

# Appendix A

## Overview of AESO Supply Adequacy Measures

*Figure 1* provides a non-exhaustive overview of AESO processes and activities relating to supply adequacy, including applicable legislation and AESO authoritative documents governing these processes and activities.

***Figure 1 – AESO processes and activities relating to supply adequacy***

All AESO processes and activities listed below are informed or required by the AESO’s legislative duties under the ***Electric Utilities Act*** and **the regulations thereunder**

Shorter-term (Real-time – 24 months)	Supply adequacy processes and actions	Longer-term (2-5 years)
<p>Establish operating agreements with adjacent balancing authorities that contain provisions for emergency assistance (per <b>requirement R1</b> of reliability standard <b>EOP-001-AB1-2.1b</b>)</p> <p>Establish and implement operating procedures, operating processes, or operating plans, for activities that require notification or coordination of actions that may impact adjacent reliability coordinator areas, which procedures, processes, or plans must include energy and capacity shortage (per <b>requirement R1.2</b> of reliability standard <b>IRO-014-AB-3</b>)</p> <p>Develop, maintain, and implement a capacity and energy emergency plan to mitigate insufficient generating capacity (per</p>	<p><b>Develop plans to manage supply shortfall events</b></p>	<p>N/A</p>

<p><b>requirements R2, R5, R6, and R7</b> of reliability standard <b>EOP-001-AB1-2.1b</b>; <b>requirement R4</b> of reliability standard <b>EOP-002-AB1-2</b>)</p> <p>Develop, maintain, and implement plans for load shedding (per <b>requirement R2</b> of reliability standard <b>EOP-001-AB1-2.1b</b>)</p>		
<p>Forecast the potential for supply shortfall in the short term, comparing available supply<sup>1</sup> with firm load and regulating reserves requirement (per <b>subsection 2 of Section 202.2</b> of the ISO rules)</p> <p>Forecast and monitor supply adequacy using <i>24-Month Supply Adequacy Report</i> (per <b>subsection 2 of Section 202.6</b> of the ISO rules)</p> <p>Identify potential threats to “system security” (per <b>Section 305.4</b> of the ISO rules)</p>	<p><b>Forecast and monitor</b></p>	<p>Forecast and monitor supply adequacy using the <i>Long-term Adequacy Report</i> (per <b>subsection 4 of Section 202.6</b> of the ISO rules)</p>
<p>System controllers assess supply adequacy in real time, considering current market data; transmission and generation outages; total transfer capability and available transfer capability on the interties; Demand Opportunity Service (DOS); and forecasts for load, variable generation, and operating reserve requirements</p> <p>Develop, maintain, and implement a capacity and energy emergency plan to mitigate insufficient generating capacity (per <b>requirement R2</b> of reliability standard <b>EOP-001-AB-2.1b</b>)</p> <p>Assess supply adequacy using 7-day <i>Supply Adequacy Report</i> (also referred to as the <i>Short-Term Adequacy Report</i>) (per <b>subsection 3 of Section 202.6</b> of the ISO rules) and <i>24-Month</i></p>	<p><b>Assess</b></p>	<p>Assess the potential need for preventative action by referring to the long-term adequacy threshold (per <b>subsection 5 of Section 202.6</b> of the ISO rules)</p> <p>Assess the likely cause, magnitude, and timing of potential supply adequacy issues (per <b>subsection 5 of Section 202.6</b> of the ISO rules)</p>

<sup>1</sup> Determined in accordance with the short-term adequacy assessment pursuant to **subsection 3 of Section 202.6**.

<p><i>Supply Adequacy Report</i> (per subsection 2 of <b>Section 202.6</b> of the ISO rules)</p> <p>Assess planned outages of transmission facilities, considering “other anticipated conditions” on the interconnected electric system, which could include potential supply shortfall conditions (per <b>subsection 6(3) of Section 306.4</b> of the ISO rules)</p> <p>Assess planned outage of generating source assets, including considering and analyzing the results of the <i>24-Month Supply Adequacy Report</i> and further assessing the status of all source assets based on all planned outage plans submitted to the AESO (per <b>subsection 7(2) of Section 306.5</b> of the ISO rules)</p> <p>Continue to conduct further situational analysis to seek to alleviate the potential supply adequacy shortfall and avoid the cancellation of any outages of generating source assets (per <b>subsection 7(3) of Section 306.5</b> of the ISO rules)</p> <p>Assess adequacy of supply to assist in determining whether to issue a directive cancelling a mothball outage (per <b>subsections 6-7 of Section 306.7</b> of the ISO rules)</p> <p>Assess potential threats to “system security” (per <b>Section 305.4</b> of the ISO rules)</p>		
<p>Publish <i>24-Month Supply and Demand Forecast</i> (per <b>subsection 2 of Section 202.6</b> of the ISO rules)</p> <ul style="list-style-type: none"> <li>Daily charts and data file are generated automatically and uploaded to the AESO’s ETS webpage</li> </ul> <p>Publish <i>7-day Short-Term Adequacy Report</i> (per <b>subsection 3 of Section 202.6</b> of the ISO rules)</p>	<p><b>Notification/reports on supply adequacy</b></p>	<p>Publish <i>Long-term Adequacy Report</i> (per <b>subsection 4 of Section 202.6</b> of the ISO rules) to enable the market to respond to long-term supply adequacy signals</p> <ul style="list-style-type: none"> <li>Quarterly publications containing four key elements: i) a list of proposed generation additions and retirements; ii) a five-year annual reserve margin forecast; iii) a two-year daily supply cushion forecast; and iv) an</li> </ul>

- Hourly data chart generated automatically and uploaded to the AESO's ETS webpage

