

Quick Takes: Real Time Generation Cost Guarantee

Issue 10, March 2023

This issue of **Quick Takes** explains the Real Time Generation On-Line or “RT-GCG” cost guarantee including an overview of the procedures for generators to participate. It should be noted that for the purpose of this Quick Take, the terms RT-GCG and SGOL (Spare Generation on Line) are synonymous. It should also be noted that the examples in this Quick Take are for illustrative purposes. They do not represent all possible RT-GCG eligibility scenarios.

Background

The IESO-administered markets select and schedule just enough resources to meet energy and operating reserve demands every five minutes. If there is a disturbance to the electricity system, the immediate impact on the energy price and on the supplying resources can be dramatic. Having additional resources on-line reduces the likelihood of generation swings and price fluctuations following a disturbance as more resources can respond to a sudden change.

Some forms of generation, primarily fossil, can take anywhere from two to sixteen hours to start and synchronize to the grid. During this period, they incur significant start-up costs. They might then be unable to make sufficient market revenues to cover these costs. The RT-GCG removes this concern by covering certain costs should market revenues fall short. In this way, the program ensures that more generation is available on-line to respond to disturbances.

RT-GCG Glossary

Congestion Management Settlement Credits

(CMSC) is compensation for lost operating profit which can occur when dispatch instructions deviate from the market schedule.

Minimum Generation Block Run-time

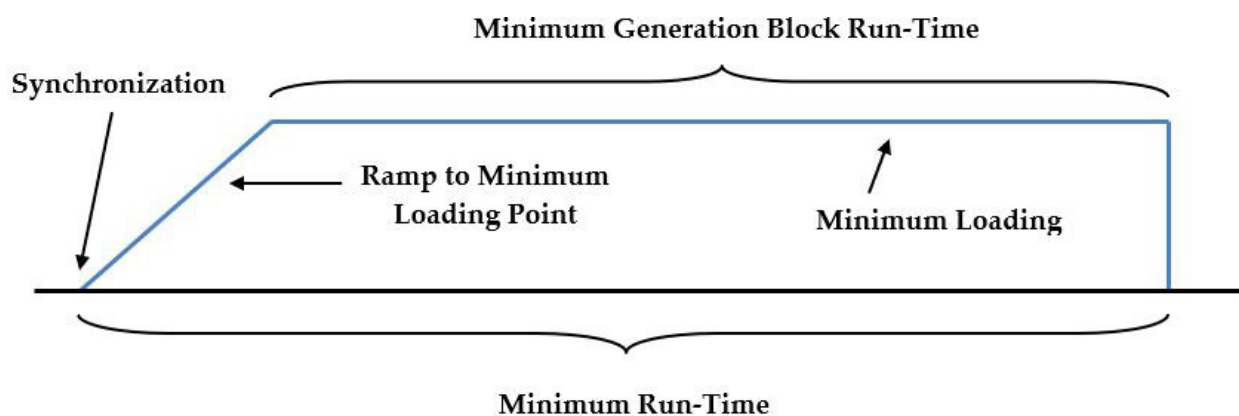
(MGBRT) means the number of hours, specified by the market participant, that a generation facility must be operating at or above minimum loading point, in accordance with the technical requirements of the facility.

Minimum Loading Point

(MLP) means the minimum output of energy specified by the market participant that can be produced by a generation facility under stable conditions without ignition support.

Minimum Run-time

(MRT) means the number of hours required for a generation facility to ramp from a cold start to its minimum loading point, plus the facility's minimum generation block run-time, as specified by the market participant in accordance with the technical requirements of the facility.



RT-GCG Cost Guarantee

The RT-GCG ensures that you will recover specific generation costs incurred when you come online. These costs, called "combined guaranteed costs" are;

1. Start-up costs:
 - the cost of fuel for start-up and ramp to minimum loading point
 - the incremental operating and maintenance costs to start-up, synchronize to the grid and ramp to minimum loading point
2. Minimum generation costs.

What are incremental operating and maintenance costs?

