



MICHIGAN PUBLIC SERVICE COMMISSION

Staff Report

December 2013 Ice Storm



March 10, 2014
Electric Operations Section
Operations and Wholesale Markets Division

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EXECUTIVE SUMMARY

On December 21 and 22, 2013, a severe ice storm crossed the midsection of Michigan's Lower Peninsula. As a result, an estimated 600,000 customers of Consumers Energy Company (Consumers Energy) and DTE Electric Company (DTE Electric) lost electric power to their homes and businesses for varying lengths of time. Published reports indicate that some customers remained without power for over 8 days. In addition to the extended outages and an unprecedented number of downed lines, it has been reported that some customers found it difficult to report outages. Public utilities are allowed to recover the costs associated with tree trimming activities and general maintenance of their distribution facilities through the rate case process. In each rate case, the Commission reviews the utility's request for operations and maintenance expenses and capital spending to determine whether spending is adequate to maintain and improve reliability to customers. The Commission has an obligation to ensure that the utilities are using these ratepayer supplied funds to provide customers with reasonably reliable service, to protect the public from hazardous downed power lines, and to promptly respond to and restore power to customers suffering from outages. Reports of prolonged power outages raise serious concerns and require review by the Commission. Storms of this magnitude also provide utilities an opportunity to improve their infrastructure, operations, and communications in order to increase resiliency during future events. In order to understand the events of the December ice storm, the Commission required both Consumers Energy and DTE Electric to file reports containing the following information no later than February 7th 2014 in Docket No. U-17542:

- 1) How the ice storm affected the utilities' distribution systems;
- 2) How the utilities responded before and during the storm (including information on the number and deployment of utility line crews, Michigan-based contractors, and mutual assistance crews from other states, as well as information on forestry crews);
- 3) Whether any changes could be implemented to reduce the potential for future power outages of the magnitude recently witnessed;
- 4) Whether there is evidence of a failure on the part of either utility to properly maintain its distribution system that could have contributed to the outages experienced during these storms;
- 5) Whether the utilities were properly prepared to receive and respond to customer calls to report outages, any problems experienced on the reporting system during the storm, and whether accurate information was relayed to customers;
- 6) Whether the utilities sufficiently addressed all public safety concerns associated with downed power lines in a timely manner.

The following Staff report is based on the information and analysis compiled during the past month through the utility reports, audit questions, industry best practices, as well as the expertise of Commission Staff. In the aftermath of a major winter storm such as the December ice storm, it is essential that utilities and regulators review their performance before, during and after in order to understand where there is room for improvement. While the December ice storm may have been unprecedented in its scope and damage, severe weather events such as this are not uncommon in Michigan. From a historic perspective the December ice storm was the largest ice storm that has occurred in Michigan in over a decade. The storm coated utility assets and nearby vegetation with ice accumulations of up to $\frac{3}{4}$ of an inch creating overstressing and failures of wires, poles and trees. This icing remained for a large part of the week creating increased difficulty in accessing utility equipment and created a dangerous work environment for workers attempting to restore service in a timely manner. This storm is best categorized as a high impact and low frequency event in terms of history, but the fact remains that there is no assurance that such an event will not recur in the near future. Accordingly, the state's utilities need to have in place procedures to meet their obligation to respond to customers quickly and effectively in future events.

The Staff's analysis of the data obtained through this investigation concluded that both Consumers Energy and DTE Electric had emergency management procedures in place and responded effectively and safely to the ice storm event to address the outages witnessed during the December ice storm. The utilities' storm response required management of resources, remarkable effort, extraordinary coordination and dedication from nearly 7,000 utility and contracted mutual assistance workers. These utility workers operated for extended periods in very difficult conditions to restore power to the Michigan citizens during the holidays without compromising their safety.

The Staff agrees with the lessons learned to improve the customers' experience, as noted by both companies in their reports. Staff also agrees with Consumers Energy's effort to hire two outside consultants. Electric consultant Oliver Wyman may further improve reliability and ensure process improvement. Consumers Energy has also sought the services of Environmental Consultants Incorporated to review its line-clearing practices and specifications, which could provide valuable independent assessment to gauge the efficiency and effectiveness of its line-clearing program.

Staff has additional observations and recommended actions to address what Staff believes to be key operational and management weaknesses revealed by the ice storm. Staff's review identified key programs and operations in the storm restoration process that could be improved to mitigate the effects of future storms of this size. Staff would like to work with both utilities in 2014 to address the following recommendations for future utility operation and storm response:

- Revisiting the timeline and process for which the utilities obtain mutual assistance.
- Improving the methods by which utilities convey estimated service restoration times to customers.

- Increased implementation of distribution automation to mitigate the scope of future outages.
- Commitment to routine vegetation management cycles.
- Implementation of territory wide programs to address hazardous trees outside of the utilities defined right of way.
- Revisiting customer service quality credits to increase utilization by customers
- Increasing the call capacity at service centers for reports of wire downs and outages.
- Increasing the number of trained wire down guards on utilities' staff to help protect the public during events such as ice storms.

INTRODUCTION AND BACKGROUND

On December 21 and 22, a severe ice storm crossed the midsection of Michigan's Lower Peninsula. As a result, nearly 600,000 customers of Consumers Energy and DTE Electric lost electric power to their homes and businesses for varying lengths of time. Published reports indicated that some customers remained without power for as long as 8 days. In addition to the extended outages and an unprecedented number of downed lines, it was reported that some customers found it difficult to report outages to their utility.

To that end, the Commission opened Docket No. U-17542 on January 8, 2014 in order to investigate Consumers Energy and DTE Electric to determine the following:

- How the ice storm affected the utilities' distribution systems.
- How the utilities' responded before and during the storm (including information on the number and deployment of utility line crews, Michigan based contractors, and mutual assistance crews from other states, as well as information on forestry crews).
- Whether any changes could be implemented to reduce the potential for future power outages of the magnitude recently witnessed.
- Whether there is evidence of a failure on the part of either utility to properly maintain its distribution system that could have contributed to the outages experienced during these storms.
- Whether the utilities were properly prepared to receive and respond to customer calls to report outages, any problems experienced on the reporting system during the storm and whether accurate information was relayed to the customers.
- Whether the utilities sufficiently addressed all public safety concerns associated with downed power lines in a timely manner.

HISTORY OF SIMILAR INVESTIGATIONS

The MPSC has formally investigated similar widespread and lengthy storm outages five other times in the last twenty-two years¹. The catastrophic events causing the outages have occurred every three to five years. The first of these prior storm response investigations was initiated by Commission Order dated July 17, 1991 in Case Number U-9916². Four years later, the Commission issued an order dated July 31, 1995 in Case Number U-10908³ initiating another proceeding to investigate Consumers Energy's and Detroit Edison's outage responses. On January 3, 2000, the Commission initiated two cases, U-12269 and U-12270 that dealt with electric reliability. Docket No. U-12269 was issued in response to a Staff report investigating Detroit Edison's response to storm outages occurring in July 1999. Detroit Edison and Staff entered into an agreement to resolve issues and improve reliability. Docket No. U-12270 was initiated to investigate the service reliability for all of the regulated electric utilities. A number of service quality and reliability standards evolved out of Case U-12270 and subsequently were approved by the Commission. These standards include a reporting requirement to include the following: 1) Call blockage factor; 2) Complaint response factor; 3) Average customer call answer time; 4) Meter reading factor; 5) New service installation factor; 6) Wire-down relief factor; 7) Service restoration factor for all conditions; 8) Service restoration factor for normal conditions; 9) Service restoration factor for catastrophic conditions, and 10) Same-circuit repetitive interruption factor. These standards acknowledged and provided a definition for catastrophic storms⁴. A slightly modified version of these standards was later adopted as administrative rules R460.701 through R460.752. These administrative rules adopted the 10 service quality standards and added penalty and incentive provisions where a customer could receive a credit on their bill for receiving unacceptable service as defined in the rules. The annual reports filed by the utilities may be found on the Commission's website in docket U-12270⁵.

On June 19, 2008, the Commission issued an order in Docket No. U-15605 directing Staff to investigate power outages that Michigan customers experienced in early June following severe thunderstorms that passed through the area between June 6th and June 13th. During these storms, Michigan experienced three confirmed tornadoes, straight-line winds in excess of 70 miles per hour, and more than 11 inches of rain in some areas⁶. The damage resulting from these storms was extensive causing more than 700,000 customers in the Detroit Edison and Consumers Energy territories to be without power for extended periods of time, up to seven days. The severe storms passing through Michigan in early June caused significant damage to the distribution infrastructure in both Detroit Edison's territory and Consumers Energy's territory.

¹ This does not include the regional blackout report of 2003.

² U-9916 docket contents are available in hard copy only at the MPSC.

³ U-10908 docket contents are available in hard copy only at the MPSC.

⁴ Catastrophic: 10% of the utilities' customer base experiencing an outage.

⁵ Service Quality and Reliability Standards: http://www7.dleg.state.mi.us/ort/Files/AdminCode/107_98_AdminCode.pdf

⁶ Press Release from Senator Levin's office: <http://www.levin.senate.gov/newsroom/release.cfm?id=300373>, July 9 2008.

On September 7, 2010 the City of Detroit experienced a severe storm that was unique because the winds were high without accompanying rain, lightning, thunderstorms, or tornados. During this September 7, 2010 windstorm in Detroit, MI., the City of Detroit experienced high, sustained winds in excess of 50 miles per hour, almost 45,000 electric service outages, hundreds of downed wires and a large number of fires. The fire damage was spread by the high winds affected at least 85 structures, of which 62 were residential homes.

