Commitment Cost Enhancements Phase 3 Revised Straw Proposal

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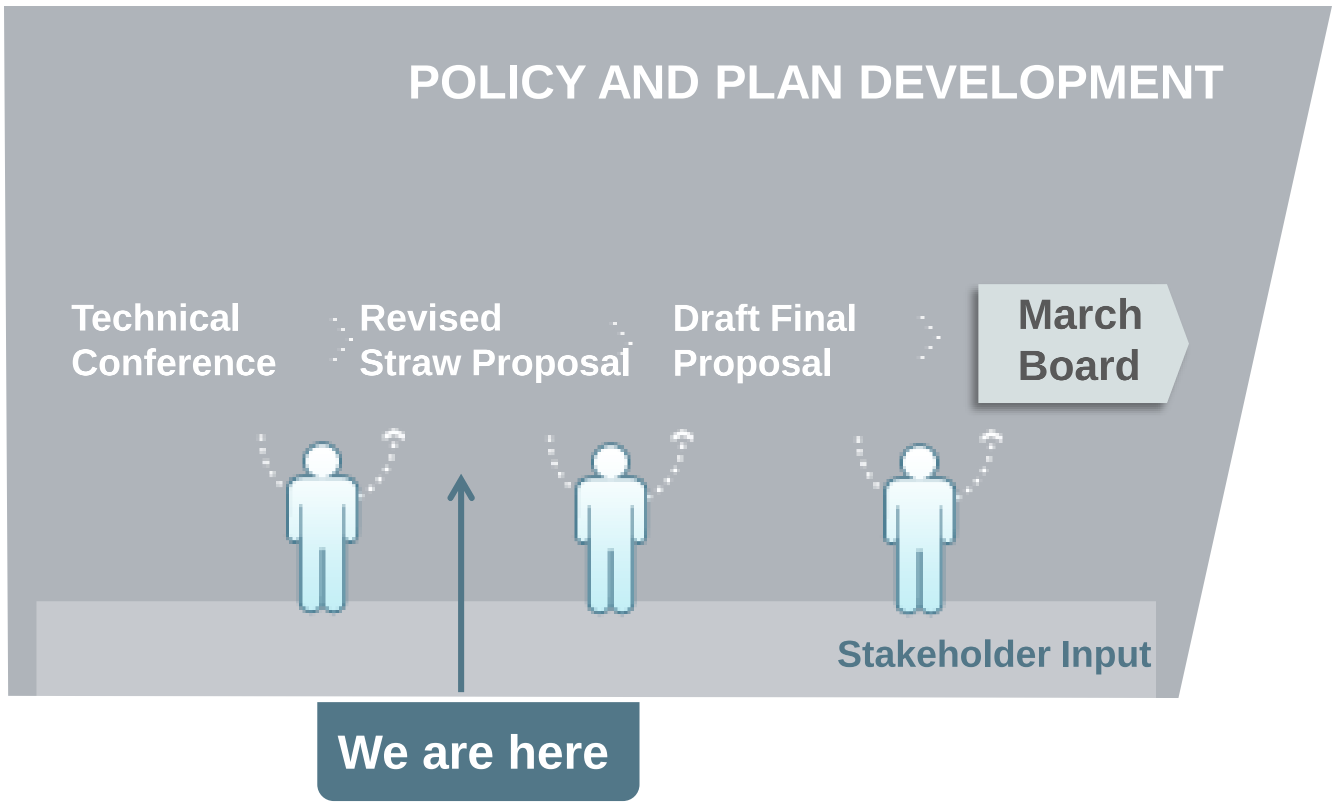
ISO Policy Initiative Stakeholder Process



Background on CCE3

- CCE2 postponed the development of an opportunity cost for use-limited resources to this initiative.
  - Allow sufficient time for vetting methodology and business rules.

- New scope includes revised definition of “use-limited”
  - Addressing FERCs’ concerns as noted in FERC order on CCE2
  - March 2016 Board of Governors with Fall 2016 implementation

- Presentation will primarily focus on clarifications and changes made to straw proposal

Overview of CCE3

- Upon completion of use-limited registration process, the ISO will verify the resource is eligible for an opportunity cost
  - Resource must qualify based on revised definition of use-limited and provide all required documentation
  - Limitations will be evaluated to determine if resource can be modeled and be eligible for a calculated opportunity cost, or cannot be modeled and be eligible for a negotiated opportunity cost

- Limitations will be in terms of starts, run-hours, and/or output.

Overview of CCE3 - continued

- Modeled resources will be eligible for a calculated opportunity costs
  - Resource specific, optimization based model
  - Model at least the applicable time horizon of the limitation
  - Monthly updates
- SCs of resources with negotiated opportunity costs will provide the ISO:
  - Proposed opportunity costs
  - Methodology used to determine proposed opportunity costs
  - Update values throughout the year as negotiated
- Opportunity costs can be reflected in start-up cost bid caps, minimum load cost bid caps, and/or DEBs.

