Flexible Resource Adequacy Criteria and Must-Offer Obligation – Phase 2

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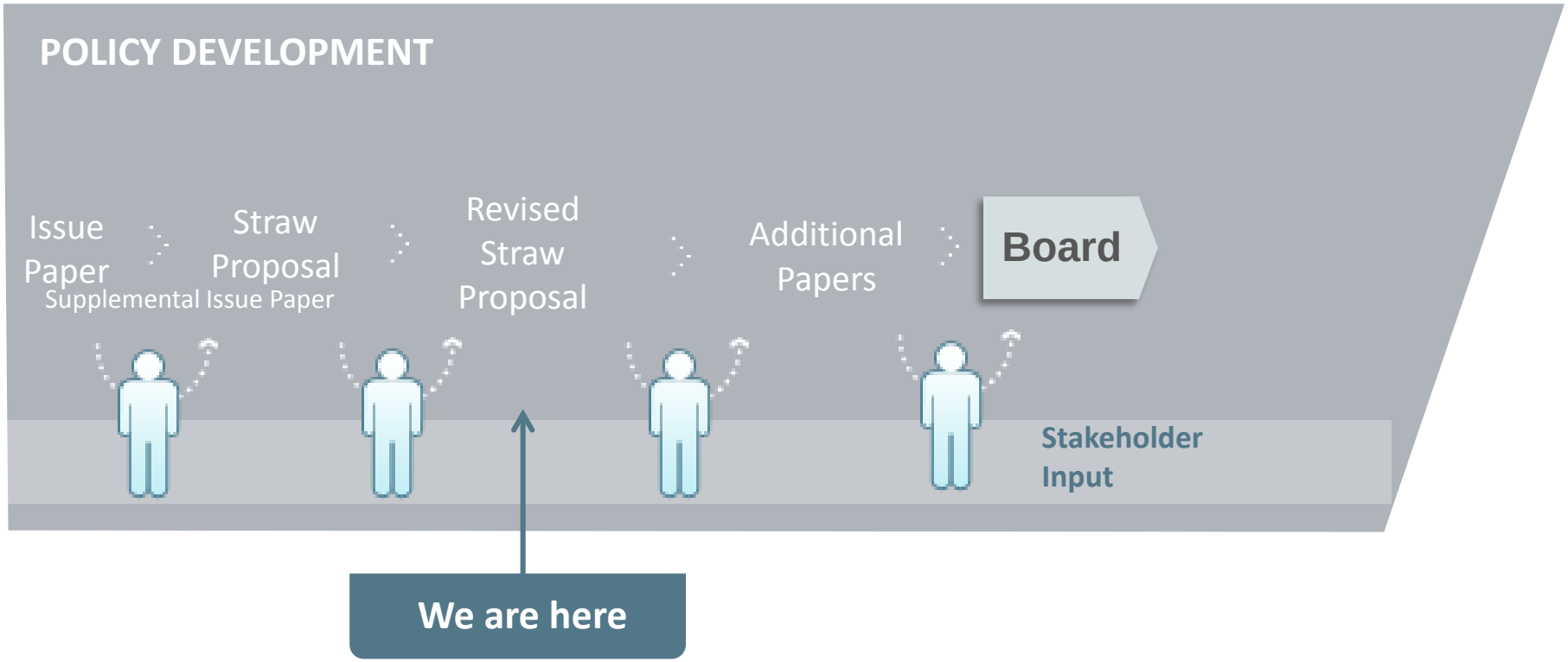
Revised Straw Proposal
May 8, 2017

Agenda

Time	Agenda Item	Speaker
10:00-10:10	Introduction, Stakeholder Process	Jody Cross
10:10-12:00	Short-term Enhancements: Proposed changes to the flexible capacity eligibility criteria	Karl Meeusen and Group Discussion
12:00-1:00	Lunch	
1:00-3:30	Future Considerations	Karl Meeusen and Group Discussion
12:50-1:00	Next Steps	Jody Cross

