



Annual Review of Dispatch Wind/Solar Assumptions

Slide 2 Updated
4/30/26

Planning Subcommittee
April 29th, 2026

Purpose & Key Takeaway

Purpose

Present MISO Wind/Solar recommendation for dispatch assumptions in the Reliability Planning Models

Key Takeaways

- In 2020 MISO, in collaboration with stakeholders, adopted a method for monitoring and updating Wind/Solar dispatch assumptions in Reliability Planning Models
- First cycle that had new values implemented was MTEP21/ DPP 2020
- Due to the rapid growth of renewables, there is annual monitoring of historical Wind/Solar output and review of impact it may have on dispatch assumptions in the Reliability Planning Models
- Based on the Contingency Severity Index (CSI) a **shoulder high renewable scenario** is the worst scenario from a reliability perspective
- First cycle with the update values proposed to be implemented in MTEP27/**DPP2027**

Rapid growth of renewables requires a periodic monitor and review wind/solar output assumptions

- In 2020, MISO in collaboration with stakeholders developed a process for identifying the more stressful Summer Shoulder wind/solar dispatch scenario
- For the 5 year out Summer Shoulder sensitivity case the following dispatch levels will be evaluated to determine which is more severe as per NERC TPL guidelines. The more severe scenario will then be used going forward.
 - Maximum Wind with coincident Solar
 - Maximum Solar with coincident Wind
 - Maximum Combined Coincident Wind & Solar

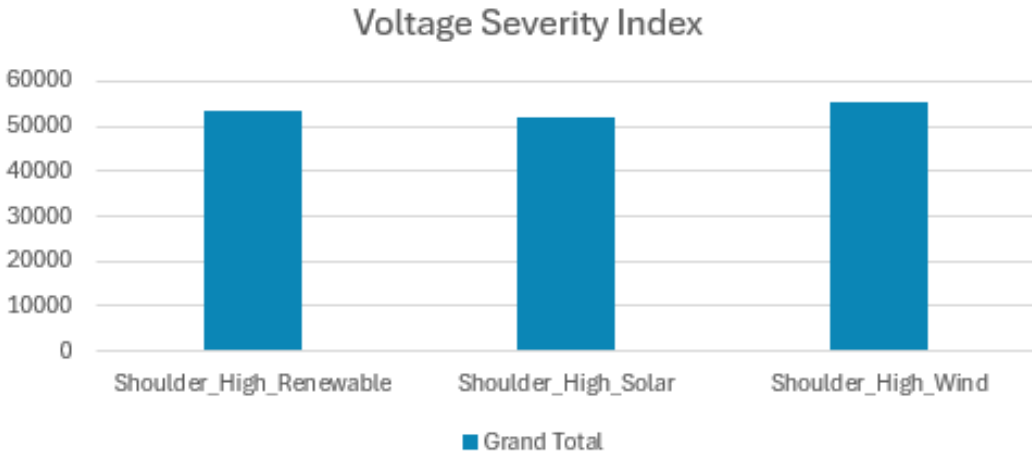
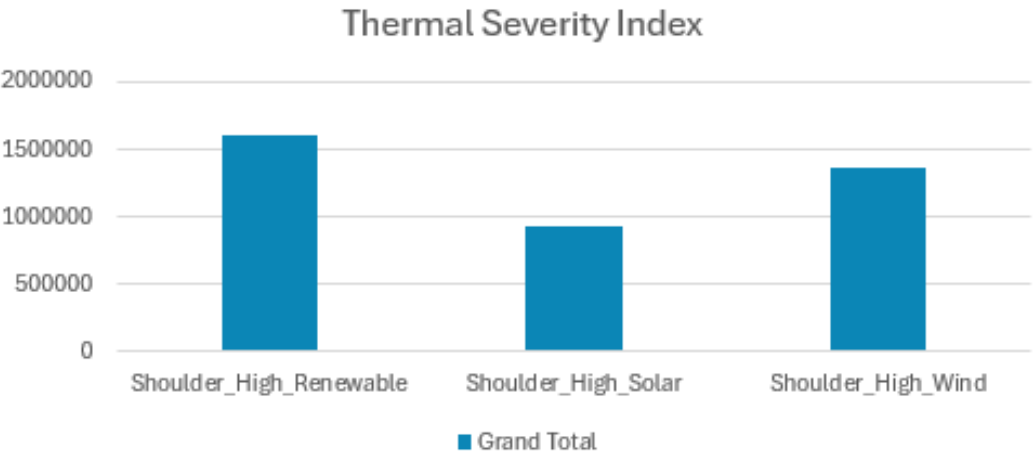
A Severity Index Calculation will be used to determine the most severe wind/solar scenario, which will be adopted and studied in MTEP reliability models

