Capacity Auction Reforms: Seasonal/Accreditation (CAR-SA)

Impact Analysis: Market Clearing Preliminary Results

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CAR-SA: Market Clearing Impact Analysis

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- Today's discussion includes:
  - Market Clearing Impact Analysis (Market Clearing IA) near-term base case simulation results, including representative prices, costs, and revenues associated with simulated clearing outcomes
    - Modeled outcomes reflect resource-specific offer prices under each scenario (Lower, Medium, and Higher)
  - Sensitivity results for alternative seasonal H (scarcity hours) split assumptions
  - Key cost drivers for each scenario
- Additional information targeted for July:
  - Sensitivity analyses including 80/20 risk split, alternative gas availability assumptions, and continued analyses

Context for Today's Simulation Results

- The ISO understands that there is strong stakeholder interest in today's results and seeks to address it through this presentation
- These results are based on the ISO's model and assumptions as developed to date and should be treated as **preliminary**
- While this is generally the case when the ISO shares preliminary modeled results, it is especially true in this case, given the following:
  - The results are dependent on deriving offers for over a thousand resources based on a range of commercial and ISO data sources
  - The results use a simplified optimization to approximate the clearing engine, including the application of a gas constraint applied to non-firm gas resources in the winter

Today's Simulation Results and Continuing Analysis

- The ISO is continuing to review aspects of both the methodology and the preliminary results, given the large volume of input data, and the introduction of seasonality, accreditation changes, and a gas constraint in the CAR-SA clearing cases
- However, we recognize the strong stakeholder interest in seeing the simulation results, even if they are preliminary and subject to change, and therefore share them to provide information as soon as possible
- As the ISO continues to run cases and review data and results, it will keep the committee apprised of any updates to the model and simulation results

Assumptions for the Near-Term Base Case

- Carryovers from Resource Accreditation Modeling IA
  - Assumptions and inputs broadly reflect potential near-term system conditions (e.g., CCP 19 in 2028/29)
    - Includes resources that cleared in FCA 18
  - 50/50 seasonal LOLE split for the seasonal Net ICR values
  - Load assumptions consistent with 2025 CELT values for CCP 19
- Assumptions specific to the Market Clearing IA
  - Net CONE and the empirical supply curve were updated using the estimated 2028 prices
  - Seasonal definitions are aligned between Current Rules and CAR-SA
    - Summer: May-October
    - Winter: November-April
  - Payments to intermittent resources under Current Rules
    - We follow current conventions in which intermittent resources clear the auction based on their Summer QC, receive a capacity payment during the summer based on their cleared Summer QC, and receive a capacity payment during the winter based on the product of Winter QC and the percentage of cleared Summer QC

Implications of Assumptions on the Resource Mix

- While a range of assumptions were made for resource offers, the near-term base case resource mix, consistent with the RAM IA, reflects resources that qualified in FCA 18 and ARA 1 for CCP 18, including newly qualified storage resources
  - Because these resources qualified under the FCA framework, they were not required to be commercial
  - As previously discussed in the April RAM IA presentation, this includes 2 GW of energy storage that is not yet commercial
  - The near-term base case also does not consider any retirements that are not already known
- The near-term base case assumes:
  - A quantity of resources that is on the higher end of what may be reasonably expected to participate in the auction
  - Demand parameters consistent with those estimated from the near-term base case

Implications of Assumptions on the Resource Mix (cont.)

- These assumptions provide consistency with the results in the RAM IA presented to stakeholders and allows for the use of the accreditation and demand parameter values that have already been calculated and shared with stakeholders
- The ISO and stakeholders recognize that there is uncertainty about the future resource mix and demand parameters; if fewer resources are available or demand increases, market conditions could tighten, potentially leading to higher capacity prices and costs under current rules and/or CAR-SA
  - The Market Clearing IA aims to account for this possibility by adjusting certain parameters that inform resource offer prices, especially in the Higher scenario, illustrating potential market outcomes under more stressed system conditions
  - However, uncertainty is inherent in any impact analysis for the future.

Preview of Baseline Simulated Outcomes

- Across Lower, Medium, and Higher scenarios, total capacity revenue/cost decreases modestly
- The percentage difference between Current Rules and CAR-SA increases slightly from the Lower to Medium to Higher scenarios
  - Drivers of this simulated outcome include increased winter price separation due to the gas constraint, as the system substitutes toward non-firm gas resources and away from other resources
- Changes in revenues by resource type generally aligns with relative changes in capacity accreditation

PRELIMINARY DIRECTIONAL RESULTS

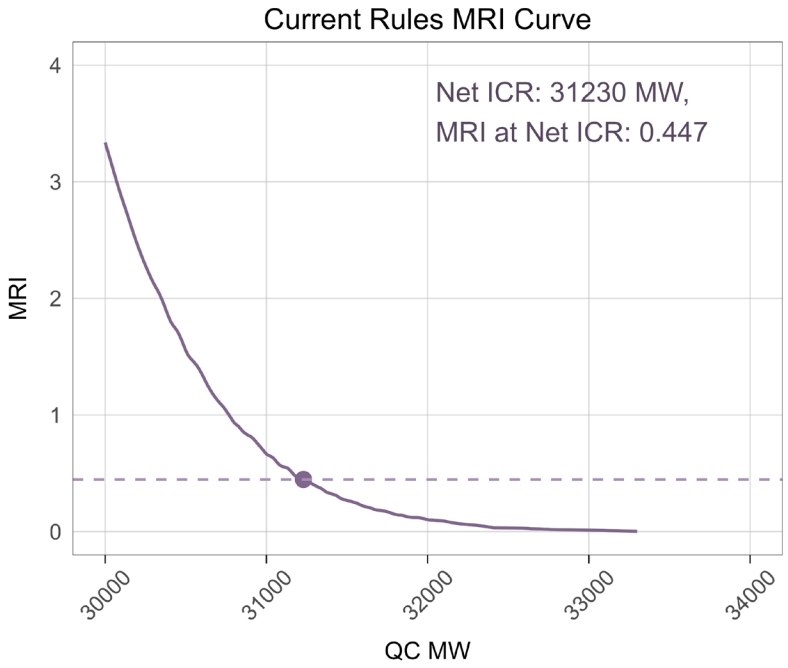
Demand Curves

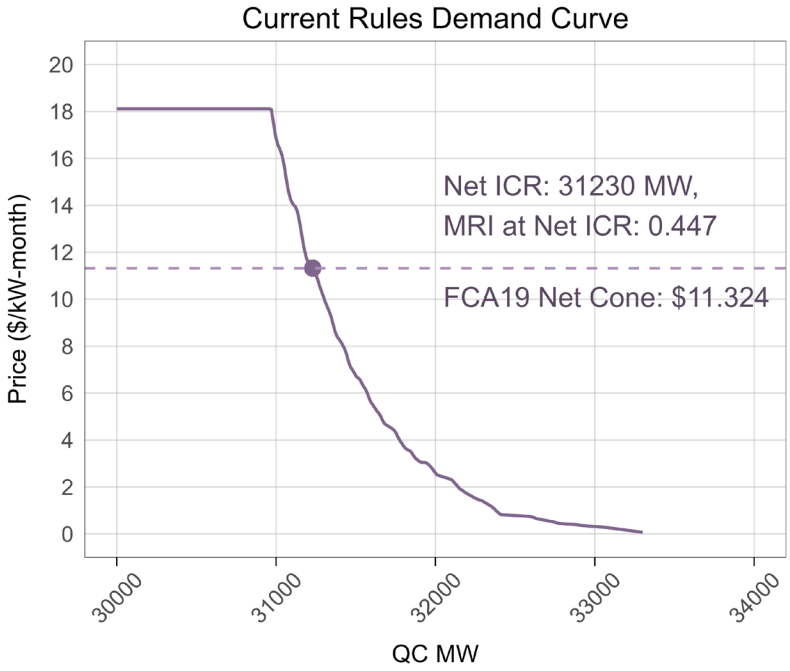
Annual Demand Curve under Current Rules

- The next figure illustrates how the Current Rules MRI curve is translated into a priced demand curve
- The MRI-to-price translation is implemented using a scaling factor, defined as the ratio of Net CONE to MRI at Net ICR
  - This scaling factor ensures that the capacity price at Net ICR will equal Net CONE
- The FCA 18 Net CONE value was updated to reflect current estimates of inflation and other factors
  - While the exact value that will be used in CCP 19 is not yet known, the ISO followed the update process, based on current inflation values, as outlined in the filing with FERC in 2020 to approximate the FCA 19 Net CONE value
  - The updated Net CONE used in the Market Clearing IA is: $11.324
    - This value is then used to derive the seasonal payment rates under CAR-SA as outlined in the Seasonal Payment Rate Calculation memo from May
  - The corresponding price cap under Current Rules is: $18.12

