Exh. AIW-5
Dockets UE-200900, UG-200901, UE-200894
Witness: Amy I. White

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **AVISTA CORPORATION, d/b/a AVISTA UTILITIES,** **Respondent.**	**DOCKETS UE-200900, UG-200901, UE-200894 (*Consolidated*)**

EXHIBIT TO TESTIMONY OF

Amy I. White

STAFF OF WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Avista's Response to UTC Staff Data Request No. 107, Adjustment 3.16, Attachment C, filed February 26, 2021

April 21, 2021

		AMI Offsets	
2021 Benefits to Customers Not Redeployed	A	6,360,716	
2022 Benefits to Customers Not Redeployed	B	6,516,474	
Rate Year Benefits to Customers Not Redeployed	C	6,477,535	Adjustment for Commission Requiren disconnect for low income customers meter readers, otherwise previously i
Test Year Benefits to Customers Not Redeployed		2,429,513	included as reduced expense, i.e. ben
O&M Offset - Total		4,048,022	**$ 271,000**

Electric Share	3,036,016	(203,250)	2,832,766
Natural Gas Share	1,012,005	(67,750)	944,255
Total AMI Offsets	4,048,022	(271,000)	3,777,022

Per AMI Report:

a) Current Expected Benefits
Avista has revised lower its estimate of the financial benefits for the credit/collections function enabled by remote service connectivity as shown above in Table 4-4. This revision is based on the delay in scheduled deployment of meters and the actual experience of avoided service trips. The Company expects this function to be on track with the initial estimate over the life of the project. As noted earlier, the Commission recently concluded a rulemaking to address issues related to the historically allowed use of remote service disconnection (U-180525). We expect new constraints on use of remote service connectivity to be accounted for as a new customer service cost rather than a reduction in AMI net benefits, which were based on circumstances known at the time Avista made its decision to deploy the system.

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not planned for and
ıefit in this file.

Cost Savings Expected to be Redeployed to Other Work and Not Result in a Direct Reduction in Revenue Requ

Area of Benefit		NPV	Cash Value
Meter Reading & Meters			
	Eliminate Regular Meter Reading	$57,383,155	$132,405,573
	Reduce Special Meter Reading	$359,095	$781,459
	Natural Gas Meter Module Refresh	$2,423,030	$5,419,319
	Total	$60,165,280	$138,606,351
Remote Service Connectivity			
	Account Open/Close/Transfer	$10,352,917	$23,985,023
	Credit Collections/Connections	$11,326,484	$18,802,758
	Total	$21,679,401	$42,787,781
Outage Management			
	Reduced Customer Calls	$1,277,163	$2,710,326
	Avoided Single Lights Out	$2,730,472	$5,794,459
	Reduced Major Storms Cost	$3,032,403	$6,551,326
	Total	$7,040,038	$15,056,111
Energy Efficiency			
	Conservation Voltage Reduction	$18,494,601	$43,660,371
	Grid-Interactive Efficient Buildings	$2,609,116	$3,123,537
	Total	$21,103,718	$46,783,908
Energy Theft & Unbilled Usage		-$2	-$1
	Stopped Meters	$3,364,422	$7,879,092
Billing Accuracy			
	Estimated Bills	$6,528,174	$15,382,656
	Bill Inquiries	$2,379,864	$5,607,789
	Billing Analysis	$1,096,662	$2,466,823
	Rebilling	$973,755	$2,294,508
	Total	$10,978,456	$25,751,775
Utility Studies			
	Retail Load Analysis	$979,467	$1,761,471
	Meter Sampling	$1,071,165	$2,241,199
	Total	$2,050,632	$4,002,670
Grand Total	**Revenue Requirement Reductions**	**$126,381,946**	**$280,867,688**
	Expected Savings to be Redeployed	**$25,063,197**	**$78,036,737**
	"True" Reductions in Revenue Req	**$101,318,750**	**$202,830,951**

from next tab…...	**Customer Direct Benefits**	**$90,363,791**	**$208,795,312**
	Grand AMI Total Benefits	**$216,745,737**	**$489,663,000**

$2,862,618 2018 Meter Reading Costs Correction

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2016	2017	2018	2019	2020	2021	2022	2023
$280,175	$369,753	$580,539	$1,652,817	$4,295,102	$4,373,502	$4,453,336	$6,239,049
$0	$0	$0	$14,499	$36,248	$36,248	$34,773	$46,855
$0	$0	$0	$67,530	$168,826	$168,826	$172,556	$235,179
$280,175	$369,753	$580,539	$1,734,846	$4,500,175	$4,578,575	$4,660,664	$6,521,083
$0	$0	$0	$292,022	$759,258	$789,629	$821,214	$1,138,750
$0	$0	$0	$229,989	$597,698	$621,322	$645,880	$895,212
$0	$0	$0	$522,012	$1,356,956	$1,410,950	$1,467,093	$2,033,962
$0	$0	$0	$0	$0	$29,223	$50,654	$140,479
$0	$0	$0	$0	$0	$62,477	$108,293	$300,333
$0	$0	$0	$0	$0	$70,638	$122,438	$339,563
$0	$0	$0	$0	$0	$162,338	$281,385	$780,375
$0	$0	$0	$411,451	$1,072,567	$1,118,469	$1,166,309	$1,621,402
$0	$0	$0	$0	$0	$4,128	$8,421	$12,884
$0	$0	$0	$411,451	$1,072,567	$1,122,597	$1,174,730	$1,634,286
$0	$0	$0	$0	$0	$0	$0	$0
$0	$0	$0	$103,081	$267,238	$265,847	$275,683	$381,178
$0	$0	$0	$194,297	$505,317	$504,286	$524,609	$727,667
$0	$0	$0	$70,831	$184,215	$183,839	$191,248	$265,273
$0	$0	$0	$41,714	$105,328	$102,052	$103,073	$138,804
$0	$0	$0	$28,982	$75,374	$75,220	$78,252	$108,540
$0	$0	$0	$335,824	$870,234	$865,397	$897,181	$1,240,285
$48,710	$50,171	$364,576	$53,226	$54,823	$42,351	$43,621	$88,782
$32,580	$77,955	$80,294	$82,702	$68,147	$52,643	$54,223	$74,466
$81,290	$128,126	$444,870	$135,929	$122,970	$94,994	$97,844	$163,248
$361,465	$497,879	$1,025,408	$3,243,143	$8,190,141	$8,500,698	$8,854,581	$12,754,416
$32,580	$77,955	$80,294	$813,630	$1,964,877	$2,139,982	$2,338,106	$3,627,938
$328,885	$419,924	$945,115	$2,429,513	$6,225,263	$6,360,716	$6,516,474	$9,126,478

Date	Benefit	Impact - Reduction in Benefits		Notes
		NPV	Actual	
2/9/2021	Meter Reading	$1,662,268	$3,889,497	Gas only areas meters will be read via a van equipped with a mobile reader
2/9/2021	Special Reads	$13,025	$30,488	Gas only areas meters will be read via a van equipped with a mobile reader. Will require a manual read
2/9/2021	Estimated Bills	$254,992	$622,954	Gas only areas meters will be read via a van equipped with a mobile reader. Will not be able to use interval data. Adjustment on Summary tab (green highlight) since it was a ratio
2/9/2021	Bill Inquiries	$92,958	$227,100	Gas only areas meters will be read via a van equipped with a mobile reader. Will not be able to use interval data. Adjustment on Summary tab (green highlight) since it was a ratio
2/9/2021	Billing Analysis	$41,907	$98,421	Gas only areas meters will be read via a van equipped with a mobile reader. Will not be able to use interval data. Adjustment on Summary tab (green highlight) since it was a ratio
2/9/2021	Rebilling	$38,035	$92,921	Gas only areas meters will be read via a van equipped with a mobile reader. Will not be able to use interval data. Adjustment on Summary tab (green highlight) since it was a ratio
2/9/2021	Slow/Failed Meters	$211,650	$347,472	Gas only areas meters will be read via a van equipped with a mobile reader. Will not be able to use interval data. Adjustment on Summary tab (green highlight) since it was a ratio
2/9/2021	Stopped Meters	$193,754	$318,573	Gas only areas meters will be read via a van equipped with a mobile reader. Will not be able to use interval data. Adjustment on Summary tab (green highlight) since it was a ratio
2/9/2021	Customer Meter Base Repairs	$1,695,285	$1,813,390	Meter base repairs were lower than forecasted. This also has a corresponding reduction in forecasted costs with offests this reduction in benefits
2/11/2021	Natural Gas Meter Module Refresh	$767,289	$1,540,274	Impact of moving to gas only area to Gas Engineering Refresh Program and using actual ERT install costs vs. projected values
		$4,971,163	$8,981,090	

	Area	NPV	Cash Value	2016	2017
	Meter Reading & Meters				
x	Eliminate Regular Meter Reading	$57,383,155	$132,405,573	$280,175	$369,753
x	Reduce Special Meter Reading	$359,095	$781,459	$0	$0
	Net Metering	$4,627,144	$10,778,181	$0	$0
	Customer Meter Base Repairs	$4,607,038	$5,921,610	$299,407	$459,313
	Natural Gas Meter Module Refresh	$2,423,030	$5,419,319	$0	$0
	Meter Salvage Value	$148,000	$0	$0	$0
	Local Economy Jobs	$0	$0	$4,057,495	$7,490,272
	Total	$69,547,463	$155,306,142	$4,637,077	$8,319,338
	Remote Service Connectivity				
x	Account Open/Close/Transfer	$10,352,917	$23,985,023	$0	$0
x	Credit Collections/Connections	$11,326,484	$18,802,758	$0	$0
	After Hours Fees	$331,214	$769,726	$0	$0
	Total	$22,010,615	$43,557,507	$0	$0
	Outage Management				
	Earlier Outage Notification	$28,009,803	$68,758,762	$0	$0
	More Rapid Restoration	$ 18,673,199	$ 45,839,168	$0	$0
x	Reduced Customer Calls	$1,277,163	$2,710,326	$0	$0
x	Avoided Single Lights Out	$2,730,472	$5,794,459	$0	$0
x	Reduced Major Storms Cost	$ 3,032,403	$6,551,326	$0	$0
	Total	$ 53,723,041	$ 129,654,041	$0	$0
	Energy Efficiency				
x	Conservation Voltage Reduction	$18,494,601	$43,660,371	$0	$0
	Customer Energy Efficiency	$3,655,286	$8,465,586	$0	$0
	Behavioral Energy Efficiency	$8,927,226	$21,955,038	$0	$0
x	Grid-Interactive Efficient Buildings	$2,609,116	$3,123,537	$0	$0
	Total	$ 33,686,230	$ 77,204,532	$ -	$ -
	Energy Theft & Unbilled Usage				
	Theft and Diversion	$4,499,424	$10,378,186	$0	$0
	Unbilled Usage	$1,951,970	$4,522,207	$0	$0
	Slow/Failed Meters	$3,784,233	$8,724,011	$42,117	$43,381
x	Stopped Meters	$3,364,422	$7,879,092	$0	$0
	Loss of Phase	$9,390,317	$20,521,976	$75,661	$332,259
	Total	$22,990,366	$52,025,471	$117,778	$375,640
	Billing Accuracy				
x	Estimated Bills	$6,528,174	$15,382,656	$0	$0
x	Bill Inquiries	$2,379,864	$5,607,789	$0	$0
x	Billing Analysis	$1,096,662	$2,466,823	$0	$0
x	Rebilling	$973,755	$2,294,508	$0	$0
	Total	$10,978,456	$25,751,775	$0	$0
	Utility Studies				
x	Retail Load Analysis	$979,467	$1,761,471	$48,710	$50,171
x	Meter Sampling	$1,071,165	$2,241,199	$32,580	$77,955
	Total	$2,050,632	$4,002,670	$81,290	$128,126
	Grand Total	$214,986,802	$487,502,139	$4,836,144	$8,823,103

2018	2019	2020	2021	2022	2023	2024	2025
$580,539	$1,652,817	$4,295,102	$4,373,502	$4,453,336	$6,239,049	$6,487,265	$6,745,302
$0	$14,499	$36,248	$36,248	$34,773	$46,855	$46,363	$46,363
$44,068	$66,221	$99,231	$114,142	$169,257	$248,651	$360,264	$511,441
$10,773	$2,867,434	$2,284,683	$0	$0	$0	$0	$0
$0	$67,530	$168,826	$168,826	$172,556	$235,179	$400,697	$409,662
$0	$0	$0	$0	$0	$0	$0	$0
$4,658,707	$8,000,000	$8,782,000	$1,200,000	$0	$0	$0	$0
$5,294,087	$12,668,502	$15,666,089	$5,892,717	$4,829,921	$6,769,733	$7,294,589	$7,712,769
$0	$292,022	$759,258	$789,629	$821,214	$1,138,750	$1,184,300	$1,231,672
$0	$229,989	$597,698	$621,322	$645,880	$895,212	$930,598	$967,383
$0	$0	$0	$0	$50,474	$50,474	$50,474	$50,474
$0	$522,012	$1,356,956	$1,410,950	$1,517,567	$2,084,436	$2,165,372	$2,249,529
$0	$0	$659,703	$1,364,002	$2,115,158	$2,915,533	$3,767,598	$3,894,943
$0	$0	$ 439,802	$ 909,334	$ 1,410,105	$ 1,943,688	$ 2,511,731	$ 2,596,628
$0	$0	$0	$29,223	$50,654	$140,479	$146,098	$151,942
$0	$0	$0	$62,477	$108,293	$300,333	$312,347	$324,840
$0	$0	$0	$70,638	$122,438	$339,563	$353,145	$367,271
$0	$0	$ 1,099,505	$ 2,435,674	$ 3,806,648	$ 5,639,597	$ 7,090,919	$ 7,335,624
$0	$411,451	$1,072,567	$1,118,469	$1,166,309	$1,621,402	$2,254,438	$2,351,423
$0	$106,781	$226,830	$287,072	$297,694	$411,612	$426,841	$442,634
$0	$0	$0	$296,000	$592,000	$888,000	$1,184,000	$1,231,360
$0	$0	$ -	$4,128	$8,421	$12,884	$17,522	$22,341
$ -	$ 518,232	$ 1,299,397	$ 1,705,669	$ 2,064,424	$ 2,933,897	$ 3,882,802	$ 4,047,758
$0	$130,137	$337,380	$349,863	$362,808	$501,643	$520,204	$539,451
$0	$55,059	$143,153	$148,879	$154,834	$214,703	$223,291	$232,223
$44,682	$112,432	$291,480	$289,963	$300,691	$415,756	$431,139	$447,091
$0	$103,081	$267,238	$265,847	$275,683	$381,178	$395,281	$409,907
$405,040	$488,501	$820,883	$845,510	$870,875	$897,001	$923,911	$951,629
$449,721	$889,210	$1,860,134	$1,900,061	$1,964,892	$2,410,281	$2,493,827	$2,580,301
$0	$194,297	$505,317	$504,286	$524,609	$727,667	$756,992	$787,499
$0	$70,831	$184,215	$183,839	$191,248	$265,273	$275,964	$287,085
$0	$41,714	$105,328	$102,052	$103,073	$138,804	$140,192	$141,594
$0	$28,982	$75,374	$75,220	$78,252	$108,540	$112,914	$117,465
$0	$335,824	$870,234	$865,397	$897,181	$1,240,285	$1,286,063	$1,333,643
$364,576	$53,226	$54,823	$42,351	$43,621	$88,782	$61,704	$63,555
$80,294	$82,702	$68,147	$52,643	$54,223	$74,466	$76,700	$115,663
$444,870	$135,929	$122,970	$94,994	$97,844	$163,248	$138,404	$179,218
$6,188,678	$15,069,708	$22,275,286	$14,305,463	$15,178,476	$21,241,477	$24,351,975	$25,438,842

2026	2027	2028	2029	2030	2031	2032	2033
$7,013,549	$7,292,412	$7,582,309	$7,883,681	$8,196,981	$8,522,682	$8,861,276	$9,213,276
$46,363	$46,363	$46,363	$46,363	$46,363	$46,363	$46,363	$46,363
$704,782	$930,567	$1,156,980	$1,325,397	$1,365,252	$1,236,460	$972,000	$666,076
$0	$0	$0	$0	$0	$0	$0	$0
$418,865	$428,313	$438,014	$447,974	$274,921	$281,222	$287,692	$294,338
$0	$0	$0	$0	$0	$0	$0	$0
$0	$0	$0	$0	$0	$0	$0	$0
$8,183,560	$8,697,655	$9,223,666	$9,703,415	$9,883,517	$10,086,727	$10,167,332	$10,220,053
$1,280,939	$1,332,176	$1,385,463	$1,440,882	$1,498,517	$1,558,458	$1,620,796	$1,685,628
$1,005,624	$1,045,378	$1,086,704	$1,129,665	$1,174,326	$1,220,754	$1,269,019	$1,319,193
$50,474	$50,474	$50,474	$50,474	$50,474	$50,474	$50,474	$50,474
$2,337,037	$2,428,028	$2,522,641	$2,621,021	$2,723,317	$2,829,686	$2,940,289	$3,055,295
$4,026,592	$4,162,690	$4,303,389	$4,448,844	$4,599,215	$4,754,668	$4,915,376	$5,081,516
$ 2,684,394	$ 2,775,126	$ 2,868,926	$ 2,965,895	$ 3,066,143	$ 3,169,778	$ 3,276,917	$ 3,387,677
$158,020	$164,341	$170,914	$177,751	$184,861	$192,256	$199,946	$207,944
$337,834	$351,347	$365,401	$380,017	$395,218	$411,027	$427,468	$444,567
$381,962	$397,240	$413,130	$429,655	$446,841	$464,715	$483,303	$502,635
$ 7,588,801	$ 7,850,745	$ 8,121,761	$ 8,402,163	$ 8,692,278	$ 8,992,444	$ 9,303,010	$ 9,624,338
$2,452,613	$2,558,485	$2,669,574	$2,785,321	$2,906,249	$3,032,192	$3,163,975	$3,301,446
$459,012	$475,995	$493,607	$511,871	$530,810	$550,450	$570,817	$591,937
$1,280,614	$1,331,839	$1,385,113	$1,440,517	$1,498,138	$1,558,063	$1,620,386	$1,685,201
$124,275	$147,936	$172,453	$197,833	$224,232	$251,536	$279,930	$309,272
$ 4,316,514	$ 4,514,255	$ 4,720,747	$ 4,935,542	$ 5,159,429	$ 5,392,240	$ 5,635,107	$ 5,887,856
$559,411	$580,109	$601,573	$623,831	$646,913	$670,849	$695,670	$721,410
$241,512	$251,172	$261,219	$271,668	$282,535	$293,836	$305,590	$317,813
$463,633	$480,788	$498,577	$517,024	$536,154	$555,992	$576,564	$597,896
$425,073	$440,801	$457,111	$474,024	$491,563	$509,751	$528,611	$548,170
$980,177	$1,009,583	$1,039,870	$1,071,066	$1,103,198	$1,136,294	$1,170,383	$1,205,495
$2,669,807	$2,762,453	$2,858,350	$2,957,614	$3,060,363	$3,166,722	$3,276,818	$3,390,784
$819,235	$852,251	$886,596	$922,326	$959,496	$998,164	$1,038,390	$1,080,237
$298,654	$310,690	$323,211	$336,236	$349,787	$363,883	$378,548	$393,803
$143,010	$144,440	$145,885	$147,344	$148,817	$150,305	$151,808	$153,326
$122,199	$127,123	$132,246	$137,576	$143,120	$148,888	$154,888	$161,130
$1,383,099	$1,434,505	$1,487,939	$1,543,482	$1,601,220	$1,661,240	$1,723,634	$1,788,496
$65,462	$67,426	$69,448	$71,532	$73,678	$75,888	$78,165	$109,385
$119,133	$122,707	$126,388	$130,180	$134,085	$138,107	$142,251	$146,518
$184,595	$190,132	$195,836	$201,711	$207,763	$213,996	$220,416	$255,903
$26,663,413	$27,877,774	$29,130,940	$30,364,948	$31,327,886	$32,343,054	$33,266,605	$34,222,726

