MINUTES OF THE 73rd MEETING OF THE RULES CHANGE COMMITTEE

Date   :   03 April 2013
Time   :   9:00 A.M.
Venue   :   PEMC Office
18th Floor, PEM Board Room, Robinsons-Equitable Tower
Ortigas Center, Pasig City

MEMBERS PRESENT:

Rowena Cristina L. Guevara	-	Chairperson/Independent – UP
Epictetus E. Patalinghug	-	Independent – UP
Francisco L.R. Castro Jr.	-	Independent – Tensaiken Consulting
Maila Lourdes G. de Castro	-	Independent –
Cherry Aquino-Javier	-	Generation Sector – AES
Cynthia R. Encarnacion	-	Generation Sector – NPC
Liberty Z. Dumlao	-	Generation Sector – PSALM
Ciprinilo C. Meneses	-	Distribution Sector – MERALCO
Augusto D. Sarmiento	-	Distribution Sector – DECORP
Jose P. Santos	-	Distribution Sector – INEC
Sulpicio C. Lagarde Jr.	-	Distribution Sector – CENECO
Conrado D. Pecjo	-	Supply Sector – Angeles Power, Inc.
Raul Joseph G. Seludo	-	System Operator – NGCP

MEMBERS NOT PRESENT:

Robinson P. Descanzo	-	Market Operator – PEMC

ALTERNATE MEMBER PRESENT:

Isidro E. Cacho	-	Market Operator – PEMC

OBSERVERS PRESENT:

Isabelo Joseph P. Tomas II	-	ERC
Ferdinand B. Binondo	-	DOE

SECRETARIAT

Geraldine A. Rodriguez	-	PEMC – MAG
Shalom Grace A. Tomas-Llamzon	-	PEMC – MAG

OTHERS PRESENT:

Ma. Lourdes S. San Andres	-	PEMC – Legal
Ambrosio R. Rosales	-	NGCP–System Operator
Emmanuel M. Sotomil	-	NGCP - Metering Services
Francis V. Mapile	-	Market Surveillance Committee
Peter Lee U	-	Market Surveillance Committee
Eulinia M. Valdezco	-	Market Surveillance Committee
Meleusipo E. Fonollera, Sr.	-	Technical Committee
Dennis dela Serna	-	Aboitiz Power Corporation
Hyacinth Rafael	-	Aboitiz Power Corporation

After determining the presence of a quorum, the 73rd RCC meeting was called to order by Chairperson Dr. Rowena Cristina L. Guevara at about 9:05 A.M.

1. **Adoption of the Proposed Agenda**

   The Proposed Agenda for the 72nd RCC Meeting was approved, as presented.

2. **Review, Correction and Approval of the Minutes of the 72nd RCC Meeting**

   Noting that the corrections sent through email by Mr. Ciprinilo C Meneses and Mr. Augusto D. Sarmiento had been incorporated in the draft Minutes, the Minutes of the 72nd RCC Meeting was approved, as presented.

3. **Business Arising from the Previous Meeting**

   A. **Consultative Meeting with the Market Surveillance Committee (MSC) and the Technical Committee (TC) on the Proposed Cancellation of Offers**

   At the outset, Dr. Rowena L. Guevara recalled the discussion leading to the RCC's invitation to the MSC and the TC to a consultative meeting on the proposed cancellation of offers. She reminded the group that PEMC's way forward as explained by Mr. Cacho during the RCC 72nd Meeting is the engagement of a consultant to study the issue on PMin and other associated market issues. Dr. Guevara recalled that the RCC, having noted this information, agreed to subject its approval of the proposed amendment to the result of the consultative meeting with the MSC and TC to possibly harmonize the RCC's position with those of the other governance committees.

   Mr. Isidro E. Cacho at this juncture, updated the RCC that the bidding process for the conduct of the Study on the PMin was concluded with Intelligent Energy Systems Pty, Ltd. (IES) emerging as the first-ranked bidder, followed by PA Consulting Ltd. and the University of the Philippines-National Engineering Center (UP-NEC) with The Lantau Group.

   Dr. Guevara then invited the MSC and the TC to join the RCC for the consultative meeting.

   Chairman Meleusipo E. Fonollera of the TC expounded on the following as the Committee's reasons for its disagreement with the proposed Cancellation of Offers:

   - The timeline provided may not be suitable for all plants, specially for plants with lead time requirements;
   - Basis for cancellation is on offers in the market and not on the fuel variable cost as listed in the WESM Merit Order Table (MOT);
   - Given the cancellation of offers, availability problems may arise while the generator is ramping up;
   - The proposal is in conflict with the WESM Rules and Dispatch Protocol provisions on the must offer rule;
   - The proposal of 10% supply margin may not be a good basis since WESM only operates an energy market;
   - Presently, the reserve capacity being nominated by the generators is not sufficient for system requirements.

   Chairman Francis V. Mapile of the MSC was then given the floor to discuss the MSC's comments. He first introduced his MSC colleagues, Ms. Eulinia Valdezco who is a nuclear scientist and Dr. Peter Lee U, Dean of Economics, University of Asia and the

Pacific. He then went-on to explain that the MSC's disagreement with the proposal is anchored on the following two main reasons:

- To maintain grid reliability and security, and
- To promote and ensure fairness in market competition.

He expounded that the above two reasons also serve as the MSC's guiding principles in its conduct of assessment/evaluation of the behavior of generator-trading participants. He stated that the MSC's objective is to strike a balance between the commercial and technical requirements of the market, since one cannot precede over the other. He explained that the MSC at first considered the merits of the proposed cancellation of offers but having noted the result of the PEMC-TOD simulation which showed the occurrence of price spikes, applying all conditions in the proposal, and further noting its limiting impact on the objective of the must-offer-rule to ensure supply availability at any given trading interval, the MSC has agreed to pose its opposition on the proposed amendment.

Chairman Mapile also explained that another reason is that with the proposal, there is no safeguard that prices will not go high. He stated that the MSC in the performance of its function in monitoring market outcome and behavior, is also guided by the principle that there must be reasonable price for the public/reasonable market price. Finally, he explained that the proposal opens up a window of temptation, even if the amendment is said to be intended only for the most expensive generators. This is because the cancellation is only based on the offers submitted and as such, the generators can claim that their plants are getting more expensive.

Ms. Cherry A. Javier then responded as follows:

- The must-offer-rule was relevant during the time when only PSALM and NPC owned generating facilities and should thus be required to offer all their capacities. In the present set-up where almost all the generating facilities are privatized and competition has been established, it should already be assumed that the market is working. Competition should work in a manner that will bring economic benefit not only for the consumers but also for the generators. However, the must-offer-rule compels even expensive generators with 130 MW Pmin, like Malaya TPP and Limay CCGT, to run its Pmin for 24 hours in order to comply with the rule even if it is uneconomic for them to run their plants.

- The proposed cancellation of offers should be read instead as a way of preventing the inefficient generators to run, thus promoting efficiency in the market. At present, the inefficient generators are actually not running, without any significant effect in the market. With the proposal, the economic impact will be to prevent the inefficient generators to run their plants and further preventing them from passing-on to their consumers the cost of their running.

- The generators are rational in their bidding behavior. A fully contracted generator will offer its full capacity in the market because otherwise, it will buy its contracted capacity from the market at a much higher price. Those which will cancel are the inefficient plants that really cannot run due to their pmin constraint.

- In the proposal, the responsibility of cancellation was passed on to the Market Operator because it knows the system. Further, the proposal was based on the Merit Order Table (MOT) to prevent the clearing price from getting any

higher, considering that at present, generators which do not intend to be dispatched are bidding at the PhP62,000 cap.

- The proposal is on top of the reserve requirement since it is based on MOT. Further, it would seem that the generators are only being forced to run because the NGCP-SO has not adequately contracted for its ancillary services.

- The generators would also like to prevent over-generation/over-frequency because they will not be dispatched with Malaya and Limay running at their PMin. Competition in the WESM should be economic, such that plants which bid lower and are running full-load should first be dispatched than diesel plants which run at PMin only to comply with the must-offer-rule.

Chairman Mapile stated that the rules operate on the basis of regularity and as such, it is assumed that all actions of the generators are regular and in order. However, he countered that to operate merely on the basis of trust may not necessarily be acceptable because anything that is not explicitly written in the rules would render anything possible. Ms. Javier responded that the generators cannot be tempted to shut-down because most are fully-contracted and shut-down/cancellation of offers will only result to economic loss.

Chairman Mapile also raised the issue on the accuracy of the Day-Ahead Projection (DAP) forecast as issued by the MO. Ms. Javier stated that there is a +/-3% allowable error on forecast accuracy. Chairman Mapile then reiterated that the MSC's disagreement is anchored on the result of the simulation of the PEMC-TOD which clearly showed the occurrence of price spikes with the implementation of the proposed cancellation of offers.

Dr. Guevara then turned to Mr. Cacho and inquired if the price spikes can be 100% attributable to the cancellation. Mr. Cacho replied affirmatively, because the result of cancellation will be tighter supply margin. Further, Mr. Cacho stated that the cancellation is based only on submitted offers. He explained that there are instances when a hydro-generating plant offers at PhP20,000, even in normal condition, and price spikes will occur depending on the price offers. He also stated that a tighter supply margin will result to more price spikes.

Dr. Guevara then noted that the simulation, as presented to the MSC and the TC, was not presented to the RCC. She then requested Mr. Cacho to have the same simulation presented in the next RCC Meeting in May 2013.

Dr. Guevara, addressing the MSC and the TC, explained how the proposal evolved/developed in its present form. She explained that two different subcommittees were formed to study PMin and the must-offer-rule, respectively. However, after about 6 months of lengthy discussions, she stated that the RCC determined that the issue zeroed in to the difficulty of the 2 plants, namely Malaya TPP and Limay CCGT, to comply with the must-offer-rule, given their PMin constraint. She also stated that a careful reading of the proposed amendment would show that the conditions would limit the cancellation of offers to only the said two plants.

Chairman Fonollera then responded that there is a probability that even hydropower plants and coal power plants would bid at a much higher offer price. Dr. Guevara inquired from the generators if this is possible. Ms. Javier countered that this is not possible considering that hydro plants have zero PMin and would no longer need to cancel their offers. For baseload plants such as coal, she explained that these are fully-

contracted plants which will never cancel their offers not unless they intend to buy their contracted capacity from the market at a higher price.

