Declined Real-Time Import and Export Bids

Department of Market Monitoring

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Summary

Bids for imports and exports of real-time energy that are pre-dispatched by the CAISO but then not delivered (or "declined") by market participants have resulted in operational problems and market inefficiencies under the CAISO's current market design. Under MRTU, such declines could pose additional problems. This paper summarizes various problems posed by declined bids, and presents several options for addressing these problems by deterring declined pre-dispatches through financial charges or penalties. This paper was prepared by the CAISO's Department of Market Monitoring (DMM) to provide a background and framework for a stakeholder process to assess options for addressing the problems associated with declined pre-dispatched bids.

I. Background

Under both the CAISO's current market design and MRTU, market participants may submit bids in the real-time market to provide incremental energy (as imports) or to purchase decremental energy (as exports).[1] The CAISO "pre-dispatches" these inter-tie bids 45 minutes before each operating hour.[2] Upon receiving a pre-dispatch from the CAISO, market participants inform the CAISO whether they intend to deliver on or "accept" a pre-dispatched bid or whether they will not deliver on or "decline" a dispatch.[3]

To complete the transaction after acceptance of a pre-dispatched bid, market participants must submit e-tag information prior to the operating hour, listing the energy source or sink and associated transmission capacity. The timing restrictions of this pre-dispatch process are designed to allow the CAISO and other control area operators sufficient time to check and manage final scheduled flows between neighboring control areas, while still allowing market participants sufficient time to finalize the necessary arrangements for energy and transmission in adjacent control areas.

Under both the current and MRTU market software, import and export bids submitted to the real-time market are pre-dispatched based on the results of an optimization. This optimization

[1] These consist of "Supplemental Energy Bids" in the current market design and "Real-Time Economic Bids for Supply" or "Real-Time Economic Bids for Demand" in MRTU that designate an inter-tie.

[2] With the exception of dynamically-scheduled resources, which are dispatched on a 5-minute basis throughout the operating hour.

[3] In both the current and MRTU markets, the CAISO pre-dispatches inter-tie bids via its Automated Dispatch System (ADS). In the current market, participants have five minutes to accept or decline these pre-dispatch instructions through ADS, although CAISO operators can manually indicate that a dispatch has been accepted until 30 minutes prior to the operating hour. Under MRTU, it has been proposed to eliminate the decline feature in ADS and for the CAISO to determine whether a pre-dispatched bid has been accepted or declined based on e-tag information.

considers both import and export bids at the inter-ties along with bids from 5-minute dispatchable resources within the control area, based on a prediction of imbalance energy requirements during the applicable operating hour. In addition, the current and MRTU market software economically dispatches or "clears" incremental and decremental real-time energy bids with "overlapping" prices (i.e., incremental bids offered at a price lower than the price of decremental energy bids submitted by other participants). This market clearing function considers the entire pool of submitted real-time bids – imports and exports, as well as 5-minute dispatchable resources.

Pre-dispatched real-time energy at the inter-ties is settled in the respective current and MRTU markets as follows:

- In the current market, pre-dispatched real-time energy at the inter-ties is settled at the participant's bid price. There is no payment or charge if a market participant declines a pre-dispatched bid at an inter-tie. If a market participant partially accepts a pre-dispatched real-time energy bid then the participant is paid or charged only for the portion accepted.

- Under MRTU, import and export bids for real-time energy are submitted to the real-time market and are pre-dispatched as part of the Hour-Ahead Scheduling Process (HASP). In MRTU, pre-dispatched imports and exports will be paid or charged based on a pre-dispatch market-clearing price rather than being paid or charged the price of the individual bid.[4] As in the current market, there will be no settlement of inter-tie bids that are dispatched but declined.

II. Problems Caused by Declined Pre-Dispatches

By the time information on the amount of any pre-dispatched bids that market participants decline can be fed back into the pre-dispatch process, there is insufficient time for the CAISO to re-optimize or issue additional pre-dispatch instructions to replace declined pre-dispatches. As a result, declined pre-dispatched real-time market bids have the potential to result in operational problems or market inefficiencies.

The following sections summarize several of the problems and inefficiencies in both the current and MRTU markets that can result if significant quantities of pre-dispatched inter-tie bids are declined. Additional problems that may exist under MRTU due to the introduction of a single HASP market clearing price for pre-dispatched imports and exports are noted separately.

