

ENERGY EFFICIENCY IN BUSINESSES PRESENTATION TEACHER'S NOTES

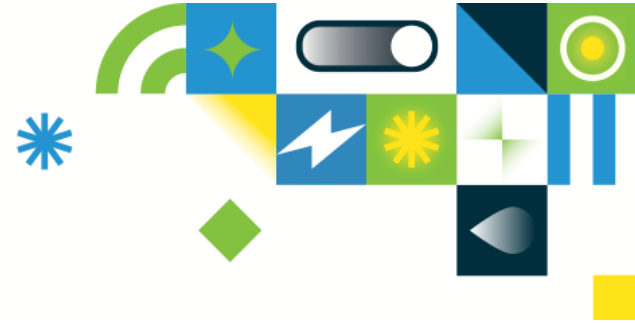
Slide 2 | What is energy efficiency?

Being energy efficient doesn't mean doing less things that require energy, although that is a great way to start. Energy efficiency means using less energy to do the same job. A lot of the activities we do everyday waste energy. We want to make sure energy is used to its maximum potential. When we do this, we not only save money, but we also reduce our negative impact on the planet (in the case of burning fossil fuels like natural gas).

Slide 3 | Why should businesses be more energy efficient?

Business activities account for 64% of energy consumption in Canada. Industrial businesses (manufacturing, agriculture, mining) account for 52% of energy consumption and commercial businesses (stores, offices, community centres) account for 12% of energy use.

Being more energy efficient means that some businesses (i.e. ones that use fossil fuels like natural gas) can reduce their greenhouse gas emissions, which also reduces harm to the planet. Energy also costs money, and using energy more efficiently means businesses can save money - something all businesses love to hear.



Source: <https://www.cer-rec.gc.ca/en/data-analysis/canada-energy-future/index.html>

Slide 4 | Brainstorming time!

Take a few minutes to brainstorm some ideas with your class on how businesses can be more energy efficient.

Slide 5 | How can businesses be more energy efficient?

There are plenty of ways businesses can become more energy efficient, save money, save resources, and reduce their strain on the environment. The following slides demonstrate different areas of business operations where energy use can be optimized. These are not the only ways to be efficient with energy use, and creative solutions to energy efficiency are always welcome.

Slide 6 | Make smart lighting choices

Much of a business's energy consumption comes from lighting. Having the proper amount of lighting gives employees and customers the most comfortable experience.

Traditional lighting sources (like incandescent bulbs) use much more energy than energy-efficient lighting options like LED lamps, which can be up to 80% more energy efficient. Traditional lights produce way more heat than light. While LED lamps convert much more of the input energy into light. The light converts into heat too, but at least you had the light, and you can let the heating and



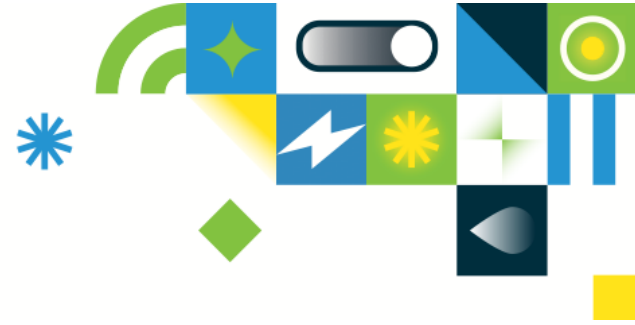
cooling system heat or cool efficiently. LEDs are more expensive initially, but they'll save businesses money over time on their monthly energy bills. They also don't need to be replaced as often since they last a long time, meaning businesses will save on maintenance and replacement costs.

The less time your lights are on, the less electricity you use. Making sure to turn off lights when they are not in use is an important energy-saving technique. Installing occupancy sensors can help to do this automatically so lights only come on when the area is occupied and will automatically turn off when there's no one around. Dimmers are another energy-saving measure. Sometimes we don't need full brightness! Dimmers allow you to decide how much energy you want your lights to use, to match what you need.

Finally, ensuring lights are clean and free of dust and debris will allow them to work at their full potential. Regularly dusting and cleaning lights will ensure they are working to their full power, and not wasting that energy and hiding it behind dusty lights. Keeping a business clean sends a good message to customers that the business also cares about the little details.

