

SESSION 2

PANEL DISCUSSION: CURRENT STATUS AND EXISTING PLANS OF MICHIGAN UTILITIES



**Ryan
Stowe**

DTE



**Rick
Blumenstock**

Consumers
Energy



**Dave
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MPSC
Technical Conference

Session Two
*Utility Report: Current
Status and Existing Plans*

Speaker Topic:
*Current Status and
Existing Plans of
Michigan Utilities*

October 22, 2021
10:10 – 11:25 a.m.



MPSC Technical Conference

Ryan Stowe

October 22, 2021

Customers have seen reliability improvements, driven by strategic investments in the last five years, but this summer's storms has reversed this trend



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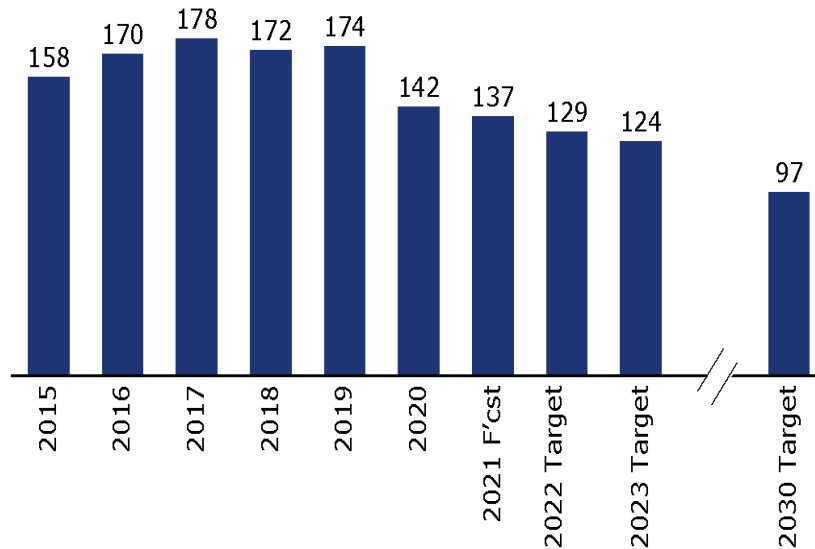
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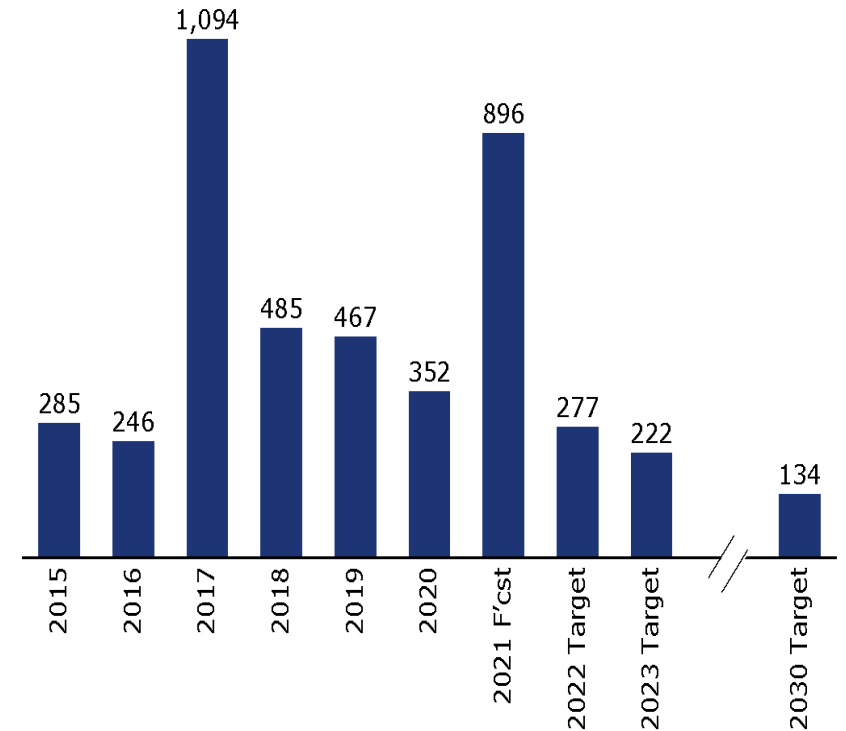
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SAIDI ex MED¹ performance



All-weather SAIDI² performance



1. SAIDI ex MED: An industry-accepted method for normalizing weather, and is the average minutes of interruption for all customers served, excluding days exceeding the "Major Event Day" (MED) threshold
 2. All-weather SAIDI: the average minutes of interruption for all customers served

This summer DTE’s service territory saw a significant increase in severe weather, including high speed winds



