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Capacity Accreditation for IESO

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Land Acknowledgement

The IESO acknowledges the land from where we are delivering today's webinar is the traditional territory of many nations including the Mississaugas of the Credit, the Anishinaabeg, the Chippewa, the Haudenosaunee and the Wendat peoples, and is now home to many diverse First Nations, Inuit and Métis peoples. We also acknowledge that Toronto is covered by Treaty 13 with the Mississaugas of the Credit First Nation.

As we have attendees from across Ontario, the IESO would also like to acknowledge all the traditional territories across the province, which include those of the Algonquin, Anishinaabeg, Ojibwe, Cree, Oji-Cree, Huron-Wendat, Haudenosaunee, Métis, and Inuit peoples.

Engagement Principles

This engagement is conducted in accordance with the IESO's [External Engagement Framework](#), which includes the following principles:

- **Purposeful** – Initiate meaningful conversations that move the sector forward
- **Inclusive** – Invite many voices and diverse perspectives to the table
- **Timely** – Seek input and insight when it can have the most impact
- **Accessible** – Ensure we meet people where they are on their energy journey
- **Traceable** – Allow everyone to follow the path that is being taken
- **Transparent** – Show how engagement helped shape the final outcome

Shared Commitment to Respectful Participation

To support a focused and constructive discussion:

- We will take questions one at a time; please use the raise-hand feature to enter the speaking queue
- We encourage concise and focused comments to allow time for multiple perspectives
- Participants are encouraged to raise relevant points during the discussion and provide more detailed feedback through the written submission process
- We ask that all participants maintain a respectful and professional tone throughout the session
- Facilitators will guide the discussion and manage participation to stay aligned with today's focus and agenda
- Where necessary, we may disable a participant's microphone to manage participation

Purpose

- Share and respond to stakeholder feedback received to date.
- Provide detail on the MRI methodology, including the modelling framework and study assumptions.
- Present and compare the capacity accreditation results produced across the resource classes assessed.
- Discuss potential ideas to support transparency and predictability under MRI and seek feedback to inform further development.



Agenda

- Background, Context and Recap of Previous Engagement
- Stakeholder Feedback and Responses
- MRI Methodology
- Results and Key Findings
- Transparency under MRI

Background and Context

- Capacity accreditation translates a resource's installed capacity into the amount that can be relied upon for resource adequacy purposes.
- As Ontario's system evolves, the reliability value of additional capacity increasingly depends on the resources already available and the needs of the system. A marginal approach assesses the contribution of the next increment of capacity under those conditions.
- Accounting for marginal contribution helps ensure capacity provides the expected contribution to reliability needs, avoiding unnecessary costs.



Recap of Previous Engagement

Why the IESO is reviewing Capacity Accreditation

- Capacity accreditation determines how much of a new resource's installed capacity can count toward Ontario's resource adequacy needs.
- The current UCAP approach primarily reflects historical availability. As Ontario's resource mix evolves, the IESO needs to move away from UCAP as reliability contribution increasingly depends on system conditions and resource interactions.
- The IESO needs to adopt an approach that reflects a resource's expected contribution during periods of need, captures declining marginal value, and provides a consistent comparison basis, allowing Ontario to select the optimal resource mix to address needs while minimizing costs.

Capacity Accreditation Approaches Considered

Method	Description
Effective Load Carrying Capability (ELCC)	Measures a perfect capacity equivalent that preserves adequacy when the resource is added.
Marginal Reliability Impact (MRI)	Normalized reliability impact of a small increment of a resource vs. the same MW of perfect capacity.
Direct Loss of Load (DLOL)	Weighted expected performance during critical hours.

Jurisdictions and Accreditation Approaches

Accreditation Method	Jurisdictions
ELCC	California Public Utilities Commission; Electric Reliability Council of Texas; PJM Interconnection; Southwest Power Pool
MRI	New York Independent System Operator; ISO New England
DLOL	Midcontinent Independent System Operator

North American jurisdictions are increasingly moving away from capacity accreditation approaches based primarily on historical availability, such as UCAP, and towards probabilistic, forward-looking approaches that reflect a resource's marginal contribution to reliability.

