

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Summary of Electric Benefits O&M Expenses

for the years 2015, 2016, 2017 and 12 Months Ended September 30, 2018

(\$000)

Case No.: U-18322

Exhibit: A-65 (HBK-1)

Witness: HBKops

Date: March 2017

Page: 1 of 1

**Benefits**

Line No.	Program Description (a)	2015	2016	2017	12 Months ended September 30, 2018	Source
		Actual (b)	Preliminary (c)	Projected (d)	Projected (e)	
1	Pension Plan	\$ 37,428	\$ 18,078	\$ 20,280	\$ 24,094	WP-HBK-1, 2, 15, 18
2	Defined Benefit Supplemental Executive Retirement Plan	5,035	2,323	2,187	2,142	WP-HBK-3, 4
3	Defined Company Contribution Plan	5,701	6,497	6,824	7,592	WP-HBK-5, 6, 15
4	Defined Contribution Supplemental Executive Retirement Plan	224	188	199	207	WP-HBK-7, 8
5	401 (k) Employees' Savings Plan	7,007	7,892	7,456	7,651	WP-HBK-9, 10, 15
6	Active Health Care/Life Insurance/LTD	24,664	23,612	22,663	23,371	WP-HBK-11, 12, 16
7	Retiree Health Care and Life Insurance	(8,058)	(11,627)	(4,750)	(4,750)	WP-HBK-13, 14, 17, 19
8	<b>TOTAL O&amp;M EXPENSES</b>	<u>\$ 72,001</u>	<u>\$ 46,963</u>	<u>\$ 54,859</u>	<u>\$ 60,307</u>	

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Summary of Projected Electric & Common Capital Expenditures

For years 2015, 2016, 2017, 9 Months Ended September 30, 2018 and 3 Months Ended December 31, 2018

(\$000)

Case No.: U-18322

Exhibit: A-66 (JHM-1)

Witness: JHMorales

Date: March 2017

Page 1 of 2

**Customer Experience**

Line No.	Program Description	2015 Actual	2016 Preliminary	2017 Projected	9 Months Ended September 30, 2018 Projected	3 Months Ended December 31, 2018 Projected	Source
1	<b>Demand Response</b>	-	-	<b>626</b>	<b>626</b>	-	
2	Materials	-	-	417	417	-	
3	Labor	-	-	209	209	-	
<b>TOTAL EXPENDITURES</b>		<u><u>\$ -</u></u>	<u><u>\$ -</u></u>	<u><u>\$ 626</u></u>	<u><u>\$ 626</u></u>	<u><u>\$ -</u></u>	

**MICHIGAN PUBLIC SERVICE COMMISSION**Consumers Energy Company

## Summary of Projected Electric &amp; Common Capital Expenditures

For years 2015, 9 Months 2016, 12 Months ending September 30, 2017 and 12 Months ending September 30, 2018

(\$000)

Case No.: U-18322

Exhibit: A-66 (JHM-1)

Witness: JHMorales

Date: March 2017

Page 2 of 2

Line No.	Program Description (a)	2015 Actual (b)	9 Months Ended September 30, 2016 Projected (c)	12 Months Ended September 30, 2017 Projected (d)	12 Months Ended September 30, 2018 Projected (e)	Source
1	<b>Demand Response</b>	-	-	<b>626</b>	<b>626</b>	
2	Materials	-	-	417	417	
3	Labor	-	-	209	209	
	<b>TOTAL EXPENDITURES</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 626</b>	<b>\$ 626</b>	

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Summary of Projected Electric O&M Expenses

For the years 2015, 2016, 2017 and 12 Months Ended September 30, 2018

(\$000)

Case No.: U-18322

Exhibit: A-67 (JHM-2)

Witness: JHMorales

Date: March 2017

Page 1 of 1

**Customer Experience**

Line No.	Program Description	2015 Actual	2016 Actuals	2017 Projected	12 Months Ended September 30, 2018 Projected	Source
1	Customer Experience	\$ 4,122	\$ 5,605	\$ 9,312	\$ 14,887	WP-JHM-2
2	Demand Response	990	604	2,395	3,389	WP-JHM-2
3	Customer Payment Programs	1,272	2,117	5,610	7,299	WP-JHM-2
<b>TOTALS O&amp;M EXPENSES</b>		<b>\$ 6,384</b>	<b>\$ 8,326</b>	<b>\$ 17,317</b>	<b>\$ 25,575</b>	

Consumers Energy Company



**Consumers Energy 2017 Large Commercial and Industrial Demand  
Response Program Customer Agreement**

This Demand Response Program Customer Agreement (this "Agreement"), entered into on \_\_\_\_\_, 2017 (the "Effective Date"), is made by and between \_\_\_\_\_, ("Customer") and Consumers Energy Company, located at One Energy Plaza, Jackson, MI 49201 ("Consumers Energy"). Customer and Consumers Energy are referred to herein collectively as the "Parties" and each individually as a "Party" to this Agreement.

1. **Term.** This Agreement shall commence on the Effective Date and continue until May 31, 2018.
2. **Program Description.** Participants in the Consumers Energy 2017 Demand Response Program ("Program") help reduce peak demand when energy use is the highest and maintain a ready supply of energy for Michigan. The Program is offered to Consumers Energy customers with an energy demand greater than 100 kilowatts. Participants will receive monetary incentives after the load control season is complete, and the incentives will vary based on actual energy reductions.
3. **Administration Solutions.** In connection with this Agreement, Consumers Energy has engaged a third party contractor ("Contractor") to manage the Program. Customer agrees to work with Consumers Energy and/or Contractor (i) to develop an appropriate energy curtailment plan for Customer's business; and (ii) to provide or cause to be provided by Consumers Energy access and use of contact, billing and energy usage data, and facility information concerning each Site Address (as defined below) ("Customer Data"). Consumers Energy or Contractor shall manage Customer's curtailable electrical capacity in the Program and upon notification by Consumers Energy or Contractor and acceptance by Customer, provide real-time support to Customer during demand response events ("Demand Response Events"); and enable data transfer, monitoring and reporting of meter data through the Contractor system ("System") and provide technical assistance, maintenance, repair and hosting of the System. In addition, as necessary, Consumers Energy or Contractor will coordinate with Consumers Energy to capture kilowatt-hour (kWh) pulses from Customer's primary utility meter to provide Customer near real-time, Internet-enabled power monitoring.
4. **System.** Contractor or Consumers Energy may equip one or more of Customer facility addresses (each a "Site Address") as identified on the Site Address Attachment attached hereto with the System, which includes site devices owned by Consumers Energy that can enable direct load management, power metering, data collection, near real-time data communication, and Internet-based reporting and analytics. Customer shall provide either a static or non-static, as applicable, Internet Protocol (IP) address and Local Area Network (LAN) access that allows for Internet-based communication of a Site Address' electricity consumption and Demand Response Event performance. Subsequent to the Effective Date, Site Address Attachment may be updated in writing from time to time by the Parties to reflect additional Site Addresses.
5. **Customer Support Requirements.**
  - a. **Representations and Warranties.** Customer holds all applicable licenses and/or permits pursuant to the Agreement that are required for the proper participation in the Program
  - b. **Demand Response Performance.** Customer has the intent and ability to generate and/or reduce electrical demand to achieve Accepted Capacity (as defined below) at each Site Address when notified by Consumers Energy or Contractor during Demand Response Events. Customer understands that the curtailable electrical capacity identified in the Site Address Attachment does not represent Accepted Capacity and is solely Contractor's and Customer's best estimate of performance and that Accepted Capacity may vary.
  - c. **Acceptance Testing.** At each Site Address where the site devices are installed, Customer agrees to collaborate with Contractor and Consumers Energy in a timely manner in testing, enabling and maintaining the System.

6. **Program Rules.** The terms of this Agreement reflect the current Program terms and conditions, which may be amended from time to time by Consumers Energy. The current terms are summarized below:

<i>Program Availability</i>	During the Program period of June 1 – September 30 (“Program Period”), Demand Response Events may be called between the hours of 11 am – 7 pm, excluding nationally recognized holidays (Fourth of July and Labor Day).
<i>Event Frequency and Duration</i>	<b><u>Emergency Events</u></b> – Up to five (5) events during the Program Period, each with a duration of four hours. <b><u>Economic Events</u></b> – Up to ten (10) events during the Program Period, each with a duration of four hours.
<i>Advanced Notification</i>	<b><u>Emergency Events</u></b> – Customer will receive at least a thirty (30) minute but no more than a twelve (12) hour notice in advance of an Emergency Event. <b><u>Economic Events</u></b> – Customer will receive “day-ahead” notice of an Economic Event.
<i>Notification Audit</i>	Consumers Energy may call one (1), one-hour notification audit (“Notification Audit”) per Program Period to confirm Accepted Capacity. (as defined below)
<i>Economic Events</i>	Consumers Energy may, in its sole discretion, initiate certain economic Demand Response Events under the Program (“Economic Event(s)”). The dispatch notification will state the energy rate for the event. Such Economic Events shall have no impact on Delivered Capacity or Capacity Payments (each, as defined below).
<i>Emergency Events</i>	Consumers Energy may call certain emergency Demand Response Events under the Program in response to MISO grid operator reliability triggers (“Emergency Event(s)”).

Customer shall be considered enrolled in the Program and eligible to earn demand response payments as of the date indicated in the Program enrollment notification email sent by Contractor to Customer.

7. **Customer capacity.**

- a. ***Accepted Capacity.*** For purposes of this agreement, “Accepted Capacity” shall represent the best estimate of Customer’s performance (in kW) based on analysis of consumption data and pre-enrollment testing. Customer agrees that the Accepted Capacity may be adjusted by Contractor or Consumers Energy in the future to reflect actual performance; changes in facility operations, Program rules, or regulations; and/or other relevant information.
- b. ***Delivered Capacity.***
- For purposes of this Agreement, “Delivered Capacity” shall be defined as the average difference between the measured energy demand (in kW) and baseline energy usage over each hourly interval in a Demand Response Event. Consumers Energy will use approved MISO methods of determining baseline energy usage. Note, that, MISO prescribes four (4) measurement and verification (“M&V”) methods to be used by all market participants and MISO’s default M&V method is the 10-day prior baseline, which gives an accurate representation of the customer’s baseload energy use and is the most commonly used method.
  - Delivered Capacity is capped at 120% of Accepted Capacity for each Demand Response Event hour. If Delivered Capacity is less than 70% of Accepted Capacity in a single Demand Response Event hour, then the Delivered Capacity for that Demand Response Event hour will equal zero (0) kW. Consumers or Contractor may, at their sole discretion, remove minimum and maximum caps on a case-by-case basis. If there is more than one (1) Emergency Event hour during the Program Period, then Delivered Capacity for that Program Period will equal the average of the Delivered Capacity from each Emergency Event hour. If there are no Emergency Event hours during the Program Period, then Delivered Capacity for that Program Period will equal the Accepted Capacity, as confirmed in the Notification Audit.

8. **Payments to customer.**

- a. ***Capacity Payments.*** Consumers Energy will pay Customer a capacity rate of \$25/kW of Delivered Capacity per Program Period (“Capacity Rate”). In the event that Customer becomes eligible to participate in the Program after June 1, then the customer’s Capacity Rate shall be set as \$25/kW multiplied by the fraction of the days remaining in the Program Period after commencement of eligibility divided by the total days in the

Program Period (122 days). Capacity payment levels ("Capacity Payments") will be determined at the end of the Program Period, by multiplying the applicable Capacity Rate by the Customer's Delivered Capacity for the Program Period.

- b. **Emergency Event Energy Payments.** In Program Periods when one or more Emergency Events are called, Consumers Energy will pay to Customer an Emergency Event energy payment for Customer participation during any Emergency Event equal to \$50/MWh multiplied by Delivered Capacity.
  - c. **Economic Event Energy Payments.** Consumers Energy will pay to Customer an Economic Event energy payment for Customer participation during any Economic Event equal to \$300/MWh multiplied by Delivered Capacity for each such event.
  - d. **Underperformance.** In no event shall Customer be penalized for underperformance or non-performance, other than to have future Accepted Capacity and/or payments reduced to reflect Delivered Capacity as described in Section 7(b) above. Notwithstanding the above, in no event shall Accepted Capacity and/or payments be reduced due to Customer's underperformance or non-performance resulting from Consumers Energy's non-compliance with the Advanced Notification provisions hereunder or the Program System's malfunction.
9. **Payment Timing.** Consumers Energy shall make all payments associated with Customer's participation in the Program after the Program Period is over and the Delivered Capacity has been verified.
10. **Confidentiality.**
- a. **Nondisclosure to Third Parties.** In performing under the Agreement, each Party will be exposed to certain Confidential Information (as hereinafter defined) of the other Party. Each Party on its own behalf and on behalf of its employees, contractors and agents (collectively, "Representatives") agrees not to, except as required by applicable law or regulation, use or disclose such Confidential Information without the prior written consent of the other Party, either during or after the Term. To protect Confidential Information, each Party agrees to: (i) limit dissemination of Confidential Information to only those Representatives having a "need to know"; (ii) advise each Representative who receives Confidential Information of the confidential nature of such information; and (iii) have appropriate agreements, policies and/or procedures in place with such Representatives sufficient to enable compliance with the confidentiality obligations contained herein. The term "Confidential Information" means all information, including, without limitation, any trade secrets, which is disclosed, either orally or in written form, by either Party or its Representatives and shall be deemed to include: (w) any notes, analyses, compilations, studies, interpretations, memoranda or other documents prepared by either Party or its Representatives which contain, reflect or are based upon, in whole or in part, any Confidential Information furnished to a receiving Party or its Representatives pursuant hereto; (x) any information concerning the business relationship between the Parties; and (y) Customer Data.
  - b. **Exclusions from Confidential Information.** Notwithstanding the obligations in Section 9(a) above, Confidential Information does not include an information that:
    - i. is or becomes generally known to the public without breach of any obligation owed to the disclosing Party;
    - ii. was known to the receiving Party prior to its disclosure by the disclosing Party without breach of any obligation owed to the disclosing Party;
    - iii. is received from a third party without the receiving party having any knowledge of any breach by such third party of any obligation owed to the disclosing Party; or
    - iv. was independently developed by the receiving Party without reference to or reliance upon the disclosing Party's Confidential Information.
11. **Limitation of Liability.** Except for breaches of confidentiality, Consumers Energy's and its contractors' and subcontractors' liability hereunder is limited to direct actual damages as the sole and exclusive remedy, and total damages under the Agreement shall not exceed \$100,000 or the total amounts paid to Customer under the Agreement, whichever is less. In no event shall either Party, its parent, officers, directors, partners, shareholders, employees or affiliates, or any contractor or subcontractor or its employees or affiliates, be liable to

the other Party for special, indirect, exemplary, punitive, incidental or consequential damages of any nature whatsoever connected with or resulting from performance or non-performance of obligations under the Agreement, including without limitation, damages or claims in the nature of lost revenue, income or profits, loss of use, or cost of capital, irrespective of whether such damages are reasonably foreseeable and irrespective of whether such claims are based upon negligence, strict liability contract, operation of law or otherwise.

## 12. Additional Terms.

a. Customer also agrees, with respect to Contractor's management of the System, it:

- (i) hereby releases Contractor from any obligations with respect to monies owed Customer in connection with its participation in the Program and further agrees to defend and indemnify Contractor, its affiliates, directors, employees and agents from any and all claims that arise or may arise out of the Agreement;
- (ii) receives a limited, revocable, non-transferrable and non-exclusive right to use and access during the Term the System and shall use the System solely for its internal use subject to the terms of the Agreement and not for the benefit of any third party. Except as expressly permitted in the Agreement, Customer agrees that it shall not receive any right, title or interest in, or any license or right to use or access, the System or any patent, copyright, trade secret, trademark or other intellectual property rights therein by implication or otherwise;
- (iii) shall use the System in accordance with all applicable law;
- (iv) shall not and shall prohibit causing or permitting, the copying, reverse engineering, disassembly, decompilation or attempting to derive the source code of the System, or other intellectual property of Contractor or creation of any derivative work thereof;
- (v) expressly disclaims any passing of title to the System, any trade names, trade dress, trademarks, service marks, commercial symbols, copyrightable material, designs, logos and/or any other intellectual property of Contractor to Customer;
- (vi) disclaims any and all direct warranties, express or implied, or liabilities of Contractor to Customer for all damages, whether direct or indirect, incidental or consequential, arising from the use of the System or participation in the Program;
- (vii) disclaims any liability of Contractor for delays, limitations or other problems inherent in the use of the Internet to which the System may be subject;
- (viii) shall protect Contractor's Confidential Information as though Contractor and Customer are the Parties in Section 10 of the Agreement; and
- (ix) shall not delete, alter, cover, or distort any copyright or other proprietary notices or trademarks from the System and to use reasonable care to prevent the System and Contractor's intellectual property rights contained in the software from damage and unauthorized use.
- (x) authorizes Consumers Energy to share Customer Data collected by any equipment with Contractor for purposes of providing the System to Customer and Consumers Energy, and further authorizes Contractor to use, copy, store, modify and display Customer Data for purposes of providing the System to Consumers and Customer.

b. **Miscellaneous.** Customer may not assign any of its rights or delegate any of its performance obligations hereunder without the prior written consent of Consumers Energy; except that Customer may assign the Agreement to its successor or any entity acquiring all or substantially all of the assets of Customer by providing Consumers Energy with written notice promptly following the acquisition date. The Agreement, including all exhibits, attachments and SOWs, constitutes the entire agreement between Customer and Consumers Energy and may only be amended in writing signed by each of the Parties. If any of its provisions shall be held invalid or unenforceable, this Agreement shall be construed as if not containing those provisions and the rights and obligations of the Parties hereto shall be construed and enforced accordingly. This Agreement shall be binding upon the Parties together with their successors and permitted assigns. Each Party shall be responsible for its Representatives' compliance with the Agreement. Customer shall promptly notify Consumers Energy in writing of any changes occurring during the Term to the Customer address(es) set forth in this Agreement. The parties agree Contractor is a third party beneficiary to this Agreement.



- c. **Force Majeure.** The Parties and Contractor shall be excused for any failure or delay in the performance of their obligations hereunder due to acts of God or any other legitimate cause beyond their reasonable control.
- d. **Warranty Limitations.** THE SYSTEM (AND ANY SOFTWARE, HARDWARE, OR OTHER COMPONENT THEREOF) ARE PROVIDED AS IS WITHOUT ANY WARRANTY OF ANY KIND. ALL WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY DISCLAIMED TO THE FULLEST EXTENT PERMISSIBLE UNDER APPLICABLE LAW.

IN WITNESS WHEREOF, and intending to be legally bound, the Parties have duly executed this Agreement by their authorized representatives as of the Effective Date.

**Consumers Energy Company**

**[Customer]**

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name                      Date

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name                      Date

Site Address Attachment  
Site Addresses

Site Name	Site Address	Estimated Capacity (kW)

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company  
 Summary of Projected Electric & Common O&M Expenses  
 For the years 2015, 2016, 2017 and 12 Months Ended September 30, 2018  
 (\$000)

Case No.: U-18322  
 Exhibit: A-69 (JJS-1)  
 Witness: JJShingler  
 Date: March 2017  
 Page 1 of 1

**Electric Business Services**

Line No.	Program Description (a)	12 Months Ended September 30, 2018				Source (f)
		2015 Actual (b)	2016 Preliminary (c)	2017 Projected (d)	Projected (e)	
1	Electric Business Services	\$ 15,323	\$ 16,672	\$ 16,797	\$ 16,411	WP JJS-1
2	<b>TOTAL O&amp;M EXPENSES</b>	<b>\$ 15,323</b>	<b>\$ 16,672</b>	<b>\$ 16,797</b>	<b>\$ 16,411</b>	

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Summary of Projected Electric & Common Capital Expenditures

For the years 2015 through 2018

(\$000)

Case No.: U-18322

Exhibit: A-70 (JJS-2)

Witness: JJShingler

Date: March 2017

Page 1 of 2

**Electric Business Services**

Line No.	Program Description / Cost Category	2015 Actual	2016 Projected	2017 Projected	9 Months ended September 30, 2018 Projected	3 Months Ended December 31, 2018 Projected	Source
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
1	<b>Asset Preservation</b>	<b>27,820</b>	<b>17,816</b>	<b>29,777</b>	<b>12,654</b>	<b>8,794</b>	
2	Contractor	23,587	15,105	25,246	10,729	7,456	
3	Materials	2,343	1,501	2,508	1,066	741	
4	Labor	176	113	189	80	56	
5	Business Expenses	44	28	47	20	14	
6	Other (Loadings, Chargebacks)	1,670	1,070	1,788	760	528	
7	<b>Transportation Equipment</b>	<b>4,198</b>	<b>9,023</b>	<b>15,009</b>	<b>6,968</b>	<b>6,432</b>	
8	Contractor	708	1,522	2,531	1,175	1,085	
9	Materials	3,456	7,428	12,356	5,737	5,295	
10	Labor	0	1	1	0	0	
11	Business Expenses	8	17	28	13	12	
12	Other (Loadings, Chargebacks)	26	56	93	43	40	
13	<b>Computer &amp; Other Equipment</b>	<b>701</b>	<b>680</b>	<b>979</b>	<b>734</b>	<b>245</b>	
14	Materials	701	680	979	734	245	
15	<b>TOTAL CAPITAL EXPENDITURES \$</b>	<b>32,719</b>	<b>\$ 27,518</b>	<b>\$ 45,765</b>	<b>\$ 20,356</b>	<b>\$ 15,471</b>	

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Summary of Projected Electric & Common Capital Expenditures

For the years 2015 through 2018

(\$000)

Case No.: U-18322

Exhibit: A-70 (JJS-2)

Witness: JJShingler

Date: March 2017

Page 2 of 2

**Electric Business Services**

Line No.	Program Description / Cost Category	2015 Actual	9 Months Ended September 30, 2016 Projected	12 Months ended September 30, 2017 Projected	12 Months ended September 30, 2018 Projected	Source
	(a)	(b)	(c)	(d)	(e)	(f)
1	<b>Asset Preservation</b>	<b>27,820</b>	<b>11,723</b>	<b>23,662</b>	<b>24,863</b>	
2	Contractor	23,587	9,939	20,062	21,080	
3	Materials	2,343	987	1,993	2,094	
4	Labor	176	74	150	157	
5	Business Expenses	44	18	37	39	
6	Other (Loadings, Chargebacks)	1,670	704	1,421	1,493	
7	<b>Transportation Equipment</b>	<b>4,198</b>	<b>4,632</b>	<b>12,195</b>	<b>14,172</b>	
8	Contractor	708	781	2,057	2,390	
9	Materials	3,456	3,813	10,039	11,667	
10	Labor	0	0	1	1	
11	Business Expenses	8	9	23	27	
12	Other (Loadings, Chargebacks)	26	29	75	88	
13	<b>Computer &amp; Other Equipment</b>	<b>701</b>	<b>400</b>	<b>1,013</b>	<b>979</b>	
14	Materials	701	400	1,013	979	
15	<b>TOTAL CAPITAL EXPENDITURES \$</b>	<b>32,719</b>	<b>\$ 16,755</b>	<b>\$ 36,870</b>	<b>\$ 40,014</b>	

## PLUS +

Financial		Earnings per Share (EPS)	Weighting 70%	TBD
		Operating Cash Flow (Billions)	Weighting 30%	TBD
	50% of total employee payout based on financial goal achievement			

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Development of the Property Tax Rate for the Test Year

Case No.: U-18322  
Exhibit: A-72 (BJV-1)  
Witness: BJVanBlarcum  
Date: March 2017  
Page 1 of 4

Line No.	Description (a)	Amount (millions) (b)	Amount (millions) (c)	Amount (millions) (d)	Source (e)
1	Electric Property Taxes Paid - 2017 Estimate			\$ 167.9	WP BJV-7, L-6
2	Electric Property Taxes on 2017 Plant Investment			12.4	Ex. A-72 (BJV-1), p.2, L-9
3	Property Taxes on Real Property Taxable Value Increases - Inflation			1.1	Ex. A-72 (BJV-1), p.3, L-4
4	Estimated Electric Property Taxes to be Paid - 2018			\$ 181.4	
5	2017 Fiscal Year Property Taxes expensed in 2018			82.9	(L-1 * 49.4%) <sup>1</sup>
6	2018 Property Taxes expensed in 2019			(89.6)	(L-4 * 49.4%) <sup>1</sup>
7	Estimated Electric Property Tax Expense - 2018			<u>\$ 174.7</u>	
8	Prorated Electric Property Tax Expense (October-December 2017)			\$ 40.5	WP-BJV-7, L-11
9	Prorated Electric Property Tax Expense (January-September 2018)			<u>\$ 131.7</u>	<sup>2</sup>
10	Prorated Electric Property Tax Expense			<u>\$ 172.2</u>	(L-8 + L-9)
11	2017 Year End Plant-in-Service		\$ 14,202.0		Ex. A-72 (BJV-1), p.4, L-3
12	2017 Construction Work-in-Progress	\$ 491.9	<sup>3</sup>		
13	@ 50%	<u>50.00%</u>			
14	2017 Construction Work-in-Progress		<u>\$ 246.0</u>		
15	Taxable Plant			<u>\$14,448.0</u>	(L-11 + L-14)
16	Property Tax Rate			<u>0.011918605</u>	(L-10/L-15)

**Footnotes**

<sup>1</sup> The 49.4% factor is from the 2015 CE Property Tax Fiscal Year Study

<sup>2</sup> Development of 2018 Prorated Property Tax Expense

2018 PT Expense	\$ 174.7	Exhibit A-72 (BJV-1), p.1, L-7
Jan-Sept Expense Ratio	75.38%	Monthly Budgeted Sales Percentage
Prorated 2018 PT Expense	<u>\$ 131.7</u>	

<sup>3</sup> Electric Rate Case - Annual Construction Report, 2017 Ending CWIP Balance

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company  
Development of the 2018 Property Taxes  
on 2017 Plant Investment

Case No.: U-18322  
Exhibit: A-72 (BJV-1)  
Witness: BJVanBlarcum  
Date: March 2017  
Page 2 of 4

Line No.	Description (a)	Amount (millions) (b)	Source (c)
1	<b>Assessed Value of Personal Property (millions)</b>		
2	Year-end 2017 Taxable Closings less Retirements	\$ 543.9 <sup>1</sup>	
3	First Year STC Multiplier	<u>96.0% <sup>2</sup></u>	
4	<b>True Cash Value of Personal Property (millions)</b>	\$ 522.1	
5	Statutory Factor for Assessed Value	<u>50% <sup>3</sup></u>	
6	New Plant - Assessed Value	\$ 261.1	
7	<b>Property Tax (millions)</b>		
8	Composite Millage Rate	<u>47.6865 <sup>4</sup></u>	
9	2018 Property Taxes Paid	<u><u>\$ 12.4</u></u>	

**Footnotes**

<sup>1</sup> 2018 CE Property Tax Budget

<sup>2</sup> Michigan Dept of Treasury Form 3589 - 1st year multiplier for Electric Transmission and Distribution Equipment

<sup>3</sup> Article IX, Section 3 of Constitution of Michigan of 1963

<sup>4</sup> CE Composite Millage Rate.xls



**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company  
Development of the 2018 Electric Portion of  
Real Property Taxable Value Increase

Case No.: U-18322  
Exhibit: A-72 (BJV-1)  
Witness: BJVanBlarcum  
Date: March 2017  
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Line No.	Description (a)	Amount (millions) (b)	Source (c)
1	<b>2018 Electric Portion of Real Property Tax Increase (millions)</b>		
2	2018 Real Property Taxable Value - Electric Portion	\$ 22.1 <sup>1</sup>	
3	2018 Composite Millage Rate	<u>47.6865</u> <sup>2</sup>	
4	2018 Electric Portion of Real Property Taxable Value increase	<u><u>\$ 1.1</u></u>	

**Footnotes**

<sup>1</sup> 2018 CE Property Tax Budget

<sup>2</sup> CE Composite Millage Rate.xls

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company Development of  
the 2017 Year-End Electric Plant-in-Service

Case No.: U-18322  
Exhibit: A-72 (BJV-1)  
Witness: BJVanBlarcum  
Date: March 2017  
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Line No.	Description (a)	Amount (millions) (b)	Source (c)
1	Total 2016 Year End Electric Plant-in-Service	\$ 13,580.2	WP-BJV-11, L-3
2	Total 2017 Net Additions per Property Model	<u>\$ 621.8</u> <sup>1</sup>	
3	Total 2017 Year End Electric Plant-in-Service	<u><u>\$ 14,202.0</u></u>	

**Footnotes**

<sup>1</sup> Electric Rate Case - Plant Report:

2017 Book Closings	\$ 786.5
2017 Book Retirements	<u>(\$ 164.7)</u>
2017 Net Additions	\$ 621.8

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Employee and Contractor Counts

Total Counts by Year as of December 31 for 2015 through 2018

**Information Technology Department**

Line No.	Description	2015 Actual	2016 Projected	2017 Projected	2018 Projected
	(a)	(b)	(c)	(d)	(e)
1	IT Employees	435	432	432	432
2	IT Staff Augmentation Contractors	179	143	147	147
3	<b>TOTAL</b>	<u>614</u>	<u>575</u>	<u>579</u>	<u>579</u>
4	IT Managed Services Contractors	288	302	302	302

NOTE: IT Managed Services contracts are written to provide a specific service, and are not written to provide a specific number of contract resources. Actual counts are provided for year end 2015, and estimates are provided for for 2016, 2017 and 2018.

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Summary of Projected Electric & Common O&M Expenses

For the years 2015, 2016, 2017, and 12 Months Ended September 30, 2018

(\$000)

Case No.: U-18322

Exhibit: A-74 (CJV-2)

Witness: CJVarvatos

Date: March 2017

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**Electric Distribution**

Line No.	Program Description	2015 Actual	2016 Preliminary	2017 Projected	12 Months Ended September 30, 2018 Projected	Source
	(a)	(b)	(c)	(d)	(e)	(f)
1	Operations	35,511	35,701	40,182	39,356	WP-CJV-1
2	Origination	967	484	1,088	1,064	WP-CJV-1
3	Investments	11,263	8,496	14,398	13,481	WP-CJV-1
4	<b>TOTAL O&amp;M EXPENSES</b>	<b>47,741</b>	<b>44,681</b>	<b>55,668</b>	<b>53,901</b>	

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Summary of Projected Electric & Common Capital Expenditures

For the years 2015 through 2018

(\$000)

Case No.: U-18322

Exhibit: A-75 (CJV-3)

Witness: CJVarvatos

Date: March 2017

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**Information Technology Department**

Line No.	Program Description (a)	2015 Actual	2016 Preliminary	2017 Projected	9 Months Ended September 30, 2018 Projected	3 Months Ended December 31, 2018 Projected	Source (g)
		(b)	(c)	(d)	(e)	(f)	
1	Upgrades & Replacements (Enterprise)	28,995	21,312	20,568	17,873	9,207	WP-CJV-2
2	Upgrades & Replacements (Business Partner)	11,478	1,259	2,926	2,340	1,205	WP-CJV-2
3	Architecture	0	0	0	2,813	1,449	WP-CJV-2
4	BP Functionality	33,636	33,773	21,630	7,551	3,890	WP-CJV-2
5	Enhancements	3,039	1,552	5,841	2,475	1,275	WP-CJV-2
6	IT Service Delivery	11,467	5,928	1,371	139	71	WP-CJV-2
7	Security	3,086	4,465	3,605	2,638	1,359	WP-CJV-2
8	<b>Total Expenditures</b>	<b>91,702</b>	<b>68,289</b>	<b>55,942</b>	<b>35,830</b>	<b>18,458</b>	

**MICHIGAN PUBLIC SERVICE COMMISSION**Consumers Energy Company

## Summary of Projected Electric &amp; Common Capital Expenditures

For the years 2015 through 12 Months Ended September 30, 2018

(\$000)

Case No.: U-18322

Witness: CJVarvatos

Exhibit: A-75 (CJV-3)

Date: March 2017

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**Information Technology Department**

Line No.	Program Description	2015 Actual	9 Months Ended September 30, 2016 Projected	12 Months Ended September 30, 2017 Projected	12 Months Ended September 30, 2018 Projected	Source
	(a)	(b)	(c)	(d)	(e)	(f)
1	Upgrades & Replacements (Enterprise)	28,995	14,066	20,821	24,866	WP-CJV-2
2	Upgrades & Replacements (Business Partner)	11,478	831	2,359	3,335	WP-CJV-2
3	Architecture	0	0	0	2,813	WP-CJV-2
4	BP Functionality	33,636	22,290	25,759	14,906	WP-CJV-2
5	Enhancements	3,039	1,024	4,383	4,461	WP-CJV-2
6	IT Service Delivery	11,467	3,913	2,921	605	WP-CJV-2
7	Security	3,086	2,947	3,897	3,864	WP-CJV-2
8	<b>Total Expenditures</b>	<b>91,702</b>	<b>45,071</b>	<b>60,140</b>	<b>54,850</b>	

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Case No.: U-18322  
 Exhibit: A-76 (CJV-4)  
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Descriptions and Benefits of Projected Electric & Common Capital Expenditures  
 For the years 2015 through 2018

**Information Technology Department**

SPEND YEAR	SPEND FOR APPLICABLE YEAR	PROJECT NAME	PROGRAM	PROJECT DESCRIPTION	PROVIDED SCOPE / BENEFIT	IMPLEMENTATION DATE	COST/BENEFIT RATIO
2015	85,146	2015 Storage Area Network Refresh	Upgrades & Replacements (Enterprise)	Replace out of warranty and obsolete existing SAN with new hardware. Risk is high due to this hardware is used for critical infrastructure.	The scope of the 2015 Storage Area Network Refresh for CIS is to replace End-of-Life EMC CX4 storage arrays with new VNX2 hardware. The new storage arrays will increase total capacity marginally but bring along advanced DR and replication features as well as significantly enhanced performance. Purchasing and installation of cabling to be provided by Professional Communications Services/PCS. Additional activity includes installing datacenter equipment in support of the two storage arrays. Implementation will be in 2015. The Parnall location will be installed first as the legacy storage is now at 97% capacity.	Sep-15	(1.08)
2015	311,813	ARP - Multimedia	Upgrades & Replacements (Enterprise)	This project is for the refresh of the Company's Collaborative tools such as Video Conference Systems and Digital Whiteboard systems.	This project provides value by insuring the tools used by employees to communicate are modern and reliable. Replace end of life and obsolete systems; enable Business to facilitate training, information exchange, in order to meet customer needs.	Dec-15	(1.11)
2015	(3,952)	Desktop Transformation	Upgrades & Replacements (Enterprise)	1. Application Rationalization: a review of all desktop applications to determine which are end of life, which are no longer needed, and which will not work with Windows 7. 2. Windows 7 Enterprise installed on workstations and field devices. 3. Windows 7 operational configuration on the CE Network as a member of the CE Active Directory domain. 4. Migration from IE8 to IE9. 5. Training for support staff and Users. 6. Certification of packaged and deployed software distribution packages on Windows 7. 7. New Software Distribution platform that is compatible and integratable with Windows 7. (SCCM) 8. Initial Windows 8 compatibility assessment and Basic Build.	Obsolescence mitigation as XP Operating System will go out of service support on April 2014. Support beyond that date will result in significantly increased O&M cost. New OS provides for greater platform stability and security.	Jan-15	(1.01)
2015	147,932	Redwood Job Scheduler Version Upgrade	Upgrades & Replacements (Enterprise)	Upgrade Redwood Cronacle Software to avoid technology obsolescence. Replace software on those servers that currently use Redwood Job Scheduler (Cronacle) V9.0 with Redwood Job Scheduler V9.0.20.5. This application handles scheduling of business critical jobs.	If batch processing does not run, we lose the ability to do billing, financials, handle wire downs, and other critical business functions. If we run our current software unsupported there is a real possibility that we would end up in a case where we would no longer be able to run batch. A more likely scenario would be that we would no longer be able to upgrade software or hardware to avoid just such an event.	Mar-15	(0.99)

MICHIGAN PUBLIC SERVICE COMMISSION

Consumers Energy Company

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SPEND YEAR	SPEND FOR APPLICABLE YEAR	PROJECT NAME	PROGRAM	PROJECT DESCRIPTION	PROVIDED SCOPE / BENEFIT	IMPLEMENTATION DATE	COST/BENEFIT RATIO
2015	7,559,866	SAP Enhancement for ERP	Upgrades & Replacements (Enterprise)	Apply a holistic maintenance upgrade to all SAP systems including all SAP modules and implementing the required enhancement pack.	Regular application of support packs to SAP systems is a best practice and ensures consistent performance and availability of the SAP systems/applications. An automated regression test library helps to ensure quality and stability for all SAP changes.	Jun-15	(1.03)
2015	39,662	WAN Transformation (2014 Bandwidth Augmentation Project)	Upgrades & Replacements (Enterprise)	This project is to migrate the Wide Area Network connectivity at Company locations off of legacy T1 technology and on to newer Carrier Ethernet technology.	All Company locations within the State of Michigan will be converted to new Wide Area Network technology. The new technology is more reliable and provides more bandwidth to enable more productivity at the Company's locations.	12/31 Annually	(1.02)
2015	289,332	ARP - Printer Asset Management (PAM)	Upgrades & Replacements (Enterprise)	The project is in support of plans for IT to validate, procure and deploy printers, plotters, and multi-function printing devices on a five-year refresh cycle for every department in the company. Not completing the refresh will push the need for more capital dollars into future years. It will also increase costs for hardware repairs and potentially not allow Business Partners with older printers to complete their job tasks.	Business Partners require these printers/plotter to support their business efforts. Refreshing the equipment: - Reduces equipment failures - Reduces Business Partner Downtime - Refreshed hardware allows software to function as designed.	12/31 Annually	(1.05)
2015	1,481,322	ARP - Workstation Asset Management (WAM)	Upgrades & Replacements (Enterprise)	The project is in support of plans for IT to validate, procure and deploy desktops and laptop computers on a four-year refresh cycle for every department in the company. Not completing the refresh will push the need for more capital dollars into future years. It will also increase costs for hardware repairs and potentially not allow Business Partners with older desktops or laptops to complete their job tasks.	Business Partners require these Desktops and Laptops to support their business efforts. Refreshing the equipment: - Reduces equipment failures - Reduces Business Partner Downtime - Refreshed hardware allows software to function as designed	12/31 Annually	(0.43)
2015	877,193	ARP-Wireless Network	Upgrades & Replacements (Enterprise)	This project is to refresh targeted portions of the Company's various wireless networks including the 800 MHz Radio System Infrastructure.	The scope of this project is extending the useful life of the Company owned radio systems. It's primary focus is on the 800 MHz radio system proper but also includes other systems, sub systems and components used within the Company. The project provides value by insuring reliable and real time communication between company crews and dispatch locations.	Dec-16	(0.91)
2015	1,094,199	ARP-Voice Network	Upgrades & Replacements (Enterprise)	This project is for the refresh of the Company's Communication tools such as Telephony Systems.	This project provides value by insuring the tools used by employees to communicate are modern and reliable.	Dec-15	(1.09)
2015	5,907,156	ARP-Server	Upgrades & Replacements (Enterprise)	IT infrastructure generally becomes less reliable after 5 years, jeopardizing the stability of our business' critical applications running on top of our IT Infrastructure. This Server ARP project will evaluate Computer Hardware with more than 5 years of continuous use and replace where appropriate.	The project will intelligently and systematically replace critical infrastructure before a system failure that would disrupt business operations.	12/31 Annually	(1.07)



SPEND YEAR	SPEND FOR APPLICABLE YEAR	PROJECT NAME	PROGRAM	PROJECT DESCRIPTION	PROVIDED SCOPE / BENEFIT	IMPLEMENTATION DATE	COST/BENEFIT RATIO
2015	1,658,650	ARP - Data Network	Upgrades & Replacements (Enterprise)	Network Services - Asset Refresh Data Network. In conjunction with Voice Network Team, refresh legacy Avaya data switches at the following Sites: Macomb, CCC, Trail Street, Jackson Garage, Bridge St., Kalamazoo, Flint, Rayt, Zeeland Gen, Cadillac, Owosso	To replace the Avaya Nortel Switches throughout the State of Michigan	12/31 Annually	(1.11)
2015	69,422	ARP-IT Facilities	Upgrades & Replacements (Enterprise)	This project addresses the physical facilities (space, equipment racks, communications cabling, etc.) and environmental needs in the Company's two Data Centers and IT Rooms.	The project will insure that the Company's IT Systems that provide Customer services can be reliably hosted from the internal Data Centers.	12/31 Annually	(0.97)
2015	91,099	ARP - Performance & Capacity Management	Upgrades & Replacements (Enterprise)	This project will refresh and add additional Network Monitoring capabilities. The equipment that is refreshed in this project is used for the monitoring and troubleshooting of our applications and services at the Network level.	The scope of this project is monitoring of the Company's internal Networks to insure the optimal performance of systems that are used to provide services to our Customers.	12/31 Annually	(1.06)
2015	724,347	ATM Retirement	Upgrades & Replacements (Enterprise)	To migrate Call Centers and 800 MHz network off a legacy ATM network that is now obsolete and no longer supported to current industry standard and supported network infrastructure. To establish network connectivity through the IP network instead of the legacy TDM based ATM.  This project will define alternatives for those two groups and then to finish the conversion and remove the 15 remaining ATM Nodes; move tower sites off the ATM network	This Project will mitigate the pending obsolescence. The ATM network is at the end of its design life; if ATM network stops working or more network outages occurs; this will impact mission critical business processes.	Aug-15	(0.87)
2015	(841)	Wireless LAN Controller	Upgrades & Replacements (Enterprise)	This project will install a HA (High Availability) controller design which will protect against a Wireless LAN Controller failure at either Data Center but would not protect against a catastrophic Data Center failure.	This will protect against unplanned failures which would impact productivity across all organizations as well as contractors who utilize the CE Wireless Corporate and Guest Networks.	Jan-15	(1.08)
2015	1,012,697	ARP-Storage	Upgrades & Replacements (Enterprise)	Assess current and future capacity storage needs.  • Add capacity to existing General Purpose Vmax storage arrays (Parnall & BRC) and decommission existing storage as required.	Product Scope Statement This project is intended to address the ongoing refresh and growth needs within Information Technology regarding the data storage hardware. The project replaces hardware aged more than 5 years and provides incremental storage capacity where needed.	12/31 Annually	(1.08)
2015	350,443	ARP - Critical Infrastructure Support	Upgrades & Replacements (Enterprise)	Asset refresh project for infrastructure supported by CIS. Replace assorted critical infrastructure due to obsolescence hardware as identified per 5 year budget planning/forecast. IT provides both hardware and labor funding.	The requirement is to replace and upgrade the in scope items with current technologies. The project will replace functionality without necessarily doing a like-for-like replacement of the asset. For example, instead of replacing 20 servers with 20 servers, converged infrastructure will be implemented.	12/31 Annually	(1.02)
2015	(401,942)	MS Mod - SQL Server Version Upgrade	Upgrades & Replacements (Enterprise)	Project adjustment		Dec-15	(0.95)

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SPEND YEAR	SPEND FOR APPLICABLE YEAR	PROJECT NAME	PROGRAM	PROJECT DESCRIPTION	PROVIDED SCOPE / BENEFIT	IMPLEMENTATION DATE	COST/BENEFIT RATIO
2015	7,358,407	Contact Center Customer Experience Refresh	Upgrades & Replacements (Enterprise)	Comprehensive refresh of the Customer Call Center's IT infrastructure, including the three Automatic Call Distributor (ACD) systems, networking equipment , IVRs, Work Force Management, servers, and applications. The ACD Systems are 10 years old in 2015 and cannot readily adapt to best practice. Additionally, they are no longer vendor supported and hardware replacement parts are not available.	Speech enabled interactive voice response (IVR) Customer Service Representative Knowledge Management eMail Management Call Center Quality Monitoring Optimize Skills Based routing Customer Analytics Enhancements Multi-Channel Inbound & Outbound Communications Virtual Hold Click to Call	Jun-17	(0.43)
2015	339,356	SAP Modernization	Upgrades & Replacements (Enterprise)	The SAP Platform Modernization Program includes the rearchitecture and replacement of the 2007-2008 SAP infrastructure, which is well beyond its recommended useful life. The program also includes an upgrade of SAP applications to Enhancement Pack 8.	This program is essential for the company to maintain support and stability of its core set of business applications, while also improving system availability, performance and resiliency.	Sep-17	(1.00)
2015	4,144	2016 ARP Collaboration	Upgrades & Replacements (Enterprise)	This project is for the refresh of the Company's Collaborative tools such as Telephony Systems, Video Conference Systems and Digital Whiteboard systems.	This project provides value by insuring the tools used by employees to communicate are modern and reliable.	12/31 Annually	(0.95)
<b>SUBTOTAL</b>	<b>28,995,450</b>	<b>2015 Upgrades &amp; Replacements (Enterprise)</b>					
2015	1,032,200	ARP - Field Device Asset Management (FDAM)	Upgrades & Replacements (Bus Partner)	The project is in support of plans for IT to validate, procure and deploy field devices on a four-year refresh cycle. Not completing the refresh will push the need for more capital dollars into future years. It will also increase costs for hardware repairs and potentially not allow Field Workers with older devices to complete their job tasks.	Field Workers require these rugged devices to complete their daily job tasks. Refreshing the equipment: - Reduces equipment failures - Reduces Field Worker Downtime - Refreshed hardware allows software to function as designed.	12/31 Annually	0.19
2015	1,449,360	Electric Distribution Historian Implementation	Upgrades & Replacements (Bus Partner)	This project is for the enablement of the DSCADA investment. Currently the DSCADA investment is planning to install Distribution Supervisory, Control and Data Acquisition devices in distribution substations from 2013 to 2017.	The implementation of the data historian provides the data storage/operational analytics platform for these devices and will serve as the data foundation for the enterprise DMS(Distribution Management System) Project.	Jun-16	(0.99)
2015	367,275	Electric GIS-OMS Upgrade	Upgrades & Replacements (Business Partner)	The purpose of this project is to implement the version of the GIS and OMS software that is required for the upcoming OMS-AMI Integration effort. The scope includes the upgrade of the ArcGIS software, the Responder software, the Oracle database and the operating system. New version of the Responder software includes: 1) Certification of the responder software on 64 bit technology (reducing risk on all patch installations); 2) Responder Refresh technology, which replaces the Responder Explorer screen refresh functionality (PubSub).	Upgrade is required to prepare for the OMS-AMI Integration implementation. Provides updated hardware and software versions.	Jun-15	(1.00)

SPEND YEAR	SPEND FOR APPLICABLE YEAR	PROJECT NAME	PROGRAM	PROJECT DESCRIPTION	PROVIDED SCOPE / BENEFIT	IMPLEMENTATION DATE	COST/BENEFIT RATIO
2015	4,815	Electronic Personnel Files	Upgrades & Replacements (Bus Partner)	Implement an electronic solution to capture, search, view and manage employee documentation and files. 1) create a secure and accessible electronic repository for all personnel files, 2) view all information for a single employee easily and simply, 3) enable remote and simultaneous access to files for staff working at any location 4) enhance employee privacy by eliminating copies of employee records, 5) provide individual employees with protected access to their own records.	The implementation of this Project mitigates the following: Paper-based files today take a large effort to manage. Making the files electronic would significantly reduce the time it takes to produce information to answer manager and employee questions, would save costs of moving files, reorganizing files, and keep things more private.	Oct-15	(0.44)
2015	1,347,711	Energy Trading and Risk Management	Upgrades & Replacements (Business Partner)	Required in order to remain in Regulatory/Legal compliance Technological obsolescence with short-term imminent risk to current service levels. In July 2013, Consumers Energy was informed by Brady PLC that POMAX, the Energy Trading & Risk Management (ETRM) software currently being used by Consumers Energy, is going to enter end-of-life mode on 07/01/15 with full cessation of support by 01/01/16. As a result, a new system replacing POMAX will need to be purchased and installed.	The POMAX system currently performs the following functions: (1) Deal capture of all natural gas and power transactions. The POMAX system then uses this information for: a. Daily market risk and credit risk measuring and monitoring b. Month-end, quarter-end, year-end accounting reporting, including 10-Q and 10-K disclosures.	Jan-16	(0.98)
2015	1,167,810	Facilities Space Management Solution	Upgrades & Replacements (Bus Partner)	Facilities is actively standardizing and optimizing all Facilities processes. In addition to implication of SAP RE-FX and connectivity of the CAD drawings to SAP, Phase 1 will provide high level roadmap for implementation of phase 2 and 3.	Centralized Facilities Management Operations through SAP will reduce complexities and organize relevant files and records. Automating workflow/tasks of current Business Services Support Center (new moves, furniture orders) as well as maintenance. Self service moves - eliminates the Move-Add-Change (MAC) form. Enabling multiple reports and dashboard functionality with integration of SAP financial master data (energy usage, work order maintenance); Know how many sq ft is being used in a report; Org and Cost Center Structure providing data to determine who is utilizing space.	Aug-19	(0.42)
2015	1,152,039	Financial Planning and Forecasting	Upgrades & Replacements (Bus Partner)	Technical support has not been available for IMPACT since September 2012. The vendor from whom this tool was purchased is no longer in the business of supporting it, nor does the expertise to do so exist either with this vendor or in the industry as a whole. As we are required to regularly apply Microsoft patches and other technology upgrades, our risk for the software becoming inoperable continues to increase.	This Project will mitigate the following risks: The loss of the software and our resulting inability to maintain an accurate and consistent forecast/budget/long term plan poses several financial risks to the Company. The forecast/budget is part of the internal control process (audit/SOX) for financial statements validation. The results of the planning tool are the basis for most financial/planning decisions made at the Company. It is used as support in Rate Cases for Rate Base and Cost of Capital projections. It is used in developing financial targets and the achievement of the targets (10 yrs. Consistent Financial Performance). Our inability to produce cohesive long term plans could result in a credit downgrade and/or negative investor/shareholder perception.	Mar-16	(1.00)

SPEND YEAR	SPEND FOR APPLICABLE YEAR	PROJECT NAME	PROGRAM	PROJECT DESCRIPTION	PROVIDED SCOPE / BENEFIT	IMPLEMENTATION DATE	COST/BENEFIT RATIO
2015	(622,899)	GIS Integrated Design Application	Upgrades & Replacements (Bus Partner)	This project is to replace the current CAD software with a GIS base design tool and reconstitute WRAD functionality to gain efficiencies for the office and field employees. Before SAP, a Work Requirements and Design (WRaD) application was used when the Scheduling and Work Management (SWM) application was first rolled out in 1995. WRaD or AutoDesign refers to an application created by and for Consumers Energy to prepare graphical designs for the order fulfillment processes for gas and electric work orders.	New functionality in scope: Ability to directly integrate with multiple ESRI databases, read data and attribution form dataset to begin design, Send data to proper data set (ESRI), electric and gas design simplification tools (streamline the actual placement of materials and attribution into a design), consumer GIS data as a service in addition to directly connect data (Replace WRaD Robosync), creating synergy for new construction of being able to send an updated design file with the corresponding updates and attribution to the GIS improving the as-built (redlining) posting process.	May-18	(0.95)
2015	2,404	JH Campbell Annex Renovations	Upgrades & Replacements (Business Partner)	Scope of work: Adding on to the Training Building to accommodate employees at the Annex. Adding Multi-media for conference rooms, Wellness Room, and digital signage.	Complete required facility improvements.	Jan-15	(0.97)
2015	5,637	Lansing Crew Room	Upgrades & Replacements (Business Partner)	Renovation to an area in Lansing Service Center to create an Storm Response area; upgrade to improve the dispatch and crew room area.	Improve the area to allow for an area to manage storms effectively.	May-15	(1.08)
2015	548	Legal Lansing Satellite Office	Upgrades & Replacements (Business Partner)	Procure/develop satellite office in Lansing near MPSC offices for use by Legal team members when working on Rate Case testimony with MPSC. Location is 7201 W. Saginaw Highway, Lansing MI. BTS will provide cabling, phone, printer and hotel offices connectivity for the Legal team.	Provides needed office space.	Jan-15	(1.05)
2015	440	Load Forecast & Modeling	Upgrades & Replacements (Business Partner)	Purchase new hardware and upgrade existing software used by Day Ahead and Real-time Merchant Operations for load forecasting. Existing hardware and software have been in place for 6+ years.	Improved modeling will enable greater forecast accuracy for generating plant dispatching and market bidding optimization. Improved DR capabilities will allow production changes to be automatically replicated to BRC for consistent operations.	Jan-15	(0.98)

SPEND YEAR	SPEND FOR APPLICABLE YEAR	PROJECT NAME	PROGRAM	PROJECT DESCRIPTION	PROVIDED SCOPE / BENEFIT	IMPLEMENTATION DATE	COST/BENEFIT RATIO
2015	(4,139)	Managed Meter Wholesale	Upgrades & Replacements (Business Partner)	Managed Wholesale Meter Data, Analysis and Reporting is critical to successful settlement with MISO (\$6 Billion annually). This project is to add new functionality, and replace obsolete database and PERL scripts. Plan to develop a user interface to enable the business partner to load meter data from SCADA system and other sources to enable modeling, validation, correction, and exporting of data for use in MISO market Meter Data Management(MDMA) submittal process. Exported data from this system will also be used in Market forecasting, accounting process, as well settlements with our gas and electric suppliers, and reconciliation of NUG settlements. The existing MDMA was in place prior to our MISO agreement and does not enable us to be responsive to the required reporting periods without significant manual effort. The new system will enable us to be timely in our response, improve productivity and ensure compliance with the MISO agreement and FERC guidelines.	This is a custom solution because of the complexity of calculations and the need to accommodate many data formats the meters send (some are CE, some are not) and there is no mature package on the market for this functionality. Managed Meter Data, Analysis and Reporting is critical to successful settlement with MISO (\$6 Billion annually) and meet NERC standards. This project is to add new functionality, and replace obsolete database and PERL scripts.	Mar-15	2.77
2015	1,289,970	Meter Operational Data Manager Historian	Upgrades & Replacements (Business Partner)	This project is for the enablement of the Operational Data Manager investment. This segment of work will be to configure the OSIsoft PI Historian to house all of the electric meter information to act as a historian for the Smart Grid MDM application. Metering data, including register reads, interval reads and events will be copied from the SG MDM application to this Operational Data Manager (ODM) so that it can keep history for a minimum of 7 years. The historical reporting can be done from the ODM.	The project will configure the OSIsoft PI Historian software to enable the Operational Data Management systems - through <ul style="list-style-type: none"> <li>• Implementation of OSIsoft PI Historian system</li> <li>• Transfer of the AMI electric metering information into OSIsoft Historian</li> <li>• Creating corporate Historian to share the data across business units</li> <li>• creating retention of historian data for minimum of 7 years</li> </ul>	Feb-16	(0.97)
2015	189	MPSC Relocation and Renovation	Upgrades & Replacements (Business Partner)	MPSC will be leasing a new office location in Lansing, the building will be leased at 910 Center Street. This is a customer initiated project. BTS be supporting with NEW Cable, voice and data switches.	Strategic Investment	Jan-15	(1.08)
2015	612,745	UADA Reduction Move In	Upgrades & Replacements (Business Partner)	Using a combination of data in the NCTUE database (National Consumer Telecom & Utilities Experience) along with historical information in SAP, this project will use a risk scoring model to reduce our exposure by collecting money before they move in and target our higher risk customer with a more aggressive dunning procedure. More customers may be required to pay a security deposit.	Make improvements against the following performance: 18.5% of all move-ins resulted in a bad debt write-off. These accounts resulted in an average of \$3.3M/month in mass write-offs.	Aug-15	5.00
2015	67,000	Corporate Capital Projects	Upgrades & Replacements (Business Partner)	Small corporate projects - No business case document.		Dec-15	
2015	(11)	Trail St Renovation	Upgrades & Replacements (Business Partner)	Project adjustment		Dec-15	

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2015	379,918	ITCP-Clare Service Center	Upgrades & Replacements (Business Partner)	BTS will be supporting the Facilities project to build a new service ctr in 2014/2015. This work will require new connectivity to the site, security, data, video, voice as well as SAP changes.	New Service Center to replace aging building.	Nov-15	(1.04)
2015	945,171	Grid Communication Modernization	Upgrades & Replacements (Business Partner)	Verizon has announced that they will no longer offer their analog, multi-drop phone service as of February 28, 2015 and their Frame Relay service after December 31, 2015. These services are an integral component of the SCADA communication infrastructure. The scope of this project is to design a system to modernize all grid communications, including voice, non-secured data, secured data, cameras, card readers, digital fault recorders, protective relays, capacitor banks, motor operated air brakes, reclosers, regulators, etc., utilizing proof of concept(s) within various device types. The end result will be to replace the communications technology to the 30 frame relay sites and ~ 250 critical substations, as well as a service catalog from which future projects rolling out SCADA to new equipment will be able to select the optimal communication solution.	- To modernize the communications technology through standards based communication, replace frame relay and analog multidrop sites - Consistent Communication devices, methods, and platforms. Support could be consolidated based on known technology and solutions, minimizing the need for multiple support models - Cost savings to Consumers Energy for production deployment of identified communication hardware, and infrastructure. Improve redundancy and reduce communications O&M based on carrier diversity - Verizon has announced that their analog multidrop service is being soft sunsetted after 2/28/2015 and Frame Relay as of 06/30/15.	Mar-20	5.00
2015	219,740	ITCP-Hamilton Service Center	Upgrades & Replacements (Business Partner)	BTS will be supporting the Facilities project to build a new service ctr in Hamilton, MI. This work will require new connectivity to the site, security, data, video, voice as well as SAP changes.	New Service Center in Hamilton Michigan to replace the aging Zeeland and Allegan Service Centers. Software changes will affect territory and service areas.	May-16	(1.02)
2015	430,749	ITCP-Jackson Innovation Center	Upgrades & Replacements (Business Partner)	Consumers Energy is renovating the old Woolworth building in downtown Jackson. This project addresses the IT needs for the building.	The project will provide 2 floors for Consumers Energy employees, 1 floor of tenant space and 1 floor of conference rooms and collaboration space. The collaboration space would need to include Wi-Fi, projector, wireless project or Apple TV attached to the projector, confidence monitors in back, Streaming video ability from the room, possible sound room.	Apr-16	(1.03)
2015	26,825	ITCP-JHC Guard House	Upgrades & Replacements (Business Partner)	Replacing Guard Shack at Campbell A 4x6 pre-fab guard shack with raise concrete pad. The ROM should be similar to KARN guard house Difference from Karn - guard house in middle - cost should be less (two lanes with guard shack in the middle)	Provide voice and data connectivity to the new guardhouse.	Nov-15	(1.02)
2015	14,414	Lab Renovation and Decommission	Upgrades & Replacements (Business Partner)	Parnall Computer Information Center lab on 3rd floor will undergo renovation in 2015.	Complete the renovation of the Parnall Basement Lab, Decommission and Move the EA Lab from the Jackson Service Center and Decommission the CIC Lab from the Parnall Building	Oct-15	(1.05)

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2015	141,812	ITCP-Parnall P-26 Renovation	Upgrades & Replacements (Business Partner)	This is project spanning to renovate P26 of the Parnall building. This will involve upgrades to cabling, phones, video conferencing, etc. Accommodations will need to be made for temporary relocation of employees during renovations.	Improved communication infrastructure.	Sep-15	(1.05)
2015	866,029	Legal: eDiscovery Tool Replacement	Upgrades & Replacements (Business Partner)	This project will replace the existing archiving solution for Exchange email, Lotus Notes email, file shares, SharePoint and Lync. It is assumed that a new tool will offer new functionality and features. The current archiving solution is unreliable, the product will be end of life in August 2015, we are on an old version, and recovery time is unacceptable.	Scope to include: Exchange email, Lync conversations, Lotus Notes email (until retired), file shares and SharePoint. Solution should be able to capture all emails (journaling), and be able to scan for new file share and SharePoint content at least once/day. The solution should also have an interface allowing all business partners to search their archived content.	Sep-16	(0.92)
2015	444,611	EA-Electric System Model Enhancement	Upgrades & Replacements (Business Partner)	Implement an Electric Grid System Model that will support the current and future needs of GIS, OMS, DPS (CYME), DMS and GIS Integrated Design Tool. The Electric Grid System Model will be designed and implemented to serve as an extensible platform to efficiently and effectively manage and share the Electric GIS network model information with the rest of grid operational and planning systems. Establish a methodology for integration that will connect Electric GIS, SAP, Cascade and other Asset Management Systems in a common way to provide an integrated view of assets across asset management areas.	Currently, Consumers Energy has four major systems that support asset management: SAP, Cascade, GIS and CAD maps. These systems are not tightly integrated. The lack of integration between these systems prevents timely and meaningful assessment of the condition of our system. Key Benefit: 1) Proactively correct system issues and provide geospatial completeness and accuracy; 2) Better prioritization of reliability funding; 3) Improve the accuracy of billing for street lights, pole attachments and determining tax assessments.	Jul-17	(0.84)
2015	57,652	Union 2015 Contract Changes	Upgrades & Replacements (Business Partner)	SAP and related objects changes needed due to the negotiation of a new OM&C Working Agreement in 2015. Changes are unknown at this time.	Achieve company goals through the items that are negotiated in the Working Agreement. We must meet the agreement made with the Utility Worker's Union for OM&C employees.	Mar-16	(1.00)
2015	19,391	Contract Lifecycle Management	Upgrades & Replacements (Business Partner)	Implement the SAP Contract Lifecycle Management (CLM) Module. This business case will be updated with the completion of 2015 plan / define portion of the project which will further build the full roadmap for both solution architecture approach and benefits. Vendor Management and Contract Management within SAP are in the plan and we expect integration with suppliers to be a later phase for this initiative. This project will be inclusive of Supply Chain Service Contracting (excluding materials contracting). The RFP/Bid process will remain outside of SAP while the newly enabled electronic workflow for service contracting is matured.	The process of negotiating, execution and administering service contracts remains largely manual and is divorced from the SAP ERP system. This reality has resulted in the need for some redundant activities and has also contributed to less than acceptable visibility of our contract services expenditures. CLM will enable us to monitor vendor commitments and ensure they are delivered. This project will result in significant process improvements which in turn will improve buyer productivity, accelerate time to realize value from company contracts and help reduce exposure to contract risks.	May-16	5.00

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2015	42,026	OMS SG User Interface	Upgrades & Replacements (Business Partner)	The purpose of this project is to enhance the OMS application to process smart energy meter data into meaningful outage/restoration information. The product's user interface does not natively meet Consumers Energy's business needs.	Enable OMS to receive power-down and power-up messages from smart meters. Enable OMS to ping user-selected smart meters for power up/down status.	Nov-16	(0.98)
2015	16,076	Prior Yr. Adjustments	Upgrades & Replacements (Business Partner)	No Business Case as these are adjustments made by Accounting that must be reflected as they are a part of the summed total.	No Business Case as these are adjustments made by Accounting that must be reflected as they are a part of the summed total.	N/A	N/A
<b>SUBTOTAL</b>	<b>11,477,509</b>	<b>2015 Upgrades &amp; Replacements (Business Partner)</b>					
2015	3,948,673	2-Way Customer Communication	BP Functionality	Implement Proactive Two-Way Communications to provide customers with timely, relevant information regarding outage, billing, and payment communications.	2-Way Customer Communication will give Consumer Energy the ability to communicate and respond to our Customers in a way that better serves their needs and preferred communication channel for outage information and billing and payment reminders.	Sep-15	(0.99)
2015	2,275,515	Bill Simplification	BP Functionality	Decreases the complexity of the front page of the bill by moving line items from page 1 to page 2. This change will increase bill readability, satisfaction, and decrease calls related to billing issues.	Simplifying bills can lead to improved customer satisfaction and experience, as well as improved on-time payments and decreased calls/complaints regarding billing.	Sep-15	(1.05)
2015	8,233,919	CE Website Redesign	BP Functionality	Redesign the CE Energy website to make the navigation, style, appearance and features current. The site will be more user friendly to visitors. By enabling customer mobility, Consumers Energy's customers can access functionality on our website in a view optimized for their mobile device. Features can include: - Increased Customer focus through content modification, which will increase web usage and longevity, and decrease call center contacts by making the website a user-friendly, value-add interface - Improved appearance, navigation and features.	Increase our customer's overall satisfaction and interaction with the Company. Increased customer focus through content modification and tagging to increase web usage and decrease call center contacts by making the website a user-friendly, value-add interface - Improved appearance, navigation, search and features - More customer-focused presentation of safety, regulatory and other required information in order to increase adherence - Content migration (some content will be migrated, rewritten, enhanced, or deleted).	Sep-15	(0.66)
2015	1,786	ECS - Enterprise Compliance Solution Release II	BP Functionality	Compliance is owned at the operational level. It is carried out via various technologies, manual approaches and applications that are not integrated. This project is to create a comprehensive, integrated and enterprise-wide data management and regulatory compliance solution.	Accountable Authorities included in this Release are Safety & Health, Self Assessment, Fleet, MPSC and Gas Code common elements, and Code of Conduct. This also includes interfaces to various systems.	Jan-15	0.18
2015	13,549	Misc. Small Projects	BP Functionality	No Business Case as these are miscellaneous small dollar projects that must be reflected as they are a part of the summed total.	No Business Case as these are miscellaneous small dollar projects that must be reflected as they are a part of the summed total.	N/A	N/A



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2015	264,705	Transmission Outage Application	BP Functionality	The purpose of this project is to implement Sun-Net's TOA Outage Application Suite. The TOA software streamlines and consolidates a broad spectrum of utility system operations in a single enterprise solution and provides long term, short term and real-time transmission system outage coordination. TOA replaces a combination of Lotus Notes applications and manual processes, and supports the Company's registration as a Transmission Operator in October 2015 by improving consistency and auditability in these processes. It also automates the generation of internal and NERC reports.	1) Replace four Lotus Notes databases used by System Control and Monitoring. 2) Consolidate clearance requests, switching orders, event and shift logs, and schedule plans into a single repository. 3) Replace manual processes with business rules that verify data as it moves through different stages in the workflow. 4) Automate communication that currently occurs via handwritten forms, word documents, and manually composed emails, faxes and phone calls. 5) Improve documentation to comply with FERC/NERC. 6) Lay the foundation for future integration with OMS/DMS, GIS, SAP.	Jun-15	(0.99)
2015	23,523	Travel & Expense Management	BP Functionality	This project is to implement a self provisioning process for travel arrangements (in conjunction with a corporate liability travel and entertainment (T&E) credit card) which enforces compliance with PPM for travel allowances. With the addition of the mobility application, supervisors will be able to approve Expense reports from their mobile device. The ability to automatically populate expense reports will provide controls to promote the use of vendors that provide discounts. Additional Information obtained from the project enhancements will improve our position when negotiating supplier discounts, Minimize potential for fraud.	This initiative is to incorporate an online booking tool that integrates with Enhancement Pack 5 functionality in SAP for Expense reporting, a corporate liability credit card for automated expense statements and the ability to approve expense reports from mobile devices. Without these enhancements, there will remain less visibility related to PPM and allowance limits, required PC access to approve expense reports, and some processes will remain manual.	Jan-15	(0.74)
2015	27,917	Web Content Management	BP Functionality	The purpose of the project is to support the CE Web Redesign project by providing a content management system with the functionality of responsive design. This will require either Ektron 9.1 or sitecore.	Increase our customer's overall satisfaction and interaction with the Company. Increased customer focus through content modification and tagging to increase web usage and decrease call center contacts by making the website a user-friendly, value-add interface - Improved appearance, navigation, search and features - More customer-focused presentation of safety, regulatory and other required information in order to increase adherence - Content migration (some content will be migrated, rewritten, enhanced, or deleted)	Jan-15	(0.98)

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2015	1,081,532	Web Foundation	BP Functionality	More customers are leveraging the company's website, which is the portal to eServices, to complete transactions and interact with Consumers Energy. Currently, numerous defects are awaiting resolution in the eServices functionality and enhancements are available, in which if implemented will lead to a more satisfying customer experience. The eServices system has also seen availability and performance issues in recent years, which further justify the need to re-design the system architecture. eServices is visited approximately 760K times each month by customers to pay bills, report payments, create payment arrangements, enroll in payment plans, report power outages, report meter reads and transfer/start services. Those functions account for 77% of the total web related traffic.	Provides the foundational technologies which will enable the CE Website redesign, focused on increasing our customer's overall satisfaction and interaction with the Company.	Sep-15	(1.02)
2015	13,090,765	Field Service Solution	BP Functionality	The project will replace the current field work management applications, which will become unsupported and resides on obsolete infrastructure. The project will also replace field devices, and address needed improvements for field workers, schedulers, dispatchers, and field leaders to be safe, efficient, and deliver customer value.	Improvements on current applications and devices are necessary to: - Enable Field Workers with tools and processes that provide a simplified and streamlined way to view and complete work with relevant, real-time information that enhances CMS Energy's customer experience and increases safety and productivity in the field - Enable Field Leaders with the tools and processes to spend more time in the field coaching and supervising their crews - Enable Schedulers and Dispatchers with the tools and processes to efficiently distribute and route work to meet customer commitments by providing an integrated real-time view of all resources and work status - Mitigate technology obsolescence with current OMAR architecture and solution.	Jul-16	(0.26)
2015	98,074	ITCP-LakeWinds O&M Building	BP Functionality	Provide BTS support as needed for the Business Funded project to construct the Lake Winds Energy Park wind generation facility. The remaining BTS scope primarily involves providing phone service and corporate network connectivity, as well as associated BTS assets to the O&M building	Provide IT needs for facilities.	Oct-15	(0.98)

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2015	2,626,197	EA - Capacitor Control Replacement	BP Functionality	This project will include replacing the obsolete capacitor controller technology that is currently used. Pager and radio controller technology (modems) will be replaced with new capacitor controllers that utilize cellular technology. These controllers will successfully turn on and off the capacitor banks remotely. Also included in this project will be a Volt Var Optimization software package that will read and store the information coming from the new capacitor controllers. The third component of this project will include a software package that manages the details of the controllers such as firmware updates, profile changes and local logic retrieval. The fourth component of this project is to implement a temporary solution for controlling the capacitor controllers while the VVO is being implemented. This basic software package will be uninstalled after the VVO is functional in 2016. The project will align with the business's existing DSCADA and Smart Energy platforms and strategy. It will also align with the Grid Communication Modernization project.	1) Two way communication to each device gives ability to know that the device is operating properly. Also gives ability to individually address devices as opposed to groups of devices. 2) Provides another node point on the circuit for which line data can be extracted.	Dec-16	(0.90)
2015	761,227	DCE Website Replacement R2	BP Functionality	The DCE Website Replacement R2 project is expected to provide significant new capabilities for payment transactions that our customers expect to see from all of their service providers.	The new payment interface will introduce more payment options, provide consistency of those options across all payment channels, and allow all but the Company's largest industrial customers to pay by any method. Features include allowing customers to see their balance change immediately upon making a payment, make one-time credit card payments online, pay a higher amount than is due, change their payment date to the day the bill is due (for customers on Auto-Pay), process a credit card payment by simply replying "YES" when they receive a text that their bill is ready to be viewed, make a payment on another customer's account, make a payment without logging into the Company's website, and allow phone agents to take payments	Jan-17	(0.85)

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2015	829,353	Wind Park Historian	BP Functionality	<p>This project will be for the implementation of the OSISoft PI Historian at Crosswinds Energy Park and Lakewinds Energy Park for capture and analytics of generation asset data. The new enterprise agreement includes the renewable asset class as points to be archived. The historian capability at the wind parks does not meet the retention capabilities required and is not using the standard OSISoft platform.</p> <p>This was originally part of the construction project, but that approach did not adequately address what's needed for a software solution. Because of the synergies between the historian needs for Crosswinds and Lakewinds, this project "spin-off" will address historian needs at both wind parks.</p>	The primary driver behind this project is for the enablement of the PI databases to increase reliability, consistency of information, and operational data retention for the wind parks.	Apr-16	(1.02)
2015	40,506	Large Service Center Renovation - 2016 (ITCP-JGR Leadership Center)	BP Functionality	This will be a new facility in the Grand Rapids Area.	Provide technology needed for new facilities	Dec-16	(1.03)
2015	73,696	DPO Card Acceptance	BP Functionality	This will be an enhancement allowing the DPO Cash Desk to be able to accept card payments onsite without a convenience fee. Currently the customer has to call the IVR to make a card payment and they pay a convenience fee.	Allow credit card payments in the DPO's. Designate this payment type separately from other payment types. Have controls the same as other payment types. This will allow customers to make card payments at the DPO's without incurring a fee.	Sep-16	(0.93)
2015	118,898	Care 3.0	BP Functionality	<p>Energy assistance systems are very complex, inefficient, and short term crisis focused. As a result, some customers are forced to seek assistance year over year without leading to self-sufficiency. Consumers Energy's CARE program is designed to offer a long term, proactive energy assistance to customers to lead to self-sufficiency.</p> <p>Updates of CARE require re-enrollment process improvement, grace credits, Agency batch enrollment/status update process, BI changes/reporting, customer status updating, multiple funding sourcing, flexible bill credits, arrears forgiveness plan, and enhancements for new grant rules.</p>	<p>-Re-enrollment process improvement and grace credits</p> <p>-CARE history table in Agency Portal</p> <p>-Balance transfer, estimated bills, other account activities</p> <p>-Batch Enrollment/status update process for Agencies (Pending and Approvals, Denied)</p>	Dec-15	(0.43)
2015	126,375	Microsoft Dynamics	BP Functionality				
<b>SUBTOTAL</b>	<b>33,636,210</b>	<b>2015 BP Functionality</b>					

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2015	634,298	BI Enhancements	Enhancements	Over the course of the year there are various requests within the Business Intelligence area for reports, dashboards, and analytics. The backlog consistently run between about 75-100 such requests. These requests vary from simple enhancements to existing reports to full dashboards and analytics. In addition, the release of projects and other development it is expected that the backlog will increase.	Business Intelligence enhancements can impact all breakthrough goals and provide value in numerous ways. As the key to analytics, dashboards, and reporting it support the evaluation of Metric, KPIs, and trending that allow the company to take action to meet objectives. Additionally it supports the analytics and compiling of data in an effective and efficient manner to increase productivity of these that would normally be focused on compiling data.	Dec-15	(0.49)
2015	2,404,958	SAP Enhancements	Enhancements	SAP Enhancements is used for smaller projects that provide new capabilities within existing SAP applications.	Requests for SAP will be managed by the Business Partner Governance Board.	Dec-15	(0.93)
<b>SUBTOTAL</b>	<b>3,039,256</b>	<b>2015 Enhancements</b>					
2015	(41,481)	Backup Redesign	IT Service Delivery	Expand and update the CommVault backup system to enhance capacity, stabilize larger database system backups, and reduce hardware dependencies. Existing system will be updated and leverage to perform snap-backup as an integrated part of the backup system, client side de-duplication will be utilized to reduce network load of backups, and PC backups will be added to help with O/S updates and Legal PC capture requirements.	Project will increase reliability of IT systems and provide quicker disaster recovery.	Sep-15	1.28
2015	104,792	CMDB and Service Catalogue	IT Service Delivery	Consumers Energy with Re-Source Partners as the selected vendor will create a functioning CMDB/ITAM repository on Consumers Energy's ServiceNow Platform instance(to be purchased as part of this project).	This is a process based solution that allows BTS to have a ITIL V3 ITSM solution. We will be capitalizing on several "quick wins" in implementing CMDB/ITAM, which includes: Breaks down the barriers between BTS and the business, CMDB will enable BTS to better assess risk and improve security, enable BTS to track changes in software, and makes compliance easier and more accurate.	Jan-15	(1.02)
2015	1,197,403	Lotus Notes Application Migration & Retirement	IT Service Delivery	Lotus Notes is an unsupported technology now at CE. Most of the 600+ LN applications can be moved to Sharepoint, either from a direct move or customization. The applications are categorized into simple, medium, and complex. The migration is happening in 4 Phases or Waves.	This next phase will further enable capabilities on our current collaboration platform standard (SharePoint), while reducing the risk footprint of using an unsupported standard (Lotus Notes). Sharepoint gives many new enhancements to these applications including collaboration, versioning of documents, security, and automated auditing. With the use of the K2 the users can also modify their own sites once migrated to better tailor them to their business needs.	Dec-15	(0.93)
2015	165,450	SAP BW HANA S/W	IT Service Delivery	BW HANA Software			-
2015	293,676	SAP Net Licensing Agreement	IT Service Delivery	SAP Licensing			-

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2015	888,292	SharePoint Phases	IT Service Delivery	<p>The SharePoint Phases Project delivers New Business Capabilities on the SharePoint platform. Based on business feedback, items will be selected from the list that provide the most business value.</p> <p>SharePoint Phases Scope to include capabilities such as (but not limited to):</p> <ul style="list-style-type: none"> <li>SharePoint Navigation</li> <li>SharePoint Audit</li> <li>SharePoint Templates</li> <li>SharePoint Site Mailboxes</li> <li>Notification Center for SP approvals, tasks, forms, and workflows</li> <li>Task Center with Enterprise Forms</li> <li>SharePoint GIS</li> <li>Notification Center for SAP Approvals, timesheets</li> </ul> <p>SharePoint Phased Development will enable the Enterprise to share and collaborate and continue to improve upon on a common operational document platform, making use of new technologies that simplify employee interaction.</p>	<ul style="list-style-type: none"> <li>Design and Deliver a Blueprint for standard iConnect style structure/features for all SharePoint sites.</li> <li>Develop and Implement the iConnect style structure/features</li> <li>Deploy effective Outlook-SharePoint integration/with features such as Drop-off libraries, Version control, metadata within Outlook utilizing an COTS product.</li> <li>Simplify configuration of project and workgroup sites.</li> <li>Provide self-managed SharePoint Security/Audit functionality as appropriate within corporate Governance/mandate standards.</li> <li>Automate Team Site provisioning- to minimize the delay in individual users getting their Team site/Project sites getting approved. The SharePoint Information Architecture (IA) part of the project scope will deliver a needed foundation for Consumers Energy's (CE) SharePoint environment to ensure compliance with the company's internal information management objectives.</li> </ul>	Dec-15	3.59
2015	202,593	xMatters	IT Service Delivery	<p>The goals of this project are to back up current communication solution and to build the framework for a corporate emergency notification functionality for both internal and external use. In addition, the current configuration does not allow for immediate recovery of functionality when recovering at the BRC; recovery time is approximately one to two hours which is not acceptable for an emergency notification system. Moving to a hosted solution will ensure that the application is available 99.95 percent of the time.</p>	<p>If the xMatters application goes down, the recovery period may be up to several hours. By migrating to a vendor-hosted solution, the application will experience little to no downtime.</p>	Oct-15	(1.00)
2015	191,168	Native HANA Pipeline	IT Service Delivery	<p>The project is intended to implement a new pipeline in the HANA BW system to support modeling and solution build leveraging native HANA capabilities. This project will enable the BI team to develop reporting and analytics solutions on the newer platform consistent with SAP's strategy for HANA. The project would establish a foundation for future solution development including possibly Big data.</p>	<p>Building solutions directly in the native HANA platform has the added benefit of faster performance relative to running BW on HANA. Native HANA will open up new frontiers in reporting, analytics and big data for our business partners and serve as a platform for competitive differentiation.</p>	Dec-15	(0.89)
2015	2,579	Infrastructure Avail Assessmt and Targeted Obsolete Equip Analysis - Critical Apps Platform Modernization	IT Service Delivery	<p>The goal of the project is to conduct an assessment of the high availability configuration of 8 critical applications and determine if they are configured appropriately to meet the system availability targets and to catalogue a list of hardware and software assets supporting each critical application and their end of service dates.</p>	<p>Improve system Availability and issue identification.</p>	Feb-15	(1.00)

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2015	4,479,257	Service Now Phase II	IT Service Delivery	ServiceNow is an ITSM solution that will be decommissioning/replacing HP Service Manager 7. This project entails enabling our ITIL processes in the ServiceNow solution. Until this project is completed, we will continue to be non-ITIL V3 compliant. Our ITIL processes, Incident, Change, Problem, to name a few all have manual steps that can be automated and streamlined within the new solution. Having the Request module separated from the Change Module (a V2 model) prevent true ownership of the Request for Change process.	A hosted solution and there are several advantages: 1) reduced time in configuration changes to the tool as it won't be within the responsibility of CE/HCL, 2) Several manual activities that are currently being performed outside of HPSM 7 can be performed within SNOW, 3) Several other applications (Form 119, Form 120) that have audit implications, and require maintenance to some level, can be retired and decommissioned as well.	Jun-16	(1.00)
2015	293,309	HANA Phase 2, BI/BOBJ 4.0 Upgrade Migration - BI Migration and new dashboards	IT Service Delivery	This project is targeted at completing the migration of all content from BOBJ 3.1 to BOBJ 4.1 and adding new dashboards. The focus of this project is to improve the front-facing user interface and enable optimal user interaction with SAP, particularly regarding reporting. HANA is SAP's next generation in-memory appliance after Business Warehouse Accelerator. The HANA device will result in a high performance solution not only for Business Intelligence but is expected to spread to other key components of SAP. The key pre-requisite to use BW on top of HANA is to upgrade BW from the current version of 7.0 to 7.4 followed by a database migration from Oracle db to Hana in-memory db.	Successful completion of this project will provide key user-interface improvements as well key reporting capabilities for SAP.	Jun-15	(0.97)
2015	766,906	HANA Phase 2, BI/BOBJ 4.0 Upgrade Migration-BW upgrade and HANA	IT Service Delivery	HANA is SAP's next generation in-memory appliance after Business Warehouse Accelerator. The HANA device will result in a high performance solution not only for Business Intelligence but is expected to spread to other key components of SAP. This project targets to upgrade BW from the current version of 7.0 to 7.4 followed by a database migration from Oracle db to Hana in-memory db.	The HANA platform is a transforming element that has the ability to totally turn around the approach to "big data". As the data needs of the organization grow HANA is SAP's direction to change the industry through high performance easy access to data. Success with this project will accelerate data load provisioning time and query execution run-time. This can provide performance improvements across the SAP landscape over time.	Mar-15	(1.06)
2015	64,998	MS Mod - MS Windows Server 2003 Retirement - App Upgrades	IT Service Delivery	The scope of this project covers applications that require an upgrade to be compatible. The project is directly linked to the Microsoft Windows Server Retirement project and needs to follow with the same approvals. Application identification for 2003 Windows Servers Plan to migrate or upgrade application off of 2003 Windows Servers Test plans pre-production Resource augmentation as needed.	Windows Server 2003 is currently at end of life, resulting in additional maintenance costs to support this out dated operating system. This project will assist system owners in upgrading applications that are not funded by other efforts so that the applications can be moved to new operating systems as the 2003 servers can be retired.	Dec-16	(0.89)

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2015	1,658,688	Private & Hybrid Cloud	IT Service Delivery	This project will define and later execute a Private and Hybrid cloud service that offers automated provisioning of server and desktop environments. This project also includes funding Enterprise Architectur developing a strategy on how we continue to use and intergrate this technology in 2016 and beyond. This will allow IT employees to request virtual datacenter infrastructure when needed. Orchestration software will charge the client and build the requested infrastructure. This will also allow Consumers Energy to dynamically scale its server and desktop infrastructure across private and public clouds as needed.	Benefits Include: OS and application compatibility, faster setup and tear down of test areas, faster infrastructure building, provide additional growth space for applications that need sudden expansion, and Disaster Recovery. This project directly supports IT's goal of Technology as a Service and supports reducing our labor costs in our Gartner Benchmarks. Projects currently wait 5-20 days from when they request server and to when it is delivered. By implmementeing orchestration software, we will be able to deliver infrastructure in minutes instead of days.	May-16	(0.73)
2015	1,074,501	Work and Financial Management Tool	IT Service Delivery	The Plan phase of the project is to deliver a Strategic plan to assist BTS in delivering a PPM solution. Depending on the outcome of this effort, the remaining phases of the project will likely consist of 1) an upgrade of the Clarity software with integrations to SAP, SharePoint and other enhancements, or less likely 2) Implementation of another PPM Toolset with integrations and enhancements as needed.	The overall goal of this project is to significantly improve Work Management and Financial Management productivity and efficiency within the BTS and the Strategy and Governance organization by implementing a solution that will:  - Provide seamless integration among systems: Project Management Information (PMIS), SAP, Service Manager - Reduced manual labor and reliance on disparate tools such Excel Spreadsheets, and third party integration packages - Provide transparency and better visibility of project and financial information for improving data driven decision making	May-16	(1.00)
2015	125,331	Tibco API Software Purchase	IT Service Delivery	TIBCO Software			-
<b>SUBTOTAL</b>	<b>11,467,463</b>	<b>2015 IT Service Delivery</b>					
2015	6,913	Cyber Security Maturity Plan	Security	Conduct the major CyberSecurity Process upgrades to address and fill the necessary gaps within CE-Security Architecture and CMS-Security Strategy areas through the assistance of all the technical teams under these two broad categories. Mandate, Guide and Oversee to protect corporate IP and OP assets against Cyber Threats and Vulnerabilites and achieve 3.5 maturity rating by May 2015.	Achieve best in class cyber security program maturity Create single, consolidated cyber security program for the enterprise Increase compliance effectiveness Focus on employee development, engagement and performance Support company breakthrough goals	Jun-15	(1.03)
2015	875,368	NERC CIP Version 5-v6.o	Security	Regulations required Consumers Energy to be compliant with NERC Critical Infrastructure Protection (CIP) standards. This project is chartered to bring critical infrastructure into compliance with NERC/CIP standards.	Key project scope includes completing requirements to meet NERC CIP requirements (Version 5), which include: Identify and clzssify BES Cyber Assets and develop preventive, detective, and corrective controls as they apply to the NERC CIP Version 5 Standards.	Sep-18	(0.96)



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2015	156,737	Security Manager Portal	Security	Corporate Security Manager will be converted from existing Visual Basic / Classic ASP site to SharePoint/Microsoft .Net 4. Design will be consistent in practice with other Intranet applications.	Corporate Security Manager application needs to be transitioned to new technology that is supported, readily available in the market place and consistent with other technology products in the department.	Apr-15	(1.00)
2015	405,669	ARP-Cyber Security	Security	The objective for Cyber Security Asset Refresh project is to ensure continued vendor support of security technology deployed at the Company as well as reduce the risk of unplanned outages due to outdated hardware/software and appliances.	Replace end of life and obsolete systems; leading to less probability of equipment failures, software compatibility issues and business partner downtime.	12/31 Annually	(1.07)
2015	(1)	Identity & access Mgmt	Security	Project adjustment		Sep-20	(0.92)
2015	824,447	Dell Identity Manager	Security	This project is chartered for implementation of configurable Identity and Access Management functionality and best practices with enforced compliance. This includes enterprise level foundation architecture, technology, and end-2-end processes and controls, which will be implemented in a phased/iterative approach.	Attestation will be a key focus area for the Project, which will streamline and automate privileged group (SOX/ACS/PCI) reviews for both the Info Risk team and group owners team completing the review. The project will then aim to continue development and implementation of self-service identity and access management processes for employees/contractors, with key focus on automation and integration.	Sep-20	(0.92)
2015	270,668	Single Sign-On Software as a Service	Security	Enable rapid deployment of employee authentication for business selected SaaS solutions.	Project will establish single sign-on capability to enable internal authentication for rapid implementation of Software as a Service solutions.	Apr-15	(0.98)
2015	355,599	Energy Resource Security Architecture (Later known as OT Security Architecture)	Security	IT Information Security is taking responsibility for Cyber Security within various areas of the businesses' operations technology. The project will be used to implement a consistent security architecture across the Operational Technology landscape.	Key scope includes the continuation of implementing the Consumers Energy OT security standard across the Generation fleet.	Nov-19	(0.97)
2015	103,558	Full Content Packet Capture	Security	This project will implement a solution capable of capturing full content data for all packets coming into and leaving our network perimeter and storing the data for a minimum of two weeks.	Key solution to detect indicents and respond to compromise. Helps answer the key question, "what was taken?" Mitigates lack of visibility and ability to determine what was stolen during an incident. Forces responders to assume data was compromised if there is no ability to prove otherwise.	Dec-15	(1.03)
2015	86,793	CIS - Critical Infrastructure Support	Security	The requirement is to replace and upgrade the in scope items with current technologies. The project will replace functionality without necessarily doing a like-for-like replacement of the asset. For example, instead of replacing 20 servers with 20 servers the project might replace them with two hypervisors, the licensing for the hypervisors, and a shelf of storage for a storage array.	IT assets that are out of warranty or obsolete require additional O&M dollars to maintain. By replacing this equipment we can minimize incremental O&M spend for extended warranty and time/material repair expenses.	12/31 Annually	(1.04)
<b>SUBTOTAL</b>	<b>3,085,750</b>	<b>2015 Security</b>					

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2016	581,380	ARP - Collaboration Asset Refresh	Upgrades & Replacements (Enterprise)	This project is for the refresh of the Company's Collaborative tools such as Telephony Systems, Video Conference Systems and Digital Whiteboard systems.	This project provides value by insuring the tools used by employees to communicate are modern and reliable.	12/31 Annually	(0.95)
2016	504,657	ARP - Critical Infrastructure Support	Upgrades & Replacements (Enterprise)	Asset refresh project for infrastructure supported by CIS. Replace assorted critical infrastructure due to obsolescence hardware as identified per 5 year budget planning/forecast. IT provides both hardware and labor funding.	The requirement is to replace and upgrade the in scope items with current technologies. The project will replace functionality without necessarily doing a like-for-like replacement of the asset. For example, instead of replacing 20 servers with 20 servers, converged infrastructure will be implemented.	12/31 Annually	(1.02)
2016	1,387,090	ARP - Field Device Asset Management (FDAM)	Upgrades & Replacements (Enterprise)	The project is in support of plans for IT to validate, procure and deploy field devices on a four-year refresh cycle. Not completing the refresh will push the need for more capital dollars into future years. It will also increase costs for hardware repairs and potentially not allow Field Workers with older devices to complete their job tasks.	Field Workers require these rugged devices to complete their daily job tasks. Refreshing the equipment: - Reduces equipment failures - Reduces Field Worker Downtime - Refreshed hardware allows software to function as designed.	12/31 Annually	0.19
2016	2,551	ARP - IT Facilities	Upgrades & Replacements (Enterprise)	This project addresses the physical facilities (space, equipment racks, communications cabling, etc.) and environmental needs in the Company's two Data Centers and IT Rooms.	The project will insure that the Company's IT Systems that provide Customer services can be reliably hosted from the internal Data Centers.	12/31 Annually	(0.97)
2016	667,535	ARP - Printer Asset Management (PAM)	Upgrades & Replacements (Enterprise)	The project is in support of plans for IT to validate, procure and deploy printers, plotters, and multi-function printing devices on a five-year refresh cycle for every department in the company. Not completing the refresh will push the need for more capital dollars into future years. It will also increase costs for hardware repairs and potentially not allow Business Partners with older printers to complete their job tasks.	Business Partners require these printers/plotter to support their business efforts. Refreshing the equipment: - Reduces equipment failures - Reduces Business Partner Downtime - Refreshed hardware allows software to function as designed	12/31 Annually	(1.05)
2016	2,027,747	ARP-Server	Upgrades & Replacements (Enterprise)	IT infrastructure generally becomes less reliable after 5 years, jeopardizing the stability of our business' critical applications running on top of our IT Infrastructure. This Server ARP project will evaluate Computer Hardware with more than 5 years of continuous use and replace where appropriate.	The project will intelligently and systematically replace critical infrastructure before a system failure that would disrupt business operations.	12/31 Annually	(1.07)
2016	1,288,757	ARP - Storage	Upgrades & Replacements (Enterprise)	Assess current and future capacity storage needs.  • Add capacity to existing General Purpose Vmax storage arrays (Parnall & BRC) and decommission existing storage as required.	Product Scope Statement This project is intended to address the ongoing refresh and growth needs within Information Technology regarding the data storage hardware. The project replaces hardware aged more than 5 years and provides incremental storage capacity where needed.	12/31 Annually	(1.08)

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2016	1,056,358	ARP - Wireless Network	Upgrades & Replacements (Enterprise)	This project is to refresh targeted portions of the Company's various wireless networks including the 800 MHz Radio System Infrastructure.	The scope of this project is extending the useful life of the Company owned radio systems. It's primary focus is on the 800 MHz radio system proper but also includes other systems, sub systems and components used within the Company. The project provides value by insuring reliable and real time communication between company crews and disptach locations.	12/31 Annually	(0.97)
2016	2,590,477	ARP - Workstation Asset Management (WAM)	Upgrades & Replacements (Enterprise)	The project is in support of plans for IT to validate, procure and deploy desktops and laptop computers on a four-year refresh cycle for every department in the company. Not completing the refresh will push the need for more capitol dollars into future years. It will also increase costs for hardware repairs and potentially not allow Business Partners with older desktops or laptops to complete their job tasks.	Business Partners require these Desktops and Laptops to support their business efforts. Refreshing the equipment: - Reduces equipment failures - ReducesBusiness Partner Downtime - Refreshed hardware allows software to function as designed	12/31 Annually	(0.43)
2016	464,729	ARP - Data Network	Upgrades & Replacements (Enterprise)	Network Services - Asset Refresh Data Network. In conjunction with Voice Network Team, refresh legacy Avaya data switches at the following Sites: Macomb, CCC, Trail Street, Jackson Garage, Bridge St., Kalamazoo, Flint, Ray, Zeeland Gen, Cadillac, Owosso	To replace the Avaya Nortel Switches throughout the State of Michigan	12/31 Annually	(1.11)
2016	282,042	BI 4.1 Dataservices Upgrade	Upgrades & Replacements (Enterprise)	Apply a holistic maintenance upgrade approach to all BI 4.1 systems. Project scope to include all 4.1 modules, Support Packs and other maintenance to be applied will be determined annually. This project will need to be aligned to the in-progress application patch strategy.	Upgrading the support packs helps to ensure overall stability, reliability, and performance of BI 4.1 applications. Regular BI 4.1 support pack upgrades are a best practice to ensure consistent performance and availability of the BI systems.	Oct-16	(0.92)
2016	470,551	ESB Upgrade	Upgrades & Replacements (Enterprise)	The Enterprise Service Bus (ESB) is an Enterprise Integration Platform initially implemented to support the AMI Smart Energy Applications. It enables secure flow of data from Smart Meter head ends to SAP and other systems that process and store the data.	Upgrading this critical infrastructure will ensure meter reads will continue to flow smoothly and securely to all the systems that process this data, in turn ensuring customers get timely services like billing etc.	Sep-17	(0.89)
2016	2,286,749	Lotus Notes Application Migration & Retirement Wave 2	Upgrades & Replacements (Enterprise)	Lotus Notes is an unsupported technology now at CE. Most of the 600+ LN applications can be moved to Sharepoint, either from a direct move or customization. The applications are categorized into simple, medium, and complex. The migration is happening in 4 Phases or Waves and this is Wave 2.	This next phase will further enable capabilities on our current collaboration platform standard (SharePoint), while reducing the risk footprint of using an unsupported standard (Lotus Notes). Sharepoint gives many new enhancements to these applications including colloboration, versioning of documents, security, and automated auditing. With the use of the K2 the users can also modify their own sites once migrated to better tailor them to their business needs.	Dec-16	(0.93)