MRI to Annual Demand Curve Conversion

$MRI(Q) \times Annual\ Scaling\ Factor = Price(Q)$, for system capacity Q





Seasonal Demand Curves under CAR-SA

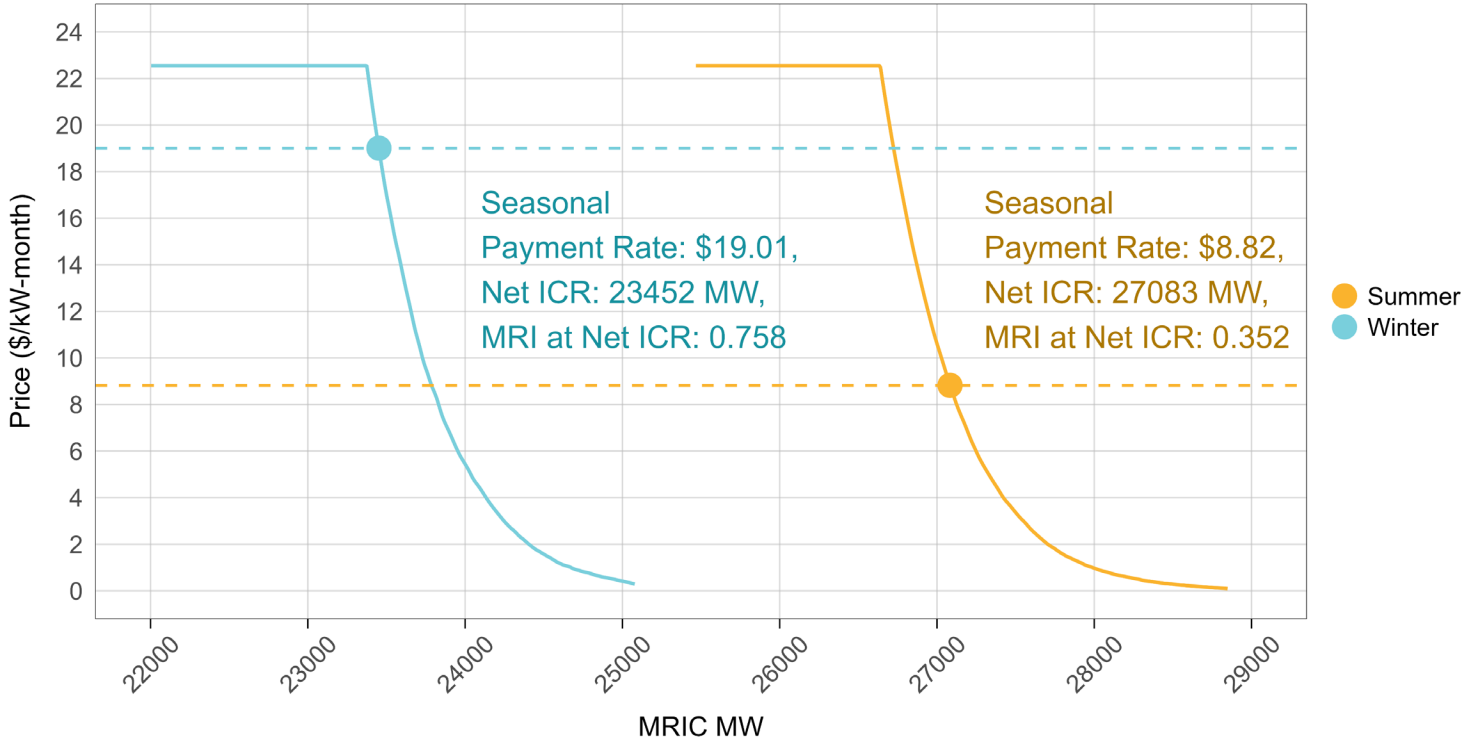
- The next two figures illustrate how seasonal MRI curves are translated into priced seasonal demand curves in the IA model
- The MRI-to-price translation is implemented using a scaling factor, defined as the ratio of seasonal payment rate to seasonal MRI at the corresponding seasonal Net ICR
- The same scaling factor is applied in both seasons, ensuring that:
  - The capacity price at the seasonal Net ICR equals the seasonal payment rate
    - Payment rate at summer Net ICR: $8.82
    - Payment rate at winter Net ICR: $19.01
  - The cost of unserved energy implied by the 1-day-in-10 annual resource adequacy criterion is equal across summer and winter
- The price cap under CAR-SA is defined as

$$\max\left\{FCA\ 19\ CONE, 1.6 \times \frac{FCA\ 19\ Net\ CONE}{Average\ of\ CONE\ Resource's\ Seasonal\ rMRI}\right\}$$

and is equal to $22.55 in the Market Clearing IA

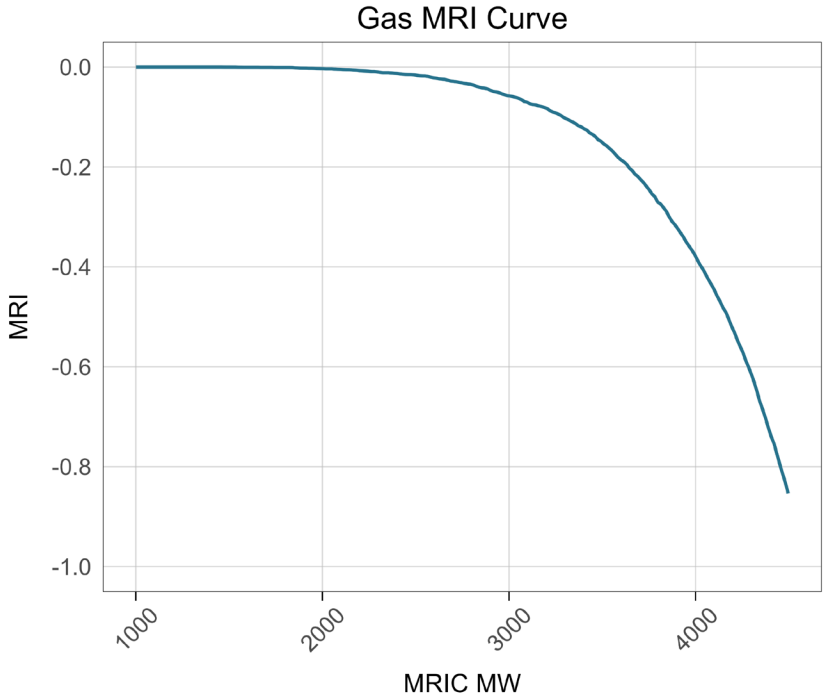
Seasonal MRI to Seasonal Demand Curve Conversion

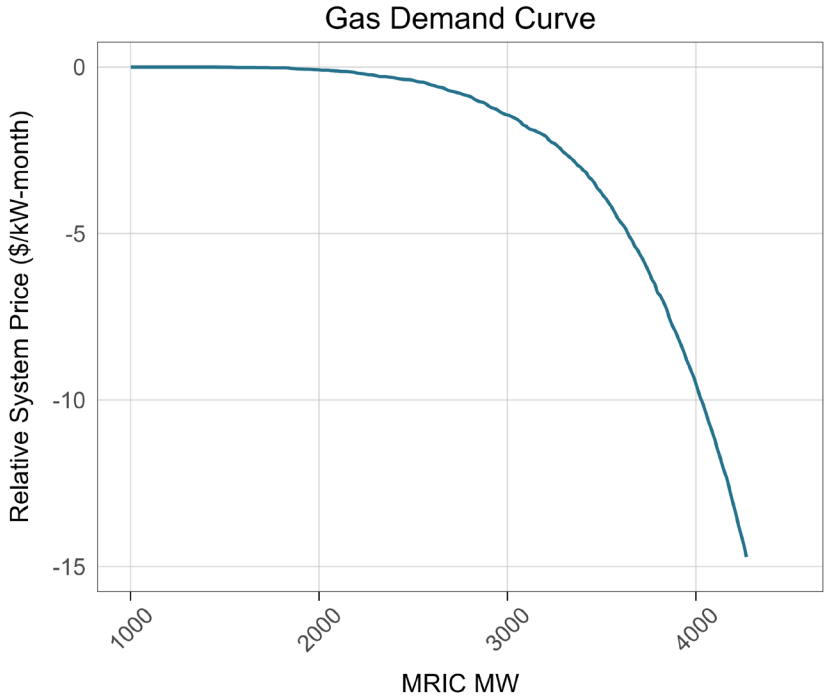
$Seasonal\ MRI(Q) \times Seasonal\ Scaling\ Factor = Seasonal\ Demand\ Price(Q)$, for system capacity Q



Gas Demand Curve

$Gas\ MRI(Q) \times Seasonal\ Scaling\ Factor = Gas\ Demand\ Price(Q)$, for non-firm capacity Q





Comparison of Simulation Results between Current Rules and CAR-SA

- Offer estimates across all three scenarios are based on multiple data sources where future resource offering behavior cannot be perfectly predicted (under both Current Rules and CAR-SA)
- A consistent modeling framework and set of assumptions are applied across both current rules and CAR-SA
- This means if an assumption is not correct, it will tend to impact the results in each case in a qualitatively similar manner
- For this reason, the analysis focuses primarily on **differences in possible market outcomes between Current Rules and CAR-SA**

REVIEW OF INPUT ASSUMPTIONS

Input Assumptions for Offers in All Scenarios

- Competitive offer
  - If a resource's next best alternative to obtaining a CSO is **full participation in the EAS markets**, their competitive offer price is the common value component:
    - PPR*BR*H
  - If a resource's next best alternative to obtaining a CSO is a **temporary exit from all ISO markets**, their competitive offer price is:
    - EAS Costs – EAS Revenues + Going Forward Cost – PPR*(A-BR)*H
- Scarcity Hours (H)
  - The ISO draws an annual H value within the range assigned for each scenario, based on an estimated distribution
  - This annual value is then allocated into seasonal values based on an assumed 50/50 split in the baseline scenario
    - This assumption does not represent the ISO's forecast of the H split; it is intended for informational purposes
    - This presentation also includes sensitivity results for alternative H splits of 25/75 and 75/25
- The ISO ran 1000 simulations for each scenario with heterogeneous offer inputs and calculated average market outcomes (price and quantity) across the simulations

Input Assumptions for Individual Resource Offers

	Lower	Medium	Higher
Capital and fixed O&M costs	50-75% of 2019-2024 historical costs from industry sources (in 2028$)	75-125% of 2019-2024 historical costs from industry sources (in 2028$)	125-300% of 2019-2024 historical costs from industry sources (in 2028$)
EAS Revenues	Historical net EAS revenues = average(Energy revenue + A/S revenue – variable cost*net generation), where averages are taken over 2019–2024 for the relevant period (annual/summer/winter)		
H	Estimates of H corresponding to Net ICR + 800 MW (draws from 25-90th percentile)	Estimates of H corresponding to Net ICR (draws from 25-90th percentile)	Estimates of H corresponding to Net ICR (draws from 50-95th percentile)
A	Historical performance during CSCs divided by the resource's total QC MW, summer MRIC MW, and winter MRIC MW for Current Rules, CAR-SA summer, and CAR-SA winter, respectively		
BR	Historical BR averages (2024–2025) calculated for summer and winter; Current Rules annual value constructed as an H-weighted mean of the two seasons; CAR-SA seasonal values adjusted for MRIC using the ratio of seasonal net ICR (absent PDR) in MRIC to that in QC		BR in Lower and Medium scenarios * 110%
Risk Premium	0-5% of capital costs if NBA is Exit; 0-5% of CVC if NBA is Full EAS Participation	5-25% of capital costs if NBA is Exit; 5-25% of CVC if NBA is Full EAS Participation	25-50% of capital costs if NBA is Exit; 25-50% of CVC if NBA is Full EAS Participation
PPR	$3,500		

Input Assumptions for Offers (cont.)

