ANNEX A

Proposed Amendments to the WESM Manual on Constraint Violation Coefficients and Pricing Re-Runs

Title	Clause	Provision	Proposed Amendment	Rationale	Stakeholder Comment/Revision	Stakeholder Rationale
Constraint Violation Coefficient – Order of Constraint Violation Coefficients	4.3.1	The order of relaxing *soft constraints* shall be set such that *constraints* resulting in the lowest reduction in the capability of the *network, load* or *generating units* shall be allowed to occur first, as follows: a. Tertiary Reserve Requirement Constraint b. Primary Reserve Requirement Constraint c. Nodal VoLL or Nodal Energy Balance Constraint d. System Energy Balance Constraint e. Self-Scheduled Generation Constraint f. Thermal Contingency Constraint – Transformer g. Thermal Contingency Constraint – Line h. Thermal Contingency Constraint – Branch Group i. Secondary Reserve Requirement Constraint j. Thermal Base Case Constraint – Transformer k. Thermal Base Case Constraint – Line l. Thermal Base Case Constraint – Branch Group	The order of relaxing *soft constraints* shall be set such that *constraints* resulting in the lowest reduction in the capability of the *network, load* or *generating units* shall be allowed to occur first, as follows: a. Tertiary**/Dispatchable** Reserve Requirement Constraint b. Primary**/Contingency** Reserve Requirement Constraint c. Nodal VoLL or Nodal Energy Balance Constraint d. System Energy Balance Constraint e. Self-Scheduled Generation Constraint **– Non-Scheduled Generation** f. **Self-Scheduled Generation Constraint – Priority Dispatch Generation** g. **Self-Scheduled Generation Constraint – Must Dispatch Generation** **h.** ~~f.~~ Thermal Contingency Constraint – Transformer **i.** ~~g.~~ Thermal Contingency Constraint – Line **j.** ~~h.~~ Thermal Contingency Constraint – Branch Group **k.** ~~i.~~ Secondary**/Regulating** Reserve Requirement Constraint **l.** ~~j.~~ Thermal Base Case Constraint – Transformer	• To distinguish among non-scheduled, priority dispatch and must dispatch generation as these three (3) self-scheduled generation categories have a set priority in dispatch and curtailment. The order of CVCs associated with these classifications are arranged in line with WESM Rules provision on the hierarchy for dispatch target curtailment (WESM Rules Clause 3.6.1.8). • To reflect classification of ancillary services based on the DOE issuances		

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			m. ~~k.~~ Thermal Base Case Constraint – Line **n.** ~~l.~~ Thermal Base Case Constraint – Branch Group			
Constraint Violation Coefficient – Order of Constraint Violation Coefficients	4.3.4	(refer to Annex succeeding table at page 4 – 7)	(refer to Annex succeeding table at page 4 – 7)	The CVC table is proposed to be revised to reflect the suggested changes in CVC hierarchy (Sec 4.3.1). The corresponding coefficients for each soft constraint are also recommended to be updated to reflect the change in CVC order. The values of the CVCs whose rankings moved up were also revised based on recommendations during the certification audit and observations during the conduct of parallel operations program. In general, values of the CVCs should be set such that the sum of the values of possible CVC combinations will not be equal to a		

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				higher single CVC value. For example, since there are CVCs set at 800,000 and 1,600,000, there should be no CVC set at 2,400,000 (800,000 + 1,600,000); otherwise, the MDOM may choose to violate the higher CVC instead of the two lower CVCs, which is the expected result.		
Automatic Pricing Re-Run Parameters	5.3.1	(refer to succeeding table page 7 to 10)	(refer to succeeding table page 7 to 10)	The Automatic Pricing Re-Run Parameters are proposed to be revised to reflect the suggested changes in CVC table (Sec 4.3.4).		

