop along the open secondary lines is excessive. And, as explained in our response preceding part (a) above, installing additional line regulators along the primary negates the CVR benefit beyond the regulator since it raises the voltage back to pre-CVR levels.

b) Basic electrical theory was used to understand that installing a transformer closer to the customer would reduce the impedance of the secondary between the customer and the transformer, thereby reducing voltage losses. Inserting a regulator in the secondary line would actually increase the overall impedance of the secondary and increase losses.

   Installing a secondary regulator would also cost more than installing a transformer, as another option. Installing a secondary regulator would cost more and reduce the theoretical conservation benefits that were possible to achieve. We therefore determined that using a secondary regulator was not cost-effective compared to installing an additional transformer. The option of installing an additional transformer (to the degree it is demonstrated to be cost effective) may be among the options considered once the Company has made a more formal determination of the CVR potential on a feeder that has been preliminarily determined to have limited or no CVR savings potential.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/03/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Tamara Bradley
TYPE:	Data Request	DEPT:	Electric Engineering/AMI
REQUEST NO.:	PC - 207	TELEPHONE:	(509) 495-7896
		EMAIL:	Tamara.Bradley@avistacorp.com

SUBJECT: AMI Updates

REQUEST:

Please refer to the Executive Technology Steering Committee AMI update presentation dated December 21, 2020, provided in response to Public Counsel Data Request No. 144, subpart (c). This presentation indicates that capabilities essential to two of the biggest potential sources of benefits in Avista's smart meter business case—Outage Management and Conservation Voltage Reduction—–were not yet operating. Slide 16 indicates "Itron targets a fix for Q2 2020" a date which is now almost eight months in arrears, for an issue first identified in the July 2019 AMI update presentation (20 months ago).

a) Provide AMI update presentations made to the Committee in January and February of 2021.
b) Provide Avista's detailed plan for securing the outage management benefit timing and levels projected in Attachment A provided in response to Public Counsel Data Request No. 148, Tabs "Earlier Outage Notification" and "More Rapid Restoration".
c) Provide Avista's detailed plan for securing the Conservation Voltage Reduction benefit timing and levels projected in Attachment A provided in response to Public Counsel Data Request No. 148, Tab "Conservation Voltage Reduction".

RESPONSE:

a) The Executive Technology Steering Committee (ETSC) was restructured for year 2021, and the Company's Washington AMI project is no longer reporting to the committee on a monthly basis, thus no presentations have been developed or presented for the subject months in this request. Given the state of completion of the AMI project, any review meetings with executive leaders in 2021 will be set up as needed by the AMI project leadership.

b) Please see the Company's responses to PC-DR-145, PC-DR-198, PC-DR-199, PC-DR-200, PC-DR-201 and PC-DR-202. As explained in responses to these requests and elsewhere, Avista has the technology capabilities in place and functioning to enable the Company to achieve the savings over time identified in the AMI business case.

c) Please see the Company's responses to PC-DR-151, PC-DR-152, PC-DR-203, PC-DR-204, PC-DR-205 and PC-DR-206. As explained in responses to these requests and elsewhere, Avista has the technology capabilities in place and functioning, and the ongoing evaluation processes needed to enable the Company to achieve over time the savings identified in the AMI business case.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/05/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Heather Rosentrater
REQUESTER:	Public Counsel	RESPONDER:	Larry La Bolle
TYPE:	Data Request	DEPT:	Transm Ops/System Planning
REQUEST NO.:	PC - 225	TELEPHONE:	(509) 495-4710
		EMAIL:	larry.labolle@avistacorp.com

SUBJECT: AMI Enabled Outage Benefits

REQUEST:

Please refer again to the June, 2017 Electric Distribution Plan provided in Avista's Response to Public Counsel Data Request No. 105, at 46, which states "[w]hile these management strategies have a positive impact in reducing the number and duration of outage events we experience on our system, there are other trending factors that are at the same time diminishing the reliability of our system. An example is the number of outage events that result from the Company's need to "de-energize" the system in order to complete maintenance, repairs and upgrades. As Avista has increased the level of its investments in electric distribution infrastructure over the prior decade, as described above, we have experienced a corresponding increase in the number of planned outages required to complete this work, as shown in Figure 25."

a) For each year shown in Figure 25, provide the number of customer minutes of sustained outages that occurred due to planned outages.
b) What is the cost in dollars to customers for these sustained outage minutes?
c) Show how Avista has taken the planned outage cost to customers into account when evaluating or justifying the installation of increasing the "level of its investments in electric distribution infrastructure."

RESPONSE:

a) The table below shows outage events and the associated customer outage hours (outage minutes /60) due to planned/maintenance outages on the Company's system for the subject period.

