



California ISO

**Bid Cost Recovery Enhancements  
Draft Final Proposal**

**February 3, 2017**



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**Revision History**

<b>Date</b>	<b>Revision</b>
02/03/2017	Initial Release

## 1. Executive summary

This paper describes the ISO's evaluation of potential enhancements to its current bid cost recovery (BCR) methodology. Bid cost recovery payments ensure resources scheduled in the market recover their costs when the market does not provide sufficient revenues to do so. This daily calculation includes bids for start-up, minimum load, ancillary services, residual unit commitment availability, and day-ahead and real-time energy costs. Bid cost recovery payments are funded through uplift costs, which the ISO allocates to market participants.

This initiative initially explored three elements of bid cost recovery: (1) basing real-time market bid cost recovery uplift allocation on deviations, (2) eliminating the exemption for load from paying bid cost recovery uplift to the extent that it self-schedules generation in the integrated forward market, and (3) dividing resource start-up costs over the total run time of the resource for resources operating over multiple days in the integrated forward market.

Of the three elements initially explored, the ISO only has one proposal: retain the current methodology regarding start-up costs in the bid cost recovery payment calculation. The ISO has suspended activity related to the real-time market bid cost recovery uplift allocation and activity related to the integrated forward market self-schedules exemption.

On January 19, 2017, the Federal Energy Regulatory Commission (FERC) issued a Notice of Proposed Rulemaking that proposes, among other things, to require each RTO/ISO that currently allocates the costs of real-time uplift due to deviations to follow certain practices when allocating such costs. FERC proposes that each RTO/ISO should allocate such real-time uplift costs only to those market participants whose transactions are reasonably expected to have caused the real-time uplift costs. Given that the outcome of this rulemaking may directly impact any approach for the allocation of real-time bid cost recovery in the ISO's markets, the ISO believes it is prudent to suspend this element of the initiative until FERC adopts a final rule or takes other action in connection with this rulemaking.

This initiative also explored eliminating the exemption for load from paying bid cost recovery uplift to the extent that it self-schedules generation. The ISO has elected to suspend this element of bid cost recovery reform until it takes up issues involving the allocation of real-time bid cost recovery pursuant to any final rule adopted in connection with FERC's Notice of Proposed Rulemaking regarding real-time uplift.

Finally, this initiative explored dividing resource start-up costs over the total run time of the resource for resources operating over multiple days. In its draft final proposal, the ISO finds the potential benefits minimal in comparison to the costs that would be incurred to modify existing settlement systems and processes for both the ISO and market participants. Therefore, the ISO proposes to retain the current methodology regarding start-up costs in the bid cost recovery payment calculation.

## 2. Changes to this proposal

The modifications below consider stakeholder feedback on the straw proposal and future action by the Federal Energy Regulatory Commission:

1. The ISO removed the proposal to base real-time market bid cost recovery uplift allocation on deviations.
2. The ISO removed the proposal to eliminate the exemption for load from paying bid cost recovery uplift to the extent that it self-schedules generation in the integrated forward market.
3. The ISO fine-tuned its analysis in **Section 5.1.3**. The previous version of this proposal reported the maximum benefit associated with this policy as \$8.15 million, which is the total amount of bid cost recovery received by resources operating over the day boundary over the study period. Since then, we fine-tuned the analysis to focus on the portion of that bid cost recovery payment associated with the resource's start-up cost since this is the revenue actually impacted by this initiative.

### 3. Stakeholder engagement

The schedule for stakeholder engagement is provided below.

Those policy issues that this initiative addresses that involve changes to the real-time market bid cost recovery allocation are within the scope of and would affect the ISO's Energy Imbalance Market, if pursued. If the ISO proposes changes to the real-time market bid cost recovery allocation, the EIM Governing Body will have an advisory role in approving any such policy changes resulting from this initiative.

At this time, the ISO is not proposing any changes to the real-time market bid cost recovery allocation, and therefore the EIM Governing Body does not have an advisory role.