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2016	50,713	Oracle Version Upgrade	Upgrades & Replacements (Enterprise)	This project will have 2 phases: 1) build new virtual servers to migrate off old HP/UX physical servers. 2) Upgrade all Oracle databases that are currently on older versions on the Oracle Cluster to a newer version.	1) Add capacity to the current virtual server farms (located at Parnall and BRC) with licensed Oracle server databases 2) Move all current Oracle Databases / Applications to the virtual farm 3) Identify the steps to modify the applications if necessary	Jun-18	(0.92)
2016	7,538,841	SAP Platform Modernization	Upgrades & Replacements (Enterprise)	The SAP Platform Modernization Program includes the rearchitecture and replacement of the 2007-2008 SAP infrastructure, which is well beyond its recommended useful life. The program also includes an upgrade of SAP applications to Enhancement Pack 8.	This program is essential for the company to maintain support and stability of its core set of business applications, while also improving system availability, performance and resiliency.	Sep-17	(1.00)
2016	45,991	TCOE HP ALM Upgrade	Upgrades & Replacements (Enterprise)	HP ALM (formerly HPQC) is our primary testing tool. It holds our test case repository enabling reuse of test cases across various initiatives. It contains test evidence, storing test execution results. It is used for test status reporting. This project upgrades HP ALM to the current version to ensure we stay on a supported version.	The intent of this project is to mitigate the risk of technology obsolescence; not being at a level of software supported by the vendor.	Dec-16	(1.01)
2016	39,096	Team Foundation Server	Upgrades & Replacements (Enterprise)	This project will look to move off of Serena as our non-SAP code library and into TFS or VSO. This will eliminate the need for Serena and improve our reliability by moving to the Microsoft code library stack. There are several new benefits with TFS/VSO, including code branching and merging, in-line code reviews, and agile project management of development tasks. This project will also plan a strategy for the standardization of Visual Studio for all .NET apps and will need to come up with a strategy for moving to a standard, including support of older applications and communications to the portfolio on upgrading certain applications when changes to the application arise.	This project will provide a standard code repository system for .NET applications	Nov-16	(0.96)
2016	26,922	WAN Transformation	Upgrades & Replacements (Enterprise)	This project is to migrate the Wide Area Network connectivity at Company locations off of legacy T1 technology and on to newer Carrier Ethernet technology.	All Company locations within the State of Michigan will be converted to new Wide Area Network technology. The new technology is more reliable and provides more bandwidth to enable more productivity at the Company's locations.	12/31 Annually	(1.02)
<b>SUBTOTAL</b>	<b>21,312,186</b>	<b>2016 Upgrades &amp; Replacements (Enterprise)</b>					
2016	285,629	Corporate Capital Projects	Upgrades & Replacements (Business Partner)	Small corporate projects - No business case document		Dec-16	

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2016	(18,870)	Electric GIS-OMS Upgrade	Upgrades & Replacements (Business Partner)	The purpose of this project is to implement the version of the GIS and OMS software that is required for the upcoming OMS-AMI Integration effort. The scope includes the upgrade of the ArcGIS software, the Responder software, the Oracle database and the operating system. New version of the Responder software includes: 1) Certification of the responder software on 64 bit technology (reducing risk on all patch installations); 2) Responder Refresh technology, which replaces the Responder Explorer screen refresh functionality (PubSub).	Upgrade is required to prepare for the OMS-AMI Integration implementation. Provides updated hardware and software versions.	Jan-16	(1.00)
2016	262	Energy Trading and Risk Management Solution	Upgrades & Replacements (Business Partner)	Required in order to remain in Regulatory/Legal compliance Technological obsolescence with short-term imminent risk to current service levels. In July 2013, Consumers Energy was informed by Brady PLC that POMAX, the Energy Trading & Risk Management (ETRM) software currently being used by Consumers Energy, is going to enter end-of-life mode on 07/01/15 with full cessation of support by 01/01/16. As a result, a new system replacing POMAX will need to be purchased and installed.	The POMAX system currently performs the following functions: (1) Deal capture of all natural gas and power transactions. The POMAX system then uses this information for: a. Daily market risk and credit risk measuring and monitoring b. Month-end, quarter-end, year-end accounting reporting, including 10-Q and 10-K disclosures	Jan-16	(0.98)
2016	(2,101)	Financial Planning and Forecasting	Upgrades & Replacements (Business Partner)	Technical support has not been available for IMPACT since September 2012. The vendor from whom this tool was purchased is no longer in the business of supporting it, nor does the expertise to do so exist either with this vendor or in the industry as a whole. As we are required to regularly apply Microsoft patches and other technology upgrades, our risk for the software becoming inoperable continues to increase.	This Project will mitigate the following risks: The loss of the software and our resulting inability to maintain an accurate and consistent forecast/budget/long term plan poses several financial risks to the Company. The forecast/budget is part of the internal control process (audit/SOX) for financial statements validation. The results of the planning tool are the basis for most financial/planning decisions made at the Company. It is used as support in Rate Cases for Rate Base and Cost of Capital projections. It is used in developing financial targets and the achievement of the targets (10 yrs. Consistent Financial Performance). Our inability to produce cohesive long term plans could result in a credit downgrade and/or negative investor/shareholder perception.	Mar-16	(1.00)
2016	10,138	GIS-Integrated Design	Upgrades & Replacements (Business Partner)	This project is to replace the current CAD/Work Requirements and Design software with a GIS based design tool for improved capabilities in the preparation of graphical designs for the order fulfillment processes for gas and electric work orders.	New functionality in scope: Ability to directly integrate with multiple ESRI databases, read data and attribution form dataset to begin design, Send data to proper data set (ESRI), electric and gas design simplification tools (streamline the actual placement of materials and attribution into a design), consumer GIS data as a service in addition to directly connect data (Replace WRaD Robosync), creating synergy for new construction of being able to send an updated design file with the corresponding updates and attribution to the GIS improving the as-built (redlining) posting process.	May-18	(0.95)

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2016	943,551	Legal-eDiscovery Tool Upgrade	Upgrades & Replacements (Business Partner)	This project will replace the existing archiving solution for Exchange email, Lotus Notes email, file shares, SharePoint and Lync. It is assumed that a new tool will offer new functionality and features. The current archiving solution is unreliable, the product will be end of life in August 2015, we are on an old version, and recovery time is unacceptable.	Scope to include: Exchange email, Lync conversations, Lotus Notes email (until retired), file shares and SharePoint. Solution should be able to capture all emails (journaling), and be able to scan for new file share and SharePoint content at least once/day. The solution should also have an interface allowing all business partners to search their archived content.	Sep-16	(0.92)
2016	40,085	Wind Park Historian	Upgrades & Replacements (Business Partner)	This project will be for the implementation of the OSISoft PI Historian at Crosswinds Energy Park and Lakewinds Energy Park for capture and analytics of generation asset data. The new enterprise agreement includes the renewable asset class as points to be archived. The historian capability at the wind parks does not meet the retention capabilities required and is not using the standard OSISoft platform.  This was originally part of the construction project, but that approach did not adequately address what's needed for a software solution. Because of the synergies between the historian needs for Crosswinds and Lakewinds, this project "spin-off" will address historian needs at both wind parks.	The primary driver behind this project is for the enablement of the PI databases to increase reliability, consistency of information, and operational data retention for the wind parks.	Apr-16	(1.02)
<b>SUBTOTAL</b>	<b>1,258,694</b>	<b>2016 Upgrades &amp; Replacements</b>	<b>(Business Partner)</b>				
2016	(15,652)	2 Way Customer Communication	BP Functionality	Implement Proactive Two-Way Communications to provide customers with timely, relevant information regarding outage, billing, and payment communications.	2-Way Customer Communication will give Consumer Energy the ability to communicate and respond to our Customers in a way that better serves their needs and preferred communication channel for outage information and billing and payment reminders.	Sep-15	(0.99)
2016	(1,007)	CARE 3.0	BP Functionality	Energy assistance systems are very complex, inefficient, and short term crisis focused. As a result, some customers are forced to seek assistance year over year without leading to self-sufficiency. Consumers Energy's CARE program is designed to offer a long term, proactive energy assistance to customers to lead to self-sufficiency.  Updates of CARE require re-enrollment process improvement, grace credits, Agency batch enrollment/status update process, BI changes/reporting, customer status updating, multiple funding sourcing, flexible bill credits, arrears forgiveness plan, and enhancements for new grant rules.	-Re-enrollment process improvement and grace credits -CARE history table in Agency Portal -Balance transfer, estimated bills, other account activities -Batch Enrollment/status update process for Agencies (Pending and Approvals, Denied)	Jan-16	(0.43)

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2016	(140,181)	CE Website Replacement	BP Functionality	Redesign the CE Energy website to make the navigation, style, appearance and features current. The site will be more user friendly to visitors. By enabling customer mobility, Consumers Energy's customers can access functionality on our website in a view optimized for their mobile device. Features can include: - Increased Customer focus through content modification, which will increase web usage and longevity, and decrease call center contacts by making the website a user-friendly, value-add interface - Improved appearance, navigation and features.	Increase our customer's overall satisfaction and interaction with the Company. Increased customer focus through content modification and tagging to increase web usage and decrease call center contacts by making the website a user-friendly, value-add interface - Improved appearance, navigation, search and features - More customer-focused presentation of safety, regulatory and other required information in order to increase adherence - Content migration (some content will be migrated, rewritten, enhanced, or deleted)	Jan-16	(0.66)
2016	3,734,664	Contact Center Customer Experience Refresh	BP Functionality	Comprehensive refresh of the Customer Call Center's IT infrastructure, including the three Automatic Call Distributor (ACD) systems, networking equipment, IVRs, Work Force Management, servers, and applications. The ACD Systems are 10 years old in 2015 and cannot readily adapt to best practice. Additionally, they are no longer vendor supported and hardware replacement parts are not available.	Speech enabled interactive voice response (IVR) Customer Service Representative Knowledge Management eMail Management Call Center Quality Monitoring Optimize Skills Based routing Customer Analytics Enhancements Multi-Channel Inbound & Outbound Communications Virtual Hold Click to Call	Jun-17	(0.43)
2016	75,012	Contract Lifecycle Management	BP Functionality	Implement the SAP Contract Lifecycle Management (CLM) Module. This business case will be updated with the completion of 2015 plan / define portion of the project which will further build the full roadmap for both solution architecture approach and benefits. Vendor Management and Contract Management within SAP are in the plan and we expect integration with suppliers to be a later phase for this initiative. This project will be inclusive of Supply Chain Service Contracting (excluding materials contracting). The RFP/Bid process will remain outside of SAP while the newly enabled electronic workflow for service contracting is matured.	The process of negotiating, execution and administering service contracts remains largely manual and is divorced from the SAP ERP system. This reality has resulted in the need for some redundant activities and has also contributed to less than acceptable visibility of our contract services expenditures. CLM will enable us to monitor vendor commitments and ensure they are delivered. This project will result in significant process improvements which in turn will improve buyer productivity, accelerate time to realize value from company contracts and help reduce exposure to contract risks.	May-16	5.00

SPEND YEAR	SPEND FOR APPLICABLE YEAR	PROJECT NAME	PROGRAM	PROJECT DESCRIPTION	PROVIDED SCOPE / BENEFIT	IMPLEMENTATION DATE	COST/BENEFIT RATIO
2016	36,939	Credit and Collections	BP Functionality	Investigate ways to leverage IT applications to support the lowering of uncollectible expense goals. Payments are uploaded and credit to a customers account automatically and efficiently. Examples are : SaS (DebtNext) This would be to manage campaigns/channels etc across the entire portfolio of Active, Final and Written-off. Technology Benefits: DebtNext - Cloud computing vs IT resources, customize system to meet business needs People Benefits - DebtNext - Real time decision support with reporting options provided Enhanced Communications - Easily understand, new communication channels (i.e.postcards) Process Benefits - DebtNext - would manage third party collections vendors and accounts placed with them. What we "need to do" not "what we have done" Financial Benefits - DebtNext - Reduce Cost and improve operations.	Technology Benefits: DebtNext - Cloud computing vs IT resources, customize system to meet business needs People Benefits - DebtNext - Real time decision support with reporting options provided Enhanced Communications - Easily understand, new communication channels (i.e.postcards) Process Benefits - DebtNext - would manage third party collections vendors and accounts placed with them. What we "need to do" not "what we have done" Financial Benefits - DebtNext - Reduce Cost and improve operations. Audit trail	Mar-17	5.00
2016	134,278	Customer Care Excellence (Interactions -SIP Based Implementation) (IVR Solutions)	BP Functionality	Interactions Virtual Assistant solutions turn frustrating experiences into productive conversations. The application will that deliver unprecedented comprehension, sSo customers can speak in their own words.	Create a path for exceptional customer service through a natural language system. Achieve operational efficiency by reducing agent call time. Provide automated solution to solve the start, stop and transfer service. Improved reporting capabilities to enable management of the self service channel. Increase customer satisfaction and contact center efficiency.	Nov-16	0.31
2016	11,416,409	DCE Website Replacement R2	BP Functionality	This project is a comprehensive, multi-year effort to transform the Consumers Energy digital customer experience. Each project delivers value and has dependencies for the next phase.	<ul style="list-style-type: none"> <li>• New online payment portfolio with a payment provider (Paymentus)</li> <li>• Guest Pay</li> <li>• Additional Credit Card options</li> <li>• Customer friendly business rule improvements</li> <li>• Additional site content</li> </ul>	Aug-16	(0.85)
2016	355,671	DOET Advanced Planning and Reporting	BP Functionality	The purpose of this project is to re-evaluate the current Project Systems WBS Hierarchy structure (primarily Blanket Orders and shadow projects) into a more efficient and effective way to report and analyze Capital and O&M work programs. The current structure, based on the original approach defined during CEA (2006) has created a large and unwieldy amount of data that prevents the ability to generate cost reports, and furthermore the current structure does not provide the ability to take full advantage of IM (Investment Management module in SAP) functionality to associate actuals, overheads and other cost allocations.	The Project will address the current structure of the SAP PR Program Hierarchy and WBS elements. By modifying them, the IT Organization will be in a position to prevent or mitigate the following situations: "the amount of data will continue to grow, reporting will be unable to handle the volume of data and "time-out"; data volume prevents the ability to access the structures for updating and modification; year-end budget assignment from SAP IM is hampered."	Jul-17	0.23



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SPEND YEAR	SPEND FOR APPLICABLE YEAR	PROJECT NAME	PROGRAM	PROJECT DESCRIPTION	PROVIDED SCOPE / BENEFIT	IMPLEMENTATION DATE	COST/BENEFIT RATIO
2016	522,017	DPO Card Acceptance	BP Functionality	This will be an enhancement allowing the DPO Cash Desk to be able to accept card payments onsite without a convenience fee. Currently the customer has to call the IVR to make a card payment and they pay a convenience fee.	Allow credit card payments in the DPO's. Designate this payment type separately from other payment types. Have controls the same as other payment types. This will allow customers to make card payments at the DPO's without incurring a fee.	Sep-16	(0.93)
2016	1,252,499	EA - Capacitor Control Replacement	BP Functionality	This project will include replacing the obsolete capacitor controller technology that is currently used. Pager and radio controller technology (modems) will be replaced with new capacitor controllers that utilize cellular technology. These controllers will successfully turn on and off the capacitor banks remotely. Also included in this project will be a Volt Var Optimization software package that will read and store the information coming from the new capacitor controllers. The third component of this project will include a software package that manages the details of the controllers such as firmware updates, profile changes and local logic retrieval. The fourth component of this project is to implement a temporary solution for controlling the capacitor controllers while the VVO is being implemented. This basic software package will be uninstalled after the VVO is functional in 2016. The project will align with the business's existing DSCADA and Smart Energy platforms and strategy. It will also align with the Grid Communication Modernization project.	1) Two way communication to each device gives ability to know that the device is operating properly. Also gives ability to individually address devices as opposed to groups of devices. 2) Provides another node point on the circuit for which line data can be extracted.	Dec-16	(0.90)
2016	757,075	EA - OMS SG User Interface	BP Functionality	The purpose of this project is to enhance the OMS application to process smart energy meter data into meaningful outage/restoration information. The product's user interface does not natively meet Consumers Energy's business needs.	Enable OMS to receive power-down and power-up messages from smart meters. Enable OMS to ping user-selected smart meters for power up/down status.	Nov-16	(0.98)
2016	(128,323)	ED -Cascade - SAP Integration	BP Functionality	Reflects the Cascade to SAP Integration project that was canceled.			
2016	319,235	Electric Distribution Historian Implementation	BP Functionality	This project is for the enablement of the DSCADA investment. Currently the DSCADA investment is planning to install Distribution Supervisory, Control and Data Acquisition devices in distribution substations from 2013 to 2017.	The implementation of the data historian provides the data storage/operational analytics platform for these devices and will serve as the data foundation for the enterprise DMS(Distribution Management System) Project.	Jun-16	(0.99)

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2016	299,817	Facilities Management	BP Functionality	Facilities is actively standardizing and optimizing all Facilities processes. In addition to implication of SAP RE-FX and connectivity of the CAD drawings to SAP, Phase 1 will provide high level roadmap for implementation of phase 2 and 3.	Centralized Facilities Management Operations through SAP will reduce complexities and organize relevant files and records. Automating workflow/tasks of current Business Services Support Center (new moves, furniture orders) as well as maintenance. Self service moves - eliminates the Move-Add-Change (MAC) form. Enabling multiple reports and dashboard functionality with integration of SAP financial master data (energy usage, work order maintenance); Know how many sq ft is being used in a report; Org and Cost Center Structure providing data to determine who is utilizing space.	Aug-19	(0.42)
2016	7,989,447	Field Service Solution	BP Functionality	The project will replace the current field work management applications, which will become unsupported and resides on obsolete infrastructure. The project will also replace field devices, and address needed improvements for field workers, schedulers, dispatchers, and field leaders to be safe, efficient, and deliver customer value.	Improvements on current applications and devices are necessary to: - Enable Field Workers with tools and processes that provide a simplified and streamlined way to view and complete work with relevant, real-time information that enhances CMS Energy's customer experience and increases safety and productivity in the field - Enable Field Leaders with the tools and processes to spend more time in the field coaching and supervising their crews - Enable Schedulers and Dispatchers with the tools and processes to efficiently distribute and route work to meet customer commitments by providing an integrated real-time view of all resources and work status - Mitigate technology obsolescence with current OMAR architecture and solution.	Jul-16	(0.26)
2016	2,462,843	Field Service Solution Release 2	BP Functionality	Field Service Solution (FSS) Release 2 will provide continued enhancement to address improvements for field workers, schedulers, dispatchers, and field leaders to be safe, efficient, and deliver customer value	FSS Release 2 enhancements include the following - 1. ETR -Improve the timeliness and accuracy of incident / work order level ETRs while reducing the frequency of changes to the ETR field. Improvement in the transparency of process changes made in dispatch and the field who are ultimately responsible for the ETR data point. 2. Fleet Summary - Need ability to update the fleet summary screen data dynamically when a mobile field worker goes on-route or on-site. Fleet Summary will provide Sub and circuit visibility on DA screen as it was in OMAR 3. EIRP Workforce -Define the work required to eliminate the paper processes by implementing standard FSS tools and work management processes to this workforce. 4. MRPS Long Cyle workforce - Define the work required to eliminate the paper processes by implementing standard FSS tools and work management processes to this workforce.	Jan-17	(0.82)

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2016	824,451	GM - Electric System Model Enhancement	BP Functionality	Implement an Electric Grid System Model that will support the current and future needs of GIS, OMS, DPS (CYME), DMS and GIS Integrated Design Tool. The Electric Grid System Model will be designed and implemented to serve as an extensible platform to efficiently and effectively manage and share the Electric GIS network model information with the rest of grid operational and planning systems. Establish a methodology for integration that will connect Electric GIS, SAP, Cascade and other Asset Management Systems in a common way to provide an integrated view of assets across asset management areas.	Currently, Consumers Energy has four major systems that support asset management: SAP, Cascade, GIS and CAD maps. These systems are not tightly integrated. The lack of integration between these systems prevents timely and meaningful assessment of the condition of our system. Key Benefit: 1) Proactively correct system issues and provide geospatial completeness and accuracy; 2) Better prioritization of reliability funding; 3) Improve the accuracy of billing for street lights, pole attachments and determining tax assessments.	Sep-17	(0.95)
2016	63,376	GM - Grid Communication Modernization	BP Functionality	Verizon has announced that they will no longer offer their analog, multi-drop phone service as of February 28, 2015 and their Frame Relay service after December 31, 2015. These services are an integral component of the SCADA communication infrastructure. The scope of this project is to design a system to modernize all grid communications, including voice, non-secured data, secured data, cameras, card readers, digital fault recorders, protective relays, capacitor banks, motor operated air brakes, reclosers, regulators, etc., utilizing proof of concept(s) within various device types. The end result will be to replace the communications technology to the 30 frame relay sites and ~ 250 critical substations, as well as a service catalog from which future projects rolling out SCADA to new equipment will be able to select the optimal communication solution.	<ul style="list-style-type: none"> <li>- To modernize the communications technology through standards based communication, replace frame relay and analog multidrop sites</li> <li>- Consistent Communication devices, methods, and platforms.</li> </ul> Support could be consolidated based on known technology and solutions, minimizing the need for multiple support models <ul style="list-style-type: none"> <li>- Cost savings to Consumers Energy for production deployment of identified communication hardware, and infrastructure.</li> <li>- Improve redundancy and reduce communications O&amp;M based on carrier diversity</li> <li>- Verizon has announced that their analog multidrop service is being soft sunsetted after 2/28/2015 and Frame Relay as of 06/30/15.</li> </ul>	Dec-18	(0.91)

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2016	1,319,765	GM - Utility Analytics	BP Functionality	<p>*This project will provide the infrastructure and framework for data analytics across Consumers Energy. Framework/infrastructure components include: • SAP-HANA platform capacity upgrades • Analysis and potential implementation of a Hadoop oriented data persistence solution • Implementation of data visualization solutions(s)</p> <p>• Integration with multiple data sources including; GIS, SAP, MODM Historian, Electric Distribution Historian, OMS - Once integration is accomplished from a specific data source, it can be leveraged to meet future needs.</p> <p>This integrated platform will be leveraged to support analysis of cross functional data that will result in actionable information. An initial listing of Grid Modernization driven use cases includes:</p> <p>• Outage Data Analysis by Circuit and Feeder • Voltage Data Analysis by Circuit and Feeder with Outages • Circuit and Feeder Analysis for Capital Investments</p> <p>• Outage Detection and Prediction</p> <p>• Transformer Load Monitoring</p> <p>• Circuit Loading Research</p> <p>• Volt Var Optimization</p>	<p>The implementation of intelligent field devices provides Consumers with an enormous amount of data. Turning that data into actionable information requires implementation of an enterprise wide framework and environment that will support development of data analytics across Consumers Energy. Information will be sourced from multiple systems across functional areas and supported with easy to use visualization tools.</p> <p>Deliver timely, trusted answers to business questions.</p> <p>Ability to easily explore enterprise data for new insights.</p> <p>Reduce the time and cost required to deliver new information and analysis.</p> <p>Provide a cost-effective, reliable, and agile information environment to rapidly meet evolving business needs.</p> <p>Proactive, predictive alerts to critical business and operational conditions.</p> <p>Support business initiatives such as Grid Mod, Smart Energy, Customer Value Impact (CVI), Gas Compliance, Customer 360</p> <p>Reduce risks associated to business-critical analytic and reporting processes presently performed in ad-hoc spread-marts.</p>	Dec-18	(0.41)
2016	31,692	ITCP – Coldwater Service Center	BP Functionality	BTS will be supporting the Facilities project to build a new service ctr in Coldwater. This work will require new connectivity to the site, security, data, video, voice as well as SAP changes.	Included in the build of Coldwater is closing Bronson Service Center and consolidating employees in Coldwater.	Aug-18	(1.00)
2016	143,788	ITCP - Hamilton Service Center	BP Functionality	BTS will be supporting the Facilities project to build a new service ctr in Hamilton, MI. This work will require new connectivity to the site, security, data, video, voice as well as SAP changes.	New Service Center in Hamilton Michigan to replace the aging Zeeland and Allegan Service Centers. Software changes will affect territory and service areas.	May-16	(1.02)
2016	78,247	ITCP - Jackson Innovation Center	BP Functionality	Consumers Energy is renovating the old Woolworth building in downtown Jackson. This project addresses the IT needs for the building.	The project will provide 2 floors for Consumers Energy employees, 1 floor of tenant space and 1 floor of conference rooms and collaboration space. The collaboration space would need to include Wi-Fi, projector, wireless project or Apple TV attached to the projector, confidence monitors in back, Streaming video ability from the room, possible sound room.	Apr-16	(1.03)
2016	888,189	ITCP - JGR Leadership Center	BP Functionality	This will be a new facility in the Grand Rapids Area.	Provide technology needed for new facilities	Dec-16	(1.03)

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2016	204,278	ITCP - Livonia Service Center	BP Functionality	New facility to replace the existing Livonia Service Center; Livonia project will consist of a new building on the current site, relocate employees to new building when complete and remove current building; IT will develop a plan for and provide communications connectivity for voice, data, radio system, and multimedia at the new Livonia Service Center. IT will procure/install necessary equipment for the network connectivity. ITS will assist in setting up the printers/plotter needed either by purchase or transfer of equipment from the old service center. IT will also make the necessary SAP and Non-SAP application configurations changes to support the build and move of employees into the new Service Center.	Improve capabilities from employees and service to customers that utilize the Livonia Service Center.	Jul-16	(1.02)
2016	140,180	ITCP - Parnall East Renovation	BP Functionality	The high level scope for this project includes updating the major building systems of the Parnall East "C" section area and optimizing the existing space, while maintaining the company required standards and the NERC/CIP requirements of the area/building. This project is broken down into 3 phases: Phase 1 - Complete 2016 Phase 2 - Complete 2017-2018 Phase 3 - Complete 2017-2018	1. Provide all network connectivity needed at the newly renovated location to enable employees to connect with the company and SCADA networks and communicate as necessary (i.e., so employees can use the building). 2. Provide all network connectivity needed in different areas throughout Parnall for those employees who will be in temporary areas during the renovation phase of the building. 3. Support removal of network equipment at end of renovation 4. Recable and redirect cabling in Section "C" at Parnall East to go to the Basement MDF 5. Install new and existing AV equipment	Dec-18	(1.01)
2016	92	Ludington Pump Storage Project Management Information System Upgrade	BP Functionality	Phase 1 - Complete 2016			
2016	25,602	Meter Operational Data Manager Historian	BP Functionality	This project is for the enablement of the Operational Data Manager investment. This segment of work will be to configure the OSIsoft PI Historian to house all of the electric meter information to act as a historian for the Smart Grid MDM application. Metering data, including register reads, interval reads and events will be copied from the SG MDM application to this Operational Data Manager (ODM) so that it can keep history for a minimum of 7 years. The historical reporting can be done from the ODM.	The project will configure the OSIsoft PI Historian software to enable the Operational Data Management systems - through • Implementation of OSIsoft PI Historian system • Transfer of the AMI electric metering information into OSIsoft Historian • Creating corporate Historian to share the data across business units • creating retention of historian data for minimum of 7 years	Feb-16	(0.97)
2016	125,405	Microsoft Dynamics	BP Functionality	Phase 3 - Complete 2017-2018			
2016	333	Union 2015 Contract Changes	BP Functionality	SAP and related objects changes needed due to the negotiation of a new OM&C Working Agreement in 2015. Changes are unknown at this time.	Achieve company goals through the items that are negotiated in the Working Agreement. We must meet the agreement made with the Utility Worker's Union for OM&C employees.	Mar-16	(1.00)

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2016	857,203	Wholesale Contractual Settlements	BP Functionality	Create and implement a contractual settlements solution that will leverage the PCI EA and data warehouse for MISO settlements. Evaluate best platform for contracts which are currently in Excel and Fortran. Functionality must accommodate many parameters specific to each contract; some very complex with a large number of parameters. Initial design includes implementing the Settlements Analyzer and Contracts Settlements modules from PCI and working with PCI to set up infrastructure that enables in-house development of invoices for each contract.	Solution will replace Fortran and Excel programs and process; provide robust analytic capability and reporting; improve remittance process; integration with Managed Meter Solution (PCI EA and DW). Successful implementation will mitigate: If current solution fails, inability to accurately and timely settle supplier contracts which would result in legal issues and large interest payments (prime rate plus 1% of \$75M/monthly contracts) and penalties for contract default if we do not settle by contract due dates.	Nov-17	(0.72)
<b>SUBTOTAL</b>	<b>33,773,343</b>	<b>2016 BP Functionality</b>					
2016	411,008	Enhancements - CERRQ	Enhancements	Small software enhancement work efforts performed for Customer Experience business areas.	Each enhancement request has defined business value.	Dec-16	(0.98)
2016	580,637	Enhancements - Corp-Shared Svcs	Enhancements	Small software enhancement work efforts performed for Corporate and Shared Services business areas.	Each enhancement request has defined business value.	Dec-16	(0.96)
2016	426,749	Enhancements - DOET	Enhancements	Small software enhancement work efforts performed for the DCO business area.	Each enhancement request has defined business value.	Dec-16	(0.96)
2016	133,447	Enhancements - Energy Resources	Enhancements	Small software enhancement work efforts performed for the Energy Resources business area.	Each enhancement request has defined business value.	Dec-16	(0.94)
<b>SUBTOTAL</b>	<b>1,551,841</b>	<b>2016 Enhancements</b>					
2016	44,874	800MHz Tower Connectivity Optimization	IT Service Delivery	Telecommunication providers have announced the discontinuation of leased TDM services (i.e. T1's) by 2020. All radio tower sites will need to migrate to alternate technologies before this date.	Maximize radio system availability to improve reliability, employee/customer safety, gas leak response, and response time to customer outages.  Migrate to a newer network technology before existing T1's are no longer supported.	Nov-19	(0.94)
2016	302,394	Internet Connectivity Redesign	IT Service Delivery	This project is to plan and implement an updated Internet Connectivity Architecture for the Company. The current Internet Connectivity Architecture is over 10 years old and has some deficiencies that puts the Company at risk for an interruption in Internet Connectivity that would disrupt both internal Internet Connectivity and the Company's external Internet presence (i.e. consumersenergy.com, e-mail, etc.).	This project will end the current "carrier lock" situation and make use of company owned IP address space as opposed to carrier owned address space. This project will also provide what is known as "Carrier Diversity", which will protect the company from losing Internet presence in the event of an upstream failure.	Mar-17	(1.10)

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2016	2,384	MS Mod - MS Windows Server 2003 Retirement - App Upgrades	IT Service Delivery	The scope of this project covers applications that require an upgrade to be compatible. The project is directly linked to the Microsoft Windows Server Retirement project and needs to follow with the same approvals. Application identification for 2003 Windows Servers Plan to migrate or upgrade application off of 2003 Windows Servers Test plans pre-production Resource augmentation as need	Windows Server 2003 is currently at end of life, resulting in additional maintenance costs to support this out dated operating system. This project will assist system owners in upgrading applications that are not funded by other efforts so that the applications can be moved to new operating systems as the 2003 servers can be retired.	Dec-16	(0.89)
2016	631,836	Nimbus Phase 2	IT Service Delivery	In 2015, Consumers Energy implemented its private cloud. 2015's effort was focused around creating self-service and automated deployment for basic datacenter requests. In 2016 we will take this team and continue expanding the features of Consumers Energy's private cloud. These additional features would include: • Self-Healing: Automated repairs to server and application errors. Instead of requiring manual intervention from an operation team when a problem ticket is created, the Private cloud with automatically resolve the issues and inform CE teams that the issue was resolved. • Server Application Packaging and Self Service Deployment allowing application teams to deploy and redeploy entire environments in a matter of minutes instead of weeks. • Storage/Network virtualization allowing the private cloud to provision storage/networks when needed without requiring manual intervention and labor.	*Continue to reduce CE Build labor (Benchmarks), speed to market for IT Infrastructure services. *Develop reactive healing countermeasures to reduce infrastructure/application unplanned outages. * Develop automatic benchmarking interfaces and reports. With successful implementation of this phase of the project effort, simple errors which cause critical systems outages will be resolved before outages occur. Critical business applications will increase in size before our customers and our business feels performance issues.	Dec-16	(0.99)
2016	595,066	Printer Document Management Platform	IT Service Delivery	This Project will implement control over our costs in CE's print environment. By moving to a document platform, CE will be able to save time and money by streamlining internal processes, reducing our risk, increase our productivity and efficiencies as well as creating value within the ITAM department	Today, since scanning and faxing are available without authenticating to everyone, it is not possible to audit these activities and determine exactly who might be scanning or faxing and what they might be sending. This is a significant risk to CE as information can be sent out of the organization today , without specifically being able to track who is sending it. The authentication function in the Managed Document Platform will eliminate this risk and increase CE's security. Sarbanes - Oxley Act and HIPPA Compliant (HR Department)	Jul-17	(0.55)

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2016	464,456	Private & Hybrid Cloud	IT Service Delivery	This project will define and later execute a Private and Hybrid cloud service that offers automated provisioning of server and desktop environments. This project also includes funding Enterprise Architectur developing a strategy on how we continue to use and intergrate this technology in 2016 and beyond. This will allow IT employees to request virtual datacenter infrastructure when needed. Orchestration software will charge the client and build the requested infrastructure. This will also allow Consumers Energy to dynamically scale its server and desktop infrastructure across private and public clouds as needed.	Benefits Include: OS and application compatibility, faster setup and tear down of test areas, faster infrastructure building, provide additional growth space for applications that need sudden expansion, and Disaster Recovery. This project directly supports IT's goal of Technology as a Service and supports reducing our labor costs in our Gartner Benchmarks. Projects currently wait 5-20 days from when they request server and to when it is delivered. By implmementeing orchestration software, we will be able to deliver infrastructure in minutes instead of days.	May-16	(0.73)
2016	187,462	SAP Archiving	IT Service Delivery	With SAP being the company's primary ERP platform for the integration of business processes, the daily system usage has resulted in massive amounts of data to be stored in SAP. Currently the size of the SAP ECC database alone is 23TB and is growing.	(1) Meet compliance requirements by purging any data that can become a liability as identified by CE legal team (2) Build an Archiving solution that allows the business to retrieve archived data with ease and in the form that is needed	Dec-17	(0.93)
2016	91,716	SAP Performance Tuning	IT Service Delivery	The project aims to target two major workstreams to help improve SAP Performance (1) Use Oracle compression on large tables to decelarte the data growth in ECC and improve performance (2) Analyze Custom Code that can be retired or remediated to improve performance	(1) Perform Custom Code Analysis to identify code to retire and remediate (2) Identify the top 30 tables in ECC for compression. (3) Identify SAP data purge targets and purge data to improve performance	Dec-16	(0.97)
2016	(768,283)	Service Now Phase II	IT Service Delivery	ServiceNow is an ITSM solution that will be decommissioning/replacing HP Service Manager 7. This project entails enabling our ITIL processes in the ServiceNow solution. As of July 2014 we are planning to implement the ServiceNow solution with CMDB and ITAM in October 2014. The solution will be in place, this work is turning ON the processes and their functionality in SNOW and decommissioning SM7. Until this project is completed, we will continue to be non-ITIL V3 compliant. Our ITIL processes, Incident, Change, Problem, to name a few all have manual steps that can be automated and streamlined within the new solution. Having the Request module separated from the Change Module (a V2 model) prevent true ownership of the Request for Change process.	A hosted solution and there are several advantages: 1) reduced time in configuration changes to the tool as it won't be within the responsibility of CE/HCL, 2) Several manual activities that are currently being performed outside of HPSM 7 can be performed within SNOW, 3) Several other applications (Form 119, Form 120) that have audit implications, and require maintenance to some level, can be retired and decommissioned as well.	Jun-16	(1.00)



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2016	3,713,895	Service Now Phase III	IT Service Delivery	ServiceNow Phase 3 will implement four applications, Asset Discovery, Service mapping, Purchasing Automation, Knowledge Base and Event Manager. ServiceNow Phase III will introduce functionality not currently available to CE. Asset Discovery, Service Mapping, and Event Manager will provide the capability to track, classify, and manage technical relationships of install software and hardware configurations in an automated method. Purchase Automation will allow the creation and management of purchase orders related to service catalog requests. Knowledge Base will new functionality to manage information.	Asset Discovery and Service Mapping: ServiceNow Asset Discovery & Service Mapping provide new and enhanced functionality to better manage our hardware and software assets <ul style="list-style-type: none"> <li>• Software discovery will be used to help normalize the hardware owned, thereby reducing costs</li> <li>• Ability to discover all hardware on the Consumers Energy's network</li> <li>• Manages the relationships between services by mapping a service to the configuration item. A business services management map displays the CIs that support a business service and the relationships that between the CIs involved in that service</li> <li>• Service Mapping scans the network for changes that have been completed without the proper change management processes conducted. Will reduce the amount of undocumented changes that put our network at risk.</li> </ul>	Apr-17	(1.00)
2016	2,611	Sharepoint Phases	IT Service Delivery	The SharePoint Phases Project delivers New Business Capabilities on the SharePoint platform. Based on business feedback, items will be selected from the list that provide the most business value.  SharePoint Phases Scope to include capabilities such as (but not limited to): SharePoint Navigation SharePoint Audit SharePoint Templates SharePoint Site Mailboxes Notification Center for SP approvals, tasks, forms, and workflows Task Center with Enterprise Forms SharePoint GIS Notification Center for SAP Approvals, timesheets SharePoint Phased Development will enable the Enterprise to share and collaborate and continue to improve upon on a common operational document platform, making use of new technologies that simplify employee interaction.	<ul style="list-style-type: none"> <li>• Design and Deliver a Blueprint for standard iConnect style structure/features for all SharePoint sites.</li> <li>• Develop and Implement the iConnect style structure/features</li> <li>• Deploy effective Outlook-SharePoint integration/with features such as Drop-off libraries, Version control, metadata within Outlook utilizing an COTS product.</li> <li>• Simplify configuration of project and workgroup sites.</li> <li>• Provide self-managed SharePoint Security/Audit functionality as appropriate within corporate Governance/mandate standards.</li> <li>• Automate Team Site provisioning- to minimize the delay in individual users getting their Team site/Project sites getting approved. The SharePoint Information Architecture (IA) part of the project scope will deliver a needed foundation for Consumers Energy's (CE) SharePoint environment to ensure compliance with the company's internal information management objectives.</li> </ul>	Dec-15	3.59

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2016	555,697	SNOW License Manager (LM)	IT Service Delivery	This project will support asset management and asset integrity to drive down licensing costs. This project will implement the SNOW Licensing Manager Software and associated SNOW tools and the required servers as well as perform the initial compilation and reconciliation of licensing data for SuSE, Adobe, HP, MS, and VMware and the reconciliation and Optimization for SAP and Oracle. This project will give CE the ability to monitor and manage software asset usage, license distribution, and assess optimization possibilities so that CE can lower risk/cost of non-compliance, lower support costs and support IT efforts to identify licenses available for harvest, redistribution and release.	Uncover savings related SW Licensing through process improvement and support for strategic decision making <ul style="list-style-type: none"> <li>Implement SNOW SW technology to ensure identification and accurate monitoring of all IT SW assets</li> <li>Reduce non-compliance findings and associated costs</li> <li>Enforce compliance of all software assets including: licenses and entitlements</li> </ul> The SNOW licensing manager will give CE the ability to monitor, manage, assess and identify all software applications. This will decrease the time required to support a vendor's compliance audit, identify non-compliances so that they can be resolved and identify opportunities to harvest and redistribute SW as well as identify opportunities to release licenses. It will also allow us the ability to support enforce corporate compliance requirements for all software assets including licenses and entitlements.	Mar-17	5.00
2016	104,343	Work Management Tool	IT Service Delivery	The Plan phase of the project is to deliver a Strategic plan to assist BTS in delivering a PPM solution. Depending on the outcome of this effort, the remaining phases of the project will likely consist of 1) an upgrade of the Clarity software with integrations to SAP, SharePoint and other enhancements, or less likely 2) Implementation of another PPM Toolset with integrations and enhancements as needed.	The overall goal of this project is to significantly improve Work Management and Financial Management productivity and efficiency within the BTS and the Strategy and Governance organization by implementing a solution that will: <ul style="list-style-type: none"> <li>Provide seamless integration among systems: Project Management Information (PMIS), SAP, Service Manager</li> <li>Reduced manual labor and reliance on disparate tools such as Excel Spreadsheets, and third party integration packages</li> <li>Provide transparency and better visibility of project and financial information for improving data driven decision making.</li> </ul>	May-16	(1.00)
<b>SUBTOTAL</b>	<b>5,928,450</b>	<b>2016 Service Delivery</b>					
2016	1,023,333	ARP-Cyber Security	Security	The objective for Cyber Security Asset Refresh project is to ensure continued vendor support of security technology deployed at the Company as well as reduce the risk of unplanned outages due to outdated hardware/software and appliances.	Replace end of life and obsolete systems; leading to less probability of equipment failures, software compatibility issues and business partner downtime.	12/31 Annually	(1.07)
2016	909,040	Dell 1 Identity Manager (CAAR Replacement)	Security	This project is chartered for implementation of configurable Identity and Access Management functionality and best practices with enforced compliance. This includes enterprise level foundation architecture, technology, and end-2-end processes and controls, which will be implemented in a phased/iterative approach.	Attestation will be a key focus area for 2017 Q1, which will streamline and automate privileged group (SOX/ACS/PCI) reviews for both the Info Risk team and group owners team completing the review. The project will then aim to continue development and implementation of self-service identity and access management processes for employees/contractors, with key focus on automation and integration for the remainder of 2017.	Sep-20	(0.92)

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2016	195,148	Full Content Capture Package	Security	This project will implement a solution capable of capturing full content data for all packets coming into and leaving our network perimeter and storing the data for a minimum of two weeks.	Key solution to detect incidents and respond to compromise. Helps answer the key question, "what was taken?" Mitigates lack of visibility and ability to determine what was stolen during an incident. Forces responders to assume data was compromised if there is no ability to prove otherwise	Dec-15	(1.03)
2016	493,916	NERC/CIP Version 5	Security	Regulations required Consumers Energy to be compliant with NERC Critical Infrastructure Protection (CIP) standards. This project is chartered to bring critical infrastructure into compliance with NERC/CIP standards.	Key project scope includes completing requirements to meet NERC CIP requirements (Version 5), which include: Identify and classify BES Cyber Assets and develop preventive, detective, and corrective controls as they apply to the NERC CIP Version 5 Standards.	Sep-18	(0.96)
2016	650,935	OT Security Architecture	Security	IT Information Security is taking responsibility for Cyber Security within various areas of the businesses' operations technology. The project will be used to implement a consistent security architecture across the Operational Technology landscape.	Key scope includes the continuation of implementing the Consumers Energy OT security standard across the Generation fleet.	Nov-19	(0.97)
2016	1,192,435	SAP Security	Security	The purpose of this project is to provide vulnerability scanning of SAP specific platforms. The product will enable the scanning of HANA, which current tools in the environment do not support. The project will include requirements gathering, vendor selection, product selection, tool design, configuration, and implementation.	The benefit of this Project closes a gap as current information security vulnerability scanning tools do not provide the capabilities needed for new systems and solutions in our environment.	Nov-16	3.65
<b>SUBTOTAL</b>	<b>4,464,808</b>	<b>2016 Security</b>					
2017	247,386	ARIS	Upgrades & Replacements (Enterprise)	Upgrade ARIS to Version 9 or the latest version upon project start-up. Many detailed business process flows are documented within the ARIS library.	ARIS application currently multiple versions behind and at risk of tool being out of support. Currently on an out of date operating system, which requires incremental maintenance to maintain	Nov-17	(0.97)
2017	826,596	ARP - Collaboration Asset Refresh	Upgrades & Replacements (Enterprise)	This project is for the refresh of the Company's Collaborative tools such as Telephony Systems, Video Conference Systems and Digital Whiteboard systems.	This project provides value by insuring the tools used by employees to communicate are modern and reliable.	12/31 Annually	(0.95)
2017	490,783	ARP - Critical Infrastructure Support	Upgrades & Replacements (Enterprise)	Asset refresh project for infrastructure supported by CIS. Replace assorted critical infrastructure due to obsolescence hardware as identified per 5 year budget planning/forecast. IT provides both hardware and labor funding.	The requirement is to replace and upgrade the in scope items with current technologies. The project will replace functionality without necessarily doing a like-for-like replacement of the asset. For example, instead of replacing 20 servers with 20 servers, converged infrastructure will be implemented.	12/31 Annually	(1.02)

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2017	1,079,705	ARP - Field Device Asset Management (FDAM)	Upgrades & Replacements (Enterprise)	The project is in support of plans for IT to validate, procure and deploy field devices on a four-year refresh cycle. Not completing the refresh will push the need for more capital dollars into future years. It will also increase costs for hardware repairs and potentially not allow Field Workers with older devices to complete their job tasks.	Field Workers require these rugged devices to complete their daily job tasks. Refreshing the equipment: - Reduces equipment failures - Reduces Field Worker Downtime - Refreshed hardware allows software to function as designed.	12/31 Annually	0.19
2017	508,939	ARP - IT Facilities	Upgrades & Replacements (Enterprise)	This project addresses the physical facilities (space, equipment racks, communications cabling, etc.) and environmental needs in the Company's two Data Centers and IT Rooms.	The project will insure that the Company's IT Systems that provide Customer services can be reliably hosted from the internal Data Centers.	12/31 Annually	(0.97)
2017	248,123	ARP - Performance & Capacity Management	Upgrades & Replacements (Enterprise)	This project will refresh and add additional Network Monitoring capabilities. The equipment that is refreshed in this project is used for the monitoring and troubleshooting of our applications and services at the Network level.	The scope of this project is monitoring of the Company's internal Networks to insure the optimal performance of systems that are used to provide services to our Customers.	12/31 Annually	(1.06)
2017	1,231,036	ARP - Printer Asset Management (PAM)	Upgrades & Replacements (Enterprise)	The project is in support of plans for IT to validate, procure and deploy printers, plotters, and multi-function printing devices on a five-year refresh cycle for every department in the company. Not completing the refresh will push the need for more capital dollars into future years. It will also increase costs for hardware repairs and potentially not allow Business Partners with older printers to complete their job tasks.	Business Partners require these printers/plotter to support their business efforts. Refreshing the equipment: - Reduces equipment failures - Reduces Business Partner Downtime - Refreshed hardware allows software to function as designed.	12/31 Annually	(1.05)
2017	2,050,874	ARP-Server	Upgrades & Replacements (Enterprise)	IT infrastructure generally becomes less reliable after 5 years, jeopardizing the stability of our business' critical applications running on top of our IT Infrastructure. This Server ARP project will evaluate Computer Hardware with more than 5 years of continuous use and replace where appropriate.	The project will intelligently and systematically replace critical infrastructure before a system failure that would disrupt business operations.	12/31 Annually	(1.07)
2017	2,628,716	ARP - Storage	Upgrades & Replacements (Enterprise)	Assess current and future capacity storage needs.  • Add capacity to existing General Purpose Vmax storage arrays (Parnall & BRC) and decommission existing storage as required.	Product Scope Statement This project is intended to address the ongoing refresh and growth needs within Information Technology regarding the data storage hardware. The project replaces hardware aged more than 5 years and provides incremental storage capacity where needed.	12/31 Annually	(1.08)
2017	998,883	ARP - Wireless Network	Upgrades & Replacements (Enterprise)	This project is to refresh targeted portions of the Company's various wireless networks including the 800 MHz Radio System Infrastructure.	The scope of this project is extending the useful life of the Company owned radio systems. It's primary focus is on the 800 MHz radio system proper but also includes other systems, sub systems and components used within the Company. The project provides value by insuring reliable and real time communication between company crews and dispatch locations.	12/31 Annually	(0.97)

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2017	3,759,201	ARP - Workstation Asset Management (WAM)	Upgrades & Replacements (Enterprise)	The project is in support of plans for IT to validate, procure and deploy desktops and laptop computers on a four-year refresh cycle for every department in the company. Not completing the refresh will push the need for more capital dollars into future years. It will also increase costs for hardware repairs and potentially not allow Business Partners with older desktops or laptops to complete their job tasks.	Business Partners require these Desktops and Laptops to support their business efforts. Refreshing the equipment: - Reduces equipment failures - Reduces Business Partner Downtime - Refreshed hardware allows software to function as designed	12/31 Annually	(0.43)
2017	154,101	BizTalk Upgrade	Upgrades & Replacements (Enterprise)	Upgrade to BizTalk Server to avoid technology obsolescence	Enable need to stay within support	Oct-18	(0.90)
2017	138,949	C&APS Portfolio Application Currency	Upgrades & Replacements (Enterprise)	Upgrade corporate applications such as:  Coursemill Learning Management System Gifts ORG Plus uPerform Questionmark Perception Physical Access Interface (PAI) Summation Pro	Upgrade corporate applications to ensure support and mitigate cyber security risks.	Nov-21	(0.90)
2017	2,551,814	Lotus Notes Application Migration & Retirement Wave 3	Upgrades & Replacements (Enterprise)	Lotus Notes is an unsupported technology now at CE. Most of the 600+ LN applications can be moved to Sharepoint, either from a direct move or customization. The applications are categorized into simple, medium, and complex. The migration is happening in 4 Phases or Waves and this is Wave 3.	This next phase will further enable capabilities on our current collaboration platform standard (SharePoint), while reducing the risk footprint of using an unsupported standard (Lotus Notes). Sharepoint gives many new enhancements to these applications including collaboration, versioning of documents, security, and automated auditing. With the use of the K2 the users can also modify their own sites once migrated to better tailor them to their business needs.	Dec-17	(0.93)
2017	244,090	Oracle Version Upgrade	Upgrades & Replacements (Enterprise)	This project will have 2 phases: 1) build new virtual servers to migrate off old HP/UX physical servers. 2) Upgrade all Oracle databases that are currently on older versions on the Oracle Cluster to a newer version.	1) Add capacity to the current virtual server farms (located at Parnell and BRC) with licensed Oracle server databases 2) Move all current Oracle Databases / Applications to the virtual farm 3) Identify the steps to modify the applications if necessary	Jun-18	(0.92)
2017	225,442	Redwood Cronacle Upgrade	Upgrades & Replacements (Enterprise)	Upgrade Redwood Cronacle Software to avoid technology obsolescence	Replace software on those servers that currently use Redwood Job Scheduler (Cronacle) V9.0 with Redwood Job Scheduler V9.0.20.5. This application handles scheduling of business critical jobs	Nov-17	(0.96)
2017	2,580,964	SAP Platform Modernization	Upgrades & Replacements (Enterprise)	The SAP Platform Modernization Program includes the rearchitecture and replacement of the 2007-2008 SAP infrastructure, which is well beyond its recommended useful life. The program also includes an upgrade of SAP applications to Enhancement Pack 8.	This program is essential for the company to maintain support and stability of its core set of business applications, while also improving system availability, performance and resiliency.	Sep-17	(1.00)

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2017	479,010	SharePoint 2013 Upgrade Project	Upgrades & Replacements (Enterprise)	This SharePoint Upgrade Project includes alignment with the Office365 cloud based hosting. This upgrade extends and enhances the existing SharePoint 2010 platform (which will become unsupported by MS in 2020 and extended support will NOT be available) by providing additional functionalities and enhanced user experience to the end user.	Foster business collaboration using modern technology; aid with migration of Notes applications to Sharepoint and retiring Domino/Lotus Notes environment.	Jan-17	(1.00)
2017	123,074	WAN Transformation	Upgrades & Replacements (Enterprise)	This project is to migrate the Wide Area Network connectivity at Company locations off of legacy T1 technology and on to newer Carrier Ethernet technology.	All Company locations within the State of Michigan will be converted to new Wide Area Network technology. The new technology is more reliable and provides more bandwidth to enable more productivity at the Company's locations.	12/31 Annually	(1.02)
<b>SUBTOTAL</b>	<b>20,567,686</b>	<b>2017 Upgrades &amp; Replacements (Enterprise)</b>					
2017	447,000	Corporate Capital Projects	Upgrades & Replacements (Business Partner)	Small corporate projects - No business case document		Dec-17	
2017	13,475	Energy Resource Portfolio Application Currency	Upgrades & Replacements (Business Partner)	This effort is needed to ensure application currency for Energy Resources Application Portfolio. The application upgrades have been prioritized based on business criticality and value, and this project will perform the routine upgrades/maintenance to ensure IT solutions supporting Energy Resources business processes to deliver energy to our customers are stable and current.	The ER Application Portfolio went through an assessment to evaluate application currency and technology obsolescence for Energy Resources Application Portfolio, prioritized needed upgrades based on business criticality and value, and this project was initiated to address priorities to ensure appropriate support and performance.	Dec-21	(0.94)
2017	177,309	eSOMS - upgrade to Operations Management	Upgrades & Replacements (Business Partner)	Upgrade eSOMS to the version 5.0 or later. eSOMS software is critical to safety in Energy Resources in that it facilitates and provides controls for the Working Clearance process which protects workers from energy sources while working on equipment per OSHA Standards	Upgrade eSOMS to the version renamed Plant Operations 5.0. Maintain configuration consistent with governing business process procedures but take advantage of improvement opportunities if they exist. This new version also supports mobile technologies.	Feb-18	(0.92)
2017	2,203,687	GIS-Integrated Design	Upgrades & Replacements (Business Partner)	This project is to replace the current CAD/Work Requirements and Design software with a GIS based design tool for improved capabilities in the preparation of graphical designs for the order fulfillment processes for gas and electric work orders.	New functionality in scope: Ability to directly integrate with multiple ESRI databases, read data and attribution form dataset to begin design, Send data to proper data set (ESRI), electric and gas design simplification tools (streamline the actual placement of materials and attribution into a design), consumer GIS data as a service in addition to directly connect data (Replace WRaD Robosync), creating synergy for new construction of being able to send an updated design file with the corresponding updates and attribution to the GIS improving the as-built (redlining) posting process.	May-18	(0.95)
2017	84,839	Land Property Mgmt Upgrade Version 5.5	Upgrades & Replacements (Business Partner)	This project is to upgrade the Land Property Management System (LMP by Landworks) to the next version, as well upgrade to arcGIS in order to support the version upgrade.	Applicaton is currently on an older version and at risk of no longer being supported by vendor.	Jul-17	(0.90)

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<b>SUBTOTAL</b>	<b>2,926,310</b>	<b>2017 Upgrades &amp; Replacements (Business Partner)</b>					
2017	742,034	Account Reconciliation	BP Functionality	This project is to replace the existing Lotus Notes application used to perform account reconciliation of General Ledger accounts on a monthly basis. This application will include ability to attach supporting documentation, electronic routing and approval	Account Reconciliation Process is a Lotus Notes application that is no longer supported. This proejct is move this application to another solution providing similar functionality and workflow functionality which will improve work processes.	May-17	(0.94)
2017	697,334	Business Continuity Disaster Recovery Integration	BP Functionality	Implement technology solution and supporting processes to integrate the Company's business continuity and disaster recovery programs to enhance program efficiency and effectiveness.	Solution will improve program management and drive efficiency with the following: o Plan management repository with workflow capabilities (in support of plan development/review, training and testing requirements o Maintain program schedules, monitor status and reporting capabilities o Risk analysis and interdependency mapping of critical business processes and IT applications o Flagging mechanism to ensure identification of restoration capability gaps to critical business processes and/or IT recovery capabilities o Business Impact Analysis (BIA) capabilities to quantify financial risks to critical process disruptions	Dec-17	(0.88)
2017	1,660,570	Contact Center Customer Experience Refresh	BP Functionality	Comprehensive refresh of the Customer Call Center's IT infrastructure, including the three Automtic Call Distributor (ACD) systems, networking equipment , IVRs, Work Force Management, servers, and applications. The ACD Systems are 10 years old in 2015 and cannot readily adapt to best practice. Additionally, they are no longer vendor supported and hardware replacement parts are not available.	Speech enabled interactive voice response (IVR) Customer Service Representative Knowledge Management eMail Management Call Center Quality Monitoring Optimize Skills Based routing Customer Analytics Enhancements Multi-Channel Inbound & Outbound Communications Virtual Hold Click to Call	Jun-17	(0.43)

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2017	8,955,813	DCE Web Replacement R3	BP Functionality	<p>The Customer Digital Experience – Web Enhancements and Content project will implement multiple phases of customer experience and product improvements.</p> <p>2017: Site navigation (menu and search), profile setup/management, content management system upgrades and other features will be prioritized based on business necessity and customer value. Targeting advanced Move In/Out functionality and Call Center integration.</p> <p>2018: Major projects including Advance Account Management architecture and functionality for business customers will help those with multiple accounts better manage their needs. Other services being evaluated include online service scheduling, integration of the Landlord Portal, migration out of BillTrust, enhanced Silver Spring Network functionality, and integration of Smart Energy Programs (Time of Use rates and Dynamic Pricing Plan).</p>	<ul style="list-style-type: none"> <li>• 2017: Improved customer satisfaction with navigation and ease of account profile settings</li> <li>• 2018: Improved customer satisfaction with advanced account settings/authorizations and expanded self-service options</li> <li>• 2018: Improved experience design (navigation and options) with integrated service offerings</li> </ul>	Dec-17	(0.96)
2017	153,131	Dispatch Simulator	BP Functionality	<p>Business requires a dedicated training environment that integrates SAP, OMS, and Service Suite (FSS) that will be utilized by employees in DOET. The current QA Environment consists of SAP, OMS, and OMAR systems linked together which allows the user to be training on the entire process from start to finish in a more realistic setup. Duplication of the environment is a key factor on the delivery of our commitment to increase the number of trained and proficient employees working storm restoration efforts.</p>	<p>Business requires a dedicated training environment for each of the systems, OMS, SAP, and Service Suite (FSS) that will be integrated/communicate as setup in production. This will allow users (Dispatch employees and other employees supporting storm operation) to train on the entire process from start to finish. OMS upgrade included a dedicated training environment, SAP has an existing training environment and Service Suite (FSS) produced a dedicated Service Suite training environment as part of Release 1. This project will complete the integration between all the environments.</p> <p>The lack of a dedicated training environment for employees has hindered our ability to effectively run restoration efforts that provide the most effective results for our customers - i.e. CAIDI, 8-hour normal by, etc. Currently employees develop their skills through on-the-job training with no availability to have year-round training access, or to be able to practice in a simulated storm sessions.</p>	Sep-17	2.04



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2017	525,475	DOET Advanced Planning and Reporting	BP Functionality	The purpose of this project is to re-evaluate the current Project Systems WBS Hierarchy structure (primarily Blanket Orders and shadow projects) into a more efficient and effective way to report and analyze Capital and O&M work programs. The current structure, based on the original approach defined during CEA (2006) has created a large and unwieldy amount of data that prevents the ability to generate cost reports, and furthermore the current structure does not provide the ability to take full advantage of IM (Investment Management module in SAP) functionality to associate actuals, overheads and other cost allocations.	The Project will address the current structure of the SAP PR Program Hierarchy and WBS elements. By modifying them, the IT Organization will be in a position to prevent or mitigate the following situations: "the amount of data will continue to grow, reporting will be unable to handle the volume of data and "time-out"; data volume prevents the ability to access the structures for updating and modification; year-end budget assignment from SAP IM is hampered."	Jul-17	0.23
2017	197,389	DOET Data Management and Storage Strategy	BP Functionality	Implement the tracking and recording of attachments from work orders into a document management system that is searchable by secured individuals and keeps historical archive of attachments related to work performed. Key artifacts collected during field work may include before and after job site pictures to avoid damage claims.	<ul style="list-style-type: none"> <li>* Implement document management to retain and save information associated with work orders.</li> <li>* Attachments need to be saved in a system with proper retention procedures per policy.</li> <li>* Solution needs to contain functionality to move documents between 'active' storage, archived, permanent deletion.</li> <li>* Solution needs to be searchable in the event of customer complaint or legal discovery.</li> <li>* Service Suite application server is not best location for long term storage of these artifacts.</li> </ul> As storage space is used up on Service Suite application server either more space would be procured at high cost or documents will need to be copied off without maintaining their relationship with the original ABB Service Suite work order.	Dec-17	(0.99)
2017	468,053	Drawing Management Software	BP Functionality	This project is to investigate and install drawing management software capable of bundling, managing and handling the versions of documents related to design, proposals, contract resources and record-keeping.	The solution will be capable of bundling, managing and handling the versions of documents related to design, proposals, contract resources and record-keeping.	Sep-17	(0.95)
2017	937,046	GM - Electric System Model Enhancement	BP Functionality	Implement an Electric Grid System Model that will support the current and future needs of GIS, OMS, DPS (CYME), DMS and GIS Integrated Design Tool. The Electric Grid System Model will be designed and implemented to serve as an extensible platform to efficiently and effectively manage and share the Electric GIS network model information with the rest of grid operational and planning systems. Establish a methodology for integration that will connect Electric GIS, SAP, Cascade and other Asset Management Systems in a common way to provide an integrated view of assets across asset management areas.	Currently, Consumers Energy has four major systems that support asset management: SAP, Cascade, GIS and CAD maps. These systems are not tightly integrated. The lack of integration between these systems prevents timely and meaningful assessment of the condition of our system. Key Benefit: 1) Proactively correct system issues and provide geospatial completeness and accuracy; 2) Better prioritization of reliability funding; 3) Improve the accuracy of billing for street lights, pole attachments and determining tax assessments.	Sep-17	(0.95)

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2017	998,974	EA - Grid Communication Modernization	BP Functionality	Verizon has announced that they will no longer offer their analog, multi-drop phone service as of February 28, 2015 and their Frame Relay service after December 31, 2015. These services are an integral component of the SCADA communication infrastructure.	A wired and wireless solution to replace Verizon's sunsetted services (analog multidrop circuits and frame relay circuits). Defined minimum and uptime requirements. Sufficient site coverage.	Dec-18	(0.91)
2017	112,281	Enterprise Project Management Information System	BP Functionality	Implement an integrated suite of project management tools and processes to support a breakthrough goal established in early 2015 to drive project management maturity across the company to Level 4 by 12/31/2019.	A project management framework has been defined that is required to reach, support and sustain project management maturity. A multi year plan has been developed to implement the EPMO processes, tools, and governance for Consumers Energy. These new standards for project management will ensure quality project management and delivery at the lowest cost.	Aug-19	3.92
2017	3,494,402	Field Service Solution Release 2	BP Functionality	Field Service Solution (FSS) Release 2 will provide continued enhancement to address improvements for field workers, schedulers, dispatchers, and field leaders to be safe, efficient, and deliver customer value	FSS Release 2 enhancements include the following - 1. ETR -Improve the timeliness and accuracy of incident / work order level ETRs while reducing the frequency of changes to the ETR field. Improvement in the transparency of process changes made in dispatch and the field who are ultimately responsible for the ETR data point. 2. Fleet Summary - Need ability to update the fleet summary screen data dynamically when a mobile field worker goes on-route or on-site. Fleet Summary will provide Sub and circuit visibility on DA screen as it was in OMAR 3. EIRP Workforce -Define the work required to eliminate the paper processes by implementing standard FSS tools and work management processes to this workforce. 4. MRPS Long Cycle workforce - Define the work required to eliminate the paper processes by implementing standard FSS tools and work management processes to this workforce.	Jan-17	(0.82)
2017	417,239	Integrated Resource Planning (IRP)	BP Functionality	Energy Policy changes will require a regularly filed Integrated Resource Plan (IRP). ...changing landscape of environmental regulations and new energy legislation... new energy law requiring electric utilities to file Integrated Resource Plans (IRPs) every four years. This formalized IRP process will be very demanding and will expose us to additional regulatory scrutiny, but it will also be an opportunity for us to shape the future of the company and the state of Michigan with our electric supply planning.	Advanced capacity and cost modeling to meet new energy policy IRP requirements. Replace/upgrade tools currently being used to ensure latest simulation data, modeling capability with capacity expansion considerations are available for portfolio optimization and integrated resource planning to ensure compliance with the new Michigan energy law.	Jan-18	(0.88)

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2017	481,226	Legal Early Case Assessment and Legal Hold	BP Functionality	Implement a solution to provide Early Case Assessment and Document Review tools for use by the CE Legal Department.	Early Case Assessment features: <ul style="list-style-type: none"> <li>• Reduce the volume of information being collected and reviewed</li> <li>• Improve productivity by reducing human effort required for case review</li> <li>• TAR - Technology Assisted Review</li> </ul> Document Review features: <ul style="list-style-type: none"> <li>• Keep case data internal to Consumers Energy</li> <li>• Reduce costs on external legal services and storage</li> </ul> Solution should allow Legal to perform keyword searches and analysis of unstructured documents in the archive system(s) as well as perform bulk exports of the documents found. Legal hold management features: The Legal department should be able to perform the following without IT Assistance: <ul style="list-style-type: none"> <li>* perform global or custodian specific searches on unstructured documents,</li> <li>* manage and preserve searches related to a hold,</li> <li>* send and track notifications to custodians on a hold.</li> <li>* increase in Legal self-service</li> </ul>	Sep-17	(0.99)
2017	1,534,101	Outage Map on the Web Upgrade	BP Functionality	This request is to upgrade the public-facing Outage Map on the Web by performing an ESRI Upgrade: <input type="checkbox"/> Improves stability of ArcGIS Server (customer impact, every week hours and support cost to keep going <input type="checkbox"/> Closes the reverse Proxy vulnerability (when originally discovered, were asked to address immediately after go-live) <input type="checkbox"/> Extends ESRI support to August 1, 2019 (currently on unsupported version) <input type="checkbox"/> Upgrades Windows to latest version (where needed and MS Modernization picks up rest) <input type="checkbox"/> Moves Outage Map to standard GIS platform from standalone environment <input type="checkbox"/> Piggyback from ESME work (has reduced upgrade effort) Separate Oracle Upgrade project later in 2016 will take care of Oracle upgrade for Outage Map and associated testing.	Improve Outage Map reliability/stability Improve Outage Map performance Improve security	Dec-17	(0.96)
2017	255,003	PC Power Management Software	BP Functionality	Implement an enterprise-wide web based PC Power Management software solution that works out-of-the-box with no dependencies on third party products that will monitor pc usage and power down the pc when not in use. This will result in lower CO2 and lower electricity usage thereby reducing facility operating costs.	Implement a software solution that will monitor when pc's are not being used and power them down to save energy and CO2 costs.	Nov-18	0.70
<b>SUBTOTAL</b>	<b>21,630,071</b>	<b>2017 BP Functionality</b>					
2017	1,173,381	Enhancements - CERRQ	Enhancements	Small software enhancement work efforts performed for Customer Experience business areas.	Each enhancement request has defined business value.	Dec-17	(0.98)

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2017	1,238,956	Enhancements - Corp-Shared Svcs	Enhancements	Small software enhancement work efforts performed for Corporate and Shared Services business areas.	Each enhancement request has defined business value.	Dec-17	(0.96)
2017	634,896	Enhancements - DOET	Enhancements	Small software enhancement work efforts performed for the DCO business area.	Each enhancement request has defined business value.	Dec-17	(0.96)
2017	703,285	Enhancements - Energy Resources	Enhancements	Small software enhancement work efforts performed for the Energy Resources business area.	Each enhancement request has defined business value. 2017 & 2018 Requests Include: FERC Market Based Rate Filings GCC – Mass move for Suppliers SAP Catalog 'B' Addition Request SAP Functional Data Fields - System Owner Met/Team customer portal external facing GIS Web Portal Layer DLA – Solution to SAP Alerts (DLA) GCC - Customers able to Block GCC enrollments Re-provisioning of non-communicating switches in batch/bulk in DRMS for DLA Gas C&S work management	Dec-17	(0.94)
2017	1,930,507	SAP Enhancement Pack Upgrade	Enhancements	Maintenance upgrade to all SAP systems. Project scope would include all SAP modules and SAP's product release note will be used in determining the enhancement pack, support pack and other maintenance to be applied.	All application modules are current in their enhancement pack level Stability and reliability of SAP platform New business functionality as part of Enhancement Pack Avoid or limit customization by using New SAP delivered functions.	Aug-17	(0.80)
2017	160,243	SharePoint User Empowerment	Enhancements	The SharePoint User Empowerment Project delivers New Business Capabilities on the SharePoint platform. Based on business feedback, items will be selected from the list that provide the most business value.	The new capabilities are expected to improve the usability of Sharepoint applications used across the enterprise for business processes.	Dec-19	(0.87)
<b>SUBTOTAL</b>	<b>5,841,267</b>	<b>2017 Enhancements</b>					
2017	220,910	BI reporting based on HANA	IT Service Delivery	HANA is SAP's next generation in-memory appliance after Business Warehouse Accelerator. This project is targeted at doing the necessary BW workflow redesign based on HANA. New reports and new functionality will be developed as part of HANA. New KPIs for each business function will be delivered. Innovate based on HANA platform.	The HANA device will result in a high performance solution not only for Business Intelligence but is expected to spread to other key components of SAP. This can provide performance improvements across the SAP landscape over time.	Oct-17	-
2017	139,480	SAP Archiving	IT Service Delivery	With SAP being the company's primary ERP platform for the integration of business processes, the daily system usage has resulted in massive amounts of data to be stored in SAP. Currently the size of the SAP ECC database alone is 23TB and is growing.	(1) Meet compliance requirements by purging any data that can become a liability as identified by CE legal team (2) Build an Archiving solution that allows the business to retrieve archived data with ease and in the form that is needed	Dec-17	(0.93)

SPEND YEAR	SPEND FOR APPLICABLE YEAR	PROJECT NAME	PROGRAM	PROJECT DESCRIPTION	PROVIDED SCOPE / BENEFIT	IMPLEMENTATION DATE	COST/BENEFIT RATIO
2017	522,333	TCoE Automated Testing 2017 - SAP Regression	IT Service Delivery	This project will automate test scenarios that are frequently used in SAP regression tests to ensure that changes being introduced, such as SAP support packs or SAP enhancements, do not adversely impact functionality.	The value of automated testing is reduced regression testing time and effort, which leads to better quality service to our customers and employees.	Aug-17	1.24
2017	488,565	TCOE Test Data & Environment Management	IT Service Delivery	The purpose of this project is to improve our SAP test and development environments and data. This will improve the quality of development by providing improved test data. This will help address the gap where untested code is advanced to the QA environments.	SAP test data has not been refreshed in years because it would require an extended period of unavailability of QA environments. Stale data results in poorer quality of testing and increased time to find or create test data. This project would implement technologies to refresh test data within an acceptable window of time.	Oct-17	1.34
<b>SUBTOTAL</b>	<b>1,371,287</b>	<b>2017 IT Service Delivery</b>					
2017	848,038	ARP-Cyber Security	Security	The objective for Cyber Security Asset Refresh project is to ensure continued vendor support of security technology deployed at the Company as well as reduce the risk of unplanned outages due to outdated hardware/software and appliances.	Replace end of life and obsolete systems; leading to less probability of equipment failures, software compatibility issues and business partner downtime.	12/31 Annually	(1.07)
2017	917,411	Dell 1 Identity Manager (CAAR Replacement)	Security	This project is chartered for implementation of configurable Identity and Access Management functionality and best practices with enforced compliance. This includes enterprise level foundation architecture, technology, and end-2-end processes and controls, which will be implemented in a phased/iterative approach.	Attestation will be a key focus area for 2017 Q1, which will streamline and automate privileged group (SOX/ACS/PCI) reviews for both the Info Risk team and group owners team completing the review. The project will then aim to continue development and implementation of self-service identity and access management processes for employees/contractors, with key focus on automation and integration for the remainder of 2017.	Sep-20	(0.92)
2017	911,051	NERC/CIP Version 5	Security	Regulations required Consumers Energy to be compliant with NERC Critical Infrastructure Protection (CIP) standards. This project is chartered to bring critical infrastructure into compliance with NERC/CIP standards.	Key project scope includes completing requirements to meet NERC CIP requirements (Version 5), which include: Identify and classify BES Cyber Assets and develop preventive, detective, and corrective controls as they apply to the NERC CIP Version 5 Standards.	Sep-18	(0.96)
2017	928,704	OT Security Architecture	Security	IT Information Security is taking responsibility for Cyber Security within various areas of the businesses' operationstechnology. The project will be used to implement a consistent security architecture across the Operational Technology landscape.	Key scope includes the continuation of implementing the Consumers Energy OT security standard across the Generation fleet.	Nov-19	(0.97)
<b>SUBTOTAL</b>	<b>3,605,204</b>	<b>2017 Security</b>					
2018	1,236,028	ARP - Smart Energy	Upgrades & Replacements (Enterprise)	This project is initiated to ensure the IT assets supporting the Smart Energy initiative are refreshed periodically.	Mitigate obsolescence of IT assets that support Smart Energy.	12/31 Annually	(1.04)

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2018	819,773	ARP - Collaboration Asset Refresh	Upgrades & Replacements (Enterprise)	This project is for the refresh of the Company's Collaborative tools such as Telephony Systems, Video Conference Systems and Digital Whiteboard systems.	This project provides value by insuring the tools used by employees to communicate are modern and reliable.	12/31 Annually	(0.95)
2018	522,101	ARP - Critical Infrastructure Support	Upgrades & Replacements (Enterprise)	Asset refresh project for infrastructure supported by CIS. Replace assorted critical infrastructure due to obsolescence hardware as identified per 5 year budget planning/forecast. IT provides both hardware and labor funding.	The requirement is to replace and upgrade the in scope items with current technologies. The project will replace functionality without necessarily doing a like-for-like replacement of the asset. For example, instead of replacing 20 servers with 20 servers, converged infrastructure will be implemented.	12/31 Annually	(1.02)
2018	660,328	ARP - Data Network	Upgrades & Replacements (Enterprise)	Network Services - Asset Refresh Data Network. In conjunction with Voice Network Team, refresh legacy Avaya data switches at the following Sites: Macomb, CCC, Trail Street, Jackson Garage, Bridge St., Kalamazoo, Flint, Rayt, Aeeland Gen, Cadillac, Owosso.	To replace the Avaya Nortel Switches throughout the State of Michigan	12/31 Annually	(1.11)
2018	3,524,803	ARP - Field Device Asset Management (FDAM)	Upgrades & Replacements (Enterprise)	The project is in support of plans for IT to validate, procure and deploy field devices on a four-year refresh cycle. Not completing the refresh will push the need for more capital dollars into future years. It will also increase costs for hardware repairs and potentially not allow Field Workers with older devices to complete their job tasks.	Field Workers require these rugged devices to complete their daily job tasks. Refreshing the equipment: - Reduces equipment failures - Reduces Field Worker Downtime - Refreshed hardware allows software to function as designed	12/31 Annually	0.19
2018	393,799	ARP - IT Facilities	Upgrades & Replacements (Enterprise)	This project addresses the physical facilities (space, equipment racks, communications cabling, etc.) and environmental needs in the Company's two Data Centers and IT Rooms.	The project will insure that the Company's IT Systems that provide Customer services can be reliably hosted from the internal Data Centers.	12/31 Annually	(0.97)
2018	248,297	ARP - Performance & Capacity Management	Upgrades & Replacements (Enterprise)	This project will refresh and add additional Network Monitoring capabilities. The equipment that is refreshed in this project is used for the monitoring and troubleshooting of our applications and services at the Network level.	The scope of this project is monitoring of the Company's internal Networks to insure the optimal performance of systems that are used to provide services to our Customers.	12/31 Annually	(1.06)

SPEND YEAR	SPEND FOR APPLICABLE YEAR	PROJECT NAME	PROGRAM	PROJECT DESCRIPTION	PROVIDED SCOPE / BENEFIT	IMPLEMENTATION DATE	COST/BENEFIT RATIO
2018	1,309,722	ARP - Printer Asset Management (PAM)	Upgrades & Replacements (Enterprise)	The project is in support of plans for IT to validate, procure and deploy printers, plotters, and multi-function printing devices on a five-year refresh cycle for every department in the company. Not completing the refresh will push the need for more capital dollars into future years. It will also increase costs for hardware repairs and potentially not allow Business Partners with older printers to complete their job tasks.	Business Partners require these printers/plotter to support their business efforts. Refreshing the equipment: - Reduces equipment failures - Reduces Business Partner Downtime - Refreshed hardware allows software to function as designed	12/31 Annually	(1.05)
2018	2,327,756	ARP-Server	Upgrades & Replacements (Enterprise)	IT infrastructure generally becomes less reliable after 5 years, jeopardizing the stability of our business' critical applications running on top of our IT Infrastructure. This Server ARP project will evaluate Computer Hardware with more than 5 years of continuous use and replace where appropriate.	The project will intelligently and systematically replace critical infrastructure before a system failure that would disrupt business operations.	12/31 Annually	(1.07)
2018	3,175,515	ARP - Storage	Upgrades & Replacements (Enterprise)	Assess current and future capacity storage needs.  • Add capacity to existing General Purpose Vmax storage arrays (Parnall & BRC) and decommission existing storage as required.	Product Scope Statement This project is intended to address the ongoing refresh and growth needs within Information Technology regarding the data storage hardware. The project replaces hardware aged more than 5 years and provides incremental storage capacity where needed.	12/31 Annually	(1.08)
2018	1,156,259	ARP - Wireless Network	Upgrades & Replacements (Enterprise)	This project is to refresh targeted portions of the Company's various wireless networks including the 800 MHz Radio System Infrastructure.	The scope of this project is extending the useful life of the Company owned radio systems. It's primary focus is on the 800 MHz radio system proper but also includes other systems, sub systems and components used within the Company. The project provides value by insuring reliable and real time communication between company crews and disptach locations.	12/31 Annually	(0.97)
2018	3,527,972	ARP - Workstation Asset Management (WAM)	Upgrades & Replacements (Enterprise)	The project is in support of plans for IT to validate, procure and deploy desktops and laptop computers on a four-year refresh cycle for every department in the company. Not completing the refresh will push the need for more capital dollars into future years. It will also increase costs for hardware repairs and potentially not allow Business Partners with older desktops or laptops to complete their job tasks.	Business Partners require these Desktops and Laptops to support their business efforts. Refreshing the equipment: - Reduces equipment failures - ReducesBusiness Partner Downtime - Refreshed hardware allows software to function as designed	12/31 Annually	(1.01)
2018	830,064	BizTalk to Tibco Conversion 2018	Upgrades & Replacements (Enterprise)	CE is moving to a Tibco ESB integration platform, so we need to continually remove our reliance on Biztalk as a third integration tool. Tibco can support everything that Biztalk does, so we can use this project to gradually move the Biztalk jobs over to the ESB.	Eventually we should get to a point where Biztalk is no longer needed. This project is also a good training tool as our resources are still quite new to the ESB. The Tibco sftp adapter will need to be purchased as part of this project.	Oct-18	(0.97)

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2018	138,801	C&APS Portfolio Application Currency	Upgrades & Replacements (Enterprise)	Upgrade corporate applications such as: Coursemill Learning Management System Gifts ORG Plus uPerform Questionmark Perception Physical Access Interface (PAI) Summation Pro	Upgrade corporate applications to ensure support and mitigate cyber security risks.	Nov-21	(0.90)
2018	2,946,674	DWDM Refresh	Upgrades & Replacements (Enterprise)	Refresh the company's Network hardware that is part of the Company's "Dark Fiber" network.	The scope of this project is to replace the existing Fiber Optic transport equipment at the ten Company locations that are part of the internal "Dark Fiber" network. This project provides value by insuring that the Company's internal Network connectivity for Call Centers, Computer Networks and the Radio Network is reliable and on modern, supportable hardware.	Sep-18	(0.99)
2018	674,902	ESB Upgrade	Upgrades & Replacements (Enterprise)	The Enterprise Service Bus (ESB) is an Enterprise Integration Platform initially implemented to support the AMI Smart Energy Applications. It enables secure flow of data from Smart Meter head ends to SAP and other systems that process and store the data.	Upgrading this critical infrastructure will ensure meter reads will continue to flow smoothly and securely to all the systems that process this data, in turn ensuring customers get timely services like billing etc.	Sep-18	(0.89)
2018	3,487,430	Lotus Notes Application Migration & Retirement Wave 4	Upgrades & Replacements (Enterprise)	Lotus Notes is an unsupported technology now at CE. Most of the 600+ LN applications can be moved to Sharepoint, either from a direct move or customization. The applications are categorized into simple, medium, and complex. The migration is happening in 4 Phases or Waves and this is Wave 4.	This next phase will further enable capabilities on our current collaboration platform standard (SharePoint), while reducing the risk footprint of using an unsupported standard (Lotus Notes). Sharepoint gives many new enhancements to these applications including collaboration, versioning of documents, security, and automated auditing. With the use of the K2 the users can also modify their own sites once migrated to better tailor them to their business needs.	Dec-18	(0.93)
2018	100,216	SharePoint 2016 Upgrade Project	Upgrades & Replacements (Enterprise)	This SharePoint Upgrade Project includes alignment with the Office365 cloud based hosting. This upgrade extends and enhances the existing SharePoint 2010 platform (which will become unsupported by MS in 2020 and extended support will NOT be available) by providing additional functionalities and enhanced user experience to the end user.	Keeping the SharePoint environment up to date is important due to the number of business critical functions that rely on SharePoint or that will rely on SharePoint at the conclusion of the Lotus Notes Migration project. SharePoint 2010, the version that is currently running at Consumers Energy, went end of Mainstream support from Microsoft on 10/13/2015. Only critical patches are being provided by Microsoft, no enhancements or functionality will be added going forward. The SharePoint 2010 product will be end of life (unsupported without significant cost) on 10/13/2020. The new version of SharePoint will provide a more productive experience for the Business Partners as well as integrate better with SharePoint online, the cloud version of Microsoft SharePoint.	Jan-18	(1.00)
<b>SUBTOTAL</b>	<b>27,080,439</b>	<b>2018 Upgrades &amp; Replacements (Enterprise)</b>					



SPEND YEAR	SPEND FOR APPLICABLE YEAR	PROJECT NAME	PROGRAM	PROJECT DESCRIPTION	PROVIDED SCOPE / BENEFIT	IMPLEMENTATION DATE	COST/BENEFIT RATIO
2018	447,000	Corporate Capital Projects	Upgrades & Replacements (Business Partner)	Small corporate projects - No business case document		Dec-18	
2018	14,646	Energy Resource Portfolio Application Currency	Upgrades & Replacements (Business Partner)	This effort is needed to ensure application currency for Energy Resources Application Portfolio. The application upgrades have been prioritized based on business criticality and value, and this project will perform the routine upgrades/maintenance to ensure IT solutions supporting Energy Resources business processes to deliver energy to our customers are stable and current.	The ER Application Portfolio went through an assessment to evaluate application currency and technology obsolescence for Energy Resources Application Portfolio, prioritized needed upgrades based on business criticality and value, and this project was initiated to address priorities to ensure appropriate support and performance.	Dec-21	(0.94)
2018	2,869,001	GIS-Integrated Design	Upgrades & Replacements (Business Partner)	This project is to replace the current CAD/Work Requirements and Design software with a GIS based design tool for improved capabilities in the preparation of graphical designs for the order fulfillment processes for gas and electric work orders.	New functionality in scope: Ability to directly integrate with multiple ESRI databases, read data and attribution form dataset to begin design, Send data to proper data set (ESRI), electric and gas design simplification tools (streamline the actual placement of materials and attribution into a design), consumer GIS data as a service in addition to directly connect data (Replace WRaD Robosync), creating synergy for new construction of being able to send an updated design file with the corresponding updates and attribution to the GIS improving the as-built (redlining) posting process.	May-18	(0.95)
2018	214,482	PowerPlant Lease Upgrade (GAAP Changes)	Upgrades & Replacements (Business Partner)	This project is to upgrade the functionality in PowerPlant to handle the reporting requires for the proposed GAAP pronouncement. With GAAP moving to adopt more of the IFRS accounting standards, this could become a larger effort depending on the timing and Future GAAP pronouncements.	Implement the required system changes to be GAAP compliant.	Nov-18	(0.94)
<b>SUBTOTAL</b>	<b>3,545,129</b>	<b>2018 Upgrades &amp; Replacements (Business Partner)</b>					
2018	611,171	ASP Portfolio Expansion/CRM Integration	BP Functionality	<p>Expand portfolio of value added product and services to customers. A solution establishing a product catalogue to support equipment leasing/installation and related reporting/tracking (equipment, financial, etc.) is required.</p> <p>Additionally, to support the Company's ability to sustain business operations, Lotus Notes is actively being retired and displaced with a SaaS instance of Microsoft Dynamics. To optimize the solution, automated integration of customer &amp; consumption/revenue data is required to facilitate within the customer business areas of contact management, sales lead tracking, complaints management, channel management, and campaign management. End state is to achieve a true 360 view of all customers with improved visibility of all customer touch points and activities, and utility process.</p>	<ul style="list-style-type: none"> <li>• System must support inventory management, multiple product packages with capability of flexible pricing/a variable commission structure for sales advisors and scheduling for sales advisors</li> <li>• Track equipment installations and lease agreements</li> <li>• Provide sales reporting</li> <li>• On scheduled basis, download customer master and referential data from SAP to SaaS instance of MS Dynamics</li> </ul>	Oct-18	5.00

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2018	1,674,689	DOET Scheduling Tool Project	BP Functionality	The DCO Scheduling Tool Project will implement a scheduling solution capable of scheduling long cycle, maintenance and emergent work. The scheduling area is in the need of a tool to aid the schedulers in performing their job more efficiently. The process(es) remain quite cumbersome and time consuming for the scheduling staff. Several excel spreadsheets continue to be utilized to allow single views of all the information needed to effectively produce the various schedules.	The Scheduling solution is expected to provide the ability to: -Produce schedules for various time periods, across multiple levels of the business, such as statewide, headquarters, zones, type of work, and manager area. The schedules will be based on resource capacity, geography, qualifications, and other resource assignment business rules. -Track progress and completion of larger projects in one place -Show charts and graphs, integrate with compliance systems as required, and provide visibility into Supply Chain requirements for every order. -Provide KPIs in real-time status to allow Scheduling to respond quickly. The current Planning Board is very time consuming, and difficult to use. Schedulers continue to be reactive to changes in workload, emergent work, and schedule. Non effective scheduling of work has lead to not meeting customer commitments and not being able to produce a high quality work plan that includes all work. The schedulers to spend a large amount of time on manual process(es) using excel spreadsheets and other tools.	Jun-19	(0.28)
2018	7,624	Drawing Management Software	BP Functionality	This project is to investigate and install drawing management software capable of bundling, managing and handling the versions of documents related to design, proposals, contract resources and record-keeping.	The solution will be capable of bundling, managing and handling the versions of documents related to design, proposals, contract resources and record-keeping.	Sep-17	(0.95)
2018	1,138,304	EA - Grid Communication Modernization	BP Functionality	Verizon has announced that they will no longer offer their analog, multi-drop phone service as of February 28, 2015 and their Frame Relay service after December 31, 2015. These services are an integral component of the SCADA communication infrastructure.	A wired and wireless solution to replace Verizon's sunsetted services (analog multidrop circuits and frame relay circuits). Defined minimum and uptime requirements. Sufficient site coverage.	Dec-18	(0.91)
2018	1,007,147	Enterprise Content Management	BP Functionality	Provide an Enterprise Document Management solution including the strategies, tools, and processes to more easily manage, rapidly locate, and deliver CMS Energy content throughout its life cycle wherever that content exists into the form the business partner needs. Areas needing this include: Legal, Risk and Insurance, HR, Strategic Communications, Learning and Development, DOET, etc.	Provide an Enterprise Content (document) Management solution including the strategies, tools, and processes to more easily manage, rapidly locate, and deliver CMS Energy content throughout its life cycle wherever that content exists into the form the business partner needs. Content management enables organizations to enforce policies and rules for the retention and disposition of content required for documenting business transactions, in addition to automating the management of their record-retention policies. These technologies, implemented with well-formulated and consistently enforced records retention policies, form an essential part of the life cycle management of information. As industry regulation and compliance requirements increase, along with the volume of digital content that must be retained and the demand for legal discovery.	Oct-18	(0.93)

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2018	663,925	Enterprise Project Management Information System	BP Functionality	Implement an integrated suite of project management tools and processes to support a breakthrough goal established in early 2015 to drive project management maturity across the company to Level 4 by 12/31/2019.	A project management framework has been defined that is required to reach, support and sustain project management maturity. A multi year plan has been developed to implement the EPMO processes, tools, and governance for Consumers Energy. These new standards for project management will ensure quality project management and delivery at the lowest cost.	Dec-19	3.92
2018	2,183,248	Field Service Solution Release 3	BP Functionality	FSS Release 3 provides continued enhancement needed for field workers and field leaders to be safe, efficient, and deliver customer value. Release 3 is targeting three implementation dates.	Release 3.1 will include improvements by adding/enhancing system functionality in the areas of: the overall order creation process, Gas Distribution and Construction work order completion, MISS DIG Service Suite work order, enhanced ties to SAP timesheet including SAP Manager Self Service, Support of data input from bar code reader technology; including changes to SAP parsing logic for the input fields, Addition of required codes to work orders, Improvements in Dispatch Application and Dispatch Schedule screens to enhance dispatcher experience, Gas Leak orders, use by the Catastrophic Crew System, Creation of new reports from automated scheduling engine  Release 3.2 will include improvements by adding/enhancing system functionality in the areas of: OMS Cancelled orders, Disconnect/Reconnects in EDL, capturing of Lat/Long information in Service Suite and post to ZGIS, ASP improvements, Automate sub/ckt information in emergent orders that bypass OMS, improvements for GCM work orders, Gas Leak work orders, and form improvements.	Jan-18	(0.77)
2018	576,024	Fleet Handhelds	BP Functionality	Provide hand held devices for Fleet mechanics to allow them access to their work orders, fleet information as well as update fleet information following the job completion. Having this access at their job site will improve work processes and improve data accuracy.	Provide the handheld technology to Fleet mechanics to improve work processes and improve data accuracy.	Feb-19	0.33
2018	1,323,991	Incident and Risk Management	BP Functionality	Implement corporate-wide incident and risk management tracking system.  Areas that will benefit are: Safety & Health, Environmental, Corporate Security (possibly), and possibly others.	Provide ability to: Implementation of the standard business processes and incident types for EHSM Incident Management, Near Misses and Safety Observations. Incident investigation, incident risk assessment and task management to organize incident management overall including incident prevention. Corrective action tracking, workflows and reminders	Oct-18	0.93

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2018	838,737	TrackStar Replacement	BP Functionality	This project will replace/upgrade/enhance the current capabilities provided by the TrackStar Application to monitor the physical location of field employees. The version of Trackstar that we are currently utilizing is going end of life and needs to be replaced.	Upgrading or replacing Trackstar will enable the company to know whereabouts of all crew/field worker vehicles. This visual of vehicles aids the dispatcher in selecting the appropriate field worker/crew to respond to emergency calls, by being able to select the closest in proximity to the emergency.  By 2018, the company expects to be 2-3 versions behind the current vendor supported version of Trackstar. In addition, the maintenance costs for procuring additional licenses with each new vehicle will continue to grow, due to provisions in the current product's license agreement.	Nov-19	(0.47)
2018	1,416,594	Work Management Improvements - 2018 Release	BP Functionality	Overall Work Management improvement efforts to support Fleet.	Technology improvements that will supplement and support people and process improvements for Fleet work management. This effort will First Time Completion of work, Every Day is a Safe Day, and Executing within Financial targets. Also direct support of Supply Chain's Right Material, Right Place, Right Time.	Dec-18	(0.96)
<b>SUBTOTAL</b>	<b>11,441,454</b>	<b>2018 BP Functionality</b>					
2018	1,138,864	Enhancements - CERRQ	Enhancements	Small software enhancement work efforts performed for Customer Experience business areas.	Each enhancement request has defined business value.	Dec-18	(0.98)
2018	1,241,921	Enhancements - Corp-Shared Svcs	Enhancements	Small software enhancement work efforts performed for Corporate and Shared Services business areas.	Each enhancement request has defined business value.	Dec-18	(0.96)
2018	635,835	Enhancements - DOET	Enhancements	Small software enhancement work efforts performed for the DCO business area.	Each enhancement request has defined business value.	Dec-18	(0.96)
2018	733,865	Enhancements - Energy Resources	Enhancements	Small software enhancement work efforts performed for the Energy Resources business area.	Each enhancement request has defined business value. 2017 & 2018 Requests Include: FERC Market Based Rate Filings GCC – Mass move for Suppliers SAP Catalog 'B' Addition Request SAP Functional Data Fields - System Owner Met/Team customer portal external facing GIS Web Portal Layer DLA – Solution to SAP Alerts (DLA) GCC - Customers able to Block GCC enrollments Re-provisioning of non-communicating switches in batch/bulk in DRMS for DLA Gas C&S work management	Dec-18	(0.94)
<b>SUBTOTAL</b>	<b>3,750,485</b>	<b>2018 Enhancements</b>					

MICHIGAN PUBLIC SERVICE COMMISSION

Consumers Energy Company

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SPEND YEAR	SPEND FOR APPLICABLE YEAR	PROJECT NAME	PROGRAM	PROJECT DESCRIPTION	PROVIDED SCOPE / BENEFIT	IMPLEMENTATION DATE	COST/BENEFIT RATIO
2018	210,113	TCoE Automated Testing 2018 - SAP Regression	IT Service Delivery	This project will continue to automate test scenarios that are frequently used in SAP regression tests to ensure that changes being introduced, such as SAP support packs or SAP enhancements, do not adversely impact existing functionality.	The value of automated testing is reduced regression testing time and effort, which leads to better quality service to our customers and employees. This is a continuation of the 2017 test automation effort, breaking up the scope into manageable chunks.	Aug-18	1.04
<b>SUBTOTAL</b>	<b>210,113</b>	<b>2018 IT Service Delivery</b>					
2018	627,660	ARP-Cyber Security	Security	The objective for Cyber Security Asset Refresh project is to ensure continued vendor support of security technology deployed at the Company as well as reduce the risk of unplanned outages due to outdated hardware/software and appliances.	Replace end of life and obsolete systems; leading to less probability of equipment failures, software compatibility issues and business partner downtime.	12/31 Annually	(1.07)
2018	124,747	Cyber Security PEN Testing Platform	Security	Cyber Security Assessments for existing and new technology projects is completed using manual efforts and a variety of tools. A Penetration testing platform integrates these tools and allows for the creation of repetitive tests.	An integrated solution allows standardization for how penetration testing is accomplished, and build collaboration amongst technical resource working in this space. Value is seen in automation of manual processes, consolidation of our technical footprint - which continue to safeguard us against cyber security threats.	Apr-18	(0.70)
2018	1,107,787	Dell 1 Identity Manager (CAAR Replacement)	Security	This project is chartered for implementation of configurable Identity and Access Management functionality and best practices with enforced compliance. This includes enterprise level foundation architecture, technology, and end-2-end processes and controls, which will be implemented in a phased/iterative approach.	Attestation will be a key focus area for 2017 Q1, which will streamline and automate privileged group (SOX/ACS/PCI) reviews for both the Info Risk team and group owners team completing the review. The project will then aim to continue development and implementation of self-service identity and access management processes for employees/contractors, with key focus on automation and integration for the remainder of 2017.	Sep-20	(0.92)
2018	561,612	Enterprise Incident Response Toolset	Security	Deploy enterprise wide solution for sweeping and collecting forensic artifacts across the enterprise environment for all workstations, laptops and servers.	Scope will be to implement a system capable tracking all security incidents across the enterprise and automating the collection of computer forensic artifacts. This automation will help detect and respond more quickly to cyber security incidents	Dec-18	(0.93)
2018	327,075	Mobile Security	Security	With an increasingly mobile workforce, a need has risen to assess and implement a solution aimed at protecting our company's mobile assets from current cyber security threats.	Aim is for a 2018 project. Scope would include implementation of a Mobile Security Solution/strategy. Goal is to leverage existing technologies, which may require configuration/development activities. Scope could expand to assessment type tools for mobile applications. Value is seen in mitigation of security threats.	Jul-18	(0.94)
2018	312,362	NERC/CIP Version 5	Security	Regulations required Consumers Energy to be compliant with NERC Critical Infrastructure Protection (CIP) standards. This project is chartered to bring critical infrastructure into compliance with NERC/CIP standards.	Key project scope includes completing requirements to meet NERC CIP requirements (Version 5), which include: Identify and classify BES Cyber Assets and develop preventive, detective, and corrective controls as they apply to the NERC CIP Version 5 Standards.	Sep-18	(0.96)

