2020 OMS-MISO Survey Results

Furthering our joint commitment to regional resource assessment and transparency in the MISO region, OMS and MISO are pleased to announce the results of the 2020 OMS-MISO Survey

June 2020

Updates:

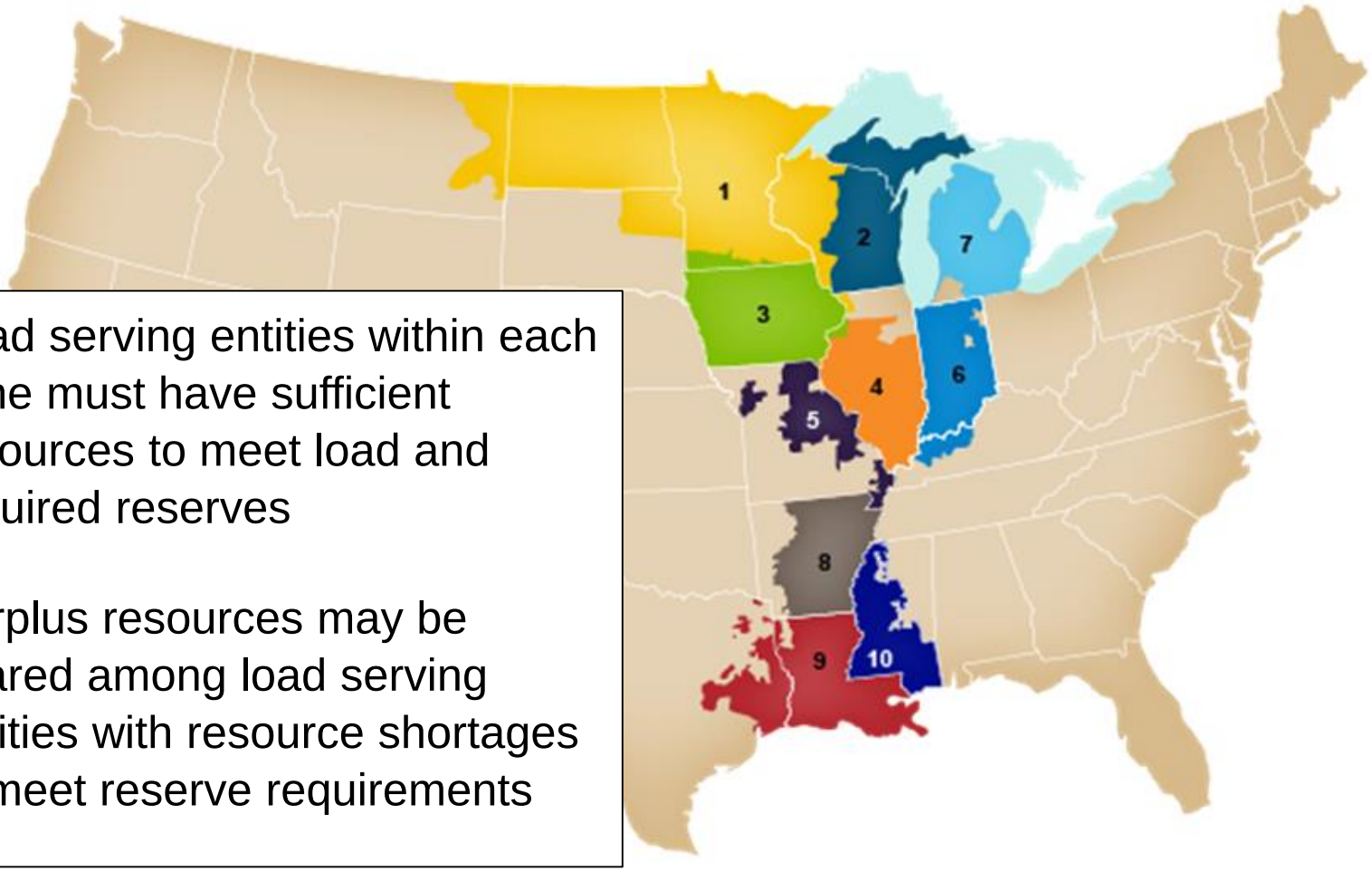
- Slide 14 in the appendix added as an aid to slide 4 explaining stacked bars
- Slides 7 and 8 footnotes edited to re-emphasize that cross-zone transactions reported are included in values shown
- Slides 5, 9 and 10 footnotes indicate ELCC applies to wind and 50% for solar
- Slides 9 and 10 “expected capacity credit” changed to “current new resource capacity credit”
- Slide 11 footnote indicates only resources within the zone are shown
- Slide 13 reference to GIA removed from unavailable resources indicating non-queue units not counted

Projections and data do not account for impacts of recent and future tariff filings, including those related to Resource Availability & Need, and CoViD-19

Region projected to have adequate resources in 2021, but continued action needed to ensure sufficiency going forward

