2020-2021
MISO
Winter Readiness Forum

Tuesday October 27, 2020
2:00 – 4:00pm ET

Winter Readiness Forum
October 27, 2020
2:00 pm – 4:00pm ET / 1:00 – 3:00PM CT
Dial In / WebEx information available at: www.misoenergy.org

This meeting will be recorded

1. Welcome	Rob Benbow	2:00pm
2. Lessons Learned	Tag Short	2:10pm
i. Winter Lessons Learned		
ii. Winter Operations Guidelines		
3. Extreme Cold Weather Preparedness SAR	Bobbi Welch	2:20pm
4. Winter 2019: Max Gen & Turbine issues	Cameron Saben	2:30pm
5. Preparedness		2:40pm
i. RAN (Resource Availability & Need)		
i. LMR Accreditation Update	Davey Lopez	
ii. MOM (Multiday Operating Margin)	Geoff Brigham	
6. Resource Assessments		3:00pm
i. Generation	Eric Rodriguez	
ii. Transmission	Corey Curran	
7. Readiness		3:20pm
i. Procedures	Mike Carrion	
ii. Winterization & Fuel Survey	Mike Mattox	
8. Guest Speaker - Entergy	Hisham Sidani	3:40pm
9. General Discussion		3:50pm
10. Adjourn		4:00pm

Lessons Learned

Tag Short

Winter Lessons Learned

Tag Short

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MISO partners with our members to prepare for the winter season

Previous winter weather challenges provide lessons learned and opportunities for improvement

Southwest Cold Weather Event

February 2011

Extended cold weather overwhelmed many of the weatherization steps taken by both generating and natural gas production facilities

Polar Vortex

January 2014

Challenging operating conditions highlighted the need for better electric-gas coordination, outage reporting, and winter readiness preparations

Extreme Cold Weather

January 2018

Regional operators called for voluntary reductions in electricity use due to abnormally cold temperatures and higher than forecast demand

Polar Vortex

January 2019

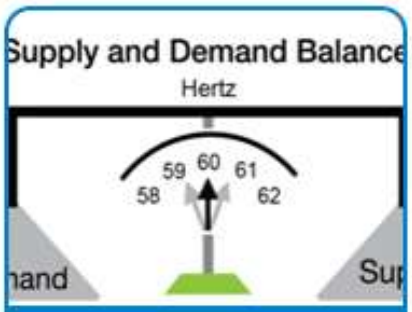
Arctic air plummeted temperatures to record lows while wind chills dipped to the -40 to -65-degree range. Wind generation was impacted due to cold weather cut outs

Properly integrated lessons learned become embedded in successful operations

Forecasting

Visualization

Emergency Pricing



Unit Performance

Electric-Gas Coordination

Collaboration

Ongoing activities address gas-electric challenges & opportunities

Enhance Operational Tools

Improve Situational Awareness (pre- and post-event)

Advance Communication Protocols with Gas Industry and Further Relationships

Market Enhancements

Advance Study Initiatives of Both Electric and Gas Infrastructure Needs

Cross-Industry Engagement

Planning

Markets

Operations

Winter Operations Guidelines

Tag Short

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MISO Winterization Guidelines

General guidelines and protection measures

Cold weather resources and training materials

NERC Cold Weather Training Materials:

- Winter Weather Preparedness
- 2015 Winter Review Report
- 2015 Winter Performance Update
- Polar Vortex Review 2014
- Survey to Assess the effectiveness of Severe Winter Weather Preparation materials
- Winter Preparation for Severe Weather Events – Webinar Q&A
- Extreme Winter Weather Events – Training Presentation
- Practical Activities Handout
- Extreme Winter Weather Events – Instructor's Manual
- Winter Preparation for Severe Weather Event – Webinar Presentation
- Reliability Guideline: Generating Unit Winter Weather Readiness
- FERC NERC Findings and Recommendations

- **NERC Winter Preparedness** https://www.nerc.com/pa/rrm/ea/Pages/Cold-Weather-Training-Materials.aspx
- **NERC Reliability Guidelines** http://www.nerc.com/comm/OC/Pages/Reliability-Guidelines.aspx
- **Reliability First Cold Weather Preparedness – Plant Winterization Recommendations** https://www.rfirst.org/KnowledgeCenter/Risk%20Analysis/ColdWeather/Pages/ColdWeather.aspx
- **2013-2014 MISO Cold Weather Operations Report** https://cdn.misoenergy.org/2013-2014%20Cold%20Weather%20Operations%20Report103558.pdf
- **South Central U.S. Cold Weather Event of January 17, 2018 Joint Report** South Central U.S. Cold Weather Event of January 17, 2018 Joint Report

https://www.nerc.com/pa/rrm/ea/Pages/Cold-Weather-Training-Materials.aspx

NERC Project 2019-06: Cold Weather SAR

Bobbi Welch

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Purpose & Key Takeaways

Purpose

Report on status of NERC Project 2019-06: Cold Weather

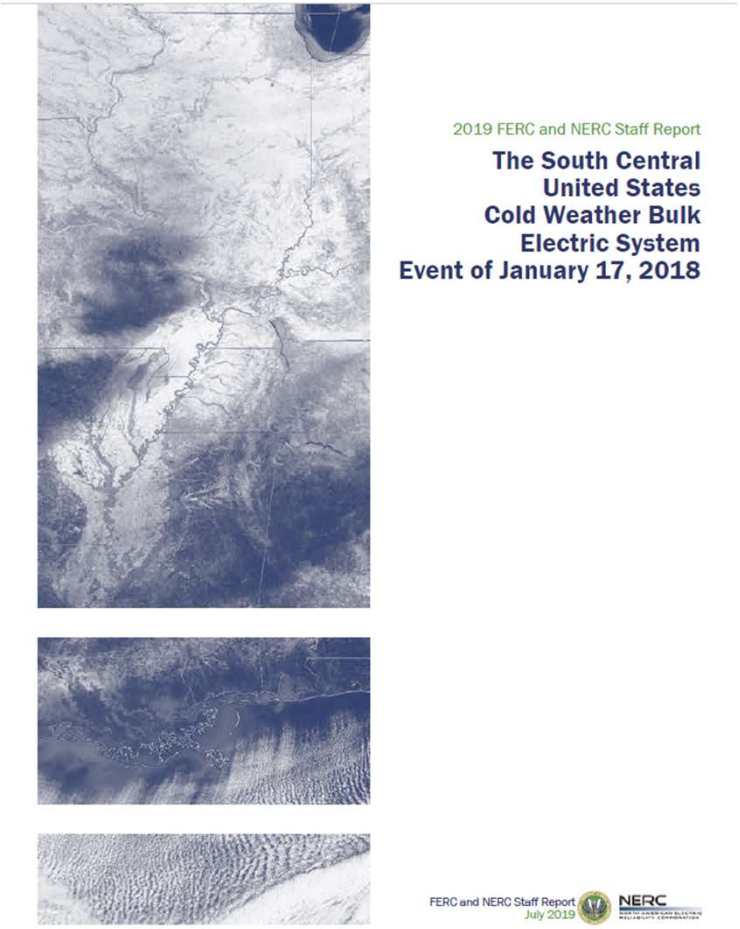
Key Takeaways

- Anticipated timeline for the project
- Scope of the project to build on existing constructs
- Where can I get more information?

Timeline for Cold Weather SAR

Scope of Cold Weather Project

- Goals
  - Ensure an adequate reliability and situational awareness by preparing generation for cold weather performance
  - Utilize existing standards to the extent possible
- Plan
  - Develop & implement cold weather preparedness plan and training
- Data and Communications
  - Notifications re: unit capability and availability
  - Utilization in Operating Planning Analysis



Additional Resources

Where can I find more information?

- NERC Project page
- Project 2019-06: Cold Weather

- FERC-NERC Joint Report
- South Central Cold Weather Event_Jan 2018_FERC-NERC Report

How can I participate?

- Subscribe to Project Observer Mailing List
  - "Service" drop-down menu
    - Select "NERC Email Distribution Lists"
  - In “Description” box
    - Specify “**Project 2019-06 Cold Weather Observer List**”

