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Dear Ms Ocampo

### **Certification of the Trading Operations Division (TOD) Software**

PA Consulting Group (PA) has been asked by the Philippine Electricity Market Corporation (PEMC) to act as an independent market auditor to perform certification testing of the TOD software to verify its compliance with the Wholesale Electricity Spot Market (WESM) Rules.

#### **Certification**

This certification is specific to the Excel spreadsheet programs listed below that are used by PEMC to verify and process metering data for the purpose of:

- Extracting and formatting data from TOD databases and operator log files for use in BSMD processes
- Identifying Price Substitution methodology (PSM) conditions and determining substitute prices
- Extracting and formatting market data for publication on the WESM website
- Determination of marginal plants and prices for use in BSMD processes

As a result of our examination of the WESM Rules, the Market Manuals, PEMC's internal procedure documentation and the TOD spreadsheet programs, we are able to provide the following certification with respect to the TOD software:

*We certify that, when used correctly, the TOD spreadsheet programs listed below, as used by the PEMC in the 83<sup>rd</sup> Billing Period and provided to PA in July 2013, will perform substantially in compliance with the WESM Rules as amended by Department of Energy (DOE) Department Circulars up to and including DC2012-02-0001, together with the associated WESM Manuals.*

This certification relates solely to the calculations that are performed within the TOD spreadsheet programs and makes no comment on the general suitability of the programs in

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performing the required tasks. It covers only the automated processes within the programs and assumes that all associated manual tasks are performed as required and without error.

### **Scope of the review and certification**

The scope of the review has included, at a minimum:

1. Examination of the algorithms used in the TOD software to determine if the algorithms are mathematically equivalent to the prescriptions in the WESM Rules and associated Market Manuals;
2. Tests to determine whether the outputs of the TOD software are consistent with those which result from the application of the prescriptions in the WESM Rules and associated Market Manuals; and
3. Identification of inconsistencies and non-compliance of the TOD software with the WESM Rules and associated Market Manuals.

The independent audit does not include ensuring that the computational performance of the software is in accordance with any requirements of the WESM Rules.

### **List of software programs covered by this certification**

This certification is limited to the following programs:

1. Marginal Tool
2. MRR Summary Program
3. Monthly Billing Macro
4. PEN Report Program
5. Reference Input Program
6. MCP Generate Program

Note that the PSM Congestion program, which is an executable program not based on Excel, is the subject of a separate certificate.

### **Nature of the tests conducted and results obtained**

In performing the review and certification of the TOD software, we have:

- Examined the WESM Rules and the Market Manuals to fully understand what functions the software is required to perform, what data it is required to use, what results the software is required to produce, and how it is to calculate them; and
- Conducted a series of tests on the software to determine whether the software properly performs these functions and correctly calculates the results required. In this respect, the software was tested for its accuracy in representing the requirements of WESM Rules and Market Manuals.

Provided the TOD software is used in the manner intended and according to the correct manual procedures, and with data that conforms to the requirements specified in the PEMC documents or, if not explicitly discussed therein, is within the expected range of values for

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data pertaining to the characteristics of the Philippine electricity system, we have found that the TOD spreadsheet programs perform all functions and correctly calculate the required results.

### **Disclaimer of Liability**

Despite the extensive testing of the software, this certification is not, and cannot be, in the form of an absolute guarantee.

Further, our certification is only valid if the software is used with care and for the purpose for which it was designed and tested.

In furnishing this certification, PA specifically limits its liability to the cost of repeating all and any certification evaluations, and any necessary re-certification in reliance on those evaluations. No person shall be entitled to claim against PA, any losses or damage whether direct, indirect, special or consequential, in excess of that limitation. PEMC shall ensure that all persons or parties who may rely on this certification are aware of this limitation of liability.

Yours sincerely



Steve Thornton  
Member of PA's Management Group