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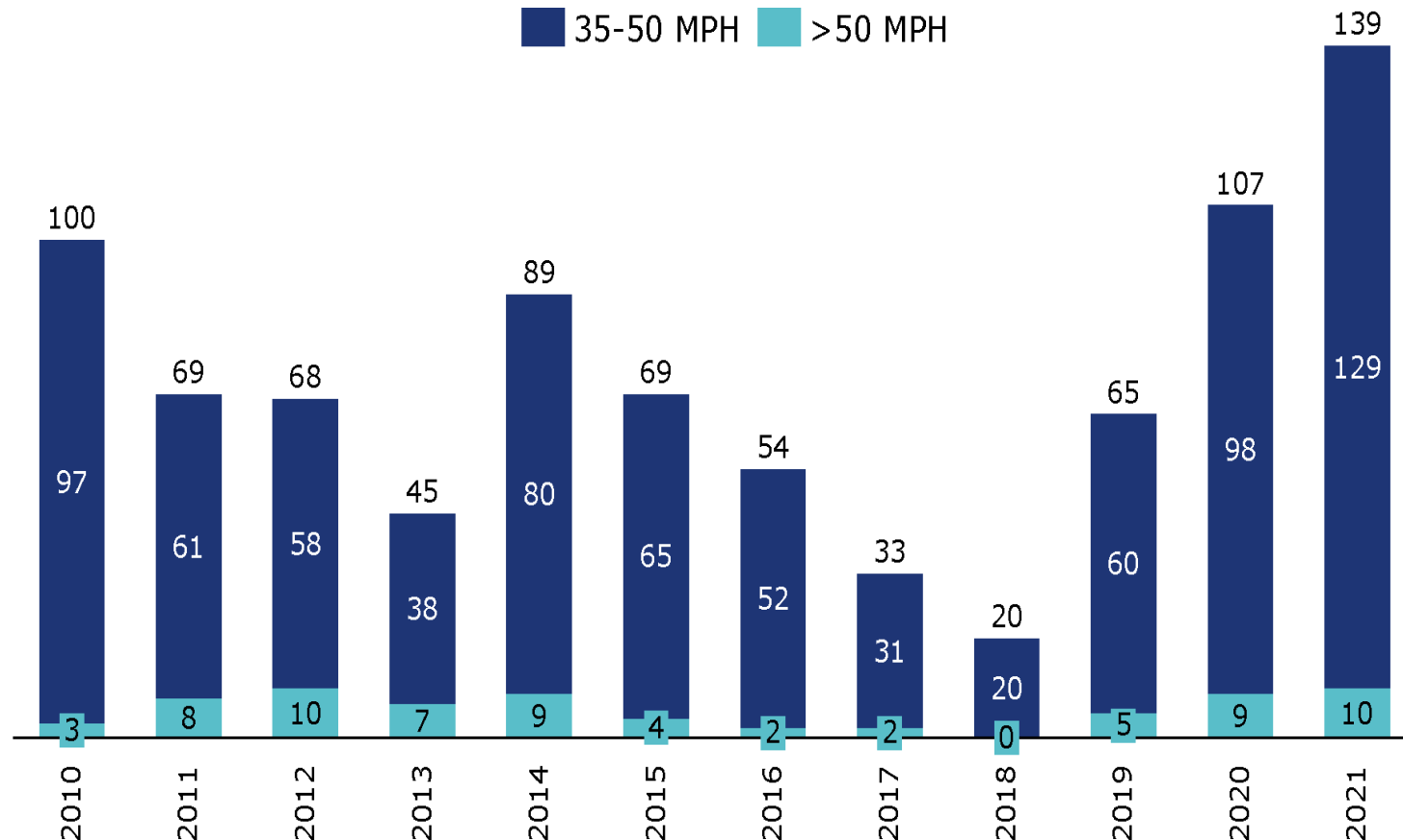
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FREQUENCY OF STATION HOURS WITH SPEEDS >35 MPH
FROM JUNE TO MID-SEPTEMBER



Source: Iowa Environmental Mesonet (IEM) data reporting across 12 representative weather stations in SE Michigan. “Station hours” represent an individual station reporting wind gusts greater than 35 MPH in a given hour during June 1 – September 15

From June through September 2021, DTE has experienced twelve back-to-back storms, five of which were catastrophic, impacting 1.7M customers



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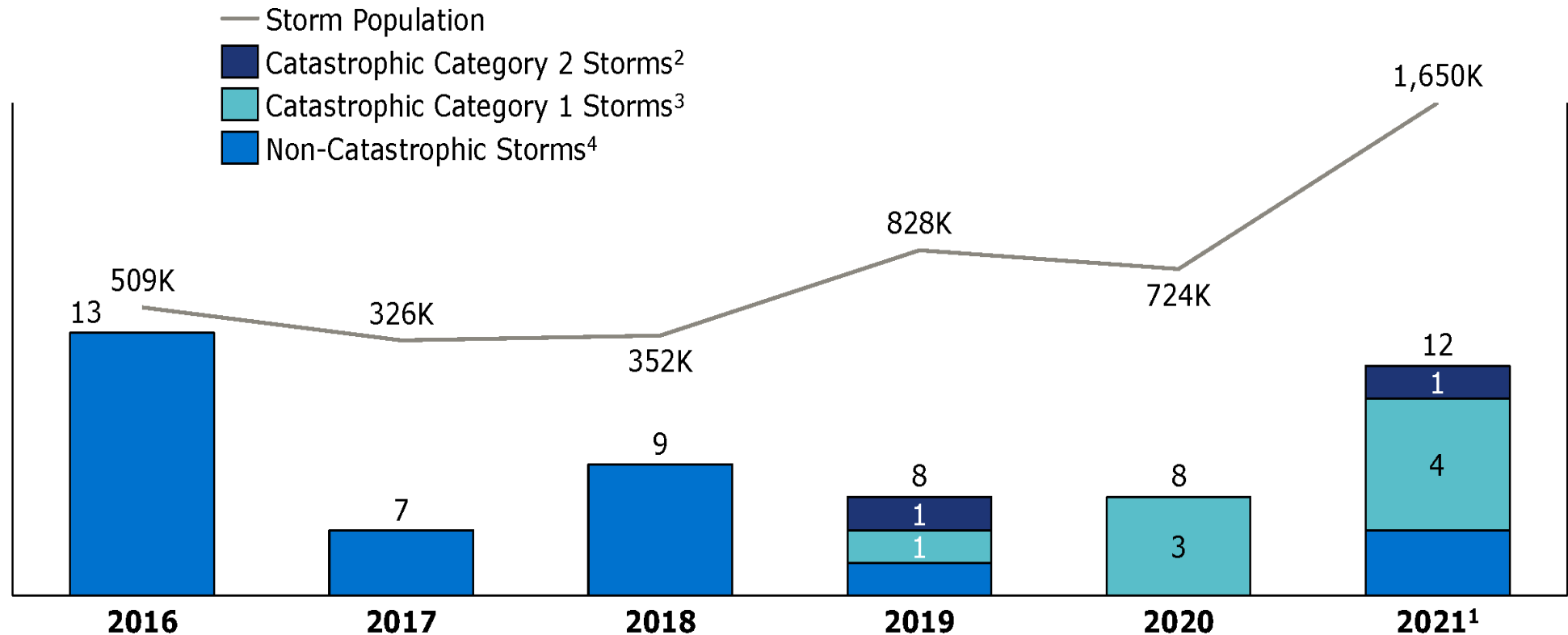
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June Through September¹ Storms



1. Storms as of September 28, 2021

2. Catastrophic Category 2 Storms account for storm population greater than 220K

3. Catastrophic Category 1 Storms account for storm population ranging from 110K to 220K

4. Non-Catastrophic storms account for storm population less than 110K

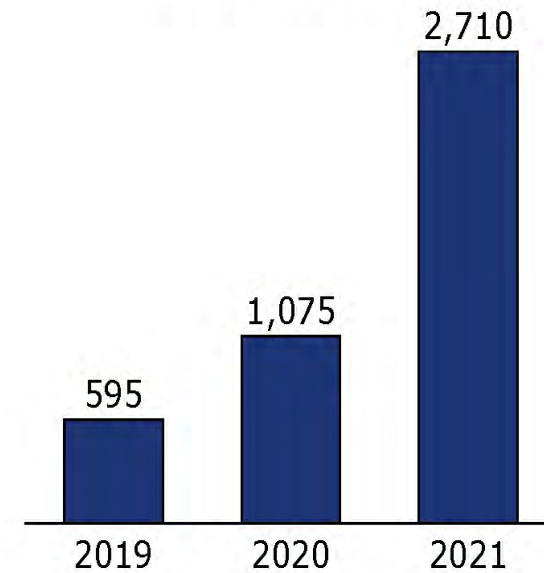


When storms occur so frequently, the system is at greater risk due to "restore before repair" industry standard