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SPEND YEAR	SPEND FOR APPLICABLE YEAR	PROJECT NAME	PROGRAM	PROJECT DESCRIPTION	PROVIDED SCOPE / BENEFIT	IMPLEMENTATION DATE	COST/BENEFIT RATIO
2018	936,281	OT Security Architecture	Security	IT Information Security is taking responsibility for Cyber Security within various areas of the businesses' operationstechnology. The project will be used to implement a consistent security architecture across the Operational Technology landscape.	Key scope includes the continuation of implementing the Consumers Energy OT security standard across the Generation fleet.	Nov-19	(0.97)
<b>SUBTOTAL</b>	<b>3,997,524</b>	<b>2018 Security</b>					
2018	973,995	ActiveMatrix Lifecycle Governance Framework- TIBCO	Architecture	This project will implement TIBCO ActiveMatrix Lifecycle Governance Framework which will serve as a system of record for Enterprise SOA by serving key functions - Service Repository and Service Registry. The project scope will also entail enabling SOA Governance and SOA visibility, trust and control capabilities supporting service reuse by making it easy to categorize, publish, discover and reuse services across development teams and departments. The implementation scope will focus on deploying TIBCO AMLG and identifying and registering re-usable services from existing TIBCO ESB artifacts.	Deployment of TIBCO AMLG component for SOA Governance and implementation of SOA repository for enterprise services by including existing re-usable services from smart energy and other services to be utilized for new project requirements.	Nov-18	(0.92)
2018	1,952,745	BizTalk EDI Migration	Architecture	Migration of BizTalk legacy EDI and File based ftp/sftp integrations to the ESB Platform. The project scope primarily includes to lift and shift existing BizTalk integrations into to ESB Design, Build and test activities for the to-be ESB EDI and SFTP Interfaces with all of the Vendors, Partners and critical business functions primarily outside of the CMS Landscape. These integrations include critical business functions related to purchasing, banking payments, integrations to government agencies and other partners.	Design, Build, Test and Cutover BizTalk EDI and SFTP interfaces into the ESB platform, perform detailed testing and sign-offs from all the vendors and partners for all the interfaces. Routing and cross reference mechanisms with the EDI VAN provider needs to switch from BizTalk to ESB Zone D security zone.	Nov-18	(0.94)
2018	1,336,044	Enterprise Data Management	Architecture	This project supports the development of an Enterprise wide Data Management Program. The scope includes the foundation activities such as implementation of a Master Data Management application to assist in the common standardization of data definitions and data attributes. Additionally, Data Quality tools may be included to support the goal of data integrity, and consistency.	Implementing data standards and quality tools will eliminate data inconsistencies and promote data integrity.	Nov-18	(0.93)
<b>SUBTOTAL</b>	<b>4,262,784</b>	<b>2018 Architecture</b>					

MICHIGAN PUBLIC SERVICE COMMISSION

Consumers Energy Company

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Detailed Costs of Actual and Projected Electric & Common Capital Expenditures  
For the years 2015 through 2018

Information Technology Department

SPEND YEAR	PROJECT NAME	PROGRAM	PROJECT ELECTRIC PORTION OF SPEND FOR APPLICABLE YEAR	SOFTWARE COSTS	MATERIAL COSTS	LABOR COSTS	CONTRACTOR COSTS	ENGINEERING COSTS	OVERHEAD & OTHER COSTS	AFUDC COSTS	CONTINGENCY COSTS
2015	2015 Storage Area Network Refresh	Upgrades & Replacements (Enterprise)	85,146	2,565	41,332	16,355	15,086	0	9,808	0	0
2015	ARP - Multimedia	Upgrades & Replacements (Enterprise)	311,813	0	152,516	36,844	101,544	0	20,909	0	0
2015	Desktop Transformation	Upgrades & Replacements (Enterprise)	(3,952)	0	(3,952)	0	0	0	0	0	0
2015	Redwood Job Scheduler Version Upgrade	Upgrades & Replacements (Enterprise)	147,932	0	0	52,584	67,146	0	23,851	4,351	0
2015	SAP Enhancement for ERP	Upgrades & Replacements (Enterprise)	7,559,866	0	76,625	1,923,602	5,132,900	0	292,226	134,513	0
2015	WAN Transformation (2014 Bandwidth Augmentation Project)	Upgrades & Replacements (Enterprise)	39,662	0	39,662	0	0	0	0	0	0
2015	ARP-Printer Asset Management (PAM)	Upgrades & Replacements (Enterprise)	289,332	0	237,959	32,486	335	0	18,553	0	0
2015	ARP-Workstation Asset Management (WAM)	Upgrades & Replacements (Enterprise)	1,481,322	898	1,362,725	83,655	0	0	34,044	0	0
2015	ARP-Wireless Network	Upgrades & Replacements (Enterprise)	877,193	0	740,030	36,442	92,787	0	7,934	0	0
2015	ARP-Voice Network	Upgrades & Replacements (Enterprise)	1,094,199	147,473	514,883	107,180	252,205	0	72,458	0	0
2015	ARP-Server	Upgrades & Replacements (Enterprise)	5,907,156	2,271,844	3,034,415	204,773	332,492	0	63,633	0	0
2015	ARP-Data Network	Upgrades & Replacements (Enterprise)	1,658,650	450	1,238,941	131,007	211,997	0	76,254	0	0
2015	ARP-IT Facilities	Upgrades & Replacements (Enterprise)	69,422	0	27,125	26,088	1,160	0	15,048	0	0
2015	ARP-Performance & Capacity Management	Upgrades & Replacements (Enterprise)	91,099	0	60,649	12,970	9,888	0	7,591	0	0
2015	ATM Retirement	Upgrades & Replacements (Enterprise)	724,347	0	343,030	113,079	147,573	74,039	46,625	0	0
2015	Wireless LAN Controller	Upgrades & Replacements (Enterprise)	(841)	0	(4,012)	0	3,171	0	0	0	0
2015	ARP-Storage	Upgrades & Replacements (Enterprise)	1,012,697	229,388	593,412	68,271	96,455	0	25,171	0	0
2015	ARP-Critical Infrastructure Support	Upgrades & Replacements (Enterprise)	350,443	36,172	263,796	29,834	2,647	0	17,995	0	0
2015	MS Mod - SQL Server Version Upgrade	Upgrades & Replacements (Enterprise)	(401,942)	(489,207)	25,120	26,219	1,353	0	2,419	32,154	0
2015	Contact Center Customer Experience Refresh	Upgrades & Replacements (Enterprise)	7,358,407	4,346,188	516,660	859,437	1,119,496	0	340,534	176,093	0
2015	SAP Modernization	Upgrades & Replacements (Enterprise)	339,356	42,512	45,688	299,386	4,407	0	(52,637)	0	0
2015	2016 ARP Collaboration	Upgrades & Replacements (Enterprise)	4,144	0	0	4,065	0	0	80	0	0
2015	ARP - Field Device Asset Management (FDAM)	Upgrades & Replacements (Business Partner)	1,032,200	0	1,029,030	2,051	0	0	1,119	0	0
2015	Electric Distribution Historian Implementation	Upgrades & Replacements (Business Partner)	1,449,360	381,055	382,687	410,501	17,186	0	122,743	135,189	0
2015	Electric GIS-OMS Upgrade	Upgrades & Replacements (Business Partner)	367,275	0	(522)	192,524	23,495	0	90,966	60,811	0
2015	Electronic Personnel Files	Upgrades & Replacements (Business Partner)	4,815	0	0	0	0	0	9,170	(4,355)	0
2015	Energy Trading and Risk Management	Upgrades & Replacements (Business Partner)	1,347,711	378,000	0	793,928	27,862	0	116,640	31,281	0
2015	Facilities Space Management Solution	Upgrades & Replacements (Business Partner)	1,167,810	33,373	0	570,279	200,096	0	266,087	97,976	0
2015	Financial Planning and Forecasting	Upgrades & Replacements (Business Partner)	1,152,039	177,988	0	530,940	260,613	0	141,926	40,573	0
2015	GIS Integrated Design Application	Upgrades & Replacements (Business Partner)	(622,899)	0	0	(10,364)	(612,804)	0	268	0	0
2015	JH Campbell Annex Renovations	Upgrades & Replacements (Business Partner)	2,404	0	0	1,134	0	0	1,270	0	0
2015	Lansing Crew Room	Upgrades & Replacements (Business Partner)	5,637	0	1,950	1,557	828	0	1,302	0	0
2015	Legal Lansing Satellite Office	Upgrades & Replacements (Business Partner)	548	0	548	0	0	0	0	0	0
2015	Load Forecast & Modeling	Upgrades & Replacements (Business Partner)	440	0	0	0	0	0	440	0	0
2015	Managed Meter Wholesale	Upgrades & Replacements (Business Partner)	(4,139)	(48,750)	0	8,046	12,813	0	5,661	18,092	0
2015	Meter Operational Data Manager Historian	Upgrades & Replacements (Business Partner)	1,289,970	194,857	502,523	379,732	25,308	0	68,490	119,061	0
2015	MPSC Relocation and Renovation	Upgrades & Replacements (Business Partner)	189	0	0	138	0	0	51	0	0
2015	UADA Reduction Move In	Upgrades & Replacements (Business Partner)	612,745	0	0	412,481	5,155	0	163,261	31,849	0
2015	Corporate Capital Projects	Upgrades & Replacements (Business Partner)	67,000	0	67,000	0	0	0	0	0	0
2015	Trail St Renovation	Upgrades & Replacements (Business Partner)	(11)	0	(1)	(1)	(9)	0	(0)	0	0
2015	ITCP-Clare Service Center	Upgrades & Replacements (Business Partner)	379,918	25,506	163,320	53,130	100,762	0	37,201	0	0
2015	Grid Communication Modernization	Upgrades & Replacements (Business Partner)	945,171	5,749	153,545	209,784	472,249	0	103,844	0	0
2015	ITCP-Hamilton Service Center	Upgrades & Replacements (Business Partner)	219,740	11,755	46,331	35,508	100,968	0	25,178	0	0
2015	ITCP-Jackson Innovation Center	Upgrades & Replacements (Business Partner)	430,749	5,697	74,066	67,107	245,915	0	37,964	0	0
2015	ITCP-JHC Guard House	Upgrades & Replacements (Business Partner)	26,825	0	2,021	9,903	7,331	0	7,569	0	0
2015	Lab Renovation and Decommission	Upgrades & Replacements (Business Partner)	14,414	0	2,511	5,696	2,156	0	4,052	0	0
2015	ITCP-Parnall P-26 Renovation	Upgrades & Replacements (Business Partner)	141,812	0	58,807	12,862	62,167	0	7,975	0	0
2015	Legal: eDiscovery Tool Replacement	Upgrades & Replacements (Business Partner)	866,029	233,754	293,458	177,830	85,236	0	71,735	4,018	0
2015	EA-Electric System Model Enhancement	Upgrades & Replacements (Business Partner)	444,611	0	0	341,254	41,817	0	54,072	7,467	0
2015	Union 2015 Contract Changes	Upgrades & Replacements (Business Partner)	57,652	0	0	43,131	0	0	14,521	0	0
2015	Contract Lifecycle Management	Upgrades & Replacements (Business Partner)	19,391	0	0	21,553	0	0	(2,223)	61	0
2015	OMS SG User Interface	Upgrades & Replacements (Business Partner)	42,026	0	0	18,807	25,194	0	(2,107)	131	0
2015	Prior Yr. Adjustments	Upgrades & Replacements (Business Partner)	16,076	0	0	16,076	0	0	0	0	0
2015	2-Way Customer Communication	BP Functionality	3,948,673	12,059	0	1,522,245	1,726,439	0	470,019	217,911	0
2015	Bill Simplification	BP Functionality	2,275,515	0	2,104,394	29,530	124,274	0	17,317	0	0
2015	CE Website Redesign	BP Functionality	8,233,919	22,197	28,300	1,488,742	5,949,476	0	386,439	358,765	0
2015	ECS - Enterprise Compliance Solution Release II	BP Functionality	1,786	0	0	1,444	(87)	0	429	0	0
2015	Misc. Small Projects	BP Functionality	13,549	102	4,499	4,369	2,917	0	1,661	0	0
2015	Transmission Outage Application	BP Functionality	264,705	0	0	107,831	74,250	0	64,921	17,703	0
2015	Travel & Expense Management	BP Functionality	23,523	0	(0)	0	23,523	0	0	0	0
2015	Web Content Management	BP Functionality	27,917	10,597	0	12,273	0	0	3,460	1,586	0
2015	Web Foundation	BP Functionality	1,081,532	0	0	306,479	603,676	0	111,605	59,772	0
2015	Field Service Solution	BP Functionality	13,090,765	102,968	306,672	3,541,771	6,887,567	0	1,299,665	952,121	0
2015	ITCP-LakeWinds O&M Building	BP Functionality	98,074	0	25,590	28,268	21,001	0	23,216	0	0
2015	EA-Capacitor Control Replacement	BP Functionality	2,626,197	733,888	1,559,790	164,606	84,896	0	78,799	4,218	0

Detailed Costs of Actual and Projected Electric & Common Capital Expenditures  
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## Information Technology Department

SPEND YEAR	PROJECT NAME	PROGRAM	PROJECT ELECTRIC PORTION OF SPEND FOR APPLICABLE YEAR	SOFTWARE COSTS	MATERIAL COSTS	LABOR COSTS	CONTRACTOR COSTS	ENGINEERING COSTS	OVERHEAD & OTHER COSTS	AFUDC COSTS	CONTINGENCY COSTS
2015	DCE Website Replacement R2	BP Functionality	761,227	0	0	287,273	404,855	0	61,869	7,231	0
2015	Wind Park Historian	BP Functionality	829,353	315,400	283,823	167,829	889	0	48,492	12,921	0
2015	Large Service Center Renovation -2016	BP Functionality	40,506	0	0	10,012	24,153	0	6,341	0	0
2015	DPO Card Acceptance	BP Functionality	73,696	0	0	50,492	5,297	0	17,907	0	0
2015	Care 3.0	BP Functionality	118,898	0	0	79,154	0	0	38,241	1,503	0
2015	Microsoft Dynamics	BP Functionality	126,375	0	0	0	126,375	0	0	0	0
2015	BI Enhancements	Enhancements	634,298	0	0	518,603	17,360	0	92,128	6,208	0
2015	SAP Enhancements	Enhancements	2,404,958	22,814	0	1,067,316	758,950	0	420,085	135,792	0
2015	Backup Redesign	IT Service Delivery	(41,481)	108,633	(249,898)	72,744	9,072	0	17,968	0	0
2015	CMDB and Service Catalogue	IT Service Delivery	104,792	0	0	20,568	78,790	0	5,434	0	0
2015	Lotus Notes Application Migration & Retirement	IT Service Delivery	1,197,403	0	0	878,606	57,004	0	179,876	81,917	0
2015	SAP BW HANA S/W	IT Service Delivery	165,450	0	0	112,084	34,309	0	19,057	0	0
2015	SAP Net Licensing Agreement	IT Service Delivery	293,676	293,676	0	0	0	0	0	0	0
2015	SharePoint Phases	IT Service Delivery	888,292	704	0	649,430	12,573	0	192,779	32,806	0
2015	xMatters	IT Service Delivery	202,593	(76,159)	0	119,105	80,270	0	49,360	30,017	0
2015	Native HANA Pipeline	IT Service Delivery	191,168	0	0	151,125	866	0	38,099	1,077	0
2015	Infrastructure Avail Assessmt and Targeted Obsolete Equip Analysis - Critical Apps Platform Modernization	IT Service Delivery	2,579	0	0	0	0	0	2,579	0	0
2015	Service Now Phase II	IT Service Delivery	4,479,257	2,622,252	121	1,370,788	36,230	0	323,051	126,816	0
2015	HANA Phase 2, BI/BOBJ 4.0 Upgrade Migration - BI Migration and new dashboards	IT Service Delivery	293,309	932	0	214,919	35,043	0	20,934	21,480	0
2015	HANA Phase 2, BI/BOBJ 4.0 Upgrade Migration-BW upgrade and HANA	IT Service Delivery	766,906	0	194,718	189,158	309,800	0	47,637	25,592	0
2015	MS Mod -MS Windows Server 2003 Retirement App Upgrades	IT Service Delivery	64,998	0	0	53,035	0	0	10,499	1,465	0
2015	Private & Hybrid Cloud	IT Service Delivery	1,658,688	266,254	0	712,516	398,941	0	235,787	45,191	0
2015	Work and Financial Management Tool	IT Service Delivery	1,074,501	391,283	0	572,853	4,307	0	85,936	20,122	0
2015	Tibco API Software Purchase	IT Service Delivery	125,331	106,793	0	0	18,539	0	0	0	0
2015	Cyber Security Maturity Plan	Security	6,913	98,073	(114,214)	3,931	15,696	0	2,787	639	0
2015	NERC CIP Version 5-v6.0	Security	875,368	138,991	435,213	189,300	12,298	0	99,565	0	0
2015	Security Manager Portal	Security	156,737	0	0	117,481	2,785	0	29,762	6,708	0
2015	ARP-Cyber Security	Security	405,669	24,987	187,824	2,548	190,278	0	33	0	0
2015	Identity & access Mgmt	Security	(1)	0	0	0	(1)	0	0	0	0
2015	Dell Identity Manager	Security	824,447	302,494	0	372,408	20,290	0	88,152	41,103	0
2015	Single Sign-On Software as a Service	Security	270,668	269,079	0	1,050	0	0	540	0	0
2015	Energy Resource Security Architecture	Security	355,599	5,184	131,157	139,010	0	0	80,248	0	0
2015	Full Content Packet Capture	Security	103,558	17,646	85,912	0	0	0	0	0	0
2015	CIS - Critical Infrastructure Support	Security	86,793	8,959	65,334	7,389	655	0	4,457	0	0
2015	<b>TOTALS</b>		<b>91,701,636</b>	<b>13,787,073</b>	<b>17,133,113</b>	<b>23,708,144</b>	<b>26,850,538</b>	<b>74,039</b>	<b>7,048,805</b>	<b>3,099,926</b>	<b>0</b>
2016	ARP - Collaboration Asset Refresh	Upgrades & Replacements (Enterprise)	581,380	77,142	143,919	146,748	158,997	0	54,574	0	0
2016	ARP - Critical Infrastructure Support	Upgrades & Replacements (Enterprise)	504,657	(8,747)	445,511	25,815	30,800	0	11,279	0	0
2016	ARP - Field Device Asset Management (FDAM)	Upgrades & Replacements (Enterprise)	1,387,090	0	1,387,090	0	0	0	0	0	0
2016	ARP - IT Facilities	Upgrades & Replacements (Enterprise)	2,551	0	2,103	(594)	0	0	1,042	0	0
2016	ARP - Printer Asset Management (PAM)	Upgrades & Replacements (Enterprise)	667,535	0	650,214	13,076	0	0	4,244	0	0
2016	ARP - Server	Upgrades & Replacements (Enterprise)	2,027,747	260,302	1,233,022	333,596	112,774	0	88,053	0	0
2016	ARP - Storage	Upgrades & Replacements (Enterprise)	1,288,757	310,017	675,053	148,951	126,227	0	28,509	0	0
2016	ARP - Wireless Network	Upgrades & Replacements (Enterprise)	1,056,358	0	881,267	12,109	157,232	0	5,750	0	0
2016	ARP - Workstation Asset Management (WAM)	Upgrades & Replacements (Enterprise)	2,590,477	407	2,592,176	(5,500)	87	0	3,307	0	0
2016	ARP-Data Network	Upgrades & Replacements (Enterprise)	464,729	560	118,402	150,873	134,611	0	60,282	0	0
2016	ESB Upgrade	Upgrades & Replacements (Enterprise)	470,551	144,000	1,574	285,502	0	0	35,446	4,029	0
2016	Lotus Notes Application Migration & Retirement Wave 2	Upgrades & Replacements (Enterprise)	2,286,749	30,616	0	1,708,733	313,333	0	235,110	(1,043)	0
2016	Oracle Version Upgrade	Upgrades & Replacements (Enterprise)	50,713	0	0	41,127	0	0	9,585	0	0
2016	SAP Platform Modernization	Upgrades & Replacements (Enterprise)	7,538,841	702,845	3,179,529	1,746,650	1,539,615	0	327,596	42,605	0
2016	TCOE HP ALM Upgrade	Upgrades & Replacements (Enterprise)	45,991	0	0	41,571	0	0	4,420	0	0
2016	Team Foundation Server	Upgrades & Replacements (Enterprise)	39,096	0	0	34,562	0	0	4,535	0	0
2016	WAN Transformation	Upgrades & Replacements (Enterprise)	26,922	0	26,922	0	0	0	0	0	0
2016	Corporate Capital Projects	Upgrades & Replacements (Business Partner)	285,629	0	285,629	0	0	0	0	0	0
2016	Electric GIS-OMS Upgrade	Upgrades & Replacements (Business Partner)	(18,870)	(18,870)	0	0	0	0	0	0	0
2016	Energy Trading and Risk Management Solution	Upgrades & Replacements (Business Partner)	262	0	262	0	0	0	0	0	0
2016	Financial Planning and Forecasting	Upgrades & Replacements (Business Partner)	(2,101)	0	0	0	(2,101)	0	0	0	0
2016	GIS-Integrated Design	Upgrades & Replacements (Business Partner)	10,138	0	0	9,086	0	0	1,052	0	0
2016	Legal-eDiscovery Tool Upgrade	Upgrades & Replacements (Business Partner)	943,551	108,590	564,420	94,148	116,416	0	35,380	24,597	0
2016	Wind Park Historian	Upgrades & Replacements (Business Partner)	40,085	2,021	(15,109)	31,910	1,870	0	9,810	9,583	0
2016	2 Way Customer Communication	BP Functionality	(15,652)	0	0	(18,961)	9,708	0	(6,399)	0	0
2016	CARE 3.0	BP Functionality	(1,007)	0	0	0	0	0	0	(1,007)	0
2016	CE Website Replacement	BP Functionality	(140,181)	0	0	(28,016)	(102,917)	0	(9,248)	0	0
2016	Contact Center Customer Experience Refresh	BP Functionality	3,734,664	79,749	28,151	1,613,358	1,138,517	0	381,260	493,629	0



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## Information Technology Department

SPEND YEAR	PROJECT NAME	PROGRAM	PROJECT ELECTRIC PORTION OF SPEND FOR APPLICABLE YEAR	SOFTWARE COSTS	MATERIAL COSTS	LABOR COSTS	CONTRACTOR COSTS	ENGINEERING COSTS	OVERHEAD & OTHER COSTS	AFUDC COSTS	CONTINGENCY COSTS
2016	Contract Lifecycle Management	BP Functionality	75,012	0	0	52,626	0	0	22,445	(60)	0
2016	Credit and Collections	BP Functionality	36,939	0	0	33,213	0	0	3,726	0	0
2016	Customer Care Excellence (Interactions - SIP Based Implementation) (IVR Solutions)	BP Functionality	134,278	0	1,346	83,458	40,597	0	8,876	0	0
2016	DCE Website Replacement R2	BP Functionality	11,416,409	223,327	6,936	3,224,481	6,769,928	0	742,926	448,810	0
2016	DOET Advanced Planning and Reporting	BP Functionality	355,671	0	0	293,110	12,069	0	46,246	4,245	0
2016	DPO Card Acceptance	BP Functionality	522,017	0	42,886	325,905	9,703	0	116,221	27,303	0
2016	EA - Capacitor Control Replacement	BP Functionality	1,252,499	640,380	211,664	150,983	124,761	0	71,899	52,812	0
2016	EA - OMS SG User Interface	BP Functionality	757,075	0	0	509,781	153,889	0	73,095	20,310	0
2016	ED - Cascade - SAP Integration	BP Functionality	(128,323)	0	0	(121,505)	(6)	0	(6,812)	0	0
2016	Electric Distribution Historian Implementation	BP Functionality	319,235	0	0	192,045	0	0	47,158	80,032	0
2016	Facilities Management	BP Functionality	299,817	0	0	162,002	41,092	0	63,943	32,780	0
2016	Field Service Solution	BP Functionality	7,989,447	11,643	4,542	2,780,499	3,526,577	0	909,549	756,636	0
2016	Field Service Solution Release 2	BP Functionality	2,462,843	130,832	511,452	1,248,897	409,931	0	138,478	23,252	0
2016	GM - Electric System Model Enhancement	BP Functionality	824,451	0	0	623,491	42,677	0	101,772	56,511	0
2016	GM - Grid Communication Modernization	BP Functionality	63,376	0	161,412	55,661	(182,303)	0	28,606	0	0
2016	GM - Utility Analytics	BP Functionality	1,319,765	1,319,765	0	0	0	0	0	0	0
2016	ITCP - Cold Water Service Center	BP Functionality	31,692	0	0	7,197	22,756	0	1,740	0	0
2016	ITCP - Hamilton Service Center	BP Functionality	143,788	0	25,077	45,981	51,267	0	21,463	0	0
2016	ITCP - Jackson Innovation Center	BP Functionality	78,247	0	(1,867)	19,749	47,917	0	12,448	0	0
2016	ITCP - JGR Leadership Center	BP Functionality	888,189	7,988	57,576	39,436	769,328	0	13,861	0	0
2016	ITCP - Livonia Service Center	BP Functionality	204,278	0	21,988	35,492	126,782	0	20,016	0	0
2016	ITCP - Parnall East Renovation	BP Functionality	140,180	310	8,584	18,344	109,082	0	3,860	0	0
2016	Ludington Pump Storage Project Management Information System Upgrade	BP Functionality	92	29	2	6	55	0	0	0	0
2016	Meter Operational Data Manager Historian	BP Functionality	25,602	0	0	15,605	4,590	0	4,017	1,391	0
2016	Microsoft Dynamics	BP Functionality	125,405	622	0	0	124,783	0	0	0	0
2016	Union 2015 Contract Changes	BP Functionality	333	0	0	217	0	0	116	0	0
2016	Wholesale Contractual Settlements	BP Functionality	857,203	415,993	118,342	125,052	158,138	0	24,556	15,123	0
2016	Enhancements - CERRQ	Enhancements	411,008	36,944	0	240,939	69,334	0	63,791	0	0
2016	Enhancements - Corp-Shared Svcs	Enhancements	580,637	0	0	410,314	42,309	0	126,395	1,618	0
2016	Enhancements - DOET	Enhancements	426,749	0	888	254,695	115,269	0	48,827	7,071	0
2016	Enhancements - Energy Resources	Enhancements	133,447	0	0	86,821	19,527	0	23,899	3,200	0
2016	800MHz Tower Connectivity Optimization	IT Service Delivery	44,874	0	2,091	15,503	25,298	0	1,982	0	0
2016	BI 4.1 Dataservices Upgrade	IT Service Delivery	282,042	0	0	233,150	15,923	0	32,970	0	0
2016	Internet Connectivity Redesign	IT Service Delivery	302,394	0	198,320	58,377	26,482	0	19,215	0	0
2016	MS Mod - MS Windows Server 2003 Retirement - App Upgrades	IT Service Delivery	2,384	0	0	0	0	0	623	0	0
2016	Nimbus Phase 2	IT Service Delivery	631,836	35,475	24,644	359,567	84,385	0	112,738	15,027	0
2016	Printer Document Management Platform	IT Service Delivery	595,066	0	378,710	172,598	1,004	0	22,619	20,136	0
2016	Private & Hybrid Cloud	IT Service Delivery	464,456	27,584	0	218,020	78,858	0	88,227	51,766	0
2016	SAP Archiving	IT Service Delivery	187,462	0	0	157,557	6,486	0	18,307	5,112	0
2016	SAP Performance Tuning	IT Service Delivery	91,716	0	0	78,340	0	0	13,920	(544)	0
2016	Service Now Phase II	IT Service Delivery	(768,283)	(1,173,933)	(119)	241,824	9,919	0	82,397	71,628	0
2016	Service Now Phase III	IT Service Delivery	3,713,895	2,304,161	0	1,121,837	3,821	0	158,387	125,689	0
2016	Sharepoint Phases	IT Service Delivery	2,611	0	0	2,611	0	0	0	0	0
2016	SNOW License Manager (LM)	IT Service Delivery	555,697	228,793	0	192,551	70,210	0	46,729	17,414	0
2016	Work Management Tool	IT Service Delivery	104,343	0	0	59,350	23,103	0	18,449	3,442	0
2016	ARP - Cyber Security	Security	1,023,333	328,424	467,698	98,511	90,695	0	38,005	0	0
2016	Dell 1 Identity Manager (CAAR Replacement)	Security	909,040	(147,863)	0	703,365	58,239	0	163,888	131,412	0
2016	Full Content Capture Package	Security	195,148	59,953	121,265	10,021	0	0	3,909	0	0
2016	NERC/CIP Version 5	Security	493,916	(117,801)	53,916	346,309	0	0	211,492	0	0
2016	OT Security Architecture	Security	650,935	492,437	42,211	163,107	(122,540)	0	75,720	0	0
2016	SAP Security	Security	1,192,435	1,182,790	0	8,488	0	0	1,157	0	0
2016	<b>TOTALS</b>		<b>68,289,322</b>	<b>7,696,485</b>	<b>14,659,700</b>	<b>21,537,717</b>	<b>16,719,715</b>	<b>0</b>	<b>5,129,436</b>	<b>2,546,271</b>	<b>0</b>
2017	ARIS	Upgrades & Replacements (Enterprise)	247,386	87,490	0	53,704	0	0	21,007	3,896	81,288
2017	ARP - Collaboration Asset Refresh	Upgrades & Replacements (Enterprise)	826,596	10,465	459,056	220,150	0	0	136,926	0	0
2017	ARP - Critical Infrastructure Support	Upgrades & Replacements (Enterprise)	490,783	0	435,261	36,446	0	0	19,076	0	0
2017	ARP - Field Device Asset Management (FDAM)	Upgrades & Replacements (Enterprise)	1,079,705	0	997,632	41,709	0	0	21,917	0	18,447
2017	ARP - IT Facilities	Upgrades & Replacements (Enterprise)	508,939	0	422,914	56,392	0	0	29,633	0	0
2017	ARP - Performance & Capacity Management	Upgrades & Replacements (Enterprise)	248,123	0	171,368	45,698	0	0	30,884	173	0
2017	ARP - Printer Asset Management (PAM)	Upgrades & Replacements (Enterprise)	1,231,036	0	1,051,937	96,999	0	0	50,938	0	31,163
2017	ARP - Server	Upgrades & Replacements (Enterprise)	2,050,874	129,567	1,389,967	348,312	0	0	183,028	0	0
2017	ARP - Storage	Upgrades & Replacements (Enterprise)	2,628,716	347,059	1,869,796	79,263	290,947	0	41,651	0	0
2017	ARP - Wireless Network	Upgrades & Replacements (Enterprise)	998,883	0	779,518	25,559	117,339	0	76,466	0	0
2017	ARP - Workstation Asset Management (WAM)	Upgrades & Replacements (Enterprise)	3,759,201	0	3,323,729	285,467	0	0	150,005	0	0
2017	BiZTalk Upgrade	Upgrades & Replacements (Enterprise)	154,101	139,017	8,672	2,412	2,828	0	1,172	0	0

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Consumers Energy Company

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SPEND YEAR	PROJECT NAME	PROGRAM	PROJECT ELECTRIC PORTION OF SPEND FOR APPLICABLE YEAR	SOFTWARE COSTS	MATERIAL COSTS	LABOR COSTS	CONTRACTOR COSTS	ENGINEERING COSTS	OVERHEAD & OTHER COSTS	AFUDC COSTS	CONTINGENCY COSTS
2017	C&APS Portfolio Application Currency	Upgrades & Replacements (Enterprise)	138,949	0	0	90,662	0	0	43,551	4,736	0
2017	Lotus Notes Application Migration & Retirement Wave 3	Upgrades & Replacements (Enterprise)	2,551,814	0	0	1,249,290	433,380	0	666,639	58,044	144,460
2017	Oracle Version Upgrade	Upgrades & Replacements (Enterprise)	244,090	0	0	138,012	0	0	106,078	0	0
2017	Redwood Cronace Upgrade	Upgrades & Replacements (Enterprise)	225,442	0	27,408	104,759	27,408	0	57,128	4,678	4,060
2017	SAP Platform Modernization	Upgrades & Replacements (Enterprise)	2,580,964	0	460,949	316,418	1,393,515	0	163,169	0	246,913
2017	SharePoint 2013 Upgrade Project	Upgrades & Replacements (Enterprise)	479,010	0	0	59,268	371,296	0	34,320	14,127	0
2017	WAN Transformation	Upgrades & Replacements (Enterprise)	123,074	0	54,442	43,553	0	0	25,079	0	0
2017	Corporate Capital Projects	Upgrades & Replacements (Business Partner)	447,000	0	447,000	0	0	0	0	0	0
2017	Energy Resource Portfolio Application Currency	Upgrades & Replacements (Business Partner)	13,475	0	13,475	0	0	0	0	0	0
2017	eSOMS - upgrade to Operations Management	Upgrades & Replacements (Business Partner)	177,309	42,304	35,253	51,705	0	0	26,349	5,247	16,452
2017	GIS-Integrated Design	Upgrades & Replacements (Business Partner)	2,203,687	765,566	0	281,646	706,682	0	283,049	166,744	0
2017	Land Property Mgmt Upgrade Version 5.5	Upgrades & Replacements (Business Partner)	84,839	0	0	39,855	16,152	0	22,199	1,532	5,101
2017	SAP Archiving	IT Service Delivery	139,480	0	11,820	47,279	47,660	0	26,347	6,374	0
2017	SharePoint User Empowerment	Enhancements	160,243	0	0	80,532	0	0	47,195	4,415	28,100
2017	Account Reconciliation	BP Functionality	742,034	0	305,945	168,836	0	0	264,478	2,774	0
2017	Business Continuity Disaster Recovery Integration	BP Functionality	697,334	137,902	17,238	265,841	65,048	0	146,172	15,725	49,407
2017	Contact Center Customer Experience Refresh	BP Functionality	1,660,570	0	0	1,166,837	0	0	401,712	0	92,021
2017	DCE Web Replacement R3	BP Functionality	8,955,813	0	0	1,623,735	1,903,594	0	5,007,125	284,980	136,379
2017	Dispatch Simulator	BP Functionality	153,131	0	34,490	62,622	0	0	31,882	4,098	20,040
2017	DOET Advanced Planning and Reporting	BP Functionality	525,475	0	0	313,962	0	0	202,111	9,402	0
2017	DOET Data Management and Storage Strategy	BP Functionality	197,389	0	14,785	46,496	85,606	0	16,543	5,429	28,529
2017	Drawing Management Software	BP Functionality	468,053	225,616	36,079	101,736	0	0	60,135	11,204	33,284
2017	EA - Electric System Model Enhancement	BP Functionality	937,046	0	0	569,183	0	0	310,311	57,552	0
2017	EA - Grid Communication Modernization	BP Functionality	998,974	50,367	563,020	205,009	86,819	0	93,760	0	0
2017	Enterprise Project Management Information System	BP Functionality	112,281	56,902	2,371	7,530	28,451	0	3,874	3,670	9,484
2017	Field Service Solution Release 2	BP Functionality	3,494,402	0	0	2,205,141	0	0	1,181,684	93,386	14,191
2017	Integrated Resource Planning (IRP)	BP Functionality	417,239	223,350	40,609	75,533	0	0	40,025	10,921	26,802
2017	Legal Early Case Assessment and Legal Hold	BP Functionality	481,226	213,513	75,763	70,941	13,775	0	41,366	7,325	58,544
2017	Outage Map on the Web Upgrade	BP Functionality	1,534,101	460,230	230,115	385,230	75,000	0	290,388	47,115	46,023
2017	PC Power Management Software	BP Functionality	255,003	159,377	15,938	0	79,688	0	0	0	0
2017	Enhancements - CERRQ	Enhancements	1,173,381	0	0	0	291,923	0	757,485	123,973	0
2017	Enhancements - Corp-Shared Svcs	Enhancements	1,238,956	0	0	18,236	309,834	0	875,985	34,902	0
2017	Enhancements - DOET	Enhancements	634,896	0	0	0	350,859	0	234,762	49,276	0
2017	Enhancements - Energy Resources	Enhancements	703,285	0	0	657	175,821	0	511,985	14,822	0
2017	SAP Enhancement Pack Upgrade	Enhancements	1,930,507	71,092	17,773	1,370,894	0	0	470,747	0	0
2017	BI reporting based on HANA	IT Service Delivery	220,910	0	0	56,733	129,106	0	27,253	7,817	0
2017	TCoE Automated Testing 2017 - SAP Regression	IT Service Delivery	522,333	0	0	80,739	380,349	0	50,051	11,193	0
2017	TCOE Test Data & Environment Management	IT Service Delivery	488,565	147,623	2,870	205,032	8,201	0	111,472	13,365	0
2017	ARP - Cyber Security	Security	848,038	0	458,541	0	389,498	0	0	0	0
2017	Deil 1 Identity Manager (CAAR Replacement)	Security	917,411	0	0	160,838	450,461	0	75,513	188,224	42,375
2017	NERC/CIP Version 5	Security	911,051	0	38,826	68,781	691,994	0	36,143	0	75,308
2017	OT Security Architecture	Security	928,704	41,259	0	581,751	0	0	305,694	0	0
2017	<b>TOTALS</b>		<b>55,941,825</b>	<b>3,308,697</b>	<b>13,814,557</b>	<b>13,607,385</b>	<b>8,923,235</b>	<b>0</b>	<b>13,812,464</b>	<b>1,267,119</b>	<b>1,208,369</b>
2018	2017 - 2021 LTFF ARP Placeholder (transfer from SE)	Upgrades & Replacements (Enterprise)	1,236,028	0	1,236,028	0	0	0	0	0	0
2018	ARP - Collaboration Asset Refresh	Upgrades & Replacements (Enterprise)	819,773	215,865	215,865	136,642	172,692	0	78,710	0	0
2018	ARP - Critical Infrastructure Support	Upgrades & Replacements (Enterprise)	522,101	0	429,268	60,855	0	0	31,978	0	0
2018	ARP - Data Network	Upgrades & Replacements (Enterprise)	660,328	28,952	243,788	224,874	27,276	0	135,439	0	0
2018	ARP - Field Device Asset Management (FDAM)	Upgrades & Replacements (Enterprise)	3,524,803	0	3,196,159	215,437	0	0	113,206	0	0
2018	ARP - IT Facilities	Upgrades & Replacements (Enterprise)	393,799	0	292,174	66,619	0	0	35,006	0	0
2018	ARP - Performance & Capacity Management	Upgrades & Replacements (Enterprise)	248,297	0	173,987	45,671	0	0	28,639	0	0
2018	ARP - Printer Asset Management (PAM)	Upgrades & Replacements (Enterprise)	1,309,722	0	1,175,165	88,226	0	0	46,331	0	0
2018	ARP - Server	Upgrades & Replacements (Enterprise)	2,327,756	0	2,208,497	0	0	0	119,259	0	0
2018	ARP - Storage	Upgrades & Replacements (Enterprise)	3,175,515	0	3,169,032	0	0	0	6,482	0	0
2018	ARP - Wireless Network	Upgrades & Replacements (Enterprise)	1,156,259	0	800,631	13,755	70,540	0	271,332	0	0
2018	ARP - Workstation Asset Management (WAM)	Upgrades & Replacements (Enterprise)	3,527,972	0	3,025,294	329,523	0	0	173,155	0	0
2018	BiTalk to Tibco Conversion 2018	Upgrades & Replacements (Enterprise)	830,064	683,274	55,777	0	62,750	0	0	28,263	0
2018	C&APS Portfolio Application Currency	Upgrades & Replacements (Enterprise)	138,801	0	0	84,385	0	0	40,536	13,880	0
2018	DWDM Refresh	Upgrades & Replacements (Enterprise)	2,946,674	0	2,283,959	171,297	114,198	0	90,012	0	287,208
2018	ESB Upgrade	Upgrades & Replacements (Enterprise)	674,902	0	15,581	411,966	0	0	219,466	27,889	0
2018	Lotus Notes Application Migration & Retirement Wave 4	Upgrades & Replacements (Enterprise)	3,487,430	0	0	2,126,241	108,245	0	1,117,283	120,198	15,464
2018	SharePoint 2013 Upgrade Project	Upgrades & Replacements (Enterprise)	100,216	0	0	0	0	0	70,371	29,845	0
2018	Corporate Capital Projects	Upgrades & Replacements (Business Partner)	447,000	0	447,000	0	0	0	0	0	0
2018	Energy Resource Portfolio Application Currency	Upgrades & Replacements (Business Partner)	14,646	0	14,646	0	0	0	0	0	0
2018	GIS-Integrated Design	Upgrades & Replacements (Business Partner)	2,869,001	0	0	267,136	1,963,478	0	300,650	337,737	0
2018	PowerPlant Lease Upgrade (GAAP Changes)	Upgrades & Replacements (Business Partner)	214,482	0	0	48,290	82,783	0	39,172	6,296	37,942

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2018	ASP Portfolio Expansion/CRM Integration	BP Functionality	611,171	155,663	20,755	100,316	238,683	0	52,714	20,417	22,623
2018	DOET Scheduling Tool Project	BP Functionality	1,674,689	489,981	53,354	245,537	469,583	0	129,036	52,407	234,792
2018	Drawing Management Software	BP Functionality	7,624	0	0	0	0	0	181	0	7,443
2018	EA - Grid Communication Modernization	BP Functionality	1,138,304	45,074	155,255	158,784	638,195	0	79,268	0	61,729
2018	Enterprise Content Management	BP Functionality	1,007,147	512,962	205,185	60,623	0	0	64,499	23,981	139,899
2018	Enterprise Project Management Information System	BP Functionality	663,925	190,319	4,758	34,638	285,479	0	17,367	93,300	38,064
2018	Field Service Solution Release 2	BP Functionality	2,183,248	0	173,811	166,859	695,246	520,720	290,279	336,333	0
2018	Fleet Handhelds	BP Functionality	576,024	0	175,153	168,358	0	0	89,430	0	143,083
2018	Incident and Risk Management	BP Functionality	1,323,991	168,964	0	98,122	815,054	0	51,560	42,637	147,655
2018	TrackStar Replacement	BP Functionality	838,737	25,568	14,252	334,084	129,185	0	176,082	27,973	131,592
2018	Work Management Improvements - 2018 Release	BP Functionality	1,416,594	0	0	0	1,416,594	0	0	0	0
2018	Enhancements - CERRQ	Enhancements	1,138,864	0	0	0	214,107	0	748,234	176,524	0
2018	Enhancements - Corp-Shared Svcs	Enhancements	1,241,921	0	0	0	0	0	989,314	252,607	0
2018	Enhancements - DOET	Enhancements	635,835	0	0	0	0	0	482,711	153,124	0
2018	Enhancements - Energy Resources	Enhancements	733,865	0	0	0	0	0	619,135	114,730	0
2018	TCoE Automated Testing 2018 - SAP Regression	IT Service Delivery	210,113	0	0	33,012	152,186	0	17,347	7,568	0
2018	ARP - Cyber Security	Security	627,660	0	627,660	0	0	0	0	0	0
2018	Cyber Security PEN Testing Platform	Security	124,747	0	0	0	124,747	0	0	0	0
2018	Dell 1 Identity Manager (CAAR Replacement)	Security	1,107,787	0	0	0	0	0	869,575	238,212	0
2018	Enterprise Incident Response Toolset	Security	561,612	349,446	0	54,963	0	0	28,882	16,240	112,081
2018	Mobile Security	Security	327,075	0	0	0	327,075	0	0	0	0
2018	NERC/CIP Version 5	Security	312,362	0	91,007	145,106	0	0	76,249	0	0
2018	OT Security Architecture	Security	936,281	0	0	613,764	0	0	322,517	0	0
2018	ActiveMatrix Lifecycle Governance Framework- TIBCO	Architecture	973,995	439,035	0	137,787	0	0	72,404	24,156	300,614
2018	BizTalk EDI Migration	Architecture	1,952,745	0	0	1,052,158	0	0	552,881	57,450	290,257
2018	Enterprise Data Management	Architecture	1,336,044	141,330	0	0	1,146,306	0	0	48,409	0
2018	TOTALS		54,287,928	3,446,431	20,504,041	7,695,028	9,254,398	520,720	8,646,692	2,250,174	1,970,444

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Power Supply Costs Reflecting Early Termination of the Palisades PPA

Case No.: U-18322  
 Exhibit: A-78 (STW-1)  
 Witness: STWalz  
 Date: March 2017  
 Page 1 of 3

Oct17 - Sep18

**SUMMARY BY SOURCE**

(a)	(b)	(c)
<b>ENERGY (MWH)</b>		
1	COAL STEAM	11,183,330
2	GAS & OIL	5,844,894
3	NUCLEAR PPA	4,646,292
4	STATION POWER	90,399
5	CE OWNED RENEWABLES	1,223,189
6	PEAKERS	185,092
7	PUMPED STORAGE	1,058,977
8	TOTAL GENERATED	24,232,173
9	LESS : PUMPING	-1,392,189
10	TOTAL GENERATED	22,839,984
11	PURCHASED (NUGs)	9,031,583
12	<u>NET INTERCHANGE</u>	<u>4,036,320</u>
13	TOTAL SYSTEM REQUIREMENTS	35,907,887
<b>VARIABLE EXPENSES (\$*1000)</b>		
14	COAL STEAM	283,139
15	GAS & OIL	174,309
16	NUCLEAR PPA VARIABLE	29,085
17	STATION POWER	0
18	CE OWNED RENEWABLES	38,011
19	PEAKERS	7,243
20	<u>PUMPED STORAGE</u>	<u>0</u>
21	TOTAL GENERATED	531,787
22	LESS : PUMPING	0
23	TOTAL GENERATED	531,787
24	PURCHASED (NUGs) VARIABLE COST <sup>1</sup>	337,428
25	<u>NET INTERCHANGE, EXCLUDING ZRC</u>	<u>106,667</u>
26	<b>TOTAL FUEL, VARIABLE PURCHASED AND NET INTERCHANGE</b>	<b>975,881</b>
27	TRANSMISSION AND MARKET ADMINISTRATION	428,446
28	ANCILLARY SERVICES CREDIT	-5,314
29	UREA	2,676
30	AQUEOUS AMMONIA	1,617
31	LIME	13,007
32	ACTIVATED CARBON	2,841
<b>TOTAL POWER SUPPLY COST EXCLUDING CAPACITY AND NUG FIXED</b>		
33	<b>ENERGY COSTS</b>	<b>1,419,154</b>
34	C&I DEMAND RESPONSE PROGRAM	2,599
35	ZONAL RESOURCE CREDIT PURCHASE	14,374
36	OWNED RENEWABLE CAPACITY	15,388
37	NUCLEAR PPA CAPACITY	207,329
38	PURCHASED (NUG) CAPACITY	261,347
39	PURCHASED (NUG) FIXED ENERGY	79,332
40	<b>TOTAL CAPACITY AND NUG FIXED COSTS</b>	<b>580,371</b>
41	<b>TOTAL POWER SUPPLY COSTS</b>	<b>1,999,524</b>

<sup>1</sup>Purchased (NUG) variable costs include costs associated with PURPA variable energy payments, non-capacity renewable energy plan transfer costs, the green generation program, energy only NUGs and certain hydro plant contract costs

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Case No.: U-18322  
Exhibit: A-78 (STW-1)  
Witness: STWalz  
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**PURCHASED AND INTERCHANGE POWER REPORT**

Oct17 - Sep18

<b>(a)</b>	<b>(b)</b>	<b>(c)</b>
	<b>PURCHASED AND NET INTERCHANGE RECEIVED (MWH)</b>	
42	MARKET ON PEAK	1,605,085
43	MARKET OFF PEAK	3,891,310
44	<u>PURCHASED (NUGs)</u>	<u>9,031,583</u>
45	TOTAL RECEIVED	14,527,977
	<b>NET INTERCHANGE DELIVERED (MWH)</b>	
46	EXTERNAL SALES	1,398,102
47	<u>MISO RAC</u>	<u>61,973</u>
48	TOTAL DELIVERED	1,460,075
49	NET (MWH)	13,067,903

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Case No.: U-18322  
Exhibit: A-78 (STW-1)  
Witness: STWalz  
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**PURCHASED AND INTERCHANGE POWER REPORT**

<b>(a)</b>	<b>(b)</b>	<b>(c)</b>
	<b>VARIABLE PURCHASED AND NET INTERCHANGE EXPENSE (\$*1000)</b>	
50	MARKET ON PEAK ENERGY	66,350
51	MARKET OFF PEAK ENERGY	97,312
52	PURCHASED (NUGs) ENERGY	324,706
53	<u>CASE NO. U-16048 COST RECOVERY</u>	<u>12,721</u>
54	TOTAL EXPENSE	501,089
	<b>NET INTERCHANGE CREDIT (\$*1000)</b>	
55	EXTERNAL SALE ENERGY	53,832
56	EXTERNAL SALE CAPACITY	0
57	<u>MISO RAC</u>	<u>3,163</u>
58	TOTAL CREDIT	56,995
59	NET EXPENSE	444,094

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Power Supply Costs With the Palisades PPA Included Per Original Agreement

Case No.: U-18322

Exhibit: A-79 (STW-2)

Witness: STWalz

Date: March 2017

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Oct17 - Sep18

SUMMARY BY SOURCE

(a)	(b)	(c)
<b>ENERGY (MWH)</b>		
1 COAL STEAM		11,182,495
2 GAS & OIL		5,808,976
3 NUCLEAR PPA		6,870,738
4 STATION POWER		90,399
5 CE OWNED RENEWABLES		1,110,738
6 PEAKERS		184,529
7 PUMPED STORAGE		1,062,368
8 TOTAL GENERATED		26,310,244
9 LESS : PUMPING		-1,396,663
10 TOTAL GENERATED		24,913,581
11 PURCHASED (NUGs)		8,649,433
12 NET INTERCHANGE		2,659,173
		-----
13 TOTAL SYSTEM REQUIREMENTS		36,222,187
<b>VARIABLE EXPENSES (\$*1000)</b>		
14 COAL STEAM		283,115
15 GAS & OIL		173,189
16 NUCLEAR PPA VARIABLE		46,491
17 STATION POWER		0
18 CE OWNED RENEWABLES		35,105
19 PEAKERS		7,222
20 PUMPED STORAGE		0
		-----
21 TOTAL GENERATED		545,122
22 LESS : PUMPING		0
23 TOTAL GENERATED		545,122
24 PURCHASED (NUGs) VARIABLE COST <sup>1</sup>		327,610
25 <u>NET INTERCHANGE, EXCLUDING ZRC</u>		<u>63,595</u>
		-----
26 TOTAL FUEL, VARIABLE PURCHASED AND NET INTERCHANGE		936,327
27 TRANSMISSION AND MARKET ADMINISTRATION		429,656
28 ANCILLARY SERVICES CREDIT		-5,314
29 UREA		2,676
30 AQUEOUS AMMONIA		1,617
31 LIME		13,007
32 ACTIVATED CARBON		2,841
33 TOTAL POWER SUPPLY COST EXCLUDING CAPACITY AND NUG FIXED ENERGY COSTS		1,380,809
34 C&I DEMAND RESPONSE PROGRAM		2,599
35 ZONAL RESOURCE CREDIT PURCHASE		14,439
36 OWNED RENEWABLE CAPACITY		13,234
37 NUCLEAR PPA CAPACITY		331,358
38 PURCHASED (NUG) CAPACITY		255,814
39 PURCHASED (NUG) FIXED ENERGY		78,395
40 TOTAL CAPACITY AND NUG FIXED COSTS		695,840
41 TOTAL POWER SUPPLY COSTS		2,076,649

<sup>1</sup>Purchased (NUG) variable costs include costs associated with PURPA variable energy payments, non-capacity renewable energy plan transfer costs, the green generation program, energy only NUGs and certain hydro plant contract costs

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Case No.: U-18322  
Exhibit: A-79 (STW-2)  
Witness: STWalz  
Date: March 2017  
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PURCHASED AND INTERCHANGE POWER REPORT		
(a)	(b)	(c)
PURCHASED AND NET INTERCHANGE RECEIVED (MWH)		
42	MARKET ON PEAK	1,273,618
43	MARKET OFF PEAK	3,130,784
44	PURCHASED (NUGs)	8,649,433
		-----
45	TOTAL RECEIVED	13,053,835
NET INTERCHANGE DELIVERED (MWH)		
46	EXTERNAL SALES	1,683,256
47	MISO RAC	61,973
		-----
48	TOTAL DELIVERED	1,745,229
49	NET (MWH)	11,308,606



**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Case No.: U-18322  
Exhibit: A-79 (STW-2)  
Witness: STWalz  
Date: March 2017  
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Oct17 - Sep18

**PURCHASED AND INTERCHANGE POWER REPORT**

(a)	(b)	(c)
	<b>VARIABLE PURCHASED AND NET INTERCHANGE EXPENSE (\$*1000)</b>	
50	MARKET ON PEAK ENERGY	53,754
51	MARKET OFF PEAK ENERGY	78,637
52	PURCHASED (NUGs) ENERGY	313,640
53	CASE NO. U-16048 COST RECOVERY	13,969
		-----
54	TOTAL EXPENSE	460,001
	<b>NET INTERCHANGE CREDIT (\$*1000)</b>	
55	EXTERNAL SALE ENERGY	65,623
56	EXTERNAL SALE CAPACITY	0
57	MISO RAC	3,173
		-----
58	TOTAL CREDIT	68,796
59	NET EXPENSE	391,205

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Summary of Projected Electric & Common Capital AMI Expenditures

For the years 2015 through 2018

(\$000)

Case No.: U-18322

Exhibit: A-80 (LDW-1)

Witness: LDWarriner

Date: March 2017

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**Smart Energy - Electric**

Line No.	Program Description	2015 Actual	2016 Preliminary	2017 Projected	9 Months Ended September 30, 2018 Projected	3 Months Ended December 31, 2018 Projected	Source
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
1	Field Equipment & Facilities	270	1,200	5,997	-	-	Detail breakdown provided on page 3
2	Meters	62,152	109,569	55,338	-	-	Detail breakdown provided on page 3
3	Software & Systems Dev	45,038	24,918	-	-	-	Detail breakdown provided on page 3
4	SE Infrastructure	1,463	3,391	2,464	-	-	Detail breakdown provided on page 3
5	Program Eng / Design & Mgmt	6,657	4,790	4,203	-	-	Detail breakdown provided on page 3
6	<b>TOTAL CAPITAL EXPENDITURES</b>	<b>115,581</b>	<b>143,868</b>	<b>68,002</b>	<b>-</b>	<b>-</b>	

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Summary of Projected Electric & Common Capital AMI Expenditures

For the years 2015 through 2018

(\$000)

Case No.: U-18322

Exhibit: A-80 (LDW-1)

Witness: LDWarriner

Date: March 2017

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**Smart Energy - Electric**

Line No.	Program Description (a)	2015 Actual (b)	9 Months Ended September 30, 2016 Preliminary (c)	12 Months Ended September 30, 2017 Projected (d)	12 Months Ended September 30, 2018 Projected (e)	Source (f)
1	Field Equipment & Facilities	270	839	5,099	1,259	12M Ended 9/30/18 are Q4 2017 costs
2	Meters	62,152	85,263	79,643	-	
3	Software & Systems Dev	45,038	23,709	1,208	-	
4	SE Infrastructure	1,463	3,412	2,443	-	
5	Program Eng / Design & Mgmt	6,657	4,030	4,963	-	
6	<b>TOTAL CAPITAL EXPENDITURES</b>	<b>115,581</b>	<b>117,254</b>	<b>93,356</b>	<b>1,259</b>	

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Breakdown of Projected Electric & Common Capital AMI Expenditures

For the years 2015 through 2018

(\$000)

Case No.: U-18322

Exhibit: A-80 (LDW-1)

Witness: LDWarriner

Date: March 2017

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**Smart Energy - Electric**

Line No.	Program Description with Cost Breakdown	9 Months Ended September 30,					3 Months Ended December 31,		Notes
		2015 Actual	2016 Preliminary	2017 Projected	2018 Projected	2018 Projected	2018 Projected	2018 Projected	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	
<b>1</b>	<b>FIELD EQUIPMENT &amp; FACILITIES</b>	<b>270</b>	<b>1,200</b>	<b>5,997</b>	-	-	-	-	
1a	Contractor	268	1,064	3,682	-	-	-	-	2017: 25,700 primary units
1b	Materials	2	137	2,315	-	-	-	-	& 3,428 secondary units
<b>2</b>	<b>METERS</b>	<b>62,152</b>	<b>109,569</b>	<b>55,338</b>	-	-	-	-	
2a	Materials	51,833	96,237	45,225	-	-	-	-	2017: 293,680 Meters/ERTs
2b	Loadings	15,614	20,457	13,278	-	-	-	-	2017: Est 29.36% of Materials
2c	Labor	(5,875)	(7,861)	(3,618)	-	-	-	-	2017: Est -8% of Materials
2d	Contractor	572	726	452	-	-	-	-	2017: Est 1% of Materials
2e	Other Nonlabor	7	9	-	-	-	-	-	
2f	Unquantified	1	1	-	-	-	-	-	
<b>3</b>	<b>SOFTWARE &amp; SYSTEMS DEVELOPMENT</b>	<b>45,038</b>	<b>24,918</b>	-	-	-	-	-	
3a	Contractor	40,565	20,977	-	-	-	-	-	2017: Cost for completion of outage management integration
3b	Labor	3,127	1,681	-	-	-	-	-	& theft analytics costs during
3c	Loadings	827	470	-	-	-	-	-	2017 were unknown at the time
3d	AFUDC	2,604	1,399	-	-	-	-	-	of 2017 forecast.
3e	Other Nonlabor / Materials / Software Licen.	(2,113)	181	-	-	-	-	-	
3f	Unquantified	29	209	-	-	-	-	-	
<b>4</b>	<b>SE INFRASTRUCTURE</b>	<b>1,463</b>	<b>3,391</b>	<b>2,464</b>	-	-	-	-	
4a	Materials	1,414	3,145	2,314	-	-	-	-	2017: Cost breakdown estimated
4b	Contractor	13	60	37	-	-	-	-	based on 2015 & 2016.
4c	Labor	21	6	14	-	-	-	-	
4d	Loadings	8	2	5	-	-	-	-	
4e	Other Nonlabor / Software Licensing	7	236	124	-	-	-	-	
4f	Unquantified	()	(59)	(30)	-	-	-	-	
<b>5</b>	<b>PROGRAM ENG / DESIGN &amp; MGMT</b>	<b>6,657</b>	<b>4,790</b>	<b>4,203</b>	-	-	-	-	
5a	Labor	3,432	2,123	2,040	-	-	-	-	2017: Cost breakdown estimated
5b	Loadings	1,311	676	730	-	-	-	-	based on 2015 & 2016.
5c	Contractor	676	565	456	-	-	-	-	
5d	Materials	226	71	109	-	-	-	-	
5e	Other Nonlabor	1,013	1,356	870	-	-	-	-	
5f	Unquantified	(1)	(1)	(1)	-	-	-	-	
<b>6</b>	<b>TOTAL CAPITAL EXPENDITURES</b>	<b>115,581</b>	<b>143,868</b>	<b>68,002</b>	-	-	-	-	

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Reconciliation of Projected Electric & Common Capital AMI Expenditures  
to U-17990 approved expenditures  
(\$000)

Case No.: U-18322

Exhibit: A-80 (LDW-1)

Witness: LDWarriner

Date: March 2017

Page 4 of 4

**Smart Energy - Electric**

Line		2015	2016	2017	2015 - 2017	
No.	Line Description	Actual	Preliminary	Projected	Total	Source
	(a)	(b)	(c)	(d)	(e)	(f)
1	U-17990 Exhibit A-62 (LDW-1), Line 6	115,581	149,486	98,316	363,382	(e) = (b) + (c) + (d)
2	Less: costs projected beyond test year	-	-	(3,698)	(3,698)	(e) = (b) + (c) + (d)
3	U-17990 requested capital expenditures	<b>115,581</b>	<b>149,486</b>	<b>94,618</b>	<b>359,684</b>	U-17990 Direct Testimony Page 4, lines 25-27
4	Less: U-17990 disallowance of load control switches		(5,557)	-	(5,557)	Footnote 1
5	Less: U-17990 disallowance of program contingency		(878)	(19,265)	(20,142)	U-17990 Exhibit S-10.1, line 2.1
6	U-17990 approved capital expenditures	<b>115,581</b>	<b>143,051</b>	<b>75,353</b>	<b>333,984</b>	line 7 = line 3 + line 4 + line 5 + line 6
7	U-18322 incremental load control switches		307	1,999	2,305	
8	U-18322 requested change in meters		(1,607)	(11,049)	(12,656)	
9	U-18322 incremental software & systems		4,349	-	4,349	
10	U-18322 requested change in infrastructure		(1,769)	1,232	(537)	
11	U-18322 requested change in program mgt		(462)	467	5	
12	U-18322 requested change summary	-	817	(7,352)	(6,534)	line 13 = line 8 + line 9 + line 10 + line 11 + line 12
13	<b>TOTAL CAPITAL EXPENDITURES</b>	<b>115,581</b>	<b>143,868</b>	<b>68,002</b>	<b>327,450</b>	line 14 = line 7 + line 13

Notes:

1 The Company's Application in Case No. U-17990 included \$10.449 million of load control switch investments, the final Order approved \$4.892 million.

**MICHIGAN PUBLIC SERVICE COMMISSION**

**Consumers Energy Company**

Summary of Projected Electric O&M AMI Expenses

For the years 2015 through September 2018

(\$000)

Case No.: U-18322

Exhibit: A-81 (LDW-2)

Witness: LDWarriner

Date: March 2017

Page 1 of 2

**Smart Energy - Electric**

Line No.	Program Description	2015 Actual	2016 Preliminary	2017 Projected	12 Months Ended September 30,	Source
					2018 Projected	
1	Program Mgmt & Other	6,469	6,794	-	-	Detail breakdown provided on page 2
2	Deployment & Meter	1,615	3,253	-	-	Detail breakdown provided on page 2
3	<b>TOTAL O&amp;M EXPENSES</b>	<b>8,084</b>	<b>10,046</b>	-	-	

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Breakdown of Projected Electric O&M AMI Expenses

For the years 2015 through September 2018

(\$000)

Case No.: U-18322

Exhibit: A-81 (LDW-2)

Witness: LDWarriner

Date: March 2017

Page 2 of 2

**Smart Energy - Electric**

Line No.	Program Description with Cost Breakdown	12 Months Ended September 30,				Source
		2015 Actual	2016 Preliminary	2017 Projected	2018 Projected	
<b>1</b>	<b>PROGRAM MGMT &amp; OTHER<sup>1</sup></b>	<b>6,469</b>	<b>6,794</b>	-	-	
1a	Contractor	4,544	4,355	-	-	
1b	Labor Expense	1,079	1,528	-	-	
1c	Material	3	27	-	-	
1d	Business Expense	22	22	-	-	
1e	Other Expense	822	863	-	-	
<b>2</b>	<b>DEPLOYMENT &amp; METER<sup>2</sup></b>	<b>1,615</b>	<b>3,253</b>	-	-	
2a	Contractor	10,484	12,315	-	-	
2b	Labor Expense	489	2,569	-	-	
2c	Material	(8)	3	-	-	
2d	Business Expense	187	526	-	-	
2e	Other Expense	(9,536)	(12,160)	-	-	
<b>3</b>	<b>TOTAL O&amp;M EXPENSES</b>	<b>8,084</b>	<b>10,046</b>	-	-	

Notes:

<sup>1</sup> Program Mgmt & Other: source cost centers 121771, 121779, 121812, 121885

<sup>2</sup> Deployment & Meter: source cost centers 121773, 121775, 121777, 121886

MICHIGAN PUBLIC SERVICE COMMISSION

Consumers Energy Company

Summary of Business Case Costs and Benefits

2007 - 2032

(000)

Case No.: U-18322  
 Exhibit: A-82 (LDW-3)  
 Witness: LDWarriner  
 Date: March 2017  
 Page 1 of 6

Smart Grid Program

Line No.	Utility	Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
1	Electric	Meters	\$ -	\$ 1,424	\$ 1,231	\$ 930	\$ 128	\$ 9,602	\$ 21,432	\$ 29,976	\$ 62,152	\$ 109,569	\$ 55,338	\$ -	\$ -	\$ -
2		Field Equipment/Facilities	\$ -	\$ 113	\$ 1,305	\$ 1,510	\$ 341	\$ 259	\$ 171	\$ 154	\$ 270	\$ 1,200	\$ 5,997	\$ 8,779	\$ 8,927	\$ 9,070
3		Software/Systems Development	\$ 7,889	\$ 8,214	\$ 12,259	\$ 15,909	\$ 19,654	\$ 20,770	\$ 32,100	\$ 31,990	\$ 45,038	\$ 24,918	\$ -	\$ -	\$ -	\$ -
4		SG Infrastructure	\$ -	\$ -	\$ -	\$ 2,789	\$ 7,834	\$ 5,912	\$ 1,109	\$ 976	\$ 1,463	\$ 3,391	\$ 2,464	\$ 1,943	\$ 2,827	\$ 3,375
5		Pilot Prep & Project Management	\$ -	\$ 7,883	\$ 8,932	\$ 13,283	\$ 9,558	\$ 7,919	\$ 6,194	\$ 6,063	\$ 6,657	\$ 4,790	\$ 4,203	\$ -	\$ -	\$ -
6		Total Capital Costs before Avoidance - Electric	\$ 7,889	\$ 17,634	\$ 23,726	\$ 34,421	\$ 37,515	\$ 44,463	\$ 61,005	\$ 69,159	\$ 115,581	\$ 143,868	\$ 68,002	\$ 10,722	\$ 11,754	\$ 12,445
7		Avoided Capital Costs - Electric	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (306)	\$ (269)	\$ 291	\$ (117)	\$ (274)	\$ (457)
8		Total Capital Costs Net - Electric	\$ 7,889	\$ 17,634	\$ 23,726	\$ 34,421	\$ 37,515	\$ 44,463	\$ 61,005	\$ 69,159	\$ 115,274	\$ 143,598	\$ 68,292	\$ 10,605	\$ 11,480	\$ 11,988
9																
10	Gas	Modules	\$ -	\$ -	\$ -	\$ 5	\$ -	\$ -	\$ -	\$ -	\$ 6,663	\$ 25,404	\$ 9,949	\$ -	\$ -	\$ -
11		Field Equipment/Facilities	\$ -	\$ 15	\$ 162	\$ 95	\$ 41	\$ 37	\$ 23	\$ 21	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
12		Software/Systems Development	\$ 1,076	\$ 1,120	\$ 1,524	\$ 2,143	\$ 2,664	\$ 2,832	\$ 4,377	\$ 4,362	\$ 5,995	\$ 3,359	\$ -	\$ -	\$ -	\$ -
13		SG Infrastructure	\$ -	\$ -	\$ -	\$ 380	\$ 1,068	\$ 806	\$ 151	\$ 133	\$ 200	\$ 470	\$ 336	\$ 265	\$ 385	\$ 460
14		Pilot Prep & Project Management	\$ -	\$ 1,573	\$ 2,348	\$ 3,016	\$ 1,737	\$ 1,183	\$ 827	\$ 727	\$ 872	\$ 667	\$ 573	\$ -	\$ -	\$ -
15		Total Capital Costs before Avoidance - Gas	\$ 1,076	\$ 2,709	\$ 4,034	\$ 5,639	\$ 5,510	\$ 4,858	\$ 5,379	\$ 5,243	\$ 13,730	\$ 29,900	\$ 10,858	\$ 265	\$ 385	\$ 460
16		Avoided Capital Costs - Gas	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (10)	\$ (20)	\$ (34)	\$ (42)	\$ (43)	\$ (43)
17		Total Capital Costs Net - Gas	\$ 1,076	\$ 2,709	\$ 4,034	\$ 5,639	\$ 5,510	\$ 4,858	\$ 5,379	\$ 5,243	\$ 13,720	\$ 29,881	\$ 10,823	\$ 223	\$ 343	\$ 417
18																
19	Total	Meter/Module Purchases, including Set & Test	\$ -	\$ 1,424	\$ 1,231	\$ 935	\$ 128	\$ 9,602	\$ 21,432	\$ 29,976	\$ 68,816	\$ 134,973	\$ 65,286	\$ -	\$ -	\$ -
20		Field Equipment/Facilities	\$ -	\$ 128	\$ 1,466	\$ 1,605	\$ 382	\$ 296	\$ 194	\$ 174	\$ 270	\$ 1,200	\$ 5,997	\$ 8,779	\$ 8,927	\$ 9,070
21		Software/Systems Development	\$ 8,965	\$ 9,334	\$ 13,782	\$ 18,052	\$ 22,318	\$ 23,602	\$ 36,477	\$ 36,353	\$ 51,033	\$ 28,277	\$ -	\$ -	\$ -	\$ -
22		SG Infrastructure	\$ -	\$ -	\$ -	\$ 3,170	\$ 8,903	\$ 6,719	\$ 1,260	\$ 1,109	\$ 1,663	\$ 3,861	\$ 2,800	\$ 2,208	\$ 3,212	\$ 3,835
23		Pilot Prep & Project Management	\$ -	\$ 9,456	\$ 11,280	\$ 16,299	\$ 11,294	\$ 9,102	\$ 7,021	\$ 6,790	\$ 7,529	\$ 5,457	\$ 4,776	\$ -	\$ -	\$ -
24		Total Capital Costs before Avoidance	\$ 8,965	\$ 20,342	\$ 27,760	\$ 40,060	\$ 43,025	\$ 49,320	\$ 66,384	\$ 74,402	\$ 129,311	\$ 173,768	\$ 78,859	\$ 10,987	\$ 12,139	\$ 12,905
25		Avoided Capital Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (316)	\$ (289)	\$ 256	\$ (159)	\$ (317)	\$ (500)
26		Total Capital Costs Net	\$ 8,965	\$ 20,342	\$ 27,760	\$ 40,060	\$ 43,025	\$ 49,320	\$ 66,384	\$ 74,402	\$ 128,994	\$ 173,479	\$ 79,116	\$ 10,828	\$ 11,822	\$ 12,405
27																
28																
29		Note:														
30		Cost of Removal	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 129	\$ 120	\$ 1	\$ -	\$ 59	\$ -	\$ -	\$ -	\$ -
31		Total Capital Costs Incl COR before Avoidance	\$ 8,965	\$ 20,342	\$ 27,760	\$ 40,060	\$ 43,025	\$ 49,450	\$ 66,504	\$ 74,403	\$ 129,311	\$ 173,827	\$ 78,859	\$ 10,987	\$ 12,139	\$ 12,905
32		Cml Total Capital Costs Incl COR before Avoidance	\$ 8,965	\$ 29,307	\$ 57,067	\$ 97,127	\$ 140,152	\$ 189,602	\$ 256,106	\$ 330,509	\$ 459,820	\$ 633,647	\$ 712,506	\$ 723,493	\$ 735,632	\$ 748,538

Total NPV Benefit of \$31.4 million based on nominal values 2007 - 2017 and present values 2018 - 2032



## MICHIGAN PUBLIC SERVICE COMMISSION

## Consumers Energy Company

## Summary of Business Case Costs and Benefits

2007 - 2032

(000)

Case No.: U-18322

Exhibit: A-82 (LDW-3)

Witness: LDWarriner

Date: March 2017

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## Smart Grid Program

Line No.	Utility	Description	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total 2007-2032
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	
1	Electric	Meters	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 291,782
2		Field Equipment/Facilities	\$ 9,173	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 47,268
3		Software/Systems Development	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 218,741
4		SG Infrastructure	\$ 2,916	\$ 2,342	\$ 2,569	\$ 3,064	\$ 2,985	\$ 2,617	\$ 2,577	\$ 2,850	\$ 2,943	\$ 2,756	\$ 2,648	\$ 2,760	\$ 67,108
5		Pilot Prep & Project Management	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 75,481
6		Total Capital Costs before Avoidance - Electric	\$ 12,088	\$ 2,342	\$ 2,569	\$ 3,064	\$ 2,985	\$ 2,617	\$ 2,577	\$ 2,850	\$ 2,943	\$ 2,756	\$ 2,648	\$ 2,760	\$ 700,380
7		Avoided Capital Costs - Electric	\$ (47)	\$ 383	\$ 599	\$ 605	\$ 611	\$ 617	\$ 590	\$ 569	\$ 569	\$ 568	\$ 565	\$ 565	\$ 5,062
8		Total Capital Costs Net - Electric	\$ 12,041	\$ 2,725	\$ 3,169	\$ 3,669	\$ 3,596	\$ 3,233	\$ 3,167	\$ 3,419	\$ 3,512	\$ 3,324	\$ 3,213	\$ 3,324	\$ 705,442
9															
10	Gas	Modules	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 42,021
11		Field Equipment/Facilities	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 394
12		Software/Systems Development	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 29,452
13		SG Infrastructure	\$ 398	\$ 319	\$ 350	\$ 418	\$ 407	\$ 357	\$ 351	\$ 389	\$ 401	\$ 376	\$ 361	\$ 376	\$ 9,159
14		Pilot Prep & Project Management	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 13,523
15		Total Capital Costs before Avoidance - Gas	\$ 398	\$ 319	\$ 350	\$ 418	\$ 407	\$ 357	\$ 351	\$ 389	\$ 401	\$ 376	\$ 361	\$ 376	\$ 94,549
16		Avoided Capital Costs - Gas	\$ (43)	\$ (43)	\$ (43)	\$ (43)	\$ (43)	\$ (43)	\$ (43)	\$ (43)	\$ (43)	\$ (43)	\$ (43)	\$ (43)	\$ (707)
17		Total Capital Costs Net - Gas	\$ 355	\$ 276	\$ 307	\$ 375	\$ 364	\$ 314	\$ 309	\$ 346	\$ 358	\$ 333	\$ 318	\$ 333	\$ 93,842
18															
19	Total	Meter/Module Purchases, including Set & Test	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 333,803
20		Field Equipment/Facilities	\$ 9,173	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 47,662
21		Software/Systems Development	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 248,193
22		SG Infrastructure	\$ 3,313	\$ 2,661	\$ 2,920	\$ 3,482	\$ 3,392	\$ 2,974	\$ 2,929	\$ 3,239	\$ 3,344	\$ 3,132	\$ 3,009	\$ 3,136	\$ 76,267
23		Pilot Prep & Project Management	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 89,004
24		Total Capital Costs before Avoidance	\$ 12,486	\$ 2,661	\$ 2,920	\$ 3,482	\$ 3,392	\$ 2,974	\$ 2,929	\$ 3,239	\$ 3,344	\$ 3,132	\$ 3,009	\$ 3,136	\$ 794,929
25		Avoided Capital Costs	\$ (90)	\$ 340	\$ 556	\$ 562	\$ 568	\$ 574	\$ 547	\$ 526	\$ 526	\$ 526	\$ 522	\$ 522	\$ 4,355
26		Total Capital Costs Net	\$ 12,396	\$ 3,001	\$ 3,476	\$ 4,044	\$ 3,960	\$ 3,547	\$ 3,476	\$ 3,765	\$ 3,870	\$ 3,657	\$ 3,531	\$ 3,658	\$ 799,284
27															
28															
29		Note:													
30		Cost of Removal	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 309
31		Total Capital Costs Incl COR before Avoidance	\$ 12,486	\$ 2,661	\$ 2,920	\$ 3,482	\$ 3,392	\$ 2,974	\$ 2,929	\$ 3,239	\$ 3,344	\$ 3,132	\$ 3,009	\$ 3,136	\$ 795,239
32		Cml Total Capital Costs Incl COR before Avoidance	\$ 761,023	\$ 763,685	\$ 766,604	\$ 770,086	\$ 773,477	\$ 776,451	\$ 779,380	\$ 782,619	\$ 785,963	\$ 789,094	\$ 792,103	\$ 795,239	

## MICHIGAN PUBLIC SERVICE COMMISSION

Case No.: U-18322

Exhibit: A-82 (LDW-3)

Witness: LDWarriner

## Consumers Energy Company

## Summary of Business Case Costs and Benefits

2007 - 2032

Date: March 2017

(000)

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## Smart Grid Program

Line No.	Utility	Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	
33	Electric	Meter Reading	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (116)	\$ (1,878)	\$ (5,151)	\$ (9,767)	\$ (16,577)	\$ (19,196)	\$ (19,926)	\$ (20,325)
34		Uncollectible Expense	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (128)	\$ (3,685)	\$ (6,227)	\$ (8,181)	\$ (8,344)	\$ (8,511)
35		Other O&M	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (1,271)	\$ (1,115)	\$ (2,917)	\$ (4,690)	\$ (7,375)	\$ (7,942)	\$ (8,183)	\$ (8,508)
36		AC Load Control Avoided Generation, Transmission	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (49)	\$ (1,149)	\$ (4,345)	\$ (7,753)	\$ (11,303)
37		Demand Response Avoided Generation, Transmission	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (0)	\$ (533)	\$ (2,943)	\$ (5,923)	\$ (10,459)
38		Theft Reduction	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (93)	\$ (919)	\$ (1,837)	\$ (4,787)	\$ (6,943)	\$ (9,238)	\$ (35,370)	\$ (36,078)	\$ (36,799)
39		AMI Induced Conservation & Efficiency Energy	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (2,906)	\$ (5,571)	\$ (7,991)	\$ (10,912)	\$ (12,405)
40		Load Management Conserved Energy	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
41		Demand Response Conserved Energy	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
42		Property Tax (Savings) - Legacy Meters	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (33)	\$ (97)	\$ (235)	\$ (500)	\$ (835)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)
43		Terminal Value	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
44		Total Non Capital Benefits before Costs - Electric	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (126)	\$ (2,403)	\$ (5,064)	\$ (13,482)	\$ (28,876)	\$ (47,736)	\$ (87,036)	\$ (98,185)	\$ (109,377)
45		Common	\$ 382	\$ 67	\$ 545	\$ 1,165	\$ 1,094	\$ 2,586	\$ 5,977	\$ 4,853	\$ 6,466	\$ 6,821	\$ 8,606	\$ 9,183	\$ 9,399	\$ 9,643
46		Meters, Modules & Communications	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 97	\$ 963	\$ 1,310	\$ 1,671	\$ 3,226	\$ 4,898	\$ 5,227	\$ 5,228	\$ 5,228
47		Customer Engagement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,538	\$ 2,444	\$ 1,956	\$ 1,833	\$ 4,179	\$ 5,275	\$ 6,321	\$ 6,376	\$ 5,139
48		Load Control Program	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 195	\$ 543	\$ 2,152	\$ 3,069	\$ 3,069	\$ 3,069
49		Demand Response Program	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 16	\$ 193	\$ 2,142	\$ 2,979	\$ 2,918	\$ 2,688
50		Property Taxes - AMI	\$ -	\$ 24	\$ 44	\$ 70	\$ 52	\$ 335	\$ 862	\$ 1,572	\$ 2,977	\$ 5,419	\$ 6,653	\$ 6,601	\$ 6,520	\$ 6,423
51		Total Non Capital Benefits Net - Electric	\$ 382	\$ 91	\$ 589	\$ 1,235	\$ 1,146	\$ 4,430	\$ 7,843	\$ 4,627	\$ (325)	\$ (8,495)	\$ (18,010)	\$ (53,656)	\$ (64,675)	\$ (77,187)
52																
53	Gas	Meter Reading	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 0	\$ (591)	\$ (1,965)	\$ (2,507)	\$ (2,602)	\$ (2,654)
54		Uncollectible Expense	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (168)	\$ (1,335)	\$ (2,144)	\$ (2,187)	\$ (2,231)
55		Other O&M	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (68)	\$ 10	\$ (1)	\$ (214)	\$ (411)	\$ (444)	\$ (454)	\$ (468)
56		Theft Reduction	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (235)	\$ (462)	\$ (517)	\$ (6,350)	\$ (6,511)	\$ (6,700)
57		AMI Induced Conservation & Efficiency Energy	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (199)	\$ (1,433)	\$ (2,247)	\$ (2,585)	\$ (2,705)
58		LAUF Gas Reduction Enabled	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (22)	\$ (173)	\$ (181)	\$ (190)
59		Terminal Value	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
60		Total Non Capital Benefits before Costs - Gas	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (68)	\$ 10	\$ (236)	\$ (1,634)	\$ (5,683)	\$ (13,866)	\$ (14,521)	\$ (14,949)
61		Common	\$ 367	\$ 64	\$ 87	\$ 143	\$ 73	\$ 127	\$ 36	\$ 11	\$ 216	\$ 746	\$ 1,173	\$ 1,252	\$ 1,282	\$ 1,315
62		Meters, Modules & Communications	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 5	\$ 6	\$ -	\$ 42	\$ 466	\$ 1,237	\$ 1,371	\$ 1,371	\$ 1,371
63		Property Taxes - AMI	\$ -	\$ -	\$ -	\$ 5	\$ 5	\$ 8	\$ 12	\$ 11	\$ 141	\$ 692	\$ 891	\$ 831	\$ 778	\$ 728
64		Total Non Capital Benefits Net - Gas	\$ 367	\$ 64	\$ 87	\$ 148	\$ 78	\$ 140	\$ (14)	\$ 32	\$ 164	\$ 271	\$ (2,382)	\$ (10,411)	\$ (11,090)	\$ (11,535)
65																
66	Total	Meter Reading	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (116)	\$ (1,878)	\$ (5,151)	\$ (10,358)	\$ (18,542)	\$ (21,704)	\$ (22,529)	\$ (22,979)
67		Uncollectible Expense	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (128)	\$ (3,853)	\$ (7,562)	\$ (10,325)	\$ (10,531)	\$ (10,742)
68		Other O&M	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (1,339)	\$ (1,105)	\$ (2,917)	\$ (4,905)	\$ (7,786)	\$ (8,386)	\$ (8,637)	\$ (8,976)
69		AC Load Control Avoided Generation, Transmission	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (49)	\$ (1,149)	\$ (4,345)	\$ (7,753)	\$ (11,303)
70		Demand Response Avoided Generation, Transmission	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (0)	\$ (533)	\$ (2,943)	\$ (5,923)	\$ (10,459)
71		Theft Reduction	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (93)	\$ (919)	\$ (1,837)	\$ (5,023)	\$ (7,405)	\$ (9,756)	\$ (41,721)	\$ (42,589)	\$ (43,500)
72		AMI Induced Conservation & Efficiency Energy	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (3,105)	\$ (7,004)	\$ (10,238)	\$ (13,497)	\$ (15,111)
73		Load Management Conserved Energy	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
74		Demand Response Conserved Energy	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
75		Property Tax (Savings) - Legacy Meters	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (33)	\$ (97)	\$ (235)	\$ (500)	\$ (835)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)
76		LAUF Gas Reduction Enabled	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (22)	\$ (173)	\$ (181)	\$ (190)
77		Terminal Value	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
78		Total Non Capital Benefits before Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (126)	\$ (2,471)	\$ (5,055)	\$ (13,718)	\$ (30,510)	\$ (53,419)	\$ (100,902)	\$ (112,706)	\$ (124,326)
79		Common	\$ 749	\$ 131	\$ 632	\$ 1,308	\$ 1,167	\$ 2,713	\$ 6,013	\$ 4,864	\$ 6,682	\$ 7,567	\$ 9,779	\$ 10,435	\$ 10,681	\$ 10,958
80		Meters, Modules & Communications	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 102	\$ 969	\$ 1,310	\$ 1,713	\$ 3,692	\$ 6,135	\$ 6,598	\$ 6,599	\$ 6,599
81		Other O&M	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,538	\$ 2,444	\$ 1,956	\$ 1,833	\$ 4,179	\$ 5,275	\$ 6,321	\$ 6,376	\$ 5,139
82		Load Control Program	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 195	\$ 543	\$ 2,152	\$ 3,069	\$ 3,069	\$ 3,069
83		Demand Response Program	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 16	\$ 193	\$ 2,142	\$ 2,979	\$ 2,918	\$ 2,688
84		Property Taxes - AMI	\$ -	\$ 24	\$ 44	\$ 75	\$ 57	\$ 343	\$ 874	\$ 1,583	\$ 3,118	\$ 6,111	\$ 7,544	\$ 7,432	\$ 7,297	\$ 7,152
85		Total Non Capital Benefits Net	\$ 749	\$ 155	\$ 676	\$ 1,383	\$ 1,224	\$ 4,569	\$ 7,829	\$ 4,659	\$ (161)	\$ (8,224)	\$ (20,392)	\$ (64,068)	\$ (75,765)	\$ (88,722)

## MICHIGAN PUBLIC SERVICE COMMISSION

Case No.: U-18322

## Consumers Energy Company

Exhibit: A-82 (LDW-3)

## Summary of Business Case Costs and Benefits

Witness: LDWarriner

2007 - 2032

Date: March 2017

(000)

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## Smart Grid Program

Line No.	Utility	Description	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total 2007-2032
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	
33	Electric	Meter Reading	\$ (20,935)	\$ (21,563)	\$ (22,210)	\$ (22,876)	\$ (23,562)	\$ (24,269)	\$ (24,997)	\$ (25,747)	\$ (26,519)	\$ (27,315)	\$ (28,134)	\$ (28,978)	\$ (390,041)
34		Uncollectible Expense	\$ (8,681)	\$ (8,855)	\$ (9,032)	\$ (9,213)	\$ (9,397)	\$ (9,585)	\$ (9,776)	\$ (9,972)	\$ (10,171)	\$ (10,375)	\$ (10,582)	\$ (10,794)	\$ (151,509)
35		Other O&M	\$ (8,826)	\$ (9,104)	\$ (9,363)	\$ (9,613)	\$ (9,865)	\$ (10,124)	\$ (10,392)	\$ (10,669)	\$ (10,953)	\$ (11,247)	\$ (11,550)	\$ (11,863)	\$ (165,570)
36		AC Load Control Avoided Generation, Transmission	\$ (14,999)	\$ (16,888)	\$ (16,877)	\$ (16,860)	\$ (16,835)	\$ (16,802)	\$ (16,950)	\$ (17,289)	\$ (17,635)	\$ (17,988)	\$ (18,347)	\$ (18,714)	\$ (230,785)
37		Demand Response Avoided Generation, Transmission	\$ (11,926)	\$ (11,881)	\$ (12,007)	\$ (12,084)	\$ (12,106)	\$ (12,077)	\$ (12,093)	\$ (12,103)	\$ (12,111)	\$ (12,119)	\$ (12,152)	\$ (12,186)	\$ (164,701)
38		Theft Reduction	\$ (37,535)	\$ (38,286)	\$ (39,052)	\$ (39,833)	\$ (40,629)	\$ (41,442)	\$ (42,271)	\$ (43,116)	\$ (43,978)	\$ (44,858)	\$ (45,755)	\$ (46,670)	\$ (635,489)
39		AMI Induced Conservation & Efficiency Energy	\$ (13,339)	\$ (13,715)	\$ (13,890)	\$ (14,069)	\$ (14,251)	\$ (14,486)	\$ (14,776)	\$ (15,071)	\$ (15,373)	\$ (15,680)	\$ (15,994)	\$ (16,314)	\$ (216,740)
40		Load Management Conserved Energy	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
41		Demand Response Conserved Energy	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
42		Property Tax (Savings) - Legacy Meters	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (18,767)
43		Terminal Value	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (246,674)
44		Total Non Capital Benefits before Costs - Electric	\$ (117,306)	\$ (121,357)	\$ (123,497)	\$ (125,613)	\$ (127,712)	\$ (129,852)	\$ (132,322)	\$ (135,034)	\$ (137,809)	\$ (140,648)	\$ (143,582)	\$ (146,516)	\$ (2,220,277)
45		Common	\$ 10,326	\$ 10,557	\$ 10,781	\$ 11,012	\$ 11,258	\$ 11,510	\$ 11,774	\$ 12,032	\$ 12,297	\$ 12,579	\$ 12,868	\$ 13,171	\$ 206,952
46		Meters, Modules & Communications	\$ 5,228	\$ 5,228	\$ 5,228	\$ 5,228	\$ 5,228	\$ 5,228	\$ 5,228	\$ 5,228	\$ 5,228	\$ 5,228	\$ 5,228	\$ 5,228	\$ 90,579
47		Customer Engagement	\$ 4,936	\$ 4,857	\$ 4,866	\$ 4,876	\$ 4,886	\$ 4,895	\$ 4,906	\$ 4,916	\$ 4,926	\$ 4,937	\$ 4,948	\$ 4,959	\$ 93,971
48		Load Control Program	\$ 3,056	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 15,152
49		Demand Response Program	\$ 1,749	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 12,685
50		Property Taxes - AMI	\$ 6,326	\$ 6,020	\$ 5,727	\$ 5,459	\$ 5,206	\$ 4,959	\$ 4,725	\$ 4,512	\$ 4,332	\$ 4,208	\$ 4,153	\$ 4,130	\$ 97,308
51		Total Non Capital Benefits Net - Electric	\$ (85,685)	\$ (94,695)	\$ (96,894)	\$ (99,039)	\$ (101,134)	\$ (103,260)	\$ (105,690)	\$ (108,347)	\$ (111,026)	\$ (113,696)	\$ (116,385)	\$ (119,106)	\$ (1,703,631)
52															
53	Gas	Meter Reading	\$ (2,734)	\$ (2,816)	\$ (2,901)	\$ (2,988)	\$ (3,077)	\$ (3,170)	\$ (3,265)	\$ (3,363)	\$ (3,464)	\$ (3,567)	\$ (3,674)	\$ (3,785)	\$ (49,122)
54		Uncollectible Expense	\$ (2,276)	\$ (2,321)	\$ (2,367)	\$ (2,415)	\$ (2,463)	\$ (2,512)	\$ (2,563)	\$ (2,614)	\$ (2,666)	\$ (2,719)	\$ (2,774)	\$ (2,829)	\$ (38,585)
55		Other O&M	\$ (484)	\$ (501)	\$ (519)	\$ (537)	\$ (556)	\$ (575)	\$ (595)	\$ (615)	\$ (636)	\$ (658)	\$ (680)	\$ (703)	\$ (9,111)
56		Theft Reduction	\$ (6,908)	\$ (7,129)	\$ (7,363)	\$ (7,601)	\$ (7,753)	\$ (7,908)	\$ (8,066)	\$ (8,227)	\$ (8,392)	\$ (8,560)	\$ (8,731)	\$ (8,906)	\$ (116,321)
57		AMI Induced Conservation & Efficiency Energy	\$ (2,846)	\$ (3,002)	\$ (3,174)	\$ (3,352)	\$ (3,419)	\$ (3,487)	\$ (3,557)	\$ (3,628)	\$ (3,701)	\$ (3,775)	\$ (3,850)	\$ (3,927)	\$ (50,888)
58		LAUF Gas Reduction Enabled	\$ (201)	\$ (213)	\$ (225)	\$ (238)	\$ (243)	\$ (248)	\$ (252)	\$ (256)	\$ (260)	\$ (263)	\$ (267)	\$ (270)	\$ (3,502)
59		Terminal Value	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (33,637)
60		Total Non Capital Benefits before Costs - Gas	\$ (15,449)	\$ (15,983)	\$ (16,550)	\$ (17,131)	\$ (17,511)	\$ (17,900)	\$ (18,297)	\$ (18,703)	\$ (19,119)	\$ (19,543)	\$ (19,977)	\$ (20,420)	\$ (301,167)
61		Common	\$ 1,408	\$ 1,440	\$ 1,470	\$ 1,502	\$ 1,535	\$ 1,570	\$ 1,606	\$ 1,641	\$ 1,677	\$ 1,715	\$ 1,755	\$ 1,796	\$ 26,006
62		Meters, Modules & Communications	\$ 1,371	\$ 1,371	\$ 1,371	\$ 1,371	\$ 1,371	\$ 1,371	\$ 1,371	\$ 1,371	\$ 1,371	\$ 1,371	\$ 1,371	\$ 1,371	\$ 22,324
63		Property Taxes - AMI	\$ 685	\$ 644	\$ 603	\$ 563	\$ 522	\$ 482	\$ 441	\$ 401	\$ 362	\$ 334	\$ 326	\$ 326	\$ 9,792
64		Total Non Capital Benefits Net - Gas	\$ (11,985)	\$ (12,528)	\$ (13,105)	\$ (13,695)	\$ (14,083)	\$ (14,477)	\$ (14,879)	\$ (15,290)	\$ (15,708)	\$ (16,123)	\$ (16,525)	\$ (16,926)	\$ (243,045)
65															
66	Total	Meter Reading	\$ (23,669)	\$ (24,379)	\$ (25,110)	\$ (25,864)	\$ (26,639)	\$ (27,439)	\$ (28,262)	\$ (29,110)	\$ (29,983)	\$ (30,882)	\$ (31,809)	\$ (32,763)	\$ (439,164)
67		Uncollectible Expense	\$ (10,957)	\$ (11,176)	\$ (11,399)	\$ (11,627)	\$ (11,860)	\$ (12,097)	\$ (12,339)	\$ (12,586)	\$ (12,838)	\$ (13,094)	\$ (13,356)	\$ (13,623)	\$ (190,094)
68		Other O&M	\$ (9,310)	\$ (9,605)	\$ (9,882)	\$ (10,150)	\$ (10,420)	\$ (10,699)	\$ (10,987)	\$ (11,284)	\$ (11,590)	\$ (11,905)	\$ (12,231)	\$ (12,566)	\$ (174,681)
69		AC Load Control Avoided Generation, Transmission	\$ (14,999)	\$ (16,888)	\$ (16,877)	\$ (16,860)	\$ (16,835)	\$ (16,802)	\$ (16,950)	\$ (17,289)	\$ (17,635)	\$ (17,988)	\$ (18,347)	\$ (18,714)	\$ (230,785)
70		Demand Response Avoided Generation, Transmission	\$ (11,926)	\$ (11,881)	\$ (12,007)	\$ (12,084)	\$ (12,106)	\$ (12,077)	\$ (12,093)	\$ (12,103)	\$ (12,111)	\$ (12,119)	\$ (12,152)	\$ (12,186)	\$ (164,701)
71		Theft Reduction	\$ (44,443)	\$ (45,415)	\$ (46,415)	\$ (47,434)	\$ (48,382)	\$ (49,350)	\$ (50,337)	\$ (51,344)	\$ (52,370)	\$ (53,418)	\$ (54,486)	\$ (55,576)	\$ (751,810)
72		AMI Induced Conservation & Efficiency Energy	\$ (16,185)	\$ (16,717)	\$ (17,064)	\$ (17,420)	\$ (17,670)	\$ (17,973)	\$ (18,333)	\$ (18,699)	\$ (19,073)	\$ (19,455)	\$ (19,844)	\$ (20,241)	\$ (267,628)
73		Load Management Conserved Energy	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
74		Demand Response Conserved Energy	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
75		Property Tax (Savings) - Legacy Meters	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (1,067)	\$ (18,767)
76		LAUF Gas Reduction Enabled	\$ (201)	\$ (213)	\$ (225)	\$ (238)	\$ (243)	\$ (248)	\$ (252)	\$ (256)	\$ (260)	\$ (263)	\$ (267)	\$ (270)	\$ (3,502)
77		Terminal Value	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (280,312)
78		Total Non Capital Benefits before Costs	\$ (132,756)	\$ (137,340)	\$ (140,047)	\$ (142,744)	\$ (145,223)	\$ (147,752)	\$ (150,620)	\$ (153,737)	\$ (156,927)	\$ (160,191)	\$ (163,559)	\$ (167,017)	\$ (2,521,445)
79		Common	\$ 11,735	\$ 11,997	\$ 12,251	\$ 12,513	\$ 12,793	\$ 13,080	\$ 13,380	\$ 13,672	\$ 13,974	\$ 14,294	\$ 14,623	\$ 14,967	\$ 232,958
80		Meters, Modules & Communications	\$ 6,599	\$ 6,599	\$ 6,599	\$ 6,599	\$ 6,599	\$ 6,599	\$ 6,599	\$ 6,599	\$ 6,599	\$ 6,599	\$ 6,599	\$ 6,599	\$ 112,903
81		Other O&M	\$ 4,936	\$ 4,857	\$ 4,866	\$ 4,876	\$ 4,886	\$ 4,895	\$ 4,906	\$ 4,916	\$ 4,926	\$ 4,937	\$ 4,948	\$ 4,959	\$ 93,971
82		Load Control Program	\$ 3,056	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 15,152
83		Demand Response Program	\$ 1,749	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 12,685
84		Property Taxes - AMI	\$ 7,011	\$ 6,664	\$ 6,330	\$ 6,022	\$ 5,729	\$ 5,440	\$ 5,166	\$ 4,913	\$ 4,694	\$ 4,542	\$ 4,479	\$ 4,456	\$ 107,101
85		Total Non Capital Benefits Net	\$ (97,670)	\$ (107,223)	\$ (110,000)	\$ (112,734)	\$ (115,217)	\$ (117,737)	\$ (120,569)	\$ (123,637)	\$ (126,734)	\$ (129,819)	\$ (132,909)	\$ (136,037)	\$ (1,946,676)