Communicate approval of planned outages for transmission facilities through an approved outage report posted on the AESO website (per **subsection 7 of Section 306.4** of the ISO rules)

If supply shortfall is forecast: Issue a message to pool participants warning of an upcoming state of supply shortfall (per **subsection 3(1) of Section 202.2** of the ISO rules)

Notification of the AESO's determination that there is a high probability of supply adequacy shortfall or reliability concern (per **subsection 7(3) of Section 306.5** of the ISO rules)

- Posted to AESO website for one week in anticipation that certain pool participants may have flexibility to voluntarily amend plans for outages to assist in the alleviation of the supply adequacy shortfall or reliability situation (per **subsection 7(5) of Section 306.5** of the ISO rules)

Contact individual pool participants to request further review of outage plans if pool participants' voluntary action—resulting from the AESO's notification per subsection 7(3) of Section 306.5—do not result in a reduction in the total amount of generating source asset capacity planned for outages such that the forecast supply adequacy shortfall or reliability remains unresolved (per **subsection 7(6) of Section 306.5** of the ISO rules)

Communicate to market participants the declaration, modification, or termination of Energy Emergency Alerts (per **subsection 4 of Section 305.1** of the ISO rules)

assessment of probability of supply shortfall over a two-year period

If long-term adequacy threshold is breached: Engage with key stakeholder groups, including Department of Energy, Market Surveillance Administrator, transmission facility owners, distribution facility owners, other market participants inclusive of load customers, and the general public

<p>Prevent threats to “system security” (per <b>Section 305.4</b> of the ISO rules)</p> <p>May take various actions to prevent supply shortfall, including:</p> <ul style="list-style-type: none"> <li>• Cancelling any of the following planned outages: generator, intertie, or transmission lines that would otherwise restrict the flow of electric energy from source assets (per <b>subsections 6, 7, and 9 of Section 306.5</b> of the ISO rules)</li> <li>• Appeal for load reduction, including from pool participants, DFOs, and the general public (per AESO <b>Information Document #2012-006R, Adequacy and Supply Shortfall</b>)</li> <li>• Directing a long lead time asset, along with corresponding dispatch down service (per <b>subsection 3(2) of Section 202.2</b> of the ISO rules)</li> <li>• Instructing available source assets to deliver energy (per <b>subsection 3(2) of Section 202.2</b> of the ISO rules)</li> <li>• Curtailing demand opportunity service (per <b>subsection 3(2) of Section 202.2</b> of the ISO rules)</li> <li>• Maximizing import capability of interties (per <b>subsection 3(2) of Section 202.2</b> of the ISO rules)</li> </ul>	<p><b>Prevent supply shortfall</b> <i>(i.e., before declaration of an Energy Emergency Alert)</i></p>	<p>AESO may take various actions to prevent supply shortfall, including:</p> <ul style="list-style-type: none"> <li>• Procuring any of the following services: load shed, emergency portable generation, and self-supply and back-up generation that would not otherwise be available to participate in the energy market (per <b>subsection 6 of Section 202.6</b> of the ISO rules)</li> </ul>
<p>After cancelling an outage under subsection 6 of Section 306.5, prepare and post a report (per <b>subsection 10 of Section 306.5</b> of the ISO rules)</p> <p>Declare an Energy Emergency Alert 1-3 if the requisite criteria are met (per <b>subsection 2 of Section 305.1</b> of the ISO rules)</p> <p>Prepare and post a report regarding the issuance of a directive for energy from a long</p>	<p><b>Notification/reports</b> <i>(post-preventative action)</i></p>	<p>N/A</p>

lead time asset (per **subsection 10 of Section 202.4** of the ISO rules)

May take various actions to manage a supply shortfall situation, including:

- Directing a long lead time asset, along with corresponding dispatch down service (per **subsection 3(2) of Section 202.2** of the ISO rules)
- Instructing available source assets to deliver energy (per **subsection 3(2) of Section 202.2** of the ISO rules)
- Curtailing demand opportunity service (per **subsection 3(2) of Section 202.2** of the ISO rules)
- Maximizing import capability of interties (per **subsection 3(2) of Section 202.2** of the ISO rules)
- Instructing a pool participant to provide energy in excess of the generating source asset's maximum capability (per **subsection 4(1) of Section 202.2** of the ISO rules)
- Approving valid e-tags submitted for the current or next settlement interval for import energy that do not have a corresponding offer, up to the posted available transfer capability limit (per **subsection 4(3) of Section 202.2** of the ISO rules)
- Instructing DFOs to shed firm load (per **subsection 5(1) of Section 202.2** of the ISO rules; **Requirement R1** of reliability standard **EOP-003-AB1**; see also **requirement R1** of reliability standard **EOP-003-AB1-1** requiring the AESO to issue directives to shed load when the interconnected electric system is operating with insufficient generation or transmission)

**Manage supply shortfall**  
*(i.e., after declaration of an Energy  
Emergency Alert)*

Refer "Prevent supply shortfall" above

<p>capacity and after all remedial steps have been considered)</p>		
<p>Declare an Energy Emergency Alert 0 if the requisite criteria are met (per <b>subsection 2 of Section 305.1</b> of the ISO rules)</p> <p>Report on load shed events by completing an Energy Emergency Alert 3 Report (per <b>requirement R9</b> of reliability standard <b>EOP-002-AB1-2</b>)</p> <p>Prepare and post a report regarding the issuance of a directive for energy from a long lead time asset (per <b>subsection 10 of Section 202.4</b> of the ISO rules)</p>	<p><b>Notification/reports (post-supply shortfall)</b></p>	<p>N/A</p>