- SDT meeting schedule
  - October 27-29
  - November 10-12

Forecasting: Winter 2019
Max Gen & Turbine issues

Cameron Saben / Adam Simkowski

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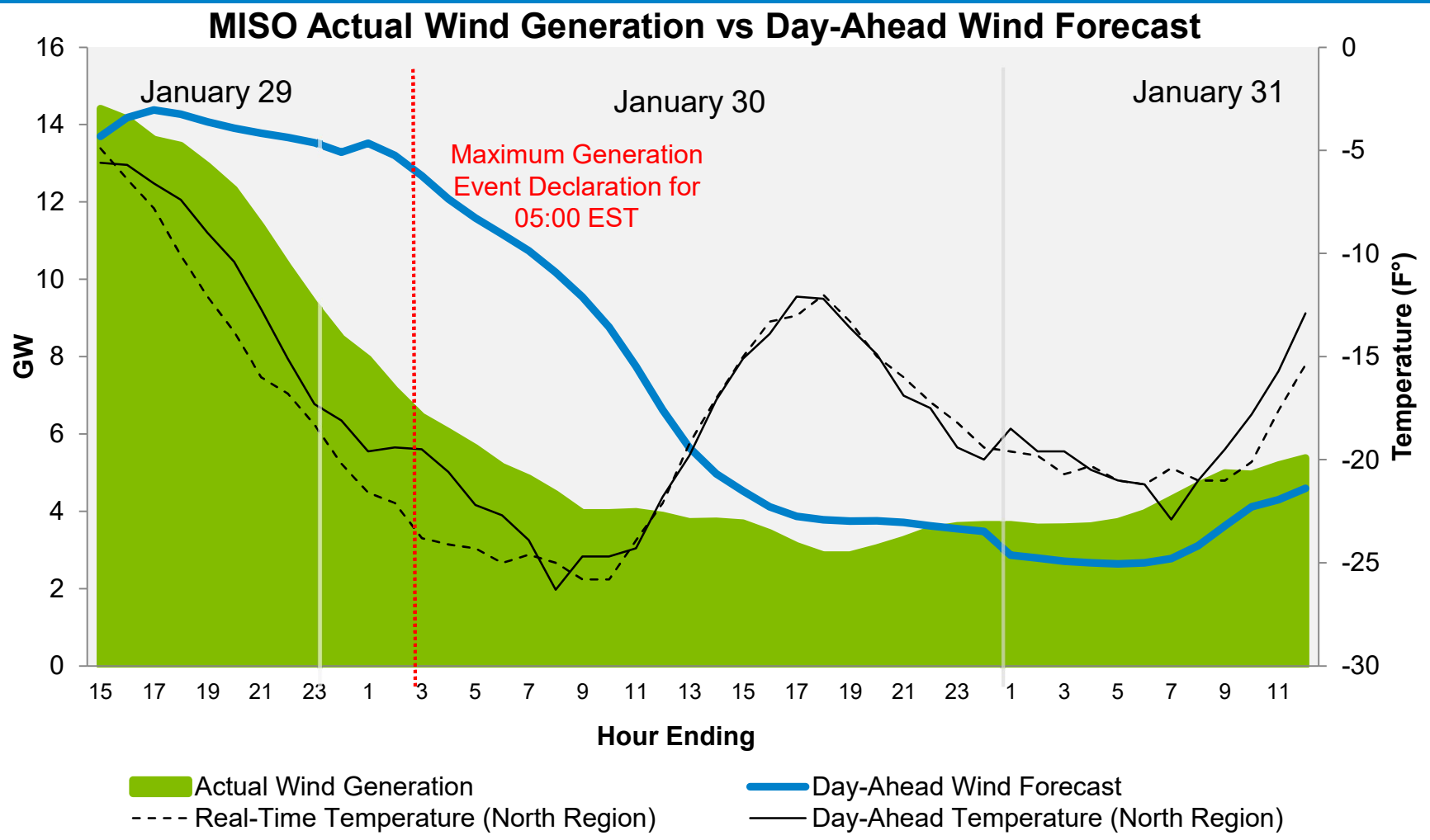
An earlier than expected drop in wind output increased insufficiency risk early on the morning of January 30th



Improving Wind Forecasting with Additional Data

- Jan 30-31 cold weather event occurs
- MISO noticed a data gap in the forecasting process
- MISO initialized an outreach to collect cold weather cutoff data
- ~99% of the data gathering is complete

Understanding the Load Behavior of a Cold Weather Event

- Extreme cold temperatures lead to a modified load shape
- Administrative buildings, universities, schools and businesses close due to extreme cold temperatures
- Closings changed the load shape to Holiday/Weekend pattern rather than a typical weekday
- With this knowledge, MISO can make load forecasting adjustments as necessary during future extreme cold spell events

Questions?

Preparedness
Resource Availability & Need (RAN)
- LMR Accreditation Update
- Multiday Operating Margin (MOM)

Davey Lopez
Geoff Brigham

Load-Modifying Resource (LMR) Accreditation

Davey Lopez

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Issue Tracking ID

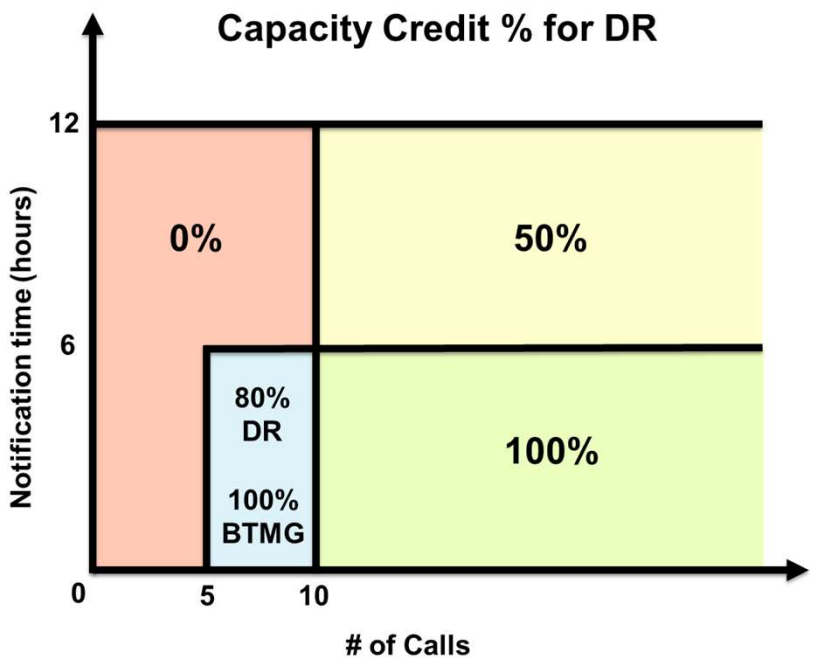
RASC009

LMR accreditation based on the critical factors of notification times and call limits will begin in the 2022-2023 Planning Year

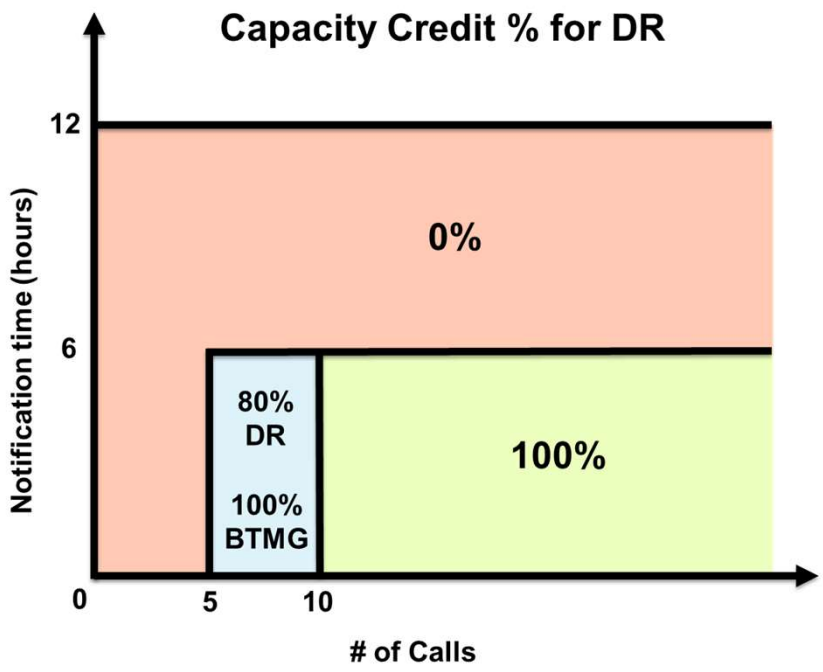
- Current accreditation methodologies to remain in place through the 2021-2022 Planning Year
- MISO's final LMR accreditation proposal reflected a delay by 1 year of the proposed changes, as many stakeholders requested, to provide sufficient time to adjust contracts and complete required state processes
- The final proposal also retained partial credit for LMRs having notification times over 6 hours until 2023-2024 Planning Year

As requested, MISO revised the proposal which provides a transition to allow stakeholders time to adequately prepare

22/23 Planning Year



23/24 Planning Year



MISO encourages stakeholders that can obtain reductions in notification times or increase call limits to do so prior to the 22/23 Planning Year, especially in LRZs that have greater reliance on LMRs

FERC Filing and Approval

- MISO filed LMR accreditation changes at FERC on 5/18/2020 under Docket #: ER20-1846-000

- On August 14, the Commission issued an Order accepting the LMR accreditation filing, effective August 16, 2020, as requested

- MISO continues to discuss the Resource Adequacy Construct and Resource Accreditation at the Resource Adequacy Subcommittee (RASC)

Multi-day Operating Margin (MOM) Forecast

Geoff Brigham

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Purpose and Key Takeaways

Purpose

Provide overview and discuss planned enhancements for the Multiday Operating Margin (MOM) Forecast

Key Takeaways

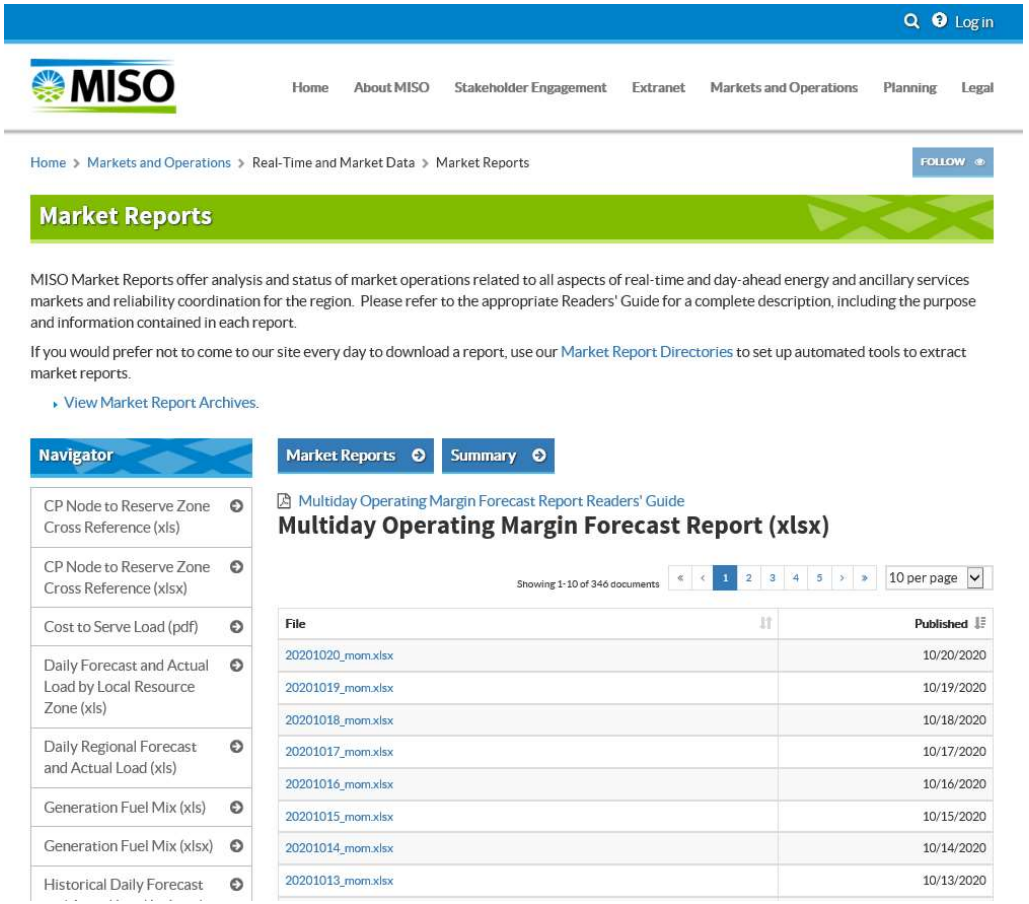
- The MOM Forecast was released a year ago
- Regional Forecast enhancement have been deployment and provide a more granular view
- Updates to MOM Forecast in 2020 will quantify uncertainty, plus additional high-priority requests

