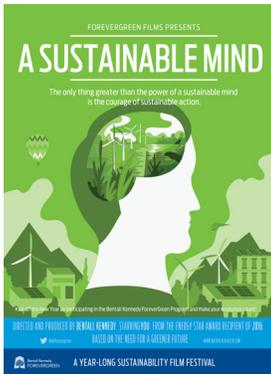


FOREVERGREEN TEAM PACK

SESSION 1 GUIDE - January - April 2017

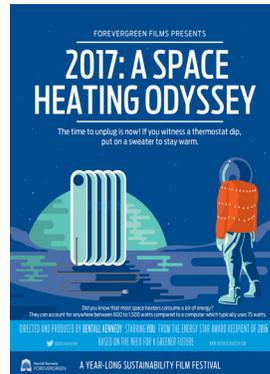
JANUARY: FOREVERGREEN KICK-OFF



In January we will (re)introduce you to Bentall Kennedy's ForeverGreen program and suggest activities to raise awareness of ForeverGreen within your organization.

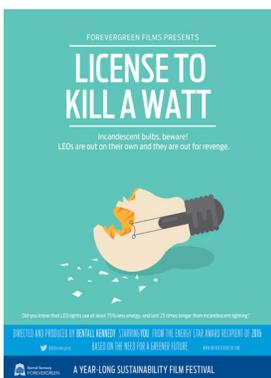
This month, participate in the property level ForeverGreen meeting, organize your own green team meeting, and complete the Detailed Walk-Through Checklist to prioritize actions for the upcoming year.

FEBRUARY: SPACE HEATING



This month, we will look into the issue of energy efficient heating and the impact a small temperature change can have on heating bills. Raise awareness and make a commitment to energy efficient heating by participating in Sweater Day!

MARCH: ENERGY EFFICIENT LIGHTING



In March, we will discuss the importance of energy efficient lighting. These days, LEDs are all the rage, so we will provide suggestions on how you can reduce your lighting impact and slash your energy bills, even when an entire lighting retrofit is not an option.

APRIL: PHANTOM POWER



In April, we will raise awareness about the issue of phantom power and plug loads. We will provide you with suggestions that will help you get rid of the phantoms and reduce energy consumption in your workplace.

Within this Team Pack, for each of the monthly topics, you will find:

BACKGROUND ON THE TOPIC

FOREVERGREEN ENGAGE ACTIVITY | FOREVERGREEN ASSESS ACTIVITY | FOREVERGREEN & KEEN ACTIVITIES

FOREVERGREEN TEAM PACK

WE ARE FOREVERGREEN!

BEFORE WE GET STARTED...

- ✓ Review the ForeverGreen newsletter and distribute within your organization
- ✓ Review ForeverGreen Team Annual Guide to plan for the year ahead
- ✓ Find out if your Property Manager will be hosting a building level Green Team meeting - if so, attend!
- ✓ Complete the Detailed Walk-Through Checklist this month (Appendix 2). We've re-vamped this checklist, so if you've done it in the past, try it again and reflect on your year-over-year performance.

DID YOU KNOW?

BUILDINGS USE ABOUT 40% OF GLOBAL ENERGY, 20% OF GLOBAL WATER, AND GENERATE ABOUT ONE THIRD OF THE TOTAL GHG EMISSIONS. IT IS BY FAR ONE OF THE LARGEST CONTRIBUTOR TO GLOBAL GHG EMISSIONS. ACCORDING TO THE UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP), COMMERCIAL AND RESIDENTIAL BUILDINGS CONSUME APPROXIMATELY 60% OF THE WORLD'S ELECTRICITY.

(SOURCE: WWW.UNEP.ORG)



By their nature, buildings affect their environments – changing the landscape, defining new skylines, becoming a destination, impacting traffic patterns, and, of course, using energy and water and generating waste.

The buildings in Bentall Kennedy's portfolio are also places that deliver economic and social value not only to its tenants and clients, but also to its surrounding communities. They are the places where tens of thousands of North Americans work and live. Development of new buildings creates jobs and benefits for construction workers and tax revenue for local jurisdictions. We look to develop green certified buildings, and certify existing ones, to achieve a lower environmental impact compared to traditional non-certified properties. Our goal is to reduce the environmental impact of our buildings, as we deliver and increase their economic and social value.

Bentall Kennedy has been working hard to improve the environmental and social performance of the buildings we manage because we believe that collaboration with our tenants is key to operationalizing sustainability. Through our ForeverGreen Tenant Program we equip the management teams and tenants with tools to drive and maintain a top performing building and engage tenants in achieving their overall sustainability, health and productivity goals.

The core components of this program that we are committed to include:

- Energy efficiency and carbon emission reductions
- Waste diversion
- Water conservation
- Healthy workplaces

Through this ForeverGreen Tenant Program we want to help you, our tenants, in achieving your overall sustainability, health and productivity goals. Vital to the success of this program is the involvement of you, our tenants.

By working together we can be ForeverGreen!

FOREVERGREEN ENGAGE: KICK-OFF THE YEAR WITH A SUSTAINABLE MIND

Activity Description:

What?

This activity has three components:

- Kick off the ForeverGreen Movie Festival by hosting a documentary screening
- At the screening, encourage employees to declare “I am ForeverGreen” and pledge an action to reduce their impact. These pledges will be displayed in your workplace for the month of January.
- Identify Green Team members within your workplace to generate awareness and increase participation.

Why?

- Generate awareness of Bentall Kennedy’s ForeverGreen program within your workplace and inspire employees to take simple actions that can make a difference either at work or at home.
- Increase awareness of your own organization’s Green Team and recruit members.
- Plan and prioritize sustainability projects for the year.

How?

- Hold a Green Team Recruitment/ForeverGreen Film Festival Kick-off event. We encourage you to organize a documentary screening. Consider the following:
 - Before the Flood: <https://www.youtube.com/watch?v=LCKEFbBmadg>
 - Bikes vs. Cars: <http://www.bikes-vs-cars.com/thefilm>
 - Chasing Ice: <https://www.youtube.com/watch?v=j5RYBGJDCAI>
 - Surviving Progress: <http://survivingprogress.com/>
- At the event, set up the “I am ForeverGreen” pledge station using resources provided in Appendix 1:
 - Print off 11x17 “I am ForeverGreen” poster and display at pledge station.
 - Print off a number of the “I am ForeverGreen” pledge templates. Use scrap paper if possible. Template is set up to print 4 per page. Cut them out and place at the pledge station with several pens or markers and pins or tape to display.
- Get things started by filling out your own pledge and attaching to the wall around the poster. Then encourage at least 5 of your colleagues to do the same. The idea is that when employees walk by the pledge station they will feel compelled to get involved and make a pledge of their own.

