10.0 Sensitivity Analysis

Black & Veatch performed sensitivity analyses on the Accelerated Scenario model. Energy prices and discount rates are changed to indicate how results change with changes to these important inputs.

10.1 CHANGES TO FORECAST ENERGY PRICE ASSUMPTIONS

The UFE, CIM, and charge-off[19] benefits are dependent on the energy costs recovered and/or avoided as these benefits accrue. The Black & Veatch model uses energy price inputs to determine UFE and CIM impacts. Black & Veatch was informed that the same energy price inputs are used by ComEd to determine charge-off benefits, which are then provided to Black & Veatch and handled as a direct input to the model.[20]

ComEd has provided updated energy price assumptions for use in the models supporting both the Accelerated and 13-0285 Scenarios. These prices are lower than those used in Docket No. 12-0298 and take several forms for residential and small commercial/industrial categories. There are also price assumptions for delivery services and energy services. Black & Veatch generalizes all of these price components as "energy prices" for purposes of referring to these assumptions in this report. The models, however, include these detailed categorizations.

The current energy prices play an important role in determining the value of the smart meter program over the 20 year evaluation period. There are two countervailing large effects occurring in the Accelerated Scenario and the 13-0285 Scenario, compared to the plan documented in Docket No. 12-0298. First, deploying meters sooner in time will generally raise benefits, since more meters with smart functionality would be available. On the other hand, lower forecast energy prices will erode the CIM, UFE, and charge-off benefits. These two effects are occurring in both the Accelerated Scenario and the 13-0285 Scenario results, as compared to results in Docket No. 12-0298. As a general statement, the lower energy prices have a larger effect on changing the NPV of the various scenarios than does changing the meter deployment as described in Table 4-1, all else being equal. This statement is offered simply to provide perspective about how the model responds to changes to these principal input assumptions.

To perform the sensitivities, Black & Veatch substitutes into the Accelerated Scenario model the previously used energy prices, as shown in Appendix E. Figure 10-1 shows the weighted average energy prices[21] used in the Accelerated Scenario and the 13-0285 Scenario models compared to the values used in Docket No. 12-0298. As a general observation, the previously supplied energy price forecast is approximately 20 percent higher year by year than the current energy price forecast.

[19] Previously labeled "Bad Debt" benefit.

[20] Changing the energy price input assumptions in the Black & Veatch model will not change the charge-off benefits shown in the model since the key energy-priced based input for the charge off benefit is provided by ComEd. For consistency purposes and model integrity, it is essential that the same energy price assumptions are used for all three benefit areas.

[21] The weighted average price is determined by weighting the contribution to total revenues ComEd receives by the residential and commercial customer classes. The total number of kWh consumed by each class, and the energy tariffs are used to determine this weighted average. The evaluation model computes benefits using detailed energy price components. The weighted average price is used here to provide an easy means of comparison.

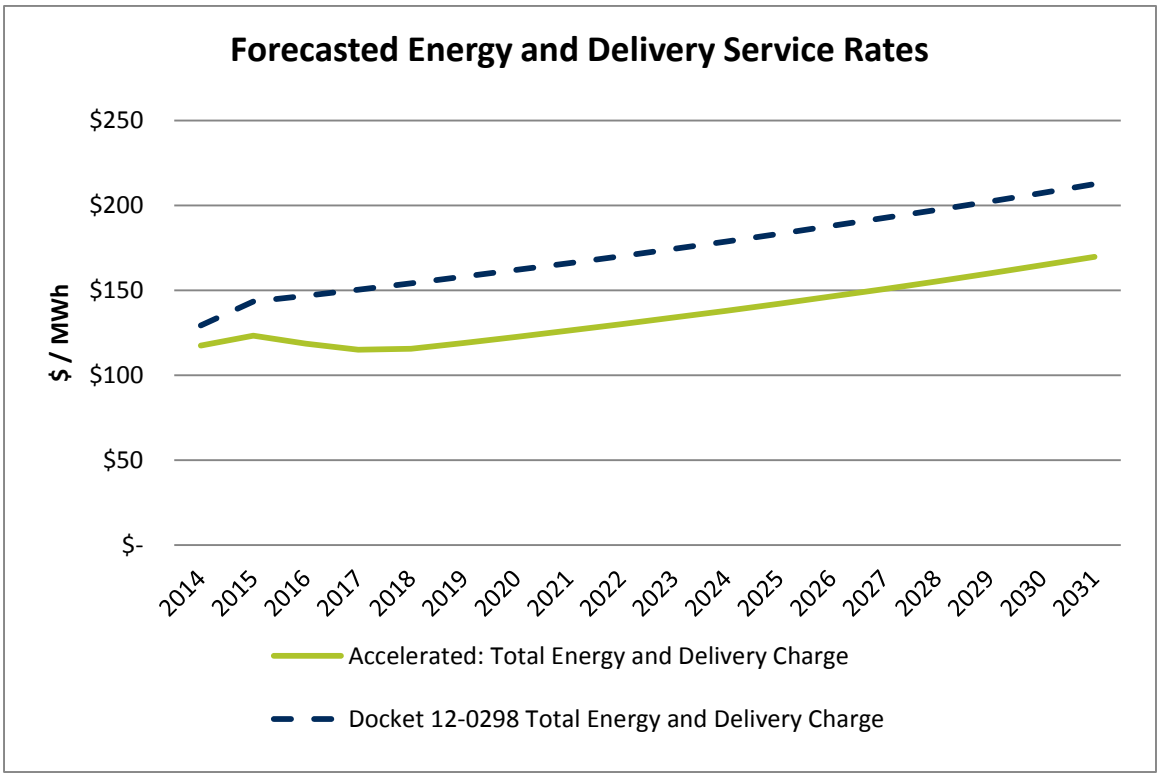

Figure 10-1 Forecasted Energy and Delivery Service Rates

Using the Accelerated Scenario, and applying the current and previous energy price assumptions, yields the following results. The use of the previous assumptions lifts the NPV result by several hundreds of millions (almost $500 million), over the 20 year period. Overall, the NPV improves over 53% ($1.35 billion versus $879 million), as compared to the current result. These results demonstrate the importance of using AMI to address the occurrence of UFE, CIM and charge offs, all of which effect customer energy costs. As energy prices rise greater value is associated with pursuing these benefit opportunities.

Table 10-1 Impact of Energy Price Assumptions (AMI Plan with Accelerated Scenario)

ITEM	ACCELERATED SCENARIO (COMPLETION BY 2018) – (PREVIOUS ENERGY PRICE ASSUMPTIONS)	ACCELERATED SCENARIO (COMPLETION BY 2018) – (CURRENT ENERGY PRICE ASSUMPTIONS)	DIFFERENCE
A. COSTS			
Operation and Maintenance (O&M) Expense for AMI System	999,158	999,158	0
New Capital Investment for AMI System	1,115,617	1,115,617	0
Subtotal	**2,114,775**	**2,114,775**	**0**
B. OPERATIONAL BENEFITS AND DELIVERY SERVICE REVENUES			
Operational Efficiencies and Cost Reductions	1,905,501	1,905,501	0
Avoidance of Capital Expenditures	2,367	2,367	0
Collection of Delivery Service Revenues Due to Reduction in UFE and CIM	569,903	542,339	27,564
Subtotal	**2,477,771**	**2,450,207**	**27,564**
C. ADDITIONAL BENEFITS (ENERGY, TRANSMISSION, AND OTHER RIDER COST REDUCTIONS AND REVENUES)			
Reduction in Energy Purchased Power Costs Due to Reduction in UFE and CIM	682,708	463,367	219,342
Collection of Energy and Other Revenues Due to Reduction in UFE and CIM	1,013,896	688,150	325,746
Reduction in Charge-off Expenses	708,553	619,456	89,097
Subtotal	**2,405,157**	**1,770,973**	**634,184**
D. SUMMARY			
Total Costs	**2,114,775**	**2,114,775**	**0**
Total Benefits	**4,882,929**	**4,221,180**	**661,749**
Benefits Less Costs	**2,768,154**	**2,106,405**	**661,749**
Benefits Less Costs, NPV	**1,346,614**	**879,468**	**467,146**

10.2 DISCOUNT RATE CHANGE IMPACTS

The discount rate reflects the value placed on future costs and benefits. The model expresses costs and benefits in nominal dollar terms, adjusted for potential inflation impacts (and changes to vendor pricing, if required). These costs and benefits are then discounted to determine their present value. In today's dollars, for example, a benefit of $10 in 10 years is less than $10 today if the discount rate is greater than zero.

Black & Veatch has adjusted the discount rate of the Accelerated Scenario from 3.53 percent to 8 percent and 14 percent to illustrate the effect that the change in the rate has to the resulting NPV.

Figure 10-2 shows the relationship of cumulative NPV, by year, and these discount rates. Where the data series crosses the X-axis indicates when there is sufficient payback to yield a NPV of $0. In performing the sensitivity at these values, Black & Veatch is performing a stress test only on the NPV. Figure 10-2 shows that the AMI Plan under the Accelerated Scenario remains positive (benefits exceeding costs on a NPV basis over 20 years) up to and including a discount rate of 14.4%.

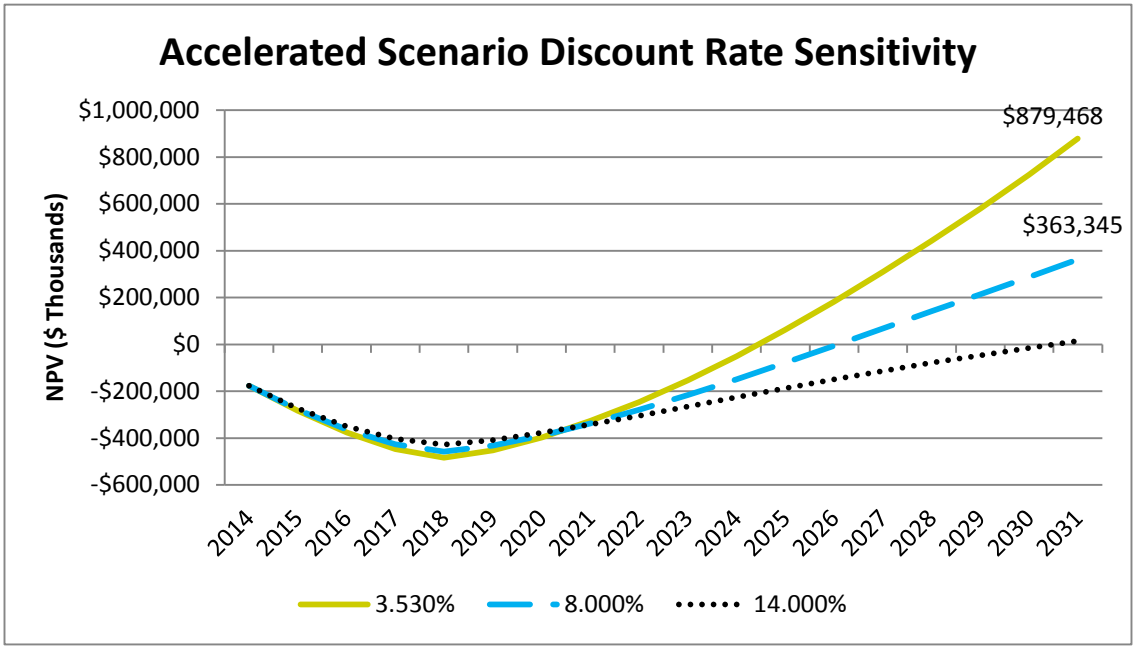

Figure 10-2 Cumulative NPV by Year, at Three Discount Rates

11.0 Discussion of Results

The Accelerated Scenario moves forward in time the deployment of smart meters by several years. It completes the deployment by the end of 2018, instead of the end of 2021 as in the 13-0285 Scenario. As a general matter, leaving aside changes to costs, moving the meter deployment forward – and reducing the time to complete the deployment by 36 months -- increases benefit achievement since more electric meters with smart functionality would be available.

