



## Technical Interpretation

**Standard:** [BPI-2400-S-2015 v.2 Standard Practice for Standardized Qualification of Whole-House Energy Savings Predictions by Calibration to Energy Use History](#)

**Edition:** 2015 v.2

**Paragraph/Figure/Table:** Proposed Future Annex

**Subject:** Treatment of Fossil-Fuel Heating System Fan and Pump Electricity in BPI-2400 Calibration

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## DM-STC technical interpretation regarding Treatment of Fossil-Fuel Heating System Fan and Pump Electricity in BPI-2400 Calibration

### 1. Scope

This interpretation clarifies how electricity used by fans or pumps associated with fossil-fuel heating systems (e.g., furnace blowers or boiler circulators) shall be treated during calibration of residential energy models in accordance with ANSI/BPI-2400.

The guidance applies when fan or pump electricity associated with fossil-fuel heating equipment is present in the analyzed home.

### 2. Background

Electricity consumption from furnace blowers or boiler circulators generally increases during the heating season. However, utility bill regression cannot reliably isolate this consumption.

Seasonal electric usage may also increase due to other loads, including domestic hot water, lighting, occupant behavior, and miscellaneous seasonal variation. If heating parameters are included in the regression model when no electric heating system exists, the resulting electric heating normalized annual consumption (NAC) may substantially overestimate actual fan or pump energy.

Fan and pump electricity shall therefore be included in the simulation model for purposes of calibration error calculations, but its categorization within model end uses depends on the calibration pathway and whether electric heating equipment is present.



### 3. Detailed Calibration Path

Under the Detailed Calibration Path, simulation model end uses shall align with the structure of the regression model used to derive normalized annual consumption values.

#### 3.1 Electric Heating System Present

When the dwelling also contains an electric heating system:

- The regression model shall include heating parameters (e.g., a five-parameter or three-parameter heating model).
- The regression-derived electric heating NAC represents all temperature-dependent electric loads.

**Electricity consumption from fossil-fuel heating system fans or pumps shall be included in the simulation model electric heating end use when calculating calibration error.**

#### 3.2 No Electric Heating System Present

When the dwelling does not contain an electric heating system:

- The electric regression model shall not include heating parameters.
- A cooling-only regression model (e.g., three-parameter cooling model) shall be used.

Under these conditions, regression-derived heating terms would capture seasonal variation unrelated to the fossil-fuel heating system fan or pump, so a heating parameter is not used.

Therefore:

**Electricity consumption from fossil-fuel heating system fans or pumps shall be included in the simulation model electric baseload when calculating calibration error.**

### 4. Simple Calibration Path

Under the simple calibration path, the end use disaggregation of the weather normalized utility bills is determined by the simulation model's end use proportions. Therefore, the utility regression model does not restrict how the fan and pump energy can be categorized.

Under the Simple Calibration Path:

**Electricity from fossil-fuel heating system fans or pumps shall be included in the simulation model electric heating end use, regardless of whether electric heating equipment is present.**



## 5. Summary

Condition	Regression Model	Treatment of Fan/Pump Electricity
Detailed Path – Electric heating present	Heating regression model (5 parameter or 3 parameter)	Include in electric heating end use
Detailed Path – No electric heating	Cooling-only regression	Include in electric baseload
Simple Calibration Path	Annual electric scaling	Include in electric heating end use