Template: M&V Professional Report

Version 1.3, April 2023

Purpose of this template

The Energy Savings Scheme Rule of 2009 **(ESS Rule**) requires that Measurement and Verification (**M&V**) Professionals be used to confirm the validity of energy models used by Accredited Certificate Providers (**ACPs**) when implementing activities that use the Project Impact Assessment with Measurement and Verification (**PIAM&V**) method.

ACPs must ensure that an approved M&V Professional deems appropriate the various aspects of their measurement procedures, energy models and parameters in accordance with the requirements of clause 7A of the ESS Rule and PIAM&V Method Requirements published by IPART. M&V Professionals must provide their validation and written explanatory reasoning using this template.

Instructions for using this template

To use this template, you must complete every section. The completed report will be reviewed by PIAM&V auditors and must include sufficient reasoning to justify your opinion of the various aspects of the energy models and parameters.

Reports without sufficient explanatory reasoning may be assessed as not meeting the requirements of the ESS Rule and/or PIAM&V Method Requirements published by IPART and may impact the validity of the energy savings certificates for the relevant implementation.

Document control

| Version Number | Change Description | Date Published |
| --- | --- | --- |
| V1.0 | Initial release | September 2016 |
| V1.1 | Updated to reflect amendments to the ESS Rule | March 2020 |
| V1.2 | Minor amendments to update formatting and fix text boxes | October 2020 |
| V1.3 | Updated to reflect amendments to the ESS Rule | April 2023 |

Report details

|  |  |
| --- | --- |
| M&V Professional name | Click here to enter text |
| ACP name (company) | Click here to enter text |
| RESA name | Click here to enter text |
| Implementation address | Click here to enter text |
| Implementation date | Click here to enter text |
| Project description | Click here to enter text |
| EUE included in the measurement boundary | Click here to enter text |
| Date of this report | Click here to enter text |

Baseline Energy Model

|  |  |
| --- | --- |
|  | Explain how the Baseline Energy Model is appropriate for the Implementation (in accordance with clauses 7A.2 and 7A.3 of the ESS Rule). |

The Baseline Energy Model must:

* use an acceptable energy model type as outlined in clause 7A.2(a) of the ESS Rule
* be dependent on Independent Variables and Site Constants (where relevant) established by measurements taken under normal operating condition
* if the model is for new end-user equipment, be established based on Independent Variables and Site Constants that incorporate the average energy performance of the same type of equipment
* if doing annual creation, use a baseline Measurement Period that has an end date that is less than 10 years before the end date of the measurement period.

|  |  |
| --- | --- |
| Provide explanatory reasoning | Click here to enter text |

Operating Energy Model

|  |  |
| --- | --- |
|  | Explain how the Operating Energy Model is appropriate for the Implementation (in accordance with clauses 7A.2 and 7A.4 of the ESS Rule). |

The Operating Energy Model must:

* use an acceptable energy model type as outlined in clause 7A.2(a) of the ESS Rule
* be dependent on Independent Variables and Site Constants (where relevant) established by measurements taken under normal operating conditions.

|  |  |
| --- | --- |
| Provide explanatory reasoning | Click here to enter text |

Measurement Procedures – Baseline Energy Model

|  |  |
| --- | --- |
|  | Fill in this section if there were any changes made to the baseline Measurement Procedures since validation was made in the Preliminary M&V Professional Report. If changes were made, please provide explanatory reasoning of amended Measurement Procedures. |

The Measurement Procedures must:

* be based on a baseline Measurement Period that meets the requirements of clause 7A.5(a)-(b)
* include any time periods in which Independent Variables may reasonably be expected to lead to the Implementation increasing consumption of eligible fuels (clause 7A.5(f1))
* cover all relevant Independent Variables that impact the energy consumption of the end-user equipment
* have sufficient frequency of measurements over the baseline Measurement Period to establish normal operating conditions (consider frequency of measurements in respect of power draw, availability of metered energy data and other relevant factors)
* define which items of end-user equipment will have their eligible fuel consumption measured (the measurement boundary)
* specify measurement equipment (meters) or other sources of measurements
* define the calibration procedures, accuracy and precision of such measurement methods
* identify and record any Non-Routine Events that occurred during the baseline Measurement Period, following the requirements in clauses 7A.5B and 7A.5B1 of the ESS Rule.

