Philippine Electricity Market Corporation

WHOLESALE ELECTRICITY SPOT MARKET
RULES CHANGE COMMITTEE

RESOLUTION NO. 2017-03

Proposed Urgent Amendments to the WESM Manuals on (a) Price Determination Methodology and (b) Constraint Violation Coefficient and Pricing Re-run regarding the Implementation of WESM Design Enhancements

WHEREAS, on 20 February 2017, the Philippine Electricity Market Corporation-Market Operator (PEMC-MO) submitted to the Rules Change Committee (RCC) the Proposed Urgent Amendments to the WESM Manuals on (a) Price Determination Methodology (PDM), and (b) Constraint Violation Coefficient and Pricing Re-run (CVC-PR) regarding the Implementation of WESM Design Enhancements;

WHEREAS, the proposal intends to further revise the PEM Board-approved proposed PDM Manual and the proposed amendments to the CVC-PR Manual as embodied in PEM Board Resolution No. 2016-41 dated 29 November 2016;

WHEREAS, the proposed urgent amendments to the PDM Manual aim to correct the proposed calculation of price adjustment for customers in the non-administered region to ensure there is no cross-subsidy when the administered region under market intervention or suspension is exporting power to the non-administered region;

WHEREAS, the proposed urgent amendments to the CVC-PR Manual intend to: (i) add constraints to provide the details of the categories and distinguish the priority among transmission equipment, (ii) revise the order of CVCs, and (iii) reflect changes to ensure consistency with the revision to the order of CVCs;

WHEREAS, the proposal was classified as urgent by the PEMC President in consideration of the following: a) target commencement of the enhanced market design and operations on 26 June 2017; b) the necessary approval by the Energy Regulatory Commission (ERC) of the PDM prior the said target commencement date; and c) the submission of the CVC-PR Manual to the ERC as supporting document to the PDM-filing of PEMC;

WHEREAS, during the 125th Meeting of the RCC on 20 February 2017, the proposed amendments were presented to the RCC for discussion and approval, and during which meeting the RCC preliminarily agreed that the submitted proposal was of an urgent nature;

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WHEREAS, pursuant to Section 7.2 (b) of the WESM Manual of Procedures for Changes to the WESM Rules ("Rules Change Manual")[1], the RCC deliberated on the proposed urgent amendments;

WHEREAS, during said deliberation, the RCC adopted further changes to the submitted urgent proposal so as to align the same with a) the RCC-approved changes to related provisions in the Dispatch Protocol Manual Issue 12 regarding the Implementation of WESM Design Enhancements, and b) the 2016 Philippine Grid Code, and approved the proposed urgent amendments, as revised to include the following:

- *for the PDM Manual,:*

    (i) clarification that Must-Run Units, which are constrained-on generating units under out-of merit, may apply for additional compensation; and
    (ii) deletion of provision stating that administered price will only be applied to an isolated portion of the grid under market suspension or intervention since (a) there have been no declaration by the System Operator of local market intervention and suspension that only affects a certain portion of the grid, and (b) the new Market Management System is capable of determining prices for an isolated system in the grid, thereby having no need to declare local market intervention;

- *for the CVC-PR Manual:*

    (i) revisions to the nomenclature of certain CVCs to be consistent with those used in the 2016 Philippine Grid Code;
    (ii) revisions to the actions undertaken by the System Operator to reflect actual practice during instances when certain CVCs are violated; and
    (iii) minor clerical edits.

WHEREAS, on 03 March 2017 during its 126th Meeting, the RCC approved additional revisions to the proposed urgent amendments to Section 8.3.1 of the PDM Manual for further clarity to specify that Must-Run Units or constrain-on generators are price takers;

WHEREAS, per Section 7.2 (d) of the Rules Change Manual which states that a majority of those present in the meeting called for the purpose of evaluating a proposed urgent amendment shall be sufficient to render a decision, approved the proposal, as revised, for endorsement to the PEM Board;

NOW THEREFORE, we, the undersigned and in behalf of the sector we represent, hereby resolve as follows:

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[1] *"...the Committee shall, within forty-eight (48) hours from receipt of a proposed urgent amendments, convene and render decision to determine whether the proposal: (i) falls within the definition of an urgent amendment, (ii) satisfies the criteria for rules changes; and (iii) has an impact on prices, and/or on the reliability and quality of electricity service, and the nature of the impact."*