## (000,000)

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Line No.	Year	Description	Pretax Return on AMI Investment		AMI Depr-eciation		Revenue Requirements - Avoided Capital Costs		Total Non-Capital Benefits Net		Net Revenue Requirements		NPV Factor	NPV of Net Revenue Require-ments
	(a)	(b)	(c)		(d)		(e)		(f)		(g)			
86	2009		\$3.7	+	\$0.1	+	\$0.0	+	\$0.7	=	\$4.5	x	1.000000	= \$4.5
87	2010		6.6	+	0.2	+	0.0	+	1.4	=	8.1	x	1.000000	= 8.1
88	2011		9.9	+	4.8	+	0.0	+	1.2	=	15.9	x	1.000000	= 15.9
89	2012	First Year of Electric AMI Meter Installations	13.2	+	10.9	+	0.0	+	4.6	=	28.7	x	1.000000	= 28.7
90	2013		17.1	+	14.5	+	(0.1)	+	7.8	=	39.3	x	1.000000	= 39.3
91	2014		21.6	+	18.8	+	(0.3)	+	4.7	=	44.8	x	1.000000	= 44.8
92	2015	First Year of Gas Module Installations	28.5	+	24.7	+	(0.4)	+	(0.2)	=	52.7	x	1.000000	= 52.7
93	2016		39.0	+	33.1	+	(0.4)	+	(8.2)	=	63.5	x	1.000000	= 63.5
94	2017	Electric AMI Meter and Gas Module Installations complete	46.7	+	40.0	+	(0.4)	+	(20.4)	=	65.9	x	1.000000	= 65.9
95	2018		47.0	+	42.7	+	(0.4)	+	(64.1)	=	25.2	x	0.920972	= 23.3
96	2019		44.3	+	43.8	+	(0.5)	+	(75.8)	=	11.9	x	0.848190	= 10.1
97	2020		41.6	+	44.9	+	(0.5)	+	(88.7)	=	(2.7)	x	0.781159	= (2.1)
98	2021		38.8	+	45.9	+	(0.5)	+	(97.7)	=	(13.5)	x	0.719426	= (9.7)
99	2022		35.5	+	46.4	+	(0.5)	+	(107.2)	=	(25.9)	x	0.662572	= (17.1)
100	2023		31.7	+	46.6	+	(0.4)	+	(110.0)	=	(32.1)	x	0.610210	= (19.6)
101	2024		28.0	+	46.8	+	(0.3)	+	(112.7)	=	(38.3)	x	0.561987	= (21.5)
102	2025		24.3	+	47.0	+	(0.2)	+	(115.2)	=	(44.2)	x	0.517574	= (22.9)
103	2026		20.7	+	42.7	+	(0.2)	+	(117.7)	=	(54.5)	x	0.476671	= (26.0)
104	2027		17.5	+	36.8	+	(0.1)	+	(120.6)	=	(66.3)	x	0.439001	= (29.1)
105	2028		14.8	+	33.4	+	0.0	+	(123.6)	=	(75.4)	x	0.404308	= (30.5)
106	2029		12.3	+	29.7	+	0.1	+	(126.7)	=	(84.6)	x	0.372356	= (31.5)
107	2030		10.2	+	25.5	+	0.2	+	(129.8)	=	(93.9)	x	0.342930	= (32.2)
108	2031		8.5	+	21.4	+	0.2	+	(132.9)	=	(102.8)	x	0.315829	= (32.5)
109	2032		7.0	+	19.2	+	0.3	+	(136.0)	=	(109.5)	x	0.290870	= (31.9)
110	2032	Model Terminal Value							(280.3)	=	(280.3)	x	0.290870	= (81.5)
111														
112		Total 2009-2032	\$568.6		\$720.2		(\$4.6)		(\$1,947.6)		(\$663.5)			(\$31.4)

## MICHIGAN PUBLIC SERVICE COMMISSION

## Consumers Energy Company

Summary of Business Case Costs and Benefits

2007 - 2032

(000,000)

Case No.: U-18322

Exhibit: A-82 (LDW-3)

Witness: LDWarriner

Date: March 2017

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## Smart Grid Program - Electric Portion

Line No.	Year	Description	Pretax Return on AMI Investment		AMI Depr-eciation		Revenue Requirements - Avoided Capital Costs		Total Non-Capital Benefits Net	Net Revenue Requirements		NPV Factor	NPV of Net Revenue Requirements
	(a)	(b)	(c)		(d)		(e)		(f)	(g)			
113	2009		\$3.2	+	\$0.1	+	\$0.0	+	\$0.6	=	\$3.9	x 1.000000	= \$3.9
114	2010		5.7	+	0.2	+	0.0	+	1.2	=	7.1	x 1.000000	= 7.1
115	2011		8.6	+	4.2	+	0.0	+	1.1	=	13.9	x 1.000000	= 13.9
116	2012	First Year of Electric AMI Meter Installations	11.5	+	9.5	+	0.0	+	4.4	=	25.5	x 1.000000	= 25.5
117	2013		15.1	+	12.8	+	(0.1)	+	7.8	=	35.5	x 1.000000	= 35.5
118	2014		19.4	+	16.7	+	(0.3)	+	4.6	=	40.3	x 1.000000	= 40.3
119	2015	First Year of Gas Module Installations	25.6	+	22.1	+	(0.4)	+	(0.3)	=	47.0	x 1.000000	= 47.0
120	2016		34.5	+	29.3	+	(0.4)	+	(8.5)	=	54.9	x 1.000000	= 54.9
121	2017	Electric AMI Meter and Gas Module Installations complete	40.9	+	35.1	+	(0.4)	+	(18.0)	=	57.5	x 1.000000	= 57.5
122	2018		41.1	+	37.5	+	(0.4)	+	(53.7)	=	24.6	x 0.920972	= 22.6
123	2019		38.8	+	38.5	+	(0.5)	+	(64.7)	=	12.2	x 0.848190	= 10.4
124	2020		36.5	+	39.7	+	(0.5)	+	(77.2)	=	(1.5)	x 0.781159	= (1.2)
125	2021		34.1	+	40.6	+	(0.5)	+	(85.7)	=	(11.5)	x 0.719426	= (8.3)
126	2022		31.2	+	41.1	+	(0.5)	+	(94.7)	=	(22.9)	x 0.662572	= (15.2)
127	2023		27.9	+	41.2	+	(0.4)	+	(96.9)	=	(28.1)	x 0.610210	= (17.2)
128	2024		24.6	+	41.4	+	(0.3)	+	(99.0)	=	(33.3)	x 0.561987	= (18.7)
129	2025		21.3	+	41.6	+	(0.2)	+	(101.1)	=	(38.4)	x 0.517574	= (19.9)
130	2026		18.1	+	37.9	+	(0.2)	+	(103.3)	=	(47.3)	x 0.476671	= (22.6)
131	2027		15.3	+	32.8	+	(0.1)	+	(105.7)	=	(57.6)	x 0.439001	= (25.3)
132	2028		12.9	+	29.7	+	0.0	+	(108.3)	=	(65.7)	x 0.404308	= (26.6)
133	2029		10.7	+	26.4	+	0.1	+	(111.0)	=	(73.9)	x 0.372356	= (27.5)
134	2030		8.9	+	22.5	+	0.2	+	(113.7)	=	(82.1)	x 0.342930	= (28.2)
135	2031		7.3	+	18.8	+	0.2	+	(116.4)	=	(90.0)	x 0.315829	= (28.4)
136	2032		6.0	+	16.8	+	0.3	+	(119.1)	=	(96.0)	x 0.290870	= (27.9)
137	2032	Model Terminal Value							(246.7)	=	(246.7)	x 0.290870	= (71.8)
138													
139		Total 2009-2032	\$499.5		\$636.4		(\$4.6)		(\$1,704.1)		(\$572.9)		(\$20.0)

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company  
General Service Self Generation Rate GSG-2  
Historic Demand and Sales

Case No.: U-18322  
Exhibit: A-83 (JCA-6)  
Witness: JCAponte  
Date: March 2017  
Page 1 of 1

<u>Line</u>	<u>Description</u> <u>(a)</u>	<u>2013</u> <u>(b)</u>	<u>2014</u> <u>(c)</u>	<u>2015</u> <u>(d)</u>	<u>Average Factor</u> <u>(e)</u>	<u>Test Year</u> <u>(f)</u>
1	Coincident Peak Demand June	0	0	4,943	0.00003830	1,269
2	Coincident Peak Demand July	0	0	0	0	0
3	Coincident Peak Demand August	0	0	0	0	0
4	Coincident Peak Demand September	<u>0</u>	<u>0</u>	<u>2,690</u>	0.00002084	<u>691</u>
5	Total 4 Coincident Peak Demand (kW)	0	0	7,633		1,960
6	Total Sales (kWh)	46,650,076	69,424,063	43,020,022		33,143,597
7	Sales On Peak Summer (kWh)	5,187,745	16,887,480	5,369,702	0.15975842	5,294,969
8	Sales On Peak Summer / Total Sales	11%	24%	12%		16%

Source: HistoricData tab Exhibit A-11 (JCA-3)

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company  
Interclass Crossing Point Adjustment

Case No.: U-18322  
Exhibit: A-84 (JCA-7)  
Witness: JCAponte  
Date: March 2017  
Page 1 of 4

<u>Line</u>	<u>Description</u>	Total Electric	Total Jurisdictional Electric	Total Residential	Total Secondary	Total Primary	Total Lighting & Unmetered	Rate GSG	Total Non Jurisdictional
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
1	<b><u>Proposed Rate Design Revenue (thousands \$)</u></b>								
2	If customers move from GPD to GP	4,274,773	4,244,206	1,963,162	1,043,341	1,191,916	42,988	2,798	30,562
3	2017-2018 TY COS Version 2	4,274,773	4,243,999	1,977,670	1,051,814	1,168,577	43,102	2,838	30,769
4	<b>Difference</b>	<b>\$ -</b>	<b>\$ 207</b>	<b>\$ (14,507)</b>	<b>\$ (8,472)</b>	<b>\$ 23,339</b>	<b>\$ (113)</b>	<b>\$ (40)</b>	<b>\$ (207)</b>
5	<b><u>Sales (MWh)</u></b>								
6	If customers move from GPD to GP	33,349,700	32,968,495	12,118,986	7,155,918	13,438,225	222,222	33,144	381,205
7	2017-2018 TY COS Version 2	33,349,700	32,968,495	12,118,986	7,155,918	13,438,225	222,222	33,144	381,205
8	<b>Difference</b>	-	-	-	-	-	-	-	-
9	<b><u># Customers</u></b>								
10	If customers move from GPD to GP	1,814,048	1,814,046	1,591,065	213,815	4,103	5,033	30	2
11	2017-2018 TY COS Version 2	1,814,048	1,814,046	1,591,065	213,815	4,103	5,033	30	2
12	<b>Difference</b>	-	-	-	-	-	-	-	-

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company  
Interclass Crossing Point Adjustment

Case No.: U-18322  
Exhibit: A-84 (JCA-7)  
Witness: JCAponte  
Date: March 2017  
Page 2 of 4

<u>Line</u>	<u>Description</u>	Rate RS (a)	Rate RT (b)	Total Residential (c)	Rate GS (d)	Rate GSD (e)	Rate GS GEI (f)	Rate GSD GEI (g)	Total Secondary (h)
1	<b><u>Proposed Rate Design Revenue (thousands \$)</u></b>								
2	If customers move from GPD to GP	1,955,740	7,422	1,963,162	532,876	460,570	14,854	35,041	1,043,341
3	2017-2018 TY COS Version 2	1,970,194	7,476	1,977,670	536,959	464,468	14,996	35,391	1,051,814
4	<b>Difference</b>	<b>\$ (14,454)</b>	<b>\$ (53)</b>	<b>\$ (14,507)</b>	<b>\$ (4,083)</b>	<b>\$ (3,898)</b>	<b>\$ (142)</b>	<b>\$ (350)</b>	<b>\$ (8,472)</b>
5	<b><u>Sales (MWh)</u></b>								
6	If customers move from GPD to GP	12,063,208	55,778	12,118,986	3,520,568	3,364,122	82,531	188,697	7,155,918
7	2017-2018 TY COS Version 2	12,063,208	55,778	12,118,986	3,520,568	3,364,122	82,531	188,697	7,155,918
8	<b>Difference</b>	-	-	-	-	-	-	-	-
9	<b><u># Customers</u></b>								
10	If customers move from GPD to GP	1,589,009	2,056	1,591,065	190,876	20,426	1,653	860	213,815
11	2017-2018 TY COS Version 2	1,589,009	2,056	1,591,065	190,876	20,426	1,653	860	213,815
12	<b>Difference</b>	-	-	-	-	-	-	-	-



MICHIGAN PUBLIC SERVICE COMMISSION

Consumers Energy Company  
Interclass Crossing Point Adjustment

Case No.: U-18322  
Exhibit: A-84 (JCA-7)  
Witness: JCAponte  
Date: March 2017  
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<u>Line</u>	<u>Description</u>	Rate GP	Rate GPD Vlt 1	Rate GPD Vlt 2	Rate GPD Vlt 3	Rate GP GEI	Rate EIP	Rate GPD GEI Vlt 1	Rate GPD GEI Vlt 2	Rate GPD GEI Vlt 3	Total Primary
		(a)	(b)	(c)	(d)	(e)	(g)	(h)	(i)	(j)	(k)
1	<b><u>Proposed Rate Design Revenue (thousands \$)</u></b>										
2	If customers move from GPD to GP	366,231	319,601	120,351	318,076	19,670	9,496	795	6,369	31,328	1,191,916
3	2017-2018 TY COS Version 2	123,907	335,517	175,545	465,230	19,908	9,526	800	6,427	31,716	1,168,577
4	<b>Difference</b>	<b>\$ 242,324</b> 195.6%	<b>\$ (15,917)</b> -4.7%	<b>\$ (55,194)</b> -31.4%	<b>\$ (147,154)</b> -31.6%	<b>\$ (239)</b>	<b>\$ (30)</b>	<b>\$ (5)</b>	<b>\$ (58)</b>	<b>\$ (389)</b>	<b>\$ 23,339</b>
5	<b><u>Sales (MWh)</u></b>										
6	If customers move from GPD to GP	3,135,240	4,409,108	1,590,291	3,522,599	179,439	255,121	8,992	58,617	278,818	13,438,225
7	2017-2018 TY COS Version 2	1,176,959	4,573,097	2,147,829	4,759,354	179,439	255,121	8,992	58,617	278,818	13,438,225
8	<b>Difference</b>	<b>1,958,281</b> 166.4%	<b>(163,989)</b> -3.6%	<b>(557,538)</b> -26.0%	<b>(1,236,755)</b> -26.0%	-	-	-	-	-	-
9	<b><u># Customers</u></b>										
10	If customers move from GPD to GP	2,185	35	120	1,352	178	16	2	9	206	4,103
11	2017-2018 TY COS Version 2	1,674	48	157	1,813	178	16	2	9	206	4,103
12	<b>Difference</b>	<b>511</b> 30.5%	<b>(13)</b> -26.9%	<b>(37)</b> -23.6%	<b>(461)</b> -25.4%	-	-	-	-	-	-

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company  
Interclass Crossing Point Adjustment

Case No.: U-18322  
Exhibit: A-84 (JCA-7)  
Witness: JCAponte  
Date: March 2017  
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<u>Line</u>	<u>Description</u>	Rate GML (l)	Rate GUL (m)	- Rate GU-XL (n)	Rate GU (o)	Total Lighting & Unmetered (p)
1	<b><u>Proposed Rate Design Revenue (thousands \$)</u></b>					
2	If customers move from GPD to GP	2,127	31,627	1,420	7,815	42,988
3	2017-2018 TY COS Version 2	2,135	31,682	1,421	7,863	43,102
4	<b>Difference</b>	<b>\$ (9)</b>	<b>\$ (55)</b>	<b>\$ (1)</b>	<b>\$ (49)</b>	<b>\$ (113)</b>
5	<b><u>Sales (MWh)</u></b>					
6	If customers move from GPD to GP	18,204	114,448	4,420	85,150	222,222
7	2017-2018 TY COS Version 2	18,204	114,448	4,420	85,150	222,222
8	<b>Difference</b>	-	-	-	-	-
9	<b><u># Customers</u></b>					
10	If customers move from GPD to GP	286	4,208	100	439	5,033
11	2017-2018 TY COS Version 2	286	4,208	100	439	5,033
12	<b>Difference</b>	-	-	-	-	-

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company  
GSG-2 Power Supply Revenue

Case No.: U-18322  
Exhibit: A-85 (LMC-6)  
Witness: LMCollins  
Date: March 2017  
Page 1 of 1

Line No.	Rate Category		JAN 2016 - DEC 2016 KWH	JAN 2016 - DEC 2016 KW Consumption	Source
			KWH	KW	
1	1330 Elec Pri SG Com >550 kW VL1 GSG-2	GSG_1330V1	236,419	0	SAP
2	1330 Elec Pri SG Com >550 kW VL2 GSG-2	GSG_1330V2	23,410,739	29,151	SAP
3	1330 Elec Pri SG Com >550 kW VL3 GSG-2	GSG_1330V3	39,013	2,785	SAP
4	1350 Elec Pri SG Ind >550 kW VL1 GSG-2	GSG_1350V1	5,728,162	46,261	SAP
5	1350 Elec Pri SG Ind >550 kW VL2 GSG-2	GSG_1350V2	3,404,892	20,229	SAP
6	Result		32,819,225	98,426	
7	Highest Contracted Capacity 2016 Average \$/MW		12.51	1,231,309	CALCULATION OF 2016 STANDBY PS CAP CHARGE
8	2016 Average LMP \$/MW		\$30.51	1,001,315	WP-LMC-8
9	2016 GSG-2 Power Supply Revenue			2,232,624	
10	2016 Average GSG Capacity	\$/MW	12.51		Line 7
11	U-17735 Average GPD Capacity	\$/MW	23.57		U-17735 Final Order Model
12	U-18322 Average GPD Capacity	\$/MW	22.20		WP-LMC-3, WP-LMC-23

MICHIGAN PUBLIC SERVICE COMMISSION

Consumers Energy Company

Case No.: U-18322

Exhibit: A-86 (TPC-1)

Witness: TPClark

Date: March 2017

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## PROPRIETARY AND CONFIDENTIAL

## KARN 1&amp;2: EARLY RETIREMENT EVALUATION

Line	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	Karn 1&2: Base Case (Retirement: May 31, 2031)			Karn 1&2 Retirement: May 31, 2021			Karn 1&2 Retirement: May 31, 2023		
	Year	Capital Expenses \$ (x1000)	O&M expenses \$ (x1000)	Year	Change in Capital Expenses \$ (x1000) <sup>2</sup>	Change in O&M expenses \$ (x1000) <sup>1</sup>	Year	Change in Capital Expenses \$ (x1000) <sup>2</sup>	Change in O&M expenses \$ (x1000) <sup>1</sup>
1	2017	\$27,116	\$22,179	2017	-\$13,525	\$0	2017	-\$13,375	\$110
2	2018	\$24,342	\$27,107	2018	\$1,279	-\$82	2018	\$4,271	\$208
3	2019	\$13,672	\$26,948	2019	-\$8,010	\$401	2019	-\$8,272	\$571
4	2020	\$35,533	\$27,109	2020	-\$26,305	-\$1,777	2020	-\$28,420	\$816
5	2021	\$39,510	\$27,734	2021	-\$37,835	-\$12,756	2021	-\$31,310	\$1,075
6	2022	\$32,524	\$32,914	2022	-\$32,524	-\$31,195	2022	-\$22,524	-\$4,316
7	2023	\$5,078	\$33,448	2023	-\$5,078	-\$31,596	2023	-\$3,478	-\$17,313
8	2024	\$6,770	\$30,993	2024	-\$6,770	-\$29,104	2024	-\$6,770	-\$28,444
9	2025	\$16,770	\$30,549	2025	-\$16,770	-\$28,621	2025	-\$16,770	-\$27,948
10	2026	\$5,078	\$31,115	2026	-\$5,078	-\$29,149	2026	-\$5,078	-\$28,462
11	2027	\$5,078	\$32,693	2027	-\$5,078	-\$30,688	2027	-\$5,078	-\$29,987
12	2028	\$3,385	\$33,283	2028	-\$3,385	-\$31,238	2028	-\$3,385	-\$30,523
13	2029	\$3,385	\$32,885	2029	-\$3,385	-\$30,799	2029	-\$3,385	-\$30,070
14	2030	\$3,385	\$33,500	2030	-\$3,385	-\$31,372	2030	-\$3,385	-\$30,629
15	2031	\$600	\$16,388	2031	-\$600	-\$15,303	2031	-\$600	-\$14,924
16	Total	\$222,226	\$438,845	Total	-\$166,448	-\$303,279	Total	-\$147,559	-\$239,836

Note:

1. Change in O&M Expense includes increased projected O&M expenses at Karn gas and oil Units 3 and 4 due to the retirement of Units 1 and 2.
2. Change in Capital Expense includes projected increased capital expenses at Karn gas and oil Units 3 and 4 due to the retirement of Units 1 and 2.

MICHIGAN PUBLIC SERVICE COMMISSION

Consumers Energy Company

Case No.: U-18322

Exhibit: A-87 (TPC-2)

Witness: TPClark

Date: March 2017

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PROPRIETARY AND CONFIDENTIAL

## CAMPBELL 1: EARLY RETIREMENT EVALUATION

Line	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
	<b>Campbell 1: Base Case (Retirement: May 31, 2031)</b>					<b>Campbell 1 Retirement: May 31, 2021</b>					<b>Campbell 1 Retirement: May 31, 2023</b>				
	Year	Capital Expenses \$ (x1000)		O&M expenses \$ (x1000)		Year	Change in Capital Expenses \$ (x1000)		Change in O&M expenses \$ (x1000) <sup>1</sup>		Year	Change in Capital Expenses \$ (x1000)		Change in O&M expenses \$ (x1000) <sup>1</sup>	
		Campbell1	Campbell2	Campbell1	Campbell2		Campbell1	Campbell2	Campbell1	Campbell2		Campbell1	Campbell2	Campbell1	Campbell2
1	2017	\$5,244	\$6,803	\$9,935	\$11,502	2017	\$0	\$0	-\$173	\$174	2017	\$10	\$0	-\$173	\$174
2	2018	\$24,326	\$11,629	\$11,901	\$13,407	2018	-\$451	\$0	\$152	\$290	2018	-\$422	\$0	\$152	\$290
3	2019	\$25,367	\$27,298	\$12,950	\$23,738	2019	-\$21,851	-\$2,239	-\$710	\$399	2019	-\$17,993	-\$2,239	\$455	\$399
4	2020	\$44,782	\$26,867	\$19,411	\$13,327	2020	-\$43,282	-\$7,863	-\$5,165	\$512	2020	-\$34,424	-\$7,863	\$767	\$512
5	2021	\$11,378	\$25,630	\$12,206	\$14,702	2021	-\$11,078	-\$6,009	-\$5,360	\$1,595	2021	-\$2,563	-\$6,009	\$1,087	\$628
6	2022	\$9,692	\$23,833	\$14,906	\$16,972	2022	-\$9,692	-\$4,598	-\$12,486	\$1,397	2022	-\$8,192	-\$4,598	-\$627	\$875
7	2023	\$12,325	\$40,011	\$15,138	\$18,247	2023	-\$12,325	\$0	-\$12,384	\$1,562	2023	-\$12,025	\$0	-\$7,246	\$2,050
8	2024	\$4,408	\$6,154	\$15,375	\$15,528	2024	-\$4,408	\$0	-\$12,566	\$1,594	2024	-\$4,408	\$0	-\$12,165	\$1,784
9	2025	\$4,408	\$6,154	\$13,616	\$15,812	2025	-\$4,408	\$0	-\$10,750	\$1,626	2025	-\$4,408	\$0	-\$10,341	\$1,820
10	2026	\$4,408	\$6,154	\$13,860	\$16,102	2026	-\$4,408	\$0	-\$10,938	\$1,659	2026	-\$4,408	\$0	-\$10,520	\$1,857
11	2027	\$4,408	\$6,154	\$14,110	\$18,397	2027	-\$4,408	\$0	-\$11,129	\$1,692	2027	-\$4,408	\$0	-\$10,703	\$1,894
12	2028	\$3,526	\$4,923	\$16,365	\$16,698	2028	-\$3,526	\$0	-\$13,324	\$1,726	2028	-\$3,526	\$0	-\$12,890	\$1,932
13	2029	\$1,500	\$1,500	\$14,624	\$17,005	2029	-\$1,500	\$0	-\$11,523	\$1,761	2029	-\$1,500	\$0	-\$11,080	\$1,971
14	2030	\$1,500	\$1,500	\$14,889	\$17,319	2030	-\$1,500	\$0	-\$11,726	\$1,797	2030	-\$1,500	\$0	-\$11,274	\$2,011
15	2031	\$300	\$300	\$7,245	\$8,454	2031	-\$300	\$0	-\$5,632	\$906	2031	-\$300	\$0	-\$5,401	\$1,015
16	Total	\$157,572	\$194,907	\$206,532	\$237,209	Total	-\$123,137	-\$20,709	-\$123,713	\$18,689	Total	-\$100,066	-\$20,709	-\$89,957	\$19,212

## Notes

1. Change in O&amp;M Expense includes increased projected O&amp;M expenses at Campbell Unit 3 due to early retirement of Unit 1.

MICHIGAN PUBLIC SERVICE COMMISSION

Consumers Energy Company

Case No.: U-18322

Exhibit: A-88 (TPC-3)

Witness: TPClark

Date: March 2017

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## PROPRIETARY AND CONFIDENTIAL

## CAMPBELL 2: EARLY RETIREMENT EVALUATION

Line	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
	<b>Campbell 2: Base Case (Retirement: May 31, 2031)</b>					<b>Campbell 2 Retirement: May 31, 2021</b>					<b>Campbell 2 Retirement: May 31, 2023</b>				
	Year	Capital Expenses \$ (x1000)		O&M expenses \$ (x1000)		Year	Change in Capital Expenses \$ (x1000)		Change in O&M expenses \$ (x1000) <sup>1</sup>		Year	Change in Capital Expenses \$ (x1000)		Change in O&M expenses \$ (x1000) <sup>1</sup>	
		Campbell1	Campbell2	Campbell1	Campbell2		Campbell1	Campbell2	Campbell1	Campbell2		Campbell1	Campbell2	Campbell1	Campbell2
1	2017	\$5,244	\$6,803	\$9,935	\$11,502	2017	\$0	\$0	-\$173	\$174	2017	\$0	-\$10	-\$173	\$174
2	2018	\$24,326	\$11,629	\$11,901	\$13,407	2018	\$0	-\$1,419	-\$83	\$525	2018	\$0	-\$804	-\$83	\$525
3	2019	\$25,367	\$27,298	\$12,950	\$23,738	2019	-\$1,165	-\$20,715	\$0	\$854	2019	-\$1,165	-\$10,853	\$0	\$854
4	2020	\$44,782	\$26,867	\$19,411	\$13,327	2020	-\$4,701	-\$25,367	\$86	\$1,143	2020	-\$4,701	-\$19,216	\$86	\$1,193
5	2021	\$11,378	\$25,630	\$12,206	\$14,702	2021	-\$3,701	-\$25,330	\$1,516	-\$6,706	2021	-\$3,701	-\$15,420	\$175	\$1,540
6	2022	\$9,692	\$23,833	\$14,906	\$16,972	2022	-\$3,367	-\$23,833	\$1,025	-\$13,903	2022	-\$3,367	-\$22,333	\$431	-\$183
7	2023	\$12,325	\$40,011	\$15,138	\$18,247	2023	\$0	-\$40,011	\$1,161	-\$14,824	2023	\$0	-\$39,711	\$1,970	-\$9,084
8	2024	\$4,408	\$6,154	\$15,375	\$15,528	2024	\$0	-\$6,154	\$1,185	-\$12,036	2024	\$0	-\$6,154	\$1,342	-\$11,619
9	2025	\$4,408	\$6,154	\$13,616	\$15,812	2025	\$0	-\$6,154	\$1,209	-\$12,251	2025	\$0	-\$6,154	\$1,369	-\$11,825
10	2026	\$4,408	\$6,154	\$13,860	\$16,102	2026	\$0	-\$6,154	\$1,233	-\$12,469	2026	\$0	-\$6,154	\$1,397	-\$12,035
11	2027	\$4,408	\$6,154	\$14,110	\$18,397	2027	\$0	-\$6,154	\$1,259	-\$14,692	2027	\$0	-\$6,154	\$1,425	-\$14,249
12	2028	\$3,526	\$4,923	\$16,365	\$16,698	2028	\$0	-\$4,923	\$1,284	-\$12,919	2028	\$0	-\$4,923	\$1,454	-\$12,468
13	2029	\$1,500	\$1,500	\$14,624	\$17,005	2029	\$0	-\$1,500	\$1,310	-\$13,150	2029	\$0	-\$1,500	\$1,484	-\$12,690
14	2030	\$1,500	\$1,500	\$14,889	\$17,319	2030	\$0	-\$1,500	\$1,337	-\$13,387	2030	\$0	-\$1,500	\$1,514	-\$12,917
15	2031	\$300	\$300	\$7,245	\$8,454	2031	\$0	-\$300	\$667	-\$6,448	2031	\$0	-\$300	\$757	-\$6,209
16	Total	\$157,572	\$194,907	\$206,532	\$237,209	Total	-\$12,934	-\$169,511	\$13,015	-\$130,089	Total	-\$12,934	-\$141,185	\$13,147	-\$98,993

## Notes

1. Change in O&amp;M Expense includes increased projected O&amp;M expenses at Campbell Unit 3 due to early retirement of Unit 2.

MICHIGAN PUBLIC SERVICE COMMISSION

Consumers Energy Company

Case No.: U-18322

Exhibit: A-89 (TPC-4)

Witness: TPClark

Date: March 2017

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## PROPRIETARY AND CONFIDENTIAL

## KARN 1 AND 2 EARLY RETIREMENT EVALUATION

<u>Line</u>		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	
	<b>EARLY RET KARN 1 AND 2 MAY 31, 2021</b>	NPV	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)
1	Lost Energy Value <sup>1</sup>	\$174	\$0	\$0	\$0	\$0	\$14	\$20	\$24	\$32	\$37	\$37	\$42	\$47	\$50	\$53	\$16	
2	Avoided O&M and Property Tax <sup>2</sup>	(\$192)	\$0	(\$0)	\$0	(\$2)	(\$18)	(\$39)	(\$40)	(\$38)	(\$37)	(\$38)	(\$39)	(\$40)	(\$40)	(\$40)	(\$19)	
3	Avoided Capital (ECC) <sup>3</sup>	(\$129)	\$2	\$7	\$6	\$7	\$7	(\$22)	(\$24)	(\$26)	(\$30)	(\$32)	(\$35)	(\$37)	(\$39)	(\$43)	(\$45)	
4	Lost Capacity Value (0% CONE)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
5	Lost Capacity Value (25% CONE)	\$70	\$0	\$0	\$0	\$0	\$8	\$13	\$13	\$14	\$14	\$14	\$15	\$15	\$15	\$16	\$7	
6	Lost Capacity Value (50% CONE)	\$141	\$0	\$0	\$0	\$0	\$15	\$26	\$27	\$27	\$28	\$29	\$29	\$30	\$31	\$32	\$13	
7	Lost Capacity Value (75% CONE)	\$211	\$0	\$0	\$0	\$0	\$23	\$39	\$40	\$41	\$42	\$43	\$44	\$45	\$46	\$47	\$20	
8	Lost Capacity Value (100% CONE)	\$281	\$0	\$0	\$0	\$0	\$30	\$52	\$53	\$55	\$56	\$57	\$59	\$60	\$62	\$63	\$26	
9	Net Position (0% CONE)	(\$147)	\$2	\$7	\$7	\$5	\$3	(\$41)	(\$40)	(\$32)	(\$30)	(\$33)	(\$33)	(\$30)	(\$30)	(\$30)	(\$48)	
10	Net Position (25% CONE)	(\$77)	\$2	\$7	\$7	\$5	\$11	(\$28)	(\$26)	(\$18)	(\$16)	(\$18)	(\$18)	(\$15)	(\$14)	(\$14)	(\$41)	
11	Net Position (50% CONE)	(\$6)	\$2	\$7	\$7	\$5	\$18	(\$15)	(\$13)	(\$4)	(\$2)	(\$4)	(\$3)	(\$0)	\$1	\$1	(\$34)	
12	Net Position (75% CONE)	\$64	\$2	\$7	\$7	\$5	\$26	(\$2)	\$0	\$9	\$12	\$10	\$12	\$15	\$16	\$17	(\$28)	
13	Net Position (100% CONE)	\$134	\$2	\$7	\$7	\$5	\$33	\$11	\$14	\$23	\$26	\$25	\$26	\$30	\$32	\$33	(\$21)	
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	
	<b>EARLY RET KARN 1 AND 2 MAY 31, 2023</b>	NPV	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	
14	Lost Energy Value <sup>1</sup>	\$147	\$0	\$0	\$0	\$0	\$0	\$17	\$32	\$37	\$37	\$37	\$42	\$47	\$50	\$53	\$16	
15	Avoided O&M and Property Tax <sup>2</sup>	(\$141)	\$0	\$0	\$1	\$1	\$1	(\$4)	(\$22)	(\$37)	(\$37)	(\$37)	(\$39)	(\$39)	(\$39)	(\$40)	(\$19)	
16	Avoided Capital (ECC) <sup>3</sup>	(\$113)	\$1	\$4	\$4	\$4	\$6	(\$4)	(\$4)	(\$26)	(\$30)	(\$32)	(\$35)	(\$37)	(\$39)	(\$43)	(\$45)	
17	Lost Capacity Value (0% CONE)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
18	Lost Capacity Value (25% CONE)	\$53	\$0	\$0	\$0	\$0	\$0	\$8	\$14	\$14	\$14	\$14	\$15	\$15	\$15	\$16	\$7	
19	Lost Capacity Value (50% CONE)	\$107	\$0	\$0	\$0	\$0	\$0	\$16	\$27	\$28	\$29	\$29	\$30	\$31	\$32	\$13		
20	Lost Capacity Value (75% CONE)	\$160	\$0	\$0	\$0	\$0	\$0	\$24	\$41	\$42	\$43	\$44	\$45	\$46	\$47	\$20		
21	Lost Capacity Value (100% CONE)	\$213	\$0	\$0	\$0	\$0	\$0	\$32	\$55	\$56	\$57	\$59	\$60	\$62	\$63	\$26		
22	Net Position (0% CONE)	(\$107)	\$1	\$4	\$4	\$5	\$7	(\$8)	(\$10)	(\$31)	(\$30)	(\$32)	(\$32)	(\$30)	(\$29)	(\$29)	(\$47)	
23	Net Position (25% CONE)	(\$54)	\$1	\$4	\$4	\$5	\$7	(\$8)	(\$2)	(\$17)	(\$16)	(\$18)	(\$17)	(\$14)	(\$13)	(\$13)	(\$40)	
24	Net Position (50% CONE)	(\$0)	\$1	\$4	\$4	\$5	\$7	(\$8)	\$6	(\$4)	(\$2)	(\$3)	(\$2)	\$1	\$2	\$2	(\$34)	
25	Net Position (75% CONE)	\$53	\$1	\$4	\$4	\$5	\$7	(\$8)	\$14	\$10	\$12	\$11	\$12	\$16	\$17	\$18	(\$27)	
26	Net Position (100% CONE)	\$107	\$1	\$4	\$4	\$5	\$7	(\$8)	\$22	\$24	\$26	\$25	\$27	\$31	\$33	\$34	(\$21)	

## NOTES

1 Energy value excludes variable O&amp;M and reagent

2 Avoided O&amp;M includes both variable and fixed O&amp;M as well as reagent (PSCR expense); avoided O&amp;M costs are offset by increased normals at Karn 3/4 and Campbell 3

3 Avoided capital costs are economic carrying charge (represent revenue requirements), avoided capital costs are offset by increased capital at Karn 3/4

MICHIGAN PUBLIC SERVICE COMMISSION

Consumers Energy Company

Case No.: U-18322

Exhibit: A-90 (TPC-5)

Witness: TPClark

Date: March 2017

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## PROPRIETARY AND CONFIDENTIAL

## CAMPBELL 1 EARLY RETIREMENT EVALUATION

Line	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	
	<b>EARLY RET CAMPBELL 1 MAY 31, 2021</b>	NPV	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)
1	Lost Energy Value <sup>1</sup>	\$94	\$0	\$0	\$0	\$0	\$8	\$11	\$12	\$15	\$19	\$20	\$22	\$26	\$28	\$30	\$9
2	Avoided O&M and Property Tax <sup>2</sup>	(\$88)	\$0	\$0	(\$0)	(\$5)	(\$8)	(\$18)	(\$18)	(\$18)	(\$16)	(\$16)	(\$17)	(\$19)	(\$17)	(\$18)	(\$8)
3	Avoided Capital (ECC) <sup>3</sup>	(\$119)	\$1	\$6	\$4	\$1	\$1	(\$20)	(\$22)	(\$24)	(\$25)	(\$27)	(\$29)	(\$31)	(\$33)	(\$35)	(\$37)
4	Lost Capacity Value (0% CONE)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	Lost Capacity Value (25% CONE)	\$36	\$0	\$0	\$0	\$0	\$4	\$7	\$7	\$7	\$7	\$8	\$8	\$8	\$8	\$8	\$3
6	Lost Capacity Value (50% CONE)	\$73	\$0	\$0	\$0	\$0	\$8	\$13	\$14	\$14	\$14	\$15	\$15	\$16	\$16	\$16	\$7
7	Lost Capacity Value (75% CONE)	\$109	\$0	\$0	\$0	\$0	\$12	\$20	\$21	\$21	\$22	\$22	\$23	\$23	\$24	\$24	\$10
8	Lost Capacity Value (100% CONE)	\$145	\$0	\$0	\$0	\$0	\$16	\$27	\$28	\$28	\$29	\$30	\$30	\$31	\$32	\$33	\$14
9	Net Position (0% CONE)	(\$113)	\$1	\$6	\$4	(\$4)	\$1	(\$26)	(\$28)	(\$27)	(\$22)	(\$23)	(\$24)	(\$24)	(\$22)	(\$22)	(\$35)
10	Net Position (25% CONE)	(\$77)	\$1	\$6	\$4	(\$4)	\$5	(\$19)	(\$21)	(\$20)	(\$15)	(\$16)	(\$16)	(\$16)	(\$15)	(\$14)	(\$32)
11	Net Position (50% CONE)	(\$41)	\$1	\$6	\$4	(\$4)	\$9	(\$12)	(\$15)	(\$13)	(\$8)	(\$9)	(\$9)	(\$8)	(\$7)	(\$6)	(\$28)
12	Net Position (75% CONE)	(\$4)	\$1	\$6	\$4	(\$4)	\$13	(\$6)	(\$8)	(\$5)	(\$0)	(\$1)	(\$1)	(\$1)	\$1	\$2	(\$25)
13	Net Position (100% CONE)	\$32	\$1	\$6	\$4	(\$4)	\$17	\$1	(\$1)	\$2	\$7	\$6	\$6	\$7	\$9	\$10	(\$21)
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	
	<b>EARLY RET CAMPBELL 1 MAY 31, 2023</b>	NPV	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)
14	Lost Energy Value <sup>1</sup>	\$79	\$0	\$0	\$0	\$0	\$0	\$8	\$15	\$19	\$20	\$22	\$26	\$28	\$30	\$9	
15	Avoided O&M and Property Tax <sup>2</sup>	(\$58)	\$0	\$0	\$1	\$1	\$2	\$0	(\$9)	(\$17)	(\$16)	(\$16)	(\$16)	(\$18)	(\$17)	(\$17)	(\$8)
16	Avoided Capital (ECC) <sup>3</sup>	(\$100)	\$0	\$3	\$2	(\$0)	\$2	(\$0)	(\$2)	(\$24)	(\$25)	(\$27)	(\$29)	(\$31)	(\$33)	(\$35)	(\$37)
17	Lost Capacity Value (0% CONE)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
18	Lost Capacity Value (25% CONE)	\$28	\$0	\$0	\$0	\$0	\$0	\$4	\$7	\$7	\$7	\$8	\$8	\$8	\$8	\$8	\$3
19	Lost Capacity Value (50% CONE)	\$55	\$0	\$0	\$0	\$0	\$0	\$8	\$14	\$14	\$15	\$15	\$16	\$16	\$16	\$16	\$7
20	Lost Capacity Value (75% CONE)	\$83	\$0	\$0	\$0	\$0	\$0	\$12	\$21	\$22	\$22	\$23	\$23	\$24	\$24	\$24	\$10
21	Lost Capacity Value (100% CONE)	\$110	\$0	\$0	\$0	\$0	\$0	\$16	\$28	\$29	\$30	\$30	\$31	\$32	\$33	\$33	\$14
22	Net Position (0% CONE)	(\$78)	\$0	\$3	\$3	\$1	\$3	(\$0)	(\$3)	(\$26)	(\$22)	(\$23)	(\$23)	(\$23)	(\$22)	(\$22)	(\$35)
23	Net Position (25% CONE)	(\$50)	\$0	\$3	\$3	\$1	\$3	(\$0)	\$1	(\$19)	(\$14)	(\$15)	(\$16)	(\$16)	(\$14)	(\$13)	(\$31)
24	Net Position (50% CONE)	(\$23)	\$0	\$3	\$3	\$1	\$3	(\$0)	\$5	(\$12)	(\$7)	(\$8)	(\$8)	(\$8)	(\$6)	(\$5)	(\$28)
25	Net Position (75% CONE)	\$5	\$0	\$3	\$3	\$1	\$3	(\$0)	\$9	(\$5)	\$0	(\$1)	(\$1)	(\$0)	\$2	\$3	(\$25)
26	Net Position (100% CONE)	\$32	\$0	\$3	\$3	\$1	\$3	(\$0)	\$13	\$2	\$7	\$7	\$7	\$8	\$10	\$11	(\$21)

## NOTES

1 Energy value excludes variable O&amp;M and reagent

2 Avoided O&amp;M includes both variable and fixed O&amp;M as well as reagent (PSCR expense); avoided O&amp;M costs are offset by increased normals at Karn 3/4 and Campbell 3

3 Avoided capital costs are economic carrying charge (represent revenue requirements), avoided capital costs are offset by increased capital at Karn 3/4



MICHIGAN PUBLIC SERVICE COMMISSION

Consumers Energy Company

Case No.: U-18322

Exhibit: A-91 (TPC-6)

Witness: TPClark

Date: March 2017

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PROPRIETARY AND CONFIDENTIAL

CAMPBELL 2 EARLY RETIREMENT EVALUATION

<u>Line</u>		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	
	<b>EARLY RET CAMPBELL 2 MAY 31, 2021</b>	NPV	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	
1	Lost Energy Value <sup>1</sup>	\$85	\$0	\$0	\$0	\$0	\$7	\$10	\$10	\$14	\$17	\$18	\$22	\$23	\$26	\$28	\$9	
2	Avoided O&M and Property Tax <sup>2</sup>	(\$99)	\$0	\$0	\$1	\$1	(\$10)	(\$21)	(\$22)	(\$19)	(\$20)	(\$20)	(\$22)	(\$21)	(\$21)	(\$21)	(\$10)	
3	Avoided Capital (ECC) <sup>3</sup>	(\$143)	\$1	\$4	\$3	\$2	\$1	(\$19)	(\$26)	(\$28)	(\$30)	(\$33)	(\$35)	(\$38)	(\$40)	(\$42)	(\$44)	
4	Lost Capacity Value (0% CONE)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
5	Lost Capacity Value (25% CONE)	\$49	\$0	\$0	\$0	\$0	\$5	\$9	\$9	\$10	\$10	\$10	\$10	\$10	\$11	\$11	\$5	
6	Lost Capacity Value (50% CONE)	\$98	\$0	\$0	\$0	\$0	\$10	\$18	\$19	\$19	\$19	\$20	\$20	\$21	\$21	\$22	\$9	
7	Lost Capacity Value (75% CONE)	\$147	\$0	\$0	\$0	\$0	\$16	\$27	\$28	\$29	\$29	\$30	\$31	\$31	\$32	\$33	\$14	
8	Lost Capacity Value (100% CONE)	\$195	\$0	\$0	\$0	\$0	\$21	\$36	\$37	\$38	\$39	\$40	\$41	\$42	\$43	\$44	\$18	
9	Net Position (0% CONE)	(\$158)	\$1	\$4	\$4	\$4	(\$2)	(\$29)	(\$38)	(\$33)	(\$33)	(\$35)	(\$36)	(\$36)	(\$35)	(\$36)	(\$45)	
10	Net Position (25% CONE)	(\$109)	\$1	\$4	\$4	\$4	\$4	(\$20)	(\$29)	(\$23)	(\$23)	(\$25)	(\$26)	(\$25)	(\$25)	(\$25)	(\$40)	
11	Net Position (50% CONE)	(\$60)	\$1	\$4	\$4	\$4	\$9	(\$11)	(\$20)	(\$14)	(\$13)	(\$15)	(\$15)	(\$15)	(\$14)	(\$14)	(\$36)	
12	Net Position (75% CONE)	(\$11)	\$1	\$4	\$4	\$4	\$14	(\$2)	(\$10)	(\$4)	(\$4)	(\$5)	(\$5)	(\$4)	(\$3)	(\$3)	(\$31)	
13	Net Position (100% CONE)	\$37	\$1	\$4	\$4	\$4	\$19	\$7	(\$1)	\$5	\$6	\$5	\$5	\$6	\$7	\$8	(\$27)	
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	
	<b>EARLY RET CAMPBELL 2 MAY 31, 2023</b>	NPV	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	(\$M)	
14	Lost Energy Value <sup>1</sup>	\$72	\$0	\$0	\$0	\$0	\$0	\$0	\$7	\$14	\$17	\$18	\$22	\$23	\$26	\$28	\$9	
15	Avoided O&M and Property Tax <sup>2</sup>	(\$70)	\$0	\$0	\$1	\$1	\$2	\$0	(\$12)	(\$19)	(\$19)	(\$19)	(\$22)	(\$20)	(\$20)	(\$21)	(\$9)	
16	Avoided Capital (ECC) <sup>3</sup>	(\$120)	\$1	\$2	\$3	\$2	\$3	\$0	(\$6)	(\$28)	(\$30)	(\$33)	(\$35)	(\$38)	(\$40)	(\$42)	(\$44)	
17	Lost Capacity Value (0% CONE)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
18	Lost Capacity Value (25% CONE)	\$37	\$0	\$0	\$0	\$0	\$0	\$0	\$5	\$10	\$10	\$10	\$10	\$10	\$11	\$11	\$5	
19	Lost Capacity Value (50% CONE)	\$74	\$0	\$0	\$0	\$0	\$0	\$0	\$11	\$19	\$19	\$20	\$20	\$21	\$21	\$22	\$9	
20	Lost Capacity Value (75% CONE)	\$111	\$0	\$0	\$0	\$0	\$0	\$0	\$16	\$29	\$29	\$30	\$31	\$31	\$32	\$33	\$14	
21	Lost Capacity Value (100% CONE)	\$148	\$0	\$0	\$0	\$0	\$0	\$0	\$22	\$38	\$39	\$40	\$41	\$42	\$43	\$44	\$18	
22	Net Position (0% CONE)	(\$118)	\$1	\$2	\$4	\$4	\$5	\$0	(\$11)	(\$32)	(\$32)	(\$34)	(\$35)	(\$35)	(\$35)	(\$35)	(\$45)	
23	Net Position (25% CONE)	(\$81)	\$1	\$2	\$4	\$4	\$5	\$0	(\$5)	(\$23)	(\$23)	(\$24)	(\$25)	(\$24)	(\$24)	(\$24)	(\$40)	
24	Net Position (50% CONE)	(\$44)	\$1	\$2	\$4	\$4	\$5	\$0	\$0	(\$13)	(\$13)	(\$14)	(\$15)	(\$14)	(\$13)	(\$13)	(\$35)	
25	Net Position (75% CONE)	(\$7)	\$1	\$2	\$4	\$4	\$5	\$0	\$6	(\$4)	(\$3)	(\$4)	(\$5)	(\$4)	(\$3)	(\$2)	(\$31)	
26	Net Position (100% CONE)	\$30	\$1	\$2	\$4	\$4	\$5	\$0	\$11	\$6	\$7	\$6	\$6	\$7	\$8	\$9	(\$26)	

NOTES

1 Energy value excludes variable O&M and reagent

2 Avoided O&M includes both variable and fixed O&M as well as reagent (PSCR expense); avoided O&M costs are offset by increased normals at Karn 3/4 and Campbell 3

3 Avoided capital costs are economic carrying charge (represent revenue requirements), avoided capital costs are offset by increased capital at Karn 3/4

Case No. U-17032  
Exhibit S-2 (BJ-2)  
Witness: Bonnie Janssen

STATE OF MICHIGAN  
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion )  
to initiate a proceeding to establish a state )  
compensation mechanism for alternative electric )  
supplier capacity in INDIANA MICHIGAN )  
POWER COMPANY's Michigan service territory )  
\_\_\_\_\_ )

Case No. U-17032

Indiana Michigan Power Company (I&M) hereby submits the following Audit Responses:

Request No.: BJ-02  
Auditor: Janssen, B.

**MPSC Audit Request**

1. Please provide a definition of Capacity Power Supply.

**Response:**

Capacity Power Supply charges are the retail power supply charges for costs incurred by I&M in order to meet its customers' capacity needs.

Capacity represents the need to have adequate generating resources to ensure that the demand for electricity can be met at all times. A utility or other supplier is required to have the resources to meet its customers' demand plus a reserve amount.

2. Please provide a definition of Non-Capacity Power Supply.

**Response:**

Non-Capacity Power Supply charges are the retail power supply charges for generation and transmission costs that are not included as Capacity Power Supply charges.

MPSC Staff's Answer to Energy Michigan, Inc.'s First Discovery Request  
MPSC Case No. U-17032

Question

For Bonnie Janssen:

1. Please describe the cost allocation mechanism in the Cost of Service study that is the basis for the rates proposed in your Testimony. In that description, please specify the percent of the production related costs allocated by peak demand, the percentage allocated by on-peak energy use, and the percentage allocated by total energy use.

Answer

1. The basis for the cost allocation mechanism in I&M's Cost of Service Study (COSS) can be found in the testimony submitted in I&M's previous rate cases, specifically MPSC Case Nos. U-16180 and U-16810. For further information on the COSS, refer to I&M witness David Roush's testimony, in Case No. U-16180, pages 7-18, which utilized a 2010 test year, <http://efile.mpsc.state.mi.us/efile/docs/16180/0003.pdf>; and refer to I&M witness Nancy Heimberger's testimony, in Case No. U-16801, pages 9-15, which utilized a 2012 test year, <http://efile.mpsc.state.mi.us/efile/docs/16801/0003.pdf>. In I&M's last two rate cases, Staff agreed with the Company's proposed cost of service study, as reference in my testimony in both cases. See <http://efile.mpsc.state.mi.us/efile/docs/16180/0061.pdf> and <http://efile.mpsc.state.mi.us/efile/docs/16801/0039.pdf>.

I&M filed its COSS pursuant to the Commission's guidelines established in Case No. U-4771. Since I&M has approximately 130,000 Michigan customers, it is not required to follow the 50-25-25 COSS specific requirements for the larger utilities as specified in PA 286.

The apportionment methods shall consist of the following as set in the Case No. U-4771 guidelines:

1. Average 12 monthly peak demands.
2. Production and transmission plant assigned as 75% demand-related and 25% energy-related.
3. Specific distribution plant, such as meters and service drops, used exclusively for a given customer shall be treated as

MPSC Staff's Answer to Energy Michigan, Inc.'s First Discovery Request  
MPSC Case No. U-17032

customer-related. All other distribution plant shall be treated as demand-related.

Prior to following the above-specified apportionment method, I&M costs must first be separated into the three jurisdictions: Indiana, Michigan, and FERC (wholesale). The jurisdictional separation study (JSS) apportions the production and transmission to the three entities as 100% demand-related. From that JSS, the Michigan costs and revenues are further separated in the COSS. Within the COSS, the production and transmission costs are apportioned as 75% demand-related and 25% energy-related.

Respondent: Bonnie Janssen

**MICHIGAN PUBLIC SERVICE COMMISSION**  
Consumers Energy Company

Case No.: U-18322  
 Exhibit: A-94 (JCA-10)  
 Witness: JCAponte  
 Date: September 2017  
 Page 1 of 1

General Service Self Generation Rate GSG-2  
 Historic Demand and Sales

<u>Line</u>	<u>Description</u> <u>(a)</u>	<u>2014</u> <u>(b)</u>	<u>2015</u> <u>(c)</u>	<u>2016</u> <u>(d)</u>	<u>Average</u> <u>Factor</u> <u>(e)</u>	<u>Test Year</u> <u>(f)</u>
1	Coincident Peak Demand June	0	4,943	4,183	0.00008086	2,680
2	Coincident Peak Demand July	0	-	4,433	0.00004511	1,495
3	Coincident Peak Demand August	0	-	4,526	0.00004606	1,526
4	Coincident Peak Demand September	0	2,690	4,387	0.00006548	2,170
5	Total 4 Coincident Peak Demand (kW)	0	7,633	17,528		7,872
6	Total Sales (kWh)	69,424,063	43,020,022	32,756,111		33,143,597
7	Sales On Peak Summer (kWh)	16,887,480	5,369,702	5,559,499	0.17926459	5,941,473
8	Sales On Peak Summer / Total Sales	24%	12%	17%		18%

Source: HistoricData tab Exhibit A-11 (JCA-3) & 2016 Load Study

18322-AG-CE-149

Question:

18. Refer to page 7, lines 7-10, of Mr. Bordine's direct testimony. Please provide the latest RAE outcomes and projections for 2015, 2016, 2017 and 2018 based on the Company's actual and proposed O&M and capital expenditures in this case.

Response:

The RAE does not produce projections as suggested in this interrogatory but rather The RAE database assembles data from numerous Company data sources such as Order Mapping and Routing (OMAR), Outage Management System (OMS), Automated Resource Call Out System (ARCOS), Forestry, Breaker Trip Failure (BTF), etc. Internally, it is a combination of raw data tables and several derived base tables. These base tables arrange the data in a manner that allows key metrics (SAIFI, CAIDI, CEMI, etc.) to be calculated at a system and subsystem level, such as headquarter, circuit, customer, and time-of-day. The outputs from the RAE database include, but are not limited to, dispatch reports, operation reports, reliability metric reports, and on demand analysis. The attachment labeled 18322-AG-CE-149 Attachment A is an output from the RAE database showing the historical reliability performance by circuit which is used to determine investment planning for the next year. The attached report was utilized for 2017 LVD Lines Reliability planning. This analysis will be done by the end of the 3<sup>rd</sup> quarter of 2017 for planning the 2018 projects. Attachment B is a report utilized to determine which circuits are experiencing repetitive outages to target for investments in 2017. The Repetitive Outage program addresses areas of consistently recurring customer outages on a reactive and proactive basis. Investments are targeted at improving the Same Circuit Repetitive Interruptions index. This report is analyzed on an ongoing basis in order to improve the performance of circuits with repetitive outages.



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Andrew J. Bordine  
June 26, 2017

Customer Management and Grid Infrastructure Department

18322-AG-CE-149 Attachment A  
Circuit Priority Rankings by SAIDI - LVD Only

		2016 YTD												2015												
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	Highest 2yr Percentile	2016 Ranking				
010001	GRA	WEALTHY STREET	15.89	2001	1,038.115	2,956.880	28	14,729	2,862	355,840	2,601,040	0.00%	402.211	1,145,625	28	5,946	2,848	365,689	779,936	0.90%	0.90%	3				
033602	CAD	LAKE CITY	193.70	2011	457.652	966.890	72	8,297	1,904	236,747	630,143	2.00%	454.174	860,301	88	6,570	1,894	243,183	617,107	1.90%	2.00%	5				
107502	CLR	OBERLIN	143.00	2016	432.888	1,191.352	71	7,265	2,783	345,980	845,372	0.00%	134.460	370,049	87	1,493	2,752	353,336	16,712	30.00%	30.00%	213				
140401	WBR	ALGER	117.86	2007	328.657	1,329.381	96	6,376	4,087	508,081	821,300	1.20%	186.728	755,296	132	3,870	4,045	519,315	225,982	7.60%	7.60%	32				
042301	WBR	GERRISH	93.89	2014	413.963	847.230	46	5,733	2,045	254,289	592,941	2.30%	376.499	770,554	58	5,265	2,047	262,762	507,792	2.80%	2.80%	9				
024103	GRA	DOEHLER JARVIS	21.53	2011	59.604	221.955	48	5,730	3,731	463,895	-241,940	98.40%	53.779	200,266	54	1,930	3,724	478,095	-277,829	99.20%	99.20%	1668				
050301	GRN	NORTH PARK	27.09	1998	374.717	1,011.815	49	5,596	2,708	336,649	675,166	1.80%	138.188	373,137	33	3,019	2,700	346,674	26,463	28.50%	28.50%	195				
103503	GRA	KNAPP	18.90	2002	287.425	713.675	29	5,209	2,489	309,495	404,181	5.00%	158.322	393,114	17	1,469	2,483	318,787	74,327	19.50%	19.50%	114				
107501	CLR	OBERLIN	112.46	2006	386.004	675.771	50	4,888	1,750	217,608	458,163	3.70%	162.336	284,200	54	1,860	1,751	224,766	59,433	21.80%	21.80%	131				
093801	KAL	RIX ROAD	25.66	2016	171.946	389.792	16	4,879	2,280	283,459	106,333	15.60%	0.981	2,224	12	24	2,267	291,048	-288,824	99.40%	99.40%	1672				
039602	WBR	HOUGHTON HEIGHTS	99.51	2011	664.474	2,192.031	71	4,607	3,312	411,811	1,780,220	0.20%	139.028	458,639	88	2,919	3,299	423,537	35,102	26.30%	26.30%	173				
057402	TRA	PENINSULA	112.91	2010	210.129	448.803	44	4,516	2,149	267,179	181,624	10.30%	95.552	204,083	79	1,256	2,136	274,216	-70,133	66.80%	66.80%	908				
032404	BIG	HOWARD CITY	67.88	1988	321.765	639.076	38	4,513	1,995	248,008	391,069	5.20%	452.013	897,769	24	4,432	1,986	254,998	642,771	1.60%	5.20%	20				
032501	GRA	BOSTON SQUARE	9.60	2006	371.097	740.416	17	4,460	1,993	247,798	492,617	3.40%	41.257	82,316	17	766	1,995	256,160	-173,844	93.20%	93.20%	1515				
126301	WBR	SPRUCE ROAD	75.99	1988	940.462	1,472.071	59	4,433	1,540	191,468	1,280,603	0.40%	1,035.856	1,621,387	77	6,857	1,565	200,960	1,420,426	0.10%	0.40%	1				
061301	ALM	RIVERDALE	56.00	2001	837.055	1,009.708	42	4,420	1,208	150,187	859,522	0.90%	152.836	184,360	48	962	1,206	154,869	29,491	27.70%	27.70%	186				
137101	GVL	CLYDE ROAD	47.24	2006	776.331	806.853	33	4,339	1,049	130,446	676,408	1.80%	334.812	347,975	39	1,402	1,039	133,435	214,540	8.70%	8.70%	36				
048502	BIG	RODNEY	93.15	2001	369.598	618.621	29	4,318	1,722	214,068	404,553	4.90%	146.010	251,184	57	838	1,720	220,967	30,317	27.20%	27.20%	182				
017902	WBR	STANDISH	138.06	2005	752.779	831.266	48	4,219	2,204	274,011	557,255	2.60%	332.803	367,502	35	2,204	1,104	141,774	225,729	8.20%	8.20%	34				
155802	GRA	PEARLINE	32.44	1988	137.769	354.783	23	4,124	2,924	363,496	-8,713	38.40%	131.675	339,091	15	2,488	2,575	330,625	8,466	32.70%	38.40%	323				
019602	BCK	CONVIS	83.65	2006	691.862	729.478	65	4,098	1,057	131,408	598,070	2.30%	439,929	463,847	77	2,127	1,054	135,368	328,479	5.20%	5.20%	20				
033803	CLR	HARRISON	30.31	2007	536.454	886.872	29	4,006	1,676	208,402	678.470	1.70%	146.708	242,536	36	1,704	1,653	212,252	30,284	27.30%	27.30%	183				
025103	MUS	NORTH MUSKEGON	26.36	2016	688.347	1,265.074	35	3,983	1,833	227.855	1,037,219	0.50%	132.824	244,110	30	824	1,838	235,956	8,153	32.80%	32.80%	243				
026502	HST	GUN LAKE	38.89	2006	686.795	776.114	39	3,964	1,136	141,183	634,931	1.90%	482.914	545,714	26	3,540	1,130	145,085	400,630	4.20%	4.20%	16				
141201	WBR	BACKUS	114.09	1988	446.913	2,477.641	68	3,953	1,549	691,553	1,786,087	0.10%	100.824	558,957	107	2,979	5,544	711,768	-152,811	90.00%	90.00%	1445				
024105	GRA	DOEHLER JARVIS	6.61	1988	434.109	648.650	32	3,844	1,496	186,011	462,639	3.70%	30.364	45,370	16	240	1,494	191,838	-146,468	88.60%	88.60%	1408				
009801	FLT	PORTER	14.03	2009	460.461	772.290	13	3,843	1,677	208,506	563,784	2.60%	8.359	14,019	5	108	1,677	215,333	-201,314	96.30%	96.30%	1586				
115004	LAN	GRAND RIVER	13.94	2011	680.141	852.002	16	3,748	1,293	160,806	691,196	1.60%	0.708	887	2	7	1,253	160,829	-159,942	91.20%	91.20%	1474				
054101	GRA	MOLINE	25.03	1997	631.151	482.000	22	3,719	770	95,773	386,227	5.30%	267.175	204,038	8	633	764	98,048	150,990	15.50%	15.50%	80				
013801	WBR	SMALLWOOD DAM	43.15	2007	1,364.065	1,724.321	25	3,708	1,272	158,176	1,566,145	0.20%	529.040	668,762	48	3,583	1,264	162,696	506,466	2.80%	2.80%	9				
136805	GRE	BROADMOOR	17.50	2011	292.465	525.405	6	3,686	1,871	225,938	299,468	6.80%	160.733	288,753	11	669	1,796	230,245	58,108	22.20%	22.20%	137				
086003	GRE	KENTWOOD	25.11	2016	115.680	370.232	29	3,685	3,201	397,926	-27,694	46.40%	8.574	27,442	18	186	3,200	410,901	-383,459	100.00%	100.00%	1688				
129401	JAC	BROUGHWELL	147.00	2011	275.124	753.797	74	3,683	2,251	342,407	411,390	4.70%	342.450	938,259	122	3,813	2,740	351,762	586,497	2.10%	4.70%	18				
022202	GVL	COWAN LAKE	67.86	2006	362.333	540.391	67	3,633	1,422	176,778	363,613	5.40%	128.229	191,243	58	1,309	1,491	191,480	-237	36.30%	36.30%	287				
037101	HST	DELTON	59.29	2006	423.869	592.653	37	3,630	1,407	174,953	417,700	4.70%	396.984	554,739	38	2,638	1,401	179,851	374,888	4.70%	4.70%	19				
127302	WBR	WHITTEMORE	178.83	2015	479.677	1,121.963	34	3,607	2,364	292,672	829,292	1.00%	1,079,674	300,299	72	6,017	2,339	300,299	778,776	0.90%	1.00%	4				
095201	GVL	PECK ROAD	13.88	2003	452.706	329.522	22	3,606	735	91,324	238,199	8.50%	56.174	40,889	12	473	728	93,453	-52,564	59.90%	59.90%	762				
010701	GRE	MEADOW BROOKE	32.10	2006	543.419	588.352	12	3,573	1,167	145,063	433,288	4.20%	58.053	62,853	21	489	1,083	139,003	-76,150	69.10%	69.10%	953				
030201	MUS	HOLTON	119.30	2009	348.254	621.010	78	3,564	1,790	222.515	398,495	5.00%	196.424	350,265	51	2,069	1,783	228,942	121,323	14.20%	14.20%	65				
039601	CAD	HOUGHTON HEIGHTS	125.83	2009	755.734	1,657.682	48	3,547	2,203	1,383,783	1,983,783	0.30%	259.091	568,310	48	4,324	2,193	281,615	286,695	5.90%	5.90%	25				
108201	BCK	GOODALE	15.18	2009	537.681	749.074	21	3,492	1,404	174,527	574,547	2.40%	39.230	54,653	26	331	1,393	178,864	-124,211	83.80%	83.80%	1285				
098203	GRA	LEFFINGWELL	5.79	1994	1,318.395	487.806	32	3,478	370	45,992	441,814	4.20%	1													



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Circuit Priority Rankings by SAIDI - LVD Only

		2016 YTD																				2015												2016 Ranking
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	Highest 2yr Percentile													
122102	WBR	WIRTZ ROAD	33.60	2014	987.304	1,374,276	24	2,522	1,395	173,428	1,200,848	0.40%	129.951	180,885	11	1,584	1,392	178,709	2,176	35.20%	35.20%	273												
021801	JAC	WILDWOOD	2.65	2005	4,823.036	908,253	28	2,513	1,408	174,992	733,261	1.50%	199.634	37,594	7	382	188	24,177	13,417	31.20%	31.20%	225												
003901	ADR	MAUMEE	12.94	2016	165.161	274,541	23	2,511	1,669	207,505	67,035	19.90%	20.858	34,671	23	176	1,662	213,414	-178,743	94.00%	94.00%	1531												
050202	GRA	WYOMING PARK	9.39	2016	206.068	193,367	9	2,503	939	116,790	76,577	18.50%	501.841	470,912	20	3,916	938	120,475	350,437	4.90%	18.50%	103												
160201	BIG	BARRYTOWN	37.09	2011	935.032	618,893	27	2,496	668	63,001	535,892	2.80%	348.270	230,518	33	1,689	662	84,979	154,539	12.20%	12.20%	215												
033903	SAG	BURROWS	16.87	2009	132.130	271,632	34	2,479	2,062	256,292	15,341	30.20%	493.942	1,013,591	20	2,485	2,056	263,938	749,653	1.00%	30.20%	54												
157004	FLT	MILBOURNE	9.78	1988	658.156	643,503	21	2,446	981	121,907	521,597	3.10%	295.301	288,726	38	818	978	125,529	163,197	11.10%	11.10%	144												
028302	GRN	CEDAR SPRINGS	65.94	2010	387.066	646,401	32	2,441	1,707	212,190	434,211	4.40%	48.980	81,797	35	452	1,670	214,407	-132,610	85.80%	85.80%	1534												
155002	WBR	SMITH CREEK	25.21	1988	578.431	576,574	31	2,432	998	124,105	452,469	3.90%	182.729	182,142	29	1,12	997	127,975	54,167	22.90%	22.90%	203												
070801	GRA	MICHIGAN	8.88	1988	158.453	257,661	11	2,430	1,628	202,395	155,266	21.50%	141.514	230,116	10	2,905	1,626	208,772	21,344	29.20%	29.20%	162												
048001	BNC	PELLSTON	37.12	2009	578.626	406,835	31	2,417	1,073	133,416	273,418	7.20%	185.687	130,557	34	1,711	703	90,270	40,287	25.10%	25.10%	248												
094602	FLT	NEWARK	49.86	2010	366.474	407,133	24	2,407	1,143	142,119	265,015	7.50%	133.335	148,128	31	860	1,111	142,632	5,496	33.40%	33.40%	56												
008001	WBR	ALCONA DAM	107.15	1988	226.521	326,154	60	2,402	1,446	146,340	124,400	12.40%	253.451	364,930	76	1,370	1,440	184,858	180,072	10.00%	12.40%	386												
057303	BIG	OHMAN ROAD	74.72	2011	251.794	259,494	38	2,360	986	122,574	136,919	13.00%	114.618	118,123	31	687	1,031	132,314	-14,191	42.30%	42.30%	328												
042501	BRO	KINDERHOOK	87.17	2009	214.172	405,924	38	2,353	1,907	237.140	168,784	11.00%	125.233	237,355	42	1,186	1,895	243,335	-5,980	38.60%	38.60%	1542												
093802	KAL	RIX ROAD	53.73	2012	129.650	214,073	34	2,340	1,667	207,270	6,803	32.20%	16.634	27,465	19	310	1,651	211,988	-184,523	94.40%	94.40%	833												
048501	BIG	RODNEY	64.47	2012	74.248	98,222	29	2,333	1,334	165,792	-67,570	63.20%	288.722	381,948	32	1,196	1,323	169,843	212,105	8.90%	63.20%	191												
154301	GVL	HARVARD LAKE	83.86	1988	268.474	456,688	73	2,275	1,795	223,104	233,584	8.70%	145.047	246,732	78	1,385	1,701	218,394	28,338	28.10%	28.10%	33												
060601	KAL	BREEDSVILLE	105.00	2010	411.420	639,217	74	2,274	1,571	195,315	443,902	4.10%	274.447	426,403	65	2,205	1,554	199,474	226,930	8.10%	8.10%	1087												
054102	GRA	MOULNE	74.70	2012	330.822	577,736	33	2,265	1,784	221,809	355,928	5.50%	74.868	130,746	42	2,043	1,746	224,212	-93,468	75.10%	75.10%	847												
161902	GRE	EMERSON	49.69	1988	641.868	606,295	47	2,264	909	112,968	493,307	3.30%	62.951	95,463	30	275	945	121,272	-61,810	64.00%	64.00%	1394												
020903	WBR	ST HELEN	40.38	1988	85.408	143,108	20	2,259	1,889	209,952	-68,845	62.90%	41.479	69,501	20	189	1,676	215,124	-145,822	88.20%	88.20%	29												
127002	WBR	RANGER LAKE	53.72	1988	374.974	474,756	42	2,252	1,276	158,686	316,070	6.50%	462.633	585,742	43	2,256	1,266	162,552	423,190	3.60%	6.50%	1449												
134002	BCK	ALDER CREEK	90.16	2008	512.978	581,501	61	2,251	1,137	141,307	440,193	4.30%	356.541	404,167	61	1,801	1,134	145,538	258.630	6.70%	6.70%	251												
079301	KAL	RAVINE	14.05	2013	221.172	273,368	26	2,222	1,256	156.148	117,221	14.50%	3.778	4,670	8	49	1,236	158,687	-154,017	90.10%	90.10%	1510												
039502	GRN	ROCKFORD	14.91	1997	487.746	545,171	14	2,211	1,126	139,933	-405,298	4.90%	132.787	148,421	11	1,069	1,118	143,504	4,917	33.70%	33.70%	108												
049905	GRA	STANDALE	22.48	1996	109.808	209,380	15	2,210	1,025	239.371	293.990	47.30%	31.456	59.980	18	217	1,907	244.808	-184.828	94.40%	94.40%	1542												
039201	JAC	MORRELL	25.00	2012	564.110	1,059,487	18	2,147	1,885	234.333	825.155	1.00%	36.465	68,486	16	162	1,878	241,132	-172,646	93.00%	93.00%	41												
158202	WBR	RYNO	75.33	1988	835.750	1,092,413	21	2,140	1,318	163,901	928,511	0.60%	188.196	245,992	35	1,618	1,307	167,816	78,176	19.10%	19.10%	230												
127702	MDL	LEVELY	97.59	2008	223.377	438,712	55	2,128	1,969	244,769	193,943	9.80%	521.486	1,024,199	83	6,921	1,964	252,153	772,045	1.00%	9.80%	1580												
054403	LUD	ORIOLE	42.18	2007	205.879	375,653	31	2,118	1,840	228,725	146,928	12.40%	135.055	246,421	50	2,056	1,825	234,260	12,161	31.50%	31.50%	23												
032101	MDL	ASHMAN	11.10	2014	281.593	469,846	13	2,114	1,731	215,141	254,705	7.90%	9.094	15,174	7	53	1,669	214,218	-199,044	96.00%	96.00%	194												
078801	BEN	HONOR	63.10	2010	572.370	471,994	21	2,100	876	108,847	363,148	5.50%	603.415	497,595	50	3,329	825	105,873	391,723	4.40%	5.50%	1477												
100802	CAD	HARRIETTA	131.47	2006	141.840	196,165	49	2,094	1,387	172,447	23,719	28.30%	383.859	530,877	55	2,487	1,383	177,560	353,317	4.90%	28.30%	1037												
044202	MUS	MONTAGUE	46.66	2006	161.335	213,464	37	2,088	1,328	165.138	48,326	22.50%	5.738	7,591	21	63	1,323	169,870	-162,279	91.40%	91.40%	169												
138302	HML	MILL GROVE	44.29	2015	420.144	465,232	31	2,086	1,119	139,076	326,156	6.30%	49.587	54,908	37	483	1,107	142,166	-87,258	72.80%	72.80%	89												
115501	TRA	MAPLE CITY	99.09	2012	220.436	266,716	27	2,082	1,215	151,083	115,632	14.60%	158.536	191,820	44	1,263	1,210	155,342	36,478	26.00%	26.00%	17												
091101	LUD	SCOTTYVILLE	44.14	2012	395.658	470,541	15	2,076	1,196	148,662	321,879	6.30%	227.301	270,321	37	2,495	1,189	152,687	117,634	14.60%	14.60%	79												
078802	BEN	HONOR	103.05	2006	173.526	385,757	55	2,065	2,239	278.368	107,389	15.40%	213.308	474,195	81	2,980	2,223	285,413	188,783	9.70%	15.40%	8												
151602	WBR	HUBBARD LAKE	62.52	1988	1,627.263	1,000,167	43	2,064	620	77.138	923,029	0.70%	1,007.237	119,080	41	1,523	615	78,911	540,169	2.60%	2.60%	71												
145102	WBR	NOBLE	39.87	2015	210.515	349,266	29	2,062	1,665	207,008	142,258	12.80%	197.266	327.286	27	1,296	1,659	213,099	114,277	14.80%	14.80%	1439												
159501	GRA	PEARLINE	26.22	1988	431.783	603,451	11	2,051	1,412	175.594	427.857	4.60%	19.467	27,206	14	218	1,398	17																



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Circuit Priority Rankings by SAIDI - LVD Only

2016 SAIDI 124  
2015 SAIDI 128

2016 YTD															2015															Highest 2yr Percentile	2016 Ranking
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile											
109802	HML	PIGEON LAKE	60.29	2007	357.169	347.055	23	1,824	975	121,213	225,842	8.70%	123.733	120,230	29	693	972	124,752	-4,522	37.90%	37.90%	314									
057302	BIG	OHMAN ROAD	37.32	2001	603.230	417.880	23	1,788	661	82,235	335,644	6.00%	87.637	60,709	19	321	693	88,939	-28,230	49.10%	49.10%	530									
004801	JAC	PARMA	68.94	2015	186.453	174,009	18	1,780	941	117,019	56,990	21.40%	259.739	242,405	40	2,117	933	119,819	122,585	14.10%	21.40%	125									
020502	WBR	WEST BRANCH	25.73	1998	728.436	593,023	19	1,773	816	101,453	491,571	3.40%	626.185	509,781	17	1,152	814	104,521	405,260	4.10%	4.10%	14									
070603	GRA	BOWEN	11.10	2014	41.904	59.808	8	1,760	1,427	177,465	-117,658	82.20%	11.872	16,945	2	64	1,427	183,243	-166,238	92.00%	92.00%	1491									
100301	BIG	NINETEEN MILE ROAD	64.35	2015	183,847	193,891	34	1,758	1,057	131,466	62,424	20.60%	87.161	91,923	30	548	1,055	135,402	-43,479	55.70%	55.70%	663									
048301	HST	AUBIL LAKE	98.63	2011	106,711	229,497	54	1,756	2,226	276,785	-47,288	54.70%	121,716	261,767	48	3,515	2,151	276,115	-14,347	42.50%	54.70%	645									
040101	OWS	ELSIE	49.42	2006	266,411	151,910	18	1,748	572	71,053	80,857	18.00%	228.865	130,501	10	512	570	73,208	57,293	22.30%	22.30%	139									
035002	MUS	FRUITPORT	42.42	2005	458.115	719,120	43	1,739	1,518	188,674	530,446	2.80%	91.942	144,324	44	1,133	1,570	201,535	-57,211	62.20%	62.20%	811									
041402	LAN	BATH	43.11	2010	329,542	443,997	17	1,738	1,369	170,150	273,847	7.10%	19.576	26,376	14	126	1,347	172,979	-146,603	88.70%	88.70%	1410									
024802	GVL	EASTON	56.52	2005	490,913	657,487	29	1,738	1,347	167,448	490,400	3.50%	157.602	211,079	41	1,180	1,339	171,952	39,127	25.50%	25.50%	166									
064401	BNC	WALLOON	23.79	2015	886.456	657,844	26	1,710	749	93,058	564,786	2.50%	1,098.380	815,113	63	3,789	742	95,277	719,836	1.20%	2.50%	7									
127701	MDL	LEVELY	77.88	2007	190,766	531,634	22	1,710	2,813	349,775	181,859	10.20%	47.952	133,634	35	679	2,787	357,796	-224,162	98.00%	98.00%	1632									
048602	BCK	MORGAN	56.43	2011	251,528	329,687	45	1,707	1,315	163,528	166,159	11.30%	239.610	314,066	48	2,018	1,311	168,282	145,784	12.10%	12.10%	52									
021802	JAC	WILDWOOD	17.75	2003	461,722	763,104	19	1,696	1,131	140,575	622,530	2.10%	197.503	326,420	16	2,088	1,653	212,191	114,229	14.80%	14.80%	71									
080901	BCK	FIFTEEN MILE ROAD	30.38	2004	594,742	372,496	34	1,690	628	78,087	294,409	6.80%	364.712	228,425	43	1,595	626	80,411	148,013	11.90%	11.90%	51									
138303	HML	MILL GROVE	81.52	1988	222,507	222,916	40	1,686	1,009	125,394	97,522	16.40%	423.298	424,078	53	1,689	1,002	126,624	295,453	5.50%	16.40%	86									
069802	FLT	HOGAN ROAD	54.82	1988	363,927	472,090	28	1,685	1,304	162,141	309,949	6.50%	55.914	72,533	16	520	1,297	166,546	-94,013	75.20%	75.20%	1089									
035802	ADR	FRONTIER	6.77	2007	507,895	350,180	15	1,680	699	86,933	263,247	7.60%	148.572	102,437	35	422	689	88,520	13,917	30.90%	30.90%	220									
010007	GRA	WEALTHY STREET	7.62	2014	127,061	102,003	12	1,676	803	99,876	2,127	33.60%	17.134	13,755	10	106	803	103,068	-89,314	73.40%	73.40%	1050									
124501	WBR	CEDAR LAKE	59.02	2010	320,101	545,065	35	1,672	1,712	212,897	332,168	6.10%	212.499	361,841	36	1,458	1,703	218,617	143,224	12.50%	12.50%	57									
084102	OWS	LOVEJOY	80.60	2009	354,452	385,103	38	1,670	1,091	155,628	249,475	8.00%	167.292	181,759	53	1,275	1,086	139,490	42,269	24.90%	24.90%	159									
031303	GRA	RIVERTOWN	14.30	1988	126.196	198.645	7	1,657	1,575	158.645	2,859	33.40%	54.102	85,162	7	464	1,574	202,096	-116,934	82.10%	82.10%	1244									
114501	ADR	CADMUS	7.74	2014	267,800	218,807	13	1,641	819	101,819	116,988	14.60%	102.667	83,884	10	662	817	104,899	-21,015	45.40%	45.40%	452									
093404	GRE	CALVIN	15.07	2009	654.191	587,188	32	1,635	1,424	176,994	410,194	4.80%	121.069	108,669	26	1,311	898	115,238	-4,569	38.90%	38.90%	333									
075704	MUS	MAPLE GROVE	9.23	1999	114,974	123,591	18	1,632	1,075	133,678	-10,887	39.00%	159.849	171,829	15	437	1,075	138,010	33,819	26.50%	39.00%	334									
088203	JAC	CARY ROAD	50.48	2009	190.097	196.600	29	1,620	1,040	129,274	190.800	10.70%	102.788	106,305	30	620	1,034	132,780	-26,475	48.20%	48.20%	508									
126302	WBR	SPRUCE ROAD	106.70	2008	455.568	710,829	47	1,616	1,565	194,550	516,280	3.10%	862.976	1,346,515	66	5,579	1,560	200,325	1,146,189	0.30%	3.10%	11									
024801	GVL	EASTON	51.54	2005	152,665	403,743	49	1,615	2,651	329,635	74,109	19.00%	225.021	595,097	60	4,338	2,645	339,538	255,559	6.80%	19.00%	107									
070701	GRA	STEVENS	7.91	1999	207.102	148,340	14	1,606	637	79,173	69,167	19.70%	172.740	123,727	7	437	716	91,959	31,768	26.90%	26.90%	178									
035103	FLT	BELSAV	19.81	2012	177.653	273.959	12	1,601	1,549	192,593	81,366	17.80%	8.425	12,992	7	24	1,542	197,987	-184,995	94.60%	94.60%	1548									
072901	CLR	EIGHT POINT	82.77	2009	291,025	695,856	44	1,597	2,404	298,895	396,961	5.10%	169.597	405,516	40	2,681	2,391	306,982	98,534	16.30%	16.30%	85									
071002	CAD	MESICK	37.90	2010	303,746	242,613	15	1,593	807	100,275	142,338	12.70%	604.062	482,486	24	1,809	799	102,548	379,938	4.50%	12.70%	58									
002002	WBR	GREENWOOD	78.94	2016	288.470	351,068	31	1,591	1,222	151,914	199,154	9.30%	590.439	718,564	58	2,343	1,217	156,248	562,316	2.40%	9.30%	39									
069803	FLT	HOGAN ROAD	34.55	2009	335,056	431,499	17	1,587	1,294	160,911	270,588	7.30%	89.151	114,813	13	449	1,288	165,343	-50,530	59.00%	59.00%	737									
100502	ALM	CHAPIN	108.60	2008	321,537	288,216	24	1,586	893	111,058	177,157	10.50%	194.514	174,356	26	1,132	896	115,083	59,274	21.90%	21.90%	133									
014801	ADR	MORENCI	28.48	2014	222,259	135,636	28	1,575	619	76,909	58,727	21.20%	143.738	87,718	20	307	610	78,350	9,368	32.40%	32.40%	238									
008801	BRO	QUINCY	66.72	2012	236,829	414,762	36	1,574	1,759	218,675	198,087	9.70%	35.445	62,076	25	581	1,751	224,847	-162,771	91.60%	91.60%	1481									
050803	GVL	BELDING	71.54	2007	119,239	180,748	26	1,574	1,524	189,474	-8,725	38.40%	270.444	409,950	45	1,695	1,516	194,615	215,334	8.70%	38.40%	323									
070002	FLT	DEAN ROAD	60.98	2006	175.867	395,460	44	1,573	2,267	281,784	113,676	14.90%	291.857	656,279	53	4,068	2,249	288,697	367,583	4.70%	14.90%	73									
087701	BNC	BAGLEY	27.70	2012	59.516	105,850	19	1,573	1,794	223,072	-117,221	81.90%	9.321	16,578	25	138	1,779	228,341	-211,762	97.20%	97.20%	1611									
060202	GVL	TRUFANT	38.34	2012	398.536	415,400	13	1,566	1,052	130,766	284,634	6.90%	59.742	62,270	21	725	1,042	133,820	-17,551	67.40%	67.40%	1617									
085701	LAN	COCHRAN	99.37	2008	213.728	261.063	34	1,564	1,221	151,829	109,234	15.30%																			

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				2016 YTD												2015												
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	Highest 2yr Percentile	2016 Ranking						
032103	MDL	ASHMAN	8.24	1988	250.978	299.060	15	1,294	1,190	147,988	151,072	12.00%	62,092	73,987	14	370	1,192	152,984	-78,997	70.10%	70.10%	975						
032102	MDL	ASHMAN	11.61	2015	278.420	322.337	11	1,288	1,158	143,997	178,340	10.50%	29,625	34,298	16	191	1,158	148,639	-114,341	81.50%	81.50%	1234						
060203	GVL	TRUFANT	47.58	2014	90.057	85.004	15	1,276	948	117,837	-32,833	48.40%	6,226	5,877	12	29	944	121,184	-115,307	81.70%	81.70%	1239						
036202	LUD	WASHINGTON	8.34	1988	146.063	179.781	4	1,267	1,198	148,924	30,857	25.80%	35,847	44,122	5	184	1,231	158,025	-113,903	81.30%	81.30%	1231						
029405	FLT	KEARSEY	9.51	1999	150.461	127,250	8	1,265	842	104,724	22,526	28.50%	68,391	57,841	11	575	846	108,582	-50,741	59.10%	59.10%	740						
070003	FLT	DEAN ROAD	59.22	2006	338.627	398.551	37	1,248	1,155	143,545	243,006	8.30%	131,543	150,160	43	799	1,142	146,558	3,602	34.60%	34.60%	265						
137804	GVL	SANDERSON	69.80	2008	178.076	252,502	62	1,246	1,428	177,563	74,939	18.80%	190,566	270,212	40	1,670	1,418	182,047	88,166	17.40%	18.80%	105						
048801	BEN	ARCADIA	49.66	2016	204.761	164.661	18	1,241	815	101,309	63,352	20.50%	127,009	102,135	23	907	804	103,244	-1,108	36.70%	36.70%	296						
027402	BIG	CONKLIN PARK	23.38	2012	196.363	186.669	17	1,240	955	118,674	67,995	19.80%	321,419	305,551	36	2,418	951	122,049	183,501	9.80%	19.80%	118						
098502	HML	BEECHNUT	29.45	1998	377.300	202,571	16	1,234	540	167,192	135,378	13.20%	312,309	167,677	32	1,417	537	68,931	98,747	16.20%	16.20%	83						
058101	MUS	SHELBY	15.55	1998	286.403	201,537	22	1,227	704	87,516	114,022	14.80%	38,212	26,960	12	161	704	90,344	-63,385	64.40%	64.40%	857						
135601	GRN	CANNONSBURG	44.44	1999	147.812	145,261	20	1,222	1,000	124,354	20,907	29.10%	304,272	299,019	19	1,854	983	126,171	172,848	10.80%	29.10%	202						
085801	LAN	BLUEWATER	46.80	2010	203.016	167,007	22	1,217	830	103,232	63,775	20.40%	9,171	7,545	9	56	823	105,616	-98,071	76.70%	76.70%	1123						
060103	CAD	TUSTIN	45.10	2002	450.058	232,988	31	1,217	522	64,915	168,073	11.10%	44,445	23,009	19	217	518	66,464	-43,456	55.60%	55.60%	662						
034402	GRN	HULL STREET	90.99	2008	60.184	170,920	72	1,217	2,871	356,959	-186,039	94.60%	179,358	509,366	98	3,401	2,840	364,614	144,752	12.30%	94.60%	1548						
148202	HML	TITUS LAKE	82.37	1988	150.321	183,779	31	1,215	1,091	135,680	28,098	26.50%	502,757	547,767	50	2,596	1,090	139,882	407,885	4.10%	26.50%	175						
107503	CLR	OVERLIN	66.27	1988	205.158	257,322	37	1,207	1,265	157,306	100,016	16.10%	151,010	189,407	36	900	1,254	161,032	28,375	28.00%	28.00%	189						
023507	GRA	BEALS ROAD	7.26	1998	99.391	102,546	9	1,189	1,034	128,522	-25,976	45.50%	0.737	760	6	6	1,032	132,462	-131,702	85.50%	85.50%	1325						
060602	KAL	BREEDSVILLE	46.40	2006	521.732	148,127	37	1,184	812	100,968	317,158	6.40%	159,984	128,215	40	906	801	102,893	25,322	28.70%	28.70%	198						
024202	CAD	MCBAIN	114.38	2015	153.191	178,080	25	1,173	1,165	144,860	33,220	25.20%	306,203	355,953	49	1,786	1,162	149,247	206,706	9.20%	25.20%	163						
024902	HML	BITTERSWEET	48.79	2001	206.452	139,246	30	1,169	538	66,626	72,420	19.30%	370,015	249,566	33	1,367	674	86,594	162,972	11.10%	19.30%	110						
032701	KAL	COMSTOCK	36.31	2016	115.578	192,394	28	1,165	1,673	207,970	-15,576	41.40%	17,831	29,682	19	393	1,665	213,718	-184,037	94.30%	94.30%	1539						
084201	FLT	STACEY	50.69	1999	120.171	295,336	18	1,164	2,451	304,757	-9,421	38.70%	75,280	185,011	42	1,147	2,458	315,530	-130,519	85.50%	85.50%	1325						
127001	WBR	RANGER LAKE	34.62	2015	173.751	232,260	26	1,164	1,341	166,669	65,591	20.20%	96,666	129,217	25	547	1,337	171,621	-42,403	55.00%	55.00%	651						
084101	OWS	LOVEJOY	102.05	2007	227.365	266,591	56	1,161	1,175	146,097	120,494	14.30%	109,538	128,436	40	540	1,173	150,538	-22,102	46.20%	46.20%	466						
085802	LAN	BLUEWATER	64.58	1988	228.786	172,926	29	1,145	740	91,991	80,935	17.80%	310,656	234,807	50	1,195	756	97,041	137,766	13.00%	17.80%	99						
054301	TRA	KINGSLEY	118.05	2009	81.200	136,271	49	1,144	1,691	210,168	-73,897	66.10%	509,408	654,894	35	1,699	1,678	215,462	639,433	1.70%	66.10%	893						
147201	GRA	DORR CORNERS	41.01	1988	49.289	61,643	16	1,143	1,269	157,724	-96,082	75.80%	52,371	65,496	16	302	1,251	160,566	-95,069	76.00%	76.00%	1104						
010404	CLR	GLADWIN	75.29	2011	288.145	261,969	33	1,140	913	113,564	148,405	12.30%	107,423	97,664	28	1,082	909	116,725	-19,060	44.80%	44.80%	441						
017602	MUS	WESTERN AVENUE	9.28	1999	137.906	193,068	4	1,139	596	74,102	118,966	14.40%	112,964	158,149	5	1,415	1,400	179,743	-21,594	45.80%	45.80%	456						
085601	BCK	FORT CUSTER	16.28	2002	137.498	125,355	10	1,136	911	113,309	12,046	30.80%	387,984	353,719	7	919	912	117,049	236,670	7.50%	30.80%	219						
057601	LAN	POTTERVILLE	40.42	2010	78.895	116,699	23	1,135	1,506	187,169	-70,470	64.50%	22,237	32,892	13	181	1,479	189,906	-157,014	90.70%	90.70%	1463						
070604	GRA	BOWEN	9.00	2014	79.228	88,710	3	1,134	1,122	139,449	-50,739	56.30%	8,586	9,613	12	72	1,120	143,754	-134,140	86.20%	86.20%	1347						
087702	BNC	BAGLEY	45.25	2003	100.062	187,953	39	1,133	1,891	235,052	-47,099	54.60%	70,887	133,151	24	874	1,878	241,159	-108,008	79.30%	79.30%	1185						
048202	BNC	CHEBOYGAN	22.73	2016	195.349	216,694	13	1,131	1,112	138,285	78,409	18.30%	147,236	163,323	16	563	1,109	142,416	20,908	29.20%	29.20%	203						
136002	OWS	BENNINGTON	104.34	2015	147.560	201,862	36	1,130	1,377	171,158	30,704	25.90%	147,660	201,999	47	908	1,368	175,634	26,365	28.60%	28.60%	196						
110402	BCK	BELLEVUE	63.01	2015	56.551	75,160	22	1,129	1,336	166,067	-90,907	73.40%	125,898	167,325	24	532	1,329	170,634	-3,309	37.50%	73.40%	1050						
009002	ALM	SHEPHERD	61.70	2002	150.567	143,910	20	1,129	960	119,303	24,607	27.70%	247,195	236,266	29	1,288	966	122,712	113,555	14.90%	27.70%	186						
129602	JAC	BLACKMAN	40.44	2009	404.705	285,019	23	1,128	710	88,248	196,770	9.50%	185,983	130,981	43	991	704	90,419	40,562	25.00%	25.00%	161						
062002	TRA	INTERLOCHEEN	16.25	2013	179.744	84,385	10	1,127	474	58,889	25,496	27.50%	144,014	67,611	14	766	469	60,275	7,336	33.10%	33.10%	246						
042102	JAC	LAKE LEANN	59.13	2005	59.338	110,181	54	1,126	1,869	232,370	-122,189	83.70%	160,472	297,972	70	1,738	1,857	238,396	59,576	21.80%	83.70%	1282						
072104	BNC	PORT CALCITE	12.68	2016	229.532	252,087	4	1,120	1,098	136,564	115,523	14.70%	302,046	331,726	11	1,248	1,098	141,003	190,722	9.50%	14.70%	70						
023002	BRO	BRONSON	38.00	2002	267.311	20505																						

