NEPOOL MARKETS COMMITTEE | MARCH 11-12, 2025 | WESTBOROUGH, MA

Revision 1

ISO new england

Capacity Auction Reforms (CAR) - Deactivations

Reliability reviews, market power assessment, and mitigation

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CAR – Deactivations Core Concepts

WMPP ID: 184

Proposed Effective Date: Q2 2026

- Moving to a prompt capacity auction requires modification to the existing market rules and business processes for resource retirements
 - The deactivation process will be separated from the capacity market offer process
 - The retirement notification timeline will be shortened from 4 years to 2 years
 - Conforming changes will be required to ISO processes (notification collection, reliability reviews, market power reviews, information release)
- Today's presentation provides additional detail on the reliability review process, and introduces the proposed market power analysis and mitigation framework

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RELIABILITY REVIEWS

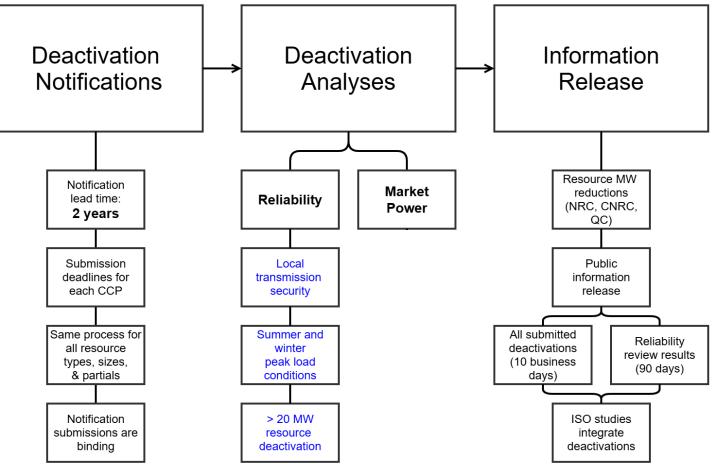
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Deactivations Notifications Process Flow:

Reliability Review



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Reliability reviews will be for local transmission security

- The ISO will analyze deactivations for local transmission security within 90 days from the deactivation submission deadline
- If there is a local transmission security retention, the Needs Assessment process in Attachment K to the OATT will be triggered
- As explained in the 2025 Annual Work Plan, the ISO <u>does not</u> plan to resurrect the retention provision for energy security

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- "However, if it found itself in a future situation where it needed to again consider retaining resources for energy security, the ISO commits to simultaneously assessing and including a different capacity pricing mechanism for stakeholder consideration"
- See 2025 Annual Work Plan, slides 11-12

Summer and winter peak load conditions will be studied, in aggregate

- The reliability review process will generally be the same as it is today, as detailed in Market Rule 1 and Planning Procedure 10
- As part of the CAR-PD proposal, we plan to modify some aspects of the reliability review process:
 - The current reliability review process analyzes summer peak load conditions for the CCP. With CAR, we propose to evaluate <u>both the</u> <u>summer and winter</u> peak load conditions for the CCP
 - The review order for de-list bids is based on descending price order.
 Since deactivations will not be priced, the review will be performed as an <u>aggregate</u> (or cumulative) set of deactivations
- The current process for winter-season specific CNR/NR adjustments for partial deactivations, which reduces winter values based on a ratio, will continue

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Deactivations greater than 20 MW require a reliability review

- The ISO will perform reliability reviews on (full or partial) deactivations greater than 20 MW

 Current threshold is 5 MW
- All submissions must use the same 2-year notification deadline
- The 20 MW threshold was selected based on engineering and administrative experience
 - Of the ~1300 individual resources, ~14% are greater than 20 MW

MARKET POWER ASSESSMENT AND MITIGATION

Background



Overview – Forward Market Retirement Mitigation Framework

- The Forward Capacity Market (FCM) Retirement De-List Bid and Permanent De-List Bid mitigation framework is based on an IMM cost workbook review to determine whether the retirement is justified by economics, or potentially motivated by benefits to a portfolio (market power)
- Key elements of the review process include:
 - A consultation process with the IMM
 - A 20 MW size threshold (at the portfolio level)
 - A cost workbook submission and review (5 years of cost and revenue data)
 - A conduct test, determining whether the retirement follows expected economic loss if the resource remains operational
 - A net portfolio benefits (NPB) test, determining whether the retirement increases the participant's revenue in the capacity market
 - Annual Retirement/Permanent De-List Bid Filing
 - The use of "proxy" de-list bids in the auction as mitigation if the IMM determines that the retirement is likely a market power exercise

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Overview – Deactivation mitigation framework compared to the FCA framework

