

Information documents are not authoritative. Information documents are for information purposes only and are intended to provide guidance. In the event of any discrepancy between an information document and any authoritative document<sup>1</sup> in effect, the authoritative document governs.

## 1 Purpose

This information document relates to the following authoritative document:

- Section 203.3 of the ISO rules, *Energy Restatements* (“Section 203.3”).

The purpose of this information document is to describe how available capability restatements in subsection 2 of Section 203.3 are applied to an energy offer. This information document is likely of most interest to pool participants submitting restatements for energy offers.

## 2 Available Capability Restatements

Section 203.3 gives pool participants the ability to restate their available capability for source assets under certain operational conditions as set out in subsection 2(1) of Section 203.3. Restating available capability up or down to a level where available capability is less than the generating source asset’s maximum capability causes the Energy Trading System to remove portions of the offer from the merit order, as outlined below.

When a pool participant has restated their available capability to a level below their maximum capability, their offers must still total the maximum capability of the generating source asset. However, the only operating blocks for that generating source asset that appear in the merit order for dispatch by the ISO are those which contain the energy up to the current available capability value. Table 1 below shows hypothetical offer structures for a generating source asset with maximum capability equal to 150 MW.

**Table 1 – Offer Operating Blocks**

Block	MW	Price
0	40	\$0.00
1	60	\$25.00
2	80	\$49.00
3	100	\$60.00
4	130	\$700.00
5	140	\$900.00
6	150	\$990.00

The total MW in the highest priced operating block is equal to the maximum capability of the generating source asset and as long as available capability equals maximum capability, all 7 operating blocks would appear in the merit order in full.

<sup>1</sup> “Authoritative documents” is the general name given by the AESO to categories of documents made by the AESO under the authority of the *Electric Utilities Act* and regulations, and that contain binding legal requirements for either market participants or the AESO, or both. Authoritative documents include: the ISO rules, the reliability standards, and the ISO tariff.

As an example, assume the pool participant has to restate the available capability of the source asset down to 100 MW for an acceptable operational reason. Restatements of available capability to a lower level are applied first to the highest priced operating blocks. In this case therefore, only operating blocks 0 through 3 would appear in the merit order.

**Table 2 – Offer Operating Blocks with Available Capability = 100MW**

Block	MW	Price
0	40	\$0.00
1	60	\$25.00
2	80	\$49.00
3	100	\$60.00
4	130	\$700.00
5	140	\$900.00
6	150	\$990.00

When the generating source asset is able to be restated to a higher available capability (e.g. an increase of 35 MW) but not all the way to 150 MW, the pool participant would submit an available capability restatement to 135 MW. Restatements of available capability to a higher level are applied first to the lowest priced blocks that are currently not fully in the merit order. In this example, blocks 0 through 4 would appear in the merit order for their full amounts and block 5 would appear in the merit order for 135 MW instead of 140 MW.

**Table 3 – Offer Operating Blocks with Available Capability = 135MW**

Block	MW	Price
0	40	\$0.00
1	60	\$25.00
2	80	\$49.00
3	100	\$60.00
4	130	\$700.00
5	140	\$900.00
6	150	\$990.00

For a source asset that is (or includes) an energy storage facility, an available capability restatement to represent the state of charge<sup>2</sup> is not considered an acceptable operational reason unless the state of charge is at relative 0% or relative 100% (for example, a battery is fully charged or fully discharged). Like all other pool assets, the AESO expects that the pool participant will manage its operation through offers submitted 2 hours before the start of a settlement interval. See the following storage restatement example in Figure 1.

<sup>2</sup> State of charge is described in Information Document 2020-013, *Energy Storage Guidance Document*.