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		2016 YTD													2015													
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	Highest 2yr Percentile	2016 Ranking						
030502	GVL	ORLEANS	59.32	2001	188.039	162,841	22	1,004	867	107,806	55,035	21.60%	226,296	195,972	29	1,632	866	111,184	84,788	17.90%	21.60%	129						
102701	MUS	SAVIDGE	29.32	1988	430.032	405,747	28	1,003	1,027	127,711	278,036	7.00%	29,671	27,995	26	365	944	121,137	-93,142	74.90%	74.90%	1081						
075902	JAC	REYNOLDS	43.45	2011	272,419	194,177	28	1,003	714	88,733	105,445	15.60%	266,823	190,188	35	763	713	91,513	98,675	16.20%	16.20%	83						
033101	GRA	VAN BUREN	22.66	1988	65,053	102,163	18	999	1,602	199,156	-96,993	76.00%	16,880	26,510	13	630	1,570	201,629	-175,119	93.40%	93.40%	1519						
027803	FLT	DIXIE	10.18	1988	158,574	111,570	9	997	716	88,968	22,601	28.40%	141,037	99,231	13	790	704	90,331	8,900	32.60%	32.60%	242						
021602	FLT	BEERS	39.42	2011	280,588	293,392	43	997	1,051	130,616	162,776	11.60%	137,632	143,912	22	502	1,046	134,246	9,666	32.20%	32.20%	235						
122901	KAL	PLAINWELL	33.24	2010	105,622	156,738	17	991	1,426	177,230	-20,492	43.20%	23,152	34,356	16	522	1,484	190,521	-156,164	90.50%	90.50%	1457						
129002	LAN	PEACOCK	36.54	1997	123,141	254,119	26	985	2,183	271,413	-17,294	41.90%	103,583	213,757	19	637	2,064	264,945	-51,188	59.50%	59.50%	750						
078202	WBR	GREENBUSH	35.86	2010	124,412	124,995	10	984	1,006	125,028	-33	34.50%	303,474	304,895	21	757	1,005	128,989	175,906	10.50%	34.50%	263						
037601	JAC	BATTEESE	39.50	2005	218,072	178,360	38	981	828	102,899	75,461	18.60%	322,374	263,668	35	742	818	105,008	158,661	11.60%	18.60%	104						
051402	BRO	READING	82.75	2010	430,142	383,256	33	979	895	111,294	271,963	7.30%	222,824	198,536	48	803	891	114,393	84,143	18.00%	18.00%	101						
034202	MUS	HICKORY	25.64	1993	422,278	381,073	22	979	993	123,458	257,615	7.70%	75,379	68,023	21	510	902	115,860	-47,836	57.50%	57.50%	703						
127601	BCY	COTTAGE GROVE	110.23	2010	116,586	166,024	40	979	1,428	177,472	-11,448	39.50%	107,357	152,883	39	938	1,424	182,831	-29,048	49.60%	49.60%	540						
064201	BCK	TEKONSHA	73.78	2008	351,011	224,203	34	978	641	79,736	144,468	12.60%	229,046	146,300	32	974	639	82,006	64,294	20.90%	20.90%	122						
154602	MDL	PRICE ROAD	38.79	1988	269,990	301,764	29	973	1,122	139,515	162,249	11.70%	299,372	334,603	35	1,454	1,118	143,497	191,106	9.40%	11.70%	49						
092102	GVL	DERBY	54.71	2001	111,694	134,251	38	971	1,210	150,481	-16,230	41.70%	22,593	27,156	20	187	1,202	154,315	-127,160	84.50%	84.50%	1302						
022302	GVL	CARSON CITY	142.64	2008	180,687	215,046	47	970	1,197	148,832	66,214	20.00%	132,054	157,165	43	1,265	1,190	152,802	4,363	33.80%	33.80%	252						
035801	ADR	FRONTIER	68.98	2010	176,379	144,621	15	966	829	103,075	41,546	23.40%	112,222	92,016	24	1,099	820	105,271	-13,255	41.90%	41.90%	380						
149702	LUD	BRYE ROAD	8.18	1988	109,133	68,105	9	963	930	78,283	-10,178	39.10%	2,097	1,309	3	11	624	80,121	-78,812	70.00%	70.00%	974						
086801	BRO	KOLASSA	100.30	2011	105,137	148,553	48	959	1,417	176,202	-27,649	46.40%	421,546	595,622	77	3,039	1,413	181,405	414,217	3.90%	46.40%	473						
111902	BCK	CHAUNCEY	39.99	2012	147,159	236,500	20	959	1,604	199,352	37,448	24.20%	2,509	4,033	10	38	1,607	202,332	-202,300	96.40%	96.40%	1588						
029602	JAC	VANDERCOOK LAKE	38.62	2011	121,491	206,368	59	951	1,703	211,726	-5,357	36.60%	231,466	393,176	34	2,472	1,699	218,083	175,992	10.50%	36.60%	293						
151201	GRN	PARAMOUNT	25.31	1988	168,568	117,660	23	949	705	87,666	29,994	26.00%	6,526	4,555	15	16	698	89,615	-85,069	72.00%	72.00%	1020						
147802	MDL	JAMES SAVAGE	6.64	1988	410,372	120,822	9	948	297	36,930	83,892	17.60%	2,454	723	3	11	294	37,800	-37,077	52.50%	52.50%	599						
024402	KAL	PORTAGE	26.64	2010	129,280	170,023	17	945	1,337	166,231	3,793	33.10%	44,049	57,932	11	1,371	1,315	168,850	-110,918	80.30%	80.30%	1210						
081602	LAN	HAGADORN	12.55	1989	265,370	239,126	4	942	903	112,295	126,832	13.80%	36,879	33,232	4	100	901	115,691	-82,459	71.20%	71.20%	999						
081503	LAN	HARPER ROAD	50.43	2000	210,136	161,020	24	942	771	95,878	65,142	20.20%	322,722	247,290	44	1,931	766	98,379	148,911	11.90%	20.20%	120						
033801	CLR	HARRISON	82.56	2010	85,366	121,525	26	941	1,428	177,511	-55,986	58.40%	215,713	307,085	29	1,778	1,424	182,770	124,315	13.90%	58.40%	723						
012402	OWS	PERRY	28.10	2004	79,657	108,728	11	940	890	110,672	-1,944	35.50%	20,498	27,978	15	193	1,365	175,242	-147,264	88.80%	88.80%	1414						
140402	WBR	ALGER	103.81	2006	103,962	170,683	56	938	1,644	204,404	-33,721	48.70%	391,061	642,040	62	1,545	1,642	210,785	431,254	3.40%	48.70%	521						
002401	CLR	BEAVERTON	52.68	2010	197,481	170,779	23	929	867	107,754	63,025	20.60%	93,659	80,996	27	804	865	111,028	-30,033	49.70%	49.70%	542						
040601	GVL	GODFREY	45.19	2010	290,713	188,428	16	924	659	81,954	106,474	15.50%	222,371	144,132	20	556	648	83,215	60,916	21.50%	21.50%	126						
032201	GRA	MARNE	45.92	2010	84,196	59,247	18	922	709	88,203	-28,955	47.10%	69,733	49,070	21	157	704	90,344	-41,275	54.50%	54.50%	641						
054901	BCY	SALZBURG	28.59	1997	84,564	131,480	11	921	1,557	193,555	-62,075	60.70%	509,255	791,785	30	3,045	1,555	199,616	592,169	2.10%	60.70%	776						
118402	OWS	NEWBURG	34.94	2011	135,545	107,330	10	916	792	98,515	8,816	31.80%	182,839	144,779	29	942	792	101,663	43,117	24.70%	31.80%	233						
086804	KAL	PARKWAY	5.93	2010	157,736	141,904	6	915	908	112,910	28,995	26.30%	84,896	76,375	9	161	900	115,502	-39,126	53.30%	53.30%	618						
154902	GRE	BIRCHWOOD	10.99	1988	144,168	116,313	11	913	745	92,967	23,746	28.20%	17,863	14,412	20	91	807	103,582	-89,170	73.20%	73.20%	1047						
023802	CAD	LAKE MITCHELL	18.88	2014	54,274	66,535	6	909	1,226	152,372	-85,838	71.50%	161,241	197,665	9	2,140	1,226	157,390	40,275	25.20%	71.50%	1008						
129602	JAC	BLACKMAN	42.16	2009	84,850	221,945	26	908	1,319	325,558	-103,619	77.90%	72,648	180,028	34	871	2,616	135,828	-145,800	88.40%	88.40%	1400						
053302	TRA	GLENN LAKE	62.90	2006	114,912	203,002	23	904	1,731	215,174	-12,172	39.90%	79,139	139,805	71	545	1,767	226,807	-87,002	72.60%	72.60%	1032						
029101	HML	HAMILTON	54.19	2015	113,908	137,595	43	903	1,221	151,855	-14,260	40.90%	248,199	299,812	28	1,792	1,208	155,096	144,726	12.40%	40.90%	365						
042101	JAC	LAKE LEANN	53.09	2007	108,825	79,125	35	902	729	90,676	-11,551	39.60%	90,641	65,843	43	378	726	93,263	-27,420	48.80%	48.80%	522						
037901	FRE	HESPERIA	58.81	2010	100,024	120,844	32	902	1,214	150,919	-30,075	47.50%	925,563	1,118,226	25	3,478	1,208	155,113	963,114	0.50%	47.50%	493						
033802	CLR	HARRISON	42.62																									

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Circuit Priority Rankings by SAIDI - LVD Only

2016 SAIDI 124  
2015 SAIDI 128

2016 YTD																	2015																	Highest 2yr Percentile	2016 Ranking
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile															
100601	LAN	RED CEDAR	9.72	1999	502.324	402,441	8	809	802	99,751	302,689	6.60%	2,077	1,664	4	13	801	102,859	-101,195	77.40%	77.40%	1141													
050903	MDL	LETTS ROAD	87.71	1988	207,309	189,590	54	809	1,668	114,571	-17,719	42.20%	80,853	133,795	52	708	1,655	212,455	-78,659	69.80%	69.80%	967													
063401	KAL	KILGORE	13.38	1990	73.170	51,466	9	809	709	88,150	-36,685	50.40%	10,795	7,593	11	68	703	90,304	-82,711	71.40%	71.40%	1004													
147602	LAN	VAN ATTA	45.88	2006	1,260,173	911,702	12	807	719	89,354	822,347	1.10%	37,185	26,903	14	265	723	92,885	-65,982	65.30%	65.30%	877													
075701	MUS	MAPLE GROVE	16.83	2014	264,242	371,191	19	806	1,405	174,639	196,552	9.50%	40,291	56,598	22	448	1,405	180,351	-123,753	83.70%	83.70%	1282													
012701	HML	NEW RICHMOND	44.51	2010	97,446	88,571	17	803	714	88,778	-20,207	43.00%	216,739	152,516	36	629	704	90,345	-62,371	61.40%	43.00%	402													
050802	FLT	HOLLY	25.74	1988	89,976	148,844	10	796	1,662	206,576	-57,732	59.00%	1,257	2,080	5	26	1,654	212,387	-210,307	97.00%	97.00%	1608													
051901	HML	SAUGATUCK	42.40	2013	84,446	168,328	23	794	2,015	250,455	-82,127	69.30%	18,805	37,485	30	260	1,993	255,917	-218,432	97.60%	97.60%	1619													
050403	OWS	OLIVER	6.90	1988	168,840	123,485	7	794	731	90,853	32,632	25.40%	261,566	191,301	14	1,181	731	93,899	97,402	16.50%	25.40%	165													
014302	MUS	SPRING LAKE	14.25	1988	151,340	218,703	23	791	1,446	179,762	38,941	24.10%	45,782	66,160	13	369	1,445	185,534	-119,374	82.90%	82.90%	1264													
137202	JAC	BALZER	41.99	2015	250,690	161,141	38	790	645	80,233	80,908	17.90%	84,268	54,166	30	326	643	82,526	-28,360	49.20%	49.20%	532													
023103	BRO	MENDON	63.89	2004	247,856	184,418	32	785	751	93,418	91,000	16.80%	133,636	99,433	55	500	744	95,527	3,905	34.30%	34.30%	260													
041103	GRA	KELLOGGSVILLE	3.53	1993	241,850	156,159	5	783	646	80,325	75,834	18.60%	61,152	39,485	11	292	646	82,898	-43,413	55.50%	55.50%	659													
135902	LAN	KIPP ROAD	48.97	2009	176,533	164,835	16	783	939	116,711	48,124	22.60%	79,194	73,947	21	421	934	119,880	-45,034	56.70%	56.70%	683													
095305	GRA	STONEGATE	17.69	2015	34,392	98,240	42	783	2,851	354,492	-256,253	98.90%	12,486	35,665	20	254	2,856	366,736	-331,071	99.80%	99.80%	1683													
156301	OWS	SCENIC LAKE	29.38	#N/A	431,944	112,641	15	782	586	72,793	39,848	23.80%	102,957	26,849	3	160	261	33,481	-6,632	39.00%	39.00%	334													
031701	GRA	ABERDEEN	14.74	2012	30,496	65,771	17	782	2,174	270,261	-204,491	95.90%	69,587	150,077	22	695	2,157	276,892	-126,814	84.30%	95.90%	1579													
109102	ADR	HENDERSHOT	53.18	2011	227,468	180,406	24	779	795	98,875	81,532	17.70%	71,812	56,954	37	338	793	101,825	-44,871	56.40%	56.40%	677													
029601	JAC	VANDERCOOK LAKE	26.49	2014	65,676	51,331	25	776	785	97,625	-46,294	54.30%	219,403	171,481	22	430	782	100,345	71,135	19.90%	54.30%	638													
039302	SAG	NIAGARA	8.75	2009	295,906	268,449	11	773	908	112,890	155,559	11.90%	223,077	202,377	14	1,093	907	116,475	85,903	17.70%	17.70%	98													
148902	MUS	ARTHUR	47.89	1988	208,707	147,006	32	772	714	88,720	58,287	21.20%	147,646	103,997	47	774	704	90,432	13,565	31.00%	31.00%	221													
103702	FLT	GILKEY CREEK	17.18	1988	94,019	113,698	8	770	1,236	153,635	-39,936	51.60%	4,764	5,761	7	51	1,209	155,261	-149,500	89.40%	89.40%	1429													
075901	JAC	REYNOLDS	44.01	2003	183,667	224,634	45	770	729	129,719	71,876	19.40%	138,733	169,677	52	1,027	1,223	167,025	12,652	31.30%	31.30%	226													
074802	WBR	WEBB ROAD	18.29	2015	146,141	71,793	12	770	496	61,690	10,104	31.30%	458,447	225,464	12	912	491	63,072	162,392	11.20%	31.30%	226													
127403	BCY	DIQUETTE	58.59	1988	172,862	123,342	37	768	716	89,040	34,302	24.80%	742,948	529,756	64	2,532	714	91,608	438,148	3.30%	24.80%	157													
006601	GRE	LABARGE	43.30	1988	501,946	321,562	16	767	646	80,305	241,257	8.40%	312,931	200,473	10	681	641	82,249	118,224	14.50%	14.50%	68													
030002	ALM	ASHLEY	55.26	2015	477,845	276,823	12	765	579	71,923	204,900	9.20%	309,630	179,374	16	672	579	74,377	104,997	15.70%	15.70%	81													
115302	KAL	LAWRENCE	34.29	2014	456,194	198,756	17	765	440	54,734	144,022	12.70%	367,574	160,146	18	584	436	55,936	104,209	15.80%	15.80%	82													
031304	GRA	RIVERTOWN	18.73	1988	97,759	143,314	16	763	1,469	182,589	-39,274	51.30%	51,403	75,357	15	405	1,466	188,216	-112,860	81.00%	81.00%	1224													
125802	KAL	PICKEREL	35.10	2001	284,150	133,012	18	762	742	58,581	74,430	18.90%	684,315	320,331	18	978	468	60,099	260,232	6.60%	18.90%	106													
155801	TEM	SCHOOL ROAD	36.42	1988	194,742	194,701	39	761	1,007	125,139	69,562	19.60%	227,169	227,121	54	1,046	1,000	128,361	98,760	16.10%	19.60%	116													
038102	MDL	STARKS	64.71	2005	143,959	236,661	45	761	1,644	204,384	32,277	25.40%	128,220	210,787	40	861	1,644	211,063	-275	36.30%	36.30%	287													
149501	KAL	ELEVENTH STREET	17.03	2014	112,826	164,685	29	760	1,300	161,631	3,054	33.30%	73,555	107,363	23	819	1,460	187,399	-80,036	70.40%	70.40%	980													
037102	KAL	DELTON	39.95	2015	52,096	55,698	19	745	1,076	133,757	-78,058	67.60%	90,120	96,352	32	487	1,069	137,267	-40,915	54.30%	67.60%	924													
063502	BCK	LEVEL PARK	18.65	2003	168,578	333,029	15	742	1,981	246,300	86,729	17.40%	53,395	105,483	19	293	1,976	253,633	-148,150	89.20%	89.20%	1423													
098202	GRA	LEFFINGWELL	11.78	1994	75,522	55,258	3	742	738	91,808	-36,550	50.20%	2,693	1,970	4	33	732	93,939	-91,969	74.40%	74.40%	1070													
153601	BCK	COLUMBIA	13.99	2015	214,791	143,166	14	739	678	84,264	58,923	21.10%	17,599	11,732	5	32	767	85,587	-73,855	68.30%	68.30%	938													
057702	SAG	JANES	6.67	2009	204,845	144,933	17	738	703	57,561	21,300	27.01%	27,018	19,116	13	83	608	90,838	-71,722	67.40%	67.40%	917													
133903	BCK	WATKINS	25.03	2015	254,012	169,961	9	733	670	83,348	86,613	17.40%	15,098	10,102	10	51	669	85,905	-75,903	68.90%	68.90%	951													
127602	BCY	COTTAGE GROVE	42.03	2008	94,492	164,864	27	731	1,742	216,522	-15,657	56.90%	119,322	206,441	52	1,309	1,745	224,003	-17,562	44.00%	56.90%	687													
148601	CLR	DEER LAKE	16.95	2012	351,544	425,535	17	730	1,203	149,526	276,009	7.10%	157,880	191,110	11	1,513	1,210	155,410	35,700	26.20%	26.20%	171													
079702	WBR	GRAYLING	34.27	2016	113,739	127,214	17	730	1,123	139,652	-12,438	40.00%	215,699	241,209	36	963	1,118	143,598	97,611	16.40%	40.00%	353													
021301	JAC	SUMMIT	7.09	2009	89,464	48,518	5	725	540	67,114	-18,596	42.50%	237,044	128,553	18	1,027	542	69,627	58,926	22.00%	42.50%	390													
115101	SAG	ALABAMA	13.61	2014	153,913	146,209	21	724	954	118,544	27,666	26.80.																							

2016 YTD													2015													Highest 2yr Percentile	2016 Ranking
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile							
028001	FLT	OTISVILLE	58.96	2010	162,547	203,706	29	647	1,257	156,259	47,447	22.70%	180,991	226,819	33	1,338	1,253	160,897	66,923	20.70%	22.70%	140					
025481	GRA	LEONARD	15.45	1996	45,224	128,022	22	646	2,875	357,463	-229,441	97.80%	77,283	218,777	30	765	2,831	363,445	-144,668	87.90%	97.80%	1626					
025702	KAL	OSHTOMO	20.63	2016	218,460	101,986	8	644	472	58,667	43,320	23.20%	53,698	25,069	8	145	467	59,937	-34,868	51.50%	51.50%	576					
018502	HML	PULLMAN	34.28	1998	210,209	116,201	13	644	566	70,366	45,835	23.00%	39,973	22,097	19	95	553	70,971	-48,875	58.00%	58.00%	713					
013802	CLR	SMALLWOOD DAM	53.19	1988	127,858	124,904	14	643	725	90,139	34,764	24.70%	45,478	32,861	16	384	723	92,770	-59,909	63.20%	63.20%	833					
027401	BIG	CONKLIN PARK	75.31	2003	208,339	127,635	35	643	617	76,654	50,981	22.00%	241,847	148,163	39	871	613	78,654	69,508	20.10%	22.00%	135					
140703	TRA	SILVER LAKE	24.85	1988	306,639	229,302	7	643	758	94,203	135,099	13.20%	6,454	4,826	13	32	748	96,007	-91,181	74.10%	74.10%	1062					
104102	ALM	GILSON	17.89	1988	386,985	127,583	15	638	337	41,883	85,700	17.50%	127,123	41,910	16	290	330	42,327	-417	36.40%	36.40%	290					
135303	KAL	VILLAGE GREEN	10.67	2015	131,369	83,565	3	637	636	79,055	4,510	32.70%	12,994	8,265	2	20	636	81,668	-73,403	68.20%	68.20%	943					
070401	JAC	FERGUSON	19.61	2015	61,307	78,312	9	636	1,278	158,699	-90,558	68.60%	226,281	289,045	16	498	1,277	163,998	125,046	13.80%	68.60%	934					
041202	JAC	SYLVAN	40.34	2012	89,912	143,794	15	632	760	94,484	46,399	22.20%	120,635	91,567	38	555	757	97,210	-5,643	38.40%	38.40%	323					
012802	MUS	EVANSTON	35.79	1988	313,459	185,733	10	635	503	74,043	111,600	15.10%	46,094	20,171	20	171	603	78,773	-49,763	57.90%	57.90%	710					
019801	HST	CLARKSVILLE	30.52	2009	119,559	55,505	9	635	468	58,098	-2,241	35.60%	29,991	138,758	11	613	468	60,065	-78,693	19.00%	25.60%	277					
140702	TRA	SILVER LAKE	36.41	2015	132,936	184,347	13	634	1,412	175,529	8,818	31.70%	35,991	49,910	12	271	1,387	178,040	-128,130	84.90%	84.90%	1313					
022503	ALM	MIDDLETON	51.40	2012	103,320	76,582	25	633	741	92,109	-15,527	41.40%	60,830	45,088	13	420	741	95,162	-50,074	58.60%	58.60%	730					
039802	FLT	SWARTZ CREEK	25.69	2014	63,761	82,345	16	633	1,300	161,663	-79,318	68.00%	47,278	61,058	25	299	1,291	165,809	-104,751	78.50%	78.50%	1165					
048902	BCY	MT FOREST	86.36	2011	123,845	119,465	22	631	970	120,624	-1,159	34.90%	207,736	200,389	34	1,515	965	123,847	76,542	19.30%	34.90%	269					
030101	HST	FREESTON	71.63	2015	130,999	92,872	26	631	714	88,824	4,047	32.90%	189,339	134,231	24	988	709	91,020	43,211	24.60%	32.90%	245					
060101	CAD	TUSTIN	47.49	2004	137,402	58,656	21	630	432	53,720	4,936	32.60%	95,030	40,568	24	294	427	54,808	-14,240	42.40%	42.40%	388					
028001	WBR	COOKE DAM	32.52	1997	340,775	141,888	16	629	418	52,012	89,876	16.90%	120,650	50,235	13	185	416	53,457	-3,222	37.40%	37.40%	308					
084001	TRA	HOSPITAL	53.37	2005	62,429	111,875	25	629	1,804	224,328	-112,453	80.80%	52,409	93,919	42	271	1,792	136,158	-136,158	86.60%	86.60%	1359					
112802	JAC	GREGORY	47.26	2011	175,319	168,334	34	628	964	119,846	48,488	22.30%	95,491	91,686	20	236	960	123,272	-31,586	50.40%	50.40%	553					
090402	BCY	KIESEL	13.18	2014	46,934	60,758	7	627	1,296	161,068	-100,310	77.00%	25,961	33,607	7	387	1,295	166,201	-132,595	85.80%	85.80%	1334					
000201	ALM	MT PLEASANT	14.43	1988	84,130	181,288	17	625	2,141	266,133	-84,845	70.90%	14,264	30,737	14	224	2,155	276,655	-245,918	98.60%	98.60%	1650					
041802	ADR	NORTH ADAMS	30.97	2015	112,192	69,234	15	625	619	76,942	-7,708	37.90%	63,562	39,224	15	276	617	79,229	-40,004	53.70%	53.70%	626					
145101	WBR	NOBLE	24.14	1998	988,227	513,262	13	622	535	66,486	446,777	4.10%	913,706	484,360	24	1,597	530	68,059	416,301	3.80%	4.10%	14					
135201	GRA	FOREMAN	72.25	2016	115,302	134,521	24	621	1,144	142,282	-7,761	37.90%	280,944	327,773	36	2,090	1,167	148,798	177,985	10.20%	37.90%	314					
026003	KAL	SARANAK	24.66	2016	231,698	154,652	22	619	833	93,256	93,256	19.60%	475,079	231,404	26	607	833	231,404	77,909	19.50%	19.50%	114					
097201	MDL	EASTLAWN	9.03	1988	84,096	85,998	10	618	800	99,457	-33,469	48.50%	54,924	43,104	4	201	800	100,757	-37,654	62.50%	62.50%	818					
124205	GRA	BRETTON	10.64	1989	185,392	233,292	13	614	1,232	153,223	80,069	18.00%	60,389	75,991	10	1,298	1,258	161,559	-85,568	72.30%	72.30%	1026					
090101	FLT	WAGER	11.19	2006	152,983	178,756	27	609	1,158	143,977	34,779	24.60%	109,174	127,567	35	508	1,168	150,018	-22,450	46.60%	46.60%	479					
026902	HML	OTSEGO	38.40	2014	164,991	99,507	27	608	748	92,979	6,528	32.30%	174,924	105,498	22	475	607	77,431	-28,067	28.30%	32.30%	236					
060602	GRE	LABARGE	36.99	2012	77,522	60,822	18	606	791	98,299	-37,477	50.80%	117,509	92,195	13	516	785	100,730	-8,535	40.00%	50.80%	560					
039202	JAC	MORRELL	18.62	1997	41,628	111,908	15	606	1,845	229,347	-117,439	82.10%	159,307	428,259	35	1,882	2,688	345,140	83,119	18.20%	82.10%	1244					
067202	MDL	INGERSOLL	49.53	2010	236,423	113,234	13	605	479	59,563	53,671	21.80%	112,244	53,759	12	334	479	61,491	-7,732	39.50%	39.50%	345					
064104	GRA	BAYBERRY	8.12	1988	117,556	100,077	4	605	857	106,556	-6,479	37.40%	1,205	1,026	1	10	851	109,298	-108,273	79.50%	79.50%	1191					
090203	SAG	CHESANING	47.36	2009	106,791	82,487	13	603	780	96,938	-14,451	41.10%	66,753	51,562	14	243	772	99,169	-47,608	57.40%	57.40%	701					
031301	GRA	RIVERTOWN	30.30	2010	101,457	121,167	24	601	1,205	149,859	-28,693	47.00%	99,914	119,323	23	1,497	1,194	153,329	-34,006	51.30%	51.30%	573					
067504	MUS	MCCRACKEN	7.99	2005	99,853	123,901	19	601	1,089	135,366	-11,465	39.50%	76,324	94,708	17	374	1,241	159,309	-64,603	64.80%	64.80%	865					
063703	GRN	PLAINFIELD	22.97	2012	144,435	161,675	20	600	1,125	139,803	21,873	28.70%	82,974	92,878	17	412	1,119	143,713	-50,835	59.20%	59.20%	742					
153001	GVL	HUBBARDSTON ROAD	19.56	1988	191,924	80,851	18	596	425	52,830	28,021	26.60%	342,400	144,241	23	907	421	54,085	90,156	17.20%	26.60%	176					
122705	FLT	STEEL DRIVE	41.08	2007	63,147	92,188	28	594	1,469	182,595	-90,407	73.30%	51,165	74,695	28	1,649	1,460	187,432	-112,737	80.90%	80.90%	1222					
040102	OWS	ELBIE	66.56	2012	154,579	134,557	24	594	869	108,061	26,495	17.60%	166,628	145,046	19	904	870	111,758	33,288	26.70%	27.10%	180					
096601	BIG	BRIDGE	28.04	2012	153,454	121,075	26	593	1,232	120,443	29,443	28.60%	98,633	172,247	31	793	850	179,949	-19,909	26.80%	26.80%	207					
035001	MUS	FRUITPORT	22.08	2006	341,387	304,211	35	591	110,738	193,474	9,800%	21,564	91,216	17	115	891	114,047	-85,191	76.70%	76.70%	1104						
031002	BCK	DUCK LAKE	39.52	1998	182,517	121,739	21	587	670	83,269	38,470	24.10%	263,463	175,730	29	859	667	86,535	90,095	17.30%	24.10%	151					
029901	MUS	NORTON	28.50	2005	330,243	448,053	26	587	1,181	146,817	301,236	6.70%	110,041	149,296	32	1,441	1,357	174,188	-24,892	47.80%	47.80%	500					
024701	HST	RUTLAND	55.69	2011	94,645	61,096	15	587	649	80,704	-19,608	42.60%	174,849	112,869	24	385	646	82,878	29,992	27.60%	42.60%	392					
007101	TEM	ERIE	18.67	1988	277,332	144,680	11	587	524	79,514	18,10%	9,946	5,189	13	54	522	66,978	-61,789	64.00%	64.00%	847						
106302	GRA	HANSEN	7.44	1998	72,530	99,171	17	585	1,368	170,026	-70,855	64.80%	37,464	51,226	18	585	1,367	175,546	-124,321	83.90%	83.90%	1287					
114502	GRA	CADMUS	20.05	2012	258,907	326,523	12	580	1,265	157,266	169,256	10.90%	12,967	16,354	13	203	1,261	161,917	-145,563	88.10%	88.10%	1392					
063801	KAL	NEELLY	24.98	2009	331,339	117,085	19	580	357	44,357	72,728	19.20%	249,610	88,204	6	356	353	45,368	42,836	24.80%	24.80%	157					
082903	GRA	MULLINS	4.81	2011	25,375	11,865	2	579	467	58,006	-46,141	54.20%	1,895	886	1	10	468	60,031	-59,145	62.80%	62.80%	807					
043501	HST	LAKE ODESSA	31.35	1994	64,195	68,232	16	578	1,070	133,037	-64,805	62.10%	93,301	99,169	21	579	1,063	136,463	-37,294	52.60%	62.10%	807					
043602	GVL	SHERIDAN	96.43	2009																							



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2016 SAIDI 124  
2015 SAIDI 128

2016 YTD																			2015																			2016 Ranking
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	Highest 2yr Percentile																	
029103	HML	HAMILTON	38.43	2010	203.738	102,587	7	545	505	62,776	39,812	23.90%	7,908	3,982	7	49	504	64,647	-60,665	63.60%	63.60%	841																
060204	GVL	TRUFANT	30.30	1988	43.038	21,036	9	544	491	61,048	-40,012	51.70%	61,860	30,237	9	305	489	62,755	-32,518	50.70%	51.70%	579																
155402	TEM	DUNBAR	15.25	1988	198,008	136,740	11	543	694	86,305	50,435	22.20%	216,224	149,320	21	726	691	88,662	60,658	21.60%	22.20%	137																
025501	HML	SALEM	35.43	2002	84,967	50,260	33	542	614	76,287	-26,027	45.60%	18,556	10,976	17	51	592	75,945	-64,969	65.00%	65.00%	869																
021902	BCK	GOGIAC	8.13	2008	48,799	86,945	15	541	1,787	222,149	-135,204	86.50%	40,453	72,075	16	219	1,782	228,746	-156,671	90.60%	90.60%	1460																
063302	BRO	JONESVILLE	47.18	2015	80,131	92,421	18	541	987	122,757	-30,336	47.70%	11,964	13,798	17	143	1,153	148,078	-134,280	86.30%	86.30%	1348																
079001	SAG	SEIDEL	9.56	2016	40,570	39,622	13	539	976	121,390	-81,768	69.10%	3,001	2,931	1	9	977	125,367	-122,457	83.50%	83.50%	1278																
078601	LAN	WESTPHALIA	34.03	2011	93,650	52,069	11	539	549	68,305	-18,235	41.70%	249,547	138,748	13	412	556	71,384	-67,364	20.40%	41.70%	376																
010402	CLR	GLADWIN	9.87	1988	368,013	196,035	7	537	529	65,733	130,302	13.60%	16,285	8,675	6	100	533	68,390	-59,715	63.00%	63.00%	829																
076202	BRO	BEHNKE	44.86	2016	71,811	59,308	21	536	834	103,690	-44,382	53.40%	101,202	83,583	21	795	826	106,035	-22,452	46.70%	53.40%	621																
063101	HML	HOPKINS	74.89	2012	97,295	98,288	41	535	1,016	126,317	-28,029	46.70%	162,254	163,911	39	799	1,010	129,699	34,212	26.30%	46.70%	481																
075101	KAL	YORKVILLE	17.61	2002	150,677	88,955	11	534	590	73,363	15,592	30.10%	37,724	22,271	13	128	590	75,796	-53,525	60.50%	60.50%	771																
115901	FLT	BALLENGER	14.51	2012	280,088	552,231	7	533	1,971	245,090	307,141	6.60%	4,897	9,654	8	95	1,972	253,133	-243,479	98.50%	98.50%	1648																
023104	BRO	MENDON	51.42	2003	137,834	115,382	40	533	844	104,888	10,494	31.10%	147,898	123,806	42	1,147	837	107,474	16,332	30.30%	31.10%	224																
154201	KAL	SPICEBUSH	43.02	2015	96,310	73,606	15	532	766	95,197	-21,591	43.70%	625,747	478,235	35	2,531	764	98,122	380,113	4.50%	43.70%	420																
065702	BNC	EAST JORDAN	36.71	2015	25,991	45,394	30	528	1,538	191,206	-145,812	89.20%	155,650	238,776	37	1,573	1,534	196,933	41,822	24.90%	89.20%	1423																
151102	TRA	LELAND	51.22	2010	123,241	145,548	37	527	1,188	147,635	-2,087	35.50%	178,419	210,713	59	1,325	1,181	151,626	59,087	22.00%	35.50%	276																
049204	GRA	HASKELITE	12.47	2007	97,914	98,321	15	524	1,005	124,995	-26,675	45.90%	172,715	173,433	9	2,412	1,004	128,921	44,512	24.50%	45.90%	458																
086802	BRO	KOLASSA	67.50	2012	92,108	69,942	39	523	765	95,132	-25,290	45.10%	175,491	133,068	33	426	758	97,352	35,716	26.10%	45.10%	446																
037701	ADR	WAMPLERS	31.88	2014	111,472	87,716	15	521	791	98,397	-10,681	39.20%	63,230	49,756	14	163	787	101,028	-51,272	59.50%	59.50%	750																
133503	LAN	TALLMAN	49.82	1988	121,599	76,530	21	519	625	117,675	-1,144	34.80%	217,685	137,004	27	1,279	629	80,803	56,201	22.40%	34.80%	267																
028902	GVL	SARANAC	31.53	2015	531,053	255,073	16	518	478	59,399	195,674	9.70%	362,415	174,074	14	835	480	61,667	112,407	15.00%	15.00%	74																
057602	LAN	POTTERVILLE	67.65	2002	48,924	66,505	30	515	1,360	169,031	-102,526	77.50%	190,128	250,128	32	1,253	1,359	174,526	75,601	19.40%	77.50%	1143																
036801	MUS	APPLE	40.72	1988	85,120	108,456	21	514	1,285	159,792	-51,336	56.60%	23,398	29,813	10	141	1,274	163,586	-133,773	86.10%	86.10%	1343																
022501	ALM	MIDDLETON	60.18	2012	140,782	50,948	11	514	360	44,815	6,134	32.40%	53,337	19,302	12	93	362	46,463	-27,160	48.60%	48.60%	517																
001302	BRO	CENTREVILLE	78.83	2010	65,717	86,376	42	514	1,323	164,477	-78,101	67.70%	101,834	133,848	65	741	1,314	168,749	-34,901	51.60%	67.70%	925																
073502	JAC	LESLIE	23.20	2004	204,866	124,839	23	511	615	76,451	48,388	22.50%	59,065	35,993	25	203	609	78,235	-42,243	54.80%	54.80%	647																
155001	WBR	SMITH CREEK	48.03	1988	459,269	187,068	17	510	407	50,625	136,443	13.10%	539,849	219,889	27	807	407	52,294	167,595	10.90%	13.10%	63																
026901	HML	OTSEGO	7.13	1999	178,468	151,181	10	510	852	105,981	45,200	23.00%	39,246	33,246	14	227	847	108,758	-75,512	68.80%	68.80%	949																
050101	KAL	EASTWOOD	10.06	2009	35,118	61,788	20	510	1,764	219,355	-157,567	90.80%	13,309	23,416	15	339	1,759	225,888	-202,472	96.40%	96.40%	1588																
156601	WBR	TURNER	65.10	1988	338,233	153,736	30	505	452	56,134	97,602	16.40%	1,391,525	632,485	52	2,496	455	58,356	574,129	2.30%	16.40%	86																
108803	MDL	GOLDEN	11.51	1995	298,091	230,204	6	502	771	95,799	134,405	13.50%	9,388	7,250	14	98	772	99,149	-91,899	74.40%	74.40%	1070																
023401	FLT	NEFF ROAD	56.82	2001	51,915	97,333	37	502	1,882	233,992	-136,659	87.00%	436,752	818,840	64	1,527	1,875	240,707	578,134	2.20%	87.00%	1369																
025403	FRE	GRANT	88.36	2015	42,101	55,006	23	501	1,305	162,187	-107,180	79.10%	98,393	128,553	54	780	1,307	167,742	-39,189	53.40%	79.10%	1177																
097702	TEM	STERN'S ROAD	44.87	2008	89,806	139,998	31	501	1,568	194,968	-54,970	58.00%	135,590	211,370	37	1,177	1,559	200,143	11,228	31.90%	58.00%	713																
152703	GRN	COIT AVENUE	4.77	1988	122,832	61,694	2	501	500	62,206	-513	34.70%	65,840	33,069	16	116	502	64,484	-31,416	50.20%	50.20%	549																
132303	MDL	ORCHARD ROAD	29.37	1988	64,928	130,462	20	501	2,007	249,460	-118,999	82.70%	120,890	242,907	17	1,404	2,009	257,971	-15,065	42.80%	82.70%	1261																
049602	GVL	GODFREY	18.33	2016	342,521	141,353	15	498	416	51,672	89,681	17.00%	7,082	2,823	9	33	413	52,984	-50,061	58.50%	58.50%	726																
059901	SAG	HEIMLOCK	67.52	2011	67,414	70,259	18	497	1,042	129,504	-59,244	59.30%	101,643	193,303	17	940	1,042	133,807	-27,874	49.10%	59.30%	746																
126701	BIG	TAMARACK	44.73	2013	96,715	82,126	25	497	852	105,909	-32,783	44.60%	254,180	215,839	19	1,043	849	109,021	106,818	15.40%	44.60%	436																
070202	CLR	MAGNUS	50.88	2013	241,604	200,300	21	496	834	103,658	97,243	16.60%	14,960	12,439	16	144	832	106,758	-94,319	75.50%	75.50%	1094																
019603	BCK	CONVIS	31.63	2001	299,810	176,790	18	494	593	103,040	15,800	21.00%	210,620	124,155	36	329	589	75,681	48,474	23.90%	23.90%	148																
081804	GRN	ALPINE	29.02	1988	199,388	138,470	24	493	697	86,626	51,844	21.90%	423,967	294,434	24	1,330	694	89,162	205,272	9.20%	21.90%	133																
103802	TEM	JEFFS ROAD	31.29	2016	93,705	145,094	30	492	1,464	181,987	-36,893	50.50%	134,167	207,747	41	1,039	1,548	198,798	8,949																			

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		2016 YTD																				2015											
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	Highest 2yr Percentile	2016 Ranking											
130906	GRE	KRAFT AVENUE	15.48	1988	384.057	216,345	11	447	709	88,105	128,241	13.70%	105,562	59,465	13	652	563	72,323	-12,858	41.50%	41.50%	373											
030602	BIG	REMUS	54.50	2003	47.004	30,310	16	446	650	80,835	-50,525	56.10%	50,851	32,791	24	126	645	82,790	-49,999	58.40%	58.40%	723											
000202	ALM	MT PLEASANT	47.22	2003	26.699	55,511	10	445	2,082	258,804	-203,293	95.90%	16,821	34,973	21	156	2,079	266,398	-231,965	98.30%	98.30%	1642											
058606	FLT	LEITH STREET	13.70	1988	29,917	56,448	19	445	1,899	236,080	-179,632	93.90%	34,738	65,543	18	119	1,887	242,240	-176,698	93.60%	93.90%	1530											
119102	BRO	SQUIRES	50.17	2015	97,005	63,068	27	444	653	81,201	-18,133	42.30%	190,252	123,694	32	712	650	83,472	40,222	25.20%	42.30%	1321											
077601	MUS	KEATING	8.39	1993	41,226	53,516	30	444	1,561	194,059	-130,543	85.30%	56,458	86,984	17	1,756	1,541	197,805	-110,921	80.30%	85.30%	213											
042601	ADR	PITTSFORD	97.60	2008	167,336	133,631	29	443	1,906	100,164	33,468	25.00%	149,062	119,038	35	723	799	102,528	16,510	30.00%	30.00%	189											
048002	BNC	PELLSTON	78.73	2008	111,725	173,133	24	443	1,198	148,996	24,137	28.00%	572,295	886,847	48	3,819	1,550	198,954	687,893	1.30%	28.00%	342											
043303	GRA	FOUR MILE	12.44	1994	220,435	45,027	15	442	206	25,649	19,377	29.50%	91,410	18,672	4	211	204	26,225	-7,553	39.30%	39.30%	189											
058302	LUD	BASS LAKE	55.73	2006	131,986	104,741	17	442	801	99,568	5,173	32.60%	72,769	57,748	17	242	794	101,886	-44,138	56.00%	56.00%	865											
020101	GVL	EDMORE	38.72	2010	45,280	40,170	11	442	894	111,130	-70,960	64.80%	114,533	101,609	22	999	887	113,900	-12,291	41.20%	64.80%	522											
054601	TRA	ALDEN	49.29	2004	92,021	93,910	23	440	1,027	127,684	-33,775	48.80%	165,783	169,186	46	765	1,021	131,023	38,163	25.60%	48.80%	522											
099001	LAN	WATERTOWN	16.72	1998	1,096,853	385,630	9	440	358	44,514	341,117	5.80%	220,540	77,537	10	392	352	45,138	32,399	26.80%	26.80%	177											
060201	GVL	TRUFANT	22.63	2010	101,892	60,175	17	439	593	73,762	-13,586	40.70%	130,123	76,848	13	884	591	75,823	1,025	35.60%	40.70%	362											
112601	GRE	CASCADE	34.18	1988	50,640	71,358	12	438	1,412	175,496	-104,138	78.10%	86,103	121,328	27	417	1,409	180,912	-59,583	62.90%	78.10%	1155											
133202	GRA	ROSEWOOD	21.61	1988	83,453	172,114	13	438	2,068	257,109	-84,995	71.10%	179,529	370,265	21	3,291	2,062	264,789	105,475	15.60%	71.10%	997											
074402	ALM	PINE RIVER	52.90	2015	47,436	92,927	21	436	1,965	244,272	-151,344	90.10%	67,908	133,032	33	2,759	1,959	251,511	-118,479	82.60%	90.10%	1449											
097701	TEM	STERNS ROAD	21.80	2009	33,046	30,785	21	435	931	115,684	-84,899	71.00%	44,438	41,397	15	362	932	119,603	-78,206	69.60%	71.00%	995											
018202	SAG	ROEDEL ROAD	38.62	2015	147,693	85,180	9	434	577	71,727	13,453	30.60%	82,417	47,533	13	266	577	74,046	-26,513	48.30%	48.30%	511											
154302	GVL	HARVARD LAKE	40.09	1988	144,050	94,603	23	433	670	83,269	11,334	31.00%	256,772	168,632	41	1,407	657	84,317	84,315	18.00%	31.00%	221											
077101	GVL	STANTON	25.44	2001	101,288	63,198	15	432	630	78,270	-15,072	41.20%	141,083	88,029	4	449	624	80,107	7,922	32.90%	41.20%	369											
024203	CAD	MCBAIN	18.15	1988	132,576	112,173	24	432	848	105,464	6,709	32.30%	196,935	166,627	36	823	846	108,629	57,998	22.20%	32.30%	736											
045402	MUS	LATIMER	18.77	2012	26,999	35,689	18	431	1,363	169,391	-133,702	86.10%	34,997	46,503	14	308	1,352	173,573	-127,070	84.40%	86.10%	1343											
042001	BCK	BEADLE	19.67	2006	88,717	66,342	17	428	748	93,051	-25,710	46.00%	61,695	46,135	14	309	748	96,007	-49,872	58.30%	58.30%	1580											
036504	GRN	PISTON RING	20.53	2010	49,395	81,104	22	427	1,641	204,031	-122,927	83.90%	6,441	10,575	13	131	1,642	210,806	-200,230	96.00%	96.00%	1680											
036001	BCK	LIBERTY	9.50	1995	175,151	115,765	5	427	664	82,569	33,196	25.30%	254,392	168,139	23	1,159	661	84,857	83,282	18.20%	25.30%	1694											
011001	HST	HASTINGS	29.03	2011	56,178	71,077	42	426	1,280	159,079	-88,002	72.50%	9,646	12,204	15	108	1,265	162,437	-150,234	89.50%	89.50%	1020											
125101	LAN	LOOMIS	69.22	2009	41,465	42,936	14	426	1,042	129,556	-86,620	72.00%	107,751	111,573	20	495	1,035	132,942	-21,369	45.60%	72.00%	1431											
160402	GRN	RATIGAN	29.28	1988	66,166	47,754	21	426	724	90,054	-42,300	52.50%	71,483	51,592	24	526	722	92,662	-41,070	54.40%	54.40%	639											
025803	LAN	DEWITT	34.56	1988	14,595	29,345	9	425	2,024	251,600	-222,255	97.30%	7,363	14,804	6	185	2,011	258,134	-243,330	98.40%	98.40%	1645											
058802	GRA	CHICAGO	30.08	2015	40,873	104,289	20	423	2,550	317,072	-212,782	96.70%	99,660	254,285	17	2,919	2,552	327,584	-73,299	68.10%	96.70%	1599											
061704	BEN	FRANKFORT	25.92	2015	183,161	104,662	13	422	575	71,465	33,197	25.20%	89,611	51,206	18	428	571	73,363	-22,158	46.30%	46.30%	472											
106102	GRA	CHAFFEE	7.68	1997	74,071	31,266	3	422	422	52,490	-21,224	43.50%	19,418	8,197	5	31	422	54,193	-45,997	56.80%	56.80%	685											
054404	LUD	ORIOLE	45.18	2011	22,590	32,204	30	421	1,129	140,326	-108,122	79.50%	33,308	47,483	24	482	1,426	183,027	-135,544	86.40%	86.40%	1352											
028202	BCK	HOMER	75.95	2011	104,814	105,807	24	421	1,011	125,682	-19,875	42.70%	73,817	74,516	26	503	1,009	129,604	-55,088	61.10%	61.10%	785											
018301	ADR	MANITOU BEACH	25.66	2011	41,306	57,259	11	421	1,395	173,409	-116,149	81.50%	9,099	12,613	6	72	1,386	177,972	-165,359	91.90%	91.90%	1487											
057301	BIG	OHMAN ROAD	41.87	2001	47,705	51,022	20	419	1,075	133,619	-82,597	69.50%	306,792	328,123	21	1,893	1,070	137,314	190,809	9.50%	69.50%	960											
036804	MUS	APPLE	41.20	2001	69,480	147,279	26	417	2,135	265,478	-118,200	82.60%	243,598	516,338	37	2,705	2,120	272,148	244,190	7.20%	82.60%	1259											
042602	ADR	PITTSFORD	86.16	2016	48,333	78,462	29	417	1,621	201,564	-123,102	84.00%	212,641	345,194	98	1,723	1,623	208,420	136,774	13.10%	84.00%	1290											
073102	MUS	MONA LAKE	10.23	1988	56,241	20,859	6	417	586	47,981	-27,122	46.10%	3,446	1,278	4	15	371	47,618	-46,340	57.00%	57.00%	200											
154102	HML	BLUE STAR	26.33	1988	164,629	91,317	11	416	562	69,810	21,507	28.90%	345,510	191,649	14	595	555	71,215	120,434	14.30%	28.90%	258											
026802	LAN	CHESTER	57.06	1999	125,883	85,216	29	416	680	84,493	724	34.20%	46,225	295,302	21	1,427	677	86,912	208,390	9.00%	34.20%	1531											
041101	GRA	KELLOGGSVILLE	11.93	2006	28,620	53,794	16	414	1,880	233,685	-179,891	94.00%	124,099	233,254	23	1,220	1,880	241,315	-8,061	39.60%	94.00%	879											
039702	KAL	GULL LAKE	19.02	2003	415,574																												

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2016 SAIDI 124  
2015 SAIDI 128

2016 YTD																	2015																	Highest 2yr Percentile	2016 Ranking
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile															
014103	GRA	GRANDVILLE	15.30	2016	53.404	64.048	20	379	1,180	146,751	-82,704	69.60%	377,751	453,043	20	2,620	1,199	153,977	299,065	5.50%	69.60%	962													
049301	GVL	PALO	40.32	2002	152.693	75.929	36	378	503	62,475	13,454	30.50%	99,475	49,465	25	300	497	63,842	-14,377	42.50%	42.50%	390													
098501	HML	BEECH-NUT	27.46	1998	111.411	51.736	12	378	467	58,084	-6,349	37.40%	53,406	24,800	12	258	464	59,619	-34,819	51.50%	51.50%	576													
062401	JAC	BROOKLYN	38.12	2012	23.651	31.305	16	377	1,328	165,144	-133,840	86.30%	41,719	55,218	27	598	1,324	169,931	-114,713	81.50%	86.30%	1348													
072501	JAC	LESLIE	26.73	2014	131.515	120,426	14	376	918	114,081	9,345	32.40%	26,571	24,331	27	916	158	117,553	-83,232	75.00%	75.00%	1085													
051201	MUS	NESTROM	59.35	2002	41.637	43,539	38	375	1,049	130,387	-86,848	72.20%	340,740	356,306	98	2,908	1,046	134,253	222,053	8.30%	72.20%	1024													
011702	FLT	LINDEN	30.72	2007	25.689	41,085	21	374	1,612	200,406	-159,321	90.90%	31,005	49,587	16	346	1,599	205,332	-155,746	90.30%	90.90%	1466													
001301	BRO	CENTREVILLE	55.79	2008	74.686	79,709	39	373	1,067	132,670	-52,961	57.30%	51,816	55,301	63	240	1,067	137,023	-81,722	70.90%	70.90%	992													
122101	WBR	WIRTZ ROAD	31.14	1988	113.503	127,768	15	372	1,134	140,961	-13,192	40.10%	565,246	636,288	32	1,680	1,126	144,524	491,765	2.90%	40.10%	355													
155502	CAD	WOODWARD	41.51	1988	84.247	53,887	6	371	645	80,207	-26,320	45.70%	42,491	27,179	12	558	640	82,121	-54,942	61.00%	61.00%	783													
029002	ALM	BRECKENRIDGE	54.57	1995	53.889	29,816	26	371	755	93,889	-64,072	61.60%	139,248	77,092	12	545	554	71,079	6,013	33.30%	61.60%	796													
061501	KAL	SCOTTS	31.05	2016	161.898	62,902	15	370	391	48,655	14,246	30.30%	388,655	151,003	26	974	389	49,882	101,121	16.00%	30.30%	216													
088501	JAC	BURTCR ROAD	79.22	2003	51.793	73,061	46	370	1,410	175,300	-102,239	77.50%	257,577	363,346	71	1,725	1,411	181,108	182,238	9.90%	77.50%	1143													
100902	CLR	SURREY	29.71	2010	65.786	60,489	11	369	923	114,788	-54,299	57.60%	158,319	145,570	34	1,151	919	118,049	27,521	28.30%	57.60%	705													
159801	ADR	RUSSELL ROAD	40.57	1988	36.256	30,240	21	369	836	103,952	-73,712	65.90%	25,294	21,096	23	299	834	107,082	-85,986	72.30%	72.30%	1026													
097302	OWS	OVID	55.84	2008	26.554	37,646	21	368	1,419	176,360	-138,713	87.40%	62,243	88,245	22	1,739	1,418	182,020	-83,775	75.20%	87.40%	1376													
109501	FLT	DUNHAM	37.81	2012	25.518	24,923	11	368	981	121,933	-97,010	76.10%	55,403	54,111	19	159	977	125,394	-71,283	67.30%	76.10%	1107													
057801	HML	VIRGINIA PARK	59.97	2008	74.159	102,784	25	367	1,398	173,775	-70,991	64.90%	253,154	350,871	65	3,289	1,386	177,945	172,926	10.70%	64.90%	868													
038001	ADR	FAIRFIELD	36.32	2012	118.173	74,928	14	364	637	179,173	-14,245	36.30%	208,003	131,885	28	901	634	81,405	50,481	23.40%	36.30%	287													
034801	GRA	HUDSONVILLE	48.56	2009	59.702	85,927	22	364	1,415	175,928	-90,000	73.10%	125,680	180,886	48	2,181	1,439	184,784	-3,897	37.80%	73.10%	1044													
160102	BRO	BABCOCK	42.12	1988	260.461	126,323	12	364	488	60,715	65,609	20.10%	90,354	43,822	14	185	485	62,268	-18,446	44.40%	44.40%	432													
024501	FLT	MONTROSE	28.97	2001	138.514	56,122	62	362	1,114	138,514	-75,624	66.70%	57,139	64,029	10	105	1,121	143,868	-79,940	70.30%	70.30%	979													
127902	JAC	CAMBRIDGE	28.16	1998	110.688	66,238	8	361	600	74,567	-8,329	38.00%	262,274	156,950	17	875	598	76,630	80,120	18.70%	38.00%	317													
078901	HST	ALTO	62.52	2005	105.974	57,121	20	361	852	105,974	-48,853	55.50%	72,042	60,235	27	346	836	107,346	-47,111	57.10%	57.10%	694													
112201	GRN	KENT CITY	39.55	2011	47.338	61,738	22	359	1,310	162,880	-101,142	77.10%	190,896	248,969	49	1,139	1,304	167,445	81,524	18.40%	77.10%	1133													
157702	JAC	SHARON HOLLOW	54.32	1988	129.572	45,030	11	359	600	74,645	-29,615	47.20%	83,622	29,061	29	162	348	44,618	-15,557	43.30%	47.20%	486													
134802	KAL	PAVILION	16.53	2014	24.981	30,459	10	358	1,211	150,501	-120,042	83.10%	3,347	4,081	4	26	1,219	156,538	-152,457	89.90%	89.90%	1443													
079802	TRA	ANTRIM	26.15	2016	20.606	27,966	12	357	1,364	169,613	-141,647	88.40%	114,901	155,945	54	1,444	1,357	174,249	-18,305	44.30%	88.40%	1400													
000703	MUS	MUSKEGON HEIGHTS	5.40	2016	102.372	70,583	17	357	689	85,716	-15,133	41.20%	44,965	31,002	18	203	689	88,520	-57,518	62.40%	62.40%	815													
030102	HST	FREEMPT	46.42	1998	194.759	100,362	17	356	520	64,641	35,722	24.50%	230,679	118,872	24	628	515	66,160	52,712	23.20%	24.50%	156													
117905	FLT	SKYLARK	42.53	1988	23.125	46,738	9	355	2,058	255,794	-209,056	96.40%	42,113	85,116	12	1,056	2,021	259,492	-174,376	93.30%	96.40%	1588													
073202	LUD	DONTZ ROAD	20.44	1994	162.072	106,209	12	353	664	82,556	23,653	28.30%	24,411	15,997	15	91	655	84,134	-68,137	66.10%	66.10%	893													
142703	FLT	IRISH ROAD	37.18	1988	26.677	72,073	26	353	2,758	342,845	-270,772	99.20%	196,314	530,378	46	1,760	2,702	346,863	183,515	9.80%	99.20%	1668													
059501	BRO	ATHENS	40.73	2014	183.898	106,951	15	353	584	72,551	34,400	24.70%	66,923	38,921	15	182	582	74,668	-35,746	52.00%	52.00%	588													
063203	HML	HARLEM	20.38	1994	28.954	43,134	7	350	233	185,965	14,180	30.50%	72,897	16,908	4	54	232	29,779	-12,871	41.60%	41.60%	374													
074303	FLT	RED ARROW	8.10	1998	46.765	72,265	17	350	1,555	193,274	-121,009	83.30%	36,415	56,270	17	256	1,545	198,393	-142,122	87.40%	87.40%	1376													
052601	BNC	BOYNE CITY	20.89	2001	34.698	53,490	23	348	1,550	192,718	-139,228	87.60%	84,017	129,518	25	1,891	1,542	197,920	-68,401	66.20%	87.60%	1383													
023102	BRO	MENDON	34.11	2005	174.930	103,706	14	348	599	74,429	29,277	26.20%	10,265	6,097	14	27	593	76,114	-70,016	66.70%	66.70%	905													
010401	CLR	GLADWIN	27.74	2002	149.350	170,695	24	348	1,148	142,721	27,978	26.70%	30,655	35,041	22	305	1,143	167,740	111,699	60.70%	60.70%	1216													
030402	CLR	WEIDMAN	44.42	1989	34.232	26,020	8	345	761	94,628	-68,608	63.80%	114,176	86,785	12	187	760	97,588	-10,803	66.60%	63.80%	844													
031101	GRN	LAMOREAUX	16.30	2014	11.324	30,761	8	344	2,724	338,658	-307,896	99.60%	55,227	150,019	12	2,189	2,716	348,755	-198,736	95.90%	99.60%	1678													
047702	BNC	CONWAY	20.92	2012	130.650	76,492	6	343	589	73,258	3,234	33.10%	0.879	515	3	3	585	75,168	-74,653	68.60%	68.60%	943													
069902	GRA	WALKER	27.98	2011	21.598	63,809	21	342	2,957	367,585	-303,777	99.50%	36,152	106,806	34	953	2,954	379,304	-272,499	99.20%	99.50%	1676													
022301	GVL	CARSON CITY	56.02	1998	94.369	65,919	16	342	645	86,744	-20,825	43.30%	68,611	47,612	26	316	699	89,682	-42,04																



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				2016 YTD										2015											
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	Highest 2yr Percentile				
071102	LUD	SCOTTVILLE	43.95	2008	44.457	41,045	17	312	931	115,737	-74.691	66.20%	3.792	3,501	10	12	923	118,536	-115.035	81.60%	81.60%	1236			
137805	GVL	SANDERSON	8.95	1988	156.998	99,826	5	311	639	79,409	20,417	29.20%	0.0	0	0	0	636	81,634	-81.634	70.90%	70.90%	992			
111206	KAL	DRAKE ROAD	3.19	1989	197.466	61,391	2	311	310	38,598	22,793	28.40%	0.523	162	1	1	311	39,915	-39.703	53.60%	53.60%	624			
123701	HML	WILMOTT	33.80	2011	36,714	72,257	17	310	1,983	246,516	-174,259	93.10%	25,087	49,374	19	181	1,968	252,680	-203,307	96.50%	96.50%	1592			
050401	OVS	OLIVER	47.08	2015	50,048	47,393	16	309	949	118,040	-70.647	64.60%	5,537	5,243	12	40	947	121,576	-116.333	82.00%	82.00%	1243			
014601	KAL	GREENSPIRE	21.43	2000	27,749	48,033	6	309	1,745	216,995	-168.861	92.20%	38,283	66,268	4	338	1,731	222,239	-155.971	90.40%	90.40%	1495			
160101	BRO	BABCOCK	42.77	1988	480,218	165,852	14	308	348	43,205	122,647	14.10%	154,924	53,506	13	292	345	44,341	9,165	32.40%	32.40%	238			
148501	GRA	CRAHEN	18.48	1988	176,822	69,612	4	305	393	48,891	20,721	29.20%	38,220	15,047	6	93	394	50,544	-35.498	51.80%	51.80%	582			
071203	ADR	COLLEGE PARK	25.44	2008	20,054	34,502	23	305	1,725	214,428	-179,932	94.00%	160,814	276,676	35	1,198	1,720	220,888	55,789	22.50%	94.00%	1531			
070001	FLT	DEAN ROAD	39.52	2012	86,631	73,951	29	305	869	108,002	-34,052	49.10%	435,360	371,637	27	1,026	854	109,596	262,042	6.60%	49.10%	530			
060803	KAL	PALMER	6.97	1988	480,794	134,875	2	303	228	28,286	106,589	15.40%	146,816	41,186	7	330	281	36,016	5,170	33.60%	33.60%	250			
111301	WBR	SHERMAN	55.63	1996	171,942	56,252	14	302	329	49,915	15,337	30.20%	174,133	56,969	19	343	327	42,003	14,966	30.50%	30.50%	217			
102501	ADR	ROUND LAKE	12.54	2014	88,822	85,303	11	302	554	68,822	-21,950	43.80%	50,947	27,994	13	167	549	70,546	-42,552	55.20%	55.20%	654			
051902	HML	SAUGATUCK	7.78	2015	79,549	68,843	6	301	880	109,390	-40,546	52.00%	19,727	17,072	11	77	865	111,109	-94,038	75.30%	75.30%	1090			
057101	HML	CASCO	49.77	2015	18,281	20,440	29	299	1,134	140,967	-120,527	83.20%	37,591	42,031	23	1,244	1,118	143,551	-101,520	77.60%	83.20%	1271			
058201	GRN	ENGLISHVILLE	35.86	2002	64,254	84,609	14	299	1,324	164,588	-79,979	68.20%	4,271	5,624	19	65	1,317	169,060	-163,436	91.70%	91.70%	1483			
061901	MUS	BROADWAY	18.71	2005	26,142	42,328	29	299	1,629	202,552	-160,224	91.10%	50,898	82,412	46	596	1,619	207,880	-125,468	84.20%	91.10%	1470			
029303	WBR	MARKEY	21.21	1988	89,713	69,669	16	299	777	96,657	-26,987	46.00%	172,192	133,721	19	654	777	99,703	34,018	26.40%	46.00%	463			
157802	GVL	TREMAINE	27.22	1988	259,520	64,607	30	299	249	31,015	33,592	24.90%	314,274	78,238	21	442	249	31,962	46,276	24.30%	24.90%	159			
018302	ADR	MANITOU BEACH	43.57	2010	40,403	31,178	19	298	783	97,304	-66,126	62.60%	120,419	92,925	20	451	772	99,075	-6,149	38.70%	62.60%	922			
006707	OVS	OWOSSO	20.83	1988	36,948	79,142	13	297	2,116	263,051	-183,309	94.30%	184,690	395,806	22	1,363	2,142	275,006	120,599	14.30%	94.30%	1539			
033901	SAG	BURROWS	9.32	2009	70,086	83,313	25	296	1,192	148,158	-64,845	62.20%	86,217	102,489	25	634	1,189	152,619	-50,130	58.70%	62.20%	811			
048702	GRN	PEACH RIDGE	28.28	2001	270,494	114,775	12	296	425	52,895	61,879	20.70%	33,009	14,006	12	119	424	54,477	-40,471	54.00%	54.00%	632			
147502	GVL	MARKER LAKE	54.56	2015	68,965	50,079	16	296	733	91,121	-41,042	52.10%	95,321	69,218	27	563	726	93,230	-24,011	47.50%	52.10%	590			
082901	GRA	MULLINS	16.43	2011	64,358	31,254	3	293	403	61,245	-29,990	47.30%	130,580	63,414	9	316	486	62,349	1,065	35.60%	47.30%	490			
005501	MDL	AUBURN	23.04	2008	29,857	44,089	10	293	1,487	184,833	-140,744	88.00%	10,164	15,009	16	70	1,477	189,588	-174,579	93.30%	93.30%	1518			
049701	BCK	OLIVET	22.20	2009	91,912	36,949	23	292	405	50,330	-13,382	40.40%	120,296	48,359	15	345	402	51,612	-3,253	37.50%	40.40%	359			
022902	KAL	COOPER	22.05	2016	102,995	63,131	7	291	617	76,680	-13,549	40.60%	355,454	217,875	20	1,400	613	78,695	139,180	12.70%	40.60%	361			
023702	ALM	CASINO	56.24	2002	40,690	58,289	24	291	1,447	179,945	-121,656	83.50%	26,855	38,470	31	308	1,433	183,919	-145,449	88.00%	88.00%	1391			
051601	MDL	BRADFORD	44.51	2011	278,749	133,667	16	289	481	59,772	73,885	19.10%	160,063	76,754	18	350	480	61,565	15,189	30.50%	30.50%	217			
129302	MUS	JOHNSON	51.85	2006	86,393	75,625	14	289	887	110,273	-34,448	49.20%	119,045	104,484	26	711	878	112,684	-8,200	39.80%	49.20%	532			
119602	LAN	PEWAMO	37.61	1994	48,413	37,563	12	288	781	97,115	-59,551	59.50%	29,010	22,509	11	118	776	99,615	-77,106	69.40%	69.40%	958			
039701	KAL	GULL LAKE	42.26	2003	86,425	45,951	21	288	540	67,153	-21,202	43.50%	248,888	132,330	28	1,053	532	68,262	64,068	21.00%	43.50%	414			
060701	MUS	GETTY	23.84	2000	15,994	50,478	27	288	3,163	393,261	-342,783	99.80%	19,933	62,912	22	383	3,156	405,205	-342,293	99.90%	99.90%	1684			
049205	GRA	HASKELITE	3.73	1998	201,514	19,398	3	287	96	11,928	7,470	32.00%	0.0	0	0	0	96	12,359	-12,359	41.30%	41.30%	371			
017006	GRA	HARVEY STREET	14.45	2009	12,964	44,741	22	287	3,523	437,945	-393,203	99.90%	84,464	291,503	17	1,160	3,451	443,093	-151,590	89.70%	99.90%	1684			
135901	LAN	KIPP ROAD	62.88	1997	96,933	74,649	22	287	770	95,701	-21,052	43.40%	298,233	229,671	35	999	770	98,872	130,799	13.40%	43.40%	413			
000901	GVL	LYONS	38.98	1999	135,340	116,350	20	286	965	107,479	8,871	31.60%	208,733	179,444	29	1,081	860	110,373	69,071	20.20%	31.60%	231			
060402	LAN	OKEMOS	19.80	2011	178,267	204,070	8	286	1,145	204,070	61,710	20.80%	70,813	81,065	12	1,240	1,145	146,977	-65,911	65.20%	65.20%	875			
130302	LAN	WEST ROAD	13.15	2014	68,881	91,601	8	285	1,331	165,517	-73,916	66.10%	87,899	116,892	9	542	1,330	170,735	-63,843	60.60%	66.10%	893			
088502	JAC	BURTON ROAD	61.18	2007	26,107	32,431	40	285	942	117,091	-84,660	70.40%	123,411	153,309	71	877	1,242	159,491	-6,182	38.70%	70.40%	980			
073201	BEN	DONTZ ROAD	41.07	2006	107,307	51,643	16	284	983	60,096	-8,444	38.00%	122,796	59,097	24	352	481	61,788	-2,691	37.20%	38.00%	317			
050801	GVL	BELDING	35.81	2011	35,033	48,994	19	284	1,405	174,632	-125,638	84.70%	39,329	55,003	35	383	1,399	179,554	-124,551	84.00%	84.00%	1307			
017402	MUS	TANUM	23.82	2012	87,221	52,576	27	284	607	75,489	-22,914	44.30%	48,												

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Circuit Priority Rankings by SAIDI - LVD Only

2016 SAIDI 124  
2015 SAIDI 128

2016 YTD																2015										Highest 2yr Percentile	2016 Ranking
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile							
133201	GRA	ROSEWOOD	18.53	2015	25.826	30.159	11	259	1,168	145,246	-115,087	81.30%	35.422	41,365	12	422	1,168	149,930	-108,565	79.60%	81.30%	1231					
154601	MDL	PRICE ROAD	38.61	1988	85.710	73.977	11	258	870	108,101	-34,124	49.20%	83.177	71,791	16	375	863	110,812	-39,021	53.20%	53.20%	816					
066101	LUD	HART	14.16	2015	148.497	62.916	7	256	424	52,699	10,217	31.30%	145.103	61,478	10	179	424	54,396	7,082	33.10%	33.10%	246					
071201	ADR	COLLEGE PARK	47.73	2006	18.180	21,444	20	254	1,181	146,876	-125,432	84.60%	25,640	30,243	25	210	1,180	151,437	-121,194	83.20%	84.60%	1305					
039903	FLT	SLOAN	14.38	2009	18.741	33,962	33	254	1,826	227,037	-193,075	95.00%	135,285	245,158	47	564	1,812	232,659	12,500	31.40%	95.00%	1305					
144302	CLR	CLARE	29.40	2005	64,235	112,529	14	254	1,762	219,034	-105,507	78.90%	67,084	117,520	25	1,014	1,752	224,915	-107,395	78.90%	78.90%	1173					
122201	TRA	ANGELL	25.54	1988	180,763	76,986	7	253	425	52,823	24,162	27.90%	256,129	109,084	29	593	426	54,680	54,404	22.80%	27.90%	188					
112503	ADR	HUNT ROAD	53.03	2014	25,381	39,590	23	252	1,574	195,623	-156,033	90.60%	87,788	136,936	41	2,212	1,560	200,264	-63,329	64.30%	90.60%	1460					
046901	BNC	CENTRAL LAKE	24.57	2011	99,269	45,376	13	252	456	56,723	-11,347	39.40%	285,895	130,684	14	900	457	58,687	71,997	19.60%	39.40%	344					
025201	BEN	ONEKAMA	58.51	2015	20,835	30,655	22	252	1,479	183,845	-153,190	90.30%	225,997	332,513	64	1,094	1,471	188,899	143,614	12.40%	90.30%	1455					
138101	BCY	PORTSMOUTH	100.26	2006	66,190	63,842	31	251	968	120,389	-56,547	58.60%	73,854	71,234	41	284	965	123,833	-62,599	60.00%	60.00%	763					
010702	GRE	MEADOWBROOKE	14.48	2016	59,766	32,651	4	250	546	67,906	-35,254	49.60%	18,817	10,280	9	42	546	70,140	-59,860	63.10%	63.10%	832					
041201	JAC	SYLVAN	54.51	2015	41,642	33,246	15	250	799	99,326	-66,080	62.50%	651,907	520,462	33	1,851	798	102,501	417,961	3.70%	62.50%	818					
123602	FRE	BAILEY	19.26	1998	112,158	24,138	11	248	216	26,821	-2,683	35.90%	50,902	10,955	12	68	215	27,630	-16,676	43.60%	43.60%	415					
078703	JAC	WISNER	7.61	2004	29,487	19,812	13	248	669	83,210	-63,398	61.30%	6,101	4,099	4	59	672	86,263	-82,164	71.00%	71.00%	995					
093503	FLT	RANKIN	22.47	1999	71,238	58,145	6	248	816	101,472	-83,327	52.90%	131,513	107,342	15	333	816	104,791	2,551	34.90%	52.90%	607					
114702	BCY	TOWN LINE	38.91	2011	22,471	17,273	10	247	773	96,074	-78,801	67.80%	36,893	28,359	19	190	769	98,690	-70,330	67.00%	67.80%	929					
041003	FLT	FLUSHING	26.37	#N/A	45,179	91,306	11	247	1,624	201,944	-110,638	80.10%	2,871	5,802	9	23	2,021	259,471	-253,669	98.80%	98.80%	1656					
051502	GRA	DUTTON	22.42	2014	19,673	62,827	13	247	3,213	399,412	-336,585	99.70%	4,489	14,335	22	123	3,194	410,023	-395,688	100.00%	100.00%	1688					
061101	KAL	KENDALL	14.19	2014	12,822	27,261	14	247	2,129	264,673	-237,413	98.20%	5,458	11,605	8	57	2,126	272,959	-261,354	99.00%	99.00%	1662					
101203	BCK	BARNUM CREEK	5.43	1988	329,672	28,438	6	246	88	10,960	17,479	29.90%	0,701	60	1	1	86	11,068	-11,008	40.70%	40.70%	362					
090702	MUS	CLUB	43.09	2015	42,894	44,023	21	245	1,029	127,887	-83,865	70.10%	39,935	40,986	19	453	1,026	131,766	-90,781	73.80%	73.80%	1059					
021202	KAL	PHILLIPS	7.32	2011	12,697	19,543	18	245	1,546	192,214	-172,670	92.80%	1,567	2,413	6	50	1,539	197,622	-195,210	95.80%	95.80%	1576					
009902	SAG	FREELAND	55.85	2010	27,437	53,877	15	244	1,972	245,188	-191,311	94.80%	216,345	424,821	38	2,325	1,964	252,106	172,715	10.80%	94.80%	1555					
107601	ALM	ISABELLA	14.08	2008	32,104	58,805	13	244	1,837	228,339	-169,534	92.30%	139,416	255,374	9	1,897	1,832	235,172	20,201	29.30%	92.30%	1497					
079202	HST	MIDDLEVILLE	57.19	2002	53,356	60,127	17	243	1,161	144,376	-84,250	70.20%	32,490	36,613	24	349	1,127	144,679	-108,066	79.40%	79.40%	1187					
071701	JAC	SPRING ARBOR	23.94	2009	33,374	28,368	9	242	886	110,103	-81,735	69.10%	623,600	530,060	10	947	850	109,130	420,930	3.70%	69.10%	953					
103301	FLT	SQUIRE HILL	21.69	1988	15,088	27,016	14	242	1,786	222,084	-195,067	95.30%	33,002	59,095	20	387	1,791	229,895	-170,800	92.80%	95.30%	1565					
006403	ADR	BEECHER	9.80	1988	16,600	17,574	13	242	1,174	146,006	-128,431	84.80%	1,737	1,838	9	28	1,059	135,922	-134,084	86.10%	86.10%	1343					
020702	OWS	DURAND	35.11	2003	20,843	29,426	17	241	1,418	176,235	-146,810	89.40%	80,217	113,249	24	621	1,412	181,256	-68,007	65.90%	89.40%	1429					
053001	FRE	WHITE CLOUD	24.06	1999	26,465	19,662	11	241	744	92,554	-72,892	65.50%	38,773	28,806	19	208	743	95,385	-66,579	65.60%	65.60%	882					
042701	FLT	RUSSELLVILLE	20.47	2002	28,596	25,047	20	241	883	109,769	-84,722	70.60%	83,332	72,990	24	329	876	112,544	-39,464	53.60%	70.60%	985					
037402	BCY	KNIGHT	74.23	2011	35,637	35,485	19	241	999	124,145	-88,660	72.80%	85,687	85,322	27	463	996	127,840	-42,519	55.20%	72.80%	1037					
036102	SAG	EDDY	16.21	2006	56,156	23,574	9	241	416	51,744	-28,170	46.70%	54,130	22,723	5	104	420	53,896	-31,172	50.00%	50.00%	546					
104202	GRN	ROGUE RIVER	17.73	1988	15,728	53,286	15	239	1,036	128,823	-75,537	66.70%	140,489	144,719	14	1,935	1,030	132,253	12,466	31.50%	66.70%	905					
132202	HST	BROGAN	27.64	1999	281,447	73,043	13	239	264	32,801	40,242	23.60%	115,564	29,992	9	94	260	33,320	-3,328	37.60%	37.60%	309					
137102	GVL	CLYDE ROAD	31.01	2006	64,443	55,367	13	238	854	106,190	-50,823	56.50%	147,944	126,721	19	318	859	110,305	16,415	30.20%	56.50%	678					
135903	LAN	KIPP ROAD	37.06	2011	45,989	69,325	14	238	1,509	187,801	-118,275	82.90%	36,910	55,645	20	179	1,508	193,555	-137,910	87.00%	87.00%	1389					
062403	JAC	BROOKLYN	36.74	2015	92,222	49,137	19	237	1,531	190,395	-141,257	88.10%	38,444	58,625	15	183	1,525	195,784	-137,159	86.90%	86.90%	1392					
025402	FRE	GRANT	29.65	1988	86,199	43,299	18	237	503	62,488	-19,188	42.50%	50,325	25,279	15	142	502	64,491	-39,212	53.40%	53.40%	621					
013702	MDL	SANFORD DAM	52.27	1988	12,051	15,440	17	237	1,286	159,844	-144,405	88.90%	427,190	547,320	40	2,426	1,281	164,492	382,828	4.40%	88.90%	1417					
078201	WBR	GREENBUSH	25.39	2011	86,528	71,504	9	236	828	102,879	-31,375	48.10%	476,435	393,711	17	966	826	106,096	287,616	5.80%	48.10%	506					
093403	GRE	CALVIN	16.51	2015	55,261	72,971	11	235	2,022	251,332	-178,361	93.60%	7,254	9,579	5	182	1,320	169,533	-159,954	91.20%	93.60%	1521					
031801	MUS	EAST MUSKOGON	17.12	1997	34,357	30,608	23	235	892	110,875	-80,266	68.30%	4,115	3,666	3	12	891</										

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2016 SAIDI 124  
2015 SAIDI 128

2016 YTD													2015													Highest 2yr Percentile	2016 Ranking
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile							
070305	JAC	INGHAM	5.87	2014	20.502	25.240	12	210	1,221	151,842	-126,602	84.80%	10.031	12,350	10	272	1,231	158,059	-145,709	88.40%	88.40%	1400					
038101	MDL	STARKS	26.23	2006	20.990	21,870	20	210	1,043	129,634	-107,764	79.30%	58.922	61,394	18	339	1,042	133,773	-72,379	67.80%	79.30%	1185					
125201	LAN	UPTON	36.29	2009	75.677	74,912	9	209	1,003	124,681	-49,769	55.90%	110.224	109,110	9	358	990	127,090	-17,980	44.10%	55.90%	669					
072201	MDL	WALDO	19.73	1994	130.822	146,094	12	208	1,119	139,070	7,024	32.10%	45.235	50,516	16	533	1,117	143,375	-92,860	74.70%	74.70%	1077					
056903	TRA	NORTHPORT	10.48	1999	28.244	37.544	9	208	213	26,435	11,109	31.10%	57.869	12,189	1	80	211	14,854	-14,854	42.70%	42.70%	396					
060904	JAC	NAPOLEON	15.75	1988	57.284	53,561	9	207	937	116,443	-82,882	60.90%	178.821	167,198	12	591	935	120,042	47,156	24.10%	60.90%	779					
090802	JAC	OAK STREET	7.65	2014	36.865	45,579	13	207	1,219	151,580	-106,002	78.70%	4.702	5,813	6	66	1,236	158,734	-152,922	90.00%	90.00%	1445					
180202	BIG	BARRYTON	17.36	1988	36.449	20,268	5	205	555	69,031	-48,763	55.40%	450.390	250,741	11	1,247	556	71,390	179,350	10.10%	55.40%	656					
058801	GRA	CHICAGO	27.29	2014	26.102	45,465	9	205	1,750	217,569	-172,103	92.70%	19.563	34,075	15	328	1,742	223,631	-189,556	95.20%	95.20%	1562					
044801	LUD	PENTWATER	25.82	1994	22.719	32,085	11	205	1,420	176,575	-144,490	89.00%	64.134	90,575	29	419	1,412	181,317	-90,743	73.90%	89.00%	1418					
157801	GVL	TREMAINE	29.43	1988	43,669	74,639	26,053	17	204	351	43,669	-17,617	42.00%	130,650	45,604	19	168	349	44,814	790	35.80%	42.00%	383				
099603	FLT	CENTER ROAD	6.57	1994	34.523	21,457	6	204	624	77,596	-56,139	58.40%	268.477	166,865	6	919	622	79,796	87,069	17.50%	58.40%	723					
103101	BCY	COGGINS	15.56	2012	95.444	31,326	5	204	329	40,889	-9,563	38.70%	296.557	97,333	10	342	328	42,138	55,195	22.60%	38.70%	329					
073604	SAG	FRANKENMUTH	25.33	1988	95.302	28,114	2	203	295	36,694	-8,580	38.20%	0.0	0	0	0	295	37,874	-37,874	52.80%	52.80%	605					
031803	MUS	EAST MUSKEGON	9.35	1988	24.952	27,427	11	203	1,122	139,508	-112,081	80.70%	81.063	89,101	18	609	1,099	141,118	-52,017	59.60%	80.70%	1216					
002303	FLT	BLINTON	59.65	2006	28.731	69,769	22	203	2,442	303,566	-233,798	98.00%	51.500	125,059	27	672	2,428	311,766	-186,707	94.90%	98.00%	1632					
032802	GRN	PIERSON	32.21	2011	27.899	21,177	22	202	762	94,694	-73,517	65.80%	149.156	113,217	21	513	759	97,453	15,764	30.30%	65.80%	887					
049902	GRA	STANDALE	40.09	2003	20.645	26,098	31	202	1,283	159,471	-133,374	86.10%	129.186	163,305	55	1,928	1,264	162,296	1,009	35.70%	86.10%	1343					
088202	JAC	CARY ROAD	32.32	2005	12,417	20,774	21	202	1,673	208,048	-187,274	94.60%	20.847	34,877	20	240	1,673	214,799	-179,922	94.10%	94.60%	1548					
156202	BCK	CRANBROOK	18.68	1988	46,807	28,936	10	201	617	76,719	-47,783	55.00%	2.270	1,403	9	11	618	79,371	-77,967	69.50%	69.50%	960					
138102	SAG	PORTSMOUTH	61.40	1999	27,347	29,548	17	201	1,082	134,574	-105,026	78.30%	28.534	31,262	20	175	1,080	138,719	-107,457	79.00%	79.00%	1175					
042402	CAD	MARION	42.54	2010	53,472	32,635	7	201	614	76,274	-43,640	53.10%	132.391	80,800	30	472	610	79,357	2,443	35.00%	53.10%	612					
040301	FLT	LONG LAKE	50.08	2015	29,641	50,335	14	201	1,712	212,805	-162,470	91.30%	19,500	33,113	19	173	1,698	218,022	-184,909	94.50%	94.50%	1546					
025301	HST	NASHVILLE	55.07	2005	28,412	34,365	19	201	1,218	151,463	-117,098	81.90%	19,491	23,575	27	221	1,210	155,288	-131,713	85.60%	85.60%	1329					
136601	TEM	M.A.E.	12.54	1988	19,330	25,870	11	200	1,340	166,538	-140,668	87.90%	21,641	28,962	13	148	1,338	171,823	-142,861	87.50%	87.90%	1389					
127402	BCY	DIQUITE	37.22	2002	115,629	56,591	21	200	493	61,349	-4,758	36.50%	71.790	35,135	19	168	489	62,836	-27,700	48.90%	48.90%	526					
074304	FLT	RED ARROW	8.61	2010	21,660	32,466	16	200	1,620	201,342	-167,076	92.00%	55.784	88,248	23	318	1,582	203,103	-114,855	81.60%	92.00%	1491					
100202	GRE	SHAFFER	6.12	2002	130,213	20,848	6	200	182	22,581	-1,733	35.20%	152.954	24,489	3	174	160	20,556	3,933	34.20%	35.20%	273					
013401	ADR	TECUMSEH	8.55	1998	198,080	98,623	8	199	525	65,308	33,315	25.00%	58.302	30,572	3	141	524	67,322	-36,751	52.30%	52.30%	594					
036403	FLT	IRON STREET	9.12	1998	26,632	31,317	18	199	1,168	145,260	-113,942	81.10%	59.940	70,486	15	276	1,176	150,977	-80,491	70.50%	81.10%	1226					
050503	SAG	BRISTOL	2.15	2015	264,661	49,171	1	198	201	25,028	24,143	27.90%	0.0	0	0	0	186	23,853	-23,853	47.20%	47.20%	486					
125605	BCK	SPRINGFIELD	15.64	2015	19,904	22,262	6	198	1,119	139,096	-116,834	81.80%	18,515	20,708	13	148	1,118	143,598	-122,890	83.50%	83.50%	1278					
123302	SAG	MCKEIGHAN	38.88	2014	60,083	35,117	8	197	584	72,617	-37,500	50.90%	620.963	362,937	11	1,235	584	75,039	287,897	5.70%	50.90%	562					
013502	KAL	TWELFTH STREET	21.05	1988	59,143	66,489	7	197	1,149	142,826	-76,336	67.00%	13.173	14,809	6	167	1,124	144,335	-129,525	85.20%	85.20%	1320					
122704	FLT	STEEL DRIVE	35.07	2003	156,043	48,950	8	196	1,255	156,043	-95,077	75.40%	71,470	89,014	24	775	1,245	159,903	-70,889	67.20%	75.40%	1091					
076401	BCK	BEDFORD	50.29	2011	39,806	32,037	14	196	811	100,818	-68,781	63.80%	77,701	62,537	33	343	805	103,332	-40,795	54.20%	63.80%	844					
005402	FLT	STANLEY	17.61	2012	27,187	37,169	15	195	1,383	171,884	-134,715	86.40%	29,189	39,906	13	130	1,367	175,526	-135,621	86.50%	86.50%	1356					
034003	LAN	DIMONDIALE	33.98	2006	26,017	26,068	17	195	1,010	125,525	-99,457	76.80%	17,273	17,307	18	146	1,002	128,638	-111,331	80.60%	80.60%	1215					
067205	MDL	INGERSOLL	52.36	2012	52,878	57,191	13	195	575	71,481	-41,295	52.30%	69,311	39,621	14	560	732	73,390	-33,770	51.10%	52.30%	694					
056902	TRA	NORTHPORT	33.48	2009	119,624	55,909	13	194	471	140,205	-2,660	35.80%	48.483	22,659	21	94	467	60,004	-37,345	52.60%	52.60%	501					
003001	WBR	FIVE CHANNELS HYDRO	11.86	1988	215.444	44,257	11	194	205	25,460	18,797	29.50%	421.456	86,576	13	354	205	26,374	60,202	21.70%	29.50%	207					
079703	WBR	GRAYLING	25.60	2015	13,663	17,346	14	194	1,278	158,869	-141,523	88.20%	191.043	242,554	25	1,476	1,270	163,005	79,549	19.00%	88.20%	1394					
008802	BRO	QUINCY	45.36	2011	34,139	54,582	22	193	1,121	139,371	-84,789	70.70%	82,713	132,241	31	614	1,599	205,265	-73,024	68.00%	70.70%	988					
000705	MUS	MUSKEGON HEIGHTS	6.92	2015	18,223	18,271	27	192	1,007	125,165	-106,894	79.00%	91,678	91,920	18	1,314	1,003	128,266	-36,806	52.40%	79.00%	1175					
01																											

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Circuit Priority Rankings by SAIDI - LVD Only

		2016 YTD													2015													2016 Ranking
		Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	Highest 2yr Percentile					
054402	LUD	ORIOLE	6.63	2002	22.469	19,982	6	175	889	110,522	-90,540	73.30%	19,494	17,336	6	192	889	114,177	-96,841	76.20%	76.20%	1109						
022402	FLT	CALKINS	7.28	2015	196,570	75,162	7	175	383	27,508	26,800%	4,461	1,706	4	31	382	49,091	-47,386	57.20%	57.20%	696							
012401	OVS	PERRY	28.77	2011	17,696	23,871	7	175	899	111,739	-87,868	72.40%	18,004	24,287	19	217	1,349	173,188	-148,901	89.30%	89.30%	1427						
148001	MUS	ARTHUR	27.98	1988	137,092	41,950	19	175	307	38,114	3,836	33.00%	49,690	15,205	15	205	306	39,287	-24,081	47.50%	47.50%	493						
076510	KAL	LOVELL	0.52	1988	521,603	45,681	3	175	87	10,816	34,865	24.60%	187,441	16,416	6	37	88	11,244	5,172	33.50%	33.50%	934						
010603	FLT	ATLAS	28.15	1998	24,342	19,174	12	173	793	98,639	-79,465	68.10%	100,982	79,542	15	587	788	101,129	-21,587	45.70%	45.70%	1437						
062901	MUS	COOPERSVILLE	24.18	2010	11,995	15,623	9	173	1,325	164,758	-149,936	89.70%	92,416	122,014	12	420	1,320	169,605	-47,492	57.40%	57.40%	1249						
070104	FLT	WALNUT	9.40	2006	35,085	45,816	23	172	1,316	163,554	-117,739	82.30%	78,613	102,656	24	669	1,306	167,654	-64,998	65.00%	65.00%	641						
129603	JAC	BLACKMAN	12.01	2010	118,057	91,979	9	172	785	97,612	-5,633	36.80%	75,048	58,470	7	578	779	100,027	-41,558	54.50%	54.50%	1249						
149802	FLT	WEST FENTON	13.30	1988	20,327	18,268	8	171	905	112,537	-94,268	74.90%	178,695	160,600	7	651	899	115,827	-45,213	24.40%	24.40%	293						
103801	TEM	JEFFS ROAD	9.40	1988	102,470	23,126	18	171	225	27,985	-4,859	36.60%	409,903	92,509	11	169	226	28,975	63,534	21.10%	21.10%	735						
053702	MUS	TWIN LAKE	39.06	2011	45,797	39,055	20	171	776	96,427	-57,373	58.90%	128,413	109,510	8	972	853	109,488	22	36.10%	36.10%	575						
037301	MUS	RAVENNA	29.09	2010	67,483	46,514	13	171	692	86,063	-39,549	51.40%	201,323	138,765	23	852	689	88,493	50,272	23.40%	23.40%	1542						
003503	CAD	CADILLAC	16.99	2016	9,512	15,268	7	171	1,610	200,105	-184,837	94.40%	43,828	70,351	15	1,799	1,605	206,082	-135,732	86.60%	86.60%	285						
000902	GVL	LYONS	21.77	2001	112,163	33,194	13	171	299	37,120	-3,925	36.20%	147,895	43,769	7	153	296	37,996	5,773	33.40%	33.40%	1542						
017604	MUS	WESTERN AVENUE	6.79	1988	8,290	12,794	10	170	387	48,112	-35,318	49.70%	9,003	13,895	6	99	1,543	198,149	-184,254	94.30%	94.30%	1539						
041603	LAN	WHITTUM	21.62	1988	51,388	18,270	26	170	355	44,167	-25,897	45.40%	96,556	34,328	21	289	356	45,645	-11,317	40.80%	40.80%	452						
154501	KAL	RICHLAND	19.00	2011	12,500	16,187	10	170	1,049	130,393	-114,206	81.20%	111,546	144,446	20	416	1,295	166,255	-21,809	46.00%	46.00%	1229						
098201	GRA	LEFFINGWELL	12.14	2016	36,671	44,075	13	169	1,204	149,624	-105,549	78.60%	18,053	21,698	2	78	1,202	154,308	-132,611	85.90%	85.90%	1337						
076702	ALM	JASPER	40.71	2002	46,656	19,995	13	169	427	53,033	-33,138	48.40%	108,662	46,336	9	322	426	54,747	-8,411	40.00%	40.00%	582						
030901	ADR	WALDRON	40.32	2009	41,868	20,108	10	169	484	60,217	-40,109	51.80%	131,932	63,362	16	210	480	61,660	1,702	35.40%	35.40%	514						
049802	HML	FENNVILLE	19.65	1999	26,782	27,122	26	168	1,064	132,304	-105,192	78.40%	61,057	64,583	28	435	1,058	135,800	-71,919	67.20%	67.20%	630						
116801	BCK	WILDER	45.54	1999	66,783	27,346	13	167	411	51,142	-23,796	44.60%	29,798	12,201	13	101	409	52,571	-40,370	53.90%	53.90%	402						
068602	KAL	PARKWAY	1.89	2000	185,055	23,073	10	167	126	15,710	7,363	32.10%	4,663	581	2	2	125	16,008	-15,427	43.10%	43.10%	405						
055103	FLT	DAVISON	23.27	2010	25,973	38,612	7	166	1,490	185,258	-146,647	89.30%	54,258	80,661	14	573	1,487	190,865	-110,204	80.10%	80.10%	1427						
040701	ADR	ONSTED	31.54	2014	22,027	13,725	15	166	625	77,740	-64,015	61.50%	10,136	6,316	21	27	623	79,999	-73,683	68.30%	68.30%	931						
049801	HML	FENNVILLE	19.65	2011	34,219	30,435	10	165	892	110,842	-80,407	68.50%	63,574	56,544	9	178	889	114,191	-97,647	62.40%	62.40%	948						
061302	ALM	RIVERDALE	73.46	1997	42,787	41,289	10	165	972	120,801	-79,512	68.20%	15,492	14,949	20	157	965	123,894	-108,945	79.70%	79.70%	1195						
060102	CAD	TUSTIN	89.13	2009	24,500	26,281	24	165	1,082	134,548	-108,267	79.60%	386,700	414,807	28	2,108	1,073	137,719	277,088	6.20%	6.20%	1193						
029702	TEM	LAMBERTVILLE	28.40	2016	10,625	19,963	17	165	1,886	234,476	-214,514	96.80%	354,588	666,234	27	2,070	1,879	241,227	425,007	3.60%	3.60%	466						
084003	TRA	HOSPITAL	18.24	1988	128,232	26,713	9	165	208	25,918	795	34.20%	33,239	6,924	6	56	208	26,745	-19,821	45.10%	45.10%	1403						
059502	BCK	ATHENS	37.15	2001	44,464	28,183	19	164	636	79,101	-50,918	56.50%	145,855	92,449	22	577	634	81,378	11,072	32.00%	32.00%	1264						
052602	BNC	BOYNE CITY	22.41	2015	21,117	24,465	14	164	1,161	144,350	-119,885	82.90%	57,638	66,778	22	510	1,159	148,747	-81,969	71.00%	71.00%	1510						
040401	BCK	ALBER	10.60	2009	9,833	14,865	20	163	1,519	188,785	-173,920	93.00%	165,113	249,616	13	1,330	1,512	194,095	55,621	22.60%	22.60%	607						
023001	BRO	BRONSON	5.93	2015	58,370	19,923	11	163	346	43,009	-23,086	44.40%	15,167	5,177	10	63	341	43,821	-38,644	52.90%	52.90%	1510						
010008	GRA	WEALTHY STREET	15.43	2016	11,567	17,700	12	163	1,581	196,565	-178,865	93.80%	27,019	41,347	19	391	1,530	196,474	-155,126	90.30%	90.30%	1526						
059602	SAG	BIRCH RUN	14.83	2016	36,489	20,296	11	163	558	69,384	-49,099	55.70%	13,344	7,418	9	52	556	71,377	-63,958	64.50%	64.50%	859						
054201	JAC	SPRINGPORT	67.70	2009	71,085	27,070	80	162	804	99,628	-42,850	52.60%	418,745	334,624	38	1,039	893	231,535	7,809	7.80%	7.80%	365						
107701	TRA	CASS ROAD	5.48	1988	296,832	35,307	5	162	121	15,082	20,225	29.30%	32,658	3,885	2	8	119	11,271	-11,387	40.00%	40.00%	1259						
130903	GRE	KRAFT AVENUE	14.17	2010	67,189	62,602	5	162	937	116,469	-83,867	57.40%	1,473	1,372	8	10	932	119,624	-118,251	82.60%	82.60%	334						
124702	BIG	FARRINGTON	12.78	1988	276,956	33,585	3	161	122	15,167	18,417	29.70%	74,148	8,991	5	128	121	15,569	-6,577	39.00%	39.00%	374						
080801	HML	SWAN CREEK	37.14	2002	77,324	26,005	15	160	340	42,217	-16,212	41.60%	150,727	50,692	17	449	336	43,179	7,513	32.90%	32.90%	1249						
056804	GRA	RAMONA	8.54	1999	148,662	30,946	18	160	1,196	148,662	-117,716	82.30%	79,370	123,024	16	1,268	1,550	199,001	-75,977	69.10%	69.10%	654						
043701	ALM	EDGEWOOD	103.42	2011	34,958	18,912	19	160	544	67,618	-48,706	55.20%	83,183	45,002	26</													