- The mitigation framework for deactivations under CAR still seeks to determine whether a deactivation is justified by the resource economics, or potentially motivated by benefits to a portfolio
- Elements of the review process carried forward:
 - Consultation with the IMM, a 20MW capacity threshold (at the portfolio level), a cost workbook submission and review (5 years of cost and revenue data), a conduct test, and a net portfolio benefits test
- Elements not carried forward:
 - De-List bids as part of the cost workbook submission
 - Proxy retirement/permanent De-List bids as mitigating measure when market power is suspected

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• Annual Retirement/Permanent De-List Bid Filing

Overview – Deactivation mitigation framework compared to the FCA framework (Cont'd)

- New elements of the review process:
 - Expected capacity clearing price for the first year after deactivation as input of the cost workbook (currently, only included for Years 2 – 5)
 - Changes to how capacity portfolio revenues are estimated in the NPB test
 - Market power charge as mitigating measure if an exercise of market power is suspected
 - Market power charge filing with FERC
- Elements and differences with the FCA framework are discussed in detail in the slides that follow

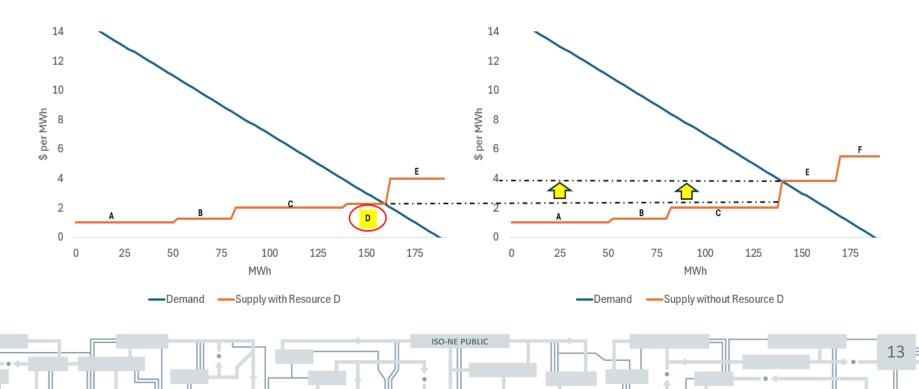
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The need for a market power assessment and mitigation in the deactivation process



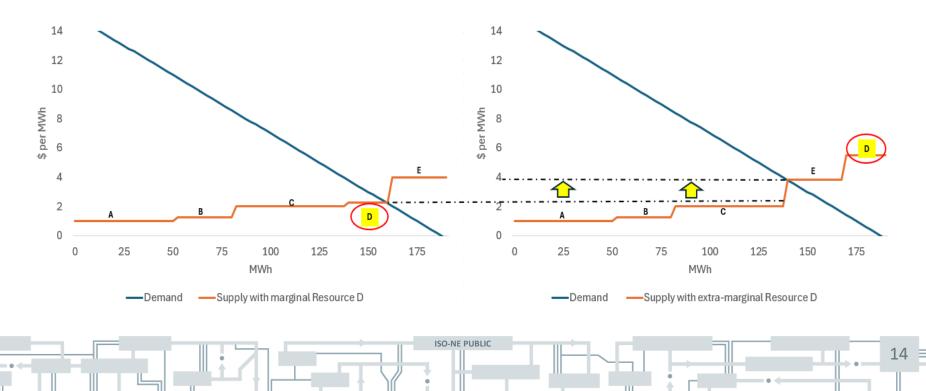
Deactivations can increase capacity prices

- When a resource exits the market, the supply stack changes and the clearing price in future auctions may increase as a result
 - In the graphic example, the deactivation of Resource D increases the clearing price



The price effect of a deactivation can be similar to the effect of a high extra-marginal de-list bid

- When a resource submits a high extra-marginal de-list bid, above its marginal cost, the supply stack changes in a similar way to the deactivation of the resource
 - In the example, the price effect of the deactivation of Resource D is the same as the effect of a high extra-marginal de-list bid for the resource



A higher capacity price can benefit the participant that deactivates a resource

- A participant owning a *portfolio*—multiple resources in the market—can benefit through the rest of its resources from the price increase produced by a deactivation ("net portfolio benefits" (NPB))
- If the NPB is significant, a participant may have an incentive to deactivate a resource that can still operate with a profit ("economic resource")
- 3. Instances where an economic resource deactivates to the benefit of its portfolio represents an exercise of market power

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Example of how a participant can obtain positive NPB through a deactivation

- A participant owns Resource A (50 MW), Resource C (60 MW), and Resource D (20 MW)
- The participant deactivates Resource D
- Assume that resources A and D always sell capacity in the market