- IPR-wind, IPR-others, and Storage Resources: To account for payments received outside the ISO wholesale markets not captured in historical data, the ISO makes corresponding adjustments
- Imports: The ISO lacks sufficient data and insight to estimate next best alternatives for import resources to construct offer components comparable to those of other resources
  - Instead, the ISO relies on a model that captures the relationship between historical import offer prices and clearing quantities to assign offer prices to import resources in the Market Clearing IA
  - Further detail is provided in the
- The ISO is continuing to evaluate resource offer input assumptions

CAR-SA Market Rule Assumptions Used

- Storage and Energy-Limited Resources: Today's Market Clearing IA results are based on the RAM IA base case presented at the March MC meeting, and therefore, do not include the potential update to their accreditation methodology
- Firm Gas: The gas demand curve reflects the latest proposal, which:
  - Applies the gas constraint without adjusting for firm MW
  - Reduces the daily requirement for pipeline and LNG contracts from 24 hours to 16 hours and reflects the new receipt and delivery point requirements

Comparison of Revenues for Firm vs. Non-Firm Gas-Only Resources

- To estimate Current Rules revenue separately for firm and non-firm gas-only MWs and compare them to CAR-SA revenues, we approximate how each resource's cleared QC under Current Rules is split between firm and non-firm MWs
- These estimates are used to populate the tables on slides 25-26, 31-32, and 39-40
- Additional details on how the firm vs. non-firm quantities of gas-only resources estimated under Current Rules are provided in the appendix

LOWER SCENARIO

Baseline case: H Split of 50/50

Overview of Simulation Results from the Lower Scenario

- Capacity prices are low under both Current Rules and CAR-SA, reflecting excess supply, low assumed H values, and low assumed capital costs incorporated in offer prices
- Total cost/revenue decreases by $3.1 million (0.35%) under CAR-SA, compared to Current Rules, with summer costs somewhat higher than winter costs
  - Capacity prices tend to increase under CAR-SA, but this is offset by a reduction in the quantity procured, as the demand curve shifts left, largely reflecting the transition from QC to MRIC, which provides greater reliability on a per-MW basis
- The common value component (PPR*BR*H) increases when going from Current Rules to CAR-SA, because PPR and H (with seasonal values summing to the same value as the annual H) are constant across the two cases, while BR is higher under CAR-SA due to the QC-to-MRIC adjustment
  - For many resources whose MRIC is less than QC, offer prices are higher under CAR-SA when their next best alternative is temporary exit, because going forward costs must be recovered over fewer MWs
- The total clearing quantity tends to be lower under CAR-SA because MRIC tends to be smaller than QC for many resources
  - MRIC captures a resource's estimated performance during simulated hours that are important for resource adequacy, while QC is a heuristic metric

Lower Scenario: Systemwide Market Outcomes

	Current Rules	CAR-SA Summer	CAR-SA Winter
Clearing Price ($/kW-month)	2.31	3.16	2.68
Gas Clearing Price ($/kW-month)	-	-	1.33
Total CSO (MW)	32,094	27,527	24,294
Total Non-firm Gas CSO (MW)	-	-	2,965
Total Capacity Revenue ($ millions)	891.0	521.6	366.3

- The total estimated capacity revenue is $891.0 million under Current Rules and $887.9 million under CAR-SA
- The estimated change in total capacity revenue is a decrease of $3.1 million in the Lower scenario

Lower Scenario: Market Clearing Quantity by Resource Class

	Current Rules			CAR-SA Summer			CAR-SA Winter		
Resource Type	Accredited MW	Cleared %	Total Revenue ($ millions)	Accredited MW	Cleared %	Total Revenue ($ millions)	Accredited MW	Cleared %	Total Revenue ($ millions)
ADCR	761	95.5%	20.1	179	94.7%	3.2	231	98.0%	3.6
Daily/Weekly Hydro	1,062	96.2%	28.3	1,013	94.0%	18.1	1,020	98.2%	16.1
Energy Storage	3,862	96.1%	102.8	2,141	95.5%	38.7	810	98.4%	12.8
Gas Only	7,873	97.0%	211.4	7,362	95.6%	133.3	7,857	61.7%	53.8
Firm	-	-	-	-	-	-	-	99.1%	30.3
Non-firm	-	-	-	-	-	-	-	49.8%	23.6
Hybrid	644	96.0%	16.5	534	94.4%	9.6	264	97.1%	4.1
IPR-Hydro	316	93.7%	9.5	228	88.1%	3.8	336	97.4%	5.3
IPR-Others	232	96.6%	6.4	218	94.9%	3.9	216	98.5%	3.4
IPR-Solar	566	95.9%	7.6	340	94.6%	6.1	100	97.9%	1.6
IPR-Wind	565	96.7%	24.4	503	95.0%	9.1	912	98.7%	14.5
Import	2,205	8.6%	5.3	2,018	34.5%	13.3	1,177	17.2%	3.3
Oil/Dual-Fuel (EL3)	798	96.7%	21.4	764	95.4%	13.8	685	98.5%	10.8
Oil/Dual-Fuel (Thermal)	10,500	93.0%	270.3	8,635	91.0%	148.9	8,956	88.9%	127.9
Other Thermal	3,922	88.3%	95.9	3,430	88.2%	57.3	3,520	90.7%	51.3
PDR	2,658	96.9%	71.3	3,452	95.7%	62.6	3,633	98.8%	57.7
Total	35,963	89.2%	891.0	30,814	89.3%	521.6	29,716	71.8%	366.3

Lower Scenario: Change in Capacity Revenue by Resource Class

Resource Type	Current Rules ($ millions)	CAR-SA ($ millions)	Change in Revenue (%)
ADCR	20.1	6.9	-65.93%
Daily/Weekly Hydro	28.3	34.1	20.70%
Energy Storage	102.8	51.6	-49.83%
Gas Only	211.4	187.1	-11.47%
Firm	53.5	62.6	16.97%
Non-firm	157.9	124.5	-21.11%
Hybrid	16.5	13.7	-16.99%
IPR-Hydro	9.5	9.1	-4.42%
IPR-Others	6.4	7.3	15.01%
IPR-Solar	7.6	7.7	1.51%
IPR-Wind	24.4	23.5	-3.58%
Import	5.3	16.5	210.49%
Oil/Dual-Fuel (EL3)	21.4	24.7	15.39%
Oil/Dual-Fuel (Thermal)	270.3	276.8	2.40%
Other Thermal	95.9	108.6	13.29%
PDR	71.3	120.4	68.76%
Total	891.0	887.9	-0.35%

Notable Changes by Resource Class from the Lower Scenario

- The revenue increases by 17% for firm gas-only resources, while it decreases by 21% for non-firm gas-only resources
  - Non-firm gas-only resources clear less quantity and receive lower payments due to price separation under the gas constraint in the winter
- The change in revenues by resource type generally aligns with relative changes in capacity accreditation
  - The revenue decrease is more pronounced in winter for energy storage resources, because their MRIC values are lower in winter than in summer, driven by the longer duration of winter events
  - The revenue increases by 69% for PDRs in accordance with their higher amount of accreditation compared to Current Rules
  - ADCRs experience a larger decrease in accreditation than most resource types, leading to lower revenues

MEDIUM SCENARIO

Baseline case: H Split of 50/50

Overview of Simulation Results from the Medium Scenario

- Total cost/revenue decreases by $22.0 million dollars (1.25%) under CAR-SA, compared to Current Rules, with summer costs somewhat higher than winter costs
- The common value component (PPR*BR*H) increases when going from Current Rules to CAR-SA, because PPR and H (with seasonal values summing to the same value as the annual H) are constant across the two cases, while BR is higher under CAR-SA due to the QC-to-MRIC adjustment
- The total clearing quantity tends to be lower under CAR-SA because MRIC tends to be smaller than QC for many resources
  - MRIC captures a resource's estimated performance during simulated hours that are important for resource adequacy, while QC is a heuristic metric
- More MWs of non-firm gas-only resources clear in the Medium scenario relative to the Lower scenario, despite clearing less total system capacity, because the relative value (as specified in the clearing engine) of non-firm gas increases as offer prices rise across all resources
  - As a result, the system substitutes away from other resource types toward non-firm gas resources compared to the Lower scenario
  - This dynamic strengthens gas-only resource's incentive to firm up their gas under tighter system conditions
  - Further detail is provided in the appendix

Medium Scenario: Systemwide Market Outcomes

	Current Rules	CAR-SA Summer	CAR-SA Winter
Clearing Price ($/kW-month)	4.61	6.27	5.16
Gas Clearing Price ($/kW-month)	-	-	3.47
Total CSO (MW)	31,702	27,231	24,023
Total Non-firm Gas CSO (MW)	-	-	3,075
Total Capacity Revenue ($ millions)	1,759.7	1,024.8	712.9

- The total estimated capacity revenue is $1,759.7 million under Current Rules and $1,737.7 million under CAR-SA
- The estimated change in total capacity revenue is a decrease of $22.0 million in the Medium scenario

Medium Scenario: Market Clearing Quantity by Resource Class

	Current Rules			CAR-SA Summer			CAR-SA Winter		
Resource Type	Accredited MW	Cleared %	Total Revenue ($ millions)	Accredited MW	Cleared %	Total Revenue ($ millions)	Accredited MW	Cleared %	Total Revenue ($ millions)
ADCR	761	84.9%	35.8	179	86.5%	5.8	231	89.2%	6.4
Daily/Weekly Hydro	1,062	90.1%	53.0	1,013	85.7%	32.7	1,020	91.6%	29.0
Energy Storage	3,862	88.1%	188.2	2,141	88.2%	71.1	810	90.8%	22.8
Gas Only	7,873	90.8%	395.6	7,362	87.3%	241.9	7,857	61.3%	117.9
Firm	-	-	-	-	-	-	-	91.9%	54.1
Non-firm	-	-	-	-	-	-	-	51.6%	63.8
Hybrid	644	87.5%	30.1	534	83.9%	16.9	264	86.7%	7.1
IPR-Hydro	316	85.5%	17.3	228	77.5%	6.7	336	89.1%	9.3
IPR-Others	232	91.3%	12.0	218	87.6%	7.2	216	92.3%	6.2
IPR-Solar	566	87.1%	13.7	340	84.6%	10.9	100	87.5%	2.7
IPR-Wind	565	87.6%	44.3	503	84.8%	16.0	912	90.9%	25.7
Import	2,205	62.1%	76.1	2,018	100.0%	75.9	1,177	86.5%	31.7
Oil/Dual-Fuel (EL3)	798	93.5%	41.3	764	90.4%	26.0	685	94.5%	20.1
Oil/Dual-Fuel (Thermal)	10,500	89.9%	522.3	8,635	86.6%	281.3	8,956	82.4%	228.6
Other Thermal	3,922	86.5%	187.5	3,430	84.9%	109.4	3,520	87.8%	95.7
PDR	2,658	96.8%	142.5	3,452	94.6%	123.1	3,633	97.6%	110.0
Total	35,963	88.2%	1,759.7	30,814	88.4%	1,024.8	29,716	70.5%	712.9