Dr. U expressed the misgiving that it may not only be the two plants which will qualify, applying the conditions set. He stated that the two plants may escalate their bids to ensure that they will be the first one to get cancelled, which could then be followed with the other non-oil plants also raising their price offers. He however clarified that such possibility can be addressed for as long as there is sufficient competition in the market and for as long as there is sufficient independence from among the competitors. Otherwise, he explained that most generators would probably bid higher as it might be an incentive for them to always be at the ceiling of the MOT.

Mr. Meneses opined that the prices/bids had nothing to do with the cancellation because this will occur only during the lowest peak hours of the day from 2am to 5am where the demand is even lower than all of the PMins in the stack. He qualified that this is one of the conditions attached to the cancellation, when there is more capacity in terms of PMin than the total demand. Dr. U stated that cancellation is also possible even during the peak hours.

Mr. Ambrosio R. Rosales explained that historically, both Limay and Malaya are cancelling their offers. He stated that these plants are cleared in the DAP during peak hours but would withdraw their capacities before gate closure. He stated that for this reason, both are called to run as MRUs. With the proposal, he raised the issue as to whether there is an assurance that they will not cancel before gate closure, even if their offers are cleared in the DAP. He further expressed the observation that at peak hours, both will run at their PMin but not during non-peak hours.

Chairman Mapile at this juncture informed the RCC that without jeopardizing the rules, the MSC is in the process of crafting a proposal/recommendation to the PEM Board specifically to address the concern of Malaya, having noted its bidding behavior which even included a time when it did not run for one whole month. He said that a problem peculiar to one generator cannot be generalized as similar/true for the other generators. He expressed the opinion that a peaking plant may not be able to efficiently compete in an energy market. He also expressed that in the course of the monitoring and surveillance of the market, the MSC has encountered bidding behaviors, not seen by the RCC, that are potential breaches of the Rules. He informed the RCC that unintentional breaches may be foreborne by the MSC.
Speaking for the NGCP-SO, Mr. Raul G. Seludo clarified that the SO does not call MRUs not unless there are security issues. He stated that MRUs are not called in instances of insufficient capacities. On the issue raised against the NGCP's contracting of ancillary services, Mr. Seludo reiterated that the SO is never amiss in negotiating for contracts though the same requires a long and extensive process.

At this juncture, the MSC and the TC requested to leave the meeting. Dr. Guevara expressed appreciation for their time and contribution in the discussion on the proposal.

Dr. Guevara summed-up the position taken by the MSC that the proposal should not be disadvantageous to the consumers. She also raised the issue on whether the proposed amendment will still be needed considering that the MSC is also preparing a recommendation to the PEM Board specifically to address the issue on Malaya TPP and Limay CCGT. She reminded the group that the RCC went this far in the discussion only because of the two plants.

Ms. Javier inquired as to how the MSC will address the compliance issue of Malaya and Limay without touching-upon the merit of the must-offer-rule. Dr. Guevara then

suggested for the RCC to await the result of the MSC initiative. She recalled the statement of Chairman Mapile that the MSC will go directly to the Board. Also, Dr. Guevara stated that the MSC proposal would necessarily change the premise of the RCC's rules change proposal.

After its lengthy deliberation on the matter, the RCC then agreed as follows:

- To request the PEMC-TOD to present to the RCC the simulation it presented to the TC and the MSC; and

- To await the result of the MSC initiative/recommendation to the PEM Board, as explained by Chairman Mapile.

B. Discussion on the Segregation of Line Rental

- **NGCP-MSP's Presentation on the Computation of System Loss**

Mr. Emmanuel M. Sotomil discussed the NGCP's system loss computation for Luzon and Visayas. Highlights of his presentation are as follows:

- Per the PGC and the PDC, System Loss is defined as the balance between how much energy enters the grid and how much energy is delivered to the users. System Loss is composed of technical, non-technical and administrative loss; Administrative loss is the energy consumed by the grid substations (substation service).

- The Grid Balance Energy Equation (Energy = Outgoing Energy + Grid Losses) was also explained together with its components.

- For Luzon, the percentage (%) system loss is 2.32%; for Visayas, 3.65%, for the sample months used in the presentation.

- Energy values are metered at the connection points to the Grid of Generators and Load Customers (DUs and Non-DUs).

- The Station Service Energy (Administrative Loss) values are read from the newly installed LP Meters.

Dr. Epictetus E. Patalinhug inquired as to why the system loss in Visayas is higher than Luzon when Luzon transacts a bigger volume of energy than the Visayas. Mr. Sotomil answered that the parameters of the grid I define the same and that the response to the query will require deeper analysis. Mr. Meneses explained that the higher system loss in Visayas can be attributed to the fact that most generators are in Leyte while the volume of the load is in Cebu, Panay and Negros, unlike in Luzon where generation is fairly distributed.

Dr. Guevara raised the query on the calibration of the NGCP meters and whether information in the meters can be saved, time-stamped.

On the query regarding calibration, Mr. Sotomil explained that the NGCP is compliant with the Grid Code requirement as follows: Metering Circuit Components shall have their own frequency testing requirement for accuracy; 5 years for the instrument transformers; for the censors, 1 year.

On the second query, Mr. Sotomil stated that the meter data is retained in the meters for 60 days and in the AMR System and also in the database of PEMC.

On the inquiry of Dr. Patalinhug as to who monitors the compliance of NGCP-SO, Mr. Sotomil clarified that it is the ERC and the PEM Audit Committee.

Ms. Javier for her part raised the question on the system loss computation as it relates to the RCC's ongoing discussion on line rental. She inquired whether the system loss as presented by Mr. Sotomil is also being charged against its customers and whether it is the same system loss being charged and paid through the WESM. Mr. Sotomil responded that he is not aware of any system loss charges by the NGCP and that it is the NGCP-Regulatory Revenue Affairs (RRA) which is in the position to answer the question.

Mr. Meneses expressed that there seems to be double charging on the station use of NGCP which passes through the DU system. Mr. Sotomil responded that this happens for the NGCP facilities which are being supplied with power by the DUs. He stated that in instances when a portion from the energy received by the DU is utilized for the station service of NGCP, the same is settled/accounted for separately. Mr. Sotomil elaborated that the NGCP Report on System Loss only recognizes the incoming and outgoing energy in the grid while the energy in the DU system is recognized in the Report as an energy delivered to the DU.

Mr. Meneses clarified that the issue rests more on the counting of the kwh and not its settlement in peso. Mr. Sotomil explained that the kwh passing through the DU system will no longer form part of the NGCP's administrative loss component in its system loss computation since the same refers only to those which passes-through the grid.

Ms. Cynthia Encarnacion then followed-up with an inquiry on whether or not the computation for the generation side on incoming energy reflects gross or net energy. Mr. Sotomil stated that the NGCP's report on energy balance shows only what is recorded in the meter, which already nets-out substation service.

Ms. Encarnacion commented that the presentation showed that NGCP's system loss computation included as a deduction the delivery to NGCP facilities which in her opinion should be paid by NGCP to its customers. She stated that this is not yet part of market records, whereas the line rental as defined and charged by PEMC is a data being derived from the market. She opined further that NGCP facilities should be metered, using WESM-compliant meters.

Mr. Sotomil stated that load profile meters were installed in the substation metering points of the NGCP, two of which are already registered with the WESM.

On a related issue, Ms. Encarnacion also pointed-out that the 2.98% transmission loss embedded factor in the NPC-Time-of-Use (TOU) rate is not comparable to the line rental being charged by PEMC for bilateral contract quantities (BCQs). She cited that the 2.98% is derived from an energy balance perspective whereas the line rental being charged by PEMC is locational.

Further in the discussion, Mr. Sarmiento stated that according to the NGCP-RRA, its new basis in the grossing-up of the 2.98% is the maximum allowable revenue (MAR), with demand as parameter. Mr. Sarmiento explained that per NGCP RRA, the value of the factor is no longer material since the factor will be cancelled-out in the equation and it will be the MAR which will be allocated among the load customers.

Mr. Meneses raised his objection on the above statement and explained that he does not agree with the RRA because the factor would still matter in terms of realistic billing parameters. He instead suggested for the NGCP to use a 0% loss factor and do away with the 2.98%, since as explained, the same amount of money is still involved. Mr. Sotomil stated that he will discuss this feedback with the NGCP.

- **PEMC-BSMD's Presentation on the Proposed Formula on the Segregation of Line Rental**

Mr. Libongco presented PEMC-BSMD's "Segregation of Line Rental Into Line Loss and Line Congestion". Highlights of his presentation are as follows:

- Line rental is not a transmission but a generation cost which accounts for the line loss due to the delivery of Bilateral Contract Quantities (BCQs) to the customers.

- Line rental is an element of the settlement for the customer/load. It is the difference between the Price at the Load side and the Price at the Generator side. The price difference is due to Line Loss (LL) and the Line Congestion (LC) portions multiplied by the BCQ. Price is based on the locational marginal price (LMP). The LMP equation can be simplified by segregating the congestion part and the line loss part.

- The MMS automatically truncates the value of the transmission loss factor (TLF), a component of the line loss, when it saves the said data in the WESM database while the congestion data, the price corresponding to transmission constraint and the sensitivity factor are not being saved.

- The mathematical formulations are the same ones approved by the PEM Board. However, there are some inaccuracies in the TLF values due to the truncation by two decimal places of the historical TLF values. The errors, positive or negative, will either go to the line loss or congestion portion.

- The constraint price "u" and sensitivity factor "a" in the equations are transient data in the MMS. Thus, there will be a problem in backtracking for its historical values. This is considering that since 26 June 2006, there was never a calculation on the segregation of line rental up to the present. hourly market re-runs equivalent to that period is around 59,000 re-runs. For this reason, PEMC-BSMD proposed an alternative calculation which to be applied prospectively.

- Historical report on system loss for Luzon in 2009 is 2.29%; 2010-2.19%; 2011-2.49% (with the integration of the Visayas in the Luzon market); 2012-2.46%.

Dr. Guevara inquired whether the truncation cited is significant. Mr. Libongco clarified that from initial analysis, the truncations would seem to be insignificant. He explained however, that BSMD will simulate more cases on higher to lower prices to derive the percentage of error resulting from the truncation. Dr. Guevara requested that this simulation be presented to the RCC for information.

Ms. Encarnacion inquired on who shoulders the system loss outside of the market, specifically, the station service consumption of NGCP which is not yet registered with

the WESM. Mr. Libongco replied that this impacts on the Net Settlement Surplus (NSS) of the participants.

Mr. Sotomil explained that there was an effort in the past to register NGCP's station service metering points in the WESM. However, there was an issue of conflict with the requirements of the WESM Rules, as raised by one of the WESM governance committees, on the metering facility of NGCP at those points, since NGCP is the sole metering services provider.