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- <u>Pre-Deactivation</u>: the capacity clearing price is \$2.20
 - The participant's total capacity payment is $$2.20 \times (50 MW + 60 MW + 20 MW) = 286
- <u>Post-Deactivation</u>: the capacity clearing price is \$4.00
 - The participant's total capacity payment is $4 \times (50 MW + 60 MW) = 440$
- The participant has a NPB of 440 286 = 154

A higher capacity price due to a deactivation for positive NPB is an exercise of market power and is inefficient for the market

- Resource deactivations impact the rest of the market:
 - Higher-cost resources sell capacity when they would not without the deactivation
 - Load pays a higher capacity price
- These market consequences are inefficient if a deactivation is not driven by the expectation that economic loss occurs when the resource continues to operate beyond the deactivation date
- Therefore, a participant deactivating a resource for the purpose of increasing the capacity revenue paid to its other resources in its portfolio reflects an exercise of market power
 - Benefits the resource owner
 - Leads to inefficient market outcomes
- The ISO will analyze and mitigate deactivations for market power purposes

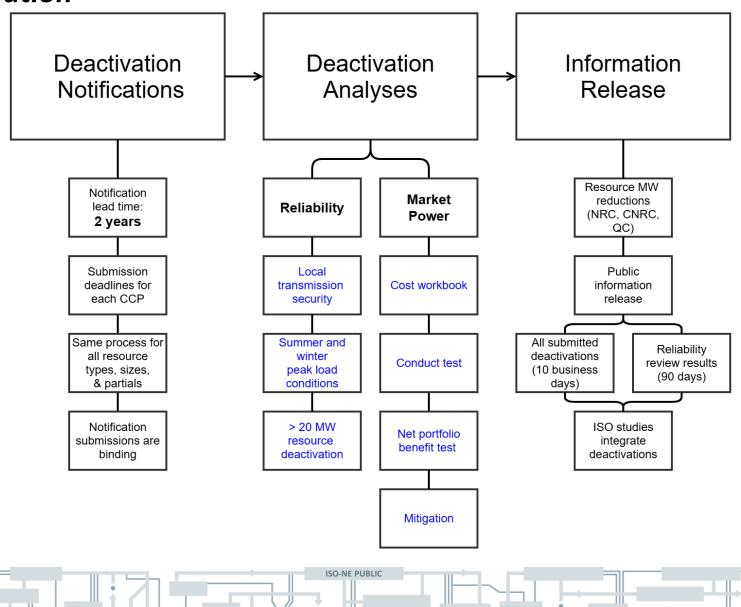
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MARKET POWER ASSESSMENT AND MITIGATION

Overview of the process



Deactivations Notifications Process Flow *Mitigation*



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Overview of the Market Power Assessment and Mitigation Process

- **1. Cost workbook:** Collect a deactivating resource's future costs, expected revenues, and market assumptions to evaluate the resource's economic situation
- **2. Conduct test:** analyze the cost workbook to determine whether the deactivation is consistent with the resource's economics
 - Is the resource expected to not be profitable beyond the deactivation date?
- **3. NPB test:** if the resource is determined in the conduct test to be profitable beyond the deactivation date, assess the NPB for the participant from deactivating it

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- **4. Mitigation:** if there are positive NPB, impose a Market Power Charge (MPC)
 - The MPC will be filed with FERC

Comparison of the proposed market power assessment and mitigation process with the current FCA retirement process

- Process flow: the proposed MPA and mitigation for deactivations maintains the same high-level process flow with respect to the current FCA retirements process
 - Cost Workbook \rightarrow Conduct Test \rightarrow NPB Test \rightarrow Mitigation
- Cost workbook: the inputs of the cost workbook and subsequent IMM validation remain the same, except for the de-list bid
 - The workbook will include an expected capacity clearing price for five years from the CCP of the deactivation (one price per year)
 - Example: if resource notifies deactivation during the 2026 deadline, the cost workbook will include an expected capacity clearing price for the 2028-2032 auctions

Comparison of the proposed MPA and mitigation process with the current FCA retirement process (Cont'd)

- **Conduct Test:** the conduct test remains the same
 - With the cost workbook, the IMM will calculate a break-even capacity price that provides similar information to a de-list bid: it is the minimum price the resource needs to sell capacity
 - The IMM will compare the resource's expected capacity price to a threshold to determine whether expected economic loss is the driver of the deactivation
- **NPB Test:** the economic logic of the NPB test will remain unaffected, with a change in its execution
 - The proposed approach changes how the supply used in the test is constructed
 - This change is necessary because the market power assessment is conducted ahead of the relevant capacity auction
 - This change will reduce the number of assumptions required and will simplify the IMM calculations (Design Objective 3 – Simplicity)

