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OUTAGES

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IESO Training Presentation

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Outages

Outage Overview

- Market participants are required to request permission and receive approval for planned outages from the IESO in order to ensure that equipment outages do not impact the reliability and/or operability of the IESO-controlled grid
- The IESO's outage management system uses the Control Room Operations Window (CROW) outage coordination and scheduling system
- Forced, urgent, information and opportunity outages are outages that market participants are unable to submit in accordance with the submission requirements for planned outages, however these types of outages must still be submitted to the IESO as either a notification or a late request for advance approval

Outage Management

A piece of equipment considered to be in an outage state:

- when it is removed from service,
- in a state other than its normal state,
- unavailable for connection to the system,
- temporarily derated,
- restricted in use,
- or reduced in performance

Outage Overview

Outage management:

- Coordination and submission of outage requests by market participants,
- Assessment of outage requests by the IESO,
- Identification of reliability issues associated with outages, leading to actions including rejection, revocation, and at risk declarations of the outage request, and recall of the equipment on outage by the IESO,
- Compliance obligations, and
- Outage compensation in the event of revocation or recall.

Participant	IESO
Coordinate and submit outages using IESO reports and recommendations,	Assess outage requests for potential impact to reliability and/or operability ² of the IESO-controlled grid,
Submit requests to implement outages to their facilities or equipment within the required timeframe to the IESO,	Provide advance and final approval for outage requests,
Request final approval prior to start of the outage,	Reject an outage request, and revoke or recall previously approved outages for reliability reasons,
Confirm the start of the outage,	Coordinate outages and tests if required, and
Confirm the completion of outage,	Grant permission for equipment to return to service.
Request permission to return equipment to service,	
Confirm the restoration of equipment to normal state with the IESO, and	
Register new equipment information and update information for existing equipment via Online IESO	

Outage Types

- Planned Outage

- ❖ Market participants are required to request permission and receive approval for planned outages from the IESO
- ❖ Study Period
- ❖ Coverage Period
- ❖ Market participants must submit their planned outages into one of four advance approval processes in order to be eligible receive advance approval. Each process has a unique set of eligibility criteria and submission/approval deadlines

Outage Coordination

- Forced Outage

- ❖ Non-discretionary outages on equipment that has been automatically or manually removed from service for equipment protection, public safety, environmental concerns or regulatory requirements.
- ❖ Market participants must submit forced outage notifications when they occur and these will be addressed by the IESO immediately

- Urgent Outage

- ❖ Non-discretionary outages on equipment that must be manually removed from service for equipment protection, public safety, environmental concerns or regulatory requirements
- ❖ Market participants may submit urgent outage requests at any time. The IESO will study such requests as soon as possible.

Outage Coordination

- Opportunity Outage

- ❖ In cases where market participants are presented with an unexpected opportunity to accomplish work that was not previously planned
- ❖ Market participants may submit opportunity outage requests at any time.

- Information Outage

- ❖ Outages that are exempt from submission requirements, but are submitted for informational purposes only
- ❖ Market participants may submit information outage requests at any time. The IESO does not study informational outages since they are for informational purposes only

Why we need to know

- We coordinate all outages that impact the grid to ensure the security and adequacy of the high voltage transmission system
 - ❖ Outage information tells us what's available for immediate and future use
 - ❖ Equipment outages affect operating limits
 - ❖ Grid adequacy and security assessment relies heavily the outage planning process
 - ❖ Outage information helps us perform accurate system studies to assess Ontario's electrical system reliability

What do you report?

- Outages to equipment - your specific requirements are explained in your “Outage Reporting Requirements” email
 - ❖ Designated equipment may include, e.g.:
 - ❖ Breakers
 - ❖ Switches
 - ❖ Transformers
 - ❖ Generators
- Power system or equipment tests

What is an Outage?

- Equipment is in outage if it is:
 - ❖ Removed from service
 - ❖ Unavailable for connection
 - ❖ Materially de-rated (i.e., reduced in output by the greater of 2% of rated capacity or 10 MW)
 - ❖ Restricted in use
 - ❖ Reduced in performance
- Outages are reported using the Online Outage Tool (CROW)

Outage Interface

Outage Request: 1-00058119 rev. 1 Submitted Planned

Back Export New Duplicate Home

Request Summary Details Study Attachments (0)

IESO Outage ID: 1-00058119 Rev #: 1 History

Created By: TESTER, ABC 2017/08/18 11:50

Submitter Org: ORGANIZATION 2

Outage Status: Submitted 2017/08/18 11:50 TESTER, ABC

*Planned Start: 2017/08/25 08:00

*Outage Duration: 8 Hour(s)

*Priority Code: Planned

*Purpose Code: Commissioning

*Purpose Description: This needs to be checked.