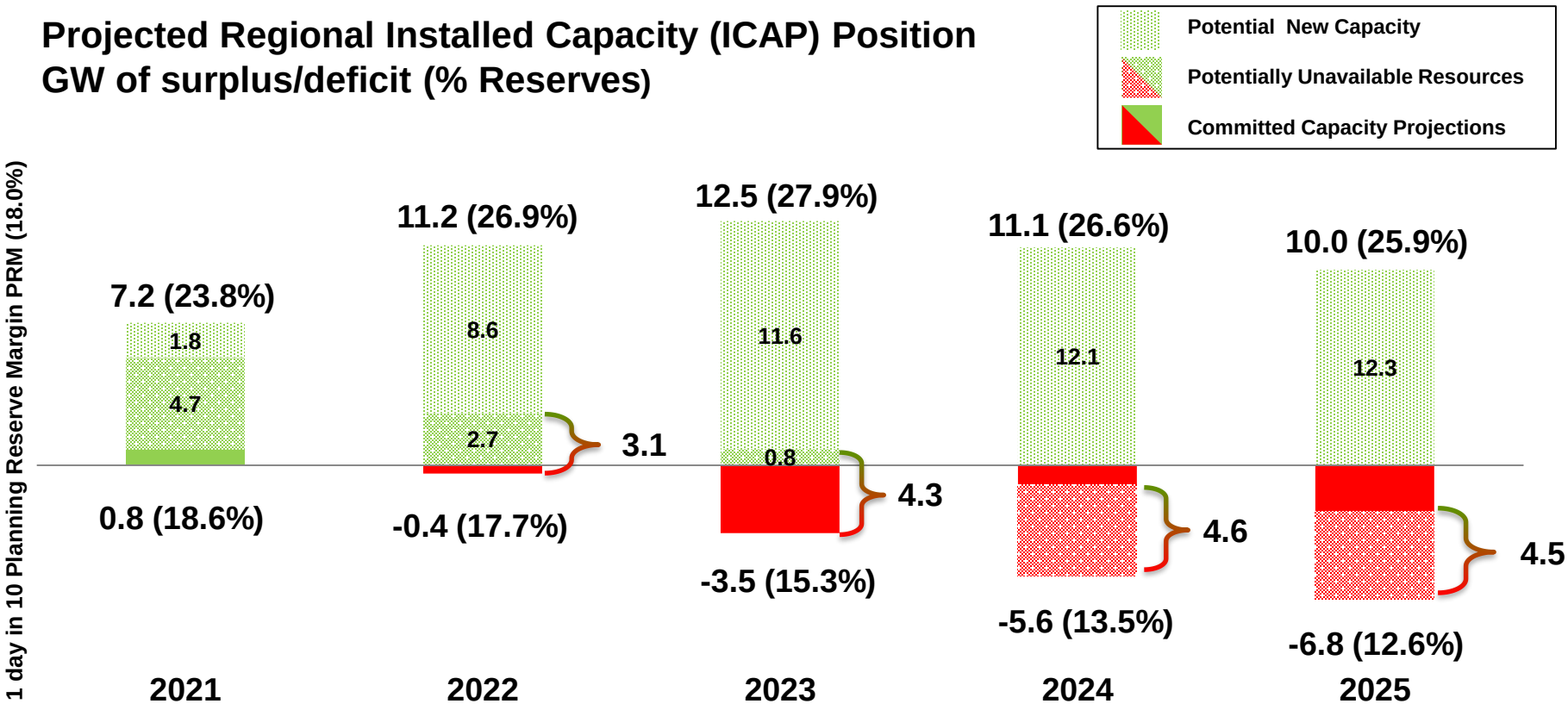
- MISO is projected to have 0.8 GW of firm capacity in excess of the 2021 regional Planning Reserve Margin (PRM), based on responses from over 94% of MISO load and other non-LSE market participants. This range could reach 7.2 GW if all potential resources are realized.
- Compared to last year, margins are tighter for both the first year and the full-five year period of the survey. This is primarily driven by an increased PRM and modest load growth.
- Since the 2019 Survey, additional resources help maintain the *regional* balance, but some zones (2, 4, 6, and 7) show potential risk
- Projected demand growth rate rose just slightly, averaging over 0.3% per year compared to 0.2% in 2019 Survey
- 2020 Survey marks first year using new OMS-MISO Survey module in the Module E Capacity Tracking tool, which streamlines process for respondents and MISO and improves data security

MISO Resource Adequacy Requirements



- Load serving entities within each zone must have sufficient resources to meet load and required reserves
- Surplus resources may be shared among load serving entities with resource shortages to meet reserve requirements

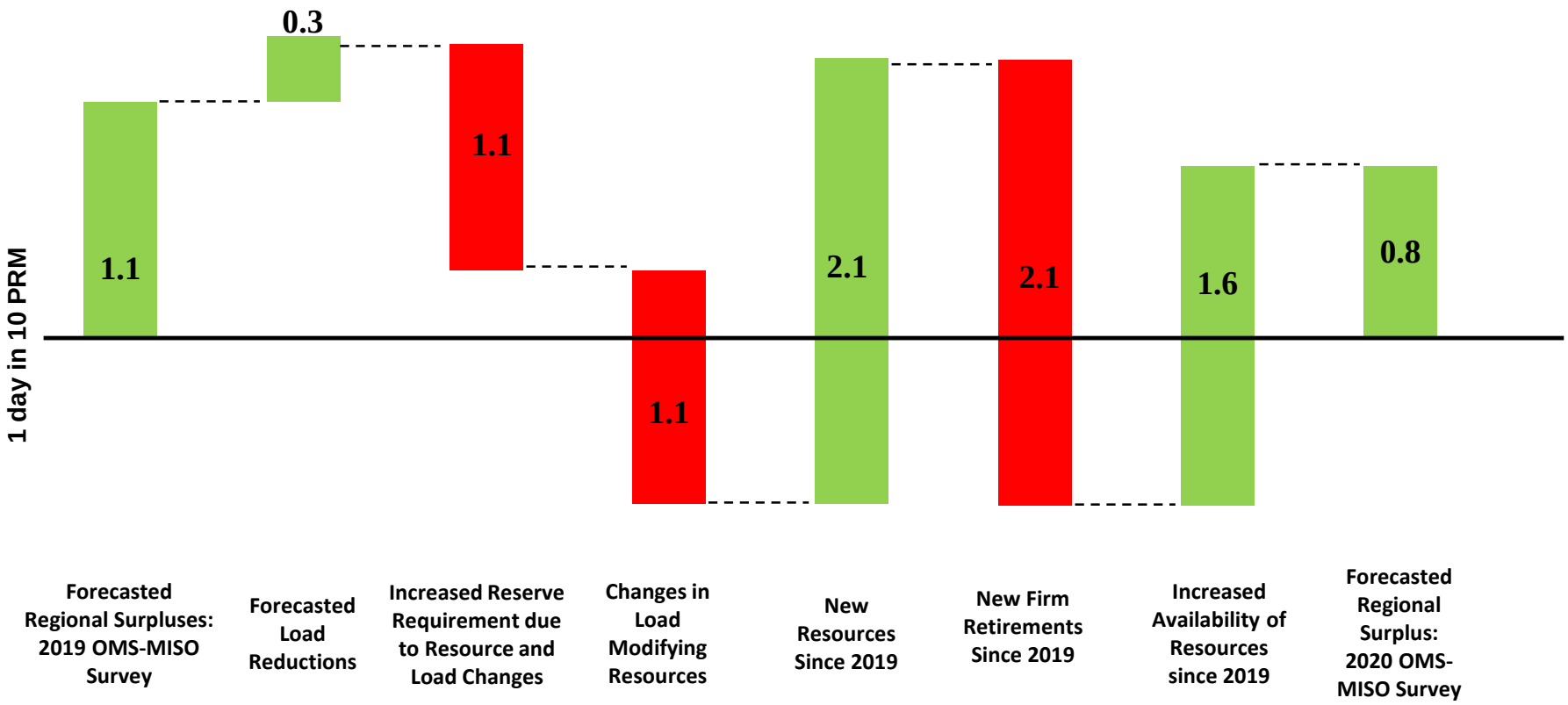
Projected 0.8 GW regional surplus of committed resources in 2021, increasing need for firming additional resources thereafter



- Appendix slide 14 added to further explain the ranges depicted above
- Regional outlook includes projected constraints on capacity, including the Sub-regional Power Balance Constraint (SRPBC)
- These figures will change as future capacity plans are solidified by load serving entities, state commissions, and local regulators
- **Potential New Capacity** represents capacity in the MISO Generator Interconnection Queue at projected queue certainty factors, updated since the 2019 Survey (see slides 15 and 16), as of April 23, 2020
- **Potentially Unavailable Resources** includes potential retirements and capacity which may be constrained by future firm sales across the SRPBC