Sub-optimal Imbalance Energy Dispatch

Declines of pre-dispatched import and export bids typically result in the CAISO dispatching incremental bids from internal energy resources at a higher price (or dispatching decremental

[4] Pre-dispatched real-time market import and export bids will be paid or charged a HASP LMP price calculated for each inter-tie.

resources at a lower price) than if the pre-dispatched bids were not declined or were not originally submitted. This is due to the following reasons:

- First, declines of pre-dispatched import and export bids can increase the volume and volatility of the CAISO's real-time imbalance energy needs that must be then obtained from the pool of 5-minute dispatchable resources during the operating hour. Depending on the amount of the net pre-dispatched energy declined and system conditions, this can result in the CAISO dispatching incremental energy at a higher cost (or selling decremental energy at a lower price) than it would have if the declined pre-dispatched inter-tie bids were not submitted. The higher real-time price typically has a significant effect on total cost because it is applicable to both the 5-minute dispatched energy to replace the declines and the 5-minute dispatches to meet other real-time imbalance energy needs. Additionally, any uninstructed deviations from resources' hour-ahead schedules will be impacted by real-time price changes due to declines of pre-dispatched inter-tie bids.
- Second, because there is no opportunity for the CAISO to dispatch economic inter-ties bids to replace pre-dispatched bids that market participants decline, declined pre-dispatches may also cause economic resources at the inter-ties to go unutilized. For example:

    1. Assume the CAISO pre-dispatches bids for incremental energy at an inter-tie up to a price of $50/MWh.

    2. Further assume that in real-time the CAISO must dispatch $60/MWh bids to meet demand.

    3. If pre-dispatched bids on this inter-tie are subsequently declined, incremental energy on the inter-tie between $50/MWh and $60/MWh would have gone unutilized, despite the fact that these bids would have been more economic than the $60/MWh bid dispatched to meet demand.

- Declines can also decrease the efficiency of the real-time energy dispatch if the CAISO by causing grid operators to manually bias the system in order to compensate for declined pre-dispatch instructions. For example, if large amounts of pre-dispatched import energy had recently been declined, the CAISO operators might bias the market system to pre-dispatch more imports for a particular hour, in anticipation of continued declines. However, because the quantity of pre-dispatched energy declined can vary significantly hour-to-hour, it may turn out that only a relatively small amount is declined. In this case, the CAISO must then decrement internal resources during the operating hour to compensate for the excess imports. If the CAISO pre-dispatched relatively high-priced import bids and then is forced to decrement internal resources with low decremental energy bids, the CAISO ends up buying energy at a relatively higher price and selling energy at a relatively lower price – a cost that is borne by market participants.

CAISO Support of Exports or Imports Dispatched due to Market Clearing

Because the CAISO "clears" the market for real-time energy by dispatching incremental and decremental bids with "overlapping" prices, declines of pre-dispatched bids for incremental energy (i.e. imports) can cause the CAISO to be forced to provide energy from within the

CAISO system to support decremental bids (i.e. exports) that were pre-dispatched solely because they cleared against bids for imports that were subsequently declined. Similarly, declines of pre-dispatched export bids can cause the CAISO to be forced to decrement energy from within the CAISO system to accommodate the additional imports that were pre-dispatched because of pre-dispatched export bids that were subsequently declined. Both these situations can create reliability problems, as well as additional costs to the market.

As illustrated later in this paper, a greater quantity of pre-dispatched import energy is typically declined than pre-dispatched export energy, except during spring months. This results in the CAISO having to dispatch internal resources during the operating hour to deliver export energy, which may cause problems during tight supply periods. In the spring months, declined pre-dispatched exports are typically a problem. This can cause the CAISO to have to decrement internal resources to absorb imports and can aggravate over-generation conditions.

In addition to creating potential reliability problems, this situation can also cause the market clearing function to incur net costs, which are ultimately borne by other CAISO market participants. This results whenever the CAISO must dispatch higher cost energy (or sell decremental energy at a lower cost) from within the CAISO system to deliver on a bid accepted as part of market clearing to compensate for a declined pre-dispatched bid.

For example:

1. Assume that as part of the process of clearing import and export bids in the pre-dispatch process, the CAISO clears a $55/MWh export bid against a $50/MWh import bid.

2. If the pre-dispatched $50/MWh import bid is declined, the CAISO must supply the $55/MWh export bid by dispatching additional incremental energy from within the CAISO system during the operating hour.

3. Thus, if the real-time price during this hour exceeds $55/MWh, there will be a net revenue loss that is ultimately recovered from other CAISO participants.

Unutilized Inter-tie Capacity or Inter-tie Congestion:

Declines of pre-dispatched real-time energy bids can also cause available capacity at the inter-ties to be under-utilized. For example, if the CAISO requires incremental energy and pre-dispatches import bids up to the capacity of an inter-tie, and some of these bids are declined, there is no opportunity for the CAISO to pre-dispatch other imports to make up for the declines and fully use the available capacity at the inter-ties. A similar situation can result when the CAISO is decrementing energy and pre-dispatched export bids are declined.

Declines of pre-dispatched Supplemental Energy bids may create real-time congestion on inter-ties, which may require curtailment of other participants' energy schedules to mitigate this congestion.