Marginal Reliability Impact

- MRI directly measures the marginal reliability contribution of an incremental resource relative to the same amount of perfect capacity, reflecting system conditions, resource penetration, declining marginal value, and interactions across the resource mix.
- Compared with ELCC, MRI uses a fixed set of model runs rather than an iterative calculation, reducing computational and process burden.
- Overall, among the approaches assessed, MRI was identified as the preferred approach because it provides the strongest balance of system-dependent assessment, consistent comparison across resource types, and practical application.



Feedback and Responses

Feedback	Response
Stakeholders requested the IESO to provide greater transparency into how accreditation values are calculated, including the methodology, inputs, assumptions and treatment of different resource classes.	Starting with today's discussion, the IESO is exploring with stakeholders on how to increase transparency to support decision making.

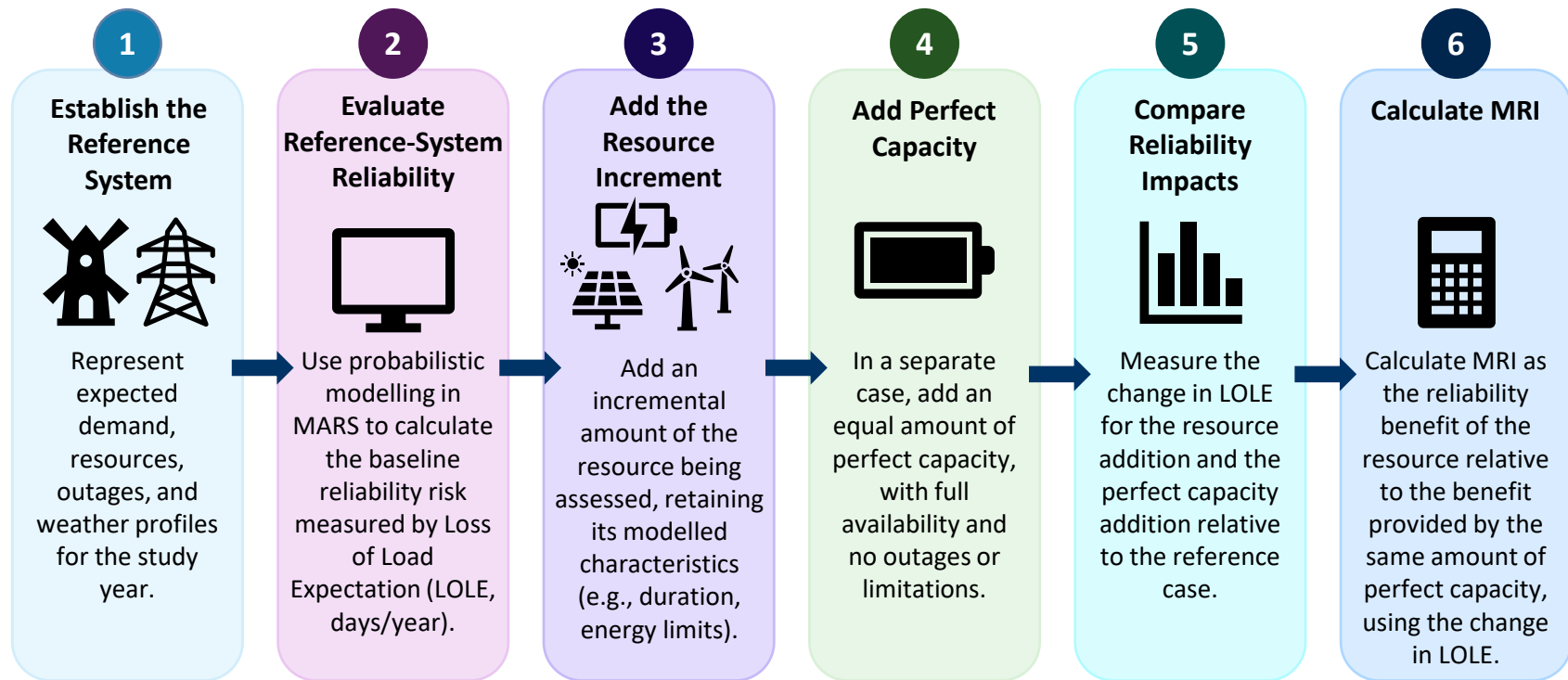
Feedback	Response
Stakeholders expressed concern about how the IESO would ensure resources with different operating characteristics are compared fairly and that the framework recognizes differences in timing, availability, duration and energy limitations.	MRI applies the same calculation and perfect capacity benchmark to each resource class, providing a consistent basis for comparison. Each resource within the system is represented using the characteristics that affect its contribution to reliability. Furthermore, resources are evaluated within the broader system, allowing the results to reflect interactions with the existing resource mix and whether an increment provides additional reliability benefit.