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Comparison of the proposed MPA and mitigation process with the current FCA retirement process (Cont'd)

- **Mitigation:** A new market power charge (MCP) will be introduced for participants that fail the NPB test
 - The MPC is a departure from the current FCA framework where if market power is suspected, the resource is included in the auction with a "proxy" offer
 - The basis for this change will be provided in the following slides, after additional detail is introduced
 - The MPC determined by the IMM and supporting materials will be filed with FERC in a manner similar to the FCA Retirement and Permanent De-List Bid filing



MARKET POWER ASSESSMENT AND MITIGATION

Step 1: Cost workbook



Cost workbook threshold

- A cost workbook *for each deactivation* in the same portfolio is required if the participant notifies the deactivation of **20 MW or** more of its portfolio
- The cutoff at 20 MW of the portfolio balances two opposing objectives:
 - Detecting instances where market power is a material concern, including multiple simultaneous small deactivations from the same participant
 - Reducing the administrative burden to participants and the ISO of reviewing cases where market power does not appear to be a material concern



Cost workbook threshold (Cont'd)

- The 20 MW cutoff is based on the *aggregate deactivated capacity*, not on the size of an individual resource
- Example: If a participant deactivates
 - 15 MW of Resource A \rightarrow No cost workbook is required for Resource A
 - 25 MW of Resource A \rightarrow A cost workbook for Resource A is required
 - 5 MW each of Resource A, Resource B, and Resource C → No cost workbook is required for Resources A, B and C
 - 10 MW of Resource A and 5 MW each of Resources B and C → A cost workbook is required for Resources A, B, and C



Cost workbook inputs

- Under the CAR deactivations process, the cost workbook will remain virtually unaffected
- Each cost workbook is a resource-specific submission including the following:
 - Expected operative costs
 - Expected capacity and energy revenues
 - Market assumptions
- Participants are required to include at least five years of data projections starting from the CCP of the deactivation

Cost workbook – Differences with the FCA's cost workbook

- The only material change to the cost workbook is the absence of a de-list bid
 - Today, a de-list bid is the minimum price the resource needs in the auction to sell capacity
- The new process separates the deactivation from the auction, meaning the deactivation is not conditional on the capacity clearing price, so there is no analog to the de-list bid concept
- Instead, as part of the cost workbook, the participant will include an expected capacity clearing price for the first CCP of the deactivation (Year 1)
 - This approach extends the current cost workbook's use of expected capacity clearing prices from Years 2 and beyond to Year 1

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MARKET POWER ASSESSMENT AND MITIGATION

Step 2: Conduct test



The conduct test determines whether a deactivation is consistent with expected economic loss

- The conduct test seeks to determine
 - Whether a resource deactivation is driven by expected economic loss if the resource continues to operate beyond the deactivation date
 - Whether the resource owner can economically benefit from the deactivation
- If the participant deactivates the entire portfolio or less than 20 MW of the portfolio, the resource automatically **passes the conduct test**
 - If the participant deactivates the entire portfolio, it does not own additional capacity in the market that can benefit from a price increase
 - If the participant deactivates less than 20 MW of the portfolio in aggregate, consistent with the cost workbook threshold, there are no material market power concerns

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Conduct test: the IMM will calculate a break-even capacity price for the resource

- If the participant does not deactivate its entire portfolio and the deactivations aggregate to 20 MW or more, the IMM will review the cost workbook and, collaboratively with the participant, adjust inputs as needed
 - This vetting process is in place today
- Using the IMM-approved cost workbook, the IMM will calculate the resource's break-even price, which is an estimate of the minimum capacity price the resource would require to continue operating economically
- The break-even price is analogous to the old "IMM approved de-list bid"
 - A higher expected capacity clearing price than the break-even price implies that if the resource continues operating, it is expected to be profitable
 - A lower expected capacity clearing price than the break-even price implies that if the resource continues operating, it is expected to operate with a loss

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Conduct test: the IMM will calculate a threshold price using the break-even price

- The IMM will calculate a threshold price equal to the approved cost workbook's break-even price plus a 10% adder
 - This threshold allows us to accommodate cases where the resource shows a small profit that may be due to uncertainty in the calculations
 - Under the current rules for retirements, the IMM also allows a 10% adder on the approved workbook's break-even price
- The conduct test compares the resource's expected capacity price to the threshold price

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Outcomes of the conduct test

