Overview

- Summary of MRI design
- FCA10 experience
- Need for a transition
- Evolution of transition proposals
- Consensus transition approach
- Impact on PSPC FCA11 discussions
Marginal Reliability Impact sloped demand curve

- Under the new MRI design, the system-wide sloped demand curve is a convex curve reflecting the marginal reliability impact of an increase or decrease in cleared capacity on the possibility of unserved energy demand at each aggregate, system-wide capacity supply level.

- The price associated with each marginal reliability impact point on the curve is the product of the possibility of unserved load (energy) and the implied value (or cost) of unserved load.

- The shape and position of the MRI curve relies on:
  - The marginal reliability impact is determined through iterations of the GE-MARS model currently used to calculate the Installed Capacity Requirement.
  - The level of the Net Cost of New Entry will determine how steeply the MRI curve rises at supply quantity points, particularly those near and below NICR.
Indicative FCA10 system-wide MRI demand curve

Figure 1 of ISO New England FERC filing in Docket No, ER16-1434-000.

Transition to MRI System-wide sloped demand curve
Net CONE impact on MRI demand curve slope

Figure 2 of ISO New England FERC filing in Docket No, ER16-1434-000.
Indicative MRI curve vs. FCA10 curve & clearing price

Transition to MRI System-wide sloped demand curve

FCA10 clearing price ($7.03/kW-month)

Constant slope curve

MRI curve
Need for a transition

- Significant new entry in FCA10 under prior constant slope demand curve.
- FCA10 system curve demand at $7.03/kw-month clearing price is 722MW greater than the demand point at $7.03/kw-month on the indicative FCA10 MRI curve.
- Absent transition, this could produce an administratively created surplus and send confusing signals to investors.
- While future retirements could possibly accelerate absorption of these megawatts, there are no guarantees.
- A transition was determined to be necessary to provide a stable and consistent market signal while balancing all stakeholder interests.
Initial transition proposal aligned with phase-in of the Performance Payment Rate (PPR)

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<thead>
<tr>
<th></th>
<th>PPR</th>
<th>PPR delta</th>
<th>Curve Foot</th>
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<tbody>
<tr>
<td>FCA11</td>
<td>$2000</td>
<td>0%</td>
<td>1.08 * NICR</td>
</tr>
<tr>
<td>FCA12</td>
<td>$3500</td>
<td>43%</td>
<td>1.065 * NICR</td>
</tr>
<tr>
<td>FCA13</td>
<td>$3500</td>
<td>43%</td>
<td>1.065 * NICR</td>
</tr>
<tr>
<td>FCA14</td>
<td>$3500</td>
<td>43%</td>
<td>1.065 * NICR</td>
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<tr>
<td>FCA15</td>
<td>$5455</td>
<td>100%</td>
<td>1.055 * NICR</td>
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FCA11
Hybrid curve with existing system curve slope consistent with $2000 PPR rate.

FCA12, 13 & 14
Hybrid curve with steeper slope consistent with higher $3500 PPR rate.

Transitional hybrid curves identified in red

FCA15
Transition over – full convex curve consistent with full PPR rate of $5455.

Transition to MRI System-wide sloped demand curve

7/28/2016
Concerns with initial transition proposal

- Curve design perceived as biased toward sellers – incorporated greatest quantity and price points of the Marginal Reliability Impact and constant slope demand curves.

- Concern with the length of the transition – could require greater capacity purchase even after market supply readjustment.
Consensus alternative transition proposal

- Provide consumers and sellers price stability in transition to MRI curve.
  - Avoid significant, abrupt supply exit, yet
  - Work off the “administrative” excess due to a change in the curve design.
- A transition curve comprised of three segments:
  - Prices above $7.03/kw-month, use Marginal Reliability Impact curve,
  - Prices below $7.03/kw-month, use FERC-approved system-wide sloped demand for FCA10 (fixed at ($7.03, 35,437) and ($0.00, 37,053MW) in all transition years,
  - Horizontal line connecting MRI and FCA10 curve segments
- Transition ends at the earlier of:
  - 3 years (full MRI no later than FCA14), or
  - When the sum of incremental NICR growth and retirements since FCA10 is greater than or equal to 722MW.
IMM concerns drove further adjustment

<table>
<thead>
<tr>
<th>IMM Concern</th>
<th>Proposal Modification</th>
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<tbody>
<tr>
<td>Incentive to delay economic retirements</td>
<td>Remove retirement-based component of trigger of transition end.</td>
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<td>May only delay market disruption (i.e., supply overhang may remain through transition end)</td>
<td>Hard-wire shortening of horizontal portion of curve.</td>
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<tr>
<td></td>
<td>• FCA11 – 722MW</td>
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<td>• FCA12 – 375MW</td>
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<tr>
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<td>• FCA13 – 150MW</td>
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Modified transition curve adopted by NEPOOL

- Transition curve still comprised of three segments:
  - Prices above $7.03, use MRI curve,
  - Prices below $7.03/kw-month:
    - FCA11: $A = ($7.03, MRI MW + 722)$
    - FCA12: $A = ($7.03, MRI MW + 375)$
    - FCA13: $A = ($7.03, MRI MW + 150)$
  - $B = ($0.00, A + 1616)$
  - Horizontal line connecting curve segments

- Transition ends at the earlier of:
  - 3 years (full MRI curve no later than FCA14), or
  - When the sum of the MRI curve MW value at $7.03 exceeds A.
Points on FCA11 system-wide sloped demand curve below $7.03/kw-month approved as the MRI transition curve by FERC.

As a practical matter, PSPC evaluations will only consider system-wide marginal reliability impact values for FCA11 at prices of $7.03/kw-month and higher.