Feedback	Response
Stakeholders expressed concern about how the IESO would provide accreditation values and implementation details early enough to support project development, financing and bid preparation. Stakeholders also enquired as to how specifically capacity accreditation would be factored into procurement design.	The IESO is considering how to reflect the outcomes of the capacity accreditation analysis into resource procurements, including the Window 2 of the LT2 RFP. More information will be provided during the course of public engagement on LT2.



Detailed MRI Methodology

MRI at a Glance



MRI Calculation

All cases use the same reference system and modelling assumptions. Each case is evaluated using the IESO's reliability model and sequential Monte Carlo simulation, consistent with the APO methodology.¹

Model case	Capacity addition	Result
Reference case	No incremental capacity	Reference LOLE
Resource case	100 MW of the resource being assessed	Resource case LOLE
Perfect-capacity case	100 MW of perfect capacity	Perfect capacity case LOLE

$$MRI = \frac{LOLE_{Reference} - LOLE_{Resource Increment}}{LOLE_{Reference} - LOLE_{Perfect Capacity}}$$

¹ For additional detail on the modelling and resource adequacy assessment, refer to the IESO's [Resource Adequacy Methodology](#).

Study Parameters

Study Parameter	Proposed Approach
Study Year and Base Case	2032, 2026 APO Base Case
Base Case Assumptions	Transmission constraints and planned outages are not modelled
Resource Classes	Wind, solar, gas, energy-limited gas, 4-hour battery, 8-hour battery, 12-hour battery
Geographic Representation	Incremental resources added in Toronto
Resource Increment	360 MW added for each resource class assessed
Accreditation period	Annual

- Energy limits for gas are based on Canada Energy Regulator (CER) limits, which are currently under revision.
- Forced outages are based on representative unit for the resource class.



Results

Methodologies Considered

Results are presented for:

- ELCC
- MRI
- DLOL

Across all the resource classes previously mentioned. Results reflect the resource assumptions, system conditions and study period discussed.

UCAP values are also presented to provide a point of comparison with the current approach.

What Drives Differences Across Methodologies?

Method	Primary basis of the result
UCAP	Historical availability, forced outages and derates
ELCC	Perfect capacity replacement calculation driven by LOLE
MRI	Incremental reliability benefit calculation driven by LOLE
DLOL	Only considers resource contributions during risk periods

Accreditation values indicate the portion of installed capacity that is recognized for the incremental capacity of the resource class under the applicable methodology.

Summary of Results

Method	UCAP	ELCC	MRI	DLOL
Solar	11.33%	19.16%	36.09%	34.06%
Wind	19.25%	19.66%	20.15%	26.59%
Battery – 4 Hour	50.00%	10.09%	14.83%	0.25%
Battery – 8 Hour	N/A	20.33%	31.29%	0.57%
Battery – 12 Hour	N/A	26.27%	37.57%	0.67%
Gas	90.84%	92.96%	94.07%	100.00%
CER-limited Gas	N/A	39.93%	52.57%	23.16%

Note: Results are based on 2026 APO assumptions and are expected to change as system conditions evolve.

Key Findings

- Methods produce similar results where availability closely reflects reliability contribution. Results are similar for gas across all four methods, as it is generally available and can respond when needed.
- Differences increase where contribution depends on timing or available energy. Results vary more for wind, solar and storage resources, where accreditation depends on the timing of need, storage duration and availability.
- Using LOLE aligns the MRI calculation with the reliability metric used to assess Ontario's resource adequacy targets, providing consistency between how reliability needs and resources are evaluated.

Selection of MRI

- MRI responds to the factors that actually shape a resource's reliability contribution, including when it produces, how long it can operate, and whether it is available.
- All resource classes are compared against the same perfect-capacity benchmark allowing for a more consistent comparison.
- The results are generally aligned with ELCC, but MRI reaches them through a simpler, fixed set of model runs. When compared with UCAP and DLOL, MRI provides a more complete view of how resources contribute across the modelled reliability events, with a calculation process that is practical to repeat as the system evolves.

