Understanding the MPP V8.1 Simulation Guidelines

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Overview

The Simulation Guidelines contain methodologies for energy simulation and model calibration for multifamily buildings. Providers are required to calculate savings for all projects per the technical standards in the Simulation Guidelines. The Simulation Guidelines are periodically updated based on industry-accepted best practices, information from data-based white papers, and program experience.

Purpose

The required use of the Simulation Guidelines will:

- Streamline reviews and minimize the number of revisions because modeling assumptions and methodologies will be consistent.
- Ensure model calibration and measure savings calculations are conducted according to best practices.
- Improve modeler productivity since Providers will not need to research the assumptions for various model parameters or develop external calculations for assumptions.

Example Simulation Guidelines Content

Below are examples of what can be found in the Simulation Guidelines. These are not the only sections in the Simulation Guidelines, but a small sample overview of what can be expected.

Model Calibration: This section includes the general approach of calibrating a model. For example, if the simulation tool supports weather-normalized model-to-billing comparison by fuel and end use, such as in TREAT, the difference between the annual modeled use and the actual consumption for heating, cooling, and baseload must differ by no more than -10% to 0%. The model should not show more energy consumption than the bills (Figure 1).

Thermal Zones: Rules of how to define thermal zones are provided in this section of the guidelines.

Heating & Cooling Systems: Modelers may not be able to determine efficiencies in existing heating or cooling systems in the project. This section provides methodologies for how to determine these assumed existing values.

Distribution Systems: This section specifies how to calculate savings from certain distribution measures, such as steam trap replacements.

Lighting: In-unit lighting assumed runtime hours to be used in the model are provided (Figure 2), as well as power adjustment percentages that should be used for common area lighting control measures.

Domestic Hot Water: The average daily DHW usage in gallons/day/person based on demographic characteristics are provided to be used in DHW calculations.

Plug Loads: In-unit and non-apartment space average annual electric usage are provided for modeling purposes.

OPTIONAL Model True-Up Check

The below table is an **optional** model true-up check. To use, enter the usage determined by the modeling software (TREAT, eQUEST, etc.) in the appropriate sections. As per the Simulation Guidelines, the difference between the annual modeled use and the actual consumption for heating, cooling, and baseload must differ by no more than -10% to 0%. The model should not show more energy consumption than the bills.

	Heating	Cooling	Baseload	Total	Units
Electric					kWh/year
% Difference	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	kWh/year
Natural Gas					Therms/year
% Difference	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	Therms/year
Oil					Gallons/year
% Difference	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	Gallons/year
District Steam					kLbs/year
% Difference	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	kLbs/year
Propane					Gallons/year
% Difference	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	Gallons/year

Figure 1: Sample of the Optional Model True-Up Check table in the SAV-IT used to determine if the model calibration has been completed.

In-Unit Lighting

Room Type	Average Lighting Usage (hrs/day)
Kitchen/Dining	3.5
Living Room	3.5
Hall	2.5
In-unit laundry/utility room	2.5
Bedroom	2.0
Bathroom	2.0

Figure 2: Sample of the In-Unit lighting fixture