Multiday Operating Margin (MOM) Forecast Approach

- Data is identical to values used by MISO Operations (data governance)
- Incremental approach with successive versions
- Utilize data warehouse and analytical platform
  - Automated
  - Reliable
  - Extensible
  - Flexible

MOM Forecast v1.0 was deployed in early November 2019

- Report is updated daily and includes system-level aggregation of peak-hour information
  - Report posted on the MISO public website under the Summary section of Market Reports
  - Quick Link placed under the Markets and Operations page



Version 2.0 included a sub-regional breakdown to provide a more granular view of margins

- Deployed in the June of 2020
- Provides breakdown of:
  - MISO North
  - MISO Central
  - MISO South
  - MISO North+Central

The current version of the MOM Forecast provides a snapshot for the next six operating days

MISO

Multiday Operating Margin Forecast Report

Publish Date: October 20, 2020
Market Date: October 20, 2020

	10/21/20 HE 19*	10/22/20 HE 19*	10/23/20 HE 14*	10/24/20 HE 19	10/25/20 HE 19	10/26/20 HE 19**
RESOURCE COMMITTED	69,041	61,324	59,258	59,406	59,472	67,372
RESOURCE UNCOMMITTED	14,041	29,132	30,792	30,207	29,638	21,571
Uncommitted >16 hr	314	3,539	4,741	5,002	4,965	3,732
Uncommitted 12-16 hr	237	1,067	4,022	2,798	2,976	648
Uncommitted 8-12 hr	346	5,244	3,687	2,703	2,446	933
Uncommitted 4-8 hr	2,809	5,132	4,322	5,064	5,430	3,721
Uncommitted < 4 hr	10,335	14,150	14,020	14,640	13,821	12,537
Renewable Forecast	4,306	14,749	15,675	6,786	7,831	5,536
MISO resources available	87,388	105,205	105,724	96,399	96,941	94,479
NSI (+ export, - import)	-6,623	-6,106	-5,389	-6,104	-6,105	-6,105
Total Resources Available	94,011	111,311	111,113	102,503	103,046	100,584
Projected Load	78,897	79,697	76,794	70,127	70,641	76,182
Operating Reserve Requirement	2,410	2,410	2,410	2,811	2,811	2,410
Obligation	81,307	82,107	79,204	72,938	73,452	78,592
Resource Operating Margin *	12,704	29,204	31,909	29,565	29,594	21,992

Note: Resources includes Generators, DRRs & EARs (emergency resources not initially included)
** indicates it is a Business day

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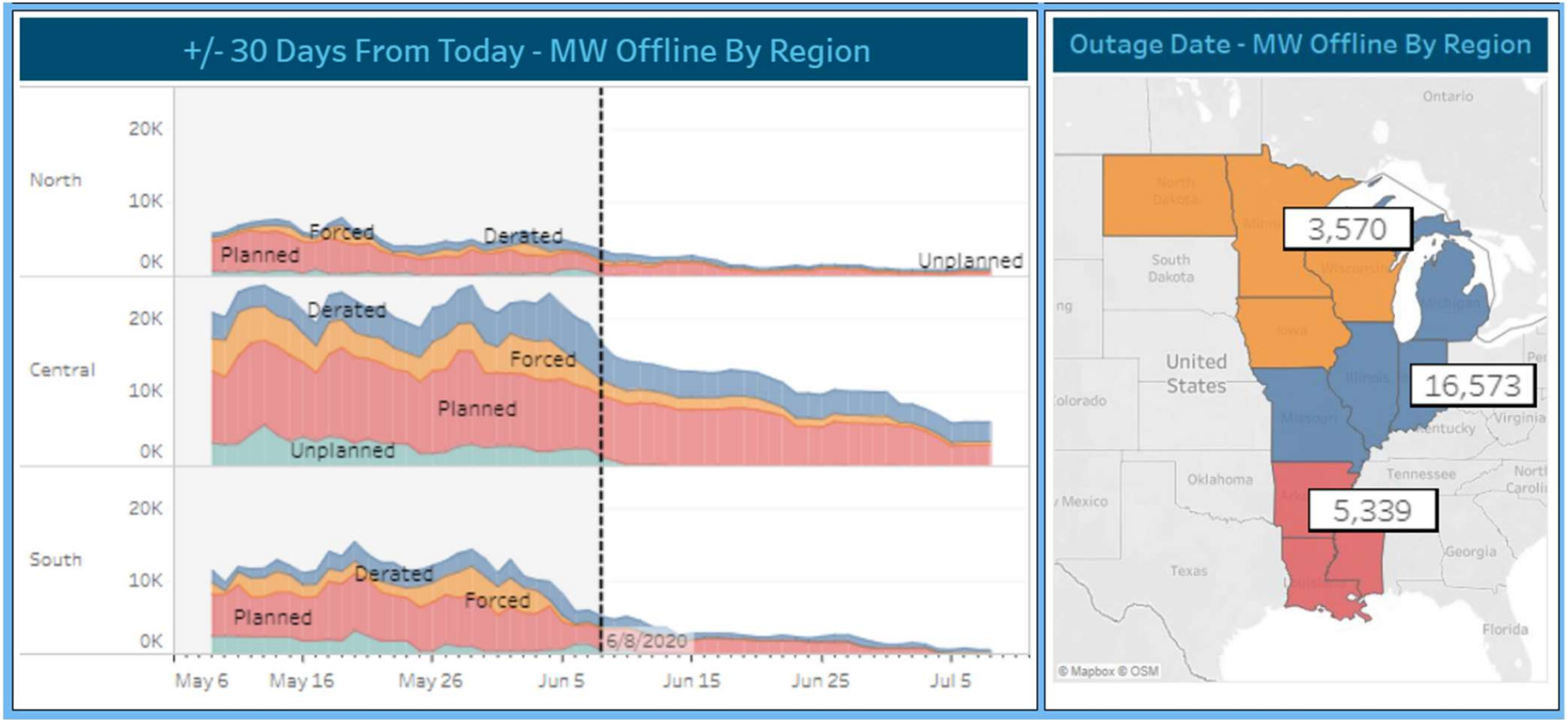
MISO currently developing approach to present forecast uncertainties

- One approach would be to utilize multi-year seasonal wind/load uncertainty values, and scale them to MWs for inclusion into the daily MOM Forecast
- For example, a 3-day-out summer demand forecast of 100,000MW has an average error of 2,140MW (2.14%) and a standard deviation of 1,760MW (1.76%)

	1/ 2014-2/2020								
		Load Forecast Uncertainty (%)				Wind Forecast Uncertainty (%)			
Season	Forecast_Day	Average Er	StDev	StDev 2	StDev 3	Average Er	StDev	StDev 2	StDev 3
Fall	DA	1.32	1.05	2.11	3.16	5.06	4.19	8.38	12.58
Fall	2Days	1.53	1.21	2.43	3.64	6.05	5.07	10.15	15.22
Fall	3Days	1.76	1.39	2.77	4.16	7.71	6.37	12.74	19.11
Fall	4Days	1.93	1.54	3.07	4.61	9.34	7.76	15.53	23.29
Fall	5Days	2.17	1.78	3.55	5.33	11.67	9.75	19.49	29.24
Fall	6Days	2.49	2.13	4.25	6.38	12.99	10.52	21.04	31.56
Spring	DA	1.28	1.03	2.06	3.09	5.38	4.57	9.13	13.7
Spring	2Days	1.47	1.18	2.37	3.55	6.64	5.53	11.06	16.59
Spring	3Days	1.68	1.37	2.73	4.1	8.16	6.84	13.67	20.51
Spring	4Days	1.84	1.49	2.97	4.46	9.63	7.98	15.97	23.95
Spring	5Days	1.99	1.59	3.19	4.78	11.82	9.68	19.37	29.05
Spring	6Days	2.18	1.75	3.49	5.24	13.3	10.41	20.82	31.23
Summer	DA	1.56	1.25	2.5	3.76	4.7	4.32	8.64	12.96
Summer	2Days	1.82	1.44	2.89	4.33	5.5	4.81	9.62	14.42
Summer	3Days	2.14	1.76	3.51	5.27	6.51	5.58	11.15	16.73
Summer	4Days	2.48	1.97	3.94	5.91	7.48	6.57	13.14	19.7
Summer	5Days	2.86	2.34	4.68	7.02	8.53	7.48	14.96	22.43
Summer	6Days	3.35	2.86	5.71	8.57	10.17	8.75	17.51	26.26
Winter	DA	1.43	1.13	2.26	3.39	5.6	5.04	10.08	15.13
Winter	2Days	1.74	1.42	2.83	4.25	7.13	6.29	12.58	18.87
Winter	3Days	1.96	1.59	3.18	4.77	9.22	7.92	15.83	23.75
Winter	4Days	2.26	1.8	3.59	5.39	11.26	9.33	18.65	27.98
Winter	5Days	2.57	2.07	4.14	6.21	13.01	10.53	21.05	31.58
Winter	6Days	2.93	2.38	4.75	7.13	14.98	11.54	23.08	34.62

MISO is also exploring the publishing of multi-day outage and derate information



This beta-version display was built for MISO Operators, and is being shown to illustrate the types of data that could be added to future MOM Forecasts.