After its lengthy discussion on the matter and having noted the inputs of NGCP-MSP and PEMC-BSMD, the RCC then created the RCC Sub-Committee on Line Rental composed of the following members:

- Chairperson-Atty. Dumlao
- Members-Mr. Sarmiento, Mr. Meneses, Mr. Lagarde, Mr. Santos, Mr. Pecjo, Ms. Javier
- Ms. Encarnacion as Consultant, given the information of Ms. Encarnacion's impending retirement from NPC.

The RCC further agreed to request the inputs of the NGCP-MSP on the proposal through the participation of Mr. Sotomil in the formulation of the corresponding proposed rules change.

Finally, the RCC requested the RCC Sub-Committee to submit its rules change proposal in time for the next RCC Meeting on 15 May 2013.

C. Proposed Amendments to WESM Rules and Manual on the Registration of Ramp Rates

After noting that comments received from the MSC and the TC expressing their agreement to the proposal, the RCC approved Resolution No. 2013-01, adopting the proposed amendments to WESM Rules and Manual on the Registration of Ramp Rates.

D. Proposed Amendments to the Registration Manual on the Provisional Approval of Request for Change in Generator's Pmax

The RCC discussed the comments received on the proposal from the MSC and the TC. After its deliberation on the said comments, the RCC agreed with the TC comment and thus revised the proposed amendments to Section 3.1.1 of the Registration Manual, as follows:

> The *Trading Participant* wishing to ~~change the registered capacities~~ **increase the registered maximum available capacity (PMax)** of its generating unit/s shall submit a request in writing to the Market Operator, **attaching thereto a copy of the Trading Participant's latest Certificate of Compliance (COC) issued by the ERC evidencing the change or in the absence of the latest said COC indicating the change, the Trading Participant's application for an updated or new COC duly received by ERC.**

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The RCC then approved Resolution No. 2013-02, adopting the Proposed Amendments to the Registration Manual on the Provisional Approval of Request for Change in Generator's Pmax, as revised.

E. Proposed Amendment in the Definition of "Financial Year" in the WESM Rules

The RCC approved Resolution No. 2013-03, adopting the Proposed Amendment in the Definition of "Financial Year" in the WESM Rules, subject to the submission of comments of interested parties on or before 08 April 2013, which is the 30th day of its publication in the WESM website.

F. Proposed Further Amendments to the WESM Dispatch Protocol Manual regarding Re-Dispatch Procedures based on the WESM Merit Order Table

Ms. Rodriguez informed the RCC that the proposed amendments to the WESM Dispatch Protocol has already been published in the WESM website on 26 March 2013, effectivity of which shall be 15 days from date of posting or on 10 April 2013.

The RCC noted the information provided and agreed to await the 10 April 2013 effectivity date of the Manual, before the deliberation on the proposed further amendments is re-opened to ensure that the RCC's further proposed amendment is based on the latest duly-approved/published issue of the Dispatch Protocol Manual.

4. New Business

Issues/ Topics Discussed	Remarks	Agreement/ Action Item
A. Proposed Amendments to the WESM Rules and the WESM Manual on Market Operator Information Disclosure and Confidentiality Issue 2.0	• Mr. Dennis dela Serna presented to the RCC the subject proposal authored by Aboitiz Power Corporation. In summary, as discussed by Mr. dela Serna, the proposal aims to extend the exception on confidential information so that the affected WESM net sellers will also have the information they need regarding their uncollected spot sales from WESM. He explained that the proposed amendments will allow the disclosure to the WESM net sellers information on (a) settlements amount not paid; (b) the failure of any WESM member to meet prudential requirement obligations; and (c) any prudential security exceptions or waivers granted. • During the discussion, the following observations/comments were made by RCC members: ❑ Ms. Encarnacion commented that the proposal should have also included the erroneous entries/mistakes by the Market Operator which is also not yet covered by the current mechanism on the Prudential Requirement (PR). ❑ Dr. Guevara raised the question on the manner by which APC intends to make-use of the information,	• After its lengthy deliberation on the matter, the RCC agreed to post the proposal, as submitted, to the WESM public information website in order to solicit comments from interested parties.

Issues/ Topics Discussed	Remarks	Agreement/ Action Item
	once these are made available to them. Mr. dela Serna clarified that the request is to only make an exception to the confidentiality rule and as such, the net sellers cannot just go to the public and disclose the information. However, he stated that the same will be used as basis for the possible filing of a request for investigation for breach of the Rules. He further explained that at present, there is difficulty identifying who created the breach thus making it impossible for the affected net sellers to correspondingly file the said request. Atty. Dumlao added that the proposal also provides good basis for effective business planning.	
	❑ Ms. Encarnacion stated that the problem with the current set-up is the generators cannot go directly to the DU/EC in-default.	
	❑ Atty. Dumlao inquired whether in the proposal, the MO will be penalized for its failure to disclose the information exempt from the confidentiality rule. Mr. dela Serna explained that since disclosure will be one of the new obligations of PEMC, its failure to do so will be considered a possible breach of the WESM Rules.	
	❑ Dr. Patalinhug expressed the opinion that the proposal is only a band-aid solution to a problem that can be rooted to the market design itself. He explained that the same poses moral hazard to the industry since the design did not give responsibility for the WESM to be the counterparty. Dr. Patalinhug elaborated that the market, unlike other markets around the world, does not assume the counterparty risk. He stated that if the counterparty issue is addressed, the net sellers would not have to run after the net payers because the net seller automatically becomes WESM.	
	❑ Mr. dela Serna explained that under the current Rules on settlement, the MO operates like a billing and settlements manager which is supposed to bill whatever is due and settle whatever is collected. He clarified that based on this settlement rule, PEMC pays the net sellers whatever were collected plus the PR and there is no specific obligation for the MO to pay the differential. Responding to Dr. Patalinhug, Mr. dela Serna stated that the proposal intends to address the issue on the PR, for the net sellers to be able to know those which failed to put up their PR and those which were granted exemptions.	

Issues/ Topics Discussed	Remarks	Agreement/ Action Item
	• After his presentation, Mr. dela Serna together with Atty. Hyacinth Rafael, were then excused from the meeting. • The RCC discussed the merits of the proposal as follows: ❑ Dr. Guevara raised the related issue on the PR, stating that this mechanism was put-up to cover the payables of defaulting customers. Ms. Javier countered that not all customers were able to put-up and maintain their PR. She stated that the non-collection of WESM means the non-collection of generators. Ms. Javier cited as example the ALECO case in year 2011. Owing to this experience, the generators would like to ensure that breaches in the PR are well-covered. ❑ Ms. Javier also stated that the current set-up triggered tax issues with the Bureau of Internal Revenue (BIR) because WESM is only a pass-through entity. ❑ Mr. Cacho explained that the basic design is the cover on the PR. However, not all customers were able to put-up the same. ❑ Responding to the comment of Dr. Patalinhug on market design, Atty. Dumlao explained that the present market is merely an AGMO, which is only a transitional market. She stated that when the market eventually proceeds as planned with the Independent Market Operator (IMO), it is presumed that as the EPIRA envisioned, the IMO is financially competent and technically viable and will have its own money to pay for its own liabilities. ❑ Ms. Encarnacion reiterated her suggestion to add to the proposal instances when it is PEMC which committed an error in settlement process. She stated that this happened 2 years ago when PEMC erroneously charged the account of SN Aboitiz, Inc. (SNAP) to NPC amounting to PhP225 M. She further stated that two years later, the issue is not yet settled. She opines that considering that PEMC is not covered by PR, it would seem that it is free to make errors in settlement. Mr. Cacho commented that the case being cited is an ongoing case, and that the PEMC-Billing and Settlements Division has already responded to SNAP on this concern. ❑ Mr. Meneses expressed that the problem is caused by two factors, first, with the implementation of the	

Issues/ Topics Discussed	Remarks	Agreement/ Action Item
	disconnection policy and second, politics. He opined that if only the disconnection policy will be strictly implemented, such that once the customer exceeds in its PR level it shall be disconnected from the grid, the system would naturally prevent the liability of the generators from ballooning. However, as the case is, Mr. Meneses stated that this design is being undermined by politics whenever Congressmen or Governors intervene.	
	❑ Dr. Patalinhug stated that in other jurisdictions, the MO and the SO are one and the same and the MO has the technical capability to disconnect.	
	❑ Dr. Patalinhug further opined that the core issue delves on information. He posted the questions as follows: what are the benefits of confidentiality and the cost of transparency? Will the market be more efficient by being more transparent?	
	❑ Mr. Cacho informed the group that when the Confidentiality Rules were first drafted, the proposal was to disclose everything, even the data on settlement. However, he recalled that what was finalized was to disclose everything, except settlement information, as then espoused by the generator sector. Ms. Javier stated that as generators, it may not also be appropriate to reveal everything in settlement, considering the competition in the generator sector. Dr. Patalinhug replied that these are only minor issues which should be ideally addressed by change in policy, that is, to make the WESM the counterparty. Ms. Javier concurred with the idea and explained that in that scenario, WESM will implement disconnection, considering that it will be liable for the non-payment to generators.	
	❑ Atty. de Castro inquired on the feasibility of the proposed amendment. Mr. Cacho replied affirmatively, noting that the original proposal for the confidentiality rule is to disclose everything to the participants, and not the general public.	
	❑ Dr. Guevara suggested for the sector representatives to consult with their respective sectors on the proposal. Ms. Javier requested to have the proposal already posted in the website to begin the 30-day publication requirement.	
B. Proposed Amendments in the WESM Rules	• Mr. Afurong presented the proposed additional clause 4.4.4 in the WESM Rules, which reads: "If a Trading Participant is also a *Metering Services*	• After its lengthy deliberation on the matter, the

Issues/ Topics Discussed	Remarks	Agreement/ Action Item
Additional Clause 4.4.4	*Provider* and there is only one *Metering Services Provider* registered in the *Market Operator* (in the Transmission Level), then it shall be allowed to provide metering services on an interim basis for a market trading node assigned to it or a connection point that it owns until another *Metering Services Provider* becomes authorized by the *ERC* and is registered with the *Market Operator* upon which the metering services shall be transferred to another *Metering Services Provider* following the applicable procedure." • Below are the highlights of what was discussed/presented to the RCC in support of the proposed amendments. ❑ NGCP is currently the only Meter Service Provider (MSP) registered in PEMC with Certificate of Authority from the ERC for its Grid System Network. ❑ Limitations provided for in the WESM Rules are as follows: WESM Rules 4.4.2 - A Generation Company or Customer which is involved in the trading of energy shall not be registered as a Metering Services Provider for any market trading node assigned to it; WESM Rules 4.4.3 - If a Trading Participant is a Customer and also a Network Service Provider, the Trading Participant may register as a Metering Services Provider only for connection point that it does not own. ❑ DOE Circular 2006-06-0008, Section 3.3 on directly-connected end-users (non-utility) states that all end-users, other than generation companies or distribution utilities, which are directly connected to the national grid, shall register as WESM members. It is provided, however, that said entities need not trade directly in the WESM but they shall ensure that their total electricity requirements are fully covered by bilateral power supply contracts. ❑ The NGCP registered as a Customer Trading Participant in the WESM, trading its facilities at Itogon and Talavera Stations. The MSP for the said (former DWS) facilities is also NGCP. ❑ Previous to the above, customers clamored for NGCP to pay for their station usage, during one of the Annual WESM Participants Meeting. ❑ NGCP shall strictly comply with the requirements of the WESM Metering Standards & Procedures, WESM Rules, PGC, and PDC.	RCC agreed to post the proposal, as submitted, to the WESM public information website in order to solicit comments from interested parties.

