



Briefing on regional resource adequacy initiative

Chris Devon
Sr. Infrastructure Policy Developer

Market Surveillance Committee Meeting
General Session
June 17, 2016



What is Resource Adequacy intended to accomplish?

- Ensure the ISO has available the right resources in the right places at the right time
- Resource availability: Must Offer Obligation
 - Ensure sufficient pool of resources available in order to operate markets reliably
 - Mitigation of physical withholding
- Key principle of Regional RA initiative: Focused on need to have enhancements to RA provisions to enable transition to a more regional Balancing Authority Area (BAA)

What does uniform reliability mean?

- How can individual sub-region's RA decisions and the potential for differing outcomes impact the broader BAA?
- Can certain issues be left up to individual areas or sub-regions of a broader BAA to decide?
- What issues should remain consistent across a regional BAA footprint?
- ISO believes there is a need for consistency in the proposed reliability assessment:
 - Evaluation of capacity contribution of resources: Uniform Counting Rules
 - System-wide Planning Reserve Margin (PRM)

Import Resources & Maximum Import Capability

Maximum Import Capability background

- MIC process considers and protects existing contractual rights and pre-existing commitments
 - ISO protects entities existing arrangements and allows current practices to continue for those transactions established under firm transmission rights and contractual obligations
- 13-step allocation process allows LSEs to select the interties on which they seek an allocation of import capability
 - After pre-existing arrangements and contracts are protected the remaining capability is allocated on a load ratio share basis to individual LSEs

Modification to MIC allocation methodology

- ISO identified need to revisit MIC allocation methodology, previously believed changes unneeded
- ISO proposal would limit initial allocations of MIC capability to only each sub-region of ISO that would be defined by Regional TAC policy “sub-regions”
- Allocations of MIC would be load ratio share basis for LSEs serving load within specified sub-regional areas
- What does this mean?
 - Current BAA keeps its current MIC allocations
 - PacifiCorp system would keep all MIC capability from its system and would be allocated by load ratio share of LSEs in that area only

Each sub-region keeps its capability in initial allocations of MIC process

- LSEs in current BAA will still be receiving similar allocations of MIC capability made available by current BAA interties today:
 - Current BAA LSEs would only be able to nominate MIC on those interties into the current BAA (sub-regional TAC area)
- LSEs serving load within PacifiCorp footprint will receive all MIC capability made available by PacifiCorp system's
 - LSEs in PacifiCorp sub-region would only be able to nominate for additional MIC allocation only on interties into that PacifiCorp sub-region area

Split MIC allocations to each sub-region limits ability of LSEs to use MIC in other sub-regions

- Proposal will still allow for LSEs to utilize MIC in other sub-regions of the ISO under Step 8 (Transfer of Import Capability) of MIC allocation process
 - Additional MIC in other sub-regions can still be bilaterally transferred between any LSE in any sub-region under this step
- Under Step 13 (Requests for Balance of Year Unassigned Available Import Capability) of MIC allocation process all remaining MIC capability yet to be assigned would be open for nomination by all LSEs in all areas of the entire expanded ISO BAA

Proposal balances MIC allocation needs

- Splitting initial MIC allocations by sub-region combined with the ability to bilaterally transfer MIC between sub-regions under Step 8 and final Step 13 allowing ability to nominate any remaining MIC anywhere in footprint will help balance MIC allocation needs
 - Maintains fair initial MIC allocations to sub-regions
 - Allows flexibility to allow all LSEs some ability to bring system RA imports to the system across any interties in an expanded BAA in order to realize the benefits of a larger geographic footprint

Discussion of import resources that qualify for RA

- New topic that was added to scope of RRA initiative
- ISO believes RA showings that import MWs designated to meet RA obligations across interties used with a MIC allocation are considered firm monthly commitments to deliver MWs to ISO at the specified interconnection point on ISO system
- ISO has given additional consideration to ensure that these requirements for RA imports are clear which will be especially important as BAA expands

Discussion of import resources that qualify for RA - background

- Would be beneficial to clarify requirements for RA imports, including how “firm” commitments should be
- Currently LSEs can meet system RA requirements using imports and these import resources do not have to be tied to specific physical resources in all cases
- ISO tariff is not specific on types of import resources that count as RA capacity to meet system RA requirements
- IRPs for utilities in other states indicate entities may rely on spot market purchases to meet a significant portion of their peak needs

What constitutes a firm monthly commitment?

- Imports used to meet RA obligations are required to bid in the day-ahead market, but are not subject to any limits on bid price and do not have any must-offer obligation in real-time if not accepted in the day-ahead market
- Given these bidding rules and must-offer obligations, the ISO believes that it is important for all stakeholders and the ISO to have a common understanding of what may constitute a “firm monthly commitment” for the purposes of meeting RA system requirements

Important to provide clarity on this issue

- This will be increasingly important as the ISO expands regionally to include additional LSEs that currently rely on established integrated resource planning processes subject to regulation by other states
- Clarification of this topic is also needed to provide a clarity for any monitoring by the ISO's DMM of the compliance of RA imports with market rules
- ISO would like to discuss the topic with stakeholders and understand their views

Discussion of import resources that qualify for RA

- The RA construct is a capacity construct, so how “firm” must system RA import resources be?
 - Should there be a role for bilateral spot market purchases or short-term firm market purchases procured at market hubs or elsewhere external to BAA to meet a portion of an LSE’s requirements?
- If there is a role for these sorts of products to be used for RA purposes:
 1. **How much of an LSEs requirement could be met with them?**
 2. **How far ahead of the delivery month must they be established?**
 3. **How should firmness be defined?**