For example:

1. Assume that after the hour-ahead market, there is 100 MW of capacity remaining on an inter-tie.

2. Further assume that as part of the pre-dispatch process, the CAISO clears 150 MW of import bids and a 50 MW market export bid on the same inter-tie.

3. If the 50 MW export bid is declined, 150 MW pre-dispatched imports have been scheduled, while only 100 MW of transmission capacity remains. In order to mitigate this congestion, the CAISO may need to curtail multiple participants' energy schedules on the inter-tie on a pro rata basis.

Gaming Concerns under Current Market Design

The ability to decline pre-dispatched bids also creates the potential for gaming of market rules if participants treat pre-dispatched real-time energy bids at the inter-ties as essentially a cost-free option to sell or purchase energy. Under this scenario, the market participant would only deliver on a dispatched bid if the price is favorable in comparison to other opportunities the market participant has to buy or sell energy in bilateral markets that exist at the time the CAISO pre-dispatches the bid. For example, a participant may submit an import bid that is dispatched at $100/MWh, and then accept the pre-dispatch only if the participant was able to purchase energy in the bilateral market at a price less than $100/MWh after receiving the pre-dispatch.[5]

Another scenario would be for a market participant to decline pre-dispatched bids in an attempt to affect the real-time price.

Additional Gaming Concerns under MRTU

Under MRTU, declined pre-dispatched inter-tie bids will likely pose additional market inefficiencies and gaming opportunities because of the introduction of a HASP single market clearing price for pre-dispatched imports and exports. Under the current market design, declined pre-dispatches do not affect the price paid or charged for pre-dispatched imports or exports because of the current "as-bid" settlement. However, under MRTU, declines will affect the price paid or charged to all pre-dispatched bids at the location(s) that are impacted (price-wise) from the declines.

Specifically, under MRTU, declined pre-dispatched import bids will generally cause the HASP price to be lower than it would be if the declined bids had not originally been submitted. For example:

1. Assume that three import bids are submitted for $50/MWh, $55/MWh, and $60/MWh, respectively.

[5] Likewise, a participant may submit an export bid at $50/MWh, and then accept the pre-dispatch only if the participant was able to sell the export in the bilateral market at a price greater than $50/MWh after receiving the pre-dispatch.

2. Further assume that the CAISO pre-dispatches two of these bids, for a HASP market clearing price of $55/MWh, but the $50/MWh bid is declined.

3. If the $50/MWh bid had not been submitted, the $60/MWh bid would have been dispatched and would have set the HASP pre-dispatch price at $60/MWh, rather than $55/MWh.[6]

Conversely, declined pre-dispatched export bids will generally cause the HASP price to be higher. Thus, under MRTU, declined pre-dispatch bids have a greater potential impact in terms of distorting HASP prices, and the relationship between the HASP price and the real-time MCP.

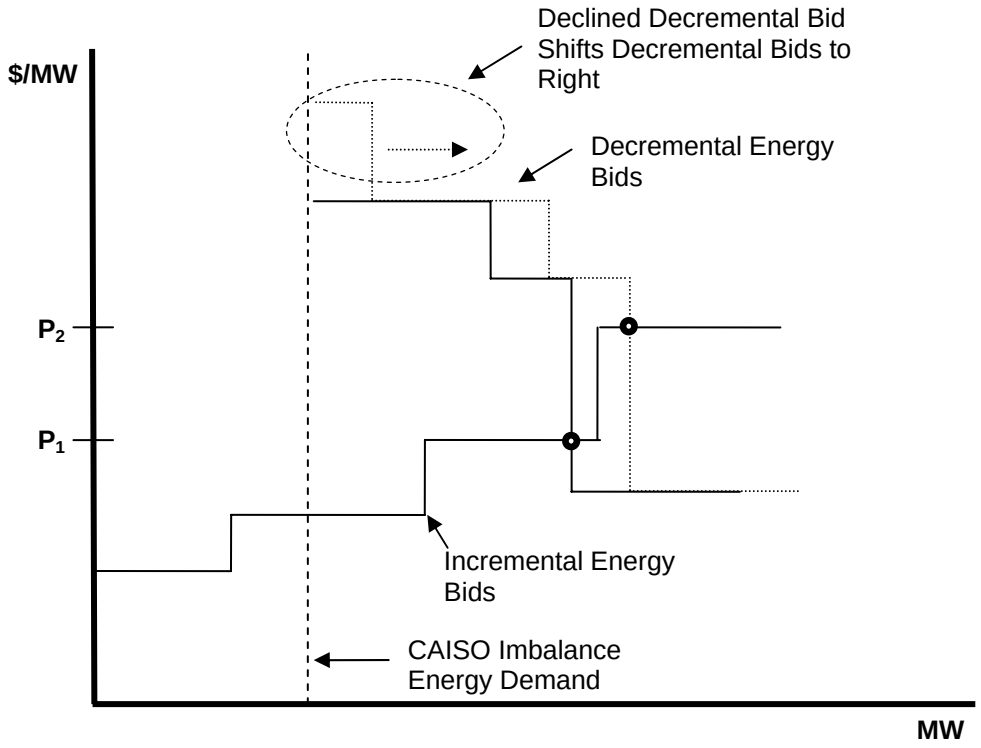
There are several potential scenarios where market participants could decline pre-dispatched import or export bids as part of a strategy to manipulate market prices. Specifically, under MRTU, since declined pre-dispatch bids will directly impact the HASP price, there will be the potential to decline pre-dispatched bids to intentionally distort the HASP price. For example, if a market participant wanted to increase the HASP market clearing price received for bids it submitted to provide incremental energy as imports, the participant could also submit an inter-tie bid to purchase energy as an export. By submitting the export bid at a relatively high price, the bid would increase the demand for decremental energy and would tend to increase the HASP market clearing price. The market participant could then decline the export bid while obtaining a higher price for delivering one or more of the import bids. A similar strategy could be used to drive down the price of decremental energy to be purchased as exports.[7]