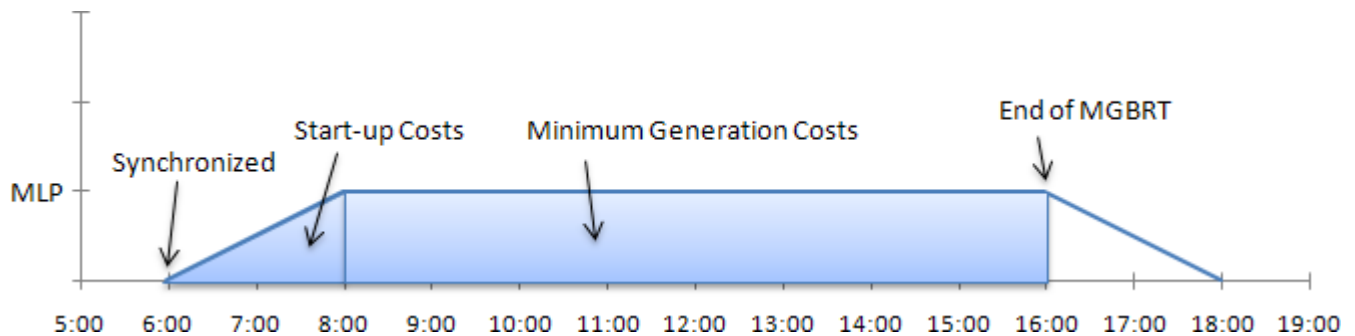
Incremental operating and maintenance costs are associated with breaker close and unit operation. These charges are avoidable if the unit does not start. Incremental operating and maintenance costs

exclude costs that are independent of unit operation such as lighting, security, and so on. Incremental costs can be broken down according to the reason they are incurred:

1. For start up and ramp: If the cost is incurred because the unit has started and ramps to minimum loading point, this lump sum amount can be submitted.
2. For continuing ongoing production: If there is an additional cost for each hour run or per MWh up to minimum loading point, related to injections during minimum generation block run-time, this cost should be included in your minimum generation block run-time offer.

What are minimum generation costs?

Minimum generation costs are the cost incurred to operate at a minimum loading point for the MGBRT period. These costs are calculated by multiplying the offer price associated with real-time dispatch by the energy injected up to and including the registered minimum loading point. The MGBRT period used for settlement cost calculations begins at the start of the first interval after the submitted ramp time and runs until the end of MGBRT or MRT, whichever comes first.



Guarantee Payments

Payments are made to eligible generators whose guaranteed costs were not recovered by their operating revenues. RT-GCG payments are the start-up and minimum generation costs less the revenue earned up to MLP from synchronization to the end of MGBRT or MRT, whichever comes first. For the purpose of settlement calculations, MGBRT begins at the first interval after the actual ramp value you submit. The calculation will always use the ramp intervals submitted in your claim.

The revenue is calculated as:

1. The market clearing price multiplied by the energy injected up to and including MLP
2. CMSC payments if the facility was uneconomic during the period when it was constrained in order to meet MLP

Who is Eligible to Receive RT-GCG?

A generation facility must meet certain conditions to be eligible to receive a cost guarantee:

- The facility must register in the RT-GCG program.

- The facility must be dispatchable.
- The facility must be a non-quick start facility. A non-quick start unit is one that cannot synchronize and follow a dispatch instruction within a 5-minute dispatch interval.
- The facility must operate as per RT-GCG program requirements.
- The facility must submit facility cost recovery information to the IESO for settlement.

As with all our market programs, the IESO monitors compliance with the program rules and has the authority to audit submitted costs.

RT-GCG Program Registration

The RT-GCG program is voluntary and there is no application fee. However, a facility must register for the program through [Online IESO](#):

- Any non-quick start generation facility can opt to register their Resource in the Real-Time Generation Cost Guarantee (RT-GCG) program by submitting a request online and providing technical data and supporting documentation to validate such data. To be applicable, the market participant must also meet the requirements specified in [Market Rules Chapter 7](#), Section 2.2B.1.
- For a Physical Facility to participate in the Day-Ahead Commitment Process (DACP), the Equipment Registration Specialist (ERS) needs to indicate to the IESO whether it is intended for participation in Real-Time Generation Cost Guarantee (RT-GCG) through [Online IESO](#).
- Market participants may choose to deregister their facilities from the RT-GCG program by submitting a request through Online IESO. For facility deregistration procedures, [MM 1.5](#), Section 5.1.

Initial registration in the program or changes will be processed during regular business days and within 10 business days of receipt. Updates such as registration, deregistration or changes to MRT, will always become effective two days after the change is approved.