Market Participant: ORGANIZATION 1

Predecessor: Linked Outages:

*Planned Complete: 2017/08/25 16:00

*Recurrence: Continuous

Priority Date: 2017/08/18 11:50

*Max Recall: 2 Hour(s)

Recall Comments: Non-Recallable

Outage Flags: Confidential FAA Request Weekly AA Assessment Eligibility: 3 Day Assessment Process ending 2017/08/22 16:00 EST

*Requested Equipment:

Station	Equip. Name	Equip. Class	Equip. Description	Constraint	Voltage Class	Facility Class
✗ TEST FACIL...	Tone Comm 1	Tone Communico...	Test	OOS	n/a	2
✗ STATION 1	CB1	Breaker		OOS	115 KV	2

Add...

Telemetry Scaling Impact? Yes No N/A

*Low Impact Questions:
Only a Loss Of Redundancy? Yes No
RTU or HUB Affected? Yes No

Cancel Request Save Save as Draft

Distributors and Transmitters

- Distributors, with embedded load or generation not registered with IESO, are required to notify the IESO in the event of changes that result in a change greater than 20 MW from the average weekday demand or supply
- Distributors and transmitters are required to notify the IESO in advance of demand control actions incl. demand management, voltage reductions and disconnections. Submit outage by 10:00 EST for the following day

Market Rules and Manuals and other information

- Market Rules: Chapter 5 - Power System Reliability , Section 6 – Outage Coordination
- Market Manual 7.3
- Suggestion: Print both and keep in a binder along with your outage management process documents
- Planned IT Outages [Planned IT Outages \(ieso.ca\)](https://www.ieso.ca)



Outage Prioritization

Priority Codes

- A priority code indicates the urgency level of an outage request
- They are also used for prioritizing competing outage requests



Determining Outage Priority

1. Priority Code
 1. Forced
 2. Urgent
 3. Planned
 4. Opportunity
2. Advance approval time frame
 1. Quarterly
 2. Weekly
 3. 3-day
 4. 1-day
3. Priority date



Codes

Purpose Codes

- Purpose Codes allow market participants to indicate the reason for the outage request.
- This information is used by the IESO to determine the impact and purpose of the outage request.

Purpose Codes

- Market participants are required to select a Purpose Codes when submitting their outage request. Below are some of the codes:
 - ❖ Maintenance Repair: Facilitate routine equipment maintenance and repair.
 - ❖ Replacement: Replace aging or faulty equipment/facilities.
 - ❖ Commissioning: Test new or modified equipment/facilities being connected to the IESO-controlled grid for the first time

Purpose Codes

- ❖ Testing: Facilitate testing of equipment/facilities not considered to be commissioning tests or activities.
- ❖ Equipment/Safety/ Regulatory/ Environmental Concerns: Non-discretionary purposes such as public safety, equipment protection, environmental concerns or regulatory requirements.
- ❖ Transmission Equipment Derating: Indicate that a piece of transmission equipment is operating at a reduced equipment rating.

Constraint Codes

- Constraint Codes identify the status of the equipment during the outage.
- This information is used to determine the limitations on the equipment to determine the impact of the outage request on the grid
- Example Codes;
 - ❖ Out of Service (OOS)
 - ❖ In Service (IS)
 - ❖ Derated To (DRATE)
 - ❖ Protection Out of Service (PROT OOS)



Long Term Outlook

Long Term Outlook

- In order to support the Reliability Outlook (Formerly the 18 Month Outlook) assessments, transmitters and generators are required to:
 - ❖ report long-term outage plans (outages equal or greater than 5 days in duration) at least three months in advance;
 - ❖ report medium-term outage plans (outages equal to or more than 4 hours in duration) at least 33 days in advance; and
 - ❖ update information about these outages as often as is required to maintain the accuracy of the information.



Planned Outage Time Frames

Equipment Criticality

- Equipment criticality dictates the advance approval timeframe a Planned outage request must be submitted
- The IESO notifies market participants of equipment criticality levels via Online IESO

Critical Equipment

- Equipment that has a material impact on the reliability of the grid when removed from service or restricted.
- Can be submitted for Quarterly Advance Approval but no later than a Weekly Advance Approval.

Non-Critical Equipment

Equipment that does not typically have a material impact on the reliability of the grid when removed from service or restricted.

Can be submitted earlier for Quarterly or Weekly Advance Approval but no later than a 3-Day Advance Approval.