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RESOLVED, that the Proposed Urgent Amendments to the WESM Manuals on (a) Price Determination Methodology, and (b) Constraint Violation Coefficient and Pricing Re-run regarding the Implementation of WESM Design Enhancements are hereby approved by the RCC;

RESOLVED FURTHER, that the attached Annexes of the Proposed Urgent Amendments to the WESM Manuals on (a) Price Determination Methodology, and (b) Constraint Violation Coefficient and Pricing Re-run regarding the Implementation of WESM Design Enhancements are hereby endorsed to the PEM Board for approval and endorsement to the DOE.

Done this 03 March 2017, Pasig City.

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(b) Constraint Violation Coefficient and Pricing Re-run regarding the Implementation of
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Approved by:
RULES CHANGE COMMITTEE
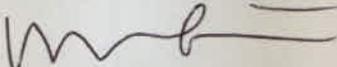
Maila Lourdes G. de Castro
Chairperson
Independent

Members:
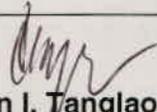
Concepcion I. Tanglao Independent	**Francisco L.R. Castro, Jr.** Independent
Allan C. Nerves Independent	**Isidro E. Cacho, Jr.** Market Operator Philippine Electricity Market Corporation (PEMC)
Ambrocio R. Rosales Transmission Sector National Grid Corporation of the Philippines (NGCP)	**Abner B. Tolentino** Generation Sector Power Sector Assets and Liabilities Management Corporation (PSALM)
Atty. Jose Ildebrando B. Ambrosio Generation Sector NorthWind Power Development Corporation	**Theo C. Sunico** Generation Sector Vivant Corporation
Ciprinilo C. Meneses Distribution Sector (PDU) Manila Electric Company (MERALCO)	**Jose P. Santos** Distribution Sector (EC) Ilocos Norte Electric Cooperative, Inc. (INEC)
Juanito Tolentino Distribution Sector Mactan Electric Company (MECO)	**Ludovico D. Lim** Distribution Sector Antique Electric Cooperative, Inc. (ANTECO)
Lorreto H. Rivera Supply Sector TeaM (Philippines) Energy Corporation (TPEC)	Certified True and Correct: **Elaine D. Gonzales** RCC Secretariat PEMC
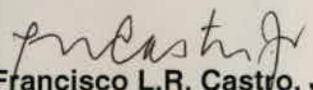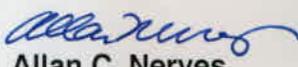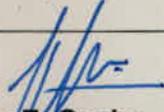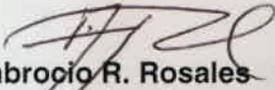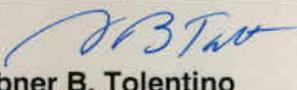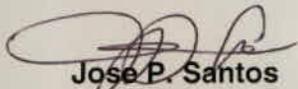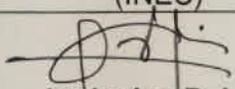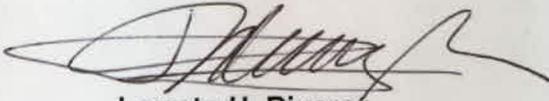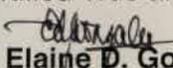
Proposed Urgent Amendments to the WESM Manuals on Price Determination Methodology regarding the Implementation of WESM Design Enhancements