> **As documented in this report, the ComEd AMI Plan under both meter deployment scenarios remains overwhelmingly positive in terms of the net present value (NPV) of financial benefits and costs evaluated over a 20 year time period. The Accelerated Scenario and the 13-0285 Scenario yield NPV results of $879 million and $795 million, respectively. The NPV results improvement of approximately $85 million with the Accelerated Scenario reflects an underlying nominal dollar difference of $170M.**

Table 11-1 (shown in Executive Summary as Table 1-1) shows the cost, benefit, and value estimates for each scenario. Several observations should be noted:

1. Both the Accelerated Scenario and the 13-0285 Scenario are positive in NPV terms over the period (2012 to 2031) by several hundreds of millions of dollars. The Accelerated Scenario returns greater value than the 13-0285 Scenario by approximately $85 million in NPV terms and $170 million in nominal dollar terms. The Accelerated Scenario is 11 percent more valuable, in NPV terms, than the 13-0285 Scenario.[22]

2. The NPVs for both scenarios are based on a revised and current energy price forecast, which is substantially lower than the forecast used in Docket No. 12-0298. Broadly speaking, the average annual energy prices used in the current models are approximately 20 percent lower than the prices used in supporting Docket No. 12-0298 analyses. A modest increase in energy prices will improve the NPV results significantly. In fact, a sensitivity using the previous (higher) energy prices – which are approximately 20% higher -- shows significantly higher NPV results of 53%. This "leverage" of the smart meter system empowers ComEd to address UFE, CIM and Charge Off benefit opportunities and is an important *strategic* aspect of AMI.

3. Both scenarios' financial results are reduced by estimated meter refusal costs, ostensibly incurred during the years 2013 through 2019, but this is a minor estimated cost impact. As explained in Section 8.0 of this report, the meter refusal costs, net of fees, reduces the NPV by around $8 million. This result is true regardless of which scenario is under consideration. In other words, the meter refusal cost impact does not alter the difference in value when comparing the scenarios. In Black & Veatch's opinion, this reduction (to either scenario) does not significantly affect the AMI program value; therefore, it is not included in the model NPV results. It is, however, explained in this report so that all relevant smart meter-related impacts are represented. The supporting calculations are also shown within the models as a separate tab or worksheet.

4. There are two reasons the Accelerated Scenario's value differs by $170 million (nominal dollars) from the 13-0285 Scenario:

[22] $85M divided by the 13-0285 Scenario NPV of $795M yields 0.107, or 11%.

a. First, costs for the Accelerated Scenario are higher by $42 million over the 20 year period.[23] Meter-related costs are slightly higher for the Accelerated Scenario (a $8 million difference). Communication network and IT costs are higher (by $42 million). Finally, Management overhead costs are lower (by $8 million) offsetting the higher costs.[24] There are some areas of costs where ComEd's accelerated meter deployment schedule drives total cumulative costs higher due to advancing O&M responsibilities. There are other areas where the Accelerated Scenario shows lower implementation costs. Overall, however, Black & Veatch considers the *total* difference of $42M (2% of total costs) insignificant given the 20 year evaluation time period.

b. Second, benefits for the Accelerated Scenario are higher by $212 million. This increase in benefits is primarily explained by the accelerated meter deployment schedule. (There are few other benefit factor differences between the Accelerated and 13-0285 Scenarios). Of the extra benefit value, $92 million is in the area of operationally oriented benefits (e.g., meter reading, billing), and the remainder is in the areas of unaccounted for energy (UFE), consumption on inactive meters (CIM), and charge-off benefit achievement.[25]

5. Stressing the Accelerated Scenario cost and benefit nominal dollar flows by year with higher discount rates lowers the resulting NPV, as is expected. A discount rate of 14.4 percent returns a breakeven NPV of $0.[26] Any discount rate below this percentage returns a positive NPV result.

The values shown are cumulative over 20 years (2012 to 2031). All values are nominal unless stated otherwise.

[23] Unless otherwise stated, all figures are nominal values and pertain to the 2012-2031 time period. NPV is used throughout to indicate the discounted cash flow values.
[24] Values are rounded to nearest millions. By way of explanation, $8M + $42M - $8M = $42M.
[25] UFE is energy that is lost within the distribution system and is not metered through customer meters. CIM refers to inactive accounts. UFE and CIM reductions are primary benefit opportunities of ComEd's smart meter initiative.
[26] The more precise rate is 14.394%, which is rounded to 14.4% to maintain consistency with reasonable data precision standards.

Table 11-1 ComEd AMI Operational Plan Element - Financial Summary ($ in thousands)

ITEM	ACCELERATED SCENARIO (COMPLETION BY 2018)	13-0285 SCENARIO	DIFFERENCE
A. COSTS			
Operation and Maintenance (O&M) Expense for AMI System[1]	999,158	961,164	37,995
New Capital Investment for AMI System	1,115,617	1,111,214	4,402
Subtotal	**2,114,775**	**2,072,378**	**42,397**
B. OPERATIONAL BENEFITS AND DELIVERY SERVICE REVENUES			
Operational Efficiencies and Cost Reductions	1,905,501	1,813,003	92,498
Avoidance of Capital Expenditures	2,367	2,367	0
Collection of Delivery Service Revenues Due to Reduction in UFE and CIM	542,339	514,337	28,002
Subtotal	**2,450,207**	**2,329,707**	**120,500**
C. ADDITIONAL BENEFITS (ENERGY, TRANSMISSION, AND OTHER RIDER COST REDUCTIONS AND REVENUES)			
Reduction in Energy Purchased Power Costs Due to Reduction in UFE and CIM[2]	463,367	439,240	24,127
Collection of Energy and Other Revenues Due to Reduction in UFE and CIM	688,150	652,318	35,832
Reduction in Charge-off Expenses[3]	619,456	587,649	31,807
Subtotal	**1,770,973**	**1,679,207**	**91,766**
D. SUMMARY			
Total Costs	**2,114,775**	**2,072,378**	**42,397**
Total Benefits	**4,221,180**	**4,008,914**	**212,266**
Benefits Less Costs	**2,106,405**	**1,936,536**	**169,869**
Benefits to Cost Ratio	**2.0**	**1.9**	**0.1**
Benefits Less Costs, NPV[4]	**879,468**	**794,541**	**84,926**
Discounted Payback Period	14 years (2025)	14 years (2025)	

[1]Includes outreach and education costs.
[2]Energy purchased power costs include power costs, transmission rights, and other related energy costs.
[3]This benefit has been relabeled; previously, it was titled "Bad Debt." The calculation method has been updated for the Accelerated and 13-0285 Scenarios.
[4]NPV calculation is based on a discount rate = 3.530% (a recent 20 year Treasury Bond rate). The NPV and discounted payback period presented in this analysis represent the discounted difference between the costs to consumers (consumer rates) and the costs to consumers under the existing system, without AMI. For convenience, the net of all these costs and benefits is defined as the *net customer impact*. Calculation of this net customer impact is shown in Appendix A, Table A-4, and Appendix B, Table B-4. Furthermore, in Table 11-1 under Item B (*Collection of Delivery Service Revenues Due to Reduction in UFE and CIM*) and under Item C (*Collection of Energy Revenues Due to Reduction in UFE and CIM*) isolate *revenue* impacts. In reality, these revenue impacts mean that the number of billing units (kilowatt-hour [kWh], bills, and kilowatt [kW]) used to design rates will *increase*. Through the ratemaking process, this will *reduce*

customer rates and costs overall. In summary each of the benefits described in Table 11-1 will flow to customers and is captured in the NPV result, but some of the benefits require a ratemaking process to pass through to customers.

Finally, while Black & Veatch has not formally reflected additional benefit opportunities in the model and this report, accelerating the meter deployment should also advance the other smart meter-related opportunities associated with AMI. These are identified in Black & Veatch's earlier report (part of Docket No. 12-0298) as well as here. Opportunities in areas of other demand response efforts, distributed generation and distribution system improvements thru and supported by smart metering are enhanced by the accelerated availability of smart meters.

Appendix A. Cost and Benefit Analysis Model Excerpts (Accelerated Scenario)

Table A-1 AMI Driven Benefits

#	AMI DRIVEN BENEFITS	SUM 20 YEARS 2012-2031	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
1	UTILITY: Items that Impact O&M	($1,000s) -->																				
2	Related to the Meter Reading Function																					
3	Elimination manual reading expenses: Direct Labor	836,996.4	0.0	196.7	1,266.7	7,304.2	16,155.2	25,831.0	36,134.7	43,313.7	45,260.0	47,461.8	49,590.3	52,008.5	54,451.7	56,964.4	59,509.4	62,166.2	65,224.1	68,221.2	71,258.7	74,678.0
4	Elimination manual reading expenses: Incentive	36,477.4	0.0	8.6	55.2	318.3	704.1	1,125.7	1,574.8	1,887.7	1,972.5	2,068.4	2,161.2	2,266.6	2,373.1	2,482.6	2,593.5	2,709.3	2,842.6	2,973.2	3,105.5	3,254.6
5	Elimination manual reading expenses: Benefit and Pensions	357,225.3	0.0	0.0	112.7	578.1	5,475.0	10,274.2	14,739.9	18,258.7	19,713.5	20,656.1	21,606.6	22,629.5	23,723.5	24,811.3	25,927.1	27,063.4	28,394.2	29,711.2	31,042.6	32,507.9
6	Elimination manual reading expenses: Vehicles	85,941.4	0.0	20.2	130.1	750.0	1,658.8	2,652.3	3,710.2	4,447.4	4,647.2	4,873.3	5,091.9	5,340.1	5,591.0	5,849.0	6,110.3	6,383.1	6,697.1	7,004.8	7,316.7	7,667.8
7	Elimination manual reading expenses: Office, Reimbursed	14,211.7	0.0	4.1	26.1	147.9	321.2	504.2	692.5	814.9	835.9	860.5	882.7	908.8	934.1	959.3	983.9	1,009.0	1,039.3	1,067.1	1,094.3	1,125.8
8	Elimination manual reading expenses: Injuries, Damages	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Elimination manual reading expenses: Training and Recruitment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Elimination manual reading expenses: Materials	14,211.4	0.0	4.1	26.1	147.9	321.2	504.2	692.4	814.8	835.9	860.5	882.7	908.8	934.1	959.3	983.8	1,009.0	1,039.2	1,067.1	1,094.2	1,125.8
11	Elimination manual reading expenses: Overtime	15,974.4	0.0	3.8	24.2	139.4	308.3	493.0	689.6	826.7	863.8	905.8	946.5	992.6	1,039.2	1,087.2	1,135.8	1,186.5	1,244.8	1,302.0	1,360.0	1,425.3
12	Avoided Expense of the Itron PP4 system - HW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	Avoided Expense of the Itron PP4 system - O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	Avoided Meter Read System Software Maintenance	1,547.5	0.0	0.0	0.0	33.6	69.9	72.6	75.5	78.4	81.5	84.7	88.0	91.4	95.0	98.7	102.5	106.5	110.7	115.0	119.5	124.1
15	Avoided Maintenance of IT Servers (Itron PP4)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	Related to the Field Meter Services Function																					
17	Reduction in FMS expenses: Direct Labor	143,969.1	0.0	0.0	-79.4	646.3	1,624.1	2,721.0	4,207.5	7,088.2	8,123.0	8,500.5	9,106.1	9,490.8	9,841.5	10,316.2	10,753.4	11,286.3	11,765.4	12,377.1	12,916.7	13,284.4
18	Reduction in FMS expenses: Incentive	7,924.3	0.0	0.0	-4.4	35.6	89.4	149.8	231.6	390.1	447.1	467.9	501.2	522.4	541.7	567.8	591.9	621.2	647.6	681.3	711.0	731.2
19	Reduction in FMS expenses: Benefit and Pensions	118,341.9	0.0	0.0	-65.2	531.2	1,335.0	2,236.6	3,458.5	5,826.5	6,677.1	6,987.4	7,485.1	7,801.4	8,089.7	8,479.9	8,839.3	9,277.3	9,671.1	10,173.9	10,617.5	10,919.7
20	Reduction in FMS expenses: Vehicles	18,322.3	0.0	0.0	-10.1	82.3	206.7	346.3	535.5	902.1	1,033.8	1,081.8	1,158.9	1,207.8	1,252.5	1,312.9	1,368.5	1,436.4	1,497.3	1,575.2	1,643.9	1,690.6
21	Reduction in FMS expenses: Office, Reimbursed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	Reduction in FMS expenses: Injuries, Damages	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	Reduction in FMS expenses: Other Premiums	14,951.6	0.0	0.0	-8.2	67.1	168.7	282.6	437.0	736.1	843.6	882.8	945.7	985.6	1,022.1	1,071.4	1,116.8	1,172.1	1,221.9	1,285.4	1,341.4	1,379.6
24	Reduction in FMS expenses: Materials	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	Reduction in FMS expenses: Overtime	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	Adjustment: Portion of FMS Labor Reduction to be Capitalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	AMR: Avoided communication costs (MV90, SmartSync)	12,880.1	0.0	0.0	0.0	0.0	0.0	613.0	641.6	671.6	702.8	735.6	769.7	805.5	842.8	881.9	922.7	965.3	1,009.9	1,056.5	1,105.2	1,156.0
28	AMR: Avoided software maintenance (MV90, SmartSync)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	Salvage Value of Replaced Meters	2,474.5	0.0	33.2	284.1	545.7	557.9	573.3	480.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	Related to the Billing Function																					
31	Reduction in Billing expenses: Direct Labor	41,947.5	0.0	0.0	0.0	185.5	669.8	934.8	1,230.7	1,544.1	1,767.5	2,130.2	2,395.1	2,813.4	2,943.9	3,080.2	3,222.8	3,371.7	3,694.8	3,690.1	4,043.3	4,229.4
32	Reduction in Billing expenses: Benefit and Pensions	31,880.1	0.0	0.0	0.0	140.9	509.0	710.5	935.3	1,173.5	1,343.3	1,619.0	1,820.3	2,138.2	2,237.3	2,341.0	2,449.3	2,562.5	2,808.1	2,804.5	3,072.9	3,214.4
33	Reduction in Billing expenses: Overtime	6,049.3	0.0	0.0	0.0	28.8	103.3	143.0	186.9	232.8	264.6	316.6	353.4	412.2	428.2	444.9	462.3	480.3	522.7	518.5	564.3	586.3
34	Related to the Call Center Function																					
35	Reduction in Call Center expenses: Direct Labor (including P&B)	3,133.6	0.0	0.0	4.2	6.4	24.2	60.5	99.3	141.5	179.5	187.9	196.6	205.7	215.3	225.2	235.6	246.5	257.9	269.8	282.2	295.2
36	Reduction in Call Center expenses: Benefit and Pensions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	Related to the OMS Function																					
38	Reduced single lights-out trips	9,884.4	0.0	11.0	16.9	64.7	162.9	269.6	386.9	494.4	521.2	549.4	579.1	610.3	643.1	677.7	714.0	752.2	792.3	834.5	878.9	925.6
39	Improved outage restoration (reduction in storm overtime)	131,156.7	0.0	145.7	224.0	858.4	2,160.9	3,576.7	5,133.5	6,559.8	6,915.5	7,289.9	7,683.6	8,097.8	8,533.5	8,991.8	9,473.7	9,980.4	10,513.3	11,073.6	11,662.7	12,282.0