Based on the current trends solar capacity is increasing rapidly and is expected to exceed wind capacity by 2030

Summer Historic Nameplate Capacity (GW)						Future projected assumptions and wind/solar output (GW)
	2021	2022	2023	2024	2025	
Wind	27	29	30	31	31	
Solar	1.4	2.5	4.3	10	15.2	
						2030
						38.5
						49.5

- Adapted method for determining wind/solar impact shows a strong correlation between historical trends and projected values and accurately predicted 2025 outcomes
- Solar capacity growth is expected to outpace wind capacity growth in the next five years, driving the need for new severity index study

Based on the Severity Index, MISO recommends using Shoulder High Renewable as the 5 year out shoulder sensitivity case



Scenario (Wind/Solar %)	Wind (MW)	Solar (MW)	Total (MW)
Highest Coincident (69/69 %)	26704	34400	61104
Highest Solar (26/80 %)	9816	39538	49354
Highest Wind (77/47 %)	29549	23051	52600
Total Installed Capacity	38446	49541	87987

Proposed Wind & Solar Dispatch Assumptions for Reliability Models

Representative Year	Model Scenario	Current Wind & Solar Output (%) Assumption		Proposed Wind & Solar Output (%) Assumption	
Year –Five (Sensitivity) TPL-001-5 R2.1.4	Summer Shoulder	High Wind 72%	Coincident Solar 47%	High Renewable 67 %	High Renewable 73%
Year – Five (Base) TPL-001-5 R2.1.2	Summer Shoulder	Average Wind 27%	Average Solar 48%	Average Wind 27%	Average Solar 48%
Year – Five (Sensitivity) TPL-001-5 R2.1.4	Spring Light Load	High Wind 83%	Coincident Solar 10%	High Renewable 71%	High Renewable 59%
Year - Five	Winter Peak	Wind 67%	Solar 0%	Wind 56%	Solar 0%

Next Steps

- Feedback Request/Response
- Updated wind and solar assumptions will be adopted into the planning manual and BPM 15

Stakeholder Feedback Request

- MISO requests feedback on **Annual Wind and Solar Dispatch Assumptions** by May 15th, 2026
 - MISO is requesting feedback on:
 - Proposed wind and solar dispatch percentages
 - Selected Summer Shoulder sensitivity case
- Feedback requests and responses are managed through the Feedback Tool on the MISO website: <https://www.misoenergy.org/engage/stakeholder-feedback/>

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Appendix

MTEP Models Wind/Solar output under the monitoring of PSC

Representative Year	Model Scenario	Expected Load Level	MTEP26 Wind Output (%) Assumption	MTEP26 Solar Output (%) Assumption	Notes	PSC Monitors Wind/Solar Output
Year - Two TPL-001-5 R2.1.1 (Base)	Summer Peak	The summer peak demand expected to be served	Capacity Credit 18.1%	Capacity Credit 50%		
Year - Two TPL-001-5 R2.1.4 (Sensitivity)	Spring Light Load	Early morning load within 40-60% of Summer peak	No Wind 0%	No Solar 0%		
Year - Five TPL-001-5 R2.1.1 (Base)	Summer Peak	The summer peak demand expected to be served	Capacity Credit 18.1%	Capacity Credit 50%	Used in GI Studies	
Year - Five TPL-001-5 R2.1.4 (Sensitivity)	Summer Shoulder	70-80% of the Summer Peak Load	High Renewable 67%	High Renewable 73%	Used in GI Studies	Yes
Year - Five TPL-001-5 R2.1.2 (Base)	Summer Shoulder	70-80% of the Summer Peak Load	Average Wind 27%	Average Solar 48%		Yes
Year - Five TPL-001-5 R2.1.4 (Sensitivity)	Spring Light Load	Early morning load within 40-60% of Summer peak	High Renewable 71%	High Renewable 59%		Yes
Year - Two TPL-001-5 NA	Winter Peak	The winter peak demand expected to be served	Coincident Wind 56%	No Solar 0%		Yes
Year - Ten TPL-001-5 R2.2.1 (Base)	Summer Peak	The summer peak demand expected to be served	Capacity Credit 18.1%	Capacity Credit 50%		