Questions?

Resource Assessments

- Generation
- Transmission

Eric Rodriguez
Corey Curran

Generation Assessment

Eric Rodriguez

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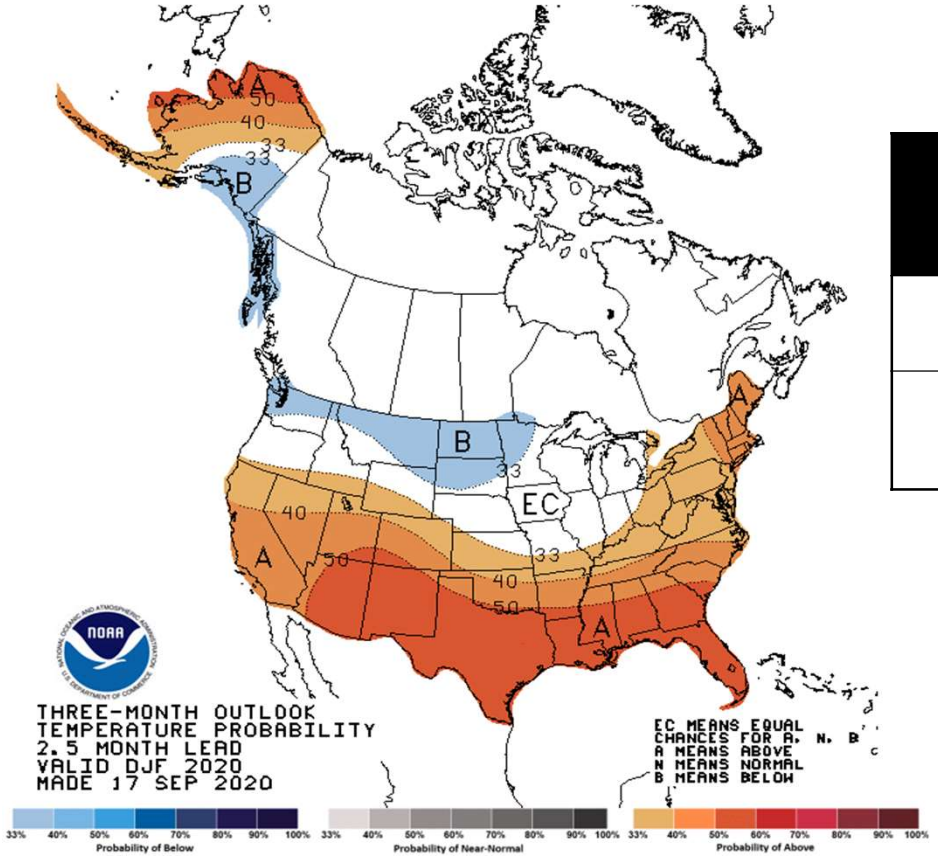
Adequate resources are projected to be available to cover demand and outages for the winter 2020-2021 season



MISO Preliminary Winter 2020-2021 Forecast	
Winter Peak Forecast	104 GW
Total Projected Available Capacity*	146 GW

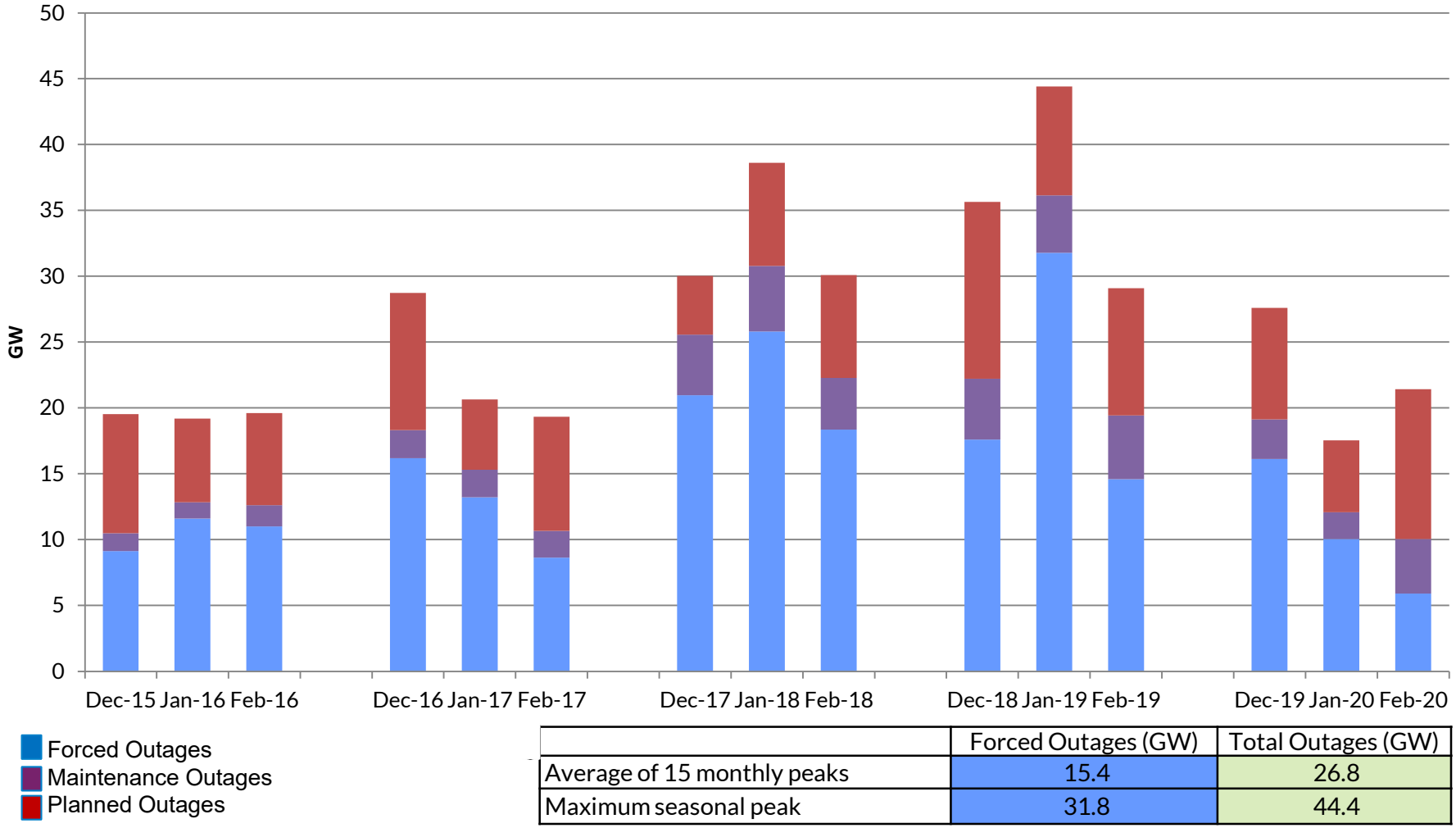
All-time Winter Peak:

109 GW on January 6th, 2017

NOAA forecasts warmer than normal temperatures for the MISO South region and colder than normal temperatures for the majority of Zone 1

*Includes Installed Capacity of Planning Resource Auction cleared resources, with wind and solar at capacity credit, plus Planning Resource Auction offered generation that did not clear but is expected to be available for the winter season

During the monthly peaks of the last winter season, historical outages of all categories were observed to be lower than the five-year average



	Forced Outages (GW)	Total Outages (GW)
Average of 15 monthly peaks	15.4	26.8
Maximum seasonal peak	31.8	44.4

Source: Generating Availability Data System (GADS)

Two deterministic scenarios (typical and worst case) are evaluated to capture potential risk this upcoming winter

Generation

Probable Capacity

- Removes an **average** volume of resource outages[1] (forced, planned, and maintenance)

Low Generation Capacity (Worst Case Outage)

- Removes a **worst case** volume of resource outages[1] (forced, planned, and maintenance), typically because of non-normal weather conditions