This potential gaming strategy is illustrated by Figure 1, which shows an incremental energy bid curve for an operating hour in which the CAISO requires incremental energy, along with two different decremental energy bid curves – one not including any declined bids and one including a bid that is declined. As Figure 1 shows, the pre-dispatch optimization will first clear incremental energy bids against the forecast imbalance energy demand for the operating hour and then will clear the remaining incremental energy bids against submitted export bids. Figure 1 shows that if the export bid that is declined is not included in the bid stack, then the HASP market clearing price would be P_1. However, including the export bid increases the demand for decremental energy, shifting the decremental energy bid curve to the right, and increasing the HASP market clearing price to P_2.

[6] This simplified example assumes there are no 5-minute dispatchable resource bids available priced at $60/MWh or lower.

[7] The current "as-bid" settlement of pre-dispatched inter-tie bids limits the potential profits and market impacts from this gaming scenario – this strategy requires the market participant to predict the market clearing price for imports and exports and would likely only affect the price of a limited number of import or export bids in a participant's portfolio.

Figure 1. Potential Gaming of HASP Price by Declining Bids



III. Recent Market Experience

This section summarizes recent rates of declined pre-dispatched real-time market energy bids at the inter-ties and the impact on prices.

Rates of Declined Pre-Dispatches

Figure 2 summarizes the past rates of declines, showing the quantity of declined real-time market energy bids pre-dispatched at the inter-ties from January 2005 through August 2007. Figure 2 shows average hourly incremental and decremental quantities declined during each month, expressed as MWh quantities and as a percentage of the quantity dispatched.

Figure 2. Declined Inter-tie Real-Time Energy Dispatches, January 2005 – August 2007

