



WHERE'S THE WASTE?

The inside story on your HVAC system.

Heating, ventilation and air conditioning (HVAC) consumes approximately 40% of a building's electricity. In fact, it's one of the most significant factors in the operating expenses of a business. That's why it pays to pinpoint HVAC energy waste and reduce it. Here are 11 common HVAC waste areas and proven ways to help your business become more energy efficient and control costs.



Blocked vents

require up to **25%** more energy to distribute air.

Where's the waste?

Take a close look at your business. Are vents blocked by furniture, paper, tools or equipment? Those blocked vents are preventing vital airflow and making your system work harder to heat or cool your business. That's unnecessary waste and it's costing your business money every month.

What your business can do.

Clear air distribution is essential to contribute to energy efficiency. It's also important for maintaining a good comfort level for your employees and customers. Carefully assess the area around each vent for proper ventilation. Is air flowing from the vent circulating freely throughout the room? If there are obstructions that prevent adequate airflow, such as cabinetry or drapes, move them to allow for clear circulation. Don't keep vents closed as an effort to save energy. Doing so can actually change the way air is distributed and cause an imbalance to the operation of the HVAC system. Remember to also check any vents on the floor. It can be more difficult to keep these areas clear of obstructions.

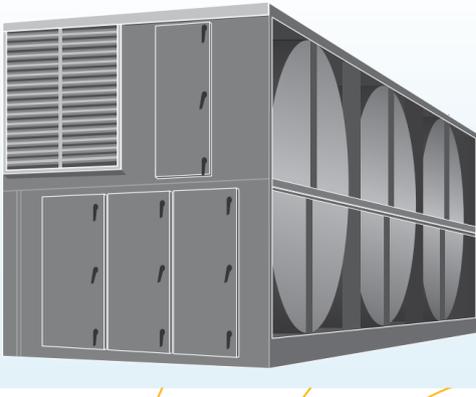
Up to **80%** of energy can be recovered from exhaust air.

Where's the waste?

Exhaust air from inefficient HVAC systems wastes a major opportunity for more efficient heating and cooling. That's because more energy is required to heat or cool incoming outside air. But there are smart ways to prevent that waste.

What your business can do.

Heat-recovery technology transfers energy from exhaust air to incoming outside air. This greatly reduces the energy that's required to heat or cool incoming air. As a result, businesses can recover 50% to 80% of energy waste. It's important to note the percentage of outside air that can be used for efficient ventilation is based on a number of factors, including project scope, technology selection and design. A qualified contractor can educate customers on available recovery technologies. For example, an energy recovery ventilator (ERV) can be a suitable solution for maintaining comfortable temperature, depending on area location and climate. Businesses can turn to their HVAC contractor to decide if an ERV is appropriate. Heat-recovery technologies can include heat exchangers, recuperators, regenerators, passive air pre-heaters and waste heat boilers.



Advanced controls can reduce energy use by **40%**

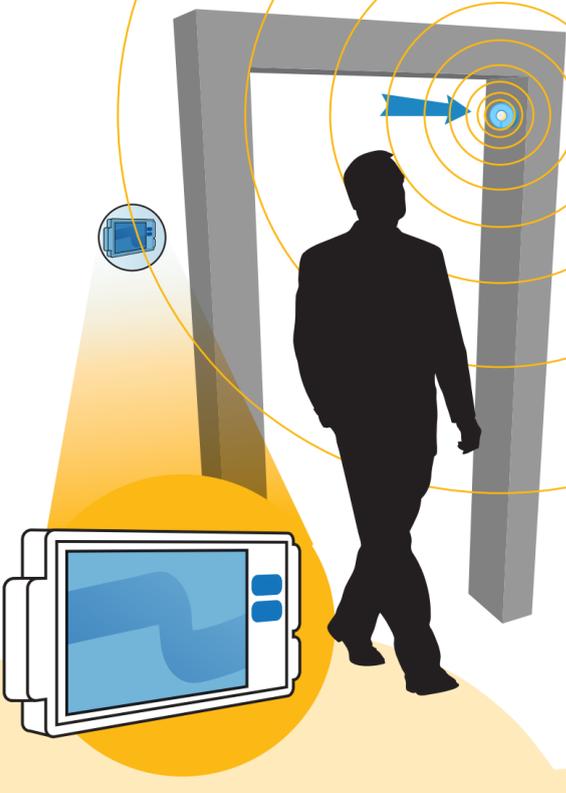
Ever feel cold when you're in a big conference room or eating in the cafeteria with just a few other people? That may be because the ventilation system is running at maximum operating power, as if the room was filled to capacity. It is a huge waste of energy.

