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1 Introduction

1.1 Automated Register of Implemented Actions

Automated Register of the Implemented Action (The “Register”) is designed to assist you in your path towards Superior Energy Performance (SEP) certification and complements the SEP Measurement and Verification (M&V) Protocol.

Completion of this Register does not guarantee certification. If you are not pursuing SEP certification, you can still use this register to organize and track your energy performance. This Register will summarize the key details of the implementation of each action, including action description, actual energy savings, source of energy savings determination, and responsible party. All actions affecting the energy performance improvement over the achievement period should be included, regardless of whether the action is associated with ISO 50001 “Action Plans” or “Significant Energy Uses”. The Register should reflect energy savings over the reporting period; typically, this will be annual savings.

1.2 About This User Manual

This user manual is drafted to accompany the Quick Guide and the Guidance Document tab that exists in the Register. The purpose of this manual is to provide detailed explanation about the Register, input and output parameters, as well as guidance on how it should be completed and used.

2 The Register

2.1 Getting Started

The current version (V1.0.2) of the Register uses Microsoft Excel and you can access it by using a Mac or a PC device. Figure 1 shows the landing page of the Register.
The Register is made up of three main tabs and two example tabs. In the following sections, we will walk you through each of the main tabs in detail.

### 2.2 AUTOMATED REGISTER

#### 2.2.1 Quick Guide

The Quick Guide section will help you understand the basics behind the color coding that is used throughout the Register. The input and output cells are color-coded so that user input, fixed parameters, and calculated results can be easily identified. Figure 2 summarizes this color-coding. Overwriting gray, green, and red cells will result in loss of the equation in that cell. Please save a copy of the original file before modifying those cells to avoid any loss of information.

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Input</td>
<td>Fixed parameter or calculated value. <strong>Overwrite only if prompted.</strong></td>
</tr>
<tr>
<td>Fixed parameter or calculated value. <strong>Overwrite only if prompted.</strong></td>
<td>Calculated results. Do not overwrite. (Reconciliation Factor greater than or equal to 0.9)</td>
</tr>
<tr>
<td>Calculated results. Do not overwrite. (Reconciliation Factor less than 0.9)</td>
<td></td>
</tr>
</tbody>
</table>

Figure 2: Color Coding Key - Used to Identify Input, Output, and Fixed Parameters

The textbox after the table shown above reiterates the goal of the Register and remind you that for each energy performance improvement action, the facility should provide the following:

- Description of energy performance improvement action.
• Anticipated annual delivered energy savings for each energy type (NOTE: Savings are listed as annual, assuming a 12-month reporting period. The savings shall be over the same number of months as the baseline and reporting periods):
  o Describe operating conditions for which energy savings are calculated.
  o Describe the starting point or baseline situation that was improved upon (e.g., equipment, systems, practices, or procedures).
• Anticipated annual primary energy savings for each energy type.
• Link or location of action plan documentation, as appropriate.
• Date action implementation was completed.
• Actual annual delivered energy savings for each energy type for the reporting period, determined after the implementation of the energy performance improvement action is complete (NOTE: If the action was taken during the reporting period, annual energy savings may be pro-rated to align with the implementation date).
• Actual annual primary energy savings for each type of energy for the reporting period, determined after the implementation of the energy performance improvement action is complete.
• Method(s) used to determine actual annual energy savings.
  o For example, assumptions used, measurements taken, calculations, and conversion factors.

2.2.2 Facility Information

In this section, you should identify the person filling out the Register, date the Register was filled, facility name, baseline period, and the reporting period. Figure 3 shows the Facility Information section.

![Facility Information Input Section](image)

2.2.3 Results

The results section condenses all the inputs into the Reconciliation Factor (RF) which is a way to measure the energy performance improvement for the purposes of
demonstrating SEP conformance and certification. RF is determined through a comparison of the results from the top down and bottom up energy savings.

Figure 4: Results Section

Top-down energy savings is determined by using the Top-Down energy performance improvement percentage which is the facility-level improvement, calculated from energy consumption data at the whole facility level. You should enter the Top Down Energy Savings from a linear regression analysis (i.e. EnPI tool). Figure 5 shows the cells from the EnPI tool where the Top Down Energy Savings can be found (in this case forecasted for electricity and natural gas). To learn more about determining top down energy savings, please review section 8 of the SEP M&V Protocol.

Figure 5: Planned Output of the latest EnPI Tool (v4.0)

Bottom-up energy savings is the facility-level energy savings calculated by analysis of individual actions taken at the facility. The Register calculates the Bottom Up Energy Savings, based on the actions entered. Next section, provides a detailed discussion on how to enter, define, and document the Implemented Actions.

2.2.4 Actions

Figure 6 shows the input section and all the necessary input parameters that needs to be defined for each action.
As shown in Figure 7, you can use drop down menus to select Action Type, Energy Type(s) Impacted, and Measurement Methods.

2.2.4.1 Action Title

To enter actions, start by entering the action number and a descriptive title for that action. Dedicate each row to a specific energy type impacted by that action. Use multiple rows for multiple energy sources impacted by the same action.

2.2.4.2 Action Type

Actions should fall into one of the available four categories (Behavior, Operations, Equipment, and Processes). Select NA if the selected action does not fall into those categories and use the documentation tab for further explanation.

2.2.4.3 Initiation and Completion Dates

Identify the date on which the facility started implementing each action as well as the date when the action implementation was complete. Use MM/DD/YYYY format when entering initiation and completion dates.

2.2.4.4 Energy Types Impacted

Select energy type(s) impacted from the drop down menu for each action. Dedicate each row to just one energy type and use multiple rows if multiple energy types are impacted by the same action. Figure 8, shows an example of an action that has impacted two energy types (Electricity and Natural gas).
2.2.4.5 Primary Energy Conversion Factor

If the energy type is listed in the dropdown menu, the Register’s built-in library will automatically populate the Primary Energy Conversion Factor. If you selected “Other” as your impacted energy source, you will be promoted to manually enter the conversion factor. If the conversion factor is not defined, you will see “Error” messages appear in the next columns. Figure 9 shows this process.
2.3 DOCUMENTATION

Use the documentation tab to provide further information regarding each action in the automated register sheet. For each action, please document the location of the action plan documentation, description of the action, and a detailed documentation on how the energy savings are calculated. The documentation should include equations, assumptions, parameters, operating condition before and after the action implementation. Please refer to the sample actions provided in the sample register and use that as a template.

![Figure 10: Action Plan Documentation](image)

2.3.1.1 Link or Location of Action Plan Documentation

You should provide a physical location or a link to where the action plan documentation can be found.

2.3.1.2 Name of Responsible Party

Please provide the name of the responsible party in charge of the action. The responsible party should be able to provide documentation regarding the implemented action and should be able to support the values, assumptions, and measurements that are listed in the register.

2.3.1.3 Existing Condition to be Modified

In this cell, the user should describe the current operating conditions (i.e. efficiencies, temperature, pressure, etc.) before implementation of the action.

2.3.1.4 Planned Action

The detailed description of the planned action. Try to specifically define the action type and the energy types it impacted. If any of your selection in the first tab requires further explanation, please use this box to provide more information.
2.3.1.5 Detailed Calculations for Anticipated and Actual Energy Savings

This is the most important part of the register. You should be as detailed as possible when filling out this section. To document your calculations please list all the equations used, assumptions made, values used, and sources where those values came from (e.g. consultation with plant operators, CRC Handbook, etc.). The examples in the register are a good source to get you started.