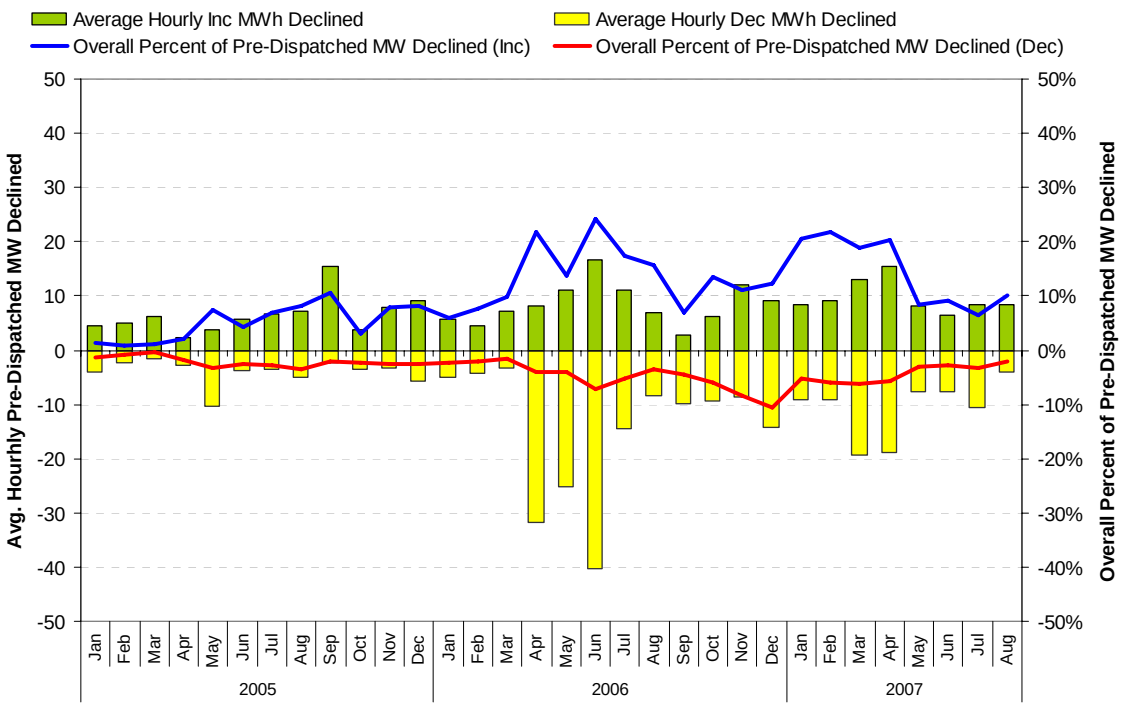


Figure 2 shows that the amount of pre-dispatched real-time energy bids that participants decline has edged up over the time period shown, at times averaging more than 20 percent of the incremental energy and as much as 10 percent of the decremental energy dispatched at the inter-ties.

During numerous periods over the last two years, excessively high volumes of declined pre-dispatches have created operational problems, market inefficiencies, and, in some cases, price spikes in the CAISO's real-time market.

Reasons for Declines

Based on DMM's discussions with market participants, it appears that high rates of declines typically occur when market participants submit real-time energy bids at the inter-ties as marketers or traders of energy, rather than bidding based on resources that they control. In this case, declines can occur due to differences in the timing between the CAISO energy dispatches at the inter-ties and the bilateral "real-time" market for the western interconnection, occurring as a result of the following scenario:

- By the deadline for submission of real-time energy bids to the CAISO (i.e., 62 minutes prior to the operating hour in the current market design), these participants typically do not have a firm businesses arrangement to deliver incremental energy or receive decremental energy for each specific bid submitted. Rather, these participants indicated that they submit bids for

energy that they expect to be able to deliver (or accept) based on their evaluation of bilateral market conditions conducted shortly before bids are due.

- Meanwhile, many transactions in the bilateral real-time market are being finalized at this same approximate time, and often completed by 60 minutes prior to the operating hour – or just beyond the deadline for submission of energy bids in the CAISO real-time market.

- Once a participant receives pre-dispatch instructions from the CAISO at 45 minutes prior to the operating hour, the potential supply (or sink) of energy may still not be available to the participant, due to commitments made in the bilateral market. Consequently, the participant may not be able to obtain a supply or sink necessary to perform on the CAISO pre-dispatch instruction and must decline it.

- In some cases, participants also indicated that, in addition to the availability of resources to take or receive energy, lack of available transmission once the CAISO issues pre-dispatch instructions at the inter-ties sometimes contributes to declines.

IV. Options to Deter Declined Pre-Dispatches

This section summarizes potential options to address declined pre-dispatched inter-tie bids. These options were developed by DMM to provide a starting point for a stakeholder process to assess various options which might be implemented by the CAISO. [8]

In developing these options, DMM sought to build upon the framework already incorporated in the CAISO's Uninstructed Deviation Penalty (UDP) provisions as they would apply to declined bids for imports or exports of real-time energy. As a benchmark for these alternatives, DMM reviewed how other ISOs treat declined or undelivered pre-dispatched inter-tie bids. A summary is provided as an appendix.

Each of the options presented in this section could be implemented in both the CAISO's current market and MRTU. If implemented in the current market, the pre-dispatch price referred to in these alternatives would be the market participant's bid price. In MRTU, the pre-dispatch price would be the applicable HASP price.

Option 1 – UDP for Inter-ties as Currently Designed

Under this option, the CAISO would file to implement the tariff provisions for the Uninstructed Deviation Penalty (UDP) for declined pre-dispatched import and export bids only (i.e., without implementing provisions for generation within the CAISO system).

[8] Note that the options discussed in this section would apply to pre-dispatched real-time energy bids that participants notify the CAISO through the dispatch system that they will not deliver, as well as pre-dispatched real-time energy bids that are not delivered because the market participant fails to complete the transaction after accepting the dispatch. These options would also apply to partially delivered pre-dispatched real-time energy bids.

The tariffs for both the current market and MRTU contain provisions for an Uninstructed Deviation Penalty (UDP) that would penalize generator uninstructed deviations as well as declined pre-dispatched inter-tie bids. These tariffs state that UDP will become active once the CAISO files and FERC approves a tariff amendment to propose an effective date for application of UDP. Since generator deviations do not appear to currently be an issue, such a filing presumably would propose to activate UDP only for declined pre-dispatched import and export bids.