On September 14, 2010 the Commission issued an order in Docket U-16462 to conduct an investigation into DTE Electric's response to the service outages and safety hazards caused by the windstorm, the current condition of the utilities infrastructure in the affected area and the company's preparedness to respond. The report found that the Detroit Fire Department could not determine the cause of fires at the time the report was written, Staff found no fault in Detroit Edison's storm response, and Staff found the distribution system in the affected areas was operated and maintained to system standards.

Staff notes similar recurring issues and recommendations stand out across all the above cases. Among them is the need for greater customer call in capacity during major events, better restoration estimates, more proactive storm readiness, better wire down response, continued system maintenance and strengthening, and an out of ROW tree trimming program. Also, customers do not understand the reason for the customer credit and believe that the credit is too small to even request.

The MPSC has informally and formally investigated storms to ensure that emergency response protocol for utilities was reasonable and efficient. When problems are found, the Commission orders the necessary improvements and allows the utility time to implement the new measures. The performance of the utility in all weather situations is re-evaluated annually and the Commission monitors the utility to ensure that satisfactory performance continues.

The chart below indicates the number of outages and duration of events:

CONSUMERS ENERGY	<u>U-9916 (1991)</u>	<u>U-10908 (1995)</u>	<u>U-12269 (1999)</u>	<u>U-15605 (2008)</u>	<u>U-16462 (2010)</u>
Number of Outages	504,000	282,000	225,000	378,972	Not Applicable
Duration of Event	5 days	3 days	3 days	8 days	Not Applicable
DETROIT EDISON	<u>U-9916 (1991)</u>	<u>U-10908 (1995)</u>	<u>U-12269 (1999)</u>	<u>U-15605 (2008)</u>	<u>U-16462 (2010)</u>
Number of Outages	684,000	451,000	264,000	350,000	44,938
Duration of Event	8 days	3 days	3 days	8 days	1 day

Underground Line Policy

In May 2007, the Commission issued an order in Docket No. U-15279 that directed MPSC Staff to study the costs and benefits of extending the Commission's existing underground line policy. For the most part, underground utility lines are currently required in new subdivisions and for new commercial and industrial lines in the Lower Peninsula. The Commission's administrative

rules for underground electric lines, R460.511- 460.519⁷, are posted on the website and have been in effect since 1971.

Staff's report found that underground lines cost significantly more than overhead lines, replacing existing overhead lines with underground lines will cost approximately \$1 million per mile, on average, or about ten times what it costs to install overhead power lines. Staff found that distribution rates could increase 80-125% if all overhead lines were replaced with an underground distribution system.

Staff's analysis indicated that there were more options that exist to improve distribution reliability that are less costly than undergrounding those circuits. Also, Staff determined it was not practical to change overhead lines to underground along road construction projects as they occur in the future. Furthermore, Staff found it would cost an additional \$100 million per year to underground all secondary overhead construction currently being constructed per year in Michigan.

Staff also found that if a group of customers wanted to underground their electric distribution system, the agreement with the utility to perform underground work should contain provisions allocating a significant portion of the increased costs to those customers receiving the local benefits, so that all of the costs are not transferred to the entire system's rate payers. Moreover, should a problem with the underground system occur, the duration of a customer's average outage time would increase exponentially. This report found that undergrounding for the sake of reliability does not appear to be economically justified.

⁷ MPSC administrative rules – Underground Electric Lines R460.511 – 460.519;
http://www7.dleg.state.mi.us/ort/Files/AdminCode/107_96_AdminCode.pdf

STAFF ANALYSIS

Topic 1: How the ice storm affected the utilities' distribution systems;

Both DTE Electric and Consumers Energy describe the December storm as being the worst storm in recent history to contend with. Both utilities had up to one inch of ice on their overhead lines and equipment, causing these structures to fall under the additional weight. Restoration was impeded by the freezing temperatures, ice accumulation and additional snowfall as linemen struggled to repair the system in these conditions.

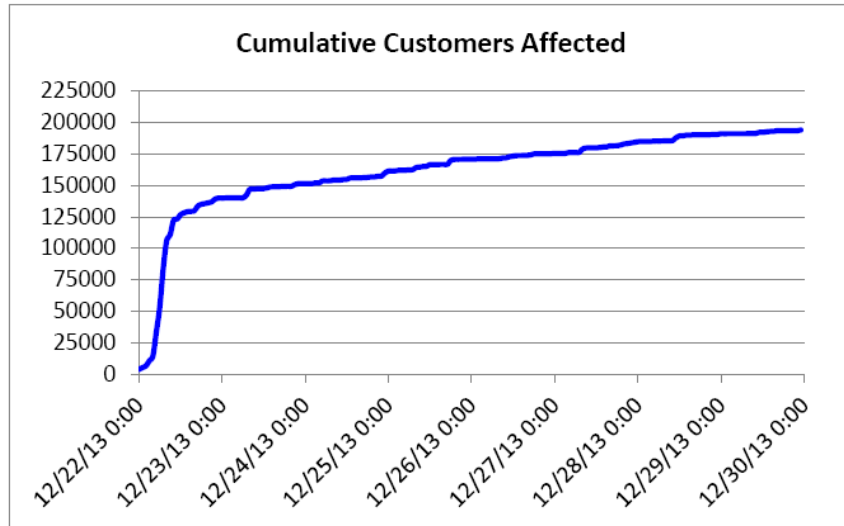


(Consumers Energy Photo)

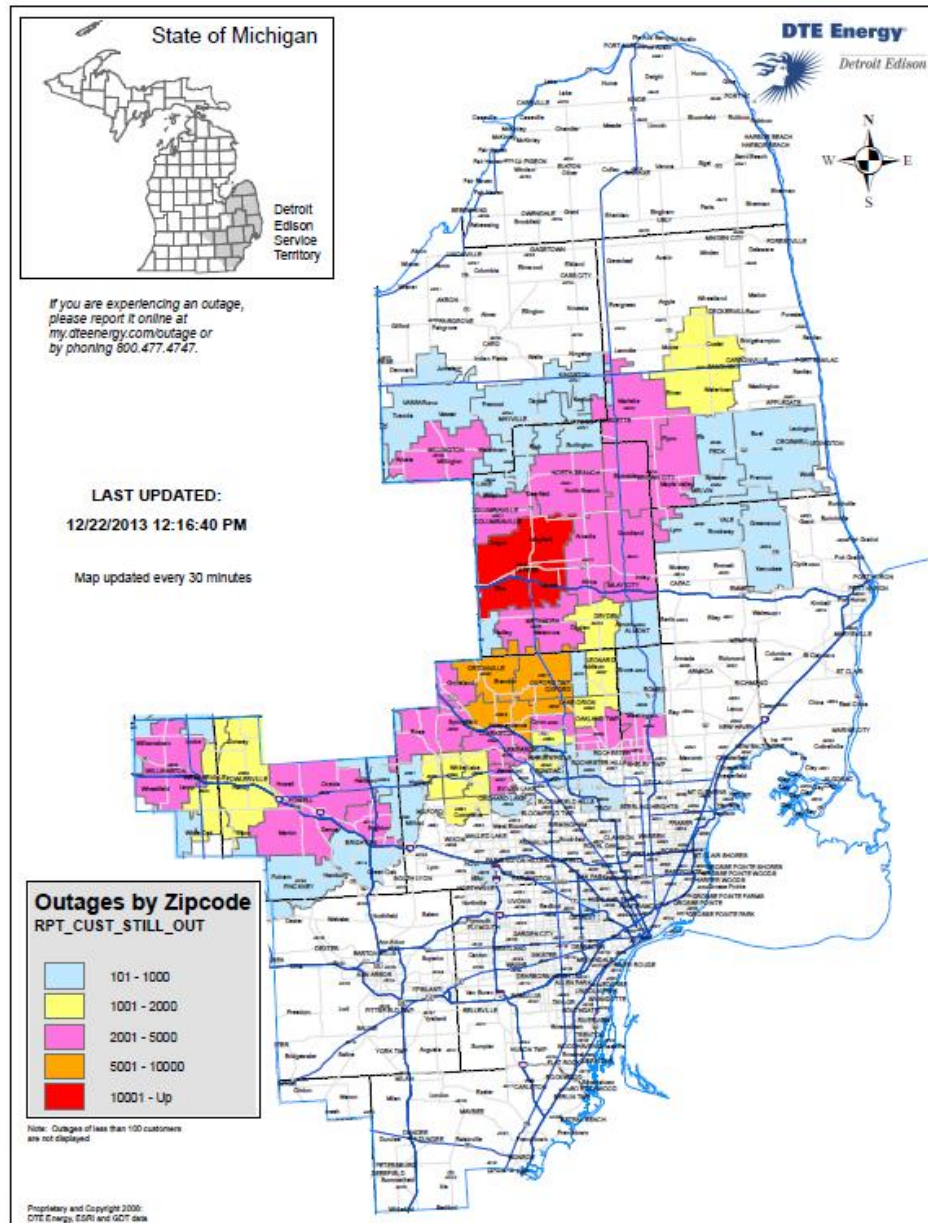
DTE Electric

In the early hours of December 22, 2013, DTE Electric began to see significant ice buildup in their territory and during a 12 hour period their electrical lines accumulated upwards of $\frac{3}{4}$ " of ice. Over the next four days, below freezing temperatures and snow accumulation caused additional weight on the lines and stress on the utility poles, causing significant equipment damage. The storm was responsible for 207,000 outages and after the initial outages were reported lingering ice caused an additional 50,000 customer interruptions. During the restoration process, DTE Electric installed over 19 miles of new wire, replaced over 200 utility poles, 223 cross-arms, 44 transformers and responded to 2,300 reported wires down. In addition, DTE Electric responded to 13,000 events requiring work crews during the storm.