Restore before repair example

Average Number of Follow Up Jobs in the System (July/August)



Between June – mid-September 2021 we had an average of **4.6 days** between storms to perform follow up work



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The company stood up a Storm Crisis Incident Command Structure (ICS) to address current infrastructure concerns and oversee immediate action to improve customer experience

Storm Crisis Incident Command



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**Enhance
Communication
& Relationship**



Community and government outreach

- Scheduling a series of meetings with 80+ hot spot communities to hear their concerns; outline the work we have planned; go-n-see work in the community
- Include key policy makers and members of the legislature in these updates



**Improve
Reliability**



Prioritized reliability improvement work to address hardest hit communities¹

- Increase tree trim spend by \$17M in 2021 and \$70M over 18 months
- Increase investment in spot trimming and pole top maintenance by \$20M to work an additional 60+ circuits
- Adding 300 tree trimmers and 198 contract overhead crews

Continuously improve storm processes (e.g. wire down, damage assessment) to drive safety and faster restoration



**Drive Down
Backlogs**



Created plans to eliminate work backlogs caused by consecutive storms

- Follow-up work by mid-October
- New customer connections by late September



**Improve Service
Recovery**



Identified workstreams focusing on

- Error-free customer communication
- Estimate strategy aligned with industry best-practices
- Community outreach to provide relief during outage events

DTE

1. Identified ~150 poor performing circuits in 35 hardest hit communities

DTE's Distribution Grid Plan conducted scenario planning to identify grid needs and the necessary investments in our four strategic pillars to improve reliability and prepare the grid for long-term changes



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Scenarios



DG/DS Scenario

High adoption of distributed generation (DG) solar PV & distributed storage (DS) behind the meter (BTM)



Increasing CAT Level Storms Scenario

Increasing catastrophic (CAT) storm frequency and intensity threat aging grid reliability



Electrification Scenario

High electrification of transportation, buildings and industrial processes



Strategic Pillars

Tree Trimming



Infrastructure Redesign & Modernization



Infrastructure Resilience & Hardening



Technology & Automation



To achieve these reliability improvements, we plan to accelerate our strategic capital investments to deliver these benefits to our customers



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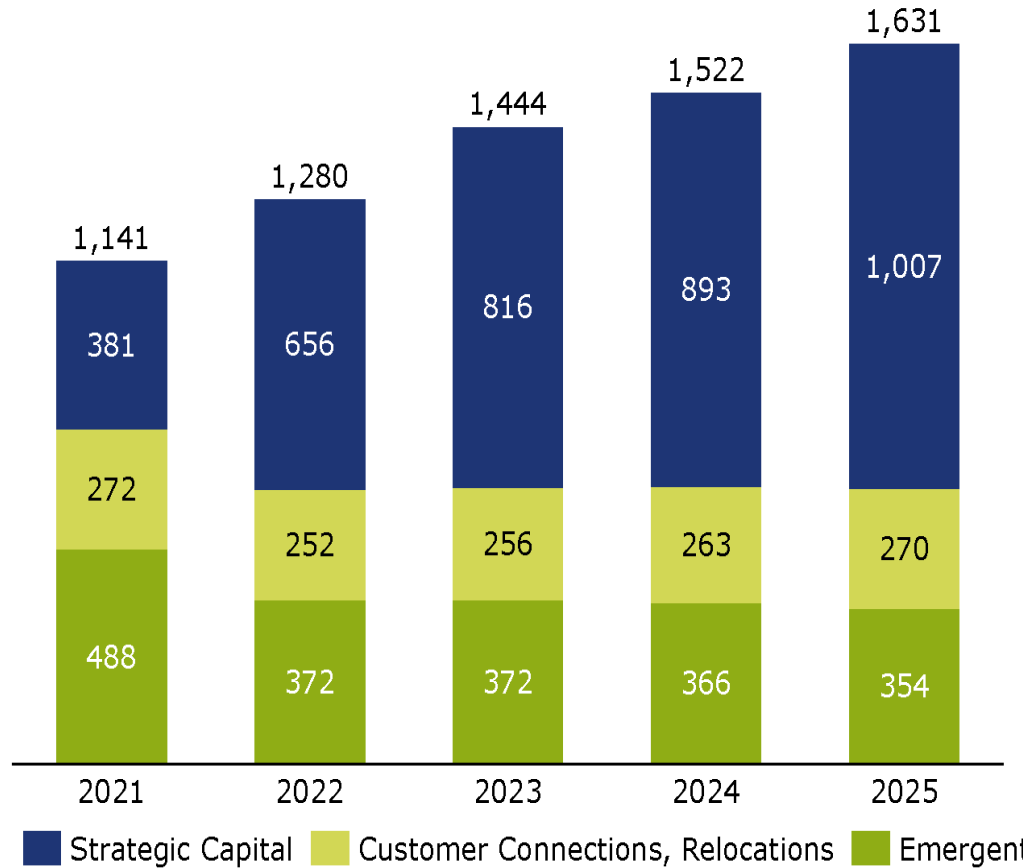
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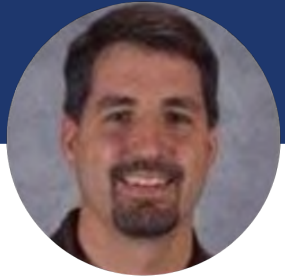
Total DO Capital (\$M)



The capital portfolio consists of 3 major categories:

- Strategic capital, which will deliver reliability and cost savings, increased capacity and other modernization benefits, is categorized into 3 pillars:
 - Infrastructure Resilience and Hardening
 - Infrastructure Redesign and Modernization
 - Technology and Automation
- Customer connections and relocations, which are driven by customer requests
- Emergent spend, which includes storm response, trouble and, replacement of failed equipment





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Consumers Energy Utility Panel Discussion

