

Outage Management Redesign Consultation Process (SE-109)

July 30, 2014



- IESO Response to Stakeholder Feedback
 - **Stakeholder feedback in bold**
 - *IESO response in italics*
- Software Design Updates
 - Linking of Outage Requests
 - Non-Continuous Outage Profiles
- Review of Process Design
- Next Steps

- **Could the criteria for outages related to making ancillary services (such as regulation) be relaxed for loads?**
 - *This criteria cannot be relaxed as outages to contracted ancillary services with conditions outside these criteria require additional study time by the IESO.*
- **SE-109 agrees with the 1 Day AA Criteria Validation.**
 - *The IESO considers the proposed 1 Day AA criteria validation approved*

- **Consider adding distribution and load equipment to the list of outage types that will receive FAA from the Auto Adv. Approval state.**
 - *Outages to this equipment will not be eligible for FAA given the reliability risk of making changes to grid connectivity without receiving IESO approval just prior to switching.*
 - *However, software will possess the ability to provide FAA manually, which allows for future expansion of the FAA process to other equipment types.*
- **There should be a mechanism to inform the market participant when the FAA flag has been manually set/unset by the IESO.**
 - *The IESO agrees with the request to inform the market participant of manual changes to FAA status and proposes capturing this requirement into the applicable market manuals.*

- **Consider changing auto-transition from Adv. Approval to Final Approval from 00:01 EST to regular business hours (e.g. day before the outage).**
 - *The main purpose of the auto transition is to enable entry of actual start times.*
 - *An earlier transition to Final Approval may be interpreted as an ability to remove the equipment from service on the day prior*
 - *FAA will be issued well in advance of the day that the outage starts (see next response)*
- **Will outages beginning at 00:01 EST receive FAA just as they are beginning?**
 - *Outages will automatically receive FAA if the outage request is auto-advance approved(i.e. no later than 14:00 EST on the business day prior to the outage start date)*

- **Conflict checking should include IF, ELSE , OR & AND dependencies rather than a one on one comparison (e.g. a hold-off on a line should not conflict with an outage on the same circuit).**
 - *The software has the capability of specifying which outage priorities and constraint codes are subject to conflict checking on the same equipment (i.e. a hold-off and an outage to the same equipment will not conflict)*
 - *The following constraint code combinations will be considered as conflicting when overlapping on the same piece of equipment:*
 - *In-Service (IS) with Out-Of-Service (OOS)*
 - *Protection Out-of-Service (PROT OOS) with PROT OOS*
 - *Breaker Fail Protection Out-of-Service (BF PROT OOS) with BF PROT OOS*
 - *Automatic Voltage Regulator Out-Of-Service (AVR OOS) with AVR OOS*
 - *Power System Stabilizer Out-Of-Service (PSS OOS) with PSS OOS*
 - *Breaker Trip Coil Test (BTCT) with BTCT*
 - *Segregated Mode of Operation (SMO) with SMO*

For undesirable combinations, conflict checking will provide a warning when a threshold number of different equipment are out of service at the same time.

- Threshold number is configurable by the IESO*
- For example, the following equipment are grouped as an undesirable combination: Line A, Line B, Line C, Line D*
 - AND, the threshold level is set to 3*
 - This means that a conflict will be generated when any combination of overlaps between these lines exceed a count of 3 (i.e no more than 3 of these can be out of service at the same time)*
- Undesirable equipment combinations should be provided to participants to assist in outage planning and re-published when changes are made.**
 - A complete list of undesirable equipment combinations will be defined and made available to participants prior to software and process implementation.*
 - The IESO agrees that providing and updating participants with this information will assist in outage planning.*

- **Demonstrate how an outage that fails Auto Adv. Approval (AA) will be still be accepted for manual AA in the next available process.**
- *Scenario 1: Planned protection outage to Generator A (non critical equipment)*
 - *Constraint Code = PROT OOS (Protection outage associated with Gen A)*
 - *Submitted on July 4, 15:00; Starting on July 10, 08:00*
 - *Participant sets the “Loss of Redundancy (LOR)?” flag to “NO”*
 - *This outage would not receive Auto AA as the LOR flag ≠ “YES”*
 - *However the outage would still be accepted for study in the 3 day AA process as it was submitted > 16:00, 5 business days in advance.*
- *Scenario 2: Same as above but submitted July 8 at 14:00*
 - *Outage would not receive Auto AA and would NOT be accepted as the outage does not meet lead time criteria of 16:00, 5 business days in advance*