Medium Scenario: Change in Capacity Revenue by Resource Class

Resource Type	Current Rules ($ millions)	CAR-SA ($ millions)	Change in Revenue (%)
ADCR	35.8	12.2	-65.83%
Daily/Weekly Hydro	53.0	61.7	16.28%
Energy Storage	188.2	93.9	-50.10%
Gas Only	395.6	359.7	-9.07%
Firm	99.6	112.7	13.10%
Non-firm	296.0	247.1	-16.54%
Hybrid	30.1	24.0	-20.18%
IPR-Hydro	17.3	15.9	-7.76%
IPR-Others	12.0	13.4	10.92%
IPR-Solar	13.7	13.6	-1.23%
IPR-Wind	44.3	41.7	-5.71%
Import	76.1	107.6	41.45%
Oil/Dual-Fuel (EL3)	41.3	46.1	11.47%
Oil/Dual-Fuel (Thermal)	522.3	509.9	-2.37%
Other Thermal	187.5	205.1	9.39%
PDR	142.5	233.0	63.46%
Total	1,759.7	1,737.7	-1.25%

Notable Changes by Resource Class from the Medium Scenario

- Many of the trends observed in the Lower scenario persist in the Medium scenario
- Revenue increases by 13% for firm gas-only resources, while it decreases by 17% for non-firm gas-only resources
- Changes in revenue by resource type generally align with relative shifts in capacity accreditation
  - The revenue decline is more pronounced in winter for energy storage resources, as their MRIC values are lower during winter than in summer, driven by the longer duration of winter events
  - Revenue increases by 63% for PDRs in accordance with their higher amount of accreditation compared to Current Rules
  - ADCRs experience a larger decrease in accreditation than most resource types, leading to lower revenues

Sources of Heterogeneous Offers Across Draws

- The ISO ran 1000 simulations for each scenario with heterogeneous offer inputs and calculated average market outcomes (price and quantity) across the simulations
- While some components are fixed for a given resource across all simulations, the values for capital and fixed costs, risk premiums, and H are stochastically determined and informed by resource-specific historical data and predetermined ranges corresponding to the **Lower**, **Medium**, and **Higher** scenarios
  - Capital costs exhibit an additional layer of heterogeneity through a probability of cost incurrence: the drawn capital cost value from the above is applied to a given resource only with a certain probability, calibrated to reflect the share of resources that the ISO observed submitting exit offers in the past
- Using multiple draws allows the ISO to approximate expected market outcomes under uncertainty and to summarize a range of potential outcomes driven by variability in each key offer component
- The graph on the next slide illustrates variability in clearing prices in the Medium scenario driven by the heterogeneity in offer components
  - The Medium scenario was chosen for illustration; all scenarios exhibit variability in clearing prices across the 1,000 simulations, with corresponding graphs provided in the appendix

Medium Scenario: Distribution of Multiple Draws

HIGHER SCENARIO

Baseline case: H Split of 50/50

Overview of Simulation Results from the Higher Scenario

- Capacity prices are high under both Current Rules and CAR-SA, reflecting high assumed H values, capital costs, and risk premium, as well as a BR value that is higher than that used in the Lower and Medium scenarios
  - These assumptions, particularly the risk premium, are intended to indirectly capture uncertainty about the future that the Market Clearing IA cannot otherwise account for, such as shifts in demand and uncertainty in the future resource mix arising from potential retirements and approximately 2 GW of energy storage that is not yet commercial
- Total cost/revenue decreases by $104.5 million (3.55%) under CAR-SA, compared to Current Rules, with summer costs somewhat higher than winter costs
- More MWs of non-firm gas-only resources clear in the Higher scenario relative to the Medium scenario, despite clearing less total system capacity, because the relative value of non-firm gas increases as offer prices rise across all resources

Higher Scenario: Systemwide Market Outcomes

	Current Rules	CAR-SA Summer	CAR-SA Winter
Clearing Price ($/kW-month)	7.78	10.30	8.56
Gas Clearing Price ($/kW-month)	-	-	5.95
Total CSO (MW)	31,433	27,015	23,802
Total Non-firm Gas CSO (MW)	-	-	3,301
Total Capacity Revenue ($ millions)	2,944.2	1,668.9	1,170.8

- The total estimated capacity revenue is $2,944.2 under Current Rules and $2,839.7 million under CAR-SA
- The estimated change in total capacity revenue is a decrease of $104.5 million in the Higher scenario

Higher Scenario: Market Clearing Quantity by Resource Class

	Current Rules			CAR-SA Summer			CAR-SA Winter		
Resource Type	Accredited MW	Cleared %	Total Revenue ($ millions)	Accredited MW	Cleared %	Total Revenue ($ millions)	Accredited MW	Cleared %	Total Revenue ($ millions)
ADCR	761	90.2%	64.1	179	89.5%	9.9	231	92.5%	11.0
Daily/Weekly Hydro	1,062	92.1%	91.4	1,013	86.0%	53.9	1,020	93.5%	49.0
Energy Storage	3,862	92.3%	333.1	2,141	91.5%	121.1	810	94.0%	39.2
Gas Only	7,873	94.5%	695.1	7,362	90.9%	413.3	7,857	65.0%	210.3
Firm	-	-	-	-	-	-	-	94.9%	92.6
Non-firm	-	-	-	-	-	-	-	55.4%	117.7
Hybrid	644	78.9%	45.6	534	82.9%	27.4	264	76.7%	10.4
IPR-Hydro	316	82.4%	28.1	228	71.0%	10.0	336	84.9%	14.6
IPR-Others	232	93.0%	20.7	218	85.0%	11.4	216	95.0%	10.5
IPR-Solar	566	91.1%	24.2	340	87.3%	18.4	100	88.8%	4.6
IPR-Wind	565	93.4%	79.5	503	88.9%	27.6	912	95.0%	44.5
Import	2,205	52.4%	108.2	2,018	99.8%	124.4	1,177	68.9%	41.8
Oil/Dual-Fuel (EL3)	798	96.9%	72.2	764	95.1%	44.9	685	97.0%	34.1
Oil/Dual-Fuel (Thermal)	10,500	83.5%	818.7	8,635	80.5%	429.6	8,956	78.1%	359.1
Other Thermal	3,922	86.1%	315.0	3,430	77.6%	163.7	3,520	85.8%	154.9
PDR	2,658	100.0%	248.2	3,452	100.0%	213.3	3,633	100.0%	186.6
Total	35,963	87.4%	2,944.2	30,814	87.7%	1,668.9	29,716	69.0%	1,170.8

Higher Scenario: Change in Capacity Revenue by Resource Class

Resource Type	Current Rules ($ millions)	CAR-SA ($ millions)	Change in Revenue (%)
ADCR	64.1	20.9	-67.38%
Daily/Weekly Hydro	91.4	102.9	12.57%
Energy Storage	333.1	160.3	-51.88%
Gas Only	695.1	623.6	-10.27%
Firm	175.5	191.8	9.28%
Non-firm	519.5	431.8	-16.88%
Hybrid	45.6	37.8	-17.05%
IPR-Hydro	28.1	24.7	-12.32%
IPR-Others	20.7	22.0	6.39%
IPR-Solar	24.2	22.9	-5.34%
IPR-Wind	79.5	72.1	-9.22%
Import	108.2	166.2	53.55%
Oil/Dual-Fuel (EL3)	72.2	79.0	9.39%
Oil/Dual-Fuel (Thermal)	818.7	788.7	-3.67%
Other Thermal	315.0	318.6	1.14%
PDR	248.2	399.9	61.12%
Total	2,944.2	2,839.7	-3.55%

Notable Changes by Resource Class from the Higher Scenario

- Many of the trends observed in the Lower and Medium scenarios continue to hold in the Higher scenario
  - Revenue increases by 9% for firm gas-only resources, while it decreases by 17% for non-firm gas-only resources
- Changes in revenue by resource type generally align with relative shifts in capacity accreditation

Summary of Baseline Directional Results

	Lower			Medium			Higher		
	Current Rules	CAR-SA Summer	CAR-SA Winter	Current Rules	CAR-SA Summer	CAR-SA Winter	Current Rules	CAR-SA Summer	CAR-SA Winter
Clearing Price ($/kW-month)	2.31	3.16	2.68	4.61	6.27	5.16	7.78	10.30	8.56
Gas Clearing Price ($/kW-month)	-	-	1.33	-	-	3.47	-	-	5.95
Total CSO (MW)	32,094	27,527	24,294	31,702	27,231	24,023	31,433	27,015	23,802
Total Non-firm Gas CSO (MW)	-	-	2,965	-	-	3,075	-	-	3,301
Total Capacity Revenue ($ millions)	891.0	521.6	366.3	1,759.7	1,024.8	712.9	2,944.2	1,668.9	1,170.8

OFFER SENSITIVITY ANALYSIS

H Split of 75/25

Overview of the Offer Sensitivity Analysis with H Split of 75/25

- This sensitivity case assumes that 75% of H occurs in the summer and 25% in the winter
- This assumption affects two components
  - Seasonal H values: Although the annual H value remains the same as in the baseline scenarios, the seasonal allocation differs
  - Annual BR value: Under the Current Rules, the annual BR value is calculated as an H-weighted average of the two seasons; therefore, changes in the seasonal H values will lead to corresponding changes in the annual BR value
- As a result, summer prices are higher than in the baseline across all three scenarios (Lower, Medium, Higher), while winter prices are lower than in the baseline, reflecting that seasonal offer prices reflect a higher expected H in the summer, and a lower expected H in the winter
- Additional simulation results regarding these cases are included in the appendix

Lower Scenario: Systemwide Market Outcomes

	Current Rules	CAR-SA Summer	CAR-SA Winter
Clearing Price ($/kW-month)	2.45	4.26	2.14
Gas Clearing Price ($/kW-month)	-	-	0.69
Total CSO (MW)	32,043	27,398	24,382
Total Non-firm Gas CSO (MW)	-	-	3,002
Total Capacity Revenue ($ millions)	945.3	700.5	286.4

- The total estimated capacity revenue is $945.3 million under Current Rules and $986.9 million under CAR-SA
- The estimated change in total capacity revenue is an increase of $41.6 million in the Lower scenario

Medium Scenario: Systemwide Market Outcomes

	Current Rules	CAR-SA Summer	CAR-SA Winter
Clearing Price ($/kW-month)	4.91	9.16	3.59
Gas Clearing Price ($/kW-month)	-	-	1.78
Total CSO (MW)	31,664	27,068	24,177
Total Non-firm Gas CSO (MW)	-	-	3,113
Total Capacity Revenue ($ millions)	1,870.2	1,488.2	486.5

- The total estimated capacity revenue is $1,870.2 million under Current Rules and $1,974.6 million under CAR-SA
- The estimated change in total capacity revenue is an increase of $104.4 million in the Medium scenario

Higher Scenario: Systemwide Market Outcomes

	Current Rules	CAR-SA Summer	CAR-SA Winter
Clearing Price ($/kW-month)	8.22	14.30	6.68
Gas Clearing Price ($/kW-month)	-	-	3.13
Total CSO (MW)	31,402	26,862	23,909
Total Non-firm Gas CSO (MW)	-	-	3,464
Total Capacity Revenue ($ millions)	3,107.0	2,304.6	883.7