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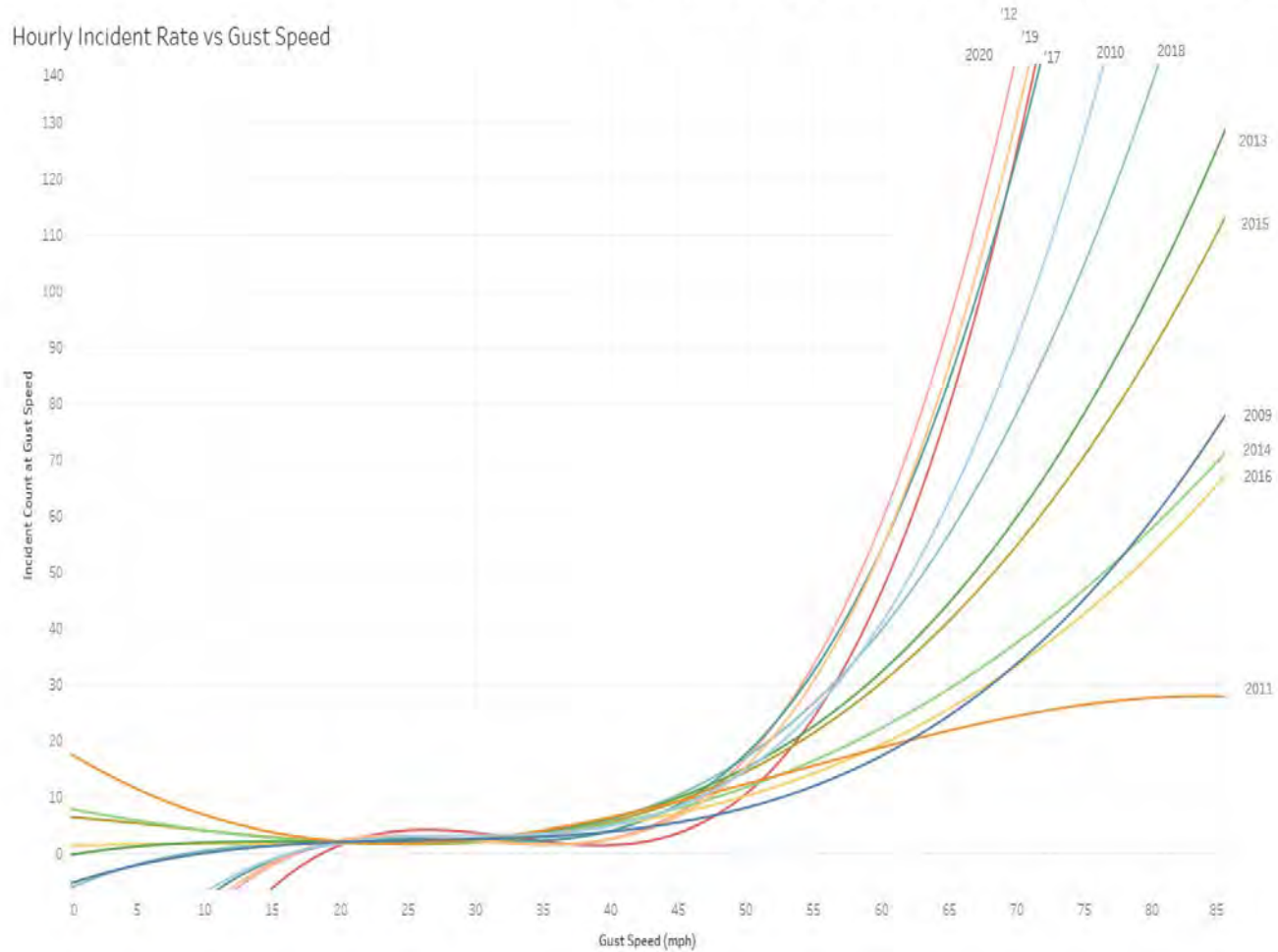
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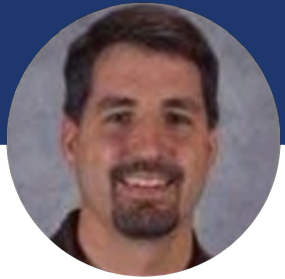
Wind vs. Outage

Evidence of Deterioration



- Incidents tend to increase at 45 mph
- Number of incidents have been increasing since 2017
- Trend indicative of system deterioration – at any given level of adverse weather, the system is less resilient than it was in the past

*Includes tree caused incidents



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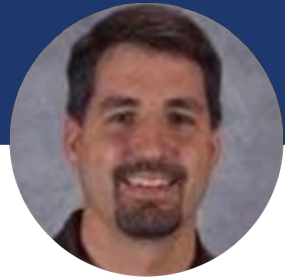
Reliability Program

- Purpose: Ensure the long-term safe and reliable operation of the electric distribution system
- Reliability investments tied to System Average Interruption Duration Index (SAIDI) improvement glidepath: 170 minutes by 2025

5-Year Capital Plan – Reliability

	Actual			Plan				
<i>All values in \$ Millions</i>	2018	2019	2020	2021	2022	2023	2024	2025
LVD Lines Reliability	36.9	35.7	30.7	40.7	45.9	80.8	86.9	95.1
HVD Lines Reliability	42.7	47.8	22.7	63.9	78.4	78.7	78.8	78.6
LVD Substations Reliability	10.2	13.6	13.1	13.3	15.5	15.5	15.5	15.5
HVD Substations Reliability	2.8	4.7	5.9	5.2	5.4	5.4	5.4	5.4
System Protection	3	3.1	3	2.3	2.4	3.3	3.4	3.4
LVD Repetitive Outages	4.4	6.6	4.8	7.7	10.2	10.6	11	11.3
Metro Reliability	1	3.3	3.3	5.6	5.6	7	6	6
HVD Lines & Substations Rehabilitation	-	-	14	39	40.7	50.7	56	56
LVD Substations Rehabilitation	-	-	8.9	14.5	13.5	13.5	13.5	10
LVD Lines Rehabilitation	32	22.4	21.4	36.2	53.6	54.6	55.6	56.2
Metro Rehabilitation	-	-	4.4	4.4	4.6	6	6	6
Grid Storage	-	-	3.8	6	10	10	10	10
Grid Modernization	22.6	59.2	63.3	71.2	83.4	80.6	65.7	64.2
TOTAL PLANNED	155.5	196.3	199	312.2	369.4	415.7	412.6	420.2

LVD = low voltage distribution HVD = high voltage distribution



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Reliability Program

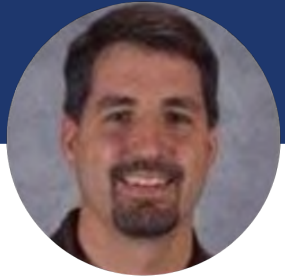
- After LVD zones receive investment, the number of outages in those zones decreases dramatically in the following years
- Similarly, rebuilt or rehabilitated HVD lines can be expected to experience few, if any, outages in subsequent years