UDP was designed with the rationale that generators should receive a penalty for under-generating and should not be compensated for over-generating, penalizing under-generation at 50 percent of the real-time price while penalizing over-generation at 100 percent of the real-time price. For declined or undelivered pre-dispatched import or export bids in both the current and MRTU markets, UDP would apply as follows:

- Declined pre-dispatches to deliver incremental energy as an import:
  UDP = Declined quantity * 50% * real-time price [9]

- Declined pre-dispatches to deliver decremental energy as an export:
  UDP = Declined quantity * 100% * real-time price

Option 2 – Modified UDP for Inter-ties

Under this option, the CAISO would file to implement UDP for declined pre-dispatched inter-tie bids with modifications to the current design of UDP as applied to declined pre-dispatched inter-tie bids.

Several alternatives for modifying UDP that could be applied separately or in combination are discussed below.

Alternative 2a – Both Declined Imports and Exports Penalized at Same Rate

The current design of UDP would penalize declined decremental energy dispatches at twice the rate that it penalizes declined incremental energy dispatches (100 percent versus 50 percent of the real-time price). Thus, one option is to modify UDP to penalize declined import and export bids the same. For example, declined imports and exports could both be penalized at 50 percent of the real-time price. In addition, the penalty amount for declined pre-dispatched bids could be changed (e.g. from 50 percent to 25 percent of the real-time price).

A consideration is that the UDP penalty amount should be established high enough to minimize declined dispatches, recognizing the potential gaming strategies involving

[9] The real-time price would be based on zonal hourly ex post price in the current market and the 5-minute real-time LMP at the corresponding scheduling point in the MRTU market. Note that there is no instructed or uninstructed imbalance energy settlement of a declined pre-dispatched import or export bid – thus, UDP would be the only charge that applies for a declined pre-dispatched import or export bid.

declines as discussed earlier in this report. For example, a market participant with a large generation portfolio could profit by declining a pre-dispatched bid and affecting the applicable price for the participant's entire generation portfolio. In the MRTU market, a participant could also decline a single pre-dispatched bid and affect the price paid to a number of other inter-tie bids. If the penalty is not large enough, a participant could still have a net gain due to a decline despite a penalty, because the penalty would apply only to the declined quantity while the market prices would apply to the participant's entire portfolio. However, if the UDP penalty amount is set at an excessively high amount, it could unnecessarily increase real-time market prices as market participants will incorporate the risk of being subject to penalties into their inter-tie bids.

Alternative 2b – UDP for Declined Pre-Dispatched Exports Based On Pre-Dispatch Price

UDP as currently designed would penalize both declined imports and declined exports based on the real-time price. For declined import bids, this approach would usually provide an effective incentive to minimize declines because a declined pre-dispatched import bid generally tends to increase the real-time price.[10] However, a declined bid to purchase decremental energy as an export generally tends to lower the real-time price and, in the MRTU market, would make the pre-dispatch price higher than it would be if the declined bid was not originally submitted. Consequently, a more effective UDP design may be to base the penalty for declined export bids on the pre-dispatch price, rather than the real-time price, calculating UDP for declines as follows:

- Declined pre-dispatch to deliver incremental energy as an import:
  UDP = Declined quantity * percentage value * real-time price

- Declined pre-dispatches to deliver decremental energy as an export:
  UDP = Declined quantity * percentage value * pre-dispatch price

Again, if implemented in the current market, the pre-dispatch price in the above formula would be the market participant's bid price, as opposed to the applicable HASP price under MRTU.

Alternative 2c – UDP for All Declined Pre-Dispatched Inter-Tie Bids Based on Greater of Pre-Dispatch or Real-Time Price

This alternative would be to base UDP for all declined pre-dispatched bids, both imports and exports, on the greater of the HASP or real-time prices. This alternative recognizes that the real-time price is not necessarily always the appropriate basis for a penalty for declined import bids and the pre-dispatch price is not necessarily always the appropriate basis for a penalty for declined export bids. For example, under conditions of short supply, the CAISO may bias the market system's optimization to pre-dispatch an

[10] In the MRTU market, a declined pre-dispatched import bid also tends to make the HASP price lower than what it would have been if the declined bid was not originally submitted.

increased amount of incremental energy to ensure against outages or other contingencies that could potentially occur during the operating hour. In this situation, although declines will still generally tend to increase the real-time price, the pre-dispatch price could likely be higher than the real-time price because of the large quantity of pre-dispatched energy. A similar situation could occur in the case that the CAISO was decrementing large amounts of energy in the pre-dispatch process, except that the pre-dispatch price could be much lower than the real-time price.

As such, UDP for declines could be calculated as follows:

> UDP for declined pre-dispatched bid = declined quantity * percentage value * max (pre-dispatch price, real-time price)

Option 3 – Settlement Charge Based on Real-Time Price

This approach reflects how the New York ISO and the Ontario IESO provide an incentive for market participants to minimize pre-dispatch declines. In this approach, market participants would be assessed a settlement charge based on the difference between the pre-dispatch price and the real-time price.[11] In this approach, charges for declined pre-dispatched bids would be as follows:

- Declined pre-dispatched import bid:
  Charge = declined quantity * max (0, real-time price – pre-dispatch price)

- Declined pre-dispatched export bid:
  Charge = declined quantity * max (0, pre-dispatch price - real-time price)

The advantage of this approach is that the charge approximates the cost of replacing the pre-dispatched quantity declined by the participant during the operating hour and thus would usually be scaled to the impact of the decline on the market and operations.

