Comments on Price Determination Methodology (PDM) of Philippine WESM

COMPANY	Provision/s (Issue)	Comment	M.O.'s Position
CEPALCO	Zonal Energy Price (Sec 2.2.1.2, Sec 3.3, and Annex B, page 4)	What are the objectives in using Zonal Energy Price instead of Nodal Energy Price for customers? What are the expected conditions or state of the electricity spot market and the transmission system in the Philippines that make it better to use Zonal instead of the Nodal Energy Price? We point out that William Hogan of John F. Kennedy School of Government, Harvard University, has been persistently advocating the use of nodal pricing and not zonal pricing in wholesale electricity markets. He states (in a paper titled "Nodal and Zonal Congestion Management and the Exercise of Market Power") that: "Other things being equal, zonal pricing always subsidizes the dominant local generator and increases monopoly profits above those that would occur under nodal pricing." Hogan further states in the same paper: "If we are interested in markets and efficiency, therefore, the weight of the argument is that zonal aggregation enhances market power. For supporting a market, zone splitting and nodal pricing would be necessary to move in the direction of getting the prices right." Unless there are better reasons for using Zonal Pricing, we take the position that Nodal Pricing should be used for customers because it avoids the cross-subsidies that would come about among customers within a zone if Zonal Pricing were used, and it makes regulatory judgments unnecessary as to which nodes should be included in a zone.	The primary objective of Zonal Energy Pricing is to come up with a uniform average price for customers within a zone. Adopting a zonal pricing regime for customers addresses social concerns against price variability and volatility across nodes in the network. We agree with the principles of Hogan that full nodal pricing encourages market efficiency and discourages market power. Same principle is adopted in the PDM, i.e., the determination of prices are based on full nodal pricing for both generators and customers. However, customer pricing zone is adopted to mitigate the effects of price variability and volatility associated with full nodal pricing on the customers. The adoption of the customer zonal pricing is in compliance to the WESM Rules (Sec 3.2.3). However, the PDM has enough flexibility to adopt full nodal pricing for both generators and customers.

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CEPALCO	Line Rental (Sec 2.2.3.2 and Annex B, p. 5)	In the event of congestion of a section of the transmission line between two nodes, line rentals will be paid by customers at the congested node, and the payments will go to the Transco as owner of the transmission line. The Transco receives no rental when there is no congestion. It is possible for the Transco as System Operator to deliberately make congestion occur in violation of the economically optimal solution. Moreover, the collection of line rentals may make it unnecessary (even disadvantageous) for the System Operator (as transmission line owner) to increase the capacity of the line in order to remove the congestion. What mechanisms exist in the PDM or in the Market Rules to prevent such anti-competitive behavior on the part of the System Operator? The Line Rentals should be included in the total revenues received by Transco, for which the Transco is limited to a maximum of 12% RORB.	The PDM has the mechanism to provide the economic value of line rentals based on nodal price differences. It does not address issues associated with the anti-competitive behavior of the System Operator. Market monitoring, surveillance, and audit are separate functions to be undertaken by respective groups/committees to be formed as described in the WESM Rules The cost of losses and congestion are already considered in the determination of nodal prices. All generators and customers who settle within the WESM will have effectively paid for the cost of losses and congestion which is equivalent to the line rental. Bilateral contracts settled outside of the WESM are not paying for the cost of losses and congestion. Therefore, they are required to pay line rentals to balance the settlement amounts in the market. Settlement surplus shall be retained by the MO as per Section 3.13.16 of the WESM Rules. Similarly, line rentals shall be paid to the MO, instead to SO as per Section 3.13.15 of the WESM Rules.

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CEPALCO	Gross Pool Model (Sec 2.2.2.5)	The draft PDM states: "The gross pool model has been chosen for the Philippines as it provides an equitable (fair equally to all) field for competition and allows new entrants to enter the market irrespective of whether they have in advance secured full contract cover from customers for the sale of their energy." Equitability cannot be the reason for the choice of the gross pool model because other alternatives could be equally equitable to market participants. Moreover there are conditions under which the gross pool model can become inequitable; it does not automatically result in equitability. For instance, one of the findings of the Council of Australian Governments in the "Energy Market Review" is that: "There is insufficient generator competition to allow Australia's gross pool system to work as intended." We suggest that the gross pool model and other alternatives be further studied before a model is finally adopted for the Philippine WESM.	The decision to adopt gross-pool model has been discussed in the numerous public consultations on the finalization of the WESM Rules. The PDM merely provides details on the dispatch and pricing principles of WESM Rules. For practical reasons, the gross pool model is use for the equitable allocation of limited transmission capacity among the bilateral and spot generators through a transparent and competitive bidding process.