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		2016 YTD												2015												2016 Ranking
		Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	Highest 2yr Percentile			
079002	SAG	SEIDEL	18.80	1995		35.768	52,716	12	143	1,475	183,420	-130,704	85.40%	271,445	400,068	11	1,603	1,474	189,223	210,845	8.90%	85.40%	1323			
112603	GRE	CASCADE	38.78	2015		27.643	38,421	8	143	1,398	173,834	-135,413	86.60%	27,492	38,211	17	409	1,390	178,445	-140,234	87.20%	87.20%	1372			
102502	ADR	ROUND LAKE	7.53	2014		94.826	37,626	7	143	381	47,379	-9,754	38.80%	123,885	49,156	3	220	397	50,943	-1,787	37.00%	38.80%	330			
034002	LAN	DIMONDIALE	31.34	2014		33.041	31,206	6	143	988	122,869	-91,662	73.60%	22,441	21,195	8	57	944	121,259	-100,064	77.10%	77.10%	1133			
004201	WBR	FOOTE HYDRO	13.47	2014		137,206	46,210	3	142	339	42,086	4,124	32.80%	163,074	54,922	2	67	337	43,240	11,682	31.70%	32.80%	243			
036201	LUD	WASHINGTON	8.85	1998		58,354	21,290	6	142	287	35,680	-14,390	41.00%	12,495	4,559	5	21	365	46,841	-42,282	54.90%	54.90%	649			
099602	FLT	CENTER ROAD	10.45	1994		101,665	27,674	10	141	495	61,598	-33,924	48.90%	93,826	25,540	1	495	272	34,948	-9,408	40.20%	48.90%	526			
099801	MUS	FERRIS STREET	49.24	2016		10,124	15,018	10	139	1,503	186,796	-171,778	92.60%	104,127	154,459	13	1,318	1,483	190,446	-35,987	52.10%	92.60%	1503			
090807	JAC	OAK STREET	1.22	1988		31,462	4,368	2	139	136	16,940	-12,572	40.00%	89,869	12,478	1	139	139	17,826	-5,348	38.20%	40.00%	353			
039002	FLT	SLOAN	7.42	2002		19,948	20,433	18	139	1,033	128,450	-108,017	79.40%	108,729	111,373	18	426	1,024	131,509	-20,137	45.20%	79.40%	1187			
040403	BCK	ALBER	9.70	1999		23,958	18,014	6	138	757	94,072	-76,058	66.80%	40,061	30,122	11	249	752	96,534	-66,412	65.40%	66.80%	908			
043902	BCK	WAKESHMA	25.27	2002		158,507	51,974	10	138	328	40,738	11,235	31.00%	36,606	12,003	11	61	328	42,098	-30,095	49.70%	49.70%	542			
029406	FLT	KEARSLEY	7.19	1999		41,961	41,266	11	138	991	123,215	-81,950	69.20%	40,223	39,556	13	298	983	126,259	-86,703	72.40%	72.40%	1028			
030701	SAG	SHIELDS	19.00	2006		13,303	14,802	13	138	1,111	138,147	-123,345	84.10%	84,147	93,625	12	1,455	1,113	142,848	-49,223	58.10%	84.10%	1293			
078702	JAC	WISNER	12.10	2014		24,562	18,843	13	138	779	96,859	-78,016	67.50%	0.040	30	1	1	767	98,494	-98,463	76.80%	76.80%	1125			
029102	HML	HAMILTON	42.32	2010		46,720	33,542	14	137	723	89,832	-56,289	58.50%	474,405	340,598	20	833	718	92,176	248,423	7.10%	58.50%	726			
054002	FLT	MT MORRIS	28.02	2016		6,027	11,507	11	137	1,872	232,788	-221,282	97.20%	18,253	34,850	22	263	1,909	245,126	-210,275	97.00%	97.20%	1611			
023801	CAD	LAKE MITCHELL	73.70	2011		22,990	32,109	21	136	1,404	174,521	-142,412	88.60%	200,437	279,937	39	1,416	1,397	179,310	100,626	16.10%	88.60%	1408			
151101	TRA	LELAND	14.05	1988		41,845	19,134	7	136	458	56,933	-37,798	51.00%	136,717	62,516	18	241	457	58,707	3,809	34.50%	51.00%	564			
150802	BRO	GIRARD	42.63	2015		120,207	67,341	10	135	565	70,222	-2,881	35.90%	133,029	74,524	21	521	560	71,924	2,600	34.80%	35.90%	279			
077001	CLR	CURTIS	46.67	2009		71,112	38,352	10	135	541	67,232	-28,880	47.00%	34,408	18,557	11	196	539	69,241	-50,884	59.00%	59.00%	737			
017701	BCY	PINCONNING	26.49	2003		64,841	38,696	9	135	600	74,612	-35,916	50.00%	183,052	109,244	31	550	597	76,620	32,623	26.70%	50.00%	546			
016203	BIG	REED CITY	23.75	2012		52,401	33,531	13	135	646	80,364	-46,833	54.50%	273,256	174,855	13	507	640	82,155	92,700	16.90%	54.50%	641			
013701	MDL	SANFORD DAM	40.44	1997		21,925	20,121	17	135	919	114,304	-94,183	74.70%	222,311	204,023	38	1,707	918	117,826	86,197	17.70%	74.70%	1077			
008502	BCK	ELM STREET	15.35	2008		4,317	10,312	8	134	2,405	298,973	-288,661	99.40%	387,882	926,548	19	2,929	2,389	306,684	619,863	1.80%	99.40%	1672			
050902	MDL	LETTIS ROAD	39.24	2007		10,838	9,976	8	134	924	114,853	-104,877	78.20%	92,379	85,037	16	565	921	118,184	-33,147	50.90%	78.20%	1158			
050502	SAG	BRISTOL	5.97	2008		31,377	31,899	16	134	1,018	126,526	-94,627	75.20%	34,915	35,496	12	181	1,017	130,523	-95,027	75.90%	75.90%	1100			
090102	FLT	WAGER	17.22	2011		19,324	27,069	15	134	1,390	127,774	-145,705	89.20%	301,961	422,984	16	1,492	1,401	179,844	243,139	7.30%	89.20%	1423			
109502	FLT	DUNHAM	25.04	2012		28,745	31,580	8	134	1,131	140,634	-109,054	79.80%	52,022	57,153	13	483	1,099	141,051	-83,897	71.70%	79.80%	1198			
124402	JAC	WESTWOOD	9.29	2014		36,909	58,016	15	134	1,367	169,973	-111,957	80.60%	47,204	74,200	8	439	1,572	201,812	-127,612	84.80%	84.80%	1311			
109101	ADR	HENDERSHOT	57.16	2012		23,187	27,519	25	132	1,190	147,968	-120,449	83.10%	71,065	84,342	26	934	1,187	152,376	-68,033	66.00%	83.10%	1268			
041902	JAC	CONCORD	41.24	2010		71,530	40,106	16	132	563	70,012	-29,907	47.20%	160,232	89,839	23	235	561	71,985	17,854	29.90%	47.20%	486			
004504	MDL	LARKIN	15.14	2012		19,219	24,860	7	131	1,297	161,271	-136,410	86.90%	11,560	14,953	11	175	1,294	166,073	-151,120	89.60%	89.60%	1434			
045101	OWS	WEST MAIN	29.70	2012		27,326	25,921	9	130	952	118,393	-92,472	73.90%	13,310	12,625	9	93	949	121,786	-109,161	79.80%	79.80%	1198			
003803	FLT	HOLLY	19.12	1988		31,070	32,047	9	129	1,042	129,569	-97,522	76.30%	369,507	381,137	10	1,167	1,031	132,428	248,708	6.90%	76.30%	1112			
010002	GRA	WEALTHY STREET	5.03	2012		242,187	28,387	4	129	114	14,205	14,181	30.40%	155,072	18,176	6	238	117	15,048	3,128	34.70%	34.70%	266			
118401	OWS	NEWBORG	31.90	2009		4,974	3,421	12	129	693	86,181	-82,760	69.70%	1,012,909	696,561	28	1,515	688	88,290	608,271	2.00%	69.70%	964			
087202	GRE	CALDERONIA	27.41	1988		16,846	19,814	11	129	1,205	149,748	-129,934	85.10%	370,811	436,133	21	2,316	1,176	151,004	285,129	6.00%	85.10%	1317			
072401	SAG	THAYER	14.91	2012		47,886	58,239	14	129	1,209	150,344	-92,104	73.70%	4,946	6,015	11	42	1,216	156,146	-150,131	89.50%	89.50%	1431			
082002	ALM	FORDYCE	18.86	2012		25,588	21,294	5	128	827	102,768	-81,474	68.90%	110,320	91,803	10	1,402	832	166,839	-15,035	88.80%	68.90%	951			
152801	ADR	TRIPP ROAD	41.67	1988		46,940	14,700	10	128	309	38,428	-23,729	44.50%	161,535	50,586	22	369	313	40,206	10,380	32.10%	44.50%	435			
010705	GRE	MEADOWBROOKE	9.08	1988		338,871	22,597	14	128	60	7,472	15,125	30.30%	0.0	0	0	0	67	8,561	-8,561	40.10%	40.10%	355			
072302	SAG	BARNARD	8.73	2003		17,836	21,787	6	127	1,222	151,934	-130,147	85.30%	22,276	27,211	13	109									



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Circuit Priority Rankings by SAIDI - LVD Only

2016 SAIDI 124  
2015 SAIDI 128

2016 YTD																	2015																	Highest 2yr Percentile	2016 Ranking
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile															
023504	GRA	BEALS ROAD	8.77	1998	12.439	10,891	9	115	876	108,951	-98,060	76.50%	26,687	23,366	7	124	876	112,414	-89,047	73.10%	76.50%	1118													
008204	KAL	AUGUSTA	28.19	2011	103.193	66,368	11	115	830	103,193	-48,335	55.10%	26,689	22,061	14	197	827	106,123	-84,062	71.80%	71.80%	1014													
067702	FLT	NEW LOTHROP	24.33	2015	72.014	24,655	8	115	345	42,852	-18,196	42.40%	85,212	29,174	5	350	342	43,956	-14,782	42.60%	42.60%	392													
015501	ALM	JEROME ROAD	10.25	1988	41.883	11,189	5	114	268	33,292	-22,103	44.00%	80,817	21,591	6	195	267	34,300	-12,709	41.40%	44.00%	425													
019402	LAN	LAKE LANSING	28.58	1988	8.331	12,731	8	114	1,533	190,552	-177,820	93.50%	0.648	991	3	9	1,528	196,190	-195,199	95.70%	95.70%	1574													
083501	TEM	JACKMAN	27.08	2016	13.627	28,288	11	113	2,076	258,150	-229,862	97.80%	33,592	69,732	30	431	2,076	266,513	-196,780	95.80%	97.80%	1626													
106603	FLT	ALDRICH	3.94	2014	52.099	15,772	2	113	269	33,423	-17,650	42.10%	0.897	271	2	2	303	38,868	-38,596	52.80%	52.80%	605													
010203	LAN	GRAND LEDGE	20.75	2009	44.952	45,546	5	112	1,013	125,957	-80,411	68.50%	17,192	17,419	14	56	1,013	130,084	-112,664	80.80%	80.80%	1220													
066301	OWS	LEHRING	45.40	2011	40.035	27,523	15	112	691	85,893	-58,370	59.20%	66,441	45,676	14	220	687	88,263	-42,587	55.30%	59.20%	742													
042302	WBR	GERRISH	33.94	2005	34.618	24,282	9	112	702	87,300	-63,018	61.10%	223,436	156,723	21	887	701	90,054	66,669	20.60%	61.10%	785													
040402	BCK	ALBER	5.31	2009	22.104	14,485	5	111	659	81,908	-67,423	63.20%	35,483	23,252	7	89	655	84,134	-60,882	63.70%	63.70%	842													
050102	KAL	EASTWOOD	8.19	2014	13.517	14,024	2	111	1,039	129,222	-115,198	81.40%	0.069	71	1	1	1,037	133,199	-133,128	85.90%	85.90%	1337													
004501	MDL	LARKIN	15.37	2003	34.257	34,331	7	111	1,001	124,459	-90,127	73.10%	62,423	62,558	4	1,067	1,002	128,665	-66,107	65.30%	73.10%	1044													
025502	HML	SALEM	61.08	2001	34.708	21,821	32	111	638	79,343	-57,522	59.00%	94,116	59,169	18	321	629	80,715	-21,546	45.70%	59.00%	737													
108802	MDL	GOLDEN	4.89	1988	41.736	12,734	6	111	305	37,866	-25,132	45.00%	191,776	58,512	5	129	305	39,172	19,340	29.50%	45.00%	444													
111803	SAG	BAY ROAD	8.83	1988	123.638	13,470	4	110	112	13,898	-428	34.60%	9.153	997	4	14	109	13,987	-12,990	41.70%	41.70%	376													
049602	ALM	MERRILL	56.69	2014	24.184	17,799	12	110	737	91,625	-73,826	66.00%	179,724	132,267	12	841	736	94,487	37,781	25.70%	66.00%	892													
022404	FLT	CALKINS	21.33	2015	20.060	25,673	4	109	1,283	159,478	-133,805	86.20%	3.938	5,040	6	104	1,280	164,316	-159,276	91.10%	91.10%	1470													
033701	FRE	EAST GRANT	20.49	1998	52.178	17,856	10	108	948	42,446	-24,590	44.80%	57,882	19,808	8	182	342	43,936	-24,128	47.60%	47.60%	496													
115102	SAG	ALABAMA	13.09	2015	30.292	29,183	5	108	968	120,363	-91,180	73.50%	27,731	26,715	8	192	963	123,685	-96,970	76.30%	76.30%	1112													
073902	KAL	RAVINE	28.30	2010	5.438	8,297	8	107	1,528	189,917	-181,620	94.20%	44,633	68,994	16	465	1,526	195,872	-127,778	84.80%	94.20%	1537													
072704	GRA	BURLINGAME	4.237	1999	8.587	9,237	11	107	2,028	252,169	-243,582	98.60%	46,968	95,183	17	258	2,027	260,181	-164,989	91.80%	98.60%	1650													
024104	GRA	DOEHLER JARVIS	3.84	1988	21.619	12,614	11	107	593	73,736	-61,121	60.20%	1.081	631	5	5	583	74,911	-74,280	68.60%	68.60%	943													
000704	MUS	MUSKOGON HEIGHTS	11.62	1998	10.775	12,107	21	107	1,114	138,514	-126,407	84.70%	70,493	79,204	28	622	1,124	144,254	-65,050	65.10%	84.70%	1307													
006801	BEN	HOMESTEAD	49.90	1988	15.715	9,096	10	106	583	72,453	-63,357	61.30%	52,644	30,472	27	243	579	74,316	-43,844	56.00%	61.30%	790													
046502	GRA	DIVISION	14.39	2014	31.599	12,257	7	106	400	49,696	-37,439	50.70%	20,333	7,887	6	56	388	49,801	-41,914	54.60%	54.60%	644													
067404	LAN	DEXTER TRAIL	39.74	1988	64.636	36,887	9	106	576	71,563	-34,676	49.40%	27,334	15,599	20	103	571	73,269	-67,670	62.50%	62.50%	818													
075402	FLT	TINSMAN	38.37	2015	79.258	65,000	7	106	825	102,578	-37,578	50.90%	282,121	231,369	9	220	820	105,291	126,078	13.80%	50.90%	562													
121001	GRN	NORTH KENT	12.91	2010	23.689	52,250	6	105	1,311	162,998	-110,748	80.20%	48,296	106,526	28	651	2,206	283,183	-176,657	93.50%	93.50%	1520													
155302	BCK	HALLS LAKE	22.85	1988	39.994	10,323	8	105	257	31,911	-21,589	43.60%	109,363	28,227	12	120	258	33,138	-4,910	38.10%	43.60%	415													
039801	FLT	SWARTZ CREEK	18.74	2009	5.372	6,759	6	105	1,260	156,658	-149,899	89.90%	12,861	16,182	9	450	1,258	161,539	-145,357	88.00%	89.90%	1443													
012002	TRA	LEELANAU	9.59	2011	193.663	23,352	6	105	122	15,174	8,178	31.90%	163,833	19,755	7	86	121	15,481	4,274	33.90%	33.90%	253													
033501	HML	NORTH ALLEGAN	19.60	2006	14.723	7,219	8	105	504	62,697	-55,478	58.10%	30,477	14,943	9	77	490	62,950	-48,007	57.60%	58.10%	715													
011201	MDL	CAMELOT LAKE	61.92	2006	37.684	33,315	24	104	888	110,365	-77,950	67.20%	397,338	351,268	41	2,235	884	113,501	237,766	7.40%	67.20%	914													
006201	FLT	GRAND BLANC	11.93	2008	5.656	7,063	5	104	1,258	156,455	-149,392	89.80%	80,075	99,997	4	530	1,249	160,329	-60,332	63.40%	89.80%	1439													
055701	LUD	EAST LAKE	21.33	2000	14.665	10,144	17	104	695	86,377	-76,233	66.90%	17,689	12,236	16	76	692	88,810	-76,574	69.20%	69.20%	955													
153002	GVL	HUBBARDSTON ROAD	18.37	1988	31.737	30,750	3	104	433	53,811	-23,061	44.40%	115,865	49,761	12	336	429	55,139	-5,378	38.30%	44.40%	432													
142701	FLT	IRISH ROAD	13.08	2002	37.387	31,928	16	104	988	122,875	-99,947	73.40%	344,987	294,618	11	1,534	854	109,643	184,976	9.70%	73.40%	1050													
106501	FLT	FOURTEENTH STREET	17.400	1994	17.400	20,539	14	104	1,056	131,329	-110,739	80.30%	12,215	14,345	9	98	1,174	150,774	-136,429	86.70%	86.70%	1361													
151903	FLT	HILL ROAD	23.18	1988	23.724	20,027	12	103	948	105,464	-85,436	71.20%	1.280	1,081	2	17	844	108,379	-107,299	78.80%	78.80%	1171													
049601	ALM	MERRILL	66.83	2012	79.445	63,869	10	103	812	100,949	-37,080	50.50%	210,863	169,522	24	964	804	103,217	66,306	20.70%	50.50%	555													
027502	KAL	OAKWOOD	11.58	2009	42.992	37,218	9	103	868	107,944	-70,726	64.70%	70,746	61,243	11	443	866	111,143	-49,900	58.40%	64.70%	863													
024503	FLT	MONTEROSE	35.82	2000	24.449	23,501	16	103	973	120,919	-97,418	76.30%	124,678	119,842	20	628	961	123,408	-3,565	37.70%	76.30%	1112													
025603	SAG	BRIDGEPORT	45.63	1988	15.687	19,892	19	103	1,472	183,053	-163,161	91.50%	56,082	71,118	19	389	1,268	162,809	-91,692	74.30%	91.50%	1480													
024201	CAD	MCBAIN	66.99	2015	26.296	19																													

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2016 SAIDI 124  
2015 SAIDI 128

2016 YTD													2015													Highest 2yr Percentile	2016 Ranking
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile							
042201	KAL	CLIMAX	8.93	1989	371.075	38.807	4	87	105	13,054	25,753	27.30%	27,830	2,910	3	18	105	13,427	-10,516	40.40%	40.40%	359					
037403	BCY	KNIGHT	20.50	2015	5.125	6.455	10	87	1,262	156,907	-150,451	90.00%	11,340	14,284	9	89	1,260	161,714	-147,431	88.90%	90.00%	1445					
084202	FLT	STACEY	8.99	1999	25.034	16.475	11	87	661	82,176	-65,701	62.40%	18,274	12,026	12	78	658	84,493	-72,466	67.90%	67.90%	930					
154901	GRE	BIRCHWOOD	16.40	1988	24.705	14.142	8	87	591	73,467	-59,325	59.40%	63,683	36,454	17	180	572	73,492	-57,038	52.50%	59.40%	748					
150801	BRO	GIRARD	41.93	1988	23,738	10,277	9	86	437	54,335	-44,057	53.30%	393,546	170,384	28	533	433	55,585	114,799	14.70%	53.30%	618					
045701	MUS	HYDE PARK	27.50	2014	24.114	11,623	14	86	487	60,551	-48,928	55.60%	16,192	7,804	16	96	482	61,883	-54,079	60.80%	60.80%	778					
034203	MUS	HICKORY	15.63	1988	104.482	59.780	14	86	578	71,871	-12,090	39.80%	52,585	30,087	12	279	572	73,458	-43,371	55.50%	55.50%	659					
058903	GRE	THORNAPPLE	10.16	2000	54.338	30.241	3	84	559	69,496	-39,255	51.20%	134,056	74,606	8	403	557	71,451	-3,155	34.70%	51.20%	569					
063001	ADR	DEERFIELD	30.19	2015	73.033	24.458	2	84	89	11,058	13,400	30.70%	63,667	21,322	16	125	335	42,996	-21,674	45.90%	45.90%	458					
058301	LUD	BASS LAKE	15.62	2014	37.200	18.872	7	83	511	63,489	-44,617	53.50%	18,451	9,360	4	79	507	65,133	-55,773	61.60%	61.60%	796					
157003	FLT	MILBOURNE	2.45	1988	69.757	19.014	17	83	620	77,020	-58,006	59.20%	662,160	180,491	14	502	273	34,996	145,495	12.20%	59.20%	742					
087201	GRE	CALEDONIA	52.51	1988	12.348	8.721	18	82	764	94,923	-86,202	71.80%	26,071	18,413	18	130	706	90,675	-72,262	67.80%	71.80%	1014					
076002	SAG	CHEYENNE	12.57	2012	8.268	9.402	6	82	1,138	141,419	-132,017	85.90%	14,271	16,229	11	96	1,137	145,997	-129,768	85.30%	85.90%	1337					
051101	TRA	MANCELONA	73.36	2010	14.380	22.043	18	82	1,544	191,906	-169,863	92.40%	80,042	122,691	41	565	1,533	196,798	-74,107	68.50%	92.40%	1499					
026402	LAN	NORTH LANSING	14.64	2014	21.581	15.552	7	82	732	90,970	-75,319	66.40%	19,758	14,330	7	111	725	93,115	-78,786	69.90%	69.90%	971					
027501	KAL	OAKWOOD	15.91	2015	4.766	8.270	5	81	1,738	216,110	-207,840	96.40%	20,801	36,094	8	331	1,735	222,780	-186,685	94.80%	96.40%	1588					
006703	OWS	OWOSSO	5.27	1998	25.756	14.066	10	81	552	68,638	-54,573	57.80%	0.203	111	1	1	546	70,113	-70,002	66.70%	66.70%	905					
007402	ADR	HUDSON	42.13	2008	9.591	11.767	11	81	1,233	153,308	-141,540	88.20%	31,261	38,355	17	278	1,227	157,525	-119,170	82.80%	88.20%	1394					
074302	FLT	RED ARROW	5.29	1997	12.619	12.041	4	80	966	120,068	-108,027	79.40%	17,119	16,336	6	70	954	122,516	-106,180	78.60%	79.40%	1187					
133504	LAN	TALLMAN	46.41	2003	34.633	23.867	25	80	691	85,926	-62,058	60.60%	295,601	203,715	43	1,097	689	88,479	115,236	14.60%	60.60%	774					
076001	SAG	CHEYENNE	9.30	1999	12.099	15.353	7	79	1,267	157,495	-142,142	88.50%	47,940	60,833	15	421	1,269	162,917	-102,084	78.00%	88.50%	1404					
028201	BCK	HOMER	49.94	2015	37.664	28.315	16	79	750	93,274	-64,958	62.20%	45,559	34,251	19	312	752	96,520	-62,270	64.20%	64.20%	852					
055104	FLT	DAVISON	24.35	1988	8.834	12.630	4	79	1,437	178,709	-166,078	91.90%	42,142	60,254	8	208	1,430	183,567	-123,313	83.70%	91.90%	1487					
061102	KAL	KENDALL	15.93	2014	4.304	10.325	9	78	2,402	298,639	-288,314	99.40%	129,407	310,469	4	4,934	2,399	308,022	2,447	35.00%	99.40%	1672					
106502	FLT	FOURTEENTH STREET	7.40	1997	6.406	9.326	11	78	1,461	181,653	-172,327	92.70%	40,049	58,308	18	381	1,456	198,919	-128,611	85.00%	92.70%	1505					
090504	GRE	KENT AIRPORT	4.71	1989	144.316	10.527	5	76	73	9,075	1,452	33.90%	48,330	3,526	1	21	73	9,366	-5,840	38.50%	38.50%	327					
061402	CLR	ROSEBUSH	67.57	2012	18.990	15.716	8	76	828	102,958	-87,242	72.30%	11,087	9,176	12	87	828	106,251	-97,075	76.40%	76.40%	1116					
057701	SAG	JANES	22.78	2012	5.718	7.608	11	76	1,326	164,798	-157,190	90.70%	17,610	23,430	23	178	1,330	170,816	-147,386	88.80%	90.70%	1463					
036203	LUD	WASHINGTON	13.37	1988	16.856	7.717	5	76	462	57,384	-49,667	55.80%	13,807	6,320	4	72	458	58,455	-52,454	59.80%	59.80%	757					
026501	HST	GUN LAKE	41.63	2014	3.311	6.149	18	76	1,887	234,562	-228,412	97.60%	13,585	25,234	23	194	1,857	238,477	-213,243	97.30%	97.30%	1619					
022001	KAL	PITCHER	4.65	2015	24.918	14.984	6	76	603	74,926	-59,943	59.70%	153,808	92,487	7	655	601	77,202	15,286	30.40%	59.70%	753					
010202	LAN	GRAND LEDGE	14.16	2009	8.890	15.598	9	76	1,743	216,725	-201,327	95.70%	6,728	11,652	15	183	1,732	222,374	-210,722	97.10%	97.10%	1610					
022401	FLT	CALKINS	16.56	1998	10.343	10.503	7	75	1,024	127,259	-116,756	81.70%	40,562	41,192	10	320	1,016	130,381	-98,189	73.30%	81.70%	1239					
019203	ADR	RIGA	35.00	2001	111.969	31.304	12	75	280	34,790	-3,486	36.00%	459,013	128,330	14	316	280	35,894	92,436	17.00%	36.00%	282					
024404	KAL	PORTAGE	12.69	2016	122.862	5.006	10	75	988	122,862	-117,856	82.40%	102,231	100,892	7	1,296	987	126,705	-25,814	48.10%	82.40%	1253					
036903	KAL	COOLEY	1.42	1988	275.352	20.869	1	75	75	9,383	11,486	30.90%	17,465	1,324	4	4	76	9,730	-8,407	39.90%	39.90%	352					
043302	GRN	FOUR MILE	16.23	2014	8.295	18.447	8	74	2,228	276,994	-258,547	99.10%	134,462	299,037	8	696	2,224	285,527	13,510	31.10%	99.10%	1664					
069602	JAC	CARROLL	0.02	1988	3,273,943	9,477	4	74	0	9,335	-9,858	38.80%	0	0	3	0	372	0	372	36.40%	38.80%	330					
008503	BCK	ELM STREET	11.71	2015	1,163	6.184	7	74	1,163	144,546	-138,366	87.20%	244,498	283,811	20	2,586	1,161	149,031	134,780	13.20%	87.20%	1372					
049403	SAG	SHATTUCK	19.46	2016	5.614	7.876	3	73	1,711	212,668	-204,792	96.00%	327,657	559,310	11	3,713	1,707	219,518	340,153	5.10%	96.00%	1580					
125203	LAN	LIPTON	21.90	1988	7.717	14.484	7	73	904	112,400	-97,915	76.40%	42,557	37,509	11	128	881	113,157	-75,648	68.80%	76.40%	1116					
004601	MDL	BULLOCK	50.98	2014	4.351	5.044	8	72	1,167	145,103	-140,059	87.80%	48,354	56,053	24	414	1,159	148,828	-82,776	74.70%	87.80%	1388					
002501	TRA	SUTTONS BAY	18.50	2011	23.485	5.901	2	72	255	31,669	-25,768	45.20%	52,435	13,175	3	253	251	32,259	-19,084	44.90%	45.20%	449					
009802	FLT	PORTER	14.78	1998	24.670	25.183	16	72	1,030	128,018	-102,835	77.70%	238,454	243,411	18	1,198	1,021	131,057	112,354	15.10%	77.70%	1148					
033702	FRE	EAST GRANT	21.66	1988	4.359	998	4	71	228	28,404	-27,407	46.20%	192,153	43,973	4	236	229	29,381	14,592	30.70%	46.20%	466					
100602	LAN	RED CEDAR	6.																								

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Circuit Priority Rankings by SAIDI - LVD Only

2016 SAIDI 124  
2015 SAIDI 128

2016 YTD																	2015										Highest 2yr Percentile	2016 Ranking
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile								
117901	FLT	SKYLARK	23.64	2001	11,256	15,415	8	63	1,379	171,498	-156,083	90.60%	99,066	135,674	21	238	1,370	175,830	-40,156	53.80%	90.60%	1460						
074602	GRE	FULTON	24.28	2012	17,498	8,699	7	61	500	62,213	-53,514	57.40%	166,323	82,689	22	767	497	63,829	18,860	29.60%	57.40%	701						
021203	KAL	PHILLIPS	8.45	2009	4,485	10,477	7	61	1,449	180,200	-169,723	92.40%	17,411	40,678	16	906	2,336	299,954	-259,276	98.90%	98.90%	1659						
009101	BCY	ESSEXVILLE	20.78	1997	4,528	7,334	13	61	1,619	201,237	-193,903	95.20%	31,735	51,398	18	309	1,620	207,941	-156,542	90.60%	95.20%	1562						
014802	ADR	MORENO	13.34	1988	9,519	8,100	12	60	849	105,509	-97,409	76.20%	166,469	141,647	11	582	851	109,244	32,403	26.80%	76.20%	1109						
045702	MUS	HYDE PARK	31.40	2014	25,709	17,080	13	60	704	87,568	-70,508	64.60%	8,267	5,486	14	96	664	85,195	-79,709	70.20%	70.20%	978						
090403	BCY	KIESEL	11.59	2014	5,720	5,064	2	60	888	110,404	-105,339	78.50%	4,825	4,272	13	60	885	113,670	-109,398	79.90%	79.90%	1200						
082402	CLR	DALE ROAD	10.88	1988	57,084	7,706	1	60	135	16,764	-9,057	38.50%	0.0	0	0	135	17,332	-17,332	43.90%	43.90%	423							
122602	KAL	KALARAMA	22.13	2012	6,590	11,757	4	60	1,751	217,745	-205,988	96.10%	1,321	2,358	6	38	1,784	229,064	-226,706	98.20%	98.20%	1641						
106101	GRA	CHAFFEE	8.48	1997	9,014	2,824	4	60	312	38,788	-35,964	50.10%	0.0	0	0	313	40,226	-40,226	53.90%	53.90%	630							
102201	GRA	FILLMORE	37.10	2015	26,447	14,980	14	60	579	72,021	-57,041	58.80%	103,277	58,498	31	497	566	72,721	-14,223	42.40%	58.80%	734						
098204	GRA	LEFFINGWELL	11.89	2006	19,115	12,002	10	59	647	80,495	-68,493	63.50%	17,658	11,087	15	82	628	80,614	-69,527	66.40%	66.40%	899						
083504	TEM	JACKMAN	13.21	2009	4,984	5,270	6	59	1,082	134,476	-129,207	85.00%	103,989	109,944	7	735	1,057	135,740	-25,796	48.00%	85.00%	1315						
041601	LAN	WHITTUM	24.52	2010	12,521	5,270	5	59	423	52,594	-47,324	54.80%	330,023	138,905	10	580	421	54,038	84,867	17.80%	54.80%	647						
060804	KAL	PALMER	5.71	1988	18,572	14,110	10	59	779	96,814	-82,704	69.60%	25,307	19,022	9	153	760	97,541	-78,519	69.70%	69.70%	964						
060902	JAC	NAPOLEON	18.43	2008	10,811	8,149	11	58	756	94,026	-85,877	71.50%	68,059	51,302	7	703	754	96,777	-45,475	56.50%	71.50%	1008						
067403	JAC	DEXTER TRAIL	8.31	1988	117,696	16,936	8	58	145	17,968	-1,032	34.80%	400,658	57,653	11	261	144	18,474	39,178	25.40%	34.80%	267						
041502	KAL	GLENDALE	13.86	2015	2,631	3,844	7	58	1,470	182,700	-178,856	93.80%	20,430	29,851	14	317	1,461	187,595	-157,743	90.80%	93.80%	1526						
074601	GRE	FULTON	17.43	2014	3,407	4,931	8	58	1,463	181,921	-176,991	93.50%	0.516	747	4	8	1,447	185,804	-185,057	94.70%	94.70%	1553						
078003	BIG	APPLETON	7.13	2009	18,809	17,323	4	58	920	114,395	-97,072	76.20%	182,942	168,489	14	1,026	921	118,245	50,244	23.50%	76.20%	1109						
125604	BCK	SPRINGFIELD	16.09	2002	6,181	7,998	11	58	1,293	160,741	-152,743	90.20%	28,506	36,886	7	410	1,294	166,134	-129,247	85.10%	90.20%	1453						
074401	ALM	PINE RIVER	5.09	2003	8,264	6,626	4	57	803	99,869	-93,243	74.40%	24,222	19,422	11	247	802	102,947	-83,524	71.60%	74.40%	1070						
052003	MUS	WHITEHALL	37.00	1999	6,051	5,942	19	57	984	122,378	-116,436	81.60%	27,823	27,321	18	163	982	126,070	-98,749	76.90%	81.60%	1236						
009005	LAN	CHARLOTTE	29.46	2015	1,871	3,226	10	57	1,731	215,239	-212,013	96.60%	10,153	17,510	13	71	1,725	221,415	-203,904	96.50%	96.60%	1596						
021603	FLT	BEERS	36.80	2015	1,478	1,588	6	56	1,079	134,175	-132,587	85.90%	72,924	78,367	18	704	1,075	137,969	-69,602	62.90%	85.90%	1337						
036401	FLT	IRON STREET	6.90	2016	19,108	10,947	7	56	579	72,015	-61,068	60.10%	83,940	48,089	23	298	573	73,553	-25,464	48.00%	60.10%	764						
109201	SAG	DAVENPORT	17.83	2014	4,552	9,689	7	56	2,127	264,484	-254,796	98.80%	1,663	3,540	6	39	2,128	273,270	-268,730	99.10%	99.10%	1664						
118301	LAN	BILLWOOD	16.66	1988	18,831	4,463	3	56	241	29,975	-25,512	45.20%	25,375	6,014	6	37	237	30,428	-24,414	47.60%	47.60%	496						
108801	MDL	GOLDEN	26.61	2002	46,980	16,408	5	55	351	43,624	-27,215	46.20%	287,503	100,414	14	234	349	44,841	55,573	22.50%	46.20%	466						
082401	CLR	DALE ROAD	25.67	2004	41,154	16,232	9	55	393	48,852	-32,620	48.30%	103,756	40,923	15	141	394	50,639	-9,715	40.30%	40.30%	511						
095202	GVL	PECK ROAD	24.63	1988	56,701	33,039	10	55	586	72,833	-39,794	51.50%	58,766	34,242	24	257	583	74,809	-40,567	54.10%	54.10%	634						
039301	SAG	NIAGARA	4.68	2003	9,901	8,973	7	55	908	112,884	-103,911	78.00%	44,732	40,536	5	197	906	116,346	-75,810	69.00%	78.00%	1154						
022801	MUS	AGNEW	32.91	2002	24,405	18,606	7	55	777	96,657	-78,051	67.50%	173,860	134,531	11	1,054	774	99,345	35,186	26.20%	67.50%	921						
005703	FLT	CLIO	24.58	2015	5,796	9,439	6	55	1,634	203,193	-193,754	95.10%	27,181	44,267	12	220	1,629	209,089	-164,823	91.70%	95.10%	1559						
005602	FLT	FENTON	14.19	1993	8,051	7,126	4	55	885	110,057	-102,931	77.80%	253,348	224,253	15	1,042	885	113,643	110,610	15.20%	77.80%	1150						
008203	KAL	AUGUSTA	11.04	1998	33,119	7,900	3	55	240	29,896	-21,996	43.90%	133,053	31,737	9	171	239	30,624	1,113	35.50%	43.90%	423						
104405	FLT	LENNON ROAD	22.38	2012	18,860	16,413	7	54	879	109,239	-92,826	74.20%	276,644	240,753	7	1,817	870	111,731	129,022	13.60%	74.20%	1066						
112002	LAN	HOGSBACK	10.30	1988	9,396	13,266	5	54	1,412	175,529	-162,263	91.20%	9,759	13,779	5	211	1,412	181,270	-167,491	92.30%	92.30%	1497						
107702	TRA	CASS ROAD	13.54	2000	11,389	7,417	9	53	863	82,484	-75,067	66.30%	270,988	176,484	12	1,055	651	83,614	92,870	16.90%	66.30%	897						
076602	FLT	JUDD ROAD	8.85	1988	23,768	8,584	9	53	362	45,044	-36,459	50.20%	105,773	38,201	5	95	361	46,368	-8,167	39.70%	50.20%	549						
156302	OWS	SCENIC LAKE	18.35	#N/A	33,281	8,672	5	53	587	73,029	-64,357	61.80%	0.386	101	1	8	261	33,452	-33,351	50.90%	61.80%	802						
063404	KAL	KILGORE	7.65	2014	106,393	7,212	12	53	856	106,393	-99,180	76.80%	19,858	16,947	5	112	853	108,569	-92,622	74.60%	76.80%	1125						
090403	BCY	COLEMAN	31.73	2009	6,311	5,831	11	52	928	115,364	-109,532	80.00%	116,897	108,013	13	727	924	118,630	-10,617	40.40%	80.00%	1204						
002301	FLT	BLUNTON	8.17	2011	72,231	8,021	4	51	113	14,002	-5,981	37.20%	119,368	13,256	3	120	111	14,258	-1,002	36.60%	37.20%	304						
010105	FRE	FREMONT	61.47	2011	4,261	6,773	13	51	1,597	198,567	-191,794	94.90%	29,581	47,028	16	195	1,590	204,109	-157,081	90.80%	94.90%	1556						
010106	FRE	FREMONT	28.62	2015	2,144																							



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2016 SAIDI 124  
2015 SAIDI 128

2016 YTD																	2015																	Highest 2yr Percentile	2016 Ranking
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile															
076606	FLM	JUDD ROAD	8.97	1999	2.603	2,563	10	40	998	124,033	-121,471	83.40%	260,974	256,963	14	1,079	985	126,415	130,548	13.50%	83.40%	1274													
007104	TEM	ERIE	14.62	1988	4.440	3,757	5	40	847	105,261	-101,504	77.20%	0.542	458	4	4	846	108,616	-108,158	79.40%	79.40%	1187													
025701	KAL	OSHTOME	35.11	2008	5.358	4,981	9	39	936	116,371	-111,390	80.40%	31,323	29,119	24	223	930	119,363	-90,234	73.60%	80.40%	1211													
042901	ADR	BLISSFIELD	15.64	2009	51.572	20,230	12	39	391	48,655	-28,426	46.80%	37,259	14,615	11	84	392	50,362	-35,746	51.90%	51.90%	586													
067401	JAC	DEXTER TRAIL	17.32	2006	20.666	5,347	5	39	258	32,016	-26,669	45.90%	166,139	42,966	8	472	259	33,219	9,768	32.10%	45.90%	458													
111801	SAG	BAY ROAD	7.97	2002	71.288	8,251	1	39	116	14,369	-6,118	37.20%	0.0	0	0	0	116	14,859	-14,859	42.70%	42.70%	396													
125202	LAN	UPTON	9.49	1988	21.560	7,020	6	38	327	40,692	-33,673	48.60%	86,787	28,256	4	132	326	41,800	-13,544	42.00%	48.60%	517													
128802	LAN	BENNETT	12.96	2000	25.484	20,527	7	38	810	100,720	-80,193	68.30%	0.921	742	4	4	805	103,413	-102,671	78.10%	78.10%	1155													
066402	KAL	TRAVIS	28.40	2016	4.233	6,763	10	38	1,608	199,915	-193,132	95.10%	12,434	19,926	13	166	1,603	205,745	-185,819	94.80%	95.10%	1559													
048901	BCY	MT FOREST	47.87	2015	35.247	20,256	7	38	574	71,360	-51,105	56.60%	215,005	123,560	16	812	575	73,782	-49,778	23.60%	56.60%	681													
020902	SAG	SOUTH WASHINGTON	6.92	1999	5.307	1,800	4	38	337	41,909	-40,109	51.70%	102,228	34,682	16	146	339	43,557	-8,875	40.10%	51.70%	579													
010602	FLT	ATLAS	33.81	1998	10.442	7,882	12	37	759	94,373	-86,491	72.00%	57,025	43,045	14	162	755	96,912	-53,868	60.60%	72.00%	1020													
091602	KAL	AMPERSEE	4.86	2009	3.174	2,453	7	37	785	97,586	-95,133	75.50%	5,947	4,597	10	102	773	99,237	-94,640	75.70%	75.70%	1097													
107604	ALM	ISABELLA	12.41	1988	7.379	4,378	5	36	601	74,724	-70,345	64.30%	15,049	8,930	5	58	593	76,181	-67,251	65.80%	65.80%	887													
028801	JAC	MICHIGAN CENTER	14.22	2012	8.302	6,380	11	36	773	96,074	-89,694	73.00%	5,541	4,258	2	33	769	98,669	-94,411	75.50%	75.50%	1094													
045501	BEN	KALEVA	14.71	2014	5.221	1,962	5	36	878	47,033	-45,071	53.80%	318,065	119,509	6	735	376	48,240	71,269	19.80%	53.80%	629													
052302	FLT	WOOD STREET	14.96	1997	5.391	6,876	9	36	875	108,729	-101,852	77.30%	178,621	227,855	32	1,384	1,276	163,775	64,080	21.00%	77.30%	967													
070502	TRA	KALKASKA	19.93	2003	11.146	8,054	10	35	732	91,042	-82,989	69.80%	160,906	116,259	16	793	723	92,763	23,495	28.90%	69.80%	967													
045102	OVS	WEST MAIN	8.41	1988	8.646	2,632	7	35	305	37,964	-35,332	49.70%	0.179	55	1	1	304	39,084	-39,029	53.30%	53.30%	618													
049903	GRA	STANDALE	27.07	2011	5.746	4,949	12	35	862	107,158	-102,209	77.40%	23,307	20,075	33	82	861	110,582	-90,508	73.80%	77.40%	1141													
040503	TEM	LASALLE	17.71	2005	13.429	6,150	12	35	458	56,965	-50,815	56.40%	27,642	12,659	18	58	458	58,795	-46,136	56.90%	56.90%	887													
009103	BCY	ESSEXVILLE	8.31	2012	0.531	931	1	35	999	124,243	-123,712	84.30%	41,294	41,298	3	160	1,000	128,401	-87,103	72.70%	84.30%	1297													
018201	SAG	RODEL ROAD	17.29	2015	10.271	5,014	11	35	455	56,619	-51,604	56.80%	1,374	671	4	21	488	62,673	-62,003	64.20%	64.20%	852													
006402	ADR	BEECHER	16.46	2002	10.852	10,594	10	35	983	122,208	-111,614	80.50%	7,272	7,099	14	61	976	125,333	-118,235	82.50%	82.50%	1256													
090801	JAC	OAK STREET	16.95	2008	6.308	7,440	7	35	1,179	146,581	-139,141	87.50%	20,504	24,185	16	163	1,180	151,437	-127,252	84.50%	87.50%	1380													
090601	FLT	HARRIET	13.36	2016	3.862	3,308	7	34	864	107,394	-104,086	78.10%	65,204	55,842	4	99	856	109,954	-64,112	60.80%	78.10%	1155													
129901	WBR	ROSCOMMON	29.97	2000	20.884	12,183	10	34	582	72,381	-60,198	59.80%	100,311	58,518	18	151	583	74,897	-16,379	43.50%	59.80%	757													
005801	SAG	BIRCH RUN	21.85	2014	9.791	6,900	7	34	711	88,392	-81,493	69.00%	7,239	5,101	12	38	705	90,473	-85,372	72.20%	72.20%	1024													
006502	SAG	BAVARIAN	18.57	1988	7.751	6,265	4	33	808	100,406	-94,141	74.70%	98,776	79,837	6	359	808	103,771	-23,934	47.30%	74.70%	1077													
011302	ALM	ITHACA	44.85	1999	16.395	16,251	7	33	996	123,883	-107,632	79.20%	7,377	7,312	17	72	991	127,259	-119,947	82.90%	82.90%	1264													
063702	GRN	PLAINFIELD	17.30	2015	10.328	12,852	4	33	1,252	155,611	-142,759	88.70%	65,796	81,874	14	821	1,244	159,762	-77,887	69.40%	88.70%	1410													
054001	FLT	MT MORRIS	24.83	2012	7.001	14,114	9	33	2,018	250,887	-236,773	98.10%	32,048	64,606	11	108	2,016	258,816	-194,210	95.60%	98.10%	1637													
092101	GVL	DERBY	22.87	2012	5.072	3,510	4	33	694	86,318	-82,808	69.80%	28,328	19,605	12	81	692	88,851	-69,246	66.40%	69.80%	967													
102902	BCY	HURON	23.66	2012	12.541	8,518	12	32	680	84,584	-76,066	66.90%	66,541	45,196	24	392	679	87,202	-42,007	54.70%	66.90%	911													
030601	BIG	REMUS	46.11	2006	1.826	1,911	7	32	1,057	131,388	-129,477	85.00%	757,427	792,667	41	2,895	1,047	134,361	658,306	1.50%	85.00%	1315													
030702	SAG	SHIELDS	27.20	2010	6.202	5,348	15	31	862	107,165	-101,817	77.30%	10,113	8,721	5	62	862	110,711	-101,990	77.90%	77.90%	1152													
066501	GRA	CUTLERVILLE	4.43	1994	14.259	9,273	5	31	659	81,895	-72,622	65.40%	10,552	6,862	6	130	650	83,493	-76,530	69.30%	69.30%	956													
040601	GRA	DIVISION	11.11	1994	12.276	9,264	11	31	758	94,242	-84,978	71.00%	2,826	2,133	6	35	755	96,885	-84,753	75.90%	75.90%	1100													
093501	FLT	RANKIN	24.47	2012	1.214	2,314	7	31	1,935	240,516	-238,202	98.30%	1,504	2,867	7	25	1,906	244,707	-241,639	98.30%	98.30%	1642													
077603	MUS	KEATING	1.60	1988	18.989	2,397	4	31	129	16,063	-13,687	40.80%	17,979	3,269	3	11	126	16,204	-13,935	42.10%	42.10%	384													
161901	GRE	EMERSON	4.58	1988	78.300	2,427	1	31	34	4,181	-1,754	35.30%	4,714	146	1	1	31	3,980	-3,834	37.70%	37.70%	311													
112504	ADR	HUNT ROAD	37.37	2011	5.283	4,759	14	30	907	112,033	-107,274	79.10%	73,701	66,382	31	858	901	115,637	-90,255	58.10%	79.10%	1177													
115002	LAN	GRAND RIVER	12.17	1996	21.890	26,140	6	30	1,173	145,848	-119,709	82.90%	208,860	249,411	7	1,605	1,194	153,315	96,096	16.60%	82.90%	1264													
019403	LAN	LAKE LANSING	17.78	2011	1.217	1,960	4	30	1,615	200,818	-198,858	95.60%	1,178	1,896	3	63	1,610	206,751	-204,855	96.80%	96.80%	1603													
003701	FLT	BOMAN	19.58	1999	2.952	3,283	8	30	1,115	138,638	-135,355	86.60%	838,660	932,723	16	1,603	1,112	142,787	789,935	0.80%	86.60%	1359													
093901	WBR	LYON MANOR	19.61	199																															

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Circuit Priority Rankings by SAIDI - LVD Only

2016 SAIDI 124  
2015 SAIDI 128

2016 YTD																	2015										Highest 2yr Percentile	2016 Ranking
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile								
002702	LUD	MANISTEE	8.43	2012	8.942	4,072	4	20	455	56,560	-52,488	57.10%	13,245	6,031	7	50	455	58,464	-52,432	59.80%	59.80%	757						
028901	FLT	MILLER ROAD	6.23	1999	3,529	1,869	5	20	536	66,695	-64,826	62.10%	131,163	69,468	5	544	530	67,998	1,470	35.50%	62.10%	807						
024401	KAL	PORTAGE	11.78	1988	2,319	1,639	4	20	711	88,425	-86,786	72.10%	5,226	3,695	6	42	707	90,770	-87,075	72.90%	72.90%	1032						
065603	GRA	CUTLERVILLE	18.90	2012	5,099	8,142	5	19	1,612	200,399	-192,257	94.90%	0,363	579	4	13	1,597	204,995	-204,415	96.70%	96.70%	1599						
053603	FLT	COURT	1.56	2000	242,933	4,654	2	19	18	2,244	-2,410	33.50%	0	0	0	0	19	2,460	-2,460	37.20%	37.20%	304						
035201	SAG	CARROLLTON	7.67	2010	4,484	2,233	3	19	498	61,905	-59,673	59.60%	6,060	3,017	6	32	498	63,924	-60,906	63.80%	63.80%	844						
035202	SAG	CARROLLTON	9.79	1988	6,671	4,133	2	19	620	77,079	-72,946	65.60%	157,753	97,749	4	638	620	79,553	18,196	29.80%	65.60%	882						
041301	MUS	TERRACE	3.45	2000	66,285	2,491	1	19	41	5,084	-2,593	35.70%	123,800	4,652	1	16	38	4,825	-172	36.20%	36.20%	285						
151802	SAG	LAUNDRA	22.44	1988	1,731	1,871	4	19	1,084	134,771	-132,900	86.00%	27,441	29,660	3	319	1,081	138,767	-109,107	79.70%	86.00%	1341						
124203	GRA	BRETON	6.90	1989	6,771	3,520	4	19	523	65,000	-61,480	60.30%	61,597	32,021	9	136	520	66,741	-34,721	51.40%	60.30%	767						
135905	LAN	KIPP ROAD	9.32	1992	134,992	9,727	2	19	73	9,089	638	34.30%	14,932	1,076	3	3	72	9,251	-8,175	39.80%	39.80%	350						
102202	GRA	FILLMORE	17.15	2015	9,955	3,872	10	19	465	57,868	-53,996	57.50%	25,917	10,082	7	292	389	49,943	-39,861	53.70%	57.50%	703						
104404	FLT	LENNON ROAD	9.55	2016	5,559	3,568	5	18	643	79,971	-76,403	67.10%	86,528	55,537	5	651	642	82,405	-26,867	48.40%	67.10%	913						
079704	WBR	GRAYLING	19.04	2012	8,691	4,778	6	18	554	68,881	-64,102	61.60%	97,203	53,441	8	269	550	70,586	-17,145	43.70%	61.60%	796						
082502	HML	NORTHERN FIBRE	17.91	1988	38,158	7,899	8	18	211	26,173	-18,274	42.40%	70,558	14,606	11	301	207	26,576	-11,971	41.10%	42.40%	388						
086001	GRE	KENTWOOD	15.79	2015	5,858	8,641	3	18	1,478	183,688	-175,046	93.20%	18,112	26,716	6	90	1,475	189,379	-162,662	91.50%	93.20%	1515						
137802	GVL	SANDERSON	14.63	1988	8,238	1,005	5	18	127	15,756	-14,751	41.10%	4,912	600	2	30	122	15,670	-15,071	42.90%	42.90%	400						
065403	FLT	BISHOP	4.71	2002	15,987	1,960	3	18	123	15,324	-13,365	40.40%	0,678	83	1	1	123	15,738	-15,655	43.30%	43.30%	410						
033902	SAG	BURROWS	7.83	2007	10,976	8,986	9	18	816	101,407	-92,421	73.90%	8,608	7,047	4	209	819	105,102	-98,055	76.60%	76.60%	1122						
064703	FLT	MAYFAIR	11.58	2011	1,428	1,351	4	17	955	118,707	-117,356	82.10%	13,690	12,948	12	110	946	121,428	-108,479	79.50%	82.10%	1244						
040801	WBR	OSCODA	10.65	2008	1,502	2,199	5	17	1,023	127,187	-124,989	84.50%	154,148	225,608	23	1,275	1,464	187,905	37,702	25.90%	84.50%	1302						
149001	LAN	PACKARD	2.19	1988	213,342	2,347	5	17	11	1,368	879	34.00%	0	0	0	0	11	1,412	-1,412	38.90%	38.90%	299						
072304	SAG	BARNARD	11.11	2014	0,988	686	1	17	704	87,522	-86,836	72.20%	3,148	2,186	3	9	694	89,142	-86,956	72.50%	72.50%	1029						
103701	FLT	GILKEY CREEK	22.11	1988	3,150	5,351	7	17	1,701	211,516	-206,166	96.20%	16,667	28,310	19	283	1,699	218,070	-189,760	95.20%	96.20%	1584						
117904	FLT	SKYLARK	20.10	1997	2,357	4,042	3	17	1,718	213,571	-209,529	96.50%	19,315	33,128	6	115	1,715	220,212	-187,083	95.00%	96.50%	1592						
102901	BCY	HURON	11.34	2012	2,337	1,738	2	16	741	92,135	-90,398	73.20%	146,555	108,983	12	1,007	744	95,473	13,510	31.10%	73.20%	1047						
076903	KAL	SPRINKLE	7.84	2014	30,457	5,171	1	16	172	21,344	-16,173	41.60%	0,979	166	2	2	170	21,799	-21,633	45.90%	45.90%	458						
081603	LAN	HAGADORN	41.43	2001	2,011	1,762	5	15	881	109,481	-107,719	79.20%	106,633	93,444	13	906	876	112,508	-19,064	44.90%	79.20%	1181						
091601	KAL	AMPERSEE	3.51	1988	6,020	1,054	4	15	173	21,475	-20,421	43.10%	69,262	12,125	1	177	175	22,475	-10,350	40.30%	43.10%	405						
119101	BRO	SQUIRES	9.45	2011	55,379	2,853	3	15	53	6,582	-3,729	36.10%	29,519	1,521	7	42	52	6,615	-5,094	38.20%	38.20%	321						
114602	KAL	ATWATER	6.67	2014	5,851	4,081	1	15	701	87,208	-83,127	69.90%	0,460	321	2	2	697	89,547	-89,226	73.30%	73.30%	1049						
037401	BCY	KNIGHT	35.60	2011	2,619	4,055	10	15	1,548	192,456	-188,401	94.70%	23,244	35,986	14	98	1,548	198,764	-162,779	91.60%	94.70%	1553						
064702	FLT	MAYFAIR	12.38	2003	2,724	1,368	4	15	510	63,410	-62,042	60.60%	202,655	101,754	13	242	502	64,464	37,290	25.90%	60.60%	774						
055802	TRA	BELLAIRE	5.74	2014	109,504	9,302	2	15	85	10,613	-1,311	35.00%	201,608	17,126	2	112	85	10,906	6,220	33.20%	35.00%	270						
061703	BEN	FRANKFORT	31.88	2015	16,197	13,750	4	15	856	106,471	-92,721	74.10%	91,247	77,464	27	482	849	108,994	-31,530	50.30%	74.10%	1062						
002602	LAN	ST JOHNS	7.23	2015	6,359	4,997	2	15	782	97,213	-92,216	73.80%	9,662	7,592	2	30	786	100,886	-93,293	75.00%	75.00%	1085						
002904	SAG	SOUTH WASHINGTON	4.59	1999	19,082	4,085	1	15	310	38,533	-34,448	49.30%	78,424	16,791	4	61	214	27,488	-10,697	40.60%	49.30%	535						
002304	FLT	BUNTON	1.80	2000	94,000	1,316	1	14	14	1,740	-424	34.50%	0	0	0	0	14	1,797	-1,797	37.10%	37.10%	302						
002302	FLT	BUNTON	28.83	1998	2,585	9	14	1,641	204,018	-201,435	95.70%	5,538	9,050	5	50	1,634	209,826	-200,776	96.10%	96.10%	1583							
001904	JAC	ROBERTS STREET	3.44	1988	13,995	5,026	1	14	357	44,435	-39,409	51.30%	3,739	1,343	4	21	399	46,111	-44,769	56.30%	56.30%	675						
000702	MUS	MUSKOGON HEIGHTS	3.06	1998	3,560	1,364	2	14	382	47,497	-46,133	54.20%	74,050	28,380	6	189	383	49,206	-20,826	45.40%	54.20%	636						
006704	OWS	OWOSSO	2.13	1988	27,463	7,269	1	14	260	32,350	-25,081	44.90%	12,736	3,371	5	75	265	33,982	-30,611	49.80%	49.80%	544						
058001	FLT	GENESEVILLE	26.47	1999	2,305	2,943	7	14	1,299	161,434	-158,492	90.80%	30,385	38,798	7	176	1,277	163,938	-125,139	84.10%	90.80%	1465						
053002	FRE	WHITE CLOUD	6.12	1999	8,503	2,220	2	14	262	32,605	-30,385	47.80%	10,183	2,659	3	17	261	33,523	-30,864	50.00%	50.00%	546						
065404	FLT	BISHOP	11.54	1988	15,316	7,843	3	14	481	59,857	-52,014	56.90%	260,325	133,314	7	191	512	65,748	67,566	20.30%	56.90%	687						
039803	FLT	SWARTZ CREEK	17.49	1999	2,006	2,662	8	14	1,331	165,452	-162,790	91.40%	646,824	858,438	14	2,328	1,327	170,391	688,047	1.20%	91.40%	1477						
051602																												

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2016 SAIDI 124  
2015 SAIDI 128

2016 YTD													2015													Highest 2yr Percentile	2016 Ranking
Circuit	HQ	Substation	Circuit Length	LastYearTrim	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile	SAIDI	Customer Minutes	Outages	Customer Interruptions	Customer Count	Potential Cust Min	Improvement Potential	Percentile							
113601	KAL	EMERALD	9.78	2014	1.295	1,047	2	10	1,709	212,504	-211,458	96.60%	32,693	26,419	6	353	808	103,751	-77,332	69.40%	96.60%	1596					
115703	OVS	NORTH CORUNNA	9.06	1988	1.634	557	3	10	341	42,433	-41,876	52.40%	2,694	918	1	13	341	43,746	-42,828	55.40%	55.40%	656					
112003	LAN	HOGSBACK	28.95	2007	2.440	4,543	10	10	1,872	232,684	-228,140	97.60%	15,420	28,718	9	243	1,862	239,105	-210,387	97.00%	97.60%	1619					
099202	JAC	MICOR	6.91	2014	23.503	3,975	2	10	157	19,564	-15,590	41.40%	0.066	11	1	1	169	21,711	-21,700	45.90%	45.90%	458					
090103	FLT	WAGER	5.62	1988	7.448	1,534	2	9	207	25,721	-24,187	44.70%	0.881	181	1	1	206	26,441	-26,260	48.20%	48.20%	508					
090804	JAC	OAK STREET	3.07	2014	6.561	2,200	1	9	331	41,124	-38,924	51.20%	59,340	19,901	8	280	335	43,057	-23,156	47.00%	51.20%	569					
034101	SAG	POTTER	11.13	2008	2.724	1,376	3	9	495	61,487	-60,110	59.80%	36,063	18,223	15	85	505	64,876	-46,653	57.00%	59.80%	757					
027503	KAL	OAKWOOD	10.07	1988	4.306	4,557	6	9	1,058	131,565	-127,008	84.80%	20,698	21,901	14	104	1,058	135,854	-113,953	81.30%	84.80%	1311					
022803	MUS	AGNEW	44.84	1988	1.362	1,317	8	8	961	119,492	-118,176	82.50%	102,922	99,493	24	460	967	124,110	-24,618	47.80%	82.50%	1256					
001903	JAC	ROBERTS STREET	10.32	2002	2.329	1,178	8	8	505	62,841	-61,663	60.40%	4,834	2,446	4	16	506	64,964	-62,518	64.20%	64.20%	852					
016204	BIG	REED CITY	24.99	1988	2.211	1,597	6	8	721	89,681	-88,084	72.50%	31,430	22,704	13	337	722	92,743	-70,039	66.70%	72.50%	1029					
064101	GRA	BAYBERRY	3.08	1988	2.190	392	1	8	180	22,371	-21,980	43.90%	0.0	0	0	0	179	22,954	-22,954	46.90%	46.90%	483					
043301	GRA	FOUR MILE	16.25	2011	0.439	770	3	8	1,756	218,289	-217,519	97.00%	0.645	1,131	11	11	1,754	225,232	-224,101	98.00%	98.00%	1632					
073602	SAG	FRANKENMUTH	16.98	1994	1.477	1,226	3	8	833	103,612	-102,386	77.50%	21,853	18,143	5	45	830	106,589	-88,446	73.00%	77.50%	1143					
076005	SAG	CHEYENNE	12.95	2014	1.112	940	1	8	845	105,051	-104,111	78.10%	0.779	658	4	20	845	108,535	-107,877	79.20%	79.20%	1181					
098302	FLT	WEBSTER	18.43	2011	4.996	3,101	3	8	624	77,583	-74,482	66.20%	1,918	1,190	5	5	621	79,688	-78,498	69.70%	69.70%	964					
112502	ADR	HUNT ROAD	11.58	1988	1.334	855	5	8	644	80,011	-79,155	67.90%	23,913	15,339	12	143	641	82,357	-67,018	65.70%	67.90%	930					
149701	LUD	BRYE ROAD	18.88	1988	0.913	435	1	8	475	59,000	-58,566	59.30%	14,796	7,042	10	44	476	61,106	-54,064	60.70%	60.70%	776					
156602	WBR	TURNER	17.42	1988	34.878	4,514	2	8	209	26,022	-21,508	43.60%	18,745	2,426	7	11	129	16,616	-14,190	42.30%	43.60%	415					
149801	FLT	WEST FENTON	11.34	1988	1.145	1,210	2	7	1,069	132,913	-131,702	85.80%	0.0	0	0	0	1,057	135,692	-135,692	86.50%	86.50%	1356					
102602	SAG	TEFT RD	13.61	1988	2.873	1,024	2	7	358	44,559	-43,535	53.00%	4,764	1,698	9	12	356	45,760	-44,062	56.00%	56.00%	669					
103501	GRA	KNAPP	8.00	2002	1.143	1,051	5	7	189	23,549	-22,498	44.20%	380,800	350,175	14	2,050	920	118,063	232,113	7.70%	44.20%	428					
079801	TRA	ANTRIM	19.87	2015	1.846	1,865	6	7	1,014	126,075	-124,210	84.40%	153,572	155,148	17	819	1,010	129,705	25,442	28.70%	84.40%	1299					
094601	FLT	NEWARK	4.89	1991	439,418	2,706	1	7	7	870	1,836	33.70%	0.0	0	0	0	6	791	-791	36.50%	36.50%	291					
045502	BEN	KALEVA	8.55	2015	2.598	743	2	7	292	36,269	-35,526	49.80%	117,927	33,715	5	305	286	36,705	-2,991	37.30%	49.80%	544					
050103	KAL	EASTWOOD	11.28	2014	4.106	4,780	3	7	1,158	143,931	-139,151	87.60%	22,763	26,503	5	85	1,164	149,484	-122,980	83.60%	87.60%	1383					
036302	OVS	CORUNNA	5.60	1988	4.194	541	1	7	141	17,536	-16,995	41.80%	13,405	1,730	1	120	129	16,569	-14,839	42.60%	42.60%	392					
065501	TRA	O-AT-KA	8.66	2012	1.658	369	2	7	225	27,946	-27,577	46.30%	10,627	2,367	3	4	223	28,597	-26,230	48.20%	48.20%	508					
020901	WBR	ST HELEN	29.95	2008	6.614	1,533	6	7	236	29,327	-27,794	46.60%	204,283	47,340	16	300	232	29,752	17,588	29.90%	46.60%	479					
029402	FLT	KEARSLEY	8.45	2002	2.528	1,497	4	7	592	73,565	-72,068	65.20%	50,446	29,877	13	109	592	76,039	-46,162	57.00%	65.20%	875					

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Color Key

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							Customers with			
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
000201	Alma	MT PLEASANT	COLLEGE	2,166	0	17	17	0	0	0
000202	Alma	MT PLEASANT	BROADWAY	2,080	0	53	53	0	0	0
000301	North Kent	WEST RIVER	GRAND RIVER	638	5	69	0	69	0	0
000401	Clare	COLEMAN	BROWN MACHINE	489	1	22	22	0	0	0
000402	Clare	COLEMAN	RURAL	971	0	91	47	14	30	0
000403	Clare	COLEMAN	COLEMAN	938	1	231	208	23	0	0
000601	Alma	SHEPHERD	SHEPHERD	984	0	96	96	0	0	0
000602	Alma	SHEPHERD	FOREST HILL	953	1	225	213	12	0	0
000702	Muskegon	MUSKEGON HEIGHTS	LEAHY	375	3	359	345	14	0	0
000703	Muskegon	MUSKEGON HEIGHTS	EAST CENTRAL	662	1	188	167	21	0	0
000801	Owosso	NEW HAVEN	JUDDVILLE	437	0	228	127	101	0	0
000802	Owosso	NEW HAVEN	HENDERSON	562	0	162	159	3	0	0
000901	Greenville	LYONS	LYONS-MUIR	844	0	214	195	19	0	0
000902	Greenville	LYONS	COLLINS-RURAL	294	0	17	17	0	0	0
001102	North Kent	BELLA VISTA	BLAKELY	891	0	76	76	0	0	0
001301	Bronson	CENTREVILLE	BUSINESS	1,074	0	42	42	0	0	0
001302	Bronson	CENTREVILLE	INDUSTRIAL	1,322	1	105	88	17	0	0
001401	Battle Creek	CERESCO	RURAL	281	0	12	12	0	0	0
001402	Battle Creek	CERESCO	CERESCO	115	0	17	17	0	0	0
002001	West Branch	GREENWOOD	RAU ROAD	1,004	0	79	79	0	0	0
002002	West Branch	GREENWOOD	INDIAN LAKE	1,217	0	17	17	0	0	0
002102	Big Rapids	ROGERS HYDRO	BIG RAPIDS	1,142	0	131	120	11	0	0
002303	Flint	BLINTON	MCWAIN	2,470	5	11	11	0	0	0
002401	Clare	BEAVERTON	ROSS STREET	860	0	454	79	292	56	27
002402	Clare	BEAVERTON	TOBACCO	1,243	2	208	208	0	0	0
002501	Traverse City	SUTTONS BAY	BINGHAM	256	0	66	66	0	0	0
002703	Ludington	MANISTEE	LAKE MICHIGAN	2,162	1	35	35	0	0	0
002801	West Branch	COOKE DAM	VILLAGE	420	0	176	72	104	0	0
002901	Saginaw	SOUTH WASHINGTON	FORDNEY	718	2	524	439	85	0	0
003102	Hamilton	LOGISTIC	FELCH	1,248	0	843	517	326	0	0
003501	Cadillac	CADILLAC	CENTRAL	1,348	3	125	114	11	0	0
003502	Cadillac	CADILLAC	HOSPITAL	1,632	0	105	105	0	0	0
003503	Cadillac	CADILLAC	BOND	1,609	3	513	76	16	421	0
003506	Cadillac	CADILLAC	BERRY LAKE	1,608	0	883	603	261	1	18
004102	West Branch	TAWAS	TAWAS	1,654	2	581	310	189	16	66
004504	Midland	LARKIN	MORNINGSIDE	1,294	1	13	13	0	0	0
004601	Midland	BULLOCK	STEWART	1,170	0	12	12	0	0	0
004701	Fremont	SPRING DRIVE	FERRIS	675	0	383	369	14	0	0
004702	Fremont	SPRING DRIVE	HESS LAKE	2,034	1	12	12	0	0	0
004703	Fremont	SPRING DRIVE	BISHOP LAKE	1,232	1	13	0	0	0	13

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							Customers with			
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
004801	Jackson	PARMA	PARMA	931	1	142	129	13	0	0
004802	Jackson	PARMA	BALDWIN	503	0	93	61	32	0	0
005402	Flint	STANLEY	NORTHLAND	1,369	3	28	0	28	0	0
005501	Midland	AUBURN	ELEVATOR	1,490	3	948	868	80	0	0
005502	Bay City	AUBURN	AUBURN	1,424	3	35	35	0	0	0
005601	Flint	FENTON	DENTON HILL	1,460	0	113	97	16	0	0
005701	Flint	CLIO	MILL STREET	1,742	3	135	135	0	0	0
005801	Saginaw	BIRCH RUN	BIRCH RUN	709	0	12	12	0	0	0
006601	East Kent	LABARGE	BLODGETT LAKE	647	0	55	0	55	0	0
006602	East Kent	LABARGE	ALASKA	799	0	15	15	0	0	0
006706	Owosso	OWOSSO	STEWART	2,518	1	17	17	0	0	0
006707	Owosso	OWOSSO	GOULD	2,085	1	270	270	0	0	0
006801	Benzie	HOMESTEAD	JOYFIELD	569	1	100	64	36	0	0
006802	Benzie	HOMESTEAD	BEULAH	1,786	2	1,781	153	147	672	809
007304	Big Rapids	MILTON	MILLPOND	923	1	58	58	0	0	0
007401	Adrian	HUDSON	WATERWORKS	710	4	294	219	75	0	0
007402	Adrian	HUDSON	CITY	1,248	1	24	24	0	0	0
008001	West Branch	ALCONA DAM	GLENNIE	1,383	0	211	211	0	0	0
008203	Kalamazoo	AUGUSTA	HOSPITAL	238	1	31	31	0	0	0
008204	Kalamazoo	AUGUSTA	AUGUSTA	826	0	30	30	0	0	0
008505	Battle Creek	ELM STREET	PORTER	1,671	1	25	25	0	0	0
008801	Bronson	QUINCY	BLACKHAWK	1,765	1	331	314	17	0	0
008802	Bronson	QUINCY	CHICAGO ROAD	1,127	1	21	21	0	0	0
008803	Bronson	QUINCY	QUINCY	611	2	15	15	0	0	0
009004	Lansing	CHARLOTTE	SEMINARY STREET	1,080	3	66	66	0	0	0
009005	Lansing	CHARLOTTE	FOOTE STREET	1,729	5	165	165	0	0	0
009101	Bay City	ESSEXVILLE	ESSEXVILLE	1,615	2	326	326	0	0	0
009201	Saginaw	CHESANING	OAKLEY	754	0	43	43	0	0	0
009802	Flint	PORTER	KNOLLWOOD	1,026	1	43	43	0	0	0
010001	West Kent	WEALTHY STREET	NORTHWEST	2,572	3	22	22	0	0	0
010003	West Kent	WEALTHY STREET	LOGAN	767	5	627	74	553	0	0
010007	West Kent	WEALTHY STREET	GODFREY	804	9	806	2	754	50	0
010008	West Kent	WEALTHY STREET	INDIANA	1,651	5	1685	1606	79	0	0
010403	Clare	GLADWIN	GLADWIN	877	0	55	0	37	0	18
010404	Clare	GLADWIN	BUZZELL	904	0	42	42	0	0	0
010602	Flint	ATLAS	ATLAS	758	0	61	61	0	0	0
011001	Hastings	HASTINGS	BROADWAY	1,274	5	59	59	0	0	0
011002	Hastings	HASTINGS	HANOVER	1,520	4	161	161	0	0	0
011003	Hastings	HASTINGS	BOLTWOOD	2,420	3	971	631	158	84	98
011004	Hastings	HASTINGS	VIKING	848	5	260	260	0	0	0
011202	Alma	CAMELOT LAKE	LOOMIS	752	0	26	26	0	0	0
011301	Alma	ITHACA	FAIR GROUNDS	1,587	0	135	59	51	25	0

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							100-499	50-299	50-99	10-49
							10-100	10-49	10-49	10-49
							Customers with			
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
011302	Alma	ITHACA	COURT HOUSE	992	4	16	16	0	0	0
011401	Hastings	WOODLAND	BARNUM	464	0	91	91	0	0	0
012001	Traverse City	LEELANAU	OMENA BAY	372	0	33	33	0	0	0
012401	Owosso	PERRY	PERRY	897	0	142	68	74	0	0
012701	Hamilton	NEW RICHMOND	NEW RICHMOND	721	0	191	1	1	63	126
013402	Adrian	TECUMSEH	EVANS STREET	1,026	1	16	16	0	0	0
013502	Kalamazoo	TWELFTH STREET	RUDGATE	1,152	0	12	12	0	0	0
013701	Midland	SANFORD DAM	AVERILL	914	0	26	26	0	0	0
013702	Midland	SANFORD DAM	OLSON	1,293	0	91	91	0	0	0
013801	West Branch	SMALLWOOD DAM	WOODEN SHOE	1,266	1	595	510	74	11	0
013802	West Branch	SMALLWOOD DAM	DISTRIBUTION	727	0	15	15	0	0	0
014301	Muskegon	SPRING LAKE	SPRING LAKE	1,963	5	222	222	0	0	0
014302	Muskegon	SPRING LAKE	COUNTRY CLUB	1,443	0	307	151	156	0	0
014401	Traverse City	HANNAH	HANNAH	1,522	0	966	773	193	0	0
014501	Greenville	GREENVILLE	WILLIAMS STREET	1,529	3	129	129	0	0	0
014502	Greenville	GREENVILLE	WASHINGTON	1,526	2	348	246	102	0	0
014601	Kalamazoo	GREENSPIRE	STREET MOORS	1,769	0	621	621	0	0	0
014801	Adrian	MORENCI	MOREY	616	1	50	19	31	0	0
014901	Bronson	BURR OAK	DOUGLAS	658	0	37	37	0	0	0
014902	Bronson	BURR OAK	INDUSTRIAL	1,103	0	327	327	0	0	0
017002	West Kent	HARVEY STREET	DIAMOND	3,371	5	570	570	0	0	0
017502	Saginaw	EAST GENESEE AVENUE	GENESEE	1,782	1	21	21	0	0	0
017603	Muskegon	WESTERN AVENUE	WEST BUSINESS	930	12	22	22	0	0	0
017701	Bay City	PINCONNING	PINCONNING	600	0	155	66	0	21	68
017702	Bay City	PINCONNING	WHITE FEATHER	1,203	1	67	40	27	0	0
017902	West Branch	STANDISH	STANDISH	2,194	4	163	128	19	16	0
018001	Hastings	CLARKSVILLE	MORRISON LAKE	465	0	373	258	115	0	0
018002	Hastings	CLARKSVILLE	CLARKSVILLE	681	2	676	448	126	86	16
018201	Saginaw	ROEDEL ROAD	BAKER	452	1	263	263	0	0	0
018301	Adrian	MANITOU BEACH	DEVILS LAKE	1,397	0	1,275	1,158	52	65	0
018302	Adrian	MANITOU BEACH	ADDISON	781	0	110	110	0	0	0
018501	Hamilton	PULLMAN	CHICORA	1,218	1	84	84	0	0	0
018502	Hamilton	PULLMAN	PULLMAN	554	0	62	62	0	0	0
018901	Battle Creek	FINE LAKE	BRISTOL	793	0	794	7	238	336	213
018902	Battle Creek	FINE LAKE	DOWLING	872	0	870	0	10	318	542
019202	Adrian	RIGA	GOETZ	611	0	614	27	473	98	16
019203	Adrian	RIGA	BIERMAN	276	0	130	119	11	0	0
019601	Battle Creek	CONVIS	CONVIS	433	0	88	62	26	0	0
019602	Battle Creek	CONVIS	WALNUT POINT	1,063	0	220	201	19	0	0
019603	Battle Creek	CONVIS	MAR CREEK	594	1	46	46	0	0	0
020103	Alma	EDMORE	CEDAR LAKE	794	0	27	27	0	0	0
020702	Owosso	DURAND	GAINES	1,414	2	44	44	0	0	0

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020902	West Branch	ST HELEN	ST HELEN	1,530	0	15	15	0	0	0
020903	West Branch	ST HELEN	ARTESIA	1,692	1	165	165	0	0	0
021102	Hamilton	BLACK RIVER	FILLMORE	1,692	2	25	25	0	0	0
021202	Kalamazoo	PHILLIPS	FACTORY	1,554	4	262	238	24	0	0
021203	Kalamazoo	PHILLIPS	MILWOOD	1,451	8	28	28	0	0	0
021204	Kalamazoo	PHILLIPS	INKSTER	1,233	0	13	13	0	0	0
021302	Jackson	SUMMIT	FRANCIS STREET	1,519	0	40	40	0	0	0
021303	Jackson	SUMMIT	FOURTH STREET	1,749	1	13	13	0	0	0
021402	Bay City	PATTERSON	PATTERSON	1,311	0	21	9	0	12	0
021602	Flint	BEERS	NICHOLS	1,051	0	116	116	0	0	0
021801	Jackson	WILDWOOD	YARDMAN	1,638	1	1,159	906	0	84	169
021902	Battle Creek	GOGUAC	LAKEVIEW	1,783	0	46	46	0	0	0
022201	North Kent	COWAN LAKE	GRATTAN	1,230	2	94	77	3	14	0
022202	Greenville	COWAN LAKE	RAMSDELL	1,384	0	705	473	109	59	64
022301	Greenville	CARSON CITY	HOSPITAL	690	1	29	29	0	0	0
022302	Greenville	CARSON CITY	BUTTERNUT	1,186	0	172	31	86	27	28
022501	Alma	MIDDLETON	GRANT	361	0	49	49	0	0	0
022503	Alma	MIDDLETON	NEWARK	735	0	169	169	0	0	0
022504	Alma	MIDDLETON	MIDDLETON	947	0	23	23	0	0	0
022701	Muskegon	ALLENDAL	RIVER	778	0	3	3	0	0	0
022802	Muskegon	AGNEW	ROBINSON	277	0	17	17	0	0	0
022901	Kalamazoo	COOPER	NAGEL	1,108	0	206	138	68	0	0
022902	Kalamazoo	COOPER	COOPER CENTER	624	0	291	291	0	0	0
023001	Bronson	BRONSON	BRONSON	341	2	25	25	0	0	0
023102	Bronson	MENDON	KIRBY	581	1	223	136	87	0	0
023402	Flint	NEFF ROAD	DODGE ROAD	1,887	1	27	0	27	0	0
023503	West Kent	BEALS ROAD	CLYDE PARK	3,389	2	11	11	0	0	0
023505	West Kent	BEALS ROAD	BURTON HEIGHTS	469	4	27	27	0	0	0
023506	West Kent	BEALS ROAD	ALGER	1,885	5	556	545	11	0	0
023507	West Kent	BEALS ROAD	DIVISION ROAD	1,031	0	23	23	0	0	0
023702	Alma	CASINO	LEATON	1,439	2	48	48	0	0	0
023801	Cadillac	LAKE MITCHELL	GOLF CLUB	1,405	0	595	392	191	12	0
023802	Cadillac	LAKE MITCHELL	CANAL	1,232	0	149	69	80	0	0
024102	West Kent	DOEHLER JARVIS	GRIGGS STREET	1,952	3	91	91	0	0	0
024103	West Kent	DOEHLER JARVIS	JEFFERSON	3,715	6	3698	2184	1391	123	0
024201	Cadillac	MCBAIN	LAKE CITY	740	1	172	172	0	0	0
024202	Cadillac	MCBAIN	VOGEL CENTER	1,167	2	475	475	0	0	0
024203	Cadillac	MCBAIN	LUCAS	854	0	131	110	0	21	0
024301	Kalamazoo	AUSTIN	WEST LAKE	1,748	0	135	96	39	0	0
024302	Kalamazoo	AUSTIN	LONG LAKE	1,504	1	648	590	20	38	0
024401	Kalamazoo	PORTAGE	ARPENTERS CORNEF	709	1	12	12	0	0	0
024402	Kalamazoo	PORTAGE	SHAVER ROAD	1,344	4	25	25	0	0	0



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							Customers with			
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024502	Flint	MONTROSE	MCKINLEY ROAD	1,392	2	54	54	0	0	0
024503	Flint	MONTROSE	SHERIDAN ROAD	972	1	23	23	0	0	0
024701	Hastings	RUTLAND	TANNER LAKE	649	1	331	28	72	3	228
024702	Hastings	RUTLAND	COOK ROAD	167	6	139	98	41	0	0
024801	Greenville	EASTON	PARMETER	2,635	12	132	132	0	0	0
024802	Greenville	EASTON	HAYNOR	1,347	6	1342	1319	23	0	0
024902	Hamilton	BITTERSWEET	RIVER ROAD	546	0	217	136	0	0	81
025201	Benzie	ONEKAMA	ONEKAMA	1,465	0	22	22	0	0	0
025203	Benzie	ONEKAMA	CHIEF	558	0	26	26	0	0	0
025301	Hastings	NASHVILLE	VERMONTVILLE	1,212	0	169	115	54	0	0
025302	Hastings	NASHVILLE	NASHVILLE	1,307	0	1066	626	141	250	49
025403	Fremont	GRANT	GRANT	1,305	1	61	61	0	0	0
025501	Hamilton	SALEM	BURNIPS	609	0	353	311	42	0	0
025502	Hamilton	SALEM	NORTH DORR	646	1	57	46	11	0	0
025603	Saginaw	BRIDGEPORT	DIXIE	1,466	3	31	31	0	0	0
025701	Kalamazoo	OSHTIMO	ALMENA	940	2	303	303	0	0	0
025702	Kalamazoo	OSHTIMO	HURD	474	0	83	83	0	0	0
025901	Jackson	HANOVER	PULASKI	359	0	180	70	110	0	0
025902	Jackson	HANOVER	HORTON	652	1	403	207	102	94	0
025903	Jackson	HANOVER	HANOVER	929	0	215	62	153	0	0
026001	Greenville	SARANAC	KEENE	610	0	612	2	350	171	89
026002	Greenville	SARANAC	CENTERLINE	475	1	461	98	164	41	158
026003	Greenville	SARANAC	SARANAC	669	4	670	354	188	78	50
026004	Greenville	SARANAC	RIVERSIDE	753	1	752	407	296	2	47
026501	Hastings	GUN LAKE	ENGLAND	1,905	1	1,302	1,225	77	0	0
026502	Hastings	GUN LAKE	TRAILS END	1,128	0	534	450	84	0	0
026802	Lansing	CHESTER	MORRELL	677	0	67	36	31	0	0
026902	Hamilton	OTSEGO	FARMER	742	1	46	18	28	0	0
027401	Big Rapids	CONKLIN PARK	HOLLY	648	0	55	55	0	0	0
027402	Big Rapids	CONKLIN PARK	CROTON	954	0	253	38	202	13	0
027801	Flint	DIXIE	HARVARD	1,419	1	25	25	0	0	0
027803	Flint	DIXIE	GEORGE STREET	712	0	37	16	21	0	0
028001	Flint	OTISVILLE	IRISH ROAD	1,259	1	29	29	0	0	0
028002	Flint	OTISVILLE	STATE ROAD	1,031	1	251	239	1	11	0
028201	Battle Creek	HOMER	HOMER	750	2	68	68	0	0	0
028202	Battle Creek	HOMER	INDUSTRIAL	990	2	65	0	31	24	10
028301	North Kent	CEDAR SPRINGS	NELSON	2,318	8	812	428	89	229	66
028302	North Kent	CEDAR SPRINGS	EDGERTON	1,762	3	1,760	1,395	53	155	157
028303	North Kent	CEDAR SPRINGS	WHITE CREEK	1,463	3	1,462	1,204	127	95	36
028802	Jackson	MICHIGAN CENTER	BALLARD	1,923	3	146	58	88	0	0
029001	Alma	BRECKENRIDGE	WHEELER	520	1	146	128	18	0	0
029101	Hamilton	HAMILTON	HAMILTON	1,231	0	181	135	46	0	0



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Color Key

>499	>299	>99	>49	100-499	50-299	50-99	10-49	10-100	10-49	10-49
							Customers with			
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
029201	Jackson	MANCHESTER	LOGAN ROAD	400	2	98	98	0	0	0
029202	Jackson	MANCHESTER	AUSTIN ROAD	367	1	66	66	0	0	0
029203	Jackson	MANCHESTER	MANCHESTER	1,110	1	1101	998	85	18	0
029302	West Branch	MARKEY	CARRICK	1,367	0	375	359	16	0	0
029303	West Branch	MARKEY	FOREST ESTATES	776	0	24	24	0	0	0
029404	Flint	KEARSLEY	SHILLELAGH	1,705	0	198	198	0	0	0
029405	Flint	KEARSLEY	CRAIG	836	2	12	0	12	0	0
029502	Jackson	STOCKBRIDGE	STOCKBRIDGE	584	1	14	14	0	0	0
029601	Jackson	VANDERCOOK LAKE	HAGUE ROAD	786	2	40	40	0	0	0
029602	Jackson	VANDERCOOK LAKE	ACKERSON LAKE	1,706	0	218	123	56	39	0
029603	Jackson	VANDERCOOK LAKE	VANDERCOOK LAKE	1,104	1	64	64	0	0	0
029702	South Monroe	LAMBERTVILLE	SUMMERFIELD	1,876	1	2	2	0	0	0
029801	Adrian	PALMYRA	PALMYRA	375	0	374	374	0	0	0
029802	Adrian	PALMYRA	VICTORSVILLE	714	0	713	562	119	32	0
030101	Hastings	FREEPORT	BOWNE CENTER	710	1	346	252	94	0	0
030102	Hastings	FREEPORT	CARLTON CENTER	525	0	109	65	44	0	0
030201	Muskegon	HOLTON	HOLTON	1,782	0	133	97	36	0	0
030301	Battle Creek	JOPPA	BECKLEY	590	0	179	162	17	0	0
030302	Battle Creek	JOPPA	JOPPA	1,293	1	105	39	66	0	0
030402	Clare	WEIDMAN	WEIDMAN	760	0	80	80	0	0	0
030501	Greenville	ORLEANS	LONG LAKE	791	0	142	27	4	111	0
030502	Greenville	ORLEANS	ORLEANS	851	0	415	130	285	0	0
030601	Big Rapids	REMUS	MECOSTA	1,042	0	1019	554	465	0	0
030602	Big Rapids	REMUS	MILLBROOK	651	2	650	2	173	396	79
030701	Saginaw	SHIELDS	SHIELDS	1,106	0	38	38	0	0	0
030901	Adrian	WALDRON	BETZER	484	0	487	0	366	121	0
030902	Adrian	WALDRON	MUNSON	487	0	489	0	441	48	0
031001	Battle Creek	DUCK LAKE	PARTELLO	867	0	100	17	17	35	31
031002	Battle Creek	DUCK LAKE	DUCK LAKE	662	1	159	146	0	13	0
031201	West Branch	LINCOLN	LOST LAKE	1,425	1	368	302	46	20	0
031202	West Branch	LINCOLN	MIKADO	949	1	175	158	17	0	0
031702	West Kent	ABERDEEN	ABERDEEN	2,464	6	306	20	286	0	0
							QUARTERLINE			
031803	Muskegon	EAST MUSKEGON	ROAD	1,131	5	15	15	0	0	0
032102	Midland	ASHMAN	SUGNET	1,157	1	12	12	0	0	0
032103	Midland	ASHMAN	HIGH SCHOOL	1,186	3	13	13	0	0	0
032201	West Kent	MARNE	WRIGHT	713	1	13	13	0	0	0
032302	Lansing	SUNFIELD	SUNFIELD	978	2	564	470	94	0	0
032402	Big Rapids	HOWARD CITY	MORLEY	834	1	832	832	0	0	0
032404	Big Rapids	HOWARD CITY	CORAL	1,962	3	1973	1721	222	30	0
032501	West Kent	BOSTON SQUARE	NELAND	1,987	5	34	0	34	0	0
032503	West Kent	BOSTON SQUARE	HALL	1,997	3	1676	1566	110	0	0

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Color Key

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							Customers with			
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
032702	Kalamazoo	COMSTOCK	TUNIER	1,099	0	65	65	0	0	0
033102	West Kent	VAN BUREN	MOSS LAKE	1,409	0	16	16	0	0	0
033301	West Branch	AU GRES	POINT LOOK-OUT	306	0	71	33	38	0	0
033302	West Branch	AU GRES	AU GRES	1,406	1	783	91	195	227	270
033401	Muskegon	NORGE MACHINE	LINCOLN	937	1	38	38	0	0	0
033402	Muskegon	NORGE MACHINE	EDGEWATER	818	1	400	400	0	0	0
033501	Hamilton	NORTH ALLEGAN	ROCKWELL	482	2	14	14	0	0	0
033502	Hamilton	NORTH ALLEGAN	HUBBARD	1,157	2	193	193	0	0	0
033601	Jackson	LITCHFIELD	LITCHFIELD	1,334	3	25	25	0	0	0
033602	Jackson	LITCHFIELD	SIMPSON	492	6	114	48	0	66	0
033801	Clare	HARRISON	LILLEY LAKE	1,415	0	98	98	0	0	0
033802	Clare	HARRISON	HARRISON	1,129	4	32	32	0	0	0
033803	Clare	HARRISON	STOCKWELL	1,663	0	941	843	98	0	0
033901	Saginaw	BURROWS	WHEELER	1,195	0	45	45	0	0	0
033903	Saginaw	BURROWS	GRATIOT	2,066	1	12	12	0	0	0
034001	Lansing	DIMONDALE	M-99	1,217	3	55	33	22	0	0
034003	Lansing	DIMONDALE	ROSSMAN	1,014	1	301	277	24	0	0
034101	Saginaw	POTTER	KIRK	478	3	467	452	15	0	0
034401	North Kent	HULL STREET	LIME LAKE	1,100	0	526	371	89	66	0
034402	North Kent	HULL STREET	CRANBERRY	2,915	0	1816	1046	770	0	0
034502	Bay City	KAWKAWLIN	WHEELER ROAD	957	0	262	239	23	0	0
034603	West Kent	BYRON CENTER	FALCON	836	8	572	572	0	0	0
034702	Saginaw	ST CHARLES	SAGINAW	1,062	0	56	56	0	0	0
034801	West Kent	HUDSONVILLE	HUDSONVILLE	1,440	3	123	115	8	0	0
035002	Muskegon	FRUITPORT	JUDSON ROAD	1,515	0	39	39	0	0	0
035102	Flint	BELSAY	LAPEER ROAD	910	0	41	41	0	0	0
035103	Flint	BELSAY	RAYMOND	1,560	0	241	241	0	0	0
035201	Saginaw	CARROLLTON	CARROLLTON	497	1	496	496	0	0	0
035202	Saginaw	CARROLLTON	MAPLE RIDGE	620	1	14	14	0	0	0
035801	Adrian	FRONTIER	RANSOM	830	0	832	1	320	367	144
035802	Adrian	FRONTIER	FRONTIER	695	0	700	0	12	137	551
036001	Battle Creek	LIBERTY	WASHINGTON	709	4	13	13	0	0	0
036002	Battle Creek	LIBERTY	HAMBLIN	647	2	94	94	0	0	0
036203	Ludington	WASHINGTON	CONRAD	460	7	55	55	0	0	0
036401	Flint	IRON STREET	DORT HIGHWAY	576	0	6	6	0	0	0
036403	Flint	IRON STREET	TERM	1,174	1	11	11	0	0	0
036404	Flint	IRON STREET	JOYCE	698	6	68	68	0	0	0
036504	North Kent	PISTON RING	STEBBINS	1,637	4	174	38	46	26	64
036801	Muskegon	APPLE	CHATTERSON ROAD	1,305	1	13	13	0	0	0
037002	Hamilton	OTTAWA BEACH	PORT SHELDON	1,529	0	368	368	0	0	0
037101	Hastings	DELTON	CLOVERDALE	1,382	0	1,390	119	416	377	478

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							Customers with			
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
037102	Kalamazoo	DELTON	DELTON	1,076	2	1,073	9	641	227	196
037301	Muskegon	RAVENNA	RAVENNA	694	0	27	27	0	0	0
037302	Muskegon	RAVENNA	MOORLAND	1,340	1	549	499	50	0	0
037403	Bay City	KNIGHT	ROSEMARY	1,375	5	321	321	0	0	0
037501	Bronson	CAMDEN	CAMDEN	784	0	72	14	58	0	0
037601	Jackson	BATTEESE	COON HILL	823	0	331	316	15	0	0
037602	Jackson	BATTEESE	PLEASANT LAKE	1,345	0	281	265	16	0	0
037603	Jackson	BATTEESE	MUNITH	1,455	1	232	216	0	0	16
037701	Adrian	WAMPLERS	FRANKLIN	990	0	231	193	0	38	0
037702	Adrian	WAMPLERS	WAMPLERS	1,230	0	587	532	55	0	0
037901	Fremont	HESPERIA	HESPERIA	1,217	5	40	40	0	0	0
037902	Fremont	HESPERIA	RURAL	1,043	0	213	213	0	0	0
038001	Adrian	FAIRFIELD	JASPER	629	0	297	7	99	97	94
038002	Adrian	FAIRFIELD	WESTON	372	1	47	47	0	0	0
038101	Midland	STARKS	HOMER	1,032	0	16	16	0	0	0
038102	Midland	STARKS	LEE	1,637	0	966	666	263	37	0
038301	Alma	GROVER	TRIANGLE	1,026	1	14	14	0	0	0
039003	Flint	SLOAN	LONGFELLOW	1,818	1	19	19	0	0	0
039004	Flint	SLOAN	BALLENGER	282	5	11	11	0	0	0
039201	Jackson	MORRELL	MCCAIN	1,896	2	1,787	1,714	39	34	0
039202	Jackson	MORRELL	WEST AVENUE	1,683	1	67	42	25	0	0
039302	Saginaw	NIAGARA	HAMILTON	902	3	28	28	0	0	0
039601	Cadillac	HOUGHTON HEIGHTS	MERRITT	2,209	0	215	90	82	43	0
039602	West Branch	HOUGHTON HEIGHTS	PRUDENVILLE	3,319	1	455	453	2	0	0
039701	Kalamazoo	GULL LAKE	TURNER	540	0	107	77	17	13	0
039702	Kalamazoo	GULL LAKE	WILLOW BEACH	679	1	205	205	0	0	0
039801	Flint	SWARTZ CREEK	MORRISH ROAD	1,266	1	17	17	0	0	0
040101	Owosso	ELSIE	CARLAND	571	1	150	82	45	23	0
040102	Owosso	ELSIE	BANNISTER	862	0	133	133	0	0	0
040201	Hamilton	WAYLAND	BRADLEY	853	1	189	189	0	0	0
040202	Hamilton	WAYLAND	WAYLAND	1,847	2	241	131	67	43	0
040301	Flint	LONG LAKE	LAKESIDE	1,717	1	218	186	32	0	0
040302	Flint	LONG LAKE	TORREY ROAD	1,307	0	1,148	1,096	52	0	0
040402	Battle Creek	ALBER	ALBERS	637	4	20	20	0	0	0
040501	South Monroe	LASALLE	DIXIE	584	1	121	121	0	0	0
040502	South Monroe	LASALLE	OTTER CREEK	1,048	0	135	135	0	0	0
040503	South Monroe	LASALLE	TELEGRAPH	411	0	66	66	0	0	0
040601	Greenville	GODFREY	LOWELL	664	1	663	193	162	234	74
040602	Greenville	GODFREY	FLAT RIVER	421	0	420	351	69	0	0
040701	Adrian	ONSTED	ROME CENTER	622	1	41	41	0	0	0
040702	Adrian	ONSTED	ONSTED	1,465	0	211	130	81	0	0
040901	Hamilton	MERSON	MERSON	1,015	0	93	93	0	0	0

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							Customers with			
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
040902	Hamilton	MERSON	DUCK LAKE	574	0	194	163	0	31	0
040903	Hamilton	MERSON	PIKE LAKE	363	0	259	181	78	0	0
041003	Flint	FLUSHING	MAPLE STREET	1,647	0	246	192	36	18	0
041102	West Kent	KELLOGGSVILLE	LEISURE	1,496	3	13	13	0	0	0
041202	Jackson	SYLVAN	RURAL	752	5	32	32	0	0	0
041401	Lansing	BATH	BATH	862	0	132	108	24	0	0
041402	Lansing	BATH	PARK LAKE	1,416	0	181	152	29	0	0
041502	Kalamazoo	GLENDALE	KEYES	1,456	1	25	25	0	0	0
041601	Lansing	WHITTUM	KINNEVILLE	418	0	291	291	0	0	0
041602	Lansing	WHITTUM	ROYSTON	583	0	202	202	0	0	0
041603	Lansing	WHITTUM	M-50	356	0	76	76	0	0	0
041604	Lansing	WHITTUM	PETRIEVILLE	822	0	206	183	23	0	0
041701	Kalamazoo	GALESBURG	GALESBURG	1,689	5	1,680	1,314	349	17	0
041702	Kalamazoo	GALESBURG	CHARLESTON	905	0	907	748	47	112	0
041801	Adrian	NORTH ADAMS	JEROME	530	0	100	100	0	0	0
041802	Adrian	NORTH ADAMS	NORTH ADAMS	630	1	27	27	0	0	0
041901	Jackson	CONCORD	SWAINS LAKE	848	1	150	91	59	0	0
041902	Jackson	CONCORD	KING ROAD	561	1	104	69	35	0	0
042002	Battle Creek	BEADLE	SPAULDING	1,079	2	270	150	104	16	0
042101	Jackson	LAKE LEANN	BUNDY HILL	723	3	33	0	33	0	0
042102	Jackson	LAKE LEANN	LAKE LEANN	1,880	0	272	272	0	0	0
042201	Kalamazoo	CLIMAX	AGGREGATES	105	1	105	88	17	0	0
042202	Kalamazoo	CLIMAX	CLIMAX	693	2	690	516	121	18	35
042301	West Branch	GERRISH	LEGION	2,057	3	1,059	1	1	121	936
042401	Cadillac	MARION	GASCOM	735	3	440	160	231	49	0
042501	Bronson	KINDERHOOK	LAKE DRIVE	1,943	1	787	0	59	527	201
042601	Adrian	PITTSFORD	CHURCH ROAD	789	0	795	3	31	114	647
042602	Adrian	PITTSFORD	BIRD LAKE	1,626	0	1,643	14	22	116	1,491
042901	Adrian	BLISSFIELD	SUGAR MILL	391	3	390	390	0	0	0
042902	Adrian	BLISSFIELD	CITY	1,439	1	1,433	1,409	24	0	0
043301	West Kent	FOUR MILE	GREENRIDGE	1,753	4	1,752	1,704	48	0	0
043501	Hastings	LAKE ODESSA	LAKE	1,067	0	935	790	145	0	0
043502	Hastings	LAKE ODESSA	INDUSTRIAL	674	2	11	11	0	0	0
043503	Hastings	LAKE ODESSA	BONANZA	189	0	74	74	0	0	0
043601	Greenville	SHERIDAN	SIDNEY	375	1	46	46	0	0	0
043602	Greenville	SHERIDAN	FENWICK	1,479	2	274	95	124	55	0
043701	Alma	EDGEWOOD	DISTRIBUTION	534	0	43	43	0	0	0
043901	Bronson	WAKESHMA	LEONIDAS	377	2	160	77	83	0	0
043902	Battle Creek	WAKESHMA	FULTON	327	1	94	16	64	14	0
044202	Muskegon	MONTAGUE	NORTH SHORE	1,321	1	53	53	0	0	0
			PENTWATER WIRE							
044801	Ludington	PENTWATER	PRODUCTS	1,415	0	12	12	0	0	0