Modeling Assumptions

Season	MISO Modeling Manual	ERAG MMWG Manual	Meteorological Season Dates
Summer Shoulder	Summer Shoulder Load (SSH) - is defined as 70% to 80% of summer peak load conditions. The Summer Shoulder shall represent a typical summer day peak value, not the shoulder values of a peak day.	Summer Shoulder Peak Load — is defined as 70% to 80% of summer peak load conditions.	June 1 To August 31
Spring Light Load	Spring Light Load (SLL) - is defined as a typical early morning load level*, modeling at or near minimum load conditions.	Spring Light Load — is defined as a typical early morning load level, approximately 40% to 60% of summer peak load conditions	March 1 to May 31
Winter Peak	Winter Peak Load (WIN) – is defined as the winter peak demand expected to be served.	Winter Peak Load— is defined as the winter peak demand expected to be served, reflecting load reductions for peak shaving.	December 1 to February 29

Historical Five Year Wind & Solar Output Percentages

Proposed Modeling Assumptions				Current Modeling Assumptions		
Season	Wind	Solar		Season	Wind	Solar
Shoulder High Renewable	67%	73%		Shoulder High Wind	74%	53%
Shoulder Average Wind	27%	48%		Shoulder Average Wind	26%	46%
Spring Light Load High Renewable	71%	59%		Spring Light Load High Wind	84%	15%
Winter Peak Coincident Wind	56%	0%		Winter Peak Coincident Wind	56%	0%

Severity Index Calculations

- The severity index formulation is a modified Contingency Severity Index (CSI) from Siemen PTI's PSS/MUST
- Taking this approach will allow for a straight forward comparison of the overall system performance for various models rather than focusing on a specific monitored element - contingency pair

Thermal Severity Index Metric (per contingency)

- Each element with a thermal issue (i) has a severity index
- P_i = Post-Contingent Branch Flow (MVA)
- $P_{lim\ i}$ = Contingent Branch Rating (MVA)