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CEPALCO	Financial Transmission Rights (Sec 2.2.3.6 and Annex B, pp. 6-7)	The first sentence in Sec 2.2.3.6 is misleading. FTR payments are not made for cases where there is failure on the part of generators to deliver energy; FTR payments are made when there are differences in locational prices due to congestion. The PDM should provide greater detail in the manner of allocating FTRs so that WESM market participants would know how to hedge against changes in locational prices. The provisions contained in the PDM and its annexes are not enough.	For clarity the first statement should read: "FTRs are financial hedging instruments, which provide compensation to the holders who are affected by nodal prices difference in the network." FTRs are paid when the following conditions exist: (a) there is price difference between the receiving and sending node and (b) the participant is a holder of a FTR for the said constraint. As per Section 3.12 of the WESM Rules, the Energy market is not contingent on the establishment of the FTR market. The MO shall establish the FTR market when necessary or reasonably feasible. Ample experience on the market operation and its impact on nodal prices is necessary to warrant the granting of FTR.
CEPALCO	Trading Amount for Line Rental (Annex A: Sec 2.6)	Does the "Trading Amount for Line Rental" refer to the payments made for line congestion? If so, the trading amount for Line Rental in the formula considers only ex-ante quantities, and additional examples should show the treatment of those cases where ex-post quantities are not the same as the ex-ante quantities.	Yes, in the PDM, this represents the cost of line losses and congestion. The use of ex-ante quantities and prices in the valuation of line rentals are based on Section 3.13.12 of the WESM Rules. We agree with your observation to consider both ex-ante and ex-post quantities and prices in computing line rental trading amount, in the same manner energy trading amount is computed.

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FIRST GAS		First Gas Holdings Corporation (FGHC) finds the proposed PDM too general. It is unclear from FGHC's standpoint how the proposed PDM would be interfaced with the Market Network Model, and determine the price for generators and loads from a series of generator offers and demand bids. It has come to attention of FGHC as well that PDM submitted for approval to the ERC deviated from the PDM endorsed by WESM-TWG, despite lengthy discussion on the matter	The main document of the PDM filing is supported by detailed step-by-step examples which are attached in Annexes A to D. As per WESM Rules, the filing of the PDM and the Market Network Model (MNM) are two separate processes. While the MNM is a required input to the PDM, the development of the MNM will still be subject to consultation with market participants as stipulated in Section 3.2 of the WESM Rules. This is reasonable since the MNM will always be subjected to changes to reflect actual conditions in the power system. The PDM endorsed by the WESM-TWG is the same document filed with the ERC.

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PSALM		1. Nodal prices cause undue high market prices if there is substantial load behind a transmission line constraint. With nodal prices, Sual in Luzon will have absolute market power until Southern transmission line constraints are released. It can withdraw capacity and set prices at very high levels. The same is true for generators in Cebu, Negros and Panay. Expanding the zonal areas could still allow these generators to bid higher prices but the effect will be negated by the payment of load weighted zonal prices.	It is widely accepted that nodal pricing provides the most transparent (not necessarily simplest) form of pricing since it closely reflects the actual conditions in the physical system. Nodal pricing provides sufficient transparency to allow regulators to detect participants exercising market power and anti-competitive behavior. This is one the reason why nodal pricing was adopted in the first place. The same thing can happen whether if it is nodal pricing or zonal pricing. Participant will tend to exercise market power in systems where there is insufficient capacity for competition in the market such as in the case of Cebu, Negros, and Panay. Localized congestions can be remedied through effective coordination with the NSPs, setting of price caps, or proper designation of price-setting generators as must-run plant with equitable compensation to cover operating cost. For further discussion on zonal vs nodal pricing, please see counter-argument of CEPALCO.