Use-limited definition – FERC order on CCE2

FERC order	ISO's response
". . . not sufficiently explained or justified the potential effect on market participants of changing from a definition of use-limited resource to use-limited capacity."	Changing the definition from "resource" to "capacity" was to accommodate resources that may not be use-limited year round or only have a portion of the capacity use-limited. After further reflection, the reference to "capacity" is not necessary. This initiative will retain the original language that defined resources as use-limited.
". . . should be able to identify a list of limitations to be included in the tariff, and it must do so in order for the Commission to understand how such a revision to the definition of use-limited resources impacts the market participants. . ."	The revised definition will identify the limitations as limits on starts, run-hours, and/or output.
"CAISO fails to include in its proposed definition any specific examples of the statutes, regulations, or ordinances it will honor or the criteria it will use in making such determinations. Although an exhaustive list of specific regulations in the tariff may not be feasible, these examples are necessary"	The definition will include a non–exhaustive list of specific examples which, to the ISO's understanding, captures the majority of restrictions.

Use-limited definition – FERC order on CCE2

FERC order	ISO's response
"... to the extent certain resources are use-limited by default, it is unclear why they are not included in the definition."	All resources will be required to register for use-limited status and there will no longer be a subset receiving default designation.
" . . . failed to discuss in sufficient detail the interaction of contractual limitations with economic and non-economic limitations. "	Additional discussion in regards to contractual limitations will be included in the stakeholder process as will be discussed in the transmittal letter in support of the revised definition. The ISO will also be eliminating the term "non-economic" from the definition.
" . . .removed clarifying language from the tariff regarding the use-limited registration process without any justification. . ."	FERC approved RSI1 tariff language, which included details regarding the registration process, as will the tariff filing for CCE3.

Use-limited definition – redefined per CCE3

Use-limited: *"A resource with one or more limitation on starts, run-hours, and/or output due to environmental restrictions or design considerations, which cannot be optimally dispatched over the limitation horizon without consideration of opportunity costs.*

Acceptable environmental restrictions are those that are imposed by regulatory bodies, legislation, or courts. A non-exhaustive list of acceptable environmental restrictions include: limits on emissions, water use restrictions, or run-hour limitations in operating permits. Restrictions with soft caps that allow the resource to increase production above the soft cap through purchasing additional compliance instruments are not acceptable restrictions.

Acceptable design considerations are those that are due to physical equipment limitations. A non-exhaustive list of acceptable design considerations include: restrictions documented in original equipment manufacturer recommendations or bulletins, or limiting equipment such as storage capability for hydroelectric generating resources."

Use-limited definition – contractual limitations

- ISO retains the current position that contractual limitations will not qualify a resource for use-limited status and be eligible for an opportunity cost.
  - If resource is subject to other restrictions, which do qualify the resource for use-limited status, those limitations will be the basis for determining an opportunity cost.
- FERC order on CCE2 did not oppose the ISO's position, but stated there was a lack of discussion and supporting justification for the ISO's position.
- Incentive to include these types of restrictions in contracts, and therefore influence resources' commitment costs and/or DEB.
- Bidding rules initiative will potentially enable SCs a way to reflect contractual limitations in the market without directly impacting the resources' commitment costs and/or DEB.

Use-limited definition – default designation

- The ISO is taking this opportunity re-define the term use-limited, and develop its applicability, solely focused on the eligibility for an opportunity cost.

- Per current tariff, hydro, proxy demand response, reliability demand response, and participating load, default to use-limited status

- ISO is now proposing to no longer have resources with default use-limited status.
  - They can apply for use-limited status through the registration process.
  - Those currently default use-limited will continue to be exempt from bid insertion.

Use-limited registration process - overview

- Scheduling coordinators will be required to submit supporting documentation during the registration process.

- ISO will verify documentation supports use-limited status and identified limitations
  - ISO may revoke use-limited status if, upon review, documentation does not support eligibility for status

- Evaluate limitations to determine the resource will have negotiated or calculated opportunity costs.

