



# FRR Alternative

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- The Fixed Resource Requirement (“FRR”) Alternative provides an alternative means for an eligible LSE to satisfy its obligation to commit Unforced Capacity to ensure reliable service to loads in the PJM
- How it differs from RPM:
  - FRR LSE does not pay RPM Locational Reliability Charge
  - Capacity resources included in an LSE’s FRR Capacity Plan do not receive RPM Auction Credits

Provisions of the FRR Alternative are described in Schedule 8.1 of the Reliability Assurance Agreement (RAA)

- A party is eligible to select the FRR Alternative if it (a) is an IOU, Electric Cooperative, or Public Power Entity, and (b) demonstrates the capability to satisfy the Unforced Capacity obligation for all load in the FRR Service Area, including all expected load growth in such area, for the term of such party's participation in the FRR Alternative

- The service territory of an IOU;
- The service area of a Public Power Entity or Electric Cooperative; or
- A separately identifiable geographic area that is:
  - bounded by wholesale metering, or similar appropriate multi-site aggregate metering, that is visible to, and regularly reported to, PJM, or to an Electric Distributor, and such Electric Distributor agrees to aggregate the load data for such FRR Service Area and regularly report such aggregated information, by FRR Service Area, to PJM; and
  - for which the FRR Entity has or assumes the obligation to provide capacity for all load (including load growth) within such area
- In a state regulatory jurisdiction that has implemented retail choice, the FRR Entity must include all load in the FRR Service Area, notwithstanding the loss of any such load to or among alternative retail LSEs

- No later than four months prior to the BRA for the first Delivery Year (“DY”) for which an FRR election is to be effective, any party seeking to elect the FRR Alternative shall notify PJM of such election
- Such election is for a minimum term of five consecutive DYs
- No Later than one month prior to the BRA, such party shall submit its initial FRR Capacity Plan, and shall annually extend and update the plan by no later than one month prior to the BRA for each succeeding DY

- An FRR Entity may terminate its FRR election effective with any DY following the minimum term of five consecutive DYs
  - By providing written notice of termination no later than two months prior to the BRA of such DY
  - An FRR Entity that has terminated FRR election is not eligible to re-elect the FRR Alternative for five years
- An FRR Entity may terminate its FRR election prior to the five year commitment term without penalty for any DY after the first DY of its five year commitment for which PJM is required to establish a separate VRR Curve for an LDA encompassing the FRR Service Area
- A party may elect or terminate the FRR Alternative effective any DY in the event of a State Regulatory Structural Change as defined in the RAA

- The FRR Capacity Plan of each FRR Entity must commit Capacity Resources in a MW quantity no less than the FRR Entity's Unforced Capacity ("UCAP") Obligation calculated as the Forecast Pool Requirement ("FPR") times the FRR Entity's allocated share of the Zonal Peak Load Forecast for such DY
- For FRR load located in an LDA for which a separate VRR Curve is required to be established, the FRR Entity must commit Capacity Resources located inside the LDA in a MW quantity no less than that calculated as the Percentage Internal Resources Required times the FRR Entity's UCAP Obligation



- The Percentage Internal Resource Required is calculated as the (LDA Reliability Requirement minus the LDA CETL) divided by the (Zonal Peak Load Forecast times the FPR) where all parameters are of the relevant DY
- An FRR Entity may reduce the Percentage Internal Resource Required associated with an LDA to the extent the FRR Entity commits to a transmission upgrade that increases the CETL of the LDA
  - The FRR Entity shall designate specific additional Capacity Resources located in the LDA from which the CETL was increased, to the extent of such increase



- If the FRR Entity intends to sell surplus Capacity Resources in any RPM auction, or to any direct or indirect purchaser that uses such resource as the basis of a sell offer into any RPM auction or as replacement for an RPM commitment, then the FRR Entity must commit an additional MW quantity of Capacity Resources above the MW quantity committed to satisfy the FRR Entity's UCAP Obligation
- This additional Threshold Quantity is calculated as the lesser of 3% of the FRR Entity's UCAP Obligation or 450 MW

