Frequently Asked Questions (FAQs) on Export Schedules and Scheduling Priorities

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California ISO

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Export Schedules and Scheduling Priorities

The California ISO has recently received numerous questions regarding export schedules and the scheduling priority rules that apply. This FAQ document is intended to serve as an aid to assist participants in understanding these rules.

Note: this article does not replace or supersede the rules laid out in the associated BPMs and Tariff sections listed below in the references.

Key Points

- ✓ Intertie schedule adjustments are part of routine reliability operations and the California ISO may adjust intertie schedules even if an Energy Emergency Alert (EEA) is not in effect.
- ✓ Congestion-driven reductions in exports may not strictly adhere to scheduling priorities.
- ✓ The intertie scheduled amount in the E-tag should not exceed the cleared schedule in the Hour-Ahead Scheduling Process (HASP).
- ✓ Scheduling coordinators should comply with CAISO dispatch instructions and submit a corresponding E-tag(s) that accurately reflects any reductions to those schedules prior to the T-20 deadline.

Understanding Scheduling Priorities and Exports in the CAISO markets

What are market scheduling priorities?
Market-scheduling priorities refer to a process used to determine how schedules may be adjusted during the market clearing process. These priorities help maintain a balance between energy supply and demand within the grid as well as maintaining system constraints.

How do market scheduling priorities affect exports?
Scheduling priorities dictate the amount and sequence in which exports could be reduced. They serve as a tool to manage energy flow and ensure grid stability, especially during times of limited supply.

Do market scheduling priorities guarantee delivery of exports?
No, scheduling priorities do not guarantee export delivery. They specify only the sequence in which exports might be reduced during market clearing, particularly when supply is constrained.

What conditions prompt scheduling priorities for exports to be utilized?
Scheduling priorities come into play when there is limited energy supply compared to demand. In such cases, both the day-ahead and real-time markets use these priorities to determine which exports may need to be reduced to maintain grid balance.

Are scheduling priorities consistent across different markets in the CAISO?
Yes, the principle for scheduling priorities are largely the same between the CAISO's day-ahead and real-time markets, with a few notable exceptions of how high priority and low priority schedules are categorized. This ensures a coherent approach to managing exports and maintaining system reliability.

Where can I find more detailed information about scheduling priorities and their role in CAISO markets?
For more in-depth information about scheduling priorities, their significance, and how they impact energy exports, customers can explore official CAISO materials in the *References* section below. These resources offer a comprehensive explanation of how CAISO manages exports and maintains grid stability through the use of scheduling priorities.

Exports and Reliability

How does adjusting exports in day-ahead RUC ensure reliability?
Adjusting exports in day-ahead RUC during tight supply conditions helps provide certainty for all stakeholders and signals to scheduling coordinators how much supply is available in the day-ahead market in order to support both CAISO's load and higher priority exports.

How does adjusting exports in the Hour Ahead Scheduling Process (HASP) ensure reliability?
Adjusting exports during emergencies or during tight supply conditions helps maintain a stable and reliable energy supply within the CAISO's region and neighboring BAAs. By prioritizing high-priority schedules and reducing exports when necessary, the CAISO can prevent potential disruptions and maintain grid reliability within its own balancing authority area (BAA) as well as in neighboring BAAs.

Are schedule adjustments part of the ISO's standard practices?
Yes, schedule adjustments are one of the tools the CAISO uses to manage the energy grid effectively. The CAISO's goal is to balance supply and demand and ensure grid reliability which may require occasional adjustments to schedules.

Can the CAISO curtail my schedule if they are in an Energy Emergency Alert (EEA) Watch?
The CAISO does NOT have to be in any of the Energy Emergency Alert (EEA) conditions in order to reduce a schedule in either the Residual Unit Commitment (RUC) or the HASP. However, when the ISO BAA *is* in actual EEA conditions, the CAISO will

leverage its tools and potentially manually curtail lower priority exports to ensure reliability of firm load and high priority schedules to our neighboring BAA's.

Do schedule adjustments only occur during EEA conditions?
No, the California ISO can adjust schedules even if an EEA condition is not in affect. Schedule adjustments can take place as a standard practice of the market clearing to ensure the reliability of the energy grid.

What is meant by "scheduling priority order" for exports?
"Scheduling priority order" refers to a sequence in which the markets adjust schedules. Exports (sending energy to other regions) may face adjustments or reductions. Lower priority exports will be reduced first to protect higher priority exports.