PERFORMANCE IMPROVEMENTS IN LVD ZONES FOLLOWING TARGETED INVESTMENT

Year of Investment	Avg. Outage Count, 3 Prior Years	Avg. Outage Count, Subsequent Years	Percent Improvement
2018	153.3	82.3	46.3%
2019	442.3	199.0	55.0%
2020	53.7	14.0	73.9%

Outages on HVD Lines that had rebuild/rehabs completed in 2018				Outages on HVD lines that have not had rebuild/rehabs since 2018			
Project Type	Description	Miles	Extended Outages on the line rebuild/rehab in 2018 to present	Project Type	Description	Miles	Extended Outages on the line 2018 to present
Insulator/Crossarm	LN027H WALDRON POLE TOP REHAB 9.7 MILES	9.70	0	n/a	Morrice (Morrice - STR 584) - Center 028C	6.5	2
Line Rebuild	LN076A GUN LAKE REBUILD 1.9 MI RR%	1.90	0	n/a	Hammond Rd Line Rebuild 119A	6.1	2
Insulator/Crossarm	LN027N WALDRON POLE TOP REHAB 9.38 MILES	9.38	0	n/a	Remus Line Rebuild 112C (south portion)	8	2
Line Rebuild	LN025A UNION CITY (ELM-U) SOUTH REBUILD%	2.50	0	n/a	Wirtz Rd 33AE (STR 510 - 800)	8	2
Line Rebuild	LN116G AUGUSTA REBUILD 1.3 MI RR%	1.30	0	n/a	Maple City (Glen Lake Spur)	7.2	1
Insulator/Crossarm	LN044E GRAND BLANC POLE TOP REHAB 3.9 MI	3.90	0	n/a	Hodenpyl (STR 210 - STR104)	4.6	1
Insulator/Crossarm	LN018A HOMESTEAD POLE TOP REHAB	15.80	1	n/a	Hodenpyl (Hodenpyl Rack - STR104)	4.6	2
Insulator/Crossarm	LN044M GRAND BLANC POLE TOP REHAB 3.3 MI	3.30	0	n/a	Tustin (entire line)	12	1
Line Rebuild	LN072N FENNVILLE RBLD LN 7.3 MILES RR%	7.30	0	n/a	Grass Lake 26A	3.2	1
Insulator/Crossarm	LN071GG OAKWOOD PTA REHAB (DF)	2.15	0	n/a	Grass Lake 26B	17.0	2
Insulator/Crossarm	LN071TT STATE HOSPITAL PTA REHAB (DF)	3.21	0	n/a	Sterns 63E	7.20	1
Insulator/Crossarm	LN019AI MECOSTA POLE TOP REHAB 1MI	1.00	0	n/a	Saranac 111A	2.30	1
Insulator/Crossarm	LN044L RANKIN POLE TOP REHAB 3.51 MI	3.51	0	n/a	Plainwell 22H, 22DD, 22CC	5.60	3
Line Rebuild	LN066I WEST BRANCH EAST RBLD 5.5 MILES %	5.50	0	n/a	Newaygo 19G	4.90	1
Insulator/Crossarm	LN072KK BREEDSVILLE POLE TOP REHAB	8.50	0	n/a	Silver Lake 32I	2.60	1
Line Rebuild	LN026G STOCKBRIDGE (SPUR) REBUILD 2.69MI	2.69	0	n/a	Galesburg 116A	4.00	1
Line Rebuild	LN032F UNION ST RBLD 3.0 MILES %	3.00	1	n/a	Cement City 25J	3.40	1
Insulator/Crossarm	LN116I AUGUSTA POLE TOP REHAB	10.80	0	n/a	Goodale 80B	2.90	1
Total			2	Total			26

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Forestry Program

- Goal: Move toward a seven-year effective clearing cycle for the LVD system, four-year clearing cycle for the HVD system
- Consumers projects significantly improved reliability and reduced outages to customers under 7-year effective cycle

5-Year O&M Rate Case Plan – Forestry

	Actual			Plan				
	2018	2019	2020	2021	2022	2023	2024	2025
LVD Line Clearing	\$39.9	\$41.1	\$46.1	\$71.4	\$81.5	\$86.8	\$104.1	\$106.5
HVD Line Clearing	\$12.0	\$12.2	\$9.2	\$12.6	\$12.9	\$13.2	\$13.5	\$13.8
TOTAL FORESTRY SPEND	\$51.9	\$53.3	\$55.3	\$84	\$94.4	\$100	\$117	\$120.4
LVD Miles	3,218	3,518	4,211	5,223	5,986	6,346	7,654	7,914
HVD Miles	1,081	1,100	1,116	1,129	1,131	1,134	1,136	1,138
TOTAL FORESTRY MILES	4,299	4,618	5,327	6,352	7,117	7,480	8,790	9,058

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Forestry Program

- Consumers looks at the number of tree-caused faults per mile on the circuit for three years prior to clearing and ten years after

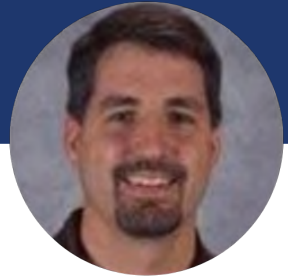
- Data reveals that performance improves following line clearing for several years thereafter, before declining again as new clearing cycle is needed

*TREE-CAUSED FAULTS PER MILE
BEFORE AND AFTER LINE CLEARING,
8.32-KV CIRCUITS*



*TREE-CAUSED FAULTS PER MILE
BEFORE AND AFTER LINE CLEARING,
24.9-KV CIRCUITS*





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August Catastrophic Storm Response – Areas for Improvement

Areas for Improvement	Observations
Resourcing Storm Roles	1) Storm role staffing enhancements identified
Damage Assessment Process	1) New damage assessment technology requires additional staff 2) Visual map showing damaged locations
Increase Capacity to Run Crews	1) Additional Field Leaders and Field Guides required to run Crews
Wire Down Process	1) Office staffing delayed operations 2) Downed wire performance needs improvement
Secure Lodging	1) Hotels full 2) Crews travels 2+ hours to find a room
Resource Management Tracking System	1) Inaccurate Crew Working/Rest times 2) Unable to track all departments engaged in storm
Work Order Management	1) Field Leaders given numerous orders 2) Struggle to keep the network model updated



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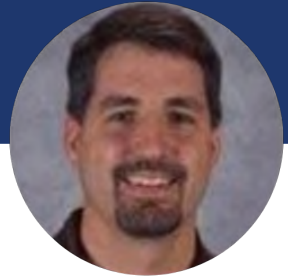
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August Catastrophic Storm Response - Strengths

