Information Document
Outages
ID #2013-003R

Information documents are not authoritative. Information documents are for information purposes only and are intended to provide guidance. If there is a discrepancy between an information document and any authoritative document[1] in effect, the authoritative document governs.

1 Purpose

This information document relates to the following authoritative documents:

- Section 203.4 of the ISO rules, *Delivery Requirements for Energy ("*Section 203.4*");*
- Section 203.5 of the ISO rules, *Consumption Requirements for Bids ("*Section 203.5*");*
- Section 306.3 of the ISO rules, *Load Planned Outage Reporting* ("Section 306.3");
- Section 306.4 of the ISO rules, *Transmission Planned Outage Reporting and Coordination* ("Section 306.4");
- Section 306.5 of the ISO rules, *Source Asset Outage Reporting and Coordination* ("Section 306.5"); and
- Section 306.7 of the ISO rules, *Mothball Outage Reporting* ("Section 306.7").

The *Fair, Efficient and Open Competition Regulation* imposes an obligation on market participants to provide outage records to the AESO. In accordance with section 4(3) of the *Fair, Efficient and Open Competition Regulation* and Section 306.4, the AESO makes outage records received from market participants available to the public in the form of reports. The purpose of this information document is to provide additional information regarding the outage reporting process and the related reports posted on the AESO's website.

2 Transmission Planned Outages

2.1 Planned Outages

Applicability

Section 306.4 applies to all transmission planned outages, including live-line work, terminal equipment and reclose-block situations. Terminal equipment includes elements associated with supervisory control and data acquisition, as well as communication and protection systems. Another term commonly used by legal owners for reclose-block situations is "hold-off permits".

Planned Outage Requests

For an outage that is being actively planned and is beyond a speculative stage, the legal owner of a transmission facility must submit a planned outage request to the AESO pursuant to subsection 2 of Section 306.4. The planned outage request can be made by submitting the outage information via the Control Room Operations Window ("CROW") web interface or via the Outage Scheduling Application Programming Interface ("API").

For legal owner of transmission facility without CROW license, the outage request can be made by sending an email to outage.coordination@aeso.ca.

To enable the AESO to foresee and mitigate coordination concerns, the AESO requests that legal owners submit planned outage requests as early as possible. Where a legal owner foresees that a planned outage has particular coordination challenges, the AESO encourages the legal owner to submit the requests as early as possible on a consultative basis.

[1] "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.

Further details concerning a transmission planned outage request submitted to the AESO pursuant to subsection 5(2) of Section 306.4 are as follows:

(i) "the transmission facility being taken out of service including system elements that will be affected": this is identified by the element designation as it appears on the CROW Web Equipment list;

(ii) "dates and times": this indicates the start of switching to isolate a facility and the end of switching to return the facility to service. For major elements, such as transmission lines, the switching time might add approximately 30 minutes to the start and end of the intended planned outage activity. In other situations, such as protection or telecommunication element planned outages, the switching time is expected to be negligible;

(iii) "nature of work": For generic transmission facilities that may be taken out of service, the system elements that will be affected should be included in the nature of work. This may include; remedial action schemes (RAS), telecom channels, and protection packages. Additional information such as duration of loss of SCADA visibility for telecom works and redundant protection packages still in-service may also be provided. Commercially sensitive information such as generator outages or visibility are not included in the submission. Switching procedures and other lengthy descriptions are not required as they cannot be accommodated by the CROW web interface or via the Outage Scheduling API;

(iv) "details of the contingency assessment and any mitigation plans": details of contingency assessments may be submitted to the AESO in a separate document. Contingency assessments utilize steady-state power flow and voltage stability analytic tools to identify concerns, such as thermal constraints, low voltage, high voltage and voltage collapse situations. The legal owner of a transmission facility is encouraged to contact the AESO by sending an email to outage.scheduling@aeso.ca confirming the scope of contingency assessments. The AESO does not anticipate that a legal owner will typically perform transient stability assessments. This does not preclude a legal owner from undertaking transient stability assessments or from assisting the AESO with such an assessment. In cases where the legal owner's contingency assessment has not identified any concerns, the legal owner may submit a statement such as "No concerns identified";

