



**PHILIPPINE INDEPENDENT POWER PRODUCERS ASSOCIATION, INC.**  
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GMC #413	
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**Mr. Tomas B. Vivero**  
Executive Director  
GMC Office  
20<sup>th</sup> Floor, Pacific Center Building  
San Miguel Avenue, Ortigas Center  
Pasig City, Metro Manila

**Re: Comments to the Proposed 2<sup>nd</sup> Amendment to the Philippine Grid Code**

Dear Mr. Vivero,

We write further to our comments to the proposed amendments to the Philippine Grid Code. We are grateful for the opportunity to explain our comments during the public consultation held last October 30, 2013 however, we note that not all comments were discussed due to time limitation. We are thankful however, to be given another opportunity to comment on the proposed changes taking into consideration the matters discussed during the public consultation.

Due to the extent of the changes and the complexity of issues relating thereto, we would like to request for additional time to comment on each and every provision, as may be necessary. Nonetheless we would like to take this opportunity to discuss some key points.

#### **1. GMC Membership**

We note that there were proposed changes to the GMC Membership, particularly the removal of Grid Owner and replacement thereof with Grid Operator. Further, the Grid Owner was considered as a government representative and was given a non-voting seat.

A direct result of the granting of a voting seat to the Grid Operator separate and distinct from the System Operator is to give the National Grid Corporation of the Philippines 2 voting seats in the GMC. While we understand that there was a need to establish the separate duties and responsibilities of the Grid Operator and System Operator, this does not address the concern that the Grid Operator and System Operator are under the same management and are not managed independently. Consequently the National Grid Corporation of the Philippines is given preferential representation having 2 seats in the GMC.

Furthermore, the EPIRA Sec. 2 (j) declares that it is state policy *"to establish a strong and purely independent regulatory body to ensure consumer protection and enhance the competitive operation of the electricity market."* In this regard, given that the GMC is part of the regulatory system of ERC, it is suggested that the Chairman of the GMC be an independent member. Noting that it will be difficult to find such person who understands the technical complexity of operating a power system, an option is to make Transco a voting member and at the same time chairman of GMC. In addition to this, it is important the Transco retain and continue to improve its technical competency in operating the power system to ensure that it has the technical knowhow to operate the system once the concession agreement is terminated. Thus, it is suggested that Transco be mandated to retain and post engineers to monitor the operation of the system 24/7 as part of its monitoring function and "learning-by-doing" process.



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**2. GMC Sub-committees**

To strengthen the understanding and operation of the PGC by stakeholders, it is suggested that GMC prepare several manuals to embody in detail the high level concepts outlined in the PGC, such as:

- Grid Planning Manual which will embody all the procedures and standards in preparing the demand forecast, evaluating and making recommendations on TDP, interconnection and major grid reinforcements and expansion projects;
- Rules and Procedures Manual;
- Budget Manual
- Manual for the Preparation of Grid Operating and Maintenance Program
- Emergency Procedure Manual

**3. System Impact Study**

The System Impact Study (SIS) is a very important requirement for the interconnection of a User system to ensure that it will not impact the safe, secure, stable and reliable operation of the transmission system and identify the necessary reinforcement to the transmission system. For the Users, in particular, generation facility developers, the SIS is a critical path in the overall development process and presents a significant barrier to entry especially when the completion of the SIS is delayed. Thus, it is suggested that the processing of application for grid interconnection should have definite timetable and penalties be applied if such timetable are not met.

**4. Generator Classification**

GMC should clarify the rationale behind the classification of generators into large and small generators. If the rationale is on the impact of the generation unit on the security, stability and/or reliability of the system, then it is suggested that GMC conduct an independent and impartial study to determine the capacity sizes of generators that will result to such a significant impact on grid operation.

**5. Embedded Generation**

Embedded generators are largely defined as generating units that are connected to the distribution utilities' system. Since the latter are connected to the grid, embedded generators are regarded as indirectly connected to the grid. There are a range of generation technologies and capacity sizes that are used as embedded generation including conventional thermal generation and such technologies as combined heat and power (CHP), fuel cells, renewable energy such as rooftop PVs which maybe exporting energy through net metering arrangement (in accordance with the RE Law), and even industrial generators (used by self-generating industrial customers which are synchronized to the distribution system and may export portion of its output).