Strengths	Observations
Pre-Staging Crews	<ol style="list-style-type: none"> 1) Restored 36K customers overnight 2) Crews prepared when the storm began
Use of Field Control	<ol style="list-style-type: none"> 1) Field Control granted on 152 circuits 2) Both Field Leaders and Crews took Field Control
Splitting Headquarters	<ol style="list-style-type: none"> 1) Headquarters were split 3-ways allowing triple capacity 2) Jackson Dispatch had no span of control issues
Crewing Levels	<ol style="list-style-type: none"> 1) Record number of Crews on the system at 573 and 79 Electric Service Workers. 2) 182 CE, 365 Contractors, 26 Mutual Assistance
Mobile Command & Storm Trailers	<ol style="list-style-type: none"> 1) Branch Directors helped with Dispatch Span of Control 2) Material trailers placed near damaged areas reduced travel



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MPSC Technical Conference on Emergency Preparedness, Distribution Reliability, and Storm Response

October 22, 2021

BOUNDLESS ENERGY™



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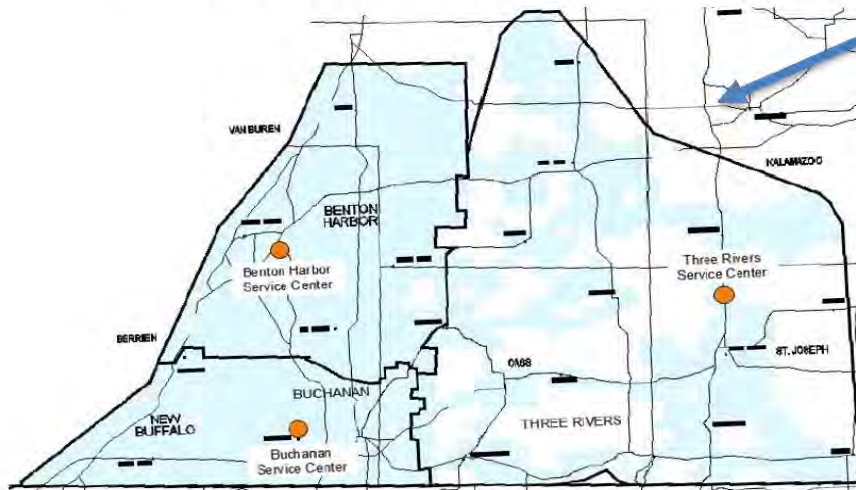
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An AEP Company

I&M Overview

- Multi-jurisdictional company
 - ~ 130,000 retail customers in Michigan
- Serve customers in Berrien, Cass, St. Joseph, Van Buren, Kalamazoo, and Allegan
- 3 Service Centers in Southwest Michigan
 - Benton Harbor
 - Buchanan
 - Three Rivers



- Michigan line miles:
 - Transmission: ~900 miles
 - Distribution: ~4,150 primary miles
 - 3,500 miles of overhead line
 - 650 miles of underground line
- Part of the American Electric Power system and a member of PJM Interconnection, LLC (PJM)



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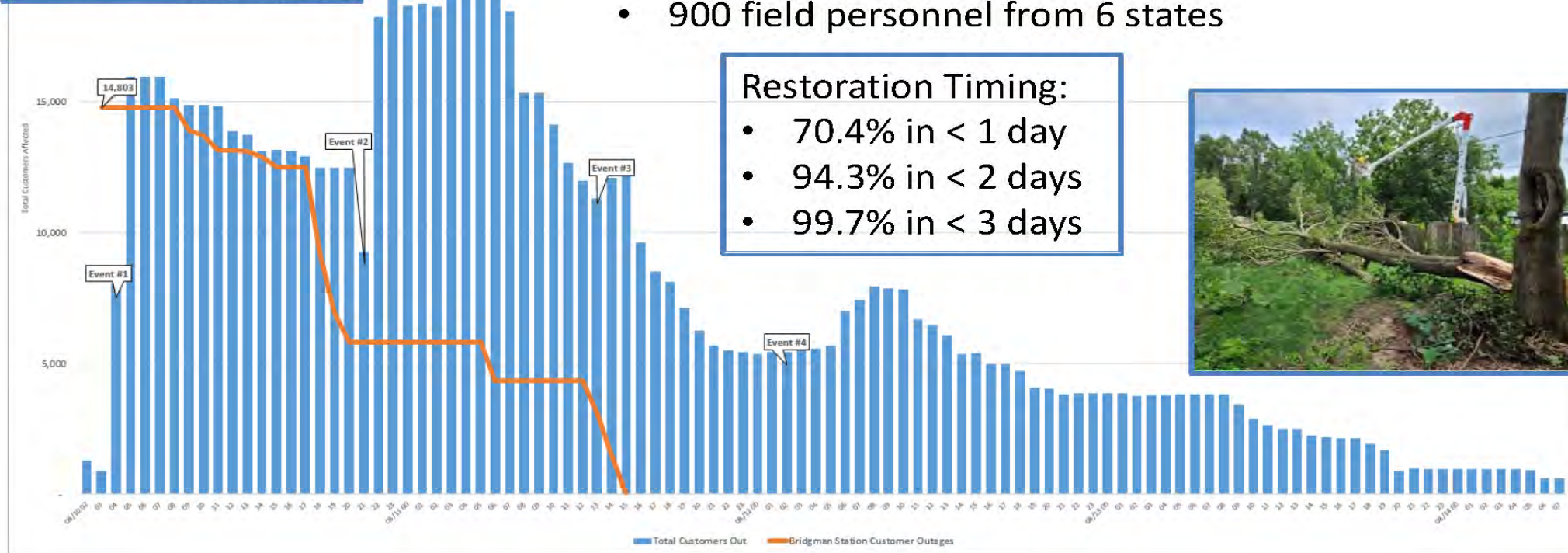
An AEP Company

August Event(s)



Michigan Outage Profile – August 10-14, 2021

- Series of 4 separate events
- Initial flooding affecting almost 15K
- Almost 40K customers were affected
- Peak outage count was 20,900
- 900 field personnel from 6 states





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An AEP Company

Customer Focus/Engagement

- Event Prediction/Preparation
 - AEP Meteorology
 - constantly monitors weather patterns
 - Incident Command Structure (ICS)
 - Provides predictable, scalable approach
 - Accommodates adjustment as changes occur
 - Damage Assessment and Hazard Mitigation occur immediately
- Customer Interface
 - Mobile Alerts – provides ETR updates
 - Social Media/One Voice – provides current “picture” of recovery
 - I&M Website – provides geographical outage information
- Technology Improvements
 - AMI – completely deployed by end of 2022
 - Drones – developing use for line patrols; assess & assign