Use-limited registration process – changes to straw proposal

- ISO will verify and validate:
  - Limitations are properly supported by documentation
  - Documentation qualifies resource for use-limited status
  - May request additional information from scheduling coordinator
  - May revoke use-limited status if not properly supported
- Maintaining use-limited status:
  - If no changes to limitations or documentation, submit affidavit in lieu of resubmitting supporting documentation.
    - Attest the limitations and all supporting documentation continues to qualify the resource for use-limited status for upcoming year, is accurate, and continues to be supported by documentation.
  - If there are changes, go through the registration process and provide updated documentation.
    - Registration process is needed to capture changes in data systems

Use-limited registration process – new resources

- SCs seeking use-limited status for new or existing resources for the first time:
  - Register and provide documentation in sufficient time for the ISO to validate documentation and negotiate or calculate opportunity costs prior to the effective date of the limitation.
  - Failure to provide sufficient time may result in not having an opportunity cost upon effective date
- Resources without one year’s worth of LMPs can remain on the registered cost option
  - After one year, ISO will commence negotiation or modeling process
  - Required to maintain use-limited status

Daily limitations

- Straw proposal set the opportunity cost for daily limitations as the maximum calculated daily opportunity cost of all days within the month.

- Prevalence of daily limitations are minimal.
  - Current daily limitations generally are in conjunction with a limitation of the same type over a longer horizon (e.g., daily and monthly start limitation)
    - Longer horizon limitation tends to be more restrictive
    - Still be eligible for a start-up opportunity cost

- ISO is now proposing opportunity costs for daily limitations will be addressed through future enhancements
  - Extend the real time look out horizon

- Still qualify for use-limited status if a medium, short, or fast start resource.
  - SCs currently have the ability to manage daily limitations in the market
  - Operators currently have tools to manage daily limitations

Opportunity cost model - methodology

- ISO previously developed and tested two prototype models, and were presented at the technical workshop.
- ISO is now proposing to implement the optimization based approach
  - Additional testing indicated results diverge, specifically when resources have more than one constraint
  - More accurately enforces limitations simultaneously
  - Minimizes post processing steps, e.g. nested limitations
- Seeking to maintain monthly updates
  - Frequency of updates is a driving factor for effectiveness of opportunity cost.

Opportunity cost model - estimated LMPs

- Straw proposal included a future power price conversion factor to adjust historical implied heat rates.
  - account for anticipated market changes not reflected in prices of natural gas futures (e.g., lower hydro conditions relative to historical year).
  - only increase estimated LMPs with a lower bound of 1

- Conversion factor will now increase *or decrease* estimated LMPs
  - Removing the lower bound of 1
  - Purpose is to account for anticipated market changes, which may be lower LMPs relative to historical year
  - Lower bound of 1 does not necessarily result in a higher opportunity cost, e.g., limitation on starts

Opportunity cost model – reserve margin

- Several stakeholders commented on reasons to include a margin of error term or reserve margin in the opportunity cost model.
  - Both ultimately result in a higher opportunity cost

- The ISO is now proposing to run the model with a 10% reserve margin on the limitations.
  - Run the model with 90% of the limitation, or 90% of the remaining limitation during monthly updates.
  - Determine a more appropriate error term based on more of a sensitivity analysis as opposed to a fixed adder.

Opportunity cost model – scheduled updates

- The ISO is proposing to re-run the model and update opportunity costs monthly.
  - Each model run will generate opportunity costs valid for the remaining calendar year.

- Limits used in the model re-runs as the year progresses will reflect actual usage of the resource
  - e.g., 90% of annual start limitation minus actual starts already incurred

- In the event the ISO is unable to update prior to the upcoming month, the most recent previously calculated opportunity cost for the upcoming month will be valid until an updated value is provided.
  - e.g., use the advisory opportunity cost for June that was generated for the May update.

Opportunity cost model – minor adjustments

- Dispute and resolution process
  - In the even the SC with a resource that has a calculated opportunity cost does not agree with the opportunity cost ,they can submit a request to the ISO to receive a negotiated opportunity cost.
  - There must be a significant factor, that cannot be modeled, and materially impacts the calculated opportunity cost, for the ISO to accept the request.
- Rolling limitations
  - Model will include at least 2 of the relevant 12 time horizons for resources with rolling annual limitations.
  - ISO will include M-11 to M and M to M+11

Negotiation process

- Resources that cannot be modeled will have negotiated opportunity cost(s).

- Negotiation process will include the frequency of updates.
  - To initiate update, SC will contact the ISO

- The ISO may offer a reasonable interim opportunity cost value in the event negotiations may not be finalized in time.
  - ISO has to agree the opportunity cost is non-zero
  - Negotiations will continue until finalized

- If a SC and the CAISO cannot reach mutual agreement on an opportunity cost to be used, the SC may file at FERC pursuant to Section 205 of the Federal Power Act for approval of a rate.

Outage cards

- Short term use-limited reached outage card will remain in place for a transition period.
  - ISO does not want to put a definitive sunset date on the outage card at this time.

- Discussion of use-limited reached outage card has migrated to RSI2.

Next steps

- Please submit written comments by November 23, 2015 to initiativecomments@caiso.com

- Draft Final Proposal will be posted early 2016.

- Enjoy the holiday season!