Embedded generation has great potential to reduce overall system cost by providing more efficient power generation system since it is close to the point of energy utilization and sized to match local demand. The benefits are as follows:

- System benefits in terms of reduction in distribution and transmission losses, voltage support, improved reliability, security and stability of supply, postponement or even complete avoidance of system infrastructure investments/upgrades in both the distribution and transmission networks.
- Social benefits include reduction of carbon footprint/greenhouse gas emission (in case of renewable energy and natural gas fired turbines).
- Economic savings to the consumers in terms of reduction in transmission wheeling charges and WESM line rental charges, and dampening of the volatility of the WESM prices.

Given these benefits, we believe that embedded generation should be encouraged as a strategy to lower overall supply cost to consumers. While EPIRA mandates (Sec 9e) that *"the grid operator of Transco shall provide central dispatch of all generation facilities connected, directly or indirectly, to the transmission system,"* we strongly suggest that GMC undertake an independent and impartial study to determine the appropriate capacity limit of embedded generators and technology that should be subjected to central dispatch by the system operator. Such study should take note of the technical and economic benefits of embedded generation in lowering supply costs to end-users. This should also take into consideration the cost of equipment (i.e., RTU, communication, etc.) necessary to connect the generator to the SCADA/EMS system used for central dispatch. It should be noted also that EPIRA recognizes embedded generation (connected indirectly) and such need only be centrally dispatched.



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It is not also necessary that the interconnection of embedded generation to the distribution utilities' system be subjected to System Impact Study, especially when such embedded generation's capacity is not significant to impact the secure, stable and reliable operation of the distribution utility system and not exporting energy to the grid. Such requirement will only provide greater barrier to entry for embedded generation which, as discussed above, provide a number of system, environmental and economic benefits.

**6. Operating States**

EPIRA Sec. 2b states that it is the policy of the state to ensure the **quality, reliability, security and affordability** of the supply of electric power. Also, among the defined functions and responsibilities of the NGCP are: (EPIRA Sec. 9b) to **provide open and non-discriminatory access** to its transmission system to all electricity users; (EPIRA Sec. 9c) ensure and maintain the **reliability, adequacy, security, stability and integrity** of the nationwide electrical grid; and (EPIRA Sec. 9d) improve and expand its transmission facilities xxx to **adequately serve** generation companies, distribution utilities and suppliers. Thus, the grid should be designed, constructed and operated in such manner, that under **Normal State**, the grid will provide its intended function within the limits of the reliability, adequacy, security, and stability criteria defined; will not result to inadequate service nor result to discriminatory access by Users. Correcting an abnormal condition through re-dispatch of generation units which are supposed to be scheduled economically based on the merit order prepared by the market operator in compliance with the WESM rules is tantamount to discriminatory action by the System Operator and inadequate service by the Grid Operator. Thus, such action to correct an abnormal condition should be regarded as a non-Normal State. It should be also noted that such generation re-dispatch will result to higher cost to end-consumers since out of merit generators are re-dispatched while on-merit generators are constrained off. As a result, both on-merit generators and end-consumers suffer in terms of lost opportunity for the former and higher cost of electricity for the latter (contrary to Sec. 2b – affordability).

**7. Ancillary Services**

EPIRA Sec. 9 defines the following functions and responsibilities of Transco or its concessionaire (among others): (EPIRA Sec. 9c) ensure and maintain the **reliability, adequacy, security, stability and integrity** of the nationwide electrical grid; and (EPIRA Sec. 9d) improve and expand its transmission facilities xxx to **adequately serve** generation companies, distribution utilities and suppliers requiring transmission service and/or **ancillary services** through the transmission system. Thus, the responsibility for ensuring and maintaining the reliability, adequacy, security, stability and integrity of the nationwide electrical grid and providing ancillary services lies with NGCP. Thus, rules that shifts the burden of mandatory provision of ancillary services to the generators runs contrary to the intent of the EPIRA Law. In this regard, the PGC should mandate that NGCP procure the necessary ancillary services required by the system and/or its users. Such ancillary services shall include primary, secondary and tertiary reserve ancillary services, reactive support, black start, automatic load dropping and manual load dropping.