Title	Section	Provision[1]	Proposed Amendment	Rationale
Administered Prices	7.1.2	7.1.2 The administered price shall be established by the Market Operator in accordance with the following guiding principles: a. The administered price shall be fair and reasonable to both the suppliers and consumers of electricity. b. Administered prices shall be determined and shall replace market prices for energy, i.e. energy administered prices shall replace the nodal energy dispatch prices, and reserves, i.e. reserve administered prices shall replace the reserve prices. c. The process for determining the administered price shall be transparent to the Trading Participants and administratively simple to implement. d. The process for determining the administered price shall be based on the market information available prior to market intervention or market suspension. e. The administered price shall be applied in the region where the market suspension or market intervention is declared. For this purpose, the regions are Luzon, Visayas and Mindanao. f. Where market suspension or market intervention is declared in an island grid ("grid islanding"), the administered prices shall be applied only to the resources in the	7.1.2 The administered price shall be established by the Market Operator in accordance with the following guiding principles: a. The administered price shall be fair and reasonable to both the suppliers and consumers of electricity. b. Administered prices shall be determined and shall replace market prices for energy, i.e. energy administered prices shall replace the nodal energy dispatch prices, and reserves, i.e. reserve administered prices shall replace the reserve prices. c. The process for determining the administered price shall be transparent to the Trading Participants and administratively simple to implement. d. The process for determining the administered price shall be based on the market information available prior to market intervention or market suspension. e. The administered price shall be applied in the region where the market suspension or market intervention is declared. For this purpose, the regions are Luzon, Visayas and Mindanao. f. ~~Where market suspension or market intervention is declared in an island grid ("grid islanding"), the administered prices shall be applied only to the resources in the island grid where the market suspension or market intervention was declared.~~ g f. The administered price will apply only to transactions above the declared bilateral contract quantities.	• To delete the provision since: (i) there have been no declaration by the System Operator of local market intervention and suspension that only affects a certain portion of the grid; and (ii) the new Market Management System is capable of determining prices for an isolated system in the grid, having no need to declare local market intervention. • To align with the RCC-approved changes to the related provision (Section 16.5.3 – Declaration of Market Suspension or Intervention) in the

Title	Section	Provision[1]	Proposed Amendment	Rationale
		island grid where the market suspension or market intervention was declared. g. The administered price will apply only to transactions above the declared bilateral contract quantities.		Dispatch Protocol Manual regarding the Implementation of WESM Design Enhancements
Administered Prices	7.3.4	In case only one region is under market suspension or market intervention and the said region is exporting power to the other region and the nodal energy dispatch prices in the region that is not under market suspension or market intervention were determined in accordance with WESM Rules Clause 3.6, the nodal energy dispatch prices for the customer resources within the region that is not under market suspension or market intervention shall be adjusted by adding the following: $$NARAPA_{b\text{-}NAR,\ i} = \frac{SQ_{ITC,\ i} {}^{*}\left(GWAP_{NAR,\ i} - GWAEAP_i\right)}{\sum_{b \in B\text{-}NAR_i} EDS_{b\text{-}NAR,\ i}}$$ Where: $NARAPA_{b\text{-}NAR,i}$ refers to the non-administered region administered price adjustment for a customer resource within the non-administered region for dispatch interval i $SQ_{ITC,i}$ refers to the snapshot quantity of the interconnection for dispatch interval i $GWAP_{NAR,i}$ refers to the generator weighted average price at the non-administered region using energy dispatch schedule for dispatch interval i	In case only one region is under market suspension or market intervention and the said region is exporting power to the other region and the nodal energy dispatch prices in the region that is not under market suspension or market intervention were determined in accordance with WESM Rules Clause 3.6, the nodal energy dispatch prices for the customer resources within the region that is not under market suspension or market intervention shall be adjusted by adding the following: $$NARAPA_{b\text{-}NAR,\ i} = \frac{SQ_{ITC,\ i} {}^{*}\left(\cancel{GWAP_{NAR,\ i}} GWAEAP_i - \mathbf{GWAP_{NAR,\ i}}\right)}{\sum_{b \in B\text{-}NAR_i} EDS_{b\text{-}NAR,\ i}}$$ Where: $NARAPA_{b\text{-}NAR,i}$ refers to the non-administered region administered price adjustment for a customer resource within the non-administered region for dispatch interval i $SQ_{ITC,i}$ refers to the snapshot quantity of the interconnection for dispatch interval i $GWAP_{NAR,i}$ refers to the generator weighted average price at the non-administered region using energy dispatch schedule for dispatch interval i $GWAEAP_i$ refers to the generator weighted average energy administered price using snapshot quantity for dispatch interval i $EDS_{b\text{-}NAR,i}$ refers to the energy dispatch schedule of customer resource b within the non-administered region for dispatch interval i	To correct the formula to ensure that there is no cross-subsidy when the region under market intervention or market suspension is exporting power to the non-administered region.