- The total estimated capacity revenue is $3,107.0 million under Current Rules and $3,188.3 million under CAR-SA
- The estimated change in total capacity revenue is an increase of $81.3 million in the Higher scenario

OFFER SENSITIVITY ANALYSIS

H Split of 25/75

Overview of Offer Sensitivity Analysis with H Split of 25/75

- This sensitivity case assumes that 25% of H occurs in the summer and 75% in the winter
  - The intent is not to suggest a specific split of scarcity hours between seasons, but rather to show how the model results (both annual and seasonal) would change under different seasonal conditions
- As in the 75/25 H split sensitivity case, this assumption affects the seasonal H values and annual BR value
- As a result, summer prices are lower than in the baseline across all three scenarios (Lower, Medium, Higher), while winter prices are higher than in the baseline, reflecting that seasonal offer prices reflect a higher expected H in the winter, and a lower expected H in the summer
- Additional results regarding these cases are included in the appendix

Lower Scenario: Systemwide Market Outcomes

	Current Rules	CAR-SA Summer	CAR-SA Winter
Clearing Price ($/kW-month)	2.15	2.22	3.57
Gas Clearing Price ($/kW-month)	-	-	1.99
Total CSO (MW)	32,123	27,667	24,180
Total Non-firm Gas CSO (MW)	-	-	3,039
Total Capacity Revenue ($ millions)	830.6	368.0	488.7

- The total estimated capacity revenue is $830.6 million under Current Rules and $856.7 million under CAR-SA
- The estimated change in total capacity revenue is an increase of $26.1 million in the Lower scenario

Medium Scenario: Systemwide Market Outcomes

	Current Rules	CAR-SA Summer	CAR-SA Winter
Clearing Price ($/kW-month)	4.31	3.72	7.24
Gas Clearing Price ($/kW-month)	-	-	5.18
Total CSO (MW)	31,748	27,457	23,872
Total Non-firm Gas CSO (MW)	-	-	3,173
Total Capacity Revenue ($ millions)	1,648.3	612.6	997.9

- The total estimated capacity revenue is $1,648.3 million under Current Rules and $1,610.6 million under CAR-SA
- The estimated change in total capacity revenue is a decrease of $37.7 million in the Medium scenario

Higher Scenario: Systemwide Market Outcomes

	Current Rules	CAR-SA Summer	CAR-SA Winter
Clearing Price ($/kW-month)	7.32	7.87	11.59
Gas Clearing Price ($/kW-month)	-	-	8.78
Total CSO (MW)	31,458	27,135	23,670
Total Non-firm Gas CSO (MW)	-	-	3,328
Total Capacity Revenue ($ millions)	2,771.3	1,281.1	1,589.0

- The total estimated capacity revenue is $2,771.3 million under Current Rules and $2,870.1 million under CAR-SA
- The estimated change in total capacity revenue is an increase of $98.8 million in the Higher scenario

Key Qualitative Takeaway from Sensitivity Analyses

- The analysis to date suggests that total capacity costs could be similar under current rules and CAR-SA
- While the base cases show very small to modest cost savings under CAR-SA, the sensitivities show instances where costs increase or decrease
- Across cases, resource types that have higher MRIC values when compared to their QCs tend to see revenue increases, and those that see lower MRIC values see the opposite

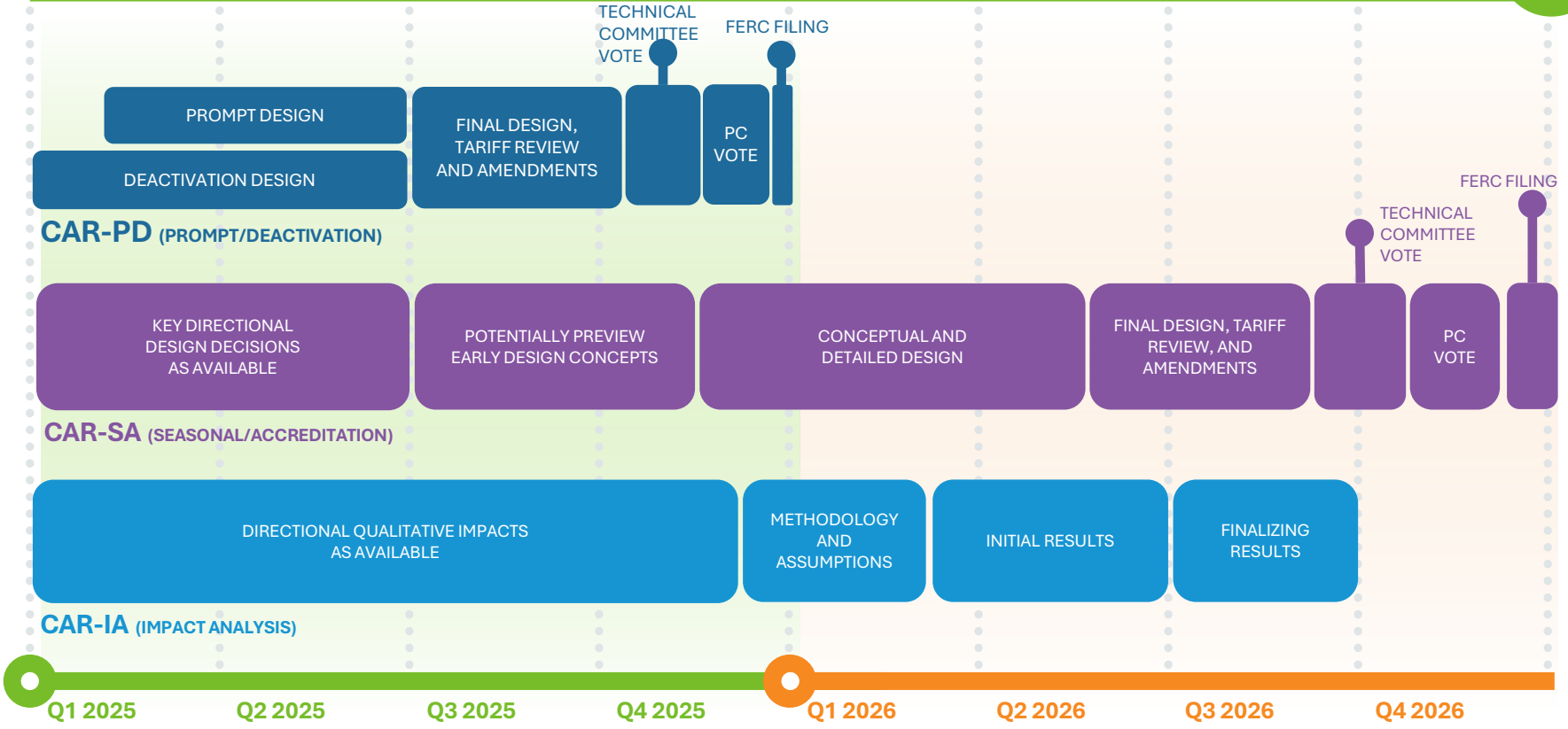
Summary and Next Steps

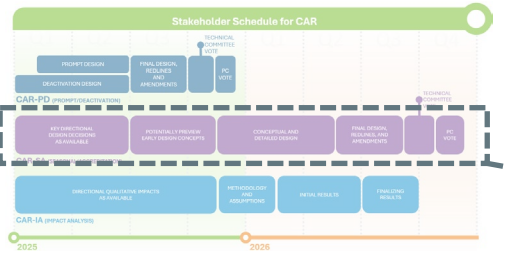
- The ISO has reviewed its preliminary directional results and the assumptions that drive lower, medium, and higher cases, and offer-sensitivity analyses
  - These cases compare directional results between a current rules case to the CAR-SA design approach case
- In July, the ISO will return with additional detail, follow-ups to questions, and with a sensitivity using the simulation output from the Resource Accreditation Modeling 80/20 risk split case
- If questions or comments arise after this meeting, please send them to MC Secretary, Jasleen Singh (jsingh@iso-ne.com), by June 24, 2026

Questions

STAKEHOLDER SCHEDULE

Stakeholder Schedule for CAR





Stakeholder Schedule for CAR-SA

CORE MODELING AND ACCREDITATION CONCEPTS

SEASONAL/ACCREDITATION MODELING AND MARKET DESIGN

CONFORMING DESIGN DETAILS

FINAL DESIGN, TARIFF REVIEW AND AMENDMENTS

TECHNICAL COMMITTEE VOTE

PC VOTE

FERC FILING

CAR-SA (SEASONAL/ACCREDITATION)

PROVIDE QUESTIONS AND FEEDBACK ON DESIGN

Stakeholder Activity

CONCEPTUAL AMENDMENTS

PRESENT AMENDMENTS

PRESENT DESIGN & RESPOND TO FEEDBACK

ISO Activity

PROVIDE QUESTIONS AND FEEDBACK ON AMENDMENTS

Q4 2025 | Q1 2026 | Q2 2026 | Q3 2026 | Q4 2026

CAR-SA Schedule Projection

- **June**
  - MC Timeframe
    - Resource Accreditation Modeling Impact Analysis, continued discussion
    - Market Clearing Impact Analysis, preliminary results
    - Gas-Only Resource Contract Requirements, continued discussion
    - Gas Constraint Demand Curve, continued discussion
    - Seasonal Offer Construction and Mitigation, continued discussion
    - Resource Qualification, continued Discussion
    - Tariff Redlines for Deactivation Mitigation
    - Capacity Bilaterals and Capacity Exports
    - Pay-for-Performance Interactions
    - Transition Mechanism
  - TC Timeframe
    - Tariff Redlines for Deactivations in a Seasonal Construct

CAR-SA Schedule Projection (Continued)

- **July**
  - MC Timeframe
    - Updated Activity Schedule
    - Quarterly Follow-up Medley
    - Market Clearing IA, continued discussion
    - Resource Accreditation Modeling, continued discussion
    - Tariff Redline Review, continued discussion
    - Transition Mechanism, continued discussion
    - Seasonal Offers and Mitigation, continued discussion
    - Balancing Ratio capping under CAR-SA, continued discussion
    - Resource Qualification, continued discussion
    - Winter Gas Constraint, continued discussion
    - Bilaterals, continued discussion, if needed
  - RC Timeframe
    - DCap Process Flows for Individual Resource Types