- **Will conflict checking flag undesirable combinations between generator and transmission equipment outages?**
 - *The IESO will be able to specify undesirable equipment combinations across all facility types.*
- **Will conflict checking flag when an outage combination is undesirable (e.g. a week long outage may in conflict for only half a day)?**
 - *In general, the conflict checking feature will flag when undesirable combinations exist, however the IESO is still discussing with the vendor what additional details (i.e. why and when) would be visible to participants.*
 - *Enhancements or modifications to this feature will not be pursued prior to project implementation unless critical defects (e.g. confidentiality) are discovered through the testing and acceptance phase of the project.*
 - *This is a new feature the IESO proposes to use “as is” and better understand it before considering whether customized changes are warranted.*

- **Consider including breaker trip coil tests (BTCTs) as part of the Auto Adv. Approval (AA) process**
 - *BTCT outages cannot be included in the Auto AA logic as the new system does not have a topology model built in to determine whether or not equipment would be offloaded by the test trip.*
- **Consider classifying BTCTs and low voltage capacitors as low-impact**
 - *As discussed at the July 3 meeting, LV capacitor outages and BTCT outages will not be included in the Auto-AA logic given the reliability risk of doing so*
 - *Both will be deemed low impact and eligible for the 1 Day AA process.*

- The following outage request linking features will be incorporated into the vendor software:
 - Predecessor/Successor Link (Outage A must occur before Outage B)
 - “Occurs Within” Link (Outage A must occur with/during Outage B)
 - “Open & Equal” Link (Outage A can be linked to many others; no business rules apply)
- This “as is” feature will only be available to the IESO
 - Similar to conflict checking, this is a new feature the IESO proposes to use internally and better understand it before determining how to integrate it with participants and whether to enhance it.
 - However, participants will benefit from the feature’s outcomes, for example:
 - IESO determines Line A and Line B outages can only be approved if they occur after one another.
 - IESO could establish a predecessor/successor relationship between these outages that would have to be respected, for example, if the participant decided to modify one of the outage requests.
 - This would be another way of preventing undesirable combinations.

- Generators submit de-rate profiles for ramping (e.g. return to service) or testing (e.g. commissioning) that may require various outputs across a range of time periods.
- Creating or updating these profiles can be time-consuming as unique start/end times and de-rate values must be individually entered for each time period.
- While the vendor software provides a similar way of creating and updating these profiles when compared to the existing software, the IESO explored alternate ways of enhancing this capability.
- Given the level of customization required, an enhancement to the initial creation of these profiles will not be pursued
 - Participants will continue to enter start/end times and constraint (e.g. de-rate) values separately for each time period
- However, an enhancement to the way existing profiles are modified is being proposed (next slide)

- Proposed Enhancement:
 - An outage profile consisting of multiple periods (i.e. non continuous) will have the capability of shifting the entire overall profile forwards or backwards by simply changing the overall planned start date/time of the outage request;
 - AND the outage request has not been Final Approved and Implemented.
- For example:
 - Gen A has a non-continuous ramp profile as follows:
 - Sept 1 08:00 to Sept 1 16:00 at 80 MW
 - Sept 1 16:00 to Sept 1 17:00 at 150 MW
 - Sept 1 17:00 to Sept 1 20:00 at 200 MW
 - Gen A anticipates a 5 hour delay. Updating the overall planned start to Sept 1 13:00 will auto shift all of the remaining periods proportionally as follows:
 - Sept 1 13:00 to Sept 1 21:00 at 80 MW
 - Sept 1 21:00 to Sept 1 22:00 at 150 MW
 - Sept 1 22:00 to Sept 2 01:00 at 200 MW

- Outage Priority Sequence:
 1. Priority Code sets the first level of priority (i.e. Forced → Urgent → Planned → Opportunity)
 2. All Forced outages are considered equal priority (i.e. they have already occurred)
 3. Planned Start date determines priority level between competing “Urgent” priority codes (i.e. the earlier it starts, the sooner it must be assessed)
 4. Advance Approval status determines priority level between competing “Planned” priority codes (i.e. Quarterly AA → Weekly AA → Daily AA)
 5. Priority Date (i.e. submission date) determines priority level between competing Priority Codes and/or Advance Approval statuses (i.e. the earlier the priority date, the higher the priority).

