NARUC
National Association of Regulatory Utility Commissioners

State Spotlight on Resilience:

The Michigan Public Service Commission and Data Informed Accountability

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Key Takeaways

Reliability and Resilience Can Improve in Tandem: The Michigan Public Service Commission (MPSC) is addressing resilience by improving reliability. These efforts include strengthening accountability in maintaining the electric grid and reducing vulnerabilities that could escalate during extreme events.

Data-Driven Accountability: The MPSC's Distribution System Reliability Metrics Webpage tracks key performance indicators (SAIDI, SAIFI, CAIDI), offering transparency and enabling benchmarking against national standards. This tool enhances public awareness and promotes utility responsibility by making outage trends and reliability performance easily accessible.

Financial Incentives to Drive Performance: Through the Financial Incentives and Disincentives Workgroup, the MPSC is developing performance-based mechanisms to encourage improvements in reliability. Proposed incentives and penalties focus on outage duration, storm restoration times, and worst-performing circuits to ensure utilities prioritize system reliability and resilience together.

Section 1: Overview

Resilience activities are an emerging area within regulatory utility policy. As resilience frameworks develop, many Public Utility Commissions (PUCs) are looking to initiate resilience activities and have identified enhancing grid reliability as a practical starting point. Reliability describes the grid's ability to deliver electricity steadily and without interruptions under normal or "blue sky" conditions. Reliability is measured using industry standard metrics such as outage frequency (SAIFI) and outage duration (SAIDI). Resilience is broader, reflecting the grid's ability to both withstand and *recover from* disruptions, particularly those caused by extreme events such as severe storms. A reliable grid minimizes routine disruptions; a resilient grid ensures the system can recover quickly when disruptions occur, preventing them from escalating into widespread or prolonged crises.

Reliability and resilience are interconnected. Reliability problems undermine resilience, as frequent outages reveal vulnerabilities in the grid that could compound during extreme events. Thus, resilience investments often enhance reliability, as the same system hardening or modernization efforts that improve recovery capabilities also reduce the frequency of interruptions.

Increasing extreme weather events coupled with aging grid infrastructure place PUCs under pressure to address and balance both reliability and resilience. Reliability improvements build the foundation for more resilient systems; thus, this profile will cover a practical approach of these reliability improvements paving a path for resilience improvements.

The MPSC found that Michigan investor-owned utilities continue to face significant reliability challenges. A 2024 audit[1] commissioned by the MPSC showed two of Michigan's largest IOUs, DTE Electric and Consumers Energy, in the bottom quarter for the average duration of service outages customers experienced for 2022 and 2023. In 2023, 13% of DTE's 2.3 million customers and 10% of Consumers' 1.8 million customers experienced at least four outages. 45% of DTE's customers and 25% of Consumers' customers experienced an eight-hour or longer outage.[2]

Section 2: MPSC's Use of Metrics and Data to Address Reliability Concerns

The MPSC has taken practical steps to enhance reliability and support resilience, such as initiating a third-party audit into the electric distribution systems of the two largest investor-owned electric utilities in the state and requiring all regulated electric utilities to file electric distribution system investment plans. These efforts include launching a **Distribution System Reliability Metrics Webpage**[3] in May 2023, which tracks monthly reliability data from regulated utilities using industry-standard metrics. The page improves transparency by highlighting trends and historical data and provides resources for outage preparedness and safety. Additionally, the Commission initiated the **Financial Incentives and Disincentives Workgroup**[4] under the MI Power Grid initiative. This workgroup examines ways to optimize grid reliability and resilience through the union of reliability metrics and an incentive/disincentive mechanism.

Section 3: Distribution System Reliability Metrics Webpage

The website features key performance indicators:

- **SAIDI:** Measures the total duration of outages for the average customer during a defined period.
- **SAIFI:** Measures how often the average customer experiences an outage.
- **CAIDI:** Measures the average time required to restore service to customers after an outage.

This platform enables benchmarking MPSC's regulated utilities against national standards, helping identify performance gaps for improvement and culpability. The page compiles detailed outage data from the state's

largest regulated utilities, providing insights into storm impacts. MPSC tracks utility performance at a granular level, such as zip code or census tract, and the data is available to the public upon request.

Section 4: Financial Incentives and Disincentives Workgroup

The MPSC established the Financial Incentives and Disincentives Workgroup as part of the MI Power Grid Initiative[6] to address electric reliability challenges through the development of comprehensive metrics. These metrics include currently tracked indices like SAIDI, SAIFI, CAIDI, as well as additional metrics such as CEMIn (customers experiencing multiple interruptions of n or more), and outage performance during extreme weather events. Informed by MPSC's updated Service Quality and Reliability Standards (SQRS)[7], the Workgroup brought together stakeholders to choose specific metrics and to explore potential incentive and disincentive mechanisms [paired with the metrics] to apply to regulated utilities.