Slide 7 | Make smart lighting choices | daylighting

Using the sun's natural light is the best and most energy efficient way to provide light to a business. It's free, there are health benefits, and there are no GHG emissions - what's not to love!



[Health benefits of natural lighting include](#) additional Vitamin D, improved mental health (especially in winter), and improved sleep quality.

As we know, the sun's light can get pretty hot and may encourage you to take off an added layer of clothing, even in winter. Allowing natural light into an office building or store can reduce how high the setting on a business' heater needs to be, saving energy and money.

Again, having a dimmer on electric lighting can be especially useful. When combined with the sun's natural light, most businesses won't need full power on their interior lights, but having them turned completely off will be a bit too dark. With a dimmer setting, they can decide how much energy to use on interior lighting when the sun is doing some of the work already.

Finally, to get the most out of natural daylighting, a business needs to be set up properly. Making sure windows are clean and unobstructed will allow for the maximum amount of natural light. However, the sun's power can be too strong sometimes - the light can be blinding or the heat can be uncomfortable. Businesses will want to make sure their office or store is designed in a way that makes life comfortable for their employees and customers, while also taking advantage of natural light as much as possible.



Slide 8 | Install energy-efficient electronics and appliances

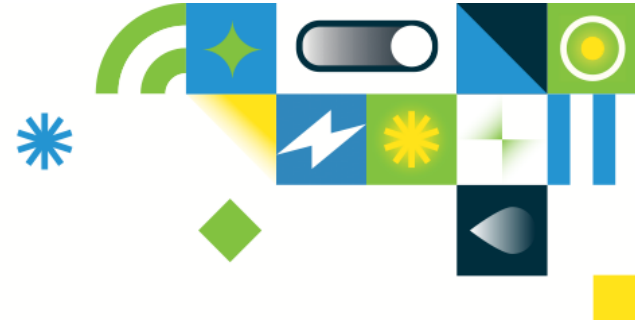
Nowadays, it's impossible to run a successful business without the use of electronic devices. Phones, computers, printers, and scanners all rely on electricity and are necessary to the success of any business. There are ways, however, to make the most out of each unit of energy being used.

One way businesses can save energy is by purchasing and installing ENERGY STAR certified electronics. ENERGY STAR is an internationally-recognized program that identifies the most energy-efficient products available for purchase. Many electronics today are ENERGY STAR certified. If you see the blue ENERGY STAR label on a product, you can be confident that it's in the top 10 to 30% of its class in energy performance.

An obvious and simple, yet often overlooked energy-saving technique is to power off all electronics when leaving the workplace and unplug anything that doesn't need to stay connected. Even when powered off electronics, can still have an internal clock running that requires a small amount of electricity. This small amount, however, can really add up over time.

Alternatively, when electronics aren't being used at the workplace, putting them on Sleep Mode will hugely decrease the amount of electricity they are using. It's easy to do and only requires you to wake them back up when it's time to get back to work.

A cool gadget that can help with powering devices down is an advanced power strip. A power strip is a long bar that allows



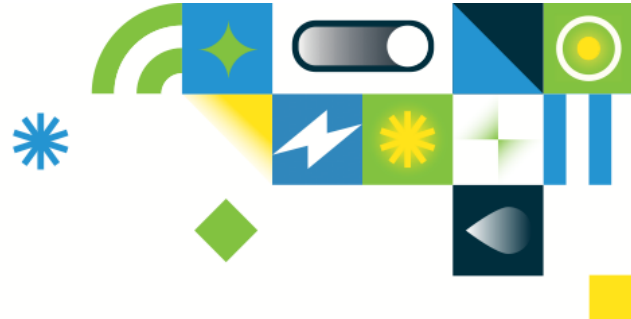
multiple electronics to be plugged into it while only requiring one electrical socket to power the strip. Unlike traditional power strips that provide extra outlets and surge protection, advanced power strips shut down devices that normally go into standby mode when not in use. Simply plug your computer into the main outlet and your associated devices (like your printer) into the controlled outlets. When you turn your computer off, you automatically turn off power to your other devices.