Load

Probable Load Forecast

- 50/50 forecast[2], provided by Market Participants

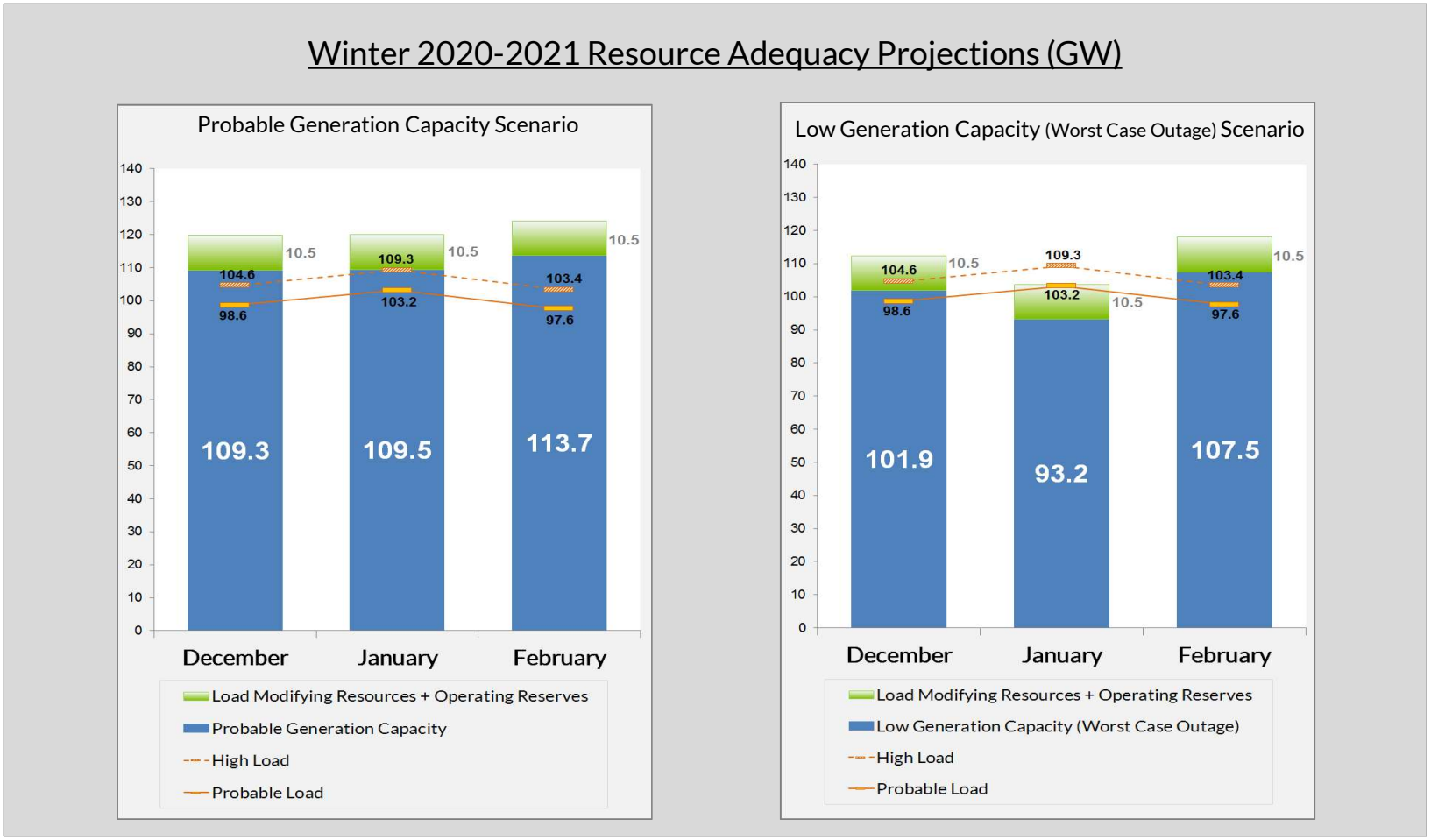
High Load Forecast

- 90/10 forecast[3]

1 Based on 5-year historical outage information provided by Resource Owners
2 50% chance of the actual load being lower and 50% chance of the actual load being higher
3 90% of the actual load being lower and 10% chance of the actual load being higher

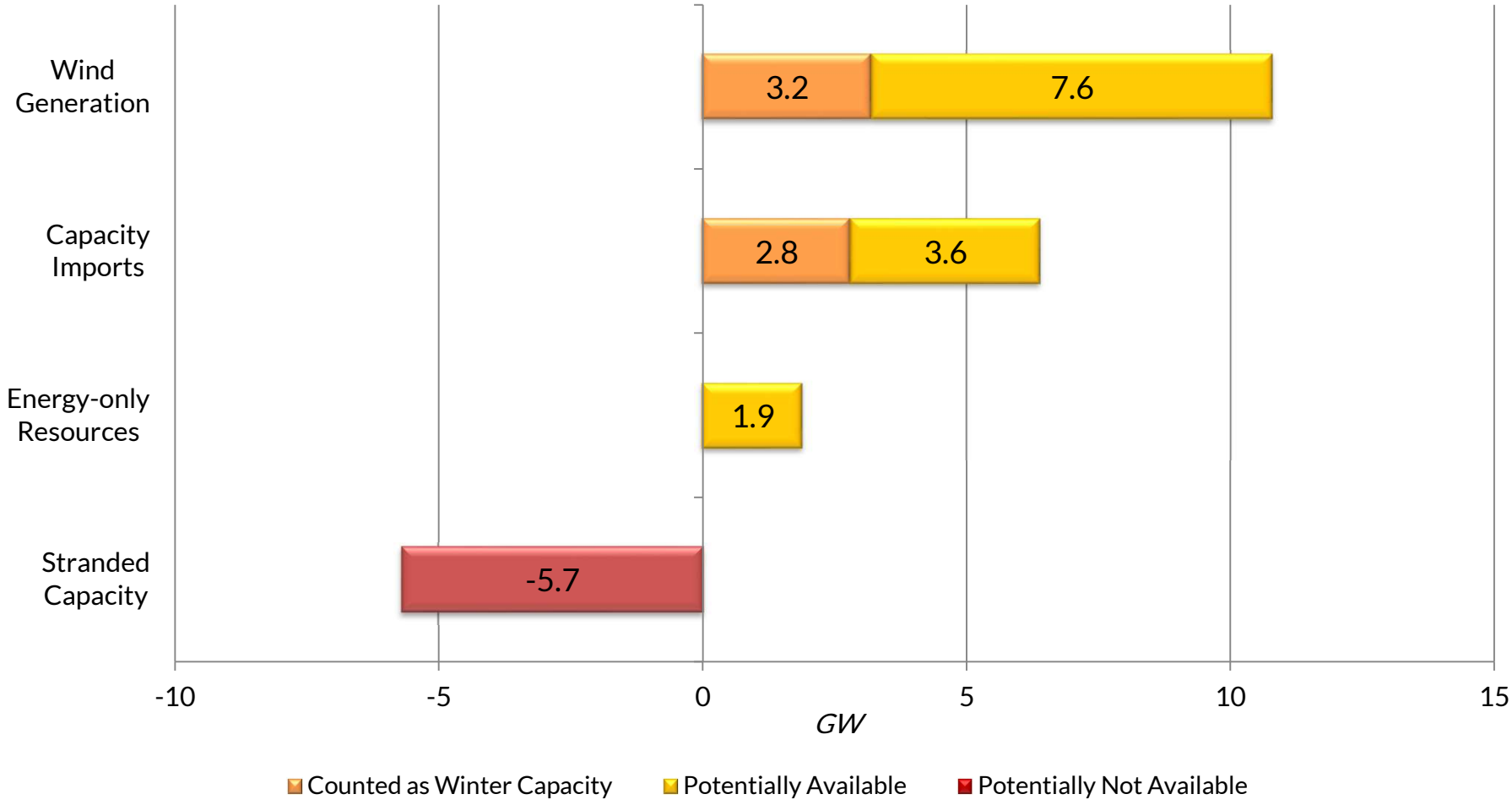
Adequate resources are projected to be available to meet the expected winter demand forecast

Winter scenarios with high generation outages and high demand could drive operational challenges



The low generation capacity of January highlights outage conditions experienced on the MISO system during the polar vortex of 2019

The need for emergency procedures will be impacted by the availability of non-firm resources

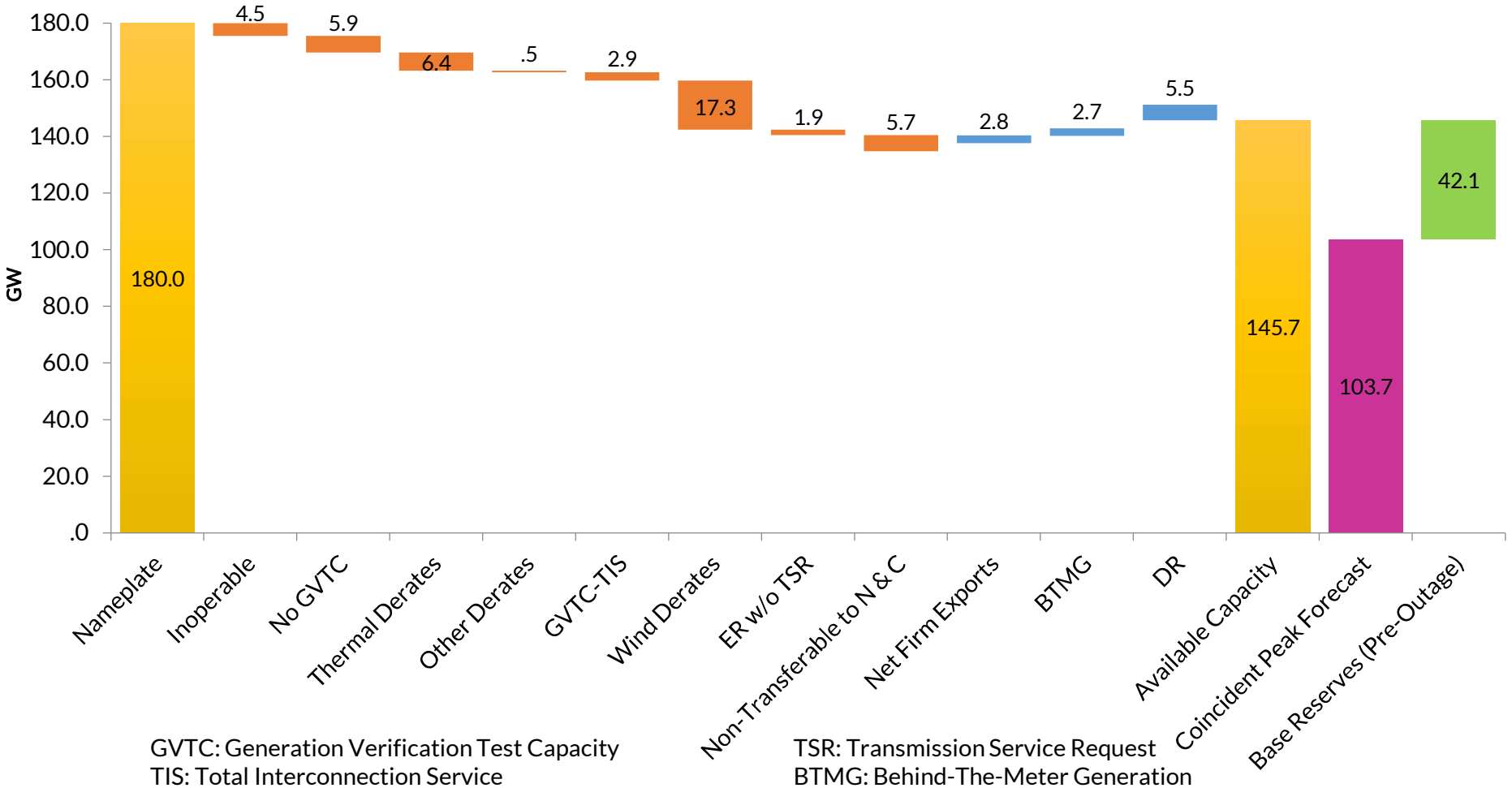


Generation Resource Assessment Appendix

Base Case Scenario

Base Case Scenario		
1a	Nameplate Capacity (MW)	180,008
2a	Inoperable Resources	(4,491)
3a	No GVTC	(5,894)
4a	Thermal Derates	(6,425)
5a	Other Derates	(539)
6a	GVTC-TIS	(2,907)
7a	Wind Derates	(17,336)
8a	ER w/o TSR	(1,895)
9a	Net Firm Imports	2,794
10a	Behind-the-Meter Generation	2,650
11a	Demand Response	5,467
12a	Non-Transferable to North/Central	(5,707)
a	**Total Available Capacity**	**145,725**
b	**Coincident Peak Demand + Transmission Losses**	**103,672**
a-b	Base Reserves (MW)	42,053
(a-b)/b	Base Reserves (%)	40.6%

