



Bidding Rules Enhancements, Correct Inefficient Accounting of Minimum Load Costs after Pmin rerate

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Market Design and Regulatory Policy

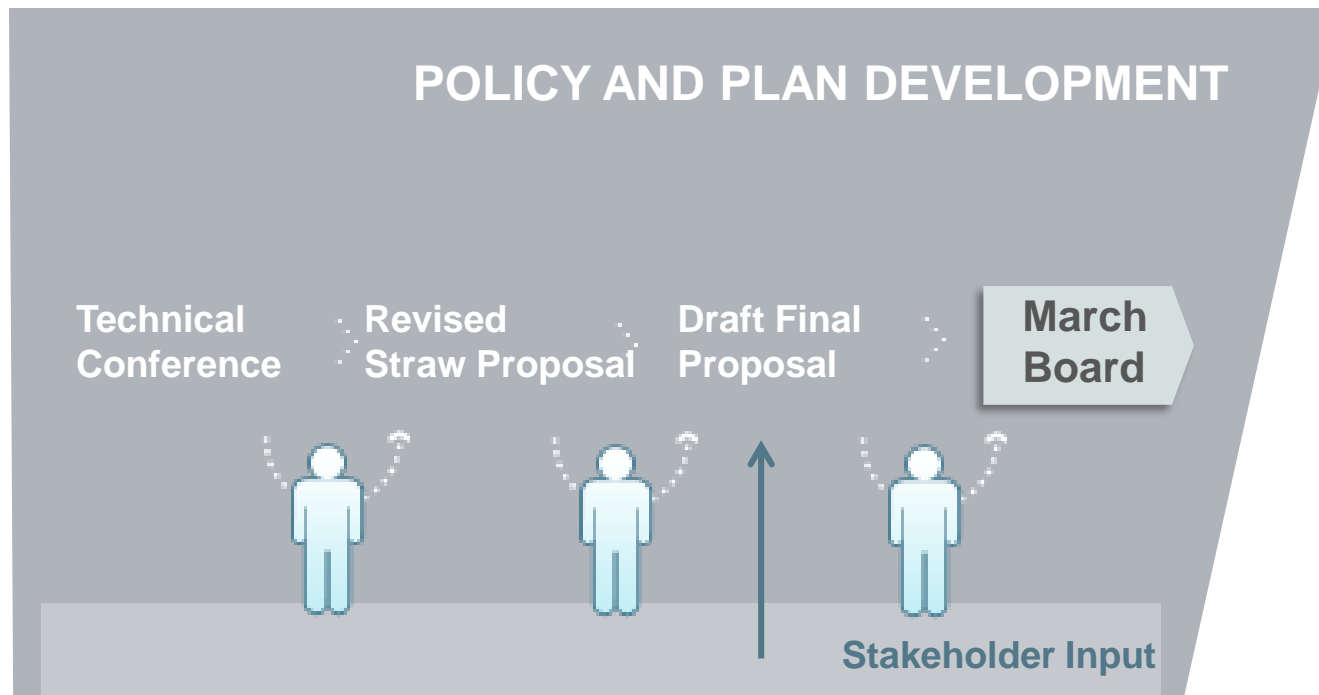
January 14, 2016



January 14 stakeholder call agenda

Time	Topic	Presenter
10:00 – 10:05	Introduction	Kim Perez
10:05 – 10:10	Updated schedule	Kim Perez
10:10 – 10:15	Overview	Cathleen Colbert
10:15 – 10:45	Review Operational Need	Cathleen Colbert
10:45 - 11:15	ISO's Proposal	Cathleen Colbert
11:15 – 11:30	Next Steps	Cathleen Colbert

ISO Policy Initiative Stakeholder Process



We are here

Stakeholder schedule update

Date	Milestone
December 3, 2014	Issue paper posted
December 10, 2014	Stakeholder call
December 30, 2014	Stakeholder comments due
April 22, 2015	Straw proposal posted
April 29, 2015	Stakeholder meeting
May 13, 2015	Stakeholder comments due
November 23, 2015	Revised straw proposal posted
December 03, 2015	Stakeholder meeting
December 17, 2015	Stakeholder comments due
January 08, 2016*	Draft final proposal
January 14, 2016	Stakeholder call
January 20, 2016	Comments due
February 03, 2016 February 04, 2016	Board of Governors Meeting

Draft Final Proposal - Overview

- For operational reasons a resource may need to increase the minimum load at which it can operate.
 - The revised minimum load energy is used to solve the day-ahead and real-time markets.
 - However, the cost change associated with increasing the minimum load to the revised minimum load energy level is not captured in today's market.
 - Instead, the market sees the resource as more economic than its actual costs potentially displacing more economic resources and not compensating resources for all of their costs.
- ISO proposes to capture the cost changes from increasing minimum load energy in its market by adding the default energy bid costs associated with the additional energy in a resource's revised minimum load energy to the bid-in minimum load costs.