Real-time Operation within the RT-GCG Program

Before Synchronizing your Facility

RT-GCG's are not applied automatically. Generators must indicate their intention to qualify for the RT-GCG at the time they notify the IESO Control Room of their intention to synchronize. A declaration of RT-GCG participation is mandatory for each start a generator intends to qualify for the RT-GCG.

You must ensure you are eligible to receive a cost guarantee before invoking RT-GCG for a start up:

- Your facility must have at least a 1 megawatt (MW) in the dispatch hour of a pre-dispatch constrained schedule published within 3 hours of the dispatch hour.
- Your facility must be scheduled for at least half the MGBRT hours for at least it's MLP

from the first dispatch hour until the earlier of either the offered ramp plus MGBRT or the registered MRT.

- You must make your request to qualify for the RT-GCG after publication of the pre-dispatch constrained schedule in which the unit has met the eligibility criteria noted above.
- Your facility cannot already be synchronized to the grid when you indicate your intention to qualify for that specific start.
- When you make your request to qualify for the RT-GCG, the offer price corresponding to MLP must be the same for all hours of the MGBRT in the pre-dispatch schedule upon which the generator invokes and remain so until the first real-time dispatch hour after the IESO has constrained on the generation facility.

This last requirement applies to the pre-dispatch schedule at the time you notified the IESO of your intention to qualify for the RT-GCG.

Therefore, if you synchronize earlier or later or ramp faster or slower than you expected when you invoked RT-GCG, the offer prices associated with the real-time MGBRT may no longer be the same as the offer prices associated with the pre-dispatch MGBRT. This potential inequality in offer prices does not impact eligibility.

After notifying the IESO of your intention to synchronise you must not increase your offer prices corresponding to your MLP for the MGBRT. Also you must synchronise your generation unit no later than the end of the dispatch hour.

RT-GCG Eligibility Example

At 03:31, a Market Participant with an 8 hour MGBRT requests to synchronize sometime during Hour Ending 7 (or "HE7") and invokes RT-GCG based on the three hour-ahead dispatch (relative to HE7) which has just been published (see chart below).

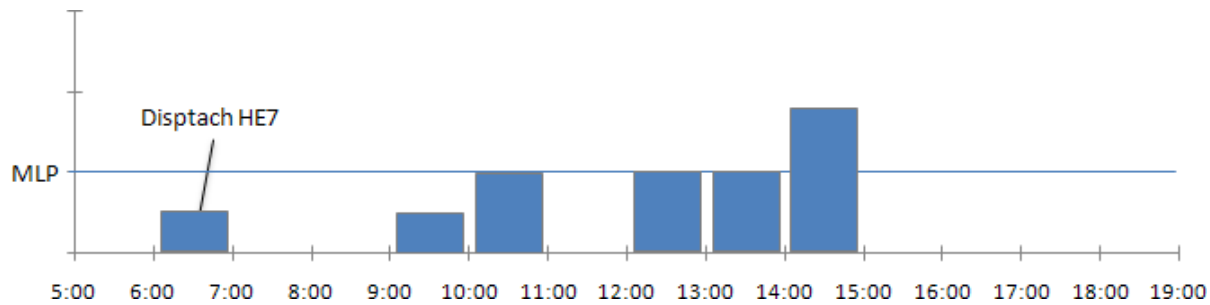
The Market Participant offers indicate ramp time that is greater than 2 hours but less than 3 hours - a 2 hour and 5-minute ramp. Since the pre-dispatch assumes that the offered ramp starts at the beginning of HE7, the unit would be fully ramped according to offered ramp at 8:05 (HE9). So, the first hour of the invoked MGBRT is HE9. Since MGBRT is eight hours, the invoked MGBRT period is HE9 to HE16, inclusive.

The MLP lamination offers for HE9 to HE16 are all equal at \$50/MWh.

To determine eligibility, IESO looks at the HE4 pre-dispatch schedule published when RT-GCG was invoked.

In this example the facility is RT-GCG eligible as it is economically scheduled at MLP or greater for 4 hours ($\frac{1}{2}$ MGBRT) during the period HE 7 - HE 16, and has at least 1 MW in dispatch HE7. Also, the facility has the same MLP offer price for each hour during the period HE 9 to HE 16. In order to

remain eligible for RT-GCG, the offer prices associated with the MGBRT must not be increased after notifying the IESO of the intent to synchronize and invoke RT-GCG.