Issues/ Topics Discussed	Remarks	Agreement/ Action Item
	❑ NGCP shall submit formal registration documents (MIRF) for all or future metering points complete with diagrams to the Market Operator.	
	❑ NGCP shall submit secured (untouched) meter data in the form of Meter Data Exchange Format (MDEF).	
	❑ The metering services for the metering points being traded by NGCP shall be transferred immediately when another MSP becomes authorized by the ERC and registered with the Market Operator.	
	• Some of the questions arising out of the presentation made were the following:	
	❑ Mr. Sotomil inquired whether the RCC knows of any ERC Ruling or DOE Circular mandating the NGCP to pay and/or account for the either increase or decrease of its system loss, considering that the Philippine Grid Code defines system loss to be inclusive of station service consumption. Mr. Sarmiento clarified that the DUs are required to do so, with the inclusion of its system loss as an item in its Operating Expenditures (OPEX). Mr. Afurong added that the NGCP already registered two metering points with the WESM and that there have been more than 100 metering points identified.	
	❑ Dr. Guevara inquired whether the NGCP, as the lone MSP in the grid is subject to PEMC audit. Mr. Sotomil clarified that the NGCP was audited by an external auditor engaged by the PEM Audit Committee in year 2012, with the totality of the metering and billing procedures as scope of audit.	
	❑ Mr. Sarmiento inquired whether the metering on the NGCP's station service consumption will be considered as a Directly Connected Customer (DCC) or a regular customer of the DU. Mr. Sotomil stated that if there is no asset of the DU which is being utilized to deliver power to the NGCP substation, and if the connection is directly to the transformer, then, the meter is not a regular customer of the DU.	
C. Proposed Amendments in the WESM Manual on Metering Standards and Procedures	• Mr. Afurong explained that the proposal relates to the Site Specific Loss Adjustment (SSLA), for which the MO needs a specific set of data in order to arrive at an accurate computation. Mr. Afurong discussed as follows: ❑ PEMC as the Market Operator relies on the	• After its lengthy deliberation on the matter, the RCC agreed to post the proposal, as submitted, to the WESM public

Issues/ Topics Discussed	Remarks	Agreement/ Action Item
Subsection 9.7	submitted conductor and transformer data from the Trading Participants and the Network Service Provider, before it computes the physical losses between the metering point and the market trading node (MTN). ❑ The amount of computed losses depends heavily on the completeness and accuracy of the conductor and transformer data. Over time, the data at hand of the MO may no longer reflect the actual physical configuration of the conductor and transformer as changes sometimes happen on the field without the knowledge of the MO. • Mr. Afurong explained that Sections 9.7.1 and 9.7.2 are basically the same and that the proposed changes simply include the following: ❑ To update and submit every 6 months or earlier the conductor and power transformer data by both the Network Service Provider and the Trading Participants. ❑ The updated data shall be used by the Market Operator starting only on the current billing month upon reconciliation by the MO, Trading Participants and the Network Service Provider. ❑ The updated data shall be used progressively on the succeeding months until a new update is submitted. • Discussion on the proposal were as follows: ❑ Mr. Lagarde stated that they are submitting the same data to the NGCP district office. Mr. Seludo commented that the DU/EC may opt to copy-furnish PEMC of the said submission. Mr. Meneses for his part explained that any upgrade on the DU system is made primarily to reduce losses and given this objective, it is always to the best interest of the DU/EC to report said changes. Mr. Afurong commented that the DU/EC Report as submitted to NGCP may not always reach PEMC. ❑ Ms. Javier clarified whether the SSLA is an output of the MMS. Mr. Afurong clarified that it is not and that the SSLA requires a separate computation.	information website in order to solicit comments from interested parties.
D. Proposed Amendments to Clause 3.13.6 of	• Mr. Afurong presented the proposal to the RCC. Below are the presentation highlights:	• After its lengthy deliberation on the matter, the

Issues/ Topics Discussed	Remarks	Agreement/ Action Item
the WESM Rules	❑ For the background, it was explained that the proposal aims to discourage meter tampering and other forms of pilferage in connection with RA 7832. Secondly, it addresses the requirement that all embedded generators should register with the ERC and secure the corresponding Certificate of Compliance. ❑ The objective is to introduce a more solid basis for the netting of bidirectional energy flows in a trading interval recorded in the meter. ❑ The MO observed that there are customers that are injecting energy to the grid as recorded in their meter. ❑ Valid power flows are as follows: (a) An embedded generator whose generation is above the requirement of the local load. The embedded generator must be a facility registered with the ERC and the Market Operator, and (b) Excess energy withdrawn from an adjacent metering/connection point that is serving the same load. ❑ Invalid power flow is described as a customer with two metering points connected to different market trading nodes. The customer has no embedded generator, and the historical meter data show simultaneously injection from the 2 meters. • The proposed amendment shall read as follows: For each trading interval, the gross ex-post energy settlement quantity for each market trading node shall be determined by the Market Operator as follows: (a) If the market trading node is defined under clause 3.2.2.1 as lying on the boundary of the power system operated by the System Operator, the gross ex-post energy settlement quantity for the market trading node is the net metered flow into the power system operated by the System Operator through the associated meter, **provided however, that if the market trading node is a customer node, and there is no ERC-registered embedded generation facility associated with that node, or the source of injection cannot be traced, any injection shall not be accounted for in determining the gross ex post energy settlement quantity for that node.** (b) xxx (c) xxx	RCC agreed to post the proposal, as submitted, to the WESM public information website in order to solicit comments from interested parties.

Issues/ Topics Discussed	Remarks	Agreement/ Action Item
	(d) **If the net metered flows registered through a meter is inconsistent with the expected power flows at the market trading node to which that meter is associated, the Metering Services Provider shall determine and shall notify the Market Operator and the relevant Trading Participant the appropriate manner of determining the gross ex-post settlement quantity for that market trading node.** • Mr. Sotomil expressed apprehension on the proposed amendment, stating that the additional clause (d) imposes an undue burden to the MSP. • Ms. Javier opined that the customer meter should be unidirectional except for those with embedded generation with duly-approved Certificate of Compliance from the ERC. Mr. Sotomil stated that some customers have bidirectional meters. Cited as example is MERALCO's Balintawak Substation. However, he explained that the same is a valid case. • Dr. Guevara suggested to proceed with the publication of the proposal, as submitted, in order to solicit comments from interested parties.	

5. **Next Meeting**

The RCC scheduled its next succeeding meetings as follows:

- 74th RCC Meeting - 15 May 2013, 9:00 AM
- 75th RCC Meeting - 05 June 2013, 9:00 AM
- 76th RCC Meeting - 03 July 2013, 9:00 AM

6. **Adjournment**

There being no other matter to be discussed, the meeting was adjourned at around 2:51 P.M.

Prepared by:

Shalom Grace T. Llamzon
Market Governance Analyst

Reviewed by:
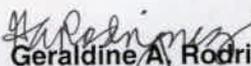
Noted by:

Geraldine A. Rodriguez
Assistant Manager
Market Governance and Administration
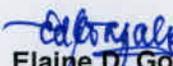
Elaine D. Gonzales
Manager
Market Data and Analysis

Approved by:
RULES CHANGE COMMITTEE

Rowena Cristina L. Guevara
Chairperson
Independent
University of the Philippines
(UP)

| Members:	
Epictetus E. Patalinghug Independent University of the Philippines (UP)	**Francisco L.R. Castro, Jr.** Independent Tensaiken Consulting
Maila Lourdes G. de Castro Independent	**Cherry Aquino-Javier** Generation Sector AES Philippines (AES)
Cynthia R. Encarnacion Generation Sector National Power Corporation (NAPOCOR)	**Liberty Z. Dumlao** Generation Sector Power Sector Assets and Liabilities Management Corporation (PSALM)
Augusto D. Sarmiento Distribution Sector (PDU) Dagupan Electric Corporation (DECORP)	**Ciprinilo C. Meneses** Distribution Sector (PDU) Manila Electric Company (MERALCO)
Sulpicio C. Lagarde Jr. Distribution Sector (EC) Central Negros Electric Cooperative, Inc. (CENECO)	**Jose P. Santos** Distribution Sector (EC) Ilocos Norte Electric Cooperative, Inc. (INEC)
Conrado D. Pecjo Supply Sector Angeles Power, Inc.	
Raul Joseph G. Seludo Transmission Sector National Grid Corporation of the Philippines (NGCP)	**Robinson P. Descanzo** Market Operator Philippine Electricity Market Corporation (PEMC)
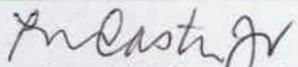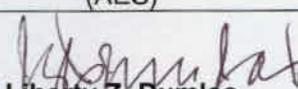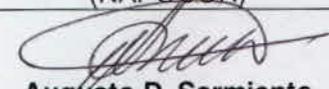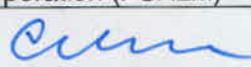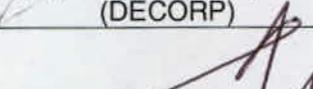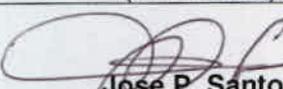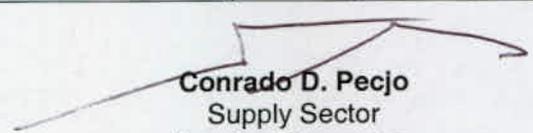
Attachments:

1) NGCP-MSP's Presentation on the Computation of System Loss
2) PEMC-BSMD's Presentation on the Proposed Formula on the Segregation of Line Rental

NGCP'S SYSTEM LOSS COMPUTATION FOR LUZON AND VISAYAS

A Presentation to the WESM RCC Meeting

PEMC, Ortigas Ave., Pasig City

April 03, 2013

PGC DEFINITION OF TERMS

System Loss:

In the **Grid Code**, it is the Energy injected into the Grid by Generating Plants, plus (or minus) the Energy transported through Grid interconnections minus the total Energy delivered to Distributors and End-Users.