APPENDIX

Imports Offer Model

- Due to a lack of data on import resource costs, we generate resource-level import offer prices that are consistent with observed bidding behavior from prior FCAs and ARAs
- Using data from FCA10-18 (and corresponding ARAs), we estimate aggregate auction-level import price elasticities (i.e. the slope of the import offer curves)
  - $\log Q = \alpha + \beta \log P$
  - Where Q is the cumulative import supply, P is the offer segment price and β is the estimated elasticity
- We then use a weighted-average of these estimated elasticities to assign prices to the observed MW amounts for the import resources under Current Rules and CAR-SA
  - $P(Q) = P_0 \left(\frac{Q}{Q_0}\right)^{\frac{1}{\beta}}$
  - Where (P_0, Q_0) represents typical clearing prices and clearing quantity of imports in the import offer stack
- This ensures import offer curves that are consistent with the approximate slope of past auctions, as well as typical clearing prices relative to cleared quantities
- The model varies import offer prices across the Lower, Medium, and Higher scenarios, with prices increasing accordingly across these scenarios; this progression is broadly consistent with the assumptions applied to other resources

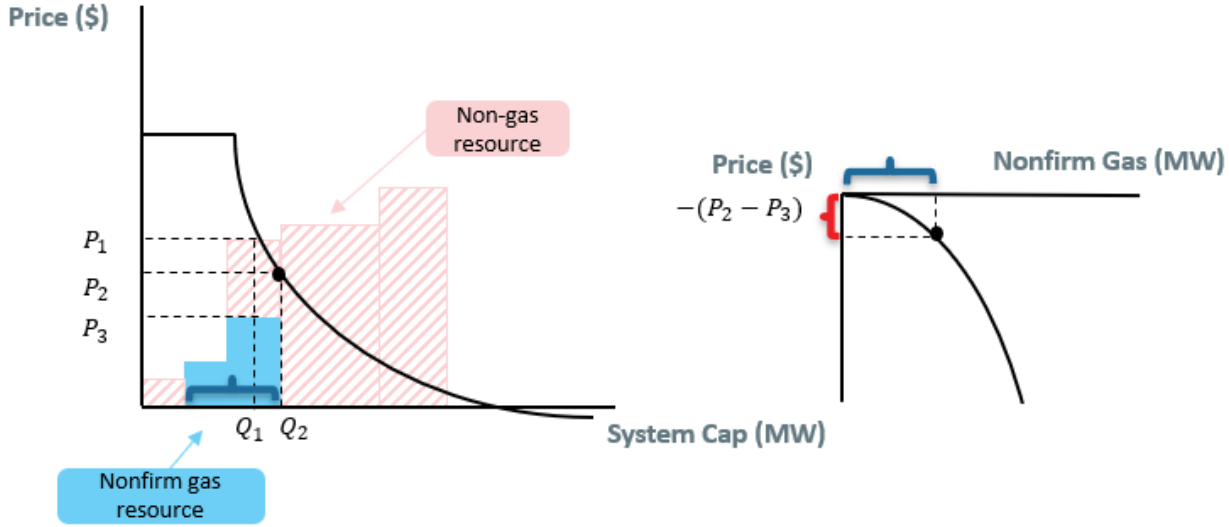
Assigning Firm vs. Non-Firm Quantity in the Current Rules Case for Comparison with CAR-SA

- We first compute the share of each resource's total MRIC that is considered firm under CAR-SA
- This share is then applied to the resource's QC to estimate the maximum firm QC MW associated with that resource
- Cleared QC is then allocated as follows to reflect the cleared gas-only quantity under Current Rules is first allocated to firm:
  - Firm QC MWs are assigned first, up to the estimated firm QC limit
  - Any remaining cleared QC is assigned to non-firm
  - This means, for a gas-only resource r:
    - $Firm\ QC\ Cleared_r = \min(QC_r \times \frac{Firm\ MRIC_r}{Total\ MRIC_r}, Cleared\ QC_r)$
    - $Nonfirm\ QC\ Cleared_r = \min(Cleared\ QC_r \times \frac{Nonfirm\ MRIC_r}{Total\ MRIC_r}, Cleared\ QC_r - Firm\ QC\ Cleared_r)$

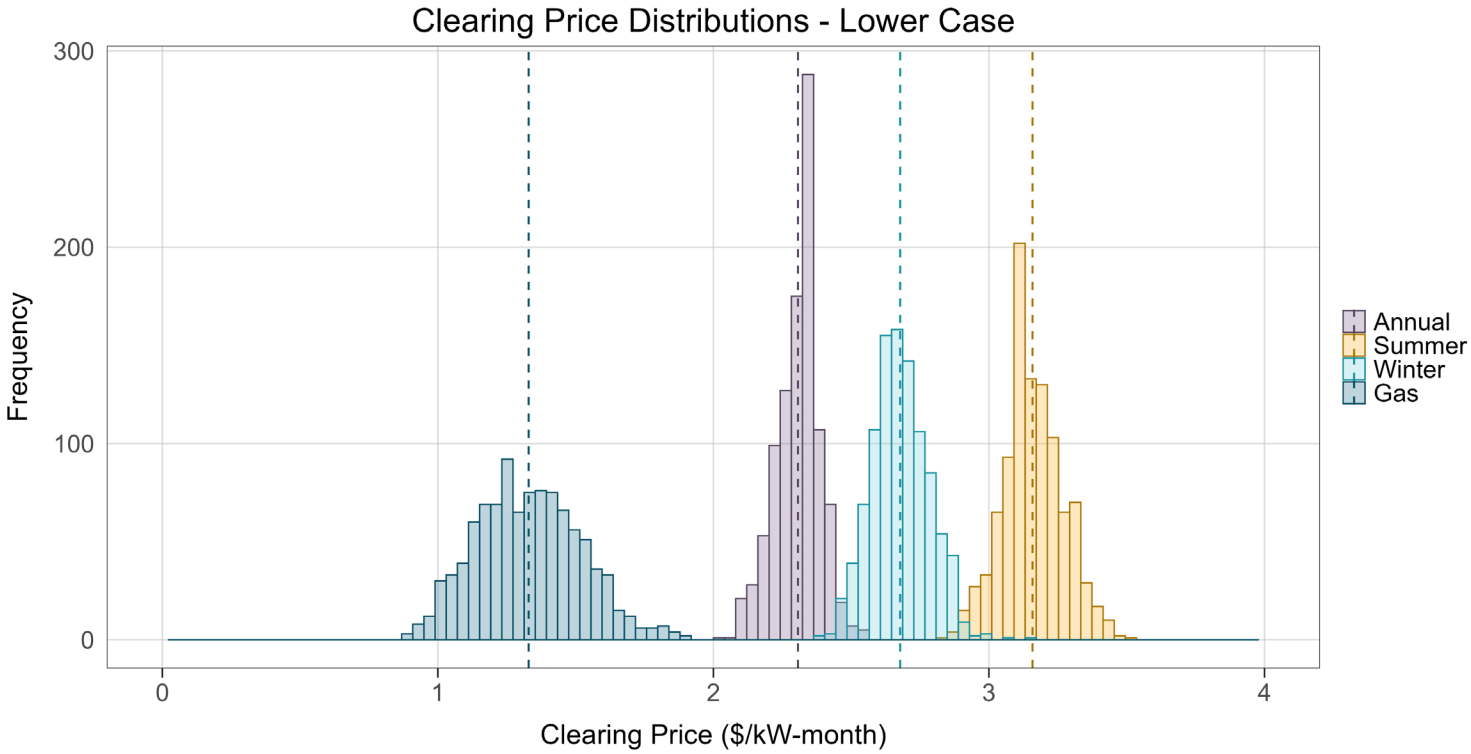
Marginal Rate of Substitution between Non-Firm Gas and Non-Gas Resources

- The stylized graph on the next slide illustrates the marginal rate of substitution between non-firm gas and non-gas resources
- After clearing the first two supply blocks with the lowest offer prices, the system must choose between clearing a non-gas resource and a non-firm gas resource
- If the system clears the non-gas resource, the system clearing price will be P_1 and the corresponding system clearing quantity will be Q_1
  - The incremental social surplus from this will be zero, since the marginal benefit (the clearing price of P_1) is exactly equal to the marginal cost (the offer price of the resource at P_1)
  - However, the incremental social surplus from clearing the non-firm gas resource instead at Q_1 is $(P_1 - P_2)$ plus a gas price that is bounded by $-(P_2 - P_3)$, totaling a net benefit with a lower bound of $(P_1 - P_3) - (P_2 - P_3) = P_1 - P_2$, which is positive
- Because clearing the non-firm gas resource yields a higher marginal net benefit, the system selects it as the third supply block
  - The system clearing price is set at P_2 and the corresponding system clearing quantity will be Q_2
  - Note that the gas price in this case is exactly equal to the negative value of the clearing price of $(P_2 - P_3)$, making the marginal net benefit of clearing the non-firm gas supply block at Q_2 equal zero

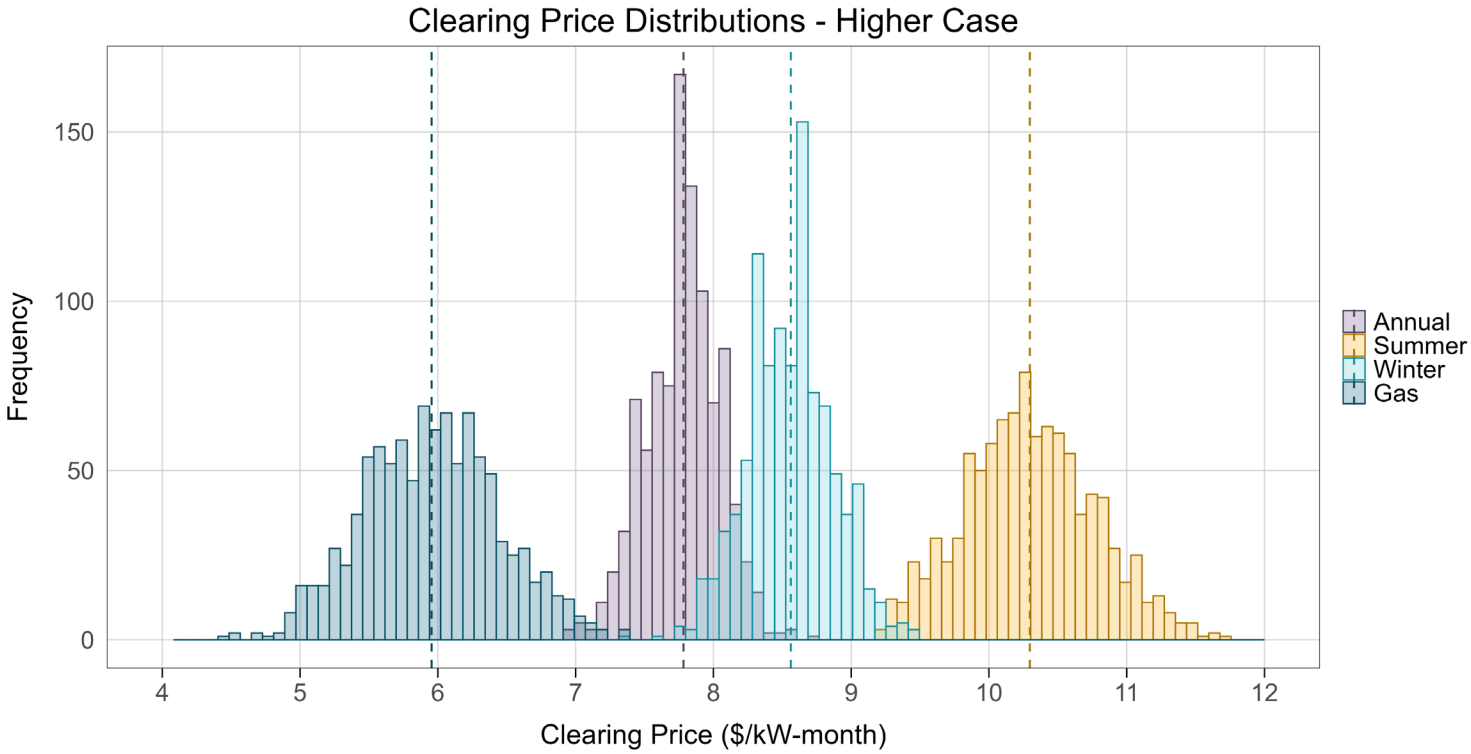
Marginal Rate of Substitution between Non-Firm Gas and Non-Gas Resources (cont.)