After synchronizing your Facility

Once your facility has synchronized, you will receive dispatch instructions to ramp up to the facility's minimum loading point. Once the minimum loading point is reached, our software will not allow it to be scheduled below its minimum loading point (based on RT-GCG constraints in our tool) until our control room operator confirms the shutdown of the unit and releases the applied minimum constraint.

We identify a generation unit start up for settlement purposes by using revenue metering results for the applicable trading day. The metering results must indicate a change from zero in one interval to a sustained positive value for four consecutive intervals. After a valid start up has been identified, your generation unit is determined to be on-line in an interval where your revenue metering results show a positive value.

Our Right to Constrain Off Units

For reasons of system reliability, the IESO reserves the right to constrain a unit off at a time when the facility may have to de-synchronize before it reaches the end of its registered minimum generation block run-time. In such cases, you will remain eligible for the RT-GCG payment.

Desynchronizing your Facility

Do not ask to de-synchronize your facility before achieving your minimum generation block run-time:

- You will not be eligible to receive the RT-GCG payment if you request a shutdown before you complete your minimum generation block run-time.
- If the unit trips or goes off-line during the minimum generation block run-time, you are no longer eligible for the RT-GCG combined guaranteed costs (this does not apply if we constrain off your facility).

RT-GCG Payments

Data Submission

You must submit the facility's combined guaranteed costs for each start that you wish to be considered for RT-GCG payments. We must receive this information before 17:00 on the sixteenth business day following the dispatch day.

You can submit your information online via the IESO portal. Please see the [Guide to Settlement Claims and Data Submissions via Online IESO](#), section 4.9.

Your submission must include the following:

- Resource name and ID
- Start-up costs (see #1 on page 3)
- The intended synchronization hour ending (EST) at the time you requested qualification of a RT-GCG start;
- The number of actual ramp intervals required to achieve *minimum loading point* after synchronization. The number of ramp intervals represents the number of five minute intervals used to reach *minimum loading point* from synchronization. For example, if your actual ramp time is 3.25 hours, you would submit 41 intervals

Payment Calculation

The revenue calculation includes:

- Revenue earned from the time of synchronization until the end of MGBRT or registered MRT (based on submitted actual ramp), whichever comes first
- The Market Clearing Prices during this period multiplied by the energy injected up to and including MLP
- Energy market Congestion Management Settlement Credit payments if your facility was constrained in order to meet MLP

The energy and CMSC revenue earned for being dispatched and generating above the minimum loading point are not included in our calculation. We exclude these revenues so there is no financial disincentive for you to generate above minimum loading point.

Your cost calculation includes:

- Submitted fuel costs for start up, synchronization and ramp to MLP
- Submitted incremental operating and maintenance costs for start up, synchronization and ramp to MLP
- Offer price associated with real-time dispatch multiplied by the energy injected up to and including MLP, from the end of the submitted actual ramp until the end of MGBRT or MRT, whichever comes first

If the amount of revenue is less than the combined guaranteed costs, we will compensate you for the difference.

We will verify RT-GCG eligibility requirements for each RT-GCG start before we issue this compensation.

RT-GCG Payment Frequency

The RT-GCG settlement amounts are calculated at month-end, and applied as a manual line item on the next applicable *preliminary settlement statement* using the *charge type* 133 "Real-time Generation Cost Guarantee Payment".