Planned Work Outages			
Year	Number of Outages	Customer Cost	Total Customer Hours
2005	171		64682.2
2006	210		53985.9
2007	321		41489.1
2008	346		36561.1
2009	507		168250.5
2010	1525		74287.1
2011	3284		98981.2
2012	2566		63223.4
2013	1816		130362.7
2014	1856		89886.6
2015	1774		127942.8
2016	2676	$11,865,220	130044.1

b) As Public Counsel is well aware from the discovery related to Avista's customer outage costs estimated for its AMI business case in 2016, the Company cannot calculate customer costs for the period of time 2005 through 2015. Because we do have an estimate of customer costs for 2016, however, we can generally apply the now very familiar $91.24 to the customer outage hours shown above for 2016, to yield a total customer cost for planned/maintenance outages for that year as shown in the table above in part (a).

c) The investments in electric distribution infrastructure discussed in the subject report need to be timely made in order to provide for the cost-effective continuity of service to our customers. It's not a question of whether the needed investments will be made, it's about how the work is conducted in order to optimize the benefits and costs to our customers. Avista, like every utility, is highly focused on carefully balancing employee (and public) safety,[12] the outage impact to our customers,[13] and the efficiency and ultimate cost[14] for performing the required work. When we decide that interrupting service to perform a specific activity represents the optimized best choice, then we are diligent in notifying customers in advance of the pending outage so they can best prepare for managing the interruption.

[12] Performing 'hot work' increases the potential risk to employees, which could extend to customers and the general public.
[13] Taking facilities out of service can reduce the risks associated with hot work but requires the interruption of service to our customers.
[14] Performing hot work is typically much more expensive than when facilities are deenergized.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/21/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Heather Rosentrater
REQUESTER:	Public Counsel	RESPONDER:	Larry La Bolle
TYPE:	Data Request	DEPT:	Transm Ops/System Planning
REQUEST NO.:	PC - 259	TELEPHONE:	(509) 495-4710
		EMAIL:	larry.labolle@avistacorp.com

SUBJECT: AMI-Enabled Outage Benefits

REQUEST:

Please refer to Avista's Response to Public Counsel Data Request No. 198 (a), which indicates in (xii) that the year 1 output of the ICE tool for Avista's entire service area ($7,489,835) was multiplied by 0.71 to reflect the benefits to Washington customers, which was then used as an input in the AMI benefit cost analysis ($5,317,783), allocated between "earlier outage notification" and "reduced outage duration". Regarding the determination of the 0.71 ratio used to allocate total benefits to Washington customers:

a) Explain how this ratio was derived. Is it a ratio of customer counts by state? Energy delivered by state? Distribution rate base by state? Or something else?

b) Provide the calculations used to develop the 0.71 ratio as described in response to subpart (a).

RESPONSE:

In response to this request, and our review of subject ratio used to allocate system benefits to Washington customers, Avista has reviewed and updated all of the customer information used to calculate financial benefits for AMI-enabled outage improvements, and has provided such updates and calculations in PC-DR-198 Revised and PC-DR-138 Revised. As a result of these updates to customer information, the subject first year value for Washington customers of $5,317,783, as referenced in the request above, has been revised upward to a value of $5,835,048, as provided and explained in PC-DR-198 Revised, part (a)(xii). None of the outage data relied upon by the Company in the calculation of the subject customer benefits has been updated or otherwise modified.

Though this increase translates to a meaningful improvement in financial net benefits for reduced outage duration, and the overall AMI project, Avista is not including any of these additional benefits in its AMI business case at this time.[15] Further, this increase in financial benefits, even if included as part of the Company's AMI business case, would not impact Avista's stated revenue requirements or O&M offsets resulting from certain AMI-enabled operational savings. O&M offsets are not impacted because the financial benefits resulting from reduced outage duration flow directly to customers in the form of avoided financial losses achieved through shortened duration of outage events.

[15] This conservative measure is in addition to the careful and thoughtful manner in which the Company has "phased in" financial benefits for customers in its AMI business case. As explained in response to PC-DR-198 Revised part (xv), Avista adjusted downward the first-year benefits in 2020 by 80% (included only 20% of the first-year value for that year). Likewise, the value for year 2021 was adjusted downward by 60%. The value for year 2022 was reduced by 40%. The value for 2023 was reduced by 20%. Accordingly, Avista is not counting the full value of this benefit until year 2024, taking the very conservative approach of providing time to improve our internal processes and tools in the achievement of these financial savings for our customers.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	03/21/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Heather Rosentrater
REQUESTER:	Public Counsel	RESPONDER:	Larry La Bolle
TYPE:	Data Request	DEPT:	Transm Ops/System Planning
REQUEST NO.:	PC - 260	TELEPHONE:	(509) 495-4710
		EMAIL:	larry.labolle@avistacorp.com

SUBJECT: AMI-Enabled Outage and CVR Benefits

REQUEST:
Please refer to Avista's Response to Public Counsel Data Request No. 207, which states, regarding Outage Management and CVR technology capabilities, "Avista has the technology capabilities in place and functioning . . . to enable the Company to achieve the savings over time identified in the AMI business case." Public Counsel requests an online meeting, with screen sharing, in which Avista can demonstrate the Outage management and CVR technology capabilities which are in place. Please provide two to three dates and times at which appropriate Avista personnel can be made available to demonstrate the Outage Management and CVR technology capabilities.

RESPONSE:

Avista offers the following date and time options for sharing the Company's systems and processes for using AMI data to capture customer financial benefits from reduced outage duration and improved conservation voltage reduction. All times proposed are Pacific Time Zone.