DTE Electric Customer Outage Timeline



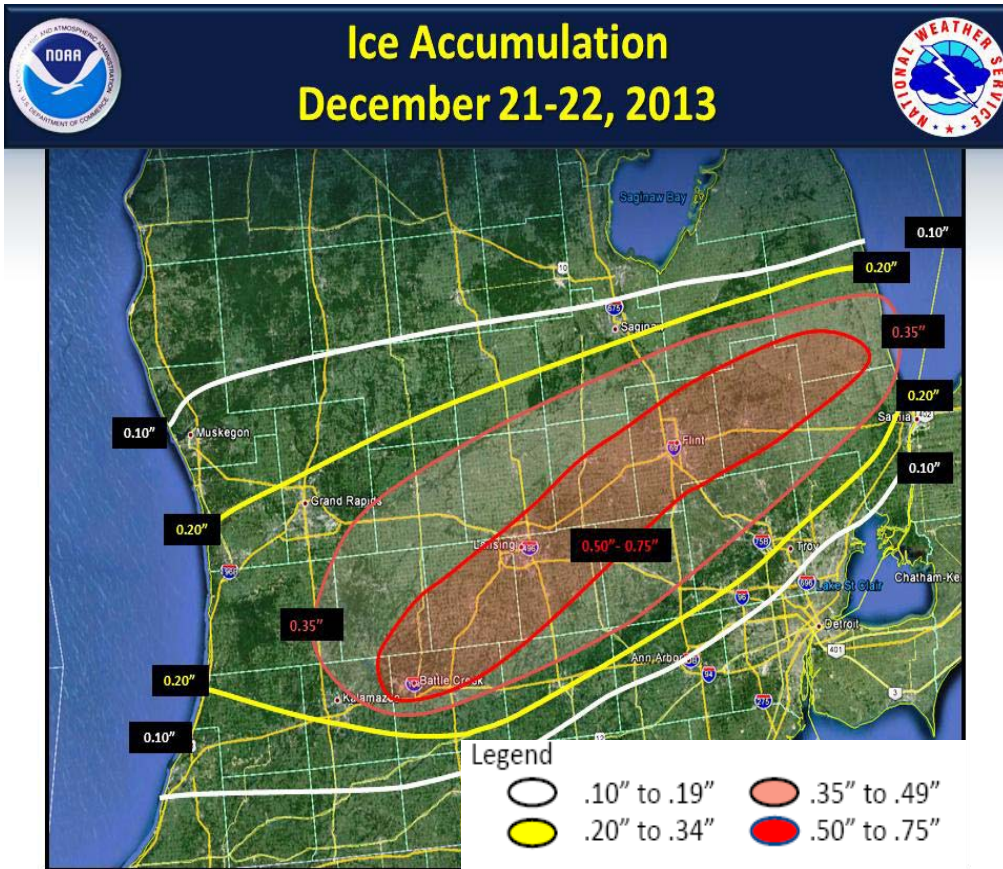
DTE Electric Outages by Zip Code



Consumers Energy

A total of 388,950 Consumers Energy customers were impacted by the ice storm. During the restoration process, Consumers Energy repaired over 120 miles of wire, 419 poles, and 270 transformers. Similar to DTE Electric, restoration work was impeded by below freezing temperatures, excessive ice buildup and additional snow accumulation during the event. The majority of lines within their territory fell due to tree contact and/or excessive ice on the line which put additional weight on the line and pole. Consumers Energy electric distribution area experienced a few days with sustained winds in the 10-20 mph range and gusts of 20-30 mph. Also, Consumers Energy experienced additional system damage due to equipment breaking under the additional weight of the ice.

CONSUMERS ENERGY		
NUMBER OF EVENTS & CUSTOMERS INTERRUPTED BY DATE		
DATE	OUTAGE EVENTS	CUSTOMERS INTERRUPTED
12/21/13	324	40,196
12/22/13	3,140	246,034
12/23/13	856	27,756
12/24/13	506	19,628
12/25/13	448	12,250
12/26/13	719	15,782
12/27/13	733	17,328
12/28/13	528	7,131
12/29/13	136	2,845
TOTAL	7,390	388,950



Consumers Energy Map

CHRISTMAS WEEK ICE STORM

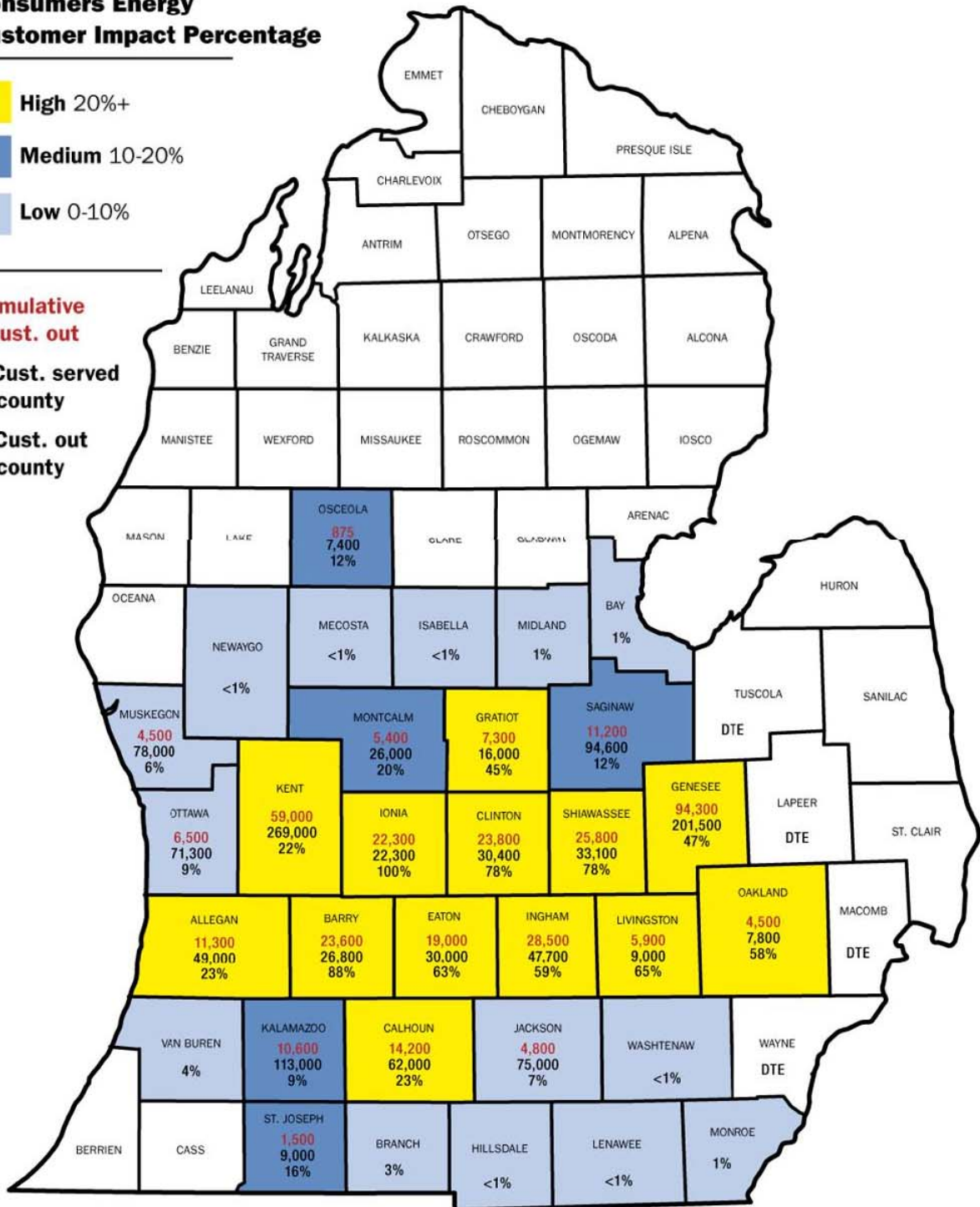
Consumers Energy Customer Impact Percentage



Cumulative #Cust. out

Cust. served
in county

% Cust. out
in county



Consumers Energy Map

Topic 2: How the utilities responded before and during the storm (including information on the number and deployment of utility line crews, Michigan based contractors, and mutual assistance crews from other states, as well as information on forestry crews);

Both utilities were aware of the storm and that it would likely be severe, days before it arrived. Consumers Energy's preemptive Storm Restoration planning began on Wednesday, December 18th. They continuously monitored the weather conditions to identify incoming system threats. Consumers Energy used contracted weather service (MxVision Weather Sentry Online by Schneider Electric) to monitor the weather conditions and monitored publicly available weather sources (NWS, weather channel, etc.) to get the most accurate and up to date forecast. Consumers Energy used the forecasted information to prepare and plan the restoration that was needed. Consumers Energy's forecast for Friday, December 20th predicted heavy ice for portions of their service territory. Consumers Energy placed additional office and field resources on call status ahead of the storm. A few Mutual Assistance line crews were called in for Saturday December 21st.

Consumers Energy's media relations were also part of the pre-storm planning process. News releases began on Wednesday December 18th, and encouraged customers to prepare for the upcoming storm and outlined Consumers Energy's planning efforts. These broadcasts continued in multiple ways (i.e.: interviews, social media, etc.) until the restoration was complete. Their message changed as needed during the duration of the storm. Consumers Energy utilized a total of 4,400 workers in their restoration efforts during this ice storm event.

The daily number of line crew members utilized are listed in the table below⁸:

CONSUMERS ENERGY				
NUMBER OF LINE CREWS BY DATE				
DATE	CE CREWS	IN-STATE CONTRACTOR	MUTUAL ASSISTANCE	TOTAL
12/21/13	19	16	7	42
12/22/13	74	42	7	123
12/23/13	109	60	78	247
12/24/13	115	68	258	441
12/25/13	123	69	269	461
12/26/13	123	76	270	469
12/27/13	123	111	364	598
12/28/13	123	111	364	598
12/29/13	123	111	364	598

⁸ Consumers Energy 2014 Ice Storm Report.

