**NAESB Accreditation Requirements for Certification of Energy Efficiency**

**Measurement and Verification Products and Services**

1. INTRODUCTION

1.1 About this Document

This document provides the technical and managerial details that an Entity seeking certification through the NAESB Energy Efficiency Measurement and Verification Certification ((EE M&V Certification) Program must demonstrate that its Energy Efficiency Measurement & Verification product or service (“EE M&V Products or Services”) meets in its Certification Practice Statement filed as part of the NAESB accreditation requirements. The following requirements are intended to support the NAESB WEQ Business Practice Standards WEQ-021 and REQ.19 Model Business Practices for Energy Efficiency.

* 1. Certification Applicability

This EE M&V Certification is limited to M&V Products or Services described in the Certification Practice Statement. An M&V Product or Service may be offered separately or as part of an integrated energy efficiency product or service. The certification applies only to the M&V process described in the Certification Practice Statement and does not imply any guarantee of product performance, demand reduction, energy savings, or economic benefit associated with the energy efficiency product, service or program. The certification does not warrant compliance with applicable Governing Documents, Wholesale or Retail product specifications under any applicable tariff, or any other regulatory requirements associated with a Federal or State energy efficiency program or building codes.

1. Definitions

2.1 Certification Practice Statement: A statement of the practices which a certification authority employs in issuing certificate.

2.2 Energy Efficiency: Installed measures on retail customer facilities that achieve a permanent reduction in electric energy usage while maintaining a comparable quality of service.

2.3 **Energy Efficiency Baseline**: The load (MW) that would have existed but for the implementation of an Energy Efficiency measure, product or service.

2.4 **Measurement & Verification (M&V):**  The process of determining reductions in usage and/or Demand resulting from a Demand Response or Energy Efficiency measure, product or service.

2.5 **Validating, Editing, and Estimation (VEE):**  The process of confirming the accuracy of raw meter data and, if necessary, replacing corrupt or missing data.  VEE guidelines are published in the Edison Electric Institute’s Uniform Business Practices for Unbundled Electricity Metering.

2.6 Entity: The organization, party or body seeking to provide its Certification Practice Statement pursuant to the requirements hereof.

2.7 Governing Documents: Documents that determine the interactions among parties, including but not limited to, applicable law, regulatory documents (e.g. tariffs, rules, regulations), contractual agreements, operational manuals, and other relevant models and operational procedures.

1. Certification Practice Statement

The Entity must submit a Certification Practice Statement which shall demonstrate and describe how its EE M&V Products or Services meets the following requirements and to which the Entity shall certify the accuracy of the representations contained in the Certification Practice Statement.

3.1 Requirements

3.1.1 The Entity must identify the nature or character of the EE measure, product or service[[1]](#footnote-1) its EE M&V Products or Services are intended to measure and verify, including but not limited to:new construction/lost opportunity measures, existing equipment modification or retrofit; operational or manufacturing process changes; energy efficient building codes; distribution grid upgrades and automation that provides for conservation voltage or var reductions; etc.

3.1.2 The Entity must verify that the EE M&V Products or Services for which certification is sought utilize one or more of the Measurement and Verification methodologies described in WEQ-021-3.6.1 and/or REQ.19.3.1. The Certification Practice Statement should indicate and justify the use of any statistical methodology that is not described in WEQ-021-3.6.1 and/or REQ.19.3.1. under provisions established in WEQ-021-3.6.2 and REQ.19.3.1.2.

3.1.3 The Entity must describe in its Certification Practice Statement the underlying assumptions it applies to the determination of the Energy Efficiency Baseline consistent with WEQ-021-3.2.6 and REQ.19.3.2.1. and certify the application of the Energy Efficiency Baseline conditions described in WEQ-021-3.7 and/or REQ.19.3.2 through the Entity’s Certification Practice Statement.

3.1.3.1 The Entity shall describe the Energy Efficiency Baseline conditions consistent with WEQ-021-3.7.1 and/or REQ.19.3.2.2 that are applicable to the EE measure, product and/or services that are affected by the M&V Products or Services described in the Certification Practice Statement.

3.1.3.2 The Entity shall certify that where applicable, it shall use in its M&V calculation the appropriate baseline e.g. nameplate rating of existing equipment, or applicable state code, federal product efficiency standard, or standard practice, whichever is most stringent..