If you are unable to host the documentary screening event, another option is to go digital: If your organization has a Green Team, print out the ‘Green Team identifiers’ and have each Green Team member display one at their workstation. *Note: If you prefer to use your organization’s Green Team branding or logo you can use the resources as a guide to create your own materials for the pledge station.*

Resource Toolbox

Appendix 1: “I am ForeverGreen” resources (including poster, pledge template, and Green Team identifiers)



FOREVERGREEN ASSESS: COMPLETE A DETAILED WALK-THROUGH CHECKLIST

Activity Description:

What?

In this activity you will conduct a walk-through of your workspace using the Detailed Walk-Through Checklist (Appendix 2). We have updated the checklist this year to include additional details in the areas of waste management, indoor air quality, lighting, plug load, water usage, heating and cooling, and sustainable transportation. The purpose of the activity is to discover areas for improvement and identify 3-5 projects to carry forward throughout the year.

Why?

By identifying and agreeing to “slam dunk” priority projects with your team and the Property Manager, you can work to improve the performance of your tenant space, creating a cleaner, greener and more enjoyable place to work.

How?

- Attend the property level ForeverGreen Team meeting hosted in January by your Property Manager. At the meeting your PM will provide guidance on completing the checklist.
- Complete your ForeverGreen Detailed Walk-Through Checklist with several representatives from your organization (e.g. Green team members).
- Review the list of recommendations for ideas on the types of projects/initiatives your team can implement during the year.
- Depending on how you rank in the relevant areas, prioritize a list of 3 “slam dunk” priority projects to tackle over the coming year with your Property Manager based on estimated ROI, value, and ability to implement.
- As a show of commitment, write out your list of 3 prioritized projects using the form included at the end of the checklist and have two representatives from your organization (e.g. Green team or tenant committee members) sign the list. This document will be used to revisit and review progress at key points throughout the year.
- Discuss results of the detailed walk-through checklist at your organization’s next Green Team meeting and share results and recommendations with key decision makers.

Resource Toolbox

Appendix 2: Detailed ForeverGreen Walkthrough Checklist

FOREVERGREEN & KEEN

If you have already completed the first two activities for the month and are looking for more, here are some additional ideas:

- Revisit your own organization's green team materials to refresh them. If participation in your green team has dwindled lately, or if you have not yet started a team, spend some time engaging your colleagues. Here is a great resource from WWF Canada's Living Planet @ Work Program to help you out: <http://atwork.wwf.ca/EN/resources/BuildingAnEffectiveGreenTeam.cfm> (note: you will have to create a Living Planet @ Work online account to download this resource)
- Calculate your personal carbon footprint. Visit http://www.footprintnetwork.org/en/index.php/GFN/page/personal_footprint/
- Find a local or regional NGO that is focused on an area of interest to your organization and invite them in to conduct a lunch and learn for employees.
- Plan a "Green your Workplace" competition to invite ideas from everyone. Each submission can be entered into a draw, and relevant projects can be implemented throughout the year. This is also a good way to recruit new green team members and give them ownership of implementation of their project ideas.
- Search the web for regional competitions/events/partnerships that are applicable to your company and get involved.

Resource Toolbox

- WWF Living Planet @ Work Resources: <http://atwork.wwf.ca/EN/>
- Harvard's 10 Tips for a Successful Green Team: <https://green.harvard.edu/tools-resources/how/10-tips-successful-green-team>

SPACE HEATING

DID YOU KNOW?

APPROXIMATELY 50% OF COMMERCIAL ENERGY USE GOES TO HEATING AND COOLING? ACCORDING TO THE INTERNATIONAL ENERGY AGENCY (IEA) BOTH, SPACE HEATING AND COOLING AS WELL AS HOT WATER ARE ESTIMATED TO ACCOUNT FOR ROUGHLY HALF OF GLOBAL ENERGY CONSUMPTION IN BUILDINGS.

THE TYPE OF BUILDING THAT YOU ARE IN WILL HAVE AN EFFECT ON HOW MUCH CONTROL YOUR ORGANIZATION HAS OVER THE TEMPERATURE IN YOUR WORKSPACE. IF YOU ARE IN A MULTI-TENANT BUILDING AND THE THERMOSTAT IS CENTRALLY CONTROLLED YOU MAY WANT TO DISCUSS SOME OF THE ENERGY CONSERVATION TIPS OUTLINED BELOW WITH YOUR PROPERTY MANAGER.

Here are some tips that you can implement in your space:

Optimize heating and cooling systems

- During winter (heating season) heat your building to a maximum of 21°C (70°F) when occupied, 16°C (61°F) when unoccupied. Heating and cooling set points must be set 2-3°C (3-5°F) apart so that the air conditioner does not cycle (turn on and off) frequently. Setting the temperature lower just a few degrees can significantly reduce heating costs.
- Submeter energy use (including separate metering for lighting, plug load and HVAC).
- Locate heat-generating office equipment including printers, copiers, etc. away from HVAC thermostats, as the heat generated by them may distort the temperature data the thermostat uses.
- Collaborate with property managers to ensure noise levels, temperature settings, humidity levels, power requirements are optimal.

Adjust controls to energy-efficient, comfortable levels

- Electronic programmable thermostats automatically adjust your building's temperature at night and on weekends. They are very reliable and easy to install. Installing a programmable thermostat can save an estimated 10% a year on heating and cooling costs.
- For larger or more complex buildings, consider using a building automation system, also known as an energy management system, which will efficiently manage all the energy usage for the building. These systems can save 5-30% in energy costs and have a payback of two to four years depending on the hours of operation used, type of system and equipment controlled.

Minimize heat loss

- Sources of heat loss include heat transmission through walls, floors and ceilings as heat naturally moves from a warmer area to a colder area. Any openings that allow heated air to escape can account for significant amounts of heat loss.