Table 2: May 2024 Update – Straw Proposal for Reliability Performance Metrics

Metric	Baseline		Target Performance		Potential Incentive/Disincentive Mechanism
	DTE	Consumers	Penalty	Incentive	
SAIDI (Excluding MEDs)	141 (average using minimum 2 of 3 years from 2021-2023)	179 (average using minimum 2 of 3 years from 2021-2023)	5% reduction from baseline over 5 years (linear glidepath)	1 st. dev. deadband + 10% reduction from baseline over 5 years (linear glidepath)	Symmetric incentive/disincentive 15% of total pool Incentive/penalty scales linearly over 1 st. dev. range
SAIDI (All Weather) (5-yr average)	DTE (2022): 563 DTE (2023): 774	CE (2022): 597 CE (2023): 698	5% reduction from baseline over 5 years (linear glidepath)	1 st. dev. deadband + 10% reduction from baseline over 5 years (linear glidepath)	Symmetric incentive/disincentive 15% of total pool Incentive/penalty scales linearly over 1 st. dev. range
Storm Restoration (48-hour catastrophic storm response)	DTE (2023): 75%	CE (2023): 75%	Below Service Quality Rule (<=90%)	Exceed Service Quality Rule (>90%)	Scale penalty from 80%-90% and incentive from 90%-100% 25% of total incentive/disincentive pool
Storm Restoration (72-hour catastrophic storm response)	Not currently available	CE (2023): 88%	Below <=95%	Exceed >95%	Scale penalty from 85%-95% and incentive from 95%-100% 20% of total pool
Storm Restoration (24-hour gray sky response)	DTE (2023): 82%	CE (2023): 95%	Below Service Quality Rule (<=90%)	Exceed Service Quality Rule (>90%)	Scale penalty from 80% - 90% and incentive from 90%-100% 10% of total pool
CEMI-4	DTE (2023): 301,244 customers; approx. 13% 7%-13% over past 5 years	CE(2023): 200,458 customers; 11% 9%-13% over past 5 years	Below Service Quality rule (CEMI-4 => 6% of customers)	Exceeds Service Quality rule (CEMI-4 < 6% of customers)	Scale incentive from 0% - 6% and penalty from 6%-12% Account for 10% of incentive/disincentive pool
Worst performing circuits Circuits ranked by system-level SAIDI (exc MEDs)	Reports use multiple metrics	Reports by SAIDI (no MEDs) on a circuit basis	Circuits ranked by SAIDI (exc MEDs) on a system basis. Circuit repeats in top 10 during any future 5-year period.	No circuit repeats in top 10 during any future 5-year period.	Symmetric 5% of total pool

The Workgroup's initial straw proposal, developed under docket U-21400[8] was a starting point for the stakeholder discussions. It was informed by prior Commission decisions, annual filings, and recent distribution system plan submissions. It emphasized the importance of tracking reliability performance separately for both "all weather" metrics and metrics excluding major event days (MEDs), so that utility performance is evaluated comprehensively. The results of the workgroup updated the initial straw proposal and are outlined in **Table 2** above.

This draft proposal provides candidate metrics and mechanisms to encourage reliability improvements, focusing on customers' experiences under both normal and extreme weather conditions. The proposal also included a recommended $10 million limit for penalties and incentives. The Commission remains concerned about regulated utilities' performance on key reliability metrics, particularly outage duration results in the fourth quartile. This underperformance marks the need for targeted improvements. The straw proposal identifies potential performance targets and mechanisms to incentivize utilities, while addressing disparities in reliability performance across the state. The MPSC is still incorporating additional comments from stakeholders and additional external research such as peer mechanisms in other states, but finalized recommendations from the Workgroup are anticipated in 2025, reflecting the MPSC's commitment to improving reliability and resilience for Michigan ratepayers.