3.2 Energy Efficiency Baseline Conditions

The Entity shall specify in its Certification Practice Statement compliance with each of the following applicable requirements and consistent with WEQ-021-3.7 and REQ.19.3.2.:

1. Where the M&V calculation includes variable load equipment or equipment whose operation is time-dependent or weather-dependent, the Energy Efficiency Baseline conditions shall be calculated for each hour across the applicable measurement duration consistent with WEQ-021.3.10 and REQ.19.3.5.
2. Where the M&V calculation results from measurement of variable load equipment or equipment whose operation is time-dependent or weather-dependent and where the Energy Efficiency Baseline conditions are calculated using historical hourly load or output data, the Entity shall demonstrate that it shall meet the Statistical Significance and Statistical Sampling requirements consistent with WEQ-021-3.8 and REQ.19.3.3, respectively.
3. Where the Energy Efficiency Baseline conditions are calculated *Ex-Ante* using an average of historical hourly load data over some period that occurred prior to application of the Energy Efficiency measure, product or service, the Entity shall demonstrate and verify that its M&V process provides for coincident operating conditions existing during the applicable measurement period. The operating conditions during the period establishing the Energy Efficiency Baseline, shall be, to the extent possible, coincident to the operating conditions of those performance hours that are observed after the Energy Efficiency measure, product or service is installed.
4. Where the Energy Efficiency measures, products or services involve replacement of existing and operating equipment, including those within or beyond than their effective useful life, the Energy Efficiency Baseline conditions shall be either (i) the *Ex-Ante* load (MW) of that operating equipment during such equipment removal or reduced use; or (ii) the nameplate rating of the equipment that meets the level of efficiency required by applicable state code, federal product efficiency standard, or standard practice, whichever of (i) or (ii) is most stringent as specified by the Governing Documents of the regulating authority.
5. When M&V calculation involves the replacement of failed equipment, the baseline condition shall be the nameplate rating of the equipment meeting the level of efficiency required by applicable state code, federal product efficiency standard, or standard practice, whichever is most stringent. If there is no applicable state code or federal energy efficiency standard, then standard practice shall be used as the basis for establishing Energy Efficiency Baseline conditions, which process shall be described in the Certification Practice Statement.

3.3 Statistical Requirements for Sampling Methodologies

Where an Entity’s M&V methodology uses statistical estimation techniques, such Entity shall describe the statistical method and practices it uses in its Certification Practice Statement and shall certify that its techniques meet the following requirements for statistical significance consistent with WEQ-021-3.8 and REQ.19.3.3:

3.3.1 Where the applicable Governing Documents require a bi-directional two tailed test of statistical significance, statistical analyses shall have a minimum sample error and precision level of 80/10.

3.3.2 Where the applicable Governing Documents require a one-tailed test of statistical significance, statistical analyses shall have a minimum sample error and precision level of 90/10.

3.3.2 The application of a population coefficient of variation (“c.v.”). If the c.v. is unknown when a sample size is designed, an estimated c.v. may be used subject to the following conditions:

3.2.2.1 The criteria for estimated c.v. used in sample design and implementation shall comport with specifications established in WEQ-021-3.8.3 and REQ.19.3.3.1.2, not less than 0.5 for homogeneous populations and not less than 1.0 for heterogeneous populations

3.2.2.2 The population sampling error and precision shall be recalibrated using a measured c.v. consistent with WEQ 021-3.8.4 and REQ.19.3.3.1.2.

3.3.3 Population sampling over heterogeneous geographic zones shall be identified in the Certification Practice Statement. Otherwise sampling studies from one zone to another shall conform to bias control criteria set forth in WEQ-021-3.8.5 and REQ.19.3.3.1.5. These sampling schemes shall meet the error and precision requirements under WEQ-021-3.8.2, and REQ.19.3.3.1.1 and identified and described in the Certification Practice Statement.

3.3.4 Certification Practice Statement shall identify that sample bias control is implemented in all sampling consistent with sample bias identified in WEQ-021-3.8.6 and REQ.19.3.3.1.5. The Certification Practice Statement shall identify sample bias controls that are implemented along with the sources of bias they are intended to mitigate.

