

## ANNEX A DOE DEPARTMENT CIRCULAR NO. \_

### **Appendix D            Metering Data Validation and Estimation Procedures**

This appendix provides suggested *metering installation* validation and estimation procedures as reference to *Retail Metering Services Providers* when performing its responsibilities under Clause 4.6.2 of the *Retail Rules*.

#### **A. Suggested Validation Tests**

1. Current and Voltage Check

This indicator detects the loss of voltage and/or current input to the *meter* due to failure of the supply from one or more *instrument transformers* or tampering.

2. Load Profile vs. Meter Reading

This checks for corruption related to the *meter* multiplier.

3. Intervals Found vs. Interval Expected

This checks for missing intervals.

4. Time Synchronization

This checks for synchronism of meter clock to Philippine Standard Time/Data Collection System time.

5. Number of Power Outage Intervals

This indicator allows periods of zero primary power to be identified.

6. Cyclic Redundancy Check /Read-Only Memory /Random Access Memory

This is part of the internal components of a *meter*, which is automatically flagged when failing.

7. Meter Clock Overflow

Flag generated by the *meter* indicating failure of internal electronics.

8. Hardware Reset

Flag generated by the *meter* indicating failure of internal electronics.

9. Time Reset

This indicates the interval in which the meter clock time has been changed creating either a shorter or longer interval.

10. Data Overflow on Interval

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This indicates that the meter is creating more pulses than it can record in an interval or Data Collection System (DCS) can accommodate in an interval.

### 11. Number of Channels

The actual number of data channels from the meter does not match the number expected at the data collection System.

### 12. Changed Device ID

The internal device identifier does not match the value registered at the data collection system.

### 13. Watchdog Time Out

This is the failure of the meter to return data in response to a poll within the required time frame. This is reported by some recorders when a watchdog register is tripped or activated.

### 14. Parity Error

This indicator is determined by a parity error bit that is set by a recorder on a channel of data during status check or read/write function.

### 15. Event Log Check

This checks error messages and alarms recorded by the meter.

## B. Suggested Daily Estimation Procedures

Any value in the *metering data* that falls outside the maximum and minimum range of the *metering data* as recorded in the database of the *Retail Metering Services Provider* may be estimated using the following:

### 1. Historical Values

The values with 'uncertain' status may be replaced using the following historical data:

- a. Value during the same hour last week,
- b. Value during the same hour the previous day, and
- c. Average of the values during the whole previous day.

### 2. Backup Meter

The values with 'uncertain' status may be replaced with the values from the backup meter during the same hour.

### 3. Previous Hour Data

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The values with 'uncertain' status may be replaced using the reading from the previous hour.

### C. Suggested Monthly Estimation Procedures

#### 1. Interpolation of Metering Data

If *metering data* of one (1) to four (4) consecutive fifteen-minute intervals are missing, *metering data* may be estimated by means of interpolation between the available intervals.

#### 2. Back-up Meter Data

If *metering data* of more than four (4) consecutive fifteen-minute intervals are missing, *metering data* from the back-up *meter* may be directly substituted for the missing data from the main *meter* provided that the historical difference of *metering data* between the main and backup *meters* does not exceed more than 0.2%. If the historical deviation exceeds 0.2% but not more than 0.6%, a correction factor based on the historical difference between the main and backup *meters* is suggested to be applied on the *metering data* from the backup *meter* before it is substituted for the missing data.

#### 3. From Grid Off-Take Meter

If both the main and backup *meters* fail, the *metering data* on the *metering point* of the facility of the *Contestable Customer* may be estimated using the *metering data* from its *grid off-take meter*. The *metering data* of the *Contestable Customer* may be estimated by adjusting the *metering data* of its grid off-take meter using a historical factor obtained through the comparison of the historical grid off-take *metering data* and historical *Contestable Customer* main *metering data*. This method of estimation is not applicable for variable loads whose historical load profile is indeterminate.

#### 4. Scientific Method of Estimation

If there is a loss of one of the phase voltages and currents, estimation may be performed through the scientific method of calculation using the average remaining phase voltages or currents of good data from the historical load profile.

#### 5. Historical Meter Data

If the above methods do not provide reasonable values, the following historical data from the main *meter* may be used for estimating missing values:

- a. Values during the same hour of the previous day with the same day type (i.e., weekday or weekend),
- b. Values during the same hour of the same day last week recorded by the same *meter* (i.e. Saturday, Sunday, Holidays), and

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- c. Average value of the values during the same hour of the same day of the three (3) previous weeks recorded by the same *meter*.

This method of estimation is not applicable for variable load whose historical load profile is indeterminate.