Market Redefinition: Accreditation Reform

RASC

October 4, 2023

(Issues RASC-2020-4 and 2019-2)

Added footnote on Slide 6 on 10/2/23

Updated title of Slide 7 on 10/4/23

Purpose & Key Takeaways

Purpose:

1. Share additional sensitivities around DLOL accreditation
2. Provide updated proposal for the transition to DLOL

Key Takeaways:

- Market Participant level impacts related to MISO's accreditation reform proposal are available upon request
- At the request of stakeholders, today MISO will share multiple sensitivities regarding DLOL accreditation results and plans to share a Future 2A look in late October/early November
- MISO will delay the accreditation reform FERC filing and is now targeted for Q1 2024

Direct-LOL Results

MISO has indicative Market Participant level accreditation reform impacts ready for distribution

- MISO External Affairs will begin to reach out to customers regarding their indicative impacts

- Detailed instructions on how to request the data can be found in the Appendix

MISO is committed to sharing forward looking Direct-LOL results and trends with stakeholders in the coming months

- Direct-LOL results based on Future 2A will be shared at the October 2023 Attributes Workshop as well as at the November 2023 RASC meeting
- MISO plans to use the Regional Resource Assessment (RRA) to publish forward looking accreditation and planning reserve margin requirement estimates starting with the 2024 RRA

Expanding the hours used in the DLOL calculation leads to a few resource classes having higher accreditation values

PY23-24	Summer			Fall			Winter			Spring		
		DLOL			DLOL			DLOL			DLOL	
Resource Class	UCAP	Base	3% EH	UCAP	Base	3% EH	UCAP	Base	3% EH	UCAP	Base	3% EH
Gas	91%	89%	90%	89%	88%	89%	84%	70%	70%	88%	72%	72%
Coal	92%	91%	91%	91%	87%	89%	90%	72%	74%	89%	74%	74%
Hydro	97%	97%	98%	97%	99%	99%	42%	69%	69%	62%	74%	73%
Nuclear	95%	90%	91%	96%	83%	87%	95%	84%	86%	92%	77%	80%
Pumped Storage	99%	98%	98%	91%	98%	98%	94%	47%	51%	89%	70%	68%
Solar	45%	36%	42%	25%	28%	35%	6%	0%	2%	15%	15%	22%
Wind	18%	11%	14%	23%	15%	15%	40%	13%	17%	23%	16%	16%
Storage	95%	94%	93%	95%	89%	93%	95%	90%	90%	95%	97%	96%
Run-of-River	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Resource class results expected to change as LOLE modeling enhancements are made to better reflect reliability risks across the year and the changing fleet, e.g., storage results expected to decrease

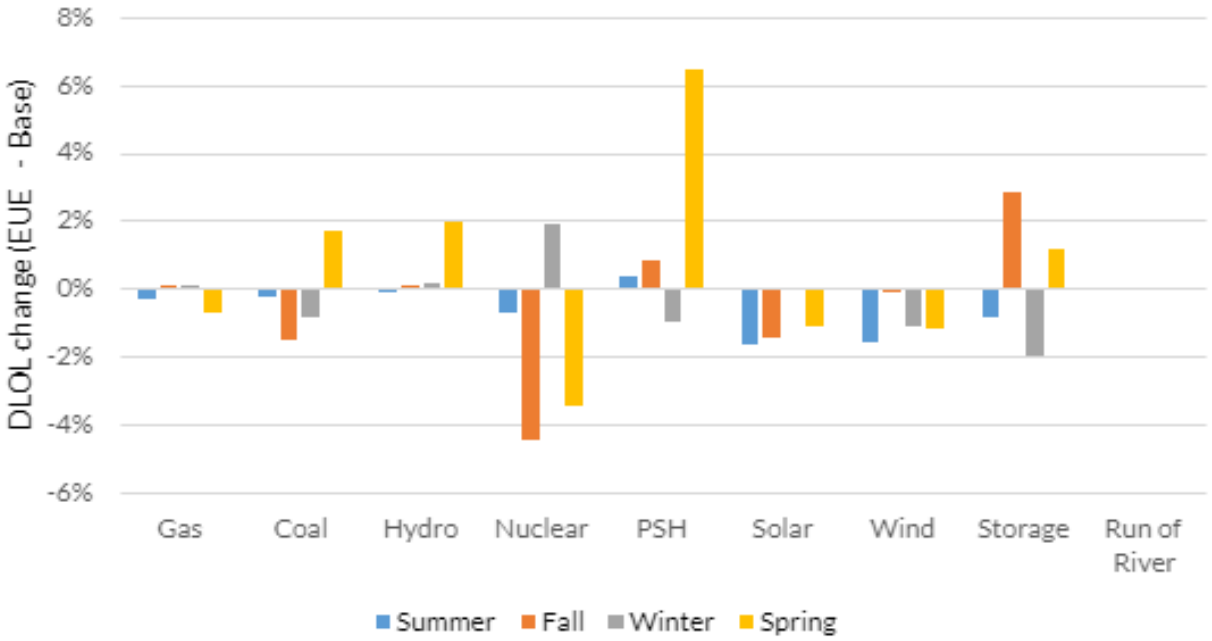
3% EH = 3% expanded hours (anytime generation is within 3% of load)