In the **Distribution Code**, it is the Energy received from the Grid plus internally generated Energy by Embedded Generating Plants, plus (or minus) the Energy transported by other Distributors minus the total Energy delivered to End-Users.

3.4.1.2. The **Technical Loss** shall be aggregate of conductor loss, the core loss in transformers, and any loss due to technical metering error.

3.4.1.3. The **Non-Technical Loss** shall be the aggregate of the Energy loss due to meter-reading errors and meter tampering.

3.4.1.4. The **Administrative Loss** shall include the Energy that is required for the proper operation of the Grid.

GRID ENERGY BALANCE EQUATION

Incoming Energy = Outgoing Energy + Grid Losses

Incoming Energy:

- ❖ Energy **Delivered by Grid-Connected Generators**
- ❖ Energy **Received from DU's and Non DU's** with Embedded Generators (surplus)
- ❖ Energy **Imported** from Adjacent Grid

Outgoing Energy:

- ❖ Energy **Delivered by the Grid to Loads (DU's and Non-DU's)**
- ❖ Energy **Delivered to Generators. (**When they consumer power) For Luzon, this includes **Kalayaan Pumping Energy**
- ❖ Energy **Exported** to Adjacent Grid

Grid Losses:

- ❖ Technical and Non Technical Losses
- ❖ Administrative Loss (Station Service)

GRID ENERGY BALANCE EQUATION

ENERGY BALANCE EQUATION:

Incoming Energy = Outgoing Energy + Grid Losses

Incoming Energy

Generators →

Imported Energy from Adjacent Grid →

Energy from DU's and Non-DU's w/ Embedded Generators →

GRID

- ➤ **Technical and Non-Technical Losses**
- ➤ **Administrative Loss**

Outgoing Energy

→ **Load Customers**

→ **Exported Energy to Adjacent Grid**

→ **Feedback Energy from the Grid to Generators**
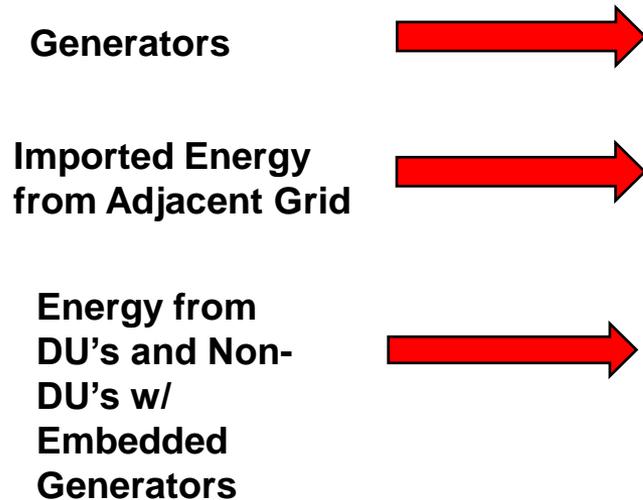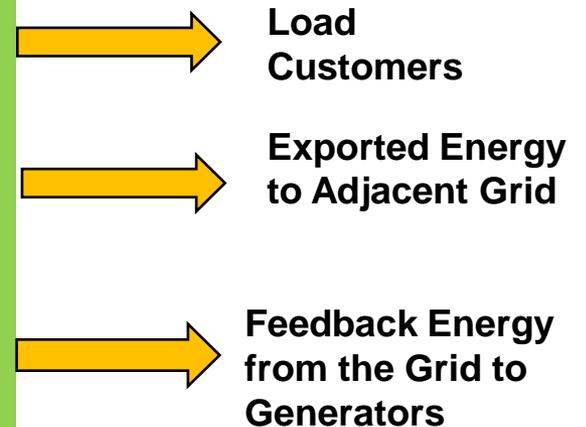
From PGC 3.4:

System Loss = Technical and Non Technical Losses + Administrative Loss

% System Loss = (System Loss / Incoming Energy) x 100

SAMPLE ENERGY BALANCE/SYSTEM LOSS REPORT FOR LUZON GRID

SYSTEM LOSS FOR LUZON GRID
NOVEMBER 26, 2012 - DECEMBER 25, 2012

1.		**GENERATION SIDE (INCOMING ENERGY)**			4,162,473,089
	1.1		ENERGY DELIVERED BY GENERATORS		4,054,700,039
		1.1.1		NPC PLANTS	41,106,240
		1.1.2		NPC IPPs	224,718,408
		1.1.3		OTHER IPPs	2,629,919,971
		1.1.4		MECO IPPs	1,158,955,420
	1.2		ENERGY IMPORTED FROM VISAYAS		107,758,665
	1.3		ENERGY RECEIVED FROM DU's AND NON DU's		
			WITH EMBEDDED GENERATOR		14,385
		1.3.1		DISTRIBUTORS	0
			1.3.1.1	NORTH LUZON NORTH (NLN)	0
			1.3.1.2	NORTH LUZON SOUTH (NLS)	0
			1.3.1.3	SOUTH LUZON NORTH (SLN)	0
			1.3.1.4	SOUTH LUZON SOUTH (SLS)	0
		1.3.2		NON-DISTRIBUTORS	14,385
			1.3.2.1	NORTH LUZON NORTH (NLN)	0
			1.3.2.2	NORTH LUZON SOUTH (NLS)	0
			1.3.2.3	SOUTH LUZON NORTH (SLN)	0
			1.3.2.4	SOUTH LUZON SOUTH (SLS)	14,385
2.		**LOAD SIDE (OUTGOING ENERGY)**			**4,065,723,472**
	2.1		ENERGY EXPORTED TO VISAYAS		2,002,703
	2.2		ENERGY DELIVERED TO LOADS		**3,911,091,427**
		2.2.1		DISTRIBUTORS	**3,677,303,968**
			2.2.1.1	MECO	2,844,729,794
			2.2.1.2	NORTH LUZON NORTH (NLN)	264,661,009
			2.2.1.3	NORTH LUZON SOUTH (NLS)	369,847,576
			2.2.1.4	SOUTH LUZON NORTH (SLN)	114,563,004
			2.2.1.5	SOUTH LUZON SOUTH (SLS)	83,502,584
		2.2.2		NON-DISTRIBUTORS	**233,787,460**
			2.2.2.1	NORTH LUZON NORTH (NLN)	27,869,218
			2.2.2.2	NORTH LUZON SOUTH (NLS)	114,897,039
			2.2.2.3	SOUTH LUZON NORTH (SLN)	85,690,225
			2.2.2.4	SOUTH LUZON SOUTH (SLS)	5,330,978
	2.3		ENERGY DELIVERED TO GENERATORS		**152,629,341**
		2.3.1		NPC PLANTS	1,600
		2.3.2		NPC IPPs	1,562,082
		2.3.3		KALAYAAN PUMP USE	116,305,200
		2.3.4		OTHER IPPs	34,729,381
		2.3.5		MECO IPPs	31,078
3.		**SYSTEM LOSS (Tech'l & Non-Tech'l Loss + Admin Loss)**			**96,749,617**
4.		**PERCENT SYSTEM LOSS**			**2.32%**
5.		**ADMINISTRATIVE LOSS**			**1,732,348**
6.		**TECHNICAL & NON-TECHNICAL LOSS**			**95,017,269**

Note:
1. *All energy values are obtained from revenue meters installed at Generators and Load Customers*
2. *Transmission System Station Service consumptions are obtained from substation service meter readings by the district offices.*

Prepared by:

RAMON B. DE ROBLES
Section Head, AMR-Luzon

Noted by:

EMMANUEL M. SOTOMIL
Head, MSD-O&M

SAMPLE ENERGY BALANCE/SYSTEM LOSS REPORT FOR VISAYAS GRID

ENERGY BALANCE/SYSTEM LOSS FOR VISAYAS GRID
NOVEMBER 26, 2012 TO DECEMBER 25, 2012

1. SUPPLY SIDE (INCOMING ENERGY)	**743,725,260.54**
1.1 ENERGY DELIVERED BY GENERATORS	**741,192,526.97**
1.1.1 NPC PLANTS	3,135,803.64
1.1.2 NPC-IPP'S	300,580,806.99
1.1.3 OTHER IPP'S	437,475,916.34
1.2 ENERGY IMPORTED FROM LUZON	**2,002,703.37**
1.3 ENERGY RECEIVED FROM DU'S & NON-DU'S W/ EMBEDDED GENS.	**530,030.20**
1.3.1 DISTRIBUTORS	
1.3.1.1 WEST VISAYAS	31,815.00
1.3.1.2 EAST VISAYAS	109,351.20
1.3.2 NON-DISTRIBUTORS	
1.3.2.1 WEST VISAYAS	–
1.3.2.2 EAST VISAYAS	388,864.00
2. LOAD SIDE (OUTGOING ENERGY)	**716,590,970.85**
2.1 ENERGY EXPORTED TO LUZON	**107,758,665.44**
2.2 ENERGY DELIVERED TO LOADS	**601,181,413.86**
2.2.1 DISTRIBUTORS	
2.2.1.1 WEST VISAYAS	174,542,376.52
2.2.1.2 EAST VISAYAS	318,379,491.09
2.2.2 NON-DISTRIBUTORS	
2.2.2.1 WEST VISAYAS	3,292,436.00
2.2.2.3 EAST VISAYAS	104,967,110.25
2.3 ENERGY DELIVERED TO GENERATORS (Feedback Power)	**7,650,891.55**
2.3.1 NPC PLANTS	226,717.75
2.3.2 NPC-IPP'S	6,788,393.90
2.3.3 OTHER IPP'S	635,779.90
3. SYSTEM LOSS (Technical & Non-Tech. Loss + Adm. Loss)	**27,134,289.68**
% SYSTEM LOSS	**3.65%**
3.1 ADMINISTRATIVE LOSS	**816,235.54**
3.2 TECHNICAL & NON-TECHNICAL LOSS	**26,318,054.14**

Notes:
1. All energy values are obtained from meters at connection points except as indicated.
2. Energy generated by Generators embedded in DU/Load Customer networks are excluded.
3. The Station Service Energy Consumption values for the Administrative loss are read from the newly installed electronic revenue meters.