|  |  |
| --- | --- |
| Provide explanatory reasoning | Click here to enter text |

Measurement Procedures – Operating Energy Model

|  |  |
| --- | --- |
|  | Explain how the Measurement Procedures for measuring eligible fuel consumption (electricity, gas, diesel, biofuel, biomass, biogas, on-site renewables), Independent Variables, Site Constants and other parameters are appropriate for the Operating Energy Model (in accordance with clause 7A.5 of the ESS Rule). This includes procedures to make non-routine adjustments to account for non-routine events (clause 7A.5B1). |

The Measurement Procedures must:

* be based on an operating Measurement Period that meets the requirements of clause 7A.5(a)-(b)
* include any time periods in which Independent Variables may reasonably be expected to lead to the Implementation increasing consumption of eligible fuels (clause 7A.5(f1))
* cover all relevant Independent Variables that impact the energy consumption of the end-user equipment
* have sufficient frequency of measurements over the operating Measurement Period to establish normal operating conditions (consider frequency of measurements in respect of power draw, availability of metered energy data and other relevant factors)
* define which items of end-user equipment will have their eligible fuel consumption measured (the measurement boundary)
* specify measurement equipment (meters) or other sources of measurements
* define the calibration procedures, accuracy and precision of such measurement methods
* identify and record any Non-Routine Events that occurred during the operating Measurement Period, following the requirements in clauses 7A.5B and 7A.5B1 of the ESS Rule.

|  |  |
| --- | --- |
| Provide explanatory reasoning | Click here to enter text |

Eligible fuel consumption, Independent Variables and Site Constants

|  |  |
| --- | --- |
|  | Explain how the selected energy consumption, Independent Variables and Site Constants are appropriate for the Implementation (in accordance with clause 7A.6 of the ESS Rule). |

The selected parameters:

* must have assigned values for eligible fuel consumption, Independent Variables and Site Constants relevant to the Implementation for each time period in each Measurement Period. Values must be assigned to Site Constants for each time period in the Measurement Period, even if the Site Constant does not change
* should be documented and based on a clearly defined selection method, which also includes justification for excluded variables
* must be based on a defined procedure if measurements have been converted
* must have the same frequency of measurement for both the Baseline and Operating Energy Models.

|  |  |
| --- | --- |
| Provide explanatory reasoning | Click here to enter text |

Normal Year

|  |  |
| --- | --- |
|  | Explain how the Normal Year is appropriate for the Implementation (in accordance with clause 7A.7 of the ESS Rule). |

The Normal Year:

* must provide values for each Independent Variable and Site Constant over a full year
* must represent a typical year for operation of the end-user equipment, including typical future performance
* should take into account actual data, rather than estimates (e.g. manufacturing records)
* must include a description of all assumptions made to establish it.

|  |  |
| --- | --- |
| Provide explanatory reasoning | Click here to enter text |

Effective Range

|  |  |
| --- | --- |
|  | Explain how the Effective Range is appropriate for the Implementation (in accordance with clause 7A.7 of the ESS Rule). |

The Effective Range must be based on the range of measured values for each Independent Variable, where each Independent Variable has:

* a lower limit that is calculated in accordance with clause 7A.8(a)(i) of the ESS Rule
* an upper limit that is calculated in accordance with clause 7A.8(a)(ii) of the ESS Rule.

|  |  |
| --- | --- |
| Provide explanatory reasoning | Click here to enter text |

Interactive Energy Effects

|  |  |
| --- | --- |
|  | Explain how the method for estimating the Interactive Energy Effects is appropriate for the Implementation (in accordance with clause 7A.9 of the ESS Rule). |

Interactive Energy Effects must:

* estimate the sum of the change in consumption of each affected eligible fuel from end-user equipment for which energy consumption of each eligible fuel is not measured
* not be greater than 10% of total eligible fuel savings for each relevant eligible fuel when expressed as the sum of absolute interactive energy effects
* include identified Interactive Energy Effects for fuels that are not measured.

|  |  |
| --- | --- |
| Provide explanatory reasoning | Click here to enter text |