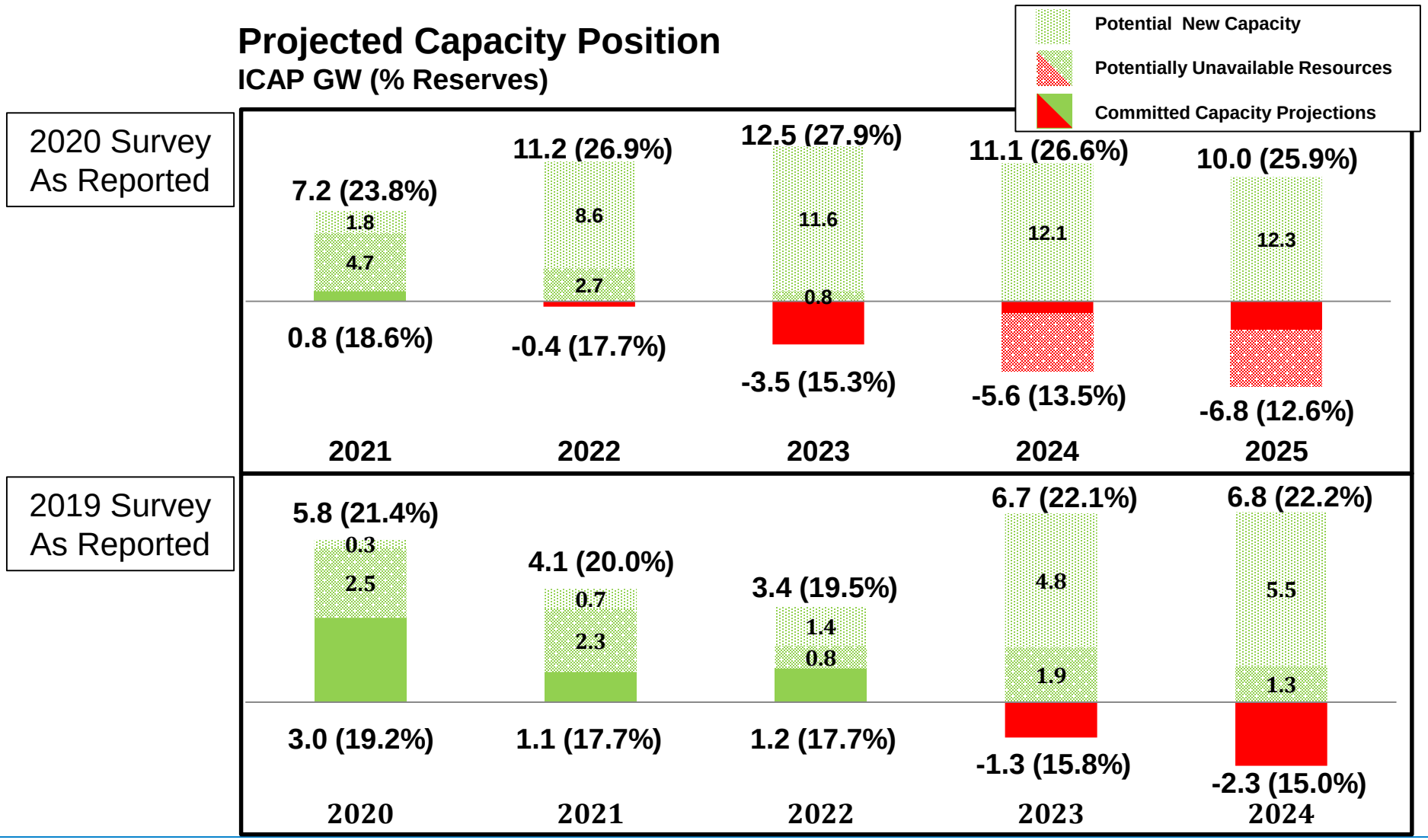
2021 supply balance is slightly lower due to changes in Planning Reserve Margin, retirements and Load Modifying Resources

2021 Regional Outlook
Committed Capacity Projection Changes since 2019 OMS MISO Survey
GW (ICAP)



New resources include resources with newly signed Interconnection Agreements; wind at ELCC, solar at 50%
Increased availability results from potential resources from 2019 survey that are now committed resources
LMRs – Load Modifying Resources are Demand Response (DR) and Behind the Meter Generation (BTMG)

Margins based on Committed Capacity are tighter than last survey across all five years