Lower Scenario: Distribution of Multiple Draws



Higher Scenario: Distribution of Multiple Draws



SENSITIVITY ANALYSIS RESULT BY RESOURCE CLASS

H Split of 25/75

Lower Scenario: Market Clearing Quantity by Resource Class

	Current Rules			CAR-SA Summer			CAR-SA Winter		
Resource Type	Accredited MW	Cleared %	Total Revenue ($ millions)	Accredited MW	Cleared %	Total Revenue ($ millions)	Accredited MW	Cleared %	Total Revenue ($ millions)
ADCR	761	96.1%	18.9	179	100.0%	2.4	231	92.5%	4.6
Daily/Weekly Hydro	1,062	96.6%	26.5	1,013	98.8%	13.3	1,020	93.4%	20.4
Energy Storage	3,862	96.8%	96.4	2,141	100.0%	28.5	810	93.0%	16.1
Gas Only	7,873	97.6%	198.2	7,362	100.0%	97.9	7,857	61.4%	74.4
Firm	-	-	-	-	-	-	-	93.9%	38.2
Non-firm	-	-	-	-	-	-	-	51.0%	36.2
Hybrid	644	96.5%	15.4	534	100.0%	7.1	264	92.3%	5.2
IPR-Hydro	316	94.2%	8.9	228	92.0%	2.8	336	92.4%	6.6
IPR-Others	232	97.2%	6.0	218	100.0%	2.9	216	93.1%	4.3
IPR-Solar	566	96.5%	7.1	340	100.0%	4.5	100	92.2%	2.0
IPR-Wind	565	97.4%	22.9	503	100.0%	6.7	912	93.5%	18.3
Import	2,205	4.7%	2.7	2,018	6.2%	1.7	1,177	51.3%	13.0
Oil/Dual-Fuel (EL3)	798	97.2%	20.0	764	100.0%	10.2	685	93.4%	13.7
Oil/Dual-Fuel (Thermal)	10,500	92.9%	251.4	8,635	90.4%	103.7	8,956	88.4%	169.3
Other Thermal	3,922	88.7%	89.6	3,430	88.6%	40.4	3,520	89.9%	67.6
PDR	2,658	97.5%	66.8	3,452	100.0%	45.9	3,633	94.0%	73.1
Total	35,963	89.3%	830.6	30,814	89.8%	368.0	29,716	71.1%	488.7

Lower Scenario: Change in Capacity Revenue by Resource Class

Resource Type	Current Rules ($ millions)	CAR-SA ($ millions)	Change in Revenue (%)
ADCR	18.9	7.0	-63.06%
Daily/Weekly Hydro	26.5	33.7	27.41%
Energy Storage	96.4	44.6	-53.72%
Gas Only	198.2	172.3	-13.07%
Firm	50.2	61.8	23.14%
Non-firm	148.0	110.4	-25.36%
Hybrid	15.4	12.3	-20.12%
IPR-Hydro	8.9	9.4	6.27%
IPR-Others	6.0	7.2	20.62%
IPR-Solar	7.1	6.5	-8.27%
IPR-Wind	22.9	24.9	9.16%
Import	2.7	14.7	444.02%
Oil/Dual-Fuel (EL3)	20.0	23.9	19.33%
Oil/Dual-Fuel (Thermal)	251.4	273.1	8.64%
Other Thermal	89.6	108.0	20.55%
PDR	66.8	119.0	78.16%
Total	830.6	856.7	3.14%

Medium Scenario: Market Clearing Quantity by Resource Class

	Current Rules			CAR-SA Summer			CAR-SA Winter		
Resource Type	Accredited MW	Cleared %	Total Revenue ($ millions)	Accredited MW	Cleared %	Total Revenue ($ millions)	Accredited MW	Cleared %	Total Revenue ($ millions)
ADCR	761	86.4%	34.0	179	97.3%	3.9	231	83.8%	8.4
Daily/Weekly Hydro	1,062	91.2%	50.2	1,013	96.1%	21.7	1,020	87.0%	38.6
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Gas Only	7,873	92.0%	374.8	7,362	98.3%	161.4	7,857	61.4%	170.2
Firm	-	-	-	-	-	-	-	87.1%	71.9
Non-firm	-	-	-	-	-	-	-	53.3%	98.3
Hybrid	644	88.6%	28.5	534	95.3%	11.4	264	83.1%	9.6
IPR-Hydro	316	86.7%	16.4	228	85.2%	4.3	336	84.9%	12.4
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Import	2,205	49.4%	56.6	2,018	27.2%	12.3	1,177	100.0%	51.2
Oil/Dual-Fuel (EL3)	798	94.5%	39.1	764	98.8%	16.8	685	90.3%	26.9
Oil/Dual-Fuel (Thermal)	10,500	90.5%	492.2	8,635	86.4%	166.4	8,956	83.1%	323.6
Other Thermal	3,922	87.1%	176.7	3,430	87.9%	67.3	3,520	87.0%	132.7
PDR	2,658	97.7%	134.6	3,452	100.0%	77.0	3,633	93.8%	148.2
Total	35,963	88.3%	1,648.3	30,814	89.1%	612.6	29,716	69.7%	997.9

Medium Scenario: Change in Capacity Revenue by Resource Class

Resource Type	Current Rules ($ millions)	CAR-SA ($ millions)	Change in Revenue (%)
ADCR	34.0	12.3	-63.78%
Daily/Weekly Hydro	50.2	60.3	20.20%
Energy Storage	178.8	77.3	-56.77%
Gas Only	374.8	331.6	-11.53%
Firm	94.3	111.0	17.68%
Non-firm	280.5	220.7	-21.34%
Hybrid	28.5	20.9	-26.50%
IPR-Hydro	16.4	16.7	2.27%
IPR-Others	11.4	12.9	13.27%
IPR-Solar	13.0	10.9	-16.55%
IPR-Wind	42.0	45.1	7.27%
Import	56.6	63.4	12.09%
Oil/Dual-Fuel (EL3)	39.1	43.8	12.00%
Oil/Dual-Fuel (Thermal)	492.2	490.0	-0.43%
Other Thermal	176.7	200.0	13.17%
PDR	134.6	225.2	67.38%
Total	1,648.3	1,610.6	-2.29%

Higher Scenario: Market Clearing Quantity by Resource Class

	Current Rules			CAR-SA Summer			CAR-SA Winter		
Resource Type	Accredited MW	Cleared %	Total Revenue ($ millions)	Accredited MW	Cleared %	Total Revenue ($ millions)	Accredited MW	Cleared %	Total Revenue ($ millions)
ADCR	761	91.7%	61.3	179	100.0%	8.4	231	85.1%	13.7
Daily/Weekly Hydro	1,062	93.3%	87.1	1,013	95.8%	45.8	1,020	87.0%	61.8
Energy Storage	3,862	93.9%	318.7	2,141	100.0%	101.1	810	87.1%	49.2
Gas Only	7,873	95.7%	661.4	7,362	99.6%	346.4	7,857	63.5%	290.6
Firm	-	-	-	-	-	-	-	87.6%	115.6
Non-firm	-	-	-	-	-	-	-	55.9%	175.0
Hybrid	644	79.2%	43.0	534	91.8%	23.2	264	72.7%	13.4
IPR-Hydro	316	83.5%	26.8	228	76.6%	8.2	336	79.5%	18.6
IPR-Others	232	94.0%	19.6	218	92.5%	9.5	216	88.3%	13.3
IPR-Solar	566	92.6%	23.2	340	100.0%	16.1	100	81.5%	5.7
IPR-Wind	565	94.8%	75.9	503	100.0%	23.7	912	88.2%	55.9
Import	2,205	43.0%	83.6	2,018	55.3%	53.8	1,177	100.0%	81.8
Oil/Dual-Fuel (EL3)	798	97.3%	68.2	764	99.3%	35.8	685	96.0%	45.7
Oil/Dual-Fuel (Thermal)	10,500	83.4%	769.1	8,635	80.1%	327.2	8,956	78.4%	487.9
Other Thermal	3,922	87.1%	299.9	3,430	74.5%	118.9	3,520	81.6%	198.8
PDR	2,658	100.0%	233.4	3,452	100.0%	163.0	3,633	99.9%	252.4
Total	35,963	87.5%	2,771.3	30,814	88.1%	1,281.1	29,716	68.5%	1,589.0

Higher Scenario: Change in Capacity Revenue by Resource Class

Resource Type	Current Rules ($ millions)	CAR-SA ($ millions)	Change in Revenue (%)
ADCR	61.3	22.2	-63.84%
Daily/Weekly Hydro	87.1	107.6	23.63%
Energy Storage	318.7	150.3	-52.85%
Gas Only	661.4	637.0	-3.69%
Firm	167.6	199.6	19.09%
Non-firm	493.8	437.4	-11.42%
Hybrid	43.0	36.5	-15.06%
IPR-Hydro	26.8	26.8	0.19%
IPR-Others	19.6	22.8	15.99%
IPR-Solar	23.2	21.7	-6.21%
IPR-Wind	75.9	79.7	4.99%
Import	83.6	135.6	62.23%
Oil/Dual-Fuel (EL3)	68.2	81.6	19.57%
Oil/Dual-Fuel (Thermal)	769.1	815.1	5.99%
Other Thermal	299.9	317.7	5.94%
PDR	233.4	415.4	77.96%
Total	2,771.3	2,870.1	3.57%