Uniform Counting Methodologies

The ISO proposes to develop uniform counting methodologies

- Uniform counting methodologies will allow the ISO to the establish maximum capacity values for RA purposes
- Needed in order to accurately evaluate system adequacy through the proposed reliability assessment
- Counting methodologies need to be uniform across an expanded BAA
 - ISO cannot accurately assess reliability using disparate counting methods that individual LRAs determine

The ISO currently uses the following counting methodologies

- **Pmax:** Maximum power output a resource can reach as established by an ISO conducted Pmax test (one hour)
- **Exceedance Methodology:** Minimum amount of generation produced by a resource in at least 70% of the studied hours at the time of system peak demand
- **Historical Data:** Monthly historic performance during specified month using a three-year rolling average
 - Missing data is replaced with average values for the same hours and day but different years

The ISO currently uses technology factors for counting resources without historic data

- **Technology Factors:** For new resources that do not have historical data, technology factors are used to calculate the QC
- For fuel type categories below the technology factors are currently calculated as follows:
 - **Wind and solar:** exceedance methodology evaluation of similar fuel type
 - **All other fuel types:** historical data methodology evaluation of similar fuel type

The ISO proposes to use the Pmax methodology for these resource types

- **Pmax Methodology:**
 - Thermal:
 - Nuclear
 - Natural gas
 - Oil
 - Coal
 - Geothermal
 - Biomass
 - Biogas
 - Participating hydro
 - Pumped hydro

The ISO proposes to initially use Exceedance methodology for solar and wind resources

- Exceedance methodology measures the minimum amount of generation produced by a resource during a certain percentage of included hours
- ISO proposes to initially proceed with the Exceedance methodology
- ISO will explore a transition to ELCC in the future
 - The ISO will hold future stakeholder processes to revisit counting methodologies as industry best practices change and ELCC methods are more fully developed

Historical counting methodology

- Historical counting methodology uses a resource's historic performance during specified month's assessment hours, using a three-year rolling average
- ISO proposes to use Historical methodology for
 - Run-of-River Hydro
 - Qualifying Facilities, including Combined Heat and Power

Four hour test counting methodology

- Four hour test method proposed to be used to evaluate the capacity value of non-generator resources (NGR) by testing the resource's sustained output capability over a four-hour period
- Test would require an NGR to provide four hours of continuous output to determine resource's maximum sustained discharge capability over that period in order to establish the NGR's QC value
 - NGRs have limited ability to provide a sustained output over the potential peak hours (4-hour period) due to potential to fully expend fuel source and a subsequent need to recharge
 - Need four hour testing as opposed to P_{max} to address limited fuel source and recharging issue

Registered capacity value counting methodology

- For the registered capacity value methodology the Scheduling Coordinators will submit the resource's registered capacity value, based on the resources ability to sustain the specified output level for a four hour duration
- ISO will accept and establish this submitted registered capacity value for the resource
- The ISO proposes to use the registered capacity value method for
 - PDR
 - RDRR
 - Participating Load

Performance audit and unannounced compliance testing for registered capacity value resources

- ISO will develop performance audits and compliance testing that can be conducted for all resources with a registered capacity value
- The PDR, RDRR, and Participating Load resources will be tested through the Resource Performance Verification process which also tests resources providing ancillary services

Planning Reserve Margin

PRM for Reliability Assessment - Background

- ISO must be able to assess level of reliability on a comparable basis across expanded BAA
 - ISO will establish PRM target in order to evaluate reliability levels and ensure adequate capacity has been made available
 - ISO previously provided background on two potential methodologies under consideration:
 1. Establish a probabilistic (stochastic) PRM target through a Loss of Load Expectation (LOLE) study, or
 2. Calculate a more simplified deterministic PRM using observed historical data points

Proposal for Probabilistic PRM

- ISO is proposing to develop the option of a probabilistic study to determine a system-wide PRM target
- Probabilistic PRM methodology is used in many other regions and can provide a robust and accurate assessment of the necessary reserve margins required to maintain a specified level of reliability across an expanded BAA
- Specified level of reliability can be measured using an established reliability criterion - such as 1-in-10 LOLE, and will also need to be discussed with stakeholders

Establishing a LOLE level for probabilistic PRM

- ISO will need determine what level of LOLE criterion is appropriate to use when studying the loss of load in order to establish the PRM target
- Many other regions use a 1-in-10 LOLE reliability criterion and this level of reliability is generally set forth by NERC regional entities reliability standards
 - WECC has not established any generation reliability criterion standard like many other NERC regional entities have

Establishing a LOLE level for probabilistic PRM

- ISO initially proposes 1-in-10 LOLE is an appropriate level to set as the system-wide generation reliability criterion that will be utilized to establish the PRM target
- ISO seeks feedback from stakeholders on what considerations should be taken when setting level of LOLE criterion and how best to do so
- ISO also would like input on what level of LOLE criterion stakeholders believe appropriate
 - If there is support for a different LOLE criterion than 1-in-10, why?

PRM study process

- Next steps in a PRM study process after determining an appropriate level for the LOLE criterion will likely need to take place after this proposal and stakeholder initiative has been finalized
- ISO will need to build appropriate models and cases, and collect required inputs and data sources necessary in order to conduct the study
- Incorporate feedback on how renewables should contribute to meeting RA needs in LOLE study (counting rules)
- Determine how net load peak shifting impacts study