One drawback of this approach is that it does not recover the full cost of a decline to the market. This is because the prices affected by the decline apply to the entire quantity of energy dispatched by the system operator, not just the quantity the market participant declines.

Another drawback of this approach is that it may not provide a sufficient deterrent for a market participant to attempt to profit from declining dispatches and affecting the real-time or HASP price applicable to the participant's entire portfolio. For example, a market participant could decline a single pre-dispatched bid and affect the applicable prices for the participants' entire portfolio. The market participant's overall profits could likely exceed the charge paid that is based on only the declined quantity.

[11] Ontario IESO charge includes a factor to account for systematic differences between pre-dispatch and real-time prices and, because of this factor, caps the charge for declined imports at the real-time price and caps the charge for declined exports at the pre-dispatch price.

Option 4 – Settlement Charge Based on Real-time Price with Minimum Floor

This approach consists of the settlement charge described in Option 3, above, but with a minimum charge. For example, charges for declined pre-dispatched bids could be as follows:

- Declined imports:
  Charge = declined quantity * max (minimum charge, max (0, real-time price - pre-dispatch price))

- Declined exports:
  Charge = declined quantity * max (minimum charge, max (0, pre-dispatch price - real-time price)

  Where the minimum charge would be some percentage of the real-time price for declined import bids and some percentage of the real-time price for declined export bids.

The advantage of this approach is that it would be scaled to the impact of the decline and would also discourage market participants from declining pre-dispatched bids even for hours in which the settlement charge by itself would not apply or would be very small.

Other Options

Threshold for Triggering Charges for Individual Participants

This variation consists of applying UDP or the settlement charges described in the various options above to an individual market participant only when the market participant's rate of declines exceeds some threshold value.

For example, with this approach a market participant would be assessed UDP or the settlement charges described above only if they declined more than 10 percent of their pre-dispatched bids over some period. The most straightforward method of implementing this alternative may be to calculate each participant's decline rate at the end of each calendar month. If the participant's decline rate over the month exceeded the specified amount, then each dispatch declined by the participant during that month would be subject to UDP or the settlement charge.

An advantage of this approach is that a penalty or charge for excessive rates of declines could be set high enough to provide a strong deterrent to declines while not penalizing lower quantities of declines that are bound to occur due to various reasons such as generator outages, transmission curtailments or a marketer's inability to make the market purchases or sales needed to accept pre-dispatched bids.

Under this approach, exemptions to UDP or the settlement charge due to curtailments by other control areas, etc., could potentially not be allowed since the rate at which these events occurred should not cause the amount of declines to be greater than the threshold. Not allowing exemptions that are based on reporting by market participants would also eliminate the potential

for false or inaccurate information and/or reduce the CAISO effort required to verify market participant reported information.

A drawback of this approach is that there would no disincentive to declining pre-dispatched bids in a quantity below the threshold. Although a low enough threshold would likely eliminate significant gaming opportunities, a market participant could still decline pre-dispatches without penalty or charge during a few critical hours.

In order to limit the complexity of this approach, it may be necessary to impose any UDP or settlement charges based on all declines during a calendar month if the participant exceeds the pre-defined threshold. This results from the fact that under all of the options described above the charges for declined pre-dispatches would be based on market prices during the specific hour that the bid was declined. For example, if the threshold was set at 10 percent and a participant declined 11 percent of their pre-dispatched bids during a month, the UDP or settlement charges would be applied to all 11 percent of the declined pre-dispatches. Otherwise, under this scenario, if the charges were assessed only on one percent of the participant's declined pre-dispatches (11 percent less the 10 percent threshold), a method would need to be developed to determine which of the participant's declined pre-dispatches during the month would be used as the basis for the charges. For example, one such method would be to base any charges for declines in excess of the threshold on the declines during hours when the charges would be the highest.[12]

Exemptions

Under any of the options discussed below, the conditions that would exempt a declined import or export bid from a penalty must also be defined. One condition that may or may not justify an exemption from penalties or charges is the lack of available transmission. Currently, the CAISO BPM for Compliance Monitoring states declined pre-dispatched import or export bids would be exempt from UDP if the market participant indicates through the ADS dispatch system that the dispatch is declined because transmission is not available.[13] As noted above, it may not be appropriate to provide any exceptions if any UDP or settlement charges are triggered only if the portion of pre-dispatch instructions declined by a participant exceeds some minimum threshold.