2034	2035	2036	2037	2038	2039	2040
$9,579,211	$9,959,636	$10,355,125	$2,468,597	$0	$0	$0
$46,363	$46,363	$46,363	$10,116	$0	$0	$0
$406,921	$248,597	$151,873	$0	$0	$0	$0
$0	$0	$0	$0	$0	$0	$0
$301,162	$308,171	$315,371	$0	$0	$0	$0
$0	$0	$0	$0	$0	$0	$0
$0	$0	$0	$0	$0	$0	$0
$10,333,657	$10,562,767	$10,868,732	$2,478,712	$0	$0	$0
$1,753,053	$1,823,175	$1,896,102	$492,987	$0	$0	$0
$1,371,353	$1,425,577	$1,481,946	$385,137	$0	$0	$0
$50,474	$50,474	$50,474	$12,618	$0	$0	$0
$3,174,880	$3,299,226	$3,428,523	$890,742	$0	$0	$0
$5,253,271	$5,430,832	$5,614,394	$1,451,040	$0	$0	$0
$ 3,502,180	$ 3,620,554	$ 3,742,929	$ 967,360	$0	$0	$0
$216,261	$224,912	$233,908	$60,816	$0	$0	$0
$462,349	$480,843	$500,077	$130,020	$0	$0	$0
$522,741	$543,651	$565,397	$147,003	$0	$0	$0
$ 9,956,803	$ 10,300,791	$ 10,656,704	$ 2,756,239	$0	$0	$0
$3,434,873	$3,584,702	$3,774,883	$0	$0	$0	$0
$613,838	$636,550	$660,103	$171,132	$0	$0	$0
$1,752,609	$1,822,714	$1,895,622	$492,862	$0	$0	$0
$339,778	$404,324	$471,440	$135,233	$0	$0	$0
$ 6,141,099	$ 6,448,290	$ 6,802,047	$ 799,226	$ -	$ -	$ -
$748,102	$775,782	$804,486	$208,563	$0	$0	$0
$330,526	$343,747	$357,497	$92,949	$0	$0	$0
$620,019	$642,959	$666,749	$148,925	$0	$0	$0
$568,452	$589,485	$611,296	$136,539	$0	$0	$0
$1,241,659	$1,278,909	$1,317,276	$1,356,795	$0	$0	$0
$3,508,758	$3,630,882	$3,757,304	$1,943,771	$0	$0	$0
$1,123,770	$1,169,058	$1,216,171	$316,296	$0	$0	$0
$409,673	$426,183	$443,358	$115,306	$0	$0	$0
$154,860	$156,408	$157,972	$39,888	$0	$0	$0
$167,624	$174,379	$181,407	$47,179	$0	$0	$0
$1,855,927	$1,926,029	$1,998,908	$518,669	$0	$0	$0
$82,925	$85,413	$87,975	$22,654	$0	$0	$0
$150,914	$155,441	$160,104	$0	$0	$0	$0
$233,839	$240,854	$248,080	$22,654	$0	$0	$0
$35,204,964	$36,408,839	$37,760,298	$9,410,013	$0	$0	$0

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Meter Reading Budget Items

		Meter Readers	Sources or References	Adjustment NPV	Annual Increase Rate
Payroll	$ 3,060,308		Meter Reading Budget 2016		
Meter Reader Payroll	$ 2,396,085	$ 2,396,085	Meter Reading Budget 2016	$28,534,636	3%
	$ 418,704		Meter Reading Budget 2016		
MR Percent of Non Admin Payroll		85%	Calculation: (Meter Reader Payroll/(Meter Reader Payroll+OSM Payroll))		
Admin Payroll	$ 177,242	$ 150,877	Meter Reading Budget 2016	$1,738,085	3%
Overtime	$ 89,000	$ 10,000	Meter Reading Budget 2016: Meter Reader Portion	$115,199	3%
One Leave	$ -	$ -	Meter Reading Budget 2016	$0	3%
Total Payroll	$ 3,081,031	$ 2,556,962	v	$31,019,493	
IT Support & Technologies					
Database Admin & Support Labor (1/4 time)	$ 52,000	$ 52,000	ET - taken from Estimated Cost for AMI system	$577,568	3%
Annual System support and Maintenace (Hardware & Software) Costs	$ 135,122	$ 135,122	Forecast from historical budget	$1,500,812	3%
Software & Handhelds (5 years)	$ 92,000	$ 92,000	Last refresh cost in 2011	$1,112,030	3%
Total IT Support & Technologies	$ 279,122	$ 279,122	v	$3,190,410	
Vehicle Costs					
Mileage Reimburse	$ 20,000	$ 20,000	Meter Reading Expense Report 2014	$250,712	3%
Miles Driven	553,306	433,306	Fleet mileage records (see Meter Reader Mileage tab)	$5,431,758	3%
Cost per Mile	$ 1.05		Fleet G. Loew		
Total Vehicle Costs		$ 454,971	Calculation: Cost per Mile * Miles Driven	$5,682,471	
Safety					
Injury Related Costs Meter Readers (2012-2014 Average)	$ 56,785	$ 56,785	Anthony Klutz Safety Report: Costs are incurred outside of Jackies budget.	$686,376	3%
Injury Related Costs OSM's	$ 12,000				
Total Safety	$ 68,785	$ 56,785		$711,835	3%
Customer Benefit					
Reduced Mileage (Carbon Reduction)					
Miles Driven		433,306	Fleet mileage records (see Meter Reader Mileage tab)	$5,431,758	3%
pound of carbon dioxide/mile driven	0.96		(.96 pound of carbon dioxide/mile driven) Avista Corporate Sustainability Report (Jessie Wuerst)		
Tons of carbon avoided		208	Calculation: (Miles Driven * pound of carbon dioxide/mile driven)/2000		
Costs per ton	$ 8.0		Avista Integrated Resource Plan		
Avoided Carbon Cost		$ 1,663.90	Calculation: Costs per ton * Tons of carbon avoided	$20,858	3%
Overheads					
Overhead	61%	$ 1,461,611.85	Neil Thorson (Over head loaders calc)	$18,322,208	3%
Facility Costs	$ 10,000		2000 sqft at $5/sqft Annual Costs		
Portion of Facility Costs		$ 0.78	Calculation: Meter Reader Payroll/Total Budget		
MR Facility Costs		$ 7,830	Calculation: Portion of Facility Costs * Facility Costs	$98,148	3%
Total Overheads		$ 1,477,272		$18,420,356	
Total Meter Reading Costs		$ 4,826,776	Calculation: Summation of all costs in Column D	$ 59,045,423	
Gas Only Areas Read By Van (Reduction to Benefits) - See Below [1]					
Meter Reads					
Total Manual Reads	4,650,000	4,650,000	Pivot Tab: Data Pull from Workplace (excluded Openway reads) - 2014 (Manual and Walk by)		
Cost Per Read		$ 1.04	Calculation: Total Manual Reads / Total Meter Reading Costs		
* Budgeted Cost Per Read (Jackie's Budget)		$ 0.55	Calculation		

1 Meter Readers for Gas Only Areas will be retained, resulting in the following reductions in Meter Reading Benefits

Gas Only Areas Read By Van		
Meter Reading Costs	$1,186,907	$3,057,897
Van Costs	$475,361	$831,600
Total	$1,662,268	$3,889,497

			$ 2,591,605.54	$ 2,695,269.76	$ 2,803,080.55	$ 2,915,203.77	$ 3,031,811.92	$ 3,153,084.40			
	0	0	0.1	0.3	0.75	0.75	0.75	1	1	1	
Customer Growth	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
1.0%	$ -	$ -	$ 259,161	$ 808,581	$ 2,102,310	$ 2,186,403	$ 2,273,859	$ 3,153,084	$ 3,279,208	$ 3,410,376	
0.7%	$ -	$ -	$ 16,225	$ 50,475	$ 130,858	$ 135,699	$ 140,720	$ 194,569	$ 201,768	$ 209,233	
0.7%	$ -	$ -	$ 1,075	$ 3,345	$ 8,673	$ 8,994	$ 9,327	$ 12,896	$ 13,373	$ 13,868	
0.7%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
	$ 280,175	$ 369,753	$ 326,974	$ 862,402	$ 2,241,841	$ 2,331,096	$ 2,423,906	$ 3,360,549	$ 3,494,349	$ 3,633,477	
0.0%	$ -	$ -	$ 5,682	$ 17,558	$ 45,212	$ 46,568	$ 47,965	$ 65,872	$ 67,848	$ 69,884	
0.0%	$ -	$ -	$ 14,765	$ 45,624	$ 117,483	$ 121,007	$ 124,637	$ 171,169	$ 176,304	$ 181,593	
0.7%	$ -	$ -	$ 10,259	$ 31,917	$ 82,745	$ 85,807	$ 88,982	$ 123,032	$ 127,584	$ 132,305	
	$0	$ -	$30,707	$95,099	$245,439	$253,382	$261,584	$360,072	$371,736	$383,781	
1.0%	$ -	$ -	$ 2,250	$ 7,019	$ 18,250	$ 18,980	$ 19,739	$ 27,371	$ 28,466	$ 29,605	
1.0%	$ -	$ -	$ 48,741	$ 152,072	$ 395,387	$ 411,203	$ 427,651	$ 593,009	$ 616,730	$ 641,399	
	$0	$ -	$50,991	$159,091	$413,637	$430,183	$447,390	$620,381	$645,196	$671,004	
0.7%	$ -	$ -	$ 6,332	$ 19,700	$ 51,073	$ 52,962	$ 54,922	$ 75,939	$ 78,749	$ 81,662	
1.0%	$ -	$ -	$ 6,388	$ 19,929	$ 51,816	$ 53,888	$ 56,044	$ 77,714	$ 80,823	$ 84,056	
1.0%	$ -	$ -	$ 48,741	$ 152,072	$ 395,387	$ 411,203	$ 427,651	$ 593,009	$ 616,730	$ 641,399	
1.0%	$ -	$ -	$ 187	$ 584	$ 1,518	$ 1,579	$ 1,642	$ 2,277	$ 2,368	$ 2,463	
1.0%	$ -	$ -	$ 164,411	$ 512,964	$ 1,333,706	$ 1,387,054	$ 1,442,536	$ 2,000,317	$ 2,080,329	$ 2,163,543	
1.0%	$ -	$ -	$ 881	$ 2,748	$ 7,144	$ 7,430	$ 7,727	$ 10,715	$ 11,144	$ 11,590	
	$0		$165,292	$515,712	$1,340,850	$1,394,484	$1,450,263	$2,011,032	$2,091,473	$2,175,132	
	$ 280,175	$ 369,753	$ 580,539	$ 1,652,817	$ 4,295,102	$ 4,464,612	$ 4,640,829	$ 6,432,026	$ 6,685,945	$ 6,949,913	

$65,910	$137,093	$142,577	$148,280	$154,211
$25,200	$50,400	$50,400	$50,400	$50,400
$91,110	$187,493	$192,977	$198,680	$204,611

1	1	1	1	1	1	1	1	1	1	1	0.25
2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
$ 3,546,791	$ 3,688,663	$ 3,836,209	$ 3,989,658	$ 4,149,244	$ 4,315,214	$ 4,487,822	$ 4,667,335	$ 4,854,029	$ 5,048,190	$ 5,250,117	#########
$ 216,975	$ 225,003	$ 233,328	$ 241,961	$ 250,914	$ 260,198	$ 269,825	$ 279,809	$ 290,162	$ 300,898	$ 312,031	$ 80,894
$ 14,381	$ 14,913	$ 15,465	$ 16,037	$ 16,630	$ 17,246	$ 17,884	$ 18,546	$ 19,232	$ 19,943	$ 20,681	$ 5,362
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 3,778,147	$ 3,928,579	$ 4,085,002	$ 4,247,656	$ 4,416,788	$ 4,592,657	$ 4,775,531	$ 4,965,689	$ 5,163,422	$ 5,369,031	$ 5,582,829	$1,451,286
$ 71,980	$ 74,140	$ 76,364	$ 78,655	$ 81,014	$ 83,445	$ 85,948	$ 88,527	$ 91,182	$ 93,918	$ 96,735	$ 24,909
$ 187,040	$ 192,652	$ 198,431	$ 204,384	$ 210,516	$ 216,831	$ 223,336	$ 230,036	$ 236,937	$ 244,045	$ 251,367	$ 64,727
$ 137,200	$ 142,276	$ 147,541	$ 153,000	$ 158,661	$ 164,531	$ 170,619	$ 176,932	$ 183,478	$ 190,267	$ 197,307	$ 51,152
$396,221	$409,068	$422,336	$436,038	$450,191	$464,807	$479,903	$495,494	$511,598	$528,230	$545,409	$140,788
$ 30,789	$ 32,021	$ 33,301	$ 34,634	$ 36,019	$ 37,460	$ 38,958	$ 40,516	$ 42,137	$ 43,822	$ 45,575	$ 11,850
$ 667,055	$ 693,737	$ 721,486	$ 750,346	$ 780,360	$ 811,574	$ 844,037	$ 877,798	$ 912,910	$ 949,427	$ 987,404	$ 256,725
$697,844	$725,758	$754,788	$784,979	$816,378	$849,034	$882,995	$918,315	$955,047	$993,249	$1,032,979	$268,575
$ 84,684	$ 87,817	$ 91,066	$ 94,436	$ 97,930	$ 101,553	$ 105,311	$ 109,207	$ 113,248	$ 117,438	$ 121,783	$ 31,572
$ 87,418	$ 90,915	$ 94,551	$ 98,333	$ 102,267	$ 106,357	$ 110,612	$ 115,036	$ 119,637	$ 124,423	$ 129,400	$ 33,644
$ 667,055	$ 693,737	$ 721,486	$ 750,346	$ 780,360	$ 811,574	$ 844,037	$ 877,798	$ 912,910	$ 949,427	$ 987,404	$ 256,725
$ 2,561	$ 2,664	$ 2,771	$ 2,881	$ 2,997	$ 3,116	$ 3,241	$ 3,371	$ 3,506	$ 3,646	$ 3,792	$ 986
$ 2,250,084	$ 2,340,088	$ 2,433,691	$ 2,531,039	$ 2,632,280	$ 2,737,572	$ 2,847,074	$ 2,960,957	$ 3,079,396	$ 3,202,572	$ 3,330,674	$ 865,975
$ 12,053	$ 12,535	$ 13,037	$ 13,558	$ 14,101	$ 14,665	$ 15,251	$ 15,861	$ 16,496	$ 17,156	$ 17,842	$ 4,639
$2,262,138	$2,352,623	$2,446,728	$2,544,597	$2,646,381	$2,752,236	$2,862,326	$2,976,819	$3,095,891	$3,219,727	$3,348,516	$870,614
$ 7,224,328	$ 7,509,606	$ 7,806,175	$ 8,114,486	$ 8,435,002	$ 8,768,208	$ 9,114,607	$ 9,474,724	$ 9,849,101	$ 10,238,306	#########	#########
$160,379	$166,794	$173,466	$180,405	$187,621	$195,126	$202,931	$211,048	$219,490	$228,270	$237,400	$246,896
$50,400	$50,400	$50,400	$50,400	$50,400	$50,400	$50,400	$50,400	$50,400	$50,400	$50,400	$50,400
$210,779	$217,194	$223,866	$230,805	$238,021	$245,526	$253,331	$261,448	$269,890	$278,670	$287,800	$297,296

Exh. AIW-5, Avista's Response to UTC Staff-DR-107 Supplemental 2 - 3.16-Attachment C ! Eliminate Regular Meter Reading

0	0	0
2038	2039	2040
$ -	$ -	$ -
$ -	$ -	$ -
$ -	$ -	$ -
$ -	$ -	$ -
$ -	$ -	$ -
$ -	$ -	$ -
$ -	$ -	$ -
$ -	$ -	$ -
$0	$0	$0
$ -	$ -	$ -
$ -	$ -	$ -
$0	$0	$0
$ -	$ -	$ -
$ -	$ -	$ -
$ -	$ -	$ -
$ -	$ -	$ -
$ -	$ -	$ -
$0	$0	$0
$ -	$ -	$ -

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Special Reads

				Sources or References	Adjustment NPV	Annual Increase Rate
Payroll						
Annual Special Reads (Washington Only)	7,741					
CSR workflow per read (minutes)	4.75					3%
CSR Cost per Minute loaded	0.66					
CSR workflow costs	$3.80	$	29,414	CSR\Billing Analyst Workflow Costs calculation	$352,242	3%
Total CSR workflow costs	$ 29,414	$29,414		Calculation		
Budgeted costs plus loaded costs per mobile dispatch	$2.44	$	18,916	MR Percent of Non Admin Payroll*Admin Payroll	$226,894	3%
Total budgeted costs plus loaded costs per mobile dispatch	$ 15,481					
Total Meter Reading Costs		$	48,330	Calculation: Summation of all costs in Column D	$372,120	0
Reduce Special Meter Reading Benefit Impacts from Mobile Van Reading				AMI Gas Only Deployment Alt Analysis (2/9/2021)	$13,025	

CSR Workflow	Mins/Meter
Sending for a Meter Reread:	
1. Click: The **Premise Tree** tab.	0.5
2. Click: The **SP Context Menu** for the service to reread and select **Go To Meter Read**.	0.25
3. Select: The most recent meter read.	0.5
4. Click: The **Reread Meter** button.	0.25
5. Educate: "A meter reader will verify the read and I will then contact you with the results."	1
6. Create a Customer Contact To Do to come back to you.	
1. Click: **Person Context Menu** icon on the dashboard.	0.25
2. Click: The **Add button for Go To Customer Contact.**	0.25
3. (Optional) Select: The contact method from the ***Preferred Contact Method*** dropdown. Select **Email** when the customer will be receiving a letter via email.	0.25
4. Select: The ***Contact Class*** from the dropdown.	0.25
5. Click: The **Search**	0.25
6. Enter: In the **Comments** field:	1
	4.75

	0	0	0	0.3	0.75	0.75	0.75	1	1	1	1	1	1
Customer Growth	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
0.7%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
0.7%	$ -	$ -	$ -	$ 10,205	$ 26,455	$ 27,434	$ 28,449	$ 39,336	$ 40,791	$ 42,300	$ 43,865	$ 45,489	$ 47,172
0.7%	$ -	$ -	$ -	$ 6,562	$ 17,013	$ 17,643	$ 18,295	$ 25,296	$ 26,232	$ 27,203	$ 28,210	$ 29,253	$ 30,336
0	$ -	$ -	$ -	$ 14,499	$ 36,248	$ 36,248	$ 36,248	$ 48,330	$ 48,330	$ 48,330	$ 48,330	$ 48,330	$ 48,330
	0	0	0	0	0	0	$1,475	$1,475	$1,967	$1,967	$1,967	$1,967	$1,967

1	1	1	1	1	1	1	1	0.25	0	0	0
2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 48,917	$ 50,727	$ 52,604	$ 54,550	$ 56,568	$ 58,661	$ 60,832	$ 63,083	$ 14,090	$ -	$ -	$ -
$ 31,458	$ 32,622	$ 33,829	$ 35,081	$ 36,379	$ 37,725	$ 39,121	$ 40,568	$ 10,517	$ -	$ -	$ -
$ 48,330	$ 48,330	$ 48,330	$ 48,330	$ 48,330	$ 48,330	$ 48,330	$ 48,330	$ 12,083	$ -	$ -	$ -
$1,967	$1,967	$1,967	$1,967	$1,967	$1,967	$1,967	$1,967	$1,967	$492		

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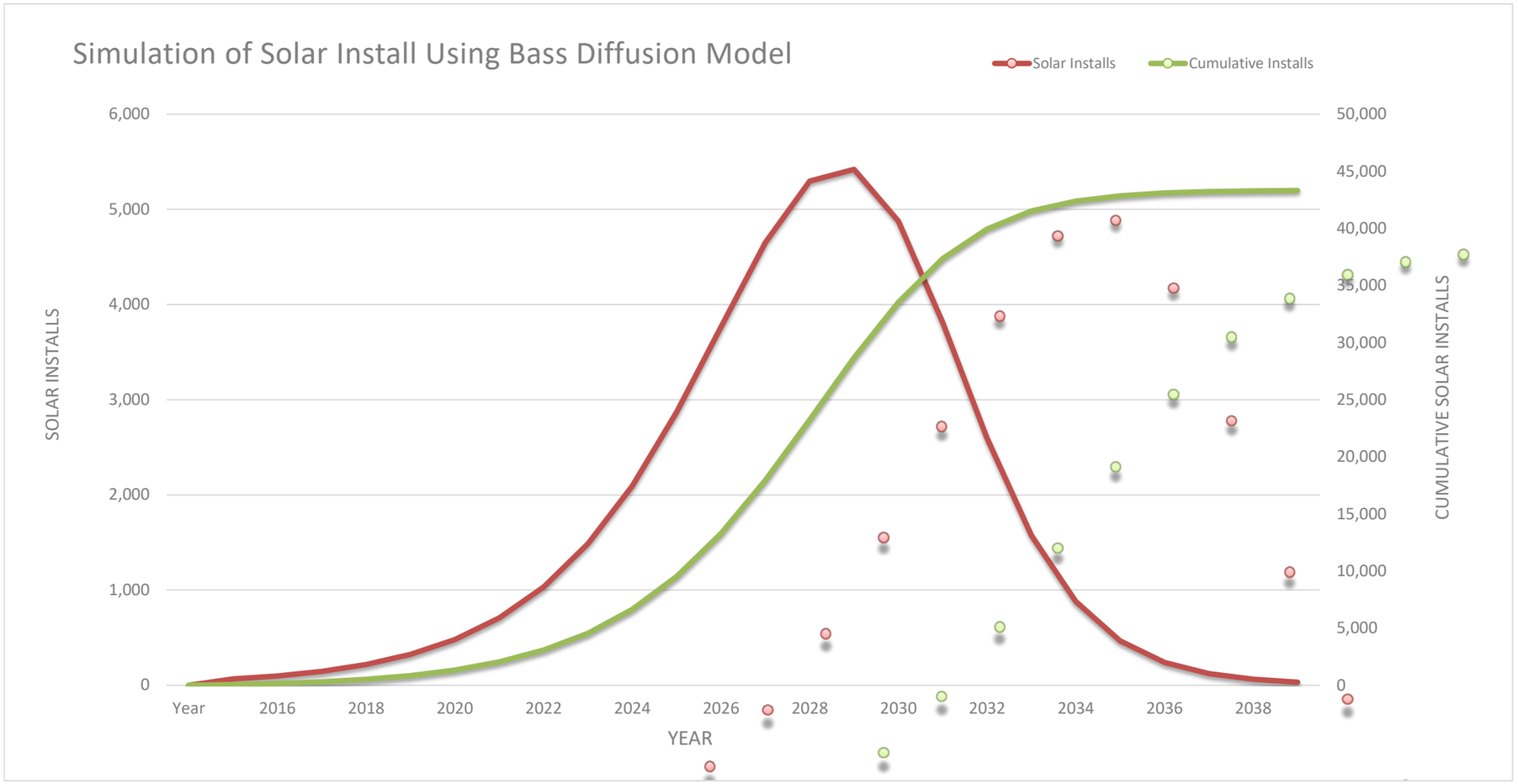
Costs Per Install Per Meter