- The resource passes the conduct test if the resource's expected capacity clearing price is smaller than the threshold price
 - The resource reasonably expects economic loss if it continues operation beyond the deactivation date
 - No further market power is assessed for this resource
- The resource fails the conduct test if the resource's expected capacity clearing price is greater than the threshold price
 - The resource reasonably expects economic profit if it continues operation beyond the deactivation date
 - The resource is subject to the NPB test

The conduct test – Summary

| Summary of the Conduct Test | |
|---|--|
| Qualifier | Outcome |
| No portfolio left after all the participant's | The Resource passes the conduct test, |
| deactivations OR less than 20 MW of the | and no further market power |
| portfolio is deactivated | assessment is conducted |
| The participant still has a portfolio AND | The Resource passes the conduct test, |
| deactivates 20 MW or more of it AND the | and no further market power |
| resource's expected capacity clearing price | assessment is conducted |
| is smaller than the IMM's threshold price | |
| | |
| The participant still has a portfolio AND | The Resource fails the conduct test, |
| deactivates 20 MW or more of it AND the | and a net portfolio benefits test will |
| resource's expected capacity clearing price | be conducted |
| is greater than the IMM's threshold price | |

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MARKET POWER ASSESSMENT AND MITIGATION

Step 3: Net portfolio benefits test



The NPB test determines whether a deactivation inconsistent with expected economic loss increases the participant's revenue

- The NPB test seeks to determine whether the deactivation of an economic resource (this is, a resource that failed the conduct test) is expected to increase the portfolio's total capacity market revenue
 - While deactivating the resource decreases the quantity of capacity the participant sells, it can also increase the capacity price paid for its remaining portfolio
 - The NPB test is applied at the *portfolio level* to any participant that has at least one resource fail the conduct test
- When the participant's total capacity payments increase with the deactivation of an economic resource, it establishes that the participant may have an incentive to deactivate the resource in an exercise of market power
 - The participant deactivates a resource that is expected to operate for a profit (failed conduct test), increasing its portfolio's total capacity market revenue



The NPB test estimates what would happen if the economic resources (failed conduct test) were not deactivated

- The NPB Test is used in the market power review of retirement and permanent delist bids, and will be similarly applied in the context of deactivations
- The test compares the revenue in two cases:
 - Baseline case, where all deactivations are considered ("what if every deactivation happens" case)
 - **Counterfactual case**, where only the deactivations for economic loss are considered ("what if only deactivations associated with resources that passed the conduct test happen" case)
- Comparing the baseline and counterfactual cases determines "what would happen if the economic resources (failed conduct test) were not deactivated"

The estimated net portfolio benefits from deactivation

- We construct the participant's portfolio revenue in the baseline and counterfactual cases in two steps
 - 1. Simulate the clearing quantities and prices in the capacity market using the following inputs:

| | Baseline Case | Counterfactual Case |
|--------|--------------------------------|-----------------------------------|
| Domond | The demand from last | The demand from last auction, |
| Demand | auction, with no change | with no change |
| | The final supply (after | The final supply (after |
| Supply | mitigation) from last auction, | mitigation) from last auction, |
| | removing every deactivation | removing every deactivation |
| | (this is, removing all | driven by economic loss (this is, |
| | deactivations regardless of | removing only the resources |
| | their conduct test outcome) | that passed the conduct test) |

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The estimated net portfolio benefits from deactivation (Cont'd)

2. Using the simulated clearing outcomes, we estimate the participant's portfolio revenue in the baseline and counterfactual cases as the product of its (simulated) awarded capacity and the (simulated) clearing price

• The revenue in each case only depends on the remaining resources in the portfolio after deactivations are considered

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Outcomes of the NPB test

- The participant passes the NPB test if the total (simulated) capacity revenues paid to its portfolio are greater when it does not deactivate the resources that failed the conduct test
 - Deactivating economic resources does not increase the portfolio revenue, and the participant therefore does not have an incentive to exercise market power
 - The participant is not subject to further market power assessment
- The participant fails the NPB test if the total (simulated) capacity revenues paid to its portfolio are smaller when it does not deactivate the resources that failed the conduct test
 - Deactivating economic resources increase the portfolio revenue, and the participant therefore has an incentive to exercise market power
 - The participant is subject to market power mitigation
 - The participant deactivated at least one resource that is expected to be profitable beyond the deactivation date (failed conduct test)

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• The deactivation(s) that failed the conduct test are expected to increase the participant's portfolio capacity revenues

MARKET POWER ASSESSMENT AND MITIGATION

Step 4: Mitigation



Market Power Mitigation

- When a participant fails both the conduct and the NPB test, this suggests that the deactivation represents an exercise of market power
- In this case, the ISO will impose an MPC of 1.5 times the estimated increase in capacity revenues to the portfolio resulting from the deactivation (the revenue difference between the baseline and counterfactual cases in the NPB test)