The daily number of forestry crew members utilized are listed in table below⁹:

<u>CONSUMERS ENERGY</u>			
<u>NUMBER OF FORESTRY CREWS BY DATE</u>			
DATE	IN-STATE CONTRACTOR	MUTUAL ASSISTANCE	TOTAL
12/21/13	16	0	16
12/22/13	100	0	100
12/23/13	115	70	185
12/24/13	115	85	200
12/25/13	135	90	225
12/26/13	135	90	225
12/27/13	135	165	300
12/28/13	135	165	300
12/29/13	135	165	300

Staff finds that Consumers Energy did not have significant mutual aid crews working on the first two full days of the storm restoration as only 7 crews were working on December 22nd and 78 crews working on December 23rd. An additional 180 mutual aid crews arrived on Tuesday, December 24th. On December 27th, an additional 94 mutual aid crews and 35 in-state contractor crews began working. Consumers Energy utilized the maximum number of 364 mutual aid crews for only the last three days of the restoration process.

DTE Electric started monitoring the ice storm through their on-staff meteorologist on December 17th. On December 18th, they held preparatory storm strategy discussions and issued internal warnings on ice due to freezing rain. DTE Electric made inquiries into the availability of internal and external restoration resources. On December 19th, deteriorating forecasts predicted more ice to accumulate and they made the decision to secure out-of-state resources and have them on site before the storm occurred. Also, DTE Electric notified their employees of the impending storm, put local contract crews on standby for line work and vegetation management on call and ramped up all DTE Electric storm support crew. DTE Electric continued to monitor weather forecasts and evaluated their preparedness until restoration was complete. DTE Electric proactively alerted their customers of the impending severe weather via email, social media, press releases and interviews with local TV and radio stations.

DTE Electric's preplanning was advantageous as they had 317 line crews working to restore service on the first day of the storm restoration. On the second day of the storm, they had 355 crews working, but on Christmas Eve the number of line crews dropped by 50 crews and on Christmas Day, the number of crews dropped another 115 crews, leaving only 240 crews working. By Thursday December 26th, 372 crews were deployed—the most crews used on any one day throughout the storm restoration process. DTE Electric utilized a total of 3,000 workers in their restoration efforts during this ice storm event. The number of line crew members and forestry crew members are listed in the following tables¹⁰.

⁹ Consumers Energy 2014 Ice Storm Report.

¹⁰ DTE Electric 2014 Ice Storm Report

<u>DTE ELECTRIC</u> <u>NUMBER OF LINE CREWS BY DATE</u>				
DATE	DTE CREWS	IN-STATE	OUT OF STATE	TOTAL
12/22/13	185	95	37	317
12/23/13	220	110	25	355
12/24/13	168	81	56	305
12/25/13	131	79	30	240
12/26/13	204	93	48	345
12/27/13	208	116	48	372
12/28/13	166	130	48	344
12/29/13	177	66	0	243

<u>DTE ELECTRIC</u> <u>NUMBER OF FORESTRY CREWS BY DATE</u>			
DATE	IN-STATE	OUT OF STATE	TOTAL
12/22/13	198	0	198
12/23/13	195	0	195
12/24/13	200	0	200
12/25/13	139	3	142
12/26/13	165	11	176
12/27/13	175	23	198
12/28/13	165	23	188
12/29/13	180	3	183

Staff's analysis of Consumers Energy's response to the storm concludes that more mutual aid crews and in-state contractors should have been called in before the storm arrived and earlier in their storm restoration process. Consumers Energy was monitoring the weather forecasts, had personnel on stand-by and knew that the storm had the potential for significant outages from the heavy ice in certain parts of their distribution system. Only 50 contractor crews, both in-state and mutual aid crews were working the first day, in comparison to 475 contractor crews that were utilized at the peak on Friday, December 27th.

At the beginning of the ice storm event, Consumers Energy was not receiving accurate information from their interactive voice response unit (VRU), as almost 60% of customer calls were blocked on Sunday December 22nd. This failure of the VRU system on the day most customers called in to report their outages did not provide the storm response personnel with accurate outage numbers and most likely led to a delay in requesting additional restoration assistance from in-state contractor crews and mutual aid crews. Staff is aware that severe icy

weather conditions, the event occurring over a holiday and the lack of experience dealing with an ice storm of this magnitude were factors that made accurate restoration predictions difficult. With the available technology such as the outage management system and the weather forecast data Consumers Energy had available, Consumers Energy should have been able to determine more workers were needed early in the week to restore the system in a more timely manner.

DTE Electric started out with a large number of crews working on the first day of restoration, but the Christmas holidays apparently interfered with them ramping up to full capacity. The number of DTE Electric crews dropped drastically on December 24th and December 25th. Staff believes DTE Electric's restoration could have been completed a day or two earlier than December 29th if staffing levels were consistent. With approximately 200,000 outages, Staff is concerned that the restoration times would have been unacceptably long if the storm impacted more of DTE Electric's service territory and the outage numbers were larger. Staff has seen DTE Electric perform better, but recognizes, similar to Consumers Energy, that the event falling over the Christmas holiday, the ice storm conditions and lack of experience all were factors in the length of the restoration.

Mutual Aid

There is no doubt that mutual aid helped in the restoration efforts of the December storm. Staff acknowledges that the use of mutual aid has cost savings for the companies and the industry. Each utility would otherwise need to increase their own workforce or let their restoration times suffer. The travel time involved with the out of state mutual aid crews can sometimes delay the restoration process if the out of state crews are called in too late. Staff is aware that both utilities used mutual assistance crews multiple times in previous years which improved restoration times during those storm events.

Both utilities also use contract crews for forestry work for routine tree trimming maintenance work. Each utility was able to get in-state contractors for the ice storm restoration work in December. Staff finds that in an event such as the ice storm, it is very important to have forestry crews working as soon as possible to provide line clearance to allow line crews access for restoration. Staff believes that having the forestry crews come from in-state gave the utilities the ability to have the crews available without long travel delays.

Topic 3: Whether any changes could be implemented to reduce the potential for future power outages of the magnitude recently witnessed;

In their responses to the Commission's inquiries, Consumers Energy and DTE Electric stated that continued investment in the system over the next five years would reduce the potential for future power outages from storms of the magnitude of the recent December storm. In their reports, Consumers Energy and DTE Electric total proposed capital investments exceed \$1.7 billion, over the next five years to maintain and improve their distribution systems. The following summarizes the planned distribution investments of the companies that were provided in the filings.

Consumers Energy

- 1) Replacing poles, cross arms, transformers, insulators, and adding new electric conductors on both the LVD and HVD systems.
- 2) Acceleration of full deployment of AMI and smart meters, concluding at the end of 2017 instead of 2019.
- 3) Distribution Supervisory Control and Data Acquisition ("DSCADA") project. In the future, DSCADA will utilize Automated Metering Infrastructure ("AMI") Smart Meter data to perform Smart Energy diagnostics.
- 4) Expanding the coverage of line crews and electric service workers outside of normal daily work schedules, monitoring and measuring outage incident dispatch steps and timing, and a more detailed approach to evaluating poor performing circuits. Additionally, a reliability analytics engine was built, which will assist with reliability related diagnostics and decision making.
- 5) Full adoption of National Incident Management System (NIMS) Incident Command System (ICS) as Consumers Energy's restoration management structure.
- 6) Utilize Oliver Wyman again in 2014 to analyze storm restoration processes.
- 7) Upgrading Outage Management System in 2014.
- 8) Enhancing line clearing schedule for vegetation management and continued work with customers to address trees outside the utility right of way.
- 9) Implementation of the newly adopted National Electric Safety Code (NESC) 2012 design standards.

DTE Electric

- 1) Improvements in system planning and construction including armless pole construction, stronger conductors, and additional fusing and sectionalization.
- 2) Continuing planned deployment of AMI and smart meter deployment throughout their service territory.
- 3) Utilizing system automation schemes such as fault sensing, volt/VAR control, distribution loop schemes, SCADA, Distribution Management Systems using AMI technology.
- 4) Implementation of the newly adopted National Electric Safety Code (NESC) 2012 design standards.
- 5) Vegetation management improvements that help address trouble trees outside of the existing utility right of way.

If properly implemented, the strategies outlined by each utility to mitigate the effects of another severe ice storm similar to the one from December, will both increase the resiliency of the infrastructure, as well as the efficiency in which the utilities respond to catastrophic storms when they occur. However, Staff is concerned with the acceleration of Consumers Energy smart meter deployment as a means for reducing the impact of future outages. Although advanced meters have the ability to provide automated outage messages to the utility, the technology does little to increase the resiliency of the system. Staff does believe that accelerating the full deployment will reduce the potential for future power outages of the magnitude recently witnessed in December. Staff believes that Consumers Energy current deployment schedule for smart meters is prudent, and accelerated investments should be focused on projects that will strengthen the resiliency of the distribution infrastructure such as distribution automation.

Distribution Automation

Distribution automation and fault monitoring are widely recognized across the industry for their ability to minimize outage frequency and duration. This is best evidenced by the Department of Energy's (DOE) initial results from the Smart Grid Investment Grants (SGIG). Approximately half of the SGIG's received by utilities were for projects that included distribution automation as a means to:

- 1) Reduce the frequency of both momentary and sustained outages;
- 2) Reduce the duration of outages, and
- 3) Reduce the operations and maintenance costs associated with outage management.