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<tr>
<td>4.3.4 The following table provides the constraint violation coefficients, which is reflective of the order of relaxing soft constraints established in Section 4.3.1 of this Market Manual, and the corresponding action by the System Operator:
<table>
<tr><th>Order</th><th>Constraint Violation Coefficient Name</th><th>CVC</th><th>SO Action</th></tr>
<tr><td>1</td><td>Tertiary Reserve Requirement Constraint</td><td>100,000</td><td>None</td></tr>
<tr><td>2</td><td>Primary Reserve Requirement Constraint</td><td>200,000</td><td>None</td></tr>
<tr><td>3</td><td>Nodal VoLL or Nodal Energy Balance Constraint</td><td>800,000</td><td>Re-dispatch generation and/or drop load as necessary.</td></tr>
<tr><td rowspan="2">4</td><td rowspan="2">System Energy Balance Constraint</td><td rowspan="2">1,300,000</td><td>For over-generation, identify generating units to be shut down to eliminate excess capacity.</td></tr>
<tr><td>For under-generation, identify must-run units that can be dispatched or drop load as necessary.</td></tr>
<tr><td>5</td><td>Self-Scheduled Generation Constraint</td><td>1,400,000</td><td>The projected output or schedule of loading level of the relevant</td></tr>
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<table>
<tr><th>Order</th><th>Constraint Violation Coefficient Name</th><th>CVC</th><th>SO Action</th></tr>
<tr><td>1</td><td>Tertiary<u>/Dispatchable</u> Reserve Requirement Constraint</td><td>100,000</td><td>None</td></tr>
<tr><td>2</td><td>Primary<u>/Contingency</u> Reserve Requirement Constraint</td><td>200,000</td><td>None</td></tr>
<tr><td>3</td><td>Nodal VoLL or Nodal Energy Balance Constraint</td><td>800,000</td><td>Re-dispatch generation and/or drop load as necessary.</td></tr>
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Provision				Proposed Amendment				Stakeholder Comment/Revision	Stakeholder Rationale
			generating unit(s) shall be curtailed.				excess capacity.		
6	Thermal Contingency Constraint – Transformer	1,500,000	Re-dispatch generation and/or drop load as necessary.				For under-generation, identify must-run units that can be dispatched or drop load as necessary.		
7	Thermal Contingency Constraint – Line	1,500,000							
8	Thermal Contingency Constraint – Branch Group	2,000,000							
9	Secondary Reserve Requirement Constraint	3,500,000	Re-dispatch generation and/or drop load as necessary.	5	Self-Scheduled Generation Constraint **– Non-Scheduled Generation**	1,400,000	The ~~projected output or~~ schedule of loading level of the relevant **non-scheduled** generating unit(s) shall be curtailed.		
10	Thermal Base Case Constraint – Transformer	4,000,000	Re-dispatch generation and/or drop load as necessary.	**6**	**Self-Scheduled Generation Constraint – Priority**	**1,500,000**	The projected output ~~or schedule of loading level~~ of the		
11	Thermal Base Case Constraint – Line	4,000,000							
12	Thermal Base Case Constraint – Branch Group	4,500,000							

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Provision	Proposed Amendment				Stakeholder Comment/Revision	Stakeholder Rationale
		Dispatch Generation		relevant **priority dispatch** generating unit(s) shall be curtailed.		
	7	**Self-Scheduled Generation Constraint – Must Dispatch Generation**	**1,600,000**	The projected output ~~or schedule of loading level~~ of the relevant **must dispatch** generating unit(s) shall be curtailed.		
	~~6~~ **8**	Thermal Contingency Constraint – Transformer	~~1,500,000~~ **2,500,000**	Re-dispatch generation and/or drop load as necessary.		
	~~7~~ **9**	Thermal Contingency Constraint – Line	~~1,500,000~~ **2,500,000**			
	~~8~~ **10**	Thermal Contingency Constraint – Branch Group	~~2,000,000~~ **3,000,000**			

