



HEATING, VENTILATION AND AIR CONDITIONING (HVAC)



Commercial buildings spend approximately 40% of their electricity use operating HVAC systems. With such a large portion of energy consumption going toward one system, it makes sense to incorporate energy efficiency strategies to maximize usage. In fact, the Whole Building Design Guide (WBDG), a program of the National Institute of Building Sciences, estimates that high-performance HVAC equipment can result in energy and cost savings ranging from 10%-40%.

Details



Things to Consider

Ensuring that your HVAC system is properly sized for your needs is essential. WBDG finds that systems are sized to meet worst-case cooling and heating conditions that historically only occur about 2% of the time, which leads to oversized equipment. In fact, most systems are oversized by at least 10%. Oversized equipment increases operating costs and wear, and runs less efficiently than properly sized options. Correct this issue by installing a right-sized unit.

Also keep in mind that both over- and right-sized systems often operate under part-load conditions. It is estimated that most systems operate at 50% or less of their full-load capacity, so be sure to take part-load efficiencies into account when selecting a system. Rather than installing an oversized system to meet potential need, select right-sized equipment that meets current requirements and operates efficiently at part-load. Future needs can be met by making sure the distribution system and building can accommodate additional equipment at a later date.

Rooftop units (RTUs) account for a majority of the commercial HVAC systems in the U.S. In 2011, the DOE and Better Buildings Alliance released high-performance RTU design specifications expected to reduce energy use by as much as 50% compared to current ASHRAE 90.1 standards, depending on location and facility type.



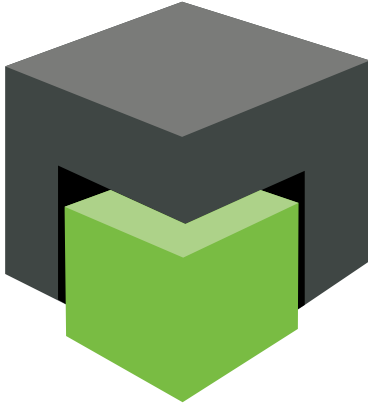
Taking Control

Installing new equipment and controls are ideal ways to optimize energy use by ensuring systems operate efficiently under typical, part-load conditions. For example:

- Install variable speed fan systems and variable speed drive controls on fan motors.
- Consider variable speed pumping systems and cooling tower fans.
- Use a variable speed drive chiller to match motor output to chiller load.
- Install water temperature reset controls to raise the water temperature as demand decreases, making the chiller more efficient.
- Utilize energy management systems with optimization software to analyze usage and maximize efficiency.
- Consider a demand control ventilation system to save energy tempering building ventilation air.
- For increased part-load efficiency, use AC equipment with high IEER, SEER or IPLV ratings.

The DOE estimates that U.S. businesses could save about \$1 billion annually in energy costs by replacing existing units with high-performance RTUs.

Technology Terms



It is estimated that most systems operate at 50% or less of their capacity and are oversized by at least 10%.

Good to Know

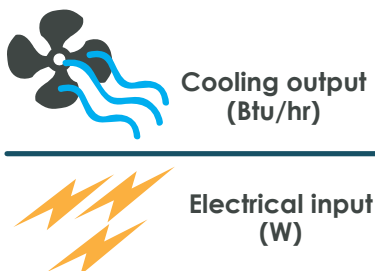
Does the cooled air in your building feel clammy? If so, your HVAC system is likely oversized and unable to dehumidify the air properly.

ENERGY STAR qualified commercial HVAC equipment is estimated to save approximately \$1.70 per square foot over the life of the product.

The U.S. Department of Energy (DOE) Pacific Northwest National Laboratory offers a Rooftop Unit Comparison Calculator to compare high-efficiency RTUs with standard options, simulating the energy usage and comparing energy and economic performance. Check it out at www.pnnl.gov/uac.

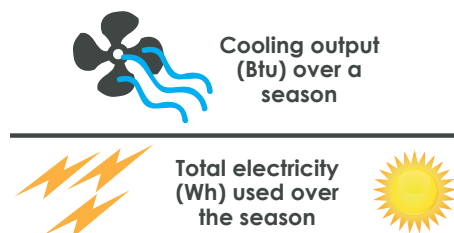
Energy Efficiency Ratio (EER):

Measure of energy efficiency in cooling mode at full-load; the higher the number, the more efficient the system. Look for units with an EER ratio above 12.0.



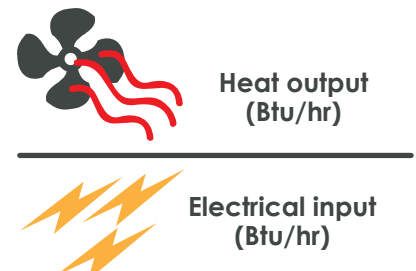
Integrated Energy Efficiency Ratio (IEER):

Measure of cooling part-load EER efficiency over a season for commercial unitary air conditioning or heat pump systems using four load points; the higher the number, the more efficient the system.



Coefficient of Performance (COP):

A heat pump's ratio of heating or cooling provided to electrical energy consumed; the higher the number, the more efficient the system.



Seasonal Energy Efficiency Ratio (SEER):

Measure of small equipment efficiency over the cooling season; the higher the number, the more efficient the system. Look for units with a SEER ratio between 14 and 17.



Energy Efficiency Made Easy

To save energy and lower utility bills, NV Energy offers technical assistance and cash incentives on select energy-efficient equipment. Customers can select a project from a prescriptive list of measures or propose a custom project with verifiable energy savings.

equipment. Customers can select a project from a prescriptive list of measures or propose a custom project with verifiable energy savings.

- Incentives are available for new construction, major renovation and existing facility retrofit project improvements.
- Prescriptive HVAC measures include high-efficiency AC units, variable frequency drives for HVAC fan and pump motors, economizers, demand control ventilation, programmable thermostats and high-performance window film.
- Custom HVAC measures include EMS upgrades, high-efficiency chiller retrofits, water-side economizer systems and central plant optimization projects. Incentives for custom measures are based on the annual kWh savings for the measure.
- Contact Business Energy Services to help identify energy efficiency opportunities, determine required documentation for custom measures or for answers to other questions regarding incentive eligibility.



Large handling units benefit from variable speed drives

Funding is limited—apply today!

Reduce your business's energy expenses, year after year. Get our free interactive Business Energy Savings Guide to learn more and discover what projects qualify for cash incentives.

Get Your FREE Guide



LEARN MORE

CALL | 800.342.6335
EMAIL | bes@nvenergy.com
VISIT | nvenergy.com/bes