



Issue Paper

Bidding Requirements for High Scheduling Priority of Exports

Executive Summary

On August 3, 2007, the CAISO published the Revised Draft of the Five-year Market Initiatives Roadmap, which presents a number of potential market enhancements that may be considered after the initial implementation of the Market Redesign and Technology Upgrade (MRTU). Section 2.3.3 of the Roadmap concerns Import and Export of Ancillary Services, and identifies issues that result from a requirement in FERC's 9/21/2006 decision to conditionally approve the MRTU tariff. The FERC decision requires that export schedules that are not supported by Resource Adequacy (RA) resources should have equal scheduling priority as Demand within the CAISO control area, and the CAISO has implemented this requirement in Release 1. In doing so, the CAISO has recognized additional issues, including whether the requirement for the non-RA resources to bid into the CAISO market should extend past the Day-Ahead market, and whether there should also be an obligation to offer ancillary service bids. Alternatively, a scheduling option for "unit contingent" exports could resolve questions about ancillary service requirements for these high-priority exports.

FERC's decision, combined with RA provisions, means that the CAISO must support multiple export products for scheduling in the Day-Ahead and Real-Time Markets. This issue paper concerns the bidding requirements for one of the export products, which provides exports supported by specific non-RA resources have high scheduling priority. It is important to recognize that this issue applies only to scheduling within the market where the Schedule is considered. Once an export Schedule has been accepted in a CAISO Market, the export is firm. For purposes of this issue paper, it is also important to distinguish between the Self-Scheduled export that receives high scheduling priority and the Supply resource that supports the assignment of that priority. The associated Supply resource does not necessarily need to be Self-Scheduled, and could be submitted into the CAISO Markets as an economic Bid.

This issue paper does not seek to resolve the bidding requirements for the high priority exports that are supported by non-RA capacity. Instead, as part of the Market Initiatives Roadmap process, this issue paper is intended to provide enough information about this topic so that stakeholders can provide meaningful input to the CAISO's ranking among the many potential market enhancements. Comments that stakeholders submit may also help the CAISO to identify the range of issues that must be considered if this topic becomes a priority as a market enhancement.

1. Introduction

This issue paper explores whether provisions need to be added to the design for the California Independent System Operator's (CAISO) Market Redesign and Technology Upgrade (MRTU) to reflect scheduling requirements for Operating Reserves for high-priority firm exports from the CAISO to other

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Control Areas. This paper adds to the description in section 2.3.3 of the August 3, 2007, Revised Draft of the CAISO's Five-year Market Initiatives Roadmap (<http://www.caiso.com/1c33/1c33cdd9444d0.pdf>), which identifies a number of potential projects that the CAISO will be considering as future market enhancements following MRTU's Release 1 implementation.

On September 21, 2006, FERC issued the "Order Conditionally Accepting The California Independent System Operator's Electric Tariff Filing To Reflect Market Redesign And Technology Upgrade", conditionally accepting the CAISO's MRTU tariff filing. FERC made the following determination regarding the scheduling priority of Self-Scheduled CAISO Demand and Self-Scheduled exports:

"116 ... [We] accept the CAISO's proposal to allow, in the IFM optimization process, self-scheduled CAISO demand to have higher scheduling priority for resource adequacy resources than self-scheduled exports because this will ensure that LSEs within the CAISO's Control Area can utilize resource adequacy resources when they are needed for the CAISO grid reliability."

"117 ... The CAISO also commits to develop a manual procedure to enable Scheduling Coordinators, in both the day-ahead market and the HASP, to self-schedule exports that are served by generation from non-resource adequacy capacity in the day-ahead market, or by non-resource adequacy/non-RUC capacity in the HASP."

"217 ... We accept the modifications proposed by the CAISO, to treat export demand the same as CAISO demand, if that export demand is not served by capacity reserved for resource adequacy or RUC use."