(v) "confirmation of coordination with affected market participants and adjacent transmission operators": this condition is satisfied by a policy statement from the requesting legal owner generally describing its coordination practice or policy with affected market participants and adjacent interconnected transmission operators. In particular circumstances, the AESO may request that the legal owner specifically confirm coordination with impacted market participants, such as system access customers or interconnected facility owners;

(vi) "isolation points": are important for the AESO's energy management system model to properly account for elements taken out of service and include at least 1 point greater than 25 kV using the element designation in the CROW Web Equipment list; and

(vii) "time to restore the transmission facility in an emergency": the information submitted indicates a realistic estimate of the time it would take to restore the transmission facility in an emergency given the particular conditions of the outage.

Reporting Outages on Transmission Facilities Not Visible to the AESO

The AESO recognizes that some large industrial service designations may consist of elements energized at more than 25 kV which are not visible to the AESO via SCADA. For such elements, unless an outage affects another legal owner, the legal owner of the industrial service designation may submit outage information via the CROW web interface or via the Outage Scheduling API in order to meet the reporting requirements of Section 306.4.

Planned Outage Pre-Work and Information

Pursuant to subsection 5(1)(a) of Section 306.4, the legal owner of a transmission facility coordinates with other affected legal owners to determine a mutually agreed upon planned outage schedule before submitting a planned outage request to the AESO.

Coordination

From time to time, a transmission facility owner will take facilities out of service to conduct maintenance and to construct new facilities. A number of conditions may compel a transmission facility owner to undertake these maintenance and construction outages in a particular period.

Pursuant to subsection 9 of Section 306.4, the legal owner of a generating unit, energy storage resource, aggregated facility, electric distribution system, and a load facility must coordinate planned outages with the affected legal owners on a reasonable efforts basis.

The AESO takes the priority of the work and the importance of the requested timeframe into account when approving the outage request and may approve the request even if an agreement on coordinating the outage has not been reached among the affected legal owners.

Assessments

The AESO assesses planned outage requests as far in advance as it considers feasible. Assessments may take into account many factors including the AESO's estimation of future conditions on the interconnected electric system and the extent to which market participants can be made aware of the outage. As per subsection 6 of Section 306.4, the AESO may decide not to assess late-submitted planned outage requests. If the AESO does not assess a planned outage, the planned outage cannot proceed.

The AESO generally assesses planned outage requests using the following guidelines, although they may not be universally applicable:

(i) a planned transmission outage is considered to be the next credible contingency and every contingency thereafter is considered to be a subsequent contingency;

(ii) the AESO may use steady-state, voltage stability and transient stability analyses to assess next credible contingency and subsequent contingency conditions;

(iii) the AESO assesses the impacts of planned transmission outages to load and to the supply margin, including operating reserves;

(iv) where appropriate, the AESO consults with the parties affected by an outage and shares the study results; and

(v) based on the results of its analysis, the AESO may develop mitigation strategies for contingency situations or request changes to a legal owner's planned outage request.

Clarification of Specific Outage Request Issues

The following provide clarification of specific aspects of outage requests:

(i) Coordination with customers: The power system is always operated in anticipation of the next contingency. The AESO recommends that an outage be communicated by the transmission facility owner to a customer if it will likely affect how they will operate during the outage to mitigate the impacts of the N-1-1 condition.

(ii) Live Line and Reclose Block activities: Live line and reclose block activities do not result in any physical change to a facility and do not affect the manner in which the facility is operated. Therefore, regardless of voltage class, live line and reclose block activities may not be considered significant outages. However, these activities are still within the definition of a planned outage and therefore are to be included in the Tuesday week-ahead outage requests.