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Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
045301	Greenville	BRICKER	ELLIS	1,253	2	62	62	0	0	0
045302	Greenville	BRICKER	BRICKER	148	1	13	13	0	0	0
045404	Muskegon	LATIMER	PORT CITY	35	8	21	21	0	0	0
047501	Muskegon	BECKER	BEAR CREEK	747	6	30	30	0	0	0
047502	Muskegon	BECKER	GILES	1,907	5	119	119	0	0	0
047602	West Kent	JAMESTOWN	JAMESTOWN	2,217	11	262	237	25	0	0
047701	Boyne City	CONWAY	ODEN	1,712	0	183	139	1	0	43
047702	Boyne City	CONWAY	BAY VIEW	588	3	13	13	0	0	0
048001	Boyne City	PELLSTON	BURT LAKE	1,239	1	317	317	0	0	0
048002	Boyne City	PELLSTON	DISTRIBUTION	1,032	1	41	41	0	0	0
048203	Boyne City	CHEBOYGAN	SEYMOUR	1,216	2	148	148	0	0	0
048204	Boyne City	CHEBOYGAN	ALVERNO	1,090	0	18	18	0	0	0
048301	Hastings	AUBIL LAKE	TOWERS	2,320	5	80	80	0	0	0
048502	Big Rapids	RODNEY	RODNEY	1,717	1	458	262	0	162	34
048601	Battle Creek	MORGAN	ORCHARD	1,708	2	80	64	16	0	0
048602	Battle Creek	MORGAN	ST MARYS	1,316	0	371	177	194	0	0
048702	North Kent	PEACH RIDGE	KENOWA	427	0	23	23	0	0	0
048801	Benzie	ARCADIA	STARKE	816	0	820	590	33	197	0
048802	Benzie	ARCADIA	PLEASANTON	696	0	32	32	0	0	0
048902	Bay City	MT FOREST	BENTLEY	976	0	85	85	0	0	0
049101	Greenville	CRYSTAL	MT HOPE ROAD	483	0	132	132	0	0	0
049102	Greenville	CRYSTAL	CRYSTAL ROAD	1,330	0	203	186	17	0	0
049301	Greenville	PALO	PALO	494	0	383	210	66	75	32
049302	Greenville	PALO	CHARLES ROAD	425	0	421	181	132	42	66
049601	Alma	MERRILL	CHAPIN	810	2	271	166	105	0	0
049602	Alma	MERRILL	MERRILL	734	0	456	456	0	0	0
049701	Battle Creek	OLIVET	ANGER	398	1	104	89	15	0	0
049702	Battle Creek	OLIVET	COLLEGE	1,305	3	155	131	0	24	0
049801	Hamilton	FENNVILLE	PEACH BELT	886	2	239	89	150	0	0
049802	Hamilton	FENNVILLE	COMMERCIAL	1,074	1	26	26	0	0	0
049902	West Kent	STANDALE	CHESTERFIELD	1,306	0	13	13	0	0	0
049903	West Kent	STANDALE	VILLAGE	863	3	36	36	0	0	0
050501	Saginaw	BRISTOL	BRISTOL	901	3	43	43	0	0	0
050502	Saginaw	BRISTOL	MILLER	1,163	1	23	23	0	0	0
050801	Greenville	BELDING	CITY	1,396	6	186	58	13	95	20
050803	Greenville	BELDING	COOKS CORNERS	1,518	2	688	546	39	54	49
050902	Midland	LETTS ROAD	MONROE ROAD	913	2	63	63	0	0	0
050903	Midland	LETTS ROAD	WALKER	1,672	2	188	187	1	0	0
051102	Traverse City	MANCELONA	LEETSVILLE	198	0	3	3	0	0	0
051201	Muskegon	NESTROM	SCENIC DRIVE	1,044	0	141	104	21	16	0
051202	Muskegon	NESTROM	SOUTH SHORE	1,078	1	150	37	77	23	13

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Circuits with Repetitive Customers 2017 YTD through May 27 2017

COMPANY TOTALS 237,397 157,989 50,526 17,140 11,742

Color Key

>499	>299	>99	>49	100-499	50-299	50-99	10-49	10-100	10-49	10-49
							Customers with			
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
051402	Bronson	READING	CAMBRIA	894	0	304	74	0	33	197
051601	Midland	BRADFORD	DISTRIBUTION	483	0	482	151	131	200	0
051602	Midland	BRADFORD	MACGRUDER	58	0	12	2	10	0	0
051801	Boyne City	INDIAN RIVER	RONDO	1,936	1	72	72	0	0	0
051802	Boyne City	INDIAN RIVER	TOPINABEE	1,020	0	190	144	0	46	0
052302	Flint	WOOD STREET	MASON	657	2	20	20	0	0	0
052602	Boyne City	BOYNE CITY	VETERANS	1,155	19	23	23	0	0	0
053001	Fremont	WHITE CLOUD	WILLIAM STREET	745	3	271	255	16	0	0
053101	Battle Creek	PENNFIELD	CLEAR LAKE	275	0	22	22	0	0	0
053102	Battle Creek	PENNFIELD	PENNFIELD	721	0	181	118	46	0	17
053303	Traverse City	GLEN LAKE	HOMESTEAD	778	2	12	12	0	0	0
053501	West Branch	PRESCOTT	MAPLE RIDGE	684	0	580	364	216	0	0
053502	West Branch	PRESCOTT	LOGAN	683	1	679	432	198	49	0
053601	West Branch	ROSE CITY	ISLAND LAKE	2,036	0	158	125	33	0	0
053602	West Branch	ROSE CITY	KLACKING CREEK	1,026	3	104	104	0	0	0
053701	Muskegon	TWIN LAKE	TWIN LAKE	1,638	1	95	67	28	0	0
054001	Flint	MT MORRIS	NEFF ROAD	2,007	1	200	200	0	0	0
054101	West Kent	MOLINE	MOLINE	777	1	61	61	0	0	0
054102	West Kent	MOLINE	GREEN LAKE	1,801	1	74	39	35	0	0
054201	Jackson	SPRINGPORT	SPRINGPORT	801	0	36	36	0	0	0
054202	Jackson	SPRINGPORT	DEVEREAUX	528	3	2	2	0	0	0
054301	Traverse City	KINGSLEY	WALTON	1,697	1	195	195	0	0	0
054401	Ludington	ORIOLE	WHITTIER	1,441	8	151	151	0	0	0
054402	Ludington	ORIOLE	LAKEVIEW	841	3	32	32	0	0	0
054403	Ludington	ORIOLE	HAMLIN	1,842	2	145	145	0	0	0
054404	Ludington	ORIOLE	BRYANT ROAD	1,404	0	1,402	1,203	199	0	0
054601	Traverse City	ALDEN	TORCH	1,029	0	21	21	0	0	0
054602	Traverse City	ALDEN	CLAM	1,272	0	56	56	0	0	0
054802	West Kent	LEONARD	TAYLOR	1,894	7	22	22	0	0	0
055102	Flint	DAVISON	DELVE	866	1	232	232	0	0	0
055702	Ludington	EAST LAKE	PINE CREEK	629	1	98	98	0	0	0
055801	Traverse City	BELLAIRE	DOWNTOWN	985	1	35	35	0	0	0
056301	Muskegon	ROTHBURY	NEW ERA	574	4	53	53	0	0	0
056602	Ludington	BALDWIN	BALDWIN	464	0	1	1	0	0	0
057001	Bronson	COLON	COLON	1,260	2	114	114	0	0	0
057101	Hamilton	CASCO	BLUFF	1,145	0	27	27	0	0	0
057102	Hamilton	CASCO	HAWKHEAD	874	0	20	20	0	0	0
057301	Big Rapids	OHMAN ROAD	EVART	1,066	6	114	114	0	0	0
057302	Big Rapids	OHMAN ROAD	HERSEY	688	0	11	11	0	0	0
057303	Big Rapids	OHMAN ROAD	SEARS	1,030	1	459	420	39	0	0
057401	Traverse City	PENINSULA	MCKINLEY ROAD	583	0	96	75	0	0	21
057402	Traverse City	PENINSULA	MAPLETON	2,152	0	101	1	100	0	0

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Circuits with Repetitive Customers 2017 YTD through May 27 2017

COMPANY TOTALS 237,397 157,989 50,526 17,140 11,742

Color Key

>499	>299	>99	>49	100-499	50-299	50-99	10-49	10-100	10-49	10-49
							Customers with			
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
057501	Owosso	MORRICE	M-78	635	0	19	0	19	0	0
057502	Owosso	MORRICE	SOUTH MORRICE	941	0	14	14	0	0	0
057601	Lansing	POTTERVILLE	POTTERVILLE	1,520	4	232	210	22	0	0
057602	Lansing	POTTERVILLE	M-78	1,358	2	439	245	115	79	0
057702	Saginaw	JANES	WALNUT	689	4	337	322	15	0	0
057703	Saginaw	JANES	JANES	837	2	21	21	0	0	0
057801	Hamilton	VIRGINIA PARK	CASTLE	1,395	0	341	341	0	0	0
058001	Flint	GENESEEVILLE	GENESEE	1,300	2	316	316	0	0	0
058101	Muskegon	SHELBY	STATE STREET	703	1	15	15	0	0	0
058202	North Kent	ENGLISHVILLE	PINE ISLAND	1,417	0	1,360	1,273	87	0	0
058301	Ludington	BASS LAKE	CARTER	510	0	143	143	0	0	0
058302	Ludington	BASS LAKE	KISTLER	791	0	30	30	0	0	0
058601	Flint	LEITH STREET	FRANKLIN	930	1	24	24	0	0	0
058604	Flint	LEITH STREET	WESTERN ROAD	1,264	0	1	1	0	0	0
058901	East Kent	THORNAPPLE	HEADLEY	508	1	45	45	0	0	0
058902	East Kent	THORNAPPLE	BUTTRICK	892	3	890	0	562	328	0
058903	East Kent	THORNAPPLE	RIX STREET	561	1	85	85	0	0	0
059401	South Monroe	TEMPERANCE	WOOD ROAD	947	0	943	358	364	122	99
059501	Bronson	ATHENS	SHERWOOD	579	0	93	87	6	0	0
059502	Battle Creek	ATHENS	ATHENS	640	1	148	120	28	0	0
059901	Saginaw	HEMLOCK	NELSON	1,033	2	63	63	0	0	0
059902	Saginaw	HEMLOCK	HEMLOCK	974	0	28	28	0	0	0
060101	Cadillac	TUSTIN	WWTU	427	1	166	166	0	0	0
060102	Cadillac	TUSTIN	LUTHER	1,076	2	960	224	287	384	65
060103	Cadillac	TUSTIN	LEROY	522	1	84	80	4	0	0
060201	Greenville	TRUFANT	MASTON LAKE	595	0	166	145	21	0	0
060202	Greenville	TRUFANT	GOWEN	1,043	0	531	467	64	0	0
060204	Greenville	TRUFANT	TRUFANT	490	0	250	184	0	66	0
060401	Lansing	OKEMOS	WKAR	1,583	2	15	15	0	0	0
060601	Kalamazoo	BREEDSVILLE	BREEDSVILLE	1,561	1	852	799	28	25	0
060602	Kalamazoo	BREEDSVILLE	GRAND JUNCTION	815	0	251	25	138	15	73
060702	Muskegon	GETTY	ALLEN	1,424	2	377	377	0	0	0
060901	Jackson	NAPOLEON	STONEY LAKE	585	0	430	389	23	18	0
060902	Jackson	NAPOLEON	MOON LAKE	760	0	650	566	84	0	0
060903	Jackson	NAPOLEON	NORVELL	824	0	274	240	34	0	0
060904	Jackson	NAPOLEON	WOLF LAKE	943	2	401	401	0	0	0
061201	Muskegon	NUNICA	WILSON	875	0	64	64	0	0	0
061202	Muskegon	NUNICA	LEONARD	598	1	23	23	0	0	0
061301	Alma	RIVERDALE	RIVERDALE	1,200	1	251	154	84	13	0
061302	Alma	RIVERDALE	SUMNER	974	0	379	255	105	19	0
061502	Kalamazoo	SCOTTS	SCOTTS	710	0	162	133	0	29	0
061602	Battle Creek	PRINCETON	BROWNLEE	510	1	47	47	0	0	0



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Circuits with Repetitive Customers 2017 YTD through May 27 2017

COMPANY TOTALS						237,397	157,989	50,526	17,140	11,742
Color Key										
>499	>299	>99	>49	100-499	50-299	50-99	10-49	10-100	10-49	10-49
							Customers with			
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
061702	Benzie	FRANKFORT	CRYSTALLIA	1,870	1	218	218	0	0	0
061703	Benzie	FRANKFORT	ELBERTA	858	1	49	49	0	0	0
061704	Benzie	FRANKFORT	GATEWAY	570	1	205	147	58	0	0
062302	Midland	BEAVER	CRUMP	762	0	11	11	0	0	0
062401	Jackson	BROOKLYN	FORD	1,318	0	112	0	0	92	20
062402	Jackson	BROOKLYN	BROOKLYN	1,528	1	26	26	0	0	0
062901	Muskegon	COOPERSVILLE	CONKLIN	1,319	2	1,317	1,317	0	0	0
063001	Adrian	DEERFIELD	RODESILER	331	0	133	133	0	0	0
063002	Adrian	DEERFIELD	DEERFIELD	445	0	80	80	0	0	0
063101	Hamilton	HOPKINS	MONTEREY	1,020	1	253	187	66	0	0
063403	Kalamazoo	KILGORE	MOUNT EVEREST	1,264	0	14	14	0	0	0
063404	Kalamazoo	KILGORE	TIMBERLANE	845	2	74	0	74	0	0
063501	Battle Creek	LEVEL PARK	COLLIER	1,507	0	39	39	0	0	0
063502	Battle Creek	LEVEL PARK	LEVEL PARK	1,969	3	223	207	1	15	0
063601	Cadillac	LAKE CITY	JENNINGS	2,298	0	100	100	0	0	0
063602	Cadillac	LAKE CITY	STITTSVILLE	1,905	2	299	229	25	45	0
063603	Cadillac	LAKE CITY	MOREY	1,697	0	136	136	0	0	0
063702	North Kent	PLAINFIELD	BELMONT	1,258	1	25	25	0	0	0
063703	North Kent	PLAINFIELD	KUTTSHILL	1,130	2	48	48	0	0	0
063801	Kalamazoo	NEELEY	HOOPER	351	2	156	31	125	0	0
063802	Kalamazoo	NEELEY	DOSTER	497	0	497	137	210	150	0
063902	Jackson	PARNALL	PARNALL ROAD	1,584	2	391	354	37	0	0
064201	Battle Creek	TEKONSHA	TEKONSHA	638	0	267	172	80	15	0
064202	Battle Creek	TEKONSHA	WAGNER	898	0	268	221	47	0	0
064401	Boyne City	WALLOON	DISTRIBUTION	746	1	258	258	0	0	0
064705	Flint	MAYFAIR	PIERSON	1,345	0	12	12	0	0	0
065401	Flint	BISHOP	RAINBOW	948	4	11	11	0	0	0
065501	Traverse City	O-AT-KA	PINE GROVE	224	1	85	85	0	0	0
065702	Boyne City	EAST JORDAN	IRONTON	1,538	2	328	2	326	0	0
066101	Ludington	HART	DISTRIBUTION	419	1	43	43	0	0	0
066301	Owosso	LEHRING	COLE ROAD	690	0	33	33	0	0	0
066302	Flint	LEHRING	MYERS LAKE	1,422	1	178	178	0	0	0
066402	Kalamazoo	TRAVIS	COLLINGWOOD	1,612	0	35	35	0	0	0
066601	Big Rapids	ENSLEY	DISTRIBUTION	843	0	188	188	0	0	0
066602	Big Rapids	ENSLEY	BAPTIST LAKE	606	0	107	107	0	0	0
067302	Hamilton	MACATAWA	BEE LINE	593	1	89	89	0	0	0
067401	Jackson	DEXTER TRAIL	MILNER	247	0	64	46	0	18	0
067402	Lansing	DEXTER TRAIL	EWERS	227	0	41	41	0	0	0
067403	Jackson	DEXTER TRAIL	MURRAY	144	0	27	0	0	27	0
067404	Lansing	DEXTER TRAIL	DANSVILLE	576	3	33	33	0	0	0
067501	Muskegon	MCCRACKEN	MCCRACKEN	1,454	2	130	130	0	0	0
067504	Muskegon	MCCRACKEN	SHERMAN	1,089	2	128	128	0	0	0



## COMPANY TOTALS

11,742

>499	>299	>99	>49	100-499	50-299	50-99	10-49	10-100	10-49	10-49
							Customers with			
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
067601	Bay City	MCGRAW	PORTSMOUTH	981	0	87	87	0	0	0
067701	Flint	NEW LOTHROP	REED ROAD	758	0	33	0	33	0	0
067702	Flint	NEW LOTHROP	BYRON ROAD	342	0	281	281	0	0	0
068604	Kalamazoo	PARKWAY	SOUTH CENTRAL	896	0	321	298	23	0	0
069802	Flint	HOGAN ROAD	ROLSTON	1,287	1	239	239	0	0	0
069803	Flint	HOGAN ROAD	MCCASLIN LAKE	1,310	0	17	17	0	0	0
069901	West Kent	WALKER	REMEMBRANCE	2,389	5	12	12	0	0	0
070002	Flint	DEAN ROAD	SHANNON LAKE	2,274	9	124	2	122	0	0
070003	Flint	DEAN ROAD	HOGAN	1,163	0	617	85	231	206	95
070004	Flint	DEAN ROAD	PARSHALLVILLE	898	0	127	60	1	66	0
070201	Clare	MAGNUS	EAGLE CORNER	736	0	154	57	97	0	0
070202	Clare	MAGNUS	MCKAY FARM	827	1	90	1	89	0	0
070401	Jackson	FERGUSON	KIBBY ROAD	1,276	1	127	91	36	0	0
070402	Jackson	FERGUSON	BROWNS LAKE	1,361	1	189	146	43	0	0
070601	West Kent	BOWEN	AIRCRAFT	987	0	149	125	24	0	0
070802	West Kent	MICHIGAN	LOOKOUT	929	1	28	28	0	0	0
070901	Hamilton	MARTIN	HYBEL	433	1	62	62	0	0	0
070902	Hamilton	MARTIN	SHELBYVILLE	891	3	432	140	187	92	13
071001	Cadillac	MESICK	SHERMAN	1,262	0	252	174	2	76	0
071002	Cadillac	MESICK	SPRINGVILLE	809	1	206	206	0	0	0
071203	Adrian	COLLEGE PARK	RIVERSIDE	1,730	5	239	196	43	0	0
071702	Jackson	SPRING ARBOR	ARBOR HILLS	1,360	1	623	578	19	14	12
072104	Boyne City	PORT CALCITE	WOODWARD	1,062	2	11	11	0	0	0
072201	Midland	WALDO	JEFFERSON	1,122	1	18	18	0	0	0
072202	Midland	WALDO	LABORATORY	1,749	0	11	11	0	0	0
072401	Saginaw	THAYER	RIVER	1,186	3	34	34	0	0	0
072802	Owosso	LAINGSBURG	ROUND LAKE	1,265	0	41	17	24	0	0
072901	Clare	EIGHT POINT	WHITE BIRCH	2,391	1	183	183	0	0	0
072902	Clare	EIGHT POINT	LAKE GEORGE	1,036	1	98	98	0	0	0
073302	Kalamazoo	TEXAS	EAGLE LAKE	1,370	0	30	25	5	0	0
073501	Jackson	LESLIE	BUSINESS	914	1	62	62	0	0	0
073502	Jackson	LESLIE	HULL ROAD	616	3	18	18	0	0	0
073603	Saginaw	FRANKENMUTH	DEHMEL	817	1	221	221	0	0	0
073604	Saginaw	FRANKENMUTH	GERA	297	2	53	0	53	0	0
074304	Flint	RED ARROW	OGEMA	1,589	0	143	143	0	0	0
074401	Alma	PINE RIVER	GRATIOT	797	0	322	193	129	0	0
074604	East Kent	FULTON	EASTMONT	754	3	11	11	0	0	0
074802	West Branch	WEBB ROAD	PLAINFIELD	497	0	220	118	102	0	0
075101	Kalamazoo	YORKVILLE	YORKVILLE	590	0	13	13	0	0	0
075102	Kalamazoo	YORKVILLE	BAYVIEW	570	0	73	57	16	0	0
075402	Flint	TINSMAN	FISH LAKE ROAD	828	1	22	7	15	0	0
075701	Muskegon	MAPLE GROVE	HENRY STREET	1,398	7	1	1	0	0	0

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Color Key

							>499	>299	>99	>49	100-499	50-299	50-99	10-49	10-100	10-49	10-49
							Customers with										
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages							
075901	Jackson	REYNOLDS	REYNOLDS	1,233	0	116	33	32	28	23							
075902	Jackson	REYNOLDS	SEARS	714	0	277	48	192	37	0							
076006	Saginaw	CHEYENNE	MCCARTY	1,798	2	718	601	114	3	0							
076201	Bronson	BEHNKE	ANGOLA ROAD	341	0	27	0	27	0	0							
076202	Bronson	BEHNKE	RIVER ROAD	834	0	33	33	0	0	0							
076401	Battle Creek	BEDFORD	MEACHEM	813	0	383	259	106	18	0							
076402	Battle Creek	BEDFORD	HALBERT	381	0	379	343	36	0	0							
076511	Kalamazoo	LOVELL	GIBSON	444	1	438	405	33	0	0							
076606	Flint	JUDD ROAD	MANDEVILLE	1,000	1	157	157	0	0	0							
076702	Alma	JASPER	REDSTONE	428	0	55	55	0	0	0							
076903	Kalamazoo	SPRINKLE	SPRINKLE	168	5	167	98	69	0	0							
077101	Greenville	STANTON	DICKERSON LAKE	627	1	180	146	34	0	0							
077201	Jackson	SCPIO	MOSHERVILLE	457	0	240	95	90	55	0							
077202	Jackson	SCPIO	POPE ROAD	639	0	554	393	146	0	15							
077401	West Kent	DEWEY	WIDDICOMB	849	3	560	521	39	0	0							
077402	West Kent	DEWEY	SEATING	3,596	4	23	23	0	0	0							
078001	Big Rapids	APPLETON	WALDRON WAY	281	3	27	27	0	0	0							
078002	Big Rapids	APPLETON	PERRY	929	1	102	102	0	0	0							
078201	West Branch	GREENBUSH	HARRISVILLE	816	0	814	151	652	11	0							
078202	West Branch	GREENBUSH	GREENBUSH	1,001	0	42	0	42	0	0							
078302	Ludington	FOX FARM	GRANT	497	8	11	11	0	0	0							
078601	Lansing	WESTPHALIA	PRICE ROAD	557	0	12	12	0	0	0							
078702	Jackson	WISNER	MONROE	772	2	76	76	0	0	0							
078801	Benzie	HONOR	INDIAN HILL	873	0	189	175	1	13	0							
078802	Benzie	HONOR	PLATTE	2,233	0	1,380	359	872	37	112							
078901	Hastings	ALTO	ALTO	860	3	35	35	0	0	0							
078902	East Kent	ALTO	MCCORDS	1,169	1	991	526	392	73	0							
079002	Saginaw	SEIDEL	BROCKWAY	1,468	2	12	12	0	0	0							
079201	Hastings	MIDDLEVILLE	BUSINESS	1,180	2	334	4	154	139	37							
079202	Hastings	MIDDLEVILLE	LAFAYETTE	1,176	0	121	121	0	0	0							
079702	West Branch	GRAYLING	RIVER	1,112	0	302	302	0	0	0							
079703	West Branch	GRAYLING	HOSPITAL	1,279	3	12	12	0	0	0							
080801	Hamilton	SWAN CREEK	MINING	325	0	43	1	9	33	0							
080901	Battle Creek	FIFTEEN MILE ROAD	A DRIVE	628	1	205	168	0	0	37							
080902	Battle Creek	FIFTEEN MILE ROAD	15 MILE ROAD	739	0	726	525	201	0	0							
081501	Lansing	HARPER ROAD	ARENS	580	3	77	77	0	0	0							
081503	Lansing	HARPER ROAD	ONONDAGA	763	0	62	62	0	0	0							
081504	Lansing	HARPER ROAD	AURELIUS	2,715	3	62	62	0	0	0							
081601	Lansing	HAGADORN	WATER	894	0	35	35	0	0	0							
081802	North Kent	ALPINE	WESTGATE	233	0	96	96	0	0	0							
082201	Hamilton	MONTEREY	30TH STREET	523	1	29	29	0	0	0							
082501	Hamilton	NORTHERN FIBRE	FIBRE	1,024	5	24	24	0	0	0							

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Color Key

>499	>299	>99	>49	100-499	50-299	50-99	10-49	10-100	10-49	10-49
							Customers with			
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
083503	South Monroe	JACKMAN	MEADOWOOD	1,670	1	15	15	0	0	0
083801	Bronson	CARLETON ROAD	BECK ROAD	512	0	14	14	0	0	0
084001	Traverse City	HOSPITAL	ELMWOOD	1,770	1	126	102	24	0	0
084003	Traverse City	HOSPITAL	KIDS CREEK	207	0	64	0	64	0	0
084101	Owosso	LOVEJOY	BRADEN	1,178	0	622	441	113	55	13
084102	Owosso	LOVEJOY	DEERFIELD	1,089	0	125	125	0	0	0
084201	Flint	STACEY	PIONEER	2,438	1	17	17	0	0	0
085603	Battle Creek	FORT CUSTER	CLARK ROAD	33	11	25	25	0	0	0
085701	Lansing	COCHRAN	KALAMO	1,226	5	239	113	104	22	0
085702	Lansing	COCHRAN	SNOW	971	8	21	21	0	0	0
085802	Owosso	BLUEWATER	SCOTT ROAD	747	1	105	77	12	16	0
085803	Lansing	BLUEWATER	TOWNSEND ROAD	1,338	8	19	19	0	0	0
085904	West Kent	IVANREST	LACROSSE	2,329	2	31	31	0	0	0
086801	Bronson	KOLASSA	KOSMERICK	1,404	1	419	129	171	3	116
086802	Bronson	KOLASSA	MATTESON	765	0	18	18	0	0	0
087201	East Kent	CALEDONIA	92ND STREET	779	1	58	47	11	0	0
087702	Boyne City	BAGLEY	OTSEGO LAKE	1,882	3	74	74	0	0	0
087704	Boyne City	BAGLEY	FREDERIC	1,657	2	188	121	67	0	0
088201	Jackson	CARY ROAD	WOODSTOCK	660	0	594	283	311	0	0
088202	Jackson	CARY ROAD	LAKE COLUMBIA	1,669	0	1,683	1,377	279	27	0
088203	Jackson	CARY ROAD	MOSCOW	1,041	0	30	30	0	0	0
088204	Jackson	CARY ROAD	JEFFERSON	285	2	125	80	45	0	0
088501	Jackson	BURTCH ROAD	BURTCH RD	1,417	0	649	573	76	0	0
088502	Jackson	BURTCH ROAD	WELCH LAKE	648	0	11	11	0	0	0
090101	Flint	WAGER	FLINT PARK	1,120	0	74	60	14	0	0
090102	Flint	WAGER	PARKLAND	1,318	1	62	62	0	0	0
090302	West Kent	LEE STREET	LEE	656	4	19	19	0	0	0
090304	West Kent	LEE STREET	KIRTLAND	2,686	2	1	0	1	0	0
090401	Bay City	KIESEL	WILDER	449	3	13	13	0	0	0
090402	Bay City	KIESEL	EUCLID	1,287	3	16	16	0	0	0
090602	Flint	HARRIET	HARRIET	730	0	147	129	18	0	0
090702	Muskegon	CLUB	VILLAGE	1,026	0	19	19	0	0	0
090801	Jackson	OAK STREET	COOPER STREET	1,174	5	12	12	0	0	0
091501	West Kent	GRAND VALLEY	TALLMADGE	915	0	44	14	30	0	0
091603	Kalamazoo	AMPERSEE	COMMERCIAL	464	2	48	48	0	0	0
091801	Battle Creek	LOMBARD	SHERIDAN	1,553	2	53	39	0	14	0
091802	Battle Creek	LOMBARD	LOMBARD	1,393	4	45	45	0	0	0
092001	Flint	VENICE	LENNON	317	0	283	283	0	0	0
092002	Flint	VENICE	GOODALL	619	0	19	19	0	0	0
092101	Greenville	DERBY	BROWN	692	0	58	58	0	0	0
092102	Greenville	DERBY	DERBY	1,200	1	393	52	186	140	15

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COMPANY TOTALS						237,397	157,989	50,526	17,140	11,742
Color Key										
>499	>299	>99	>49	100-499	50-299	50-99	10-49	10-100	10-49	10-49
							Customers with			
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
092201	Fremont	NEWAYGO	QUARTERLINE	782	12	26	11	0	15	0
093202	Cadillac	BOON ROAD	ROUND LAKE	461	0	69	69	0	0	0
093502	Flint	RANKIN	GREEN VALLEY	1,590	0	619	454	165	0	0
093503	Flint	RANKIN	TRAPANI	830	0	319	247	72	0	0
093802	Kalamazoo	RIX ROAD	UNDERPASS	1,673	0	122	122	0	0	0
093901	West Branch	LYON MANOR	TREASURE	922	0	639	190	1	352	96
093902	West Branch	LYON MANOR	TOWN HALL	1,432	0	103	89	14	0	0
094602	Flint	NEWARK	EVANS ROAD	1,164	11	217	87	40	90	0
095201	Greenville	PECK ROAD	ORE-IDA	731	3	72	72	0	0	0
095203	Greenville	PECK ROAD	WISE ROAD	1,247	0	83	83	0	0	0
095305	West Kent	STONEGATE	BREVIS	2,850	4	43	43	0	0	0
097202	Midland	EASTLAWN	FLAJOLE	1,335	3	525	104	174	231	16
097302	Owosso	OVID	OVID	1,414	0	1,126	982	90	13	41
097701	South Monroe	STERNS ROAD	LEWIS	932	2	53	53	0	0	0
097702	South Monroe	STERNS ROAD	POINT PLACE	1,560	2	295	295	0	0	0
098204	West Kent	LEFFINGWELL	NOTTINGHAM	1,000	3	464	437	27	0	0
098301	Flint	WEBSTER	WEBSTER	1,358	0	206	206	0	0	0
098302	Flint	WEBSTER	COLDWATER	629	2	117	60	57	0	0
098501	Hamilton	BEECH-NUT	HOLAGAN	472	1	425	307	118	0	0
098502	Hamilton	BEECH-NUT	BEECH-NUT	549	0	215	215	0	0	0
099103	Saginaw	KOCHVILLE	KRAENZLEIN	626	0	1	1	0	0	0
100301	Big Rapids	NINETEEN MILE ROAD	CEMENT	1,053	0	511	392	119	0	0
100302	Big Rapids	NINETEEN MILE ROAD	INDUSTRIAL PARK	853	1	57	57	0	0	0
100501	Owosso	CHAPIN	CHAPIN	551	0	156	99	57	0	0
100502	Alma	CHAPIN	MARION	894	0	875	58	552	165	100
100802	Cadillac	HARRIETTA	BOON	1,371	2	54	54	0	0	0
100901	Clare	SURREY	SURREY	1,490	1	119	34	61	24	0
100902	Clare	SURREY	MAIN STREET	909	2	11	11	0	0	0
101801	Kalamazoo	COLONY FARM	BTR PARK	303	0	108	107	1	0	0
102201	West Kent	FILLMORE	NORTH BLENDON	596	0	49	0	36	13	0
102502	Adrian	ROUND LAKE	ROUND LAKE	392	0	56	56	0	0	0
102701	Muskegon	SAVIDGE	BOOM ROAD	1,040	6	13	13	0	0	0
103501	West Kent	KNAPP	DEAN LAKE	204	1	12	0	12	0	0
103503	West Kent	KNAPP	PERKINS	2,488	2	65	65	0	0	0
103701	Flint	GILKEY CREEK	WOLCOTT	1,686	0	10	10	0	0	0
103702	Flint	GILKEY CREEK	WALKER	1,258	0	25	25	0	0	0
103801	South Monroe	JEFFS ROAD	U.S. 23	224	2	77	77	0	0	0
103802	South Monroe	JEFFS ROAD	ADLER ROAD	1,597	1	63	63	0	0	0
104101	Alma	GILSON	WYMAN	651	0	338	300	38	0	0
104201	North Kent	ROGUE RIVER	CANNON FARMS	1,401	4	384	112	261	11	0
104202	North Kent	ROGUE RIVER	ROGUE RIVER	1,040	1	76	2	74	0	0
105301	Muskegon	ELLIS	DANGL	2,130	1	118	118	0	0	0

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Color Key											
>499	>299	>99	>49	100-499	50-299	50-99	10-49	10-100	10-49	10-49	
							Customers with				
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages	
106302	West Kent	HANSEN	HANSEN	1,364	2	102	102	0	0	0	
106501	Flint	STREET	TOBIAS STREET	1,150	2	13	13	0	0	0	
106502	Flint	STREET	STREET	1,451	0	15	15	0	0	0	
106503	Flint	STREET	LIBERTY STREET	2,300	0	179	162	17	0	0	
107201	Kalamazoo	ALAMO	FISH HATCHERY	1,493	1	293	293	0	0	0	
107202	Kalamazoo	ALAMO	PINE GROVE	1,594	0	1,080	856	224	0	0	
107203	Kalamazoo	ALAMO	OWEN	717	0	107	87	20	0	0	
107501	Clare	OBERLIN	MERIDITH	1,737	0	960	292	552	116	0	
107502	West Branch	OBERLIN	BENMARK	2,752	0	137	137	0	0	0	
107503	Clare	OBERLIN	PRATT LAKE	1,269	0	551	487	23	22	19	
107604	Alma	ISABELLA	REMUS	601	1	16	16	0	0	0	
108101	South Monroe	BECK ROAD	CONSEAR	809	1	53	14	39	0	0	
108102	South Monroe	BECK ROAD	OTTAWA	248	1	103	103	0	0	0	
108201	Battle Creek	GOODALE	HUBBARD	1,376	1	126	115	11	0	0	
108203	Battle Creek	GOODALE	ROOSEVELT	1,505	2	196	89	91	16	0	
108804	Midland	GOLDEN	SCHUETTE	221	0	92	80	0	12	0	
109102	Adrian	HENDERSHOT	CENTENNIAL	794	0	57	32	25	0	0	
109502	Flint	DUNHAM	BRENT CREEK	1,155	0	422	422	0	0	0	
109802	Hamilton	PIGEON LAKE	OLIVE	978	0	61	61	0	0	0	
110401	Battle Creek	BELLEVUE	ASSYRIA	827	0	94	67	27	0	0	
110801	Hamilton	WILLIAMS	ELY	1,024	2	54	54	0	0	0	
110803	Hamilton	WILLIAMS	LINCOLN	578	0	13	13	0	0	0	
111203	Kalamazoo	DRAKE ROAD	COUNTRY CLUB	1,380	4	64	64	0	0	0	
111301	West Branch	SHERMAN	SHERMAN	329	0	145	73	20	30	22	
111804	Saginaw	BAY ROAD	BAY ROAD	349	6	115	115	0	0	0	
111901	Battle Creek	CHAUNCEY	AUSTIN	644	8	12	12	0	0	0	
111902	Battle Creek	CHAUNCEY	CASS	1,594	3	30	30	0	0	0	
112101	West Branch	ABBE	ABBE	1,164	3	308	290	18	0	0	
112102	West Branch	ABBE	CALDWELL	1,293	1	467	205	262	0	0	
112103	West Branch	ABBE	HWY 33	756	0	536	366	159	0	11	
112201	North Kent	KENT CITY	TYRONE	1,323	2	347	206	86	55	0	
112202	North Kent	KENT CITY	CASNOVIA	1,667	0	28	28	0	0	0	
112504	Adrian	HUNT ROAD	HUNT ROAD	903	1	88	76	12	0	0	
112601	East Kent	CASCADE	THORNCREST	1,410	3	1,408	479	770	159	0	
112602	East Kent	CASCADE	CASCADE	1,227	4	529	260	269	0	0	
112603	East Kent	CASCADE	PEACE STREET	1,406	0	1,406	1,074	104	228	0	
112801	Jackson	GREGORY	GREGORY	951	0	317	317	0	0	0	
112802	Jackson	GREGORY	UNADILLA	966	0	338	338	0	0	0	

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Color Key										
>499	>299	>99	>49	100-499	50-299	50-99	10-49	10-100	10-49	10-49
							Customers with			
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
114201	Lansing	MASON	COUNTY GARAGE	275	7	79	79	0	0	0
114301	Cadillac	MANTON	GILBERT	947	0	196	71	107	18	0
114302	Cadillac	MANTON	DOWNTOWN	1,346	1	23	23	0	0	0
114403	Battle Creek	RENTON	WATKINS	269	1	266	197	68	0	1
114501	Adrian	CADMUS	WINTER	813	4	408	408	0	0	0
114702	Bay City	TOWN LINE	MACKINAW	767	0	37	4	33	0	0
115301	Kalamazoo	LAWRENCE	LAWRENCE	1,103	2	226	226	0	0	0
115302	Kalamazoo	LAWRENCE	CHRISTIE LAKE	435	0	60	60	0	0	0
115501	Traverse City	MAPLE CITY	CEDAR	1,216	0	311	216	42	53	0
115902	Flint	BALLENGER	SALISBURY	1,067	1	21	21	0	0	0
116501	Hamilton	BENTHEIM	BENTHEIM	771	0	233	60	144	29	0
116801	Battle Creek	WILDER	WILDER	409	0	88	86	0	2	0
117903	Flint	SKYLARK	ROCKINGCHAIR	1,210	1	99	99	0	0	0
118403	Owosso	NEWBURG	SHIATOWN	539	0	104	104	0	0	0
119102	Bronson	SQUIRES	ALLEN	652	1	15	1	14	0	0
120202	Flint	TUCKER	OAK HILL	748	1	77	77	0	0	0
121003	North Kent	NORTH KENT	NORTHVILLE	946	3	716	700	16	0	0
121701	Clare	FROST	LONG LAKE	1,190	0	562	308	170	84	0
121702	Clare	FROST	LEOTA	836	0	133	113	8	0	12
122101	West Branch	WIRTZ ROAD	BOWMANVILLE	1,130	0	253	231	0	22	0
122401	East Kent	PETTIS ROAD	HONEY CREEK	796	1	169	132	23	0	14
122402	North Kent	PETTIS ROAD	PETTIS ROAD	667	2	142	116	14	12	0
122502	Alma	CRAWFORD	WINN	1,038	0	11	11	0	0	0
122601	Kalamazoo	KALARAMA	ROMENCE	2,201	0	19	19	0	0	0
122701	Flint	STEEL DRIVE	STEEL DRIVE	31	3	31	31	0	0	0
122704	Flint	STEEL DRIVE	VISTA	1,260	1	664	305	281	78	0
122705	Flint	STEEL DRIVE	PONCHATRAIN	1,471	0	757	204	439	114	0
122901	Kalamazoo	PLAINWELL	COMMERCIAL	1,489	5	201	182	0	19	0
123101	Big Rapids	BIG PRAIRIE	BIG BEND	350	0	33	33	0	0	0
123102	Big Rapids	BIG PRAIRIE	OXBOW	774	0	527	435	57	35	0
123301	Saginaw	MCKEIGHAN	SHARON ROAD	620	0	37	37	0	0	0
123701	Hamilton	WILMOTT	WILMOTT	1,972	3	60	7	1	0	52
124502	West Branch	CEDAR LAKE	VAN ETTEN	1,982	2	397	397	0	0	0
125101	Lansing	LOOMIS	TAFT ROAD	1,052	2	18	18	0	0	0
125102	Lansing	LOOMIS	LOOMIS ROAD	837	1	71	71	0	0	0
125201	Lansing	UPTON	MT HOPE	1,024	0	150	37	64	49	0
125202	Lansing	UPTON	MARKET PLACE	334	1	79	79	0	0	0
125603	Battle Creek	SPRINGFIELD	UPTON	562	0	21	21	0	0	0
125801	Kalamazoo	PICKEREL	INDIAN LAKE	1,155	0	827	784	43	0	0
125802	Kalamazoo	PICKEREL	EAST LAKE	473	0	26	26	0	0	0
126301	West Branch	SPRUCE ROAD	EAST BAY	1,535	0	554	443	80	31	0

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COMPANY TOTALS 237,397 157,989 50,526 17,140 11,742

Color Key										
>499	>299	>99	>49	100-499	50-299	50-99	10-49	10-100	10-49	10-49
							Customers with			
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
126302	West Branch	SPRUCE ROAD	BLACK RIVER	1,555	0	1,354	1,060	271	23	0
126701	Big Rapids	TAMARACK	AMBLE	841	1	278	235	43	0	0
127001	West Branch	RANGER LAKE	KOKOSING	1,348	0	159	159	0	0	0
127002	West Branch	RANGER LAKE	GOODAR	1,271	1	570	109	305	105	51
127003	West Branch	RANGER LAKE	LUPTON	2,400	0	1,287	401	582	95	209
127301	West Branch	WHITTEMORE	M-65	1,627	1	408	268	122	18	0
127302	West Branch	WHITTEMORE	SAND LAKE	2,353	0	34	34	0	0	0
127402	West Branch	DUQUITE	JOHNSFIELD	493	3	16	16	0	0	0
127403	West Branch	DUQUITE	SAGANING	701	0	437	400	37	0	0
127404	West Branch	DUQUITE	PINE RIVER	929	0	416	273	115	28	0
127501	West Branch	EAST TAWAS	ALABASTER	788	2	129	16	113	0	0
127502	West Branch	EAST TAWAS	LINCOLN STREET	2,887	5	59	59	0	0	0
127601	Bay City	COTTAGE GROVE	PREVO	1,408	0	109	26	66	17	0
127602	Bay City	COTTAGE GROVE	HURON	1,736	1	1,163	912	251	0	0
127701	Midland	LEVELY	ALLBRIGHT	2,817	1	64	64	0	0	0
127702	Midland	LEVELY	STURGEON	1,954	0	848	41	441	366	0
127901	Jackson	CAMBRIDGE	SPEEDWAY	66	1	66	66	0	0	0
127902	Jackson	CAMBRIDGE	IRISH HILLS	604	0	34	34	0	0	0
128001	Adrian	HALEY ROAD	CLAYTON	409	0	11	11	0	0	0
128002	Adrian	HALEY ROAD	MEDINA	162	0	22	0	22	0	0
128803	Lansing	BENNETT	DOBIE ROAD	900	1	77	0	77	0	0
129001	Lansing	PEACOCK	STOLL ROAD	673	1	344	186	101	0	57
129002	Lansing	PEACOCK	COLEMAN ROAD	2,252	2	36	36	0	0	0
129401	Jackson	BROUGHWELL	MINARD	2,729	1	402	298	104	0	0
129402	Jackson	BROUGHWELL	ONONDAGA	882	0	62	62	0	0	0
129601	Jackson	BLACKMAN	SANDSTONE	2,652	3	185	114	71	0	0
129801	Boyne City	VANDERBILT	CORWITH	395	1	20	20	0	0	0
129802	Boyne City	VANDERBILT	WOLVERINE	1,017	1	65	54	0	0	11
129902	West Branch	ROSCOMMON	PIONEER	1,951	1	1,541	753	259	453	76
130301	Lansing	WEST ROAD	WOOD ROAD	1,917	0	1	1	0	0	0
130904	East Kent	KRAFT AVENUE	CENTENNIAL	262	2	150	99	51	0	0
131202	Hamilton	BIL-MAR	PIERCE	655	2	193	165	28	0	0
131402	Hamilton	BELKNAP	TODD FARM	363	0	82	19	63	0	0
132201	Hastings	BROGAN	BROGAN	780	1	778	34	347	243	154
132202	Hastings	BROGAN	SOUTH	260	0	262	140	105	0	17
132303	Midland	ORCHARD ROAD	SAGINAW ROAD	2,013	2	32	0	32	0	0
132304	Midland	ORCHARD ROAD	ST ANDREWS	1,100	4	22	22	0	0	0
133203	West Kent	ROSEWOOD	LAMPLIGHTER	2,199	4	119	119	0	0	0
133501	Lansing	TALLMAN	WACOUSTA	1,408	2	139	139	0	0	0
133503	Lansing	TALLMAN	WRIGHT ROAD	624	5	616	324	292	0	0
133504	Lansing	TALLMAN	EAGLE	690	0	411	315	78	18	0
133901	Battle Creek	WATKINS	CHRISTY	800	2	800	1	719	80	0



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COMPANY TOTALS 237,397 157,989 50,526 17,140 11,742

Color Key

>499	>299	>99	>49	100-499	50-299	50-99	10-49	10-100	10-49	10-49
							Customers with			
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
133903	Battle Creek	WATKINS	KNAPP	669	0	152	67	3	50	32
134001	Battle Creek	ALDER CREEK	LEE LAKE	1,016	0	434	148	286	0	0
134002	Battle Creek	ALDER CREEK	EAST LEROY	1,141	1	244	201	43	0	0
134702	Saginaw	BELL ROAD	ALBEE	2,169	1	157	91	66	0	0
134801	Kalamazoo	PAVILION	PAVILION	656	3	44	44	0	0	0
135201	East Kent	FOREMAN	VERGENNES	1,161	0	1,155	726	429	0	0
135202	East Kent	FOREMAN	CUMBERLAND	763	0	762	364	233	75	90
135601	North Kent	CANNONSBURG	CANNONSBURG	1,012	1	229	184	0	45	0
135602	North Kent	CANNONSBURG	GRASS LAKE	945	2	70	0	70	0	0
135903	Lansing	KIPP ROAD	COLUMBIA ROAD	1,485	1	83	83	0	0	0
135904	Lansing	KIPP ROAD	COLLEGE ROAD	1,218	1	237	75	133	29	0
136001	Owosso	BENNINGTON	MANITOU	745	0	1	0	1	0	0
136002	Owosso	BENNINGTON	GRAND RIVER	1,368	0	574	414	147	13	0
136601	South Monroe	M.A.E.	LINCOLN ROAD	1,342	0	15	15	0	0	0
136602	South Monroe	M.A.E.	ALBAIN ROAD	827	0	56	56	0	0	0
136801	East Kent	BROADMOOR	NORTH	2,038	4	2,038	4	2,013	21	0
136804	East Kent	BROADMOOR	36TH STREET	59	3	59	59	0	0	0
137101	Greenville	CLYDE ROAD	GLENN ROAD	1,040	5	983	692	196	95	0
137102	Greenville	CLYDE ROAD	STATE ROAD	838	2	26	26	0	0	0
137201	Lansing	BALZER	SANDERS	828	1	145	145	0	0	0
137202	Jackson	BALZER	COMSTOCK	642	0	108	108	0	0	0
137302	Kalamazoo	TWILIGHT	GULL ROAD	2,290	0	259	240	0	19	0
137801	Greenville	SANDERSON	COUNTY FARM	314	0	249	23	217	9	0
137802	Greenville	SANDERSON	VAN DEINSE	126	5	28	28	0	0	0
137804	Greenville	SANDERSON	M-57	1,428	5	197	35	33	129	0
138102	Saginaw	PORTSMOUTH	BLUMFIELD	1,081	3	27	27	0	0	0
138302	Hamilton	MILL GROVE	ALLEGAN HYDRO	1,134	0	12	12	0	0	0
138303	Hamilton	MILL GROVE	DUMONT	1,011	2	104	104	0	0	0
139501	Kalamazoo	WARNER	MILO	1,605	2	956	496	358	90	12
139502	Kalamazoo	WARNER	BURCHETT	1,560	0	355	93	138	74	50
140201	West Branch	SIMMONS	DAM ROAD	1,630	0	519	358	111	50	0
140401	West Branch	ALGER	SKIDWAY	4,079	0	18	18	0	0	0
140402	West Branch	ALGER	FOREST LAKE	1,627	2	449	282	93	74	0
140701	Traverse City	SILVER LAKE	SECOR	1,206	0	12	12	0	0	0
141201	West Branch	BACKUS	SPRINGBROOK	5,560	1	2,180	1,744	310	126	0
141202	West Branch	BACKUS	MAPLE VALLEY	1,009	2	363	351	12	0	0
141801	Saginaw	HACKETT	HACKETT	685	3	41	41	0	0	0
142701	Flint	IRISH ROAD	BELLE MEADE	1,134	1	43	43	0	0	0
142702	Flint	IRISH ROAD	WEXFORD	2,693	1	1,385	969	328	88	0
142703	Flint	IRISH ROAD	CRYSTALWOOD	2,779	0	74	74	0	0	0
145101	West Branch	NOBLE	DUBY	539	1	36	36	0	0	0
145102	West Branch	NOBLE	WHITNEY	1,638	0	674	235	439	0	0



18322-AG-CE-149 Attachment B

Circuits with Repetitive Customers 2017 YTD through May 27 2017

COMPANY TOTALS 237,397 157,989 50,526 17,140 11,742

Color Key

>499	>299	>99	>49	100-499	50-299	50-99	10-49	10-100	10-49	10-49
							Customers with			
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
147201	West Kent	DORR CORNERS	RED RUN	1,277	2	261	230	31	0	0
147202	West Kent	DORR CORNERS	100TH STREET	594	1	515	278	170	25	42
147501	Hastings	MARKER LAKE	JACKSON ROAD	404	2	155	132	23	0	0
147502	Greenville	MARKER LAKE	KYSER ROAD	735	0	287	240	47	0	0
147602	Lansing	VAN ATTA	VAN ATTA	678	1	677	573	104	0	0
147801	Midland	JAMES SAVAGE	WASHINGTON	958	3	154	154	0	0	0
147901	Flint	DUFFIELD	COLE CREEK	1,168	0	20	20	0	0	0
148001	Muskegon	ARTHUR	ARTHUR	305	0	88	88	0	0	0
148002	Muskegon	ARTHUR	BERLIN	715	0	58	58	0	0	0
148202	Hamilton	TITUS LAKE	TENTH STREET	939	0	300	188	13	46	53
148301	Clare	MANN SIDING	CEDAR	1,624	1	141	141	0	0	0
148501	West Kent	CRAHEN	GREENBRIER	391	3	142	3	139	0	0
148502	West Kent	CRAHEN	LOMOND	1,101	4	104	1	90	13	0
148602	Clare	DEER LAKE	BALL AVENUE	1,425	1	42	42	0	0	0
149501	Kalamazoo	ELEVENTH STREET	BASELINE	1,272	1	616	616	0	0	0
149601	Jackson	CLEAR LAKE	WATERLOO	1,028	0	682	188	325	24	145
149803	Flint	WEST FENTON	OVERPASS	1,459	0	11	11	0	0	0
149902	Kalamazoo	ZYLMAN	ZYLMAN	1,321	0	85	85	0	0	0
150001	West Branch	WITHEY LAKE	PETTIT	1,216	0	549	347	178	24	0
150701	Jackson	EAST JACKSON	TROJAN	670	1	92	76	16	0	0
150801	Bronson	GIRARD	GIRARD	425	0	28	28	0	0	0
150802	Bronson	GIRARD	DAYBURG	565	0	82	54	28	0	0
151002	Bronson	BALCOM	BANKERS	1,251	0	159	159	0	0	0
151102	Traverse City	LELAND	LELAND	1,182	1	60	60	0	0	0
			NORTH LAND							
151201	North Kent	PARAMOUNT	FARMS	726	2	73	73	0	0	0
151401	Flint	MCCANDLISH	BUSH CREEK	107	0	39	39	0	0	0
151501	Saginaw	BUSCH ROAD	CURTIS	884	0	46	46	0	0	0
151502	Saginaw	BUSCH ROAD	CANADA	449	0	235	72	148	15	0
151601	West Branch	HUBBARD LAKE	HUBBARD LAKE	457	1	343	343	0	0	0
151602	West Branch	HUBBARD LAKE	MILLER ROAD	623	1	83	83	0	0	0
151802	Saginaw	LAUNDRA	PLEASANTVIEW	1,084	0	22	0	22	0	0
151903	Flint	HILL ROAD	PINE WAY	849	1	838	569	269	0	0
152309	West Kent	SINCLAIR	HERITAGE HILL	1,576	5	71	17	54	0	0
152703	North Kent	COIT AVENUE	RIFLE RANGE	500	2	155	101	0	54	0
152801	Adrian	TRIPP ROAD	TRIPP ROAD	313	0	313	0	200	113	0
153601	Battle Creek	COLUMBIA	COLUMBIA	536	2	20	20	0	0	0
154102	Hamilton	BLUE STAR	GANGES	571	0	106	106	0	0	0
154201	Kalamazoo	SPICEBUSH	LESTER LAKE	765	0	145	145	0	0	0
154301	Greenville	HARVARD LAKE	HARVARD LAKE	1,837	0	881	569	135	0	177
154302	Greenville	HARVARD LAKE	COURTLAND	677	0	532	101	41	57	333

18322-AG-CE-149 Attachment B

Circuits with Repetitive Customers 2017 YTD through May 27 2017

COMPANY TOTALS 237,397 157,989 50,526 17,140 11,742

Color Key

>499	>299	>99	>49	100-499	50-299	50-99	10-49	10-100	10-49	10-49
							Customers with			
Feeder ID	Headquarter	Substation name	Feeder name	Customer Count	Primary Customers ("Priority")	Customers with 2 or more outages	2 outages	3 outages	4 outages	5 or More outages
154501	Kalamazoo	RICHLAND	D AVENUE	1,048	4	52	52	0	0	0
154601	Midland	PRICE ROAD	PRICE	867	1	53	53	0	0	0
154602	Midland	PRICE ROAD	MERIDIAN	1,120	0	269	23	172	74	0
155001	West Branch	SMITH CREEK	SKIPARK (WEST)	413	0	114	114	0	0	0
155302	Battle Creek	HALLS LAKE	HALLS LAKE	261	0	35	35	0	0	0
155401	South Monroe	DUNBAR	DUNBAR	1,399	0	103	92	11	0	0
			WOODWARD							
155501	Cadillac	WOODWARD	LAKE	766	0	670	496	145	29	0
155801	South Monroe	SCHOOL ROAD	MOROCCO	1,000	0	106	73	0	33	0
156202	Battle Creek	CRANBROOK	11 MILE ROAD	617	1	79	79	0	0	0
156301	Owosso	SCENIC LAKE	SCENIC LAKE	585	0	63	63	0	0	0
156601	West Branch	TURNER	GATES	441	0	398	6	221	128	43
157702	Jackson	SHARON HOLLOW	SHARON VALLEY	596	0	579	228	325	26	0
157801	Greenville	TREMAINE	JORDAN LAKE	353	2	80	80	0	0	0
158201	West Branch	RYNO	MORENCI	2,199	1	385	45	222	118	0
158202	West Branch	RYNO	MAPES	1,321	0	272	199	31	42	0
158701	Adrian	ROLLIN	BURTON	258	0	28	28	0	0	0
158702	Adrian	ROLLIN	POSEY LAKE	340	0	13	13	0	0	0
159502	West Kent	PEARLINE	WINDFIELD	3,128	6	1,672	1,657	15	0	0
159802	Adrian	RUSSELL ROAD	RAISIN	910	2	23	23	0	0	0
160102	Bronson	BABCOCK	DIVISION	488	0	64	64	0	0	0
160201	Big Rapids	BARRYTON	BARRYTON	652	0	468	257	192	19	0
160202	Big Rapids	BARRYTON	CHIPPEWA LAKE	549	0	192	192	0	0	0
160401	North Kent	RATIGAN	GREELEY	642	0	18	0	18	0	0
161301	Cadillac	SNYDER	WELLSTON	97	0	206	206	0	0	0
			CRITTENDEN							
161302	Cadillac	SNYDER	LAKE	1,173	0	22	22	0	0	0
161902	East Kent	EMERSON	KILMER	946	0	520	520	0	0	0
163703	Jackson	WILLIS ROAD	LIST ROAD	844	1	475	203	208	64	0
163802	Bronson	DOBSON ROAD	HALF MOON	235	0	92	68	24	0	0

18322-AG-CE-177

Question:

46. Refer to Exhibit A-22 (AJB-9) and A-23 (AJB-10). Please:
- Provide detailed support for the \$33.7 million in capital expenditures for LVD Lines Reliability for the nine months ended September 2018.
  - Provide detailed support for the \$3.4 million in capital expenditures for HVD Subs Reliability for the nine months ended September 2018.
  - Provide detailed support for the \$1.7 million in capital expenditures for System Protection HVD for the nine months ended September 2018.
  - Provide detailed support for the \$5.6 million in capital expenditures for LVD Repetitive Outages for the nine months ended September 2018.
  - Provide detailed support for the \$2.3 million in capital expenditures for Metro Reliability for the nine months ended September 2018.

Response:

- Please note that the 2017 projects in the Reliability Program are shown on workpaper WP-AJB-6 and not WP-AJB-9 as indicated on Exhibit A-23 (AJB-10). The Company will determine which projects it will undertake in 2018, in the fall of 2017. The planning process will occur in 2017. The projects will be slated for construction in 2018. This project determination happens closer to the time that the projects are to be constructed so that timely data is utilized to provide the most benefit to customers. Planning these types of investments too far in advance could result in using stale data and reducing overall system benefit. Further, project areas identified for pro-active reliability improvements so far in advance could have system improvements done under other capital or O&M programs (ie Service Restoration, Demand Failures, Capacity) in the interim. The work on the LVD lines will include: (1) upgrading lightning protection; (2) replacing equipment that has reached the end of its useful life such as poles, cross-arms, switches (cutouts), and overhead and underground conductors; and (3) sectionalizing. Sectionalizing refers to measures designed to segment the electric distribution system into smaller sections, thereby minimizing the number of customers that are affected by any individual outage. These projects will be determined in the fall of 2017 and thus are not currently available. It is a prudent business practice to utilize the best, most timely data available to ensure maximum customer benefit.
- The HVD Subs Reliability Program maintains and improves reliability of HVD substations by replacing obsolete equipment such as bushings, voltage transformers, switches, breakers, batteries, and lightning arrestors. The program also reduces the risk of catastrophic transformer failures by replacing bushings and reduces PCBs on the system. The planning process to define the complete workplan for 2018 will not occur until the

fall of 2017. However, below are some examples of projects that are currently scheduled for the nine months ended September 2018.

Project	Bas. start date	Basic fin. date	Estimated costs
BRONSON REPL 288OCB W/ MOAB	05/01/2018	06/30/2018	94,000.00
AC REPL 100 OCB	01/04/2018	03/15/2018	105,000.00
COOLEY REPL 177 & 277 BKRS	03/01/2018	05/15/2018	45,000.00
CLIO REPL 199 SW	02/15/2018	03/31/2018	18,000.00
ABBE REPL TB1 HS BUSH	04/01/2018	04/30/2018	58,300.00
MEDUSA REPL 299 CIRCUIT SW	03/01/2018	06/01/2018	56,000.00
ROBERTS ST REPL TB1 BUSHING	01/01/2018	02/28/2018	41,241.00
OTTAWA BEACH REPL TB1 X,Z BUSH	01/01/2018	02/28/2018	64,532.00
STEERING GEAR REPL BUSH	01/15/2018	03/15/2018	110,691.00
CADMUS REPL TB1 BUSHING	08/15/2018	09/30/2018	68,623.00
ORBITAL REPL TB1 BUSHING	07/01/2018	08/30/2018	71,538.00
N BELDING REPL 200,1488&1588 BRKR	02/01/2018	04/30/2018	256,101.00
MEDUSA REPL 399 CSW	03/01/2018	06/01/2018	63,309.00
GRODI RD REPL LM SPT'S (2)	03/01/2018	04/15/2018	19,100.00
DELANEY REPL OPTO SNAP	01/24/2018	10/01/2018	70,000.00
WHITESTONE PT, REPL 177&277 BKRS	01/15/2018	04/15/2018	160,000.00
SONOMA, ADD SECOND HOUSE	01/03/2018	03/01/2018	3,000.00
VERNON, REPL 166 OCB	04/16/2018	02/06/2019	80,000.00

- c. The 2018 System Protection projects are shown below.

System Protection HVD	2018 Projected
WD0979 Halsey Repl Relays for working space	\$ 360
WD1083 Summerton Repl Relays for working space	\$ 256
WD0100 Wealthy Repl Relays for working space	\$ 960
WD0959 Beveridge Repl 1277 Relays	\$ 144
<b>Total</b>	<b>\$ 1,720</b>

- d. The Repetitive Outage program addresses areas of consistently recurring customer outages. Investments are targeted at improving the Same Circuit Repetitive Interruptions per its definition found in R460.702(s) of the Michigan Public Service Commission Service Quality and Reliability Standards for Electric Distribution Systems. Some of the 2018 projects would be identified in late 2017 but most projects will be identified during 2018. The Company analyses the Customers Experiencing Multiple Interruptions index every two weeks to identify targeted projects. It is a prudent business practice to utilize the best, most timely data available to ensure maximum customer benefit. Attachment B to discovery request 18322-AG-CE-149 demonstrates the analysis utilized to determine targeted areas for Repetitive Outage investments.
- e. The Metro Reliability Program maintains and improves the reliability of the metro system by replacing obsolete equipment such as oil insulated switches, PCB oil insulated voltage transformers, lead insulated primary and secondary cables, live-front dry type transformers in buildings that fall under our 'high rise policy', live-front transformer fusing and load centers. The program also reduces the workplace risks and safety of our crew members and contractors by correcting Minimum Approach Distances (MAD) by dead fronting equipment using elbow-type, load break capable terminations, installation of elbow-type protective equipment such as switching modules, molded vacuum interrupters (MVT's), SF6 insulated switches, encapsulated fuses and elbow type transformer bushings. The planning process to define and the complete workplan for

2018 will not occur until the fall of 2017. Below is a list of projects currently being reviewed for inclusion in the 2018 plan. These projects are subject to change pending the final workplan completion process in the 3rd quarter of 2017.

2018 Proposed Projects	Estimated Cost
KZO – Primary lead cable replacements (4 ckts)	\$800,000.00
BCK – Primary lead cable replacement (2 ckts)	\$250,000.00
Saginaw – Primary lead cable replacement & vault retirement	\$800,000.00
Flint – Dry-type transformer replacements (Doyle Commons)	\$225,000.00
Flint – WW First Vault deadfront equipment	\$175,000.00
Jackson – Courtland Vault deadfront equipment	\$150,000.00
GR – Michigan Trust Vault deadfront equipment	\$500,000.00
GR – Dry-type transformer replacement (Viewpoint Towers)	\$300,000.00



Andrew J. Bordine  
June 26, 2017

Customer Management and Grid Infrastructure Department

18322-AG-CE-185

18322-AG-CE-185  
Page 1 of 2

Question:

54. Refer to Exhibit A-29 (AJB-16). Please:

- a. Provide detailed support for the \$97.8 million in capital expenditures for HVD Lines Demand Failures for the nine months ended September 2018.
- b. Provide detailed support for the \$11.6 million in capital expenditures for HVD Demand Failures for the nine months ended September 2018.
- c. Explain why on line 31, the number of meters increase by 90% over 2016 and why in 2018 the number is 59% higher than 2016. Provide supporting analysis and documentation to justify the increase in the number of meters in 2017 and 2018.
- d. Explain why the number of Metering Transformers on line 36 declines to 192 in 2017 and increases to 960 in 2018. Provide supporting analysis and documentation to justify the number of units in 2017 and 2018.
- e. Provide the calculations with supporting data in Excel showing how the Loading rate on lines 43, 51 and 58 were determined.
- f. Explain why the number of Streetlights-Mercury Vapor conversions on line 55 increases in 2017 and 2018. Provide supporting analysis and documentation to justify the number of units in 2017 and 2018.
- g. Explain why the unit cost on line 5 increases to \$0.462 in 2018, or 59% over 2017,
- h. Provide detailed support for the \$1.2 million in capital expenditures for Metro Demand Failures for the nine months ended September 2018.

Response:

- a. The HVD Lines Demand Failures amount for the nine months ended September 30, 2018 is \$11,605,000. See part b below.
- b. As described in my direct testimony beginning on page 58, line 18, the Demand Failures program is primarily expenditures incurred in connection with customer outage restoration and repair and replacement of equipment due to unanticipated or imminent failure. The expenditure levels in this program are based upon historical experience with these types of failures and are not planned in advance. Most projects in the Demand Failures program with the exception of some of the Mercury Vapor Streetlight Conversion program are in response to unplanned and imminent failures that in most cases have resulted in service interruptions to customers. As these projects are unplanned and emergent in nature, there is no project list nor are there details for subsequent periods.
- c. During the deployment of Smart Energy/AMI the Company had a waiver on the routine meter exchange program. In 2016, the Company only purchased electric meters to meet

the needs of the business in Smart Energy/AMI deployed areas that have returned to normal business. These meters would be used for meter failures and new business in those areas. In 2017, since the number of deployed areas has increased, Consumers Energy has purchased more meters to support those areas. The 2018 projection is based on Smart Energy deployment being complete, a return to normal business in all areas, and a resumption of a routine meter exchange program.

- d. The Company determined that it had enough metering transformers in stock such that major purchases were not required in 2017. The 2018 units represent a resumption of normal purchase levels.
- e. The loadings are based on the high level planning assumptions that take into account the increases in capital investments the Company is projecting in this filing.
- f. See my direct testimony beginning on page 59, lines 24 through 33, and page 60, line 11 through page 61, line 22, which discussed the proposed tariff change that will increase the number of streetlight conversions. Since LED lights are more expensive this also increases the cost per unit.
- g. The amounts on line 5 of Exhibit A-29 (AJB-16) are \$65,483,000 and \$67,091,000 these are not unit costs.
- h. The Metro Failures Program is the Company's 'further action' response to civil and electrical metro system failures. This program funds the replacement of civil infrastructure such as: crushed duct, failing vault roofs and manholes, etc. This program also funds failed electrical components such as: electric transformers, primary and secondary cables, splices and risers, etc. The planning process to define and the complete workplan for 2018 will not occur until the fall of 2017. Below is a list of projects currently being reviewed for inclusion in the 2018 plan. These projects are subject to change pending the final workplan completion process in the 3rd quarter of 2017.

2018 Proposed Projects	Estimated Cost
KZO – Lovell St. crushed duct	\$ 275,000.00
BCK – Jackson St crushed duct	\$ 500,000.00
Flint – Brush Alley crushed duct	\$ 225,000.00
Unknown Pri & Sec cable failure and replacement	\$ 150,000.00
Unknown transformer failure and replacement	\$ 50,000.00
<b>Total</b>	<b>\$ 1,200,000.00</b>



Andrew J. Bordine  
June 29, 2017

Customer Management and Grid Infrastructure Department



18322-AG-CE-191

Question:

60. Refer to Exhibit A-33 (AJB-20). Please:
- Provide detailed support for the \$938,000 in capital expenditures for System Control Projects for the nine months ended September 2018.
  - Explain why in U-17990 the Company had projected to spend \$7.2 million, \$7.9 million and \$8.2 million in 2016, 2017 and 2018, respectively on NERC/NESC Compliance and in this case the Company is forecasting to spend zero, \$3.3 million and \$3.3 million for those same years. Explain what changed and why the previous forecasts are no longer accurate.

Response:

- System Control Projects –
  - 46 & 138 kV Operations Projects – Projects associated with the real time operation of the grid to increase both operability with switching as well as mitigating capacity issues during planned and unplanned outages.
  - Real-Time Applications – Capital costs associated with the applications used by the control center personnel for monitoring and controlling the grid as well as scheduling facility outages.
  - SCC/DCC Office Expansion – A project is underway to consolidate all of the Transmission & HVD control functions into the Jackson System Control Center (SCC) and create a Distribution Control Center (DCC) at the Grand Rapids SCC. This line item is for costs associated with the control center facility improvements needed to accommodate this organizational change. \$375,000 projected in this filing

Projected expenditures by project are shown below.

System Control Projects	2018 Projected
18-5000	\$ 240
18-5001	\$ 135
Real-Time Applications	\$ 188
SCC/DCC Office Expansion	\$ 375
<b>Total</b>	<b>\$ 938</b>

- Based upon the guidance from Reliability First, the Company was no longer required to treat the Frame Relay telephone circuits in a manner consistent with the requirements under NERC CIP as was projected in MPSC Case No. U-17990 and so the related expenditures are no longer necessary.



Andrew J. Bordine  
June 27, 2017

Customer Management and Grid Infrastructure Department

32200805



**MPSC AUDIT REQUEST**

CASE NO: U-18322  
DATE OF REQUEST: 4/25/17  
NO. LEF-1  
REQUESTED BY: Lauren E. Fromm  
DATE OF RESPONSE: 5/8/17  
RESPONDENT: Lincoln D. Warriner – Part A;  
Andrew J. Bordine – Parts B-D

Question:

9. Please identify any costs in this filing associated with the measures taken to mitigate the meter reading issues as discussed in docket U-18002 including, but not limited to:
- Aggressive installation of AMI meters*
  - Supplemental meter reading workforce
  - Any software/systems development work done to specifically address the meter estimation process
  - Any additional investments made to address the issue

Answer:

Revised information is in red font below

- (Response provided by Lincoln D. Warriner) The Company accelerated the installation of AMI meters and modules for customers with multiple consecutive estimated billings. As a result, installation contractor time and material based installation costs were incurred as part of our investment in electric AMI meters and gas modules. During the months of December 2015 through December of 2016, the additional installation costs for these meters totaled \$589,740. Approximately 80% of these installation costs are considered incremental because 20% of consecutive estimate meter locations had access issues that would have required special handling if meters were installed according to the installation schedule, therefore \$471,792 are considered incremental installation costs. Of this incremental amount, \$304,777 (or 64.6%) would represent the amount attributable to electric meter installations. The remaining \$167,015 relate to the installation of gas modules, which are not included in this case.
- (Response provided by Andrew J. Bordine) In 2015, there were not any costs associated with the measures taken to mitigate the meter reading issues as discussed in docket U-18002. In 2016, an estimated cost of \$1,076,000 was necessary for a supplemental meter reading workforce to move from an 85% meter read rate to a 97% meter read rate and to reduce consecutive estimated reads. In this filing, the 2017 cost includes \$791,000 to maintain a 97% meter read rate and address consecutive estimated meter reads. The 12 Months Ending September 30, 2018 cost in this filing to maintain a 97% meter read rate is \$634,000.
- (Response provided by Andrew J. Bordine) In 2015, there were not any software/systems costs associated with the measures taken to mitigate the meter reading issues as discussed in docket U-18002. In 2016, the Company spent \$156,516 in software/systems development to

Request #: 122 REVISED

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address consecutive estimates and improve meter reading rates. There are no software/system costs in 2017 or the test year 12 Months Ending September 30, 2018 in this filing associated with the measures taken to mitigate the meter reading issues as discussed in docket U-18002.

- d. (Response provided by Andrew J. Bordine ) In 2015, there were not any costs associated with the measures taken to mitigate the meter reading issues as discussed in docket U-18002. In 2016, the Company invested \$234,611 in new meter reading hardware costs to enhance the ability to obtain a 97% meter reading rate and address consecutive estimate issues. **These devices were all purchased for gas headquarters and thus were charged to gas division capital accounts.** These were necessitated by the additional meter readers added to enable the Company to obtain the targeted read rate. The Company also spent \$800 in postage and postcards in 2016 in order to increase the meter reading rate and address consecutive estimated reads. There are no additional investments projected in 2017 or the test year in this filing associated with the measures taken to mitigate the meter reading issues as discussed in docket U-18002. In 2015 there weren't any costs associated with the measures taken to mitigate the meter reading issues as discussed in docket U-18002. In 2016 the Company invested \$234,611 in new meter reading hardware costs to enhance the ability to obtain a 97% meter reading rate and address consecutive estimate issues. These were necessitated by the additional meter readers added to enable the Company to obtain the targeted read rate. The Company also spent \$800 in postage and postcards in 2016 in order to increase the meter reading rate and address consecutive estimated reads. There are no additional investments projected in 2017 or the test year in this filing associated with the measures taken to mitigate the meter reading issues as discussed in docket U-18002.

It should be noted that in the direct testimony of Andrew J. Bordine on page 30, lines 1 through 16, he discusses the test year adjustments the Company has made in Electric Distribution in recognition of the order in MPSC Case No. U-18002. This is also shown on Exhibit A-14 (AJB-1) at line 3.

18322-AG-CE-151

Question:

20. Refer to the chart on page 8 of Mr. Bordine's direct testimony. Please:
- Explain why the SAIDI index has increased in both 2015 and 2016.
  - Provide this chart including MEDs.

Response:

- There are two System Average Interruption Duration Indexes (SAIDI); one excludes Major Event Days (MEDs) and is used for comparative benchmarking by IEEE (Institute of Electrical and Electronics Engineers). The other considers all 365 days regardless of weather and is called "overall" SAIDI; this is ultimately what our customers' experience.

In 2016, Consumers Energy achieved its lowest overall SAIDI in 16 years, dating back to 2001, with a total of 284.3 minutes. This was 92.3 minutes lower than our 2014 total and 156.4 minutes lower than 2015. See Table 1.

To address the SAIDI number (excluding MED) differences between 2014, 2015, and 2016, we must first discuss what a MED is and why it is applied to IEEE Reliability Indices. For the purposes of comparative utility benchmarking, MEDs are days which far exceed the norm for a given utility based on the previous 5 year daily averages and standard deviation. This is 1,825 days of data used to set a MED threshold (in SAIDI minutes), that when exceeded, all values (customer counts and customer minutes) incurred for outages from midnight to midnight on that day are excluded. The MED threshold for exclusion in 2014 was 12.82 minutes, 2015 was 12.48 minutes, and 2016 was 11.24 minutes.

An example of a recent MED was August 20<sup>th</sup>, 2016, where 6 tornados and related straight-line winds struck our southwest territory. We had an overall SAIDI of 14.8 minutes that day, which exceeded the 2016 threshold of 11.24 minutes. Therefore, by IEEE standards, the 35,906 customers and related 26,727,000 customer minutes from 8/20 were allowed for exclusion.

The IEEE SAIDI differences between 2014, 2015, and 2016 come down to one major factor: disparity in MED exclusions. In 2014, we had 372,172,243 customer minutes (206 SAIDI minutes) and 335,662 customers (0.186 SAIFI) excluded from our 4 Major Event Days. In contrast, 2016 had just 139,146,265 customer minutes (77 SAIDI minutes) and 260,667 customers (0.145 SAIFI) excluded from our 5 MEDs. The ability to deduct 129 more SAIDI minutes in 2014 than in 2016 is the primary reason the totals appear to be much better in 2014 than last year, when in fact, 2016 was the better overall year.

18322-AG-CE-151

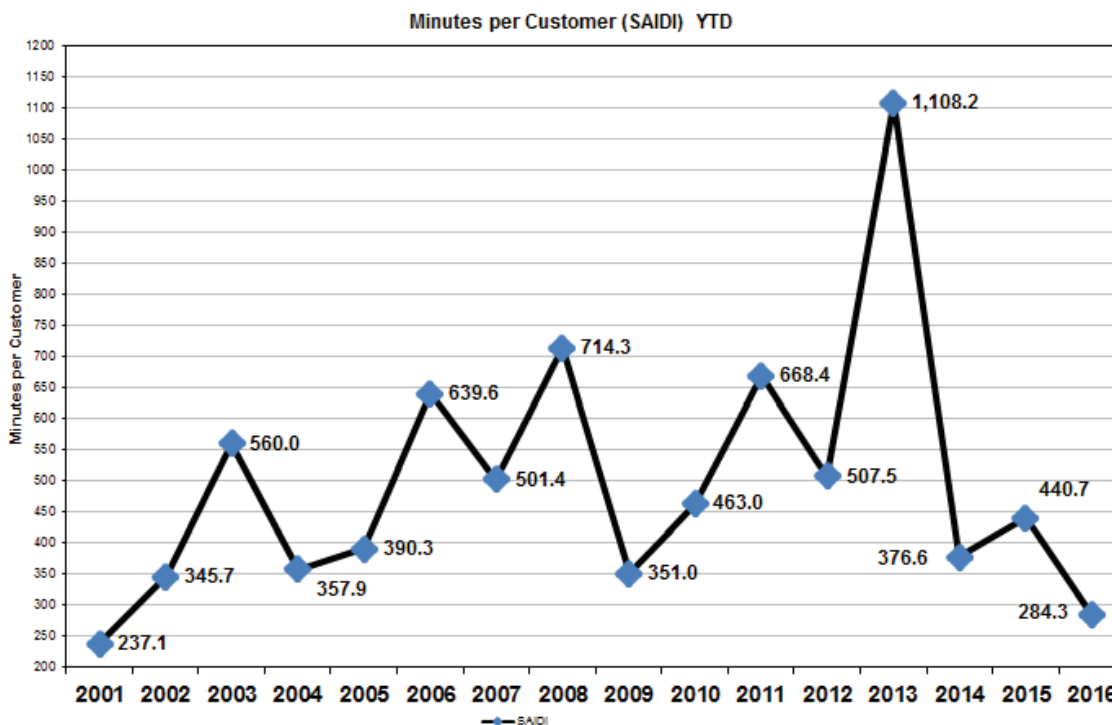
Page 2 of 2

When comparing 2015 to 2014, it's important to note that 2015 had two catastrophic events, both of greater magnitude than the one event in 2014. Catastrophic storms tend to have an adverse effect on overall reliability numbers, even with MED exclusions, as they carry restoration beyond the excluded MED days. For 2015, the MED exclusions were 470,035,577 customer minutes (261 SAIDI minutes) and 356,140 customers (0.198 SAIFI). Even when removed from the overall totals in those categories, those exclusions were not large enough to offset the total impact of the two referenced catastrophic events.

b. See Table 1 below.

Table 1

Consumers Energy SAIDI including MEDs, 2001-2016



*Andrew J. Bordine*

Andrew J. Bordine  
June 26, 2017

Customer Management and Grid Infrastructure Department

18322-AG-CE-152

Page 1 of 2

18322-AG-CE-152

Question:

21. Refer to the chart on page 10 of Mr. Bordine's direct testimony. Please:
- Explain why SAIFI frequency has increased in both 2015 and 2016.
  - Provide this chart including MEDs.

Response:

- As with Consumers Energy's response to 18322-AG-CE-151 (SAIDI), this response regarding SAIFI (System Average Interruption Frequency Index) follows the same rationale. Please refer to 18322-AG-CE-151 for an explanation of the IEEE definition of Major Event Days (MEDs) and how they affect reliability numbers.

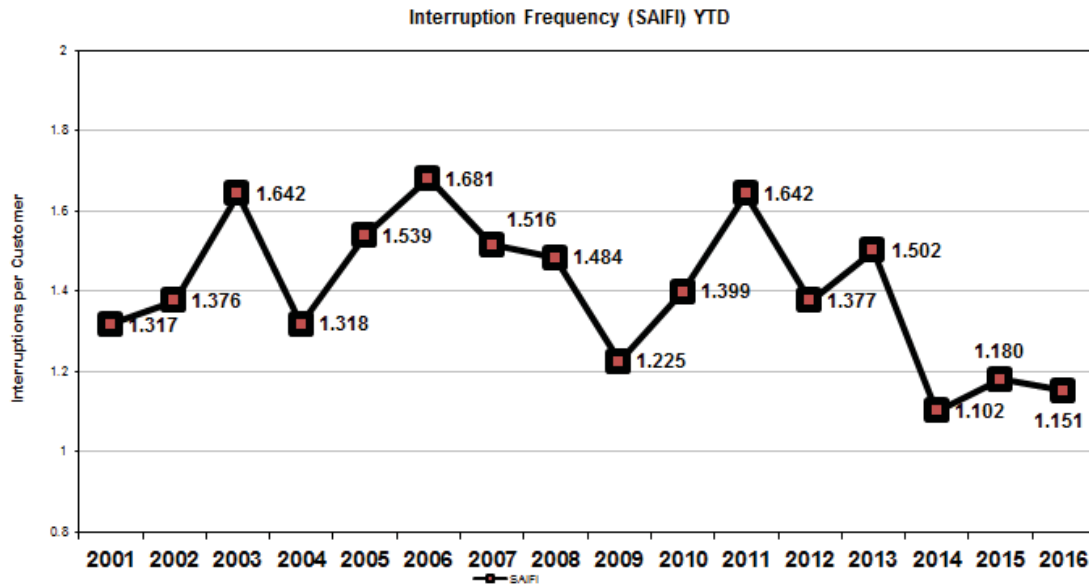
Although Consumers Energy's 2016 overall SAIFI did not top our 2014 numbers, the Company's performance over the last three years clearly demonstrates progress in improving customer reliability as those three years rank #1, #2, and #3 over the last 16 years (See Table 1).

Addressing differences between 2014 and 2016 from a SAIFI perspective, MED exclusions are our primary focus. In 2014, 335,662 customers were excluded from overall SAIFI due to MEDs, or an equivalent 0.186 SAIFI. For 2016, the MED exclusion was 260,667 customers, or a SAIFI equivalent of 0.145. This gives a MED exclusion difference of 0.145. If applied to 2016, the Company would get a value of 1.11 which would put it close to the value achieved in 2014.

- See Table 1, below.

18322-AG-CE-152  
Page 2 of 2

Table 1  
Consumers Energy SAIFI including MEDs, 2001-2016



*Andrew J. Bordine*

Andrew J. Bordine  
June 26, 2017

Customer Management and Grid Infrastructure Department

18322-AG-CE-153

Question:

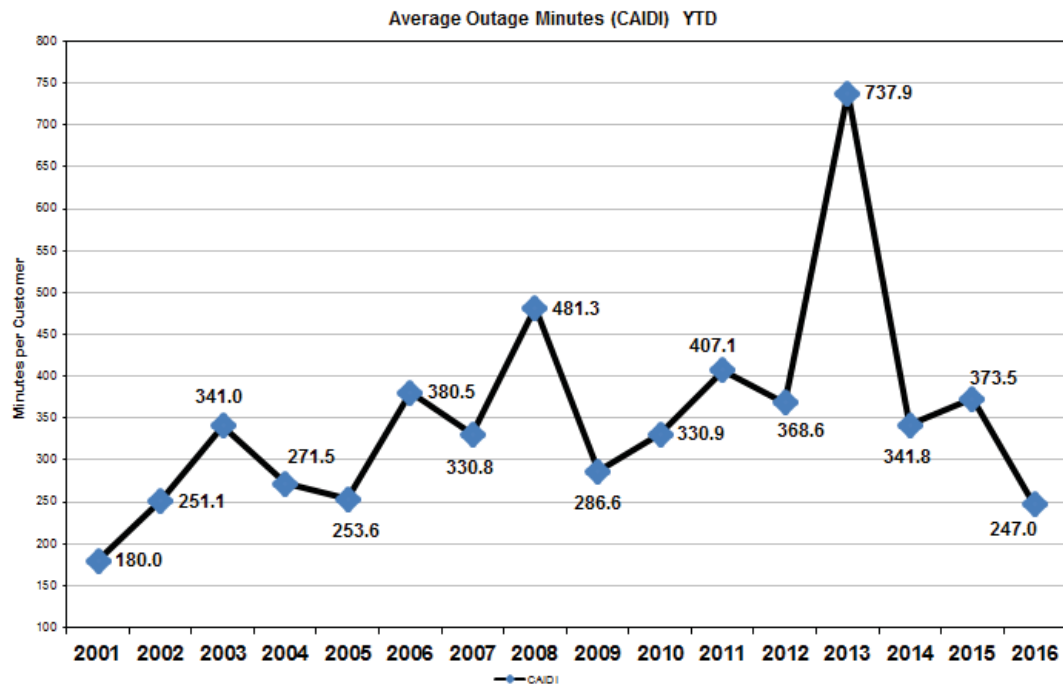
22. Refer to the chart on page 11 of Mr. Bordine's direct testimony. Please:
- Explain why CAIDI duration time increased in 2016.
  - Provide this chart including MEDs.

Response:

- Similar to Consumers Energy's 2016 overall SAIDI performance (outlined in 18322-AG-CE-151), our overall Customer Average Interruption Duration Index (CAIDI) also was the Company's best showing in 16 years. This metric focuses on the time it takes for the Company to restore service to a Consumers Energy customer if they lose power. For 2016, the average restoration time, under all conditions, was 247 minutes. See Table 1. Major Event Days (MEDs) play a significant role in shaping the difference between the IEEE CAIDI used for benchmarking and the overall CAIDI that is seen by our customers. Table 2 shows the magnitude of these differences between such calculations as 2014 had a 158 minute drop, 2015 a 194 minute drop, and 2016 only a 41 minute drop from the overall to MED excluded CAIDI values.
- See Table 1.

18322-AG-CE-153  
Page 2 of 3

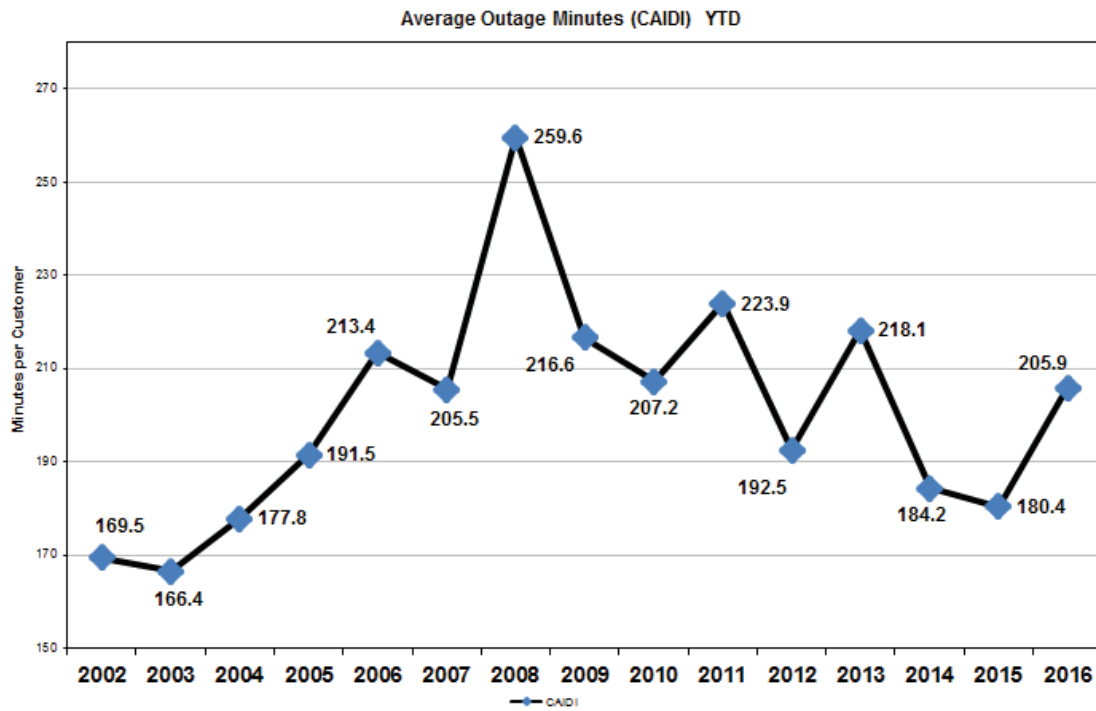
Table 1  
Consumers Energy CAIDI including MEDs, 2001-2016





18322-AG-CE-153  
Page 3 of 3

Table 2  
Consumers Energy CAIDI excluding MEDs, 2001-2016



Andrew J. Bordine  
June 26, 2017

Customer Management and Grid Infrastructure Department

18322-AG-CE-193 (Revised)  
Page 1 of 2

Question:

62. Refer to Exhibit A-35 (AJB-22) page 3. Please provide this same schedule in Excel with actual data for the first five months of 2017.

Response:

The requested actual data for the first seven months of 2017 is provided in the table below and in the Excel file named "18322-AG-CE-193 Attachment Revised", which is included with this response. The previous response reflected only direct expenditures.