UCAP = current accreditation methodology by resource type

Base results have shifted slightly from the August 2023 RASC due to weighting of Load Forecast Error

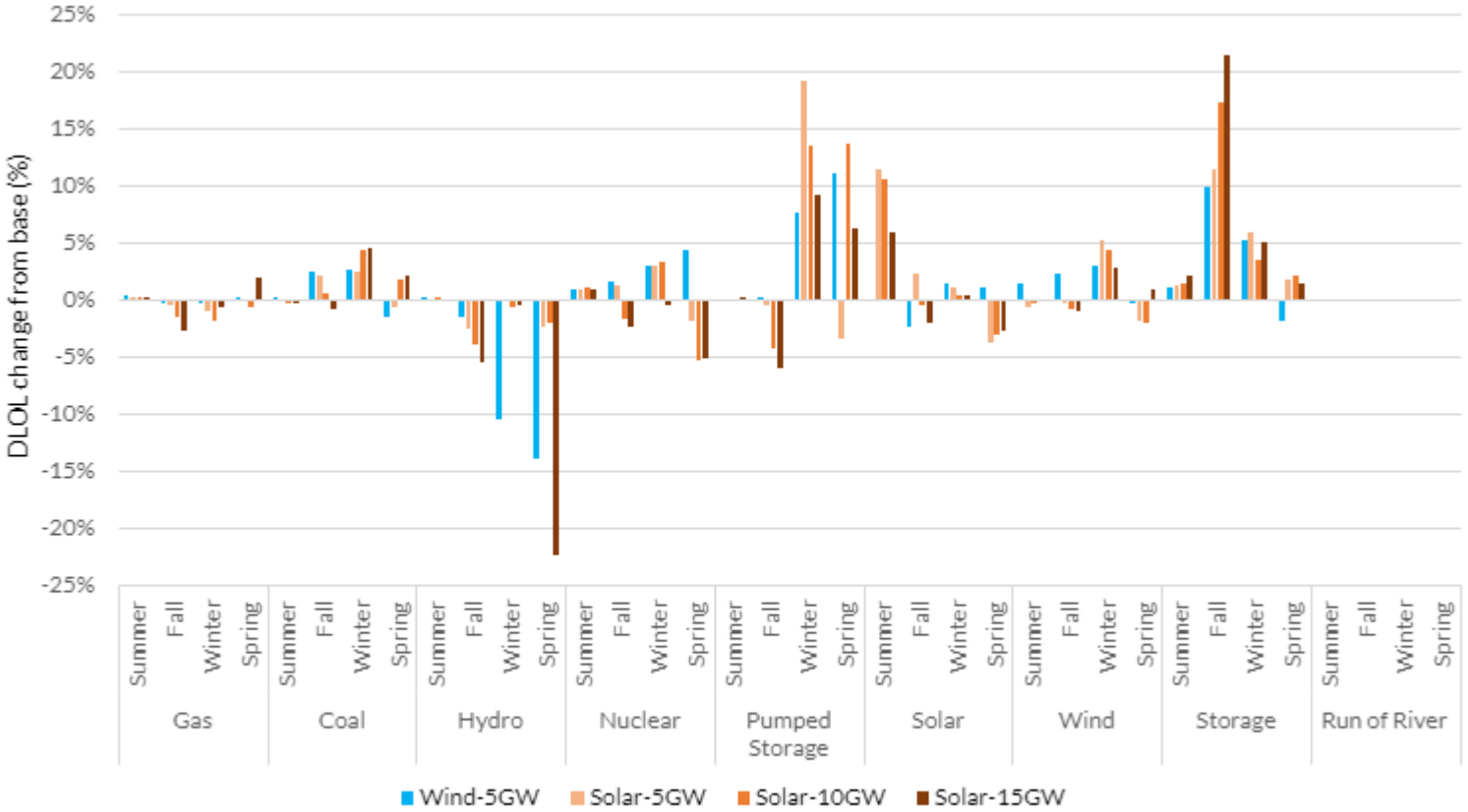
UCAP and Base DLOL %'s were previously shared