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What your business can do.

Installing advanced control sensors can improve a ventilation system's operating power for energy efficiency. These controls can count the number of people in a room and then adjust the heat and air conditioning accordingly. When the sensors are integrated into a building's HVAC system, the advanced controls can reduce energy use by almost 40%. That could save a typical 500,000-square-foot office building tens of thousands of dollars each year. Such buildings in the U.S. take up more than 4.4 billion square feet.



Programmable thermostats

provide **\$180** in annual savings.

Where's the waste?

You want employees to be comfortable when they're at work — warm in the winter and cool in the summer. But what about late at night or when your business is closed? Keeping the office temperature constant when no one is around isn't necessary.

Programmable thermostats better monitor the building's heat or cooling output. Temperatures will automatically go up or down at preset times when no one is around. You may even qualify for a rebate up to \$300 when installing an advanced programmable thermostat. Also, consider programming the thermostat to be a little cooler during the winter months and warmer during summer. Generally speaking, people are comfortable at 78F in the summer and 68F in the winter.

Note: Annual savings are based on per project energy-efficiency measures.

15% of energy waste is caused by dirty air filters.

Where's the waste?

Dirty air filters impair your HVAC, contributing to wasted energy. They slow down airflow and make the system work harder to keep employees warm or cool.

Prevent dust and dirt from building up.

What your business can do.

Replace air filters (or clean them if they're reusable) monthly, especially during peak heating and cooling seasons. While you're at it, clean the blower and motor housing as well. It can lower an air conditioner's energy consumption by 5% to 15%. Keeping air filters clean can prevent dust and dirt from building up in the system. When dirt builds up, it can lead to expensive maintenance repairs or the need for a new system. Watch for filters that gather excessive dust. This may be a sign of potential leaks in the duct system.

Unsealed ducts contribute **20%** of waste.

Where's the waste?

The ducts that circulate the cold and warm air throughout your building can be big energy wasters. Sometimes they are not sealed properly. Other times they are not insulated well. Both instances can cost your business money.

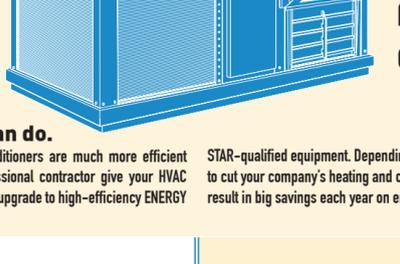
What your business can do.

Start by hiring a contractor to make sure all the ducts that run throughout your building have duct sealant or metal-backed (foil) tape over the seams and connections. Then wrap the ducts in insulation to keep them from getting hot in the summer or cold in the winter. By doing this, you can improve the efficiency of your building's heating and cooling system by 20% or more. In fact, it's now possible for contractors to perform verified duct sealing using a special fan to test duct system leakage before and after sealing efforts have been made.

Replacing older HVAC equipment can save up to **20%** of energy costs.

Where's the waste?

Today's heating and air conditioning equipment is much more efficient than earlier models. If your HVAC system is more than 10 years old, there's a good chance you're spending too much to heat and cool your building.



What your business can do.