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PSALM		2. Constraint violation pricing has not been set in the PDM, nor have the methods by which they will be applied, i.e. will they influence pool prices?	The PDM is flexible in accommodating the constraint violation coefficients as required in Section 3.6.2 of the WESM Rules. However, the methodology for setting such constraint violation coefficients will be developed separately by various stakeholders subject to approval of PEMC. The most significant violation coefficient is the VOLL which should be set [by PEMC] as per Section 3.6.2 of the WESM Rules. Constraint violation coefficients are adopted in the WESM with the following objectives: 1) to ensure that an optimization solution is always found, 2) to ensure that binding constraints are prioritized, 3) to ensure that resulting prices will be appropriate in all circumstances.
PSALM		3. There is no market cap – conceivably prices can reach any amount for undetermined periods. This will severely impact on the credit risk of both Gencos and Distribution companies. I believe this should be initially regulated by the ERC.	The WESM Rules has no provision for market price caps. Imposition of market price caps can be implemented either during the bidding process when participants submit their offer prices or after market clearing when nodal prices are determined. Either way, the PDM will not be affected by imposing price caps. Your recommendation can be accommodated without changing the PDM, subject to WESM rules change procedure.
PSALM		4. The rules are not clear with regard to pricing payments and penalties for generation which is either constrained on or off.	The settlement amounts are based on the ex-ante and ex-post quantities and prices as defined in Section 3.10 and 3.13 of the WESM Rules.

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PSALM		5. The PDM uses a shadow pricing methodology which prices each node at the next MWh which is required to be provided in the system. a. This may be either a positive or negative amount; b. Participants are not readily (if at all) able to replicate these results; c. As a result prices may be higher or lower than bid prices of marginal units. Marginal rather than shadow pricing is more transparent, easier to calculate and is readily replicated by pool participants.	As clearly explained in the step-by-step examples, the PDM uses nodal "marginal" pricing.
PSALM		6. The method for pricing reserve or ancillary services has not been concluded	As per EPIRA and the WESM Rules, the SO shall be responsible for the procurements and cost recovery mechanisms for ancillary services.
PSALM		7. In relation to item (3), the allowable duration of the market cap should be determined, i.e after how many hours of occurrence of a particular event/total as average prices reach a particular level. What will generators be paid in an administrated market?	There is no provision in the WESM Rules for market price caps. Please see previous discussion. Per Section 6.2.3 of the WESM Rules, the MO shall impose an administered price cap to be used as basis for settlements during market suspension and intervention. Said administered price cap is to be endorsed by the PEMC Board for ERC approval.
PSALM		8. What will generators be paid if prices are below zero? ▫ Will SO get this? ▫ Will prices for settlement per peso = zero? ▫ If not, does consumer get this?	Generators whose offers are cleared in the market will always be paid based on the market clearing prices. If that value is negative, the generators will pay for generating energy. The customers shall pay whatever the resulting market clearing price will be. If resulting price is negative, the customer will be paid for drawing energy from the market.

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PSALM		9. Will losses from nodal to zonal points be static or dynamic? - recommend static as this is easier to understand/replicate - static to be published annually.	Losses are automatically imputed in the nodal pricing scheme and are continuously computed (i.e., dynamic representation of losses). Dynamic representation of losses will accurately represent the dispatches, line loadings, and nodal prices. Zonal pricing is simply the load-weighted average of nodal prices in a given zone. Thus losses are not treated on a zonal level but on a nodal level for greater accuracy.

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MERALCO	WESM Characteristics (2.1)	1. With electricity markets in various jurisdictions adopting different market structures, we recommend that as a form of introduction, the initial portion of the PDM should be dedicated to the explanation as to why the Philippine WESM has chosen to adopt a mandatory, gross-pool market structure. This will serve to orient the reader as well as provide the rationale for such a choice of market structure.	The WESM Rules and the selection of appropriate market models have been discussed in numerous public consultation and have already been endorsed by industry participants. We will include the agreement reached by the industry participants during the consultations regarding the market structure as an introduction to the PDM.
MERALCO	WESM Characteristics (2.1)	2. The section discusses the nature and benefits of the use of nodal, location-specific pricing for generation. We recommend that the PDM also discuss the various disadvantages that could arise from such a market structure. These may include discussions on the increased potential for large price differences across the nodes due to the very nature and inherent characteristics of the system. Also for inclusion are the measures and instruments that have been or will be put in place in order to account for the identified shortcomings of a nodal pricing scheme.	Section 2.1 of the PDM merely provides an objective description of the pricing principle being adopted, and not the advantages of nodal pricing as stated.
MERALCO	WESM Characteristics (2.1)	3. The discussion on the use of ex-ante and ex-post pricing would be further understandable with an inclusion of the argument that this specific choice was made due expected variances between bid quantities/prices and the eventual outcome. This condition arises from the choice of a relatively long trading interval (i.e. one-hour) for the WESM. May we also recommend that the Department of Energy (DoE) mention that it is intended that shorter trading intervals be eventually adopted by the WESM, which may lead to a revisiting of the ex-ante/ex-post pricing scheme.	This suggestion is accepted. Section 3.4 of the WESM Rules contains the provision for any proposed change in the timetable and related procedures subject to approval of the PEMC Board in accordance with the rule change process.

