Impact of NERC’s New Bulk Electric System (BES) Definition

Presentation to IESO Technical Panel
• Background
• Existing BPS and future BES in Ontario
• Estimated impact of new NERC BES definition in Ontario
• Considerations of a BES Exception Procedure in Ontario
• Options for exception criteria
• Recommendations for next stage
• The classification of facilities as BES is used to determine the applicability of the electric reliability standards in NERC jurisdictions.

• In the NPCC footprint the elements that are part of the BES are currently identified using a performance-based test, outlined in NPCC A-10: Classification of Bulk Power System Elements.

• FERC issued Order 743 on November 18, 2010 which in summary directed NERC to revise the definition of “bulk electric system” to maintain a bright-line threshold that includes all facilities operated at or above 100 kV with specific inclusions and exclusions.

• NERC was also asked to adopt an exception process and criteria for excluding facilities that are not necessary to operate an interconnected electric transmission network.
• In response to this directive NERC produced a new BES definition and revised its Rules of Procedure (RoP) to include a BES Exception Process.

• BES Definition and revised NERC RoP were filed with FERC on January 25, 2012.

• The NERC Exception Process in the RoP includes the option for Canadian entities to adopt the NERC BES Exception Process or an equivalent procedure.

• FERC is expected to approve the new BES Definition by Q3 2012.
• The IESO prepared a preliminary list of BES facilities in Ontario. The results indicate that all current BPS facilities are also BES. Furthermore, additional facilities will be classified as BES as a result of the new BES definition in Ontario.

• The list indicates the additional facilities which will have to comply with NERC standards and the following standards are expected to have an economic impact on those facilities:
  – Transmission Planning (TPL) standards;
  – Protection and Control (PRC) standards; and
  – Critical Infrastructure Protection (CIP) standards.
A study was carried out to estimate the impact of compliance with NERC’s Transmission Planning Standards as they apply to facilities classified as BES in Ontario under the new definition. The summary of study results are as follows:

<table>
<thead>
<tr>
<th>Region</th>
<th>Variation from TPL Standard</th>
<th>Cost Implication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwest</td>
<td>New enhanced transmission facilities would be necessary for compliance with the standards</td>
<td>Moderate (after the addition of the new E/W tie)</td>
</tr>
<tr>
<td>Northeast</td>
<td>Transmission system enhancements would be necessary unless BES Exceptions are approved for this area</td>
<td>Moderate (assuming Load rejection is allowed for all 500 kV contingencies)</td>
</tr>
<tr>
<td>Ontario 115 kV System</td>
<td>To achieve compliance with the standard, special protection systems may be required at a few specific locations to reject load for double-circuit or breaker fail contingencies.</td>
<td>Low</td>
</tr>
</tbody>
</table>
• **Potential Impact on Protection and Control (PRC) and Critical Infrastructure Protection (CIP) Standards**

  – It is anticipated that the PRC and CIP standards will become more onerous and applicable to some, if not all, 115 kV BES facilities. This could potentially have significant cost implications for facility owners in Ontario.

  – Based on preliminary assessment, the estimated cost of compliance with partial redundancy requirements (i.e., duplicate trip coils for breakers) for a subset of 115 kV breakers plus CIP requirements for a subset of 115 kV facilities is around $250M.
• NERC has developed an exception process for US entities.
• The NERC process does not include specific assessment criteria.
• The IESO proposes to develop an Ontario-specific BES Exception Procedure and criteria which follows the same broad process steps as NERC’s, but has different governance.
• The table below shows the entities responsible for each step in the NERC exception process and the Ontario BES Exception Procedure:

<table>
<thead>
<tr>
<th>Nr</th>
<th>Step</th>
<th>NERC BES Exception Process</th>
<th>Ontario BES Exception Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prepare BES exception request</td>
<td>Applicant, Reliability Coordinator</td>
<td>Applicant</td>
</tr>
<tr>
<td>2</td>
<td>Initial screening of request</td>
<td>Regional Reliability Organization</td>
<td>IESO</td>
</tr>
<tr>
<td>3</td>
<td>Substantive review / recommendation</td>
<td>RRO</td>
<td>IESO</td>
</tr>
<tr>
<td>4</td>
<td>Technical panel review</td>
<td>RRO panel</td>
<td>IESO</td>
</tr>
<tr>
<td>5</td>
<td>Filing of Supplementary evidence</td>
<td>Applicant, RC</td>
<td>Applicant</td>
</tr>
<tr>
<td>6</td>
<td>Decision on BES exception request</td>
<td>NERC panel</td>
<td>IESO</td>
</tr>
<tr>
<td>7</td>
<td>Challenge of decision</td>
<td>NERC Rules of Procedure</td>
<td>Market Rules dispute resolution</td>
</tr>
</tbody>
</table>
The application assessment criteria is still under development.

Criteria under consideration include:

- General Criteria contained in such processes as:
  - IESO Exemption Application and Assessment Criteria.

- Specific Technical Criteria
  - Section 7 of ORTAC on load security to determine generator exceptions.
  - Performance based criteria similar to NPCC A-10.
  - NPCC PRC-023 Attachment B for exceptions on circuits operated between 100 – 200 kV.
  - NERC BES Exception Process for exceptions on circuits operated above 200 kV.

- Cost Criteria
  - it is recommended to ground the BES exception criteria in an accepted set of criteria that includes cost effectiveness.

Criteria will be included in the procedure documentation.
• The OEB does not remand the new definition.
• Develop and implement an equivalent BES Exception Procedure for Ontario as permitted in NERC’s RoP.
• Develop assessment criteria applicable to Ontario.
• Initiate Stakeholder engagement for public review and approval of the procedure.
• Introduce market rule amendments to enable the implementation of the procedure.
• Seek IESO Board Approval in September 2012.
Timeline

November 2011 BES Team Initial meeting to discuss need and approach

February 2012 - BES Tech Team completes BES impact report based on BES Definition application

May 15, 2012 Technical Panel Meeting: Presentation & Amendment Submission

May, 2012 : Initiate Stakeholder Engagement Focus Group with a target of July 3rd, 2012 completion

September 2012: Seek IESO Board approval, potential vote at the September 7, 2012 Board meeting

Q3 2012: FERC expected to Approve BES Definition. Definition could be effective as early as January 1, 2013

BES Exception Process Open for Applications January 2013