Proposed Urgent Amendments to the WESM Manual on Price Determination Methodology regarding the Implementation of WESM Design Enhancements

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Title	Section	Provision[1]	Proposed Amendment	Rationale
		$GWAEAP_i$ refers to the generator weighted average energy administered price using snapshot quantity for dispatch interval i $EDS_{b\text{-}NAR,i}$ refers to the energy dispatch schedule of customer resource b within the non-administered region for dispatch interval i $B\text{-}NAR_i$ refers to the set of all customer resources within the non-administered region for dispatch interval i b-NAR refers to a customer resource within the non-administered region	$B\text{-}NAR_i$ refers to the set of all customer resources within the non-administered region for dispatch interval i b-NAR refers to a customer resource within the non-administered region	
Additional Compensation	8.3.1	8.3.1 A Trading Participant may be entitled to additional compensation when the costs incurred in complying with dispatch instructions are not sufficiently covered by the trading amounts related to settlement intervals with dispatch intervals under any of the following conditions: a. Market suspension or market intervention; or b. When the same Trading Participant was designated as must-run unit.	8.3.1 A Trading Participant may be entitled to additional compensation when the costs incurred in complying with dispatch instructions are not sufficiently covered by the trading amounts related to settlement intervals with dispatch intervals under any of the following conditions: a. Market suspension or market intervention **and was paid at the administered price in accordance with Section 7**; or b. When the same Trading Participant was designated as must-run unit **or constrain-on generating unit and was paid at the WESM price in accordance with Section 4.12.**	▪ To clarify that Must-Run Units, which are constrained-on generating units under out-of merit, may apply for additional compensation; ▪ To align with the RCC-approved changes to the related provision (Section 11.6.4 – *Re-dispatch Process*) in the Dispatch Protocol Manual regarding the Implementation of WESM Design Enhancements

Proposed Urgent Amendments to the WESM Manual on Price Determination Methodology
regarding the Implementation of WESM Design Enhancements

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Proposed Amendments to the WESM Manual on Constraint Violation Coefficient and Pricing Re-run for the Implementation of WESM Design Enhancements

Title	Section	Provision[1]	Proposed Amendment	Rationale
Definitions	2.1.2	NEW	**b. Branch Group. A group of lines and/or transformers**	To clarify the definition of branch group as used in this Manual.
Soft Constraints	4.2	The following soft constraints may be relaxed in the market dispatch optimization model and shall have an associated constraint violation coefficient. a. xxx e. Transmission Group Constraint, where the power flow through a branch group, or an interconnection equipment between grids (i.e. HVDC links) should be within its normal limits. f. xxx g. xxx	The following soft constraints may be relaxed in the market dispatch optimization model and shall have an associated constraint violation coefficient. a. xxx e. ~~Transmission Group Constraint, where the power flow through a branch group, or an interconnection equipment between grids (i.e. HVDC links) should be within its normal limits.~~ ~~f.~~ xxx ~~g~~ **f**. xxx	• Power flow constraint of a branch group or an interconnection equipment between grids is provided as additional constraints under Thermal Contingency and Thermal Base Case Constraints. See Section 4.3.4 below. • Renumbering.
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. Delayed Contingency Reserve Requirement Constraint b. Slow Contingency Reserve Requirement Constraint c. Fast Contingency Reserve Requirement Constraint d. Nodal VoLL or Nodal Energy Balance Constraint e. System Energy Balance Constraint f. Self-scheduled Generation Constraint g. Thermal Contingency Constraint	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. ~~Delayed Contingency~~ **Tertiary** Reserve Requirement Constraint b. ~~Slow Contingency~~ **Primary** Reserve Requirement Constraint ~~c. Fast Contingency Reserve Requirement Constraint~~ **c.** ~~d.~~ Nodal VoLL or Nodal Energy Balance Constraint **d.** ~~e.~~ System Energy Balance Constraint **e.** ~~f.~~ Self-scheduled Generation Constraint	• To distinguish the priority among the thermal contingency and thermal base case constraints of transmission equipment, such as line, transmission, and branch group. • To align the terminologies on reserve requirement with the PGC 2016 edition. Renumbering

[1] As provided in RCC Resolution No. 16-13 and PEM Board-approved PDM transmitted to the DOE on 02 December 2016

