



# Capacity Zone (Locality) Predefine & Eliminate

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# Objectives

- ◆ **Discuss whether capacity zones should be predefined and, if so, market design concepts to predefine capacity zones**
- ◆ **Continue discussion whether capacity zones should be eliminated and, if so, market design concepts to eliminate capacity zones**

## Request from October 30 MIWG

- ◆ **Stakeholders requested a presentation on how PJM and ISO-NE eliminate capacity zones**
  - *Stakeholders recognized that this request was in the context of markets that had different capacity zone constructs*
  
- ◆ **The following slides provide a brief overview of how PJM predefines and eliminates capacity zones**
  - *ISO-NE will be presented at a future ICAP Working Group meeting*

# PJM - Locational Deliverability Area

- ◆ **Locational Deliverability Area (LDA) – Reliability Assurance Agreement**
  - *Sub regions used to evaluate locational constraints. LDAs include EDC zones, sub-zones and combination of zones. A Zone is an area within the PJM Region or such areas that may be combined as a result of mergers and acquisitions; or added as a result of the expansion of the boundaries of the PJM Region. A Zone will include any Non-Zone Network Load located outside the PJM Region that is served from inside a particular Zone.*
  - *Limited ability to import capacity due to physical limitations of the transmission system, voltage limitations or stability limitations.*
  - *There are currently 27 LDAs.*
- ◆ **PJM will analyze the need for an addition of an LDA – Manual 14b**
  - *RTEP Market Efficiency Analysis – constrained facilities will be identified (persistent congestion on a 500kV or above facility or interface) for multiple years beyond the next Base Residual Auction*
  - *RTEP Long Term Planning - Future constrained facilities or clusters of facilities are identified utilizing the long term planning analysis. Potential facilities are screened using thresholds that are utilized in the RTEP long-term planning studies. This analysis is updated annually based on approved RTEP upgrades. 500 kV and above facilities that advance more than three years between RTEP cycles are identified for further consideration. If the driver for a 500 kV facility advancing more than three years is linked to a specific event (e.g. significant generation retirement), it may require further analysis.*
  - *Once a facility has been identified utilizing the above methods, distribution factor analysis is utilized to determine the specific busses included in the analyzed LDA.*
  - *The sequence of evaluating areas of differing size involves nesting small sub-areas into larger areas and finally areas into larger geographical areas of Locational Deliverability Area (LDA).*
- ◆ **Any other party may propose to PJM a new LDA and they will study**
- ◆ **PJM required to file with FERC if a new LDA (or aggregate of LDAs) is warranted**

Sources – PJM Schedule 10.1 of Reliability Assurance Agreement, PJM Manuals 14b PJM Region Transmission Planning Process, Manual 20 – PJM Resource Adequacy Analysis, Manual 18 – PJM Capacity Market, Manual 35 – PJM Definitions

# PJM – Load Deliverability Study (CETO/CETL)

## Manual 18 – PJM Capacity Market

- ♦ **The process of determining the Installed Reserve Margin (IRM) that meets the PJM reliability criterion assumes that the internal RTO transmission is adequate and any generation can be delivered to any load without transmission constraints. This process helps in determining the minimum possible IRM for the RTO. However, since transmission may have limitations, after IRM is determined a Load Deliverability analysis is conducted. The RTO is divided into different sub-regions for this analysis. These sub-regions are referred to as Locational Deliverability Areas (LDAs) in the Reliability Pricing Model.**
- ♦ **The first step in the Load Deliverability analysis is to determine the transmission import capability required for each LDA to meet the area reliability criterion of Loss of Load Expectation of one occurrence in 25 years. This import capability requirement is called Capacity Emergency Transfer Objective (CETO), expressed in megawatts and valued as unforced capacity. The standard generation reliability evaluation model is used to determine CETO.**
- ♦ **The second step in Load Deliverability analysis is to determine the transmission import capability limit for each LDA using the transmission analysis models. For this analysis, a Transmission Upgrade including transmission facilities at voltages of 500 kV or higher that is in an approved Regional Transmission Expansion Plan (“Backbone Transmission”) will be included in the system model only if it satisfies the project development milestones set forth in the tariff. This import capability limit is called Capacity Emergency Transfer Limit (CETL), expressed in megawatts and valued as unforced capacity.**
- ♦ **If CETL value is less than CETO value, transmission upgrades are planned under the Regional Transmission Expansion Planning Process (RTEPP). However, higher than anticipated load growth and unanticipated retirements may result in the CETL value being less than CETO value with no lead time to build transmission upgrades to increase CETL value. These conditions could result in locational constraints in the RTO.**

Sources – PJM Schedule 10.1 of Reliability Assurance Agreement, PJM Manuals 14b PJM Region Transmission Planning Process, Manual 20 – PJM Resource Adequacy Analysis, Manual 18 – PJM Capacity Market, Manual 35 – PJM Definitions

# PJM – Locational Constraints

- ♦ **Locational Constraints are localized intra-PJM capacity import capability limitations (low CETL margin over CETO) that are caused by transmission facility limitations or voltage limitations that are identified for a Delivery Year in the PJM Regional Transmission Expansion Planning Process (RTEPP) prior to each Base Residual Auction. Such locational constraints are included in the RPM to recognize and to quantify the locational value of capacity within the PJM region.**
  