Thus, Self-Scheduled internal CAISO Demand has higher priority access to Energy from Resource Adequacy (RA) Resources, while equal priority is also provided to Self-Scheduled exports that do not use RA Resources. Self-Scheduled exports that are not being explicitly supported by non-RA resources have lower priority than Self-Scheduled CAISO Demand in the Day-Ahead Market (DAM), and Self-Scheduled exports that are not explicitly being supported by non-RA/non-Residual Unit Commitment (RUC) resources¹ have lower priority than forecasted CAISO Demand in the Real-Time Market (RTM), including its Hour-Ahead Scheduling Process (HASP).

The process to date for establishing the scheduling priority required by FERC's decision has essentially created three export products, after a separate requirement to allow a Load Serving Entity to pre-establish an export as part of its Resource Adequacy Plan, comparable to its own Load. The three export products that have been created to provide the opportunity for some export schedules to receive equal scheduling priority as CAISO Demand are:

- A. Export schedules that are not explicitly associated with Bids for non-RA and non-RUC capacity receive lower priority than CAISO Demand.
- B. Export schedules that are explicitly associated with Bids for non-RA and non-RUC capacity receive equal priority as CAISO Demand, and
- C. Export schedules that are included in pre-established RA Plans that are submitted in compliance with CPUC requirements receive equal priority as CAISO Demand, even if they are served by RA capacity.

¹ Resource Adequacy Plans are established before DAM is run, and the RUC can establish additional capacity requirements prior to the Real-Time Market (RTM). For simplicity, this paper simply uses the term "non-RA", but this is intended to mean "non-RA/non-RUC" in the context of RTM.

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It is important to recognize that this distinction in scheduling priority applies only to scheduling within the market where the Schedule is considered. Once an export Schedule has been accepted in a CAISO Market, the export is firm. This is discussed further in Attachment A. For purposes of this issue paper, it is also important to distinguish between the Self-Scheduled export that receives high scheduling priority and the Supply resource that supports the assignment of that priority. The associated Supply resource does not necessarily need to be Self-Scheduled, and could be submitted into the CAISO Markets as an economic Bid.

Prioritization of this issue needs to consider that the actual future requirements for Operating Reserve may also be refined in the future. Discussions have been underway in the WECC Operating Committee for development of a permanent regional reliability standard for Operating Reserve, which have not yet been completed, but which may affect the CAISO's requirements for firm and unit-contingent exports.

2. Issues for Resolution

Initial statements of the scheduling priority requirements have been included in updates to the CAISO's MRTU tariff filing, and in software specifications. Further examination of this requirement has revealed additional issues that need to be resolved for MRTU implementation:

1. Bidding Obligation: Whether the obligation for exports that seek the same priority as internal load to offer non-RA capacity should extend through RUC and also RTM.² Such validation does not exist in the software for MRTU Release 1. Therefore, extending the obligation to offer non-RA capacity to support the high export priority would initially need to be supported by an after-the-fact compliance check. This requirement would also require tariff language to establish the additional obligation on non-RA capacity that is supporting the high export priority.
2. Operating Reserve Requirements: Whether an additional bidding obligation should be placed on the use of non-RA capacity by an export that is seeking to have the same priority as CAISO Demand. The current software design includes export Bid validation using a configurable percentage parameter, such as requiring a high-priority export to be matched by 107% of the export MW quantity to be equivalent to including Operating Reserve, or 115% to be consistent with the obligation to offer capacity under CPUC RA rules. However, implementing this requirement would require the currently-filed tariff language for the export priority to be supplemented by an additional offer obligation above the 100% of the export itself, from non-RA capacity. As discussed below, this issue amounts to defining the characteristics of export product "B" in the list above, i.e., export schedules that are explicitly with non-RA and non-RUC capacity.

The following sections of this issue paper present an initial assessment of each issue.

3. Initial Assessment of Issues: Bidding Obligation

For resources that are in the RA Plan that is required of Load Serving Entities within the CAISO Control Area, there is a must-offer obligation that begins in DAM and extends for as long as the resource is

² The requirement that non-RA capacity must be offered through RTM applies only to resources whose start-up time allows commitment and dispatch in RTM. If a resource is off-line and cannot be started within the time horizon of the RTM processes (approximately 5 hours), it could not have a viable Bid in RTM. Also, if a Supply resource's required capacity has been scheduled in DAM, its obligation to bid has been satisfied.