(iii) A request for an outage to a transformer that is energized but not normally carrying load and for which the isolation is a single breaker connected off of a bus, may be submitted to the AESO in the Tuesday week-ahead outage requests regardless of the voltage level of the transformer.

(iv) A request for an outage to a transformer that is energized but not normally carrying load and for which the isolation requires the momentary opening of a breaker(s) that will impact a ring bus or bus diameter, may be submitted in the Tuesday week-ahead outage requests regardless of the voltage level of the transformer.

(v) An outage to terminal equipment such as remote terminal units (RTUs), telecom radios, or an individual protection group may not be significant. If such an outage does not result in loss of visibility to generation or loss of control to a switched device (e.g. capacitor), regardless of the voltage level of the transformer it may not be significant.

(vi) Pursuant to subsection 3(3)(d) of Section 306.4, a legal owner of transmission facility must report an outage to the AESO if the outage affects a system element that connects a generating unit, energy storage resource, or an aggregated facility to the interconnected electric system. For the purpose of this requirement, a system element is affected if, as a result of the planned outage, the power flow will be interrupted between a generating unit, energy storage resource, or an aggregated facility and the transmission system.

Changes to Requests and Cancellations

Subsection 4 of Section 306.4 sets out the times by which changes or cancellations to a previously scheduled outage request are to be submitted to the AESO. The sooner a legal owner submits a change to a scheduled outage, the more likely the AESO can assess and approve the change prior to the scheduled time of the outage. All changes to planned outages are made via the CROW web interface or via the Outage Scheduling API.

Notifications of emergency or forced outages submitted after 10 am on the business day before the change, may be made by phoning the AESO System Controller in addition to submitting the outage information via the CROW web interface or via the Outage Scheduling API.

In order to cancel a previously scheduled outage request in the time period up to and including the day before the start-date of the planned outage, and if the cancellation occurs during AESO business hours, being 8 am to 5 pm, the legal owner updates the outage information via the CROW web interface or via the Outage Scheduling API. In order to cancel a scheduled outage on the intended start-day of the planned outage, or if the cancellation occurs after AESO business hours, being 8 am to 5 pm, the day before the start-date of the planned outage, the legal owner phones the AESO System Controller in addition to updating the outage via the CROW web interface or via the Outage Scheduling API.

2.2 Transmission Planned Outage Reports

The AESO reports transmission planned outages to market participants in two separate reports: the *Approved Outages* report and the *Long Range Significant Transmission Outages* report. These reports are located on the Market & System Reporting page of the AESO's website. Previous versions of these two reports are available.

In addition, the *System Coordination Plan* is sent directly to the legal owners of transmission facilities each week.

Approved Outages

The *Approved Outages* report lists the transmission planned outages that the AESO has approved. This report is time stamped when posted.

Long Range Significant Transmission Outages

The principal purpose of *Long Range Significant Transmission Outages* report is to assist in the coordination of planned outages between legal owners. The report lists transmission planned outages by month for the subsequent 24 months. Planned outages listed in this report are tentative and may not have the AESO's approval. The report includes planned outages of facilities that meet one or more of the criteria listed in subsection 3(3) of Section 306.4. The *Long Range Significant Outages* report is time stamped when posted.

System Coordination Plan

The *System Coordination Plan* provides information to the legal owners of transmission facilities about the conditions that must be in place before particular outages can occur or mitigation strategies for contingency conditions, or both. Pursuant to subsection 10(5) of Section 306.4, the ISO uses reasonable efforts to e-mail the *System Coordination Plan* to the legal owners of transmission facilities by 18:00 (6:00 pm) each Thursday. The AESO may send an updated *System Coordination Plan* to the legal owners of transmission facilities on the Friday prior to the start of the operating week. The updated *System Coordination Plan* may include information regarding additional outages, cancelled outages, and revised risk assessments.

3 Generation Outage

3.1 Generation Outage Communication

A pool participant submits contact information to the AESO pursuant to subsection 2(2) of Section 306.5 by sending an email to info@aeso.ca.