The PGC should explicitly and adequately define the requirements of such ancillary services in terms of quality, quantity and qualification of ancillary services providers in a separate Manual of Ancillary Services. This manual should be separate from the Ancillary Services Procurement Plan (ASPP) prepared by NGCP and approved by ERC. The latter should only be limited to the manner by which NGCP shall procure ancillary services. The Manual of Ancillary Services should also define in detail the manner by which the performance of ancillary services providers shall be monitored by the System Operator, reported to the GMC and post-audited by GMC.

With respect to the proposal to require generating units operating under free governor mode to provide Primary Reserve and generating units operating under AGC mode to provide Secondary Reserve, it is very clear from EPIRA Sec. 9d that it is the responsibility of NGCP as the concessionaire to provide such ancillary services and not the generators. If such ancillary services will be required by NGCP from generators, then such services should be procured and properly compensated. Requiring generators to provide such services without remuneration or compensation would be tantamount to being confiscatory.



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In addition, the grid operator has at its disposal, equipment that has the capability to adjust for good voltage regulation. One is the On-Load Tap Changer ("OLTC"). The OLTC is a connection point selection mechanism in the power transformer winding with variable number of turns in steps to enable stepped voltage regulation of the output. This is normally achieved by changing the ratios of the transformers on the system by altering the number of turns in one winding of the appropriate transformer/s. Supply authorities are under obligation to their customers to maintain the supply voltage between certain limits. Tap changers offer automatic variable control under load to keep the supply voltage within these limits. About 96% of all power transformers today above 10MVA incorporate OLTC as a means of voltage regulation.

On-load tap changers generally consist of a diverter switch and a selector switch operating as a unit to effect transfer current from one voltage tap to the next. It was more than 60 years ago on-load tap changers were introduced to power transformers as a means of on load voltage control.

We urge the GMC to look into whether NGCP has optimally utilize these tap changers instead of placing the burden of NGCP's compliance to voltage limit to the generators. Specifically the generators wishes to be provided simulation and operational capabilities of these OLTC's during voltage limit incursions conducted by a third party.

In the same manner, NGCP can improve reactive power compensation to enhance the performance of the grid through series and shunt reactive power compensating devices. These devices are generally used to modify the natural electrical characteristics of the system generally for voltage support to reduce voltage fluctuation at a given point of the transmission grid. Reactive power compensation in the grid also improves the stability of the system by increasing the maximum active power that can be transmitted. NGCP on its part being the system operator should install these devices to correct voltage limit incursions without resorting to burdening the generators to provide reactive power. We also ask that NGCP provide a study of the capacity of capacitor banks that is needed on a per grid basis. We understand that NGCP has installed several capacitor banks that have significantly improved the voltage in a particular area, e.g. Magapit capacitor bank in Cagayan. Lastly, we would like to propose that the GMC provide an additional section that will standardize impedance requirement for the equipment of the grid operator.

Finally, before the PGC mandates that primary and secondary reserves be provided by generators under free-governor or AGC modes, GMC should first conduct a study if such scheme is technically feasible and what benefit or harm will such free governor or AGC mode of operation do to the generator's equipment and operation.

**8. Monitoring and Control of Generator Equipment**

EPIRA (Sec. 5) divides the electric power industry into four (4) separate sectors which effectively separating the generation from transmission (as against the vertically integrated NPC pre-EPIRA). On the other hand, Sec. 9e places on NGCP the function and responsibility of providing "*central dispatch of all generation facilities connected, directly and indirectly, to the transmission system.*" Recognizing the commercial separation of the generation and transmission sectors and the System Operator function of central dispatch of generators, we believe that the intent of the law is not for the System Operator to control the operation of the generator equipment but only to provide dispatch instructions to operators of the generator. Thus, in concept, any communication equipment that will be connected at the generator's facility will be intended only to enable the generator to communicate with the System Operator, transmit signals to the SCADA/EMS for monitoring only of relevant generator parameters, and not to provide or enable the System Operator or the Grid Operator to control the generator's equipment.