SPACE HEATING

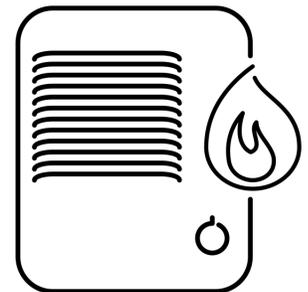
- Office areas in high-ceilinged buildings like warehouses need their own ceilings, not just wall partitions. Otherwise, warm air rises to the high ceiling causing the heater to run constantly. If your building's ceiling is higher than 3.0 meters (10 feet), consider installing ceiling fans to force the warm air down to the occupied level. As the temperature gradient will be minimal, the heat loss will be reduced.
- Installing window films can reduce heat loss in the winter and minimize solar glare.
- In loading areas, install a relay switch on your heating system so that the heat goes off when doors are opened. If loading areas are in heavy use, consider partitions and local heaters for staff.

Only heat and cool spaces where necessary

- Reduce heating and cooling spaces used only for short periods. If possible reduce temperature or shut off heating in vestibules, stairwells, lobbies and unused spaces.
- Dress appropriately for the seasons and the comfort level of your work area. Have a hot beverage to warm up or get up and move around, before turning on the heater.

Give some space to space heaters!

- They can have significant negative impact on the building system, particularly when the space heater is located anywhere near a thermostat. Consider this scenario... a person is chilly, so they go and purchase a space heater. They are now toasty warm with their space heater and the thermostat is picking up that the temperature near that person is 24° Celsius. So as a result, the building system stops sending heat and in some cases will actually send cooled air to everyone else, within the perimeter, because it's trying to bring the temperature back down to 21° Celsius. So what happens next? The people that are getting cold air go out and purchase space heaters! And this is how an office ends up with an abundance of space heaters. Instead of turning to a space heater, the first thing to do is contact your building's operations personnel and ask them to review why it's cold in your space. They will look at where the thermostats are placed within your office.
- Space heating accounts for 63% of the energy used in the average home and 32% of home heating fires are caused by space heaters!
- During winter, personal space heaters can account for a significant plug load in many offices. Even a modestly sized space heater can consume 1,000 watts when running. Over the course of an 8-hour work day, that heater can use as much energy as a laptop does in a month!



FOREVERGREEN ENGAGE: THE SWEATER AWARDS & TRIVIA CONTEST

Activity Description:

What?

WWF Canada's Sweater Day takes place on February 2, 2017. To raise awareness of this event and the importance of saving energy, celebrate Sweater Day at work with the Sweater Awards!

Why?

On Sweater Day, everyone is encouraged to turn down the heat and wear a sweater to show you're taking action on climate change. If all Canadians lowered their thermostats by just 2 degrees Celsius this winter, it would reduce greenhouse gas emissions by about 4 megatons – equivalent to shutting down a 600 megawatt coal-fired power station and taking nearly 700,000 cars off the road!

How?

- Begin to raise awareness of Sweater Day around your workplace at least 2 weeks prior to the event by displaying posters, sending emails, etc. WWF Canada provides a Business Toolkit for National Sweater Day on their Living Planet @ Work website: <http://atwork.wwf.ca>
- Encourage everyone to wear a sweater on February 2 and announce that you will be holding the 'Sweater Awards'. You can host an actual voting and awards ceremony during the lunch-hour, or have everyone email you a picture of them in their sweater. How you organize the contest is up to you, just be sure to have fun with it! Categories can include the best, woolliest, ugliest or most stylish sweater. Make up your own categories.
- Use the quiz in Appendix 4 to raise awareness on energy efficiency amongst employees - add in some building specific trivia questions in the quiz as well. For e.g. what is your building's ENERGY STAR score? How many space heaters are in the office? etc.
- Prizes for the Sweater Award & Trivia Contest can include free lunches or mini trophies.

FOREVERGREEN ASSESS: THERMAL COMFORT SURVEY

Activity Description

What?

If you notice a lot of your colleagues are using space heaters or complaining about temperature then there may be an issue within your suite.

Thermal comfort is the condition of mind that expresses satisfaction with the thermal environment, in other words, do building occupants find their work environment to be a comfortable temperature? Since there are large variations from person to person in terms of physiological and psychological satisfaction, it is hard to find an optimal temperature for everyone in a given space. There are six primary factors that directly affect thermal comfort that can be grouped in two categories:

- Personal factors - because they are characteristics of the occupants (metabolic rate, clothing insulation)
- Environmental factors - which are conditions of the thermal environment. The former are metabolic rate and clothing level, the latter are air temperature, radiant temperature, air speed and humidity.

Use the thermal comfort survey provided in Appendix 4 to determine employee satisfaction with regards to thermal comfort in your workspace.

Keen to learn more?

- Quantifying Thermal Comfort: The Predicted Mean Vote (PMV) refers to a thermal scale that runs from Cold (-3) to Hot (+3). The recommended acceptable PMV range for thermal comfort from ASHRAE 55 is between -0.5 and +0.5 for an interior space.

Value	Sensation
-3	Cold
-2	Cool
-1	Slightly Cool
0	Neutral
1	Slightly warm
2	Warm
3	Hot

Source: <https://sustainabilityworkshop.autodesk.com/buildings/human-thermal-comfort>

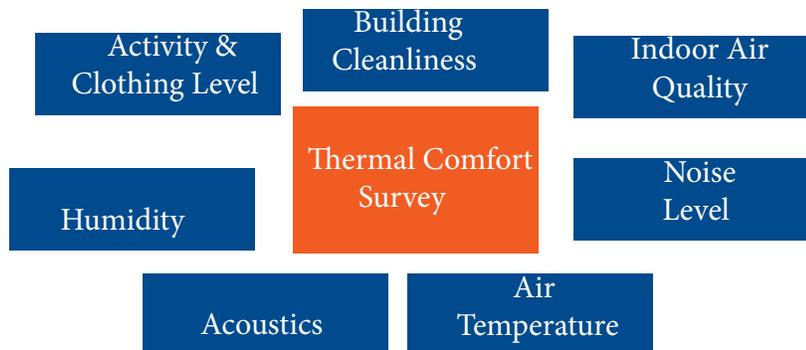
FOREVERGREEN ASSESS: THERMAL COMFORT SURVEY

Why?