#	AMI DRIVEN BENEFITS	SUM 20 YEARS 2012-2031	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
40	**Subtotal, O&M Impacts**	**1,905,500.9**	**0.0**	**427.3**	**2,002.9**	**12,612.5**	**32,625.6**	**54,074.8**	**76,274.2**	**96,202.9**	**103,029.4**	**108,519.9**	**114,244.5**	**120,237.3**	**125,733.3**	**131,602.6**	**137,496.5**	**143,785.3**	**150,994.3**	**157,802.0**	**165,231.6**	**172,603.7**
41																						
42																						
43	**UTILITY: Items that Impact Capital Budgets (Avoided Capital Costs**																					
44	Avoided Purchase Costs of new Meters (Growth)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	Avoided Installation Costs of new Meters (Growth)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	Avoided Purchase Costs of new Meters (Failures)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	Avoided Meter Capital (for investment refresh) -- Meter Purchase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	Avoided Meter Capital (for investment refresh) -- Labor	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49	Avoided RRTP Meter Capital	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	Avoided Handheld System Software Upgrade	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51	Avoided IT Hardware purchases for AMR (MV90, SmartSync)	2,367.2	0.0	625.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	777.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	963.8	0.0	0.0
52	Placeholder -- FMS Installation Labor (Capitalized) (Routine Work -- Failures, Growth)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53	**Subtotal, Capital Budget Impacts**	**2,367.2**	**0.0**	**625.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**777.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**963.8**	**0.0**	**0.0**
54																						
55	**UTILITY: Items that Impact Working Capital**																					
56	Reduction in working capital	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	**Subtotal, Working Capital Impacts**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
58																						
59	**UTILITY: Other Items**																					
60	SAIDI/CAIDI Reduction (Customer Average Interruption Duration Index)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61	**Subtotal, Other Items**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
62																						
63	**CUSTOMER BENEFITS**																					
64	Improved Meter Accuracy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	Total CIM-related benefit	1,023,351.0	0.0	0.0	0.0	10,136.8	24,286.1	35,338.1	47,200.5	55,317.1	57,532.1	59,686.9	61,919.2	64,231.7	66,627.3	69,108.8	71,679.2	74,341.6	77,099.3	79,955.5	82,913.7	85,977.4
66	Total UFE-related benefit	670,504.8	0.0	0.0	0.0	6,788.7	16,004.0	23,173.1	30,913.2	36,229.1	37,679.7	39,091.0	40,553.0	42,067.6	43,636.5	45,261.7	46,945.2	48,688.9	50,495.0	52,365.6	54,303.0	56,309.6
67	Total Bad Debt related benefit	619,456.4	0.0	0.0	0.0	5,802.9	14,425.8	20,912.9	28,625.2	33,547.6	34,890.9	36,197.7	37,551.5	38,954.0	40,406.8	41,911.7	43,470.6	45,085.2	46,757.7	48,489.8	50,283.9	52,141.9
68	**Subtotal, Customer Impacts**	2,313,312.2	0.0	0.0	0.0	22,728.4	54,715.9	79,424.1	106,738.9	125,093.8	130,102.7	134,975.6	140,023.7	145,253.3	150,670.6	156,282.2	162,094.9	168,115.7	174,351.9	180,810.9	187,500.6	194,428.9

Table A-2 AMI Cost Details

#	AMI COSTS	SUM 20 YEARS 2012-2031	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
1	**Summary Results ($1000's)**																					
2	**Capital Items - Summary**																					
3	Meters	844,450.2	54,987.9	18,332.6	103,457.8	168,009.0	169,055.8	171,810.1	125,351.0	1,569.4	1,569.4	1,569.4	2,624.5	2,677.0	2,730.5	2,785.2	2,840.9	2,897.7	2,955.6	3,014.7	3,075.0	3,136.5
4	Meters - Labor	192,427.8	0.4	2,661.7	21,749.0	41,825.9	43,229.3	44,915.3	38,046.1	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Meters - HW	5,015.1	2,815.1	-	2,200.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	Meters - SW	23,893.7	23,893.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Meters - Other	623,113.6	28,278.7	15,670.9	79,508.9	126,183.1	125,826.5	126,894.8	87,304.9	1,569.4	1,569.4	1,569.4	2,624.5	2,677.0	2,730.5	2,785.2	2,840.9	2,897.7	2,955.6	3,014.7	3,075.0	3,136.5
8	Communication System	83,723.1	77.2	18,808.5	7,135.9	11,707.6	12,930.4	12,903.8	11,189.6	1,147.6	573.8	593.3	622.3	631.3	640.5	650.0	659.6	669.5	679.7	690.1	700.7	711.6
9	Comm Sys - Labor	2,738.8	-	16.9	405.1	509.3	574.3	556.3	339.0	20.5	21.3	22.1	22.9	23.8	24.8	25.7	26.7	27.8	28.9	30.0	31.2	32.4
10	Comm Sys - HW	14,233.7	-	256.7	1,797.7	2,759.5	3,209.5	3,303.6	2,906.7	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Comm Sys - SW	16,360.0	-	16,360.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Comm Sys - Other	50,390.6	77.2	2,175.0	4,933.2	8,438.8	9,146.6	9,043.9	7,943.9	1,127.2	552.5	571.2	599.4	607.5	615.8	624.2	632.9	641.7	650.8	660.1	669.6	679.3
13	Information Technology Applications and Operations	143,218.4	182.8	10,259.1	44,744.4	26,375.7	13,349.0	4,303.2	10,919.6	1,000.0	1,000.0	1,000.0	1,000.0	9,832.6	3,500.0	-	-	3,000.0	9,752.0	-	3,000.0	-
14	IT - Labor	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	IT - HW	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	IT - SW	9,000.0	-	0.0	-	-	-	-	-	-	-	-	-	-	3,000.0	-	-	3,000.0	-	-	3,000.0	-
17	IT - Other	134,218.4	182.8	10,259.1	44,744.4	26,375.7	13,349.0	4,303.2	10,919.6	1,000.0	1,000.0	1,000.0	1,000.0	9,832.6	500.0	-	-	-	9,752.0	-	-	-
18	Management and Other Costs	44,225.1	122.3	1,303.6	7,247.7	9,724.0	8,759.7	7,420.5	7,406.4	727.8	748.5	764.7	-	-	-	-	-	-	-	-	-	-
19	Mgmt / Other - Labor	44,225.1	122.3	1,303.6	7,247.7	9,724.0	8,759.7	7,420.5	7,406.4	727.8	748.5	764.7	-	-	-	-	-	-	-	-	-	-
20	Mgmt / Other - HW	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	Mgmt / Other - SW	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	Mgmt / Other - Other	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	**Subtotal, Capital**	1,115,616.8	**55,370.1**	**48,703.9**	**162,585.9**	**215,816.3**	**204,095.0**	**196,437.6**	**154,866.5**	**4,444.8**	**3,891.7**	**3,927.4**	**4,246.8**	**13,141.0**	**6,871.1**	**3,435.1**	**3,500.5**	**6,567.2**	**13,387.3**	**3,704.8**	**6,775.8**	**3,848.2**
24																						
25	**O&M Items - Summary**																					
26	Meters and Modules	50,994.9	8,351.4	2,024.7	3,473.3	6,136.4	6,923.7	7,314.6	15,513.8	532.1	386.8	242.1	96.2	-	-	-	-	-	-	-	-	-
27	Meters - Labor	23,570.6	3,454.4	149.8	1,248.7	2,400.0	2,505.5	2,602.8	11,209.4	-	-	-	-	-	-	-	-	-	-	-	-	-
28	Meters - Materials	551.3	551.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	Meters - Services	26,873.0	4,345.7	1,874.9	2,224.6	3,736.3	4,418.3	4,711.7	4,304.4	532.1	386.8	242.1	96.2	-	-	-	-	-	-	-	-	-
30	Communication System	243,653.5	2,828.3	4,817.6	5,820.8	7,363.8	8,887.0	10,682.9	12,887.5	13,596.6	13,923.4	14,240.7	14,142.4	14,291.6	14,444.4	14,601.2	14,761.8	14,926.5	15,095.3	15,268.3	15,445.8	15,627.7
31	Comm Sys - Labor	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	Comm Sys - Materials	10,730.1	-	-	-	-	-	3.6	149.4	335.8	537.0	725.2	839.6	852.6	865.5	878.5	891.4	904.4	917.3	930.3	943.2	956.2
33	Comm Sys - Services	232,923.4	2,828.3	4,817.6	5,820.8	7,363.8	8,887.0	10,679.3	12,738.1	13,260.8	13,386.4	13,515.5	13,302.7	13,439.0	13,578.9	13,722.7	13,870.4	14,022.1	14,177.9	14,338.1	14,502.5	14,671.5
34	Information Technology Applications and Operations	533,308.7	8,234.1	11,265.6	16,622.7	19,655.2	22,634.5	22,272.7	22,543.0	23,101.7	23,916.8	24,763.6	29,052.1	30,009.7	31,003.8	32,035.8	33,107.1	34,219.2	35,373.7	36,572.3	37,816.7	39,108.5
35	IT - Labor	353,021.7	8,111.9	10,433.3	14,559.5	16,547.0	18,417.4	16,140.3	15,424.4	15,335.9	15,934.0	16,555.4	17,201.1	17,871.9	18,568.9	19,293.1	20,045.5	20,827.3	21,639.6	22,483.5	23,360.4	24,271.4
36	IT - Materials	33,660.0	-	-	-	-	-	-	-	-	-	-	3,366.0	3,366.0	3,366.0	3,366.0	3,366.0	3,366.0	3,366.0	3,366.0	3,366.0	3,366.0
37	IT - Services	146,627.0	122.2	832.2	2,063.2	3,108.2	4,217.1	6,132.4	7,118.6	7,765.8	7,982.8	8,208.2	8,485.1	8,771.8	9,068.9	9,376.7	9,695.5	10,025.9	10,368.2	10,722.8	11,090.3	11,471.1
38	Management and Other Costs	171,201.2	5,384.5	11,289.7	19,885.4	16,477.9	16,426.6	16,402.4	14,493.3	5,962.7	4,380.5	4,544.3	4,714.4	4,890.9	5,074.2	5,264.5	5,462.0	5,667.1	5,880.1	6,101.1	6,330.7	6,569.0
39	Mgmt / Other - Labor	144,257.8	5,181.5	10,869.8	18,633.1	15,269.3	15,227.4	15,211.8	13,268.5	4,696.9	3,072.3	3,192.1	3,316.6	3,445.9	3,580.3	3,720.0	3,865.0	4,015.8	4,172.4	4,335.1	4,504.2	4,679.8
40	Mgmt / Other - Materials	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	Mgmt / Other - Services	26,943.5	203.1	419.9	1,252.3	1,208.6	1,199.2	1,190.6	1,224.7	1,265.7	1,308.2	1,352.2	1,397.8	1,445.0	1,493.9	1,544.5	1,597.0	1,651.3	1,707.7	1,766.0	1,826.5	1,889.2
42	**Subtotal, O&M**	999,158.4	24,798.4	29,397.6	45,802.2	49,633.2	54,871.8	56,672.6	65,437.5	43,193.1	42,607.5	43,790.7	48,005.1	49,192.2	50,522.5	51,901.4	53,330.9	54,812.8	56,349.1	57,941.8	59,593.1	61,305.2
43																						
44	**Grand Total, Capital + O&M**	**2,114,775.2**	**80,168.5**	**78,101.4**	**208,388.1**	**265,449.5**	**258,966.8**	**253,110.1**	**220,304.0**	**47,637.8**	**46,499.1**	**47,718.1**	**52,251.9**	**62,333.2**	**57,393.5**	**55,336.5**	**56,831.4**	**61,380.0**	**69,736.3**	**61,646.6**	**66,368.9**	**65,153.4**