According to the initial results from the Department of Energy’s Smart Grid Investment Grants program, programs such as automated feeder switching can account for significant System Average Interruption Frequency Index (SAIFI) and System Average Interruption Duration Index (SAIDI) improvements. Automated feeder switches can open or close in response to a fault condition identified locally or to a control signal sent from another location. When combined with communications and controls, the operation of multiple switches can be coordinated to clear faulted portions of feeders and reroute power to and from portions that have not experienced faults. These coordinated actions are called fault location, isolation, and service restoration (FLISR)¹¹.

Reliability Indices	Description	Range of Percent Changes
SAIFI	System Average Interruption Frequency Index (outages)	-11% to -49%
MAIFI	Momentary Average Interruption Frequency Index (interruptions)	-13% to -35%
SAIDI	System Average Interruption Duration Index (minutes)	+4% to -56%
CAIDI	Customer Average Interruption Duration Index (minutes)	+29% to -15%

Table ES-1. Changes in Reliability Indices from Automated Feeder Switching

Initial results from the SGIG report on Reliability Improvements from the Application of Distribution Automation Technologies concluded the following:

“The use of AMI and smart meters, fault detection technologies, and automated controls can help improve the allocation of field resources to restore power. Cost reductions are derived from fewer truck rolls and labor resources to locate and troubleshoot outages. Costly rework can be avoided by Smart Grid Applications Primary Impacts on Outages Fault detection and automated feeder switching Reductions in the frequency and duration of outages and the number of affected customers Diagnostic and equipment health sensors Reductions in the frequency of outages and the number of affected customers Outage detection and notification systems Reductions in the duration of outages using smart meter restoration notifications to ensure all customers have power restored before demobilizing field crews. It is expected that the level of savings from these actions will correlate with the size of the outage. The greatest savings will occur during restoration following major events that require many field crews and long work periods, often under extreme conditions.”¹²

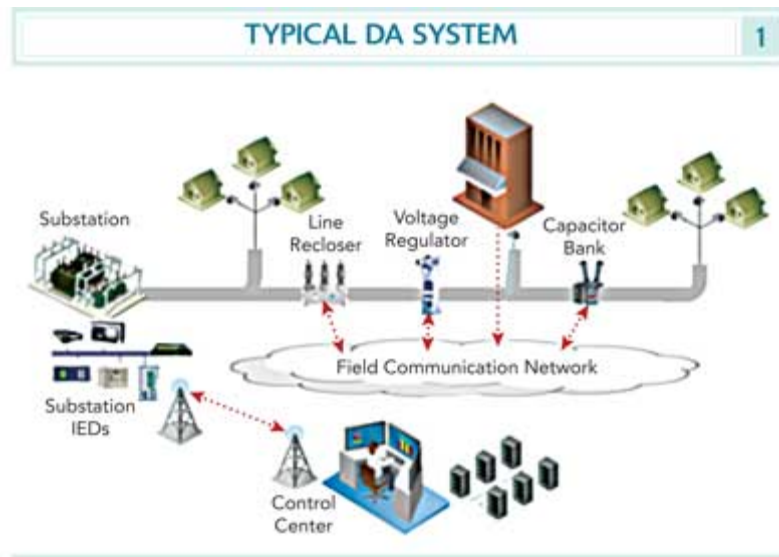
Commission Staff believes the FLISR integration will play a significant part in improving service reliability in this state and mitigating the effects of future storms of the magnitude of the December ice storm. The companies existing investment in communications infrastructure for

¹¹ United States Department of Energy. (2012). *Reliability Improvements from the Application of Distribution Automation Technologies*. Washington DC.

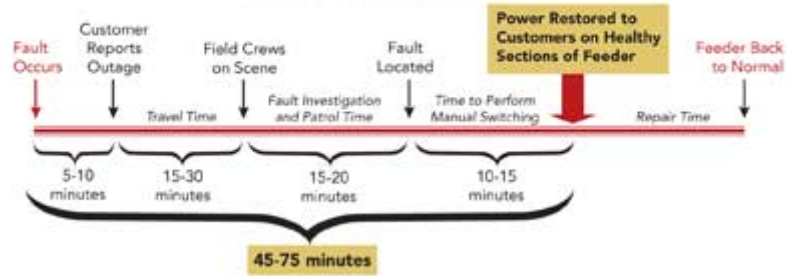
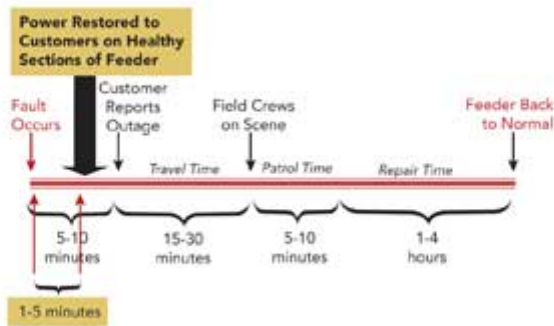
¹² United States Department of Energy, 2012.

AMI deployment can provide the groundwork for these applications and maximizing the benefit of previous investments.

Figure 1: Distribution Automation (DA) System and Benefits¹³



¹³ Uluski, R. (2013), June 10). *Developing a Business Case for Distribution Automation*:
http://www.elp.com/articles/powergrid_international/print/volume-18/issue-6/features/developing-a-business-case-for-distribution-automation.html?p=FLISR+benefit

5a: Time Line Without FLISR

5b: Time Line With FLISR


Topic 4: Whether there is evidence of a failure on the part of either utility to properly maintain its distribution system that could have contributed to the outages experienced during these storms;

Over the last decade, the Michigan Public Service Commission has approved funding for increased distribution system maintenance programs such as vegetation management, pole replacement, and pole top maintenance. Without the increased funding in these programs, Staff believes that the damages by the December ice storm would have been measurably worse. These programs operate as preventative maintenance for severe weather events and help identify trouble areas and assets before they propagate into outages. However, severe weather events such as the winter ice storm provide opportunities for utilities to learn and improve existing programs. Staff has the following recommendations regarding system maintenance program.

Vegetation Management

Currently both utilities have vegetation management programs designed to remove trees and branches inside the utilities assigned right of way to prevent contact with utility equipment and subsequent faults. Staff's analysis of national utility industry data shows that vegetation management programs are very effective for increasing reliability. Staff believes that vegetation management is the best tool available to reduce the number of outages per year. Consumers Energy reported decreases in outage frequency in work areas of 30% after line clearing work was performed. Staff recognizes vegetation management to be the most effective tools in outage avoidance and duration limitation, currently deployed by utilities. Therefore, Staff has the following analysis and recommendations for Michigan utility vegetation management programs.

Consumers Energy

Staff's analysis of the Consumers Energy report and audit responses showed that expenditures for reliability programs such as vegetation management are often discretionary from year to year. This is best evidenced by the almost 16 million dollar shortfall in vegetation management expenditures in 2013 relative to approved amounts. Over the last five years, Consumers Energy vegetation management expenditures have ranged from 35% below the Commission approved budget to 28% percent above the rate case authorized budget. Although these program expenditures are approved through rate cases, Consumers Energy states that it, "manages its overall level of capital investments and Operations and Maintenance expenses across the utility portfolio¹⁴". This practice has led to large fluctuation from approved spending year to year in the vegetation management program, leading to backlogs of trees that are now outside of their recommended trimming cycle.

¹⁴ U-17087, Direct Testimony of James Anderson page 4, lines 6, 7.

Due to the fact that Consumers Energy identifies vegetation falling into utility equipment as the leading culprit in outage causation, Staff believes that the practice of inconstant vegetation management expenditures is imprudent given its reliability implications and the cost implications associated with deferred maintenance. Failure to stay “on-cycle” in terms of vegetation management may have been a contributing factor to the number of tree-related instances in the December ice storms. Staff recommends in the future, approved budgets for vegetation management should be viewed as a minimum expenditure and that Consumers Energy’s focus should instead be aimed at clearing the appropriate amount of line miles to stay “on-cycle”. In their last rate case, U-17087¹⁵, Consumers Energy requested \$53 million for tree trimming in 2013 to optimize the overall benefit to customers, through improved reliability performance as measured by SAIDI. Although that case was settled below its request, Consumers Energy proceeded to spend just over half of what they had requested at approximately \$29 million. This is the lowest tree trimming budget seen on the system since 2008 and an unacceptable practice given the devastation trees have on the distribution system. Furthermore, the incremental costs associated with deferring maintenance will ultimately be borne by the rate payers in subsequent years, and will make identifying reasonable expenditures in this program difficult in future rate cases.

Table 2: Cost of Deferred Vegetation Management¹⁶

<u>Utility</u>	<u>Length of Optimum Line Clearance Cycle</u>	<u>At The Conductor**</u>	<u>Relative Cost* To Prune Trees At A Site That Is:</u>			
			<u>1-Yr. Past Optimum</u>	<u>2 Yrs. Past Optimum</u>	<u>3 Yrs. Past Optimum</u>	<u>4 Yrs. Past Optimum</u>
A	5 Years	\$1	\$1.23	\$1.43	\$1.59	\$1.69
B	5 Years	\$1	\$1.21	\$1.39	\$1.53	\$1.64
C	6 Years	\$1	\$1.16	\$1.30	\$1.40	\$1.47

* Excludes an adjustment for inflation.
 ** Optimum time is based on the industry standard of 10-15% maximum tree-to-conductor contact, referenced in this table as "At The Conductor".

Table 3: Consumers Energy Vegetation Management Expenditures 2009-2013

	2009	2010	2011	2012	2013
Actual Spend	\$44,211.00	\$34,180.00	\$45,188.00	\$42,406.00	\$28,817.00
Rate Case Approved	\$34,394.00	\$32,006.00	\$40,536.00	\$42,806.00	\$44,550.00
% Difference	28.54%	6.79%	11.48%	-0.93%	-35.32%

¹⁵ U-17087 Direct Testimony of James Anderson, Page 20, Line 14.