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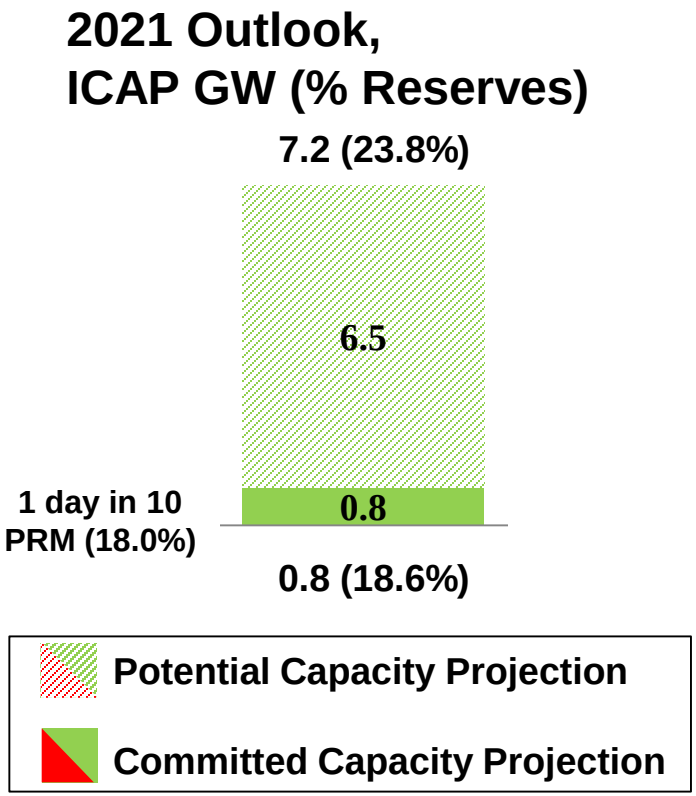
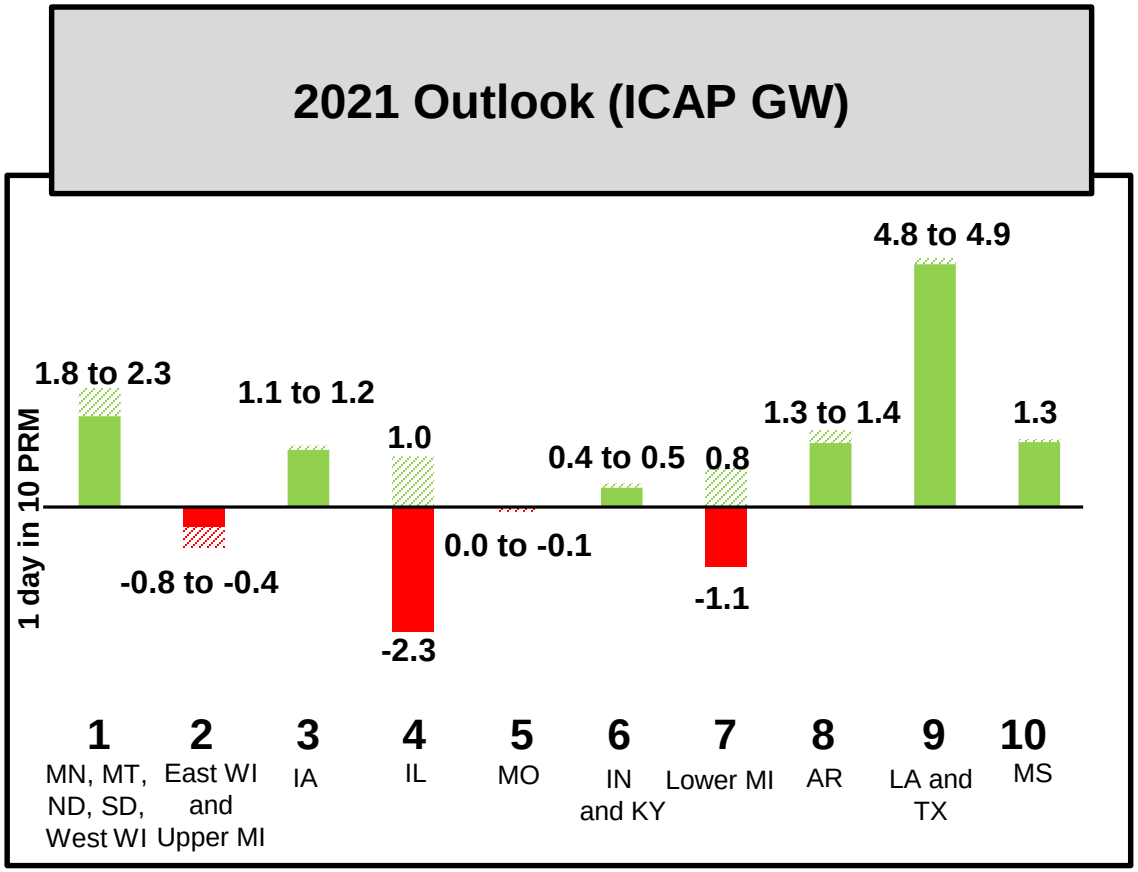
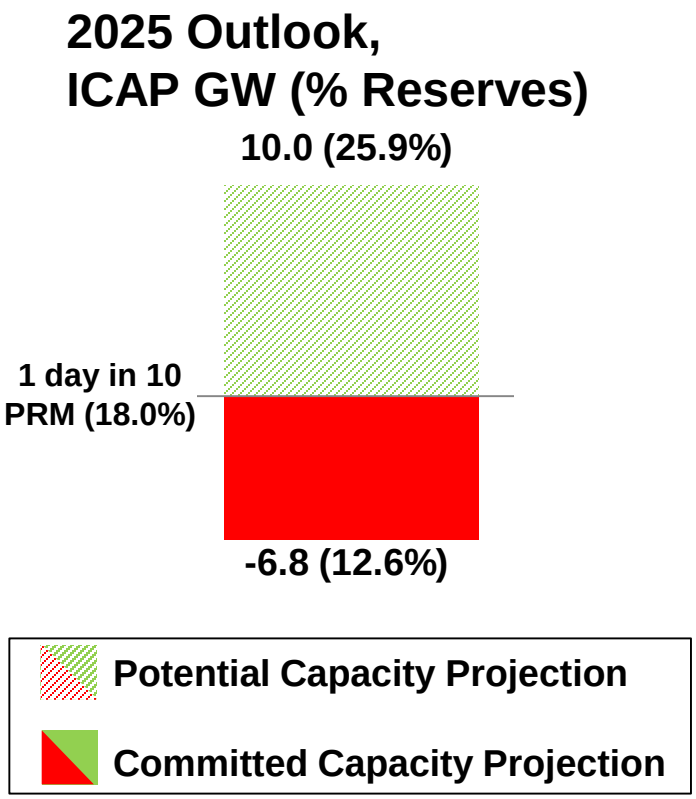
In 2021, regional surpluses and transmission are sufficient to cover zones with potential resource deficits