1. Draft (to Submitted, Adv. Approved or Cancelled)
 2. Submitted (to Draft, Study or Cancelled)
 3. Study (to Negotiate, Adv. Approved or At Risk)
 4. Negotiate (to Study, Adv. Approved, At Risk or Rejected)
 5. Adv. Approved (to Draft, Submitted, Negotiate, Revoked, Final Approved or Cancelled)
 6. At Risk (to Draft, Submitted, Study or Cancelled)
 7. Rejected (end state)
 8. Revoked (end state)
 9. Final Approved (to Implemented)
 10. Implemented (to Recalled or Completed)
 11. Recalled (end state)
 12. Completed (end state)
 13. Cancelled (end state)
- A state diagram will be provided in an upcoming requirements document

- A priority date (i.e. timestamp) will be set when the outage request is first placed into the Submitted status.
- Any subsequent significant changes made to the outage request will reset the priority date.
- Significant Changes:
 - Planned Start (if changed to an earlier start date/time)
 - Planned End (if changed to a later start date/time)
 - Equipment Requested (added or removed)
 - Priority Code (i.e. change from Planned to Forced)
 - Constraint Code (i.e. change from Out of Service to De-rated)
 - Max Recall (any change)

MONTHS																	
M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
Study			Coverage														
			Study		Coverage												
						Study		Coverage									
									Study		Coverage						

- This process repeats quarterly with study and coverage periods that start at 00:00 EST on the first day of the month period and end at 23:59 EST on the last day of the month period.
 - Voluntary process (planned outages are not precluded from being submitted in the Weekly or Daily processes).
- Planned outage requests starting in the coverage period will be studied by the IESO if they are submitted prior to the corresponding study period.
 - Planned outage requests will be auto-transitioned into the Study status at the start of the study period if the above criteria is met.
- All outages included in the study period are locked (i.e. read only) for participants during the study period. Changes can only be made if:
 - IESO makes a recommendation to do so (via the Negotiate state)
 - Negotiate state allows the participant to make a one time change to the outage request (e.g. for the purposes of rescheduling during the study period), after which the outage will transition back to the Study status
 - The Negotiate state can be entered and exited multiple times.
 - OR, the participant cancels the outage

Overview of Process Redesign: Quarterly Adv Approval (AA) Process (con't)

MONTHS																	
M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
Study			Coverage														
			Study		Coverage												
					Study		Coverage										
									Study		Coverage						

- By the end of the study period, the IESO shall either provide planned outages with Adv. Approved or At Risk status
 - Any subsequent significant changes to the outage will reset the priority date and place the outage back into the Submitted status.
 - Exception: At Risk outages resubmitted beyond the first 3 months of the coverage period and done so prior to the start of the next study period will retain their latest priority date.
 - The 18 Month Outlook process will no longer provide At Risk declarations.
- Generator, distributor or wholesales customer outages with Adv. Approval and starting within the first 3 months of the coverage period are eligible for compensation in the event of subsequent revocation
 - Those with Adv. Approval and starting in the last 3 months are subject to rescheduling and At Risk declaration in the next quarterly coverage period (due to overlapping periods) and are ineligible for compensation.
 - Revoked outages must be rescheduled within 5 business days in order to preserve timestamp (priority date retention is not automated, rather manually performed by the IESO upon notification from participant)
 - There is no limit to the number of times revoked outages can be re-submitted for the purpose of priority date retention (as per existing market rules).