Date	Event
11/24/2015	Issue paper
12/21/2015	Stakeholder conference call
01/15/2015	Stakeholder comments due on issue paper
06/03/2016	Straw proposal posted
06/21/2016	Stakeholder conference call
06/28/2016	Stakeholder comments due on straw proposal
02/03/2017	Draft final proposal posted

## 4. Background

Bid cost recovery (BCR) payments ensure resources scheduled in the market recover their costs when the market does not provide sufficient revenues to do so. This daily calculation includes bids for start-up, minimum load, ancillary services, transitions, residual unit commitment availability, and day-ahead and real-time energy costs. Costs of these BCR payments are funded through uplift costs allocated to market participants.

In September 2006 FERC (Federal Energy Regulatory Commission) conditionally accepted the ISO's proposal to implement the nodal market design, with a directive to implement certain additional market enhancements within three years of implementation. On April 1, 2009, the ISO commenced operation of locational marginal price based day-ahead and real-time markets. The ISO has since designed and implemented most of those additional elements along with several other significant market enhancements to address evolving needs and further improve the overall market design. A **two-tier allocation of real-time bid cost recovery** uplift charges and **bid cost recovery for resources operating over multiple days** are the two remaining market enhancements from the original FERC order.

In March 2012 and again in March 2014, the ISO filed requested an extension of time with FERC on the two bid cost recovery items discussed above. In both instances, the ISO had recently implemented significant market modifications and argued for additional time to accurately evaluate a real-time two-tier uplift allocation. In addition, the ISO continued to find the impact of units operating across multiple days to be minimal (2-3 percent of all resource commitments), and stakeholders rated this concern as a low priority. FERC granted the ISO an extension of time until April, 2014, and then subsequently until April 2017.<sup>1</sup>

On January 19, 2017, the Federal Energy Regulatory Commission (FERC) issued a Notice of Proposed Rulemaking that proposes, among other things, to require each RTO/ISO that currently allocates the costs of real-time uplift due to deviations to follow certain practices when allocating such costs. FERC proposes that each RTO/ISO should allocate such real-time uplift costs only to those market participants whose transactions are reasonably expected to have caused the real-time uplift costs. Given that the outcome of this rulemaking may directly impact any approach for the allocation of real-time bid cost recovery in the ISO's markets, the ISO believes it is prudent to suspend exploring **two-tier allocation of real-time bid cost recovery** until FERC adopts a final rule or takes other action in connection with this rulemaking.

This proposal addresses only the **bid cost recovery for resources operating over multiple days** topic in Section 5.1.

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<sup>1</sup> See September 2014 FERC Order, <http://www.ferc.gov/CalendarFiles/20140905162300-ER06-615-000.pdf>



## 5. Proposal

In this section, we explore dividing resource start-up costs over the total run time of the resource for resources operating over multiple days to reduce bid cost recovery payments to these resources; and

### 5.1. IFM bid cost recovery for resources operating over multiple days

#### 5.1.1. Discussion

Integrated forward market bid cost recovery considers eligible costs<sup>2</sup> and revenues for resources committed through the integrated forward market over a single trade date. If the revenues earned within the trade date are not sufficient to cover a resource's bid costs, the resource is eligible for a bid cost recovery payment to make the resource whole.

The payments are funded through uplift charges, which are allocated using a two-tiered system. A resource's eligibility for bid cost recovery is determined based on the resource's bidding, commitment, and dispatch during a given day. Bid cost recovery ensures a resource is made whole within the trade date, therefore bid cost recovery payments are calculated daily. If a resource operates across different trade dates, two bid cost recovery calculations are conducted for the same commitment period; each daily calculation only considers the costs and revenues incurred during hours within the trade date for which the bid cost recovery calculation is being conducted.