Title	Section	Provision[1]	Proposed Amendment	Rationale
		h. Regulating Reserve Requirement Constraint i. Transmission Group Constraint j. Thermal Base Case Constraint	f. g. Thermal Contingency Constraint – **Transformer** **g. Thermal Contingency Constraint – Line** **h.** Thermal Contingency Constraint – **Branch Group** **i.** h . Regulating **Secondary** Reserve Requirement Constraint i. Transmission Group Constraint j Thermal Base Case Constraint – **Transformer** **k. Thermal Base Case Constraint – Line** **l. Thermal Base Case Constraint – Branch Group**	
Order of Constraint Violation Coefficients	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 to be undertaken by the System Operator.	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 to be undertaken by the System Operator.	• To distinguish the priority among the thermal contingency and thermal base case constraints of transmission equipment, such as line, transmission, and branch group. • To reflect the actual practice of the System Operator when certain CVCs are violated. • To align the terminologies on reserve requirement with the PGC 2016 edition.

Provision table:

Order	Constraint Violation Coefficient Name	CVC	SO Action
1	Delayed Contingency Reserve Requirement	100,000	Automatic load drop to cover for loss of generation if contingency reserve is insufficient.
2	Slow Contingency Reserve Requirement	200,000	Automatic load drop to cover for loss of generation if contingency reserve is insufficient.
3	Fast Contingency Reserve Requirement	400,000	Automatic load drop to cover for loss of generation if contingency reserve is insufficient.

Proposed Amendment table:

Order	Constraint Violation Coefficient Name	CVC	SO Action
1	Delayed Contingency **Tertiary** Reserve Requirement Constraint	100,000	Automatic load drop to cover for loss of generation if contingency reserve is insufficient. **None**
2	Slow Contingency **Primary** Reserve Requirement Constraint	200,000	Automatic load drop to cover for loss of generation if contingency reserve is insufficient. **None**

Proposed Urgent Amendments to the WESM Manual on Constraint Violation Coefficient regarding the Implementation of WESM Design Enhancements

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Title	Section	Provision[1]				Proposed Amendment				Rationale
		4	Nodal Value of Lost Load or Nodal Energy Balance Constraint	800,000	Re-dispatch generation and/or drop load as necessary.	~~3~~	~~Fast Contingency Reserve Requirement~~	~~400,000~~	~~Automatic load drop to cover for loss of generation if contingency reserve is insufficient.~~	
		5	System Energy Balance Constraint	1,300,000	For over-generation, identify generating units to be shut down to eliminate excess capacity. For under-generation, identify must-run units that can be dispatched or drop load as necessary	~~3~~ 4	Nodal Energy Balance Constraint	800,000	Re-dispatch generation and/or drop load as necessary.	
						~~4~~ 5	System Energy Balance Constraint	1,300,000	For over-generation, identify generating units to be shut down to eliminate excess capacity. For under-generation, identify must-run units that can be dispatched or drop load as necessary	
		6	Self-Scheduled Generation Constraint	1,400,000	The projected output or schedule of loading level of the relevant generating unit(s) shall be curtailed.	~~5~~ 6	Self-Scheduled Generation Constraint	1,400,000	The projected output or schedule of loading level of the relevant generating unit(s) shall be curtailed.	
		7	Thermal Contingency Constraint	2,400,000	Re-dispatch generation and/or drop load as necessary.	~~6~~ 7	Thermal Contingency Constraint **- Transformer**	~~2,400,000~~ **1,500,000**	Re-dispatch generation and/or drop load as necessary.	
						7	**Thermal Contingency Constraint - Line**	1,500,000		
		8	Regulating Reserve Requirement	2,800,000	Re-dispatch generation and/or drop load as necessary.	8	**Thermal Contingency Constraint - Branch Group**	2,000,000		

Proposed Urgent Amendments to the WESM Manual on Constraint Violation Coefficient regarding the Implementation of WESM Design Enhancements