- ♦ **An LDA is modeled if:**
  - *LDA has CETL < 1.15 CETO*
  - *LDA had locational price adder in any of three immediately preceding Base Residual Auctions*
  - *LDA is likely to have a locational price adder based on a PJM analysis using historic offer price levels*
  - *LDA is EMAAC, SWMAAC, and MAAC*
  - *An LDA that does not meet the criteria above may be modeled if PJM identifies reliability concerns with LDA*
  - *LDAs modeled in a Base Residual Auction are modeled in the Incremental Auctions for the Delivery Year*
  
- ♦ **A Reliability Requirement and a Variable Resource Requirement Curve will be established for each constrained LDA to be modeled in the RPM Base Residual Auction.**
  
- ♦ **Capacity Import Limits**
  - *First modeled in 2017/2018 year that will limit the delivery of capacity from external source zones*

Sources – PJM Schedule 10.1 of Reliability Assurance Agreement, PJM Manuals 14b PJM Region Transmission Planning Process, Manual 20 – PJM Resource Adequacy Analysis, Manual 18 – PJM Capacity Market, Manual 35 – PJM Definitions

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## PJM - LDAs

- ◆ **Mitigation**
- ◆ **VRR Curves**
- ◆ **Locational Requirements**

# NYISO – Predefine Possible Options

- ◆ **Pursue an incremental approach first**
  - *Based on the tariff's current deliverability construct*
    - Look at what constraints are likely to bind or where there are likely to be export constrained zones
- ◆ **The MMU has proposed a dynamic process - Discussion at August 20, 2014 and November 14 ICAP WG meetings**
  - *Complicated to define*
  - *Complicated to administer*
  - *Requires significant changes to the current capacity market*
- ◆ **PJM approach**



# NYISO – Eliminate Possible Options

- ◆ **Actual or projected price convergence with the NYCA clearing price**
- ◆ **Deliverability Constraints are Eliminated**
- ◆ **No need to eliminate as prices will converge or nearly converge**

# Potential Triggers for Elimination of a Capacity Zone

- ◆ **Actual or projected price convergence with the NYCA clearing price**
  - ***What period of time – past or future or both***
    - How many months, consecutive ?
    - Studies performed that the prices converge in a period in the future ?
    - Does the IRM/LCR setting process impact the convergence ?
  - ***Upcoming Market Events***
    - Transmission builds and enhancements – how far ahead, base case inclusion rules
    - Resource retirements/additions
      - What is retiring/being added ? When ?
      - Should Mothballs and ICAP Ineligible be considered ?
    - How to look forward without Demand Curves for those periods
  - ***How to look at Price Convergence***
    - **Planning Studies**
      - Deliverability study, IRM/LCR study, a combination of planning studies or other study ?
      - How far out is the study horizon ?

# Triggers for Zone Elimination (cont)

- ◆ **Deliverability Constraints are Eliminated**
  - ***What MW threshold is required to cause elimination***
    - Incremental MW of interface deliverability capability have been added to eliminate all likelihood that the interface will become constrained within the horizon period ?
    - Compare amount of incremental interface capability to what ?
    - What about Generator retirements/additions?
  - ***Planning Horizon***
    - What is the time required to show the deliverability constraint has been adequately relieved ?
      - 5 years ? 10 years ? Other ?
      - Baseline , inclusion rules ?
      - Scenarios

# Alternative Position

- ◆ **No need to eliminate as prices will converge or nearly converge**
- ◆ **Other analysis to support**
  - *Changes to the IRM/LCR processes and/or DCR*
  - *Export constrained zone*

# Potential Issues to Elimination

- ◆ **Mitigated Units (buyer-side and supplier-side)**
  - ***Buyer –side (BSM)***
    - If a mitigated unit is no longer in a mitigated zone is it no longer subject to an Offer Floor ?
    - What if the eliminated zone becomes a mitigated capacity zone in the future ?
    - New units could enter the newly eliminated zone and not be mitigated and others still mitigated
    - Continuation of BSM without the associated Locality creates a disconnect and unlikely the mitigated unit will come out of mitigation
  - ***Supplier-side (Pivotal Supplier)***
    - Are business decisions affected by the uncertainty of whether or not this might apply

## Potential Issues to Elimination (con't)

- ◆ **CY deliverability study , impacts to SDU cost allocations, built or not built**
- ◆ **Import Rights analysis**
- ◆ **Tariff rule changes**
- ◆ **Software issues**

# Timing

- ◆ **When and how frequently is the periodic planning study or other analyses done?**
  - *Seasonal*
  - *Annual*
  - *With NCZ study in a DCR year*
  - *Should elimination be coupled with examination of other new zones or a reconfiguration of an existing one*
- ◆ **What time frame does the elimination become effective ?**

# Studies and Analyses Impacted

- ◆ **Impacts**
  - *What type of impacts*
  - *Consumer impacts*
- ◆ **CRP, RNA**
  - *Do market based or backstop solutions impact the elimination of a zone ?*
    - If so, how ?
- ◆ **Interconnection, Class Year and Deliverability Studies**
- ◆ **MMA BSM determinations linked to CY Studies**
- ◆ **Timing of studies for zone elimination may conflict with existing studies; e.g., DCR and IRM/LCR Studies**



# Next Steps

- ◆ **Elimination**
  - *Provide highlights of ISO-NE*
  - *Continue stakeholder discussions on elimination concepts into 2015*

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