¹⁶ D. Mark Browning, H.V. (n.d.). *The Economic Impacts of Deferring Electric Utility Tree Maintenance*.

DTE Electric

Staff's review of DTE Electric's vegetation management program showed a strong commitment to staying "on-cycle" and spending allocated funding on vegetation management. Over the last five years DTE Electric's vegetation management expenditures have ranged from 6% below the Commission approved budget to 13% percent above the rate case authorized budget. Staff believes the benefits of this commitment to vegetation management are best illustrated through their SAIFI performance over the last five years being in the top quartile in the nation.

Table 4: DTE Vegetation Management Expenditure 2009-2013

	2009	2010	2011	2012	2013
Actual Spend	\$49,653.00	\$47,530.00	\$50,812.00	\$53,765.00	\$57,313.00
Rate Case Approved	\$50,700.00	\$50,700.00	\$50,700.00	\$50,700.00	\$50,700.00
% Difference	-2.07%	-6.25%	0.22%	6.05%	13.04%

Vegetation Management Recommendations

Staff has the following recommendation for Consumers Energy and DTE Electric utilities in regards to their vegetation management programs:

- Utilities should make all attempts to maintain their line clearance cycle and expend allocated funding to vegetation management.
- Utilities should explore the possibility of a dynamic tree trimming schedule in the future rather than a one size fits all cycle length. Michigan has a very diverse landscape of vegetation that makes a one size fits all cycle length ineffective in some areas. This is best evidenced by the difference in trim cycles used by Consumers Energy (10 years) and DTE Electric (5 years) operating in the same state. Staff believes that a more effective way of vegetation management would be using available technology to classify vegetation management cycle lengths on a circuit by circuit or regional basis based on vegetation prevalence.
- 100% audit of contracted line clearance miles in an annual year.
- Annual reports to the Commission on vegetation management progress and program expenditures.

Vegetation Management: Outside the Right of Way

According to the reports provided by the utilities, a large portion of tree-related outages were caused by trees outside of the utilities' right of way. These trees are not addressed through typical vegetation management practices and have been shown to greatly affect the reliability of the distribution system. Staff review of both reports concludes that there is a need for programs that address these hazardous trees outside of the current right of way. Failure to address these hazardous trees that lie outside the right of way creates a huge reliability liability as was recognized during the December ice storm.

Both utilities are currently piloting programs that attempt to address these trees and these programs have been met with resounding success. Staff would like to work with the utilities to expand these pilots to critical areas on the distribution system and also work with the utilities, local governments, and landowners to increase the efficiency of hazardous tree removal across the state. Staff has the following recommendations to help understand and address the hazardous tree issues across the state:

- The use of local ordinances or legislation to streamline the hazardous tree removal process for cities, towns and villages.

New Hampshire RSA 231:145, specifically allows for: *“The governing bodies of cities and towns and the county commissioners for unorganized places on class IV, V, and VI highways and town maintained portions of class II highways may declare any tree, either alive or dead, situated within the limits of highways, roads, or streets to be a public nuisance by reason of unreasonable danger to the traveling public, spread of tree disease, or the reliability of equipment installed at or upon utility facilities authorized under RSA 231:160 or RSA 231:160-a. After such declaration by such authority and notice to the abutting landowner on whose property such tree is located the said authority shall within a reasonable time remove the same without compensation or cost to the abutter”*¹⁷

- The development of future tariffs/riders that allow for cities, towns and villages to address concerns such as undergrounding and tree trimming outside utilities' planned maintenance schedule.

¹⁷ General Court New Hampshire. (nd.). *Trees and Roadside Growth*:
<http://www.gencourt.state.nh.us/rsa/html/XX/231/231-145.htm>

ComEd's Local Government Compliance Rider directs Edison to recover the marginal costs of providing "non-standard" service from customers within any governmental unit that mandates such service¹⁸.

- Improved communication with customers about the dangers of hazardous tree and the results of non-action.
- Documentation of utilities' efforts to obtain landowner consent to trim or remove trees outside the right of way. This documentation would include: who requested the permission (utility or contractor), pictures of hazardous trees and utility concerns with the growth, and reasoning behind customer refusals.
- Updating of current hazardous tree process to explain the importance of removal for instances like the December ice storm.

Pole Top Maintenance

Staff believes the current pole top maintenance programs used by the utilities are sufficient for future operations. Asset failures of the magnitude witnessed during the December ice storm were expected given the heavy ice accumulations.

Pole Replacement

Although there were a large number of poles that were replaced during the storm, Staff believes the current pole replacement programs employed by the utilities are sufficient for future operations. Given the extra weight load placed on the poles from ice accumulations and the design criteria of the system, it would be expected that a number of poles in hard hit areas would be prone to failure. As the utilities begin utilizing NCES 2012 as a design standard which increases design criteria for both ice and wind for distribution facilities above 60 feet, it can be expected that in future storms pole related failures will become rarer.

¹⁸ Commonwealth Edison Company. (n.d.). *Local Government Compliance Adjustment*: <https://www.comed.com/Documents/customer-service/rates-ricing/rates-information/current/RiderLGC.pdf>

Topic 5: Whether the utilities were properly prepared to receive and respond to customer calls to report outages, any problems experienced on the reporting system during the storm and whether accurate information was relayed to the customers;

Utility Call Volumes

During the event, Consumers Energy customer call volumes exceeded 50,000 calls per hour by 8:00 a.m. on Sunday, December 22, 2013 and 206,000 customer calls and emails were handled that day. This compares to a normal Sunday when Consumers Energy handles a peak volume of less than 75 live and 6,000 Voice Response Unit (VRU) calls per hour with daily volumes of less than 1,300 live calls and 6,200 VRU calls. On a typical Sunday, 10-12 Customer Service Representatives and senior level representatives field phone calls on each shift. Mondays are typically the busiest day of a normal week, with 2,800 live calls and 3,000 VRU handled calls per hour and up to 25,000 live calls and 20,500 VRU handled calls per day. Over the course of the outage, Consumers handled 605,000 customer calls and emails. More than 300 customer service agents and 50 other support staff members were engaged in supporting customer contracts throughout the storm.

Consumers Energy stated in their report to the Commission that the call volumes that they experienced overwhelmed their telecom capacity in the morning and early afternoon of December 22nd, which prevented some customers from immediately reporting their outages. In follow-up inquiries, Consumers Energy shared that while they may have handled 206,000 customer calls and emails on December 22nd, because of issues with their telecom carrier not being able to deliver calls to Consumers Energy 282,385 calls were blocked. While the blocked call percentage through most of the storm and recovery was zero or near zero percent, 59.5% of the calls on December 22nd were blocked.

Conversely, DTE Electric reported that they received approximately 250,000 customer calls during this event. On a typical week day, DTE Electric has 348 onsite customer service agents and 60 offsite contracted customer service agents spread across multiple shifts. At the height of the storm's outage calls, almost all of the 400 customer service agents were dedicated to responding to incoming outage calls. Critical and priority customer facilities call into a separate number. DTE Electric has specially trained staff to respond to these calls with appropriate priority and communication 24/7 during the outage.

In their report, DTE Electric stated that the average speed of answer time during the duration of restoration efforts was 35 seconds. DTE Electric stated that they did not have any reported issues with their toll-free phone number during the period customers were reporting outages. DTE Electric states that at the height of the storm and the following outage calls, almost all of their 400 customer service agents were dedicated to responding to incoming outage calls. However, on December 22, some customers experienced a 30 minute wait time.

MPSC Service Quality and Reliability Standards for Electric Distribution state:

R 460.724 Unacceptable service quality levels of performance.

Rule 24. It is an unacceptable level of performance for an electric utility to fail to meet any of the following service quality standards:

(a) An electric utility shall have an average customer call answer time of less than 90 seconds.

(b) An electric utility shall have a call blockage factor of 5% or less.

Consumers Energy made outbound calls to some customers to communicate updated restoration times and outage map information. The automated outbound calling campaign was launched and completed on Tuesday, December 24 with more than 82,000 calls to customers without power at the time. Over 700 additional outbound calls were made providing updated outage information to business customers by Business Center team members. The Business Center team members also made nearly 2,000 outbound calls to validate restoration for business customers.

In addition to handling incoming calls, DTE Energy made over 200,000 proactive outbound communication calls to customers regarding restoration times. During the storm, DTE used a team of employees trained to make outbound customer calls to verify restoration and other information to aid the efficient utilization of restoration crews. DTE also used an automated outbound dialer program to provide specific restoration updates to customers.

Additionally, Consumers Energy had issues with their email system becoming unavailable on Sunday, December 22. This prevented some employees from being able to immediately respond to e-mails that may have come from customers. Technicians identified issues with a third party vendor's fiber optic cable and after disabling the faulty connection email service was restored in four hours.

Resources

Consumers Energy launched its online outage map in November 2012 with a purpose of providing its customers with estimated restoration times for their particular area. Their Outage Map opens with a view of the state of Michigan. There, a dotted line shows the approximate location of Consumers Energy's electric service area. Shaded areas with lines are served by other electric utilities. The default view has a legend showing outages statewide with color codes indicating the number of customers without electric power.

The web and mobile outage maps were highly utilized with 186,000 unique desktop users and 29,000 unique mobile users. Consumers Energy had added additional server capacity to ensure outage map responsiveness and availability. Consumers Energy did state on page 23 of their report to the Commission, that "in a large-scale outage like the December 2013 ice storm, ETRs (Estimated Times of Restoration), like all other pieces of data and information, become challenging to manage due to sheer volume." Consumers Energy intends on exploring ways to improve the availability and accuracy of this resource.

DTE Electric's website also allows customers to report an outage and check on restoration times through their website and a mobile phone application. DTE reports that 252,000 customer interactions used the Mobile App and 23,564 customers utilized the mobile outage application to report their outage. DTE Energy also reported that they had 672,000 Outage Map Views from customers using their website.