- If the Threshold Quantity is not satisfied, the FRR Entity cannot sell surplus capacity in any RPM auction, or to any direct or indirect purchaser that uses such resource as the basis of a sell offer into any RPM auction or as replacement for an RPM commitment
  - The FRR Entity may sell surplus capacity off-system or to another FRR Entity
- If the Threshold Quantity is satisfied, the FRR Entity may sell capacity in excess of the Threshold Quantity up to a sales cap amount calculated as the lesser of 25% of the FRR Entity's UCAP Obligation or 1,300 MW

- The FRR Capacity Plan shall comprise only Capacity Performance (“CP”) Resources including Seasonal CP Resources
- The FRR Capacity Plan may not include any Capacity Resource that has cleared in any RPM auction for the relevant DY
- The UCAP MW quantity of each generation resource committed to the initial FRR Capacity Plan will, at the FRR Entity’s election, be determined using either the resources’ 1-year or 5-year EFORD
  - A generation resources final UCAP MW value is based on the resource’s final effective 1-year EFORD

- For DR intended to be committed in the FRR Capacity Plan, a DR Sell Offer Plan must be submitted 15 business days prior to the deadline for submitting the FRR Capacity Plan
  - A Demand Resource’s final UCAP MW Value is based on the total DY Nominated Value of DR registrations in DR HUB times the final DY FPR
- An FRR Entity’s UCAP Obligation and Minimum Internal Resource Requirement is increased by the UCAP MW value of any EE Resource that is committed in the FRR Capacity Plan
  - EE measures are already reflected in the peak load forecast that is used as the basis for the UCAP Obligation and the Minimum Internal Resource Requirement therefore this “addback” is needed to avoid double-counting of EE MWs

The following example assumes that the FRR Alternative is elected for all load located in a zone and that the zonal load is wholly contained in a LDA and represents all of the load of the LDA

## **Key Planning Parameters associated with FRR Service Area**

- Zonal Peak Load Forecast = 21,000 MW
- FPR = 1.095
- LDA Reliability Requirement = 26,000 MW
- LDA CETL = 5,500 MW

## FRR Capacity Plan Requirements

Zonal UCAP Obligation =  $(21,000 \text{ MW})(1.095) = 23,000 \text{ MW}$

% Internal Resource Required =  $(26,000 \text{ MW} - 5,500 \text{ MW}) / 23,000 \text{ MW} = 89.1\%$

Min Internal Resource Required =  $(23,000 \text{ MW})(89.1\%) = 20,500 \text{ MW}$

Threshold Quantity = 450 MW, if FRR Entity intends to sell excess capacity

RPM Sales Cap = 1,300 MW

The FRR Capacity Plan of this example must commit Capacity Resources in a UCAP MW quantity no less than 23,000 MW, and, no less than 20,500 MW of this total commitment quantity must be of Capacity Resources located inside the LDA (plus 450 MW if the FRR Entity intends to sell excess into RPM).



- If all of the load located in a LDA is included in a FRR Capacity Plan then locational reliability requirements are fully satisfied via the FRR Entity's Minimum Internal Resource Requirement therefore the LDA is not modeled using a separate LDA VRR Curve in the relevant BRA
- If any portion of the load located in a LDA is served through RPM then the LDA is modeled in the relevant BRA using a separate VRR Curve based on the LDA Reliability Requirement reduced by the total minimum internal resource requirement of all FRR Entities located in the LDA



## RPM Participation by Capacity Resources located in a FRR Service Area but not Included in a FRR Capacity Plan

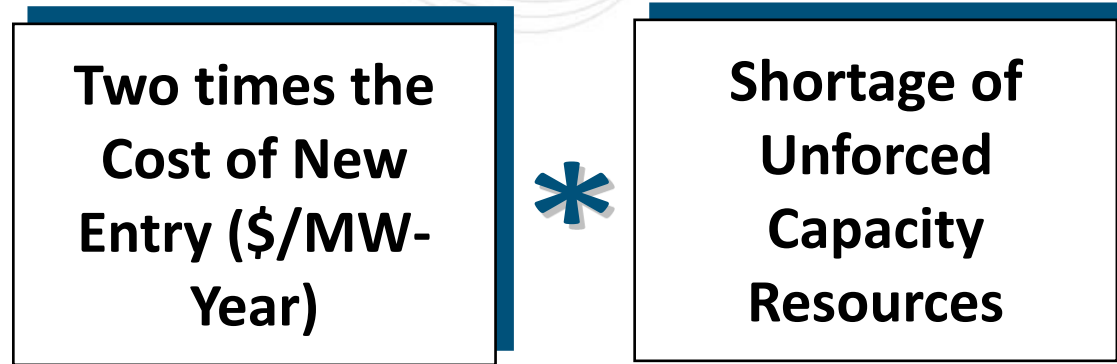
- Generation Capacity Resources and Demand Resources that are located in the FRR Service Area of an FRR Entity but that are not included in the FRR Entity's Capacity Plan are required/eligible to participate in RPM
- EE Resources located in the FRR Service Area of an FRR Entity may be committed in an FRR Entity's Capacity Plan where such commitment can be accommodated by a commensurate increase of the FRR Entity's UCAP Obligation and Minimum Internal Resource; however, such EE Resources may not participate in RPM due to the misalignment of the location of the EE measure and the location of the necessary add-back

