

## Mapping Document

### Project 2015-08 Emergency Operations

Standard: EOP-004-4		
Requirement in Approved Standard	Translation to New Standard or Other Action	Description and Change Justification
<p>EOP-004-3, Measure M1</p> <p><b>M1.</b> Each Responsible Entity will have a dated event reporting Operating Plan that includes, but is not limited to the protocol(s) and each organization identified to receive an event report for event types specified in EOP-004-3 Attachment 1 and in accordance with the entity responsible for reporting.</p>	<p>EOP-004-4, Measure M1</p> <p><b>M1.</b> Each Responsible Entity will have a dated event reporting Operating Plan that includes protocol(s) and each organization identified to receive an event report for event types specified in EOP-004-4 Attachment 1 and in accordance with the entity responsible for reporting.</p>	<p>Updated standard version number. "...not limited to" removed from Measure M1, as unnecessary.</p>
<p>EOP-004-3, Requirement R2</p> <p><b>R2.</b> Each Responsible Entity shall report events per their Operating Plan within 24 hours of recognition of meeting an event type threshold for reporting or by the end of the next business day if the event occurs on a weekend (which is recognized to be 4 PM</p>	<p>EOP-004-4, Requirement R2</p> <p><b>R2.</b> Each Responsible Entity shall report events specified in EOP-004-4 Attachment 1 to the entities specified per their event reporting Operating Plan by the later of 24 hours of recognition of meeting an event type threshold for reporting or by the end of the Responsible Entity's next business</p>	<p>Requirement R2 revisions were provided for clarity; to remove the ambiguity for weekends and to add clarity for holidays.</p>

Standard: EOP-004-4		
Requirement in Approved Standard	Translation to New Standard or Other Action	Description and Change Justification
local time on Friday to 8 AM Monday local time).	day (4 p.m. local time will be considered the end of the business day).	
<p>EOP-004-3, Measure M2</p> <p><b>M2.</b> Each Responsible Entity will have as evidence of reporting an event, copy of the completed EOP-004-3 Attachment 2 form or a DOE-OE-417 form; and evidence of submittal (e.g., operator log or other operating documentation, voice recording, electronic mail message, or confirmation of facsimile) demonstrating the event report was submitted within 24 hours of recognition of meeting the threshold for reporting or by the end of the next business day if the event occurs on a weekend (which is recognized to be 4 PM local time on Friday to 8 AM Monday local time). (R2)</p>	<p>EOP-004-4, Measure M2</p> <p><b>M2.</b> Each Responsible Entity will have as evidence of reporting an event to the entities specified per their event reporting Operating Plan either a copy of the completed EOP-004-4 Attachment 2 form or a DOE-OE-417 form; and some evidence of submittal (e.g., operator log or other operating documentation, voice recording, electronic mail message, or confirmation of facsimile) demonstrating that the event report was submitted by the later of 24 hours of recognition of meeting an event type threshold for reporting or by the end of the Responsible Entity’s next business day (4 p.m. local time will be considered the end of the business day).</p>	<p>Measure M2 was updated for clarity and to identify 4:00 p.m. local time to be considered as the end of the entity’s business day.</p>
EOP-004-3, Requirement R3	Recommended for retirement.	The EOP SDT recommends retirement of Requirement R3 under Criterion B1, administrative; the R3 requirement in EOP-