Outage

1. Tuesday March 30 1:00 pm
2. Wednesday March 31 10:30 am
3. Thursday April 1 9:30 am

CVR

1. Thursday April 1 11:00 am
2. Friday April 2 9:00 am
3. Tuesday April 6 11:30 am

To select meeting times and dates, please reach out directly to Larry La Bolle, who is helping to coordinate these meetings. We understand public counsel has participated in virtual meetings with the rate case parties using the Microsoft Teams application; once scheduled, Avista will provide you the invitations in Teams format. Finally, if these date and time options do not meet your needs, please let us know so we can adjust schedules as needed to fit your requirements.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	04/21/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Dan Burgess/Tamara Bradley
TYPE:	Data Request	DEPT:	Electrical Engineering
REQUEST NO.:	PC - 320	TELEPHONE:	(509) 495-7896
		EMAIL:	Tamara.Bradley@avistacorp.com

SUBJECT: AMI-Enabled Energy Efficiency

REQUEST:

Please refer to Revised Attachment A provided in response to Public Counsel Data Request No. 136, tabs "Conservation Voltage Reduction", "Customer Energy Efficiency", and "Behavioral Energy Efficiency.

These tabs still retain many pasted values. In Avista's response to this data request, please provide all responses in worksheet format with no pasted values, no hidden or protected cells, and all formulae intact and available for Public Counsel review.

a) For each of these tabs explain, and provide all data, calculations, assumptions, estimates, and other support, for the level of MWh savings by year.

b) For each of these tabs explain, and provide all data, calculations, assumptions, estimates, and other support, for the manner in which MWh savings by year were translated into dollar values by year.

RESPONSE:

Please find attached the file originally provided as PC-DR-136 Revised Attachment A, which has been updated with formulae intact for the benefit categories noted in this request, and provided as PC-DR-320 Attachment A.

a) Please see the descriptions below for each of the categories of energy conservation savings enabled by AMI.

   i. **Conservation Voltage Reduction** – For the calculations and supporting information, please see Avista's response to PC-DR-321. Please also note the Company's revised estimate for the financial benefits arising from Conservation Voltage Reduction, which has been reduced on a net present value basis from the initially-filed value of $18,494,601 to the currently-estimated value of $16,896,343. Currently-estimated benefits are shown in line 11 in the tab labeled "Conservation Voltage Reduction."[16]

   ii. **Customer Energy Efficiency** – Please see the tab in PC-DR-320 Attachment A labeled Customer Energy Efficiency where in lines 11-51 the Company explains its rationale and provides supporting documentation for its estimate of the annual energy savings enabled by

[16] In its recent online meeting with Public Counsel held in response to PC-DR-260, Avista shared its view that, based on updated information, CVR benefits would need to be reduced from the amounts included in the AMI business case. The Company has reduced benefits as shown in PC-DR-320 Attachment A for years 2019 – 2022 based on the availability of AMI service voltage data and the year-long-plus delay in deployment due to work restrictions resulting from Avista's prudent response to the COVID-19 pandemic.

AMI data, support, and analytical tools available for customers. Avista has estimated the annual kWh savings, and the resulting financial benefit for customers, based on an expected participation rate ranging from one to five percent for its residential customers (depending on their monthly kWh use), and one percent for its commercial customers. The Company has estimated participating customers will on average reduce their kWh use by three percent by taking energy conservation actions as a result of having access to more-granular energy use information, in combination with helpful guidance, hints, rebates and online analytical tools. As shown in lines 13-18, in columns D, E and F, we provide the numbers of commercial and residential customers by block, the total kWh for each customer group, and the average annual use in kWh for each group. In lines 23-28, in columns D, E, F, G and H, we show the calculation of the average annual kWh reduction for each customer group, including the total for all groups in column G, line 28. The total kWh reduced is then multiplied by a per kWh charge of $0.085 to yield the average annual financial savings for customers, in the form of lower bills, of $307,792. The multiplier value is the per kWh charge for our electric customers for the second block of energy consumed (First 800 kWh = $0.07263; Next 700 kWh = $0.08493; All over 1,500 kWh = $0.10002). Please also note the Company's revised estimate for the financial benefits arising from Customer Energy Efficiency, which has been reduced on a net present value basis from the initially-filed value of $3,655,286 to the currently-estimated value of $3,475,081.[17]

iii. **Behavioral Energy Efficiency** – Please see the tab in PC-DR-320 Attachment A labeled Behavioral Energy Efficiency where in lines 11-24 the Company explains its rationale and provides supporting documentation for its estimate of annual energy savings, enabled by AMI data, in combination with other analytics and tools, for our behavioral energy conservation program. As shown column B, line 17, based on the Company's experience with behavioral conservation programs, we expect to achieve an ultimate rate of participation of 40% by year 2025 for our electric residential customers. As shown in column D, line 21, we expect these participating customers on average to reduce their per kWh use by two percent. Based on the total annual energy used by residential customers shown in Column C, line 13, and the percentages of participation and savings, described above, the total annual energy savings is calculated and shown in Column C, line 21, as 18,933,000 kWh. The annual value of this energy reduction to customers, in the form of lower energy bills, is $1,479,999, calculated by multiplying the kWh savings above by $0.07817, which is the average per kWh price for the first two energy blocks paid by our customers, as shown above in part (ii). Avista believes this multiplier is overly conservative but is not adjusting it upward to the middle block value of $0.085, discussed in part (ii), at this point in time. Please also note the Company's revised estimate for the financial benefits arising from Behavioral Energy Efficiency, which has been increased on a net present value basis from the initially-filed value of $8,927,226 to the currently-estimated value of $10,772,564.[18]

b) Please see the descriptions below for the calculation of costs by year for the energy conservation savings enabled by AMI.

i. **Conservation Voltage Reduction** – For the calculations and supporting information, please see Avista's response to PC-DR-321.