DLOL weighted by Expected Unserved Energy (EUE) produces similar results compared to a straight average approach



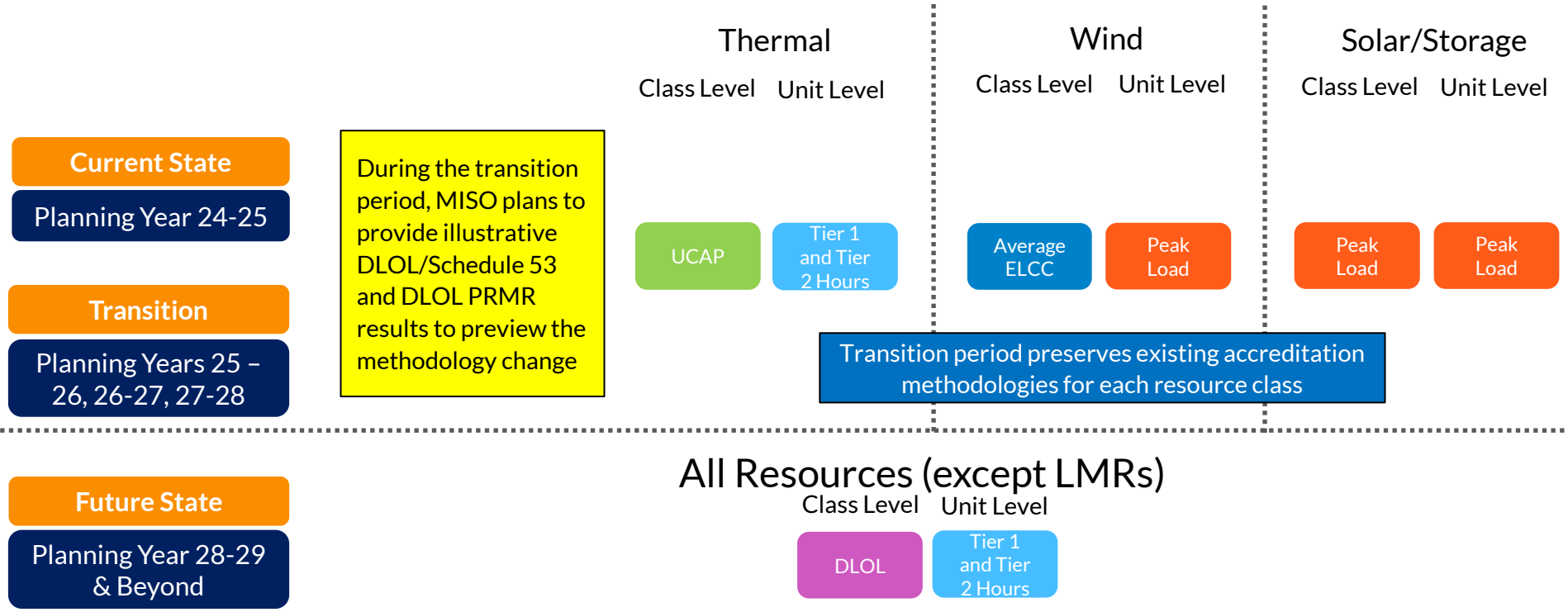
Base DLOL %'s were previously shared

Increasing solar penetration drives lower DLOL accreditation for solar resources



Transition Period

MISO is proposing a 3-year transition to allow stakeholders to better understand and plan for the DLOL accreditation methodology



End State: Consistent accreditation methodology for all resources with continued emphasis and improvements on the probabilistic modeling (i.e., generator capabilities, correlated outages, fuel supply limitations, severe weather).