Accuracy Factor

|  |  |
| --- | --- |
|  | Explain how the method for determining the Accuracy Factor is appropriate for the Implementation (in accordance with clause 7A.10 of the ESS Rule). |

The Accuracy Factor should:

* take into account all material sources of error associated with the development of the model when calculating the relative precision of the relevant energy savings estimate
* correspond to the energy model type and relative precision of the energy savings estimate and be in accordance with the confidence levels outlined in Table A23 of the ESS Rule, or
* be based on another process approved by IPART.

|  |  |
| --- | --- |
| Provide explanatory reasoning | Click here to enter text |

Persistence Model

|  |  |
| --- | --- |
|  | Explain how the Persistence Model is appropriate for the Implementation (in accordance with clause 7A.13 of the ESS Rule). |

The Persistence Model must:

* be based on a method accepted by IPART
* estimate the expected lifetime of the End-User Equipment in whole years
* estimate the Decay Factors for each future year within the Maximum Time Period for Forward Creation
* take into account the inputs listed in clause 7A.13(c) of the ESS Rule.

|  |  |
| --- | --- |
| Provide explanatory reasoning | Click here to enter text |

Sampling Method (if applicable)

|  |  |
| --- | --- |
|  | Explain how the Sampling Method is appropriate for the Population (in accordance with clause 7A.20 of the ESS Rule). |

The Sampling Method must:

* define the Eligibility Requirements to test if a Site can be included in the Population
* ensure the Population only includes Sites that meet the Eligibility Requirements
* describe the expected distribution of Site Constants across the Population
* define the Representativeness Test to determine if the Sample Sites are representative of the Population with respect to Site Constants
* define conditions under which additional Sample Sites must be selected to ensure Representativeness Tests are met
* ensure that the number of Sample Sites is at least six times the number of Site Constants in each energy model
* ensure the process of selecting Sample Sites minimises bias
* determine the Normal Year for each Site prior to the Implementation Date, according to the procedure that is deemed appropriate under clause 7A.7(e) of the ESS Rule.

|  |  |
| --- | --- |
| Provide explanatory reasoning | Click here to enter text |

Supporting evidence

|  |  |
| --- | --- |
|  | List the documents and systems that you reviewed to prepare this report. |

| Document/System name | Version | Review date |
| --- | --- | --- |
| Click here to enter text | Click here to enter text | Click here to enter text |
| Click here to enter text | Click here to enter text | Click here to enter text |
| Click here to enter text | Click here to enter text | Click here to enter text |
| Click here to enter text | Click here to enter text | Click here to enter text |
| Click here to enter text | Click here to enter text | Click here to enter text |
| Click here to enter text | Click here to enter text | Click here to enter text |

|  |  |
| --- | --- |
|  | List the people you consulted to prepare this report. |

| Name | Company | Position |
| --- | --- | --- |
| Click here to enter text | Click here to enter text | Click here to enter text |
| Click here to enter text | Click here to enter text | Click here to enter text |
| Click here to enter text | Click here to enter text | Click here to enter text |
| Click here to enter text | Click here to enter text | Click here to enter text |
| Click here to enter text | Click here to enter text | Click here to enter text |

Declaration

|  |  |
| --- | --- |
|  | Section 158 of the Electricity Support Act 1995 imposes a maximum penalty of $11,000 and/or six (6) months imprisonment for knowingly providing false or misleading information to the Scheme Administrator. |

**I hereby declare that:**

* I have reviewed the M&V Plan and the supporting documentation provided by the ACP and deem the measurement procedures in relation to the baseline energy model to be appropriate for the implementation and in accordance with the requirements of clauses 7A.5 and 7A.5A of the ESS Rule.
* I was not responsible for the design or delivery of the M&V approach that is the subject of this report and have provided an independent opinion.
* There are no conflicts of interest between the ACP, myself and other parties involved in the relevant implementation.
* The information in this report is correct and not misleading by inclusion or omission.
* I am aware that there are penalties for providing false or misleading information to IPART as Scheme Administrator of the ESS in this report and when operating as an M&V Professional.

**Signed by the M&V Professional**

|  |  |
| --- | --- |
| Signature | Click here to enter text |
| Full name of signatory | Click here to enter text |
| Date | Click here to enter text |