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Title	Section	Provision[1]					Proposed Amendment					Rationale
		9	Transmission Group Constraint	2,900,000	Re-dispatch generation and/or drop load as necessary.		~~9~~ 8	~~Regulating~~ **Secondary** Reserve Requirement Constraint	~~2,800,000~~ **3,500,000**	Re-dispatch generation and/or drop load as necessary.		
		10	Thermal Base Case Constraint	3,000,000	Re-dispatch generation and/or drop load as necessary.		~~9~~	~~Transmission Group Constraint~~	~~2,900,000~~	~~Re-dispatch generation and/or drop load as necessary.~~		
							10	Thermal Base Case Constraint - **Transformer**	~~3,000,000~~ **4,000,000**	Re-dispatch generation and/or drop load as necessary.		
							11	**Thermal Base Case Constraint – Line**	**4,000,000**			
							12	**Thermal Base Case Constraint – Branch Group**	**4,500,000**			
Automatic Pricing Re-Run Parameters	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:										▪ To distinguish the priority among the thermal contingency and thermal base case constraints of transmission equipment, such as line, transmission, and branch group. ▪ To provide the corresponding re-run prices for the proposed additional constraints. ▪ To align the terminologies on reserve requirement with the PGC 2016 edition.

Proposed Urgent Amendments to the WESM Manual on Constraint Violation Coefficient regarding the Implementation of WESM Design Enhancements

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	Original							Proposed Amendments				
Order	Constraint Violation Coefficient Name	CVC	Violation Variable Value	Delta	Constraint Relaxation during Pricing Re-Run	Re-run Price[2]	Order	Constraint Violation Coefficient Name	CVC	Violation Variable Value	Delta	Constraint Relaxation during Pricing Re-Run	Re-run Price[2]
1	Delayed Contingency Reserve Requirement	100,000	x	0.1	x + delta	EDP AND RP	1	~~Delayed Contingency~~ **Tertiary** Reserve Requirement Constraint	100,000	x	0.1	x + delta	EDP AND RP
2	Slow Contingency Reserve Requirement	200,000	x	0.1	x + delta	EDP AND RP	2	~~Slow Contingency~~ **Primary** Reserve Requirement Constraint	200,000	x	0.1	x + delta	EDP AND RP
3	Fast Contingency Reserve Requirement	400,000	x	0.1	x + delta	EDP AND RP	3	~~Deficit Fast Contingency Reserve Requirement~~	~~400,000~~	~~x~~	~~0.1~~	~~x + delta~~	~~EDP AND RP~~
4	Nodal Energy Balance Constraint	800,000	x	0.1	x + delta	EDP AND RP	~~3~~ 4	Nodal Energy Balance Constraint	800,000	x	0.1	x + delta	EDP AND RP
5	System Energy Balance Constraint	1,300,000	x	0	delta	Excess Price for over-generation Shortage Price for under-generation	~~4~~ 5	System Energy Balance Constraint	1,300,000	x	0	delta	Excess Price for over-generation Shortage Price for under-generation
6	Self-Scheduled Generation Constraint	1,400,000	x	0.1	x + delta	EDP AND RP	~~5~~ 6	Self-Scheduled Generation Constraint	1,400,000	x	0.1	x + delta	EDP AND RP
7	Thermal Contingency Constraint	2,400,000	x	0.1	x + delta	EDP AND RP	~~6~~ 7	Thermal Contingency Constraint - **Transformer**	~~2,400,000~~ **1,500,000**	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

[2] EDP refers to *nodal energy dispatch price;* and RP refers to *reserve price*

Proposed Urgent Amendments to the WESM Manual on Constraint Violation Coefficient regarding the Implementation of WESM Design Enhancements

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Original								Proposed Amendments					
8	Regulating Reserve Requirement	2,800,000	x	0.1	x + delta	EDP AND RP	9 8	Regulating **Secondary** Reserve Requirement Constraint	2,800,000 **3,500,000**	x	0.1	x + delta	EDP AND RP
9	Transmission Group Constraint	2,900,000	x	0.1	x + delta	EDP AND RP	9	Transmission Group Constraint	2,900,000	x	0.1	x + delta	EDP AND RP
10	Thermal Base Case Constraint	3,000,000	x	0.1	x + delta	EDP AND RP	10	Thermal Base Case Constraint - **Transformer**	3,000,000 **4,000,000**	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**
							12	**Thermal Base Case Constraint – Branch Group**	**4,500,000**	**x**	**0.1**	**x + delta**	**EDP AND RP**

Proposed Urgent Amendments to the WESM Manual on Constraint Violation Coefficient regarding the Implementation of WESM Design Enhancements

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