Although temperature preferences vary greatly among individuals and there is no one temperature that can satisfy everyone, it is important to ensure that thermal comfort is achieved for the majority of employees. An office which is too warm makes its occupants feel tired; on the other hand, one that is too cold can cause the occupants' attention to drift, making them restless and easily distracted. Answers to these survey questions can provide an indication as to the performance of the buildings heating, ventilation, and air conditioning systems while providing direction for making improvements to systems in an attempt to provide a continual comfortable environment for building occupants. Discuss the results of the survey with your Property Manager.

How?

- Ask employees to complete the survey provided in Appendix 3.
- Tally results and if it appears that there is thermal comfort issues in your workplace (i.e. majority of employees express dissatisfaction with the temperature) bring the issue forward with your Property Manager for further investigation.



Resource Toolbox

- Appendix 3: Thermal Comfort Survey

FOREVERGREEN & KEEN

If you have already completed the first two activities for the month and are looking for more, here are some additional ideas:

- **Space Heater Check-up**
Encourage your co-workers to avoid space heaters with the aim of fostering a workplace culture where everyone works together to help reduce the energy demand of electronic equipment. Conduct a space heater audit of your workplace and highlight the safety risk and environmental costs of space heaters. Most space heaters consume significant amounts of electricity. They draw anywhere from 800 to 1,500 watts compared to your computer at 75 watts. Space heaters can also interfere with your unit's heating and cooling system causing them to run ineffectively. This is especially true when a space heater is close to a thermostat which may cause the cooling system to turn on mistakenly, thereby reinforcing the need to heat the space. In the visual inspection, check the following:
 - The number and types of space heaters
 - Whether space heaters are turned on or off
 - Whether space heaters are running when no one is around
 - Whether space heaters are below a thermostat
 - Flag areas with temperature issues

Use this online space heater calculator to calculate how much the space heaters in your area consume in a year (use 11 cents as the cost per kWh): http://energyusecalculator.com/electricity_spaceheater.htm

- Screen an educational environmental documentary with your colleagues during lunch hour

Resource Toolbox

- WWF Canada Sweater Day webpage: http://www.wwf.ca/events/sweater_day/
- WWF Canada's Living Planet at Work: <http://atwork.wwf.ca>
- Energy Star Heat & Cool Efficiently: http://www.energystar.gov/index.cfm?c=heat_cool.pr_hvac
- BC Greencare Space Heater Toolkit <https://bcgreencare.ca/system/files/resource-files/Space%20Heater%20Toolkit%202016.pdf>

ENERGY EFFICIENT LIGHTING

DID YOU KNOW?

ACCORDING TO THE INTERNATIONAL ENERGY AGENCY (IEA), NEARLY 20% OF THE WORLD'S TOTAL ELECTRICITY PRODUCTION IS CONSUMED BY ELECTRIC LIGHTING, AND THE GLOBAL DEMAND FOR ARTIFICIAL LIGHT IS PROJECTED TO BE A WHOPPING 80% HIGHER BY 2030? LIGHTING CAN ACCOUNT FOR MORE THAN 60% OF TENANTS' ENERGY COSTS IN OFFICES, AND IS ONE OF THE BIGGEST CONSUMERS OF ENERGY DIRECTLY CONTROLLED BY TENANTS.



Here is what you can do reduce costs by making your space more energy efficient:

EQUIPMENT UPGRADES

- Installing lighting controls can reduce costs by 30-50%
- Upgrade to LED, CFLs or T5 lighting and installing energy efficient spotlights
- When replacing lamps: Consider group re-lamping or replacing all the lamps in an area at the same time and near the end of their useful life. In doing so, you can cut replacement labour costs
- Choose ENERGY STAR qualified light bulbs and lighting fixtures for the most used fixtures or light bulbs in your home or building.
- Install motion-sensitive lighting or daylight-activated dimming to save energy in the workplace.
- Sub-meter energy use (for lighting)
- Install occupancy sensors - occupancy sensors turn off lights automatically when space is unoccupied saving about 25% of the lighting energy.
- If you are considering upgrading your lighting systems: prioritize high quality energy efficient lighting system that utilizes both natural and electric sources as well as lighting controls can cut lighting operational costs 30% to 60% while enhancing lighting quality, reducing environmental impacts, and promoting health and work productivity.

ACT ON IT

- Turn off unnecessary lights or adjusting lighting levels to suit the task.
- Put signs in areas where lights are used frequently to encourage and remind staff and cleaners to switch off when leaving – just this simple strategy can save up to 15% of your lighting energy.
- Make sure you're not 'overlighting.'
- Appoint specific people to be responsible for turning lights off.
- Make the best use of daylight when laying out your office.
- Remove lamps/ lighting that are not needed. In some cases, lamps or whole lighting fixtures can be removed or retrofitted without creating lighting problems (de-lamping), although this may create uneven lighting in the working environment.
- Clean & inspect your lighting systems regularly. Rust can affect the reflectance on the inside surfaces and decrease lamp life.
- Maximize daylighting throughout the office, as well as occupant exposure to natural light.



FOREVERGREEN ENGAGE: TURN IT OFF!

Activity Description:

What?

This activity is designed to encourage your colleagues to turn off unnecessary lighting when it is not being used including lighting in offices, meeting rooms, lunch rooms, individual task lighting, etc., by raising awareness and providing a disincentive to leaving lights on.

Why?

In a commercial building, lighting typically accounts for 30% of electricity costs. Turning off lights when not in use is the first step to reducing the energy used by lighting.

How?

- Launch a campaign to remind co-workers to turn off unnecessary lighting throughout the workplace. Create signs and stickers and place them in lunch rooms, meeting rooms and other high traffic areas around the workplace.
- Set up a collection jar that employees will have to contribute to if they forget to turn off the lights (or 'switch off').
- Send out an email to all employees encouraging them to 'call someone out' if they notice a co-worker leave a light on. The person who forgets to switch off will be asked to add \$1 to the collection jar.
- Run the campaign for 2-3 weeks. At the end of the campaign the money collected can be donated to a charity of your company's choosing or be used to purchase a treat for the office.

FOREVERGREEN ASSESS: SAVINGS CALCULATOR FOR ENERGY STAR QUALIFIED BULBS

Activity Description:

What?