Most costs considered in the bid cost recovery calculation and all revenues, are incurred hourly or more granularly. Therefore conducting a daily calculation based on hourly costs and revenues is an accurate representation of a resource's overall revenue shortfall. The one exception is start-up costs, which are incurred once for every commitment period. The ISO currently does not spread the start-up costs over multiple hours or days; nor does it account for revenues outside of the 24 hour period in which a unit was committed and could be used to offset the one-time start-up cost incurred for that commitment period. Therefore, the current consideration of start-up costs in the bid cost recovery calculation could result in inflated payments, and thus uplift charges.

For example, consider a resource that is committed in hour 23 of trade day 1, and operates into hour 2 of the following trade day, trade day two. The resource is dispatched and priced such that it receives \$7,500 in revenues for hours 23 through 24 on trade day one, and \$5,500 in revenues for hours 1 through 2 on trade day two (a total of \$13,000 of revenues over the commitment period). The resource incurs a \$2,000 minimum load cost in each hour (a total of

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<sup>2</sup> Costs include those for start-up, minimum load, transitions, energy, and ancillary services. Commitment costs are only considered for resources which are not self-scheduled or self-committed by the market participant.

\$8,000 of minimum load cost over the commitment period). The resource also has a start-up cost of \$6,000.

Currently, the bid cost recovery calculation would apply the minimum load cost of \$2,000/hr to each hour the resource is committed, whereas the start-up cost, \$6,000/start, is only applied to the day in which the market committed the resource. On trade day one, the current bid cost recovery calculation would show \$10,000 in costs, which are partially offset by the \$7,500 in energy revenues. The resource would receive a bid cost recovery payment of \$2,500 on trade day one. On trade day two, the current bid cost recovery calculation would show \$4,000 in costs which are more than fully offset by the \$5,500 of energy revenues, thus no bid cost recovery payment. In trade day two the resource profited \$1,500 but the additional revenues earned were not considered as offsetting revenues towards the start-up costs incurred on trade day one.

<b>Current cost consideration and bid cost recovery calculation</b>				
<b>Trade day</b>	<b>1</b>		<b>2</b>	
Trade hour	23	24	1	2
Energy award	100	100	100	100
Energy LMP	\$40	\$35	\$30	\$25
Revenues	\$4,000	\$3,500	\$3,000	\$2,500
<b>Total Revenues</b>	\$7,500		\$5,500	
Minimum load cost	\$2,000	\$2,000	\$2,000	\$2,000
Start-up cost	\$6,000		\$0	
<b>Total Costs</b>	\$10,000		\$4,000	
<b>Bid cost recovery per day</b>	<b>\$2,500</b>		<b>\$0</b>	

Shown below, over the duration of the operation of the resource, the start-up cost in the first day is fully covered by energy market revenues. The resource still receives bid cost recovery, but only on the days where the revenues did not cover the portion of the start-up cost distributed to that day when accounting for all hours of operation. This methodology reduces the total bid cost recovery uplift.

<b>Potential cost consideration and bid cost recovery calculation</b>				
<b>Trade day</b>	<b>1</b>		<b>2</b>	
Trade hour	23	24	1	2
Energy award	100	100	100	100
Energy LMP	\$40	\$35	\$30	\$25
Revenues	\$4,000	\$3,500	\$3,000	\$2,500
<b>Total Revenue</b>	\$7,500		\$5,500	
Minimum load cost	\$2,000	\$2,000	\$2,000	\$2,000
Start-up cost	\$6,000			
Start-up cost divided over the day*	\$3,000		\$3,000	
<b>Total Costs</b>	\$7,000		\$7,000	
<b>Bid cost recovery per day</b>	<b>\$0</b>		<b>\$1,500</b>	

\*The start-up cost associated with a given day will be the start-up cost of the resource divided by the total number of intervals of operation multiplied by the number of intervals of operation in a given day.

$$StartUpCost_{Day,Resource} = \frac{StartUpCost_{Resource}}{TotalIntervalsOfOperation} \times IntervalsOfOperation_{Day}$$