Table A-3 Deployment (6 Year Plan)

#	DEPLOYMENT DETAILS	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
1	**Populations (End of Period Values)**																				
2	Total # Meter Population (end of period) ("As Is" and "To Be")	4,189,004	4,221,008	4,253,012	4,285,016	4,317,020	4,349,024	4,381,028	4,413,032	4,445,036	4,477,040	4,509,044	4,541,048	4,573,052	4,605,056	4,637,060	4,669,064	4,701,068	4,733,072	4,765,076	4,797,080
3	Total # EM Meters (end of period) ("To Be") - including RRTP & IDR	4,060,994	4,032,998	3,564,810	2,630,006	1,700,102	760,629	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	# Mass Smart Grid Meters (end of period)	128,010	188,010	688,202	1,551,170	2,511,542	3,480,667	4,170,276	4,200,744	4,231,212	4,261,680	4,292,148	4,322,616	4,353,084	4,383,552	4,414,020	4,444,488	4,474,956	4,505,424	4,535,892	4,566,360
5	# Rural Smart Grid Meters (end of period)	-	-	-	768	1,536	3,120	105,376	106,144	106,912	107,680	108,448	109,216	109,984	110,752	111,520	112,288	113,056	113,824	114,592	115,360
6	# Urban Smart Grid Meters (end of period)	-	-	-	103,072	103,840	104,608	105,376	106,144	106,912	107,680	108,448	109,216	109,984	110,752	111,520	112,288	113,056	113,824	114,592	115,360
7	Total # Smart Grid Meters (end of period)	128,010	188,010	688,202	1,655,010	2,616,918	3,588,395	4,381,028	4,413,032	4,445,036	4,477,040	4,509,044	4,541,048	4,573,052	4,605,056	4,637,060	4,669,064	4,701,068	4,733,072	4,765,076	4,797,080
8	% of Smart Grid Meters (end of period)	3.1%	4.5%	16.2%	38.6%	60.6%	82.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
9	Electric Additions	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004
10																					
11	**Current System Read Performance**																				
12	# Electric Reads (seasonality adjustment, "As Is")	43,671,620	44,017,263	44,362,906	44,708,549	45,054,193	45,399,836	45,745,479	46,091,122	46,436,765	46,782,409	47,128,052	47,473,695	47,819,338	48,164,981	48,510,625	48,856,268	49,201,911	49,547,554	49,893,197	50,238,841
13	# Electric Reads (seasonality adjustment, "To Be")	43,700,369	44,044,159	42,811,213	35,807,943	25,765,534	15,683,430	5,710,553	213,121	91,211	91,211	91,211	91,211	91,211	91,211	91,211	91,211	91,211	91,211	91,211	91,211
14																					
15	**EM Replacements due to Failures**																				
16	Failures: Electric EM Failures Under the "As Is" Scenario	33,396	33,650	33,907	34,163	34,419	34,674	34,930	35,188	35,442	35,700	35,954	36,214	36,465	36,725	36,977	37,238	37,488	37,750	37,999	38,263
17	Failures: Residual Electric EM Failures Replaced as EM	32,372	32,536	30,762	24,490	17,044	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	Failures: Electric EM Failures Avoided	1,024	1,114	3,145	9,673	17,375	34,674	34,930	35,188	35,442	35,700	35,954	36,214	36,465	36,725	36,977	37,238	37,488	37,750	37,999	38,263
19	Failures: Electric EM Failures Replaced as Smart Grid	-	-	-	-	-	9,569	2,507	-	-	-	-	-	-	-	-	-	-	-	-	-
20																					
21	**EM Additions, or Avoided EM Additions, Associated with Growth**																				
22	Growth: Electric EM Growth Additions Under the "As Is" Scenario	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004
23	Growth: Residual Electric EM Growth under the "To Be" Scenario	32,004	32,004	32,004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	Growth: Electric EM Growth Avoided (Difference, As Is and To Be)	-	-	-	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004
25	EM Electric Meters Remaining (end of year) ("To Be")	4,060,994	4,032,998	3,564,810	2,630,006	1,700,102	760,629	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	Quantity EM and AMR Electric Reads (per year) ("To Be")	48,555,966	48,804,954	46,141,900	36,739,916	25,570,637	14,341,776	3,756,787	-	-	-	-	-	-	-	-	-	-	-	-	-
27																					
28	**AMI Smart Meter Devices (Electric)**																				
29	Smart Grid Planned Deployment (Pilot Only)	128,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	Smart Grid Planned Deployment (Pilot + Core)	128,010	60,000	500,192	934,804	929,904	929,904	758,122	-	-	-	-	-	-	-	-	-	-	-	-	-
31	Smart Grid Planned Deployment (Core Only)	10	60,000	500,192	934,804	929,904	929,904	758,122	-	-	-	-	-	-	-	-	-	-	-	-	-
32	Growth Electric Meters (installed as Smart Grid)	-	-	-	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004
33	Total Smart Grid Deployed (not counting Smart Grid failures) (Includes Pilot)	128,010	60,000	500,192	966,808	961,908	971,477	792,633	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004
34	Cumulative Smart Grid Installations (not counting Smart Grid failures) [Includes Pilot]	128,010	188,010	688,202	1,655,010	2,616,918	3,588,395	4,381,028	4,413,032	4,445,036	4,477,040	4,509,044	4,541,048	4,573,052	4,605,056	4,637,060	4,669,064	4,701,068	4,733,072	4,765,076	4,797,080
35																					
36	**AMI Failure Related Replacement Work**																				
37	Failed Smart Grid Meters (for installation, warranty replacement, or replacement)	1,280	1,393	3,932	12,087	21,715	31,392	40,533	43,984	44,304	44,624	44,944	45,264	45,584	45,904	46,224	46,544	46,864	47,184	47,504	47,824
38																					
39																					

40	**AMI Network Services and Equipment Provisioning**																			
41	Repeaters (Mass, Rural, High Rise, Growth)	-	328	1,968	1,968	1,968	328	54	54	54	54	54	54	54	54	54	54	54	54	54
42	Takeout Pts (Mass, Rural, High Rise, Growth)	-	70	423	423	423	70	11	11	11	11	11	11	11	11	11	11	11	11	11
43	Total # Devices Installed (Mass, Rural, High Rise, Growth)	-	398	2,391	2,391	2,391	398	65	65	65	65	65	65	65	65	65	65	65	65	65
44	Failures, Repeaters	0	0	0	0	0	0	331	333	336	339	342	344	347	350	352	355	358	360	363	366
45	Failures, Takeouts	0	0	0	0	0	0	71	72	72	73	73	74	74	75	75	76	77	77	78	78
46	Battery Replacements	0	0	0	0	0	0	0	-	398	2,391	2,391	2,391	398	65	-	398	2,391	2,391	2,391	398