August RASC Stakeholder DLOL Enhancement Proposal

MISO is still evaluating the stakeholder proposal for DLOL enhancements and will also consider the stakeholder presentations included with today's agenda on PRMR allocation

1 - LOL Hour Selection

- Expand beyond just narrow LOL hours to include hours within tightest hours, more closely aligning to existing Schedule 53 tightest hours

2 - Energy Limited Resource Dispatch

- Amend LOLE model storage dispatch assumptions such that each MW of capacity is treated equitably across dispatch technologies

3 – Allocation of PRMR Reduction

- Reduce risk of inadvertently favoring certain zones over others as a result of MISO's proposed PRMR reduction

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Next Steps

Next Steps

- Provide Market Participants resource level accreditation values with requirements upon request through Dynamics – details in Appendix
- Revised Resource Accreditation whitepaper will be posted once more design details are added
- MISO is targeting a response to the stakeholder DLOL enhancements proposal at the November RASC
- A FERC filing for Resource Adequacy accreditation reforms is now targeted for Q1 2024

Contact Information

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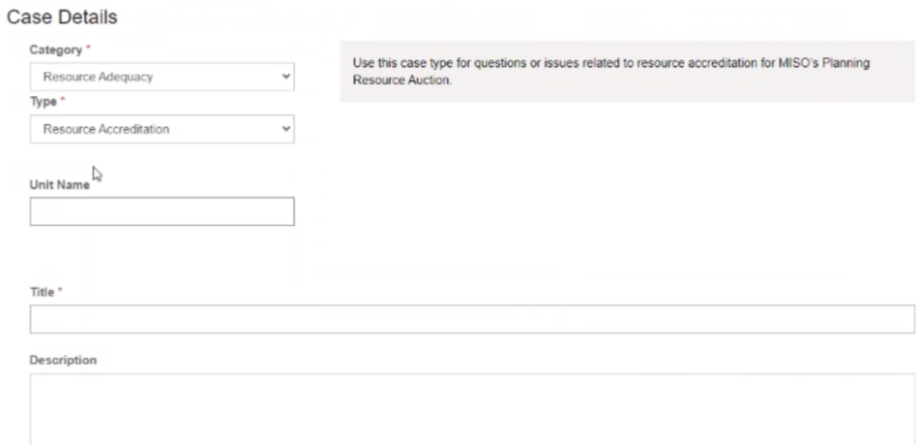
Appendix

Instructions for requesting indicative Market Participant level accreditation reform impacts

1. Go to help.misoenergy.org/
2. Login to account
3. Select "My Support"
4. Select "Open a New Case"
5. Input Contact Details
6. Select "Resource Adequacy" category
7. Select "Resource Accreditation" type
8. Title "Request for Results" or "Feedback from *insert company name here"
9. Add description with feedback, or other details as needed

Example



MISO's accreditation design is near final with the expansion of hours being the one remaining feature still being considered

Design Element	MISO Proposal	Features still being considered
Hour Selection	Loss of Load (LOL) hours only	Expansion of hours to include hours within a certain margin threshold (e.g., 3% margin)
Direct-LOL calculation	Straight average of all LOL hours	Design final
Resource Classes	Gas, Coal, Hydro, Nuclear, Pumped Storage, Solar, Wind, Storage, Run-of-River	Design final

MISO suggests extending Schedule 53 to **all resources (except LMRs)** although some design elements may need to be modified (Unit Level Design)

Design Elements		Today under current Schedule 53	Proposed changes to Schedule 53
Hour Selection	Calculation of operating margin to identify RA hours	Online margin + offline margin with 12 hours or less lead time divided by RT load	No Change
	Top X% of tightest margin hours	Tier-1: all hours excluding tight hours in Tier-2 Tier-2: MaxGen hours supplemented with top 3% of tight margin hours per season	No Change
	Margin threshold	25%	No Change
	Seasons with no/ limited RA hours to meet 3% per season (65 hours)	Supplement deficient number of hours with Annual Average Offered Capacity (AAOC) over top 3% of tightest margin hours per year	Fill deficient hours with seasonal class DLOL % (Current UCAP during transition)
	Regionality (N+C/S) (tight margin and MaxGen hours)	Yes	No Change
	Leadtime for offline units (tight margin calc)	24 hours	No Change
Accreditation Calculation	Annual verses seasonal	4 season	No Change
	Tiered weighting	Tier-1 20%; Tier-2 80%	No Change
	Leadtime for offline units	24 hours	No Change
	Real-time offer considered	Tier-1 & Tier-2 Emergency Max	Real-time availability for Wind/Solar; All other resources will use Emergency Max (same as today)
	Adjustment Ratio	Multiply ISAC by ratio of thermal class UCAP to ISAC	Resource ISAC * (Class DLOL/Class ISAC) (Current UCAP during transition)
Planned Outage Exemption	Exemption removes hours from the Schedule 53 calculations	Yes, full out-of-service outages only with proposed three-level structure (none, Tier-1, Tier-2)	No Change