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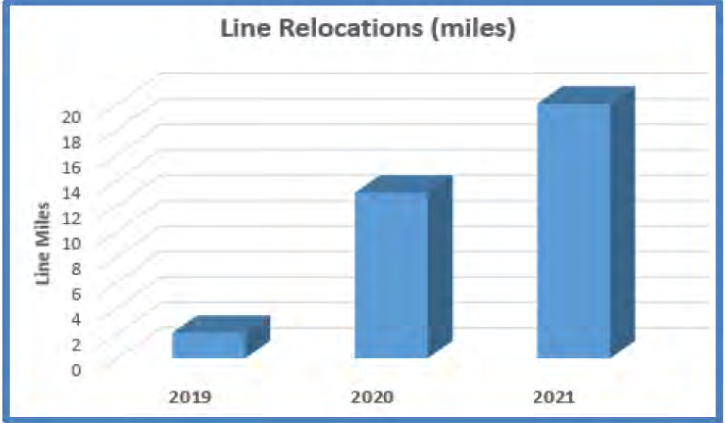
Michigan Investments

Distribution Investments

Area of Investment	Measure	Previous 5 Year Amount (2016-2020)	Present 5 Year Plan (2021-2025)	% Change
Vegetation Control	miles	2,223	3,500	57%
Line Rebuilds	miles	121	270	123%
Grid Modernization/AMI	meters	20,000	113,000	465%



- Performance Results
 - Vegetation – CMI improved 27%
 - Failed Equipment – CMI improved 31%
 - Transmission Issues – CMI improved 53%
- Targeted Work - Line Relocations
 - Over 40% of Michigan lines are “off-road”
 - Heavy vegetation and limited access
- Grid Modernization
 - AMI fully deployed by end of 2022
 - Automatic Circuit Recovery (DACR)
 - Smart Circuit components



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An AEP Company

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Speaker Topic:

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October 22, 2021

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Thank You





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Technical Conference on Emergency Preparedness, Distribution Reliability and Storm Response

Michelle Glynn, Director — System Operations

Oct. 22, 2021



Michelle Glynn

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Discussion topics

- UMERC overview
- Current data
- Existing system improvements
- What the future looks like



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UMERC overview





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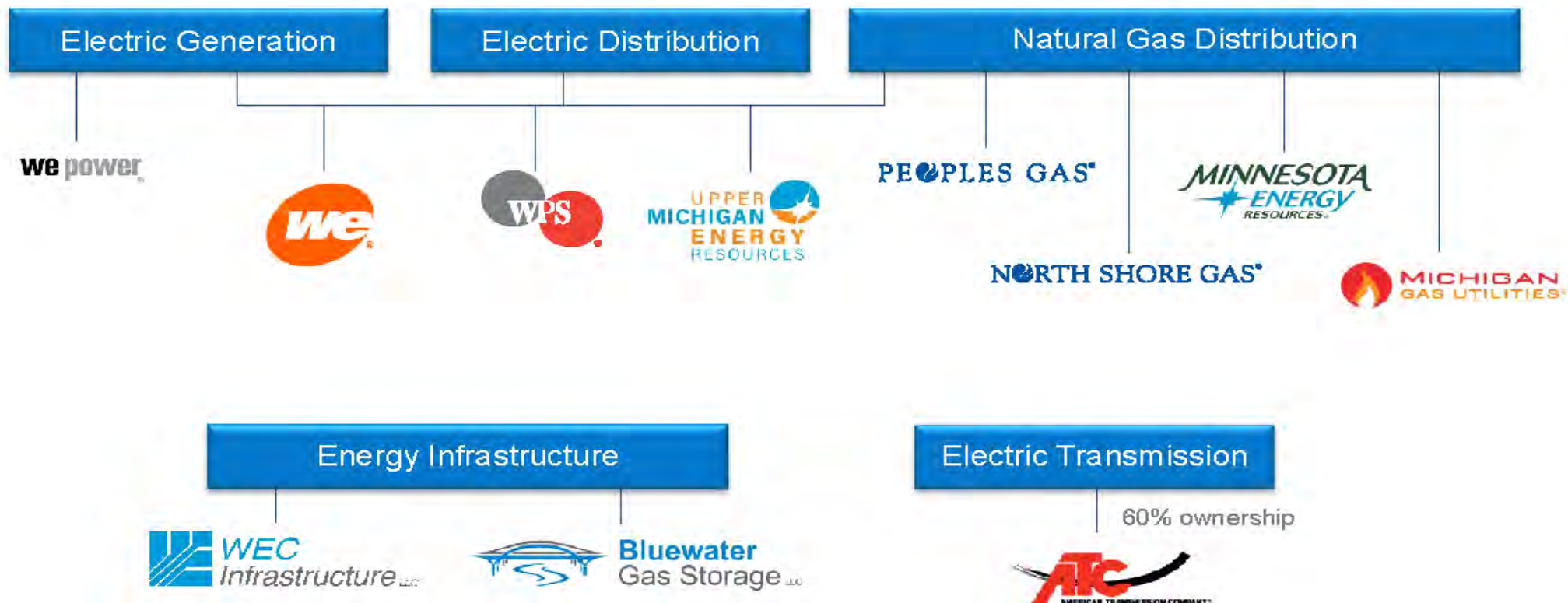
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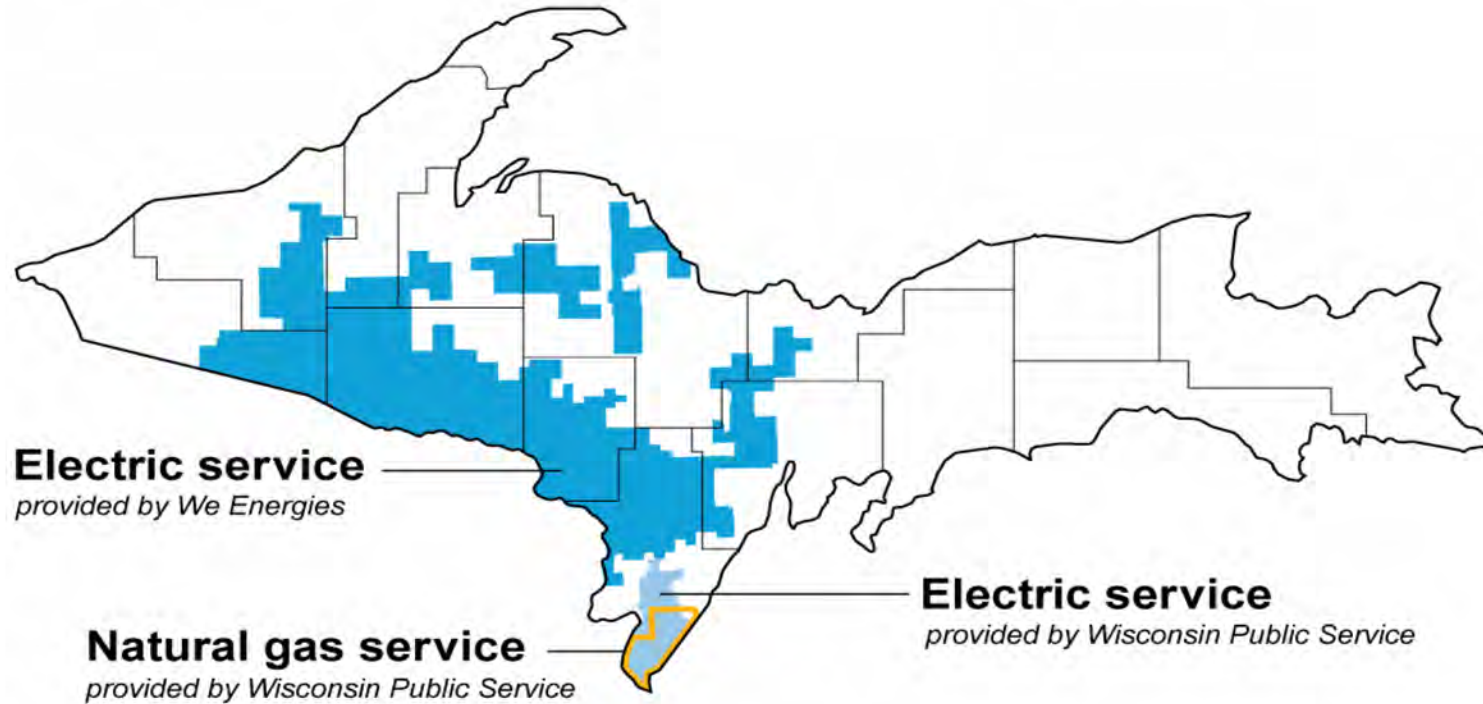
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Upper Michigan Energy Resources