The example above is calculated as follows:

$$StartUpCost_{1,Resource} = \frac{\$6,000}{4} \times 2 = \$3,000$$

$$StartUpCost_{2,Resource} = \frac{\$6,000}{4} \times 2 = \$3,000$$

If the resource had operated for three intervals in the second day (rather than just the two shown), the denominator would have been five and the multiplier on day two would have been three, thus yielding a cost of  $\frac{\$6,000}{5} \times 2 = \$2,400$  in the first day and  $\frac{\$6,000}{5} \times 3 = \$3,600$  in the second day.

### 5.1.2. Issue

The ISO divides start-up costs only to hours of the day in which the market commits the resource which can lead to resources receiving bid cost recovery payments even if the start-up costs were fully covered by energy market revenues over the duration of the commitment.

### 5.1.3. Analysis

We assessed the potential benefits associated with a change in bid cost recovery payment calculations. From May 2014 through April 2016, we analyzed the amount of bid cost recovery payments made to resources which operated across two trade dates limited to each resource's startup cost on those dates. The analysis shows \$2.93<sup>3</sup> million of bid cost recovery payments associated with start-up costs (representing 1.5% percent of total integrated forward market and real-time market bid cost recovery payments over the two year period) were made to resources which operated across two trade dates. This represents the maximum potential benefit gained with a modification to the payment calculation.

Most of the \$2.93 million of uplift costs were paid to a handful of resources. **Figure 1** below shows the amount of bid cost recovery associated with start-up costs paid to each resource that operated across two trade dates between May 2014 and April 2016. Each point is a unique

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<sup>3</sup> The previous version of this proposal reported this as \$8.15 million, which is the total amount of bid cost recovery received by resources operating over the day boundary over the study period. Since then, we fine-tuned the analysis to focus on the portion of that bid cost recovery payment associated with the resource's start-up cost since this is the revenue actually impacted by this initiative.

resource that received the uplift payment associated with start-up cost shown on the vertical axis over the two year period.