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<tr><td>~~9~~ <u>11</u></td><td>Secondary<u>/Regulating</u> Reserve Requirement Constraint</td><td>~~3,500,000~~ <u>5,600,000</u></td><td>Re-dispatch generation and/or drop load as necessary.</td></tr>
<tr><td>~~10~~ <u>12</u></td><td>Thermal Base Case Constraint – Transformer</td><td>~~4,000,000~~ <u>6,000,000</u></td><td rowspan="3">Re-dispatch generation and/or drop load as necessary.</td></tr>
<tr><td>~~11~~ <u>13</u></td><td>Thermal Base Case Constraint – Line</td><td>~~4,000,000~~ <u>6,000,000</u></td></tr>
<tr><td>~~12~~ <u>14</u></td><td>Thermal Base Case Constraint – Branch Group</td><td>~~4,500,000~~ <u>6,500,000</u></td></tr>
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<tr><td>5.3.1 The corresponding constraint relaxation formulas for the constraint violation coefficients during pricing re-runs shall be as provided in Table 2 below:
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<tr><th>Order</th><th>Constraint Violation Coefficient Name</th><th>CVC</th><th>Violation Variable Value</th><th>Delta</th><th>Constraint Relaxation during Pricing Re-Run</th><th>Re-run Price</th></tr>
<tr><td>1</td><td>Tertiary Reserve Requirement Constraint</td><td>100,000</td><td>x</td><td>0.1</td><td>x + delta</td><td>EDP AND RP</td></tr>
<tr><td>2</td><td>Primary Reserve</td><td>200,000</td><td>x</td><td>0.1</td><td>x + delta</td><td>EDP AND RP</td></tr>
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Provision							Proposed Amendment							Stakeholder Comment/Revision	Stakeholder Rationale
	Requirement Constraint							Requirement Constraint							
3	Nodal Energy Balance Constraint	800,000	x	0.1	x + delta	EDP AND RP	2	Primary**/Contingency** Reserve Requirement Constraint	200,000	x	0.1	x + delta	EDP AND RP		
4	System Energy Balance Constraint	1,300,000	x	0	delta	Excess Price for over-generation	3	Nodal Energy Balance Constraint	800,000	x	0.1	x + delta	EDP AND RP		
						Shortage Price for under-generation	4	System Energy Balance Constraint	1,300,000	x	0	delta	Excess Price for over-generation		
5	Self-Scheduled Generation Constraint	1,400,000	x	0.1	x + delta	EDP AND RP							Shortage Price for under-generation		
6	Thermal Contingency Constraint – Transformer	1,500,000	x	0.1	x + delta	EDP AND RP	5	Self-Scheduled Generation Constraint **– Non-Scheduled Generation**	1,400,000	x	0.1	x + delta	EDP AND RP		
7	Thermal Contingency Constraint – Line	1,500,000	x	0.1	x + delta	EDP AND RP									
8	Thermal Contingency Constraint – Branch Group	2,000,000	x	0.1	x + delta	EDP AND RP									
9	Secondary Reserve Requirement Constraint	3,500,000	x	0.1	x + delta	EDP AND RP									

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10	Thermal Base Case Constraint – Transformer	4,000,000	x	0.1	x + delta	EDP AND RP	**6**	**Self-Scheduled Generation Constraint – ~~Non-~~ Priority Dispatch Generation**	**1,500,000**	**x**	**0.1**	**x + delta**	**EDP AND RP**		
11	Thermal Base Case Constraint – Line	4,000,000	x	0.1	x + delta	EDP AND RP	**7**	**Self-Scheduled Generation Constraint – Must Dispatch Generation**	**1,600,000**	**x**	**0.1**	**x + delta**	**EDP AND RP**		
12	Thermal Base Case Constraint – Branch Group	4,500,000	x	0.1	x + delta	EDP AND RP	~~6~~ **8**	Thermal Contingency Constraint – Transformer	~~1,500,000~~ **2,500,000**	x	0.1	x + delta	EDP AND RP		
							~~7~~ **9**	Thermal Contingency Constraint – Line	~~1,500,000~~ **2,500,000**	x	0.1	x + delta	EDP AND RP		
							~~8~~ **10**	Thermal Contingency Constraint	~~2,000,000~~ **3,000,000**	x	0.1	x + delta	EDP AND RP		

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