ISO Stakeholder Initiative Process



Stakeholder process schedule

Step	Date	Event
Supplemental Issue Paper	December 9, 2016	Stakeholder meeting
	December 19, 2016	Comments due
	May 1, 2017	Revised straw proposal posted
Revised Straw Proposal	May 8, 2017	Stakeholder meeting
	May 22, 2017	Comments due
	November 9, 2016	Supplemental issue paper posted
Second Revised Straw Proposal	Early July	Second revised straw proposal posted
	Mid-July	Stakeholder meeting
	Late July	Comments due
Second Revised Straw Proposal	Early September 2017	Draft final proposal posted
	Mid-September 2017	Stakeholder meeting
	Late September 2017	Comments due
Board Approval*	Q2 2018	Board Approval

* The ISO will work with LRAs to facilitate collaboration with their processes prior to seeking Board approval

FRACMOO2 Background

- ISO issued supplemental issue paper on November 2016 to expand scope of FRACMOO2
  - ISO received comments from 22 stakeholders
    - Included nine proposals of some type

- The ISO does not believe any of the proposals are capable of being completed in an expeditious manner either due to policy gaps or implementation complexity

- **Revised straw proposal focuses on short-term enhancements to existing flexible capacity**

The ISO's objective in FRACMOO2 must also consider the impact of SB 350

- SB 350 required the CPUC to
  - Oversee the construction of an Integrated Resource Plan ("IRP")
  - Oversee its jurisdictional LSEs procurement to reach a 50 percent RPS target
- RPS eligible capacity curtailment impact long term resource portfolio
  - Frequently curtailed RPS eligible resources could mean more RPS eligible capacity
  - Mitigating the costs of building incremental RPS eligible capacity means a premium on maximizing RPS eligible energy production

Problem statement

- There is a need to send bilateral capacity procurement signals that specifically focus on sustaining fast ramping and fast starting resources in order to achieve a 50 percent RPS mandate while the specific details surrounding the implementation of the state's 50 percent RPS target are determined.

It is prudent to consider a least-regrets approach to short-term modifications to the flexible capacity eligibility rules

- Focus on identifying resource characteristics that help minimize RPS curtailment

- Provide a stronger signal regarding the type of resources needed in the future while more comprehensive changes are developed
  - i.e. Mitigate the risk of uneconomic retirements

It is prudent to consider a least-regrets approach to short-term modifications to the flexible capacity eligibility rules

- Focus on identifying resource characteristics that help minimize RPS curtailment
- Ensure that attributes are more appropriately valued while a comprehensive long-term plan is developed
  - Fast start,
  - Fast ramping, and
  - Low minimum operating levels (Low Pmin burden)
- Signal that resources that can be started up and shut down within the ISO's real-time market are increasingly valuable

Demonstration of need for changes to flexible capacity eligibility

The ISO's initial assessment has shown that the current product is overly inclusive

- FRACMOO provided a broad opportunity for a variety of resource types to provide flexible capacity
  - virtually all technology types eligible to provide flexible capacity regardless of operational attributes
- Allowed LSEs maximum discretion over how to meet flexible capacity requirements
- Total eligible capacity exceeded 35,000 MW
  - Including OTC resources scheduled for retirement
- Not sending strong signals to ensure more flexible capacity resources are procured and remain financially viable long term

Many of the fastest ramping resources procured to provide flexible capacity during periods of greatest flexible capacity need

- As much as 40 percent of the flexible RA showings are long-start resources that receive infrequent day ahead dispatches.
  - Without a day-ahead commitment, these resources are not required to be available to the ISO for real-time flexibility and other operational needs.
  - Further, between 25 and 33 percent of total flexible RA showings come from Once-Through-Cooling ("OTC") resources.
    - OTC resources are slow ramping resource and expected to retire
- Many fast ramping resources are not shown as either system or flexible RA resources in non-summer months, when flexible capacity needs are highest
  - Many of these resources were shown on summer RA showings

Continued reliance on long-start and OTC resources for flexible capacity has three potential adverse consequences