Meterman's Cost			
Meter Cost	$	165	Meter Shop (Mike)
Reduced Cost for Production Meter	$	68	Meter Shop (Mike)
Install and Administrative Cost	$	30	Meter Shop (Mike)
Labor Overheads	$	21	Neil Thorson
Utilization Rate		80%	From Meter man study (accounts for holidays, OL, training, etc)
Total Labor Costs	$	64	
Total Meter Install Costs (incremental)	$	297	
Annual O&M increase Rate		3%	
Percent Costs O&M		21%	
Adjusted O&M Increase Rate		0.64%	

9%			Years where a production meter is required									
Year			2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Forecasted Installed Solar Panels			65	-	146	217	324	480	707	1,033	1,486	2,097
Forecasted Installed Cost	$	4,627,144	$ -	$ -	$ 44,068	$ 66,221	$ 99,231	$ 114,142	$ 169,257	$ 248,651	$ 360,264	$ 511,441



2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
2,871	3,766	4,653	5,296	5,420	4,877	3,810	2,594	1,574	956	580	-	-	-	-
$ 704,782	$ 930,567	$ 1,156,980	$ 1,325,397	$ 1,365,252	$ 1,236,460	$ 972,000	$ 666,076	$ 406,921	$ 248,597	$ 151,873	$ -	$ -	$ -	$ -

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Forecasted	1820000	2016	2017	2018	2019	2020	2021
Itron Deployment Services				$ 1,200,000	$ 1,600,000	$ 1,682,000	$ 1,200,000
Trinity MDM Services		$ 2,950,000	$ 2,950,000				
Itron Software		$ 1,107,495	$ 1,740,272	$ 408,707			
Head End System Services			$ 2,800,000	$ 2,800,000			
Meter Deployment				$ 250,000	$ 6,400,000	$ 7,100,000	
Meter Repair		$ 375,000	$ 375,000		$ 3,492,500	$ 3,492,500	
New Total Actual	$ 7,735,000	$ 4,057,495	$ 7,865,272	$ 4,658,707	$ 11,492,500	$ 12,274,500	$ 1,200,000
New Total NPV	$ 6,302,323			$ 16,581,474			

Actuals to Date							**Total**
Meter Repair		$ 299,407	$ 459,313	$ 10,773	$ 2,867,434	$ 2,284,683	$ 5,921,610
New Total Actual	$ 5,921,610						
New Total NPV	$4,607,038						
Differences	$ 1,813,390	$ 1,695,285					

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	Cost Adj	NPV
ERTs That Would Require Planned Replacement		
Percent of ERTs that Would Not Fail Prior to Planned Replacement		
Estimated ERT Avoided Replacements		
Estimated Cost Per ERT (Equipment)	1%	
Estimated Cost per ERT (Labor)	3%	
Estimated Cost per ERT (Overheads) - inlcuded in the total ERT cost now	3%	
Estimated Avoided ERT Replacement Costs		
Transfer gas only modules to Gas Engineering Gas Refresh Program		
Total Avoided Costs		$2,423,030.02

Battery Catalog of Remaining Life from Asset Management (5/12/2017)

Remaining Life of Battery	Count	
-18	6	
-10	1	
-9	1	
-7	3	
-6	300	
-5	163	
-4	102	
-3	135	
-2	87	
-1	30	
0	35	
1	168	1,031
2	341	341
3	1629	1629
4	67	67
5	592	592
6	1027	1027
7	11132	11132
8	6918	6918
9	9634	9634
10	2503	2503
11	9521	9521
12	1725	1725
13	3398	3398
14	2908	2908
15	4181	4181
16	2759	2759
17	3750	3750
18	3221	3221
19	300	300
	66,637	
		Gas Only:
		% Gas Only:

Total		2016	2017	2018	2019	2020	2021	2022
					3,000	3,000	3,000	3,000
		0	0	0	0.3	0.75	0.75	0.75
					900	2,250	2,250	2,250
					$ 61.70	$ 61.70	$ 61.70	$ 62.32
					$ 94.37	$ 94.37	$ 94.37	$ 97.20
					$ -	$ -	$ -	$ -
					$ 156.07	$ 156.07	$ 156.07	$ 159.52
					$ 36,466	$ 91,166	$ 91,166	$ 93,180
$	5,419,319	0	0	0	$ 67,530	$ 168,826	$ 168,826	$ 172,556

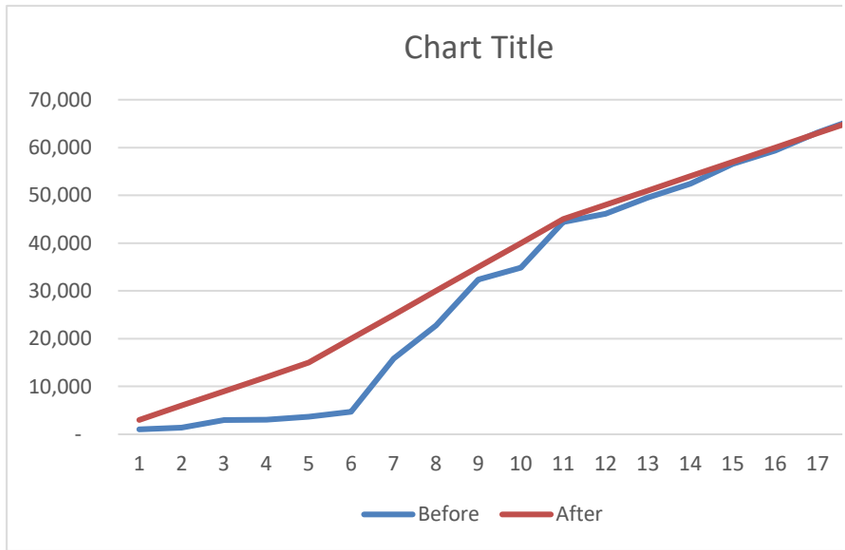
Cost Inputs

1. Materials
   a. Residential - $55.77 each (includes the ERT module, index, and programming)
   b. Commercial - $201.22 each (includes the ERT module, index, and programming)
2. Labor to replace ERT - $21.42 each
3. **Total**
   a. **Residential - $77.19 each** 90%
   b. **Commercial - $222.64 each** 10%

Link to ERT replacement doc

Updated costs from Actuals (Prior values noted above were estimates)	
Install Cost Per Meter (Average)	94.37
Gas Module Cost (Average)	61.7
Total	156.07

Smoothing	Before	After
3,000	1,031	3,000
3,000	1,372	6,000
3,000	3,001	9,000
3,000	3,068	12,000
3,000	3,660	15,000
5,000	4,687	20,000
5,000	15,819	25,000
5,000	22,737	30,000
5,000	32,371	35,000
5,000	34,874	40,000
5,000	44,395	45,000
3,000	46,120	48,000
3,000	49,518	51,000
3,000	52,426	54,000
3,000	56,607	57,000
3,000	59,366	60,000
3,000	63,116	63,000
3,000	66,337	66,000
637	66,637	66,637
66,637		
17,300		
26.0%		



2023	2024	2025	2026	2027	2028	2029	2030	2031
3,000	5,000	5,000	5,000	5,000	5,000	5,000	3,000	3,000
1	1	1	1	1	1	1	1	1
3,000	5,000	5,000	5,000	5,000	5,000	5,000	3,000	3,000
$ 62.94	$ 63.57	$ 64.21	$ 64.85	$ 65.50	$ 66.15	$ 66.81	$ 67.48	$ 68.16
$ 100.12	$ 103.12	$ 106.21	$ 109.40	$ 112.68	$ 116.06	$ 119.55	$ 123.13	$ 126.83
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 163.06	$ 166.69	$ 170.42	$ 174.25	$ 178.18	$ 182.21	$ 186.36	$ 190.61	$ 194.98
$ 126,997	$ 216,377	$ 221,218	$ 226,187	$ 231,290	$ 236,528	$ 241,906	$ 148,457	$ 151,860
$ 235,179	$ 400,697	$ 409,662	$ 418,865	$ 428,313	$ 438,014	$ 447,974	$ 274,921	$ 281,222

2032	2033	2034	2035	2036	2037	2038	2039	2040
3,000	3,000	3,000	3000	3000				
1	1	1	1	1				
3,000	3,000	3,000	3,000	3,000				
$ 68.84	$ 69.53	$ 70.22	$ 70.92	$ 71.63				
$ 130.63	$ 134.55	$ 138.59	$ 142.74	$ 147.03				
$ -	$ -	$ -	$ -	$ -				
$ 199.47	$ 204.07	$ 208.81	$ 213.67	$ 218.66				
$ 155,354	$ 158,942	$ 162,628	$ 166,413	$ 170,300				
$ 287,692	$ 294,338	$ 301,162	$ 308,171	$ 315,371				

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Existing meters will be replaced with the new AMI meters and as a result will need to be properly managed for recovery or disposal. The market for resale has dried up as evidenced with resellers stating that third world markets are choosing newer meters over refurbished meters. We believe this can attributed to the theft and diversion benefits being large percentage-wise in less economically developed countries. The lack of a resale market combined with lower salvage values for metals makes the benefits associated with recovery nonexistent.

The benefit for recovery is offset with the labor costs to process the meters, but is still a worthy option because it reduces a potential disposal cost of approximately $148,000 and is consistent with our sustainability efforts.

We assign a zero value to this benefit, but wanted to include a note that Avista will not incur disposal costs because there is a value enough for the meters for the recycling company to acquire them.

Avoided Disposal Cost	$	148,000

Exh. AIW-5, Avista's Response to UTC Staff-DR-107 Supplemental 2 - 3.16-Attachment C ! Meter Salvage Value

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Tara noted that Paul Kimmell Estimated ~2 Million

$ 1,820,000

The updated information has not beer

Original
Wellington & FivePoint Updated
Added in Itron
Itron Services
Itron Software
New Total

Original	1820000	2016	2017	2018	2019	2020
Itron Deployment Services				$ 1,200,000	$ 1,600,000	$ 1,682,000
Trinity MDM Services		$ 2,950,000	$ 2,950,000			
Itron Software		$ 1,107,495	$ 1,740,272	$ 408,707		
Head End System Services			$ 2,800,000	$ 2,800,000		
Meter Deployment				$ 250,000	$ 6,400,000	$ 7,100,000
Meter Repair		$ 375,000	$ 375,000		$ 3,492,500	$ 3,492,500
New Total Actual	$ 34,188,474	$ 4,057,495	$ 7,490,272	$ 4,658,707	$ 8,000,000	$ 8,782,000
New Total NPV	$ 27,780,772			$ 16,206,474		

n added into the financial model (this is for discussion)

$1,820,000.00	2016	2017	2018	2019	2020	2021
$ 2,508,513	$ 312,818	$ 500,000	$ 350,000	$ 1,000,000	$ 1,000,000	
	$ 665,018	2,905,562	$ 1,920,010	$ 2,176,946	$ 1,164,660	$ 1,416,468
	$ 1,107,495	1,740,272	$ 408,707			
$ 9,550,249	**$ 2,085,331**	**$ 500,000**	**$ 2,678,717**	**$ 3,176,946**	**$ 2,164,660**	**$ 1,416,468**

Itron Hardware	$ 7,097	$ 77,708	$ 4,642,768	$ 21,009,355	$ 10,090,189	

2021	
$ 1,200,000	
	< Separated from this analysis because meter base repairs are a direct customer benefit, compared with an indirect economic benefit
$ 1,200,000	

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Annual O&M increase rate	3%					
Customer Growth	1%					
		0	0	0	0.3	
Year		2016	2017	2018	2019	
Avoided Admin Costs for Open/Close/Transfer	$ 656,574	$ -	$ -	$ -	$ 18,520	
Avoided Admin Costs for Customer Requested Turn On and Turn Off	$ 4,524,771	$ -	$ -	$ -	$ 127,629	
Avoided Non Soft Open Close	$ 5,171,572	$ -	$ -	$ -	$ 145,873	
Total	$ 10,352,917	$ -	$ -	$ -	$ 292,022	

Account Open, Close Transfer

		2014			
1	**Increase in Letters**				
2	Cost of letters	$ 0.50			Pulled from TransCentra Billing s
3	Letters for application of service (2014)	12,576			Monthly average (1048 * 12mor
4	2014 cost per application letter sent		$ 6,262.85		Calculation: cost of letters * lette
5	Total Non-Soft Closes (2014)	16,951			Metered History - counted m
6	Expecteds cost for application with AMI meters		$ 8,441.60		Calculation: cost of letters * Tota
7	**Increased Cost:**			**$ (2,179)**	Calculation: Expected cost for ap
8	**Customer would have quicker reconnect response**				
9	Average hours to complete FA	3.5			Retreived from Nicola Hostetler
10	Expected average hours to complete FA for AMI	1			Retreived from Nicola Hostetler
11	**Customer Experience: Hours to complete FA**			**-2.5**	Service Level Improvement
12	**Manual Service Dispatches Avoided**				
13	total number of reconnects, non credit - WA (2014)	4,868			Provided by Lisa Garrett see Nor
14	total number of disconnects, non credit - WA (2014)	1,512			Provided by Lisa Garrett see Nor
15	Total Non-Soft Closes (2014)	16,951			Provided by Lisa Garrett see Nor
16	Total Open And Close That Can Be Done Remotely		40,282		Calculation: Total Non-Soft Close
17	Cost per dispatch		$1.31		Per Nicola Hostetler
18	**Avoided Cost: For Open And Close That Can Be Done Remotely**			**$ 52,769**	
19	Servicemen Avoided Costs				
20	Disconnects and Reconnects (13 + 14)	6,380			
21	Serviceman costs per visit	57			(Serviceman's time include in ro
22	Cost Benefit: avoided trip		$ 363,660		
26	Unbilled Accts	3,646			
27	Serviceman costs per visit (2 visits required)	57			
28	Cost Benefit: avoided trip		$ 415,644		
29	**Total Costs for Servicemen Avoided Viists**			**$ 779,304**	
30					
31	**Total Cost Savings**			**$ 829,895**	
32	**Customer experience**			**-2.5 hours**	

0.75	0.75	0.75	1	1	1	1	1	1	1	1	1
2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
$ 48,152	$ 50,078	$ 52,081	$ 72,219	$ 75,107	$ 78,112	$ 81,236	$ 84,486	$ 87,865	$ 91,380	$ 95,035	
$ 331,836	$ 345,109	$ 358,914	$ 497,694	$ 517,602	$ 538,306	$ 559,838	$ 582,231	$ 605,521	$ 629,741	$ 654,931	
$ 379,271	$ 394,442	$ 410,219	$ 568,838	$ 591,591	$ 615,255	$ 639,865	$ 665,459	$ 692,078	$ 719,761	$ 748,551	
$ 759,258	$ 789,629	$ 821,214	$ 1,138,750	$ 1,184,300	$ 1,231,672	$ 1,280,939	$ 1,332,176	$ 1,385,463	$ 1,440,882	$ 1,498,517	

preasheet - Kim Corrigeux
ıth) - received from Paula Nichols
ers for application of service (2014)
eters where gap between open and close was greater than 1 day. See NonSoftCloseDetails tab to show accounts - Lisa Garrett
al non-soft closes (2014)
plications with AMI meters * 2014 cost per application letter sent

see Cost per Dispatch tab

ıSoftClostDetails tab
ıSoftClostDetails tab
ıSoftClostDetails tab
es (2014) * 2 + total number of reconnects, non credit - WA (2014) + total number of disconnects, non credit - WA (2014)

ute and onsite / utilization rate) * average minutes per vist + $15 transportation cost which includes unit cost per mile (average of $1 per mile)

1	1	1	1	1	1	0.25	0	0	0	
2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	
$ 98,836	$ 102,790	$ 106,901	$ 111,177	$ 115,624	$ 120,249	$ 31,265	$ -	$ -	$ -	
$ 681,128	$ 708,373	$ 736,708	$ 766,177	$ 796,824	$ 828,697	$215,461	$ -	$ -	$ -	
$ 778,493	$ 809,633	$ 842,018	$ 875,699	$ 910,727	$ 947,156	$246,261	$ -	$ -	$ -	
$ 1,558,458	$ 1,620,796	$ 1,685,628	$ 1,753,053	$ 1,823,175	$ 1,896,102	$492,987	$ -	$ -	$ -	

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Meter Reading Budget Items

		Meter Readers	OSMs		Sources or References	Adjustment NPV	Annual Increase Rate	Customer Growth	0 2016	0 2017	0 2018	0.3 2019	0.75 2020
Payroll													
Total Budget	$ 3,060,308				Jackie Foss Budget 2016								
Meter Reader Payroll	$ 2,396,085	$ 2,396,085			Jackie Foss Budget 2016								
OSM Payroll	$ 418,704		$ 418,704		Jackie Foss Budget 2016	$5,209,646	3%	1.0%	$ -	$ -	$ -	$ 146,947	$ 382,063
MR Percent of Non Admin Payroll		85%	15%		Calculation: (Meter Reader Payroll/(Meter Reader Payroll+OSM Payroll))								
Admin Payroll	$ 177,242	$ 150,877	$ 26,365		Jackie Foss Budget 2016	$316,242	3%	0.7%	$ -	$ -	$ -	$ 9,147	$ 23,713
Overtime	$ 89,000	$ 10,000	$ 79,000		Jackie Foss Budget 2016: most goes to OSMs	$947,588	3%	0.7%	$ -	$ -	$ -	$ 27,407	$ 71,053
One Leave	$ -	$ -	$ -		Jackie Foss Budget 2016	$0	3%	0.7%	$ -	$ -	$ -	$ -	$ -
Total Payroll	$ 3,081,031	$ 2,556,962	$ 524,069	v		$6,473,476			$0	$0	$0	$183,501	$476,829
IT Support & Technologies													
Database Admin & Support Labor (1/4 time)	$ 52,000	$ 52,000	$ -		ET - taken from Estimated Cost for AMI calcs	$0	3%	0.0%	$ -	$ -	$ -	$ -	$ -
Annual System support and Maintenace (Hardware & Software) Costs	$ 135,122	$ 135,122	$ -		Jon Thompson current state O&M for Handheld Reading Technologies, Openway, IEE MDM	$0	3%	0.0%	$ -	$ -	$ -	$ -	$ -
Software & Handhelds (5 years)	$ 92,000	$ 92,000	$ -		Last refresh cost in 2011	$0	3%	0.7%	$ -	$ -	$ -	$ -	$ -
Total IT Support & Technologies	$ 279,122	$ 279,122	$ -	v		$0			$0	$0	$0	$0	$0
Vehicle Costs													
Mileage Reimburse	$ 20,000	$ 20,000			Jackie Foss Expense Report 2014	$0	3%	1.0%	$ -	$ -	$ -	$ -	$ -
Miles Driven	553,306	433,306	$ 120,000		Fleet mileage records (see Meter Reader Mileage tab)	$1,493,077	3%	1.0%	$ -	$ -	$ -	$ 42,115	$ 109,499
Cost per Mile	$ 1.05				Fleet G. Loew								
Total Vehicle Costs		$ 454,971	$ 126,000		Calculation: Cost per Mile * Miles Driven	$1,493,077			$0	$0	$0	$42,115	$109,499
Safety													
Injury Related Costs Meter Readers (2012-2014 Average)	$ 56,785	$ 56,785			Anthony Klutz Safety Report: Costs are incurred outside of Jackies budget.								
Injury Related Costs OSM's	$ 12,000		$ 12,000			$149,308	3%	1.0%	$ -	$ -	$ -	$ 4,211	$ 10,950
Total Safety	$ 68,785	$ 56,785	$ 12,000			$149,308	3%	1.0%	$ -	$ -	$ -	$ 4,211	$ 10,950
Customer Benefit													
Reduced Mileage (Carbon Reduction)													
Miles Driven		433,306	120,000		Fleet mileage records (see Meter Reader Mileage tab)								
pound of carbon dioxide/mile driven	0.96				(.96 pound of carbon dioxide/mile driven) Avista Corporate Sustainability Report (Jessie Wuerst)								
Tons of carbon avoided		208	58		Calculation: (Miles Driven * pound of carbon dioxide/mile driven)/2000								
Costs per ton	$ 8.0				Avista Integrated Resource Plan								
Avoided Carbon Cost		$ 1,664	$ 461		Calculation: Costs per ton * Tons of ca	$5,733	3%	1.0%	$ -	$ -	$ -	$ 162	$ 420
Overheads													
Overhead	61%	$ 1,461,612	$ 255,409		Neil Thorson (Over head loaders calc)	$3,177,884	3%	1.0%	$ -	$ -	$ -	$ 89,638	$ 233,058
Facility Costs	$ 10,000				2000 sqft at $5/sqft Annual Costs								
Portion of Facility Costs		$ 0.78	22%		Calculation: Meter Reader Payroll/Tot								