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MERALCO	Market Network Model (2.2.1)	4. It is clear that there is a need for an accurate and true representation of the Philippine electric system through the Market Network Model. However there is no mention in the PDM as to why the System Operator (SO) should settle for the use of the reduced Market Network Model (MNM) instead of a full network model (FNM).	The SO will still maintain their current network model which represents the physical system. As stated in Section 3.2 of the WESM Rules: "The MO shall continuously adapt or adjust the representation of the MNM to accurately reflect power system conditions, within the relevant market timeframes, as advised by the SO." This means that MO shall ensure consistency of the MNM with the SO network model.
MERALCO	Market Network Model (2.2.1)	5. Although general guidelines have been set out for the desired MNM, no mention is made of the principles that will be observed during the construction of the appropriate reduced version of the electricity network. This is necessary to ensure that the final MNM is a fair representation of the actual system and that it will be consistent and reliable when used. Also, no criteria have been set against which the final MNM will be evaluated to qualify it for implementation. This may include the desired level of accuracy, essential components, and acceptable omissions. In this light, may we also make the following recommendations: 1. A process should be established to specifically define the components that must be included in the MNM, especially components of the system that have material impact on dispatch and pricing. 2. An explanation on the rationale why a particular component is included or not included should be documented. 3. The methodology for the derivation of the values of all parameters should be included. A detailed	We agree with this suggestion. Please see previous discussion on MNM.

		computation of the values should be properly documented for auditing purposes. 4. Sufficient documentation should be provided for the simplifications, approximations, equivalencies or adaptations that were adopted in the process of developing the MNM. This should include the rationale as well as all arguments leading to such decisions. 5. A process must be established to sufficiently test the determined MNM. We believe that the rules that will govern the development of the MNM, as well as any future revisions that shall be made to it, should be contained in the PDM. Hence, at any point during the MNM's development or modification, reference can easily be made to these rules. As modifications to the MNM become necessary due to changes in the electricity infrastructure (e.g. additional generating capacity, new transmission line, etc.), these rules will continue to guide the MO's actions in the management of the MNM. Also, any other market participant can review and validate the MO's actions against these ERC approved rules.	

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MERALCO	Market Trading Nodes (2.2.1.1)	6. Since the concept is rather new, it would be beneficial if the PDM expounded on the definition of a Market Trading Node. The definition and assignment of nodes to market participants has significant impact on the structure and behavior of the market, and will definitely affect prices. We recommend that the PDM provide detailed policies and procedures for the identification of nodes.	This could also be part of the development of criteria and procedures for the MNM as per previous discussion.
MERALCO	Customer Pricing Zones (2.2.1.2)	7. Although the PDM briefly discusses the concept of the Customer Pricing Zone, there is insufficient detail concerning the criteria for its determination. We recommend that the PDM provide detailed policies and procedures for the composition of customer pricing zones	This could also be part of the development of criteria and procedures for the MNM as per previous discussion.
MERALCO	Reserve Pricing Zones (2.2.1.3)	8. Mention is made of the initial determination of three Reserve Pricing Zones, namely Luzon, Visayas, and Mindanao. There is no further discussion concerning the determination of future zones through the decomposition and/or aggregation of the initially determined zones. We recommend that the PDM establish the parameters and process for the determination and/or modification of Reserve Pricing Zones.	This could also be part of the development of criteria and procedures for the MNM as per previous discussion.