SENSITIVITY ANALYSIS RESULT BY RESOURCE CLASS

H Split of 75/25

Lower Scenario: Market Clearing Quantity by Resource Class

	Current Rules			CAR-SA Summer			CAR-SA Winter		
Resource Type	Accredited MW	Cleared %	Total Revenue ($ millions)	Accredited MW	Cleared %	Total Revenue ($ millions)	Accredited MW	Cleared %	Total Revenue ($ millions)
ADCR	761	94.7%	21.2	179	88.8%	4.1	231	100.0%	3.0
Daily/Weekly Hydro	1,062	95.6%	29.9	1,013	88.4%	22.9	1,020	99.3%	13.0
Energy Storage	3,862	95.4%	108.4	2,141	89.6%	49.1	810	100.0%	10.4
Gas Only	7,873	96.3%	223.0	7,362	89.6%	168.5	7,857	62.4%	36.7
Firm	-	-	-	-	-	-	-	100.0%	24.4
Non-firm	-	-	-	-	-	-	-	50.4%	12.3
Hybrid	644	95.2%	17.4	534	88.4%	12.1	264	98.3%	3.3
IPR-Hydro	316	92.9%	10.0	228	83.0%	4.8	336	99.0%	4.3
IPR-Others	232	95.6%	6.7	218	89.2%	5.0	216	100.0%	2.8
IPR-Solar	566	95.2%	8.0	340	88.5%	7.7	100	100.0%	1.3
IPR-Wind	565	96.0%	25.7	503	89.0%	11.4	912	100.0%	11.7
Import	2,205	13.8%	9.0	2,018	90.2%	46.7	1,177	8.2%	1.2
Oil/Dual-Fuel (EL3)	798	95.9%	22.5	764	89.4%	17.5	685	99.7%	8.8
Oil/Dual-Fuel (Thermal)	10,500	92.9%	286.8	8,635	88.8%	196.1	8,956	90.1%	103.4
Other Thermal	3,922	88.0%	101.4	3,430	86.2%	75.4	3,520	88.8%	40.1
PDR	2,658	96.2%	75.3	3,452	89.8%	79.3	3,633	100.0%	46.6
Total	35,963	89.1%	945.3	30,814	88.9%	700.5	29,716	71.9%	286.4

Lower Scenario: Change in Capacity Revenue by Resource Class

Resource Type	Current Rules ($ millions)	CAR-SA ($ millions)	Change in Revenue (%)
ADCR	21.2	7.0	-66.83%
Daily/Weekly Hydro	29.9	35.9	20.13%
Energy Storage	108.4	59.5	-45.14%
Gas Only	223.0	205.2	-8.01%
Firm	56.5	65.2	15.37%
Non-firm	166.5	140.0	-15.95%
Hybrid	17.4	15.4	-11.23%
IPR-Hydro	10.0	9.1	-8.92%
IPR-Others	6.7	7.7	15.29%
IPR-Solar	8.0	9.0	12.67%
IPR-Wind	25.7	23.1	-10.00%
Import	9.0	47.9	431.82%
Oil/Dual-Fuel (EL3)	22.5	26.2	16.40%
Oil/Dual-Fuel (Thermal)	286.8	299.5	4.42%
Other Thermal	101.4	115.4	13.84%
PDR	75.3	125.9	67.21%
Total	945.3	986.9	4.40%

Medium Scenario: Market Clearing Quantity by Resource Class

	Current Rules			CAR-SA Summer			CAR-SA Winter		
Resource Type	Accredited MW	Cleared %	Total Revenue ($ millions)	Accredited MW	Cleared %	Total Revenue ($ millions)	Accredited MW	Cleared %	Total Revenue ($ millions)
ADCR	761	83.6%	37.5	179	84.3%	8.3	231	100.0%	5.0
Daily/Weekly Hydro	1,062	89.1%	55.8	1,013	83.9%	46.8	1,020	99.1%	21.8
Energy Storage	3,862	86.8%	197.4	2,141	86.2%	101.5	810	100.0%	17.4
Gas Only	7,873	89.6%	415.5	7,362	85.2%	344.5	7,857	63.8%	74.0
Firm	-	-	-	-	-	-	-	100.0%	40.9
Non-firm	-	-	-	-	-	-	-	52.3%	33.1
Hybrid	644	86.4%	31.6	534	82.0%	24.1	264	93.4%	5.3
IPR-Hydro	316	84.5%	18.2	228	77.0%	9.7	336	96.7%	7.0
IPR-Others	232	90.0%	12.6	218	85.4%	10.2	216	100.0%	4.6
IPR-Solar	566	85.9%	14.4	340	82.5%	15.5	100	100.0%	2.1
IPR-Wind	565	86.7%	46.6	503	82.6%	22.9	912	100.0%	19.6
Import	2,205	74.4%	96.9	2,018	100.0%	110.9	1,177	25.1%	6.4
Oil/Dual-Fuel (EL3)	798	92.5%	43.5	764	88.6%	37.2	685	99.3%	14.6
Oil/Dual-Fuel (Thermal)	10,500	89.3%	552.0	8,635	87.9%	417.5	8,956	84.7%	163.2
Other Thermal	3,922	85.8%	197.9	3,430	86.3%	162.3	3,520	88.5%	67.1
PDR	2,658	95.9%	150.3	3,452	93.0%	176.6	3,633	100.0%	78.2
Total	35,963	88.0%	1,870.2	30,814	87.8%	1,488.2	29,716	70.9%	486.5

Medium Scenario: Change in Capacity Revenue by Resource Class

Resource Type	Current Rules ($ millions)	CAR-SA ($ millions)	Change in Revenue (%)
ADCR	37.5	13.3	-64.59%
Daily/Weekly Hydro	55.8	68.6	22.98%
Energy Storage	197.4	119.0	-39.72%
Gas Only	415.5	418.5	0.73%
Firm	104.7	124.2	18.62%
Non-firm	310.8	294.3	-5.30%
Hybrid	31.6	29.4	-6.84%
IPR-Hydro	18.2	16.7	-8.31%
IPR-Others	12.6	14.9	17.75%
IPR-Solar	14.4	17.6	22.11%
IPR-Wind	46.6	42.5	-8.78%
Import	96.9	117.4	21.07%
Oil/Dual-Fuel (EL3)	43.5	51.9	19.27%
Oil/Dual-Fuel (Thermal)	552.0	580.7	5.20%
Other Thermal	197.9	229.4	15.93%
PDR	150.3	254.8	69.56%
Total	1,870.2	1,974.6	5.58%

Higher Scenario: Market Clearing Quantity by Resource Class

	Current Rules			CAR-SA Summer			CAR-SA Winter		
Resource Type	Accredited MW	Cleared %	Total Revenue ($ millions)	Accredited MW	Cleared %	Total Revenue ($ millions)	Accredited MW	Cleared %	Total Revenue ($ millions)
ADCR	761	88.6%	66.5	179	83.7%	12.9	231	100.0%	9.3
Daily/Weekly Hydro	1,062	90.9%	95.3	1,013	81.4%	70.9	1,020	98.3%	40.2
Energy Storage	3,862	90.9%	346.4	2,141	85.9%	157.9	810	100.0%	32.5
Gas Only	7,873	93.3%	724.7	7,362	85.9%	542.1	7,857	68.3%	141.0
Firm	-	-	-	-	-	-	-	99.9%	76.1
Non-firm	-	-	-	-	-	-	-	58.1%	64.9
Hybrid	644	78.6%	48.0	534	80.8%	37.1	264	80.0%	8.5
IPR-Hydro	316	81.3%	29.3	228	69.2%	13.6	336	89.2%	12.0
IPR-Others	232	91.7%	21.5	218	81.4%	15.2	216	99.4%	8.6
IPR-Solar	566	89.7%	25.2	340	81.0%	23.7	100	98.3%	3.9
IPR-Wind	565	92.1%	82.8	503	82.6%	35.6	912	100.0%	36.5
Import	2,205	63.1%	137.7	2,018	100.0%	173.1	1,177	30.7%	14.7
Oil/Dual-Fuel (EL3)	798	96.5%	76.0	764	92.5%	60.6	685	96.4%	26.4
Oil/Dual-Fuel (Thermal)	10,500	83.4%	863.3	8,635	84.1%	623.2	8,956	78.4%	280.9
Other Thermal	3,922	84.9%	328.2	3,430	82.8%	243.2	3,520	87.8%	123.8
PDR	2,658	100.0%	262.2	3,452	99.8%	295.6	3,633	100.0%	145.5
Total	35,963	87.3%	3,107.0	30,814	87.2%	2,304.6	29,716	68.8%	883.7

Higher Scenario: Change in Capacity Revenue by Resource Class

Resource Type	Current Rules ($ millions)	CAR-SA ($ millions)	Change in Revenue (%)
ADCR	66.5	22.1	-66.72%
Daily/Weekly Hydro	95.3	111.1	16.48%
Energy Storage	346.4	190.3	-45.05%
Gas Only	724.7	683.1	-5.74%
Firm	182.5	206.0	12.85%
Non-firm	542.1	477.1	-12.00%
Hybrid	48.0	45.5	-5.12%
IPR-Hydro	29.3	25.6	-12.73%
IPR-Others	21.5	23.8	10.69%
IPR-Solar	25.2	27.6	9.66%
IPR-Wind	82.8	72.2	-12.81%
Import	137.7	187.8	36.39%
Oil/Dual-Fuel (EL3)	76.0	87.1	14.59%
Oil/Dual-Fuel (Thermal)	863.3	904.1	4.73%
Other Thermal	328.2	366.9	11.82%
PDR	262.2	441.1	68.23%
Total	3,107.0	3,188.3	2.62%

Acronyms

ADCR – Active Demand Capacity Resource
ARA – Annual Reconfiguration Auction
BR – Balancing Ratio
CCP – Capacity Commitment Period
CELT – Capacity, Energy, Loads, and Transmission
CSO – Capacity Supply Obligation
CVC – Common Value Component
EAS – Energy and Ancillary Services
EL3 – Energy-Limited Resource (Category 3)
FCA – Forward Capacity Auction
FCM – Forward Capacity Market
H – Scarcity Hours
ICR – Installed Capacity Requirement
IEP – Inventoried Energy Program
IPR – Intermittent Power Resource
LNG – Liquefied Natural Gas
LOLE – Loss of Load Expectation
MRIC – Marginal Reliability Impact Capacity
NBA – Next Best Alternative
Net CONE – Net Cost of New Entry
NICR – Net Installed Capacity Requirement
PDR – Participating Demand Resource
PPR – Performance Payment Rate
QC – Qualified Capacity
rMRIC – Resource-Specific Marginal Reliability Impact Capacity