[17] Incremental benefits in years 2019 – 2021 were reduced from those initially filed as shown in PC-DR-320 Attachment A.

[18] In its filed estimate of the financial value for customers for behavioral energy efficiency as enabled by AMI data and systems, the Company failed to include the full amount of the base financial value of $1,479,999 in its calculation of lifecycle benefits, as shown in PC-DR-320 Attachment A. Additionally, Avista has made minor adjustments to several areas of benefit, which combined with the changes in energy conservation benefits discussed in this response, add $33,296 to the AMI project net benefits. Each update is listed and explained on lines 13-20 in the tab labeled "Updates" in PC-DR-320 Attachment A.

ii. **Customer Energy Efficiency** – Please see the description and references to PC-DR-320 Attachment A for the calculation of 'base level' of annual energy conservation savings of $307,792. This base value is used to determine the annual energy savings for the life of the project as shown in line 5, columns F-X, in the tab labeled Customer Energy Efficiency. In an effort to be especially conservative in the estimation of the customer financial value associated with this area of benefit, Avista only counts, as shown in line 3 for the 'percent realized,' 30% of the benefit in year one, only 75% of the base benefit in years 2-4, and does not count 100% of the benefit until year 5, in 2023. The annual 'base benefit amount,' in addition to being reduced by the percent realized, and noted above, is also compounded starting in year 2023, to account for expected annual growth in number of customers and energy costs.

iii. **Behavioral Energy Efficiency** – Please see the description and references to PC-DR-320 Attachment A, and the description above in part (a)(iii), for the calculation of the 'base level' of annual energy conservation savings of $1,479,999, to be fully achieved by year 2025. This base value is used to determine the annual energy savings for the life of the project as shown in line 5, columns I-Y, in the tab labeled Behavioral Energy Efficiency. In an effort to be conservative in the estimation of the customer financial value associated with behavioral energy conservation, Avista only includes, as shown in line 3 for the 'percent realized,' 20% of the 'base level' benefit in year one for 2021, 40% in year two, 60% in year 3, 80% in year 4, and does not count 100% of the base level benefit until year 2025. The annual 'base benefit amount,' in addition to being reduced by the percent realized, and noted above, is also compounded to account for growth in number of customers and energy costs. Finally, in the process of updating the AMI Benefits Workbook (PC-DR-320 Attachment A) in response to this request, Avista determined it had inadvertently not entered the full baseline value of $1,479,999 in the benefit calculations, which error has now been corrected. This correction results in an increase of approximately $1.8 million in the NPV of the lifecycle benefits for behavioral energy conservation.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	04/19/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh DiLuciano
REQUESTER:	Public Counsel	RESPONDER:	Dan Burgess/Tamara Bradley
TYPE:	Data Request	DEPT:	Electrical Engineering
REQUEST NO.:	PC - 321	TELEPHONE:	(509) 495-7896
		EMAIL:	Tamara.Bradley@avistacorp.com

SUBJECT: AMI-Enabled Energy Efficiency

REQUEST:

Please refer to Revised Attachment B provided in response to Public Counsel Data Request No. 135, tab "EnergyEfficiency_CVR".

This tab still retains many pasted values. In Avista's response to this data request, please provide all responses in worksheet format with no pasted values, no hidden or protected cells, and all formulae intact and available for Public Counsel review.

a) For this tab explain, and provide all data, calculations, assumptions, estimates, and other support, for the level of MWh savings by year.

b) For this tabs explain, and provide all data, calculations, assumptions, estimates, and other support, for the manner in which MWh savings by year were translated into dollar values by year.

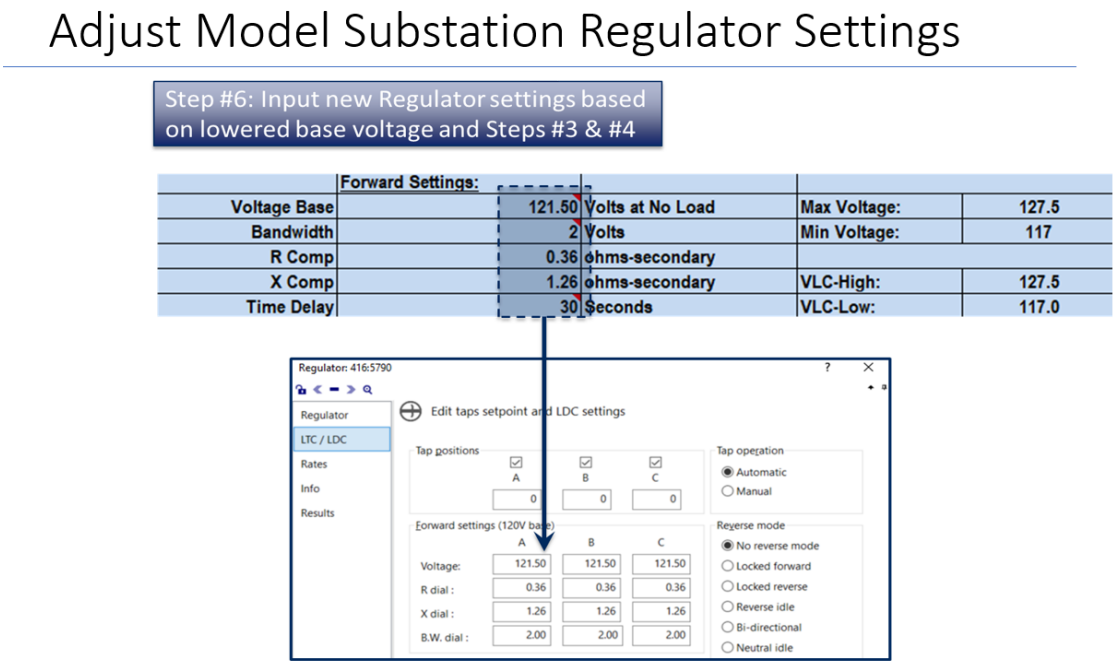
RESPONSE:

