

## **601 TRANSMISSION OUTAGES AND LIMIT CHANGES**

### **1. Purpose**

To define the process to be used by the ISO and transmission facility owners (TFOs) to coordinate transmission outages and limit changes on the Alberta Interconnected Electric System (AIES) and interconnections. Outage coordination is essential to maintain system reliability, reduce the number of hours of operation under constrained conditions, facilitate open and transparent operation of the electricity market, and minimize customer interruptions.

### **2. Background**

There is a need to coordinate outages and derates to generation and major transmission elements. Since June 1998, the process for managing the necessary coordination and completing the associated risk assessments has evolved significantly. The original version of the Transmission Administrator Operating Policy (TAOP) on outage coordination was issued in September of 1998. Since then, a number of refinements have been made to clearly define the responsibilities of the various parties with regard to the coordination of outages and limit changes and the associated risk analysis.

### **3. Policy**

#### **3.1 Outage coordination and reliability**

- The ISO has overall accountability for assessment of the risk to the transmission system from maintenance and commissioning activities. The ISO will carry out assessments of the risk to the transmission system posed by maintenance and commissioning operations, and work in cooperation with the other parties to resolve any issues that are identified (see [Appendix B](#)).
- TFOs will provide outage and maintenance schedules to the ISO as set out in this OPP. Outage information provided by the TFOs, with their outage schedules, will include scheduled dates and times, affected elements, nature of work, a brief operational contingency assessment, and time to restore the element in an emergency.
- TFOs will provide, as soon as reasonable, unplanned derates of any of its transmission facilities and derate information. Such derate information will include the transmission facilities affected, time period, and cause of the derate. TFOs will subsequently inform the ISO of plans to restore the derated transmission facilities to their full rating.
- TFOs will make reasonable efforts to coordinate planned outages to transmission elements that restrict generation with the planned outage schedules of the affected GFO before submitting such plans to the ISO for review and overall system coordination.
- TFOs will make reasonable efforts to coordinate their scheduled work or maintenance with any impacted interconnecting facility owner, so as to minimize the risk and impacts to system access service customers to the extent reasonably possible.
- TFOs will work with the ISO and other parties, to assess the potential impact of planned outages and to resolve any issues that are identified.

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- TFOs will not interrupt or curtail transmission services to carry out scheduled maintenance or work until the ISO confirms that to do so would not adversely affect system reliability or, if during real-time, the SC approves the timing of the outage, on the basis of the impact of the requested outage on AIES system reliability.
- TFOs will coordinate operations relating to transmission outages, with the SC in real-time.
- The interconnected members (IMs) will provide the ISO with outage schedules and related information, as described in [Section 4.4](#).

## **4. Responsibilities**

### **4.1 ISO**

The ISO must:

- Review the procedures used to implement this OPP.
- Review and confirm long term maintenance schedules for the transmission system, in order to ensure that such schedules do not affect system reliability.
- Conduct assessments and analyses, in consultation with the affected parties to identify any risk to the transmission system, issues or potential problems with respect to proposed maintenance schedules and derates. The ISO will work with the parties to resolve any issues that are identified.
- Work with the TFOs and make reasonable efforts to finalize the outage schedules for facilities 240 kV and above, and balancing area interconnections, at least 30 days in advance of the operating week.
- Convene and chair a coordination review meeting (if required) to review the proposed outages. Participants in the coordination review meeting will include the ISO, the facility owner proposing the outage and may include other TFOs, GFOs, power purchase arrangements (PPA) buyers, neighboring jurisdictions and wire service providers (WSPs), where these parties are likely to be directly affected by the outage plans. The meeting will take place at least 15 days in advance of the proposed outage for facilities below 240 kV or at least 30 days in advance of the proposed outage for facilities 240 kV and above.
- Carry out risk assessments as set out in [OPP 602](#) and may request modifications and deferrals, or request restrictions be placed on planned transmission outages. The ISO will communicate these study results and requests to the TFOs. The ISO will support the TFOs and GFOs in any discussions with their stakeholders regarding changes to proposed outage schedules that result from ISO requests.
- Aggregate the submitted maintenance and outage plans into one coordinated operations plan for the entire system (the system coordination plan). The ISO will provide the system coordination plan to the TFOs at least 2 working days in advance of the operating week. The system coordination plan will not include details of generator outage schedules.
- Identify, as part of the system coordination plan, any high risk planned transmission outages.
- Produce and display on the AESO's website at the end of the day each Wednesday the actual scheduled outage data (transmission, and interconnection information) for the next week.