Prepared by:
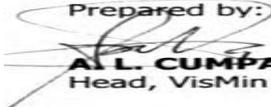
A. L. CUMPAS
Head, VisMin AMR Section

Noted by:

E. M. SOTOMIL
Head, Metering Services

SAMPLE ENERGY BALANCE/SYSTEM LOSS REPORT FOR LUZON GRID CY 2012

Legend:
- 1. SUPPLY SIDE (INCOMING ENERGY) X 1,000,000
- 2. LOAD SIDE (OUTGOING ENERGY) X 1,000,000
- 3. SYSTEM LOSS ENERGY X 100,000
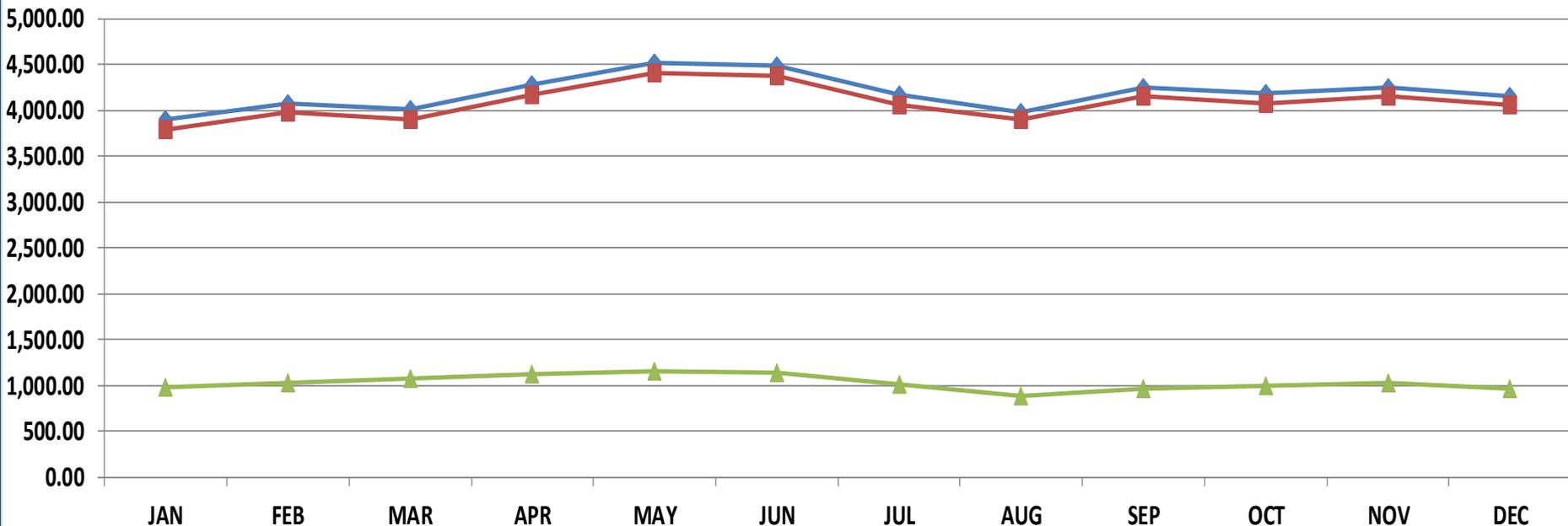
PARTICULARS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1. SUPPLY SIDE (INCOMING ENERGY) X 1,000,000	3,896.01	4,081.64	4,010.57	4,285.75	4,524.83	4,496.82	4,168.52	3,987.77	4,257.73	4,183.24	4,259.14	4,162.47
2. LOAD SIDE (OUTGOING ENERGY) X 1,000,000	3,798.27	3,978.31	3,903.62	4,173.28	4,408.55	4,382.51	4,067.90	3,898.39	4,161.71	4,083.63	4,156.03	4,065.71
3. SYSTEM LOSS ENERGY X 100,000	977.38	1,033.37	1,069.49	1,124.68	1,162.82	1,143.15	1,006.20	893.47	960.18	996.11	1,031.18	967.66
4. % SYSTEM LOSS	2.51%	2.53%	2.67%	2.62%	2.57%	2.54%	2.41%	2.24%	2.26%	2.38%	2.42%	2.32%

ENERGY BALANCE/SYSTEM LOSS FOR VISAYAS GRID CY 2012

PARTICULARS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1. SUPPLY SIDE (INCOMING ENERGY) X 1,000,000	762.68	762.86	714.08	784.30	786.43	824.22	754.33	726.69	717.30	701.79	749.89	743.73
2. LOAD SIDE (OUTGOING ENERGY) X 1,000,000	736.37	736.71	687.35	754.74	756.99	796.97	729.97	694.77	688.35	674.08	722.68	716.59
3. SYSTEM LOSS ENERGY X 100,000	263.07	261.50	267.30	295.65	294.46	272.54	243.62	319.21	289.53	277.19	272.09	271.34
% SYSTEM LOSS	3.45%	3.43%	3.74%	3.77%	3.74%	3.31%	3.23%	4.39%	4.04%	3.95%	3.63%	3.65%

NOTES TO THE GRID ENERGY BALANCE/SYSTEM LOSS REPORT

- Energy values are metered at connection points to the Grid of Generators and Load Customers (DU's and Non-DU's).

- Energy from Generators embedded in DU/Load Customer networks are excluded except in special cases.

- The Station Service Energy (Administrative Loss) values are read from the newly installed LP Meters.

- The Report does not contain an analysis of the System Loss increase/decrease.

Additional Notes: Metered Energy Quantity Recording

- Grid Meters can be configured to record either Uni-Directional or Bi-Directional energy values that flow at the Grid Connection Points of Generators and Loads (DU's and Non-DU's).

	Channels			
Uni-Directional	**KWH-D**	**KVARH-D**		
Bi-Directional	**KWH-D**	**KVARH-D**	**KWH-R**	**KVARH-R**

Convention: "D" means "Delivered" by the Source (Grid or Generator)
"R" means "Received" by the Source (Grid or Generator)

- For a Generator Meter, energy injected into the Grid is recorded in the "D" or "Delivered" Channels; feedback energy from the Grid is recorded in the "R" or "Received" Channels.

- For a Load Meter, energy flowing from the Grid to the Load is recorded in the "D" or "Delivered" Channels; energy injected by the Load to the Grid is recorded in the "R" or "Received" Channels.

THANK YOU!

GENERATOR METERING CONFIGURATION

CASE NO. 1: *GENERATOR WITH SINGLE CONNECTION TO THE GRID*

ENERGY DELIVERED TO THE GRID = **(ΣKWH-D)**
FEEDBACK ENERGY = (ΣKWH-R)

CASE NO. 2: *GENERATOR WITH SEPARATE GENERATION AND STATION SERVICE CONNECTIONS TO THE GRID:*

ENERGY DELIVERED TO THE GRID = **(ΣKWH-D)** FROM THE GEN METER(S)
FEEDBACK ENERGY = (ΣKWH-D) FROM THE STA. SERVICE METER(S)

CASE NO. 3: *GENERATOR WITH MULTIPLE, METERED LINE CONNECTIONS TO THE GRID:*

ENERGY DELIVERED TO THE GRID = (ΣKWH-D) – (ΣKWH-R) If **Net Positive**
FEEDBACK ENERGY = (ΣKWH-D) – (ΣKWH-R) If **Net Negative**

ENERGY DELIVERED TO THE GRID = (ΣKWH-D)

FEEDBACK or STATION SERVICE ENERGY = (ΣKWH-R)

CABANATUAN S/S.

51MY3

51MY4

51MY5

(3CT)

(M) A (M) B

(3PT)

(MMSWMSWY01)