Standard: EOP-004-4		
Requirement in Approved Standard	Translation to New Standard or Other Action	Description and Change Justification
<b>R3.</b> Each Responsible Entity shall validate all contact information contained in the Operating Plan pursuant to Requirement R1 each calendar year.		004-3 requires responsible entities to perform a function that is administrative in nature, does not support reliability and is needlessly burdensome. Contact lists are administrative in nature.
EOP-004-3, Attachment 1 Event Type: Damage or destruction of a Facility Entity with Reporting Responsibility: BA, TO, TOP, GO, GOP, DP Threshold for Reporting: Damage or destruction of its Facility that results from actual or suspected intentional human action.	EOP-004-4, Attachment 1 Event Type: Damage or destruction of its Facility Entity with Reporting Responsibility: TO, TOP, GO, GOP, DP Threshold for Reporting: Damage or destruction of its Facility that results from actual or suspected intentional human action.  It is not necessary to report theft unless it degrades normal operation of its Facility.	The EOP SDT wanted to change the reporting responsibility to the Facility owner. It is the responsibility to the Facility owner, as the Threshold states. The EOP SDT used the defined term “Facility” to add clarity for several events listed in Attachment 1. A Facility is defined as:  “A set of electrical equipment that operates as a single Bulk Electric System Element (e.g., a line, a generator, a shunt compensator, transformer, etc.)”  With the specific entities listed for reporting, the event type and reporting entity better aligns with the word change from “...a Facility” to “...its Facility.”
EOP-004-3, Attachment 1	EOP-004-4, Attachment 1	The EOP SDT wanted to change the reporting responsibility to the Facility

Standard: EOP-004-4		
Requirement in Approved Standard	Translation to New Standard or Other Action	Description and Change Justification
<p>Event Type: Physical threats to a Facility</p> <p>Entity with Reporting Responsibility: BA, TO, TOP, GO, GOP, DP</p> <p>Threshold for Reporting: Physical threat to its Facility excluding weather or natural disaster related threats, which has the potential to degrade the normal operation of the Facility.</p> <p>OR</p> <p>Suspicious device or activity at a Facility.</p> <p>Do not report theft unless it degrades normal operation of a Facility.</p>	<p>Event Type: Physical threats to its Facility</p> <p>Entity with Reporting Responsibility: TO, TOP, GO, GOP, DP</p> <p>Threshold for Reporting: Physical threat to its Facility excluding weather or natural disaster related threats, which has the potential to degrade the normal operation of the Facility.</p> <p>OR</p> <p>Suspicious device or activity at its Facility.</p>	<p>owner. It is the responsibility to the Facility owner, as the Threshold states. The EOP SDT used the defined term “Facility” to add clarity for several events listed in Attachment 1. A Facility is defined as:</p> <p>“A set of electrical equipment that operates as a single Bulk Electric System Element (e.g., a line, a generator, a shunt compensator, transformer, etc.)”</p> <p>With the specific entities listed for reporting, the event type and reporting entity better aligns with the word change from “...a Facility” to “...its Facility.”</p>
<p>EOP-004-3, Attachment 1</p> <p>Event Type: Physical threats to a BES control center</p> <p>Entity with Reporting Responsibility: RC, BA, TOP</p>	<p>EOP-004-4, Attachment 1</p> <p>Event Type: Physical threats to its BES control center</p> <p>Entity with Reporting Responsibility: RC, BA, TOP</p>	<p>With the specific entities listed for reporting, the event type and reporting entity better aligns with the word change from “...a BES control center” to “...its BES control center.”</p>

Standard: EOP-004-4		
Requirement in Approved Standard	Translation to New Standard or Other Action	Description and Change Justification
<p>Threshold for Reporting: Physical threat to its BES control center, excluding weather or natural disaster related threats, which has the potential to degrade the normal operation of the control center.</p> <p>OR</p> <p>Suspicious device or activity at a BES control center.</p>	<p>Threshold for Reporting: Physical threat to its BES control center, excluding weather or natural disaster related threats, which has the potential to degrade the normal operation of the control center.</p> <p>OR</p> <p>Suspicious device or activity at its BES control center.</p>	
<p>EOP-004-3, Attachment 1</p> <p>Event Type: BES Emergency requiring public appeal for load reduction</p> <p>Entity with Reporting Responsibility: Initiating entity is responsible for reporting</p> <p>Threshold for Reporting: Public appeal for load reduction event.</p>	<p>EOP-004-4, Attachment 1</p> <p>Event Type: Public appeal for load reduction resulting from a BES Emergency</p> <p>Entity with Reporting Responsibility: BA</p> <p>Threshold for Reporting: Public appeal for load reduction to maintain continuity of the BES.</p>	<p>To maintain the continuity of the BES was added to better align with the DOE OE-417 reporting category.</p> <p>Rationale: The EOP SDT changed the reporting responsibility to the BA only based on the BA requirements in EOP-011-1 (FERC approved, pending enforcement) Requirement R2 “Each Balancing Authority shall develop, maintain, and implement one or more Reliability Coordinator-reviewed Operating Plan(s) to mitigate Capacity Emergencies and Energy Emergencies within its Balancing Authority Area. The Operating Plan(s) shall include the</p>