A pool participant submits generation planned outage information to the AESO pursuant to subsection 3 of Section 306.5 through the Energy Trading System.

A pool participant submits delayed forced outage and automatic forced outage information to the AESO pursuant to subsections 4(2) and 5 of Section 306.5 by making a telephone call to the AESO as soon as reasonably practicable following a determination by the pool participant that the outage is necessary.

For the purpose of subsection 5(a) of Section 306.5 and subsection 5(2) of Section 203.4, a pool participant contacts the AESO and it is the AESO-designated telephone number that has voice recording system.

Energy Storage Resource Outage Reporting

If a pool participant requires an outage for a pool asset that is (or includes) an energy storage resource, and the associated source asset has a maximum capability of 5 MW or greater, the AESO expects the pool participant to submit a generation planned outage for the source asset pursuant to Section 306.5.

If a pool participant requires an outage for a pool asset that is (or includes) an energy storage facility, and the associated asset has a maximum capability of 5 MW or greater and plans to decrease the capability of an energy storage facility to charge from the interconnected electric system by 40 MW or greater, the AESO expects the pool participant to submit both the generation planned outage for the source asset pursuant to Section 306.5 and the load planned outage for the sink asset pursuant to Section 306.3.

3.2 Generation Outage Reports

The AESO reports generation outages to market participants in three separate reports: the *Daily Outage* report, the *7 Day Hourly Available Capability* report and the *Monthly Outage* report. These reports can be found on the Market & System Reporting page of the AESO's website. All 3 generation outage reports are current and no historical reports are available.

The purpose of these reports is to illustrate generation outages based on pool participant submissions in the Energy Trading System made in accordance with Sections 306.5 and 306.7. These reports reflect generation availability, but do not take constrained down generation into account. The expected impact of

transmission and other operating constraints, including outages, is reflected in the 24-Month Supply and Demand report.

The generation outage data will also be made available through the AIESGenCapacity API. The AIESGenCapacity API fetches hourly historical outages and provides an outage forecast for the next 24 months.

Description of the Generation Outage Reports

Daily Outage Report

The *Daily Outage* report provides the daily average volume of generation outages by fuel type for the next 3 months. The report is based on the outage data of pool assets as submitted by pool participants in the Energy Trading System. The outage data is aggregated by fuel type for each hour. The hourly data is then combined into a daily number by averaging the hourly volumes for all hours of the day by fuel type. The aggregated volume (in MW) for each fuel type is then rounded off to the nearest integer.

For most generating units, the maximum capability and maximum continuous rating are similar. However, for generating units that primarily supply onsite load and only offer electric energy net-to-grid, the maximum continuous rating may be considerably larger than the maximum capability.

Source assets smaller than 5 MW are not included in the outage reports.

The *Daily Outage* report is available in HTML and CSV formats.

Load and mothball outages are also included in the *Daily Outage* report. See Section 4, *Load Outage Reporting* and Section 5, *Mothball Outage Reporting* below.

Monthly Outage Report

The *Monthly Outage* report provides the monthly average volume of generation outages by fuel type for the next 24 months. The report is based on the outage data of pool assets as submitted by pool participants in the Energy Trading System. The data is aggregated by fuel type for each hour. The hourly data is then combined into a monthly number by averaging the hourly volumes for all hours of the month by fuel type. The aggregated volume (in MW) for each fuel type is then rounded off to the nearest integer.

Source assets smaller than 5 MW are not included in the outage reports.

The *Monthly Outage* report is available in Graph, HTML and CSV formats.