69/13.8 kV
TRANSFORMER
15.8 MVA

G1

12 MW
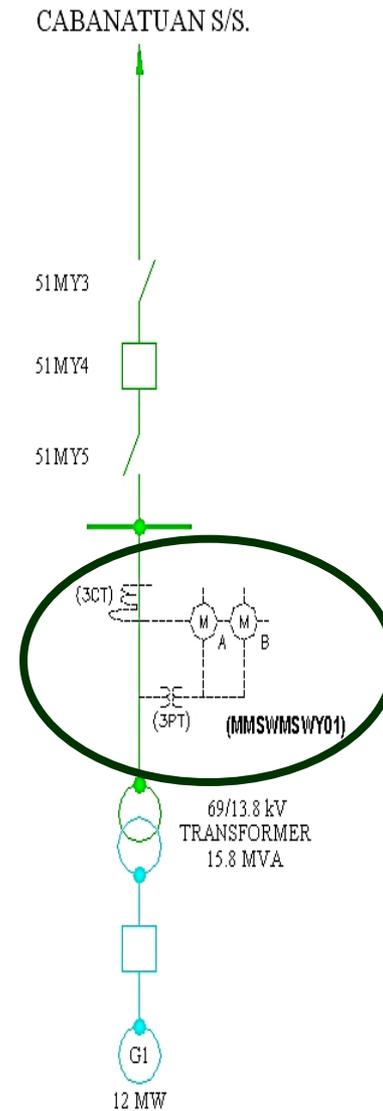
GENERATOR METERING CASE NO. 2

ENERGY DELIVERED TO THE GRID
= ΣKWH-D@M1 + ΣKWH-D@M2

FEEDBACK or STATION SERVICE
ENERGY = ΣKWH-D@M3
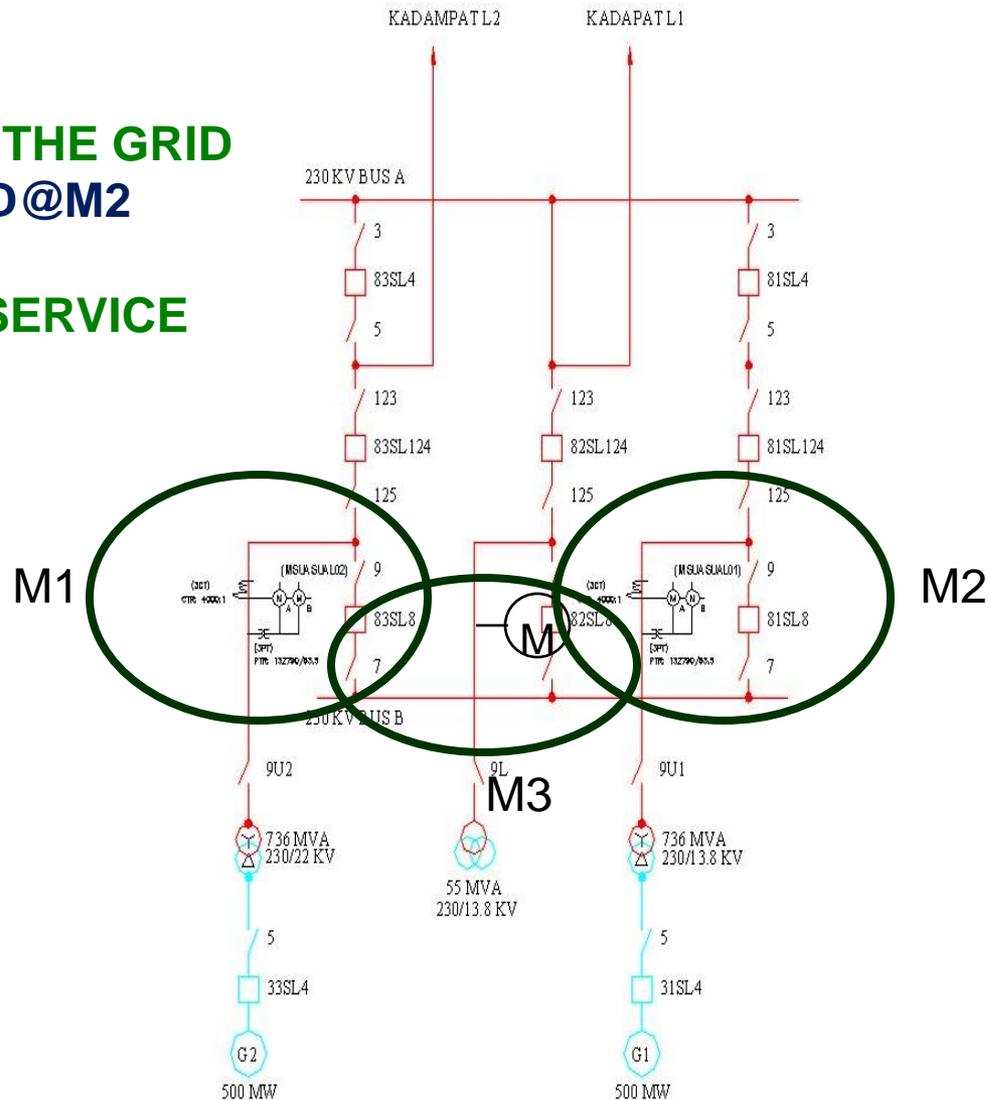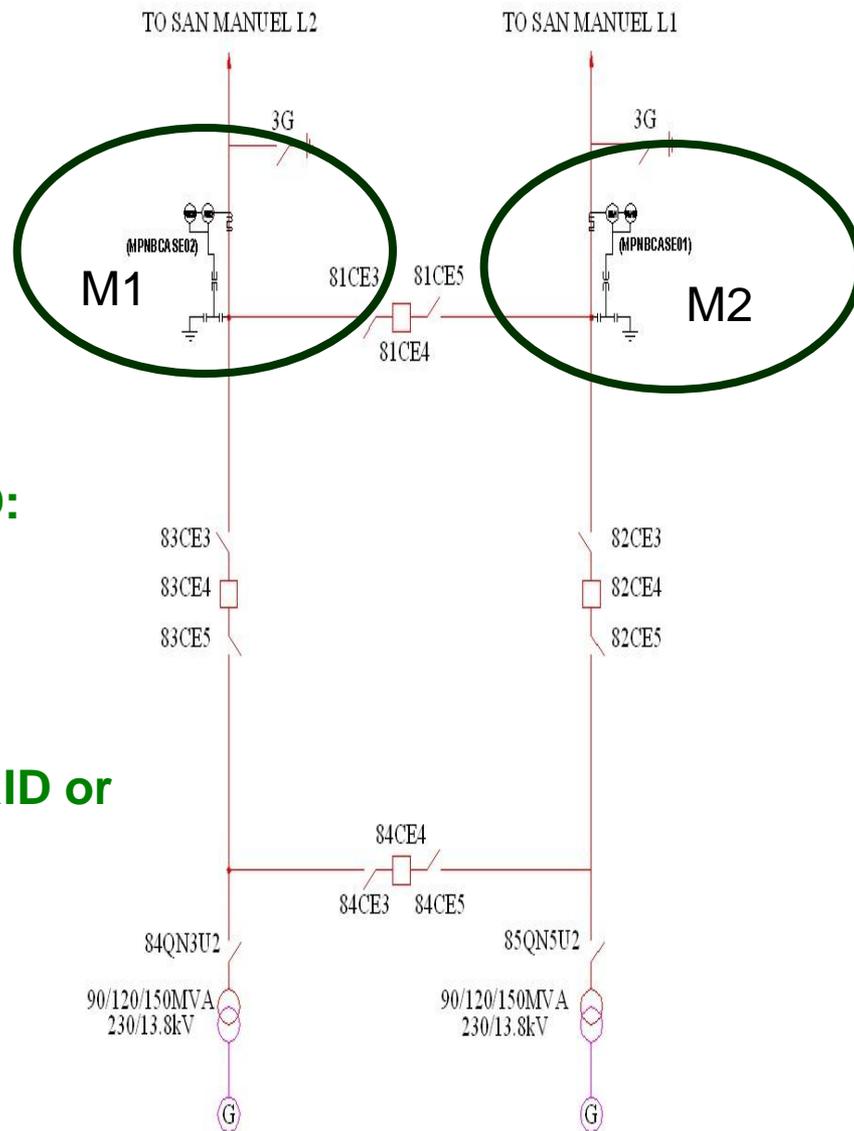
ENERGY DELIVERED TO THE GRID:
 = (ΣKWH-D@M1 + ΣKWH-D@M2) -
   (ΣKWH-R@M1 + ΣKWH-R @M2)
     if Net Positive

**ENERGY RECEIVED FROM THE GRID or
FEEDBACK ENERGY:**
 = (ΣKWH-D@M1 + ΣKWH-D@M2) -
   (ΣKWH-R@M1 + ΣKWH-R @M2)
     if Net Negative

ENERGY EXPORTED TO LUZON = ΣKWH-D

ENERGY EXPORTED TO VISAYAS = ΣKWH R
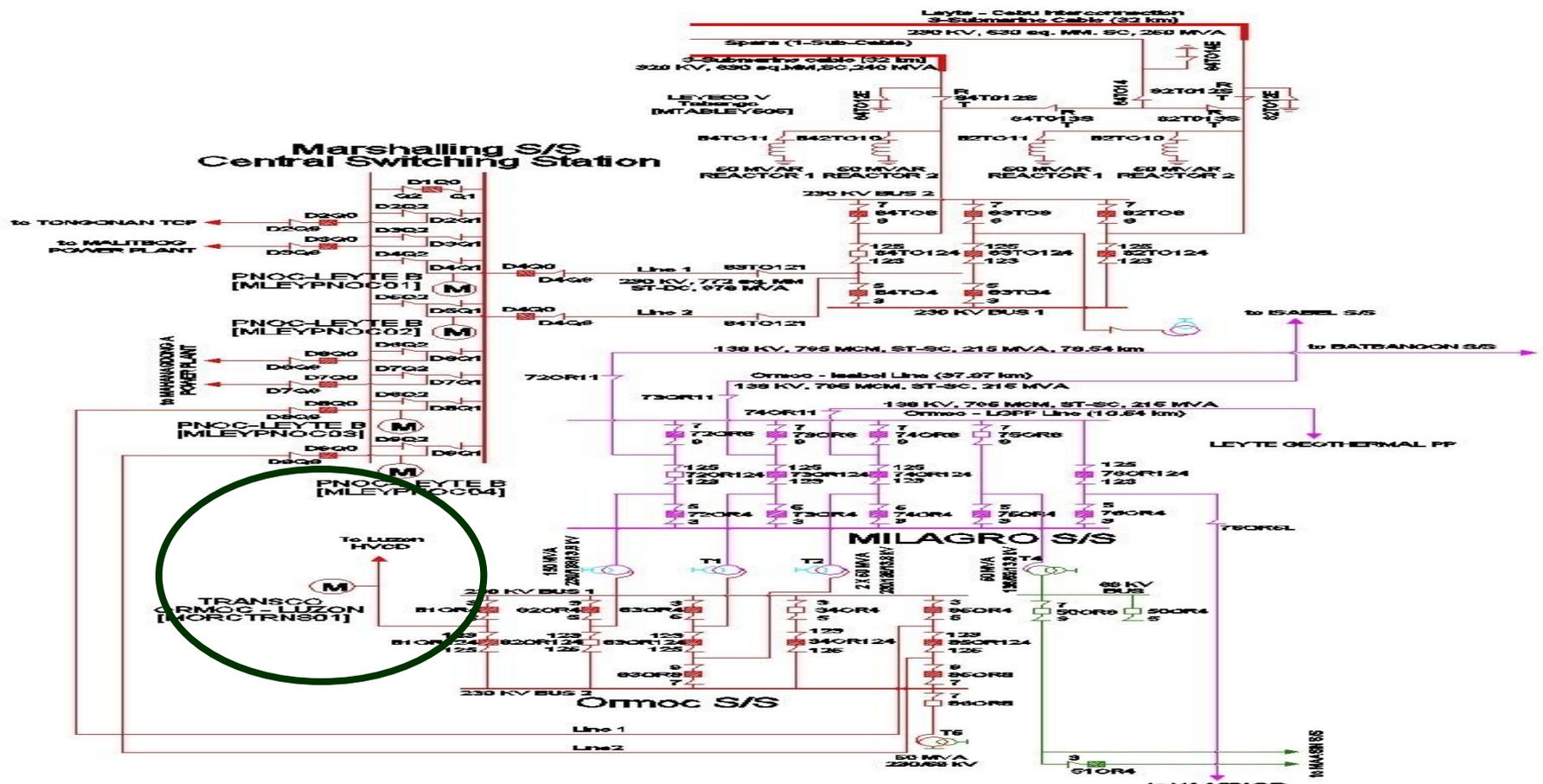
Segregation of Line Rental
Into Line Loss and Line Congestion

Millan H. Libongco
Manager – Billing and Settlement Division
03 April 2013

Outline

- ❑ Line Rental (LR) Definition
- ❑ Locational Marginal Price (LMP) Definition
- ❑ Prospective Application of Line Rental Segregation
- ❑ Average Luzon System Loss (2009-2012)
- ❑ MERALCO Total Line Rental Trading Amounts

Wholesale Electricity Spot Market

Line Rental (LR) Definition

❑ **LR** is the economic rental arising from the use of a *transmission line*, calculated as the difference in value between flows out of the *receiving node* of that line and flows into the *sending node,* in accordance with clause 3.13.12 of the WESM Rules.