Such monitoring equipment should be provided by the Grid Operator and that the space provided by the User should be of standard size and stipulated in the PGC. Also, the communication protocol used on such communication/monitoring equipment should be based on internationally accepted communication protocol and not proprietary.



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**9. Renewable Energy/Intermittent Resources**

Republic Act 9513, "An Act Promoting the Development, Utilization and Commercialization of Renewable Energy Resources and for Other Purposes", otherwise known as the Renewable Energy Act of 2008, aims to: (1) accelerate the exploration and development of RE resources; (2) increase its utilization; (3) encourage its development and utilization as tools to prevent or reduce harmful emissions; and (4) establish the infrastructure to carry out such activities.

In Section 20 of the said Act, it is further stated that:

"Section 20. Intermittent RE Resources. - TRANSCO or its successors-in-interest, in consultation with stakeholders, shall determine the maximum penetration limit of the Intermittent RE-based power plants to the Grid, through technical and economic analysis. Qualified and registered RE generating units with intermittent RE resources shall be considered "must dispatch" based on available energy and shall enjoy the benefit of priority dispatch. All provisions under the WESM Rules, Distribution and Grid Codes which do not allow "must dispatch" status for intermittent RE resources shall be deemed amended or modified. The PEMC and TRANSCO or its successors-in-interest shall implement technical mitigation and improvements in the system in order to ensure safety and reliability of electricity transmission.

"As used in this Act, RE generating unit with intermittent RE resources refers to a RE generating unit or group of units connected to a common connection point whose RE energy resource is location-specific naturally difficult to precisely predict the availability of RE energy resource thereby making the energy generated variable, unpredictable and irregular and the availability of the resource inherently uncontrollable, which include plants utilizing wind, solar, run-of-river hydro or ocean energy."[emphasis provided]

Meanwhile, we note that the GMC is maintaining its current proposed definition of VRE as follows:

"Variable Renewable Energy Generating Facility. A facility consisting of one or more Generating Units, where electric Energy is produced from a source that is renewable, cannot be stored by the facility owner or operator and has inherent variability that is beyond the control of the facility owner or operator. For the avoidance of doubt, it refers to Wind Farms and Photovoltaic Generation Systems."[emphasis provided]

We are in the position that amendments of the PGC should already follow that of the Renewable Energy Act of 2008. Moreover, the WESM Rules should also be amended to follow it. The GMC should not create more complications, such as introducing another set of variable REs different from the RE Act of 2008 and the WESM Rules. Limiting the VRE to wind and solar will create a disincentive for run-of-river, ocean and other forms of VRE. This again runs counter to the RE Act of 2008, which are incentivized and promoted the use of these renewable resources.

We are reiterating our position that the PGC should be consistent with the RE Act of 2008, which VRE should be defined as follows:

Variable Renewable Energy Generating Facility. RE generating unit or group of units connected to a common connection point whose RE energy resource is location-specific naturally difficult to precisely predict the availability of RE energy resource thereby making the energy generated variable, unpredictable and irregular and the availability of the resource inherently uncontrollable, which include plants utilizing wind, solar, run-of-river hydro or ocean energy.



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Moreover, the draft PGC amendment alleviated the concern on the non-inclusion of run-of-river as VRE, by including the definition of "Non-scheduled Generating Unit" as per WESM Rules. Since the current draft of the WESM Rules is still not in conformity with the RE Act of 2008, then the GMC is also including an incorrect definition of non-scheduled generating unit.

A non-scheduled generating unit should also include ALL those intermittent generation as per the RE Act of 2008. By doing so, it will also cover the "must-dispatch" provision in Section 20 of the RE Act of 2008.

In view of our above comments, we would like to reiterate our request to discuss the same with you together with your consultant at your convenience.

Very truly yours,

A handwritten signature in black ink, appearing to be "Luis Miguel O. Aboitiz", written in a cursive style.

**Luis Miguel O. Aboitiz**  
President