MR Facility Costs	$ 7,830	$ 2,170	Calculation: Portion of Facility Costs *	$27,005	3%	1.0%	$ -	$ -	$ -	$ 762	$ 1,981				
Total Overheads	$ 1,477,272	$ 259,751		$3,204,889											
Additional Costs (See Part 2)		$ 26,129		$325,100	3%	1.0%	$ -	$ -	$ -	$ 9,170	$ 23,842				
Total Additional Costs		$ 26,129		$325,100			$0	$0	$0	$9,170	$23,842				
Total OSM Costs	$ 4,826,776	$ 948,409	Calcualtion: Summation of all costs in Column D	$ 11,326,484			$ -	$ -	$ -	$ 229,989	$ 597,698				

Additional Costs

Part 2 — **2014**

Reduce Prior Obligation and Balances, Thus write-off to revenue

Credit Connections

1	Prior Obligation Amount (2014)				
2	Write-off to revenue Amount (2014)				
3	Percentage increase/decrease?				
4	**Eliminate "Too Old to Work" orders**				
5	Total number of "	3623			Provided by Lisa Garrett see Too Old to Work
6	Cost of Notices	$ 0.46			retreive from TransCentra invoices
7	Cost of "Too Old to Work" notices		6643.1328		Calculation: (Cost of Notices * 4) * Total number of "Too Old to Work" orders (2014)
8	Cost if notices hadn't resulted in "Too		3321.5664		Calculation: (Cost of Notices * 2) * Total number of "Too Old to Work" orders (2014)
9	**Cost Benefit**			**$ 3,322**	Calculation: Cost of "Too Old to Work" notices - Cost if notices hadn't resulted in "Too Old to Work"
10	**Dispatch Workload will decrease if disconnects are automated**				
11	Total number of d	10848			Provided by Lisa Garrett seeDisconnects Reconnects 12-7-15
12	Average Budgeted	$1.07			Provided by Nicola, see Cost per Dispatch tab
13	Cost for disconnects related to credit		$ 11,647.59		Calculation: Total number of disconnects related to credit (2014) * Average Budgeted cost per dispatch order
14	Total number of re	10695			Provided by Lisa Garrett seeDisconnects Reconnects 12-7-15
15	Average Budgeted	$1.07			Provided by Nicola, see Cost per Dispatch tab
16	Cost for reconnects related to credit		$ 11,483.31		Calculation: Total number of reconnects related to credit (2014) * Average Budgeted cost per dispatch order
17	**Cost Benefit**			**$ 23,131**	Calculation: Cost for disconnects related to credit + Cost for reconnects related to credit
18	**Potential increase to commission complaints**				
19	Total number of c	22			Provided by Dalila Sheehan - see "credit disconnect complaints" tab.
20	Expected increase	2			Calculation: Total number of claims related to disconnects - WA (2014) * Expected increase to claims (10%)
21	Average hours to c	3			Provided by Dalila Sheehan
22	Labor Rate	$49.07			Commission 2014 Est avg. $ per Hr incl loadings.
23	**Additional Cost**			**($323.86)**	Calculation:
24					
25	**Total Cost Savings**			**$ 26,129**	

0.75	0.75	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.25	0	0	0
2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	
$ 397,346	$ 413,239	$ 573,025	$ 595,946	$ 619,784	$ 644,576	$ 670,359	$ 697,173	$ 725,060	$ 754,062	$ 784,225	$ 815,594	$ 848,217	$ 882,146	$ 917,432	$ 954,129	$ 248,074	$ -	$ -	$ -	
$ 24,590	$ 25,500	$ 35,258	$ 36,563	$ 37,915	$ 39,318	$ 40,773	$ 42,282	$ 43,846	$ 45,468	$ 47,151	$ 48,895	$ 50,704	$ 52,580	$ 54,526	$ 56,543	$ 14,659	$ -	$ -	$ -	
$ 73,682	$ 76,408	$ 105,647	$ 109,556	$ 113,610	$ 117,813	$ 122,172	$ 126,693	$ 131,380	$ 136,241	$ 141,282	$ 146,510	$ 151,930	$ 157,552	$ 163,381	$ 169,426	$ 43,924	$ -	$ -	$ -	
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
$495,618	$515,148	$713,930	$742,065	$771,309	$801,707	$833,304	$866,147	$900,286	$935,772	$972,657	$1,010,998	$1,050,852	$1,092,278	$1,135,339	$1,180,099	$306,656	$0	$0	$0	
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 113,879	$ 118,434	$ 164,228	$ 170,797	$ 177,629	$ 184,734	$ 192,124	$ 199,809	$ 207,801	$ 216,113	$ 224,758	$ 233,748	$ 243,098	$ 252,822	$ 262,935	$ 273,452	$ 71,098	$ -	$ -	$ -	
$113,879	$118,434	$164,228	$170,797	$177,629	$184,734	$192,124	$199,809	$207,801	$216,113	$224,758	$233,748	$243,098	$252,822	$262,935	$273,452	$71,098	$0	$0	$0	
$ 11,388	$ 11,843	$ 16,423	$ 17,080	$ 17,763	$ 18,473	$ 19,212	$ 19,981	$ 20,780	$ 21,611	$ 22,476	$ 23,375	$ 24,310	$ 25,282	$ 26,293	$ 27,345	$ 7,110	$ -	$ -	$ -	
$ 11,388	$ 11,843	$ 16,423	$ 17,080	$ 17,763	$ 18,473	$ 19,212	$ 19,981	$ 20,780	$ 21,611	$ 22,476	$ 23,375	$ 24,310	$ 25,282	$ 26,293	$ 27,345	$ 7,110	$ -	$ -	$ -	
$ 437	$ 455	$ 631	$ 656	$ 682	$ 709	$ 738	$ 767	$ 798	$ 830	$ 863	$ 898	$ 933	$ 971	$ 1,010	$ 1,050	$ 273	$ -	$ -	$ -	
$ 242,381	$ 252,076	$ 349,545	$ 363,527	$ 378,068	$ 393,191	$ 408,919	$ 425,275	$ 442,287	$ 459,978	$ 478,377	$ 497,512	$ 517,413	$ 538,109	$ 559,634	$ 582,019	$ 151,325	$ -	$ -	$ -	

$ 2,060	$ 2,142	$ 2,970	$ 3,089	$ 3,213	$ 3,341	$ 3,475	$ 3,614	$ 3,759	$ 3,909	$ 4,065	$ 4,228	$ 4,397	$ 4,573	$ 4,756	$ 4,946	$ 1,286	$ -	$ -	$ -
$ 24,796	$ 25,788	$ 35,759	$ 37,189	$ 38,677	$ 40,224	$ 41,833	$ 43,506	$ 45,246	$ 47,056	$ 48,938	$ 50,896	$ 52,932	$ 55,049	$ 57,251	$ 59,541	$ 15,481	$ -	$ -	$ -
$24,796	$25,788	$35,759	$37,189	$38,677	$40,224	$41,833	$43,506	$45,246	$47,056	$48,938	$50,896	$52,932	$55,049	$57,251	$59,541	$15,481	$0	$0	$0
$ 621,322	$ 645,880	$ 895,212	$ 930,598	$ 967,383	$ 1,005,624	$ 1,045,378	$ 1,086,704	$ 1,129,665	$ 1,174,326	$ 1,220,754	$ 1,269,019	$ 1,319,193	$1,371,353	$1,425,577	$ 1,481,946	$ 385,137	$ -	$ -	$ -

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Year				0	0	0
		Annual Increase				
Avoided Late Fees		Rate	Customer Growth	2016	2017	2018
Forecasted Installed Cost	$ 331,214	3%	1.0%	$ -	$ -	$ -

After Hours Fees

				2014		
1		**Reduce After Hours reconnect from $32 to $16 (WA)**				
2			Total number of after h	3027		
3			After hours reconnect f	$ 32		
4			Customer Cost for After Hours Reconnect		$ 96,864	
5			Regular Business Hours	$ 16		
6			Customer cost if they had paid regular fee		$ 48,432	
7			**Customer Cost Savings:**			**$ 48,432**
8		**Customer doesn't have to wait for next day turn-on/reconnect**				
9			Total number of FA's cr	29		
10			Total number of FA's cr	66		
11			Total number of FA's cr	5		
12			**Total number of customers who wouldn't have to wait for nex**			**100**
13		**Automate Reconnect fee charges - Eliminates a CS Support report**				
14			Hours to complete repc	0.8		
15			weeks in a year	52		
16			Hours to complete report in 1 year		41.6	
17			Loaded Labor Rate (2014)		$37.07	
18			**Cost Savings**			**$1,542.11**
			Total Cost Savings			**$ 49,974**

0	0	0	1	1	1	1	1	1
2019	2020	2021	2022	2023	2024	2025	2026	2027
$ -	$ -	$ -	$ 50,474	$ 50,474	$ 50,474	$ 50,474	$ 50,474	$ 50,474

Provided by Lisa Garrett, see After Hours FA's tab
Provided by Contact Center
Calculation: Total number of after hours reconnects * After Hours fee
Provided by Contact Center
Calculation: Total number of after hours reconnects * Regular Business Hours Fee
Calculation: Customer cost for After Hours Reconnects - Customer cost if they had paid regular fee

Provided by Nicola, see Reconnects tab
Provided by Nicola, see Reconnects tab
Provided by Nicola, see Reconnects tab
Total number

provided by Lisa Garrett see Reduced CS Support Workload
Calander weeks
Calculation: Hours to complete report in 1 week * weeks in a year
BackOffice 2014 Est avg. $ per Hr incl loadings.

1	1	1	1	1	1	1	1	1	0.25
2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
$ 50,474	$ 50,474	$ 50,474	$ 50,474	$ 50,474	$ 50,474	$ 50,474	$ 50,474	$ 50,474	$ 12,618

0	0	0
2038	2039	2040
$ -	$ -	$ -

Back to Summary

Annual Customer And Load Growth	1.0%				
Annual inflation rate	2.4%	Source: IMF (Projected inflation rate through			
Estimated Customer Savings	$3,190,670	<- 2019			
		0	0	0	
Year		2016	2017	2018	
Forecasted Installed Cost (see Spreadsheet)	$ 28,009,803	$0	$0	$0	
	$68,758,762				
Original					
Estimated Customer Savings	$2,622,924				
		0	0	0	
Year		2016	2017	2018	
Forecasted Installed Cost (see Spreadsheet)	$ 29,913,262	$0	$0	$0	

.2017-2020)

0	0.2	0.4	0.6	0.8	1	1	1	1	1	1
2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
$0	$659,703	$1,364,002	$2,115,158	$2,915,533	$3,767,598	$3,894,943	$4,026,592	$4,162,690	$4,303,389	$4,448,844

0.3	0.75	0.75	0.75	1	1	1	1	1	1	1
2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
$898,779	$2,322,895	$2,401,409	$2,482,577	$3,421,983	$3,537,646	$3,657,219	$3,780,833	$3,908,625	$4,040,737	$4,177,314

1	1	1	1	1	1	1	0.25	0	0	0
2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
$4,599,215	$4,754,668	$4,915,376	$5,081,516	$5,253,271	$5,430,832	$5,614,394	$1,451,040	$0	$0	$0

1	1	1	1	1	1	1	0.25	0	0	0
2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
$4,318,507	$4,464,472	$4,615,371	$4,771,371	$4,932,643	$5,099,367	$5,271,725				

Back to Summary

	Outage Management	NPV	Actual Dollars	
	Ramp up in Capability			
Behavioral Energy Conservation	AnnualCustomerSavings	$18,673,199	$ 45,839,168	
	Reduced Outage Duraion from More Efficient Restorati	4% Reduction i		

Annual Customer And Load Growth	1.0%	
Annual inflation rate	2.4%	Source: IMF (Projected inflation rate through.2017-2020)

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
0	0	0	0	0.2	0.4	0.6	0.8	1	1
0	0	0	$ -	$ 439,802	$ 909,334	$ 1,410,105	$ 1,943,688	$ 2,511,731	$ 2,596,628

Annual Value = $2,127,113 <- 2019

2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
1	1	1	1	1	1	1	1	1	1
$ 2,684,394	$ 2,775,126	$ 2,868,926	$ 2,965,895	$ 3,066,143	$ 3,169,778	$ 3,276,917	$ 3,387,677	$ 3,502,180	$ 3,620,554

2036	2037	2038	2039	2040
1	0.25	0	0	0
$ 3,742,929	$ 967,360	$ -	$ -	$ -

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Outage Management

When an AMI meter is installed, the meter will communicate its status directly to OMT, accelerating the awareness of an outage by not relying solely on customer initiated outage reports. Customers with AMI meters will be less likely to call Avista to report their outage as their familiarity and confidence in automated outage notification increases. The reduction in phone calls will reduce the staffing needed to handle customer initiated outage calls.

Customer Growth Rate	1%
O&M Escalation	3%

			0	0	0
Year		2016	2017	2018	2019
Forecasted Installed Cost	$ 1,277,163	$0	$0	$0	$0

Reduced Customer Calls

			2014		
1	**Reduction in customer outage phone calls**				
2		Electric Call Volume (2014)	36,863		
3		WA electric Calls (2014) (67% of Electric calls)	24,698		
4		Total Number of initial incidents created by CSRs (WA)	16,619		
5		Potential reduction in electric calls		67%	
6		Average Handle Time for All Calls (2014) - m:ss	07:03		
7		Average Handle Time for Electric Calls (2014) - m:ss	05:09		
8		Electric AHT percentage of AHT.	73%		
9		Cost per Call (2015)	$6.71		
10		Cost per Electric Call (2015)		$4.91	
11		**Cost Savings**			**$81,556.77**
12	**Reduction in outage call duration as AMI meters are rolled out.**				
13		Average Handle Time for Electric Calls (2014) - m:ss	05:09		
14		Average CSR time to gather outage information to report incident	01:20		
15		Decrease in call time	26%		
16		Cost per Electric Call (2015)	$4.91		
17		Cost related to gathering outage information to create initial ticket		$1.27	
18		Total Number of initial incidents created by CSRs (WA)		16,619	
19		**Cost savings**			**$ 21,090**
		Total Cost Savings			**$ 102,647**

Exh. AIW-5, Avista's Response to UTC Staff-DR-107 Supplemental 2 - 3.16-Attachment C ! Reduced Customer Calls

0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1
2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	
$0	$29,223	$50,654	$140,479	$146,098	$151,942	$158,020	$164,341	$170,914	$177,751	$184,861	$192,256	$199,946	$207,944	$216,261	

Retrieve from Veronica see "Electric Call Volume" tab.
Calculation: 67% * Electric Call Volume (2014)
Cognos Report see Incidents by CSRs tab
Calculation:
Retreived from Veronica Soules - Contact Center Stats
Retrieve from Veronica see "Electric Call Volume" tab.
Calculation: Average Handle Time for Electric Calls (2014) - m:ss / Average Handle Time for Electric Calls (2014) - m:ss

Calculation: Electric AHT percentage of AHT. * Cost per Call (2015)
Calculation: Cost per Electric Call (2015) * (Percentage of WA Electric calls where initial incident was created by CSR * WA electric Calls (2014) (67% of Electric calls))

Retrieve from Veronica see "Electric Call Volume" tab.
QA Reviewed Electric Calls - range between 60-80 seconds.
Calculation: Average CSR time to gather outage information to report incident / Average Handle Time for Electric Calls (2014) - m:ss
Calculation: Electric AHT percentage of AHT. * Cost per Call (2015)
Calculation: Cost per Electric Call (2015) * Percentage of call time related to gathering outage information to create initial ticket
Cognos Report see Incidents by CSRs tab
Calculation: Cost related to gathering outage information to create initial ticket * Total Number of initial incidents created by CSRs (WA)

1	1	0.25	0	0	0
2035	2036	2037	2038	2039	2040
$224,912	$233,908	$60,816	$0	$0	$0

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Outage Management

Avoiding False Positive

This benefit estimates the reduction in the number of truck rolls associated with customers who call in to report an outage that is determined to be caus management responds to calls where customers lose power. The goal is to restore power safely and quickly. An outage that is responded to is called ar customers out of power. Some incidences that are responded to are false incidences where the customer power loss is due to a cause on the customer spent investigating these false positives will result in lower time spent on the phones, data entry and physical trips to the customer's home. A call cente customer specific questions that would help diagnose if the outage is customer caused. Questions such as have you checked your breaker or are your n the homeowner's premise. Without the AMI insight, a crew will be dispatched to investigate and if needed resolve an outage.

Escalation Rate		3%			
Customer Growth Rate		1%			
Percent Realized			0	0	0
Year			2016	2017	2018
Forecasted Avoided Cost	$	2,730,472	$0	$0	$0

	Benefits Description	2009-2014 Avg		
	Events			
1	Total False Postive Reports Per Year Washington	1,681		Reuben Arts (OMT)
2	Crew Responded To Incident Count Washington	165		Reuben Arts (OMT)
3	Servicemen Responded to Incident Count Washington	1,516		Reuben Arts (OMT)
4	Crew Costs			
5	Average Time Per Response By Crew in Hours	1		
6	Number of Crew per Response	4		
7	Overtime Percentage Ratio	38%	Prior Study from 2009	
8	Average Labor Rate	$45		
9	Loading	71%		
10	Blended Hourly Cost Per Crew Hour	$445		
11	Vehicle Cost Per Incident	$60.00		
12	Average Cost Per Incident	$504.60		

13	Servicemen Costs			
14		Average Time Per Response By Serviceman in Hours	1	
15		Number of Serviceman per Response	1	
16		Overtime Percentage Ratio	38%	Prior Study from 2009
17		Average Labor Rate	$45	
18		Loading	71%	
19		Blended Hourly Cost Per Serviceman Hour	$111	
20		Vehicle Cost Per Incident	$15	
21		Average Cost Per Incident	$126.15	
22	CSR Time			
23		CSR reduced call time was included in the OMT Reduced Call Time Benefit		
29	Estimated Costs Total			
30		Crew Costs	$83,091	
31		Servicemen Costs	$191,222	
32		Total Costs	$274,313	
33		Expected Percentage Decrease	80%	
34		Expected Net Benefit	$219,451	
35				
36	Incremental Costs			
38		Training: Part of the CSR Training	$0	
39		Application and Development Cost	$0	Included in reduced customer calls benefit

Total (Calculation)

	2009	2010	2011	2012
<=2Man	2792	2426	2370	2282
>2Man	339	198	249	248
Grand Total	3131	2624	2619	2530
PercentWashington	64%	64%	64%	64%
<=2Man	1786	1552	1516	1460
>2Man	216	126	159	158
Washington Grand Total	2003	1679	1676	1619

Table 1

Year	CrewCat	Incidents
2005	>2Man	89
2005	<=2Man	1167
2006	<=2Man	1657
2006	>2Man	118
2007	<=2Man	1999
2007	>2Man	143
2008	<=2Man	2762
2008	>2Man	247
2009	>2Man	288
2009	<=2Man	2735
2010	>2Man	339
2010	<=2Man	2792
2011	<=2Man	2426
2011	>2Man	198
2012	<=2Man	2370
2012	>2Man	249
2013	<=2Man	2282
2013	>2Man	248
2014	<=2Man	2062
2014	>2Man	247
2015	>2Man	268
2015	<=2Man	2278

sed by something on the occupant's side of the meter. Outage
ı incidence and each incidence is measured by duration and number of
side of the meter, which is still a cost to the utility. Reducing the time
ɛr representative will try to determine the meter state by asking the
eighbors' lights on are used to determine if the problem is isolated to

0	0	0	0	1	1	1	1	1	1	1
2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
$0	$0	$62,477	$108,293	$300,333	$312,347	$324,840	$337,834	$351,347	$365,401	$380,017

2013	2014	Average
2062	2278	2368
247	268	258
2309	2546	2626
64%	64%	
1319	1457	1515
158	171	165
1477	1629	1681

1	1	1	1	1	1	1	0.25	0	0	0
2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
$395,218	$411,027	$427,468	$444,567	$462,349	$480,843	$500,077	$130,020	$0	$0	$0

Back to Summary

Based on an average of $4,170,430/Year from 2010 - 2014
Percent of costs apportioned to employees and corresponding costs such as payroll, meals and lodging is 59.5%
Assumption is that estimated reduction in time is 10% or (5.95% adjusted)