P_G **BCQ** P_C

$$LR = BCQ [LMP_L - LMP_G]$$

GENCO / SUPPLIER DU / CUSTOMER

The Settlement Equations for Spot Market Transactions and Line Rental

<u>Total Trading Amount (TTA) Load/Customer</u>

$$TTA_L = (EAQ_L - BCQ_L)*EAP_L + (MQ_L - EAQ_L)*EPP_L + \textcolor{red}{LR}$$

$$LR = BCQ_{G-L}*(\text{Receiving End Price} - \text{Sending End Price})$$

$$LR = BCQ_{G-L}*(EAP_L - EAP_G)$$

Wholesale Electricity Spot Market

Line Rental

❑ Line Rental is the Difference between the Price at Load side and the Price at the Generator side

❑ The Price difference is due to Line Loss (LL) and the Line Congestion (LC) Portions Multiplied by the Bilateral Contract Quantities (BC)

❖ $LR = BCQ \; [LMP_L - LMP_G]$

Definition of Locational Marginal Price (LMP)

$$LMP_i = \lambda + \lambda\left(\frac{1}{TLF_i} - 1\right) + \sum_{j=1}^{n} \mu_{ij}a_{ij}$$

$$\lambda = Offer_{MP} * TLF_{MP}$$

or

$$LMP_i = \left(\frac{\lambda}{TLF_i}\right) + \sum_{j=1}^{n} \mu_{ij}a_{ij}$$

LMP	-	Locational Marginal Price at node "i"
λ	-	The system marginal price based on the offer and TLF of the marginal plant
TLF_i	-	Transmission Loss Factor at node "i"
μ_{ij}	-	Price corresponding to transmission constraint
a_{ij}	-	Sensitivity factor
n	-	The number of constraints involved that affects the node "i"
$Offer_{MP}$	-	Marginal Plant Offer
MP	-	Marginal Plant
j	-	Count of constraint occurrences
i	-	Node

Wholesale Electricity Spot Market

Proposed Line Rental Segregation

$$\text{Line Rental}_{\text{Losses}} = BCQ_{G-L} * \lambda * \left(\frac{1}{TLF_L} - \frac{1}{TLF_G} \right)$$

λ $= \text{Offer}_{MP} * TLF_{MP}$

BCQ_{G-L} - Bilateral Contract Between Supplier G and Customer L (MWH)

Offer_{MP} - Offer of Marginal Plant

TLF_{MP} - Transmission Loss Factor of Marginal Plant

TLF_L - Transmission Loss Factor of Customer L

TLF_G - Transmission Loss Factor of Supplier G

**Wholesale Electricity
Spot Market**

Congestion Portion in the LMP

$$LMP_i = \left(\frac{\lambda}{TLF_i}\right) + \sum_{j=1}^{n} \mu_{ij} a_{ij} \qquad \sum_{j=1}^{n} \mu_{ij} a_{ij} = LMP_i - \left(\frac{\lambda}{TLF_i}\right)$$

$$Congestion_i = LMP_i - \lambda / TLF_i$$

LMP	-	Locational Marginal Price at node "i"
λ	-	The system marginal price based on the offer and TLF of the marginal plant
TLF_i	-	Transmission Loss Factor at node "i"
μ_{ij}	-	Price corresponding to transmission constraint
a_{ij}	-	Sensitivity factor
n	-	The number of constraints involved that affects the node "i"
$Offer_{MP}$	-	Marginal Plant Offer
MP	-	Marginal Plant
j	-	Count of constraint occurrences
i	-	Node

Wholesale Electricity Spot Market

Proposed Prospective Application of Line Rental Segregation

$$\text{Line Rental}_{\text{Congestion}} = BCQ_{G\text{-}L} * \left[\left(LMP_L - \frac{\lambda}{TLF_L} \right) - \left(LMP_G - \frac{\lambda}{TLF_G} \right) \right]$$

$\lambda = \text{Offer}_{MP} * \text{TLF}_{MP}$

$BCQ_{G\text{-}L}$ - Bilateral Contract Between Supplier G and Customer L (MWH)

Offer_{MP} - Offer of Marginal Plant

TLF_{MP} - Transmission Loss Factor of Marginal Plant

TLF_L - Transmission Loss Factor of Customer L

TLF_G - Transmission Loss Factor of Supplier G

LMP_L - Locational Marginal Price of Customer L

LMP_G - Locational Marginal Price of Supplier G

Wholesale Electricity Spot Market

Associated Inaccuracy Using the TLF

❑ Historical TLF values are truncated by several decimal places

  ❖ Any error either positive or negative will either go to the Line Loss or Congestion portion

Wholesale Electricity Spot Market

Associated Challenges Using Constraint Price (μ) and Sensitivity Factor (a)

❑ MMS has no provision for the segregation of Line Rental (LR) into Line Loss (LL) and Line Congestion (LC) components

❖ Line Rental Amounts were never segregated into LL and LC portions since the start of the WESM commercial operations

❖ Parameters needed to segregate the LR into LL and LC portions are transient values [not stored by the Market Management System (MMS)]

❖ Revisiting the historical data is a tedious and costly procedure (For the period June 26, 2006 to March 25, 2013)

❖ Hourly Market re-runs (59,136 reruns)

❖ For 20 minute per re-run, 821 days will be needed (24x7 non-stop)

Wholesale Electricity Spot Market

Historical Luzon System Loss (2009-2010)

		AVARAGE SYSTEM LOSS BASED ON METER QUANTITIES				
Bill No.	Month	Generator (MWh)	Load (MWh)	Difference (MWh)	System Loss	Average
31	Jan-09	3,011,829.3998	2,950,914.2626	60,915.1372	2.02%	
32	Feb-09	3,501,761.2550	3,425,060.6638	76,700.5912	2.19%	
33	Mar-09	3,362,568.9990	3,286,954.7411	75,614.2580	2.25%	
34	Apr-09	3,658,053.9151	3,569,610.0033	88,443.9119	2.42%	
35	May-09	3,590,036.3224	3,504,836.4169	85,199.9055	2.37%	
36	Jun-09	3,743,134.5428	3,656,557.5993	86,576.9434	2.31%	
37	Jul-09	3,670,006.5978	3,585,040.5250	84,966.0728	2.32%	
38	Aug-09	3,800,172.5593	3,712,907.7756	87,264.7837	2.30%	
39	Sep-09	3,778,787.2112	3,692,460.5478	86,326.6635	2.28%	
40	Oct-09	3,462,537.7177	3,382,182.9669	80,354.7508	2.32%	
41	Nov-09	3,709,943.7669	3,623,335.1414	86,608.6255	2.33%	
42	Dec-09	3,544,052.6240	3,461,854.2201	82,198.4039	2.32%	2.29%
43	Jan-10	3,555,159.3333	3,477,724.4818	77,434.8515	2.18%	
44	Feb-10	3,889,631.0363	3,807,338.3574	82,292.6789	2.12%	
45	Mar-10	3,672,925.4350	3,595,415.6888	77,509.7461	2.11%	
46	Apr-10	4,005,728.1550	3,918,011.8746	87,716.2804	2.19%	
47	May-10	4,237,132.2847	4,131,001.1361	106,131.1486	2.50%	
48	Jun-10	4,324,054.1884	4,224,619.3788	99,434.8096	2.30%	
49	Jul-10	3,898,935.3633	3,810,948.2379	87,987.1254	2.26%	
50	Aug-10	4,103,315.9045	4,011,181.0899	92,134.8146	2.25%	
51	Sep-10	4,090,107.2245	4,003,874.3917	86,232.8329	2.11%	
52	Oct-10	3,905,854.9731	3,824,747.6543	81,107.3188	2.08%	
53	Nov-10	3,985,118.1954	3,899,532.9764	85,585.2190	2.15%	
54	Dec-10	3,800,817.3313	3,721,109.4274	79,707.9039	2.10%	2.19%

Historical Luzon System Loss (2011-2013)

	AVARAGE SYSTEM LOSS BASED ON METER QUANTITIES					
Bill No.	Month	Generator (MWh)	Load (MWh)	Difference (MWh)	System Loss	Average
55	Jan-11	4,260,994.86	4,161,220.02	99,774.83	2.34%	
56	Feb-11	4,509,574.15	4,395,988.88	113,585.27	2.52%	
57	Mar-11	4,168,102.55	4,068,189.42	99,913.13	2.40%	
58	Apr-11	4,536,360.12	4,422,204.21	114,155.91	2.52%	
59	May-11	4,905,664.02	4,773,794.46	131,869.57	2.69%	
60	Jun-11	4,884,617.71	4,757,595.56	127,022.15	2.60%	
61	Jul-11	4,716,191.88	4,598,531.93	117,659.95	2.49%	
62	Aug-11	4,809,624.03	4,690,747.01	118,877.02	2.47%	
63	Sep-11	4,821,253.53	4,701,747.15	119,506.38	2.48%	
64	Oct-11	4,579,339.69	4,465,246.94	114,092.75	2.49%	
65	Nov-11	4,817,573.68	4,697,175.20	120,398.48	2.50%	
66	Dec-11	4,585,710.17	4,475,767.57	109,942.60	2.40%	2.49%
67	Jan-12	4,546,088.52	4,433,501.80	112,586.71	2.48%	
68	Feb-12	4,732,833.31	4,616,861.91	115,971.40	2.45%	
69	Mar-12	4,640,333.70	4,518,988.00	121,345.70	2.62%	
70	Apr-12	4,969,001.61	4,839,670.26	129,331.35	2.60%	
71	May-12	5,233,481.35	5,101,338.33	132,143.02	2.52%	
72	Jun-12	5,205,052.07	5,073,836.61	131,215.46	2.52%	
73	Jul-12	4,843,812.98	4,726,409.55	117,403.43	2.42%	
74	Aug-12	4,610,422.26	4,502,480.50	107,941.77	2.34%	
75	Sep-12	4,859,222.17	4,745,836.69	113,385.48	2.33%	
76	Oct-12	4,772,088.17	4,656,469.61	115,618.56	2.42%	
77	Nov-12	4,861,615.12	4,744,478.70	117,136.42	2.41%	
78	Dec-12	4,719,552.79	4,607,806.64	111,746.15	2.37%	2.46%
79	Jan-13	4,527,502.99	4,414,305.72	113,197.27	2.50%	
80	Feb-13	4,744,496.01	4,621,906.41	122,589.60	2.58%	
81	Mar-13	4,558,506.87	4,445,691.83	112,815.03	2.47%	2.52%
AVERAGE (Jan 2009-March 2013)					2.37%	

Wholesale Electricity Spot Market

Thank You!