UCAP = Unforced Capacity ISAC = Intermediate Seasonal Accredited Capacity ELCC = Effective Load Carrying Capability

DLOL results weighted by Expected Unserved Energy (EUE) results produce similar results compared to a straight average approach

PY23-24	Summer DLOL		Fall DLOL		Winter DLOL		Spring DLOL	
Resource Class	Base	EUE Weighted	Base	EUE Weighted	Base	EUE Weighted	Base	EUE Weighted
Gas	89%	89%	88%	88%	70%	70%	72%	71%
Coal	91%	91%	87%	85%	72%	71%	74%	76%
Hydro	97%	97%	99%	99%	69%	69%	74%	76%
Nuclear	90%	90%	83%	79%	84%	86%	77%	74%
Pumped Storage	98%	99%	98%	99%	47%	46%	70%	76%
Solar	36%	35%	28%	27%	0%	0%	15%	14%
Wind	11%	9%	15%	15%	13%	12%	16%	15%
Storage	94%	94%	89%	92%	90%	88%	97%	98%
Run-of-River	100%	100%	100%	100%	100%	100%	100%	100%

Base DLOL %'s were previously shared

Increasing solar penetration drives lower DLOL accreditation for solar resources

Resource Class	Summer DLOL Base	Wind-5GW	Solar-5GW	Solar-10GW	Solar-15GW
Gas	89%	89%	89%	89%	89%
Coal	91%	91%	91%	91%	90%
Hydro	97%	97%	97%	97%	97%
Nuclear	90%	91%	91%	91%	91%
Pumped Storage	98%	98%	98%	98%	98%
Solar	36%	36%	29%	22%	15%
Wind	11%	10%	10%	11%	11%
Storage	94%	96%	96%	96%	97%
Run-of-River	100%	100%	100%	100%	100%

Resource Class	Fall DLOL Base	Wind-5GW	Solar-5GW	Solar-10GW	Solar-15GW
Gas	88%	88%	88%	87%	85%
Coal	87%	89%	89%	87%	86%
Hydro	99%	97%	96%	95%	93%
Nuclear	83%	85%	85%	82%	81%
Pumped Storage	98%	98%	97%	94%	92%
Solar	28%	26%	18%	10%	6%
Wind	15%	15%	14%	14%	14%
Storage	89%	99%	100%	100%	100%
Run of River	100%	100%	100%	100%	100%

Resource Class	Winter DLOL Base	Wind-5GW	Solar-5GW	Solar-10GW	Solar-15GW
Gas	70%	69%	69%	68%	69%
Coal	72%	74%	74%	76%	76%
Hydro	69%	59%	69%	68%	69%
Nuclear	84%	87%	87%	87%	84%
Pumped Storage	47%	55%	66%	61%	56%
Solar	0%	2%	1%	0%	0%
Wind	13%	14%	18%	17%	16%
Storage	90%	95%	95%	93%	95%
Run-of-River	100%	100%	100%	100%	100%

Resource Class	Spring DLOL Base	Wind-5GW	Solar-5GW	Solar-10GW	Solar-15GW
Gas	72%	72%	72%	71%	74%
Coal	74%	72%	73%	76%	76%
Hydro	74%	60%	72%	72%	52%
Nuclear	77%	82%	75%	72%	72%
Pumped Storage	70%	81%	67%	84%	76%
Solar	15%	16%	7%	5%	4%
Wind	16%	13%	14%	14%	17%
Storage	97%	95%	99%	99%	98%
Run-of-River	100%	100%	100%	100%	100%

Each sensitivity added the GW amount shown in the column heading

Base DLOL %'s were previously shared

Heat map for each sensitivity with increased renewable penetration