Table A-4 Net Customer Impact

#	SUMMARY RESULTS -- NET CUSTOMER IMPACT -- (NOMINAL $1,000S)	SUM 20 YEARS 2012-2031	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
1	O&M Benefits	1,905,500.9	0.0	427.3	2,002.9	12,612.5	32,625.6	54,074.8	76,274.2	96,202.9	103,029.4	108,519.9	114,244.5	120,237.3	125,733.3	131,602.6	137,496.5	143,785.3	150,994.3	157,802.0	165,231.6	172,603.7
2	**Total AMI O&M Savings**	**1,905,500.9**	**0.0**	**427.3**	**2,002.9**	**12,612.5**	**32,625.6**	**54,074.8**	**76,274.2**	**96,202.9**	**103,029.4**	**108,519.9**	**114,244.5**	**120,237.3**	**125,733.3**	**131,602.6**	**137,496.5**	**143,785.3**	**150,994.3**	**157,802.0**	**165,231.6**	**172,603.7**
3																						
4	**O&M Expenses**																					
5	Meters and Modules	(50,994.9)	(8,351.4)	(2,024.7)	(3,473.3)	(6,136.4)	(6,923.7)	(7,314.6)	(15,513.8)	(532.1)	(386.8)	(242.1)	(96.2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Communication System	(243,653.5)	(2,828.3)	(4,817.6)	(5,820.8)	(7,363.8)	(8,887.0)	(10,682.9)	(12,887.5)	(13,596.6)	(13,923.4)	(14,240.7)	(14,142.4)	(14,291.6)	(14,444.4)	(14,601.2)	(14,761.8)	(14,926.5)	(15,095.3)	(15,268.3)	(15,445.8)	(15,627.7)
7	Information Technology Applications and Operations	(533,308.7)	(8,234.1)	(11,265.6)	(16,622.7)	(19,655.2)	(22,634.5)	(22,272.7)	(22,543.0)	(23,101.7)	(23,916.8)	(24,763.6)	(29,052.1)	(30,009.7)	(31,003.8)	(32,035.8)	(33,107.1)	(34,219.2)	(35,373.7)	(36,572.3)	(37,816.7)	(39,108.5)
8	Management and Other Costs	(171,201.2)	(5,384.5)	(11,289.7)	(19,885.4)	(16,477.9)	(16,426.6)	(16,402.4)	(14,493.3)	(5,962.7)	(4,380.5)	(4,544.3)	(4,714.4)	(4,890.9)	(5,074.2)	(5,264.5)	(5,462.0)	(5,667.1)	(5,880.1)	(6,101.1)	(6,330.7)	(6,569.0)
9	**Total AMI O&M Expenses**	**(999,158.4)**	**(24,798.4)**	**(29,397.6)**	**(45,802.2)**	**(49,633.2)**	**(54,871.8)**	**(56,672.6)**	**(65,437.5)**	**(43,193.1)**	**(42,607.5)**	**(43,790.7)**	**(48,005.1)**	**(49,192.2)**	**(50,522.5)**	**(51,901.4)**	**(53,330.9)**	**(54,812.8)**	**(56,349.1)**	**(57,941.8)**	**(59,593.1)**	**(61,305.2)**
10																						
11	**Depreciation, Taxes, and Total Cost to Customers (pre UFE, CIM and Bad Debt adjusted)**																					
12	Net Change in Operation and Maintenance Expenses	906,342.5	(24,798.4)	(28,970.3)	(43,799.3)	(37,020.8)	(22,246.2)	(2,597.7)	10,836.7	53,009.9	60,421.9	64,729.2	66,239.5	71,045.1	75,210.9	79,701.2	84,165.7	88,972.6	94,645.2	99,860.2	105,638.5	111,298.5
13	Net Change in Book Depreciation	(1,063,850.6)	(1,869.1)	(9,808.4)	(21,435.6)	(43,341.5)	(63,786.5)	(75,969.8)	(83,784.5)	(80,540.0)	(71,469.0)	(65,633.9)	(62,192.8)	(58,213.4)	(59,440.0)	(59,955.8)	(59,931.1)	(59,091.6)	(56,644.0)	(53,524.4)	(44,113.4)	(33,105.8)
14	Net Change in Taxes, Other than Income Taxes	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Net Change in Income Taxes	(173,464.1)	(1,343.4)	(2,381.6)	(6,322.4)	(11,087.0)	(15,061.3)	(18,313.0)	(19,958.5)	(17,409.6)	(15,183.1)	(13,161.5)	(11,314.6)	(9,821.0)	(8,169.4)	(6,549.5)	(5,127.6)	(4,004.1)	(3,258.2)	(2,297.5)	(1,624.3)	(1,076.7)
16	Net Change in Return	(432,714.3)	(3,543.0)	(6,041.6)	(16,026.6)	(27,957.2)	(37,582.9)	(45,505.3)	(49,672.9)	(43,329.3)	(37,787.8)	(32,756.4)	(28,159.8)	(24,442.5)	(20,332.0)	(16,300.4)	(12,761.6)	(9,965.4)	(8,109.0)	(5,718.1)	(4,042.5)	(2,679.8)
17	Accelerated Recovery of Retired Meters	42,317.2	171.2	(2,248.8)	(8,271.8)	(13,466.5)	(15,911.8)	(15,692.6)	(6,846.9)	1,426.3	1,494.5	1,651.9	1,871.3	3,357.9	7,402.3	11,842.2	14,321.1	14,728.9	13,880.1	12,531.3	10,757.4	9,319.2
18	**Total Cost to Customers (Before UFE, CIM and Bad Debt Expense Related Benefits)**	**(721,369.4)**	**(31,382.7)**	**(49,450.7)**	**(95,855.6)**	**(132,873.0)**	**(154,588.7)**	**(158,078.4)**	**(149,426.1)**	**(86,842.8)**	**(62,523.4)**	**(45,170.8)**	**(33,556.3)**	**(18,073.9)**	**(5,328.2)**	**8,737.7**	**20,666.4**	**30,640.3**	**40,514.1**	**50,851.6**	**66,615.8**	**83,755.3**
19																						
20	**UFE, CIM and Bad Debt Expense-Related Benefits**																					
21	Collection of Delivery Service Revenues due to Changes to UFE and CIM	542,338.9	0.0	0.0	0.0	5,153.7	12,734.6	18,699.2	25,033.5	29,338.3	30,513.0	31,655.9	32,839.8	34,066.3	35,336.8	36,652.9	38,016.2	39,428.2	40,890.8	42,405.6	43,974.6	45,599.5
22	Reduction in Energy Purchase Power & Other Costs Due to Changes to UFE and CIM	463,366.9	0.0	0.0	0.0	4,736.9	11,088.2	16,020.2	21,359.3	25,032.3	26,034.6	27,009.7	28,019.9	29,066.3	30,150.4	31,273.3	32,436.5	33,641.3	34,889.2	36,181.7	37,520.4	38,906.8
23	Collection in Energy/Other Revenues Due to Changes to UFE and CIM	688,150.0	0.0	0.0	0.0	7,034.8	16,467.2	23,791.8	31,720.9	37,175.6	38,664.2	40,112.3	41,612.5	43,166.7	44,776.6	46,444.2	48,171.7	49,961.0	51,814.2	53,733.8	55,721.8	57,780.8
24	Reduction in Bad Debt Expenses	619,456.4	0.0	0.0	0.0	5,802.9	14,425.8	20,912.9	28,625.2	33,547.6	34,890.9	36,197.7	37,551.5	38,954.0	40,406.8	41,911.7	43,470.6	45,085.2	46,757.7	48,489.8	50,283.9	52,141.9
25	**Total Additional Benefits**	**2,313,312.2**	**0.0**	**0.0**	**0.0**	**22,728.4**	**54,715.9**	**79,424.1**	**106,738.9**	**125,093.8**	**130,102.7**	**134,975.6**	**140,023.7**	**145,253.3**	**150,670.6**	**156,282.2**	**162,094.9**	**168,115.7**	**174,351.9**	**180,810.9**	**187,500.6**	**194,428.9**
26																						
27	**Net Customer Impact (Change in Customer Costs)**																					
28	Net Impact to Customer Costs	1,591,942.8	(32,970.8)	(48,052.3)	(95,124.2)	(109,047.2)	(98,376.4)	(76,917.1)	(45,248.6)	40,004.5	66,658.7	88,094.6	104,265.1	125,802.6	145,267.7	164,371.7	181,533.9	197,039.2	212,286.3	230,131.7	252,069.0	275,731.8
29																						
30	**Cumulative Net Customer Impact (Change in Customer Costs)**																					
31	Cumulative Net Impact to Customer Costs	1,591,942.8	(32,970.8)	(81,023.1)	(176,147.3)	(285,194.5)	(383,571.0)	(460,488.1)	(505,736.7)	(465,732.1)	(399,073.4)	(310,978.8)	(206,713.8)	(80,911.2)	64,356.6	228,728.3	410,262.2	607,301.4	819,587.7	1,049,719.5	1,301,788.5	1,577,520.3
32																						
33	**Net Present Value of Net Customer Impact**																					
34	Cumulative Net Present Value (NPV)	**879,467.6**	**(31,382.7)**	**(80,833.4)**	**(176,689.0)**	**(283,078.1)**	**(376,256.4)**	**(447,136.4)**	**(484,292.7)**	**(452,133.0)**	**(397,252.7)**	**(326,810.0)**	**(246,144.6)**	**(153,072.3)**	**(50,334.5)**	**62,335.4**	**182,863.9**	**309,471.4**	**441,674.2**	**579,351.6**	**725,224.0**	**879,467.6**

Appendix B. Cost and Benefit Analysis Model Excerpts (13-0285 Scenario)

Table B-1 AMI Driven Benefits

#	AMI DRIVEN BENEFITS	SUM 20 YEARS 2012-2031	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
1	UTILITY: Items that Impact O&M	($1,000s) -->																				
2	Related to the Meter Reading Function																					
3	Elimination manual reading expenses: Direct Labor	794,200.8	0.0	196.7	896.0	3,678.7	10,374.7	18,289.6	27,108.6	34,863.4	39,696.8	45,023.8	49,590.3	52,008.5	54,451.7	56,964.4	59,509.4	62,166.2	65,224.1	68,221.2	71,258.7	74,678.0
4	Elimination manual reading expenses: Incentive	34,602.0	0.0	8.6	39.0	160.3	452.0	796.8	1,181.1	1,518.9	1,729.5	1,961.6	2,160.6	2,265.9	2,372.4	2,481.8	2,592.7	2,708.5	2,841.7	2,972.3	3,104.6	3,253.6
5	Elimination manual reading expenses: Benefit and Pensions	339,631.4	0.0	0.0	39.3	283.1	3,483.9	7,144.9	10,947.0	14,466.5	16,920.4	19,210.2	21,325.6	22,629.5	23,723.5	24,811.3	25,927.1	27,063.4	28,394.2	29,711.2	31,042.6	32,507.9
6	Elimination manual reading expenses: Vehicles	81,591.6	0.0	20.2	92.0	377.9	1,065.8	1,879.0	2,785.0	3,581.7	4,078.2	4,625.5	5,094.6	5,343.1	5,594.1	5,852.2	6,113.7	6,386.6	6,700.7	7,008.7	7,320.7	7,672.0
7	Elimination manual reading expenses: Office, Reimbursed	13,396.9	0.0	4.1	18.5	74.5	206.4	357.2	519.8	656.2	733.6	816.8	883.2	909.3	934.6	959.9	984.4	1,009.5	1,039.8	1,067.7	1,094.9	1,126.4
8	Elimination manual reading expenses: Injuries, Damages	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Elimination manual reading expenses: Training and Recruitment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Elimination manual reading expenses: Materials	13,396.6	0.0	4.1	18.5	74.5	206.4	357.2	519.8	656.2	733.5	816.8	883.1	909.3	934.6	959.8	984.4	1,009.5	1,039.8	1,067.7	1,094.8	1,126.4
11	Elimination manual reading expenses: Overtime	15,165.9	0.0	3.8	17.1	70.2	198.1	349.3	517.7	665.7	758.0	859.8	947.0	993.1	1,039.8	1,087.8	1,136.4	1,187.1	1,245.5	1,302.7	1,360.7	1,426.0
12	Avoided Expense of the Itron PP4 system - HW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	Avoided Expense of the Itron PP4 system - O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	Avoided Meter Read System Software Maintenance	1,547.5	0.0	0.0	0.0	33.6	69.9	72.6	75.5	78.4	81.5	84.7	88.0	91.4	95.0	98.7	102.5	106.5	110.7	115.0	119.5	124.1
15	Avoided Maintenance of IT Servers (Itron PP4)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	Related to the Field Meter Services Function																					
17	Reduction in FMS expenses: Direct Labor	135,678.3	0.0	0.0	-79.4	449.1	1,188.9	2,088.8	3,101.6	4,308.4	5,770.3	7,380.0	9,299.6	9,629.8	9,841.5	10,316.2	10,753.4	11,286.3	11,765.4	12,377.1	12,916.7	13,284.4
18	Reduction in FMS expenses: Incentive	7,502.6	0.0	0.0	-4.4	24.8	65.7	115.5	171.5	238.2	319.1	408.1	514.2	532.5	544.2	570.5	594.6	624.1	650.6	684.4	714.3	734.6
19	Reduction in FMS expenses: Benefit and Pensions	112,044.2	0.0	0.0	-65.5	370.9	981.8	1,725.0	2,561.3	3,557.9	4,765.1	6,094.5	7,679.7	7,952.4	8,127.2	8,519.2	8,880.3	9,320.3	9,716.0	10,221.1	10,666.7	10,970.3
20	Reduction in FMS expenses: Vehicles	17,221.4	0.0	0.0	-10.1	57.0	150.9	265.1	393.7	546.9	732.4	936.7	1,180.4	1,222.3	1,249.2	1,309.4	1,364.9	1,432.6	1,493.4	1,571.0	1,639.5	1,686.2
21	Reduction in FMS expenses: Office, Reimbursed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	Reduction in FMS expenses: Injuries, Damages	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	Reduction in FMS expenses: Other Premiums	14,690.5	0.0	0.0	-8.6	48.6	128.7	226.2	335.8	466.5	624.8	799.1	1,006.9	1,042.7	1,065.6	1,117.0	1,164.3	1,222.0	1,273.9	1,340.1	1,398.6	1,438.4
24	Reduction in FMS expenses: Materials	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	Reduction in FMS expenses: Overtime	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	Adjustment: Portion of FMS Labor Reduction to be Capitalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	AMR: Avoided communication costs (MV90, SmartSync)	12,880.1	0.0	0.0	0.0	0.0	0.0	613.0	641.6	671.6	702.8	735.6	769.7	805.5	842.8	881.9	922.7	965.3	1,009.9	1,056.5	1,105.2	1,156.0
28	AMR: Avoided software maintenance (MV90, SmartSync)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	Salvage Value of Replaced Meters	2,548.5	0.0	33.4	91.4	399.4	464.7	477.6	490.7	186.6	201.8	202.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	Related to the Billing Function																					
31	Reduction in Billing expenses: Direct Labor	41,833.5	0.0	0.0	0.0	185.5	669.8	934.8	1,116.7	1,544.1	1,767.5	2,130.2	2,395.1	2,813.4	2,943.9	3,080.2	3,222.8	3,371.7	3,694.8	3,690.1	4,043.3	4,229.4
32	Reduction in Billing expenses: Benefit and Pensions	31,793.5	0.0	0.0	0.0	140.9	509.0	710.5	848.7	1,173.5	1,343.3	1,619.0	1,820.3	2,138.2	2,237.3	2,341.0	2,449.3	2,562.5	2,808.1	2,804.5	3,072.9	3,214.4
33	Reduction in Billing expenses: Overtime	6,032.0	0.0	0.0	0.0	28.8	103.3	143.0	169.6	232.8	264.6	316.6	353.4	412.2	428.2	444.9	462.3	480.3	522.7	518.5	564.3	586.3
34	Related to the Call Center Function																					
35	Reduction in Call Center expenses: Direct Labor (including P&B)	2,960.5	0.0	0.0	4.2	6.4	12.2	38.7	70.7	105.7	143.1	162.4	183.6	205.7	215.3	225.2	235.6	246.5	257.9	269.8	282.2	295.2
36	Reduction in Call Center expenses: Benefit and Pensions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	Related to the OMS Function																					
38	Reduced single lights-out trips	9,411.0	0.0	11.0	16.9	32.7	104.3	191.8	289.0	394.1	450.6	513.0	579.1	610.3	643.1	677.7	714.0	752.2	792.3	834.5	878.9	925.6
39	Improved outage restoration (reduction in storm overtime)	124,874.0	0.0	145.7	224.0	434.1	1,384.1	2,544.9	3,834.3	5,229.0	5,978.6	6,807.0	7,683.6	8,097.8	8,533.5	8,991.8	9,473.7	9,980.4	10,513.3	11,073.6	11,662.7	12,282.0
40	**Subtotal, O&M Impacts**	**1,813,002.7**	**0.0**	**427.5**	**1,289.0**	**6,931.2**	**21,820.8**	**39,321.6**	**57,679.7**	**75,142.6**	**87,795.7**	**101,504.0**	**114,437.9**	**120,612.7**	**125,817.5**	**131,690.8**	**137,588.5**	**143,881.8**	**151,094.8**	**157,907.7**	**165,341.9**	**172,717.2**
41																						
42																						
43	UTILITY: Items that Impact Capital Budgets (Avoided Capital Costs																					
44	Avoided Purchase Costs of new Meters (Growth)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	Avoided Installation Costs of new Meters (Growth)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	Avoided Purchase Costs of new Meters (Failures)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	Avoided Meter Capital (for investment refresh) -- Meter Purchase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	Avoided Meter Capital (for investment refresh) -- Labor	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49	Avoided RRTP Meter Capital	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	Avoided Handheld System Software Upgrade	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51	Avoided IT Hardware purchases for AMR (MV90, SmartSync)	2,367.2	0.0	625.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	777.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	963.8	0.0	0.0