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able to respond to dispatch instructions, either by having a start-up time within a CAISO Market's time horizon or by already being on-line. A requirement for non-RA capacity to be included in Bids in all CAISO Markets that follow the submission of a high-priority export Schedule applies the same principle to the high-priority export Schedules that applies to CAISO Demand. Adding the requirement for non-RA capacity to be included in Bids in RUC and RTM will provide assurance that the offer of non-RA capacity to support the high export priority will be a legitimate offer (not an offer that is made only for a limited time horizon, at a high price that exceeds any likely market clearing price). Adding this requirement also ensures that the same non-RA capacity will not be used to support two different high-priority exports (one being offered in DAM at a high price that exceeds any likely market clearing price, and then the same capacity being offered to support a different export in RTM). This would not be an issue if the supply resource that supports the high priority export were self-scheduled, but becomes a requirement when there is flexibility for the export to receive high priority while the supply resource is an offer to buy from the market.

It is important to recognize that this ongoing obligation for the associated non-RA resource to bid into CAISO Markets does not affect the firmness of the export Schedule itself, even if the non-RA Supply resource's Bid is not scheduled by the CAISO – the export and the associated non-RA Supply resource are separate Schedules. Once the export is accepted in a CAISO Market, it is firm, as discussed further in Attachment A. Once a supply resource is scheduled, it must continue to make itself available in CAISO Markets. However, any requirement to submit new Bids in markets after DAM, to support a high-priority export, would need to be conditioned on acceptance of the export in DAM – if the neither the export nor the supply resource were scheduled in DAM, there would be no reason to require a matching supply resource after DAM (unless the export schedule is resubmitted).

4. Initial Assessment of Issues: Operating Reserve Requirements

The issue of whether the use of non-RA capacity to support high-priority exports should have an additional obligation to submit Bids for Operating Reserves is founded on the obligation for the CAISO to include firm exports as Demand when calculating its Operating Reserve requirements. As a general matter, a similar requirement is reflected in the standard contract provisions established by the Western Systems Power Pool (WSPP) Agreement, e.g., "Firm capacity is deemed a capacity sale from the Seller's resources and backed by the Seller's capacity reserves" (Service Schedule C, "Firm Capacity/Energy Sale or Exchange Service", section C-3.3). Although the CAISO does not directly use the WSPP Agreement in running the CAISO Markets and thus is not the "Seller" in the WSPP Agreement, the CAISO understands that the WSPP Agreement supports a number of bilateral transactions between Scheduling Coordinators that get scheduled through the CAISO Markets. Just as firm exports from the CAISO must be supported by Operating Reserves that are scheduled within the CAISO Markets, firm imports into the CAISO must be supported by Operating Reserves that are scheduled within the external Control Areas. Because firm exports from the CAISO add to the CAISO's Operating Reserve requirements, firm export Schedules are charged in Settlements for ancillary service costs. When firm export Schedules have lower priority than CAISO Demand, the CAISO is assured that the exports would not be scheduled if the CAISO's available resources were insufficient to meet CAISO Demand and required ancillary services. This is not the case when firm exports have equal scheduling priority as CAISO Demand, and therefore it can be reasonable to require these high-priority firm export Self-Schedules to be accompanied by Bids for the amount of Operating Reserves that will be required, if "firm" means that the CAISO must procure the associated Operating Reserve.

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Whereas the requirement for high priority export Schedules to be accompanied by Bids for Operating Reserves has parallels in the Operating Reserve requirements for firm imports from other Control Areas into the CAISO, and in the WSPP Agreement, there would be no parallel for requiring a 15% reserve margin as part of scheduling high priority firm exports. The 15% RA reserve margin is similar to a planning reserve, and is founded on considerations beyond providing hour-to-hour Operating Reserves. Thus, this paper does not recommend a reserve requirement for firm exports of more than 7%.