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- Be responsible for daily intertie postings, which are modified as a result of constraints on Alberta's interconnections due to planned maintenance. The SC makes changes in real-time. All changes are displayed on the AESO's website.
- Request maintenance schedules and information from all interconnected systems (including BC Hydro and SaskPower) on outages affecting inter-tie capability.

**System Controller**

The SC must:

- Provide approval or denial of the planned outage timing to the TFOs prior to the removal from service, for maintenance, of equipment above 25 kV. The SC will also provide confirmation to the TFOs before energization of equipment after completion of maintenance.
- Continue to monitor system operating conditions and will implement the System Coordination Plan unless implementation would, in the opinion of the SC, result in an unacceptable risk to system reliability or the safety of the public, personnel or facilities. The SC will evaluate and approve or reject any request for timing changes to the system coordination plan in real-time based on the impact to AIES system reliability.
- Confirm that the removal of TFO equipment from service will not pose an unacceptable risk to AIES system reliability, except where the TFO determines that leaving the equipment in service would result in an unacceptable risk to the safety of the public, personnel or apparatus.
- Any TFO equipment outage may be disallowed in by the SC to maintain system reliability, except those that are necessary for maintaining equipment integrity or ensuring personnel and public safety.
- Coordinate unplanned maintenance outages with facility owners to ensure acceptable system risks.
- As required by WECC requirements, the SC will advise the Vancouver Reliability Coordinator (VRC) of planned or forced outages to key facilities as specified in the WECC Regional Reliability Plan.
- Make changes to the interconnection ATC postings in real-time.

**4.2 Transmission Facility Owners**

TFOs must:

- Provide outage schedules, in electronic form and in the format of [Appendix A](#), to the ISO (e-mail address <mailto:outage.scheduling@aeso.ca>) as follows:
  - Prior to February 15 of each year, provide a schedule for such year of all planned outages and live line work known at the time for its facilities operating at 69 kV and above, identifying the quarter in which the work is expected to be carried out, paying particular attention to 240 kV facilities, and those facilities that provide interconnections with other balancing areas or interconnections to generation facilities.
  - Provide to the ISO 30 days prior to the commencement of each operating week a preliminary schedule of planned outages and work notifications for transmission

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facility outages and live line work for such operating week, for facilities operating at 69 kV and above, which have been scheduled by the TFO. The TFOs will make reasonable effort to coordinate their outage schedules with interconnected facility owners and system access customers prior to submitting their outage schedules to the ISO.

- In recognition of the particular importance of facilities 240 kV and above, and balancing area interconnections, to the reliability of the AIES and the impacts on transfer capabilities of these facilities, the ISO and TFO will make reasonable efforts to finalize each outage schedule in respect of such facilities at least 30 days prior to the commencement of the relevant operating week.
- Outage information provided with outage schedules will include scheduled dates and times, elements affected, nature of work, a brief operational contingency assessment, and time to restore element in an emergency.
- As soon as practical, provide unplanned derates of all transmission facilities to the SC by telephone. The derate information will include elements affected, time period, and cause of the derate.
- Changes to outage schedules arising up to four days prior to the commencement of the relevant operating week will be communicated to the ISO as soon as practical following the change.
- Provide to the ISO four days prior to the commencement of each operating week its planned outage schedule for transmission facility outages and live line work for facilities operating at 69 kV and above which have been scheduled by the TFO for the following operating week. The plans are to be submitted by 12:00 noon on the Tuesday before the operating week. Any changes are to be submitted no later than 17:00 (5 PM) on the Tuesday before the operating week. An example of a transmission outage schedule is shown in [Appendix C](#).
- Changes to weekly outage schedules will be communicated to the ISO as soon as practical following the change. Changes to the weekly outage schedule occurring in real-time will be communicated to the SC, as soon as practical following the change.
- Obtain real-time approval from the SC prior to switching transmission equipment in or out of service except where the TFO determines that not switching transmission equipment would result in an unacceptable risk to the safety of the public, personnel or equipment.

#### **4.3 System Members (SM)**

- System Members must, on a reasonable efforts basis, coordinate with the TFO to which the System Member is interconnected, regarding any maintenance outage plans.