Standard: EOP-004-4		
Requirement in Approved Standard	Translation to New Standard or Other Action	Description and Change Justification
		<p>following, as applicable: <i>[Violation Risk Factor: High] [Time Horizon: Real-Time Operations, Operations Planning, Long-term Planning]</i></p> <p><b>2.1.</b> Roles and responsibilities for activating the Operating Plan(s);</p> <p><b>2.2.</b> Processes to prepare for and mitigate Emergencies including:</p> <p><b>2.2.1.</b> Notification to its Reliability Coordinator, to include current and projected conditions when experiencing a Capacity Emergency or Energy Emergency;</p> <p><b>2.2.2.</b> Requesting an Energy Emergency Alert, per Attachment 1;</p> <p><b>2.2.3.</b> Managing generating resources in its Balancing Authority Area to address:</p> <p><b>2.2.3.1.</b> capability and availability;</p> <p><b>2.2.3.2.</b> fuel supply and inventory concerns;</p> <p><b>2.2.3.3.</b> fuel switching capabilities; and</p> <p><b>2.2.3.4.</b> environmental constraints.</p> <p><b>2.2.4.</b> Public appeals for voluntary Load reductions;</p>

Standard: EOP-004-4		
Requirement in Approved Standard	Translation to New Standard or Other Action	Description and Change Justification
<p>EOP-004-3, Attachment 1</p> <p>Event Type: BES Emergency requiring system-wide voltage reduction</p> <p>Entity with Reporting Responsibility: Initiating entity is responsible for reporting.</p> <p>Threshold for Reporting: System wide voltage reduction of 3% or more.</p>	<p>EOP-004-4, Attachment 1</p> <p>Event Type: System-wide voltage reduction resulting from a BES Emergency</p> <p>Entity with Reporting Responsibility: TOP</p> <p>Threshold for Reporting: System-wide voltage reduction of 3% or more.</p>	<p>The TOP is operating the system and is the only entity that would implement System-wide voltage reduction.</p>
<p>EOP-004-3, Attachment 1</p> <p>Event Type: BES Emergency requiring manual firm load shedding</p> <p>Entity with Reporting Responsibility: Initiating entity is responsible for reporting</p> <p>Threshold for Reporting: Manual firm load shedding <math>\geq</math> 100 MW.</p>	<p>EOP-004-4, Attachment 1</p> <p>Event Type: Firm load shedding resulting from a BES Emergency</p> <p>Entity with Reporting Responsibility: Initiating RC, BA, or TOP</p> <p>Threshold for Reporting: Firm load shedding <math>\geq</math> 100 MW (manual or automatic).</p>	<p>The RC, BA and TOP are the entities that would initiate manual firm load shedding.</p>
<p>EOP-004-3, Attachment 1</p> <p>Event Type: BES Emergency resulting in automatic firm load shedding</p> <p>Entity with Reporting Responsibility: DP, TOP</p>	<p>This Event Type/Entity with Reporting Responsibility/Threshold for Reporting has been merged with Event Type: Firm load shedding resulting from a BES Emergency.</p>	<p>This Event Type/Entity with Reporting Responsibility/Threshold for Reporting has been merged with Event Type: Firm load shedding resulting from a BES Emergency.</p>