While the SIBR, DAM, and RTM software is being designed to support the capability to require non-RA Energy Bids amounting to more than 100% of a high-priority firm export, not all factors that would support adding this requirement in MRTU Release 1 have been explored above. Load serving entities within the CAISO control area may be concerned about the explicit "leaning" on the capacity that they have been required to purchase and make available to the CAISO under the RA program, and that high-priority export Schedules should have a responsibility to provide bids for 7% reserves, to match what CAISO is required to procure as the sending control area supporting the export under current WECC rules. However, the prospect of requiring high-priority export Schedules to be accompanied by ancillary service Bids has not been thoroughly explored with stakeholders, and it would not be surprising for there to be concerns from other perspectives about adding Operating Reserve requirements to firm export Schedules. The CAISO's charges to firm exports for Operating Reserves have not raised such concerns, perhaps because they are at least partially offset by reduced ancillary service costs in the Control Area that receives the export, but requiring market participants in other control areas that rely on bilateral market arrangements to bid into the CAISO's organized central market could raise new concerns. This could be especially true when the owners of resources that will be scheduled as exports from CAISO operate primarily in other control areas, or when an owner of generation in the CAISO is marketing the output of its specific generator and is not trying to operate as a broker of broader services. A solution to these concerns would be to offer an option that does not carry an Operating Reserve requirement under current WECC rules, or to define the characteristics of the CAISO's export product B as listed above under "Introduction" in a way that avoids the current WECC Operating Reserve requirement.

Scheduling practices in WECC provide an option for unit-contingent firm interchange, rather than conventional firm service. Unit-contingent firm Schedules do not carry the same Operating Reserve requirement as conventional firm Schedules. The desire of CAISO stakeholders to use unit contingent exports under MRTU has not been explored to date because firm export Schedules have not required Bids exceeding 100% of their capacity. However, sample data in an October 2003 presentation on the CAISO's Operating Reserve requirements showed that depending on the hour of day, about 40% to 90% of imports into the CAISO are unit-contingent rather than conventional firm imports.³ From a perspective of providing exports from the CAISO, it has not been determined whether the market participants who would be interested in export product B as listed in the Introduction to this paper are in a market segment (perhaps 40% to 90% of the market) that might actually want to schedule unit-contingent exports, would be in the remaining half that trades firm interchange, or is a mixture. There may be interest in unit-contingent exports from the CAISO as either the standard terms of service of export product B, or as an option in its responsibilities.

It appears that unit-contingent exports can be supported in the DAM and RTM software by requiring the firm export Self-Schedule to be accompanied by a Self-Schedule from non-RA generation, and linking these Self-Schedules as a wheeling Schedule from the CAISO generation to the export. While wheeling from internal generation to exports has been developed and tested in the DAM and RTM

³ See <http://www.aiso.com/docs/2003/10/08/2003100812065325219.pdf>

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software, and Operating Reserve requirements are set manually and could consider the presence of unit-contingent exports, other parts of the end-to-end process are not in place for unit-contingent exports in MRTU Release 1, such as SIBR rules, Settlements and specific operation procedures. Further development of the wheeling functionality in the DAM and RTM software for use in this context may be needed. A comprehensive assessment of changes to other MRTU systems has not been done at this time. Furthermore the implication of allowing wheels from internal resources needs to be investigated.

5. Next Steps

For the reasons discussed above, this issue paper identifies three options for potential consideration (subject to the Market Initiatives Roadmap prioritization process), instead of implementing an Operating Reserve bidding requirement on high-priority firm exports in MRTU Release 1:

1. Imposing a requirement for all Self-Scheduled exports that seek the same scheduling priority as CAISO Demand to be supported by Bids for Operating Reserves, in addition to the Bids for Energy,
2. Adding unit-contingent exports as a feature after Release 1, to provide an option that does not require additional Operating Reserves, or
3. Finding it unnecessary to impose a requirement for Self-Scheduled exports that seek the same scheduling priority as CAISO Demand to be supported by Bids for Operating Reserves. Existing requirements for firm exports to pay charges for operating reserves in Settlements would not change, although they would be relying upon the RA capacity that is bid into the market by other parties if they keep the traditional meaning of "firm".