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Deactivations Market Power Mitigation Compared to FCA's Retirements Mitigation

- The proposed approach is different from the current mitigation process
- In the retirements context, when a participant fails the conduct test, the IMM enters a "proxy" supply offer for the resource in the capacity auction
 - This may result in two different prices for the same product; the first run price may send a price signal inconsistent with the capacity's marginal reliability value and not incent efficient investment
- The existing design does not naturally carry forward to the CAR context and presents challenges in the implementation
 - Deactivations will be decoupled from the capacity auction and the concept of "de-list bids" will not be applicable

Deactivations Market Power Mitigation compared to FCA's Retirements Mitigation (Cont'd)

- The proposal allows the ISO to account for two important factors that are not present in the existing framework:
 - Excluding a deactivating resource from the capacity supply stack instead of including it with a proxy offer accurately reflects capacity scarcity, producing accurate price signals for the rest of the market
 - Additionally, there will be a single capacity clearing price (or, with capacity zones, set of clearing prices)
 - The MPC is intended to deter participants from exercising market power via deactivations

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Market power mitigation

- A 1.5x multiplier on estimated portfolio revenue increase aims to effectively deter deactivations for market power purposes without being excessively punitive
 - The use of a multiplier scales the MPC proportionally to the estimated economic benefits of exercising market power
 - To serve as a deterrent, the MPC must be at least equal to the portfolio revenue increase (1x multiplier)
 - Bigger multipliers (greater than 1x) will more strongly deter market power exercises, but may become increasingly punitive
 - As the multiplier is intended to serve as a market power deterrent, the practical effectiveness of a 1.5x multiplier balances the need for effective deterrence against the potential for being overly punitive

Commission Review of the MPC

- ~120 days after the deactivation notification deadline, the IMM will make an as needed filing (*i.e.*, if an MPC is imposed) with FERC supporting the MPC
- This filing will be made only on an as-needed basis and the supporting documentation will support the MPC
- Supporting materials will include cost workbooks and the relevant documentation from both the IMM and the participant

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These materials will be confidential

Conclusion

- The ISO will analyze deactivations of 20 MW or more for local transmission security only
- The ISO will also analyze aggregate portfolio deactivations of 20 MW or more for market power
- The market power assessment for deactivations is similar to the current process for retirements
 - The main differences are how the NPB from deactivations is measured and the mitigation of market power
 - These differences stem mainly from deactivations being decoupled from the capacity auction

Questions

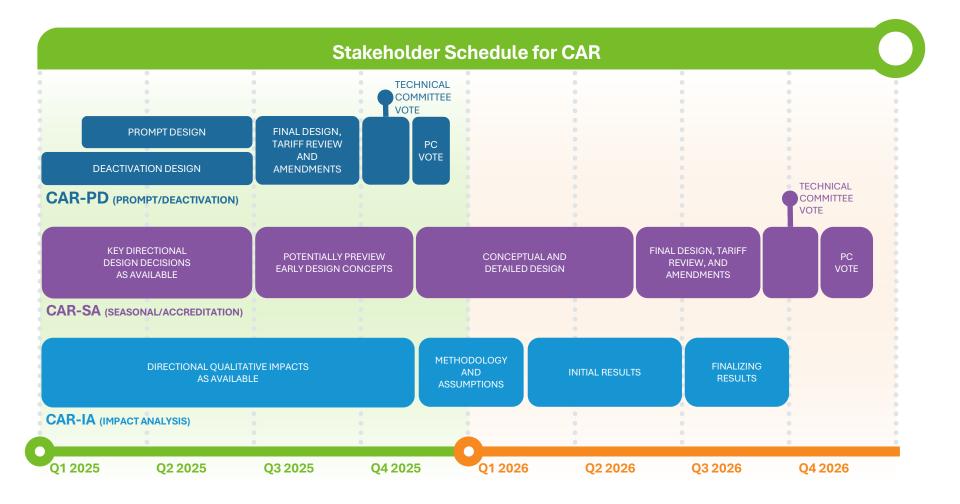
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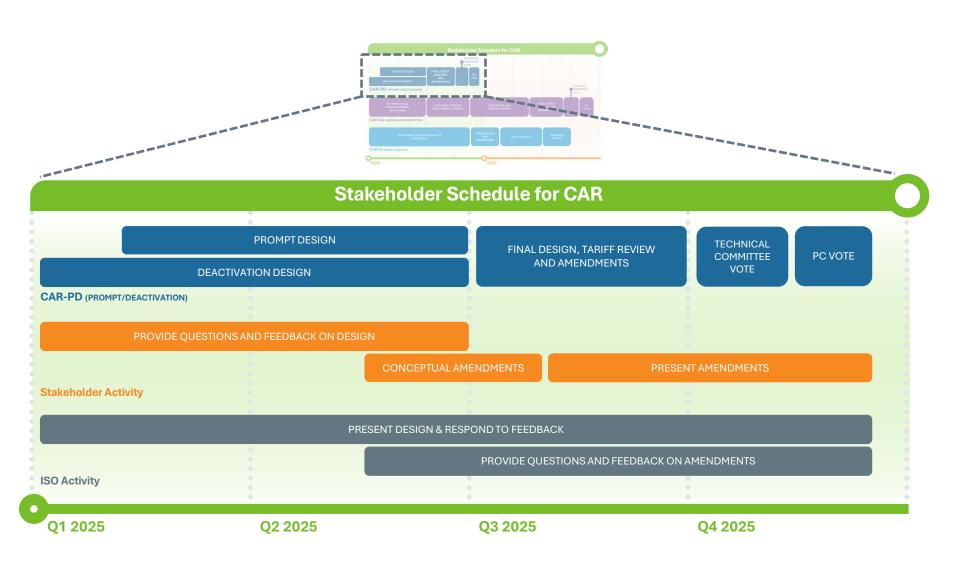