#	AMI DRIVEN BENEFITS	SUM 20 YEARS 2012-2031	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
52	Placeholder -- FMS Installation Labor (Capitalized) (Routine Work -- Failures, Growth)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53	**Subtotal, Capital Budget Impacts**	**2,367.2**	**0.0**	**625.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**777.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**963.8**	**0.0**	**0.0**
54																						
55	**UTILITY: Items that Impact Working Capital**																					
56	Reduction in working capital	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	**Subtotal, Working Capital Impacts**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
58																						
59	**UTILITY: Other Items**																					
60	SAIDI/CAIDI Reduction (Customer Average Interruption Duration Index)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61	**Subtotal, Other Items**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
62																						
63	**CUSTOMER BENEFITS**																					
64	Improved Meter Accuracy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	Total CIM-related benefit	970,263.4	0.0	0.0	0.0	5,826.5	16,305.1	25,638.9	35,773.7	45,108.9	50,907.4	56,920.3	61,848.2	64,231.7	66,627.3	69,108.8	71,679.2	74,341.6	77,099.3	79,955.5	82,913.7	85,977.4
66	Total UFE-related benefit	635,631.9	0.0	0.0	0.0	3,902.1	10,744.7	16,812.8	23,429.4	29,543.3	33,341.0	37,279.1	40,506.5	42,067.6	43,636.5	45,261.7	46,945.2	48,688.9	50,495.0	52,365.6	54,303.0	56,309.6
67	Total Bad Debt related benefit	587,649.1	0.0	0.0	0.0	3,335.5	9,685.2	15,173.0	21,695.3	27,356.7	30,873.3	34,519.9	37,508.5	38,954.0	40,406.8	41,911.7	43,470.6	45,085.2	46,757.7	48,489.8	50,283.9	52,141.9
68	**Subtotal, Customer Impacts**	**2,193,544.3**	**0.0**	**0.0**	**0.0**	**13,064.1**	**36,734.9**	**57,624.7**	**80,898.4**	**102,009.0**	**115,121.7**	**128,719.4**	**139,863.2**	**145,253.3**	**150,670.6**	**156,282.2**	**162,094.9**	**168,115.7**	**174,351.9**	**180,810.9**	**187,500.6**	**194,428.9**

Table B-2 AMI Cost Details

#	AMI COSTS	SUM 20 YEARS 2012-2031	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
1	**Summary Results ($1000's)**																					
2	**Capital Items - Summary**																					
3	Meters	864,342.0	54,987.9	15,912.4	37,375.0	126,856.6	139,876.7	144,075.0	137,233.4	60,459.3	62,771.9	56,056.1	2,624.5	2,677.0	2,730.5	2,785.2	2,840.9	2,897.7	2,955.6	3,014.7	3,075.0	3,136.5
4	Meters - Labor	207,285.0	0.4	2,661.7	6,988.7	30,425.2	35,795.7	39,481.2	41,021.0	15,889.5	17,370.8	17,650.7	-	-	-	-	-	-	-	-	-	-
5	Meters - HW	5,015.1	2,815.1	-	2,200.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	Meters - SW	23,893.7	23,893.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Meters - Other	628,148.2	28,278.7	13,250.7	28,186.3	96,431.4	104,081.0	104,593.8	96,212.4	44,569.8	45,401.1	38,405.4	2,624.5	2,677.0	2,730.5	2,785.2	2,840.9	2,897.7	2,955.6	3,014.7	3,075.0	3,136.5
8	Communication System	83,657.2	77.2	19,036.3	4,724.1	8,403.5	9,601.4	10,211.9	9,069.9	5,697.7	5,622.1	4,676.5	605.7	617.4	629.2	639.4	649.0	658.7	668.7	678.9	689.4	700.1
9	Comm Sys - Labor	2,724.5	-	57.2	165.9	417.5	475.5	494.0	430.8	190.5	168.3	62.0	22.0	22.8	23.7	24.7	25.6	26.6	27.7	28.7	29.9	31.0
10	Comm Sys - HW	15,347.6	-	216.4	766.8	2,349.2	2,675.1	2,773.9	2,570.1	1,492.5	1,461.4	1,042.2	-	-	-	-	-	-	-	-	-	-
11	Comm Sys - SW	16,360.0	-	16,360.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Comm Sys - Other	49,225.0	77.2	2,402.8	3,791.4	5,636.8	6,450.8	6,943.9	6,069.0	4,014.7	3,992.4	3,572.3	583.7	594.6	605.5	614.8	623.3	632.1	641.0	650.2	659.5	669.1
13	Information Technology Applications and Operations	129,335.0	182.8	10,250.6	31,278.0	27,179.0	15,330.0	2,050.0	9,730.0	500.0	750.0	750.0	750.0	9,582.6	3,750.0	500.0	500.0	3,500.0	9,752.0	-	3,000.0	-
14	IT - Labor	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	IT - HW	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	IT - SW	9,000.0	-	0.0	-	-	-	-	-	-	-	-	-	-	3,000.0	-	-	3,000.0	-	-	3,000.0	-
17	IT - Other	120,335.0	182.8	10,250.6	31,278.0	27,179.0	15,330.0	2,050.0	9,730.0	500.0	750.0	750.0	750.0	9,582.6	750.0	500.0	500.0	500.0	9,752.0	-	-	-
18	Management and Other Costs	33,880.2	122.3	1,262.5	5,462.7	5,469.6	4,633.9	3,309.0	3,359.0	3,417.5	3,394.3	3,449.4	-	-	-	-	-	-	-	-	-	-
19	Mgmt / Other - Labor	33,880.2	122.3	1,262.5	5,462.7	5,469.6	4,633.9	3,309.0	3,359.0	3,417.5	3,394.3	3,449.4	-	-	-	-	-	-	-	-	-	-
20	Mgmt / Other - HW	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	Mgmt / Other - SW	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	Mgmt / Other - Other	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	**Subtotal, Capital**	**1,111,214.4**	**55,370.1**	**46,461.8**	**78,839.9**	**167,908.7**	**169,442.1**	**159,646.0**	**159,392.3**	**70,074.5**	**72,538.3**	**64,932.0**	**3,980.2**	**12,877.1**	**7,109.8**	**3,924.6**	**3,989.8**	**7,056.4**	**13,376.3**	**3,693.6**	**6,764.4**	**3,836.7**
24																						
25	**O&M Items - Summary**																					
26	Meters and Modules	22,704.7	8,351.4	149.8	413.8	1,806.4	2,220.7	2,534.5	2,721.1	1,350.6	1,363.3	1,303.3	236.9	130.5	84.6	37.9	-	-	-	-	-	-
27	Meters - Labor	15,262.9	3,454.4	149.8	399.4	1,757.7	2,061.1	2,255.1	2,336.1	893.5	971.3	984.5	-	-	-	-	-	-	-	-	-	-
28	Meters - Materials	551.3	551.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	Meters - Services	6,890.5	4,345.7	0.0	14.3	48.7	159.7	279.5	385.0	457.1	392.0	318.8	236.9	130.5	84.6	37.9	-	-	-	-	-	-
30	Communication System	229,025.2	2,828.3	4,829.8	5,106.3	6,390.6	7,576.4	8,692.3	9,798.3	11,009.7	12,599.3	13,900.2	13,834.2	14,027.3	14,222.4	14,391.6	14,550.0	14,712.4	14,878.8	15,049.4	15,224.3	15,403.7
31	Comm Sys - Labor	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	Comm Sys - Materials	9,879.3	-	-	-	-	-	27.7	97.9	243.6	404.2	564.7	708.6	767.7	824.9	852.6	865.5	878.5	891.4	904.4	917.3	930.3
33	Comm Sys - Services	219,145.9	2,828.3	4,829.8	5,106.3	6,390.6	7,576.4	8,664.6	9,700.4	10,766.1	12,195.1	13,335.5	13,125.5	13,259.7	13,397.5	13,539.0	13,684.5	13,833.9	13,987.3	14,145.0	14,307.0	14,473.4
34	Information Technology Applications and Operations	520,096.9	8,234.1	11,396.8	13,811.5	17,185.4	20,565.6	20,836.7	21,641.5	21,978.2	23,231.4	24,554.6	28,883.1	29,841.4	30,836.3	31,869.3	32,941.8	34,055.3	35,211.4	36,411.9	37,658.3	38,952.5
35	IT - Labor	349,091.1	8,111.9	10,457.2	12,922.7	15,528.5	17,171.1	16,179.0	15,391.2	15,335.9	15,915.0	16,515.9	17,201.1	17,871.9	18,568.9	19,293.1	20,045.5	20,827.3	21,639.6	22,483.5	23,360.4	24,271.4
36	IT - Materials	33,660.0	-	-	-	-	-	-	-	-	-	-	3,366.0	3,366.0	3,366.0	3,366.0	3,366.0	3,366.0	3,366.0	3,366.0	3,366.0	3,366.0
37	IT - Services	137,345.8	122.2	939.6	888.9	1,656.9	3,394.5	4,657.7	6,250.3	6,642.3	7,316.4	8,038.7	8,316.0	8,603.5	8,901.4	9,210.2	9,530.2	9,862.0	10,205.9	10,562.3	10,931.9	11,315.0
38	Management and Other Costs	189,336.7	5,384.5	11,336.4	17,092.8	15,192.3	15,554.3	15,475.3	16,710.0	11,848.7	12,203.1	12,309.6	5,382.2	4,854.1	5,035.8	5,224.5	5,420.4	5,623.8	5,834.9	6,054.1	6,281.7	6,518.0
39	Mgmt / Other - Labor	162,836.8	5,181.5	10,869.8	15,840.5	13,983.7	14,355.1	14,284.6	15,485.3	10,594.1	10,912.7	10,991.3	4,019.8	3,445.9	3,580.3	3,720.0	3,865.0	4,015.8	4,172.4	4,335.1	4,504.2	4,679.8
40	Mgmt / Other - Materials	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	Mgmt / Other - Services	26,499.9	203.1	466.6	1,252.3	1,208.6	1,199.2	1,190.6	1,224.7	1,254.6	1,290.4	1,318.3	1,362.5	1,408.2	1,455.5	1,504.6	1,555.4	1,608.0	1,662.5	1,719.0	1,777.5	1,838.2
42	**Subtotal, O&M**	**961,163.5**	**24,798.4**	**27,712.8**	**36,424.3**	**40,574.8**	**45,917.0**	**47,538.8**	**50,870.9**	**46,187.2**	**49,397.0**	**52,067.7**	**48,336.4**	**48,853.3**	**50,179.1**	**51,523.3**	**52,912.2**	**54,391.4**	**55,925.1**	**57,515.4**	**59,164.3**	**60,874.1**
43																						
44	**Grand Total, Capital + O&M**	**2,072,377.9**	**80,168.5**	**74,174.6**	**115,264.2**	**208,483.5**	**215,359.0**	**207,184.7**	**210,263.2**	**116,261.7**	**121,935.3**	**116,999.7**	**52,316.6**	**61,730.4**	**57,288.9**	**55,447.9**	**56,902.0**	**61,447.8**	**69,301.4**	**61,209.0**	**65,928.7**	**64,710.8**