Customer Growth		1.0%				
Annual O&M increase rate		3.0%				
Expected Value	$	248,115				
			0	0	0	0
Year			2016	2017	2018	2019
Forecasted Restoration Savings	$	3,032,403	$0	$0	$0	$0

0	0	0	1	1	1	1	1
2020	2021	2022	2023	2024	2025	2026	2027
$0	$70,638	$122,438	$339,563	$353,145	$367,271	$381,962	$397,240

1	1	1	1	1	1	1	1
2028	2029	2030	2031	2032	2033	2034	2035
$413,130	$429,655	$446,841	$464,715	$483,303	$502,635	$522,741	$543,651

1	0.25	0	0	0
2036	2037	2038	2039	2040
$565,397	$147,003	$0	$0	$0

Back to Summary

reduction rate				0.3	0.3	0.3	0.3
	NPV	2016	2017	2018	2019	2020	2021	2022
X&R Savings	$ 11,058,456	$ -	$ -	$ -	$ 310,551	$ 808,985	$ 842,962.83	$ 878,367.27
AMI Augmentation	$ 26,740,173	$ -	$ -	$ -	$ 750,936	$ 1,956,187	$ 2,038,347.16	$ 2,123,957.74
Future Grid Mod	$ 11,449,965	$ -	$ -	$ -	$ 310,016	$ 810,052	$ 846,918.96	$ 885,370.84
Grid Mod Cost	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CVR/AMI Cost Other (Capital)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mitigation (Capital)	$ (828,690)	$ -	$ -	$ -	$ (32,813)	$ (83,125)	$ (95,000.00)	$ (100,000.00)
CVR/AMI Cost Other (O&M)	$ (2,904,386)	$ -	$ -	$ -	$ (83,411)	$ (217,646)	$ (256,200.50)	$ (277,775.27)
Total	$ 18,494,601	$ -	$ -	$ -	$ 411,450.76	$ 1,072,567	$ 1,118,469	$ 1,166,309

Year	X&R Savings	AMI Augmentation	Future Grid Mod	Grid Mod Cost	CVR/AMI Cost Other (Capital)	Mitigation (Capital)	CVR/AMI Cost Other (O&M)	X&R Savings
2016	0	0	0	-	1	1	0	$ -
2017	0	0	0	0	0	0	0	$ -
2018	0	0	0	0	0	0	0	$ -
2019	0.3	0.3	0.3	0.3	0.3	0.3	0.3	$ 310,551
2020	0.75	0.75	0.75	0.75	0.75	0.75	0.75	$ 808,985
2021	0.75	0.75	0.75	0.75	0.75	0.75	0.75	$ 842,963
2022	0.75	0.75	0.75	1	1	1	1	$ 878,367
2023	1	1	1	1	1	1	1	$ 1,220,345
2024	1	1	1	1	1	1	1	$ 1,271,599
2025	1	1	1	1	1	1	1	$ 1,325,007
2026	1	1	1	1	1	1	1	$ 1,380,657
2027	1	1	1	1	1	1	1	$ 1,438,644
2028	1	1	1	1	1	1	1	$ 1,499,068
2029	1	1	1	1	1	1	1	$ 1,562,028
2030	1	1	1	1	1	1	1	$ 1,627,634
2031	1	1	1	1	1	1	1	$ 1,695,994
2032	1	1	1	1	1	1	1	$ 1,767,226
2033	1	1	1	1	1	1	1	$ 1,841,449
2034	1	1	1	1	1	1	1	$ 1,918,790
2035	1	1	1	1	1	1	1	$ 1,999,379
2036	1	1	1	1	1	1	1	$ 2,083,353
2037	0.25	0.25	0.25	0.25	0.25	0.25	0.25	$ 540,580
2038	0	0	0	0	0	0	0	$ -
2039	0	0	0	0	0	0	0	$ -
2040	0	0	0	0	0	0	0	$ -
								$12,366,159

$ -	$ -	$ -	$ 116,457	$ 707,862	$ 800,814.69	$ 878,367.27
$ -	$ -	$ -	$ 281,601	$ 1,711,664	$ 1,936,429.80	$ 2,123,957.74
$ -	$ -	$ -	$ 116,256	$ 708,795	$ 804,573.01	$ 885,370.84
$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ (12,305)	$ (72,734)	$ (90,250.00)	$ (100,000.00)
$ -	$ -	$ -	$ (31,279)	$ (190,440)	$ (243,390.47)	$ (277,775.27)
$ -	$ -	$ -	$ 154,294	$ 938,496	$ 1,062,545.25	$ 1,166,308.76

	Benefits
Year	X&R Savings
1	$ 914,974
2	$ 953,403
3	$ 993,445
4	$ 1,035,170
5	$ 1,078,647
6	$ 1,123,950
7	$ 1,171,156
8	$ 1,220,345
9	$ 1,271,599
10	$ 1,325,007
11	$ 1,380,657
12	$ 1,438,644
13	$ 1,499,068
14	$ 1,562,028
15	$ 1,627,634
16	$ 1,695,994
17	$ 1,767,226
18	$ 1,841,449
19	$ 1,918,790
20	$ 1,999,379
21	$ 2,083,353
Totals	$ 29,901,920
Load	0.70%
Inflation	3.5%

	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	2023	2024	2025	2026	2027	2028	2029	2030	2031
$	1,220,344.93	$ 1,271,599.42	$ 1,325,006.59	$ 1,380,656.87	$ 1,438,644.46	$ 1,499,067.52	$ 1,562,028.36	$ 1,627,633.55	$ 1,695,994.16
$	2,950,885.29	$ 3,074,822.47	$ 3,203,965.02	$ 3,338,531.55	$ 3,478,749.87	$ 3,624,857.37	$ 3,777,101.38	$ 3,935,739.63	$ 4,101,040.70
$	1,233,442.39	$ 1,289,673.15	$ 1,349,584.80	$ 1,412,343.99	$ 1,478,819.08	$ 1,550,010.76	$ 1,624,173.05	$ 1,702,249.13	$ 1,783,444.05
$	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$	(100,000.00)	$ (100,000.00)	$ (100,000.00)	$ (100,000.00)	$ (100,000.00)	$ (100,000.00)	$ (100,000.00)	$ (100,000.00)	$ (100,000.00)
$	(286,108.53)	$ (294,691.79)	$ (303,532.54)	$ (312,638.52)	$ (322,017.67)	$ (331,678.20)	$ (341,628.55)	$ (351,877.41)	$ (362,433.73)
$	1,621,402	$ 2,254,438	$ 2,351,423	$ 2,452,613	$ 2,558,485	$ 2,669,574	$ 2,785,321	$ 2,906,249	$ 3,032,192

AMI Augmentation	Future Grid Mod	Grid Mod Cost	CVR/AMI Cost Other (Capital)	Mitigation (Capital)	CVR/AMI Cost Other (O&M)	X&R Savings	AMI Augmentation	Future Grid Mod
$ -	$ -	$ -	$ (599,028)	$ (580,000)	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ (100,000)	$ (239,611)	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ (100,000)	$ (246,800)	$ -	$ -	$ -
$ 750,936	$ 310,016	$ -	$ -	$ (100,000)	$ (254,204)	$ 310,551	$ 750,936	$ 310,016
$ 1,956,187	$ 810,052	$ -	$ -	$ (100,000)	$ (261,830)	$ 808,985	$ 1,956,187	$ 810,052
$ 2,038,347	$ 846,919	$ -	$ -	$ (100,000)	$ (269,685)	$ 842,963	$ 2,038,347	$ 846,919
$ 2,123,958	$ 885,371	$ -	$ -	$ (100,000)	$ (277,775)	$ 878,367	$ 2,123,958	$ 885,371
$ 2,950,885	$ 1,233,442	$ -	$ -	$ (100,000)	$ (286,109)	$ 1,220,345	$ 2,950,885	$ 1,233,442
$ 3,074,822	$ 1,289,673	$ -	$ -	$ (100,000)	$ (294,692)	$ 1,271,599	$ 3,074,822	$ 1,289,673
$ 3,203,965	$ 1,349,585	$ -	$ -	$ (100,000)	$ (303,533)	$ 1,325,007	$ 3,203,965	$ 1,349,585
$ 3,338,532	$ 1,412,344	$ -	$ -	$ (100,000)	$ (312,639)	$ 1,380,657	$ 3,338,532	$ 1,412,344
$ 3,478,750	$ 1,478,819	$ -	$ -	$ (100,000)	$ (322,018)	$ 1,438,644	$ 3,478,750	$ 1,478,819
$ 3,624,857	$ 1,550,011	$ -	$ -	$ (100,000)	$ (331,678)	$ 1,499,068	$ 3,624,857	$ 1,550,011
$ 3,777,101	$ 1,624,173	$ -	$ -	$ (100,000)	$ (341,629)	$ 1,562,028	$ 3,777,101	$ 1,624,173
$ 3,935,740	$ 1,702,249	$ -	$ -	$ (100,000)	$ (351,877)	$ 1,627,634	$ 3,935,740	$ 1,702,249
$ 4,101,041	$ 1,783,444	$ -	$ -	$ (100,000)	$ (362,434)	$ 1,695,994	$ 4,101,041	$ 1,783,444
$ 4,273,284	$ 1,869,426	$ -	$ -	$ (100,000)	$ (373,307)	$ 1,767,226	$ 4,273,284	$ 1,869,426
$ 4,452,762	$ 1,959,404	$ -	$ -	$ (100,000)	$ (384,506)	$ 1,841,449	$ 4,452,762	$ 1,959,404
$ 4,639,778	$ 2,028,615	$ -	$ -	$ (100,000)	$ (396,041)	$ 1,918,790	$ 4,639,778	$ 2,028,615
$ 4,834,649	$ 2,127,726	$ -	$ -	$ (100,000)	$ (407,922)	$ 1,999,379	$ 4,834,649	$ 2,127,726
$ 5,037,704	$ 2,316,149	$ -	$ -	$ (50,000)	$ (420,160)	$ 2,083,353	$ 5,037,704	$ 2,316,149
$ 1,307,162	$ 600,078	$ -	$ -	$ (25,000)	$ -	$ 1,143,235	$ 2,764,427	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$29,902,297	$12,746,387	$0	($582,259)	($1,998,495)	($4,578,202)	$ 41,213,360	$ 99,656,986	$ 42,907,458
	$55,014,844				($7,158,956)			

$	1,220,344.93	$ 1,271,599.42	$ 1,325,006.59	$ 1,380,656.87	$ 1,438,644.46	$ 1,499,067.52	$ 1,562,028.36	$ 1,627,633.55	$ 1,695,994.16
$	2,950,885.29	$ 3,074,822.47	$ 3,203,965.02	$ 3,338,531.55	$ 3,478,749.87	$ 3,624,857.37	$ 3,777,101.38	$ 3,935,739.63	$ 4,101,040.70
$	1,233,442.39	$ 1,289,673.15	$ 1,349,584.80	$ 1,412,343.99	$ 1,478,819.08	$ 1,550,010.76	$ 1,624,173.05	$ 1,702,249.13	$ 1,783,444.05
$	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$	(100,000.00)	$ (100,000.00)	$ (100,000.00)	$ (100,000.00)	$ (100,000.00)	$ (100,000.00)	$ (100,000.00)	$ (100,000.00)	$ (100,000.00)
$	(286,108.53)	$ (294,691.79)	$ (303,532.54)	$ (312,638.52)	$ (322,017.67)	$ (331,678.20)	$ (341,628.55)	$ (351,877.41)	$ (362,433.73)
$	1,621,401.78	$ 2,254,438.01	$ 2,351,422.56	$ 2,452,612.96	$ 2,558,485.36	$ 2,669,574.26	$ 2,785,321.12	$ 2,906,248.93	$ 3,032,191.56

	Costs				
AMI Augmentation	Future Grid Mod	Grid Mod Cost	CVR/AMI Cost Othe	Mitigation (Capital)	CVR/AMI Cost Other (O&M)
$ 2,212,475	$ 920,665	0	$ 599,028	$ 580,000	
$ 2,305,399	$ 952,799	$ -	$ -	$ 100,000	$ 239,611
$ 2,402,225	$ 1,110,048	$ -	$ -	$ 100,000	$ 246,800
$ 2,503,119	$ 1,033,386	$ -	$ -	$ 100,000	$ 254,204
$ 2,608,250	$ 1,080,069	$ -	$ -	$ 100,000	$ 261,830
$ 2,717,796	$ 1,129,225	$ -	$ -	$ 100,000	$ 269,685
$ 2,831,944	$ 1,180,494	$ -	$ -	$ 100,000	$ 277,775
$ 2,950,885	$ 1,233,442	$ -	$ -	$ 100,000	$ 286,109
$ 3,074,822	$ 1,289,673	$ -	$ -	$ 100,000	$ 294,692
$ 3,203,965	$ 1,349,585	$ -	$ -	$ 100,000	$ 303,533
$ 3,338,532	$ 1,412,344	$ -	$ -	$ 100,000	$ 312,639
$ 3,478,750	$ 1,478,819	$ -	$ -	$ 100,000	$ 322,018
$ 3,624,857	$ 1,550,011	$ -	$ -	$ 100,000	$ 331,678
$ 3,777,101	$ 1,624,173	$ -	$ -	$ 100,000	$ 341,629
$ 3,935,740	$ 1,702,249	$ -	$ -	$ 100,000	$ 351,877
$ 4,101,041	$ 1,783,444	$ -	$ -	$ 100,000	$ 362,434
$ 4,273,284	$ 1,869,426	$ -	$ -	$ 100,000	$ 373,307
$ 4,452,762	$ 1,959,404	$ -	$ -	$ 100,000	$ 384,506
$ 4,639,778	$ 2,028,615	$ -	$ -	$ 100,000	$ 396,041
$ 4,834,649	$ 2,127,726	$ -	$ -	$ 100,000	$ 407,922
$ 5,037,704	$ 2,316,149	$ -	$ -	$ 50,000	$ 420,160
$ 72,305,079	$ 31,131,748	$ -	$ 599,028	$ 2,530,000	$ 6,438,448
0.70%	0.70%			O&M	3%
3.5%	3.5%				

0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
2032	2033	2034	2035	2036	2037	2038	2039	2040
$ 1,767,225.91	$ 1,841,449.40	$ 1,918,790.28	$ 1,999,379.47	$ 2,083,353.41	0	0	0	0
$ 4,273,284.41	$ 4,452,762.35	$ 4,639,778.37	$ 4,834,649.06	$ 5,037,704.32	0	0	0	0
$ 1,869,426.08	$ 1,959,403.57	$ 2,028,615.07	$ 2,127,726.48	$ 2,316,149.39	0	0	0	0
$ -	$ -	$ -	$ -	$ -	0	0	0	0
$ -	$ -	$ -	$ -	$ -	0	0	0	0
$ (100,000.00)	$ (100,000.00)	$ (100,000.00)	$ (100,000.00)	$ (200,000.00)	0	0	0	0
$ (373,306.74)	$ (384,505.94)	$ (396,041.12)	$ (407,922.36)	$ (1,680,640.11)	0	0	0	0
$ 3,163,975	$ 3,301,446	$ 3,434,873	$ 3,584,702	$ 3,774,883	$ -	$ -	$ -	$ -

Grid Mod Cost	CVR/AMI Cost Othe	Mitigation (Capital)	CVR/AMI Cost Other (O&M)
$ -	$ (599,028)	$ (580,000)	$ -
$ -	$ -	$ (100,000)	$ (239,611)
$ -	$ -	$ (100,000)	$ (246,800)
$ -	$ -	$ (100,000)	$ (254,204)
$ -	$ -	$ (100,000)	$ (261,830)
$ -	$ -	$ (100,000)	$ (269,685)
$ -	$ -	$ (100,000)	$ (277,775)
$ -	$ -	$ (100,000)	$ (286,109)
$ -	$ -	$ (100,000)	$ (294,692)
$ -	$ -	$ (100,000)	$ (303,533)
$ -	$ -	$ (100,000)	$ (312,639)
$ -	$ -	$ (100,000)	$ (322,018)
$ -	$ -	$ (100,000)	$ (331,678)
$ -	$ -	$ (100,000)	$ (341,629)
$ -	$ -	$ (100,000)	$ (351,877)
$ -	$ -	$ (100,000)	$ (362,434)
$ -	$ -	$ (100,000)	$ (373,307)
$ -	$ -	$ (100,000)	$ (384,506)
$ -	$ -	$ (100,000)	$ (396,041)
$ -	$ -	$ (100,000)	$ (407,922)
$ -	$ -	$ (50,000)	$ (420,160)
$ -	$ -	$ (53,387)	$ (199,102)
$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -
$ -	$ (599,028)	$ (2,890,209)	$ (9,167,000)

$ 1,767,225.91	$ 1,841,449.40	$ 1,918,790.28	$ 1,999,379.47	$ 2,083,353.41
$ 4,273,284.41	$ 4,452,762.35	$ 4,639,778.37	$ 4,834,649.06	$ 5,037,704.32
$ 1,869,426.08	$ 1,959,403.57	$ 2,028,615.07	$ 2,127,726.48	$ 2,316,149.39
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ (100,000.00)	$ (100,000.00)	$ (100,000.00)	$ (100,000.00)	$ (200,000.00)
$ (373,306.74)	$ (384,505.94)	$ (396,041.12)	$ (407,922.36)	$ (1,680,640.11)
$ 3,163,974.56	$ 3,301,446.13	$ 3,434,873.49	$ 3,584,702.01	$ 3,774,882.85

Back to Summary

Percent Realized			0	0	0	0.3
Year			2016	2017	2018	2019
Forecasted Installed Cost	$	3,655,286	$0	$0	$0	$106,781
Third Party Evaluation	$	50,000				
Escalation Rate		3%				
Customer Load Growth		1%				

Energy Savings due to better understanding of energy usage

Immediate direct feedback could be extremely valuable, especially for savings from daily behaviour in non-heating end-uses. In the longe larger scale, informative billing and annual energy reports can promote investment as well as influencing behaviour. Savings have been s of 5-15% and 0-10% for direct and indirect feedback respectively.