STAKEHOLDER SCHEDULE





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CAR-Prompt Topic Schedule

The list below provides a preliminary projection of when committee discussions will begin on the following CAR-Prompt topics:

| Prompt Topic | Projected Start of Committee Discussions |
|---|---|
| Price Formation and Offer Formation | March 2025 |
| Non-Commercial Participation | March 2025 |
| Auction Design and Structure | March 2025 |
| Activity Schedule | March 2025 |
| Resource Qualification Criteria and Process | April 2025 |
| Capacity Interconnection Service | April 2025 |
| Market Power and Mitigation | April 2025 |
| RAA/ ICR Process | April 2025 |

CAR-Deactivation Topic Schedule

The list below provides a projection of when committee discussions will begin on topics related to the deactivation framework:

| Deactivation Topic | Projected Start of Committee Discussions |
|--|---|
| Introduction and notification timeframe | January 2025 |
| Additional design details on notifications and information release | February 2025 |
| Reliability reviews | March 2025 |
| Market power evaluation framework | March 2025 |
| Market power evaluations follow-up | April 2025 |

APPENDIX



Example 1 of the conduct test

| Participant Owns | Deactivations | Conduct Test |
|------------------------------------|---------------|--|
| Resource A (25 MW) | А | Pass, no portfolio left |
| Resource B (5 MW) | В | Pass, no portfolio left |
| Resource A (25 MW) and B (5 MW) | A | Further testing, deactivates more than 20 MW of the portfolio but not all of it |
| Resource A (25 MW) and B (5 MW) | В | Pass, deactivates less than 5 MW of the portfolio |
| Resource A (25 MW) and B (5 MW) | A and B | Pass, deactivates more than 20 MW of the portfolio but deactivations represent the entire portfolio |

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Example 2 of the conduct test

• Resource A submits a cost workbook, and after IMM reviewing, the expected capacity clearing price is $P_{expected} = 2.00

| | Pexpected | P _{break-even} | $P_{Threshold} = 1.1 P_{break-even}$ | Conduct Test | Outcome |
|--------|-----------|-------------------------|--------------------------------------|--------------------------------|---------|
| Case 1 | \$2.00 | \$3.00 | \$3.30 | $P_{expected} < P_{Threshold}$ | Pass |
| Case 2 | \$2.00 | \$1.90 | \$2.09 | $P_{expected} < P_{Threshold}$ | Pass |
| Case 3 | \$2.00 | \$1.50 | \$1.65 | $P_{expected} > P_{Threshold}$ | Fail |

- In Case 2, without a threshold, Resource A would fail the conduct test because it expects profits if continues to operate (the break-even price is lower than the expected capacity price)
 - The difference between the break-even and expected capacity price is small
 - The adder in the threshold price protects Resource A from uncertainty in the cost workbook, as it ultimately passes the conduct test

Example 1 of the NPB test

- There are two participants
 - Patriots Energy Co.
 - Resources A (50 MW), B (30 MW), D (50 MW), E (25 MW), and J (5 MW)
 - Eagles INC.
 - Resource F (10 MW)
- Patriots Energy Co. notifies the deactivation of Resources B and J (35 MW of portfolio)
 - Assume Resource B fails the conduct test, Resource J passes the conduct test
- Eagles INC. notifies the deactivation of Resource F (10 MW of portfolio)

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• Resource F passes the conduct test