Table B-3 Deployment (9 Year Plan)

#	DEPLOYMENT DETAILS	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
1	**Populations (End of Period Values)**																				
2	Total # Meter Population (end of period) ("As Is" and "To Be")	4,189,004	4,221,008	4,253,012	4,285,016	4,317,020	4,349,024	4,381,028	4,413,032	4,445,036	4,477,040	4,509,044	4,541,048	4,573,052	4,605,056	4,637,060	4,669,064	4,701,068	4,733,072	4,765,076	4,797,080
3	Total # EM Meters (end of period) ("To Be") - including RRTP & IDR	4,060,994	4,032,998	3,905,002	3,225,002	2,455,002	1,668,763	888,786	597,887	294,419	-	-	-	-	-	-	-	-	-	-	-
4	# Mass Smart Grid Meters (end of period)	128,010	188,010	348,010	956,174	1,756,642	2,572,533	3,281,490	3,602,857	3,936,793	4,261,680	4,292,148	4,322,616	4,353,084	4,383,552	4,414,020	4,444,488	4,474,956	4,505,424	4,535,892	4,566,360
5	# Rural Smart Grid Meters (end of period)	-	-	-	768	1,536	3,120	105,376	106,144	106,912	107,680	108,448	109,216	109,984	110,752	111,520	112,288	113,056	113,824	114,592	115,360
6	# Urban Smart Grid Meters (end of period)	-	-	-	103,072	103,840	104,608	105,376	106,144	106,912	107,680	108,448	109,216	109,984	110,752	111,520	112,288	113,056	113,824	114,592	115,360
7	Total # Smart Grid Meters (end of period)	128,010	188,010	348,010	1,060,014	1,862,018	2,680,261	3,492,242	3,815,145	4,150,617	4,477,040	4,509,044	4,541,048	4,573,052	4,605,056	4,637,060	4,669,064	4,701,068	4,733,072	4,765,076	4,797,080
8	% of Smart Grid Meters (end of period)	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9	Electric Additions	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004
10																					
11	**Current System Read Performance**																				
12	# Electric Reads (seasonality adjustment, "As Is")	43,671,620	44,017,263	44,362,906	44,708,549	45,054,193	45,399,836	45,745,479	46,091,122	46,436,765	46,782,409	47,128,052	47,473,695	47,819,338	48,164,981	48,510,625	48,856,268	49,201,911	49,547,554	49,893,197	50,238,841
13	# Electric Reads (seasonality adjustment, "To Be")	43,700,369	44,044,159	43,182,902	40,210,114	32,589,961	24,252,267	15,780,568	8,990,203	5,639,515	2,366,818	149,864	91,211	91,211	91,211	91,211	91,211	91,211	91,211	91,211	91,211
14																					
15	**EM Replacements due to Failures**																				
16	Failures: Electric EM Failures Under the "As Is" Scenario	33,396	33,650	33,907	34,163	34,419	34,674	34,930	35,188	35,442	35,700	35,954	36,214	36,465	36,725	36,977	37,238	37,488	37,750	37,999	38,263
17	Failures: Residual Electric EM Failures Replaced as EM	32,372	32,536	31,643	28,368	22,459	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	Failures: Electric EM Failures Avoided	1,024	1,114	2,264	5,795	11,960	34,674	34,930	35,188	35,442	35,700	35,954	36,214	36,465	36,725	36,977	37,238	37,488	37,750	37,999	38,263
19	Failures: Electric EM Failures Replaced as Smart Grid	-	-	-	-	-	16,239	9,977	5,899	3,468	1,055	-	-	-	-	-	-	-	-	-	-
20																					
21	**EM Additions, or Avoided EM Additions, Associated with Growth**																				
22	Growth: Electric EM Growth Additions Under the "As Is" Scenario	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004
23	Growth: Residual Electric EM Growth under the "To Be" Scenario	32,004	32,004	32,004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	Growth: Electric EM Growth Avoided (Difference, As Is and To Be)	-	-	-	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004
25	EM Electric Meters Remaining (end of year) ("To Be")	4,060,994	4,032,998	3,905,002	3,225,002	2,455,002	1,668,763	888,786	597,887	294,419	-	-	-	-	-	-	-	-	-	-	-
26	Quantity EM and AMR Electric Reads (per year) ("To Be")	48,555,966	48,804,954	47,468,002	42,556,868	33,695,024	24,343,193	14,951,065	8,839,714	5,199,689	1,580,435	-	-	-	-	-	-	-	-	-	-
27																					
28	**AMI Smart Meter Devices (Electric)**																				
29	Smart Grid Planned Deployment (Pilot Only)																				
30	Smart Grid Planned Deployment (Pilot + Core)	128,010	60,000	160,000	680,000	770,000	770,000	770,000	285,000	300,000	293,364	-	-	-	-	-	-	-	-	-	-
31	Smart Grid Planned Deployment (Core Only)	10	60,000	160,000	680,000	770,000	770,000	770,000	285,000	300,000	293,364	-	-	-	-	-	-	-	-	-	-
32	Growth Electric Meters (installed as Smart Grid)	-	-	-	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004
33	Total Smart Grid Deployed (not counting Smart Grid failures) (Includes Pilot)	128,010	60,000	160,000	712,004	802,004	818,243	811,981	322,903	335,472	326,423	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004	32,004
34	Cumulative Smart Grid Installations (not counting Smart Grid failures) [Includes Pilot]	128,010	188,010	348,010	1,060,014	1,862,018	2,680,261	3,492,242	3,815,145	4,150,617	4,477,040	4,509,044	4,541,048	4,573,052	4,605,056	4,637,060	4,669,064	4,701,068	4,733,072	4,765,076	4,797,080
35																					
36	**AMI Failure Related Replacement Work**																				
37	Failed Smart Grid Meters (for installation, warranty replacement, or replacement)	1,280	1,393	2,827	7,239	14,944	23,058	31,204	36,617	39,971	43,307	44,944	45,264	45,584	45,904	46,224	46,544	46,864	47,184	47,504	47,824
38																					
39																					
40	**AMI Network Services and Equipment Provisioning**																				
41	Repeaters (Mass, Rural, High Rise, Growth)	-	328	1,968	1,968	1,968	328	54	54	54	54	54	54	54	54	54	54	54	54	54	54
42	Takeout Pts (Mass, Rural, High Rise, Growth)	-	70	423	423	423	70	11	11	11	11	11	11	11	11	11	11	11	11	11	11
43	Total # Devices Installed (Mass, Rural, High Rise, Growth)	-	398	2,391	2,391	2,391	398	65	65	65	65	65	65	65	65	65	65	65	65	65	65
44	Failures, Repeaters	-	-	-	-	-	-	331	333	336	339	342	344	347	350	352	355	358	360	363	366
45	Failures, Takeouts	-	-	-	-	-	-	71	72	72	73	73	74	74	75	75	76	77	77	78	78
46	Battery Replacements	-	-	-	-	-	-	-	-	398	2,391	2,391	2,391	398	65	-	398	2,391	2,391	2,391	398

Table B-4 Net Customer Impact

#	SUMMARY RESULTS -- NET CUSTOMER IMPACT -- (NOMINAL $1,000S)	SUM 20 YEARS 2012-2031	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
1	O&M Benefits	1,813,002.7	0.0	427.5	1,289.0	6,931.2	21,820.8	39,321.6	57,679.7	75,142.6	87,795.7	101,504.0	114,437.9	120,612.7	125,817.5	131,690.8	137,588.5	143,881.8	151,094.8	157,907.7	165,341.9	172,717.2
2	**Total AMI O&M Savings**	**1,813,002.7**	**0.0**	**427.5**	**1,289.0**	**6,931.2**	**21,820.8**	**39,321.6**	**57,679.7**	**75,142.6**	**87,795.7**	**101,504.0**	**114,437.9**	**120,612.7**	**125,817.5**	**131,690.8**	**137,588.5**	**143,881.8**	**151,094.8**	**157,907.7**	**165,341.9**	**172,717.2**
3																						
4	**O&M Expenses**																					
5	Meters and Modules	(22,704.7)	(8,351.4)	(149.8)	(413.8)	(1,806.4)	(2,220.7)	(2,534.5)	(2,721.1)	(1,350.6)	(1,363.3)	(1,303.3)	(236.9)	(130.5)	(84.6)	(37.9)	0.0	0.0	0.0	0.0	0.0	0.0
6	Communication System	(229,025.2)	(2,828.3)	(4,829.8)	(5,106.3)	(6,390.6)	(7,576.4)	(8,692.3)	(9,798.3)	(11,009.7)	(12,599.3)	(13,900.2)	(13,834.2)	(14,027.3)	(14,222.4)	(14,391.6)	(14,550.0)	(14,712.4)	(14,878.8)	(15,049.4)	(15,224.3)	(15,403.7)
7	Information Technology Applications and Operations	(520,096.9)	(8,234.1)	(11,396.8)	(13,811.5)	(17,185.4)	(20,565.6)	(20,836.7)	(21,641.5)	(21,978.2)	(23,231.4)	(24,554.6)	(28,883.1)	(29,841.4)	(30,836.3)	(31,869.3)	(32,941.8)	(34,055.3)	(35,211.4)	(36,411.9)	(37,658.3)	(38,952.5)
8	Management and Other Costs	(189,336.7)	(5,384.5)	(11,336.4)	(17,092.8)	(15,192.3)	(15,554.3)	(15,475.3)	(16,710.0)	(11,848.7)	(12,203.1)	(12,309.6)	(5,382.2)	(4,854.1)	(5,035.8)	(5,224.5)	(5,420.4)	(5,623.8)	(5,834.9)	(6,054.1)	(6,281.7)	(6,518.0)
9	**Total AMI O&M Expenses**	**(961,163.5)**	**(24,798.4)**	**(27,712.8)**	**(36,424.3)**	**(40,574.8)**	**(45,917.0)**	**(47,538.8)**	**(50,870.9)**	**(46,187.2)**	**(49,397.0)**	**(52,067.7)**	**(48,336.4)**	**(48,853.3)**	**(50,179.1)**	**(51,523.3)**	**(52,912.2)**	**(54,391.4)**	**(55,925.1)**	**(57,515.4)**	**(59,164.3)**	**(60,874.1)**
10																						
11	**Depreciation, Taxes, and Total Cost to Customers (pre UFE, CIM and Bad Debt adjusted)**																					
12	Net Change in Operation and Maintenance Expenses	851,839.2	(24,798.4)	(27,285.3)	(35,135.4)	(33,643.6)	(24,096.1)	(8,217.2)	6,808.8	28,955.4	38,398.6	49,436.3	66,101.5	71,759.4	75,638.4	80,167.5	84,676.3	89,490.4	95,169.7	100,392.3	106,177.6	111,843.1
13	Net Change in Book Depreciation	(1,016,794.4)	(1,869.1)	(9,733.6)	(18,465.5)	(33,287.1)	(50,339.2)	(59,692.0)	(65,304.1)	(66,718.0)	(64,059.2)	(63,851.2)	(64,470.9)	(61,775.5)	(62,419.1)	(62,108.6)	(61,376.9)	(60,583.9)	(58,364.9)	(57,523.9)	(51,721.2)	(43,130.4)
14	Net Change in Taxes, Other than Income Taxes	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Net Change in Income Taxes	(174,597.2)	(1,343.4)	(2,322.6)	(3,989.6)	(7,728.4)	(11,140.1)	(13,874.2)	(16,283.1)	(16,100.9)	(16,063.5)	(15,777.6)	(13,754.4)	(12,110.7)	(10,331.6)	(8,563.5)	(6,969.2)	(5,645.4)	(4,676.0)	(3,491.3)	(2,593.3)	(1,838.4)
16	Net Change in Return	(435,305.8)	(3,543.0)	(5,892.0)	(10,113.3)	(19,488.1)	(27,798.3)	(34,475.4)	(40,525.6)	(40,072.1)	(39,979.1)	(39,267.5)	(34,232.1)	(30,141.3)	(25,713.4)	(21,312.9)	(17,345.0)	(14,050.2)	(11,637.8)	(8,689.2)	(6,454.2)	(4,575.5)
17	Accelerated Recovery of Retired Meters	41,001.3	171.2	(2,248.8)	(7,057.3)	(10,803.1)	(12,918.6)	(13,713.1)	(12,872.3)	(6,724.3)	(1,840.8)	2,759.3	4,892.0	6,101.0	8,996.5	11,921.6	13,755.2	14,235.1	13,739.5	12,531.3	10,757.4	9,319.2
18	**Total Cost to Customers (Before UFE, CIM and Bad Debt Expense Related Benefits)**	**(733,857.0)**	**(31,382.7)**	**(47,482.2)**	**(74,761.2)**	**(104,950.4)**	**(126,292.3)**	**(129,971.8)**	**(128,176.3)**	**(100,659.9)**	**(83,544.0)**	**(66,700.7)**	**(41,463.8)**	**(26,167.0)**	**(13,829.2)**	**104.1**	**12,740.5**	**23,446.0**	**34,230.5**	**43,219.3**	**56,166.3**	**71,618.0**
19																						
20	**UFE, CIM and Bad Debt Expense-Related Benefits**																					
21	Collection of Delivery Service Revenues due to Changes to UFE and CIM	514,337.3	0.0	0.0	0.0	2,962.3	8,549.7	13,566.8	18,973.1	23,924.2	26,999.5	30,188.6	32,802.1	34,066.3	35,336.8	36,652.9	38,016.2	39,428.2	40,890.8	42,405.6	43,974.6	45,599.5
22	Reduction in Energy Purchase Power & Other Costs Due to Changes to UFE and CIM	439,239.6	0.0	0.0	0.0	2,722.7	7,444.4	11,623.2	16,188.4	20,412.8	23,036.8	25,757.8	27,987.7	29,066.3	30,150.4	31,273.3	32,436.5	33,641.3	34,889.2	36,181.7	37,520.4	38,906.8
23	Collection in Energy/Other Revenues Due to Changes to UFE and CIM	652,318.4	0.0	0.0	0.0	4,043.6	11,055.7	17,261.7	24,041.6	30,315.2	34,212.1	38,253.1	41,564.8	43,166.7	44,776.6	46,444.2	48,171.7	49,961.0	51,814.2	53,733.8	55,721.8	57,780.8
24	Reduction in Bad Debt Expenses	587,649.1	0.0	0.0	0.0	3,335.5	9,685.2	15,173.0	21,695.3	27,356.7	30,873.3	34,519.9	37,508.5	38,954.0	40,406.8	41,911.7	43,470.6	45,085.2	46,757.7	48,489.8	50,283.9	52,141.9
25	**Total Additional Benefits**	**2,193,544.3**	**0.0**	**0.0**	**0.0**	**13,064.1**	**36,734.9**	**57,624.7**	**80,898.4**	**102,009.0**	**115,121.7**	**128,719.4**	**139,863.2**	**145,253.3**	**150,670.6**	**156,282.2**	**162,094.9**	**168,115.7**	**174,351.9**	**180,810.9**	**187,500.6**	**194,428.9**
26																						
27	**Net Customer Impact (Change in Customer Costs)**																					
28	Net Impact to Customer Costs	1,459,687.4	(31,382.7)	(47,482.2)	(74,761.2)	(91,886.3)	(89,557.4)	(72,347.1)	(47,277.9)	1,349.0	31,577.7	62,018.6	98,399.4	119,086.3	136,841.4	156,386.3	174,835.4	191,561.7	208,582.4	224,030.2	243,666.9	266,046.9
29																						
30	**Cumulative Net Customer Impact (Change in Customer Costs)**																					
31	Cumulative Net Impact to Customer Costs	1,459,687.4	(31,382.7)	(78,864.9)	(153,626.1)	(245,512.4)	(335,069.8)	(407,416.9)	(454,694.8)	(453,345.8)	(421,768.0)	(359,749.4)	(261,350.0)	(142,263.8)	(5,422.3)	150,964.0	325,799.4	517,361.0	725,943.4	949,973.6	1,193,640.5	1,459,687.4
32																						
33	**Net Present Value of Net Customer Impact**																					
34	Cumulative Net Present Value (NPV)	794,541.4	(31,382.7)	(78,864.9)	(153,626.1)	(242,379.4)	(325,933.7)	(391,130.0)	(432,282.2)	(431,148.0)	(405,504.1)	(356,856.8)	(282,304.3)	(195,154.6)	(98,425.9)	8,349.3	123,650.8	245,675.5	374,012.1	507,153.6	647,027.6	794,541.4