1. Fast ramping and flexible resources may not receive RA contracts needed for long-term financial viability
2. Increase the frequency of exceptional dispatch CPM designations
   - May not provide sufficient ramping speed to address real-time operational needs caused by forecast error or forced generation and/or transmission outages
3. Slower resource ramp rates means greater Pmin burden
   - Could result in more frequent curtailment of renewable resources
   - Could result in steeper ramps over some time intervals

Proposed changes to EFC eligibility criteria

The ISO is proposing short-term changing to eligibility criteria for flexible capacity resources

- ISO proposes flexible capacity eligibility rule changes
  - Start-up time of less than 4.5 hours and
  - Minimum run time of less than 4.5 hours
- Align with the STUC outlook
  - Allows the ISO to commit and decommit resources in the real-time time
- Should ensure a fleet of fast ramping resources is available while minimizing the associated Pmin burden
- 17,042 MW of remaining eligible flexible capacity

EFC eligibility will be limited to resources able to respond to a real-time commitment instruction and ramp in real-time

- 2016 EFC list contains 35,234 MW of EFC eligible
  - Including 16,860 MW of long-start capacity.
- February 2016 Flexible RA showings
  - 6,066 MW of long-start resources were shown towards meeting a 10,507 total system wide flexible RA requirement.
  - These long-start resources were rarely committed.
- Resource with a start-up time of greater than the ISO's 4.5 hours will not be eligible to provide flexible capacity
  - Leaves 18,374 MW of flexible capacity resources eligible
  - Largest monthly flexible capacity requirement for 2018 was 15,743 MW

EFC eligibility will also be limited to resources with minimum run times of less than the ISO's STUC horizon

- Managing Pmin burden requires decommitting resources
- Once a resource completes its full start-up, could the resource then be decommitted in a single STUC interval
  - i.e. If a resource with a start-up time of 240 min receives a commitment at time (t), then ISO would want to be able to decommit that resource during the STUC that runs at time (t+240)
- Resources that cannot be decommitted in this timeframe are referred to as long-run resources.

EFC eligibility will also be limited to resources with minimum run times of less than the ISO's STUC horizon

- 16,612 MW of long-run capacity eligible to provide flexible capacity
  - 5,045 MW of long-run capacity shown on February 2016 RA showings
    - Excludes the Pmin burden for these resources
  - Pmin burden for the resources shown on the February 2016 RA showings is approximately 2,570 MW of additional capacity
  - The resulting system impact of committing these long-run resources is 7,615 MW

Proposed eligibility modification reduce the eligible EFC

- A majority of the resources identified as long-start are also long-run resources
  - Only 1,332 MW of long-start capacity are not also long-run capacity
- Proposed eligibility changes results in 17,042 MW of remaining eligible flexible capacity.
  - Deems 18,191 MW currently eligible EFC capacity as ineligible

The ISO proposal addressed multiple issues identified in the supplemental issue paper

- Specifically, this modification will:
  - Mitigate the minimum operating levels that must be maintained due to start-up and minimum run times;
  - Eliminate the ISO's reliance on long-start resources that are not likely to be available to address real-time ramping needs, and;
  - Establish a faster ramping flexible capacity fleet because most long-start and/or long run-times are also slower ramping resources.

Proposed changes to Super Peak resource availability requirement

- Many of the largest three hour net-load ramps occur on weekends.
- Current super-peak flexible capacity resource MOO is no longer consistent with flexible capacity needs
  - Currently only requires the resources be available on non-holiday weekdays
- The ISO proposes to extend the MOO for super-peak resources to all seven days a week.
  - Not proposing to change the requirement to provide a minimum of 5 dispatches per month.

Future Considerations

Long-term enhancements to flexible capacity product and definition of need must support state goals and the IRP

- ISO is not making a long-term proposal at this time due to
  - Time required to develop longer-term solutions
  - Ongoing development of the state IRP process
  - Additional policy direction regarding the need, or willingness, to curtail the output of RPS eligible resources
- Long-term plan will assess the specific proposals put forward by stakeholders in response to the supplemental issue paper
  - Scope and specific direction of the envisioned long-term enhancements will ultimately depend on the specific implementation details of California state energy policy

Potential long-term enhancements to flexible capacity provisions should attempt achieve basic objectives