7 Day Hourly Available Capability Report

The *7 Day Hourly Available Capability* report illustrates the aggregate available capability factor by fuel type for each hour for the next 7 days. The availability factor is calculated as the sum of the available capability divided by the total maximum capability of the fuel type. The available capability is a factor of the generation outages and mothball outages according to the following formula:

Available Capability = Maximum Capability – Operational Outage – Mothball Outage

Updating of the Generation Outage Reports

All 3 of the generation outage reports are updated at regular intervals, illustrated by a “last updated time” stamp within the report. Outage report updating is subject to a small delay due to calculation and posting. On average, the outage reports are updated every 5 to 10 minutes, with a maximum update time of 20 minutes. On rare occasions, the *Daily Outage* and *Monthly Outage* reports may not be updated. If after refreshing the report the last updated time is more than 20 minutes earlier, please contact info@aeso.ca.

An outage may not appear in the report immediately. If the time at which the outage was submitted is after the “last updated” time on the report then no action needs to be taken, as the outage should appear following the next update.

If the time at which the outage was submitted is prior to the “last updated” time on the outage report, check that the new available capability values were submitted correctly into the Energy Trading System.

This can be verified by logging into the Energy Trading System and viewing the submission in the "Outage Scheduling" tab for the specific time period of that the outage. Determine the impact the submission would have on the outage report, noting that:

(i) outages are pro-rated across the time period (for example, an outage for a single hour today shows as an outage on the daily report of 1/24th of the magnitude); and

(ii) outages (in MW) are rounded to the nearest integer.

If a problem with the outage report is still suspected after completing these checks, contact info@aeso.ca. Even where an outage appears to be missing from an outage report, the report may still be accurate since a countervailing outage of similar magnitude and time could result in a zero net impact.

Note that the AESO does not provide individual pool participant outage information and does not indicate whether such information has or has not been included in an outage report.

New Generating Units

A new generating unit is only included in the outage reports once it has access to the Energy Trading System and once available capability and maximum capability values are entered for the unit. A pool participant is only able to access the Energy Trading System once it has a valid supply transmission service contract in place. Typically, this occurs on the first day of the month during which the generating unit is expected to start generating.

While the generating unit is testing in accordance with its testing plan submitted under Section 505.3 of the ISO rules, *Coordinating Synchronization, Commissioning, WECC Testing, Ancillary Services Testing, or Operational Testing*, the outage reports reflect its available capability submissions. Typically, testing and commissioning activities for simple cycle gas generating units are relatively short. Testing and commissioning activities for coal generating units and some cogeneration generating units, where commissioning may be staged, may last a number of months.

To ensure that all market participants know when a new unit is reflected in the outage report, the AESO has adopted the business practice of including the pool asset name on the list of pool assets and placing the generating unit on the Current Supply & Demand page on the AESO's website. While the AESO is able to add a generating unit to the Current Supply & Demand page, the AESO may not display the unit's total net generation until it has verified that it is receiving accurate data.

If a generating unit is added to the Current Supply & Demand page before all parts of its supervisory control and data acquisition system are operational, the values under the headings "Total Net Generation" and "Dispatched (and accepted) Contingency Reserve" display a dash instead of zero.

Generating Unit Retirement

A generating unit that is subject to an upcoming retirement is still required to submit availability information as specified by Section 306.5. In such cases, an available capability of 0 MW is recorded in each hour after the expected retirement date. This appears as an "outage" for the corresponding periods in the *Daily Outage* and *Monthly Outage* reports. Once the generating unit is retired, the pool participant no longer enters available capability values and the generating unit no longer appears in the *Daily Outage* and *Monthly Outage* reports. The AESO has adopted the business practice of changing the generating unit's entry in the list of pool assets to show an 'Operating Status' of 'retired' and removing the generating unit from the Current Supply & Demand page of the AESO's website.

4 Load Outage Reporting

As noted previously, load outages are combined with generation outages within the *Daily Outage* report. As with generation outages, the report displays load outages submitted for the current month and the next 3 months. The load outage records are aggregated to determine the daily load outage based on market participant submissions. The Load Outage data is also be made available through Load Outage Forecast API. The Load Outage Forecast API fetches hourly historical outages as well as the forecast for the next

24 months. Pursuant to Section 306.3, a market participant with a planned decrease in its capability to consume load at a facility, where such planned decrease is 40 MW or greater, must report load outage records to the AESO. Load outages associated with pipelines do not have to be reported to the AESO unless the outage behind a single point of delivery is 40 MW or greater.

