

**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.”<sup>1</sup>
  - 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 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

<sup>1</sup> 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.

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.<sup>2</sup>

- 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.<sup>3</sup>
- 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.
  - 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

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<sup>2</sup> Incremental benefits in years 2019 – 2021 were reduced from those initially filed as shown in PC-DR-320 Attachment A.

<sup>3</sup> 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.

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.

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H28 =G28\*0.085

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
16		Under 500 kWh/Mo		46,061	154,446,492	3353	34								
17		500 - 1000 kWh/Mo		85,416	762,768,267	8930	179								
18		Over 1000 kWh/Mo		81,121	1,564,546,291	19287	579								
19					6,769,055,383		\$17,261,091	<-- if total reduction across all customers							
20															
21															
22				#	% participating	% Reduced	kWh Reduction	3%							
23	Commercial Customers			23,385	1%	3%	541,440								
24	Residential Customers			212,659											
25		Under 500 kWh/Mo		46,061	1.0%	3%	46,334								
26		500 - 1000 kWh/Mo		85,416	3.0%	3%	686,491								
27		Over 1000 kWh/Mo		81,121	5.0%	3%	2,346,819								
28		Total					3,621,085	\$307,792							
29															
30															
31					233.85										
32					7079.14										
33					7312.99										
34	6%	<a href="http://www.slideshare.net/breakingnews/unlocking-energy-efficiency-in-the-us-economy-1789726">http://www.slideshare.net/breakingnews/unlocking-energy-efficiency-in-the-us-economy-1789726</a>													
35		<a href="http://www.eci.ox.ac.uk/research/energy/downloads/smart-metering-report.pdf">http://www.eci.ox.ac.uk/research/energy/downloads/smart-metering-report.pdf</a>													
36	1-4%	<a href="http://finance-commerce.com/2014/09/sustainable-reducing-energy-use-through-behavioral-science/">http://finance-commerce.com/2014/09/sustainable-reducing-energy-use-through-behavioral-science/</a>													
37		<a href="http://opower.com/uploads/library/file/24/Opower_WP_Effective_Customer_Engagement.pdf.pdf">http://opower.com/uploads/library/file/24/Opower_WP_Effective_Customer_Engagement.pdf.pdf</a>													
38		<a href="http://www.elp.com/articles/2013/07/study-utility-customer-engagement-programs-are-worth-it.html">http://www.elp.com/articles/2013/07/study-utility-customer-engagement-programs-are-worth-it.html</a>													
39		<a href="https://www.energystar.gov/buildings/program-administrators/state-and-local-governments/campaigns">https://www.energystar.gov/buildings/program-administrators/state-and-local-governments/campaigns</a>													
40	2%	<a href="http://www.energyvortex.com/pages/headlinedetails.cfm?id=4857">http://www.energyvortex.com/pages/headlinedetails.cfm?id=4857</a>													
41	2%	<a href="http://www.intelligentutility.com/article/12/02/behavioral-approaches-energy-conservation-pay&amp;utm_medium=eNL&amp;utm_campaign=IU_DAILY2&amp;utm_term=Original-Member">http://www.intelligentutility.com/article/12/02/behavioral-approaches-energy-conservation-pay&amp;utm_medium=eNL&amp;utm_campaign=IU_DAILY2&amp;utm_term=Original-Member</a>													
42	4%	<a href="http://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/projects/smart-metering/smi-program-business-case.pdf">http://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/projects/smart-metering/smi-program-business-case.pdf</a>													

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H60 =F60\*H63\*0.085

	A	B	C	D	E	F	G	H	I	J	K	L
37												
38	Original											
39	Percent Realized			0	0	0	0.3	0.75	0.75	0.75	1	1
40	Year			2016	2017	2018	2019	2020	2021	2022	2023	2024
41	Forecasted EE Savings	\$	391,191	\$0	\$0	\$0	\$34,642	(\$7,723)	(\$4,309)	(\$50,769)	\$37,204	\$42,280
42	Forecasted EE Research Costs											
43												
44	Outreach and Administration		\$100,000									
45	Third Party Evaluation	\$	50,000									
46	Escalation Rate		3%									
47	Customer Load Growth		1%									
48	Percent who Don't Access Web		40%									
49	Percent Who Would Respond		50%									
50												
51												
52	<b>Energy Savings due to better understanding of energy usage</b>											
53	<b>be extremely valuable, especially</b>											
54					#	kWh	Avg					
55	Commercial Customers				23,385	1,804,801,283	77178					
56	Residential Customers				212,659	2,482,493,050	11674					
57		Under 500 kWh/Mo			46,061	154,446,492	3353	34				
58		500 - 1000 kWh/Mo			85,416	762,768,267	8930	179				
59		Over 1000 kWh/Mo			81,121	1,564,546,291	19287	579				
60						6,769,055,383		<b>\$17,261,091</b>	ross all customers was 2% on average			
61												
62	Broken out											
63					#	% participating		3%	percent Reduced			
64	Commercial Customers				23,385	1%	541,440					
65	Residential Customers				212,659	-						