The purpose of this activity is to help your organization determine the potential energy and dollar savings by replacing the light bulbs in your workplace with more efficient lighting using the Savings Calculator for ENERGY STAR Qualified Light Bulbs. You can also search for 'lighting calculators' online and a number of private lighting companies have developed calculators that will help you with your lighting upgrades.

Why?

In commercial buildings lighting normally accounts for more than 25% of the total electrical energy consumed. Yet much of this expense can be avoided by specifying a high quality energy efficient lighting system. Present the business case for lighting upgrades:

- What is the projected return on investment and payback period? Use the Energy Calculator here for different projects.
- Investigate the 'do nothing' alternative – take into account the costs that have been avoided as a result of the project. Within this, you can include future price increases for energy and other potential risks mitigated by your project. Almost all energy efficiency projects lead to avoidance of capital costs because all buildings have facility equipment and assets that will need to be upgraded eventually. For a list of potential risks and corresponding mitigation strategies see Pg. 17 of the RMI Retrofit Guide – Building the Case

Avoiding capital costs happens on nearly all energy retrofit projects because all buildings have equipment and components that will need to be replaced eventually! When calculating the return on energy efficiency investments, consider the life cycle costs, internal rate of rate (IRR), and value of increased occupant comfort in energy-efficient buildings in addition to the financial savings.

How?

- Access the EPA's online Savings Calculator for ENERGY STAR Qualified Light Bulbs here: https://www.energystar.gov/ia/partners/promotions/change_light/downloads/bulb.html
- Follow the calculator instructions and input relevant fields to determine savings.

FOREVERGREEN & KEEN

If you have already completed the first two activities for the month and are looking for more, here are some additional ideas:

- Develop a policy for your office where the last person to leave the office is responsible for turning off the lights.
- “Lights Out” Movie lunch – Run an environmental film during the lunch hour and encourage co-workers to join together, shutting off their individual lights and conserving electricity together
- Review the ENERGY STAR Bulb purchasing guide at http://www.energystar.gov/ia/products/fap/purchasing_checklist_revised.pdf
- Earth Hour is Saturday March 25 from 8:30 to 9:30pm. Remember to turn the lights off! There are lots of fun activity ideas for work and for home. Visit www.earthhour.org for ideas.

Resource Toolbox

- ENERGY STAR Interactive Guide to choosing Lighting: <http://www.drmediaserver.com/CFLGuide/index.htm>
- CFL Lighting Calculator: <http://energy.gov/eere/femp/energy-cost-calculator-compact-fluorescent-lamps>
- Lighting Choices to Save You Money – Department of Energy: <http://www.energy.gov/energysaver/lighting-choices-save-you-money>
- Purchasing Lights: <http://www.energy.gov/energysaver/lumens-and-lighting-facts-label>
- Whole Building Design Guide: <https://www.wbdg.org/resources/energy-efficient-lighting>

BEWARE OF THE PHANTOM POWER!

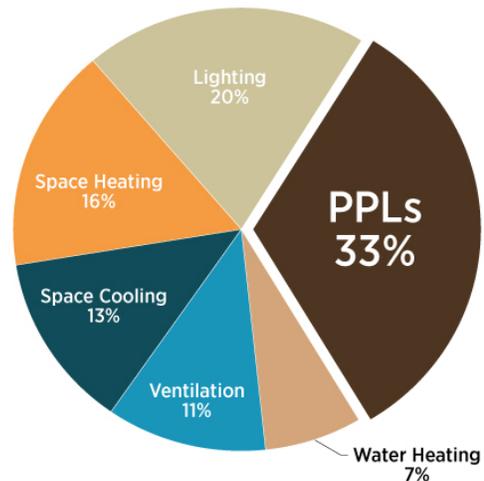


What is plug load and what is meant by phantom power? Plug load refers to energy required to run electronic devices plugged into electrical outlets, such as computers and task lights. Even when these devices are in sleep mode or turned off they can still use energy or “phantom power”. Plug loads account for about 33% of building energy consumption, which is more than heating, cooling, or even lighting. Electronic devices left plugged in, even when turned off or in standby mode, use significant amounts of energy. That’s called phantom power. It is the hidden ghost lurking in everyone’s offices and homes. Televisions, home entertainment systems, desktop computers, dryers, video game consoles, and printers are some of the biggest contributors to phantom power.

On the bright side, the good news is that plug loads can be managed through low- and no-cost measures that are relatively straightforward to implement.

Plug loads are one of the fastest growing sources of energy use in commercial buildings today. Specifically, plug load energy use/phantom power for computers and office equipment is increasing.

Commercial Buildings Energy Use Breakdown



Source: NRDC

PLUG LOAD SOURCES FOR OFFICES

Computers | Monitors | Chargers | Projectors | TVs
Audio Systems | Desk Lamps | Coffee Makers |
Printers | Scanners | Copiers

5 STEPS FOR HUNTING DOWN THE PHANTOM POWER:

1. **Unplug unused or rarely used devices.** Check with your IT department to see if there are any policies against shutting down your work computer at night.
2. **Put known energy hogs that don't need to stay on 24/7 on an advanced power strip.** Consider, using a “smart” power bar to automatically turn off equipment when not in use.
3. **Adjust the power settings** on your computer, game console, and TV. For instance, don't use screen savers, instead, set your computer to go to sleep after 15 minutes (or less) of inactivity, dim the brightness control, and turn it off when you've finished using it. By enabling the power management in computers, the energy use in non-business hours can be decreased by 60%.
4. **When time comes to replacing your electronics or appliances,** consider ENERGY STAR products with low standby power use.
5. **Engage staff.** Make sure they understand why, when and how to power down.

Note: Many IT departments have policies against shutting down computers, so before you shut yours down be sure to check with IT.

FOREVERGREEN ENGAGE: WHERE IS THE PHANTOM POWER HIDING?

Activity Description:

What?

The workbook from National Renewable Energy Laboratory (NREL) is meant to help you **document and estimate plug load** energy use and costs. Use the sheet named “Office PPL Calculator” to determine which PPL strategies will offer the greatest savings in your building. Access via this link: <http://www.nrel.gov/docs/fy13osti/54175.pdf>

Consider establishing a **Phantom Power champion** in the workplace to increase awareness amongst the co-workers.