Please find attached the file PC-DR-321 Attachment A, originally provided as PC-DR-135 Revised Attachment B, which has been updated with formulae intact for the benefit category noted in this request.

a) Please also see the file provided as PC-DR-321 Attachment B, which includes the lists of feeders developed in 2015 for the initial estimate of financial benefits to be achieved through CVR. The lists of feeders are presented in three groups, based on their potential and the planned application of CVR, which groups are labeled 'Future Grid Mod,' 'Grid Mod Augmentation' and 'X&R Savings.' A high-level description of these feeder groups is provided in Columns B though J, lines 2 through 9. For each feeder in each group, the Company listed amperage by phase, the CVR Factor (CVRf), the projected voltage reduction (VDROP%), the expected MWh savings (Column S), and the expected financial value of the energy savings ($CVR). Derivation of the financial value assigned to each MWh reduced is presented in the tab labeled Avoided Costs Reference. The financial values for the feeders in each group, by year, are summarized in the tab labeled 'Summary by Year,' which values are indexed to account for expected load growth and inflation (by the percentages shown in the table).

   Results from the tab Summary by Year were input into the AMI benefits workbook (PC-DR-321 Attachment A) under the tab labeled EnergyEfficiency_CVR, in Columns I through O, lines 47 through 72. The expected realization schedule for the financial benefits in each feeder group is shown in columns B through D, lines 16 through 37. Multiplying the realization schedule value (0-1.0) by the expected financial value for each feeder group for each year, produced the expected realized financial benefit, shown in columns I through K, lines 18 through 37. These financial values were then transposed into lines 7 through 9 in Columns C through W, reflecting the annual financial benefits shown in the tab labeled Summary Detail, which annual nominal values were used to calculate the net present value of the total lifecycle benefits.

For the calculation of CVR benefits in the Company's current AMI business case, please see PC-DR-320 Attachment A in the tab labeled Conservation Voltage Reduction. Savings for the feeders, as initially calculated and described above, have been included in this tab in the manner described above. The expected realization schedule (shown in Columns B through D, lines 14 through 35) was modified to account for the current deployment of AMI, and was also reduced in overall value by 60% using the multipliers shown in line 2. The multipliers in line 2 served to reduce the calculated values to match actual CVR savings achieved in 2019 and 2020, and the expected values for year 2021 through 2037, with the full expected value occurring (with a line 2 multiplier of 0.4) in year 2023. The purpose of the multipliers in line 2 is to reduce the overall CVR benefit initially estimated to match the potential financial value associated with the Company's current assessment of the factors limiting CVR potential, as discussed by Avista in responses to PC-DR-151, PC-DR-152, PC-DR-204, PC-DR-205 and PC-DR-206. As noted in those responses, and during the online presentation with Public Counsel (one of which presentation slides is shown in the image below), Avista is modeling the CVR potential of each candidate feeder to determine initial regulator settings to optimize the feeder voltage, and monitoring actual voltage levels in real time at each customer's service using our AMI system data. Through the duration of the project, actual energy savings will be reported each year for each individual feeder in Washington, which has been evaluated and modeled, and for which new regulator settings have been implemented and refined.



Also, as described in PC-DR-320, and as accomplished with the multipliers in line 2 discussed above, Avista has reduced expected benefits from the as-filed values for years 2019 through 2022, reducing the NPV of the overall CVR expected benefit to $16,647,784 compared with the as-filed value of $18,494,601.

b) Please see part (a) above.

AVISTA CORP.
RESPONSE TO REQUEST FOR INFORMATION

JURISDICTION:	WASHINGTON	DATE PREPARED:	05/03/2021
CASE NO.:	UE-200900 & UG-200901	WITNESS:	Josh Diluciano
REQUESTER:	Public Counsel	RESPONDER:	Dan Burgess/Tamara Bradley
TYPE:	Data Request	DEPT:	Electrical Engineering
REQUEST NO.:	PC - 331	TELEPHONE:	(509) 495-7896
		EMAIL:	Tamara.Bradley@avistacorp.com

SUBJECT: AMI-Enabled Energy Efficiency

REQUEST:

Please refer to Attachment B provided by the Company in response to Public Counsel Data Request No. 321(b).

a) The formulae in columns "K" and "L" in tab "Future Grid Mod" refer to a value denoted only as "AE". PC interprets this value to represent "avoided energy" costs. Provide the amount represented by "AE" for rows 2 through 40 in columns "K" and "L" in this tab.

b) For each value provided in response to subpart (a), provide all calculations, assumptions, estimates, details, worksheets, and other support for the value.

