

ENERGY SAVINGS ANALYSIS

NORTH DAKOTA DEPARTMENT OF COMMERCE
 DIVISION OF COMMUNITY SERVICES
 SFN 59261 (01/21)

Directions: Please have your engineering firm, utility, vendor, energy auditor, etc. complete the form to verify energy savings. **Note:** Not all boxes may apply to your project. If you have questions about this form, please contact Bruce Hagen at (701) 665-4496 or bahagen@nd.gov.

Utility Rate Information

Cost/Unit KW	Cost/Unit kWh	Cost/Unit Ntr. Gas	Cost/Unit Water	Other

Energy Savings

Energy Conservation Measure (ECM)	Annual Demand Savings (KW)	Annual Electric Savings (kWh)	Annual Fossil Fuel Savings (mmBtu)	Annual Water Savings (1,000 Gal.)
Total				

Energy Cost Savings. Calculate by multiplying **Utility Rate Information** by **Energy Savings**.

Energy Conservation Measure(ECM)	Annual Demand Cost Savings (KW)	Annual Electric Cost (kWh)	Annual Fuel Cost Savings (mmBtu)	Annual Water Cost Savings	Total ECM Energy Cost Savings
	\$	\$	\$	\$	\$
	\$	\$	\$	\$	\$
	\$	\$	\$	\$	\$
Total	\$	\$	\$	\$	\$
Total Project Energy Cost Savings					\$

Payback. Provide the following information about and savings generated by this ECM.

Total Project Investment	Total Project Energy Cost Savings	Simple Payback Years
\$	\$	

Describe the basis for the estimated savings generated by this ECM:

Certification:

I, the undersigned representative of _____ (Company), certify that to the best of my knowledge this information is true and correct.

Name (Please Print)	Title
Authorized Signature	Date

For Commerce Use Only		
Verified		Authorized Signature
Date		

This is an example for converting a #2 fuel oil boiler to an electric boiler. The current #2 fuel oil boiler is estimated to use 19,800 gallons of #2 fuel oil a year. The new electric boiler will use 438,600 kWh a year and during peak load times the #2 fuel oil boiler will still use 5,480 gallons a year. The cost of the electric boiler is \$84,900. Below are the steps to calculate the energy savings simple payback.

- Determine the current energy use for the #2 fuel oil boiler.

Estimated #2 fuel oil boiler fuel usage: 19,800 gallons/year. Using the conversion 139,000Btu/Gal of #2 fuel oil, converts to 2752.2 mmBtu/year

- The #2 fuel oil boiler and the electric boiler use different energy types to heat the building. In this case we would convert the electric boiler energy use to the #2 fuel oil boiler energy use (Btu).

Estimated electric boiler fuel usage: 438,600 kWh/year. Using the conversion 3412 Btu/kWh, converts to 1496.5 mmBtu/year

- Determine the peak load #2 fuel oil boiler energy use.

Estimated #2 fuel oil boiler fuel usage during peak load (using the high side): 5,480 gallons/year. Using the conversion 139,000Btu/Gal of #2 fuel oil, converts to 761.72 mmBtu/year

- Find the difference in what is currently used in energy and what is the proposed use of energy (Energy Savings) or

Current – (total of proposed electric boiler usage and peak #2 fuel oil boiler fuel usage): 2752.2 mmBtu/year – (1496.5 mmBtu/year + 761.72 mmBtu/year) = 493.98 mmBtu/year

- Find the energy cost savings.

Convert the energy savings to fuel cost: 493.98 mmBtu/year converting back to gallons using the conversion 139,000Btu/Gal of #2 fuel oil and the to dollars per year using \$2.9/gallon of #2 fuel oil, converts to \$10,306/year

- Finally determine the energy savings payback.

Using the total project cost and dividing it by the total project energy cost savings:
 $\$84,900.00 / (\$10,306/\text{year}) = 8.24 \text{ years}$