		DAYS						
		S	M	T	W	T	F	S
WEEKS	1							
	2	Study						
	3							
	4		Coverage					
	5							

- This process repeats weekly with study periods that start and end at 16:00 EST on Fridays and coverage periods that start at 00:00 EST on Mondays and end at 23:59 EST on Sundays.
 - Process is mandatory for planned outages containing any critical equipment and voluntary for planned outages with only non-critical or low-impact equipment.
- Planned outages with any critical equipment and starting in the coverage period must be submitted by the start of the study period in order to be studied by the IESO for Adv. Approval.
 - Planned outage requests will be auto-transitioned into the Study status at the start of the study period if the above criteria is met.
 - Late submissions will not be accepted by the software (i.e. not transitioned into Submitted status) unless they are re-submitted as Opportunity, Urgent or Forced outages.
- Planned outages with only non-critical or low-impact equipment starting in the coverage period but submitted with the “Request Weekly AA” flag checked by the start of the study period will be studied by the IESO for Adv. Approval.
 - The “Request Weekly AA” flag will be read-only once the start of the study period passes.
 - Once the study period starts, these outages cannot be resubmitted to start within the 3 Day AA or 1 Day AA processes until the weekly coverage period passes (unless they are re-submitted as Opportunity, Urgent or Forced outages).

Overview of Process Redesign: Weekly Adv Approval (AA) Process (con't)

		DAYS						
		S	M	T	W	T	F	S
WEEKS	1							
	2	Study						
	3							
	4	Coverage						
	5							

- All outages included in the study period are locked (i.e. read only) for participants during the study period. Changes can only be made if:
 - IESO makes a recommendation to do so (via the Negotiate state)
 - Negotiate state allows the participant to make a one time change to the outage request (e.g. for the purposes of rescheduling during the study period), after which the outage will transition back to the Study status
 - The Negotiate state can be entered and exited multiple times.
 - OR, the participant cancels the outage
- By the end of the study period, the IESO shall either provide planned outages with:
 - Adv. Approved status
 - Any subsequent significant changes to the outage will reset the priority date and place the outage back into the Submitted status.
 - Generator, distributor or wholesales customer outages with Adv. Approval are eligible for compensation in the event of subsequent revocation
 - Rejected status
 - Outages must be resubmitted within 5 business days in order to preserve their priority date (priority date retention is not automated, rather manually performed by the IESO upon notification from participant)
 - Rejected outages can only be rescheduled once for the purpose of priority date retention (as per existing market rules).

Overview of Process Redesign: 3 Day Adv Approval (AA) Process

		DAYS						
		S	M	T	W	T	F	S
WEEKS	1		Study					
	2	Coverage						

		DAYS						
		S	M	T	W	T	F	S
WEEKS	1		Study					
	2		Coverage					

- Coverage and Study period definitions are identical to the current Interim process
 - Process is mandatory for planned outages containing any non-critical equipment and voluntary for planned outages containing:
 - Only low-impact equipment; or
 - Any critical or non-critical equipment with low-impact outage request attributes (as per materials presented at the July 3/14 meeting and in accordance with criteria in existing Market Manual 7.3, Appendix B)
- Planned outages with any non-critical equipment and no low-impact attributes that are starting in the coverage period must be submitted by the start of the study period in order to be studied for Adv. Approval.
 - Planned outage requests will be auto-transitioned into the Study status at the start of the study period if the above criteria is met.
 - Late submissions will not be accepted by the software (i.e. not transitioned into Submitted status) unless they are re-submitted as Opportunity, Urgent or Forced outages.

Overview of Process Redesign: 3 Day Adv Approval (AA) Process (con't)

		DAYS						
		S	M	T	W	T	F	S
WEEKS	1		Study					
	2	Coverage						

		DAYS						
		S	M	T	W	T	F	S
WEEKS	1		Study					
	2		Coverage					

- All outages included in the study period are locked (i.e. read only) for participants during the study period. Changes can only be made if:
 - IESO makes a recommendation to do so (via the Negotiate state)
 - Negotiate state allows the participant to make a one time change to the outage request (e.g. for the purposes of rescheduling during the study period), after which the outage will transition back to the Study status
 - The Negotiate state can be entered and exited multiple times.
 - OR, the participant cancels the outage
- By the end of the study period, the IESO shall either provide planned outages with:
 - Adv. Approved status
 - Any subsequent significant changes to the outage will reset the priority date and place the outage back into the Submitted status.
 - Generator, distributor or wholesales customer outages with Adv. Approval are eligible for compensation in the event of subsequent revocation
 - Rejected status
 - Outages must be resubmitted within 5 business days in order to preserve their priority date (priority date retention is not automated, rather manually performed by the IESO upon notification from participant)
 - Rejected outages can only be rescheduled once for the purpose of priority date retention (as per existing market rules).