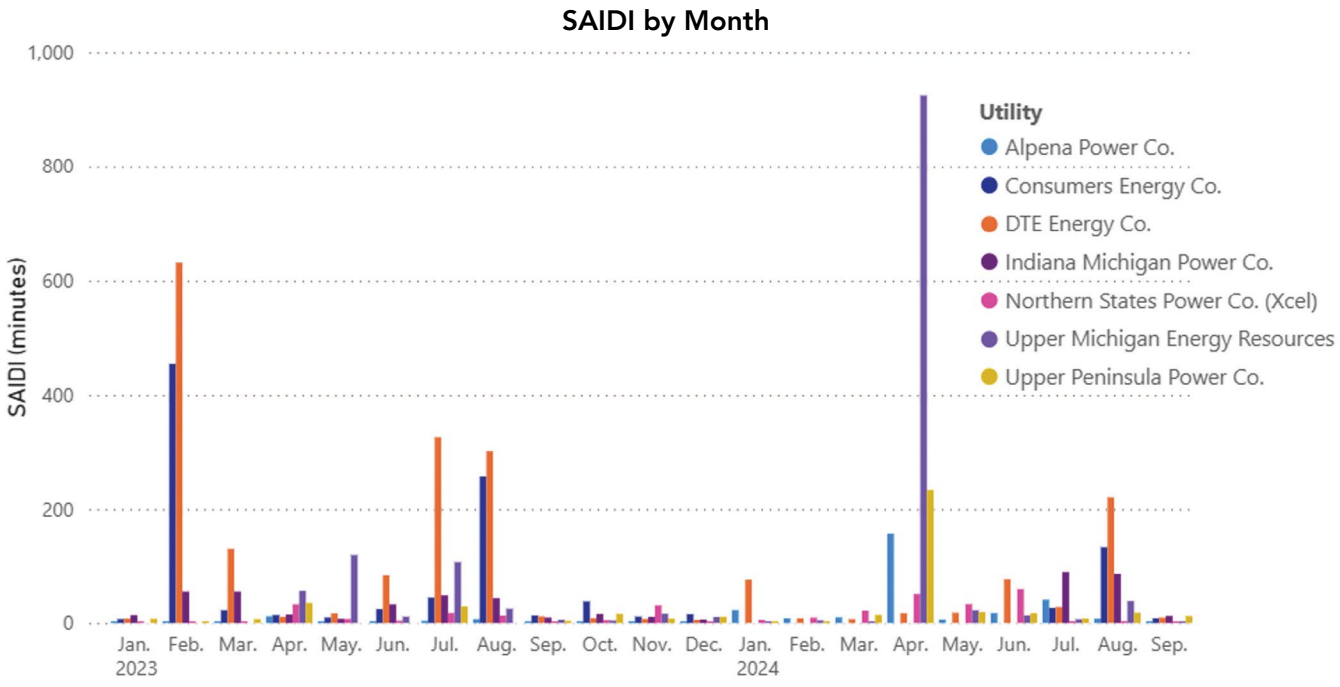
Section 5: Interview with the Michigan Public Service Commission

NOTE: The following text is a narrative interview, and all responses reflect the work, views and opinions of the individuals interviewed.

1. What we those goals informed by community stakeholders or the regulated utilities themselves?

Due to the increasing severity of storms and the unsatisfactory reliability performance of Michigan's regulated utilities, the Commission directed the Commission Staff to develop a website dedicated to distribution reliability, customer outages, and storm response in its March 3, 2022, order in Case No. U-21122. A publicly available set of data was intended to make it easier for the public to assess utility reliability performance.

Commission Staff worked collaboratively with utilities to develop a monthly reliability data reporting template for utilities to provide quarterly reports composed of monthly data. The template contains data including outages per month and per storm, restoration time, monthly tree trimming data, SAIDI, SAIFI, and CAIDI. The chart below shows SAIDI by month for the seven electric utilities regulated by the Commission.



2. What is the process for receiving the data, processing it, and making it accessible to a broad audience?

MPSC uses an electronic data deliverables system where utilities upload filled-in reliability reporting templates, which are validated before the data is stored and published. An interactive dashboard helps to visualize the data and MPSC makes that report available to the public via its website.

3. What impact has the webpage had on utility accountability or public awareness of grid reliability issues since its launch?

There have been a number of requests for the monthly data files provided by utilities which indicate public awareness and interest. The utility distribution reliability dashboard webpage has been viewed over 3,000 times in the past 6 months.

4. Are there plans to expand the metrics or add more granular data? Where do you see this program going in the future?

The Commission is in the process of developing GIS maps showing SAIDI, SAIFI, and CAIDI values by zip code for most of the lower peninsula of Michigan and when available, by census tract. Viewing reliability metrics on a map presents a clear picture of utility customer experience. While the reliability metric data is helpful for those who desire to work with the data and perform their own analysis, presenting reliability data on a map will make this information useful to a wider audience.

Utilities began providing this data in January 2023. As the dataset grows over time, opportunities to analyze changes in reliability over time will become available.

5. How could a reliability data program like this be useful for improving utility reliability?

Requiring a utility to calculate and track reliability performance in different geographic areas within its service territory will make the company more aware of locations with poor reliability. The utility can then adjust its capital investments to improve reliability in those areas.

6. What was the goal of the Straw Proposal outlined in Order U-21400-0002? What challenges arose from meeting this goal?

The April 24, 2023, order launched the workgroup and indicated an initial focus on developing metrics regarding reliability (SAIDI, SAIFI, CEMI, CAIDI) and resilience (downed wire response, and frequency/duration of outages during extreme weather). The Commission likely articulated this goal to ensure that attention was directed towards these specific areas of distribution system reliability. Several workgroup participants indicated an interest in a broader PBR (performance-based regulation) effort – both in terms of issues addressed and costs/revenues subject to PBR, which, while laudable, was not the charge given the workgroup.