c) The formulae in column "K" in tab "Grid Mod AMI Augmentation" refer to a value denoted only as "AE". PC interprets this value to represent "avoided energy" costs. Provide the amounts represented by "AE" for rows 2 through 40 in column K in this tab.

d) For each value provided in response to subpart (c), provide all calculations, assumptions, estimates, details, worksheets, and other support for the value.

e) The formulae in column "M" in tab "X&R Savings" refer to a value denoted only as "AE". PC interprets this value to represent "avoided energy" costs. Provide the amount represented by "AE" for rows 2 through 40 in column M in this tab.

f) For each value provided in response to subpart (e), provide all calculations, assumptions, estimates, details, worksheets, and other support for the value.

g) Describe the approach Avista will employ to get "X&R Savings" benefits from CVR.

h) Describe the approach Avista will employ to get "Grid Mod AMI Augmentation" benefits from CVR. In this description, be sure to describe the difference between "X&R savings" and "Grid Mod AMI Augmentation".

i) Describe the approach Avista will employ to get "Future Grid Mod" benefits from CVR. In this description, be sure to describe the difference between "Grid Mod AMI Augmentation" and "Future Grid Mod".

RESPONSE:

a) Excel allows a user to assign a name to a cell or range of cells, and the name 'AE' refers to cell M4 on the tab labeled 'Summary by Year' in PC-DR-321 Attachment B. As such AE refers to the Avoided Cost of Energy ($/MWh). The image, below, from Attachment B, which contains the subject cell M4 lists the individual names used by Avista to reference Key Benefit Assumptions relied upon in the analysis. This explanation for the definition of the name 'AE' is also applicable for parts (c) and (e) in this request.

	Key Benefit Assumptions:	
LF	Load Factor	0.38
AE	Avoided Cost of Energy ($/MWh)	68.00
CVRf	CVR Factor (if not known)	0.87
Life	Project Life (years)	20.75
XR	X&R Volt Drop	1.25
AMIVoltDrop	AMI Volt Drop	2.00

b) Calculation of the value of the Avoided Cost of Energy is provided in the tab labeled 'Avoided Costs Reference.' This calculation, from a 2013 Avista Electric Resources Integrated Plan (IRP) presentation, which Avoided Cost includes the cost of Energy, Capacity Savings, Risk Premium, the Preference percentage, Distribution Capacity Savings, and Avoided T&D line losses. The per MWh Avoided Cost of $68.05 is the sum of the two subtotals ($56.26 and $9.79). Such calculation reflects Avista's then actual avoided cost properly determined as part of its Commission IRP process. This explanation for the calculation of Avoided Energy Costs is also applicable for parts (d) and (f) in this request.

g) This response is also applicable to parts (h) and (i) of this request. For reference to the explanation of the CVR analyses conducted for the Company's 2016 AMI business case, please see the information excerpted below, which explains the sources of the benefits related to the subject categories "X&R Savings," "Grid Mod Augmentation," and "Future Grid Mod."

Pertaining to 'the approach Avista will employ,' the Company has previously described the process it is currently using to determine the CVR potential from a feeder. This process was presented during our online meeting with Public Counsel held on April 1, 2021 in response to the request in PC-DR-260. As explained in the meeting, Avista is applying that process to all candidate feeders, regardless of the subject prior classification of feeder groups, noted in this request.

From Avista's 2016 AMI Business Case……..

Avista's Washington Advanced Metering Project

Description of Quantified Customer Benefits

Area of Benefit
Conservation Voltage Reduction
Customer Value
As a result of the deployment of advanced meters across the Company's Washington service territory, Avista will be able to achieve additional savings through conservation voltage reduction, which will reduce the cost of providing service to our customers.
Background
The electric utility industry has generally agreed that lowering the voltage delivered to a customer meter, while maintaining the minimum required voltage, results in both reduced losses for the electric distribution system as well as reduced consumption for the customer. The methodology used to achieve the savings associated with

lower voltage is referred to as conservation voltage reduction (CVR). This involves lowering the operating voltage of the distribution system toward the lower half of the acceptable range (126 V to 114 V) as defined by the American National Standards Institute (ANSI)[19]. Avista has attained a weighted average savings of 2.02% in its CVR deployments in Spokane and Pullman, as validated by Navigant Consulting. Advanced metering data from 13 of the feeders, located in Pullman, suggests that an additional increment of approximately 2% can be achieved with the installation of AMI.