# Appendix

- FRR Commitment Insufficiency Charge
- FRR Capacity Resource Deficiency Charge
- Capacity Performance Event Assessment

- FRR LSE must annually commit sufficient capacity for each succeeding Delivery Year.
- If the capacity is not adequate for a Delivery Year:
  - the LSE will be assessed an FRR Commitment Insufficiency Charge for the shortage in meeting the Percentage of Internal Resources Required in LDA or the Preliminary Daily Unforced Capacity Obligations (including any Threshold Quantity) for the remainder of the minimum term of the FRR plan.

FRR Commitment Insufficiency Charge =



- FRR Commitment Insufficiency Charge is allocated to LSEs that were charged RPM Locational Reliability Charge.

- FRR LSE will pay a Capacity Resource Deficiency Charge for any shortage of resources to meet the Amount of Internal Resources Required in an LDA and the Final Daily Unforced Capacity Obligation.
- Shortage to meet the Internal Resources Required is calculated by comparing an LSE's daily LDA FRR Resource Position to its Internal Resources Required. Any shortage will be assessed a FRR Capacity Resource Deficiency Charge.
- A deficiency charge for this shortage less the shortage calculated for failure to satisfy the Internal Resources Required in the LDA will be assessed.

## FRR Capacity Resource Deficiency Charge =

**1.2 \* Weighted Average Resource Clearing Prices from all RPM auctions for the LDA encompassing the FRR Service Area, weighted based on quantities cleared in auction (in \$/MW-Day)**



**Shortage Amount (MW)**

The Daily FRR Capacity Resource Deficiency Charges, FRR Transmission Upgrade Delay Penalties, Generation Resource Rating Test Failure Charges and Load Management Test Failure Charges are distributed pro-rata to the LSEs in the RTO that were charged an RPM Locational Reliability Charge, based on LSE daily unforced capacity obligations.



- Prior to the start of each Delivery Year, the FRR entity must elect whether it seeks to be subject to the Non-Performance Charge or to physical non-performance assessments for such Delivery Year.
- An FRR Entity may not elect the physical non-performance assessment option if such FRR Entity will not be an FRR Entity for the following Delivery Year.
- If such FRR Entity opted to be subject to physical non-performance assessments, the FRR Entity will be required to update their FRR Capacity Plan for the following Delivery Year with additional MW of Capacity Performance Resources for each MW of FRR net Performance Shortfall for each Performance Assessment Interval
  - Such FRR Entity shall not be eligible for, or subject to, Bonus Performance Credits

- An FRR Entity that elected to be subject to financial non-performance assessment will be subject to Non-Performance Assessment Charge for each resource committed to the FRR Capacity Plan that had a Performance Shortfall for a Performance Assessment Interval.
- If a resource committed to the FRR Capacity Plan had Bonus Performance for a Performance Assessment Interval, such resource will be eligible for Bonus Performance Credits.

- The FRR Entity's net Performance Shortfall for each Performance Assessment Interval shall be multiplied by a rate of 0.00139 MWs/ Performance Assessment Interval [i.e., 0.5 MWs/30 PAHs/12 intervals per hour] to establish the additional MW of Capacity Performance Resources that such FRR Entity must add to its FRR Capacity Plan for the following Delivery Year.
- The maximum additional MW required by the FRR Entity as a result of non-performance from the FRR Entity's Capacity Performance Resources during a Delivery Year shall not exceed 50% of the MW quantity of the Capacity Performance Resources committed in the FRR Capacity Plan for such Delivery Year.