Standard: EOP-004-4		
Requirement in Approved Standard	Translation to New Standard or Other Action	Description and Change Justification
Threshold for Reporting: Automatic firm load shedding $\geq$ 100 MW (via automatic undervoltage or underfrequency load shedding schemes, or RAS).		
EOP-004-3, Attachment 1 Event Type: Voltage deviation on a Facility Entity with Reporting Responsibility: TOP Threshold for Reporting: Observed within its area a voltage deviation of $\pm$ 10% of nominal voltage sustained for $\geq$ 15 continuous minutes.	EOP-004-4, Attachment 1 Event Type: BES Emergency resulting in voltage deviation on a Facility Entity with Reporting Responsibility: TOP Threshold for Reporting: A voltage deviation of $\geq$ 10% of nominal voltage sustained for $\geq$ 15 continuous minutes.	To provide clarity to the Event Type and to the Threshold for Reporting, the language revisions were made.
EOP-004-3, Attachment 1 Event Type: IROL Violation (all Interconnections) or SOL Violation for Major WECC Transfer Paths (WECC only) Entity with Reporting Responsibility: RC Threshold for Reporting: Operate outside the IROL for time greater than IROL $T_v$ (all Interconnections) or Operate outside the SOL	This Event Type/Entity with Reporting Responsibility/Threshold for Reporting is proposed for retirement.	This Event Type/Entity with Reporting Responsibility/Threshold for Reporting is proposed for retirement.  Event Type: IROL Violation (all Interconnections) or SOL Violation for Major WECC Transfer Paths (WECC only) are in the new standard TOP-001-3, Requirement R12 that becomes effective on 4/1/17, requiring a self-report if $T_v$ is exceeded; the TOP-007-WECC-1 standard is pending retirement.

Standard: EOP-004-4		
Requirement in Approved Standard	Translation to New Standard or Other Action	Description and Change Justification
for more than 30 minutes for Major WECC Transfer Paths (WECC only).		
<p>EOP-004-3, Attachment 1</p> <p>Event Type: Loss of firm load</p> <p>Entity with Reporting Responsibility: BA, TOP, DP</p> <p>Threshold for Reporting: Loss of firm load for <math>\geq</math> 300 MW for entities with previous year's peak demand <math>\geq</math> 3,000 MW</p> <p>OR</p> <p><math>\geq</math> 200 MW for all other entities</p>	<p>EOP-004-4, Attachment 1</p> <p>Event Type: Uncontrolled loss of firm load resulting from a BES Emergency</p> <p>Entity with Reporting Responsibility: BA, TOP, DP</p> <p>Threshold for Reporting: Uncontrolled loss of firm load for <math>\geq</math> 15 minutes from a single incident:</p> <p><math>\geq</math> 300 MW for entities with previous year's peak demand <math>\geq</math> 3,000 MW</p> <p>OR</p> <p><math>\geq</math> 200 MW for all other entities</p>	<p>To provide clarity to the Threshold for Reporting and to align with the DOE's OE-417 reporting category, language revisions were made.</p>
<p>EOP-004-3, Attachment 1</p> <p>Event Type: Generation loss</p> <p>Entity with Reporting Responsibility: BA, GOP</p> <p>Threshold for Reporting: Total generation loss, within one minute, of :</p>	<p>EOP-004-4, Attachment 1</p> <p>Event Type: Generation loss</p> <p>Entity with Reporting Responsibility: BA</p> <p>Threshold for Reporting: Total generation loss, within one minute, of:</p>	<p>The EOP SDT removed the reporting requirement from the GOPs to reduce redundant reporting. The BA should do the reporting given they have the generation status information.</p>

Standard: EOP-004-4		
Requirement in Approved Standard	Translation to New Standard or Other Action	Description and Change Justification
<p>≥ 2,000 MW for entities in the Eastern or Western Interconnection</p> <p>OR</p> <p>≥ 1,000 MW for entities in the ERCOT or Quebec Interconnection</p>	<p>≥ 2,000 MW in the Eastern, Western, or Quebec Interconnection</p> <p>OR</p> <p>≥ 1,400 MW in the ERCOT Interconnection</p>	<p>Technical justification for reverting back to the value of 2,000 MW for the generation loss for the Québec Interconnection and for harmonizing with NERC EA process.</p> <ol style="list-style-type: none"> <li>1. Generation in the Québec Interconnection is 95 % hydraulic. To be efficient, generation must operate within 80 % of its operating range. There is a large spinning reserve available at all times which aids in the recovery period after an event (ACE-Area Control Error). Historically, the recorded average ACE recovery time for a 2,000 MW loss is 5 minutes which is 3 times faster than the standard requirement of 15 minutes. <u>BAL-002-1a (R4.2)</u>.</li> <li>2. Based on the Hydro Québec’s generation loss reports, generation loss between 1,500 MW to 2,000 MW does not trig the first stage threshold of the UFLS scheme.</li> </ol>