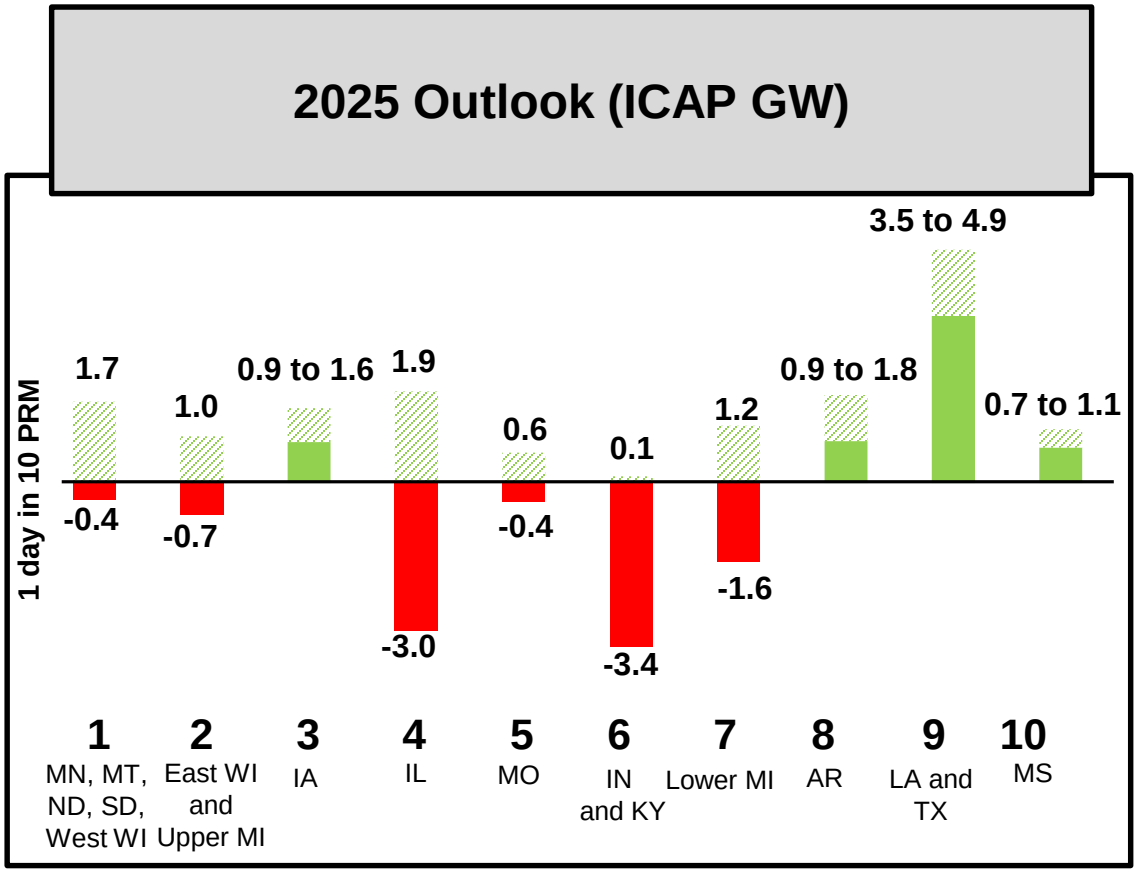




- Regional surpluses and potential resources will be critical for all zones to serve their deficits while meeting local requirements
- Positions include ***reported contractual*** inter-zonal transfers~~, but do not reflect other possible transfers between zones~~
- Exports from Zones 8, 9, and 10 were limited by the Sub-regional Power Balance Constraint

Continued focus on load growth changes and generation additions and retirements will improve out-year uncertainty





- Regional surpluses and potential resources will be critical for all zones to serve their deficits while meeting local requirements
- Positions include ***reported*** ***contractual*** inter-zonal transfers~~, but do not reflect other possible transfers between zones~~
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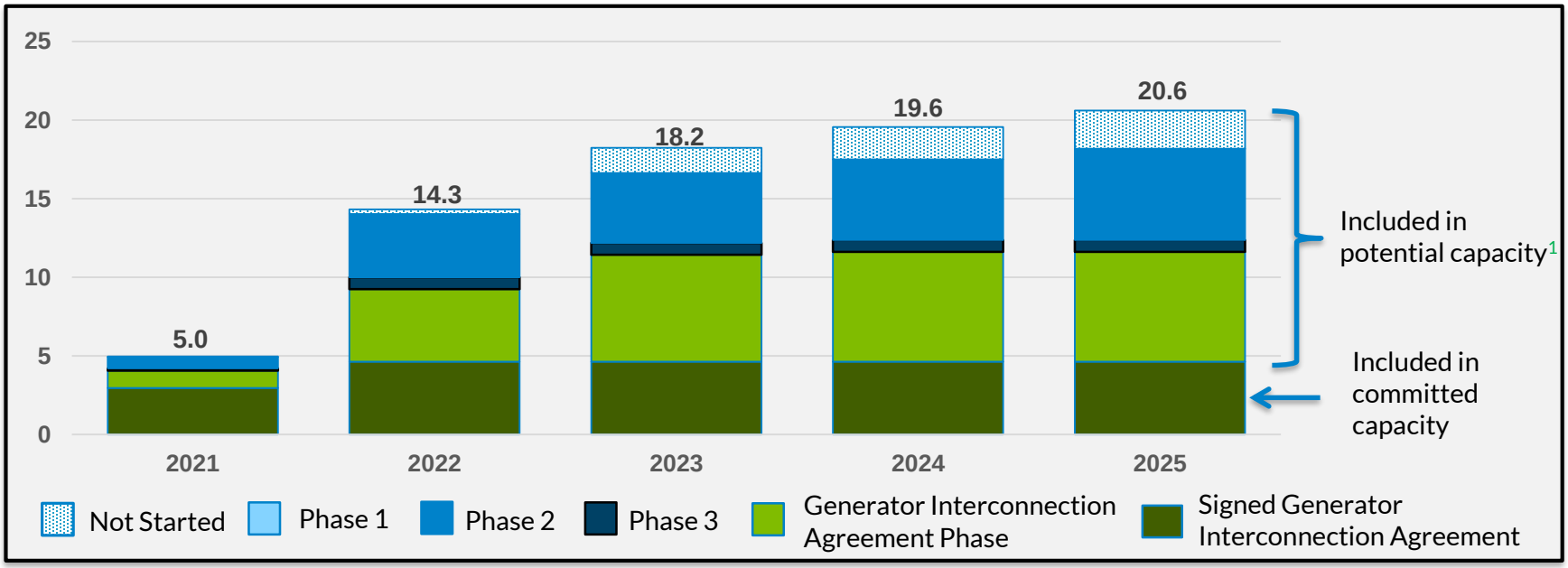
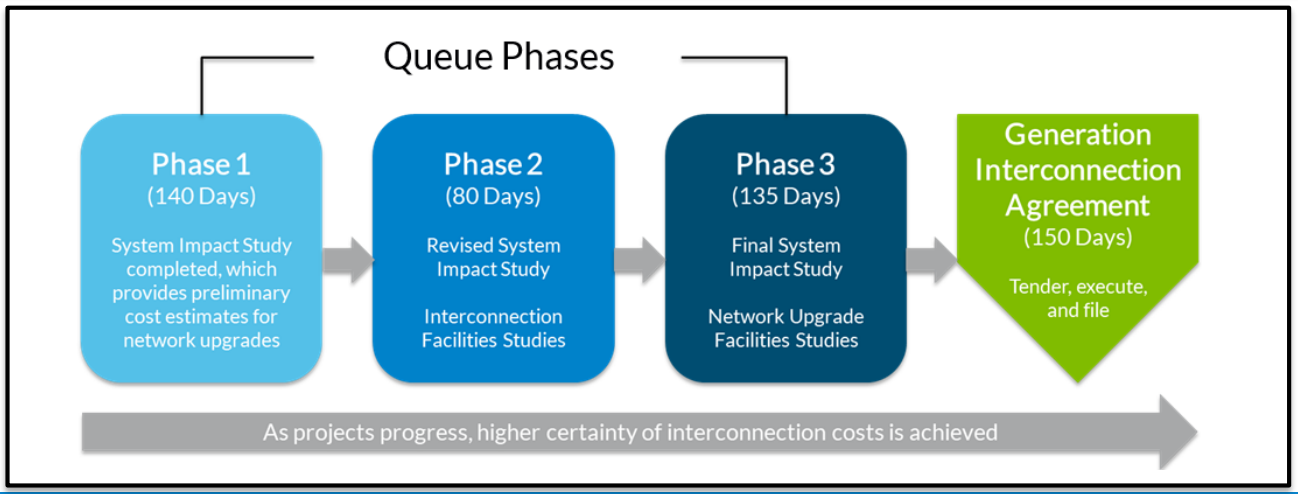
Future resource ranges will shift as planned generation interconnections are firmed up