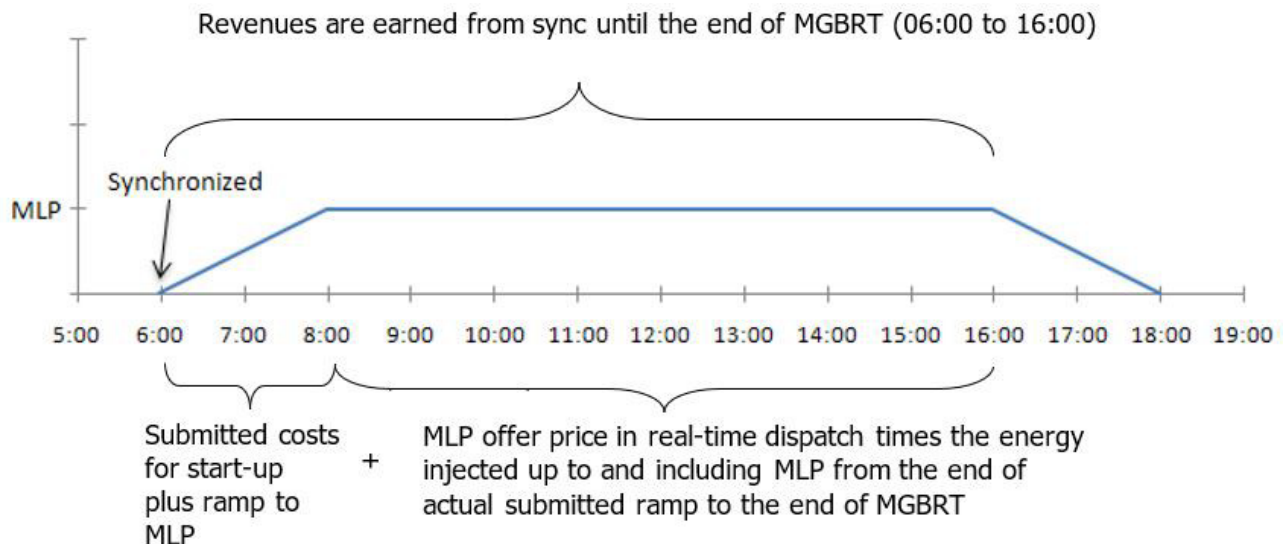
RT-GCG calculations are only included in the current *invoice* for days that have gone final since the last *invoice* was prepared. We recover the cost of the compensation from other market participants as a monthly uplift charge, based on each Market Participants (MP) Allocated Quantity of Energy Withdrawn (AQEW) and Exports.

RT-GCG Payment Examples

Building on the previous RT-GCG eligibility example, the following three examples show how RT-GCG payments apply under different than expected ramp conditions as per the submitted offers. As before, the offered ramp is two hours and five minutes and the eight hour MGBRT is from HE9 to HE16 inclusive.

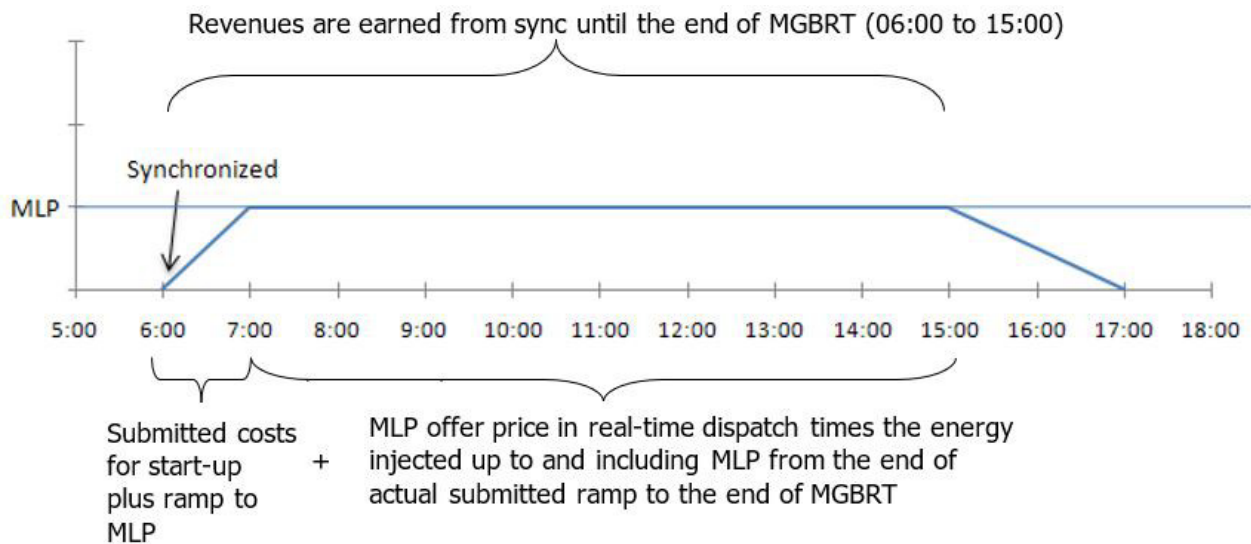
Example One

Let's assume that your facility starts on time and ramps as expected. Then your RT-GCG payment would be as the diagram below. Revenues earned minus start-up and minimum generation costs.