The **short ranking quiz** in Appendix 4 can be used to raise awareness of phantom power in the workplace and at home. Distribute the quiz amongst your colleagues and encourage them to complete it for a chance to win a \$10 Starbucks gift card.

Why?

Many people do not realize the sheer number of electronic devices that are drawing power at any given time. By raising awareness of the issue we hope to empower tenants to reduce the plug load in their workplace.

How?

- Quiz
 - Print the quiz provided via the link below or the one in Appendix 4, on scrap paper and distribute to your colleagues.
 - Print the answer key and display in a central area along with a ballot box.
 - Place “unplug” stickers on office equipment with high plug loads (e.g. coffee maker, kettle, computer etc.)
 - Give your colleagues a set amount of time (e.g. one week) to complete the quiz and drop it in the ballot box before you draw for a prize (you can hint to them that the answers are available by the ballot box).
- Place “unplug” stickers on office equipment with high plug loads (e.g. coffee maker, kettle, computer etc.)
- Place a reminder in the common area to raise awareness about unplugging equipment.

Resource Toolbox

- Plug Load Quiz: <http://www.theboc.info/continuing-education/webinars/boc1603/webinar-quiz-building-tool-diagnostics-2-managing-plug-load/>
- Appendix 4: Know where the phantom power is lurking quiz

FOREVERGREEN ASSESS: MONITOR SHUTDOWN CHALLENGE

Activity Description:

What?

Many organizations have policies in place that prevent employees from shutting down their computer at the end of the day because software updates and patches will often be pushed to computers overnight. However each computer is typically inactive but drawing power for at least 13-15 hours a day or more.

Organize a “Monitor Shutdown” challenge. Check with your IT department to confirm if this is permissible.

Why?

Just by turning off computers in the evenings and on weekends, running costs can be cut by more than two-thirds. Screen savers do not reduce energy use by monitors; automatic switching to sleep mode or manually turning monitors off is a better energy-saving strategy. The average desktop computer consumes 75 watts in active mode, 4 watts in sleep mode, and 2 watts while turned off. This challenge is to encourage your colleagues to turn off their computer monitors every evening, with the hopes of turning this action into a sustained behaviour.

How?

- Encourage employees to participate in the ‘Monitor Shutdown Challenge.’ As part of the challenge, they will have to ensure they shut down their monitors and/or laptops every day for 2 weeks.
- Each night, one person should be assigned to assign tally compliance.
- All workstations that successfully complete the task for 2 weeks should be entered into a draw for a prize. Ideas for prizes include “Goal Zero Products (<http://www.goalzero.com/products>) like solar-powered products including speakers, flashlights, portable power packs, etc.

FOREVERGREEN & KEEN

If you have already completed the first two activities for the month and are looking for more, here are some additional ideas:

- Celebrate **Earth Day** on **Saturday April 22nd** - Get out and participate in this annual celebration! Attend an Earth Day event in your community. From park cleanups, workshops, picnics to tree plantings, there are plenty of ways to get out and get involved.
 - Why not organize an outdoor picnic with your co-workers? Enjoy all that nature has to offer and get everyone to share one sustainability tip with the group.
 - Earth Day Canada hosts a 'pledge a tree' campaign every year. Check out the events page to see how your green team/co-workers can get involved: <https://earthday.ca/add-an-event/>
 - In the US? Find or host an Earth Day event here: <http://www.earthday.org/earth-day/registerfind-an-event/>
- Work with your procurement department to amend your purchasing policies to include ENERGY STAR. The EPA has some suggested language and 'Purchasing and Procurement Case Studies' here: <http://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/save-energy/purchase-energy-saving-products>
- Create a plug load policy for energy management of equipment based upon efficiency measures.
- Run a "Eliminate the Phantom Power" awareness campaign in the workplace and assess the results by using the this "Energy Visual Assessment Tool" from GreenCare: <https://bcgreencare.ca/resource/gl-toolkit-energy-assessment-tool-and-calculator-new>

Resource Toolbox

- ENERGY STAR for Office Equipment <http://oee.nrcan.gc.ca/sites/oee.nrcan.gc.ca/files/pdf/publications/equipment/energy-smart-office/pdf/energy-smart-office-eng.pdf>
- Managing Office Plug Loads: <http://www.cityofpaloalto.org/civicax/filebank/documents/15887>
- Managing Plug Loads: <http://newbuildings.org/wp-content/uploads/2015/11/PlugLoadBestPracticesGuide1.pdf>
- National Renewable Energy Laboratory (NREL): <http://www.nrel.gov/docs/fy13osti/54175.pdf>
- 4 Tips for Reducing Plug Load – Infographic: <http://www.gsa.gov/portal/content/199503>
- GSA Plug Load Checklist: http://www.gsa.gov/portal/mediaId/178935/fileName/PlugLoad_Checklist_Form_Fields_508.action
- San Francisco Plug Load Tool: <https://sftool.gov/learn/about/426/plug-loads#private-office/power-management>



FOREVERGREEN TEAM PACK

APPENDIX 1: I AM FOREVERGREEN

The following printable resources are included in the next few pages:

- I AM FOREVERGREEN poster
- I AM FOREVERGREEN commitment template
- Green Team member identifiers



I AM FOREVERGREEN



Bentall Kennedy and our tenants are working together to achieve a clean, green and enjoyable workplace. **Are you ForeverGreen?**

Write your name on a ForeverGreen pledge card along with an action you will take this month to reduce your environmental impact.

For more information talk to your company's Green Team reps or contact your Property Manager.

I AM FOREVERGREEN

I AM

AND I PLEDGE TO REDUCE MY ENVIRONMENTAL IMPACT BY:



Bentall Kennedy
FOREVERGREEN

I AM FOREVERGREEN

I AM

AND I PLEDGE TO REDUCE MY ENVIRONMENTAL IMPACT BY:



Bentall Kennedy
FOREVERGREEN

I AM FOREVERGREEN

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AND I PLEDGE TO REDUCE MY ENVIRONMENTAL IMPACT BY:



Bentall Kennedy
FOREVERGREEN

I AM FOREVERGREEN

I AM

AND I PLEDGE TO REDUCE MY ENVIRONMENTAL IMPACT BY:



Bentall Kennedy
FOREVERGREEN

I AM FOREVERGREEN



i AM A MEMBER OF THE GREEN TEAM!
ASK ME HOW TO GET INVOLVED.