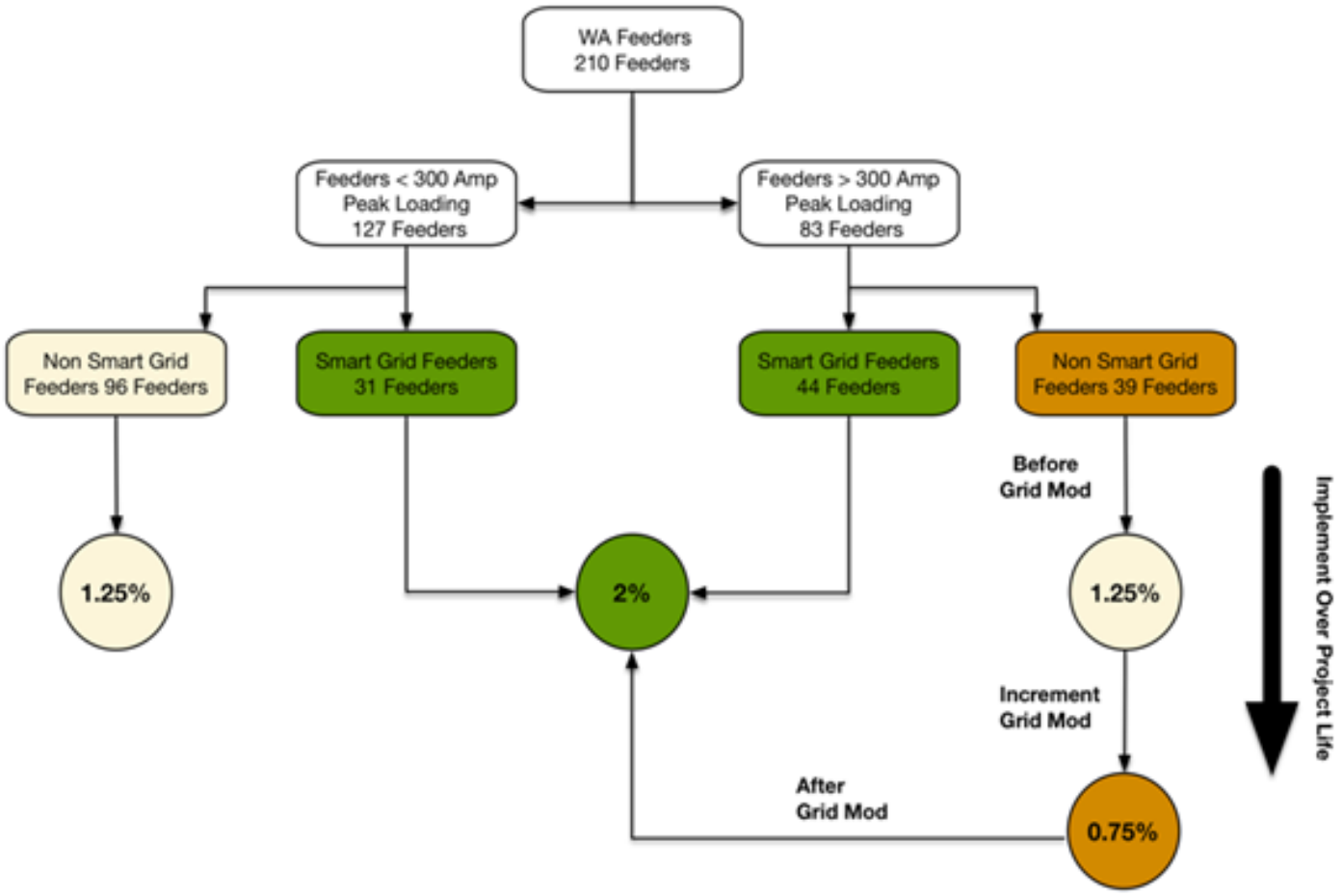
Calculating the Benefit Value

Avista serves its Washington electric customers from 210 electric feeder lines. The diagram below outlines the anticipated savings from groups of feeders based on the load levels and planned upgrades under Avista's Grid Modernization Program (Grid Mod). For feeders loaded at less than 300 amps, CVR will be accomplished by making more aggressive voltage regulator settings (X&R savings) as determined from readings taken by the advanced meter. Avista estimates this methodology can provide an average savings of 1.25%. This estimation is based on the advanced metering data from the system in Pullman. These savings can only be achieved because the voltage reading from the advanced meter enables the reduction while ensuring the customer receives adequate voltage. For feeders with more than 300 peak amp loading, the grid modernization program will implement conservation voltage reduction with smart grid technologies over a 20 year period (approximately two feeders per year). Voltage savings will be captured with aggressive X &R savings until the feeder is converted, at which time the remaining savings can be achieved. The feeders have been prioritized for conservation voltage savings by highest to lowest peak load levels.

To achieve the target savings will require us to install active mitigation at some points along the feeder which are associated with customer service drops and dynamic customer loads. The capital and expense costs required to complete and maintain the anticipated mitigation work is included in the estimated cost for the Washington AMI Project.