Example 1 of the NPB test

- Assume the last auction's demand is P = 7 0.2Q
- Assume the last auction's supply stack is:

| Resource | Offer Quantity (MWh) | Offer Price (\$ per MWh) |
|----------|----------------------|-----------------------------|
| A | 50 | \$1.50 |
| В | 30 | \$1.75 |
| С | 10 | \$2.00 |
| D | 50 | \$2.25 |
| Е | 25 | \$3.00 |
| F | 10 | \$3.50 |
| G | 15 | \$4.00 |
| Н | 100 | \$5.00 |
| I | 35 | \$5.50 |
| J | 5 | \$7.00 |

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Example 1 of the NPB test – base case

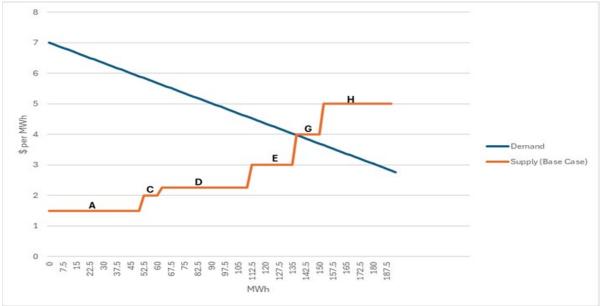
- In the base case, we remove from the supply stack every deactivation
 - Resources A, F, and J
- The resulting supply stack is:

| Resource | Offer Quantity (MWh) | Offer Price (\$ per MWh) |
|----------|----------------------|-----------------------------|
| А | 50 | \$1.50 |
| С | 10 | \$2.00 |
| D | 50 | \$2.25 |
| E | 25 | \$3.00 |
| G | 15 | \$4.00 |
| Н | 100 | \$5.00 |
| I | 35 | \$5.50 |

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Example 1 of the NPB test – base case (Cont'd)

• After removing *all the deactivations*, we simulate the market and determine that only Resources A, C, D, and E clear, at a price of \$4.00



 We calculate Patriots Energy Co.'s revenue in the base case, as a function only of the resources left in its portfolio after every deactivation takes place

$$\pi_{Base} = (50 + 50 + 25) \times \$4 = \$500$$

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Example 1 of the NPB test – counterfactual case

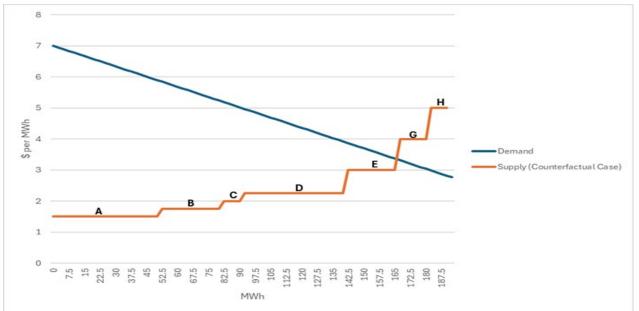
- In the counterfactual case, we remove from the supply stack only the deactivations that passed the conduct test
 - Resources F, and J
- The resulting supply stack is:

| Resource | Offer Quantity (MWh) | Offer Price (\$ per MWh) |
|----------|----------------------|-----------------------------|
| А | 50 | \$1.50 |
| В | 30 | \$1.75 |
| С | 10 | \$2.00 |
| D | 50 | \$2.25 |
| E | 25 | \$3.00 |
| G | 15 | \$4.00 |
| Н | 100 | \$5.00 |
| Ι | 35 | \$5.50 |

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Example 1 of the NPB test – counterfactual case (Cont'd)

• After removing *only the deactivations that passed the conduct test*, we simulate the market and determine that only Resources A, B, C, D, and E clear, at a price of \$3.00



• We calculate Patriots Energy Co.'s revenue in the counterfactual case, as a function only of the resources left in its portfolio after every deactivation takes place

$$\pi_{counter} = (50 + 50 + 50 + 25) \times \$3 = \$465$$

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Example 1 of the NPB test

- Resource B's deactivation leads to a 33% price increase (from \$3.00 to \$4.00)
- Patriots Energy Co. fails the NPB Test

 $\pi_{Base} = \$500 > \pi_{Counter} = \465

- By deactivating Resource B, Patriots Energy Co. is expected to increase its revenue
- Economic loss did not justify the deactivation of Resource B (failed conduct test), so the exercise is deemed consistent with Market Power

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Example 1 of the NPB test – Market power charge

In this example, Patriots Energy Co. receives an MPC equal to

 $MPC = 1.5(\pi_{Base} - \pi_{counter}) = 1.5 \times (\$500 - \$465) = 52.5$

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