Base Case Scenario



GVTC: Generation Verification Test Capacity
TIS: Total Interconnection Service
ER: Energy Resources

TSR: Transmission Service Request
BTMG: Behind-The-Meter Generation
DR: Demand Response

Historical Outage Calculations for Winter

Formula		MW
A	2015-16 Average	19,438
B	2016-17 Average	22,907
C	2017-18 Average	32,912
D	2018-19 Average	36,384
E	2019-20 Average	22,187
F=(A+B+C+D+E)/5	Overall Average	26,766
G	Max Seasonal Average Over 5 Years	36,384

Source: Generating Availability Data System (GADS)

Transmission Assessment

Corey Curran / Tony Rowan

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The transmission limitations in the system are within the expected norms for the upcoming Winter

Steady-State AC Contingency Analysis

- Evaluate the effects of simple and complex contingencies on the MISO footprint and Tier-1 areas
- IROL review
- **No major constraints that do not have mitigations for this Winter**

Thermal Analysis during Energy Transfer Simulations

- First Contingent Incremental Transfer Capability (FCITC)
- Evaluate the impact of high MW transfers & identify key flowgates and lines that may limit transfers
- 6 transfer analyses studied

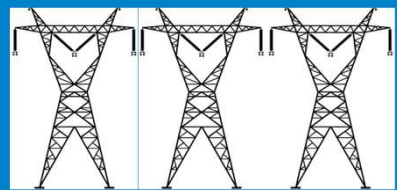
Voltage Stability Analysis during Energy Transfer Simulations

- Power-Voltage Analysis (PV)
- Analyze high transfers in combination with transmission & generator outages which can cause stability issues across the footprint
- 1 High Voltage interfaces studied

Phase Angle Analysis during Energy Transfer Simulations

- Identifies large phase angle differences associated with reclosing a transmission line
- Identify angle differences before and after an energy transfer

Thermal Transfer Analysis (FCITC)



Analysis	Transfer Limit (MW)	Constraint
MISO CENTRAL Region West to East Transfer (On the NIPSCO System)	**5,065**	[AEP] Allen - [AEP] Robert Mone 345kV CKT 1 for the loss of [AEP] Sorenson - [AEP] Marysville 765kV CKT 1
MISO CENTRAL Region East to West Transfer (On the NIPSCO System)	**> 6,000**	No Constraint Found
MISO Midwest to MISO SOUTH	**>3,000**	No constraint found up to the agreed upon transfer limit
MISO SOUTH to MISO Midwest	**1,780**	[TVA] Volunteer - [TVA] Phipps Bend 500kV CKT 1 for the loss of [AEP] Mountaineer - [AEP] Mountaineer Generation & Mountaineer unit 1H &1L
MISO Central to MISO North	**> 6,000**	No Constraint Found
MISO North to MISO Central	**5,275**	[AMIL] Marblehead North XFmr 161kV - 138kV CKT 1 for the loss of [AMIL] Herleman - [AMMO] Maywood 345kV CKT 1

Phase Angle Analysis

Procedure

- **Monitored 750 High Voltage lines (>=345kV) for Angle Separation between 2 ends of a line:**
  - when it opens (contingency)
  - Measurements taken during an energy transfer
  - Report Phase Angle Separation >= 30 degrees

Results:

- Most of the large Angle Separations will only appear during an energy transfer
- TO's have responded to the large Phase Angle separations

Phase Angle Analysis (continued)

NORTH Region
King-Eau Claire (XEL) 345kV
Bison (OTP) - Buffalo (XEL) 345kV
Briggs Rd (XEL) - North Madison (MGE) 345kV
Buffalo-Jamestown (OTP) 345kV
Eau Claire (XEL) -Arpin (ALTE) 345kV
Jamestown - Center (OTP) 345kV
Lyon Co - Hawk's Nest Lake (XEL) 345kV

NORTH Region
Morgan (WEC) - Plains (MIUP) 345kV
North Rochester-Briggs Rd (XEL) 345kV
Center-Prairie 345kV (MPC) 345kV
Stone Lk-Arrowhead (WPS) 345kV

CENTRAL Region
Dumont (AEP) - Wilton Center (CE) 765 kV
Amo-Edwardsport 345kV
Amo-Qualitec Steel 345kV
Cayuga2 - Nucor Steel (DEI) 345 kV
Nucor Steel - Whitestown (DEI) 345kV
Frances Creek - Petersburg (IPL) 345kV
Argenta - Tompkins (METC) 345kV

CENTRAL Region
Keystone - Ludington (METC) 345kV
Bondurant - Montezuma (MEC) 345kV
Collins - Wilton Center (CE) 765 kV
Grimes - Beaver Creek (MEC) 345 kV
Killdeer - Quinn (ALTW) 345 kV
Quinn (ALTW) - Blackhawk (MEC) 345 kV

SOUTH Region
Hartburg (EES) -Layfield (AEPW) 500kV
McKnight (EES)-Daniels (SOCO) 500kV
Mt. Olive (EES)-El Dorado (EES-EAI) 500kV
Baxter Wilson (EES-EMI) - Perryville (EES) 500kV