MPSC Customer Contact

The MPSC Staff received more than 67 customer contacts regarding electric outages between December 19th and January 5th. Of these customer contacts, 38 were Consumers Energy customers and 19 were DTE Electric customers. The number of electric or combined electric/gas cases and electric call center dispositions totaled 165 contacts, with 41% of the electric contacts within this timeframe pertaining to outage related complaints.

Some of the overall themes taken out of the customer complaints received by the MPSC about Consumers Energy were: customers were not able to get through to report their outage because of high call volumes, misinformation regarding restoration times, and frequency of electrical outages being experienced by customers.

In addition to these contacts, customers also had an opportunity to comment in the E-Docket (U-17542). A typical customer comment is below:

“Where I find fault is with the decision makers, the executives at the top. Perhaps Consumers is doing the best job they are able to do and Mother Nature was very unkind to our area as this ice storm was a double whammy. I was also one of the unfortunate ones to lose power for four days on November 19th due to high winds so that was two long outages in a month. I think this is the reason many of my friends and neighbors are up in arms, especially those of us who live in the country. We feel we are not being properly served, especially when we are always the last to go back on line. Here in the country, we pay as much as those in more populated areas that are brought back on line first. Perhaps they should charge us less in the country where we are poorly served. This can be a life threatening situation for many people, not including all the pets and farm animals that suffer. There was no warming shelter set up in Hastings and I was told it was because no one had power. There should be a shelter set up WITH A GENERATOR beforehand, so that people know where to go during the next disaster. Communication was very poor, not only by Consumers but by our teams in the county. Many people simply did not know where to go to get warm. Outages during warmer climates certainly are not as serious as the previous two we had in November and December.”

(Mary Fisher)

Similarly, the overall themes taken from the customer complaints about DTE Electric fielded by the MPSC were: customers were not able to get through to report their outage because of high call volumes, misinformation regarding restoration times, and frequency of electrical outages being experienced by customers.

In addition to these contacts, customers also had an opportunity to put a comment in the E-Docket (U-17542). A typical customer comment is below:

“While we realize this was an expansive power outage that happened over the holidays, it was also incredibly frustrating to work with a system that is obviously incapable of providing pertinent and accurate information as to the status of power restoration to our area. To restate our problems, the following questions come to mind: With what information was DTE able to close our service ticket EIGHT times when the power was never in fact restored in any of those instances? Conversely, with what information did they NOT CLOSE six of the tickets when in fact we DID have power causing a technician to report to our house under faulty pretenses?”

(Marianne Dwyer)

Media Outreach

Consumers Energy states that they issued 22 news releases, both prior to the storm and regular updates and made 1,000 media contacts by their media relations team, officers and key Public Affairs area managers. Following the ice storm and during the power outage, Consumers Energy reported that they had eight news media events in hardest-hit areas: Flint, Lansing region, Grand Rapids, Corunna, and Hastings.

Consumers Energy also used social media to convey safety topics including: Staying 25 feet from downed wires, preventing carbon monoxide poisoning, treating stoplights as four-way stops and dangers of falling snow and ice. By uploading and posting information to their Facebook, Twitter, and Flickr accounts, Consumers Energy stated that they were able to notify customers of restoration efforts, posts photos, and share two Company produced videos. Consumers Energy also answered 1,260 social media customer service inquiries and produced six blog posts. They had an increase of 29 percent in fans on Facebook and Twitter sites. Consumers Energy indicated that they had 64 storm updates posted, including two videos. Topics included, but not limited to, safety, restoration progress, damage caused by storm, crews working in hazardous conditions, information about 211 and other agency assistance.

Following the storm, Consumers Energy reported that they used radio, print and digital advertising, focused on safety, call-to-action directing customers to their website and/or outage map. In addition to normal wire down safety 'trigger' ads, four radio spots were developed in-house with employees providing voice-overs.

DTE Electric reported that they used social media, TV and radio, to keep their customers informed of restoration progress. Multiple media updates were provided daily and approximately 30 interviews were conducted. DTE Electric indicated that they utilized earned media from December 22nd to December 24th, with a total of 325 units. During the outage, DTE Electric reported that they used social, earned, and paid media to convey safety topics including:

preparing before a winter storm strikes, staying away from power lines, and the importance of emergency backup systems for medical equipment.

DTE Electric also reported that they used social media, TV and radio, to keep their customers informed of restoration progress. Multiple media updates were provided daily and approximately 30 interviews were conducted. DTE Electric used both Facebook and Twitter social media outlets to update their customers on restoration progress and to provide safety tips. DTE Electric measured social media impressions and the following percentages represent an increase or decrease since July 2013.

Facebook

- Daily people talking about DTE Electric: Increased 14%
- Daily stories about DTE Electric: Increased 12%
- Daily new likes: Increased 12%
- Daily unlikes: Decreased 64%
- Daily people engaged with DTE Electric: Decreased 15%

Twitter

- New followers: Decreased 21%
- Tweets: Increased 4%
- Tweet interactions: Increased 26%
- Link clicks: Increased 130%

Community Outreach Activities

Consumers Energy has a Public Safety Outreach Team, which is dedicated to addressing the needs of communities during emergencies through real-time coordination with local emergency management officials. Consumers Energy actively promoted the resources available in communities. More than 70 employees were mobilized at shelters throughout the state, many during the holidays to provide information and assistance to customers. Consumers Energy provided direct assistance to agencies through volunteerism and financial contributions. Employees also donated food, money and purchased items to help displaced families.

In addition to normal restoration efforts, DTE Electric also aided some local communities in need during the outage. DTE Electric partnered with the American Red Cross in Lapeer to provide water, blankets, and breakfast items for the warming center there. On 12/23/2013, DTE Electric also sent bottled water and flashlight batteries to the Marlette City Hall/Chamber of Commerce, per the city of Marlette's request.

Staff Recommendations

The extended outages created frustration and questions regarding the performance and capabilities of Consumers Energy and DTE Electric during the early hours of the restoration efforts. Having a system that allows customers to report outages in real time is essential and MPSC rules do not permit a call blockage factor of greater than 5% or an average customer call

answer time of less than 90 seconds. While the average speed of answer was 35 seconds for DTE Electric, at the height of outage calls, some Consumers Energy customers did experience unreasonable wait times to communicate outages due to a 60% call blockage factor. Consumers Energy must identify issues with their telecommunication system and interface with their telecom carrier to avoid a repeat incident of blocked customer calls.

The MPSC would like to be kept apprised of Consumers Energy's improvements to their telecom capacity to handle increased call volumes such as those experienced on December 22nd. However, Staff finds that overall, Consumers Energy and DTE Electric met their obligations to customers based on customer service best practices generally accepted by the utility industry, outlined below.

Major Service Outage Responses and Restoration Practices Customer Service Obligations Best Practices

Comprehensive Crisis Communication Plan

- Includes residential customers, priority facilities and customers, senior citizens, large business customers, small and medium business customers, government/civic leaders, community leaders and organizations

Timely Communication Should Be Consistent and Include

- Outage updates, specific causes, outage size/scope, number of customers affected, accurate and timely estimates of restoration
- Proactively respond to public concerns
- Safety Tips-surviving outages, downed power lines, alternative heating sources
- Common talking points should be distributed to all utility employees who may be in contact with customers or media

Provide Two-Way Interaction with Customers

- Strive to use the best technology possible to share information
- Call Centers, IVR, interactive map, mobile applications, responding to social media
- Outbound call or contact with priority customers-hospitals, law enforcement facilities, senior citizen residential facilities

Media Relations

- Manage flow of factual information to the media
- Use social media-be proactive and responsive

Additional Responsibilities

- Work with local communities as a partner in supporting the efforts to provide emergency services for customers

Service Quality Credits

The MPSC's Service Quality and Reliability Standards for Electric Distribution Systems R460.744 - R460.746 define customer billing credits of \$25.00 that are available to customers experiencing one of the following:

- The utility fails to restore service to a customer within 120 hours after an interruption that occurred during the course of catastrophic conditions
- The utility fails to restore service to a customer within 16 hours after an interruption that occurred during normal conditions
- A customer experiences and notifies the utility of more than 7 interruptions in a 12-month period due to a same-circuit repetitive interruption.

Due to the large amounts of public comments on the topic, Staff investigated the number of credits paid out in the December ice storm as well as in past years according to the filings in U-12270. Analysis has led the Staff to determine that the current structure of this reliability credit is not working as intended in terms of providing relief to customers experiencing unreliable service. The following table shows the number of people who qualified for the credit in the December ice storm and those who attempted to redeem the credit for both Consumers Energy and DTE Electric.

Table: Number of Catastrophic Credit Requests vs. Customers Qualified

Utility	Credit Requests	Customer Qualified
DTE Electric	2,962	8,452
Consumer Energy	~12,500	21,858

Looking back on past years, it appears that the number of credit requests is very large when compared to total payouts for all three credits combined in the past five years for both utilities.

