



# ENERGY HOTLINE FACT SHEET

## CALCULATING SAVINGS FROM SWITCHING HOME HEATING FUELS

Are you thinking about switching heating fuels to save money? First, check to see if there is a more efficient heating system available that uses your fuel. Calculate what you would save staying **with the** same fuel. Figure out what a replacement system would cost and how long it would take for the system to pay for itself. After you have done this, then consider your fuel switching options. Collect the necessary data in the top section using the tables on page 2 and plug the information into the formulas at the bottom of this page. For questions call the Energy Hotline at 800-532-1114 or in Des Moines 281-7017.

### Existing Heating System Data:

Type of Heating System:  forced air  boiler  radiant  
 Type of Heating Fuel:  natural gas  propane  fuel oil  electric  
 Units of fuel consumed Oct. -Apr.: \_\_\_\_\_ unit1 \_\_\_\_\_  
 May consumption: (base for non-heating appliances) \_\_\_\_\_ unit2 \_\_\_\_\_  
 Conversion factor for converting to average winter: (table 2) factor \_\_\_\_\_  
 Present cost/unit: (obtained from current fuel bills) cost/unit1 \_\_\_\_\_  
 Btu/unit of fuel: (table 1) btu/unit1 \_\_\_\_\_  
 Present heating system efficiency: (table 3) eff1 \_\_\_\_\_

### Proposed Heating System Data:

Type of heating fuel:  natural gas  propane  fuel oil  electric  
 Proposed cost/unit: (obtain from utility or table 1) cost/unit2 \_\_\_\_\_  
 Btu/unit of fuel: [table 1] btu/unit2 \_\_\_\_\_  
 Proposed heating system efficiency: (table 3) eff2 \_\_\_\_\_  
 Cost of replacement system: cost \_\_\_\_\_

### Calculate Average Units Used for Space Heating:

$$\left( \frac{\text{unit1}}{\text{unit1}} - \left( \frac{\text{unit2}}{\text{unit2}} * 7 \right) - \frac{\text{factor}}{\text{factor}} \right) = \text{unit3}$$

### Convert Present Units to Building Btu Requirements:

$$\text{unit3} * \text{btu/unit1} * \text{eff1} = \text{btul}$$

### Convert Btu Requirements to Proposed Fuel Units:

$$\text{btul} / \left( \frac{\text{btu/unit2}}{\text{btu/unit2}} * \frac{\text{eff2}}{\text{eff2}} \right) = \text{unit4}$$

### Calculate Dollar Savings/Year:

$$\left( \frac{\text{unit3}}{\text{unit3}} * \frac{\text{cost/unit1}}{\text{cost/unit1}} \right) - \left( \frac{\text{unit4}}{\text{unit4}} * \frac{\text{cost/unit2}}{\text{cost/unit2}} \right) = \text{savings}$$

### Calculate Payback:

$$\frac{\text{cost}}{\text{cost}} / \frac{\text{savings}}{\text{savings}} = \text{payback(yrs)}$$

Making the most of Iowa's energy

Table One: Btu/Unit of Fuel

Fuel	Btu/Unit	Price <sup>1</sup>
Natural Gas	100,000/CCF	\$.54/CCF
Propane	93,000/GAL	\$.65/GAL
Fuel Oil	138,000/GAL	\$.95/GAL
Electricity	3412/KWH	\$.06/KWH

Table Three: Heating Efficiencies

Type	Efficiency <sup>2</sup>
Gas & Oil Furnaces	
20 yrs+ or converted	.50
10-20 yrs.	.60
Newer conventional	.65
New efficient	.75-.97
Electric	
Resistance	1.00
Older air heat pump	1.50
New air heat pump	2.20
Water source heat pump	3.00

Table Two: Conversion Factors

Winter	Factor
81-82	.9434
82-83	1.0540
83-84	.9416
84-85	1.0402

1 Average Iowa December 1984 prices. Actual prices vary considerably between utilities.

2 Efficiencies can vary depending on how often a heating unit may have been serviced, whether it was converted from oil to gas, etc.

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