#### **4.4 Interconnected Members (IM)**

- Interconnected Members (IM) must provide outage schedules, in electronic form and in the format of [Appendix A](#), to the ISO (e-mail address <mailto:outage.scheduling@aeso.ca>) as follows:
  - Each year provide a schedule for all planned outages and live line work known at the time, for those facilities where the work may result in a risk to the reliability or transfer capacity of interconnections with Alberta. Particular emphasis should be

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placed on identification of outages on 240 kV and 500 kV lines and DC converter stations that interconnect with the AIES. The plan is to be submitted by November 30.

- Provide to the ISO 30 days prior to the commencement of each operating week a preliminary schedule of planned outages and work notifications for transmission facility outages and live line work for such operating week, for those facilities where the work may result in a risk to the reliability or transfer capacity of interconnections with Alberta.
- Outage information provided with outage schedules will include scheduled dates and times, elements affected, nature of work, a brief operational contingency assessment, and time to restore element in an emergency.
- Changes to outage schedules arising up to four days prior to the commencement of the relevant operating week will be communicated to the ISO as soon as practical following the change.
- Four days prior to the commencement of each operating week, the IM will provide the ISO with planned outage and work schedules for transmission facility outages and live line work, for facilities as described in this section, which have been scheduled for such operating week. The plans are to be submitted by 12:00 noon on the Tuesday before the operating week. Any changes are to be submitted no later than 17:00 (5 PM) on the Tuesday before the operating week.
- Changes to weekly outage schedules will be communicated to the ISO as soon as practical following the change.
- Unplanned changes to the inter-tie facilities will be communicated to the SC, as soon as practical following the change.

## **5. System Controller Procedures**

None specified.

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**Appendix A. Transmission Outage Schedule**

<b>Transmission Element Name</b>	<b>Outage From Date (YYYY-MM-DD)</b>	<b>Outage From Time (HH:MM)</b>	<b>Outage to Date (YYYY-MM-DD)</b>	<b>Outage to Time (HH:MM)</b>	<b>Emergency Return to Service (Hr.)</b>	<b>Activity Code</b>	<b>Elements Not Avail. For Service During Maint. Period Due to the Planned Maint. Activities</b>	<b>Scheduled Activity</b>
Use the exact Bus code, Transmission Segment Code, or Transformer Code as previously submitted by your utility to the TA <i>or</i> Line, Breaker/ Circuit switcher and Transformer designations								Details and descriptions of outage not implicit in the previous six columns must be entered
Activity Codes:  GOI - Guarantee of isolation, outage, clearance on a transmission element RB or HOP - Recloser block or Hold-off permit TFO specific codes for outages other than above								

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**Appendix B. Transmission Risk Assessment**

Transmission Element Name	Outage from Date (YYYY-MM-DD)	Outage from Time (HH:MM)	Risk Assessment
As described above		24 hr clock	Indicate level of risk to other transmission elements (low, medium, high) and, for medium or high risk situations, identify the elements at risk and consequences of an inadvertent outage to those element(s).

**Appendix C. Transmission Outage Schedule – Examples**

Transmission Element Name	Outage From Date (YYYY-MM-DD)	Outage From Time	Outage to Date	Outage to Time	Emergency Return to Service (Hr.)	Activity Code	Elements Not Avail. For Service During Maint. Period Due to the Planned Maint. Activities	Scheduled Activity
132S Relays	2000-04-05	08:00	2000-04-05	17:00	4	TE	950L	Relay maint. on 132S950L
745L (58S –745L985)	2000-04-06	08:00	2000-04-06	14:00	6	GOI		Line maintenance
9L948 (863S- 648S)	2000-04-06	08:00	2000-04-06	17:00	3	GOI		Spacer change
745AL4	2000-04-15	08:00	2000-04-15	18:00	6	GOI	745 AL	Airbreak maintenance
<b>Activity Codes:</b>								
GOI - Guarantee of isolation, outage, clearance on a transmission element								
RB or HOP - Recloser block or Hold-off permit								
TFO specific codes for outages other than above								

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## 6. Revision History

<b>Issued</b>	<b>Description</b>
2009-09-01	Supersedes 2008-11-13
2008-11-13	Supersedes 2007-09-27
2007-09-27	Supersedes 2005-05-25; Generator Outage Coordination info transferred to new OPP 606
2005-05-25	Supersedes 2003-07-28
2003-07-28	Revised to ISO Operating Policies and Procedures