Bentall Kennedy
FOREVERGREEN

I AM FOREVERGREEN



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ASK ME HOW TO GET INVOLVED.



Bentall Kennedy
FOREVERGREEN

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Bentall Kennedy
FOREVERGREEN

DETAILED WALK-THROUGH CHECKLIST

	NEEDS SOME WORK	DOING GOOD	OUTSTANDING	NOTES
WASTE MANAGEMENT				
Waste or recycling placed in wrong bins	<input type="checkbox"/> Frequent	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Rarely	
Waste and recycling communications and labeling	<input type="checkbox"/> Non-existent	<input type="checkbox"/> Some visible	<input type="checkbox"/> Highly visible	
Waste/Recycling bin placement	<input type="checkbox"/> Recycling only in central locations	<input type="checkbox"/> Recycling at garbage bins at workstations	<input type="checkbox"/> Only recycling bins at workstations, garbage only centrally located	
We receive waste diversion data from Property Manager	<input type="checkbox"/> No access	<input type="checkbox"/> Annually	<input type="checkbox"/> Monthly	
Paper shredding data is provided to Property Manager	<input type="checkbox"/> Never	<input type="checkbox"/> Annually	<input type="checkbox"/> Monthly	
Do employees in your company believe that the cleaning staff recycles properly?	<input type="checkbox"/> Believe that cleaners place everything in the garbage	<input type="checkbox"/> Believe that waste usually gets recycled properly	<input type="checkbox"/> Believe that all waste remains properly sorted	
We participate in an exchange or donation program for electronic equipment, furniture or office supplies	<input type="checkbox"/> No	<input type="checkbox"/> Ensure all old office supplies and equipment are recycled responsibly	<input type="checkbox"/> Participate and donate what we can to a charitable organization, school or other organization	
We follow sustainable paper and printing practices	<input type="checkbox"/> None	<input type="checkbox"/> Have signs encouraging people to print double-sided and black and white.	<input type="checkbox"/> Defaulted all print setting to double-sided and black and white; one-sided paper is reused	
We provide employees with reusable dishes, cutlery, coffee mugs for use in the workplace	<input type="checkbox"/> None	<input type="checkbox"/> Employees tend to bring and use their own dishes and reusable mugs	<input type="checkbox"/> Reusable dishes are provided and employees are encouraged to use and wash their own dishes/reusable mugs	
INDOOR AIR QUALITY				
Green cleaning products used	<input type="checkbox"/> Very little or unsure	<input type="checkbox"/> Some products in use	<input type="checkbox"/> Green cleaning policy is in place and adhered to	

DETAILED WALK-THROUGH CHECKLIST

	NEEDS SOME WORK	DOING GOOD	OUTSTANDING	NOTES
PLUG LOAD				
Are computers left on at the end of the day?	<input type="checkbox"/> IT policy is not to shut down	<input type="checkbox"/> No policy, some people shut down	<input type="checkbox"/> Automated, central shutdown procedure	
Number of electronic items left plugged in (e.g. cell phone chargers, coffee makers, projectors, etc)	<input type="checkbox"/> Many things left plugged in	<input type="checkbox"/> Some items	<input type="checkbox"/> None visible	
Number of employees with individual printers.	<input type="checkbox"/> Most people have individual printers (>30%)	<input type="checkbox"/> Some people have individual printers 10-30 %).	<input type="checkbox"/> IT policy does not permit	
Percent of eligible equipment that is ENERGY STAR Qualified (e.g. computers, monitors, imaging equipment, appliances)	<input type="checkbox"/> >40%	<input type="checkbox"/> 40% — 90%	<input type="checkbox"/> <90%	
Are energy savings features enabled on office equipment? (For e.g. computers/monitors enter stand by mode after a 15 minute period of inactivity)	<input type="checkbox"/> IT policy is not to do so	<input type="checkbox"/> No policy, some people proactively adjust settings	<input type="checkbox"/> Automated central procedure	
LIGHTING				
Efficiency of majority of ceiling lights	<input type="checkbox"/> Inefficient (32 watt tubes or greater)	<input type="checkbox"/> Energy efficient (less than 28 watts)	<input type="checkbox"/> Very efficient (LED)	
Do people turn off lights in meeting rooms, offices, etc. when unoccupied?	<input type="checkbox"/> People rarely switch off lights	<input type="checkbox"/> Some people switch off lights	<input type="checkbox"/> Majority switch off lights	
Occupancy sensors are installed as part of the lighting system	<input type="checkbox"/> Unable to install them as it would require a major electrical retrofit	<input type="checkbox"/> Some office areas have occupancy sensors, will consider expanding across the office as part of next retrofit	<input type="checkbox"/> Occupancy sensors are installed.	

DETAILED WALK-THROUGH CHECKLIST

	NEEDS SOME WORK	DOING GOOD	OUTSTANDING	NOTES
HEATING AND COOLING				
Usage of window coverings / blinds to regulate temperature	<input type="checkbox"/> No blinds or always left open	<input type="checkbox"/> Some people open/close them	<input type="checkbox"/> Blinds are fully automated	
Number of space heaters in the office	<input type="checkbox"/> No office policy, >10% of people have space heaters at their desk	<input type="checkbox"/> Very few people have them (<10%)	<input type="checkbox"/> None/office policy does not permit	
WATER USAGE				
Accessibility of cold, filtered drinking water to reduce water bottle use	<input type="checkbox"/> None	<input type="checkbox"/> Water available through sink faucet	<input type="checkbox"/> Drinking water dispensers available	
GENERAL				
Accessibility of utility data from Property Manager: electricity, gas, water	<input type="checkbox"/> None	<input type="checkbox"/> Annual	<input type="checkbox"/> Monthly	
Operating Hours Optimization (i.e. do the heating, cooling & lighting levels adjust based on hours that people are actually in the building?)	<input type="checkbox"/> None	<input type="checkbox"/> Turns off on weekends	<input type="checkbox"/> Fully Optimized for evenings, weekends and holidays	
Bicycle parking available	<input type="checkbox"/> None	<input type="checkbox"/> Insufficient	<input type="checkbox"/> Sufficient or better	
Employees are provided discounted/free transit passes	<input type="checkbox"/> None	<input type="checkbox"/> Insufficient	<input type="checkbox"/> Sufficient or better	
Carpooling program available or encouraged	<input type="checkbox"/> None	<input type="checkbox"/> Available and encouraged	<input type="checkbox"/> Available and office provides discounted parking rates for those who carpool.	
Social Programming	<input type="checkbox"/> None or few activities planned, low attendance	<input type="checkbox"/> Occasional activities with good attendance	<input type="checkbox"/> Frequent activities with good attendance	

