

Fuel Switching Request Calculations Worksheet

Iowa Weatherization Program

This form should be used in conjunction with the Fuel Switching Request form when requesting approval to switch heating unit fuel sources for any reason. Complete one calculation sheet per heating unit.

Client Name: _____ File Number: _____

Address: _____ City, State: _____

SECTION A

(complete fields for existing unit efficiency and proposed unit efficiency)

Fuel Source

Existing Proposed

<input type="checkbox"/>	<input type="checkbox"/>	Electric	_____	x 292 =	\$0.0000	/	_____	=	_____
							Efficiency as a decimal		Cost per Million Btu's
			<i>Fuel cost per kWh (see chart below or enter other cost)</i>						
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Natural Gas	\$0.7760	x 10 =	\$7.7600	/	0.95	=	\$8.17
							Efficiency as a decimal		Cost per Million Btu's
			<i>Fuel cost per therm (see chart below or enter other cost)</i>						
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Fuel Oil	\$1.6500	x 7.14 =	\$11.7810	/	0.65	=	\$18.12
							Efficiency as a decimal		Cost per Million Btu's
			<i>Fuel cost per gallon (see chart below or enter other cost)</i>						
<input type="checkbox"/>	<input type="checkbox"/>	Propane	_____	x 11.1 =	\$0.0000	/	_____	=	_____
							Efficiency as a decimal		Cost per Million Btu's
			<i>Fuel cost per gallon (see chart below or enter other cost)</i>						
<input type="checkbox"/>	<input type="checkbox"/>	Air-to-Air Heat Pump	_____	x 292 =	\$0.0000	/	_____	=	_____
							Efficiency as a decimal		Cost per Million Btu's
			<i>Fuel cost per kWh (see chart below or enter other cost)</i>						

Statewide Average Fuel Costs

Electric	\$0.110	cost per kWh
Natural Gas	\$0.776	cost per therm
Fuel Oil	\$1.650	cost per gallon
Propane	\$1.010	cost per gallon

SECTION B

(used 1,000 gallons fuel oil) (1 gal fuel oil = 135,000 Btu's)

(1,000 gallons x 135,000 Btu's = 135,000,000 Btu's or 135 MMBtu)

1. **MILLION** Btu's used in the last 12 months* _____ 135

(This information is obtained from the client utility usage report or bill AND converted into Million Btu's using the Btu Conversion Factors below)

(Make sure the conversion is to **MILLION** Btu's)

(* NOTE: If this is an **ALL-ELECTRIC** home, only indicate Btu's used from the October through May)

2. Fuel Cost (existing system) x **MILLION** Btu's _____ \$2,446.20

(fuel oil cost per Million Btu's = \$18.12) (\$18.12 x 135 = \$2,446.20)

Existing system fuel cost per Million Btu's (from Section A above) x Million Btu's used last winter (from Section B Line 1)

3. Fuel Cost (proposed system) x **MILLION** Btu's _____ \$1,102.95

(natural gas cost per Million Btu's = \$8.17) (\$8.17 x 135 = \$1,102.95)

Proposed system fuel cost per Million Btu's (from Section A above) x Million Btu's used last winter (from Section B Line 1)

Savings: _____ \$1,343.25

_____ \$2,700.00 / _____ \$1,343.25 = _____ 2.01 (If the payback is less than 15 years, it is cost effective to switch fuels)

*Total installation cost

Savings

Payback in years

*Includes cost of appliance, ductwork, etc.

Appliance Efficiency Key

Appliance	Efficiency Range	Efficiency as a Decimal
Electric	100%	1
Natural Gas or Propane	70% - 98%	.70 - .98
Oil	70% - 80%	.70 - .80
Air-to-Air Heat Pump	100% - 180%+	1.0 - 1.8+

Btu Conversion Factors

Electric	1 kWh	=	3,400 Btu's
Natural Gas	1 CCF	=	100,000 Btu's
Natural Gas	1 therm	=	100,000 Btu's
Propane	1 gallon	=	91,300 Btu's
Fuel Oil	1 gallon	=	135,000 Btu's