As the CAISO works through the stakeholder process that would consider this issue, the actual future requirements for Operating Reserve may also be refined. Discussions have been underway in the WECC Operating Committee for development of a permanent regional reliability standard for Operating Reserve, which have not yet been completed, but which may affect the CAISO's requirements for firm and unit-contingent exports.

Attachment A

Clarification of CAISO Provisions Regarding Resource Adequacy
Capacity and Exports Under MRTU

For discussion at Seams Issues Subcommittee, May 30-31, 2007

Overview

1. This document explains the relationship, in the context of the CAISO's redesigned MRTU markets, between the status of generating capacity within the CAISO control area as Resource Adequacy (RA) capacity or non-RA capacity, and the treatment of exports being supplied by such capacity. In particular, this document is intended to affirm and clarify the fact that export schedules established in the MRTU markets – the day-ahead Integrated Forward Market (IFM) and the real-time Hour Head Scheduling Process (HASP) – are firm energy schedules consistent with the conventional meaning of "firm" as used in the western region.⁴ Once export schedules have been established in the MRTU markets they will be tagged as "firm." Paragraphs 2-4 below summarize the basis for this fact; the remainder of the paper provides additional details.
2. Much of the misunderstanding around the matter of the firmness of energy schedules under MRTU stems from the need to distinguish two aspects of the treatment of exports.
 - A. The rules and procedures for establishing firm export schedules in the MRTU markets (IFM and HASP); and
 - B. For firm export schedules that have been established as part of a final IFM or a final HASP schedule, whether there are circumstances under which such schedules might subsequently be curtailed by the CAISO.

The distinction between RA and non-RA capacity is relevant for (A) but not (B). MRTU does specify certain rules affecting the ability to establish firm export schedules in the IFM and HASP, depending on whether an export bid submitted to one of these markets is linked to non-RA generating capacity offered into the same market. However, once an export bid clears the market and becomes part of a final IFM or HASP schedule, the distinction between RA and non-RA capacity has no relevance to the firmness of that schedule. All such final schedules are firm and will be tagged as such.

3. Regarding item (A), because RA capacity is paid for by load-serving entities (LSEs) who serve load within the CAISO control area, capacity that is under contract to meet RA requirements must be available to meet CAISO control area load and operational needs through participation in the Day Ahead Market (DAM), which includes both the Integrated Forward Market (IFM) and the Residual Unit Commitment (RUC), as well as the Real Time Market (RTM) which includes the Hour Ahead Scheduling Process (HASP). This principle and the distinction between RA and non-RA capacity will

⁴ The use of the terms "firm" and "firm schedule" in this paper refer only to firm energy transactions and schedules. There is no discussion of firm versus non-firm transmission because that is not the subject of this paper. It is important to recognize, however, that all transmission service offered by the CAISO, both in the current system and under MRTU, is firm. The CAISO does not today and will not under MRTU offer non-firm transmission service.

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affect the ability of parties to establish firm export schedules in the IFM and in the HASP. In particular, certain special provisions in MRTU allow parties additional flexibility to establish firm day-ahead (IFM) and hour-ahead (HASP) export schedules that explicitly rely on non-RA capacity.

4. Once the DAM has concluded and day-ahead export schedules are established, such export schedules are firm in the usual sense of the word regardless of whether they are served by RA capacity, non-RA capacity, or simply by “the market” which will typically include both RA and non-RA capacity. “Firm” in this case means that the CAISO carries required operating reserves to support these exports, and they are treated as fixed schedules and afforded the highest priority against any reduction in the subsequent RTM/HASP market processes. Similarly, once the HASP has concluded and hour-ahead export schedules are established, such export schedules are firm without regard to their reliance on RA or non-RA capacity, and they are supported by CAISO-procured reserves.