Since the objective of a penalty or charge for declined bids is to provide an incentive that bids represent resources that will be able to perform, then the penalty or charge potentially should also provide an incentive for participants to also reasonably ensure that they can obtain the associated transmission. Thus, an option would be to not exempt declined pre-dispatched import or export bids from a penalty or charge if the market participant does not obtain transmission, except in the case that a participant obtained transmission that was later curtailed by another control area or the CAISO. This would be similar to the approach taken by the New York ISO and the Ontario IESO in implementing their charges for declined import or export bids.

[12] The would be equivalent to applying exemption for charges up to the threshold level of declines to those declines for which charges would be the lowest. Presumably, if applied on a calendar month basis, this could be done by a relatively simple sorting procedure.

[13] This is different from instances where a market participant had transmission that was later curtailed by another control area, which participants apparently can separately designate in ADS. Also note that the CAISO has proposed to eliminate the decline feature in ADS under MRTU; alternatively, whether a bid has been accepted or declined will be indicated by e-tag information.

Negative Prices

A final consideration applicable to each of the UDP alternatives discussed above is that UDP as currently designed does not apply when the real-time price is negative. Real-time prices are negative during extreme over-generation conditions during which an incentive not to decline dispatched decremental energy would be desirable. Consequently, all of the UDP alternatives could also include a provision to charge UDP for declined decremental energy even if the applicable price is negative or non-negative.

Appendix A – Other ISO's Treatment of Undelivered Pre-Dispatched Bids

Market	Penalty or "Charge" for Declines	Settlement	Market Clearing	Ability to Replace Declines	Generator Uninstructed Deviation Penalty
NYISO	Undelivered real-time import/export bids assessed "financial impact charge": • Undelivered imports = Undelivered quantity * max (real-time LMP – pre-dispatch LMP, 0) • Undelivered exports = Undelivered quantity * max (pre-dispatch LMP – real-time LMP, 0) Financial impact charge applies to all failures to deliver except those beyond a participant's control, which are generally limited to curtailments by control area operators for reliability reasons. Failure by a market participant to be able to procure transmission capacity does not result in exemption to financial impact charge.	Real-time import/export bids pre-dispatched based on forecast real-time LMP and paid/charged real-time LMP. Imports only guaranteed bid price. No settlement of undelivered real-time import/export bids other than the financial impact charge.	Imports and exports included in market clearing	Cannot replace declines in pre-dispatch, only during operating hour	150% of real-time market price for under-generation, no compensation for over generation.
ISO-NE	None	No settlement for undelivered pre-dispatched real-time import or export bids. Real-time import/export bids dispatched based on forecast real-time LMP and paid/charged real-time LMP. Imports eligible for uplift payment to the extent real-time LMP does not cover bid cost over day.	Imports and exports included in market clearing	Dispatch system reportedly allows for dispatch of other real-time import or export bids to replace those market participants decline.	None, but charges allocated to deviations

Market	Penalty or "Charge" for Declines	Settlement	Market Clearing	Ability to Replace Declines	Generator Uninstructed Deviation Penalty
PJM	None	No settlement of undelivered pre-dispatched real-time import or export bids. Real-time import/export bids dispatched based on forecast real-time LMP and paid real-time LMP.	Imports and exports apparently dispatched only for imbalance energy	No information available as of publishing date	None, but charges allocated to deviations
MISO	No information available as of publishing date				Yes

Market	Penalty or "Charge" for Declines	Settlement	Market Clearing	Ability to Replace Declines	Generator Uninstructed Deviation Penalty
IESO - Ontario	Undelivered real-time import/export bids assessed "real-time import/export failure charge": • Real-time import failure charge = undelivered quantity * max ((real-time inter-tie zone price + price adjustment factor – pre-dispatch inter-tie), 0) • Real-time export failure charge = undelivered quantity * max ((pre-dispatch inter-tie zone price – real-time inter-tie zone price – price adjustment factor, 0) "Price adjustment factor" accounts for systematic differences between pre-dispatch and real-time prices. In addition to formulas above, the failure charge is capped at real-time inter-tie zone price because price adjustment factor could result in failure charge being greater than real-time inter-tie zone price. Financial impact charge applies to all failures to deliver except those beyond a participant's control, which are generally limited to curtailments by control area operators for reliability reasons.	Real-time import/export bids pre-dispatched based on forecast inter-tie zone price and paid/charged real-time inter-tie zone price. Imports guaranteed bid price. No settlement of undelivered real-time import/export bids other than the import/export failure charge.	Imports and exports included in market clearing	Cannot replace declines in pre-dispatch, only during operating hour	No explicit penalty, but deviations in excess of tolerance band subject to compliance action
Alberta ESO	None	No settlement of undelivered pre-dispatched real-time import or export bids. Real-time imports/exports bid as price-takers and paid real-time MCP.	Imports and exports dispatched only for imbalance energy	Bids generally not declined because they must be tagged upon submittal.	None