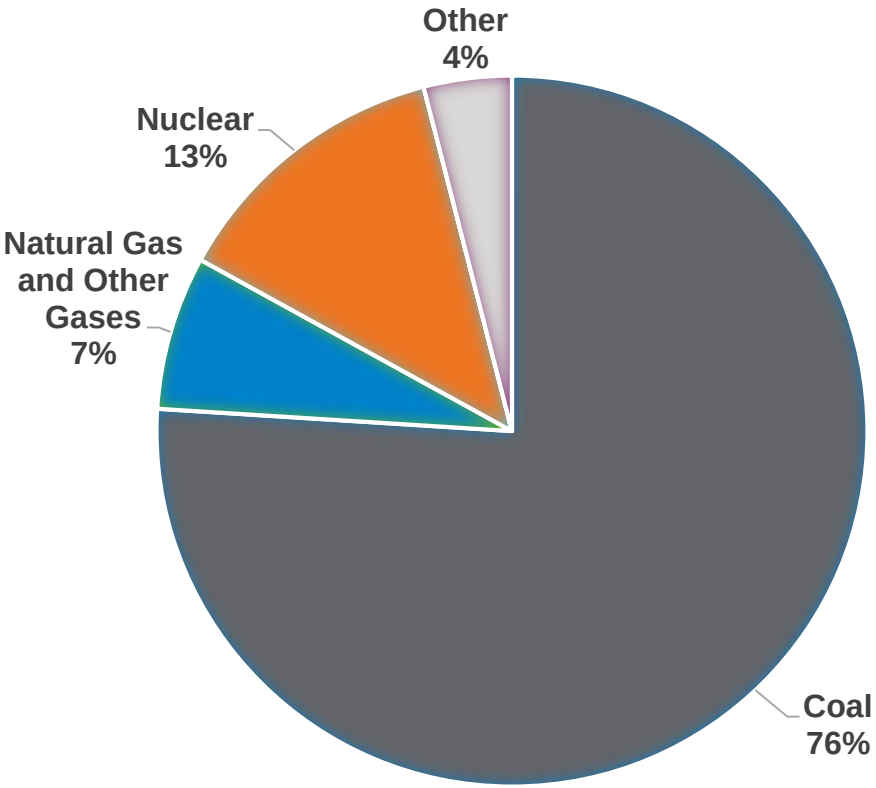


[1] *"Potential capacity" values shown here are higher than amounts shown on pg 4 because they do not factor in SRPBC limitations.*

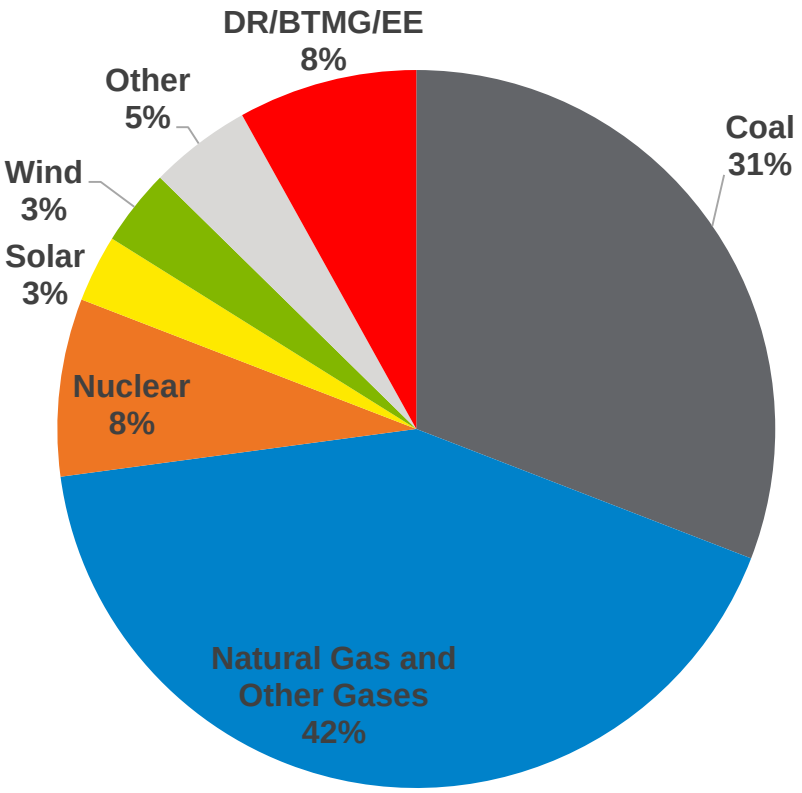
- Potential New Capacity represents capacity in the MISO Generator Interconnection Queue at projected queue certainty factors as of April 23, 2020. Wind and solar resources are ~~modeled~~ shown at ~~expected~~ current new resource capacity credit (ELCC for Wind, 50% for solar)

Forecasted resource mix changes continue to underpin a number of initiatives in the MISO stakeholder process