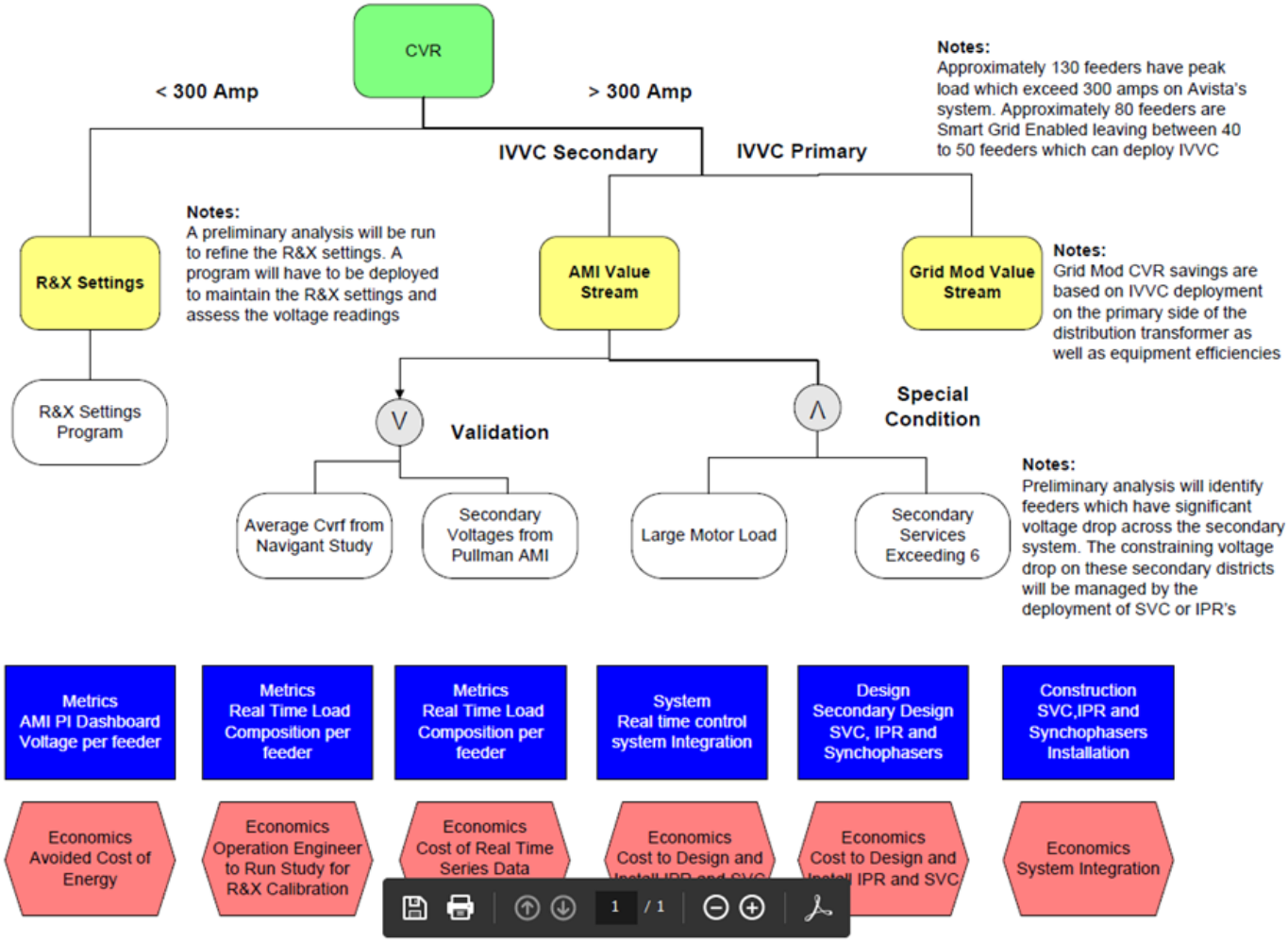
The diagram below depicts the Company's electric feeders in Washington, based on loading (AMPS), and identifies the source of the conservation voltage savings to be achieved over the Washington AMI Project lifecycle.

[19] American National Standards Institute (ANSI), ANSI C84.1, ELECTRIC POWER SYSTEMS AND EQUIPMENT - VOLTAGE RANGES 1-2006



Supporting Information

The engineering models used to estimate the potential value to be achieved with AMI-enabled conservation voltage reduction, are shown schematically in the diagram below. Models include the "SynerGEE" engineering models, the DMS model, the GIS model, OsiSoft PI Historian, and all the AMI register and interval data as well as exceptions and events.



Data supporting the calculation of this customer benefit is provided in the attached electronic workbook titled "Avista AMI Customer Benefits" included on the Compact Disc provided at the end of Attachment B, Project Costs. The workbook contains the cost information for the activities associated with conservation voltage reduction used in determining the quantified value of this benefit.

1. Open the Benefits Workbook and select the tab "Summary Detail."
2. Select "Conservation Voltage Reduction" under that area of benefit.
3. This tab contains the cost information for the expected savings for this benefit, and the forecast of benefits through the Project lifecycle.

Functional Requirements

Where conservation voltage is to be implemented on feeders through grid modernization (AMI augmentation), using the distribution management system (DMS):

- The AMI data must be analyzed thoroughly to understand voltage reduction opportunity.
- The DMS set points must be modified and monitored for maximum benefit.
- Dashboard components will need to be created for the capture of real time savings.
- Mitigation strategies may need to be implemented.

Feeders leveraging X&R settings will require:

- Engineering analysis to thoroughly understand voltage reduction risk/opportunity.

- Regulator X&R settings must be modified by relay technicians and monitored for maximum benefit.
- Mitigation strategies may need to be implemented.

Additional tasks may include:

- Setting changes must be implemented quickly after AMI deployment.
- Dashboards may be necessary in order to better analyze conditions as system changes are made.
- Ongoing distribution system operations and PI[20] support will be necessary.

Additional Requirements

Costs - The various costs for the applications and reporting systems required to implement the conservation voltage benefits are included in the estimated capital and expense costs for the Project.

Business Process Changes - The Distribution Management System (DMS) process to establish voltage set points and produce metrics will need to be integrated with AMI data pre and post deployment.

Key Metrics

Actual conservation voltage savings will be tracked and reported over the Project lifecycle.

Benefit Realization Schedule

The ramp up in benefits and the expected annual savings in each year of the Project lifecycle are shown in the electronic workbook discussed above.

[20] "PI" is the application system used by the Company for various types of data capture and reporting.