Review Operational Need

Cathleen Colbert

Current market inefficiency when Pmin temporarily increased, i.e. “rerated”

- Current methodology:
 - Resources temporarily increase Pmin through outage management system
 - But resource cannot increase minimum load costs (MLC) beyond applicable cap (125% of calculated costs under proxy cost option)
 - Model and settle resource based on its bid-in MLC not accounting for additional costs due to rerated energy
- Results in inefficiencies:
 - Market inefficiently commits resources because \$/MWh costs it sees for minimum load output is too low
 - Resources potentially do not recover costs through bid cost recovery

ISO anticipates increased use of rerates by MSG resources due to variation in output levels

- MSG resources' output is influenced by various factors with the significant impact from changes in ambient temperature.
- The ISO requires resources to register a single Pmin and Pmax value in its Master File, however MSG configurations may not have a constant Pmin or Pmax value for all hours.
- The ISO anticipates resources may use its outage system to adjust Pmin and Pmax values for hours based on actual operating conditions to reflect hourly variation.

Illustration of temperature impacts on MSG resources' output levels

- In this example,
 - The lower configuration (C1) pmax will increase during hours with lower temperatures
 - The increased output of C1 results in the higher configuration (C2)'s pmin and pmax levels increasing
 - To reflect the actual operating capabilities of the specific hour:
 - HE 0700: A Pmin derate would be submitted
 - HE 1600: Pmax derate for C1 and C2 would be submitted



ISO's current practice for modelling and settling resources with Pmin rerates

Undervalues the total cost of Resource B after its Pmin rerate, this results in potentially displacing a more economic resource and insufficient cost recovery for the resource.

Data	Units	Formula	Resource A	Resource B	Resource B w/ Pmin rerate		
					Current	Scale MLC	Use DEB
[A] Pmin	MW		100	100	185	185	185
[B] Pmax	MW		300	300	300	300	300
[C] Capacity above Pmin	MW	$[B] - [A]$	200	200	115	115	115
[D] Mn load cost	per hour		\$7,000	\$7,000	\$7,000	\$12,950	\$11,250
[E] Bid cost	per MWh		\$30	\$50	\$50	\$50	\$50
[F] Mn load cost / MWh	per MWh	$[D] / [A]$	\$70	\$70	\$37.84	\$70	\$60.81
[G] Mn load cost / hour			\$7,000	\$7,000	\$7,000	\$12,950	\$11,250
[H] Total bid cost / hour		$[C] \times [E]$	\$6,000	\$10,000	\$5,750	\$5,750	\$5,750
[I] Total cost		$[G] + [H]$	\$13,000	\$17,000	\$12,750	\$18,700	\$17,000



ISO's proposal

Cathleen Colbert

ISO's Proposal – Revise tariff for acceptable uses for submitting Pmin rerates

- A Pmin rerate submitted through its outage management system must be operationally based therefore not due to economic concerns.
- ISO proposes to revise tariff to provide definition of acceptable uses for Pmin rerates.
- Acceptable uses include:
 - Changes due to ambient temperature
 - Outages of mechanical equipment
 - Managing of environmental limitations

ISO's proposal – Adjust minimum load costs

- Propose to adjust the minimum load costs (MLC) to reflect change to commitment costs associated with additional costs due to the rerated Pmin level
- Replace bid-in MLC with a revised MLC (MLC') in market systems and settlements including the additional costs
- ISO's proposal to use the MLC' results in two market improvements in the event of a Pmin rerate:
 - ISO solves for an efficient commitment solution
 - ISO settles bid cost recovery resulting in sufficient cost recovery

ISO's proposal – default energy bid integration

- Integrate the additional costs of a resource's or MSG configuration's rerated Pmin into its minimum load costs
- Use the costs reflected in the default energy bid (DEB) to reflect the change to commitment costs associated with additional costs due to the rerated Pmin level

$$MLC' = MLC + \int_{P_{min}}^{P_{min}'} DEB(p) dp$$

MLC'	Minimum load cost of the re-rated Pmin level
MLC	Minimum load cost of the original bid-in minimum load cost
$DEB(p)$	Default energy bid cost associated with the actual cost of re-rating a resource or MSG configuration's Pmin
dp	Change in energy

ISO's proposed practice for modelling and settling resources with Pmin rerates

ISO's proposal adjusts the minimum load cost based on the DEB costs which resolves the inefficiency since the resource's actual cost will now be modelled and settled.

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Next steps

- Stakeholders are asked to submit written comments by **January 20, 2015** to InitiativeComments@caiso.com
- ISO's proposal will be presented to the Board of Governors at the February 2016 meeting.