How are scheduling priorities enforced in the market?
The market implements scheduling priorities through scheduling parameters—or non-priced quantities—which are often represented as prices. These prices are set higher than economical bids to ensure they are utilized only after the market has considered all economical bids to balance supply and demand and manage congestion.

Where are these scheduling parameters defined?
The scheduling parameters, or prices, are defined in both the Tariff and the Business Practice Manual (BPM) for Market Operations (see *References* section below). These documents outline the rules and guidelines that govern energy market operations, including the use of scheduling priorities.

What factors determine the schedule of exports and wheels in the internal clearing process?
There are two main factors in the internal market clearing process that determine the optimal schedules of exports and wheels: the balance between supply and demand and congestion management.

The Day-Ahead Market and Exports

What are the Integrated Forward Market (IFM) and Reliability Unit Commitment (RUC) processes?
The IFM and RUC are day-ahead market processes that clear energy schedules. IFM clears supply schedules against bid-in demand whereas RUC determines energy resources to meet forecasted demand.

How are scheduling priorities applied to the IFM and RUC processes?
Both IFM and RUC processes apply scheduling priorities in the same order. These priorities determine the sequence in which exports are scheduled and potentially reduced, ensuring a consistent approach.

What happens if an export is reduced in the RUC process after clearing in the IFM process?
If an export that previously cleared in the IFM process is reduced in the RUC process, the RUC schedule becomes the reference quantity for tagging and participation in the real-time market. Anything that did not “clear” during the RUC process, can be reoffered in real-time.

Where can I find my RUC export schedules?
You can find your RUC Export schedules using the Day-Ahead Residual Commitment Capacity report in CMRI. It is important to check this report since your IFM energy schedules in the Day-Ahead Import-Export Schedules report in CMRI may be higher than what cleared RUC as a function of the RUC process.

Can I use SIBR to generate my real-time self-schedules?
No. If you've been relying on SIBR for real-time self-schedules, ensure you review the Day-Ahead Residual Commitment Capacity report in CMRI. Self-schedules submitted on behalf of participants (generated by SIBR) in real-time will be based on the RUC schedules as reflected in the Day-Ahead Residual Commitment (RUC) Capacity report in CMRI. Any self-schedule submitted in real-time above the RUC schedule will not have a day-ahead self-schedule priority, but will still be subject to the existing real-time self-schedule priority rules per Tariff Section 34.12.1.

What happens if a participant economically bids their schedule into RTM after receiving priority status?
Economically bidding a schedule into the real-time market (RTM) after being awarded a priority status will result in forfeiting that priority. It's important to carefully consider the implications of such bidding decisions.

What are the tiers of scheduling priorities for the day-ahead market (both IFM and RUC) for exports?
For more information about the different tiers of scheduling priorities in the day-ahead market, please refer to the *Scheduling Priorities and Export Schedules Overview* (link in the *References* section below).

Does a RUC schedule with DALPT (day-ahead lower price taker) guarantee an export schedule in real time?
No. An export scheduled in RUC that does not qualify for a high-priority export will receive DA-LPT status. This priority status only provides a higher scheduling priority than RT-LPT schedules from HASP. However, the HASP will reassess the need to reduce that export even further below the RUC schedule if real-time conditions warrant it.

The Real-Time Market and Exports

What happens after the HASP is complete?
Once the Hour Ahead Scheduling Process (HASP) is complete, the final energy schedules are transmitted through the Automatic Dispatch System (ADS). These schedules reflect any necessary export reductions.

Is it possible for the HASP to award a lower scheduled amount than what was cleared in RUC?
Yes, it is possible for the Hour Ahead Scheduling Process (HASP) to award a lower scheduled amount than what was initially cleared in RUC. This highlights the dynamic nature of system conditions.

Can the CAISO reduce an export any time and regardless of RUC awards?
Yes, economical or low-priority exports can be reduced through any of the market processes. Exports awarded in RUC are still assessed for feasibility in the real-time market through the HASP process and they can still be reduced based on real-time conditions. Post-market adjustments may also occur due to a variety of conditions, including the need to comply with intertie scheduling limits. Reliability curtailments may also happen when the CAISO is in an EEA3.