Background on Bid Submission: Economic Bids and Self Schedules

5. A “bid” is the generic name for the template that each Scheduling Coordinator (SC) submits to the CAISO – on a daily basis for the Day Ahead Market (DAM) and on an hourly basis for the Real Time Market (RTM) and Hour Ahead Scheduling Process (HASP).
6. Within a bid there are two main ways that energy supply (generation and imports) and demand (load and exports) can be submitted: (1) as an “economic bid” – having MWh quantities and a bid price associated with each quantity, or (2) as a “self-schedule” – having MWh quantities without any prices associated. In the RTM and HASP parties cannot submit self-schedule changes for internal load, so their actual RT load deviation (from DA schedule) is deemed to correspond to any self-scheduled supply changes in HASP.
7. The self-schedule provision was designed into MRTU to allow for the preference of some participants to serve their demand using their own resources or bilateral contracts, without buying or selling energy in the CAISO markets.
 - Under MRTU – in contrast to today’s CAISO markets – there is no requirement for submitted self-schedules to be balanced. Moreover, in almost all cases the market optimization does not recognize any linkage between the supply bids or self-schedules and the demand bids or self-schedules submitted by an SC. Rather, the optimization looks at the entire set of submitted bids and self-schedules for supply and demand, and clears the market as a whole and calculates energy prices at each grid location (LMPs) that are used for settlement. (One special case, of course, is the special treatment available for exports discussed in the next section.)
 - Even if an SC does submit balanced supply and demand self-schedules, such schedules are still using the CAISO grid and must settle for the costs of congestion and losses, even though they are not transacting energy in the markets. For an accepted self-schedule that has balanced quantities of supply and demand, settlement based on the LMP differential between the supply and demand locations will reflect the costs of congestion and losses. (See the separate presentation for detailed examples of how this works.)
8. When the market optimization runs, it will try to “clear the market” – that is, balance supply against demand plus losses for the system without violating any transmission constraints – using only the

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economic bids, that is, by treating all the submitted self-schedules as effectively fixed⁵ and not making any adjustments to them.

9. If it is not possible to clear the market using only economic bids, then the optimization will make “non-economic” adjustments to submitted self-schedules in order to balance the system and eliminate congestion. When such adjustments are necessary, two rules apply:
 - A. First, the optimization follows a “scheduling priority” sequence among self-schedules. Starting with the LAST ones to be adjusted (that is, the highest scheduling priority), the order in the DAM is as follows:
 - Reliability Must Run (RMR);
 - Transmission Ownership Rights (TOR);
 - Existing Transmission Contracts and Converted Rights (ETC and CVR);
 - Regulatory Must Run and Regulatory Must Take; and
 - “Generic” energy self-schedules, the first to be adjusted. (See filed Tariff Sec. 31.4. Priority sequence for RTM/HASP is a little different; see Sec. 33.3.)
 - B. Second, within each priority level, the optimization will usually adjust the most effective self-schedules first in order to minimize the total MW amount of submitted self-schedules that are reduced.
10. Because self-schedules do not indicate the prices they are willing to accept for supply or the prices they are willing to pay for demand, accepted self-schedules are settled as price takers. As noted above, for an SC whose accepted self-schedule features a balanced quantity of supply and demand, the settlement based on the LMP differential between the supply and demand locations will reflect only the costs of congestion and losses.

Resource Adequacy (RA) Capacity and Exports in the DAM

11. In general, exports submitted as self-schedules in the DAM are “generic” self-schedules with respect to the scheduling priorities listed above.
12. Within the class of generic self-schedules, generic export self-schedules usually have lower scheduling priority than generic internal demand self-schedules. This means that if the market optimization cannot clear the market using only economic bids, because the amount of available supply in the market is not sufficient to cover both self-scheduled internal demand and self-scheduled exports, the self-scheduled exports will be reduced first.
13. The reason for establishing this priority is because LSEs serving load within the CAISO were required to procure RA capacity to meet a specified planning reserve requirement, and this capacity must be offered into the DAM. In the extreme situations where such capacity is not enough to meet self-scheduled internal demand, the LSEs who paid for the RA capacity get the first opportunity to utilize the associated energy in the DAM.

⁵ The submitted self-schedules are effectively fixed relative to economic bids by using extremely high-priced extensions to form a bid curve around the self-schedule, to ensure that economic bid adjustments are made prior to non-economic adjustments to self-schedules.