Smart thermostats can also save businesses energy and money. These Wi-Fi connected devices can learn your heating and cooling patterns over the course of each day and can automatically adjust the temperatures to meet your needs. Also, if someone accidentally leaves the A/C on high when leaving the workplace, a smart thermostat can be adjusted with a few touches of a button on a smartphone.

Slide 9 | Optimize heating & cooling

In parts of the world with extreme changes in weather, like Manitoba, heating and cooling systems are as much about survival as they are about comfort.

The first thing businesses can do to make sure temperature control systems are as energy efficient as possible is to use the most energy efficient products. Using high-efficiency furnaces, heat pumps, boilers, air conditioners, fans, and other temperature



control products that are ENERGY STAR certified ensures that businesses get started on the right foot.

That said, even the best products get dirty and need a tune-up from time to time. Having a licensed technician come in to clean and perform yearly maintenance on a business's heating and cooling systems will ensure the machines use energy only as intended and don't need to work harder to overcome deficiencies. Supplementing air conditioning with fans may help in some situations. What else can you think of?

While systems might be working how they're supposed to, if the heated or cooled air they are producing isn't able to get where it needs to go, they'll have to work even harder to get a room to a comfortable temperature. Making sure the vents where air comes from aren't blocked and that air can properly flow throughout a room ensures efficient use of its energy. Getting good airflow in the server rooms of big businesses is important as well, since servers need to be cool to function properly. It's better to ensure good airflow than to rely on an air conditioner alone to do the job.

Finally, ensuring rooms are properly insulated is important to maintain an energy-efficient building. Making sure there are no cracks in walls, no gaps in windows or doors, and sufficient insulation throughout will mean the heating and cooling systems don't have to work as hard to produce the same results. You don't want to lose any energy the systems have used by having air leak its way outside or inside.



Slide 10 | Reduce waste

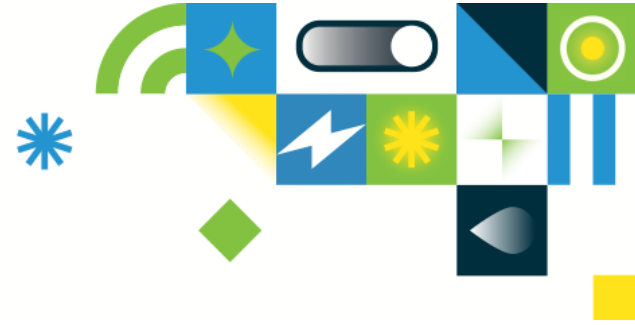
Reducing waste in business is important from an energy standpoint, but also for other reasons. Producing a product takes materials and energy, and no matter what they are (electronics, paper, water, food, or packaging), there is an abundance of trash ending up in landfills as well as our rivers and oceans. Finding a way to reduce waste in business will help clean up the natural environment and save energy.

Installing automatic shut-off taps will save water, as will installing on-site water recycling systems that clean and re-use the business's water.

Paper gets wasted a lot in the business world. Refraining from printing anything that isn't necessary and using both sides of a page is a great way to reduce paper waste.

Packaging is another big one. A lot of products are packaged in so much unnecessary material that just gets thrown out once the product reaches the consumer. This packaging ends up in landfills and natural waterways, harming the environment and wildlife.

Thanks to advances in technology and the shorter lifespans of products, electronic waste (also known as e-waste) is the fastest growing source of waste in the world. It takes energy and resources to produce these electronics, and then after a year or two of use, those electronics get thrown out. Businesses must be better with recycling their electronics and using them for as long as the technology will allow.



Slide 11 | Get employees involved

Using energy-efficient equipment is one thing, but encouraging behavioural changes in employees is just as important. Businesses should give employees a reason to want to help them use less energy. Setting goals and incentivizing employees to help hit those goals by providing bonus money, event tickets, extra time off, or anything that would encourage employees to help with energy efficiency is a wise investment. Saving energy will save a business money as well.

Encouraging employees to walk, cycle, or take the bus to work can also help to reduce a business's carbon footprint.

The more a business can get its team on board with improving energy efficiency, the more successful they are likely to be, and the healthier our planet is likely to be.