		#	kWh	Avg
Commercial Customers		23,385	1,804,801,283	77178
Residential Customers		212,659	2,482,493,050	11674
	Under 500 kWh/Mo	46,061	154,446,492	3353
	500 - 1000 kWh/Mo	85,416	762,768,267	8930
	Over 1000 kWh/Mo	81,121	1,564,546,291	19287
			6,769,055,383	

		#	% participating	% Reduced
Commercial Customers		23,385	1%	3%
Residential Customers		212,659		
	Under 500 kWh/Mo	46,061	1.0%	3%
	500 - 1000 kWh/Mo	85,416	3.0%	3%
	Over 1000 kWh/Mo	81,121	5.0%	3%
	Total			

	233.85
	7079.14
	7312.99

6%	http://www.slideshare.net/breakingnews/unlocking-energy-efficiency-in-the-us-economy-178972(
	http://www.eci.ox.ac.uk/research/energy/downloads/smart-metering-report.pdf
1-4%	http://finance-commerce.com/2014/09/sustainable-reducing-energy-use
	http://opower.com/uploads/library/file/24/Opower_WP_Effective_Customer_Engagement.pdf.pd
	http://www.elp.com/articles/2013/07/study-utility-customer-engagement-programs-are-worth-it.
	https://www.energystar.gov/buildings/program-administrators/state-and-local-governments/cam
2%	http://www.energyvortex.com/pages/headlinedetails.cfm?id=4857
2%	http://www.intelligentutility.com/article/12/02/behavioral-approaches-energy-conservation-pay&
4%	http://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/projects/smart-me
3%	http://www.utilitydive.com/news/could-reducing-peak-demand-5-be-as-simple-as-asking/329102/

REV_CLASS_C	CountOfUSAGE_PT_KY	SumOfACCUM_USAGE_QTY
01	212,659	2,482,493,050
21	23,385	1,804,801,283
39	570	80,159
31	359	205,546,579
80	56	12,095,526
51	1	2,875

0.75	0.75	0.75	1	1	1	1	1	1	1	1
2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
$226,830	$287,072	$297,694	$411,612	$426,841	$442,634	$459,012	$475,995	$493,607	$511,871	$530,810

er term and on a
shown in the region

34
179
579
$17,261,091 <-- if total reduction across all customers

kWh Reduction	**3%**
541,440	
46,334	
686,491	
2,346,819	
3,621,085	**$307,792**

5

-through-behavioral-science/

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html
paigns

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tering/smi-program-business-case.pdf
/

1	1	1	1	1	1	0.25	0	0	0
2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
$550,450	$570,817	$591,937	$613,838	$636,550	$660,103	$171,132	$0	$0	$0

Back to Summary

Percent Realized					0	0
Year					2016	2017
Forecasted EE Savings	$	8,927,226	$	21,955,038	$0	$0
Annual MWh Savings						
Annual Customer Growth		1%				
Rate Increase		3%				

Original					
Percent Realized				0	0
Year				2016	2017
Forecasted EE Savings	$	391,191		$0	$0
Forecasted EE Research Costs					
Outreach and Administration		$100,000			
Third Party Evaluation	$	50,000			
Escalation Rate		3%			
Customer Load Growth		1%			
Percent who Don’t Access Web		40%			
Percent Who Would Respond		50%			

Energy Savings due to better understanding of energy usage

Immediate direct feedback could be extremely valuable, especially for savings from daily behaviour in non-heat

		#
Commercial Customers		23,385
Residential Customers		212,659
	Under 500 kWh/Mo	46,061
	500 - 1000 kWh/Mo	85,416
	Over 1000 kWh/Mo	81,121

Broken out

		#
Commercial Customers		23,385
Residential Customers		212,659
	Under 500 kWh/Mo	46,061
	500 - 1000 kWh/Mo	85,416
	Over 1000 kWh/Mo	81,121
	Total	

6%	http://www.slideshare.net/breakingnews/unlocking-energy-efficiency
	http://www.eci.ox.ac.uk/research/energy/downloads/smart-mete
1-4%	http://finance-commerce.com/2014/09/sustainable-
	http://opower.com/uploads/library/file/24/Opower_WP_Effective_Cu
	http://www.elp.com/articles/2013/07/study-utility-customer-engager
	https://www.energystar.gov/buildings/program-administrators/state-
2%	http://www.energyvortex.com/pages/headlinedetails.cfm?id=4857
2%	http://www.intelligentutility.com/article/12/02/behavioral-approache
4%	http://www.bchydro.com/content/dam/BCHydro/customer-portal/dc
3%	http://www.utilitydive.com/news/could-reducing-peak-demand-5-be-

REV_CLASS_C	ntOfUSAGE_PT
01	212,659
21	23,385
39	570
31	359
80	56
51	1

0	0.3	0.75	0.75	0.75	1	1
2018	2019	2020	2021	2022	2023	2024
$0	$0	$0	$ 296,000	$ 592,000	$ 888,000	$ 1,184,000
			2,839	5,679	8,518	11,357

0	0.3	0.75	0.75	0.75	1	1
2018	2019	2020	2021	2022	2023	2024
$0	$34,642	($7,723)	($4,309)	($50,769)	$37,204	$42,280

ting end-uses. In the longer term and on a larger scale, informative billing and annual energy reports can prom

kWh	Avg		
1,804,801,283	77178		
2,482,493,050	11674		
154,446,492	3353	34	
762,768,267	8930	179	
1,564,546,291	19287	579	
6,769,055,383		**$17,261,091**	

% participating		**3%**	% percent Reduced
1%	541,440		
	-		
1.0%	46,334		
3.0%	686,491		
5.0%	2,346,819		
	3,621,085	**$307,792**	0.05%

233.85

7079.14
7312.99
-in-the-us-economy-1789726
ering-report.pdf
-reducing-energy-use-through-behavioral-science/
ustomer_Engagement.pdf.pdf
ment-programs-are-worth-it.html
-and-local-governments/campaigns

es-energy-conservation-pay&utm_medium=eNL&utm_campaign=IU_DAILY2&utm_term=Original-Mem
ocuments/projects/smart-metering/smi-program-business-case.pdf
-as-simple-as-asking/329102/

hOfACCUM_USAGE_QTY
2,482,493,050
1,804,801,283
80,159
205,546,579
12,095,526
2,875

1	1	1	1	1	1	1	1
2025	2026	2027	2028	2029	2030	2031	2032
$1,231,360	$1,280,614	$1,331,839	$1,385,113	$1,440,517	$1,498,138	$1,558,063	$1,620,386
14,200	14,342	14,485	14,630	14,777	14,924	15,074	15,224

1	1	1	1	1	1	1	1
2025	2026	2027	2028	2029	2030	2031	2032
$47,545	$53,004	$58,665	$64,536	$70,624	$76,937	$83,483	$90,272

ote investment as well as influencing behaviour.

1	1	1	1	0.25	0	0	0
2033	2034	2035	2036	2037	2038	2039	2040
$1,685,201	$1,752,609	$1,822,714	$1,895,622	$492,862	$0	$0	$0
15,377	15,530	15,686	15,842	4,000	0	0	0

1	1	1	1	0.25	0	0	0
2033	2034	2035	2036	2037	2038	2039	2040
$97,312	$104,613	$112,183	$120,034	$0	$0	$0	$0

Back to Summary

Capacity Costs

	factor	levelized	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
T&D Capacity	50%	$33.01	27.52	28.07	28.63	29.20	29.79	30.38	30.99	31.61	32.24	32.89
Gen Capacity	50%	$81.84	0	0	0	0	0	107.7	109.9	112.1	114.3	116.6
Total		$114.85	13.76	14.03	14.32	14.60	14.89	69.04	70.45	71.86	73.27	74.74

		Max Avoided										
Load Added		11.9	0.3	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	NPV											
2021	$204,435	0	$ 4,128	$ 4,210	$ 4,295	$ 4,381	$ 4,468	$ 20,713	$ 21,134	$ 21,557	$ 21,981	$ 22,423
2022	$200,570	0	0	$ 4,210	$ 4,295	$ 4,381	$ 4,468	$ 20,713	$ 21,134	$ 21,557	$ 21,981	$ 22,423
2023	$196,879	0	0	0	$ 4,295	$ 4,381	$ 4,468	$ 20,713	$ 21,134	$ 21,557	$ 21,981	$ 22,423
2024	$193,353	0	0	0	0	$ 4,381	$ 4,468	$ 20,713	$ 21,134	$ 21,557	$ 21,981	$ 22,423
2025	$189,986	0	0	0	0	0	$ 4,468	$ 20,713	$ 21,134	$ 21,557	$ 21,981	$ 22,423
2026	$186,771	0	0	0	0	0	0	$ 20,713	$ 21,134	$ 21,557	$ 21,981	$ 22,423
2027	$172,813	0	0	0	0	0	0	0	$ 21,134	$ 21,557	$ 21,981	$ 22,423
2028	$159,479	0	0	0	0	0	0	0	0	$ 21,557	$ 21,981	$ 22,423
2029	$146,743	0	0	0	0	0	0	0	0	0	$ 21,981	$ 22,423
2030	$134,584	0	0	0	0	0	0	0	0	0	0	$ 22,423
2031	$122,970	0	0	0	0	0	0	0	0	0	0	0
2032	$111,880	0	0	0	0	0	0	0	0	0	0	0
2033	$101,287	0	0	0	0	0	0	0	0	0	0	0
2034	$91,172	0	0	0	0	0	0	0	0	0	0	0
2035	$190,344	0	0	0	0	0	0	0	0	0	0	0
2036	$168,798	0	0	0	0	0	0	0	0	0	0	0
2037	$148,217	0	0	0	0	0	0	0	0	0	0	0
2038	$128,564	0	0	0	0	0	0	0	0	0	0	0
2039	$109,792	0	0	0	0	0	0	0	0	0	0	0
2040	$91,868	0	0	0	0	0	0	0	0	0	0	0
2041	$74,747	0	0	0	0	0	0	0	0	0	0	0
2042	$58,391	0	0	0	0	0	0	0	0	0	0	0
2043	$42,770	0	0	0	0	0	0	0	0	0	0	0
2044	$27,855	0	0	0	0	0	0	0	0	0	0	0
2045	$13,605	0	0	0	0	0	0	0	0	0	0	0
	$3,267,870	$ 3,123,537	$ 4,128	$ 8,421	$ 12,884	$ 17,522	$ 22,341	$ 124,275	$ 147,936	$ 172,453	$ 197,833	$ 224,232
		$2,609,116										

Attached is the 2018 demand study work paper used in the 2019 WA and ID GRC filings. The 2018 monthly system peaks are shown on the tab titled “Peak Calc CP” on Rows 84 through 114 .
It appears that the annual coincident peak occurred on August 10, 2018 at 4:00 PM. Large commercial and industrial customers served on Schedule 21 or 22 had peak demand of WA 233,522 KW,

	Aug-18	
Schedule 21/22 Secondar	220,231	
Schedule 21 Primary	13,291	
Total	233,522	EDO_Reduction
MW	233.5	0.128%

2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
33.55	34.22	34.90	35.60	36.31	37.04	37.78	38.53	39.30	40.09	40.89	41.71	42.54	43.40	44.26
118.9	121.3	123.7	126.2	128.7	131.3	133.9	136.6	139.3	142.1	145	147.9	150.8	153.9	156.9
76.22	77.76	79.30	80.90	82.51	84.17	85.84	87.57	89.30	91.10	92.95	94.80	96.67	98.65	100.58
				bldg Code										
0.30	0.30	0.30	0.30	0.7006	0.7006	0.7006	0.7006	0.7006	0.7006	0.7006	0.7006	0.7006	0.7006	0.7006
$ 22,867	$ 23,328	$ 23,790	$ 24,270	$ 24,752	$ 25,251	$ 25,752	$ 26,270	$ 26,791	$ 27,329	$ 27,884	$ 28,441	$ 29,002	$ 29,594	$ 30,174
$ 22,867	$ 23,328	$ 23,790	$ 24,270	$ 24,752	$ 25,251	$ 25,752	$ 26,270	$ 26,791	$ 27,329	$ 27,884	$ 28,441	$ 29,002	$ 29,594	$ 30,174
$ 22,867	$ 23,328	$ 23,790	$ 24,270	$ 24,752	$ 25,251	$ 25,752	$ 26,270	$ 26,791	$ 27,329	$ 27,884	$ 28,441	$ 29,002	$ 29,594	$ 30,174
$ 22,867	$ 23,328	$ 23,790	$ 24,270	$ 24,752	$ 25,251	$ 25,752	$ 26,270	$ 26,791	$ 27,329	$ 27,884	$ 28,441	$ 29,002	$ 29,594	$ 30,174
$ 22,867	$ 23,328	$ 23,790	$ 24,270	$ 24,752	$ 25,251	$ 25,752	$ 26,270	$ 26,791	$ 27,329	$ 27,884	$ 28,441	$ 29,002	$ 29,594	$ 30,174
$ 22,867	$ 23,328	$ 23,790	$ 24,270	$ 24,752	$ 25,251	$ 25,752	$ 26,270	$ 26,791	$ 27,329	$ 27,884	$ 28,441	$ 29,002	$ 29,594	$ 30,174
$ 22,867	$ 23,328	$ 23,790	$ 24,270	$ 24,752	$ 25,251	$ 25,752	$ 26,270	$ 26,791	$ 27,329	$ 27,884	$ 28,441	$ 29,002	$ 29,594	$ 30,174
$ 22,867	$ 23,328	$ 23,790	$ 24,270	$ 24,752	$ 25,251	$ 25,752	$ 26,270	$ 26,791	$ 27,329	$ 27,884	$ 28,441	$ 29,002	$ 29,594	$ 30,174
$ 22,867	$ 23,328	$ 23,790	$ 24,270	$ 24,752	$ 25,251	$ 25,752	$ 26,270	$ 26,791	$ 27,329	$ 27,884	$ 28,441	$ 29,002	$ 29,594	$ 30,174
$ 22,867	$ 23,328	$ 23,790	$ 24,270	$ 24,752	$ 25,251	$ 25,752	$ 26,270	$ 26,791	$ 27,329	$ 27,884	$ 28,441	$ 29,002	$ 29,594	$ 30,174
$ 22,867	$ 23,328	$ 23,790	$ 24,270	$ 24,752	$ 25,251	$ 25,752	$ 26,270	$ 26,791	$ 27,329	$ 27,884	$ 28,441	$ 29,002	$ 29,594	$ 30,174
0	$ 23,328	$ 23,790	$ 24,270	$ 24,752	$ 25,251	$ 25,752	$ 26,270	$ 26,791	$ 27,329	$ 27,884	$ 28,441	$ 29,002	$ 29,594	$ 30,174
0	0	$ 23,790	$ 24,270	$ 24,752	$ 25,251	$ 25,752	$ 26,270	$ 26,791	$ 27,329	$ 27,884	$ 28,441	$ 29,002	$ 29,594	$ 30,174
0	0	0	$ 24,270	$ 24,752	$ 25,251	$ 25,752	$ 26,270	$ 26,791	$ 27,329	$ 27,884	$ 28,441	$ 29,002	$ 29,594	$ 30,174
0	0	0	0	$ 57,801	$ 58,966	$ 60,136	$ 61,346	$ 62,562	$ 63,818	$ 65,115	$ 66,417	$ 67,725	$ 69,109	$ 70,464
0	0	0	0	0	$ 58,966	$ 60,136	$ 61,346	$ 62,562	$ 63,818	$ 65,115	$ 66,417	$ 67,725	$ 69,109	$ 70,464
0	0	0	0	0	0	$ 60,136	$ 61,346	$ 62,562	$ 63,818	$ 65,115	$ 66,417	$ 67,725	$ 69,109	$ 70,464
0	0	0	0	0	0	0	$ 61,346	$ 62,562	$ 63,818	$ 65,115	$ 66,417	$ 67,725	$ 69,109	$ 70,464
0	0	0	0	0	0	0	0	$ 62,562	$ 63,818	$ 65,115	$ 66,417	$ 67,725	$ 69,109	$ 70,464
0	0	0	0	0	0	0	0	0	$ 63,818	$ 65,115	$ 66,417	$ 67,725	$ 69,109	$ 70,464
0	0	0	0	0	0	0	0	0	0	$ 65,115	$ 66,417	$ 67,725	$ 69,109	$ 70,464
0	0	0	0	0	0	0	0	0	0	0	$ 66,417	$ 67,725	$ 69,109	$ 70,464
0	0	0	0	0	0	0	0	0	0	0	0	$ 67,725	$ 69,109	$ 70,464
0	0	0	0	0	0	0	0	0	0	0	0	0	$ 69,109	$ 70,464
0	0	0	0	0	0	0	0	0	0	0	0	0	0	$ 70,464
$ 251,536	$ 279,930	$ 309,272	$ 339,778	$ 404,324	$ 471,440	$ 135,233								

and ID 121,235 KW out of the system total of 1,729,000 KW that hour.

Back to Summary

Customer and Load Growth	0.7%					
Escalation Rate	3.0%					
New Revision based on current experience (201910)	33.3%					
Percent Realized		0	0	0	0.3	0.75
Year		2016	2017	2018	2019	2020
Forecasted Installed Cost	$ 4,499,424	$ -	$0	$0	$130,137	$337,380

Analytic Modules	$ 400,000	Costs are included in the cost model under "Data Analytics"
Integration Costs	$ 375,000	Costs are included in the cost model under "Data Analytics"

	Gas & Electric		
Benefits Description	**Low**	**Medium**	**High**
Washington Revenue 2012	$577,955,706	$577,955,706	$577,955,706
Theft impact to revenue	0.206%	0.309%	0.413%
Estimated percent of theft found	85%	90%	95%
Recoverable revenue	$1,013,228.60	$1,609,245.42	$2,264,863.92
Cost of Resolution (estimate at 30% of recovered revenue)	$303,968.58	$482,773.63	$679,459.18
Net Opportunity	$709,260.02	$1,126,471.79	$1,585,404.74

0.75	0.75	1	1	1	1	1	1	1	1	1
2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
$349,863	$362,808	$501,643	$520,204	$539,451	$559,411	$580,109	$601,573	$623,831	$646,913	$670,849

0.00375

1	1	1	1	1	0.25	0	0	0
2032	2033	2034	2035	2036	2037	2038	2039	2040
$695,670	$721,410	$748,102	$775,782	$804,486	$208,563	$0	$0	$0

Back to Summary

Year

Avoided Late Fees		
Forecasted Installed Cost	$	1,951,970

Benefits Description		**Electric**
Non App Meters in Washington		3,646
Usage adjusted off in Washington		1,009,563
Estimated Dollars not Billed Washington	$	91,497.88
Loaded labor rate for billing analyst (per min)		0.66
Billing Edit Process in Minutes per account		5.5
Cost per Review and Administration		3.63
Estimated Review & Admin costs	$	13,233.53
Total Costs	$	104,731.41

Table 1

BILL_CORRECT_CDE (Multiple Items)

Row Labels	Column Labels 2010
E	
01	
Average of Days	24.23
Sum of SumOfUSAGE_QTY	898,811
Count of USAGE_PT_KY	3,863
21	
Average of Days	53.92
Sum of SumOfUSAGE_QTY	145,046
Count of USAGE_PT_KY	183
E Average of Days	25.57
E Sum of SumOfUSAGE_QTY	1,043,857
E Count of USAGE_PT_KY	4,046
G	
01	
Average of Days	29.84
Sum of SumOfUSAGE_QTY	40,087
Count of USAGE_PT_KY	1,840
21	
Average of Days	48.61
Sum of SumOfUSAGE_QTY	10,711
Count of USAGE_PT_KY	123
G Average of Days	31.02
G Sum of SumOfUSAGE_QTY	50,798
G Count of USAGE_PT_KY	1,963

Procedure:

a. Add: A ***Customer Contact*** that includes the following details:
Needs x months billed
Premise address
Note: This will hit a Billing report and the Billing Team will work these.

2. Identify the billing period and read(s) required to bill.
a. Go to Meter Read History.
b. Review reads to confirm the read you're using is in line and looks accurate. (If not, see Adding a Mete
c. Verify the required read(s) are checked "**Use on Bill**" and take note of the read dates.

3. How many "months" are you billing?

If...	Then...
1 month:	CLICK HERE a. Click: The **Account Context Menu** icon. b. Click: The **Add** button for **Go To Bill**. c. Click: The **Generate** button. d. Enter: The ***Last Meter Read Date*** in the **Cutoff Date** field. e. Click: The **Calculate** button. f. Click: The **Freeze** button. g. Click: The **Complete** button. h. Click: The **Complete** button. i. Add: A ***Customer Contact*** .
2 or more months:	CLICK HERE a. Click: The **Account Context Menu** icon on the dashboard. b. Select: The **Add** button for **Go To Bill**. c. Click: The **Generate** button. d. Enter: The End Meter Read Date for the first billing period in the Cutoff Date field. tip Example: If you have reads for 7/01, 7/28, and 8/28, then ***End Meter Read Date*** for the first billing period would be 7/28. e. Click: The **Calculate** button. f. Click: The **Freeze** button. g. Click: The **Bill segment** link.

	h. Copy: The **SA ID**. i. Click: The **Bill ID Context Menu**  and select the **Add**  button for **Go To Bill Segment**. j. Paste: The ***SA ID*** into the **SA ID** field. k. Click: The **Generate** button. l. Enter: The ***Cutoff Date*** for the next month. **Note:** The Cutoff Date should be the meter read date of the next billing period. m. Click: The **Calculate** button. n. Click: The **Freeze** button. o. Repeat: Steps i) through n) to add all additional bill segments if necessary for each SA. p. (If multiple SAs) Repeat: Step i) through n)  tip Instead of pasting SA ID, search for correct SA. q. Click: The ***Pending Bill Exists*** hyperlink in the **Financial Information** zone on the dashboard. r. Click: The **Complete** button. s. Click: The **Complete** button. t. Add: A ***Customer Contact*** .