Low Impact Equipment

- Equipment that has little to no impact on the reliability of the grid when removed from service or restricted
- May be submitted for Quarterly ,Weekly Advance Approval and 3-Day Advance Approval but no later than a 1-Day Advance Approval

Definition: Study Period

- Refers to the period when the IESO assesses planned outage requests submitted for the related advance approval process
- The IESO will notify you of the assessment by the end of the study period
 - ❖ Approved
 - ❖ Rejected
 - ❖ Placed 'At Risk'
 - ❖ Revoked

Definition: Coverage Period

- Is the period where you will start your outage
- You must submit outage requests before the start of the associated study period to be eligible to receive advance approval to start your outage during the associated coverage period

Four Advance Approval Timelines

- Quarterly, Weekly, 3-Day, and 1-Day
- Each of these process has a set of eligibility criteria and submission/approval deadlines

Quarterly Advance Approval

- You have the option to request approval for any planned outages up to nine months prior to the scheduled start time
- Outages submitted for Quarterly Advance Approval get the highest priority compared to planned outages submitted under other timeframes, thus granting greater certainty to market participants.
 - The Study Period is two months
 - ❖ The Study period begins at 00:00:00 EST on the first day of the period and ends at 23:59:59 EST on the last day of the period
 - The Coverage period is six months
 - ❖ The Coverage begins 00:00:00 EST on the first day of the period and ends at 23:59:59 EST on the last day of the period

Weekly Advance Approval

- This is the latest you can submit planned outage requests for critical equipment
- Outages submitted within this process get a higher priority compared to those submitted under 3-Day and 1-Day timeframes
- The Study Period is 7 days
 - ❖ Study begins at 16:00:00 EST on Friday and ends at 15:59:59 EST on the following Friday
- The Coverage period is 7 days
 - ❖ Coverage begins 00:00:00 EST on Monday and ends at 23:59:59 EST on the following Sunday

3-Day Advance Approval

- This is the latest you can submit planned outage requests for non-critical equipment
- Low-impact outages submitted within this process get a higher priority compared to those submitted under 1-Day timeframe, granting greater certainty for those outages
- The Study Period is two business days
 - ❖ The study period begins at 16:00:00 EST on business days and ends at 15:59:59 EST, two business days later
- The Coverage Period is one business day
 - ❖ The coverage period begins 00:00:00 EST on the fifth business day
 - ❖ Statutory holidays and weekend days that precede a business day are included in that business day

1-Day Advance Approval

- This is the latest you can submit planned outage requests for low-impact equipment
- Based on the type of equipment and Constraint Code, certain outage requests to critical and non-critical equipment, may be deemed as having low-impact attributes
- The Study Period is 22 hours
 - ❖ The study period begins at 16:00:00 EST on business days and ends at 13:59:59 EST, one business days later
- The Coverage Period is one business day
 - ❖ The coverage period begins 00:00:00 EST on the second business day after the beginning of the study period and ends at 23:59:59 on the same business day
 - ❖ Statutory holidays and weekend days that precede a business day are included in that business day

Planned Outage Final Approval

- On the day of the outage, market participants must contact the IESO Control Room via telephone when they are ready to proceed with the outage.
- The IESO will, in general, provide final approval to a planned outage unless it foresees an adverse reliability impact, based on ongoing security and adequacy assessments.

Auto Advance Approval (Auto AA)

- Outage requests for low-impact equipment or equipment containing low-impact attributes may be eligible for Auto AA in any Advance Approval time frame.
- You must answer certain questions to determine eligibility for Auto AA.
- Your answers will establish eligibility for and grant Auto AA.

Low-Impact Attributes Example

- You submit a planned outage request for line protection out of service,
- You will need to specify whether it is only a loss of redundancy.
- If you answer “Yes”, the equipment is considered to have low-impact attributes and will be Auto AA. (also receive final A in advance (FAA))

Final Approval in Advance (FAA)

- At midnight all FAA slips get transitioned into final approval.
- No need to call in for final approval

Completing Your Outage

- Upon outage completion and prior to returning your equipment to service, call our control room operator to request return to service
- Our operators process this information and may have to make important system changes
- Return your equipment to service, then call us back to let us know the exact time you did it
- Let us know of any other information that may affect the reliability of your equipment

Call for Delays

- If start of planned outage is delayed:
 - ❖ Less than 30 minutes:
 - ❖ Call IESO control room
- If more than 30 minutes:
 - ❖ Call IESO control room
 - ❖ Update outage request form

Extension to Planned Outage

- When a planned outage exceeds the duration originally approved by the IESO an extension can be requested
 - ❖ Unless the extension is due to a forced outage condition. In this case it is treated as a new outage request

Revoke Advance Approvals

- The IESO may, where necessary to maintain the reliability of the IESO-controlled grid, revoke an advance approval of a planned outage if:
 - ❖ Determined that either an emergency operating state or a high-risk operating state is occurring or is reasonably likely to occur at the time at which the planned outage would otherwise take place
 - ❖ Necessary to avoid recalling a planned outage

Recall of Advanced Approvals

- Any time during implementation, the IESO may recall either the current period or the entire outage, based on sudden or unexpected impacts to the reliability and/or operability of the IESO-controlled grid.
- The IESO will provide affected market participants with the reason for the recall.
- Generation facilities, distributors and wholesale customers whose planned outages are revoked or recalled by the IESO are entitled to compensation for expenses

Thank You

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