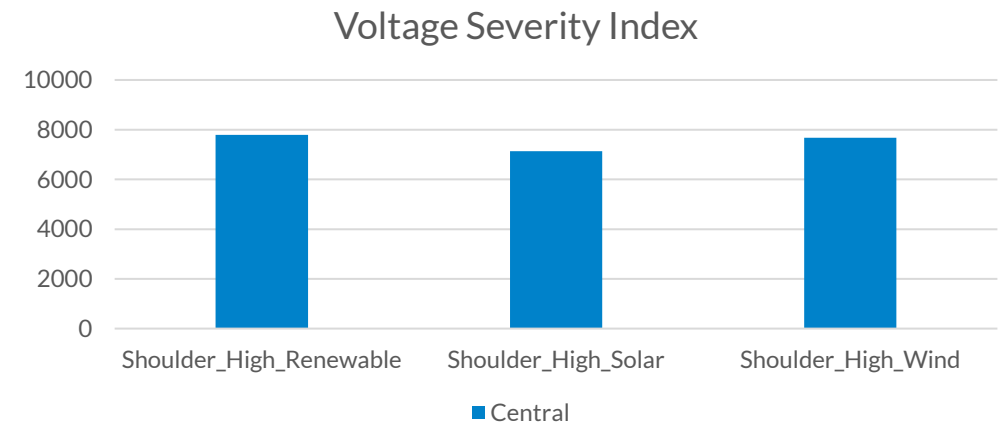
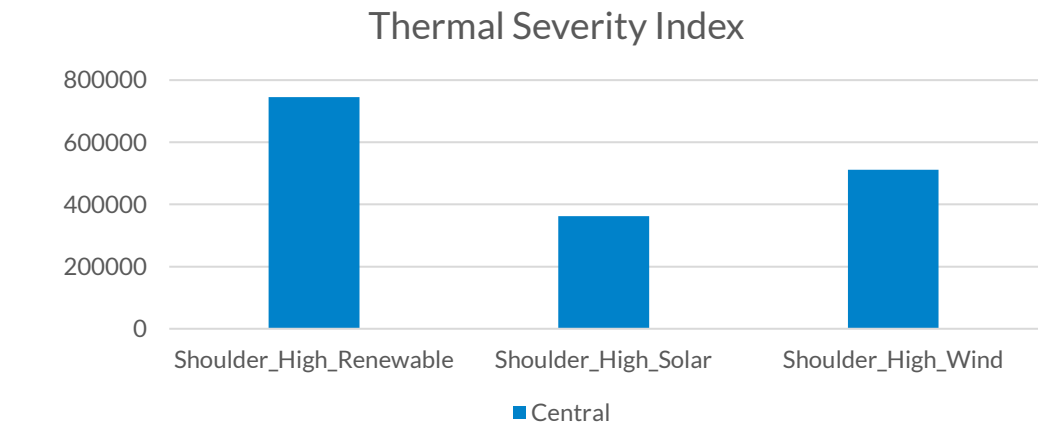
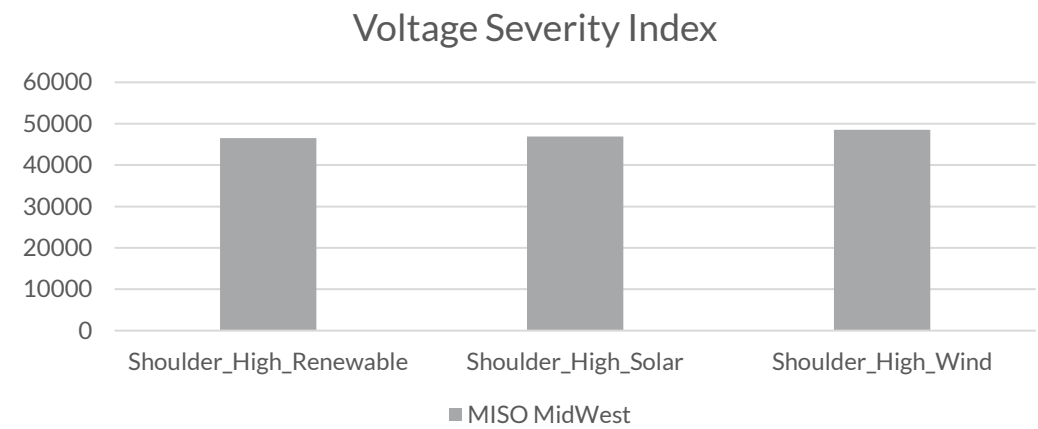
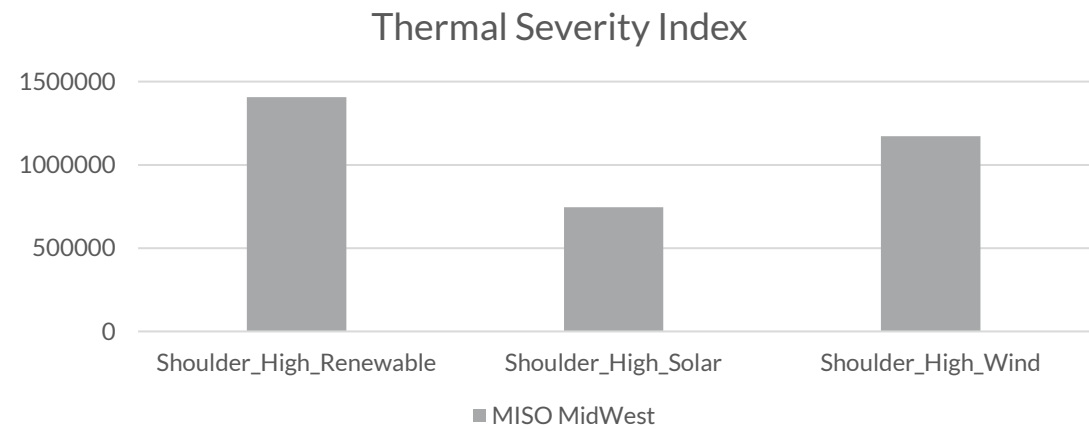
$$\sum (P_i - P_{lim\ i})^2$$

Voltage Severity Index Metric (per contingency)