		0	0	0	0.3
Annual Increase Rate	Customer Growth	2016	2017	2018	2019
3%	1.0%	$ -	$ -	$ -	$ 55,059

Gas	Total	Sources or References
1,783	5,428	Table 1 - source: Unbilled Data tab
50,895		Table 1 - Pivot Data - source: Unbilled Data tab
$ 45,678.63	$ 137,177	Calculation: Unbilled usage * Rate (see pivot)
0.66		
5.5		
3.63		Calculation: Loaded labor rate * edit processing time
$ 6,471.56	$ 19,705	Calculation: Cost per Review and Admin * Non Apps
$ 52,150.19	$ 156,882	Calculation: Unbilled Revenue + Billing Analyst Time + Servicemen Time

2011	2012	2013	2014	Excluded all electric accounts wit Average	Ratio
26.19	28.48	32.28	32.12		
918,452	918,911	888,242	850,114	894,906	89%
3,926	3,462	3,196	3,010		
49.30	47.70	50.77	46.40		
114,756	48,276	157,515	107,693	114,657	11%
188	151	119	130		
27.24	29.29	32.95	32.71	30	
1,033,208	967,187	1,045,757	957,807	1,009,563	
4,114	3,613	3,315	3,140	3,646	
32.05	34.05	35.06	33.38		
44,767	38,109	37,562	30,887	38,282	75%
1,876	1,678	1,612	1,414		
49.73	52.22	45.80	58.15		
18,840	7,777	9,976	15,757	12,612	25%
130	88	86	67		
33.19	34.95	35.60	34.50	34	
63,607	45,886	47,538	46,644	50,895	
2,006	1,766	1,698	1,481	1,783	

Table 2 (Breakout of Bill Ana

Reviewed process with Kim Blair,

Time Savings Cacul	Mins/Meter	
Billing Analyst Revi	1	1
Research, inquiry, r	1	2
Calculate Correct U	1	1
Correct bill manual	1	3
Total	4	7
	AVG	**5.5**

0.75	0.75	0.75	1	1	1	1	1	
2020	2021	2022	2023	2024	2025	2026	2027	
$ 143,153	$ 148,879	$ 154,834	$ 214,703	$ 223,291	$ 232,223	$ 241,512	$ 251,172	

h usage over 90,000 and gas accounts with usage greater than 9,000

Unit Costs	Revenues
Revenue/Unit	Estimated Rev
$ 0.088	$ 78,304.28
$ 0.115	$ 13,193.60
	$ 91,497.88
$ 0.870	$ 33,304.92
$ 0.981	$ 12,373.70
	$ 45,678.63

1	1	1	1	1	1	1	1	1
2028	2029	2030	2031	2032	2033	2034	2035	2036
$ 261,219	$ 271,668	$ 282,535	$ 293,836	$ 305,590	$ 317,813	$ 330,526	$ 343,747	$ 357,497

0.25	0	0	0

2037	2038	2039	2040
$ 92,949	$ -	$ -	$ -

Back to Summary

Customer and Load Growth		0.7%					
Escalation Rate		3.0%					
Percent Realized			0	0	0	0.3	0.75
Year			2016	2017	2018	2019	2020
Forecasted Installed Cost	$	3,995,883	$42,117	$43,381	$44,682	$112,432	$291,480

Column Labels

	Sum of Lost gas revenue				Sum of Lost electric revenue	
Row Labels	2011	2012	2013	2014	2011	2012
WA	$ 167,044	$ 83,939	$ 67,242	$ 81,917	$ 344,144	$ 104,631
Area light	$ -	$ -			$ -	$ -
Both			$ 303			
Electric	$ -	$ -			$ 344,144	$ 104,330
Gas	$ 167,044	$ 83,939	$ 66,939	$ 81,917	$ -	$ 301
Grand Total	$ 167,044	$ 83,939	$ 67,242	$ 81,917	$ 344,144	$ 104,631
			Average	$ 100,036		

Data from Failed Meters Workbook

0.75	0.75	1	1	1	1	1	1	1	1
2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
$302,265	$313,449	$433,395	$449,431	$466,060	$483,304	$501,186	$519,730	$538,960	$558,901

	2013		2014
$	298,930	$	148,478
		$	3,583
$	274		
$	298,657	$	144,894
$	298,930	$	148,478
	Average	$	224,046

1	1	1	1	1	1	0.25	0	0	0
2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
$579,581	$601,025	$623,263	$646,324	$670,238	$695,037	$155,243	$0	$0	$0

Back to Summary

	Electric		
	Low	Medium	High
Field Visits to investigate stopped meters in Washington *(Stopped Meter Report)*	4,233	4,233	4,233
Percent Meters investigate resulting in stopped in Washington *(Stopped Meter Report)*	13.7%	13.7%	13.7%
Percent Meters investigate resulting in stopped in Washington - Predicted Rate [1]	70%	80%	90%
Improvement in investigation Rate in Washington (row 9- row 6)	56%	66%	76%
Estimated Avoided Visits Washington (row 12 * row 3)	2,383	2,806	3,230
Billing analyst additional time to investigate stopped meter (mins)	5	5	5
Loaded labor rate for billing analyst (per min)	$0.65	$0.65	$0.65
Total cost per investigation for billing analyst	$3.25	$3.25	$3.25
Total additional analyst time to investigage	$10,140.00	$7,390.50	$4,637.75
Cost Per Dispatch	$2.50	$2.50	$2.50
Avoided Mobile Dispatch Costs	$5,957.95	$7,016.20	$8,074.45
Transportation Costs	15.75	15.75	15.75
Cost per meter serviceman per minute	$0.96	$0.96	$0.96
Time per visit per serviceman including travel time	45	45	45
Cost per visit for serviceman (row 21 * row 22) + row 20	$58.88	$58.88	$58.88
Estimated benefit from avoided visits (row 23 * row 15) - (row 18 * row 15)	$136,128	$164,857	$193,590

Annual O&M increase rate	3%		
Customer and Load Growth	0.70%		
		0	0
Year		2016	2017
Forecasted Avoided Stopped Meter Checks		-	-
Forecasted Installed Cost	$ 3,558,176	$0	$0

	Gas		
Low	Medium	High	
3,295	3,295	3,295	Stopped Meter Report
7.1%	7.1%	7.1%	
60%	75%	90%	Estimate
53%	68%	83%	Calculation: Predicted - Actual
1,743	2,237	2,732	Calculation: Predicted - Actual
5	5	5	
$0.65	$0.65	$0.65	
$3.25	$3.25	$3.25	Calculation: Analyst time * labor rate
$6,652.75	$5,044.00	$3,438.50	Calculation: Analyst time * labor rate * Avoided Visits Counts
$2.50	$2.50	$2.50	Budgeted Costs/Mobile Orders Completed
$4,357.64	$5,593.26	$6,828.89	Calculation: Costs Per Dispatch * Avoided Orders
15.75	15.75	15.75	ServicemenLaborCostsEstimate tab
$0.96	$0.96	$0.96	ServicemenLaborCostsEstimate tab
45	45	45	Average enroute and onsite times can average 45 minutes depending on location and meter type
$58.88	$58.88	$58.88	Calculation
$100,327	$132,271	$164,211	Calculation

0	0.3	0.75	0.75	0.75	1	1	1	1	1	1	1
2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
-	1,513	3,783	3,783	3,783	5,044	5,044	5,044	5,044	5,044	5,044	5,044
$0	$103,081	$267,238	$277,126	$287,379	$397,350	$412,052	$427,298	$443,108	$459,503	$476,505	$494,135

1	1	1	1	1	1	1	0.25	0	0	0
2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
5,044	5,044	5,044	5,044	5,044	5,044	5,044	1,261	-	-	-
$512,418	$531,378	$551,039	$571,427	$592,570	$614,495	$637,231	$142,332	$0	$0	$0

Back to Summary

Customer and Load Growth		0.0%
Average Rate Increase Percent		3.0%

Year			**2016**	**2017**	**2018**	**2019**	**2020**
Forecasted	$	9,390,317	$ 75,661	$ 332,259	$ 405,040	$ 488,501	$ 820,883
	$	20,521,976					

Burned Wiring Portion of Case from CC&B

Year		2016	2017	2018	2019	2020	
Value	$	75,661	$ 332,259	$ 405,040	$ 488,501	$ 320,858	
Adjusted to Number of Months	$	75,661	$ 332,259	$ 405,040	$ 488,501	$ 770,059	<-(Total/5 Mon
Adjusted to Deployment %	$	75,661	$ 332,259	$ 405,040	$ 488,501	$ 820,883	Adjusted Total

? Likelihood that they are found in normal inspections vs finding new instances.
We found these things by deployment efforts, but we also have to note that the meters are inspected periodically (for the big ones)
So can we assume that the eventually founds will be replaced by the new founds or do we reduce future values 8 years out on the premise tha

2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
$ 845,510	$ 870,875	$ 897,001	$ 923,911	$ 951,629	$ 980,177	$ 1,009,583	$ 1,039,870	$ 1,071,066	$ 1,103,198

ths)*12 Months
+ (Adjusted Total * Currently Not Deployed Percentage * 20%)

ıt

2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
$ 1,136,294	$ 1,170,383	$ 1,205,495	$ 1,241,659	$ 1,278,909	$ 1,317,276	$ 1,356,795	$ -	$ -	$ -

Back to Summary

CSR

Estimated Reads - CSR or Billing Analysts estimates bills

Benefits Description

		2012-14			NPV
	Component Estimate				6.58%
1	Annual Estimated Bills	92,419	Table 2		
2	Average analysis time in minutes	9	Table 1		
3	Cost per minute loaded	$0.66	Loaded cost of CSR (2014) Source: Veronica Soules		
4	Average Cost per Estimated Loaded	$5.93	Calculation		
5	Estimated Reduction in Rebills (%) [1]	83%	Failure Rate of AMI meters, projected at 1%		
6	Estimated Reduction in Rebill Costs	$454,839	Calculation		
	Total (Calculation)	**$454,839**		**$454,839**	
					$6,783,166

References

1 Automated reads will be automatically processed (currently available in CC&B) - look at estimations as exceptions (estimated expections are 3%)

Table 1 (Breakout of Bill Estimation ·

Reviewed process with Kim Blair, Billing Analyst, Nov 2015

Time Savings Caculation	Mins/Meter	
Account is flagged as needing estimation, res	2	3
Determine if field service visit is required	1	1
No, estimate bill	1	2
Generate bill in CC&B	1	2
Total	5	8

AVG **6.5**

Table 2 (Counts of Estimated Bills)

STATE_CDE WA

Sum of CountOfUSAGE_PT_KY	Column Labels						
Row Labels	2012	2013	2014	Grand Total	Average		
A	1,419,309	1,496,613	1,569,142	4,485,064	1,495,021		
B	6,250	7,920	9,447	23,617	7,872		
C	1,179	1,183	921	3,283	**1,094**		
E	54,976	58,882	57,561	171,419	**57,140**	1.138%	77%
F	9,772	10,760	10,859	31,391	**10,464**		
I	5,272	6,593	7,211	19,076	6,359		
K	24,297	23,659	22,037	69,993	**23,331**		
N	5,617	4,170	4,373	14,160	**4,720**		
P	167	316	476	959	**320**		
Q	10,686	12,190	7,583	30,459	10,153		
R	3,127,153	3,071,472	3,084,141	9,282,766	3,094,255		
S	19,517	20,574	18,397	58,488	19,496		
T	19,131	18,616	18,298	56,045	**18,682**		
V	266,026	287,862	264,535	818,423	272,808		
W			1	1	1		
Grand Total	4969352	5020810	5074982	15065144			57%
		1%	1%				

read codes that lead to Estimated Bill 92,419

Meter Read Codes

Code	Type	Code	Type
A	Successful Remote Read	P	Pass
B	Unsuccessful Remote Read so read manually	Q	Change Out Read
C	Customer Read	R	Regular Read
E	Estimated Read	S	Special Read
F	Estimated from Next Read	T	Estimated from Actual Read
I	Install Read	V	Verified Read
K	Computer Estimated Read	W	Wait for Read
N	No Read		

YR 1	YR 2	YR 3	YR 4	YR 5	YR 6	YR 7	YR 8
2015	2016	2017	2018	2019	2020	2021	2022
0	0	0	0	0.3	0.75	0.75	0.75
93,343.19	94,276.62	95,219.39	96,171.58	97,133.30	98,104.63	99,085.68	100,076.53
9	9	9	9	9	9	9	9
$0.68	$0.70	$0.72	$0.74	$0.76	$0.79	$0.81	$0.83
$6.11	$6.29	$6.48	$6.67	$6.87	$7.08	$7.29	$7.51
97%	97%	97%	97%	97%	97%	97%	97%
552,980.31	575,265.42	598,448.62	622,566.10	647,655.51	673,756.03	700,908.40	729,155.00
-	-	-	-	194,296.65	505,317.02	525,681.30	546,866.25

STATE_CDE	ID					
Sum of CountOfUSAGE_PT_KY	Column Labels					
Row Labels	2012	2013	2014	Grand Total		
A	2,494,405	2,518,436	2,546,052	7,558,893		
B	151	228	181	560		
C	181	194	265	640		
E	4,536	5,002	5,762	15,300	0.197%	17%
F	378	366	368	1,112		
I	2,785	3,784	3,873	10,442		
K	1,033	922	2,930	4,885		
N	55	80	78	213		
P	78	73	106	257		
Q	2,641	2,869	3,172	8,682		
R	8,534	8,115	8,158	24,807		
S	42,734	44,873	44,797	132,404		
T	763	1,043	1,276	3,082		
V	103	80	88	271		
W	1			1		
Grand Total	2558378	2586065	2617106	7,761,549.00		

YR 9	YR 10	YR 11	YR 12	YR 13	YR 14	YR 15	YR 16	YR 17
2023	2024	2025	2026	2027	2028	2029	2030	2031
1	1	1	1	1	1	1	1	1
101,077.30	102,088.07	103,108.95	104,140.04	105,181.44	106,233.26	107,295.59	108,368.55	109,452.23
9	9	9	9	9	9	9	9	9
$0.86	$0.89	$0.91	$0.94	$0.97	$1.00	$1.03	$1.06	$1.09
$7.74	$7.97	$8.21	$8.45	$8.71	$8.97	$9.24	$9.52	$9.80
97%	97%	97%	97%	97%	97%	97%	97%	97%
758,539.95	789,109.11	820,910.21	853,992.89	888,408.80	924,211.68	961,457.41	1,000,204.14	1,040,512.37
758,539.95	789,109.11	820,910.21	853,992.89	888,408.80	924,211.68	961,457.41	1,000,204.14	1,040,512.37

YR 18	YR 19	YR 20	YR 21	YR 22	YR 23	
2032	2033	2034	2035	2036	2037	
1	1	1	1	1	0.25	16.55
110,546.75	111,652.22	112,768.74	113,896.43	115,035.40	116,185.75	
9	9	9	9	9	9	
$1.12	$1.16	$1.19	$1.23	$1.26	$1.30	
$10.09	$10.40	$10.71	$11.03	$11.36	$11.70	
97%	97%	97%	97%	97%	97%	
1,082,445.02	1,126,067.55	1,171,448.07	1,218,657.43	1,267,769.33	1,318,860.43	
1,082,445.02	1,126,067.55	1,171,448.07	1,218,657.43	1,267,769.33	329,715.11	

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Contact Center

Bill Inquiries

Currently Customer Service Representatives respond to bill inquiries without the benefit of querying a meter data ma
direct or trigger a process to automatically update with data would reduce the time involved in determining the curr
comparisons.

Benefits Description

	2012-14		Sources or References
Component Estimate			
Annual Calls Handled By CSR		650,130	Table 1
Percent of calls that are billing inquiries	42.7%		Table 1
Annual billing inquiry calls		277,389	Calculation
Estimated percent of calls that would benefit from AMI	25%		Conservative Ac
Fraction of meters equipped with AMI	57%		Meter Shop Pro
Calls expected to be eliminated by AMI		39,217	Calculation
Average analysis time reduced in minutes	7.5		Table 2
Cost per minute loaded	$0.66		Loaded cost of (
Average Cost per Estimated Loaded	$4.94		
Total (Calculation)	**$193,781**		

Table 1 (Contact Center Call Stats)

IVR	2012	2013
Inbound IVR Calls	1,158,458	1,112,163
Outbound IVR Calls	175,148	170,156
Total IVR Calls	1,333,606	1,282,319

Billing Related	2012	2013
IVR Handled	445,609	421,136
CSR's Handled	303,065	271,122
Total Billing Calls	748,674	692,258

CSR's	2012	2013
IVR Transfers	664,109	640,287
Billing Related	303,065	271,122
Percent of CSR calls related to Billing	46%	42%

Sent: Tue 07-01-2014 9:31 AM, 2014 data received 12.3.15, Source: Veronica Soules

Value represented above includes avoided costs, efficiencies with benefits redeployed in the utility, net present value

Table 2 (Breakout of Bill Estimation Times)

Reviewed process with Kim Blair, Billing Analyst, N

Time Savings Caculation	Mins/Meter	
CSR recieves call, opens account in CC&B	0.5	0.5
Dialogue with customer	2	4
Research, inquiry, review read history	1	3
Conclude call, give energy tips, send report, recap remarks	1	3
Total	4.5	10.5
	AVG	**7.5**

anagement system that would provide a meter history in various increments. Being able to query
ent read by reducing the time to gather the data and input it into a spreadsheet that would enable

	YR 1	
		2015
	0	
NPV		
6.58%		
	39,609.19	
		7.5
djustment	$0.68	
visioning Analysis (% has increased since original analysis)	$5.09	
	201,590.46	
CSR (2014) Source: Veronica Soules		
$2,472,821	-	

2014
1,162,947
153,285
1,316,232

2014
407,971
256,628
664,599

2014	Average
645,993	650,130
256,628	276,938
40%	43%

of long-lived asset programs, re-invested sourcing benefits & power supply cost reductions.

lov 2015

YR 2	YR 3	YR 4	YR 5	YR 6	YR 7	YR 8	YR 9
2016	2017	2018	2019	2020	2021	2022	2023
0	0	0	0.3	0.75	0.75	0.75	1
40,005.28	40,405.33	40,809.39	41,217.48	41,629.65	42,045.95	42,466.41	42,891.07
7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
$0.70	$0.72	$0.74	$0.76	$0.79	$0.81	$0.83	$0.86
$5.24	$5.40	$5.56	$5.73	$5.90	$6.08	$6.26	$6.45
209,714.56	218,166.06	226,958.15	236,104.56	245,619.58	255,518.04	265,815.42	276,527.78
-	-	-	70,831.37	184,214.68	191,638.53	199,361.57	276,527.78

YR 10	YR 11	YR 12	YR 13	YR 14	YR 15	YR 16	YR 17
2024	2025	2026	2027	2028	2029	2030	2031
1	1	1	1	1	1	1	1
43,319.98	43,753.18	44,190.72	44,632.62	45,078.95	45,529.74	45,985.04	46,444.89
7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
$0.89	$0.91	$0.94	$0.97	$1.00	$1.03	$1.06	$1.09
$6.64	$6.84	$7.05	$7.26	$7.47	$7.70	$7.93	$8.17
287,671.85	299,265.03	311,325.41	323,871.82	336,923.86	350,501.89	364,627.11	379,321.59
287,671.85	299,265.03	311,325.41	323,871.82	336,923.86	350,501.89	364,627.11	379,321.59

YR 18	YR 19	YR 20	YR 21	YR 22	YR 23	
2032	2033	2034	2035	2036	2037	
1	1	1	1	1	0.25	16.55
46,909.34	47,378.43	47,852.21	48,330.74	48,814.04	49,302.18	
7.5	7.5	7.5	7.5	7.5	7.5	
$1.12	$1.16	$1.19	$1.23	$1.26	$1.30	
$8.41	$8.66	$8.92	$9.19	$9.47	$9.75	
394,608.25	410,510.96	427,054.55	444,264.85	462,168.72	480,794.12	
394,608.25	410,510.96	427,054.55	444,264.85	462,168.72	120,198.53	

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Billing

Bill Analysis

A staff of several billing analysts that work through exception such as high/low bills. These bills br reduced. This reduction could also be supported by automated smart process. The automati

	Benefits Description	Components
	Component Estimate	
1	Annual Bills (average of 2013 & 2014)	5,974,036
2	Estimated Exception %	3%
3	Estimated Exceptions	179,221
4	Percent Washington Bills	57%
5	Percent Residential	89%
6	Daily Exception Load	358
7	Daily Exception Load Worked %	33%
8	Fully loaded blended direct labor rate	$39.53
9	Average analysis time in minutes	5.50
10	Total Minutes	165,374
11	Cost per Minute	0.66
12	Average Occupancy Rate (availability) & Overheads factor	80%
13	Expected reduction in analysis time in minutes	70%
14	Total benefit	**$95,334**

Table 1 $90,204

	Additional Costs
a	Training
b	Application development (percentage of application that would also be developed for Revenue Protection)
c	Integration
d	IT/IS Support

subtotal

Total (Calculation)

Figure 1 (Summary of DataSource Survey (2011)

Table 2 (Bre

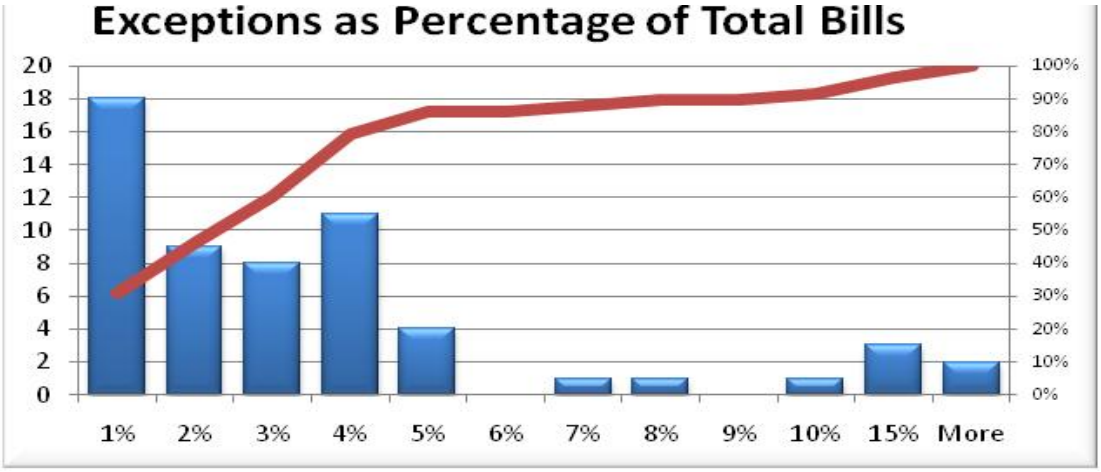
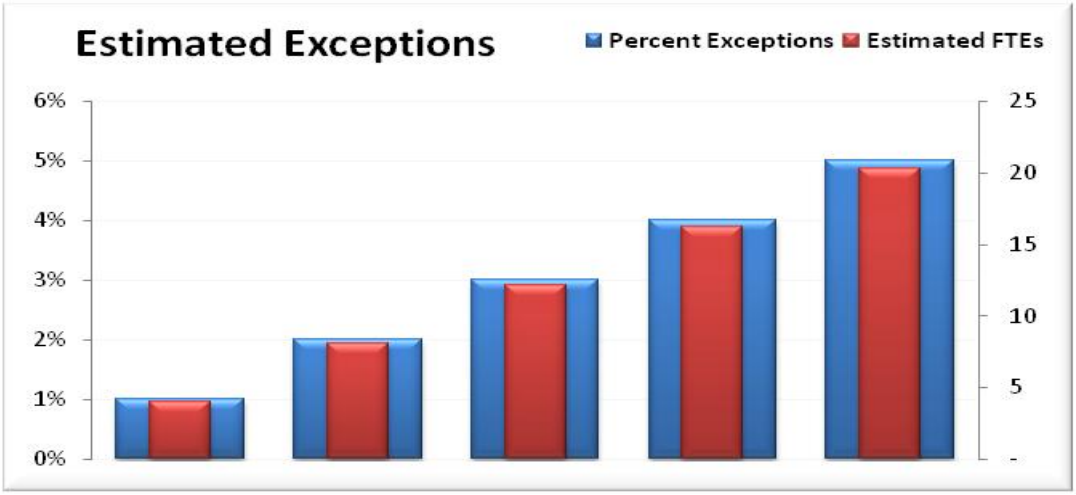


Figure 2 (Summary of DataSource Survey (2011)



; require determining if someone should be sent out if the data looks suspicious. Combine
on of certain process could be accomplished through integration with dispatch and CC&B.