Industry Perspective on Method Selection

- There is no single “correct” accreditation method, the best approach depends on the system conditions and the planning objective.^{1,2}
- Different methods can reasonably produce different values because they measure reliability contribution differently. The more important consideration is whether the method is appropriate for the planning objective being evaluated.^{1,2}

¹ EPRI (2025), *Assessing Capacity Accreditation Method Choice on Resource Mix Outcomes*

² ESIG (2023), *Ensuring Efficient Reliability: New Design Principles for Capacity Accreditation*



Transparency under MRI

The Transparency Challenge with MRI

- MRI relies on probabilistic modelling and is inherently more complex than an availability-based approach such as UCAP.
- Accreditation values also depend on the reference system, resource assumptions and modelled reliability-risk conditions.
- As a result, stakeholders may not be able to independently reproduce MRI values using publicly available information.
- The proposed transparency framework would instead allow stakeholders to understand how values are calculated, what assumptions drive them, and why they change.

What Transparency Could Support

Potential transparency measures could help stakeholders:

- understand the methodology and assumptions used to determine MRI values
- anticipate how values may change as system conditions evolve
- identify the principal drivers of changes between updates
- understand when published values would apply

Transparency Approaches Used in Other Jurisdictions

Transparency Element	Jurisdictions
Publish detailed accreditation methodology	CPUC, PJM, SPP, ERCOT
Publish study assumptions and key inputs	CPUC, PJM, SPP, ERCOT
Publish accreditation values and results	CPUC, PJM, SPP, ERCOT
Explain material changes between updates	CPUC

Jurisdictions generally support transparency by publishing methodology documentation, study assumptions, inputs, and accreditation results. The extent and level of detail of the information shared differ by jurisdiction.

Potential Approaches

- Publish the key inputs and assumptions used to calculate MRI values.
- Publish a detailed MRI methodology document explaining the calculation process and treatment of resource classes.
- Publish MRI values and explain material changes, including the key inputs or system conditions driving those changes.

Do stakeholders have additional suggestions?

Key Takeaways

- The results show that methodology choice has the greatest impact where contribution depends on need timing, duration or available energy. MRI captures these differences by measuring the reduction in LOLE provided by an incremental resource addition relative to perfect capacity.
- The results support MRI as the optimal approach because it provides a forward-looking and system-dependent assessment using a fixed, repeatable set of model runs.

Key Takeaways

- MRI values will evolve as demand, the resource mix and reliability needs change. Regular updates will therefore be required to support participants understanding any impacts to procurement.
- MRI introduces greater modelling complexity than UCAP, making transparency and clear communication of assumptions, methodologies, and results essential to stakeholder understanding and planning. Potential measures include publishing methodology documentation, key inputs and assumptions to help stakeholders understand how values are determined and why they change.

Next Steps

- The IESO plans to use MRI as its capacity accreditation approach going forward.
- More information on how MRI results will inform a specific procurement's design will be provided during the course of public engagement for that procurement, beginning with LT2 Window 2.
- The IESO will continue to see stakeholder feedback as it develops measures to support transparency and predictability for participants.