Serves more than 36,000 electric customers and 5,000 natural gas customers in Michigan's Upper Peninsula.





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Our strategy is to create long-term value by focusing on the fundamentals: safety, world-class reliability, operating efficiency, financial discipline and customer care.



Finalist for the S&P Global Energy Award in Corporate Social Responsibility
WEC Energy Group

S&P Global Platts



Best in the U.S. in Large Customer Satisfaction (Top 2 Box)
WEC Energy Group

J.D. Power



Most reliable utility in the Midwest
We Energies

PA Consulting



2021 Diversity in Business Award
We Energies

Milwaukee Business Journal



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Current data



Responding to and recovering from storm events

Current data



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- **UMERC was not impacted by August event**
 - Did not require any mutual assistance or community support during event.
 - Storm restoration costs for entire month of August \$150,000.
- **Typical storm response**
 - Initiate Storm Response Command Center and solicit mutual assistance, if needed (major storms).
 - Stage crews based on forecasted path to facilitate faster response.
 - Prioritize restoration priorities:
 - High-risk customers (first responders, hospitals, nursing homes, etc.).
 - Largest number of impacted customers.

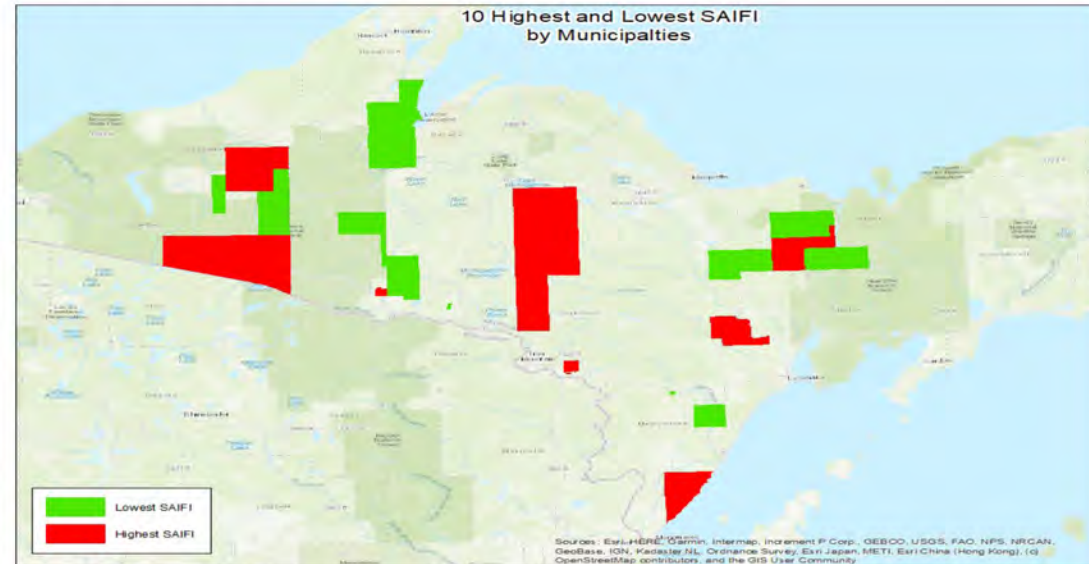
Reliability

Current data

Distribution system reliability data

- UMEREC-wide reliability metrics
 - SAIDI: 204
 - SAIFI: .83

- UMEREC's best and worst performing circuits



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Existing system improvements



2021 forestry plans

Existing improvement plans

- A total of 157.5 line miles will be trimmed in 2021
 - We Energies rate zone: 86.3 line miles
 - WPS rate zone: 71.2 line miles

We Michigan	District	Project #	Line Miles	Project Cost	Start Date	Finish Date Estimation
	WMI	528	40.2	\$140,159	2/24/2021	10/1/2021
	HMI	563	46.1	\$125,582	5/24/2021	11/1/2021
WPS Michigan	District	Project #	Line Miles	Project Cost	Start Date	Finish Date
	MEN	170	30.2	\$78,400.00	1/20/2021	11/1/2021
	MEN	171	41	\$125,582	4/7/2021	9/10/2021

WMI — Wolverine Service Center
 HMI — Headwaters Service Center
 MEN — Menominee Service Center



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Prioritizing circuit upgrades

Existing improvement plans

- Periodic assessments of circuits
- Prioritize investments on those with lowest reliability metrics
- Circuit upgrades evaluated for:
 - Conductor replacement
 - Pole replacement
 - Potential for undergrounding
 - Installation of distribution automation devices



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What the future looks like





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What the future looks like

Storm response communications —

Customers can report and check on outages through website and app with potential enhancements related to “push notifications” as greater system integration occurs.