ENERGY STAR-certified central air conditioners are much more efficient than a standard system. Have a professional contractor give your HVAC system a checkup and see if you should upgrade to high-efficiency ENERGY STAR-qualified equipment. Depending on your location, you may be able to cut your company's heating and cooling costs by nearly 20%. That can result in big savings each year on energy costs.

Cut energy use **65%** by switching to open office space.

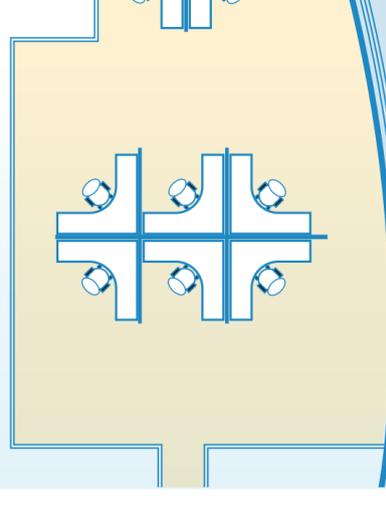
Where's the waste?

In one such case of identifying energy waste, Adobe Systems Inc. identified that its energy systems were regularly accommodating about 25% more people than those who actually occupied its individual, hard-walled offices.

Savings reached nearly \$750 in the first week.

What your business can do.

As a result, Adobe moved from a closed office environment to an open floor plan. The move lowered operating costs, increased floor capacity and improved employee comfort. What's more, Adobe's building management system was programmed to shut down lighting and HVAC services to individual floor sections when they weren't occupied. As a result of these measures, Adobe cut energy use on a test floor by 65% (largely attributable to controls that better managed building lighting and HVAC). In fact, gas and electricity savings reached nearly \$750 in the first week alone.



Maintenance programs can contribute **\$500** in annual savings.

Where's the waste?

Many businesses have inconsistent HVAC maintenance schedules. As a result, their systems aren't running as efficiently as they should. If that sounds like your maintenance approach, you're likely spending more than you have to on heating and cooling.

What your business can do.

Switch to PG&E's Commercial HVAC Quality Maintenance Program. Businesses that switch to the program can save up to \$500 per year per unit in operating, servicing and repair costs. Even customers who already follow a regular check-based plan can save up to \$260 per year per unit. Plus, you can earn incentives of up to \$3,836 per unit when you enroll. More information on the program and incentive options can be found [here](#).

10% of energy can be saved with efficient employee behavior.



Where's the waste?

Maximizing efficiency is more than just upgrading equipment. Employees have a big impact on how well your heating and cooling system operates. When people cover vents, tamper with thermostats or remove light bulbs, the amount you spend on energy rises.

What your business can do.

Educate employees about how to reduce energy use. Better yet, make it a collaborative effort and foster a competitive spirit. Encourage employees to speak up when they see energy being wasted and reward them for their actions. Then be sure to respond and act on recommendations when feasible. After all, it's in your company's best interest. ENERGY STAR partners have shown it's possible to save 10% or more by educating employees and changing their behavior.

Where's the waste? Putting off HVAC maintenance can be costly. It often results in emergency repairs, a shorter unit life and replacement costs of \$5,000 or more.

40% of higher costs come from neglected maintenance.

What your business can do.

Be proactive about maintaining your HVAC system. You'll avoid big problems and catch small issues early when they're less expensive to fix. In fact, you can lower upkeep costs by as much as 40%. At the same time, studies show that optimal HVAC performance affects the health, comfort and productivity of the building. The first step is to identify a qualified HVAC contractor and then work with the company to put a long-term maintenance plan in place.



Eliminating energy waste shouldn't be hard.



Download the eBook "How to Get the Best Results from a Lighting or HVAC Project" and learn best practices to reduce your energy waste today.

Sources:

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Note: Reduced energy usage and annual savings outlined in this infographic are not all encompassing and are based on individual projects and energy-efficiency measures.