Thank You

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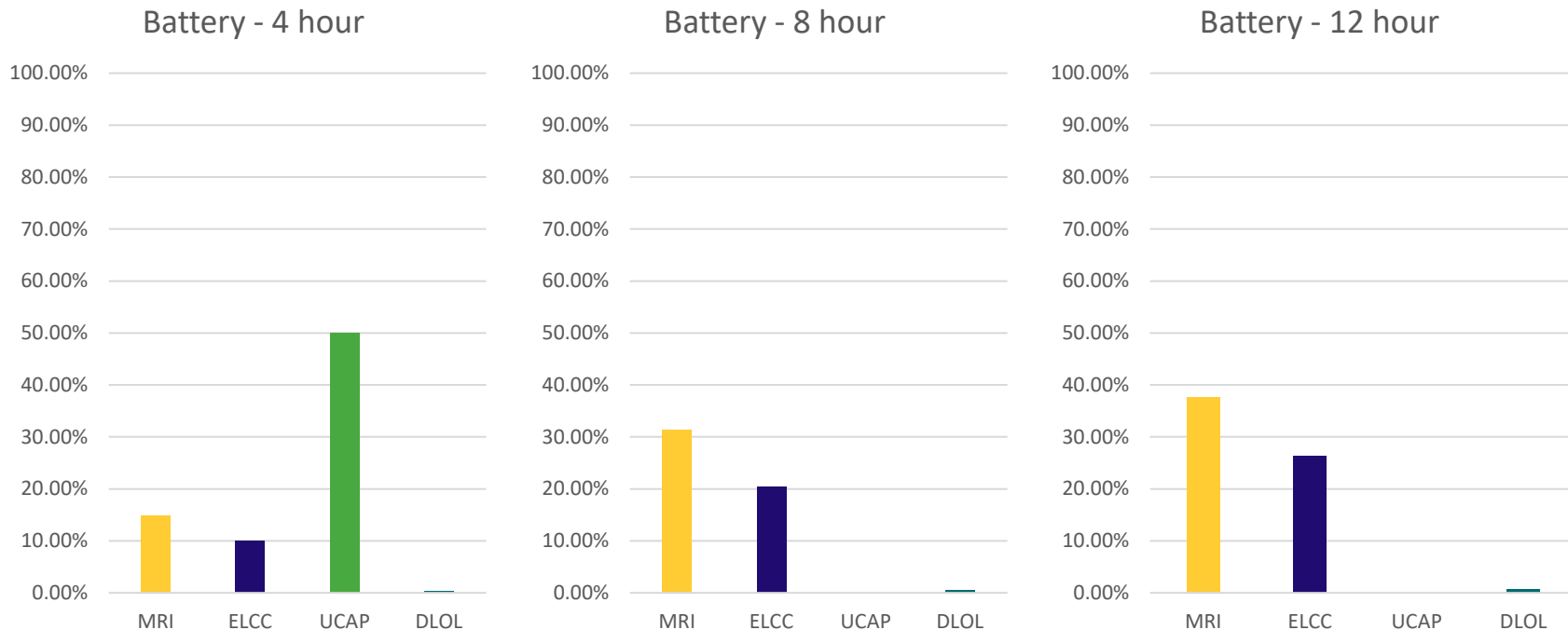


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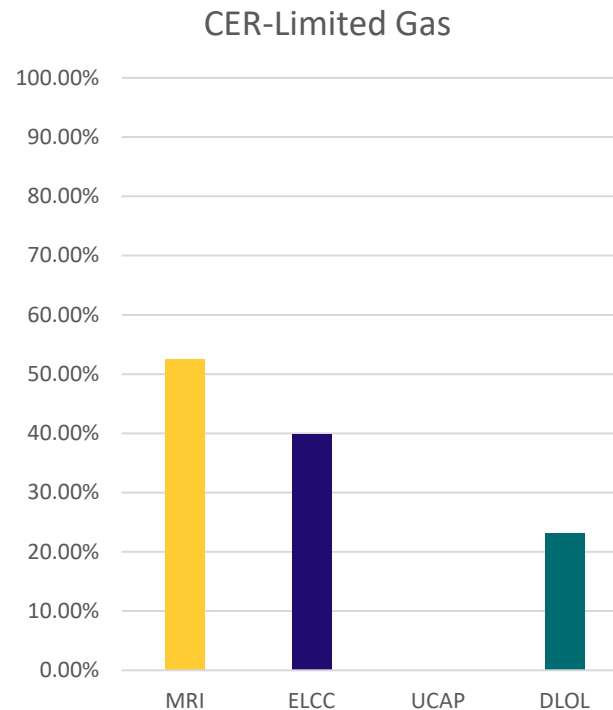
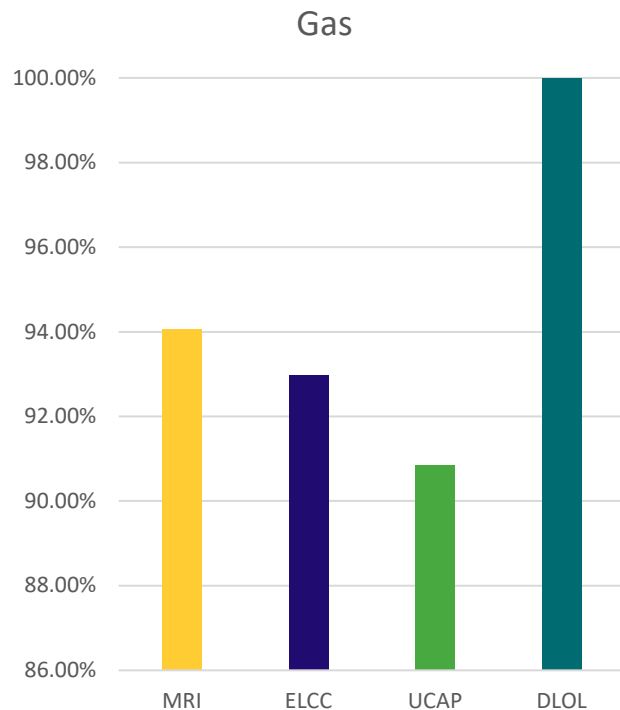