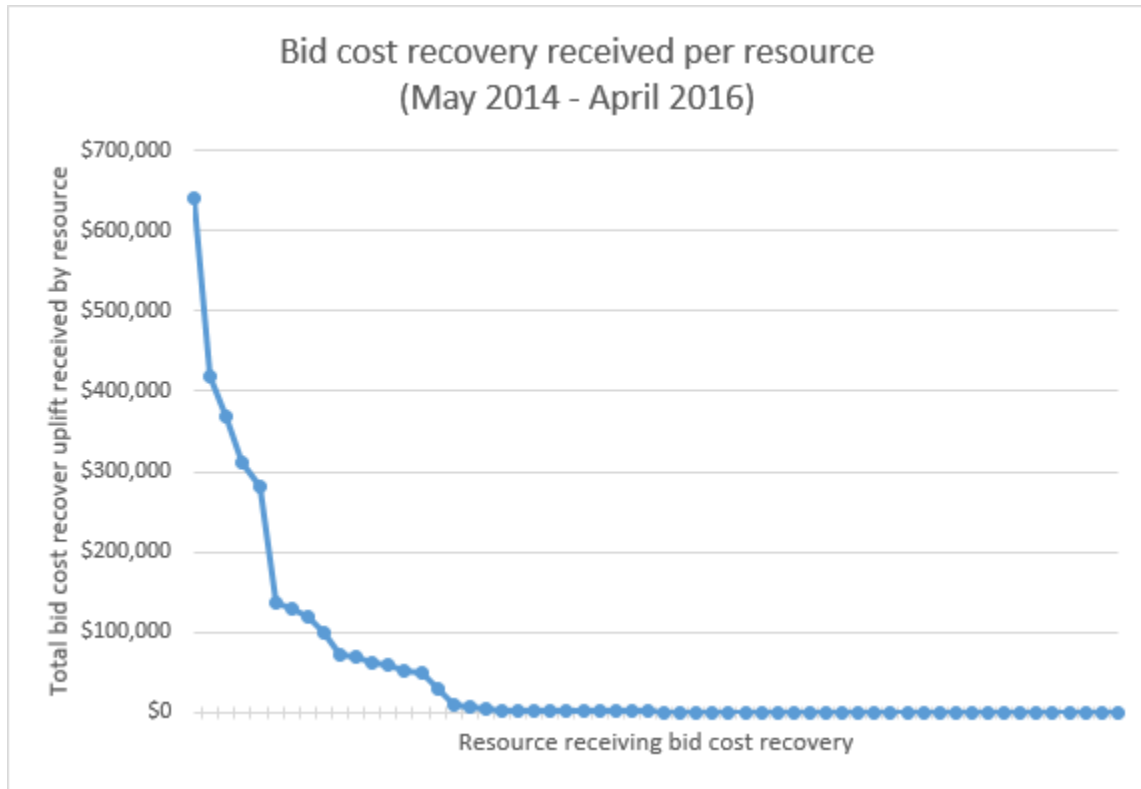


Figure 1: Bid cost recovery uplift associated with start-up costs received per resource between May 2014 and April 2016.

As shown, there are eight resources that collected more than \$100,000 over the two year period. These eight resources collected over 82% of the bid cost recovery uplift associated with start-up costs of resources operating over multiple days. Seven of these eight resources, accounting for approximately \$1.99 million of the \$2.93 million in bid cost recovery, utilize once-through-cooling technology and are currently scheduled for retirement in the near future to comply with the California State Water Resources Control Board’s approved once-through-cooling policy.<sup>4</sup> Overall, 73% of the \$2.93 million in bid cost recovery is paid to resources that utilize once-through-cooling technology.

5.1.4. Proposal

We considered distributing resource start-up costs evenly across the hours of the unit commitment period to enable the bid cost recovery calculation to account for revenues incurred

<sup>4</sup> See California Energy Commission – Tracking Progress, Once-Through Cooling Phase-Out. [http://www.energy.ca.gov/renewables/tracking\\_progress/documents/once\\_through\\_cooling.pdf](http://www.energy.ca.gov/renewables/tracking_progress/documents/once_through_cooling.pdf)

in the second trade date of a commitment period as revenues eligible to cover start-up costs. This modification could reduce bid cost recovery payments and uplift costs to the extent current bid cost recovery payments are inflated by the current consideration of start-up costs.

The analysis shows \$2.93 million of bid cost recovery payments associated with start-up costs (representing 1.5% percent of total integrated forward market and real-time market bid cost recovery payments over the two year period) were made to resources which operated across two trade dates. Overall, 73% of the \$2.93 million in bid cost recovery is paid to resources that utilize once-through-cooling technology and are currently scheduled for retirement in the near future to comply with the California State Water Resources Control Board's approved once-through-cooling policy.

As expressed in comments on the straw proposal, stakeholders agree that the ISO should retain the current consideration of start-up costs in the bid cost recovery payment calculation because the potential benefits of a policy change are small.

The ISO finds the potential benefits minimal in comparison to the costs that would be incurred to modify existing systems/processes for both the ISO and market participants. Therefore, at this time, the ISO proposes to retain the current consideration of start-up costs in the bid cost recovery payment calculation.

The ISO will ask the Federal Energy Regulatory Commission to relieve it of its prior obligation to change its current consideration of start-up costs in the bid cost recovery payment calculation.

## 6. Next steps

The ISO will discuss the issue paper with stakeholders during a teleconference to be held on February 10, 2017. Stakeholders should submit written comments by February 17, 2017 to [InitiativeComments@caiso.com](mailto:InitiativeComments@caiso.com).

After receiving final stakeholder feedback, the ISO will begin its filing process with the Federal Energy Regulatory Commission.