2005 Capacity Mix

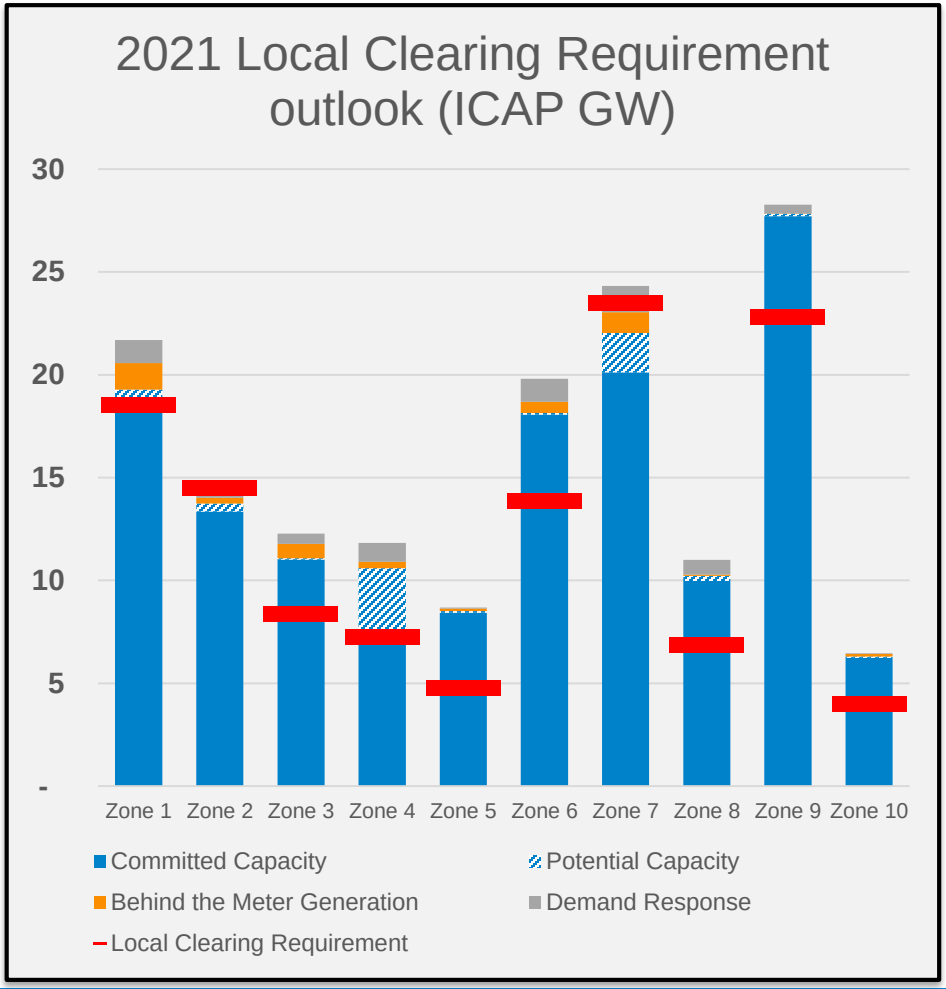


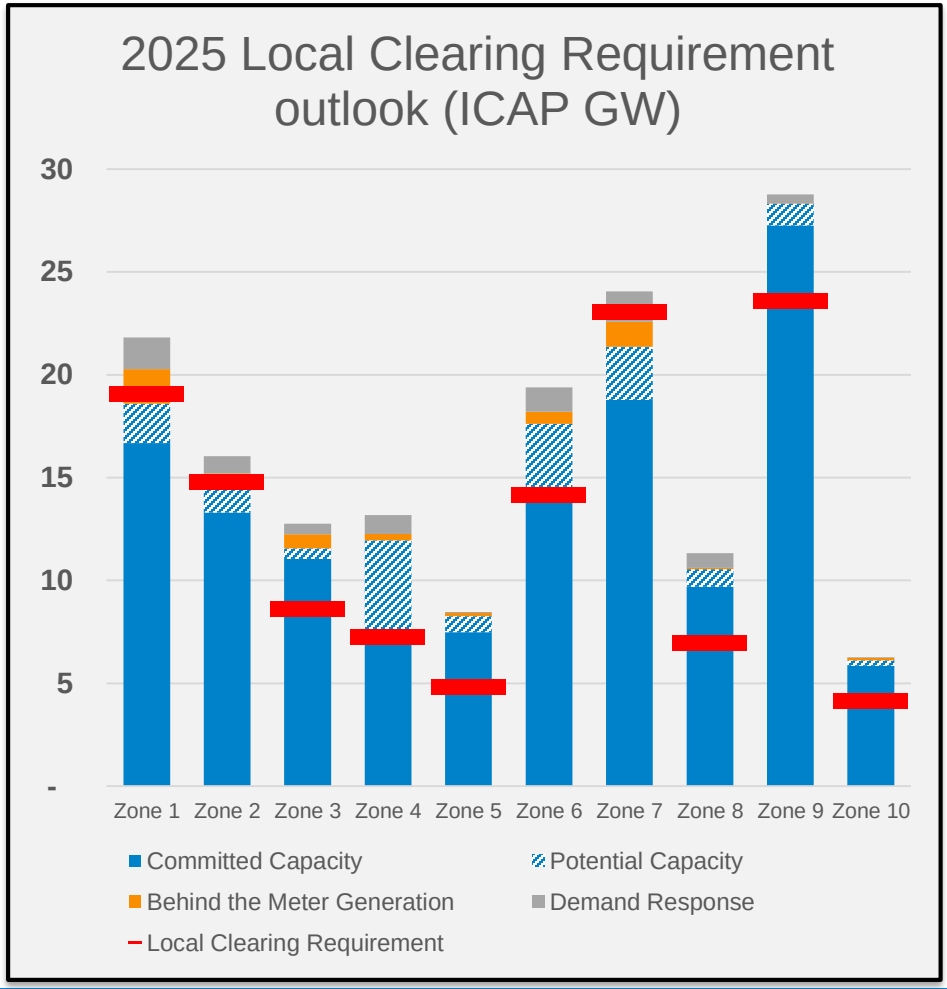
2025 Capacity Mix (Existing, Certain and Potential New Resources)



- Wind and solar resources shown at ~~expected~~ current new resources capacity credit (ELCC for Wind, 50% for solar)
- Potential New Capacity represents the capacity in the MISO Generator Interconnection Queue at projected queue certainty factors (see slide 15), as of April 23, 2020

New generation and load modifying resources continue to be important in meeting local resource needs





- Includes only projected capacity resources within the zone, i.e. does not include imports and interzonal transfers
- Potential Capacity includes both new generation and potential retirements
- Load Modifying Resources include Demand Response (DR) and Behind the Meter Generation (BTMG)

Appendix

Understanding Resource Projections

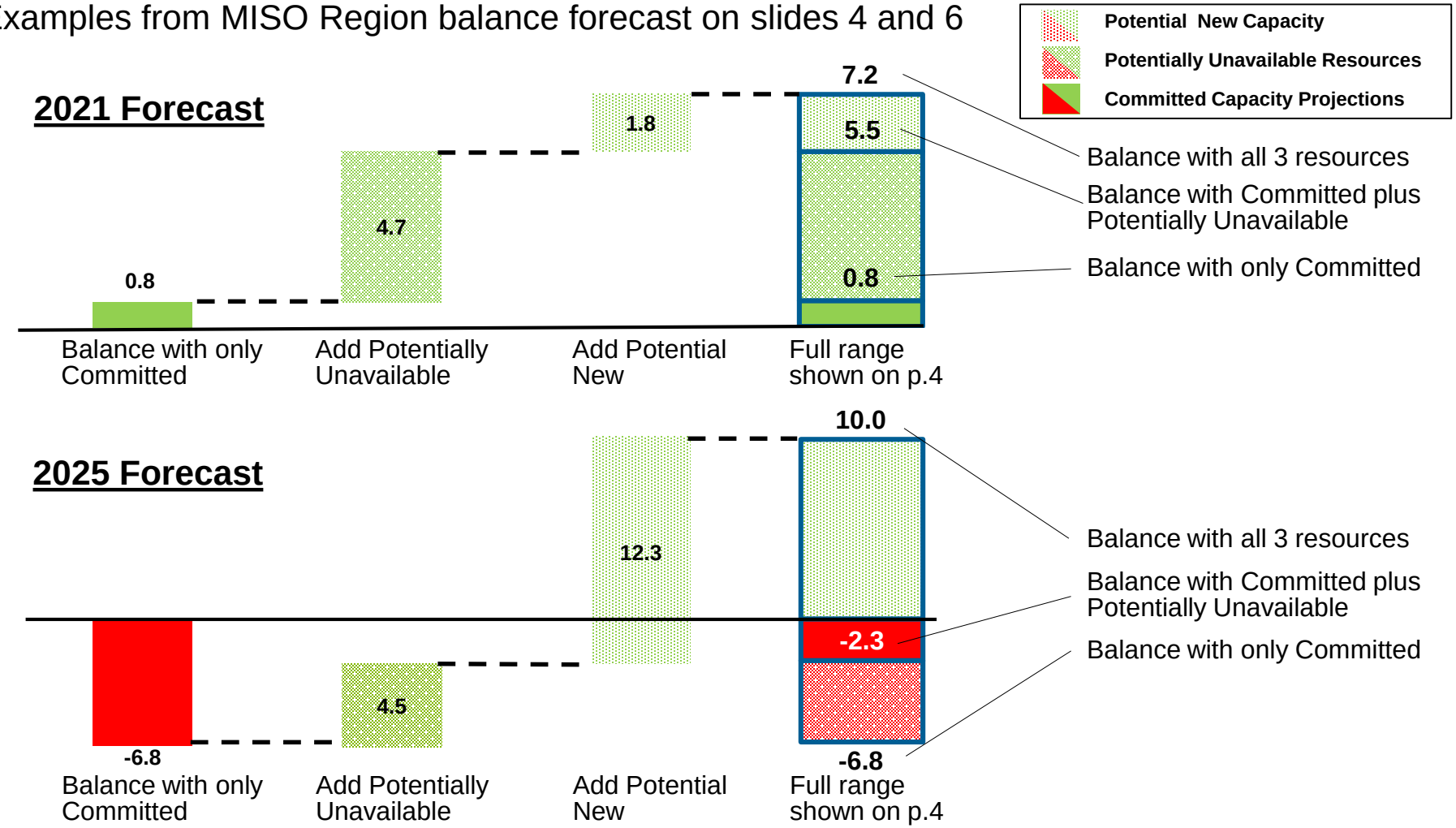
- **Committed Capacity Projections** - resources committed to serving MISO load
  - Resources within MISO utilities' rate base
  - New generators with signed interconnection agreements
  - External resources with firm contracts to MISO load
  - Non-rate base units without announced retirements or commitments to non-MISO load