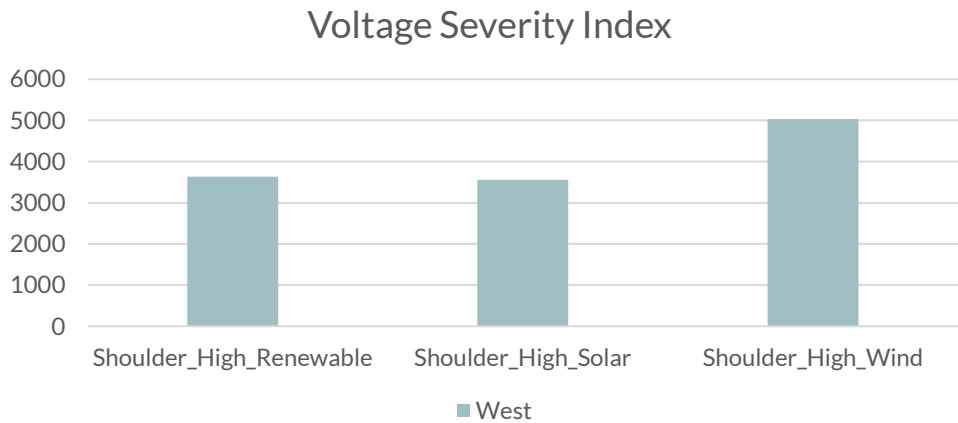
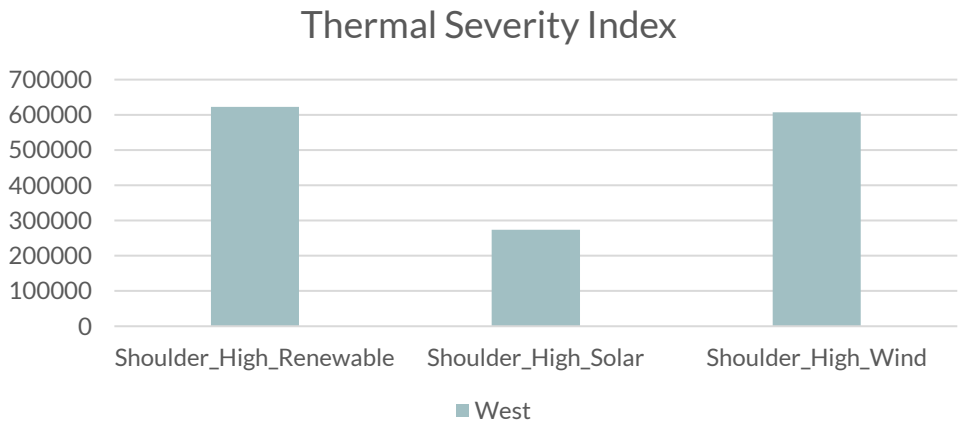
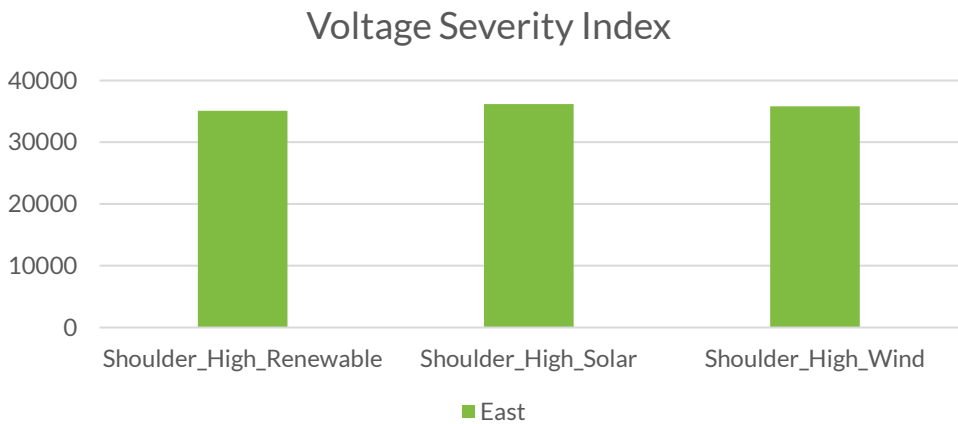
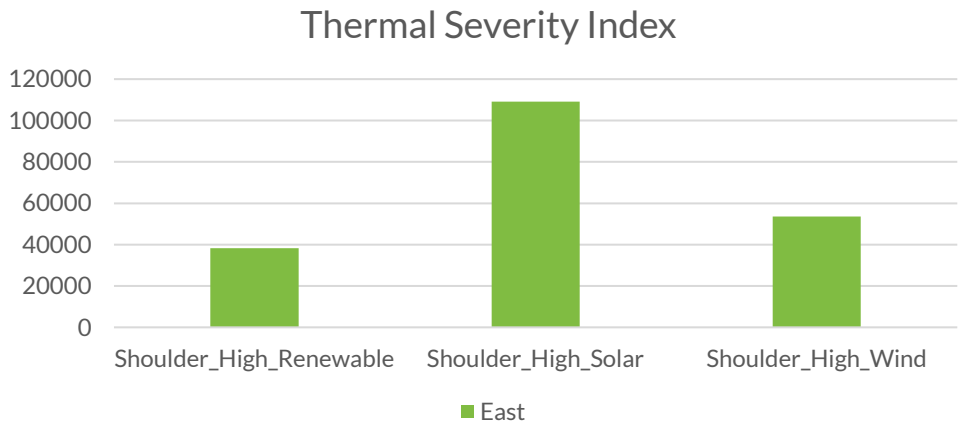
- Each Voltage issue (i) has a severity index
- V_i = Post-Contingent Voltage in kV
- $V_{lim\ i}$ = Voltage limit exceeded in kV

$$\sum (V_i - V_{lim\ i})^2$$

Regional Severity Indices



Regional Severity Indices



Regional Severity Indices