Overview of Process Redesign: 1 Day Adv Approval (AA) Process

		DAYS						
		S	M	T	W	T	F	S
WEEKS	1					Study		
	2	Coverage						

		DAYS						
		S	M	T	W	T	F	S
WEEKS	1		Study		Coverage			
	2							

- Coverage and Study period definitions are identical to the current Interim process
 - Process is mandatory for planned outages containing:
 - Any low-critical equipment; or
 - Any critical and non-critical equipment with low-impact outage request attributes (as per materials presented at the July 3/14 meeting and in accordance with criteria in existing Market Manual 7.3, Appendix B)
- Planned outages with any low-impact equipment, or outages with critical and non-critical equipment with low-impact attributes, starting in the coverage period must be submitted by the start of the study period in order to be studied for Adv. Approval.
 - Planned outage requests will be auto-transitioned into the Study status at the start of the study period if the above criteria is met.
 - Note that if auto-advance approval criteria (as discussed at the June 4/14 meeting) is met, planned outages will be automatically transitioned into the Adv. Approval status on submission (i.e. they do not have to wait until the start of a study period)
 - As per July 3/14 meeting, certain low-impact outages will also be flagged with Final Approval in Advance (FAA)
 - Late submissions will not be accepted by the software (i.e. not transitioned into Submitted status) unless they are re-submitted as Opportunity, Urgent or Forced outages.

Overview of Process Redesign: 1 Day Adv Approval (AA) Process

		DAYS						
		S	M	T	W	T	F	S
WEEKS	1					Study		
	2	Coverage						

		DAYS						
		S	M	T	W	T	F	S
WEEKS	1		Study		Coverage			
	2							

- All outages included in the study period are locked (i.e. read only) for participants during the study period. Changes can only be made if:
 - IESO makes a recommendation to do so (via the Negotiate state)
 - Negotiate state allows the participant to make a one time change to the outage request (e.g. for the purposes of rescheduling during the study period), after which the outage will transition back to the Study status
 - The Negotiate state can be entered and exited multiple times.
 - OR, the participant cancels the outage
- By the end of the study period, the IESO shall either provide planned outages with:
 - Adv. Approved status
 - Any subsequent significant changes to the outage will reset the priority date and place the outage back into the Submitted status.
 - Generator, distributor or wholesales customer outages with Adv. Approval are eligible for compensation in the event of subsequent revocation
 - Rejected status
 - Outages must be resubmitted within 5 business days in order to preserve their priority date (priority date retention is not automated, rather manually performed by the IESO upon notification from participant)
 - Rejected outages can only be rescheduled once for the purpose of priority date retention (as per existing market rules).

- FAA will be a flag on the outage request that provide participants with Final Approval status in advance
 - The flag can be set automatically via Auto AA validation and manually set or unset by the IESO user.
 - A phone call to the IESO Control Room requesting final approval is not required provided the FAA flag is still present on the day the outage is scheduled to start.
- The following outage requests that receive Auto AA will also receive FAA:
 - Holdoffs
 - Primary Protections
 - AC/DC SS Equipment
 - Tone Communication Channel Equipment
 - UFLS
- If FAA flag is still present at 00:01 EST on the day the outage starts, the outage will auto transition from Advance Approved to Final Approved.
- Transition to Final Approved status is necessary so that the MP can enter actual start times and place the outage into “Implemented” status

- **August 15** – Stakeholder Feedback Due
 - Linking of Outage Requests
 - Non-Continuous Outage Profiles
 - Process Design Overview
- **August 22** – IESO Response to Feedback Due and Materials posted for the next SE109 Meeting
- **August 27** – Next SE109 Meeting

Questions/Comments?