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14. There are two ways for a party to submit self-scheduled exports and receive scheduling priority in the DAM that is equal to the scheduling priority of generic internal demand.
 - A. Submit a wheeling schedule, in which the MW of self-scheduled exports are matched with equal MW of self-scheduled imports. The optimization will see the two sides of this self-schedule as matched and either will not adjust them at all or will adjust them in a balanced manner. Moreover, any such adjustment would only occur as a result of congestion, not for a supply-demand imbalance. The reason is that adjusting a wheeling schedule would always adjust supply and demand in equal quantities and thus would have no effect on relieving a supply-demand imbalance.
 - B. Submit an export self-schedule linked to an equal MW quantity of non-RA capacity that is offered – with either a self-schedule or economic bids – into the DAM (which may be used in the IFM or the RUC), and into the RTM if the unit is physically capable. In this case the market optimization might not even schedule energy from the non-RA capacity, but the fact that it was offered is sufficient to obtain scheduling priority for the self-scheduled export that is equal to the priority for self-scheduled internal load.
15. Once an export that is registered in the Master File as firm clears the DAM and is part of a final DA schedule, it is a firm schedule consistent with the conventional meaning of that term. Under current WECC MORC, this means the CAISO as the sending Control Area will ensure sufficient operating reserves are procured to support the firm export. In doing so, the CAISO expects such firm export to be tagged accordingly. Moreover, as a firm schedule that has cleared the DAM, the export also has the highest priority against any subsequent curtailment in the RTM/HASP processes, as described below.

RA Capacity and Exports in the HASP

16. Bids are submitted no later than T-75 to be used in the HASP and RTM processes.⁶ In the HASP, all of the economically bid and self-scheduled supplies (generation and imports) are cleared against the CAISO's forecast of internal RT demand plus all the economically bid and self-scheduled exports.
17. As in the DAM, the market optimization tries to clear the market using only economic bids, treating all the submitted self-schedules as fixed. In this optimization, the final DA schedule is also treated as fixed and cannot be adjusted. If economic bids are not sufficient to clear the market in the HASP, then "non-economic" adjustments are applied to newly-submitted self-schedules in a manner analogous to the DAM, following the sequence of scheduling priorities.
18. Analogous to the DAM rule for "generic" self-schedules, export self-schedules in HASP have lower priority than the CAISO forecast of internal demand, which means that if there is not enough supply to meet the internal demand forecast, export self-schedules will be reduced.
19. As in the DAM, a party wishing to submit an export self-schedule in the HASP and receive equal scheduling priority to the internal demand forecast can submit either a wheeling self-schedule, or an export self-schedule that is linked to an equal MW quantity – that is offered into the RTM – of non-RA capacity or even to RA capacity that was not scheduled in the DAM (IFM or RUC).

⁶ Actually, the HASP is one of the several market processes that comprise the RTM. The best way to think about HASP is as the MRTU equivalent – with some additional functionality – of today's Real Time Pre-dispatch by which the CAISO procures Supplemental Energy from imports.

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20. As in the DAM, once an export clears the HASP and is part of a final HASP schedule, it is a firm schedule consistent with the conventional meaning of that term. Under current WECC MORC, this means the CAISO as the sending Control Area will ensure sufficient operating reserves are procured to support the firm export. In doing so, the CAISO expects such firm export to be tagged accordingly.

RA Capacity and Exports in the Real Time Operating Time Frame

21. Although the CAISO has tariff and operating provisions that allow it in principle to curtail exports in RT under contingency conditions, in practice the CAISO has consistently avoided such action because it is not viewed as an effective way to manage contingencies. That is, CAISO operators fully expect that any RT curtailment of exports would be promptly offset by a comparable curtailment of our imports, resulting in zero net impact.
22. The CAISO believes that its emergency provisions allowing curtailment of exports in RT are fully equivalent to the capabilities all western control area operators or balancing authorities have available to them to manage emergencies, and therefore should not be viewed as in any way degrading the firmness of established DAM or HASP export schedules.