Figure 1 – Energy Storage AC Restatement Example

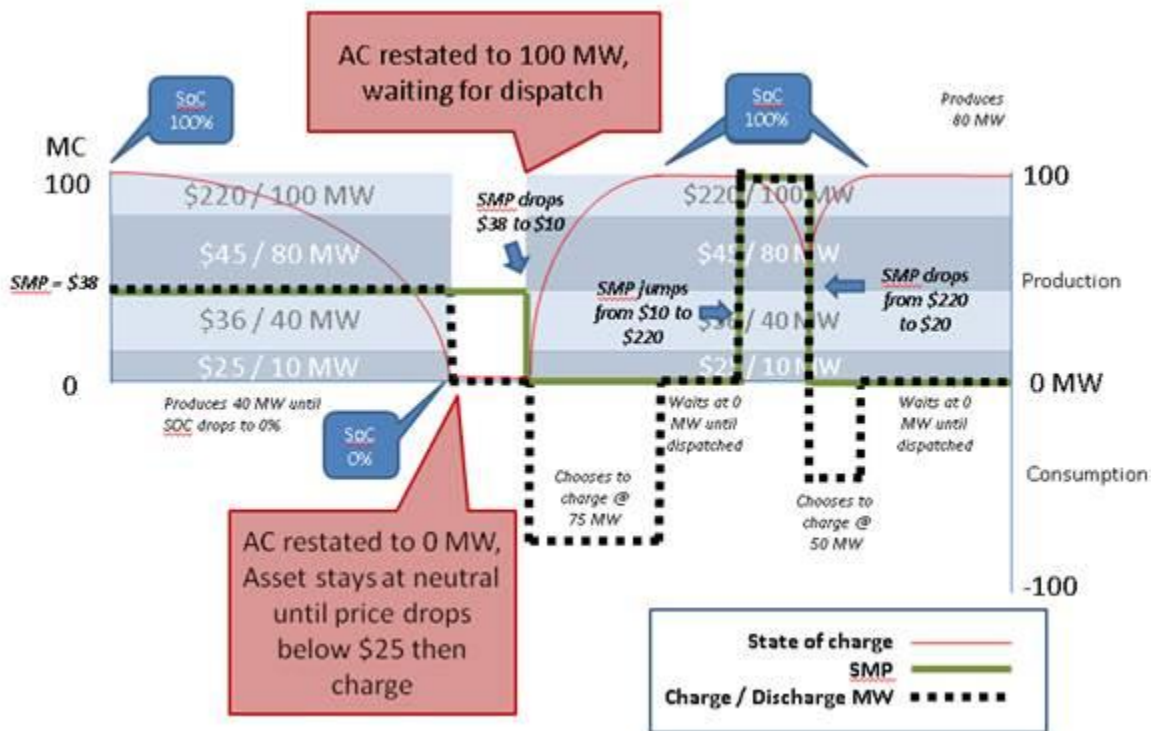


Figure 1 above provides an example where a pool participant has submitted an offer to the energy market for a 100 MW source asset that is a stand-alone energy storage facility. The starting point of this example has the system marginal price at \$38. At this price, the AESO issues a dispatch for the energy storage facility (with a fully charged facility) of 40 MW. The AESO expects that the facility will continue to provide 40 MW of energy production until the energy storage facility receives a dispatch for another level or is incapable of maintaining the original level. For energy storage facilities, physical incapability occurs when the state of charge<sup>3</sup> of the facility drops to 0%. When the energy storage facility’s state of charge is at 0%, the source asset is no longer available and may be subject to restatements to represent the change in available capability and operating state. Figure 1 outlines an example where the pool participant submits an available capacity restatement when the state of charge drops to 0%.

In this example, once the state of charge drops to 0%, the pool participant restates the available capacity to 0 MW and declares an acceptable operational reason as “0% State of charge”. The pool participant may wish to recharge the energy storage facility when system marginal price has dropped to levels that are below submitted offers.<sup>4</sup> Recharging the energy storage facility while the system marginal price is higher than any block offer will start to restore the state of charge above 0% indicating the energy storage facility will no longer have an available capability of 0 MW and an available capability restatement is required. In Figure 1, when the system marginal price drops below \$25, the pool participant charges the energy storage facility at any desired MW level and restores the available capability to 100 MW. In this example, charging is at 75 MW and the pool participant can continue to charge the energy storage facility until the system marginal price rises to or above \$25. In the example, the state of charge restores to 100%, however the pool participant waits for the system controller to issue a dispatch for a level above 0 MW in order to discharge.

<sup>3</sup> Further information on state of charge is described in Information Document 2020-013, *Energy Storage Guidance Document*.

<sup>4</sup> See Figure 2 for offers that have block 0 priced at \$0.00/MWh.

In Figure 1, when the system marginal price jumps from \$10 to \$220, the system controller issues a dispatch for the energy storage facility to provide 100 MW of energy. This price excursion only lasts a short while and the system marginal price drops back down to \$20, at which point the system controller issues a dispatch for the energy storage facility to reduce its output to 0 MW and the pool participant takes that opportunity to recharge the energy storage facility at 50 MW. While remaining at the 0 MW dispatch level, the pool participant continues to charge the energy storage facility until it reaches a state of charge of 100%. Once again, the energy storage facility is fully charged and out of merit, so the energy storage facility remains at the 0 MW dispatch level until the system controller issues a new dispatch.

### 3 Price Restatements

Section 203.3 gives pool participants the ability to restate the price associated with an offer or bid for a pool asset. To make a price restatement, pool participants may change the price associated with a bid or offer prior to 2 hours before the start of a settlement interval. Price restatements do not require an acceptable operational reason.

As an example, see Table 4 below. Since this offer has been submitted for HE12, at any time prior to 9:00 am, the pool participant change the offer as follows:

**Table 4 – Offer Operating Blocks for HE12**

Block	MW	Price
0	40	\$0.00
1	60	\$40.00
2	80	\$55.00
3	100	\$60.00
4	130	\$800.00
5	140	\$900.00
6	150	\$990.00

For a source asset that is (or includes) an energy storage facility, a pool participant can manage the state of charge by restating the price associated with an offer. As noted above, price restatements may be changed prior to 2 hours before the start of the settlement interval.