Readiness

- Procedures
- Winterization and Fuel Surveys

Mike Carrion
Mike Mattox

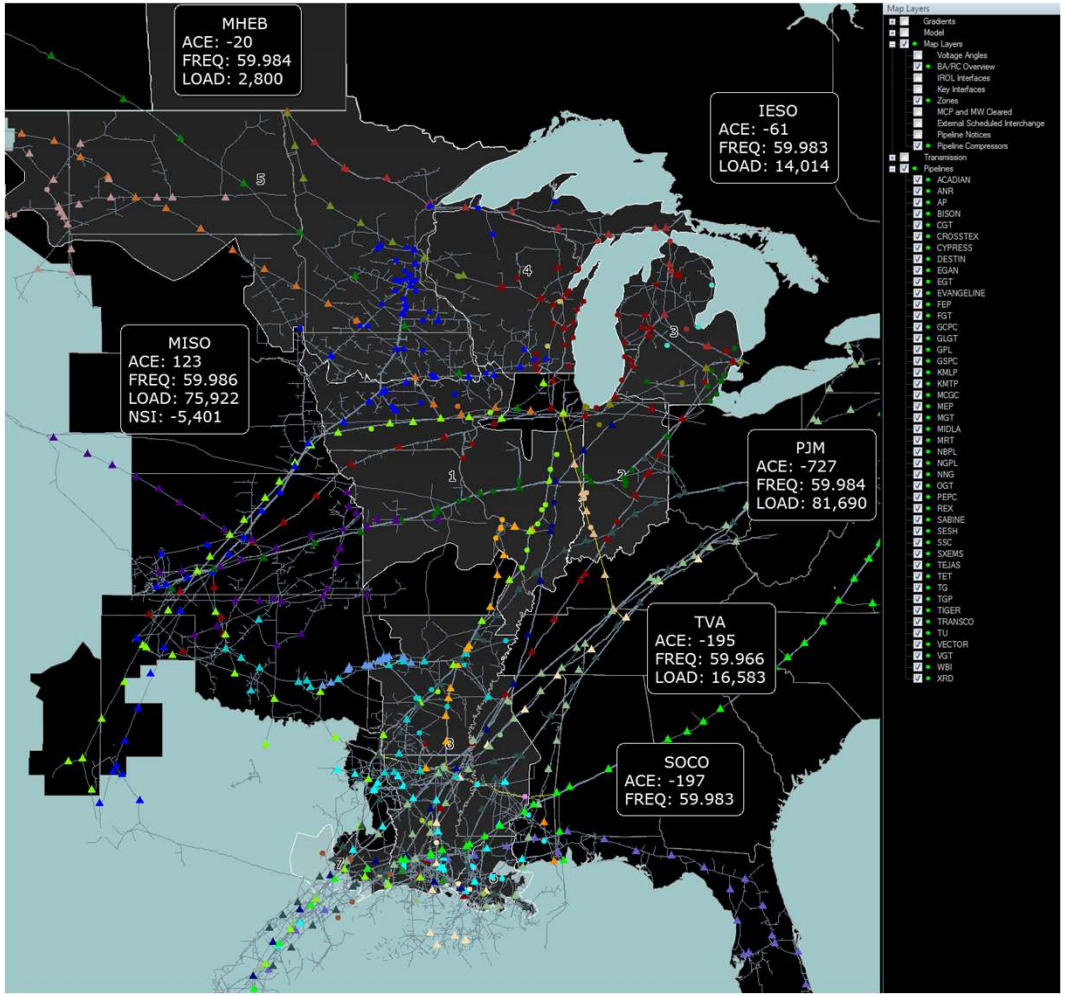
Readiness: Procedures

Mike Carrion

Winter Readiness Workshop

October 27, 2020

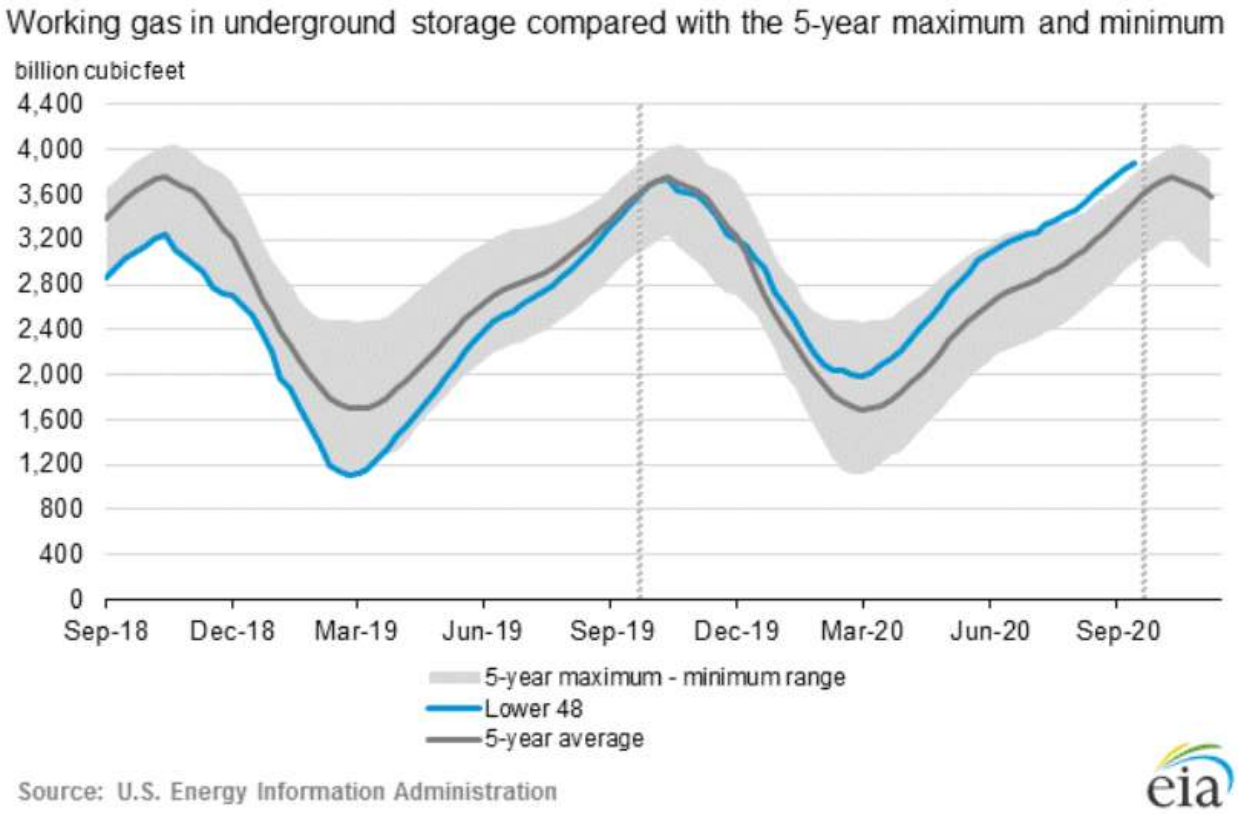
Gas pipeline and storage access throughout the MISO footprint support Winter generation needs



- Gas demand for electric power sector continues to increase as coal units retire
- Prolonged cold temperatures could impact pipeline delivery, withdrawals, and prices
- **Gas demand has grown, and MISO's evolving fleet will propel gas demand even higher.**

EIA Natural Gas Storage Summary

Midwest storage levels **above the five-year historical range** and **nearing the five-year maximum storage threshold** due to strong production, reduced load and relatively mild temperatures



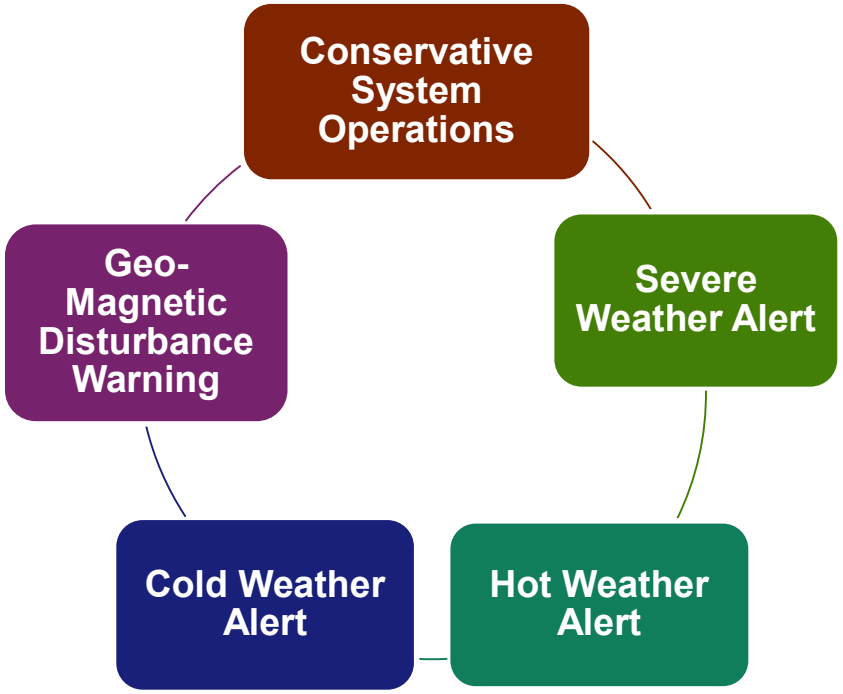
Data Source: U.S. Energy Information Administration (http://ir.eia.gov/ngs/ngs.html#cvtable) and S&P Global Platts Gas Daily Report for October 19, 2020

MISO

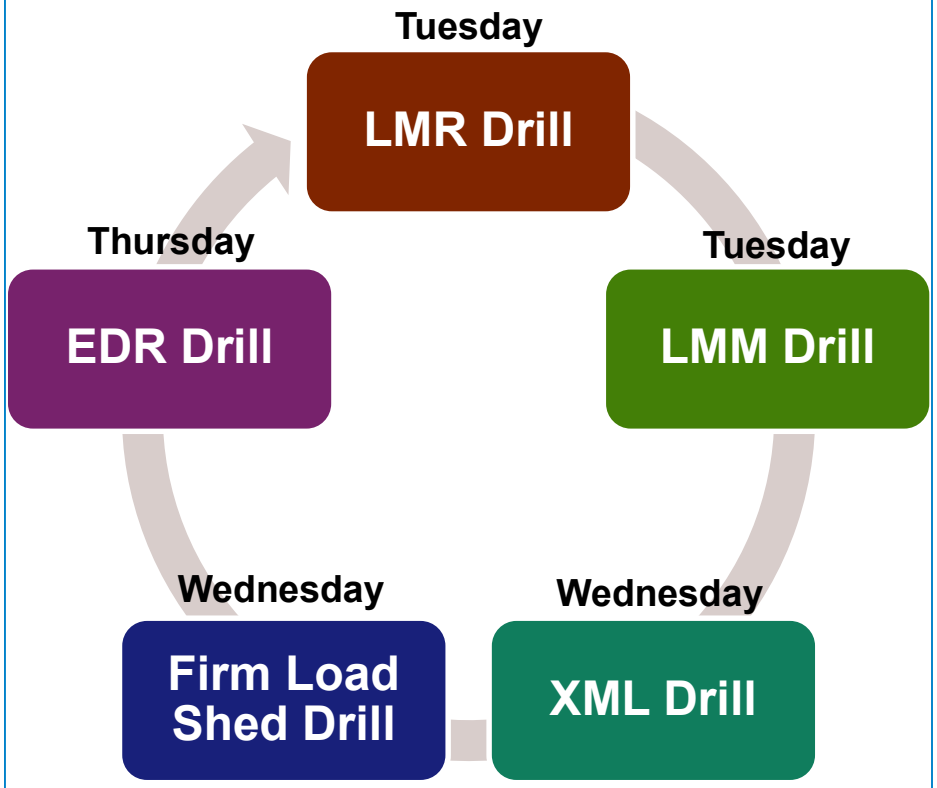
Operators use emergency procedures and partner with members to drill on emergency process to ensure readiness in all operating situations

Emergency Operating Procedures

guide operator actions when an event has the potential to, or does, negatively impact system reliability



Monthly Drills



Power Restoration Drills: Two Drills held Oct 6/7 & 20/21
Summer Readiness Drills: 6 Thursdays in April and May 2020

Data Source: SO-P-NOP-00-449 Rev 4 Conservative System Operations and SO-P-EOP-00-002 Rev 9 MISO Market Capacity Emergency procedures

Implementation of Transmission Advisory

- **Provides situational awareness that an area or region within the MISO RC footprint has sustained significant transmission system damage**
  - Due to extreme weather, e.g., major hurricane, ice storm, tornado, etc.
- **Provides MISO and its members with the ability to escalate reliability actions, as necessary, to ensure reliability of the affected area. Such escalation could include:**
  - Local Transmission Emergency (LTE)
  - Transmission System Emergency (TSE)