Standard: EOP-004-4		
Requirement in Approved Standard	Translation to New Standard or Other Action	Description and Change Justification
		<p>The frequency stayed above the underfrequency limit.</p> <p>3. In order to maintain the integrity of the Québec system, the RPTC SPS in Québec (Generation Rejection and Remote Load Shedding) is designed to detect abnormal or predetermined system conditions, to take corrective actions and to deliberately remove up to 1,500 MW of preselected generation from the power system. Consequently, the system is design to remain stable upon the instantaneous loss of 1,500 MW of generation. For Hydro-Québec, a generation loss of more than 2,000 MW is considered as an issue, which is make sense with previous 2,000 MW generation loss reporting requirement.</p> <p>4. The EEA Level 3 alert (EOP-002) in Québec is set generally set at 2,000 MW, based on the deficiency of</p>

Standard: EOP-004-4		
Requirement in Approved Standard	Translation to New Standard or Other Action	Description and Change Justification
		<p>operating reserves and margins. Up to now, no EEA Level 3 alert has occurred in the Québec Interconnection.</p> <p>5. Hydro Québec’s loss of generation in first contingency (n-1) is set around 2,000 MW.</p> <p>Technical justification for the value of 1,400 MW for the generation loss for the ERCOT Interconnection and for harmonizing with NERC EA process.</p> <p>1. ERCOT maintains a mix of operating reserves (typically 50% Load Resources controlled by under-frequency relays and 50% frequency responsive spinning reserves) available at all times, which aids in the recovery period after an event affecting Area Control Error (ACE) or frequency. ERCOT typically procures between 2,300 MW to 3,000 MW of frequency responsive reserves for all</p>

Standard: EOP-004-4		
Requirement in Approved Standard	Translation to New Standard or Other Action	Description and Change Justification
		<p>operating hours besides procuring additional regulation and non-spinning reserves. The Load Resources controlled by Under-Frequency relay are set to respond automatically at 59.7 Hz to provide instantaneous frequency response. Historically, the recorded average ACE recovery time for a 1,400 MW loss is less than 10 minutes, which is much faster than the standard requirement of 15 minutes. <u>BAL-002-1a (R4.2)</u>.</p> <ol style="list-style-type: none"> <li>2. The design criteria for ERCOT's frequency responsive reserves is to procure adequate reserves that allow frequency to stay above the under-frequency limit for up to ERCOT's resource contingency criteria limit of 2,750 MW.</li> <li>3. The EEA level 1 alert (EOP-002) in ERCOT is set at 2,300 MW of Physical Responsive Capability (PRC) which is</li> </ol>

Standard: EOP-004-4		
Requirement in Approved Standard	Translation to New Standard or Other Action	Description and Change Justification
		a mix of operating reserves (typically 50% Load Resources and 50% frequency responsive spinning reserves).
<p>EOP-004-3, Attachment 1</p> <p>Event Type: Complete loss of off-site power to a nuclear generating plant (grid supply)</p> <p>Entity with Reporting Responsibility: TO, TOP</p> <p>Threshold for Reporting: Complete loss of off-site power affecting a nuclear generating station per the Nuclear Plant Interface Requirement</p>	<p>EOP-004-4, Attachment 1</p> <p>Event Type: Complete loss of off-site power to a nuclear generating plant (grid supply)</p> <p>Entity with Reporting Responsibility: TO, TOP</p> <p>Threshold for Reporting: Complete loss of off-site power (LOOP) affecting a nuclear generating station per the Nuclear Plant Interface Requirements</p>	<p>The Event Analysis Program (EAP) refers to loss of off-site power as “(LOOP)”. Therefore, LOOP has been added to the Threshold for Reporting to provide consistency.</p>
<p>EOP-004-3, Attachment 1</p> <p>Event Type: Transmission loss</p> <p>Entity with Reporting Responsibility: TOP</p> <p>Threshold for Reporting: Unexpected loss within its area, contrary to design, of three or more BES Elements caused by a common disturbance (excluding successful automatic reclosing).</p>	<p>EOP-004-4, Attachment 1</p> <p>Event Type: Transmission loss</p> <p>Entity with Reporting Responsibility: TOP</p> <p>Threshold for Reporting: Unexpected loss within its area, contrary to design, of three or more BES Facilities caused by a common disturbance (excluding successful automatic reclosing).</p>	<p>The definition of BES Element includes generation. The reporting requirement for this Event Type is the TOP. The TOP does not have the visibility to report for the GO and/or the GOP for this Event Type. It could lead to confusion as to the element count for three elements contrary to design. In addition, the EAP uses the definition of “BES Facility” in its application, which could lead to additional confusion in evaluating a</p>