DETAILED WALK-THROUGH CHECKLIST - LIST OF RECOMMENDATIONS | For more recommendations and additional resources, see Tenant Team Pack(s) or contact your Property Manager

WASTE MANAGEMENT

- Complete a waste walkthrough audit
- Implement office organic composting program
- Place recycling signs to increase awareness of what materials are recyclable
- Minimize purchase of disposable products such as paper cups and plates.
- Implement k-cup cycling program and provide reusable dishes and mugs in the kitchen
- Reuse scrap paper and office supplies
- Purchase products with minimal packaging and buy in bulk when appropriate
- Donate old furniture or office equipment
- Use rechargeable batteries
- Recycle e-waste through government approved processors

INDOOR AIR QUALITY

- Use Green Seal cleaning products
- Perform IAQ test (Contact your property manager)
- Conduct a thermal comfort survey (Contact your property manager)

PLUG LOAD

- Enable power management settings for computers, printers, copiers and other office devices.
- Use advanced power bars
- Consolidate use of printers
- Shut off monitors and/or manually configure energy saving mode for computers

LIGHTING

- Use task lighting with LED or CFL bulbs
- Consider sub-metering
- Install occupancy sensors
- Ensure lights are turned off and place reminder stickers on switches, if needed
- Use natural lighting where possible

HEATING AND COOLING

- Eliminate space heaters
- Keep window/doors closed when heating or air conditioning is running
- Close blinds/shades during peak summer to reduce heat

WATER USAGE

- Report leaks to property management

GENERAL

- Participate in sustainability events (e.g. Bike to work month, Earth Hour, Earth Day)
- Organize a carpooling initiative for employees
- Participate in bike share or car share service for employees to use for travel to and from meetings
- Offer telecommuting opportunities
- Organize Lunch n' Learns and environmental documentary screenings to increase awareness among employees
- Contact your property manager to see if they can provide utility data

DETAILED WALK-THROUGH CHECKLIST

THERE ARE A FEW THINGS THAT NEED SOME WORK.

WE HAVE CHOSEN 3 PRIORITIES. WE COMMIT OUR BEST EFFORT TO MAKE PROGRESS ON:

PRIORITY #1

PRIORITY #2

PRIORITY #3

Please sign below, though there are no legal or contractual obligations related to signing the document.
Review list with your property manager.

PRINT NAME _____

PRINT NAME _____

SIGNATURE _____

DATE _____

SIGNATURE _____

DATE _____

FOREVERGREEN TEAM PACK

Appendix 3 - Thermal Comfort Survey

Please rate the overall thermal comfort in your workspace:

	-3 very dissatisfied	-2	-1	0	1	2	3 very satisfied
Overall thermal comfort							
Thermal comfort during warm/hot weather							
Thermal comfort during cool/cold weather							
Acoustics (Noise from inside and outside sources like Building Systems, vibrations, ambient noise)							
Indoor Air Quality							
Lighting Levels							
Building Cleanliness							
Overall workspace satisfaction							

How closely do you connect your personal productivity and comfort with the level of noise in the office?

- Very connected
- Somewhat connected
- Neutral
- Not connected

If you experience thermal discomfort (temperature and humidity), when do experience it the most?

- Morning
- Afternoon
- Weekends
- Holidays
- Monday Mornings
- Always
- Other (Please explain below)



FOREVERGREEN TEAM PACK

Appendix 3 - Thermal Comfort Survey

If you experience thermal discomfort (temperature and humidity), which of the following best describes it?

- Too much/ too little air movement
- Uneven temperature (some areas are always too hot while others are usually cold)
- Incoming sunlight heats up space
- Heat from office equipment
- Drafty windows
- Vented air is too hot
- Vented air is too cold
- My workspace is hotter than other areas
- My workspace is colder than other areas
- Hot floors and walls
- Cold floors and walls
- Thermostat is inaccessible/ controlled by others
- Other (Please explain) _____

Which of the following do you use to control thermal comfort in your workspace? stores de fenêtre ou pare-soleils

- Window blinds or shades
- Ceiling fan
- Windows
- Thermostat
- Portable fan
- Portable space heaters
- Adjustable air vents
- Other (Please explain) _____

Please describe any other issues related to your thermal comfort in your workspace:



FOREVERGREEN TEAM PACK

Appendix 4: Know where the phantom power is lurking - Quiz

ForeverGreen: Know Where the Phantom Power is Lurking Quiz

Name: _____ Phone: _____ Email: _____

Question 1: Rank the following equipment from the highest to the lowest idle (phantom) load

Device	Rank by average idle load per device (1 for the one that consumes the most, and 10 for the least)
TV	
Fans	
Modems	
Computer - Laptop	
Computer - Desktop	
Printer/Fax	
Coffee Maker	
Audio/Video Devises	
Alarm Clocks/Radios	
Irrigation system	

Question 2: Fill in the blanks:

Plug loads (energy used by equipment that is plugged into an outlet) can average approximately ___% of electricity use in office settings.

FOREVERGREEN TEAM PACK

Appendix 4: Know where the phantom power is lurking - Quiz

Answer Key

Question 1: Rank the following equipment from the highest to the lowest phantom load.

Device	Rank by average idle load per device (1 for the one that consumes the most, and 10 for the least)	Idle load per device (Watts)
TV	2	13
Fans	1	110
Modems	3	11
Computer - Laptop	6	7.1
Computer - Desktop	4	9.5
Printer/Fax	7	6.3
Coffee Maker	10	1.4
Audio/Video Devises	5	7.5
Alarm Clocks/Radios	9	2.9
Irrigation system	8	3.5

Source: NRDC Home Idle Load Study - May 2015

Question 2: Fill in the blanks:

Plug loads (energy used by equipment that is plugged into an outlet) can average approximately **30%** of electricity use in office settings.