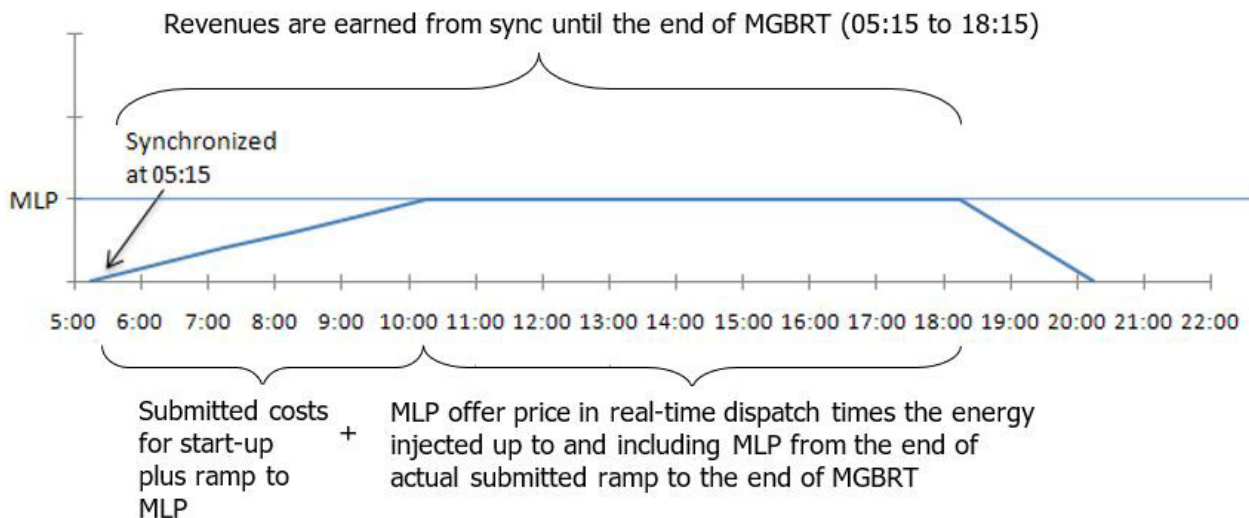
Example Two

What if your facility starts on time and then ramps faster than expected? Eligibility for RT-GCG payment is not impacted if your real-time injections are different than expected when you invoked RT-GCG.



Example Three

What if your facility starts earlier than expected and takes an extra 3 hours to ramp to MLP for a 5-hour total ramp time? Eligibility for RT-GCG payment is not impacted if your real-time injections are different than expected when you invoked RT-GCG.



Compliance

We expect that if your facility receives payments under the RT-GCG program, you are complying with the offer, schedule and synchronization rules of the program. We have the right to audit your submitted costs if you receive a guarantee payment and we will seek to recover any over-payments resulting from an IESO determination that the actual costs differed from the submitted data.

Supplemental Information

Although minimum generation block run time (MGBRT) is a fixed, registered value, there are several different times at which MGBRT can start:

- a) For the purpose of determining eligibility based on pre-dispatch schedules, MGBRT starts at the beginning of the first hour in which the unit is capable of achieving minimum loading point (MLP), as per dispatch data. To be clear, the ramp time reflects the offered ramp rate and quantity from the beginning of the hour. Pre-dispatch uses the capability of the unit at the end of the hour to schedule MW's.

If the ramp rate indicates that the unit can reach MLP by the end of the dispatch hour, this hour will be considered the first hour of invoked pre-dispatch MGBRT. In this case the unit will still need to have at least 1 MW scheduled in the first dispatch hour *and* will need to have all MGBRT hour MLP offers at the same price. For clarity, the first dispatch hour may be the same as the first MGBRT hour if your offered ramp rate is less than one hour. You may offer this hour using one or more laminations before the MLP lamination.

- b) For operational purposes, MGBRT begins at the first interval after actual synchronization plus actual ramp required to reach MLP. This performance is expected to be reflected as accurately as possible in the dispatch data. Operational ramp time is actual time to the interval.
- c) For the purpose of settlement calculations, MGBRT begins at the first interval after submitted actual ramp, with the submitted actual ramp beginning at actual synchronization.

Summary

The Real-time Generation Cost Guarantee program guarantees start-up, minimum run-time, and operations and maintenance costs to participants who otherwise might not commit their units when they were not certain they would be dispatched sufficiently to recover these costs.

Additional Information

Refer to [Market Manuals](#) 4.2, 4.3 and 5.5 for additional SGOL information.

See [IESO Charge Types and Equations](#) for detailed revenue calculation information.

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