

C&I Energy Efficiency Program Guidelines

Fuel Switch Measure Guidelines

The following is the minimum information required for fuel switching Energy Conservation Measures (ECM's). Fuel switching is defined as any measure that converts existing natural gas or oil HVAC equipment to electricity. Example Fuel Switch Measures include but are not limited to the following:

Eligible Existing Equipment	Proposed Replacement Technology
Gas-fired boiler	Electric Boiler
Steam-driven boiler	

Ineligible Measures	Examples
Fuel Conversion from	- Electric → Gas - Oil → Gas - Steam → Electric
District Steam Equipment	- Steam chillers on Con Edison district steam
Fuel Switching (HVAC)	C&I projects that convert natural gas, steam or fuel oil cooling equipment, including but not limited to chillers and air conditioners, to electricity. - Heat pumps - Gas-engine-drive Chiller - Gas Absorption Chiller - Heat Pump Chiller - Heat Recovery Chiller - Steam Absorption Chiller - Steam Turbine Chiller - Steam Chillers with On Site Natural Gas Boiler (or Cogen System) -
Fuel Switching (Non-HVAC)	- Electrification of non-HVAC equipment (stoves, washers, dryers)
Heating Systems	- Conversion to electric resistance heating
Cogeneration/CHP	- Removal of Cogeneration or Combined Heat and Power (CHP) plants

Required Project Documentation

All projects must provide documentation as outlined in the C&I Energy Efficiency Program [Custom Measures Guidance](#), along with the following documentation:

1. A detailed description of the fuel switching measure being proposed including energy savings and calculation methodology that accurately quantifies the proposed savings.
 - A. Savings shall be calculated as the difference in energy consumption between baseline equipment and new energy efficient technology.
 - B. Savings shall be expressed in MMBTU.
 - C. Savings baselines are dependent on measure application type as follows:

Measure Application Type	Baseline Utilized for Calculation	Proposed
Normal Replacement	Code or Industry Standard Efficiencies (Gas / Steam Fuel Equipment)	Electric Fuel Equipment
Special Circumstance – Extended Life or Early Replacement	Existing Equipment Efficiency (Gas / Steam Fuel Equipment) ¹	Electric Fuel Equipment

Existing equipment efficiency must be backed up with supporting documentation submitted by the customer or PC as per the Extended Life or Early Replacement technical guidance.

- D. Savings approach may include but are not limited to:
 - Computer Energy Modeling Software
 - Bin Analysis
 - Modified TRM measures

E. Con Edison Master Case ID (Provided by Con Edison Energy Services)

Savings Methodology

Fuel switch savings are calculated as the difference in energy consumption between baseline equipment and the new energy efficient technology.

Fuel Switch Savings (Total MMBTU) = Baseline Consumption – EE Consumption

Energy savings are expressed in total MMBTU, which is the conversion of the sum mlbs or therms savings of the displaced original fuel baseline technology and the increased kWh consumption from the substituted new fuel measure.

Example: if a natural gas fired boiler is replaced by an electric boiler, the energy savings is represented as an increase in electric usage, in kWh, and as the decrease in natural gas usage, in Therms. These savings are rolled up into total MMBTU savings.

The following unit conversions to MMBTU are noted:

Fuel	Native Units	Conversion Factors
District Steam	Mlbs	1.2
Oil No. 2	Gallons (US)	0.138
Oil No. 4	Gallons (US)	0.146
Electric	kWh	0.003412
Gas	Therms	0.1

Example Conversions:

kWh to MMBTU:

$kWh \times 0.003412 \text{ mmbtu} = kWh \times 0.003412 \text{ mmbtu}$

Therms to MMBTU:

$Therms \times 0.1 \text{ mmbtu} = Therms \times 0.1 \text{ mmbtu}$

Mlbs to MMBTU¹:

$mlbs \times 1.2 \text{ mmbtu} = mlbs \times 1.2 \text{ mmbtu}$