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MERALCO	Price Adjustment to Reflect Transmission Losses (2.2.2.7)	9. Mention is made of the relevance of the choice of a "reference bus" for the determination of the actual energy loss due to the flow of energy. We would like to request for clarification on the rationale for this, considering the potential for large price fluctuations among the various choices for the reference bus. We recommend that the parameters be set for the choice of the appropriate reference bus. We suggest that these measures be specified in the PDM.	The reference bus as discussed in the PDM is manually selected which requires a basis or criteria. However, the basic algorithm of the MDOM is capable of computing the losses (or loss factors) and automatically assigning the resulting marginal plant as the reference bus. The latter is recommended for consideration of ERC.
MERALCO	Price Adjustment to Reflect Transmission Losses (2.2.2.7)	Mention is made of the use of loss adjustment factors to reflect the particular conditions at the chosen reference bus. There is insufficient detail on the nature of these loss factors. It is unclear whether these loss factors will be computed for each trading interval or pre-calculated and simply applied when necessary. In either case it is unclear as to how these parameters will be determined, validated, and set. We recommend that the PDM establish the guidelines and process for the calculation of Transmission Loss Factors.	See above discussion on reference bus selection.

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MERALCO	Price Adjustment to Reflect Transmission Losses (2.2.2.7)	We would like to request for clarification on how the reference node is selected in computing for the loss factors and the reason why the absolute value of the nodal prices will change from that of the marginal plant depending on which reference is selected. It is unclear how would this affect the nodal prices and the customer zonal prices. We recommend that the PDM should establish the process for selecting the reference plant.	See above discussion on reference bus selection.
MERALCO	Administered Price Cap (2.2.3.4)	Mention is made of the authority of the MO to impose a price cap on the market during market suspension and intervention. There is insufficient detail concerning the manner by which this cap will be determined and implemented. We recommend that the PDM establish the parameters and process for the determination and administration of the price cap.	Section 6.2.3 of the WESM Rules requires that Administrative Price Caps shall be filed separately for ERC approval. This price cap will only be imposed for settlement purposes during market suspension. Hence, it is not part of the PDM filing.

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MERALCO	Treatment of Must-Run Generation (2.2.3.5)	Clearly there is a need for must-run generation to meet system stability and security requirements. As a responsibility of the SO, we recommend that the SO determine the process of classifying generators as must-run plants, and the generators classified as such must be submitted to ERC for approval. It may be necessary to amend the WESM rules to properly define must-run plants. In line with this, the SO should also determine and publish the specific system stability and security requirements that it hopes to satisfy with the operation of the must-run plants. Also, since must-run generators are price-takers, we would like to request for clarification on the manner by which must-run generators will be compensated should the marginal price fall below their cost of operation	The WESM Rules has no provision for designating must-run plants. We agree to the proposal that designation of must-run plants shall be related to security and reliability of the system. SO, as the responsible group for maintaining the system security and reliability, shall develop criteria and guidelines on the designation and compensation of must-run plants. Furthermore, other instances that require designation of must-run plant, an example of which is the testing of generating plants, shall be allowed and participants should agree on the timing and compensation of such designation.
MERALCO	Ancillary Services Traded in the Market (2.2.3.8)	We would like to request for clarification on why the PDM only identifies two types of reserve categories, regulating and contingency, as opposed to the five ancillary services already listed in the WESM Rules. Also, since according to the WESM Rules (Section 3.3.4.2) the MO may propose other reserve categories, we recommend that the parameters be set for the MO to exercise this authority	In accordance to Section 3.3.4.1 of the WESM Rules, the MO, in coordination with the SO, shall establish and administer a spot market for the purchase of certain reserve categories when reasonably feasible. This provision is consistent with Section 3.3.1 to 3.3.3 of the WESM Rules which clearly assigned the responsibility to SO as regard the requirement, arrangement, and procurement of all ancillary services for the power system. As further specified in Section 3.3.3.2 (c) of the WESM Rules, competitive spot market trading is one option of ancillary services agreements. The PDM proposes to start initially with market arrangement for the two reserve categories. The market will gradually include arrangement for the other reserve categories and

			ancillary services in consultation with the SO and PEMC through its members.
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DECORP		1. Using the information in Table A-1 (Annex A), the computed Y-bus is different from the Y-bus in Table 4.	Generally, the transmission line resistance and capacitance are neglected in DC load flow. Try neglecting the resistance in Table A-1 and the results will be the same data in Table 4. The resistance in Table A-1 (Annex A) is used to account for the power losses in the lines. If AC load flow will be used, then the values in your table are correct.
		2. Any impact if we use AC load flow instead of DC?	The results of the DC load flow are nearly as accurate as that of AC real power flow results. Section 3.2.1.3 of the WESM Rules allows simplification of the market network model. Furthermore, Section 3.6.1.4 (i) allows DC approximation in computing power flows.