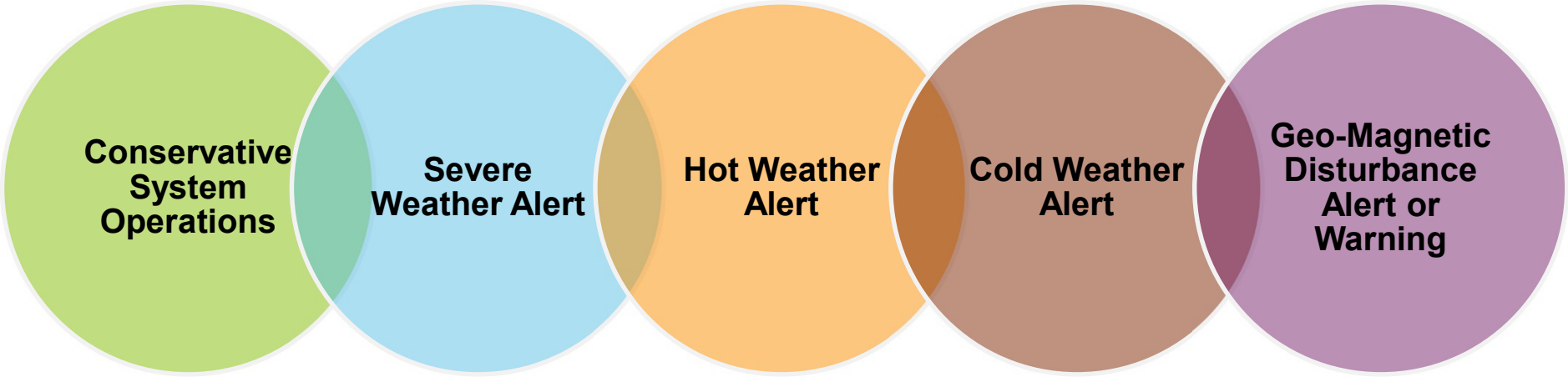
Procedure Review

Conservative System Operations Procedure
SO-P-NOP-00-449

MISO Market Capacity Emergency
SO-P-EOP-00-002

Conservative System Operations

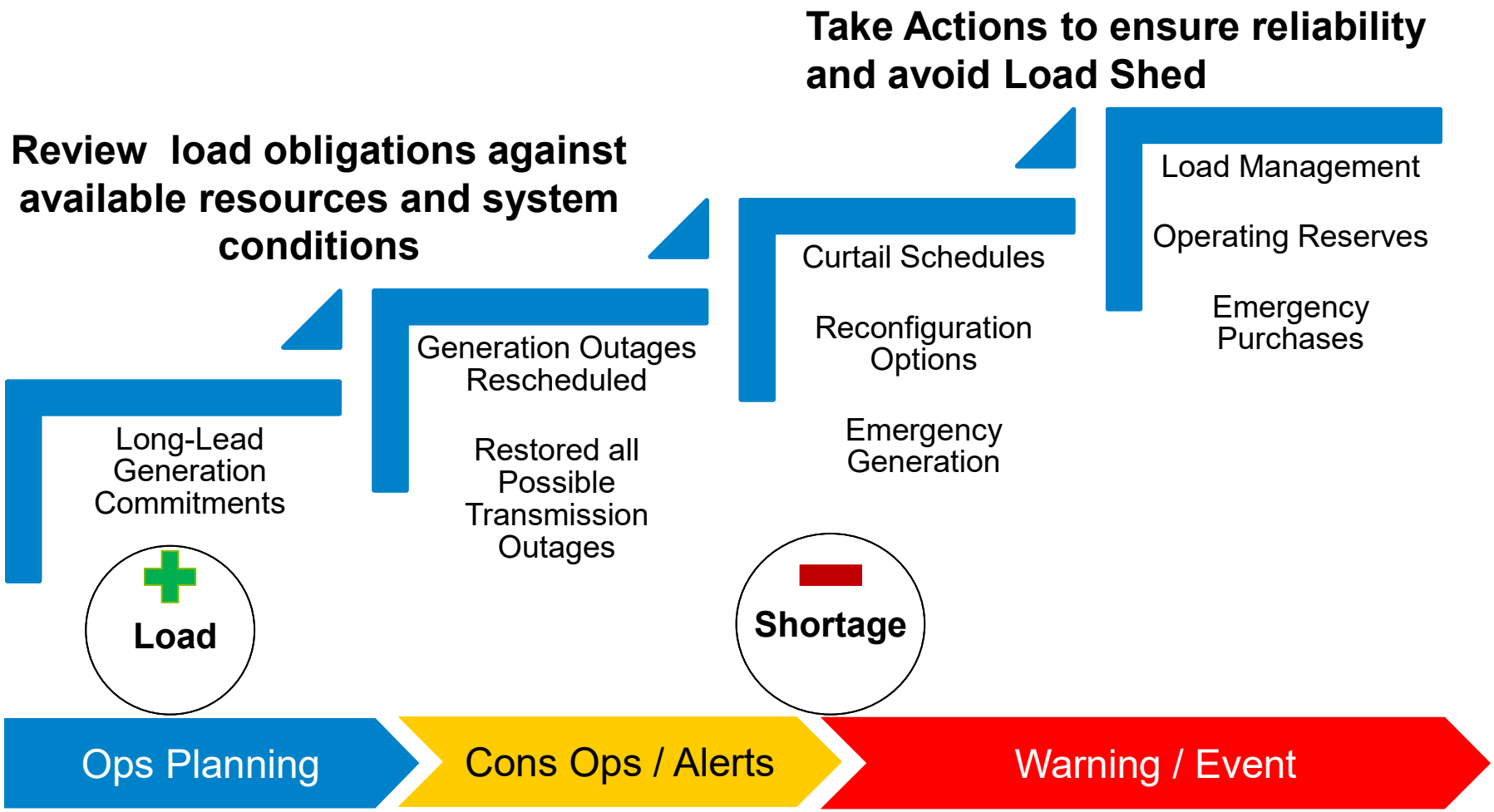
- Five declarations are used to prepare operating personnel and facilities for extreme weather conditions or abnormal conditions that will, or have the potential to, impact the Bulk Electric System (BES):



- Allows MISO & regional operators to defer or cancel transmission or generation outages to increase transfer capability and capacity .
- Provide instructions for returning planned outages/maintenance equipment to service, if possible, in the impacted areas
- Suspend all work on critical computer systems
- Prepare for the implementation of Emergency Procedures

Data Source: SO-P-NOP-00-449 Rev 4 Conservative System Operations

MISO prepares for extreme conditions in advance. In Real-Time, unplanned outages and other unknowns may require additional actions



Market Capacity Emergency Review

Capacity Advisory	• Advance notice of forecasted capacity shortage, requests Stakeholders update offer data	
Alert	• Define boundaries/suspend maintenance	
Warning	• Schedule in External Resources, Curtail export transactions, Reconfiguration, and set Emergency Pricing Tier 1 Offer Floor	Emergency Pricing Tier 1 Offer Floor
Step 1	• Commit Emergency Resources, Declare NERC EEA 1, Activate Emergency Limits	
Step 2	• Declare NERC EEA 2, Implement LMRs, LMMs Stage 1, Commit EDR Resources, Emergency Energy Purchases, Public Appeals, and set Emergency Pricing Tier 2 Offer Floor	
Step 3	• Utilize Operating Reserves, and LMMs Stage 2	Emergency Pricing Tier 2 Offer Floor
Step 4	• Reserve Call and Emergency Reserve Purchases	
Step 5	• Declare NERC EEA 3, Firm Load Shed, and set LMPs and MCPs to the VOLL	
Termination	• Max Gen and, possibly, Capacity Advisory Termination	

Data Source: SO-P-EOP-00-002 Rev 9 MISO Market Capacity Emergency procedures

Generator Winterization & Gas Fuel Surveys

Mike Mattox

Winter Readiness Workshop

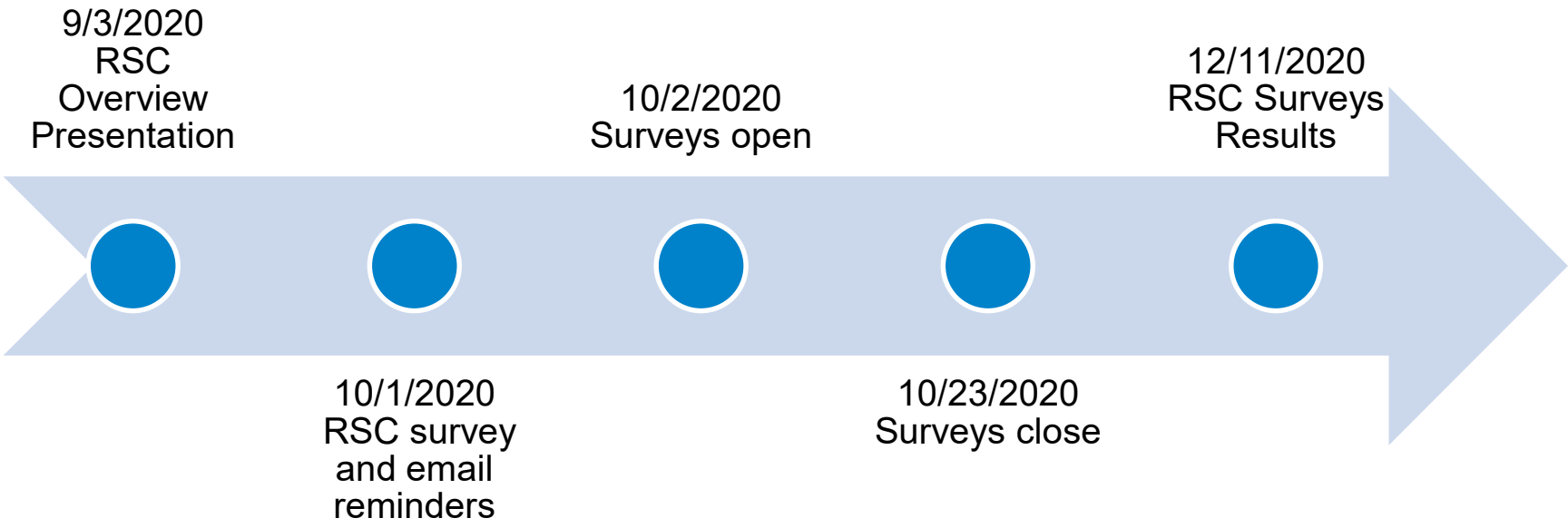
October 27, 2020

Name Changes to Surveys

New Name	Old Name(s)
Generator Winterization Survey	(Generator) Winterization Survey
Annual Gas Fuel Survey	Winter (Generator) Fuel Survey

- 2019 was first time there were two surveys which led to some confusion
- Survey links went live on Oct 2 – misoenergy.org main page and under Market and Operations Quick Links
- Publicized in multiple stakeholder forums
- Email reminders to Market Participant General Contacts and prior year respondents

Survey Timeline



Additional Information

- Surveys unchanged from 2019
- NERC Standard Authorization Request (SAR), Project 2019-06, Cold Weather Preparedness and Communication Requirements between Functional Entities, https://www.nerc.com/pa/Stand/Pages/Project%202019-06%20Cold%20Weather.aspx
- Generator Winterization Survey – all generation
- Annual Gas Fuel Survey – only for generators with commercial model fuel type
  - Gas
  - Oil/Gas
  - Coal/Gas

Questions?

Guest Speaker: Hisham Sidani
Entergy

Thank you for joining us today!