Appendix C. Work Papers for Charge-Off Benefit

This appendix provides the work papers ComEd has provided to compute the charge-off benefits. This is provided here because this benefit category name was changed (compared to previous uses of the cost and benefit model) and the presentation of the benefit build-up within the model was modified. Previously, this benefit was labeled Bad Debt. While the occurrence of bad debt underlies the benefit, the benefit is achieved by reducing the charge offs that eventually result with bad debt occurrence.

Accelerated Scenario, workbook excerpt

Residential Rate Escalation Factor	3%				
Residential Customers	3,465,160	3,478,298	3,497,429	3,518,413	3,537,765
Residential Customer Growth Rate after LRP	0.5%				
Disconnect Switch Implementation Year	2015				
Reinstatement %	30%	2012 actual residential performance			
Expected Residential Net Charge Off Improvement	50%	From B&V write-up on Bad Debt Benefits page 6			
Residential Net Charge-off Improvement	$ 28.6	$ 26.4	$ 27.7	$ 27.6	$ 26.7
Residential as % of Total Meters	90%				
Year 1 Effective Meter Factor	43%				
Year 2 Effective Meter Factor	96%				
Target Cut-offs AMI Fully Deployed	205,000				
Average Residential Bill	$ 84	$ 79	$ 86	$ 82	$ 79
Months of Arrears Prior to Cut	3				
Steady State Cut Value	$ 810				
Steady State Cuts	85,500				
Residential Only Base Case - 85,500 Cuts a year	**2013**	**2014**	**2015**	**2016**	**2017**
ComEd Supplied	67.1	48.4	49.3	49.1	48.7
RES Supplied	14.7	27.1	29.7	29.7	27.4
Total Charge-offs	$ 81.8	$ 75.5	$ 79.0	$ 78.9	$ 76.2
Reinstatements	(24.5)	(22.7)	(23.7)	(23.7)	(22.9)
Net Charge-offs	$ 57.3	$ 52.9	$ 55.3	$ 55.2	$ 53.3

13-0285 Scenario, workbook excerpt

Residential Rate Escalation Factor	3%				
Residential Customers	3,465,160	3,478,298	3,497,429	3,518,413	3,537,765
Residential Customer Growth Rate after LRP	0.5%				
Disconnect Switch Implementation Year	2015				
Reinstatement % - Initial	30.0%	2012 actual residential performance			
Expected Residential Net Charge Off Improvement	50%	From B&V write-up on Bad Debt Benefits page 6			
Residential Net Charge-off Improvement	$ 28.6	$ 26.4	$ 27.7	$ 27.6	$ 26.7
Residential as % of Total Meters	90%				
Year 1 Effective Meter Factor	43%				
Year 2 Effective Meter Factor	96%				
Target Cut-offs AMI Fully Deployed	205,000				
Average Residential Bill	$ 84	$ 79	$ 86	$ 82	$ 79
Months of Arrears Prior to Cut	3				
Steady State Cut Value	$ 810				
Steady State Cuts - Residential	85,500				
Residential Only Base Case - 85,500 Cuts a year	**2013**	**2014**	**2015**	**2016**	**2017**
ComEd Supplied	67.1	48.4	49.3	49.1	48.7
RES Supplied	14.7	27.1	29.7	29.7	27.4
Total Charge-offs	$ 81.8	$ 75.5	$ 79.0	$ 78.9	$ 76.2
Reinstatements	(24.5)	(22.7)	(23.7)	(23.7)	(22.9)
Net Charge-offs	$ 57.3	$ 52.9	$ 55.3	$ 55.2	$ 53.3

Appendix D. Meter Refusal Assumptions

INPUT	VALUE USED	SOURCE
Percent Meter Refusals	0.5%	ComEd input.
Meter Read Charge (Fee)	$21.53 per meter per month	Order in Docket No 13-0552.
Meter Read Cost Factor	$26.91 per meter per month	ComEd estimate of cost per meter read at the 0.5% refusal rate. ComEd Ex. 2.01 in Docket No. 13-0552.
Mesh network Cost Impact	$500,000	ComEd estimate of unplanned-for network devices as a result of meter refusals. Page 19, line 391 of ComEd Ex. 2.0 in Docket No. 13-0552.
Back Office Cost Factor	$4.05 per meter per month	ComEd estimate of additional FTE to enroll, track and report on customers who refuse the AMI meter at the 0.5% refusal rate. Page 20, line 403 of ComEd Ex. 2.0 and ComEd Ex 2.01 in Docket No. 13-0552.
Field Trip to Swap Meters	$63.43	ComEd estimate of reconnection service cost. Page 33, line 683 of ComEd Ex. 1.0 CORR. in Docket No. 13-0552.
Fee to swap meters	$63.43	Order in Docket 13-0552.
Meter Refusal Counts	Utilizes a "churn" assumption of 1/68, or 0.147%.	ComEd and Black & Veatch. Refusals continue at the 0.5% rate as customers churn, which occurs, on average once every 68 months. This churn rate is a ComEd provided figure based on historical data.
Operational Benefit Impact Percent	0.5%	ComEd and Black & Veatch. Generally, all benefits are tied to smart meter deployment. Benefits drop proportionally.
Other Benefit Impact Percent (e.g. CIM, UFE)	0.5%	ComEd and Black & Veatch. Generally, all benefits are tied to smart meter deployment. Benefits drop proportionally.

Appendix E. Energy Price Assumptions

	Residential				Small Commercial & Industrial			
	Current		Docket 12 - 0298		Current		Docket 12 - 0298	
	Delivery	Energy	Delivery	Energy	Delivery	Energy	Delivery	Energy
2014	$ 50.31	$ 71.36	$ 53.94	$ 79.31	$ 21.66	$ 63.70	$ 23.54	$ 74.58
2015	$ 55.72	$ 71.67	$ 55.32	$ 92.06	$ 23.86	$ 67.50	$ 23.68	$ 87.93
2016	$ 55.27	$ 67.29	$ 56.42	$ 94.46	$ 23.51	$ 63.72	$ 24.15	$ 90.19
2017	$ 54.11	$ 64.81	$ 57.83	$ 96.82	$ 22.77	$ 61.10	$ 24.76	$ 92.44
2018	$ 54.51	$ 64.99	$ 59.28	$ 99.24	$ 22.97	$ 61.55	$ 25.37	$ 94.75
2019	$ 56.14	$ 66.94	$ 60.76	$ 101.72	$ 23.66	$ 63.40	$ 26.01	$ 97.12
2020	$ 57.82	$ 68.95	$ 62.28	$ 104.26	$ 24.37	$ 65.30	$ 26.66	$ 99.55
2021	$ 59.56	$ 71.02	$ 63.84	$ 106.87	$ 25.10	$ 67.26	$ 27.33	$ 102.04
2022	$ 61.35	$ 73.15	$ 65.43	$ 109.54	$ 25.85	$ 69.28	$ 28.01	$ 104.59
2023	$ 63.19	$ 75.34	$ 67.07	$ 112.28	$ 26.63	$ 71.36	$ 28.71	$ 107.20
2024	$ 65.08	$ 77.60	$ 68.74	$ 115.09	$ 27.42	$ 73.50	$ 29.43	$ 109.88
2025	$ 67.03	$ 79.93	$ 70.46	$ 117.96	$ 28.25	$ 75.70	$ 30.16	$ 112.63
2026	$ 69.05	$ 82.33	$ 72.22	$ 120.91	$ 29.09	$ 77.97	$ 30.92	$ 115.45
2027	$ 71.12	$ 84.80	$ 74.03	$ 123.94	$ 29.97	$ 80.31	$ 31.69	$ 118.33
2028	$ 73.25	$ 87.35	$ 75.88	$ 127.03	$ 30.87	$ 82.72	$ 32.48	$ 121.29
2029	$ 75.45	$ 89.97	$ 77.78	$ 130.21	$ 31.79	$ 85.20	$ 33.29	$ 124.32
2030	$ 77.71	$ 92.66	$ 79.72	$ 133.47	$ 32.75	$ 87.76	$ 34.13	$ 127.43
2031	$ 80.04	$ 95.44	$ 81.72	$ 136.80	$ 33.73	$ 90.39	$ 34.98	$ 130.62

The value for Delivery is provided directly by ComEd. The value for Energy is based on three separate inputs from ComEd, and is computed within the cost and benefit model.