3.4 Calculation Methodologies

The Entity shall identify in its Certification Practice Statement the calculation methodologies used in the M&V activity. This identification shall include all variables used in the M&V calculation; controls and validation for use of proxy variables, stipulated values and modifiers consistent with and as applicable to WEQ-021-3.9.1 and REQ.19.3.4. Additional specific requirements for calculation methodologies include:

3.4.1. Provide justification and engineering basis for use of proxy variable(s) in the M&V measurement calculations Such proxy variable(s) may include but are not limited to: coincidence factor, realization rate, equipment failure rate, weather normalization for weather sensitive loads, temperature, humidity, flow, concentration, volts, amps, lumens, and quantity. Such justification(s) shall demonstrate correlations between the metered/monitored proxy variable(s) and the energy efficiency measurement. Such correlations shall be accepted provided there is statistically valid evidence provided in short-term measurement, spot measurements, or regression analyses;

3.4.2 Provide detailed information on controls for proxy variable(s) developed over the applicable measurement period;

3.4.3 Provide justification and engineering basis for stipulated variables used in the M&V calculations

3.4.4 Provide details on use of any engineering correlations based on documented engineering algorithms or simulation(s);

3.4.5 Provide details on use of any equipment data supplied by a manufacturer or recognized industry group or government-sponsored program.

3.5 Measurement and Monitoring Requirements

The Entity shall identify and describe in its Certification Practice Statement the monitoring parameters and the measurement variables used in the collection of data for purposes of its M&V calculations consistent with WEQ-021.3.10. and REQ.19.3.5. The description in its Certification Practice Statement shall

3.5.1. Demonstrate how the duration and frequency of metering and monitoring is sufficient to provide an accurate representation of the Energy Efficiency Baseline and the *Ex-Poste* conditions in the M&V calculation.

3.5.2. Demonstrate how the parameters and variables identified are applicable to the category of equipment, measure or practice being measured and verified, consistent with WEQ-021.3.10.1. and REQ.19.3.5.

3.5.1.1 When measuring performance associated with a retrofit or system level operational changes,

* Spot or short-term electrical demand measurements would only be used when variations in operations are not expected to change across the measure life;
* When temporal variations are expected, measurements shall be made over a period of time sufficient to represent performance during the relevant period of time to establish the baseline period and across the measure life.

3.5.3. Demonstrate controls are used in the M&V practice applicable to the monitoring frequency and duration of sampling to reduce measurement error and biases and to ensure accurate representation of the M&V calculation results during the performance hours or minimum reporting interval consistent with statistical significance requirements in WEQ-021-3.8.

3.5.4. Demonstrate that monitoring frequency used in the measurement calculations result in statistical significance consistent with statistical precision and accuracy requirements set forth in WEQ-021-3.8.2 and REQ.19.3.3.

3.6 Measurement Equipment Specifications

The Entity shall identify and describe in its Certification Practice Statement, the measurement equipment devices that it uses as part of its EE M&V Products or Services. The Entity shall certify in its Certification Practice Statement that any measurement or monitoring data that it uses in its M&V calculation shall be obtained from measurement equipment that satisfies all the specifications and requirements set forth in WEQ-021-3.11.1 thru WEQ-021-3.11.15 and REQ.19.3.6.1 thru REQ.3.6.3.

3.7 Data Validation

An Entity shall certify in its Certification Practice Statement that its EE M&V Products or Services includes validation of measured data using standard VEE procedures and that its validation process includes checks on any data, including but not limited to billing meter data, data from an individual facility, or data from energy consuming equipment and is consistent with the specifications and requirements set forth in WEQ-021-3.12 and REQ.19.3.7.

3.7.1. Details on the application of data validation shall include at a minimum, but not limited to those as specified in WEQ-021-3.12 and REQ.19.3.7:

3.7.1.1 Time Check

3.7.1.2. Sum Check

3.7.1.3. High/Low Check

3.7.1.4. Zero Value Check

3.7.1.5. Identification of Estimated Data

3.7.1.6. Identification of Data Classifications

1. Energy Efficiency as defined in WEQ-000 and REQ.0.2.234 [↑](#footnote-ref-1)