Appendix 1 – Results by Resource Type

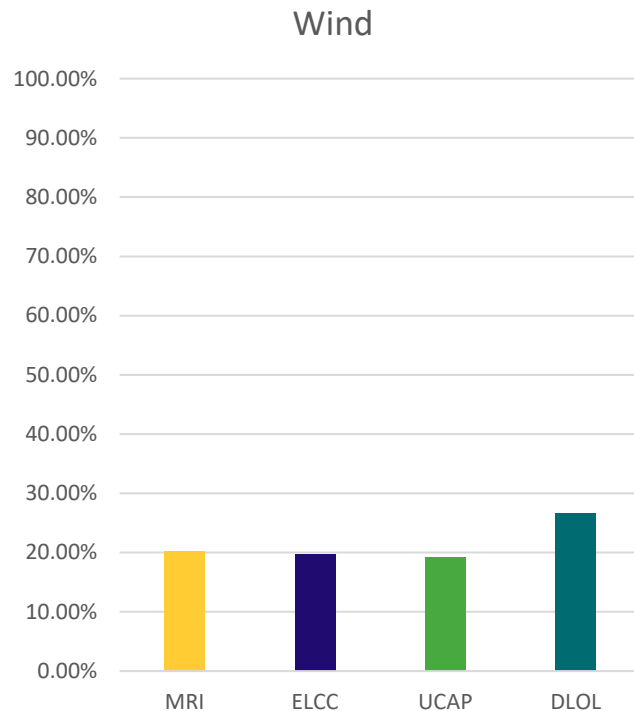
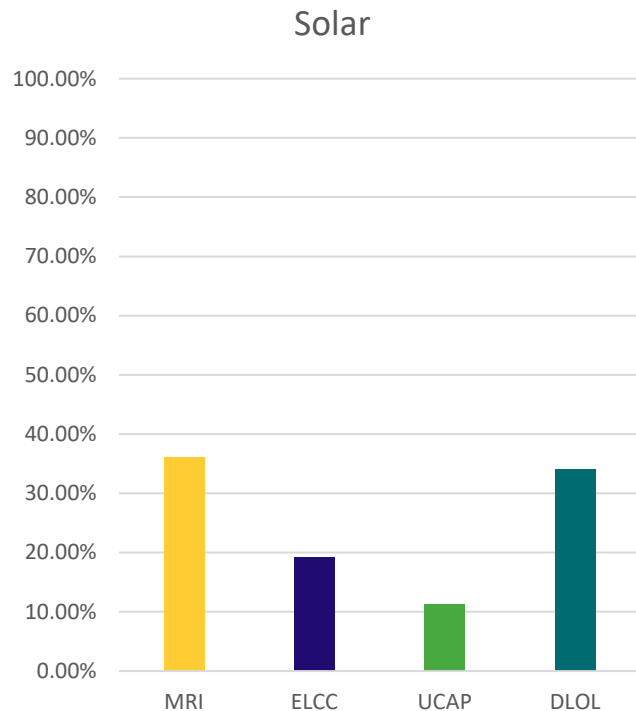
Storage Resources – Results – Annual



Thermal Resources - Results – Annual



Solar and Wind - Results – Annual





Appendix 2 – Evaluation of Capacity Accreditation Approaches

Evaluation of Capacity Accreditation Approaches

Criteria	UCAP	ELCC	MRI	DLOL
Captures system dependence	Low	High	High	High
Captures declining marginal value	Low	High	High	Medium
Computational and process burden	Low	High	Medium	High
Captures performance during periods of need	Low	Medium	Medium	High
Transparency	High	Low	Low	Low
Predictability ¹	High	Low	Medium	Medium

¹ Measured by variability from year-to-year