Sources and References

Customer Information System
Figure 1
Calculation
Meter Shop Provisioning Analysis (% has increased since original analysis)
Customer Information System
Customer Information System

Loaded cost of CSR (2014) Source: Veronica Soules
Table 2
Calculation

Accounts for training, One Leave, and non direct work activities
Approximated 1 standard deviation reduction (Area under normal distribution curve)
Calculation

	$1,581	
		$16,000
	$8,000	
	$9,581	$16,000
	$9,581	

eakout of Bill Analysis Times) Reviewed process wi

Time Savings Caculation	Mins/
Billing Analyst Reviews "To Do" list reports	1
Research, inquiry, review read history in CC&B	1
Calculate Correct Usage, Enter new read	1
Correct bill manualy or process cancel/rebill	1
Total	4
	AVG

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d with other meter health monitoring data, the number of exceptions could
These integrations are included in the MDM implemenation.

	YR 1	YR 2	YR 3	YR 4
	2015	2016	2017	2018
	0	0	0	0
NPV				
6.58%				
	167,027.40	168,697.67	170,384.65	172,088.50
	$ 0.68	$0.70	$0.72	$0.74
	80%	80%	80%	80%
	70%	70%	70%	70%
	$99,176	134,958	136,308	137,671
$1,138,569	-	-	-	-

$1,581

$16,000

$8,000
$9,581 $16,000
$9,581

ith Kim Blair, Billing Analyst, Nov 2015

Meter
1
2
1
3
7
5.5

YR 5	YR 6	YR 7	YR 8	YR 9	YR 10	YR 11
2019	2020	2021	2022	2023	2024	2025
0.3	0.75	0.75	0.75	1	1	1
173,809.38	175,547.48	177,302.95	179,075.98	180,866.74	182,675.41	184,502.16
$0.76	$0.79	$0.81	$0.83	$0.86	$0.89	$0.91
80%	80%	80%	80%	80%	80%	80%
70%	70%	70%	70%	70%	70%	70%
139,048	140,438	141,842	143,261	144,693	146,140	147,602
41,714.25	105,328.49	106,381.77	107,445.59	144,693.39	146,140.33	147,601.73

YR 12	YR 13	YR 14	YR 15	YR 16	YR 17	YR 18
2026	2027	2028	2029	2030	2031	2032
1	1	1	1	1	1	1
186,347.18	188,210.65	190,092.76	191,993.69	193,913.63	195,852.76	197,811.29
$0.94	$0.97	$1.00	$1.03	$1.06	$1.09	$1.12
80%	80%	80%	80%	80%	80%	80%
70%	70%	70%	70%	70%	70%	70%
149,078	150,569	152,074	153,595	155,131	156,682	158,249
149,077.75	150,568.52	152,074.21	153,594.95	155,130.90	156,682.21	158,249.03

YR 19	YR 20	YR 21	YR 22	YR 23
2033	2034	2035	2036	2037
1	1	1	1	0.25
199,789.40	201,787.30	203,805.17	205,843.22	207,901.65
$1.16	$1.19	$1.23	$1.26	$1.30
80%	80%	80%	80%	80%
70%	70%	70%	70%	70%
159,832	161,430	163,044	164,675	166,321
159,831.52	161,429.84	163,044.14	164,674.58	41,580.33

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Billing

Bill Analysis/Rebills

Estimation errors drove 80% of the rebill activity as shown in Table 2 below. With AMI, interval da

	Benefits Description		Components
1	Annual Bills (average of 2013 & 2014)		5,974,036
2	Bills Cancelled Before Bill Created		18,572
3	Percent from Washington		90%
4	Percent Cancelled and No New Bills Created		0.31%
5	Daily Exception Load (No New Bills)		64
6	Loaded analyst time		$0.66
7	Average analysis time in minutes (New Bills)		9
8	Average Cost per Rebill Loaded (New Bills)		$5.93
9	Estimated Rebill Costs (No New Bills)	$	99,110
10	Estimated Reduction in Rebills (New Bills)		80%
11	Estimated Reduction in Rebill Costs (New Bills)	$	79,288.33
	Total (Calculation)	$	79,288

Table 1

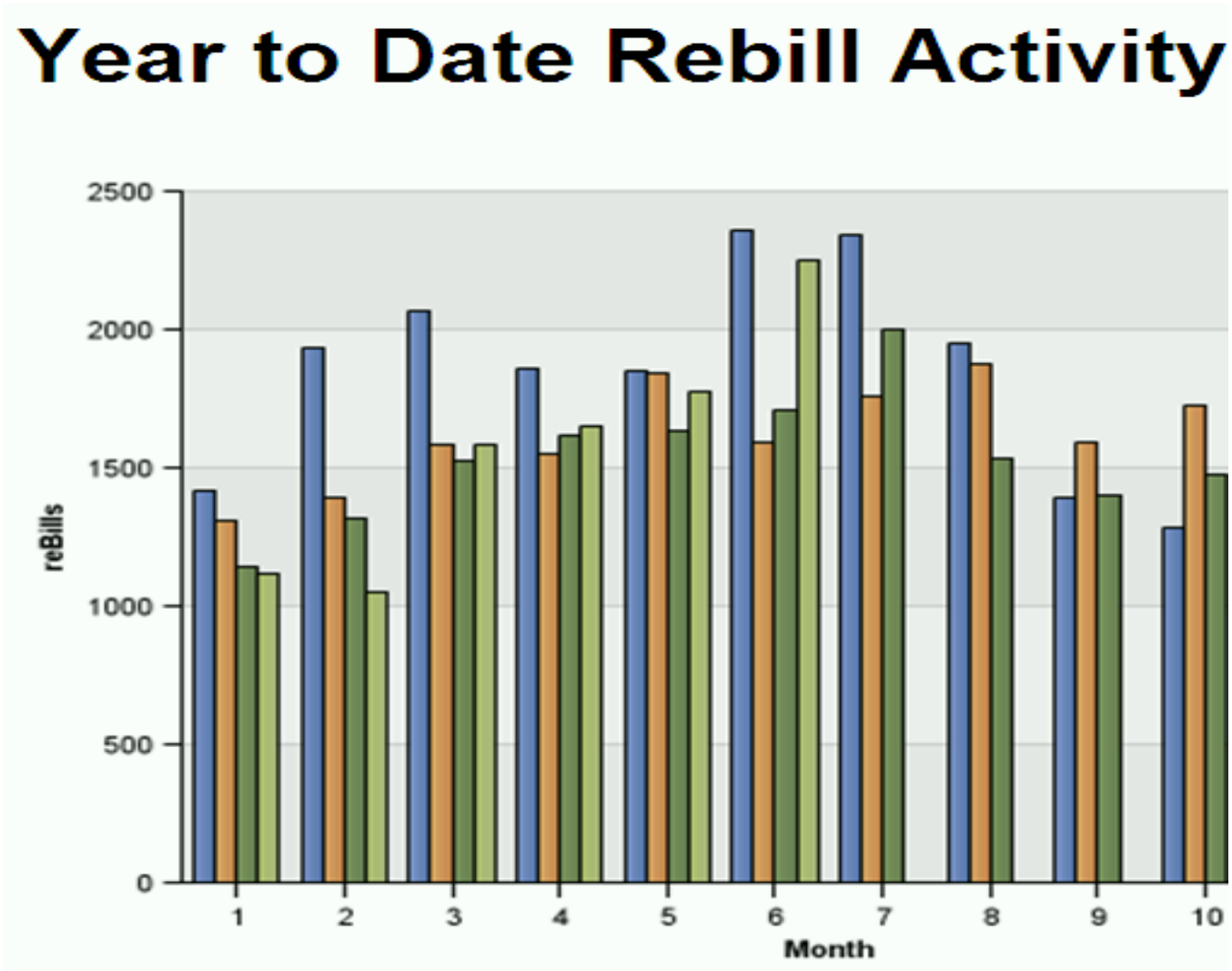
CUST_ACCT_KY #'s	SRV_STATE_CDE
970	ID
16773	WA
829	OR
18572	

Source: Customer Information System

Table 2

CUST_ACCT_KY	
OPEN DATE	2014
OVER ESTIMATE	2014
METER TESTED FAST	2014
OVER READ	2014
INCORRECT BILLING	2014
CLOSE DATE	2014
LOW ESTIMATE	2014
RATE SCHEDULE CHANGE	2014
INCORRECT ESTIMATE	2014
STOPPED METER	2014

MIXED METERS	2014
CANCELLED IN ERROR	2014
DISPUTED BILL	2014
LOW READ	2014
INCORRECT OPEN READ	2014
CLOSE READ	2014
CORRECTION CODE ERROR	2014
METER INSTALLED	2014
BANKRUPT	2014
THEFT OF SERVICE	2014
MISREAD	2014
ZERO USE	2014
CONVERSION CODE	2014
HIGH DEMAND	2014
DONT USE SETTLEMENT ON ACCT	2014



Exh. AIW-5, Avista's Response to UTC Staff-DR-107 Supplemental 2 - 3.16-Attachment C ! Rebilling

ta would reduce the need to estimate bills since the meter data would be able to determine the actual amounts

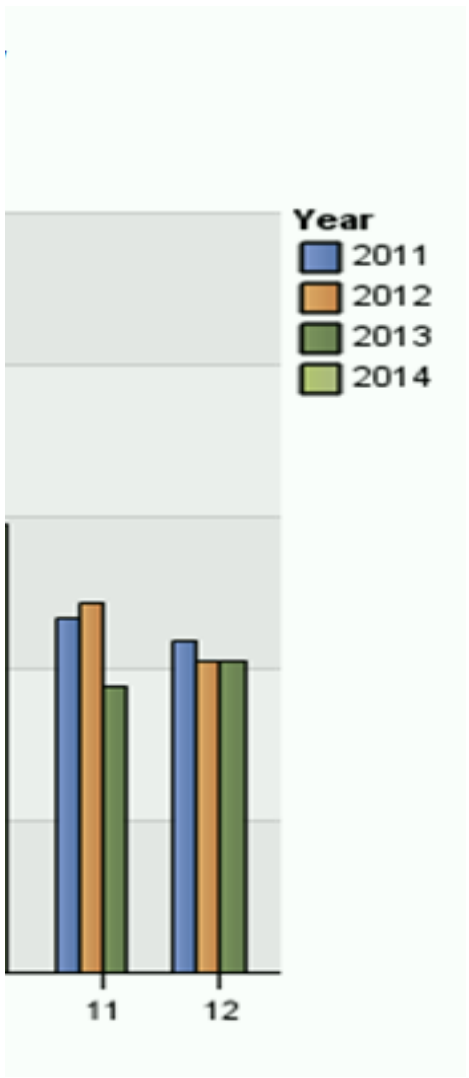
Rebill Report (Customer Information System)
See Table 1
Calculation
Calculation
Loaded cost of CSR (2014) Source: Veronica Soules
Table 3
Calculation (Loaded Analyst Time * Average Analyst Time)
Calculation
Estimation errors are the most likely to be reduced as a result of having interval data - see Table 2
Calculation

90%

Table 3 (Breakout of Rebilling Tim

Time Savings Caculation	1	2	3	4	5
Open account in CC&B	170	107	122	120	95
Research, inquiry, review re	40	22	37	132	36
Calculate Correct Usage, En	14	105	106	175	161
Correct bill manualy or proc	11	5	12	23	5
Total	62	60	48	44	38
	49	59	35	57	13
	32	24	53	45	16
	9	15			33
	33	20	33	4	5
	32	28	14	8	8

15	24	23	6	12
26	18	7	13	8
25	11	16	2	4
7	12	7	11	1
20	8	12	8	3
2	3	5	4	
	1			
1	13			1
6	6	2		
1		1	1	2
1			1	
		1		
556	541	534	654	441



s for the given period(s)

	YR 1	YR 2	YR 3	YR 4	YR 5	YR 6	YR 7
	2015	2016	2017	2018	2019	2020	2021
	0	0	0	0	0.3	0.75	0.75
NPV							
6.58%							
	16,881.95	17,050.77	17,221.28	17,393.49	17,567.42	17,743.10	17,920.53
	$ 6.11	$6.29	$6.48	$6.67	$6.87	$7.08	$7.29
	80%	80%	80%	80%	80%	80%	80%
	$82,484	**$85,808**	**$89,266**	**$92,863**	**$96,606**	**$100,499**	**$104,549**
$1,011,791	-	-	-	-	28,981.68	75,374.09	78,411.67

Reviewed process with Kim Blair, Billing Analyst, Nov 2015

Mins/Meter	
1	1
1	2
1	1
1	3
4	7
AVG	**5.5**

6	7	8	9	10	11	12	Total
125	109	149	131	628	529	573	2858
30	23	91	23	924	766	731	2855
216	172	58	20	82	110	76	1295
9	6	22	14	491	253	275	1126
32	65	34	63	244	158	269	1117
21	52	41	27	211	217	211	993
1	2	20	17	77	120	107	514
256	23	3	16	23	20	52	450
8	4	3	19	50	61	125	365
23	4	15	7	84	55	64	342

15	12	13	35	38	35	109	337
12	15	5	16	35	46	33	234
4	3	4	9	26	29	32	165
1	1	4	2	42	9	30	127
4	5	6	8	3	3	20	100
1	4	9	1	16	5	16	66
12				36		8	57
2	5	1		2	3	12	40
				3		5	22
	2		3			3	13
	1	1	1	4	1	2	12
						6	7
				4	2		6
						4	4
			1				1
772	508	479	413	3023	2422	2763	13106

YR 8	YR 9	YR 10	YR 11	YR 12	YR 13	YR 14	YR 15
2022	2023	2024	2025	2026	2027	2028	2029
0.75	1	1	1	1	1	1	1
18,099.73	18,280.73	18,463.54	18,648.17	18,834.66	19,023.00	19,213.23	19,405.36
$7.51	$7.74	$7.97	$8.21	$8.45	$8.71	$8.97	$9.24
80%	80%	80%	80%	80%	80%	80%	80%
$108,762	**$113,145**	**$117,705**	**$122,449**	**$127,383**	**$132,517**	**$137,857**	**$143,413**
81,571.66	113,145.33	117,705.09	122,448.60	127,383.28	132,516.83	137,857.25	143,412.90

0.82534717

YR 16	YR 17	YR 18	YR 19	YR 20	YR 21	YR 22	YR 23
2030	2031	2032	2033	2034	2035	2036	2037
1	1	1	1	1	1	1	0.25
19,599.42	19,795.41	19,993.37	20,193.30	20,395.23	20,599.18	20,805.18	21,013.23
$9.52	$9.80	$10.09	$10.40	$10.71	$11.03	$11.36	$11.70
80%	80%	80%	80%	80%	80%	80%	80%
$149,192	**$155,205**	**$161,460**	**$167,966**	**$174,736**	**$181,777**	**$189,103**	**$196,724**
149,192.44	155,204.90	161,459.65	167,966.48	174,735.53	181,777.37	189,103.00	49,180.96

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Load Studies

						Adjustment		
							Annual Increase	
			Sources or References			NPV	Rate	
Meter Operations								
Benefits Description								
	2013							
Component Estimate								
Current Installed base of meters	650							
Washington Load Study Meters (Residential)	168							
Washington Load Study Meters (Commercial)	217							
Washington Load Study Meters (Total)	385							
Cellular Costs Per Month	$7,981							
Cost Per meter	$1,000							
Residential	$700							
Commercial	$900							
Total Meter Costs	$312,900		Every 10 Years (next update is 2018, requires new meters since G2 cellular coverage is					
Recovery Benefit of Meters	0%							
Annual New Installs Per Year (0.5%)	3							
Cost for Installs	$2,600							
Annual Networking Costs for Washington Load Study	$47,291							
Percent of Meters Attributed to Load Studies In Washington	59%							
Cost for New Installs Washington Load Study	$312,900	$0	x				$259,545	3%
Annual Networking Costs for Washington Load Study	$47,291	$47,291	x				$613,518	3%
Meter Moves (every 5 years)	385							
Years before resampling group established	5							
Costs Per Move	$ 75.00							
Annual Meter Move Costs	$ 28,875	$ 28,875					$26,944	0
Total Avoided Costs				$	1,761,471		$979,467	0.03

State	Rate Code
Washington	1
Idaho	1
Total	**1**
Washington	011/012
Idaho	011/012
Total	**011/012**
Washington	021/022
Idaho	021/022
Total	**021/022**
Washington	031/032
Idaho	031/032
Total	**031/032**

Washington Study	
Residential	168
Non Residential	217
	385

	1	1	1	1	1	0.75	0.75	1	1	1	1
Customer Growth	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026

no longer available)

0	0	0	$ 312,900	$ -	$ -	$ -	$ -				
0	$ 48,710	$ 50,171	$ 51,676	$ 53,226	$ 54,823	$ 42,351	$ 43,621	$ 59,907	$ 61,704	$ 63,555	$ 65,462
0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 28,875	$ -	$ -	$ -
0.01	$ 48,710	$ 50,171	$ 364,576	$ 53,226	$ 54,823	$ 42,351	$ 43,621	$ 88,782	$ 61,704	$ 63,555	$ 65,462

Class	Error Ratio	Sample
Residential	0.9	168
Residential	0.9	82
Residential	**0.9**	**250**
General Service	0.81	115
General Service	0.787	85
General Service	**0.8**	**200**
Large General Service	0.498	52
Large General Service	0.505	23
Large General Service	**0.5**	**75**
Pumping	0.985	50
Pumping	1.034	25
Pumping	**1**	**75**

Year	Cellular Costs
2008	31,365
2009	95,956
2010	91,769
2011	79,597
2012	98,066
2013	95,774
2014	88,901
2015	79,842
2016	31,353

1	1	1	1	1	1	1	1	1	1	0.25	0	0
2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 67,426	$ 69,448	$ 71,532	$ 73,678	$ 75,888	$ 78,165	$ 80,510	$ 82,925	$ 85,413	$ 87,975	$ 22,654	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ 28,875	$ -	$ -	$ -	$ -	$ -	$ -
$ 67,426	$ 69,448	$ 71,532	$ 73,678	$ 75,888	$ 78,165	$ 109,385	$ 82,925	$ 85,413	$ 87,975	$ 22,654	$ -	$ -

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Back to Summary

Costs Per Install Per Meter

Meterman's Cost							
Analyst Costs Per Meter	$ 8	<- need to update where this came from					
Dispatch Cost Per Order	$ 3						
Metermen Costs Per Order	$ 60						
Travel Costs Per Meter	$ 15	$ 12,525	$ 12,525	$ 12,525	$ 12,525	$ 10,020	
Performance Monitoring Per Meter	$ 5						
Total Labor Costs	$ 88						
Total Meter Install Costs (incremental)							
Annual O&M increase rate	3%						
9%		0.5	1	1	1	1	
Year		2016	2017	2018	2019	2020	
Forecasted Installed Solar Panels		835	835	835	835	668	
Forecasted Installed Cost	$ 1,071,165	$ 37,842	$ 77,955	$ 80,294	$ 82,702	$ 68,147	

$ 10,020	$ 10,020	$ 10,020	$ 10,020	$ 14,670	$ 14,670	$ 14,670	$ 14,670	$ 14,670	
0.75	0.75	1	1	1	1	1	1	1	
2021	2022	2023	2024	2025	2026	2027	2028	2029	
668	668	668	668	978	978	978	978	978	
$ 52,643	$ 54,223	$ 74,466	$ 76,700	$ 115,663	$ 119,133	$ 122,707	$ 126,388	$ 130,180	

$ 14,670	$ 14,670	$ 14,670	$ 14,670	$ 14,670	$ 14,670	$ 14,670	$ -	$ -	$ -

1	1	1	1	1	1	1	0.25	0	0
2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
978	978	978	978	978	978	978			
$ 134,085	$ 138,107	$ 142,251	$ 146,518	$ 150,914	$ 155,441	$ 160,104	$ -	$ -	$ -

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