### 4 MW Restatements

Section 203.3 gives pool participants the ability to submit a MW restatement, redistributing the MW associated with an offer or bid for a pool asset. MW restatements are only permitted under certain operating conditions, as set out in subsection 4(2) of Section 203.3.

As an example, see Table 5 below. Assume that Table 1 above reflected the original offer for this pool asset.

Table 5 shows the new offer after making a MW restatement where operating conditions required the pool asset to produce a minimum of 55 MW.

**Table 5 – Offer Operating Blocks**

Block	MW	Price
0	55	\$0.00
1	60	\$25.00
2	80	\$49.00
3	100	\$60.00
4	130	\$700.00
5	140	\$900.00
6	150	\$990.00

15 MW have been moved from Block 1 into Block 0, into the \$0.00 offer block.

Note, that when submitting a MW restatement, prices remain constant for each block.

For a source asset that is (or includes) an energy storage facility, if a pool participant cannot comply with a dispatch because the state of charge is at relative 0% or relative 100% (for example, a battery is fully charged or fully discharged), the AESO expects a pool participant to submit a MW restatement and declare the acceptable operating reason as the state of charge being the physical limitation.

**Figure 2 - Energy Storage MW Restatement Example**

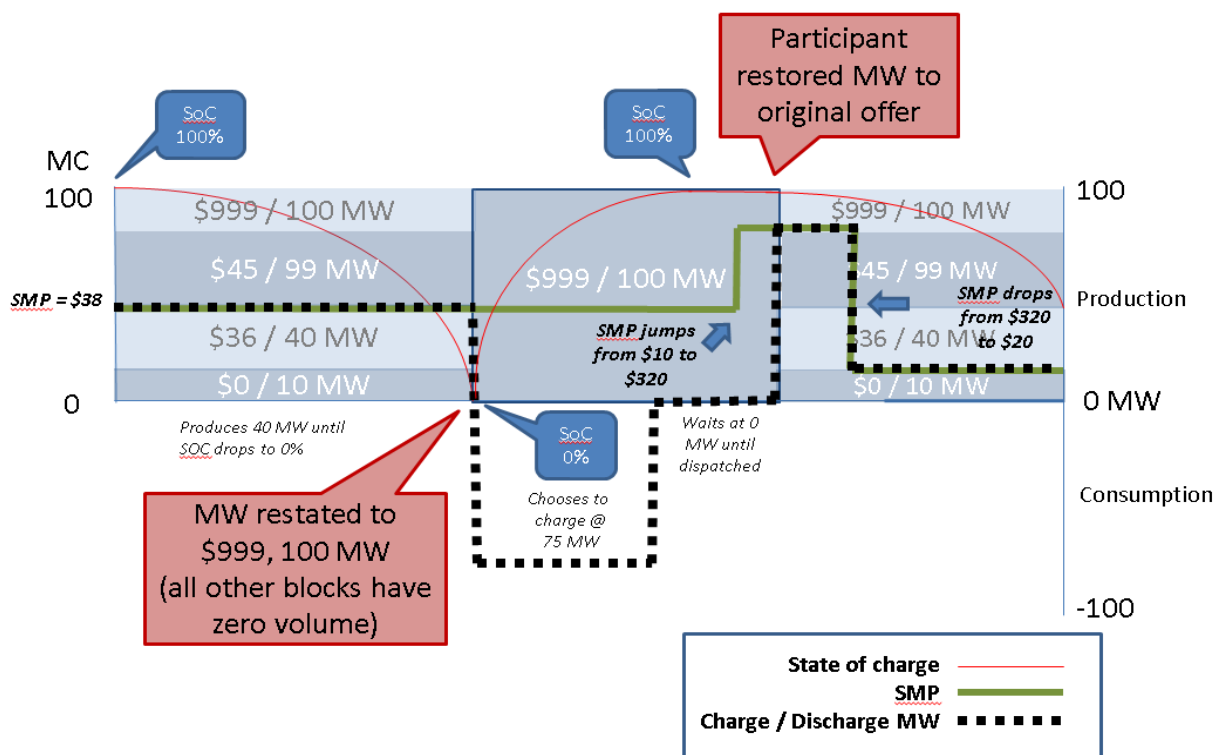


Figure 2 provides an example of a situation where a pool participant with a source asset that is an energy storage facility submits a MW restatement when the energy storage facility's state of charge drops to 0%.

Ensuring the dispatchable volume of an energy storage facility is priced above the system marginal price enables the pool participant to restore the energy storage facility's state of charge without receiving a dispatch to provide energy. In this example, the pool participant moves all of its MW volume into a \$999 block and leaves it there until the energy storage facility's state of charge is restored. The pool participant then chooses to submit a MW restatement, reverting to the original day-ahead offer, and the system controller issues a dispatch for the energy storage facility.

### Revision History

Posting Date	Description of Changes
	Removal of subsection 5
2020-06-19	Addition of information regarding energy storage facilities incorporated into subsections 2, 3 and 4
2017-05-11	Addition of section 5
2014-06-13	ISO rule reference amendment
2013-11-12	Administrative updates
2013-01-08	Initial release