7. What has been the response from utilities and other stakeholders to the straw proposal?

There were multiple iterations of the straw proposal incorporating feedback from interested parties through engagement sessions and comments filed to the docket. Utilities indicated an interest in gradually adopting a performance-based regulatory [PBR] scheme related to reliability and were concerned about their ability to meet targets that were laid out. Other participants in the process sought to ensure that utilities would not be rewarded for performance on any individual metric if they hadn't met or exceeded minimum standards in the Commission's Service Quality and Reliability Standards for Electric Distribution Service.

8. Can you explain how the Potential Incentive/Disincentive mechanism pairs up with each metric?

Based on the straw proposal filed on May 3, 2024:

- SAIDI excluding MEDS (major event days): Averaging the lowest SAIDI excluding MEDs values in the last 3 years for the baseline, the utility would incur a penalty if this metric increased by 5%. An incentive

threshold utilizes a 10% improvement rate with a deadband to incorporate variability. This metric measures the average duration of outages following major storms.

- SAIDI all weather: A 5% or smaller cumulative improvement in SAIDI would assess a penalty using a 5-year average for a threshold. The incentive utilizes a 10% or greater improvement in SAIDI from recent performance with a deadband to incorporate variability. This metric measures the average duration of outages during all weather conditions.
- 48-hour catastrophic storm restoration: Per the MPSC service quality rules, utilities are required to restore 90% of all customers within 48 hours during a catastrophic storm. A penalty would be assessed if 90% or less customers are not restored within 48 hours, but an incentive would be assessed if a utility can restore more than 90% of customers within 48 hours during a catastrophic storm. This metric measures the percentage of customers who have not had their power restored 48 hours following a major storm.
- 72-hour catastrophic storm restoration: A utility would be assessed a penalty if 95% or less of customers are not restored by 72 hours during a catastrophic storm but can earn an incentive if a utility restores more than 95% of customers within 72 hours during a catastrophic storm. This metric measures the percentage of customers who have not had their power restored 72 hours following a major storm.
- 24-hour storm restoration- gray sky: Per the MPSC service quality rules, utilities are required to restore 90% of customers within 24 hours. A utility would be assessed a penalty if the rule is not met but can earn an incentive if a utility exceeds the rule. This metric measures the percentage of customers who have not had their power restored 24 hours after a smaller localized storm.
- CEMI-4: A utility would be assessed a penalty if more than 6% of all customers experience 4 or more outages. An incentive would be determined if less than 6% of all customers experience 4 or more outages.
- Worst performing circuit: A utility would be assessed a penalty if a circuit repeats in the top 10 list of worst performing circuits within 5 years.

These metrics are ripe for Commission decision and subject to change based on the Commission directives. In addition, the financial incentives and disincentives framework will be further vetted and implemented in future contested case proceedings.

9. What is the difference between the incentives/disincentives and Penalties? What is the logic between sorting the metrics between those two Commission responses?

"Disincentives" and "penalties" in this context are two different words for the same concept. In establishing incentives and disincentives (or penalties) for various performance targets, the Commission is trying to align the utility's financial goals with the Commission's goals to reduce outages and improve distribution system performance. The metrics are intended to incentivize faster improvements to the distribution system and service for customers.

10. How do you envision the integration of these recommendations into rate cases impacting utility behavior and resilience outcomes over the long term?

It is expected that the Commission will provide additional guidance in a future order. All participants in the process indicated that adopting any performance metrics and incentives/disincentives applicable to a specific utility should be done through a contested case process, and that performance metrics and incentives/disincentives should be reviewed periodically to monitor progress towards goals and reset metrics and incentives/disincentives if necessary.

Section 6: Conclusion

The MPSC's approach to enhancing electric reliability reflects a proactive, forward-thinking commitment to building resilience. Through data collection via the Distribution System Reliability Metrics Webpage and strategic application of insights through the Financial Incentives and Disincentives Workgroup, the MPSC is effectively addressing persistent challenges while promoting increasing transparency and responsibility. As the MPSC refines its frameworks and metrics, it serves as a model for addressing reliability and resilience as complementary priorities.

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Endnotes

1 Utility Distribution Audit Status Report for the MPSC, Liberty Consulting Group, December 20, 2023

2 Audit takes issue with DTE, Consumers, for frequency and duration of power outages, Arpan Lopo, Detroit Free Press, September 2024

3 Distribution System Reliability Metrics, MPSC.

4 Financial Incentives/Disincentives, MPSC.

5 U-21122, MPSC

6 MI Power Grid, MPSC

7 Service Quality and Reliability Standards for Electric Distribution Systems, the Michigan Department of Labor and Economic Growth and the MPSC.

8 Case No. U-21400, MPSC, April 2023