18322-AG-CE-193 ATTACHMENT (REVISED)

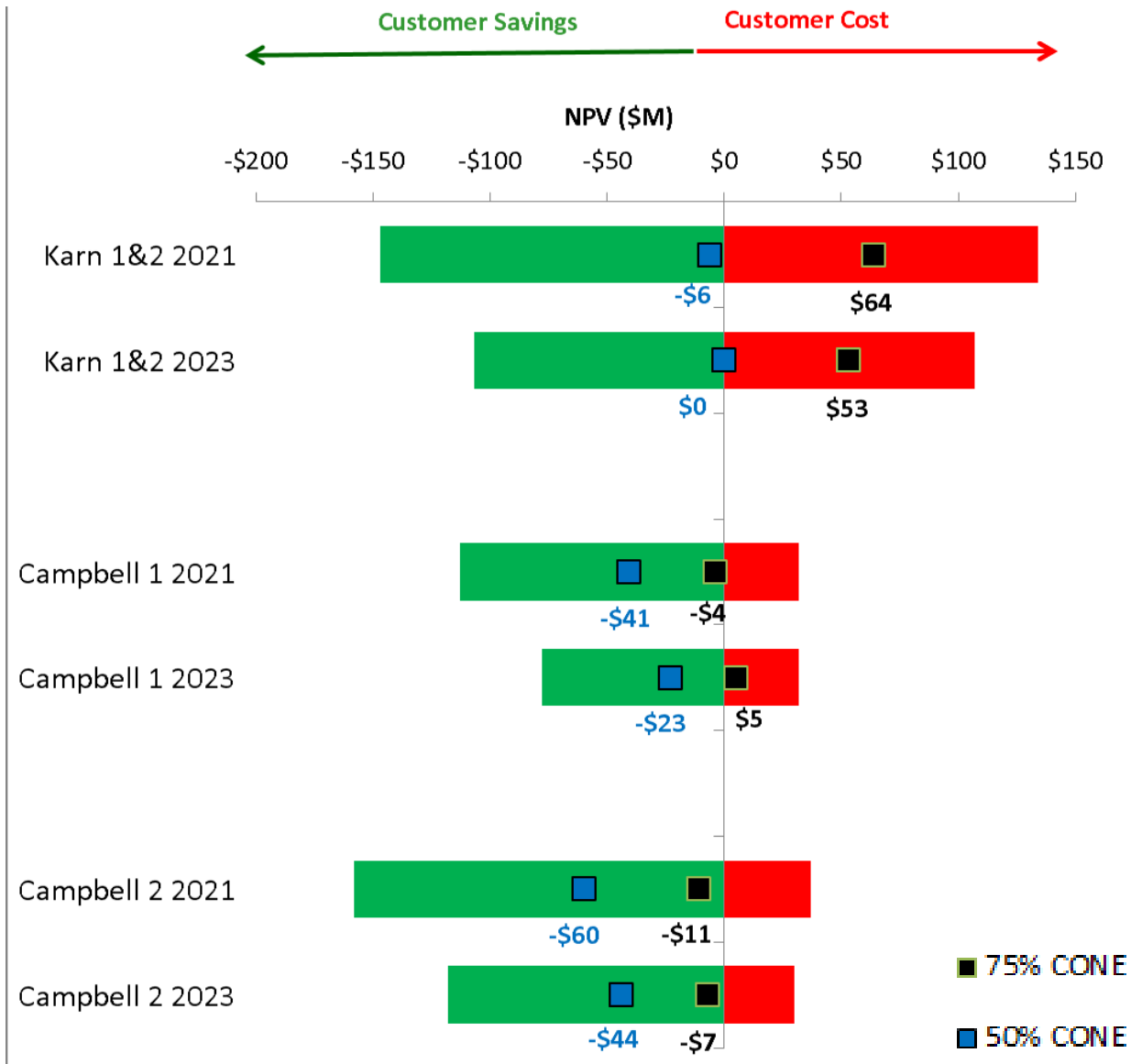
Consumers Energy Company  
Summary of Projected Electric & Common Capital Expenditures  
Program Timelines  
(\$000)

<b>2017 7 MONTHS ACTUAL ELECTRIC CAPITAL TIMELINE TOTALS</b>										
	<b>Jan Act</b>	<b>Feb Act</b>	<b>Mar Act</b>	<b>Apr Act</b>	<b>May Act</b>	<b>June Act</b>	<b>July Act</b>	<b>YTD Total</b>	<b>2017 Projection</b>	
LVD Lines New Business	4,987	4,259	2,325	3,054	3,690	5,105	4,151	27,570	26,492	
LVD Large New Business Projects	-	-	-	-	-	-	-	-	-	
HVD Strategic Cust. New Business	306	978	1,138	734	906	(1,217)	1,287	4,133	7,527	
Distribution Metering New Business	2,028	1,760	828	296	400	331	546	6,189	2,334	
Distribution Transformers New Business	775	859	1,454	611	725	1,009	1,168	6,601	5,203	
Metro New Business	142	41	61	42	328	788	196	1,597	2,958	
<b>New Business</b>	<b>8,238</b>	<b>7,898</b>	<b>5,805</b>	<b>4,737</b>	<b>6,049</b>	<b>6,016</b>	<b>7,347</b>	<b>46,091</b>	<b>44,514</b>	
LVD Lines Reliability	1,285	2,290	2,249	3,139	7,577	3,626	2,202	22,368	29,231	
HVD Lines Reliability	1,534	5,070	1,944	979	690	114	1,853	12,184	8,910	
LVD Substations Reliability	504	1,043	1,020	689	1,274	3,202	876	8,609	9,114	
HVD Subs Reliability	270	321	340	522	413	127	3	1,996	2,346	
HVD System Protection	290	305	566	112	358	101	25	1,757	1,167	
LVD Repetitive Outages	467	705	683	310	590	731	397	3,883	4,872	
Metro Reliability	(33)	(15)	16	46	27	37	260	338	1,657	
<b>Reliability</b>	<b>4,316</b>	<b>9,718</b>	<b>6,819</b>	<b>5,796</b>	<b>10,929</b>	<b>7,939</b>	<b>5,616</b>	<b>51,134</b>	<b>57,299</b>	
SCADA	639	(579)	68	36	123	61	56	404	938	
Grid Modernization	150	1,847	626	750	2,200	2,680	2,595	10,848	14,538	
<b>Grid Modernization</b>	<b>788</b>	<b>1,268</b>	<b>693</b>	<b>786</b>	<b>2,322</b>	<b>2,742</b>	<b>2,651</b>	<b>11,251</b>	<b>15,476</b>	
LVD Lines Capacity	1,638	1,378	1,396	1,782	1,943	2,005	1,474	11,616	8,507	
HVD Lines & Subs Capacity	1,890	2,478	3,160	2,022	1,422	(304)	1,261	11,929	9,455	
LVD Substations Capacity	880	1,602	1,438	858	876	73	387	6,114	8,244	
LVD Transformers Capacity	274	303	513	216	256	356	412	2,330	1,892	
<b>Capacity</b>	<b>4,683</b>	<b>5,760</b>	<b>6,508</b>	<b>4,878</b>	<b>4,497</b>	<b>2,130</b>	<b>3,534</b>	<b>31,990</b>	<b>28,098</b>	
LVD Lines Dem Failures	5,781	5,211	13,603	8,213	8,786	7,150	9,998	58,743	36,213	
HVD Demand Failures	1,069	536	1,147	1,245	1,383	2,182	1,026	8,588	7,305	
LVD Substations	1,180	1,155	778	992	1,321	1,279	1,169	7,874	8,364	
Distribution Metering	3,932	3,469	1,171	29	254	303	678	9,835	6,003	
Distribution Transformers	1,231	1,365	2,309	971	1,151	1,603	1,854	10,484	8,672	
Streetlight - Mercury Vapor	104	257	177	191	357	173	197	1,455	2,017	
Metro Demand Failures	(335)	132	152	655	366	117	777	1,865	3,538	
<b>Demand Failures</b>	<b>12,964</b>	<b>12,126</b>	<b>19,338</b>	<b>12,295</b>	<b>13,618</b>	<b>12,806</b>	<b>15,699</b>	<b>98,845</b>	<b>72,111</b>	
LVD Asset Relocations	622	1,504	1,299	1,437	2,419	1,888	1,528	10,697	9,419	
HVD Asset Relocations	6	(15)	32	106	(68)	(10)	9	60	448	
Metro Asset Relocations	171	51	88	114	1,384	777	658	3,242	1,061	
<b>Asset Relocations</b>	<b>799</b>	<b>1,540</b>	<b>1,419</b>	<b>1,657</b>	<b>3,735</b>	<b>2,655</b>	<b>2,195</b>	<b>13,999</b>	<b>10,928</b>	
Computer & Equipment	-	14	189	59	33	4	32	330	128	
Capital Tools	174	45	109	63	208	38	87	723	1,523	
System Control Projects	-	-	-	-	-	6	57	63	788	
NERC/NESC Compliance	-	-	-	-	-	-	-	-	1,760	
Substation Fall Protection	-	1	4	-	2	-	-	6	149	
<b>Technology Projects</b>	<b>174</b>	<b>59</b>	<b>301</b>	<b>122</b>	<b>243</b>	<b>49</b>	<b>175</b>	<b>1,122</b>	<b>4,347</b>	
<b>TOTAL CAPITAL</b>	<b>31,962</b>	<b>38,369</b>	<b>40,882</b>	<b>30,271</b>	<b>41,392</b>	<b>34,337</b>	<b>37,218</b>	<b>254,432</b>	<b>232,773</b>	

*Andrew J. Bordine*

Andrew J. Bordine  
August 21, 2017

## Range of Net Present Value Results of Early Retirement Analysis



MICHIGAN PUBLIC SERVICE COMMISSION  
Consumers Energy Company

Test-Year Present and Proposed Revenue Detail

Primary Demand GPD (Voltage Level 1)

Line No.	Description	(a) Billing Determinants		(b) Units	(c) Present		(e) Proposed		(g) Difference		(h) Percent
		Quantity			Rates	Revenue	Rates	Revenue	Revenue	Percent	
					\$/unit	\$000	\$/unit	\$000	\$000	%	
	Bundled Service										
	Power Supply										
	Summer (June - Sept.)										
	Non Capacity										
1	On-peak kW/mth	2,327		MW	20.24	\$ 47,104	-	\$ -	\$ (47,104)	(100.0)	
2	On-peak kWh/mth	420,097		MWh	0.048966	20,570	0.046409	19,496	(1,074)	(5.2)	
3	Off-peak kWh/mth	1,155,581		MWh	0.031098	35,936	0.030461	35,200	(736)	(2.0)	
4	Capacity										
5	On-peak kW/mth	2,327		MW	-	\$ -	20.57	\$ 47,869	\$ 47,869	NA	
6	Provisions										
7	Interruptible GI	201		MW	(7.00)	(1,407)	(7.00)	(1,407)	-	-	
8	Education GEI	3,145		MWh	-	-	-	-	-	NA	
9	Total Summer Power Supply					102,204		101,159	(1,045)	(1.0)	
10	Winter (Oct. - May)										
11	Non Capacity										
12	On-peak kW/mth	4,510		MW	19.24	86,775	-	-	(86,775)	(100.0)	
13	On-peak kWh/mth	804,835		MWh	0.039207	31,555	0.036426	29,317	(2,238)	(7.1)	
14	Off-peak kWh/mth	2,200,294		MWh	0.033935	74,667	0.032371	71,225	(3,442)	(4.6)	
15	Capacity										
16	On-peak kW/mth	4,510		MW	-	-	19.57	88,259	88,259	NA	
17	Provisions										
18	Interruptible GI	402		MW	(6.00)	(2,410)	(6.00)	(2,410)	-	-	
19	Education GEI	5,847		MWh	-	-	-	-	-	NA	
20	Total Winter Power Supply					190,587		186,391	(4,196)	(2.2)	
21	Annual PSCR Factor kWh/mth	4,580,806		MWh	0.002230	10,215	0.002230	10,215	-	-	
22	Annual Power Factor Adjustment					(782)		(768)	14	1.7	
23	Total Power Supply					\$ 302,225		\$ 296,998	\$ (5,228)	(1.7)	
24	Delivery										
25	Maximum kW/mth	7,930	4,533	MW	1.14	\$ 9,041	1.14	5,178	\$ (3,863)	(42.7)	
26	Distribution kWh/mth	4,580,806		MWh		-		-	-	NA	
27	Skewing						0.138040				
28	Substation Ownership	401		MW	(0.44)	(177)	(0.38)	(153)	24	13.6	
29	Joint Substation Ownership	3,398		MW	(0.30)	(1,019)	(0.26)	-	1,019	100.0	
30	Allocated Distribution Charge	3,398		MW			0.25	849	849	NA	
31	System Access	428		Bills	200.00	86	200.00	86	-	-	
32	Provisions										
33	Education GEI	8,992		MWh	(0.000326)	(3)	(0.000300)	(3)	0	7.9	
34	Annual Power Factor Adjustment					(20)		(13)	8	38.1	
35	Total Delivery					\$ 7,907		\$ 5,945	(1,962)	(24.8)	
36	ROA Service										
37	Delivery										
38	Maximum kW/mth	2,106		MW	1.14	\$ 2,400	1.14	\$ 2,405	\$ 5	0.2	
39	Distribution kWh/mth	1,180,785		MWh	-	-	-	-	-	NA	
40	Substation Ownership	226		MW	(0.44)	(100)	(0.38)	(86)	14	13.6	
41	System Access	163		Bills	200.00	33	200.00	33	-	-	
42	Provisions										
43	Education GEI	2,995		MWh	(0.000326)	(1)	(0.000300)	(1)	0	7.9	
44	Total Delivery					\$ 2,333		\$ 2,351	\$ 19	0.8	
45	Total Primary GPD (Voltage Level 1)					\$ 312,465		\$ 305,294	\$ (7,171)	(2.3)	

**MICHIGAN PUBLIC SERVICE COMMISSION**  
**Consumers Energy Company**

**Schedule D-1**

Rate of Return Summary  
Projected 12-Month Period Ending September 30, 2018

**Company Revision to Staff's Exhibit S-4, Schedule D-1**

Case No.: U-18322  
Exhibit: A-106 (AJD-11)  
Witness: AJDenato  
Date: September 2017  
Page 1 of 1

**Recommended Capital Structure & Cost Rates**

Line	Description (a)	Capital Structure			Cost Rate (e)	Weighted Cost			
		Amount Outstanding (000,000) (b)	% of Permanent Capital (1) (c)	% of Total Capital (d)		Permanent Capital (1) (f)	Total Cost % (g)	Conversion Factor (h)	Pre-Tax Wghtd Cost (i)
1	Long-Term Debt	\$ 5,880	47.06%	36.55%	4.68%	2.20%	1.71%	1.0000	1.71%
2	Preferred Stock	37	0.30%	0.23%	4.50%	0.01%	0.01%	1.6377	0.02%
3	Common Equity	6,579	52.64%	40.89%	10.50%	5.53%	4.29%	1.6377	7.03%
4	Total Permanent Capital	\$ 12,496	100.00%						
5	Short-Term Debt	161		1.00%	3.55%		0.04%	1.0000	0.04%
6	Deferred Income Taxes	3,340		20.76%	0.00%		0.00%	1.0000	0.00%
	<u>Investment Tax Credit</u>								
7	Long-Term Debt	43		0.27%	4.68%		0.01%	1.0000	0.01%
8	Preferred Stock	0		0.00%	4.50%		0.00%	1.6377	0.00%
9	Common Equity	48		0.30%	10.50%		0.03%	1.6377	0.05%
10	Total Capitalization	\$ 16,089		100.00%			6.09%		8.86%

**Line      Consumers Energy Adjustment**

- 3,9 Common Equity balance changed from \$6,647,913,538 to \$6,578,682,769  
Common Equity cost rate changed from 9.8% to 10.5%  
10 Overall cost of capital changed from 5.82% to 6.09%

**MICHIGAN PUBLIC SERVICE COMMISSION**  
Consumers Energy Company

Electric Uncollectible Accounts Expense Projection  
For the 12 Months Ended September 30, 2018  
(\$000)

Case No.:	U-18322
Hearing Date:	9/26/2017
Exhibit No.:	A-107

Case No.: U-18322  
Exhibit: A-107 (DLH-7)  
Witness: DLHarry  
Date: September 2017  
Page 1 of 1

Line No.	Year	Gross Charge-offs	Recoveries	Net Write-offs	Total Elec Svc Revenue MPSC P-521	BDLR
					P. 304.1 col (c) + P. 305 col (c)	col (d) / col (e)
	(a)	(b)	(c)	(d)	(e)	(f)
1	2012	\$ 48,842	\$ 21,868	\$ 26,974	\$ 3,925,308	0.687%
2	2013	52,616	21,124	\$ 31,492	4,013,614	0.785%
3	2014	48,049	16,824	\$ 31,225	4,150,882	0.752%
4	2015	46,941	16,886	\$ 30,055	4,031,759	0.745%
5	2016	32,691	13,496	\$ 19,195	4,157,143	0.462%
6	3-Year Average	\$ 42,560	\$ 15,735	\$ 26,825	\$ 4,113,261	0.652%
7	5-Year Average	\$ 45,828	\$ 18,040	\$ 27,788	\$ 4,055,741	0.685%
Test Year Total Company Electric Revenues and Deliveries Exhibit A-10 (EMB-1) Schedule E-1, Page 1 of 1						
8	Row 25, Column (k) - Row 25, Column (c)				<b>3-Year Avg.</b> \$ 4,294,026	<b>5-Year Avg</b> \$ 4,294,026
9	3- and 5-Year Average BDLR				0.652%	0.685%
10	Sub-Total				<u>\$ 28,004</u>	<u>\$ 29,421</u>
11	Smart Grid Program Benefits				\$ (6,422)	<sup>1</sup> \$ (6,422)
12	Test Year Total Uncollectible Accounts Expense				<u>\$ 21,582</u>	<u>\$ 22,999</u>

<sup>1</sup> Smart Grid Program Benefits:

Exhibit A-82 (LDW-3), page 3, line 34	
2017: 6,227/12 x 3 months =	\$ 1,557
2018: 8,181/12 x 9 months =	6,136
Total	\$ 7,693
Less amounts included in prior year actual Net Write-offs	
2014	-
2015	128
2016	3,685
Total	\$ 3,813
3-year average	1,271
Test year Smart Grid Program Benefits	<u>\$ 6,422</u>

Case No.:	U-18322
Hearing Date:	9/26/2017
Exhibit No.:	A-108

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

Impact of Accounting Change on Revenue Requirement  
\$ (in Millions)

Case No.: U-18322  
Exhibit: A-108 (DLH-8)  
Witness: DLHarry  
Date: September 2017  
Page 1 of 1

**Impact of Accounting Change on Revenue Requirement**

Disputed Land	\$	70.0	
Pre-Tax Rate of Return		9.09%	Source: U-17990 Exhibit A-9 (AJD-1)
Return on Investment	\$	6.4	
Depreciation Expense	\$	0.3	
R&PP Tax		0.8	Footnote 1
Reduction to Revenue Requirement due to Removal of Transmission Assets	\$	7.5	
Increase to Revenue Requirement due to Absence of METC Easement Payment	\$	9.3	Source: Easement Agreement
<b>Net Increase to Distribution Revenue Requirement</b>	<b>\$</b>	<b>1.8</b>	
(1) Plant Balance at August 31, 2016	\$	70.0	
Tax Rate		0.011999204	Source: U-17990 Exhibit A-58 (BJV-1)



Summary of the Avoidable Capital Expenditures under early retirement scenarios  
For the test year October 1, 2017 - September 30, 2018

**2023 Retirement Scenario**

Site (a)	Project Description (b)	Test Year Contingency (c)	Test Year Avoidable (d)
Campbell	Upgrade unit 1 turbine control system	\$ 7	\$ 49
Campbell	Replacement of the JHC 1-1 LPH and Drain Cooler	\$ 6	\$ 34
Campbell	JHC-1 FRONT UPPER WATER WALL AND RAIDIANT REHEATER REPLACEMENT	\$ 6	\$ 32
Campbell	JHC1 Load Center 11A 11B Replacement	\$ 0	\$ -
Campbell	JHC1 SH Outlet Pendant Replacement	\$ 3	\$ 17
Campbell	JHC-1 BACKPASS PC SOOT BLOWERS	\$ 3	\$ 17
Campbell	Overhaul JHC2 FD Fan Motors	\$ 0	\$ 2
Campbell	Replace primary air heater JHC 2	\$ 40	\$ 231
Campbell	Replace 6 combustion air heat exchanger banks JHC 2	\$ 7	\$ 40
Total		\$ 72	\$ 422

Site (a)	Project Description (b)	Test Year Contingency (c)	Test Year Avoidable (d)
Karn	K1 Start Up Exciter Rewind	\$ 6	\$ 214
Karn	Karn 1 Secondary Air Expansion Joint Replacement	\$ 20	\$ 198
Karn	Karn 2 - Install new reheat drying system	\$ 32	\$ 248
Karn	K1 Feeder Controls Replace	\$ -	\$ 47
Karn	Karn 2 Air Heater Magnetic Couplings	\$ 11	\$ 87
Karn	FH- Replace Dumper Control System	\$ 4	\$ 31
Total		\$ 73	\$ 825

Case No.: U-18322  
Hearing Date: 9/28/2017  
Exhibit No.: A-109

**2021 Retirement Scenario**

Site (a)	Project Description (b)	Test Year Contingency (c)	Test Year Avoidable (d)
Campbell	Upgrade unit 1 turbine control system	\$ 7	\$ 49
Campbell	Replacement of the JHC 1-1 LPH and Drain Cooler	\$ 6	\$ 34
Campbell	JHC-1 FRONT UPPER WATER WALL AND RAIDIANT REHEATER REPLACEMENT	\$ 6	\$ 32
Campbell	JHC1 Load Center 11A 11B Replacement	\$ 0	\$ -
Campbell	JHC1 SH Outlet Pendant Replacement	\$ 3	\$ 17
Campbell	JHC-1 BACKPASS PC SOOT BLOWERS	\$ 3	\$ 17
Campbell	Overhaul JHC2 FD Fan Motors	\$ 0	\$ 2
Campbell	Replace primary air heater JHC 2	\$ 40	\$ 231
Campbell	Replace 6 combustion air heat exchanger banks JHC 2	\$ 7	\$ 40
Campbell	JHC2 Turbine/Generator Refurbish HP/IP Rotor	\$ 32	\$ 20
Campbell	JHC2 RH Drying	\$ 3	\$ 9
Total		\$ 106	\$ 451

Site (a)	Project Description (b)	Test Year Contingency (c)	Test Year Avoidable (d)
Karn	K1 Start Up Exciter Rewind	\$ 6	\$ 214
Karn	Karn 1 Secondary Air Expansion Joint Replacement	\$ 20	\$ 198
Karn	Karn 2 - Install new reheat drying system	\$ 32	\$ 248
Karn	K1 Feeder Controls Replace	\$ -	\$ 47
Karn	Karn 2 Air Heater Magnetic Couplings	\$ 11	\$ 87
Karn	FH- Replace Dumper Control System	\$ 4	\$ 31
Karn	1-A CCWP Overhaul 07MDEK120305	\$ 12	\$ 237
Karn	K2 "A" BFP Remachine barrel and replace element	\$ 20	\$ 155
Karn	K2 Cond Outlet Water Box Expansion Joint	\$ 15	\$ 117
Karn	K1 "A" BFP Remachine barrel and replace element	\$ 6	\$ 119
Karn	DEK2 RH Drying System	\$ 56	\$ 342
Total		\$ 182	\$ 1,795

18322-ST-CE-83

Case No.:	U-18322
Hearing Date:	9/28/2017
Exhibit No.:	A-110

Case No.: U-18322  
Exhibit: A-110 (DMH-8)  
Witness: DMHill  
Date: September 2017  
Page 1 of 1

Question:

74. In Case No. U-17990, Consumers Energy projected \$15,347,000 for Environmental Operations expense for 2016. As shown in this case in Exhibit A-60 (DMH-3), actual Environmental Operations expense in 2016 was \$8,318,000. Please explain why the actual expense is nearly half of the projected expenses.

Response:

There are four primary reasons the 2016 Actual Environmental Operations were lower than projected in Case No. U-17990:

1. Expenses (originally budgeted in Case No. U-17990 as Environmental Operations) were reduced and assigned to capital due to commissioning delays of the Air Quality Control System (AQCS) project at Campbell.
2. Karn SDA Landfill operations (originally budgeted in Case No. U-17990 as Environmental Operations) were assigned to Cost of Removal to support landfill closure.
3. Karn SDA training (originally budgeted in Case No. U-17990 as Environmental Operations) was delayed to 2017.
4. Minor expenses (originally budgeted in Case No. U-17990 as Environmental Operations) for Decommissioning activities and operations of the Zeeland and Jackson Generating Plants were assigned to Base O&M.

Due in part to the changes in item 4, Energy Resources 2016 Actual Base O&M was more than \$5 million higher than projected in Case No. U-17990.



Danielle M. Hill  
May 23, 2017

18322-ST-CE-130

Case No.:	U-18322
Hearing Date:	9/28/2018
Exhibit No.:	A-111

Case No.: U-18322  
Exhibit: A-111 (DMH-9)  
Witness: DMHill  
Date: September 2017  
Page 1 of 1

Question:

104. Refer to Discovery Response 18322-ST-CE-83.
- a. Is the Karn SDA training going to occur every year, or is it just a one-time event?
  - b. If funds were not expended for SDA training in 2016, what were those funds used for?
  - c. Provide the 2017 expense amount for SDA training.

Response:

- a. In reference to certification training for SDA Equipment Operators – once an operator is certified, there is no additional certification training required. New employees will need certification training.
- b. The \$800,000 projected for SDA operations training was used in other areas within the business to fund weather and operational related overruns. The Company did not track, and thus cannot identify, the exact items the funding was used for.

If presented with excess revenues, Consumers Energy prudently invests that money in projects that improve reliability and efficiency – projects that ultimately provide additional customer value. Likewise, when presented with less revenue (or greater expenses), Consumers Energy prudently evaluates its current projects, delaying or reducing scope accordingly.

- c. The actual expense amount for SDA training in 2017 as of May 31, 2017, is approximately \$364,265.



Danielle M. Hill  
June 27, 2017

Energy Resources Portfolio and Performance Management (ERP&PM)

**MICHIGAN PUBLIC SERVICE COMMISSION**  
Consumers Energy Company

Summary of the Electric & Common O&M Expense  
For the Years 2013 through 2016

Case No.:	U-18322
Hearing Date:	9/28/2017
Exhibit No.:	A-112

Case No.: U-18322  
Exhibit: A-112 (DMH-10)  
Witness: DMHill  
Date: September 2017  
Page 1 of 1

**ENERGY RESOURCES OPERATION AND MAINTENANCE EXPENSES**

(\$000s)

Line No.	Description (a)	2013 <sup>1</sup> Projected (b)	2013 <sup>2</sup> Actual (c)	2014 <sup>2</sup> Projected (d)	2014 <sup>3</sup> Actual (e)	2015 <sup>2</sup> Projected (f)	2015 <sup>4</sup> Actual (g)	2016 <sup>3</sup> Projected (h)	2016 <sup>4</sup> Actual (i)
1	<b>BASE O&amp;M</b>	\$131,415	\$141,118	\$136,340	\$138,283	\$123,082	\$120,997	\$107,133	\$112,226
2	<b>ADJUSTED O&amp;M</b>								
3	Environmental Operations	\$2,989	\$2,378	\$5,026	\$3,958	\$12,237	\$6,249	\$15,347	\$8,318
4	Jackson Gas Plant	\$0	\$0	\$0	\$0	\$0	\$454	\$10,365	\$9,727
5	Other	\$12,692	\$0	\$0	\$0	\$0	\$450	\$0	\$977
6	Major Maintenance	\$17,167	\$19,884	\$23,343	\$21,666	\$23,892	\$21,322	\$24,777	\$24,267
7	<b>TOTAL O&amp;M</b>	<b>\$164,263</b>	<b>\$163,380</b>	<b>\$164,709</b>	<b>\$163,907</b>	<b>\$159,211</b>	<b>\$149,472</b>	<b>\$157,622</b>	<b>\$155,515</b>
		<u>Projected</u> \$645,805	<u>Actual</u> \$632,274	<u>Projected vs. Actual</u> 97.90%					

\* Other includes Residential Demand Response & Mothballing

- 1. - Case No. U-17087
- 2. - Case No. U-17735
- 3. - Case No. U-17990
- 4. - Case No. U-18322

18322-AG-CE-335

Question:

108. Refer to exhibit A-62 (DMH-5). Please explain why Karn 1 and 3 (*sic*) have an O&M cost per MWh which places them in the 3<sup>rd</sup> quartile of the peer group.

Response:

The occurrence of major maintenance at a plant in a given year can have a dramatic effect on the plant's O&M, and hence its placement in benchmarking.

The Company manages the maintenance of our major equipment as a fleet. Therefore comparisons of individual plants or sites by year can lead to misleading results.

The Company's Non-Fuel O&M / MWh study is not intended to compare individual plants or sites (as suggested above), but rather a fleet of plants.



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Danielle M. Hill  
July 6, 2017

Energy Resources Portfolio and Performance Management (ERP&PM)

**ENERGY RESOURCES CAPITAL CONTINGENCY EXPENES**  
**(\$000's)**

Line No.	Description	12 months 2015 Actual	9 months Jan - Sept 2016 Actuals	12 months Oct 2016-Sep 2017 Projected	12 months Oct 2017-Sep 2018 Projected
1	JHCampbell 1&2	-	-	95	931
2	JHCampbell 3	-	-	116	759
3	DEKarn 1&2	-	-	66	914
4	DEKarn 3&4	-	-	-	323
5	Zeeland	-	-	22	262
6	Jackson Gas Plant	-	-	12	176
7	Thetford Gas Plant	-	-	-	-
8	Classic 7	-	-	-	-
9	Hydros	-	-	125	1,013
10	Ludington	-	-	464	3,471
11	Residential Demand Response Programs	-	-	-	-
12	Admin and Other	-	-	3	20
13	Air Quality	-	-	13	3
14	RCRA	-	-	500	1,355
15	316b	-	-	5	15
16	SEEG	-	-	27	105
17	All Other Enviromental	-	-	297	3,064
18	Total Expenditures	-	-	1,744	12,410

**MICHIGAN PUBLIC SERVICE COMMISSION**  
Consumers Energy Company

Case No.:	U-18322
Hearing Date:	9/28/2017
Exhibit No.:	A-115

Case No.: U-18322  
Exhibit: A-115 (DMH-13)  
Witness: DMHill  
Date: September 2017  
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Summary of Electric Capital Expenditures

**ENERGY RESOURCES CAPITAL EXPENSES**  
**(\$000's)**

Line No.	Description	Jan - May 2017 Actual	Jan - July 2017 Actual
1	JHCampbell 1&2	4,023	6,462
2	JHCampbell 3	1,108	1,963
3	DEKarn 1&2	708	622
4	DEKarn 3&4	13,155	13,352
5	Zeeland	2,486	3,342
6	Jackson Gas Plant	2,345	3,784
7	Thetford Gas Plant	-	
8	Classic 7	131	150
9	Hydros	1,794	3,735
10	Ludington	23,569	27,151
11	Residential Load Control	-	-
12	Admin and Other	367	605
13	Air Quality	7,030	9,367
14	RCRA	2,392	6,685
15	316b	12	23
16	SEEG	65	90
17	All Other Enviromental	1,080	1,423
18	Total Expenditures	60,266	78,753

Line No.	Description	(\$1,000's)												
		2017 Projected	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)
1	JHCampbell 1&2	6,556	349	563	812	864	548	548	582	575	575	521	365	254
2	JHCampbell 3	7,172	215	215	276	541	717	717	832	893	893	850	602	421
3	DEKarn 1&2	9,727	1,230	797	743	564	1,462	1,279	670	518	477	940	777	270
4	DEKarn 3&4	25,462	6,765	5,826	4,199	2,564	967	420	532	526	746	1,516	985	416
5	Zeeland	9,992	647	672	740	878	903	925	929	933	1,052	974	681	658
6	Jackson Gas Plant	10,575	650	700	850	950	1,050	1,050	1,150	1,100	1,000	750	700	625
7	Thetford Gas Plant	-	-	-	-	-	-	-	-	-	-	-	-	-
8	Classic 7	-	-	-	-	-	-	-	-	-	-	-	-	-
9	Hydros	18,412	380	1,741	1,679	2,071	2,311	1,949	2,651	1,937	569	1,761	723	640
10	Ludington	63,497	5,572	4,334	4,701	2,620	3,807	3,785	3,668	10,499	4,169	4,437	8,454	7,451
11	Residential Demand Response Programs	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Admin and Other	3,151	237	245	549	133	141	423	134	167	400	166	138	418
13	Air Quality	2,854	543	612	637	610	188	125	75	54	5	5	-	-
14	RCRA	38,561	386	386	386	3,856	5,013	5,013	6,941	7,712	6,170	1,542	771	385
15	316b	193	16	16	16	16	16	16	16	16	16	16	16	17
16	SEEG	1,458	88	88	108	138	138	138	189	138	138	118	88	89
17	All Other Environmental	15,751	670	676	676	519	1,561	1,812	1,291	697	904	3,208	1,800	1,937
18	Total Expenditures	<u>213,361</u>	17,748	16,870	16,372	16,324	18,822	18,200	19,660	25,765	17,114	16,804	16,100	13,582



18322-AG-CE-334

Question:

18322-AG-CE-334

Page 1 of 3

107. Refer to exhibit A-61 (DMH-4). Please:

- a. Provide the same information for actual for each year 2012-2014.
- b. Provide the actual expenditures incurred for the months of January through May 2017 for each line item.
- c. Provide a breakdown of the components of expenditures for each line item for 2017 and the projected test year.
- d. Explain how WPs 68-73 related to the amounts on each line in this exhibit. Some of the totals on these workpapers do not match to the line items on the exhibits.
- e. With regard to WP-DMH-73, for the following projects: JHC3 SCR Catalyst Management (2,000), JHC 1-2 Fly Ash (12,000), Ash Storage Facility Cell Closure (2,000), UBAS Upgrades – Aqueous Ammonia (1,000 and 750), SDA & DSI Remediation – Mixers, economizer ash (5,000 and 5,000), are the amounts for 2017 and 2018 still preliminary or ballpark numbers yet to be finalized? Please explain and provide a copy of what specific plans have been developed to complete these projects.
- f. For line 1, JHCampbell 1&2, please explain why the amounts have decline (*sic*) significantly from the capital expenditures projected in U-17990 of \$46 million and \$90 million for 2017 and 2018, respectively.
- g. For line 2, JHCampbell 3, please explain why the amounts have declined significantly from the capital expenditures projected in U-17990 of \$11.7 million and \$28.5 million for 2017 and 2018, respectively.
- h. For line 3, DEKarn 1&2, please explain why the amounts have decline (*sic*) significantly from the capital expenditures projected in U-17990 of \$43 million and \$25.9 million for 2017 and 2018, respectively.
- i. For line 10, Ludington, please explain why the amounts have increased significantly from the capital expenditures projected in U-17990 of \$55.7 million and \$40.3million for 2017 and 2018, respectively.

Response:

- a. Please see the attached Excel file: 18322-AG-CE-334.xlsx.

18322-AG-CE-334

Page 2 of 3

- b. Please see the attached Excel file: 18322-AG-CE-334.xlsx.
- c. Please see DMH-WP-63 and 65.
- d. WP 68 – 73 do not show the distribution of the “Site Commons” projects that are allocated to JHCampbell 1&2 and JHCampbell 3, and DEKarn 1&2 and DEKarn 3&4. In addition, WP 68-73 include the following gas projects that were not included in exhibit A-61 (DMH-4): CNG Fueling Station (\$1,450), Facilities Upgrade (Overisle) (\$1,200), Gas Control Solution (\$1), and Condition Based Reliability (\$2,140). Finally, \$4,265 of the Condition Based Reliability (shown under Admin on WP 68-73) was allocated to Karn3&4 (\$3,291) and Hydro (\$974).
- e. With regard to WP-DMH-73, the project detail is noted below.

JHC3 SCR Catalyst Management - The current plan is to issue a Purchase Order (PO) in 2017 to procure material, delivery is anticipated in 2018, with installation in the spring of 2018.

JHC 1-2 Fly Ash – Detailed engineering will be complete 9/29/2017, procurement is anticipated January 2018, and installation in December 2018. Budget amounts are definitive. Scope has been identified: Install 3<sup>rd</sup> conveying tower, Install 2 vacuum exhausters, Install 1 pressure blower, Upgrade controls, Install 2 fluidizing heaters and blowers, Install new pressure cross-over.

Ash Storage Facility Cell Closure – the budget amounts for 2017 and 2018 are still preliminary.

UBAS Upgrades – Aqueous Ammonia – Detailed engineering is anticipated to be complete August 2017; procurement is anticipated in October 2017, with installation to begin in December 2017. Budget amounts are conceptual. Scope has been identified: Install new vacuum/pressure transmitters for melters, install new pressure transmitter on reactor pressure relief line, automate back-up power transfer, review installation of back-up steam supply, replace duplex strainer.

SDA & DSI Remediation – The scope of this project is to resolve DSI and SDA challenges experienced by the balance of plant equipment once the air quality control systems became operational. Preliminary investigations in 2017 identified that the \$5 million allocated for this project would be best utilized supporting the JHC 1 & 2 fly ash project, thus the funds were transferred to the project at that time. Engineering remains ongoing for the SDA and DSI funding allocated in 2018; budget is still preliminary.

- f. Please see 18322-MEC-CE-292.

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Page 3 of 3

- g. Exhibit A-45 (DBK-4) in U-17990 did not separate “All Other Environmental” projects from the site total. The following are the significant contributions to the Campbell 3 2017 variance between cases.

Campbell UBAS upgrades (Aqueous Ammonia) was delayed to allow for engineering activities and further scope definition in 2017 and 2018.

Campbell 3 Finishing Superheat Terminal Tube Replacement was delayed to allow for engineering activities in 2018, with execution in 2019.

- h. Please see sub-part (f).
- i. Please reference page 22, lines 14-15 of my testimony.



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Danielle M. Hill  
July 6, 2017

Energy Resources Portfolio and Performance Management (ERP&PM)

Project Title	UBAS Upgrades - Aqueous Ammonia						\$818								
	Oct 17	Nov 17	Dec 17	Jan 18	Feb 18	Mar 18	Apr 18	May 18	Jun 18	Jul 18	Aug 18	Sep 18	Total		
Total CAP	120	90	60	23	23	30	60	75	75	83	90	90	818		
LABOR	50	53	40	14	14	15	20	25	25	26	28	28	337		
MATERIAL						11	33	42	42	48	53	53	282		
ENGINEERING	40	20	10	2	2	2	2	2	2	2	2	2	88		
CONTRACTOR	20	10	5	5	5								45		
RISK BASED															
CONTINGENCY	10	7	5	2	2	2	5	6	6	7	7	7	66		

Scope: Aqueous ammonia system includes ammonia storage facility, vaporizer systems for each unit, heat trace, controls, etc. This system would be simpler, more reliable and less maintenance-intensive than the existing system. This also includes the demo of the UBAS.

Project Title	SDA & DSI Remediation - Mixers, economizer ash						\$5,300							
	Oct 17	Nov 17	Dec 17	Jan 18	Feb 18	Mar 18	Apr 18	May 18	Jun 18	Jul 18	Aug 18	Sep 18	Total	
Total CAP	600	450	300	150	150	150	250	500	500	750	750	750	5,300	
LABOR	120	90	60	30	30	30	50	100	100	150	150	150	1,060	
MATERIAL	192	144	96	48	48	48	80	160	160	240	240	240	1,696	
ENGINEERING	72	54	36	18	18	18	30	60	60	90	90	90	636	
CONTRACTOR	168	126	84	42	42	42	70	140	140	210	210	210	1,484	
RISK BASED													-	
CONTINGENCY	48	36	24	12	12	12	20	40	40	60	60	60	424	

Scope:

Project Title	Ash Storage Facility Cell Closure						\$1,734							
	Oct 17	Nov 17	Dec 17	Jan 18	Feb 18	Mar 18	Apr 18	May 18	Jun 18	Jul 18	Aug 18	Sep 18	Total	
Total CAP	14	10	7	70	70	49	41	197	197	374	352	352	1,734	
LABOR	6	4	3	35	35	20	20	60	60	120	120	120	604	
MATERIAL								53	53				106	
ENGINEERING	7	5	3	29	29	25	18	68	68	69	31	31	385	
CONTRACTOR										155	173	173	500	
RISK BASED														
CONTINGENCY	1	1	1	6	6	4	3	16	16	30	28	28	140	

Scope: Plant will bring approximately 6.4 acres to grade using flyash to a design completed elevation of 680 feet and per a described contour. Ash particle size should be no greater than 3/8" with no rocks or tree debris since 40 mil liner will be placed on this ash and welded together as certified by a third party Construction Quality Assurance (CQA) contractor. Two feet of screened fill will be placed on the liner followed by six inches of topsoil. A commercial irrigation system will be installed and then the area will be hydroseeded. The CQA contractor will certify the installation and prepare a certification document for the State.

18322-MEC-CE-290

18322-MEC-CE-290

Page 1 of 2

Question:

30. Refer to page 19 line 18 through page 20 line 2 of the Direct Testimony of Danielle M. Hill.
- a. For each of the Medium 4 Units, identify the level of Major Maintenance costs included in the Test Year.
  - b. For each Major Maintenance project for each of the Medium 4 Units included in the Test Year, identify the Internal Rate of Return (“IRR”) and Present Value Ratio (“PVR”), and produce the project scope document or other written justification.
  - c. Explain how you determined which Test Year Major Maintenance expenses at any of the Medium 4 Units would or would not be avoidable, and produce any document regarding or supporting that determination.
  - d. Identify the Test Year Major Maintenance projects at Campbell 2 and Karn 2 that could be avoided in a 2021 retirement scenario.
  - e. Explain why such projects could be avoided in a 2021 retirement scenario.
  - f. Explain why such projects are not avoidable in a 2023 scenario.

Response:

- a. Please see the attached Excel file: 18322-MEC-290.xlsx
- b. Please see sub part (a)
- c. All Test Year Major Maintenance projects were reviewed; projects that were considered unavoidable were those that are necessary to maintaining safety, environmental compliance and/or required for continued operation. Reliability and/or efficiency projects were considered avoidable.
- d. The Karn 2 Cutsforth Brush Holders major maintenance project is considered avoidable, and the full project cost of \$175 thousand is included in the test year. The Campbell 2 Turbine/Generator Inspection was also identified as avoidable given a 2021 retirement scenario, this project is set to begin October 2018 and continue through 2019. While this project was included in my direct testimony, page 19 line 18 through page 20 line 2, it does not have funding included in the test year. All test year major maintenance projects are detailed in sub part (a).

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Page 2 of 2

- e. The Cutsforth brush holder project improves the weekly maintenance on the exciter; under a 2021 retirement scenario reliability or efficiency improvement projects would be avoidable. The portion of the turbine generator inspection that is performed for reliability rather than regulatory or safety purposes would be avoided.
- f. The projects listed above are not avoidable with a 2023 retirement scenario due to potential safety and/or environmental risks.



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Danielle M. Hill  
June 30, 2017

Energy Resources Portfolio and Performance Management (ERP&PM)





**CMS Energy**  
**ASC 715 (Formerly FAS 87) Pension Expense Estimates (\$ millions)**  
**HATFA Minimum Required Contributions - Baseline Scenario**

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**Projections reflect the following:**

- January 1, 2016 census data
- PBO effective discount rate of 4.30% for pension and 4.16% for SERP in fiscal 2017, based on the December 31, 2016 yield curve
- November 2016 lump sum interest rates with an assumption that rates will increase by 50 basis points in 10 years
- Service Cost effective interest rate of 4.53% for pension and 4.19% for SERP in fiscal 2017, based on the December 31, 2016 yield curve
- Interest Cost effective interest rate of 3.56% for pension and 3.51% for SERP in fiscal 2017, based on the December 31, 2016 yield curve
- MP-2016 mortality improvement scale from 2006 for accounting purposes applies beginning December 31, 2016
- RP2014 mortality with MP-2016 mortality improvement scale for funding, PBGC, and lump sum purposes applies beginning January 1, 2018
- December 31, 2016 market assets provided by CMS for disclosure purposes.
- Expected and actual asset returns decrease 25 basis points every other year, starting with a drop to 7.00% in 2018
- Other provisions, assumptions, and methods are the same as those used for December 31, 2016 ASC 715 disclosures.

**CMS Energy**  
**ASC 715 OPEB Expense Estimates (\$ millions)**

	2015	2016	2017	2018	2019	2020	2021	2022
<b>Funded Status, January 1</b>								
Accumulated Postretirement Benefit Obligation	\$ (1,378)	\$ (1,227)	\$ (1,409)	\$ (1,431)	\$ (1,450)	\$ (1,467)	\$ (1,480)	\$ (1,491)
Plan Assets at Fair Value	1,265	1,208	1,264	1,295	1,321	1,345	1,365	1,382
Funded Status	\$ (113)	\$ (19)	\$ (145)	\$ (136)	\$ (129)	\$ (122)	\$ (115)	\$ (109)
<b>ASC 715 Accounting Expense</b>								
Utility	\$ (23)	\$ (36)	\$ (16)	\$ (16)	\$ (18)	\$ (11)	\$ (11)	\$ (10)
Nonutility	(5)	(5)	(5)	(5)	(5)	(5)	(4)	(4)
Total	\$ (28)	\$ (41)	\$ (21)	\$ (21)	\$ (23)	\$ (16)	\$ (15)	\$ (14)
<b>Components of Total Expense</b>								
Service Cost	\$ 25	\$ 18	\$ 20	\$ 19	\$ 19	\$ 19	\$ 18	\$ 18
Interest Cost	58	47	52	53	54	54	55	55
Expected Return on Assets	(91)	(86)	(89)	(88)	(90)	(88)	(90)	(88)
Amortization of Net (Gain) or Loss	21	21	31	29	28	26	25	24
Amortization of Prior Service Cost	(41)	(41)	(35)	(34)	(34)	(27)	(23)	(23)
Total Expense	\$ (28)	\$ (41)	\$ (21)	\$ (21)	\$ (23)	\$ (16)	\$ (15)	\$ (14)
<b>Assumptions</b>								
APBO Discount Rate	4.30%	4.70%	4.49%	4.49%	4.49%	4.49%	4.49%	4.49%
Service Cost Effective Interest Rate	4.30%	4.75%	4.89%	4.89%	4.89%	4.89%	4.89%	4.89%
Interest Cost Effective Interest Rate	4.30%	3.89%	3.79%	3.79%	3.79%	3.79%	3.79%	3.79%
Expected Return on Assets	7.25%	7.25%	7.25%	7.00%	7.00%	6.75%	6.75%	6.50%
Trend Rate—Initial Pre-65	6.50%	7.25%	7.00%	6.75%	6.50%	6.25%	5.75%	5.75%
Trend Rate—Initial Post-65	6.50%	8.00%	7.75%	7.25%	7.25%	6.75%	6.50%	6.50%
Trend Rate—Ultimate	4.75%	4.75%	4.75%	4.75%	4.75%	4.75%	4.75%	4.75%
Trend Rate—Ultimate Year Pre-65	2024	2027	2027	2027	2027	2027	2027	2027
Trend Rate—Ultimate Year Post-65	2024	2027	2027	2027	2027	2027	2027	2027
Expected Contribution	\$ 28.8	\$ 0	\$ 0.0	\$ 0.4	\$ 0.4	\$ 0.4	\$ 0.4	\$ 0.4

**2017-2021 expense projections reflect the following:**

- January 1, 2016 census data.
- APBO discount rate of 4.49% in fiscal 2017+, based on December 31, 2016 yield curve.
- Service Cost effective interest rate of 4.89% in fiscal 2017+, based on December 31, 2016 yield curve.
- Interest Cost effective interest rate of 3.79% in fiscal 2017+, based on December 31, 2016 yield curve.
- December 31, 2016 market assets provided by CMS.
- Expected Return on Assets reduced 25 basis points every two years beginning with 2018
- Projected contributions provided by CMS:
  - \$0.4 million in all future years after 2016.
- Other provisions, assumptions and methods are the same as those used for December 31, 2016 ASC 715 disclosures.

**MICHIGAN PUBLIC SERVICE COMMISSION**  
**Consumers Energy Company**

**Projected 12-Month Period Ending September 30, 2018**  
**Rate Case Details**

State: Total U.S., excluding Michigan  
Year: 2017, 2016  
Service Type: Electric  
Metric Type: Mean

**Case No.: U-18322**  
**Hearing Date: 10/2/2017**  
**Exhibit No.: A-122**

Case No.: U-18322  
Exhibit: A-122 (SM-2)  
Schedule: D-5  
Witness: SMaddipati  
Date: September 2017  
Page: 1 of 1

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
Line	State	Company	Case ID	Rate Case Event Date	Return on Equity (%)	Common Equity to Total Capital (%)	Rate Case Test Year	Rate Case Duration (months)	Weighted Cost of Equity (i) x (g)	Adjusted ROE (j)/(g), line 67
1	Arizona	Tucson Electric Power Co.	D-E-01933A-15-0322	2/24/2017	9.75	50.03	06/2015	15	4.9%	12.0%
2	Arizona	UNS Electric Inc.	D-E-04204A-15-0142	8/18/2016	9.50	52.83	12/2014	17	5.0%	12.3%
3	Arkansas	Entergy Arkansas Inc.	D-15-015-U	2/23/2016	9.75	28.46	03/2015	10	2.8%	6.8%
4	Arkansas	Oklahoma Gas and Electric Co.	D-16-052-U	5/18/2017	9.50	36.38	06/2016	8	3.5%	8.5%
5	California	Liberty Utilities CalPeco Ele	A-15-05-008	12/1/2016	10.00	52.50	12/2016	19	5.3%	12.9%
6	Colorado	Black Hills Colorado Electric	D-16AL-0326E	12/19/2016	9.37	52.39	12/2015	7	4.9%	12.0%
7	Connecticut	United Illuminating Co.	D-16-06-04	12/14/2016	9.10	50.00	12/2015	5	4.6%	11.2%
8	District of Columbia	Potomac Electric Power Co.	FC-1139	7/24/2017	9.50	49.14	03/2016	12	4.7%	11.4%
9	Idaho	Avista Corp.	C-AVU-E-16-03	12/28/2016	9.50	50.00	12/2015	7	4.8%	11.6%
10	Illinois	Ameren Illinois	D-16-0262	12/6/2016	8.64	50.00	12/2015	7	4.3%	10.6%
11	Illinois	Commonwealth Edison Co.	D-16-0259	12/6/2016	8.64	45.62	12/2015	7	3.9%	9.7%
12	Indiana	Indianapolis Power & Light Co.	Ca-44576	3/16/2016	9.85	37.33	06/2014	14	3.7%	9.0%
13	Indiana	Northern IN Public Svc Co.	Ca-44688	7/18/2016	9.98	47.42	03/2015	9	4.7%	11.6%
14	Maine	Emera Maine	D-2015-00360	12/19/2016	9.00	49.00	12/2014	9	4.4%	10.8%
15	Maryland	Baltimore Gas and Electric Co.	C-9406 (elec)	6/3/2016	9.75	51.90	11/2015	7	5.1%	12.4%
16	Maryland	Delmarva Power & Light Co.	C-9424	2/15/2017	9.60	49.10	03/2016	7	4.7%	11.6%
17	Maryland	Potomac Electric Power Co.	C-9418	11/15/2016	9.55	49.55	12/2015	7	4.7%	11.6%
18	Massachusetts	Fitchburg Gas & Electric Light	DPU 15-80	4/29/2016	9.80	52.17	12/2014	10	5.1%	12.5%
19	Massachusetts	Massachusetts Electric Co.	DPU-15-155	9/30/2016	9.90	50.70	06/2015	10	5.0%	12.3%
20	Minnesota	Northern States Power Co. - MN	D-E-002/GR-15-826	5/11/2017	9.20	52.50	12/2019	18	4.8%	11.8%
21	Minnesota	Otter Tail Power Co.	D-E-017/GR-15-1033	3/2/2017	9.41	52.50	12/2016	12	4.9%	12.1%
22	Missouri	Kansas City Power & Light	C-ER-2016-0285	5/3/2017	9.50	49.20	12/2015	10	4.7%	11.5%
23	Nevada	Sierra Pacific Power Co.	D-16-06006	12/22/2016	9.60	48.03	12/2015	6	4.6%	11.3%
24	New Hampshire	Liberty Utilities Granite St	D-DE-16-383	4/12/2017	9.40	50.00	12/2015	11	4.7%	11.5%
25	New Hampshire	Unitil Energy Systems Inc.	D-DE-16-384	4/20/2017	9.50	50.97	12/2015	11	4.8%	11.9%
26	New Jersey	Atlantic City Electric Co.	D-ER-16030252	8/24/2016	9.75	49.48	12/2015	5	4.8%	11.8%
27	New Jersey	Jersey Cntrl Power & Light Co.	D-ER-16040383	12/12/2016	9.60	45.00	06/2016	7	4.3%	10.6%
28	New Jersey	Rockland Electric Company	D-ER-16050428	2/22/2017	9.60	49.70	12/2016	9	4.8%	11.7%
29	New Mexico	El Paso Electric Co.	C-15-00127-UT	6/8/2016	9.48	49.29	12/2014	13	4.7%	11.5%
30	New Mexico	Public Service Co. of NM	C-15-00261-UT	9/28/2016	9.58	49.61	09/2016	13	4.8%	11.7%
31	New York	Consolidated Edison Co. of NY	C-16-E-0060	1/24/2017	9.00	48.00	12/2017	12	4.3%	10.6%
32	New York	NY State Electric & Gas Corp.	C-15-E-0283	6/15/2016	9.00	48.00	04/2017	13	4.3%	10.6%
33	New York	Rochester Gas & Electric Corp.	C-15-E-0285	6/15/2016	9.00	48.00	04/2017	13	4.3%	10.6%
34	North Carolina	Virginia Electric & Power Co.	D-E-22, Sub 532	12/22/2016	9.90	51.75	12/2015	8	5.1%	12.6%
35	North Dakota	MDU Resources Group Inc.	C-PU-15-703	1/5/2016	10.50	50.27	12/2016	2	5.3%	12.9%
36	North Dakota	MDU Resources Group Inc.	C-PU-16-666	6/16/2017	9.65	51.40	12/2017	8	5.0%	12.2%
37	Oklahoma	Oklahoma Gas and Electric Co.	Ca-PUD201500273	3/20/2017	9.50	53.31	06/2015	15	5.1%	12.4%
38	Oklahoma	Public Service Co. of OK	Ca-PUD201500208	11/10/2016	9.50	44.00	01/2015	16	4.2%	10.2%
39	South Carolina	Duke Energy Progress LLC	D-2016-227-E	12/7/2016	10.10	53.00	12/2015	5	5.4%	13.1%
40	South Carolina	South Carolina Electric & Gas	D-2016-224-E	10/19/2016	NA	51.35	06/2016	3		
41	Tennessee	Kingsport Power Company	D-16-00001	8/9/2016	9.85	40.25	12/2017	7	4.0%	9.7%
42	Texas	Electric Transmission Texas	D-45636-ETT	1/12/2017	9.60	40.00	12/2016	-	3.8%	9.4%
43	Virginia	Appalachian Power Co.	C-PUE-2016-00024 (G-RAC)	12/30/2016	10.00	47.22	12/2017	9	4.7%	11.6%
44	Virginia	Virginia Electric & Power Co.	C-PUE-2015-00058 (Rider B)	2/29/2016	11.60	49.99	03/2017	9	5.8%	14.2%
45	Virginia	Virginia Electric & Power Co.	C-PUE-2015-00059 (Rider R)	2/29/2016	10.60	49.99	03/2017	9	5.3%	13.0%
46	Virginia	Virginia Electric & Power Co.	C-PUE-2015-00060 (Rider S)	2/29/2016	10.60	49.99	03/2017	9	5.3%	13.0%
47	Virginia	Virginia Electric & Power Co.	C-PUE-2015-00061 (Rider W)	2/29/2016	10.60	49.99	03/2017	9	5.3%	13.0%
48	Virginia	Virginia Electric & Power Co.	C-PUE-2015-00075 (Rider GV)	3/29/2016	9.60	49.99	03/2017	9	4.8%	11.8%
49	Virginia	Virginia Electric & Power Co.	C-PUE-2015-00102 (Rider BW)	6/30/2016	10.60	49.99	08/2017	9	5.3%	13.0%
50	Virginia	Virginia Electric & Power Co.	C-PUE-2015-00104 (Rider US-2)	6/30/2016	9.60	49.99	08/2017	9	4.8%	11.8%
51	Virginia	Virginia Electric & Power Co.	C-PUE-2016-00059 (Rider B)	2/27/2017	11.40	49.49	03/2018	9	5.6%	13.8%
52	Virginia	Virginia Electric & Power Co.	C-PUE-2016-00060 (Rider GV)	2/27/2017	9.40	49.49	03/2018	9	4.7%	11.4%
53	Virginia	Virginia Electric & Power Co.	C-PUE-2016-00061 (Rider R)	2/27/2017	10.40	49.49	03/2018	9	5.1%	12.6%
54	Virginia	Virginia Electric & Power Co.	C-PUE-2016-00062 (Rider S)	2/27/2017	10.40	49.49	03/2018	9	5.1%	12.6%
55	Virginia	Virginia Electric & Power Co.	C-PUE-2016-00063 (Rider W)	2/27/2017	10.40	49.49	03/2018	9	5.1%	12.6%
56	Virginia	Virginia Electric & Power Co.	C-PUE-2016-00111 (Rider DSM)	6/1/2017	9.40	49.49	08/2018	8	4.7%	11.4%
57	Virginia	Virginia Electric & Power Co.	PUE-2016-00112 (Rider BW)	6/30/2017	10.40	49.49	08/2018	9	5.1%	12.6%
58	Virginia	Virginia Electric & Power Co.	C-PUE-2016-00113 (Rider US-2)	6/30/2017	9.40	49.49	08/2018	9	4.7%	11.4%
59	Washington	Avista Corp.	D-UE-150204	1/6/2016	9.50	48.50	09/2014	11	4.6%	11.3%
60	Washington	PacifiCorp	D-UE-152253	9/1/2016	9.50	49.10	06/2015	9	4.7%	11.4%
61	Wisconsin	Madison Gas and Electric Co.	D-3270-UR-121 (Elec)	11/9/2016	9.80	57.16	12/2017	7	5.6%	13.7%
62	Wisconsin	Wisconsin Power and Light Co	D-6680-UR-120 (Elec)	11/18/2016	10.00	52.20	12/2018	6	5.2%	12.8%
63	Wyoming	MDU Resources Group Inc.	D-2004-117-ER-16	1/18/2017	9.45	50.99	12/2015	7	4.8%	11.8%
64	Minimum					48.91		9	4.8%	6.8%
65	Average									11.7%
66	Maximum									14.2%
67	Michigan	Consumers Energy Co. Proposed				40.79		12	4.3%	10.5%

Sources:  
Regulatory Research Associates

Projected 12-Month Period Ending September 30, 2018

**Projected Equity Risk Premium S&P 500**

Equation:  $K_e = \text{Dividend Yield} + g$

Where:

$K_e$  = Annual required rate of return on equity

Dividend Yield = Expected dividend yield

$g$  = Growth rate

(a)	(b)	(c)
1	2018 S&P 500 Expected Dividend Yield	2.17%
2	2018 S&P 500 Expected Growth Rate	12.02%
		<hr/>
3	Market Expected ROE (Lines 1+2)	14.19%
4	Less Risk Free Rate	3.65%
		<hr/>
5	<b>Estimated Market Risk Premium (Line 3 - Line 4)</b>	<b>10.54%</b>

Note:

S&P Date as of June 30, 2017

Sources:

Column (c) Lines 1 and 2: Bloomberg.

Column (c) Line 4: Exhibit A-9 (SM-1). Schedule D-5, page 3, column (f).

**MICHIGAN PUBLIC SERVICE COMMISSION**  
Consumers Energy Company

**Projected 12-Month Period Ending September 30, 2018**

**Revised Staff Analysis**

**CAPM Model**

Case No.: U-18322  
Hearing Date: 10/2/2017  
Exhibit No.: A-124

Case No.: U-18322  
Exhibit: A-124 (SM-4)  
Schedule: D-5  
Witness: SMaddipati  
Date: September 2017  
Page: 1 of 3

(a)	(b)	(c)	(d)	<b>Inconsistent</b>		<b>Revised</b>	<b>Inconsistent</b>	<b>Inconsistent</b>	<b>Revised</b>
Line No.	Company	Value Beta	Risk Free Rate	1926-2016 Risk Premium*	1952-2016 Risk Premium*	2011-2016 Risk Premium*	90-Year CAPM	64-Year CAPM	CAPM
1	Alliant Energy Corporation	0.70	3.49%	6.93%	6.24%	10.03%	8.34%	7.86%	10.51%
2	Ameren Corporation	0.65	3.49%	6.93%	6.24%	10.03%	7.99%	7.55%	10.01%
3	DTE Energy Company	0.65	3.49%	6.93%	6.24%	10.03%	7.99%	7.55%	10.01%
4	Edison International	0.60	3.49%	6.93%	6.24%	10.03%	7.65%	7.23%	9.51%
5	Eversource Energy	0.65	3.49%	6.93%	6.24%	10.03%	7.99%	7.55%	10.01%
6	OGE Energy Corp.	0.95	3.49%	6.93%	6.24%	10.03%	10.07%	9.42%	13.02%
7	Pinnacle West Capital Corp.	0.70	3.49%	6.93%	6.24%	10.03%	8.34%	7.86%	10.51%
8	Portland General Electric Company	0.70	3.49%	6.93%	6.24%	10.03%	8.34%	7.86%	10.51%
9	SCANA Corporation	0.65	3.49%	6.93%	6.24%	10.03%	7.99%	7.55%	10.01%
10	WEC Energy Group	0.60	3.49%	6.93%	6.24%	10.03%	7.65%	7.23%	9.51%
11	Xcel Energy Group	0.60	3.49%	6.93%	6.24%	10.03%	7.65%	7.23%	9.51%
12	<b>Proxy Low Value</b>						<b>7.65%</b>	<b>7.23%</b>	<b>9.51%</b>
13	<b>Proxy Median</b>						<b>7.99%</b>	<b>7.55%</b>	<b>10.01%</b>
14	<b>Proxy Average</b>	<b>0.68</b>					<b>8.18%</b>	<b>7.72%</b>	<b>10.28%</b>
15	<b>Proxy High Value</b>						<b>10.07%</b>	<b>9.42%</b>	<b>13.02%</b>

Source: Global Insight: US Economic Outlook  
Value Line: S&O:  
Average Risk Free Rate  
CAPM Formula: Risk Free Rate + Risk Premium \* Beta

3.40  
3.58  
3.49

\*\*Ibbotson SBBI 2017 publications

	Proxy Group (1926 - 2016)	<b>Inconsistent</b> Proxy Group (1952 - 2016)	<b>Revised</b> Market 2011-2016
Average Common Stock Return**	11.95%	12.17%	12.92%
Average LT Government Bond	5.02%	5.93%	2.89%
Risk Premium (Rp)*	6.93%	6.24%	10.03%

**MICHIGAN PUBLIC SERVICE COMMISSION**  
**Consumers Energy Company**

**Projected 12-Month Period Ending September 30, 2018**

**Revised Staff Analysis**

**Risk Premium Method**

Case No.: U-18322

Exhibit: A-124 (SM-4)

Schedule: D-5

Witness: SMaddipati

Date: September 2017

Page: 2 of 3

(a) No.	(b)	Inconsistent	Inconsistent	(c) Revised	(d) Revised
1	Historical Electric Utility Market Return Average (1932 - 2016) <sup>2,3</sup>	10.96%			
2	Historical Utility Bond Yields(1932-2016) <sup>4</sup>	6.46%			
	Historical Spread (Risk Premium) (Incorrect Application)	4.50%			
3	Risk Premium in Current Environment			8.00%	
		<u>A- Rated</u>	<u>Baa/BBB- Rated</u>	<u>A-Rated Long-</u>	<u>Baa/BBB- Rated</u>
4	Current estimated Utility Bond Yield (Cost of Debt) <sup>1</sup>	4.01%	4.36%	4.01%	4.36%
5	<b>Historical Cost of Equity using Risk Premium(1+4):</b>	<b>8.51%</b>	<b>8.86%</b>	<b>12.01%</b>	<b>12.36%</b>

Cost of Equity Estimate = Cost of Debt + Risk Premium

Notes:

Sources: 1 Value Line Selected Yields:

	<u>A</u>	<u>Baa/BBB</u>
April 28, 2017:	4.06%	4.42%
May 26, 2017:	4.09%	4.44%
June 30, 2017:	3.88%	4.21%
Average:	4.01%	4.36%

2 Mergent's (formerly Moody's) Public Utility Manual 2003 Edition (dec to dec gain/loss + yrly ave yield)

3 Data for 2003-2016: Dow Jones Utility Average Total Return Index from DJAverages.com

4 Mergent's (formerly Moody's) Public Utility Manual and Bond Record through 2016

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

**Projected 12-Month Period Ending September 30, 2018**

**Revised Staff Analysis**

**Discounted Cash Flow (DCF) Model**

Case No.: U-18322

Exhibit: A-124 (SM-4)

Schedule: D-5

Witness: SMaddipati

Date: September 2017

Page: 3 of 3

				Inconsistent	Revised		
(a)	(b)	(c)	(d)	(e)	(e)	(f)	(g)
Line		Ticker	Dividend	Growth	Growth	Cost of Equity	Adjusted
<u>No.</u>	<u>Company (ticker symbol)</u>	<u>Symbol</u>	<u>Yield</u>	<u>Rate</u>	<u>Rate</u>	<u>DCF</u>	<u>DCF</u>
1	Alliant Energy Corporation	LNT	3.18%	5.49%	6.11%	9.29%	9.39%
2	Ameren Corporation	AEE	3.23%	5.51%	4.54%	7.77%	7.84%
3	DTE Energy Company	DTE	3.21%	5.25%	6.61%	9.82%	9.93%
4	Edison International	EIX	2.73%	4.48%	10.34%	13.07%	13.21%
5	Eversource Energy	ES	3.20%	5.70%	6.41%	9.61%	9.71%
6	OGE Energy Corp.	OGE	3.50%	5.15%	6.79%	10.29%	10.41%
7	Pinnacle West Capital Corp.	PNW	3.12%	5.22%	5.14%	8.26%	8.34%
8	Portland General Electric Company	POR	2.82%	5.09%	5.89%	8.71%	8.79%
9	SCANA Corporation	SCG	3.67%	5.03%	5.97%	9.64%	9.75%
10	WEC Energy Group	WEC	3.46%	5.65%	6.36%	9.82%	9.93%
11	Xcel Energy Group	XEL	3.23%	4.63%	5.94%	9.17%	9.27%
12	<b>Proxy Low Value</b>						<b>7.84%</b>
13	<b>Proxy Median</b>						<b>9.71%</b>
14	<b>Proxy Average</b>		3.22%	5.20%	6.37%	9.59%	<b>9.69%</b>
15	<b>Proxy High Value</b>						<b>13.21%</b>

DCF = Dividend Yield + Growth Rate

Adjusted DCF = (Dividend Yield)(1 + .5 Growth Rate) + Growth Rate

aka Semi-Annual Compound Model



**MICHIGAN PUBLIC SERVICE COMMISSION**  
Consumers Energy Company

**Projected 12-Month Period Ending September 30, 2018**

**Revised Attorney General Analysis**

**Summary of Cost of Common Equity Capital Analysis**

Case No.: U-18322  
Hearing Date: 10/2/2017  
Exhibit No.: A-125

Case No.: U-18322  
Exhibit: A-125 (SM-5)  
Schedule: D-5  
Witness: SMaddipati  
Date: September 2017  
Page: 1 of 4

<u>Line</u>	<u>Description</u> (a)	<u>Relative Weighting</u> (b)	<b>Incorrect</b> <u>Consumers Energy</u> (c)	<b>Revised</b> <u>Consumers Energy</u> (c)	<u>Note</u> (d)
1	Discounted Cash Flow (DCF) Approach	50.00%	9.08%	10.02%	1
2	Capital Asset Pricing Model Approach	25.00%	8.24%	10.29%	2
3	Equity Risk Premium Approach	25.00%	9.58%	13.19%	3
4	<b>Calculated Cost of Common Equity (Sum of Col. (b) x (c) for each line)</b>		<u>8.99%</u>	<u>10.88%</u>	
5	<b>Cost of Common Equity for Rate Case Purposes</b>		<b>9.50% to 9.75%</b>	<b>10.02% to 13.19%</b>	4

Note 1 See Exhibit AG-26

Note 2 See Exhibit AG-27

Note 3 See Exhibit AG-28

Note 4 Reflects the potential effects of increasing interest rates on the DCF Approach and establishing a more gradual approach to adjusting the Company's ROE to the true cost of Common Equity

**MICHIGAN PUBLIC SERVICE COMMISSION**

Consumers Energy Company

**Projected 12-Month Period Ending September 30, 2018**

**Revised Attorney General Analysis**

**Capital Asset Pricing Model Application**

Case No.: U-18322

Exhibit: A-125 (SM-5)

Schedule: D-5

Witness: SMaddipati

Date: September 2017

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			Mkt. to Bk.		Inconsistent	Revised	Beta x Risk	2018	Ke or 2018 CAPM
Line	Company	Ticker	Ratio of Com. Equity	Current Beta (B)	Risk Premium (Rp)	Risk Premium (Rp)	Premium Col. (d) x (e)	Risk Free Rate (Rf)	ROE for Proxy Co. Col. (e) + (f)
	(a)	(b)	(c)	(d)		(e)	(f)	(g)	(h)
1	Alliant Energy	LNT	2.32	0.70	6.93%	10.03%	7.02%	3.65%	10.67%
2	Ameren	AEE	1.88	0.65	6.93%	10.03%	6.52%	3.65%	10.17%
3	American Electric Power	AEP	1.95	0.65	6.93%	10.03%	6.52%	3.65%	10.17%
4	Consolidated Edison	ED	1.63	0.50	6.93%	10.03%	5.02%	3.65%	8.67%
5	Dominion Resources	D	3.26	0.65	6.93%	10.03%	6.52%	3.65%	10.17%
6	DTE Energy	DTE	1.98	0.65	6.93%	10.03%	6.52%	3.65%	10.17%
7	Edison International	EIX	2.16	0.60	6.93%	10.03%	6.02%	3.65%	9.67%
8	Eversource Energy	ES	1.73	0.65	6.93%	10.03%	6.52%	3.65%	10.17%
9	OGE Energy	OGE	2.06	0.95	6.93%	10.03%	9.53%	3.65%	13.18%
10	PG & E	PCG	1.85	0.65	6.93%	10.03%	6.52%	3.65%	10.17%
11	Pinnacle West Capital	PNW	1.93	0.70	6.93%	10.03%	7.02%	3.65%	10.67%
12	Portland General Electric	POR	1.66	0.70	6.93%	10.03%	7.02%	3.65%	10.67%
13	P. S. Enterprise Group	PEG	1.82	0.65	6.93%	10.03%	6.52%	3.65%	10.17%
14	Vectren	VVC	2.72	0.70	6.93%	10.03%	7.02%	3.65%	10.67%
15	WEC Energy	WEC	2.10	0.60	6.93%	10.03%	6.02%	3.65%	9.67%
16	Xcel Energy	XEL	2.04	0.60	6.93%	10.03%	6.02%	3.65%	9.67%
17	Average		2.07	0.66	6.93%		6.64%	3.65%	10.29%
18	High								13.18%
19	Low								8.67%
20	CMS Energy	CMS	2.87	0.65	6.93%		4.50%	3.65%	8.15%

<b>Sources</b>	Column (c)	From Work Papers AG-27-1.
	Column (d)	The Value Line Investment Survey Publications of April 28, May 19 and June 16, 2017
	Column (e)	Company Exhibit A-9 (SM-1) Sched. D-5, page 2 of 15, line 51
	Column (g)	Risk free rate as projected by the Company: Exhibit A-9 (SM-1) Sched. D-5, page 3 of 15.

**MICHIGAN PUBLIC SERVICE COMMISSION**Consumers Energy Company**Projected 12-Month Period Ending September 30, 2018****Revised Attorney General Analysis****Equity Risk Premium Approach**

Case No.: U-18322

Exhibit: A-125 (SM-5)

Schedule: D-5

Witness: SMaddipati

Date: September 2017

Page: 3 of 4

<u>Line</u>	<u>Description</u> (a)	<u>Consumers Electric Peer Group</u>		<u>Note</u> (d)
		<u>Current</u> <u>Factors</u> (b)	<u>Projected</u> <u>Test Period</u> (c)	
1	Proxy Group Debt Ratings (S & P)	A-/BBB	A-/BBB	1
	<b><u>Build-up of Common Equity Rate of Return</u></b>			
2	Long Term US Treasury Rate Projection	2.90%	3.65%	2
3	Corporate Spread Over Treasury Bond Rate	<u>1.54%</u>	<u>1.54%</u>	3
4	Sub Total (Line 2 + Line 3)	4.44%	5.19%	
	Historical Spread - Utility Common Stocks over Bonds (Incorrect Application)	<del>4.39%</del>	<del>4.39%</del>	4
5	Risk Premium in Current Environment	8.00%	8.00%	
6	Cost of Common Equity (Line 4 + Line 5)	<u>12.44%</u>	<u>13.19%</u>	

Notes

- The peer group contains companies rated in either the "A" or "BBB" categories (approximately 50/50)
- During the period July 1 to July 12, 2017 the 30 year US Treasury Bond yield approximated 2.9% (Source US Dept of the Treasury)  
The 3.65% projected rate is based on economists projections supplied by the Company (See Exhibit A-9 (SM-1), page 3.
- Based upon spread data for "A" rated and "BBB" rated debt set forth on Company Exhibit A-48 (AJD-9)
- Historical average developed by Company: see Company Exhibit A-9 (SM-1), Schedule D-5, page 5 of 15, line 87

$g$  = the expected growth rate of earnings

Case No.: U-18322  
Hearing Date: 10/2/2017  
Exhibit No.: A-126

MPSC Case No.: U-18322  
Exhibit: BSL-5  
Witness: Billie S. LaConte  
Date: August 2017  
Page 1 of 1

**MICHIGAN PUBLIC SERVICE COMMISSION**  
Consumers Energy Company

**Projected 12-Month Period Ending September 30, 2018**  
**Revised ABATE Analysis**  
**Estimated ROE Using the Capital Asset Pricing Model**

Case No.: U-18322  
Exhibit: A-126 (SM-6)  
Schedule: D-5  
Witness: SMaddipati  
Date: September 2017  
Page: 1 of 2

<u>Line</u>	<u>Utility</u>	<u>Comparable Group<sup>1</sup></u>	
		<u>Beta</u>	
1	Alliant Energy Corp.	0.70	
2	Ameren Corp.	0.65	
3	American Electric Power Company, Inc.	0.65	
4	Dominion Resources Incorporated	0.65	
5	DTE Energy Company	0.65	
6	Duke Energy Corporation	0.60	
7	PG&E Corporation	0.65	
8	Pinnacle West Capital Corp.	0.70	
9	Portland General Electric Company	0.70	
10	WEC Energy Group	0.60	
11	Xcel Energy Incorporated	0.60	
12	Average	0.65	
		<u>Inconsistent</u>	<u>Revised</u>
		<u>Current</u>	<u>Forecast</u>
		<u>Risk-Free Rate</u>	<u>Risk-Free Rate</u>
13	Average Beta	0.65	0.65
	Market Risk Premium <sup>2</sup> (Incorrect Application)	<del>6.93%</del>	<del>6.93%</del>
14	Market Risk Premium	10.03%	10.03%
15	Beta * Market Risk Premium	<del>4.50%</del>	6.52%
16	30-Year Treasury Yield <sup>3</sup>	<del>2.89%</del>	3.78%
17	Estimated ROE (ln. 15 + ln. 16)	<del>7.39%</del>	10.30%

**Source:**

1. Value Line Investment Analyzer.

2.S. Maddipati's Direct Testimony at 35, based on data from Ibbotson's 2017 *Stocks, Bonds, Bills, and Inflation (SBBBI) Yearbook*.

3. 90-day average, Tab Treasury Yields; forecast rate, IHS Economics, US Economic Outlook, January 2017 at 79.

**MICHIGAN PUBLIC SERVICE COMMISSION**  
Consumers Energy Company

Projected 12-Month Period Ending September 30, 2018

Revised ABATE Analysis

Constant Growth DCF Estimated Return on Equity

Case No.: U-18322  
Exhibit: A-126 (SM-6)  
Schedule: D-5  
Witness: SMaddipati  
Date: September 2017  
Page: 2 of 2

Line	Company	Stock Symbol	Stock Price	Annualized Dividend	Dividend Yield	Expected Dividend Yield	Inconsistent					Revised		Inconsistent
							Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Expected Average Growth Rate	Low Forecast ROE	Consensus Analyst Growth (%)	Mean ROE	High Forecast ROE
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1	Alliant Energy Corp.	LNT	\$41.43	\$1.26	3.04%	3.23%	6.00%	6.45%	5.50%	5.98%	8.90%	6.11%	9.34%	9.9%
2	Ameren Corp.	AEE	\$56.33	\$1.76	3.12%	3.27%	6.00%	6.05%	6.50%	6.18%	9.46%	4.54%	7.81%	10.0%
3	American Electric Power Company, Inc.	AEP	\$71.71	\$2.36	3.29%	3.46%	4.00%	2.39%	5.63%	4.01%	5.94%	5.28%	8.74%	9.3%
4	Dominion Resources Incorporated	D	\$79.41	\$3.02	3.80%	4.13%	5.50%	3.45%	6.00%	4.98%	7.72%	8.59%	12.72%	10.4%
5	DTE Energy Company	DTE	\$109.38	\$3.30	3.02%	3.22%	6.00%	4.41%	5.93%	5.45%	7.77%	6.61%	9.83%	9.4%
6	Duke Energy Corporation	DUK	\$85.96	\$3.42	3.98%	4.14%	4.50%	2.57%	5.00%	4.02%	6.82%	4.08%	8.22%	9.3%
7	PG&E Corporation	PCG	\$68.20	\$1.96	2.87%	3.12%	9.50%	4.20%	4.37%	6.02%	7.45%	8.42%	11.54%	12.9%
8	Pinnacle West Capital Corp.	PNW	\$87.89	\$2.62	2.98%	3.13%	5.50%	6.26%	5.17%	5.64%	8.47%	5.14%	8.27%	9.6%
9	Portland General Electric Company	POR	\$47.17	\$1.28	2.71%	2.87%	6.00%	5.55%	5.25%	5.60%	8.27%	5.89%	8.76%	9.0%
10	WEC Energy Group	WEC	\$63.22	\$2.08	3.29%	3.50%	6.00%	5.61%	5.50%	5.70%	9.13%	6.36%	9.86%	9.7%
11	Xcel Energy Incorporated	XEL	\$47.34	\$1.44	3.04%	3.22%	4.50%	N/A	5.43%	4.97%	7.87%	5.94%	9.16%	8.8%
12	Estimated ROE											9.48%		

Source:

(2) Yahoo! Finance 30-day average

(3) Value Line

(11) Column (i) of A-9 (SM-1). DUK based on IBES 3-yr consensus analyst DPS estimate. AEP based on EPS estimates due to lack of information.

Computation of Adjusted Revenue Requirement  
for the Test Year Ended September 30, 2018  
(\$000)

Date: September 2017  
Page 1 of 1

Line	Description	CECo Position as Filed <sup>1</sup>	Adjustments	CECo Rebuttal Position	CECo Jurisdictional
	(a)	(b)	(c)	(d)	(e)
1	Rate Base	\$ 10,332,668	\$ (28,986) <sup>2</sup>	\$ 10,303,682	\$ 10,260,363 <sup>2</sup>
2	Adjusted Net Operating Income	527,847	7,343 <sup>3</sup>	535,190	535,877 <sup>3</sup>
3	Overall Rate of Return	5.11%		5.19%	5.22%
4	Required Rate of Return	6.16%	-0.07%	6.09%	6.09% <sup>4</sup>
5	Income Required	636,764	(8,856)	627,908	625,268
6	Income Deficiency (Sufficiency)	108,917	(16,199)	92,718	89,391
7	Revenue Multiplier	1.6377	1.6377 <sup>5</sup>	1.6377	1.6377 <sup>5</sup>
8	Revenue Deficiency (Sufficiency)	\$ 178,370	\$ (26,529)	\$ 151,841	\$ 146,393
9	FERC Docket No. ER16-1188 <sup>6</sup>	-	1,800	1,800	1,793
10	Adjusted Revenue Deficiency	\$ 178,370	\$ (24,729)	\$ 153,641	\$ 148,186

Footnotes

<sup>1</sup> Exhibit: A-6 (JRF-1)

<sup>2</sup> Exhibit: A-128 (HJM-2)

<sup>3</sup> Exhibit: A-130 (HJM-4)

<sup>4</sup> Exhibit: A-106 (AJD-11)

<sup>5</sup> Exhibit: A-8 (JRF-11) <sup>6</sup>

Exhibit A-108 (DLH-8)

**MICHIGAN PUBLIC SERVICE COMMISSION**  
Consumers Energy Company

Case No.:	U-18322
Hearing Date:	9/27/2017
Exhibit No.:	A-128

Case No.: U-18322  
Exhibit: A-128 (HJM-2)  
Witness: HJMyers  
Date: September 2017  
Page 1 of 1

Computation of Adjusted Rate Base  
for the Test Year Ended September 30, 2018  
(\$000)

Line	Description	CECo Position as Filed <sup>1</sup>	Adjustments <sup>2</sup>	CECo Rebuttal Position	CECo Jurisdictional <sup>2</sup>
	(a)	(b)	(c)	(d)	(e)
1	Plant In Service	\$ 14,332,629	\$ (17,634)	\$ 14,314,996	\$ 14,258,509
2	Plant Held for Future Use	5,193	-	5,193	5,150
3	Construction Work In Progress	488,973	(12,320)	476,653	473,719
4	Total Utility Plant	14,826,795	(29,954)	14,796,842	14,737,377
5	Depreciation Reserve	(5,194,782)	968	(5,193,814)	(5,174,031)
6	Net Utility Plant	9,632,013	(28,986)	9,603,027	9,563,346
7	Retainers & Customer Advances	(28,475)	-	(28,475)	(28,455)
8	Working Capital	729,131		729,131	725,472
9	Total Rate Base	\$ 10,332,668	\$ (28,986)	\$ 10,303,683	\$ 10,260,363

Footnotes

<sup>1</sup> Exhibit: A-7 (JRF-5)

<sup>2</sup> Exhibit: A-129 (HJM-3)



**MICHIGAN PUBLIC SERVICE COMMISSION**  
Consumers Energy Company

Case No.:	U-18322
Hearing Date:	9/27/2017
Exhibit No.:	A-129

Case No.: U-18322  
Exhibit: A-129 (HJM-3)  
Witness: HJMyers  
Date: September 2017  
Page 1 of 1

Projected Utility Plant Reconciliation  
for the Test Year Ended September 30, 2018  
(\$000)

Line	Description	Plant Held For			Depreciation Reserve	Net Utility Plant
		Plant in Service	Future Use	CWIP		
	(a)	(b)	(c)	(d)	(f)	(g)
1	Projected Utility Plant - As Filed <sup>1</sup>	\$ 14,332,629	\$ 5,193	\$ 488,973	\$ (5,194,782)	\$ 9,632,013
	<u>Adjustments</u>					
2	Property Model Correction <sup>2</sup>	(2,237)		(12,320)	138	(14,419)
3	RCRA Capital Adjustment <sup>4</sup>	(15,397)			830	(14,567)
4	Total Adjustments	(17,634)	-	(12,320)	968	(28,986)
5	Adjusted Projected Utility Plant	\$ 14,314,996	\$ 5,193	\$ 476,653	\$ (5,193,814)	\$ 9,603,027
6	Jurisdictional Factor <sup>3</sup>	0.996054	0.991639	0.993845	0.996191	
7	Total Projected Utility Plant	\$ 14,258,509	\$ 5,150	\$ 473,719	\$ (5,174,031)	\$ 9,563,346

Footnotes

<sup>1</sup> Exhibit: A-7 (JRF-7)

<sup>2</sup> Exhibit: S-10.2 (RF Nichols)

<sup>3</sup> WP-JRF-153

<sup>4</sup> WP-HJM-1

**MICHIGAN PUBLIC SERVICE COMMISSION**  
Consumers Energy Company

Case No.: U-18322
Hearing Date: 9/27/2017
Exhibit No.: A-130

Case No.: U-18322  
Exhibit: A-130 (HJM-4)  
Witness: HJMyers  
Date: September 2017  
Page 1 of 1

Computation of Adjusted Projected Net Operating Income  
for the Test Year Ended September 30, 2018  
(\$000)

Line	Description	CECo Position as Filed <sup>1</sup>	Adjustments <sup>2</sup>	CECo Rebuttal Position	CECo Jurisdictional <sup>2</sup>
	(a)	(b)	(c)	(d)	(e)
<u>Operating Revenue</u>					
1	Sales Revenue	\$ 4,214,366	\$ 89	\$ 4,214,455	\$ 4,214,455
2	Wholesale Revenues	26,096	-	26,096	-
3	Other Electric Revenue	52,842	-	52,842	52,842
4	Total Operating Revenue	4,293,304	89	4,293,393	4,267,297
<u>Operating Expense</u>					
5	Fuel Cost	2,145,445	-	2,145,445	2,124,040
6	Other O&M Expense	627,602	(13,727)	613,875	611,748
7	Depreciation Expense	612,004	(1,053)	610,951	608,010
8	R&PP Tax	172,207	(260)	171,947	171,533
9	General Taxes	30,213	-	30,213	30,043
10	Local Income Tax	1,203	32	1,235	1,237
11	State Income Tax	38,933	1,178	40,111	40,162
12	Federal Income Tax <sup>3</sup>	142,902	6,576	149,478	149,668
13	Total Operating Expenses	3,770,509	(7,254)	3,763,255	3,736,441
14	Total Net Operating Income	522,795	7,343	530,138	530,856
<u>Operating Income Adjustments</u>					
15	AFUDC	5,052	-	5,052	5,021
16	Income Tax Effect of Interest <sup>3</sup>		Included in Line 11 and 12		
17	Interest Synchronization Adjustment <sup>3</sup>		Included in Line 11 and 12		
18	Total Operating Income Adjustments	5,052	-	5,052	5,021
19	Total Adjusted Net Operating Income	\$ 527,847	\$ 7,343	\$ 535,190	\$ 535,877

Footnotes

<sup>1</sup> Exhibit: A-8 (JRF-10)

<sup>2</sup> Exhibit: A-131 (HJM-5)

<sup>3</sup> Income Tax Effect of Interest and Interest Synchronization are included in the calculation of State and Federal Income Tax. The separate calculations can be seen on Exhibit: A-132 (HJM-6) and Exhibit: A-133 (HJM-7)

**MICHIGAN PUBLIC SERVICE COMMISSION**  
Consumers Energy Company

Projected Net Operating Income Reconciliation  
for the Test Year Ended September 30, 2018  
(\$000)

Case No.:	U-18322
Hearing Date:	9/27/2017
Exhibit No.:	A-131

Case No.: U-18322  
Exhibit: A-131 (HJM-5)  
Witness: HJMyers  
Date: September 2017  
Page 1 of 1

Line	Description	Revenue				Expenses								NOI		
		Sales Revenue	Wholesale	Other	Total	Fuel Cost	O&M	Depreciation	R&PP Tax	General Taxes	CIT	MCIT	FIT	NOI	AFUDC	Adjusted NOI
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
1	Operating Income - As Filed <sup>1</sup>	\$ 4,214,366	\$ 26,096	\$ 52,842	\$ 4,293,304	\$ 2,145,445	\$ 627,602	\$ 612,004	\$ 172,207	\$ 30,213	\$ 1,203	\$ 38,933	\$ 142,902	\$ 522,795	\$ 5,052	\$ 527,847
	<u>Adjustments</u>															
2	Property Model Correction <sup>2</sup>	-	-	-	-	-		(282)	(76)	-	1	21	118	219	-	219
3	Long-term Incentive Restricted Stock <sup>3</sup>		-	-	-	-	(11,378)			-	18	670	3,742	6,949	-	6,949
4	DB SERP/DC SERP				-		(2,349)				4	138	772	1,434	-	1,434
5	RSC Provision Customer Count <sup>7</sup>	89			89						0	5	29	54		54
6	RCRA Capital Adjustment <sup>8</sup>				-			(771)	(184)		2	56	314	583		583
7	Proforma Interest <sup>4</sup>	-	-	-	-	-	-	-	-	-	8	285	1,590	(1,882)	-	(1,882)
8	Interest Synchronization <sup>5</sup>	-	-	-	-	-	-	-	-	-	0	2	12	(14)	-	(14)
9	Total Adjustments	89	-	-	89	-	(13,727)	(1,053)	(260)	-	32	1,178	6,576	7,343	-	7,343
10	Adjusted Net Operating Income	\$ 4,214,455	\$ 26,096	\$ 52,842	\$ 4,293,393	\$ 2,145,445	\$ 613,875	\$ 610,951	\$ 171,947	\$ 30,213	\$ 1,235	\$ 40,111	\$ 149,478	\$ 530,138	\$ 5,052	\$ 535,190
11	Jurisdictional Factor <sup>6</sup>	1.000000	-	1.000000		0.990023	0.996535	0.995187	0.997591	0.994373	1.001273	1.001273	1.001273	0.993845		
12	Jurisdictional Adjusted NOI	\$ 4,214,455	\$ -	\$ 52,842	\$ 4,267,297	\$ 2,124,040	\$ 611,748	\$ 608,010	\$ 171,533	\$ 30,043	\$ 1,237	\$ 40,162	\$ 149,668	\$ 530,856	\$ 5,021	\$ 535,877

Footnotes

- <sup>1</sup> Exhibit: A-8 (JRF-23)  
<sup>2</sup> Exhibit: S-10.2 RFNichols  
<sup>3</sup> Rebuttal Testimony of Company witness AMConrad  
<sup>4</sup> Exhibit: A-132 (HJM-6)  
<sup>5</sup> Exhibit: A-133 (HJM-7)  
<sup>6</sup> WP-JRF-153  
<sup>7</sup> WP-HJM-2  
<sup>8</sup> WP-HJM-1

**MICHIGAN PUBLIC SERVICE COMMISSION**  
Consumers Energy Company

Case No.: U-18322
Hearing Date: 9/27/2017
Exhibit No.: A-132

Case No.: U-18322  
Exhibit: A-132 (HJM-6)  
Witness: HJMyers  
Date: September 2017  
Page 1 of 1

Adjusted Net Operating Income Pro-Forma Interest Adjustment  
for the Test Year Ended September 30, 2018  
(\$000)

Line	Description	Amount	Source
	(a)	(b)	(c)
1	Rate Base	\$ 10,303,683	Exhibit: A-128 (HJM-2)
2	Weighted Cost of Debt <sup>1</sup>	<u>1.75%</u>	0
3	Allowable Interest Expense	179,901	Line 1 * Line 2
4	Projected Pro-Forma Interest Expense from Original Filing	<u>184,735</u>	Exhibit: A-8 (JRF-21)
5	Increase/ (Decrease) In Allowable Interest Deduction	<u>(4,834)</u>	Line 3 - Line 4
6	Impact on Taxable Income	4,834	Line 5 * -1
7	CIT Rate	<u>0.16%</u>	
8	Impact on Local Income Tax	<u>8</u>	Line 6 * Line 7
9	Impact to State Taxable Income	4,827	Line 6 - Line 8
10	MCIT Rate	<u>5.898%</u>	
11	Impact on State Income Tax	285	Line 9 * Line 10
12	Impact on Federal Taxable Income	4,542	Line 9 - Line 11
13	FIT Rate	<u>35.00%</u>	
14	Impact on Federal Income Tax	<u>1,589.72</u>	Line 12 * Line 13
15	Impact on Net Operating Income	<u>\$ (1,882)</u>	(Line 8 + Line 11 + Line 14) * -1

Footnotes

<sup>1</sup> Excludes the Job Development Investment Tax Credit portion

**MICHIGAN PUBLIC SERVICE COMMISSION**  
Consumers Energy Company

Case No.: U-18322
Hearing Date: 9/27/2017
Exhibit No.: A-133

Case No.: U-18322  
Exhibit: A-133 (HJM-7)  
Witness: HJMyers  
Date: September 2017  
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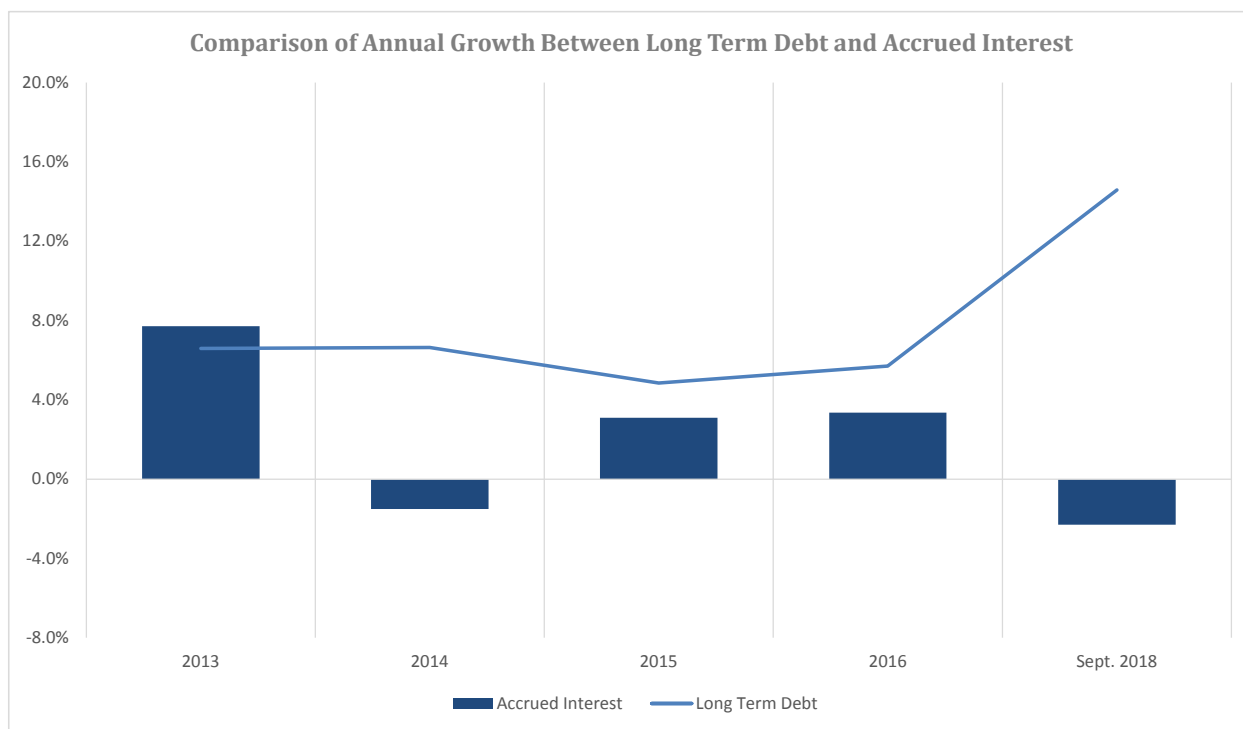
Tax Effect of Interest Synchronization Adjustment  
for the Test Year Ended September 30, 2018  
(\$000)

Line	Description	Amount	Source
	(a)	(b)	(c)
1	Rate Base	\$ 10,303,683	Exhibit: A-128 (HJM-2)
2	Debt Related JDITC <sup>1</sup> Portion of the Capital Structure	<u>0.27%</u>	0
3	Portion of Rate Base Funded by JDITC	27,708	Line 1 * Line 2
4	Cost of Debt - JDITC Portion	<u>4.68%</u>	0
5	JDITC Interest Expense	1,297	Line 3 * Line 4
6	Projected Pro-Forma Interest Expense from Original Filing	<u>1,332</u>	Exhibit: A-8 (JRF-22)
7	Increase/ (Decrease) in Allowable JDITC Interest Expense	<u>(35)</u>	Line 5 - Line 6
8	Impact on Taxable Income	35	Line 7 * -1
9	CIT Rate	<u>0.160%</u>	
10	Impact on Local Income Tax	<u>0</u>	Line 8 * Line 9
11	Impact on State Taxable Income	35	Line 8 - Line 10
12	MCIT Rate	<u>5.898%</u>	
13	Impact on State Income Tax	<u>2</u>	Line 11 * Line 12
14	Impact on Federal Taxable Income	33	Line 11 - Line 13
15	FIT Rate	<u>35.00%</u>	
16	Impact on Federal Income Tax	<u>12</u>	Line 14 * Line 15
17	Synchronization Adjustment to Net Operating Income	<u>\$ (14)</u>	(Line 10 + Line 13 + Line 16) * -1

Footnotes

<sup>1</sup> Job Development Investment Tax Credit

Comparison of Annual Growth Between Long Term Debt,  
and Accrued Interest  
(\$000)



Line	Description	2012	2013	2014	2015	2016	Test Year Sept. 2018
1	Long Term Debt	4,074,158	4,342,414	4,631,040	4,855,277	5,132,225	5,880,452
2	Change in Long Term Debt		6.6%	6.6%	4.8%	5.7%	14.6%
3	Accrued Interest	39,546	42,597	41,957	43,256	44,710	43,684
4	Change in Accrued Interest		7.7%	-1.5%	3.1%	3.4%	-2.3%

Source

2012: Company Rates Department, 2012 Cost of Capital Study, 2012 Working Capital Study

2013: Electric Case U-17735: Long Term Debt- Exhibit A-4 (NNB-35), Schedule D1, Accrued Interest - Exhibit A-2 (NNB-6), Schedule B-4

2014: Electric Case U-17990: Long Term Debt- Exhibit A-4 (AKR-34), Schedule D-1, Accrued Interest - Exhibit A-2 (AKR-6), Schedule B-4

2015: Long Term Debt- Exhibit A-4 (JRC-34), Schedule D-1, Accrued Interest - Exhibit A-2 (JRC-6), Schedule B-4

2016: Company Rates Department, 2016 Cost of Capital Study, 2016 Working Capital Study

2018: Long Term Debt - Exhibit A-9 (AJD-1), Schedule D-1, Accrued Interest - Exhibit A-7 (JRF-9), Schedule B-4

**MPSC Staff's Answer to Consumers' Third Discovery Request**  
**MPSC Case No. U-18239**  
**August 2, 2017**

**18239-CE-ST-6** Does Staff agree that Consumers Energy's owned electric generating plants provide capacity service? If the answer is anything but an unqualified yes please explain your answer.

**Answer**

Assuming that "capacity service" means the provision of capacity to cover the Company's customers' load/capacity requirements, insofar as the Company's owned electric generating plants' capacity qualifies at MISO to cover the Company's capacity requirements at MISO, Staff agrees. However, it is important to note that capacity service is only one of many services provided by the Company's electric generating plants.

**Respondent: Nicholas M. Revere**

**MPSC Staff's Answer to Consumers' Third Discovery Request**  
**MPSC Case No. U-18239**  
**August 2, 2017**

**18239-CE-ST-7** Does Staff agree that Consumers Energy's power purchase contracts provide for the provision of capacity service? If the answer is anything but an unqualified yes please explain your answer.

**Answer**

Assuming that "capacity service" means the provision of capacity to cover the Company's customers' load/capacity requirements, insofar as the contracts provide capacity to the Company that qualifies at MISO to cover the Company's capacity requirements at MISO, Staff agrees. However, it is important to note that capacity service is only one of many potential services provided by the Company's power purchase contracts. In general, these contracts also provide at least energy service.

**Respondent: Nicholas M. Revere**



RIA CUSTOMER HISTORY  
September 2016 to August 2017

	SEP 2016	OCT 2016	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	Total
RS 1000-INC ASST CR	48,417	49,521	49,995	49,720	50,853	52,653	56,974	59,035	61,603	61,434	61,923	61,781	663,909
RES 1005-INCOME ASSISTANCE CREDIT	5	8	10	13	17	28	49	64	112	161	190	236	893
<b>TOTAL RIA CUSTOMER COUNT</b>	<b>48,422</b>	<b>49,529</b>	<b>50,005</b>	<b>49,733</b>	<b>50,870</b>	<b>52,681</b>	<b>57,023</b>	<b>59,099</b>	<b>61,715</b>	<b>61,595</b>	<b>62,113</b>	<b>62,017</b>	<b>664,802</b>
RS 1000-INC ASST CR	\$ 6,313,476	\$ 4,518,763	\$ 4,655,225	\$ 5,615,970	\$ 6,719,992	\$ 5,883,917	\$ 5,983,277	\$ 5,899,786	\$ 5,461,379	\$ 6,173,720	\$ 7,362,392	\$ 7,341,510	\$ 71,929,406
RES 1005-INCOME ASSISTANCE CREDIT	\$ 407	\$ 461	\$ 692	\$ 921	\$ 1,481	\$ 2,138	\$ 4,212	\$ 5,150	\$ 9,324	\$ 16,789	\$ 26,190	\$ 32,654	\$ 100,418
<b>TOTAL RIA CUSTOMER REVENUES</b>	<b>\$ 6,313,884</b>	<b>\$ 4,519,223</b>	<b>\$ 4,655,916</b>	<b>\$ 5,616,891</b>	<b>\$ 6,721,473</b>	<b>\$ 5,886,055</b>	<b>\$ 5,987,489</b>	<b>\$ 5,904,935</b>	<b>\$ 5,470,703</b>	<b>\$ 6,190,509</b>	<b>\$ 7,388,581</b>	<b>\$ 7,374,164</b>	<b>\$ 72,029,825</b>
<b>RIA REV/CUST</b>	<b>\$ 130</b>	<b>\$ 91</b>	<b>\$ 93</b>	<b>\$ 113</b>	<b>\$ 132</b>	<b>\$ 112</b>	<b>\$ 105</b>	<b>\$ 100</b>	<b>\$ 89</b>	<b>\$ 101</b>	<b>\$ 119</b>	<b>\$ 119</b>	<b>\$ 108</b>
RS 1000-INC ASST CR	40,571,346	31,600,332	33,021,888	40,985,257	45,939,374	39,955,185	40,795,626	40,844,169	37,684,619	39,791,850	46,997,250	47,354,201	485,541,097
RES 1005-INCOME ASSISTANCE CREDIT	2,879	3,209	4,893	6,691	10,088	14,472	28,625	35,528	64,230	116,056	174,966	220,165	681,802
<b>TOTAL RIA CUSTOMER DELIVERIES</b>	<b>40,574,225</b>	<b>31,603,541</b>	<b>33,026,781</b>	<b>40,991,948</b>	<b>45,949,462</b>	<b>39,969,657</b>	<b>40,824,251</b>	<b>40,879,697</b>	<b>37,748,849</b>	<b>39,907,906</b>	<b>47,172,216</b>	<b>47,574,366</b>	<b>486,222,899</b>
<b>RIA USAGE (KWH)</b>	<b>838</b>	<b>638</b>	<b>660</b>	<b>824</b>	<b>903</b>	<b>759</b>	<b>716</b>	<b>692</b>	<b>612</b>	<b>648</b>	<b>759</b>	<b>767</b>	<b>731</b>

CONSUMERS ENERGY COMPANY  
RESIDENTIAL RATE\_RS CUSTOMER HISTORY  
2016 - AUG 2017 YTD

Tiered Residential	1,583,567	1,587,843	1,582,528	1,590,291	1,589,913	1,588,736	1,589,069	1,579,805	1,579,098	1,573,179	1,573,180	1,564,953	18,982,162
Tiered Residential	203,779,995	142,507,647	139,019,585	164,687,615	188,467,797	157,605,804	147,317,847	140,247,032	130,200,231	156,678,645	189,568,807	188,453,596	1,948,534,599
<b>RATE_RS REV/CUST</b>	<b>\$ 129</b>	<b>\$ 90</b>	<b>\$ 88</b>	<b>\$ 104</b>	<b>\$ 119</b>	<b>\$ 99</b>	<b>\$ 93</b>	<b>\$ 89</b>	<b>\$ 82</b>	<b>\$ 100</b>	<b>\$ 121</b>	<b>\$ 120</b>	<b>\$ 103</b>
Tiered Residential	1,245,833,507	928,034,425	917,752,775	1,130,512,156	1,221,608,300	1,003,982,546	938,179,555	904,082,884	831,853,330	948,966,694	1,147,614,865	1,153,257,099	12,371,678,136
<b>RATE_RS USAGE (KWH)</b>	<b>787</b>	<b>584</b>	<b>580</b>	<b>711</b>	<b>768</b>	<b>632</b>	<b>590</b>	<b>572</b>	<b>527</b>	<b>603</b>	<b>729</b>	<b>737</b>	<b>652</b>

Case No.:	U-18322
Hearing Date:	10/3/2017
Exhibit No.:	A-137

**Question**

**18322-CE-ST-2.** Does Staff continue to support the adjustment related to its 2% overall reduction in O&M expense proposed in the direct testimony of Staff witness Brian Welke starting on page 12, line 19 and continuing through page 15, line 22?

**Answer**

**18322-CE-ST-2.** It is Staff's continued position that the Company cannot reconcile its O&M expense projections presented in this case to what the Company has presented to its investors. But Staff is unable to determine, with confidence, what the rate case O&M expense projection would be if it were consistent with investor projections.

On September 25, 2017, the Company, in discovery response 18322-ST-CE-649, indicated that for the 12-months ending July 2017, the Company actually spent \$585 million in electric O&M. The electric O&M expense of \$585 million was not audited by Staff, but nonetheless suggests that Staff's adjustment related to 2% O&M Savings is not appropriate.

As such, Staff no longer supports its \$50,961,000 O&M expense adjustment related to 2% O&M Annual Cost Savings and will be removing the adjustment from the Staff projected test year revenue deficiency in its brief.

**Respondent: Brian Welke.**