I received an IFM award of 100MW and then an 80MW RUC award. What amount do I tag in real-time?
From a day-ahead market perspective, the RUC schedule is the reference and should be tagged to the 80 MW value. Once in real-time, exports need to be tagged to the HASP schedule with the correct market priority. In this example, the participant may decide to reoffer the 20 MW through HASP. If the 20 MW is awarded in HASP, a new tag should be submitted with *Product Type* "G-FP" and the correct RT priority in the *Misc Token* field (RTLPT or RTECON). The total award of 100 MW would then have two E-tags: one with DALPT for 80 MW and one with RTLPT or RTECON for 20 MW.

In real-time, I received a HASP award of 80MW but my RUC schedule was 100MW. What amount do I tag in real-time?
The HASP award determines the final schedule to be tagged, which in some cases can be lower than the RUC schedules. In this example, the tag should be adjusted to the 80 MW value.

What about 15-minute resources and intertie clearing?
The fifteen-minute market (FMM) handles the clearing of 15-minute resources in the Real-Time market. However, it's important to note that scheduling priorities are not used for hourly transactions in the FMM or Real-Time Dispatch (RTD) markets.

Why aren't scheduling priorities used for hourly transactions in the FMM or RTD markets?
Scheduling priorities are not applied to hourly transactions in the FMM or RTD markets because these transactions have already been cleared in the Hour Ahead Scheduling Process (HASP). The focus shifts to optimizing 15-minute resources.

What are the tiers of scheduling priorities for the real-time market for exports?
For more information about the different tiers of scheduling priorities in the real-time market, please refer to the *Scheduling Priorities and Export Schedules Overview* (link in the *References* section below).

What are the differences between scheduling priorities in the day-ahead market and the real-time market?
The principles remain the same and both markets have high and low priorities, but there are two main additions in the real-time market.

For *Low Priority*, there are two groups: the lowest priority is assigned to price takers participating only in the real-time market. A slightly higher priority is given to price takers already cleared in the day-ahead market that are carrying over their RUC schedules into the real-time market.

For *High Priority*, there are also two groups (created merely for internal processing purposes): those directly bidding for their high priority exports in real-time (RTPT) versus those already cleared in the day-ahead market and are carrying over their RUC schedule into real-time. Both groups have the very same high priority.

Please refer to the *Scheduling Priorities and Export Schedules Overview* (link in the *References* section below).

Bidding and Tagging in the Energy Market

Why do I need to enter my bids correctly?
Correctly bidding transactions into the SIBR system is crucial to ensure that bids are properly evaluated by the market with the expected priority. Accurate bidding is essential for maintaining consistency and fairness in the evaluation process.

What is an E-tag and how does it relate to real-time market awards?
An E-tag (or electronic tag) is an electronic record that formalizes energy transactions across interties. Participants must submit an E-tag to finalize the scheduling of their CAISO real-time market award on an intertie.

How are E-tags adjusted to reflect a resource's day-ahead award?
Your E-Tag energy profile should reflect the Day-Ahead RUC award. Beginning on June 14, 2023, the ISO updated its e-tagging procedures so that the energy profile on day-ahead e-tags reflects each resource's day-ahead award. After the day-ahead market

results are published (typically at 13:00), the ISO compares the MW in the energy profile on the e-tag against the DA RUC award quantity. If the amount on the e-tag exceeds the DA RUC award, the amount on the e-tag is adjusted to equal the DA RUC award by 15:30. For information about this process, see the *Day-Ahead Residual Unit Commitment Adjustments* readiness note below in the *References* section.

Can I tag my DA-LPT up to my IFM EN award regardless of what clears RUC?
No. E-tags should be submitted for the final RUC award. If a participant decides to reoffer the difference between their IFM and RUC award through HASP, a new tag should be submitted with the correct scheduling priority.

What are the new provisions implemented in July 2023 as part of the Resource Sufficiency Evaluation Phase 2?
The new provisions introduced in July 2023 require that all economical and low priority exports be E-tagged as firm provisional energy (G-FP). This tagging provides visibility to other areas of the grid about the temporary nature of these exports which may be curtailed during emergency or tight supply conditions.

What is G-FP tagging for transactions from IFM?
G-FP tagging refers to categorizing transactions that come out of the CAISO's markets process as "General Firm Provisional" transactions. Any tag that has an associated schedule with LPT status out of the Day-Ahead or Real-Time markets should reflect G-FP as the production type. This tagging is part of the Resource Sufficiency Evaluation Track 1 changes.

How does E-tagging exports as G-FP benefit grid operations?
E-tagging exports as G-FP informs operators from CAISO and other areas about the provisional nature of these exports. During an emergency event, if energy resources become strained, the grid operators will have the transparency of what exports may get curtailed to accurately prioritize more critical energy needs.