Standard: EOP-004-4		
Requirement in Approved Standard	Translation to New Standard or Other Action	Description and Change Justification
		reporting during an event. The EOP SDT revised “BES Elements” to “BES Facilities” to add clarity to the Threshold for Reporting and to align with the EAP language.
<p>EOP-004-3, Attachment 1</p> <p>Event Type: Unplanned BES control center evacuation</p> <p>Entity with Reporting Responsibility: RC, BA, TOP</p> <p>Threshold for Reporting: Unplanned evacuation from BES control center facility for 30 continuous minutes or more.</p>	<p>EOP-004-4, Attachment 1</p> <p>Event Type: Unplanned evacuation of its BES control center</p> <p>Entity with Reporting Responsibility: RC, BA, TOP</p> <p>Threshold for Reporting: Unplanned evacuation from its BES control center facility for 30 continuous minutes or more.</p>	<p>In the Threshold for Reporting, with the specific entities listed for reporting, the event type and reporting entity better aligns with the word change from “...BES control center” to “...its BES control center.”</p>
<p>EOP-004-3, Attachment 1</p> <p>Event Type: Complete loss of voice communication capability</p> <p>Entity with Reporting Responsibility: RC, BA, TOP</p> <p>Threshold for Reporting: Complete loss of voice communication capability affecting a</p>	<p>EOP-004-4, Attachment 1</p> <p>Event Type: Complete loss of Interpersonal Communication and Alternative Interpersonal Communication capability at its staffed BES control center</p> <p>Entity with Reporting Responsibility: RC, BA, TOP</p> <p>Threshold for Reporting: Complete loss of Interpersonal Communication and</p>	<p>COM-001-2 defined Interpersonal Communication for the NERC Glossary of Terms as: “Any medium that allows two or more individuals to interact, consult, or exchange information.”</p> <p>And Alternative Interpersonal Communication as: “Any Interpersonal Communication that is able to serve as a substitute for, and does</p>

Standard: EOP-004-4		
Requirement in Approved Standard	Translation to New Standard or Other Action	Description and Change Justification
BES control center for 30 continuous minutes or more.	Alternative Interpersonal Communication capability affecting its staffed BES control center for 30 continuous minutes or more.	not utilize the same infrastructure (medium) as, Interpersonal Communication used for day-to-day operation.”
<p>EOP-004-3, Attachment 1</p> <p>Event Type: Complete loss of monitoring capability</p> <p>Entity with Reporting Responsibility: RC, BA, TOP</p> <p>Threshold for Reporting: Complete loss of monitoring capability affecting a BES control center for 30 continuous minutes or more such that analysis capability (i.e., State Estimator or Contingency Analysis) is rendered inoperable.</p>	<p>EOP-004-4, Attachment 1</p> <p>Event Type: Complete loss of monitoring or control capability at its staffed BES control center</p> <p>Entity with Reporting Responsibility: RC, BA, TOP</p> <p>Threshold for Reporting: Complete loss of monitoring or control capability at its staffed BES control center for 30 continuous minutes or more.</p>	<p>The language revisions to this event type provides clarity to the Threshold for Reporting and better aligns with the EAP language.</p>