1. Provide for the efficient retention and retirement of resources needed to maintain reliable grid operations
2. Simplify RA procurement and showing processes
3. Refine requirements to more closely differentiate particular resource attributes of flexible capacity needed
4. Align long-term planning and annual RA processes
5. Provide opportunities for internal and external resources to qualify to supply flexible capacity
6. Scalable regardless of number of LSEs or size of LSEs

Provide for the efficient retention and retirement of resources needed to maintain reliable grid operations

- There is not sufficient revenue from energy and ancillary services markets to sustain the long-term financial viability of resources that do not have RA contracts
- System wide ISO LMPs decrease as more low and zero marginal cost energy resources come on line.
  - Resources will rely more on capacity payments
- The *revenue* adequacy will become a larger part of sustaining the resources needed to meet state policy goals and maintain long-term reliability
- Flexible capacity resources need to receivesignals and revenue streams today, lest they retire uneconomically

Provide for the efficient retention and retirement of resources needed to maintain reliable grid operations

- A review of the needed operating characteristics is required due to changing generation fleet
- Long-term enhancements should ensure resources with needed operational attributes receive price signals that reflect the need for that type of capacity
- The need for a given attribute should be based on grid reliability needs
- With proper price signals and future system needs, Resources can make rational economic decisions to stay on-line, make upgrades and/or major maintenance, or retire

Simplify RA procurement and showing processes

- Currently LSE must make three RA demonstrations to the ISO (and typically three more similar showings to its LRA).
  - Creates confusion regarding the rules for each products
- Long-term flexible capacity solutions offers an opportunity to simplify the RA processes
  - Better aligning system, local, and flexible RA needs
- Any long term solution will require detailed collaboration with the CPUC and other LRAs

Refine requirements to more closely differentiate particular resource attributes of flexible capacity needed

- The flexibility of a resource is multidimensional and difficult to define in a one-dimensional product
- Long-term flexible capacity enhancements should improve upon the specifications of the needed attributes
- ISO cannot assess the effectiveness of the shown flexible capacity fleet with tools currently in use

Refine requirements to more closely differentiate particular resource attributes of flexible capacity needed

- Given the multidimensional nature of a resources flexibility, the ISO believes it may be necessary to either
  - Develop more than a single flexible RA product or assessment of the adequacy of flexible RA showings as part of the long-term solution or
  - Develop an assessment process that is capable of examining the entire portfolio of RA resources to determine if the shown RA fleet is capable of ensuring reliable grid operations.

Align long-term planning and annual RA processes

- An important coordination effort is needed to align the annual RA process and longer-term resource planning and procurement.
  - Annual RA proceeding
  - Integrated Resource Plan (IRP) and
  - ISO's Transmission Planning Process
- IRP studies must rely on assumptions about the resources that are available in the year being studied
  - Any procurement that occurs in the annual RA procurement should receive similar market signals and messages as those sent in the IRP process
    - Absent feedback loop, IRP may rely on assumptions that are invalidated due to the signals sent in short-term procurement

Provide opportunities for internal and external resources to qualify to supply flexible capacity

- Imports are not currently eligible to provide flexible capacity
- Import resources have several benefits that will help the ISO meet its operational needs.
  - No minimum operating levels,
  - Fast ramping, and,
  - Could an be provided from clean hydro resources from the northwest
- ISO proposes to take a long-term view for both the provision of RA and through enhancement of coordination and availability requirements that might provide benefits to both the ISO system and the external resources' native BAA

Scalable regardless of number of LSEs or size of LSEs

- There are a growing number of LSEs in the ISO footprint.
  - As shown at the February 1, 2017 CPUC en banc on Community Choice Aggregation, there are over 30 entities either operating, preparing to operate, or exploring the possibility of creating a Community Choice Aggregation.
- Entities will range in size and location
- Any enhancements made to the capacity procurement should be scalable and work for all entities, regardless of
  - LSE size
  - Number of LSEs in the ISO footprint

Next steps

- May 8, 2017 – Stakeholder meeting
  - May 22, 2017 – Comments due
- Complete stakeholder process by Q3 2017
- Board Approval – Q2 2018