Energy Storage Facility Load Outage Reporting

If a pool participant plans to decrease the capability of an energy storage facility to charge from the interconnected electric system by 40 MW or greater, the AESO expects the pool participant to submit a load planned outage for the associated sink asset pursuant to Section 306.3.

Monthly Supply and Demand Graphs

In addition to the outage reports described above, the AESO publishes 24 month supply and demand graphs on the AESO website.

The purpose of these graphs is to provide information to assist in the planning of generation and intertie outages. The graphs represent the anticipated available supply compared with expected system demand. The system demand includes load and required operating reserves. The supply portion accounts for planned outages and derates of generation, including those caused by transmission outages, and reductions in intertie capability caused by transmission system conditions. Generation outages are aggregated such that individual generating unit outages are not disclosed. The timeframe is a rolling window of 24 months. The graphs are updated each weekday, sometimes more than once per day, and are time-stamped.

5 Mothball Outage Reporting

Mothball outages are reported within the *Daily Outage* and *Monthly Outage* reports. The *Daily Outage* report displays the aggregated mothball outage volumes submitted for the current month and the subsequent 3 month period, whereas the *Monthly Outage* report displays the aggregated mothball outage volumes submitted for next 24 months.

The mothball outage data is also made available through AIESGenCapacity API. The AIESGenCapacity API fetches hourly historical mothball outage data as well as mothball outage data for the next 24 months, aggregated by fuel type. The data in the reports and the AIESGenCapacity API is based on the mothball outage records submitted by the market participants in the Energy Trading System, in accordance with Section 306.7.

Revision History

Posting Date	Description of Changes
2024-05-15	Amended sections 3 and 4 to add information regarding new AIESGenCapacity and Load Outage Forecast APIs for generation outage reporting and to update descriptions of existing reports. Added section 5 to describe mothball outage reporting, in line with section 306.7 of the ISO rules.
2024-04-16	Administrative amendments to align with the Energy Storage ISO Rule amendments. Section 2 was also updated to align procedures for changes or cancellations of scheduled outage requests with revised ISO rule 306.4 (AUC Decision 28605-D01-2024)

2023-05-12	Updated subsection 2.1 to include information regarding submission of outages via the CROW web interface or the Application Programming Interface (“API”). Deleted Appendix A as manual submissions are no longer required.
2022-04-01	Addition to subsection 2.2 to clarify information regarding updates to the *System Coordination Plan.* Addition to subsection 3.1 to clarify voice recording system requirements in Sections 203.4 and 306.5. Administrative amendments
2021-07-22	Addition of clarifications to subsection 2.1, Planned Outages, under the section “Clarification of Specific Outage Request Issues” paragraph (vi)
2020-06-19	Addition of information associated with energy storage facilities into subsections 3 and 4 Administrative amendments
2019-08-23	Added clarifications to section 2, Reporting Outages on Transmission Facilities Not Visible to the AESO and added a related submission form as Appendix A. Updated the contact information for planned outage requests.
2019-02-11	Add clarifications to Section 4, Load Outage Reporting.
2018-11-13	Added clarification to subsection 2.1, Clarification of Specific Outage Request Issues (iii) and (iv).
2017-12-06	Added clarifications and new section entitled “Clarification of Specific Outage Request Issues” under section 2.1. Assessments. Included examples for subsection 4(1) of section 306.4, “Changes to Requests and Cancellations”.
2016-09-28	Administrative amendments
2016-06-16	Revised the contact information in subsection 3.1
2016-06-07	Revisions to Sections 1 and 3 to add reference to Section 306.7, Mothball Outage Reporting and to provide contact information for mothball outage reporting.
2014-08-28	Initial release