- **Potential Capacity Projections** - resources that may be available to serve MISO load but do not have firm commitments to do so
  - Potential retirements or suspensions
  - Capacity in the MISO Generator Interconnection Queue at their ~~expected~~ current new resource capacity credit and projected queue certainty factors

- **Unavailable resources** are not included in the survey totals
  - Resources with firm commitments to non-MISO load
  - Resources with finalized retirements or suspensions
  - Potential new generators ~~without a signed Generator Interconnection Agreement or generators~~ which **have not entered** the MISO Generator Interconnection Queue

Interpreting the range of resource balances shown in the Survey summary

Examples from MISO Region balance forecast on slides 4 and 6



2020 OMS-MISO Survey Queue Treatment

Apply Capacity Credit

Wind 16.6%

Solar 50%

All other 100%

Apply DPP Study Phase Weighting

Not Started and Phase 1= 10%

Phase 2 = 75% Non-Intermittent, 50% Intermittent

GIA in Progress and Phase 3 = 90%

Requested In-Service Date

If requested in-service date is prior to the first Survey year, projects moved to their DPP study cycle end date, unless an updated date provided in the OMS-MISO Survey

DPP Study Cycle Not Started

If DPP Study Cycle not started, the requested in-service dates are moved to the DPP study cycle end date plus 2 years unless updated date provided in the OMS-MISO Survey

- DPP Study Phase Weighting is applied to recognize that as projects move through the queue process they generally become more certain
- In-service adjusted if the DPP Study Cycle Not Started to recognize that a project likely can't get capacity credit until at least the end of the DPP study cycle **and additional 2 years** to to reflect expected GIA dates and construction timelines

- Yellow denotes changes form last year

Updated Queue Weights account for very few phase 3 and low phase 2 withdrawals

2019 DPP Study Phase Weighting

- Not Started/Phase 1 = 10%
- Phase 2 = 50% Non-Intermittent / 25% Intermittent
- Phase 3 = 75% Non-Intermittent / 50% Intermittent
- GIA in Progress = 90%

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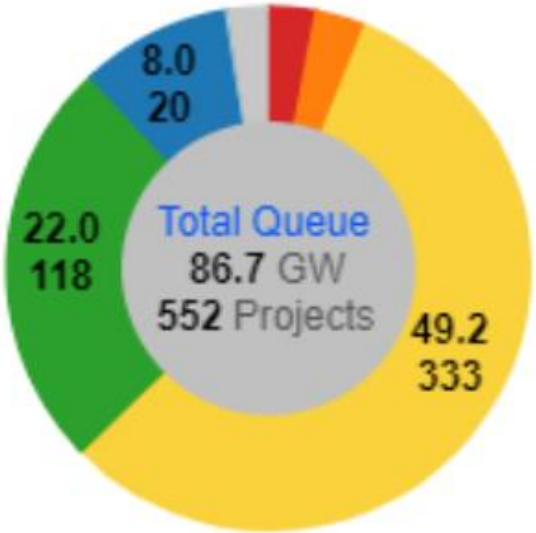
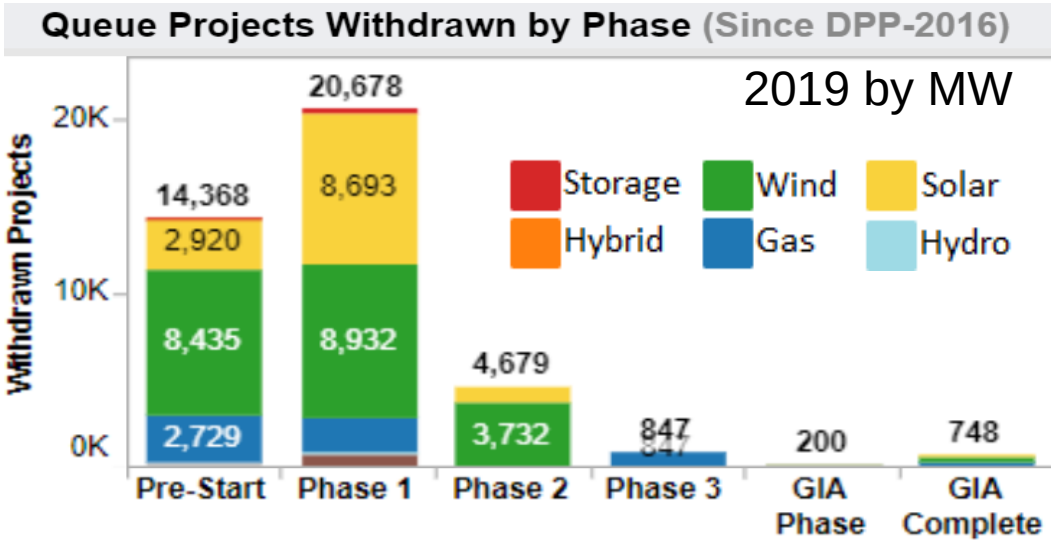
2020 Proposed Weighting

- Not Started/Phase 1 = No Change
- Phase 2 = 75% Non-Intermittent / 50% Intermittent
- GIA in Progress, Phase 3 = 90%





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