Year	DTE Electric	Consumers Energy
2008	2,065	147
2009	584	482
2010	1,653	821
2011	15,543	1,688
2012	2,905	323

Although the time frame of this report did not allow for investigation on utilization rate, Staff believes that much like the December storm many of these credits are left un-redeemed by qualified customers. Staff believes one of the reasons for this is the proactive approach a customer must take to understand the storms extent and classification as well as navigate the utilities websites to find the applications. Staff believes that this credit process should be revisited in 2014 in order to ensure that customers are provided not only financial relief from these situations but also mitigation from ongoing reliability issues. Staff has the following recommendations to the Commission regarding the reliability credit program:

- 1) Moving to an automatic payment from utilities for reliability credits.
 - a) Given the utilities ability to provide exact numbers of qualified candidates in the audit process, this seems to be a feasible option.
- 2) Requiring the utilities to put the \$25 credit application in with each customer's bill following a storm. That way the customers have it if they need it, if not, they have one for next time.
- 3) Increasing the credit amount to provide incentive for reliability work from the Company and the incentive for customer requests.
- 4) Defining performance standards and underperformance penalties as is done for electric provider, Xcel Energy in Minnesota. According to Xcel's rate book section 1.9 General Rules and Regulations. This type of regulation would provide for automated payments in the form of refunds to customer and earmarked funding for distribution system maintenance.
 - By May 1 of each year, the Company is required to file a report with the Minnesota Public Utilities Commission detailing the Company's actual performance, as compared with the thresholds established for each metric.
 - The following metrics tracked by the Minnesota Public Service Commission are subject to \$1,000,000 penalties for underperformance:
 - Customer Complaints
 - Telephone Response Time
 - SAIDI
 - SAIFI
 - Natural Gas Emergency Response
 - Customer Outage Refunds
 - Accurate Invoices
 - Invoice Adjustment Timeliness
 - Of these penalties, 50% of the fine is applied to customers July billing statement, while the other 50% is added to the following year's budget for maintenance of the distribution system. These fines are completely borne by stockholder and are not recoverable in future rate cases.
 - Xcel pays out the following "individual customer credits" based on reliability witnessed at a customer's residence
 - Single Year Outages
 - \$50 annual credit to individuals experiencing at least 6 interruptions
 - \$50 credit to individual customers per interruption lasting 24 hours or more
 - \$200 credit to municipal pumping customers for any outage unrelated to major event days that exceed 1 minute in duration

- Consecutive Year Outages- credits below shall be in addition to Single Year Outage credits
 - \$75 to a customer after the second year if the customer experiences 5 or more interruptions in 2 consecutive years
 - \$100 to a customer after the third year if the customer after the third year if the customer experiences 4 or more interruption for 3 consecutive years
 - \$125 to a customer after the fourth year, and after each consecutive year thereafter, if the customer experiences 4 or more interruptions for 4 or more years¹⁹

¹⁹ Xcel Energy Minnesota, 1997.

Topic 6: Whether the utilities sufficiently addressed all public safety concerns associated with downed power lines in a timely manner;

Electric Operations Staff continues to receive complaints in regard to utility response time to downed wires. Townships, Police and Fire departments are generally not pleased with the response time of DTE Electric and Consumers Energy during both storm and non-storm conditions. The Staff realizes that rule 23 listed below is for all conditions in a twelve month period for wire down relief but believes it can be used to measure performance during the restoration period.

MPSC Rule 23 (R460.723) of the Service Quality and Reliability Standards provides a measure of unacceptable performance for the relief of non-utility employees (i.e. police/fire personnel) guarding a downed wire. It is an unacceptable level of performance for an electric utility to fail to respond to a request for relief of a non-utility employee guarded downed wire at a location after notification in a metropolitan area within 240 minutes and 360 minutes in a non-metropolitan area at least 90% of the time under all conditions. Utilities are required to report their performance in meeting this standard in its annual service quality and reliability standards report²⁰.

In their report for 2012, DTE Electric reported meeting the 360 minute wire relief standard 90% of the time for the non-metro area, while Consumers Energy met this metric 94.9% of the time. They also reported meeting the 240 minute wire relief standard 89% of the time for the metro area, while Consumer Energy met this metric 98% of the time. However, it should be noted that DTE Electric has a company goal of wire down relief within 120 minutes for the City of Detroit.

Detroit Edison's Wire Down Relief Response Time

Detroit Edison responded to 2,033 wire down reports in the eight day period starting on December 22nd. The daily average wire down relief time was greater than the 360 minute mark for the first five days. During the first day of the storm on Sunday, DTE Electric had over 1,200 wires reported down and had an average relief time of 1,198 minutes, more than three times greater than the 360 minute standard. On average, DTE relieved wire guards in 976 minutes, more than 600 minutes longer than what is acceptable by MPSC standards. The data does not measure the individual responses to ascertain how many of the individual responses met the mark. The numbers are high enough, however, to question whether Detroit Edison performed to an acceptable level for this time period. They stated in their report that they met the 240 minute metro area standard 90% of the time during the event. They also reported that they could not meet the 360 minute non-metro standard since they were only able to meet the standard 81% of the time.

²⁰ The reports can be found in e-docket U-12270. The numbers for 2013 are not due as of this report.

Detroit Edison did slightly better in the November Wind storm, but again was not likely to have performed to an acceptable level for the time period. They only had 424 jobs to attend to in this storm but they did not meet the 360 minute standard for the first two days of that event. The average relief time for the 7 day event that started on November 17th was 375 minutes. DTE Electric indicated in their report that approximately 500 public safety employees were deployed to guard wire-down locations in December. In regards to their 81% non-metro performance, they will be investigating the option of utilizing additional first responders to improve their performance. They replied to a Staff audit request that they have 2,155 employees trained in wire down response. DTE Electric would have had better wire down performance if they deployed more wire down guards. Staff recommends that they implement a deployment plan that more closely predicts and recognizes the volume of wire downs, their locations, and travel conditions.

Consumers Energy's Wire Down Response Time

Consumers Energy indicated in their report that they have 475 field employees utilized for wire down activities. This, along with 71 office resources was the highest number of wire down personnel that they had ever deployed for one storm. However, the 475 employee number was only attained after Consumers Energy certified a total of 193 employees during the storm restoration process. The 475 employees who responded to wire downs had to address 10,569 confirmed²¹ downed wires. In comparison, they had approximately 315 personnel responding to wire downs in the November storm.

In response to a Staff audit request, Consumers Energy reports an average wire down relief factor (police and fire) of 556 minutes for the December ice storm which is more than twice the average response time of the November storm, 265 minutes. In terms of the Service Quality Standard, Consumers Energy also had unacceptable performance for the December storm. They reported an average response time to a wire down of 1,891 minutes for the December storm and 714 minutes for the November storm. Although there is no standard for this average, Staff is of the opinion that the response was not in a timely manner and recommends that the Company deploy a number of wire down guards that more closely meets the volume of wire downs, their locations, and travel conditions.

Consumers Energy was overwhelmed with the sheer volume of reported wire downs. They have recognized that and the need to enhance the effectiveness of its wire down program and increase the resources (people) certified to perform wire down duty during a high volume event. Staff has concern that close to half (193 of 475) of the persons utilized for wire down duty were certified after the event had occurred. Staff believes Consumers Energy needs an annual or bi-annual certification program to ensure that more trained workers are available before an outage event begins.

²¹ 19,562 wire down reports to call centers.

The Safety of the Public

Both utilities reported no injuries from electrical contact in the December storm. That should not relieve a utility of their obligation to address the safety of the public. That said, Staff believes that the utilities adequately addressed the public safety concerns of the Commission. Both utilities have room to improve as far as responding to and securing downed wires in a more timely manner. Staff believes that restoration time improvements would be realized if there was greater deployment of personnel to attend to the wire downs earlier in the event.

Public Comments

Several upset and concerned customers of both DTE Electric and Consumers Energy provided comments to the docket to this case. In general, many customers were upset that they were without power during the week of the busy holiday season. Several customers questioned the maintenance practices of their utility and their storm preparation procedures as the storm was forecasted to hit Michigan nearly a week before the event. Moreover, numerous customers felt that the \$25 credit for an extended outage was not enough to penalize their utility and felt that they should receive more money for the outage.

Consumers Energy customers specifically commented that they were unable to report their outages by phone for a period of 24 hours and received incorrect/inaccurate restoration estimates. One customer called Consumers Energy repeatedly in order to report an outage, only to have Consumers Energy tell him that his power had been restored. After days of fighting, he went to his local news station with his story and had them help him get his power restored.

DTE Electric customers reported that they repeatedly received incorrect restoration information via DTE Electric's automated phone system. Many customers received automated calls stating that their power was restored when it was still out. Subsequent calls to the DTE Electric center resulted in further confusion and frustrations as their customer service representatives reiterated the incorrect information to the customers and new outage tickets had to be created, resulting in further delays in the restoration process. Other DTE Electric customers experienced poor power quality after their power was restored while others lost power repeatedly throughout the 8 day restoration process.

The Utility Workers Union of America, AFL-CIO submitted their own set of comments to the docket, questioning Consumers Energy's practice of hiring contract workers versus hiring full time, qualified line staff. They expressed concern over the qualifications of the contractors and argue that "the work and safety standards employed by contract labor are not equal to those utilized by (the Consumers Energy) in-house workforce."²² In the same vein, a customer submitted a comment to the docket, questioning why their acquaintances within the International Brotherhood of Electrical Workers were not called in to assist in the restoration effort when their chapter was available throughout the eight day restoration process.

However, each utility is responsible for its own business model, which is a management function that is not within the scope of MPSC regulation. It is the Commission's responsibility to see that each utility operating in Michigan follows the applicable state and federal laws, administrative rules, guidelines and decisions. Therefore, Commission Staff cannot mandate that a utility hire a certain number or percentage of full time line workers in their staffing model. However, Staff suggests each utility continue with aggressive storm pre-storm planning and when justified send company line workers and wire down responders from outside areas not affected by storm to affected areas to minimize mutual aid workers needed and to decrease restoration times.

²² UWUA Comments, Page 14.

Concluding Remarks

Staff would like to thank all the Consumers Energy and Detroit Edison employees and contract workers who worked long hours during the restoration to restore power. The employees were inconvenienced as most of them would already have had plans for the holidays and no one likes to be away from family during the Christmas holidays or miss family traditions. Staff would like to send out a special thanks to all the crews who worked outside during the restoration effort as conditions were difficult to work in due to the cold, icy and windy weather.