When and how do I tag G-FP?
Upon receipt of a CAISO real-time market award for an intertie, the Scheduling Coordinator must submit an E-tag to formalize the scheduling of the award. An E-tag may be submitted at any time before the respective market finalizes (RUC or HASP) but LPT exports should be tagged as "G-FP" in the *Product* field of the tag and the CAISO_PRIORITY_TYPE in the token field with the correct market priority. If the E-tag is submitted in advance of the respective market that is being bid into, the E-tag should be adjusted to the final award.

How are downstream parties expected to know if energy sourced from the ISO tagged by a Scheduling Coordinator should be G-F or G-FP?
All parties on the tag can see the *Product Type* and the CAISO_PRIORITY_TYPE value in the *Misc. Token* field of the tag. Any priority type of DALPT/DAECON/RTLPT/RTECON should be tagged as G-FP.

Balance between Supply and Demand

When are exports or wheel-through transactions reduced in CAISO?
Exports or wheel-through transactions are reduced when there is insufficient supply to meet both CAISO's demand and exports. This happens when the balance between energy supply and demand cannot be maintained by increasing supply alone.

What happens during a tight power balance condition?
Only in a power balance condition with no other constraints involved—and where there's not enough supply to fulfill all demand and exports—scheduling priorities are followed strictly. Export reductions occur according to their priority levels, starting from the lowest and moving up to the highest.

What is the role of marginal losses in export reduction decisions?
In the absence of congestion, marginal losses, which are specific to certain locations, become a key factor in determining which exports are reduced first among the same priority level.

Are exports always reduced based on scheduling priority?
Exports are primarily reduced based on scheduling priority when addressing a power balance condition. However, locational factors and marginal losses are also taken into account to optimize the export reduction process.

Congestion Management and Export Priorities in CAISO Markets

How does congestion management affect resource dispatch?
During congestion management, more expensive resources may be dispatched before cheaper ones. This is referred to as "dispatch out of merit." The goal is to strategically manage congestion while maintaining the reliability of the grid. Export resources, which involve sending energy to other regions, can be reduced for congestion management purposes. Even when there's enough supply to meet demand and exports, congestion-driven reductions might occur. These reductions may not necessarily follow the usual scheduling priorities because they will be influenced by the location of the export relative to the congested constraint.

How does locational marginal pricing affect export reductions?
Even when addressing a power balance condition, the market uses locational marginal prices to optimize the solution. If only a portion of a group of exports needs to be reduced, the clearing process considers the locations of these exports (scheduling points) to minimize costs.

Can high-priority exports be affected by congestion management?
Yes, high-priority exports may also be subject to reduction in cases of congestion. Sometimes, even high-priority exports can be reduced before lower-priority ones if it helps alleviate congestion and maintain grid stability.

Are there cases where low-priority exports are fully awarded?
Yes, in some situations, low-priority exports may be fully awarded despite reductions in other higher-priority exports. This could be because these exports are more effective to help address congested constraints.

Wheels and CAISO Operations

What are wheels in the energy market?
Wheels are energy transactions that involve moving electricity between different regions through the CAISO area. They enable the movement of electricity between regions.

How do wheels impact energy supply and demand?
Wheels are unique in that they do not introduce additional supply or demand to the system. They help balance energy between regions without altering the overall supply-demand equation of the wheel-through area.

How does CAISO handle limited intertie capacity and supply infeasibility?
CAISO has specific functionality to pro-rata allocate limited intertie capacity when there's both limited capacity on the interties and a supply infeasibility. This ensures fair allocation of available energy resources.

Are wheels affected by internal congestion and severe constraints?
Yes, similar to exports, wheel-through transactions can be affected by congestion on internal constraints. In such cases, the market clearing process may reduce wheel transactions based on their impact on the constraints, rather than following the standard sequence of priorities.

References

For Integrated Forward Market: Tariff Section 31.4, Market Operations BPM Section 6.5.9

For Real-Time Market: Tariff Section 34.12.1

Resource Sufficiency Evaluation Enhancements Phase 2 Track 1 Training
Summer Readiness 2023 Training

Transmission Service Market and Scheduling Priorities Phase 1 Training

SIBR Bidding Tool user guide can be found on the California ISO developer portal

The Scheduling Priorities and Export Schedules Overview knowledge article can be found on the caiso.com Learning Center.

Day-Ahead Residual Unit Commitment Adjustments Readiness note