

Savings Analysis Worksheet

HVAC Rooftop Units

Opportunity

Rooftop units are commonly used to provide space heating and cooling because they are relatively inexpensive, can easily be integrated into a standard forced air duct system and can be placed easily on the exterior of a building so they don't take up valuable internal space. You can save on operating costs by installing a high efficiency rooftop unit in a new building, replacing old, inefficient rooftop units in existing buildings and maintaining your system.

Action: Install a high efficiency rooftop unit and maintain your system.

High Efficiency Rooftop Units

Energy efficiency of rooftop units 5.5 tons and smaller is listed in terms of SEER (Seasonal Energy Efficiency Ratio), while efficiency of units over 5.5 tons is listed in terms of EER (Energy Efficiency Ratio). Currently, ENERGY STAR® and FEMP (Federal Energy Management Program) consider a unit of 5.5 tons or smaller with a SEER of 12 or higher to be efficient, and consider a unit larger than 5.5 tons with an EER of 11 or higher to be efficient. Smaller units will soon be given an EER in addition to a SEER to ensure that peak day performance can be judged for these units.

You can save about \$100 per SEER or EER each year if you replace a 10-ton unit with a higher efficiency unit of the same size. (Savings based on average cooling hours for Wisconsin. Your savings may be different, depending on location and any type of usage.

Over the years, the average efficiency of rooftop units has increased. In 1981, the average SEER was about 7.8, but, by 1995, the average had jumped to about 10.7. In addition, as a unit gets older, its parts become worn and efficiency suffers even more. So, that 1980s vintage rooftop unit might really have a SEER of worse than 7.0 when wear-and-tear on its parts is taken into account.

Maintenance

Keep your rooftop unit in top condition by changing the filters monthly and having it serviced at least once a year. Servicing should include greasing the bearings and checking pulleys, belts, refrigerant charge, temperature drop across the coil and amperage for potential problems.

More Information

You can use the worksheet to gain an understanding of the savings potential. Consult with your HVAC dealer for a more precise estimate on prices and savings for your situation. For names of HVAC professionals in your area, fact sheets on other energy saving opportunities and more information on the Focus on Energy Program, call 800.762.7077 or visit our Web site at focusonenergy.com. Information in this fact sheet was derived from the ENERGY STAR Small Business Guide published by EPA and other sources. For further information on the ENERGY STAR Small Business Program, visit www.energystar.gov or call Focus on Energy.

Additional information on high efficiency commercial air conditioning and heat pumps can be found at the Consortium for Energy Efficiency Web site at www.ceel.org.



Estimate Your Savings

You can estimate the savings you would see if you installed a high efficiency rooftop unit by completing the worksheet below.

- A. Enter the size of the existing rooftop unit in tons.
- B. From Table 1, select the city nearest your location and enter the listed number of hours.
- C. Enter your average energy cost (from your electric bill). If you don't know what it is, enter \$0.08.
- D. From Table 2, select the approximate age of the existing unit and enter the listed EER/SEER.
- E. Calculate your current operating cost based on the formula in the chart below.
- F. Enter the size of the proposed rooftop unit.
- G. Enter the hours you entered in B.
- H. Enter the cost per kWh you entered in C.
- I. Enter the EER/SEER of the proposed unit.
- J. Calculate your current annual operating cost based on the formula in the chart below.
- K. Calculate your proposed annual energy cost by subtracting J from E.

Existing System

A. Current Unit Size (Tons)		Btu/hr per Ton		B. Cooling Hours for Your Area		C. Cost per kWh		D. Current Unit EER or SEER		E. Current Annual Cost
	x	12,000	x		x		÷		÷	1,000 =

Table 1. Equivalent Full Load Cooling Hours

City	Hours
Eau Claire	900
Green Bay	700
La Crosse	950
Madison	900
Milwaukee	750
Superior	400

Table 2. Approximate EER/SEER Based on Age

Approx. age	EER	SEER
5-10	9	10
10-15	8	9
15-20	7	8
> 20	6	7

Proposed System

F. New Unit Size (Tons)		Btu/hr per Ton		G. Cooling Hours for Your Area		H. Cost per kWh		I. New Unit EER or SEER		J. New Annual Cost
	x	12,000	x		x		÷		÷	1,000 =

K. Annual savings = E – J = \$ _____

Focus on Energy is a public-private partnership offering energy information and services to energy utility customers throughout Wisconsin. The goals of this program are to encourage energy efficiency and use of renewable energy, enhance the environment, and ensure the future supply of energy for Wisconsin. **800.762.7077. focusonenergy.com**

