



Commercial Building Energy Initiative
Tenant Business Case

May 2010

**GREENING
GREATER
TORONTO**



An initiative of the Toronto City Summit Alliance

The business case for GTA tenants

Why to invest in energy efficiency programs

Commercial buildings are a key driver of the GTA region's carbon emissions

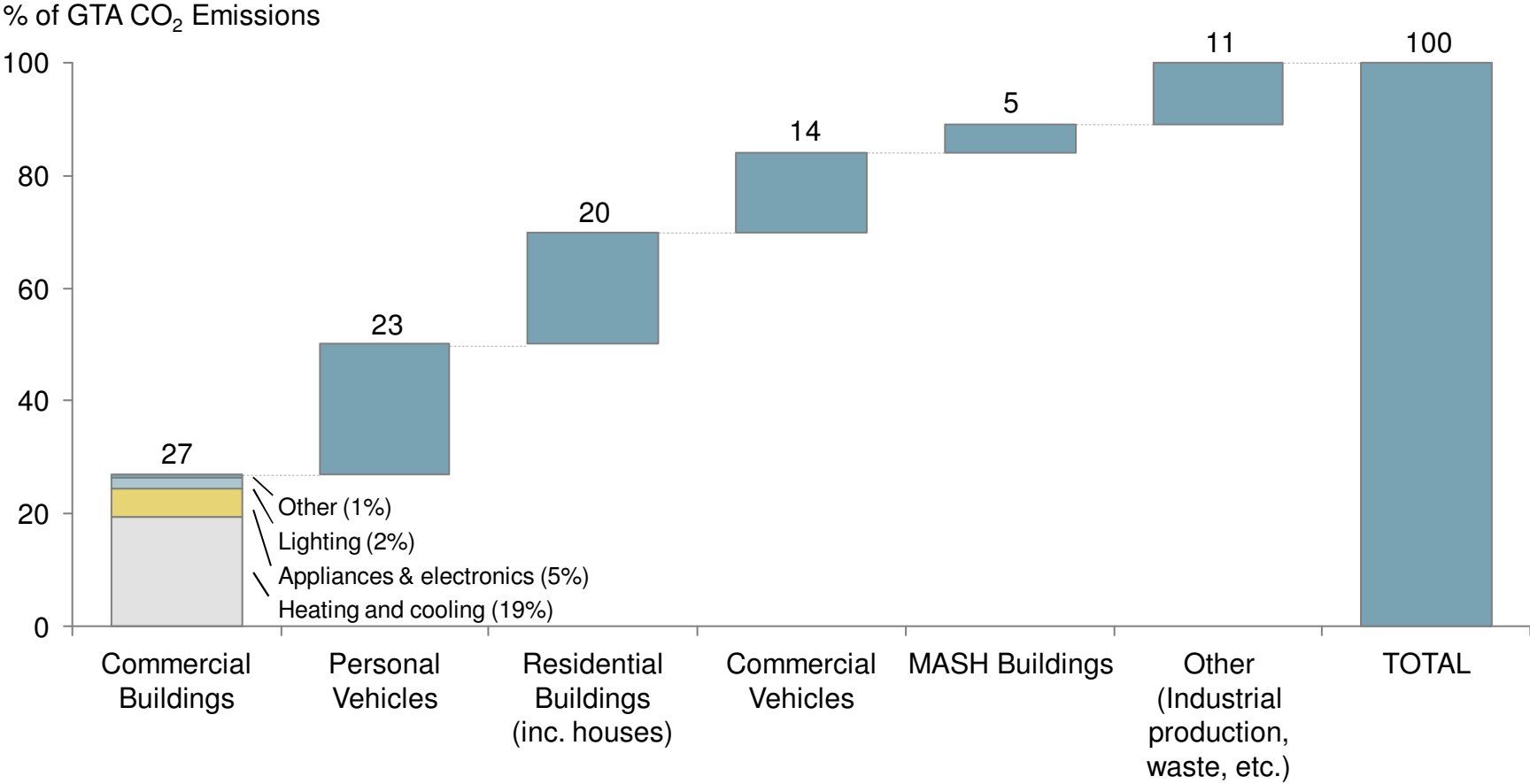
Tenant decisions play a vital role in driving change

Options range from "quick wins" to large scale investments with multi-year paybacks

- ~60% of GTA retrofit projects have a payback of less than 5 years

GGT and its partnering organizations can support you in beginning your "greening" effort today

Commercial buildings a significant driver of CO₂ emissions...

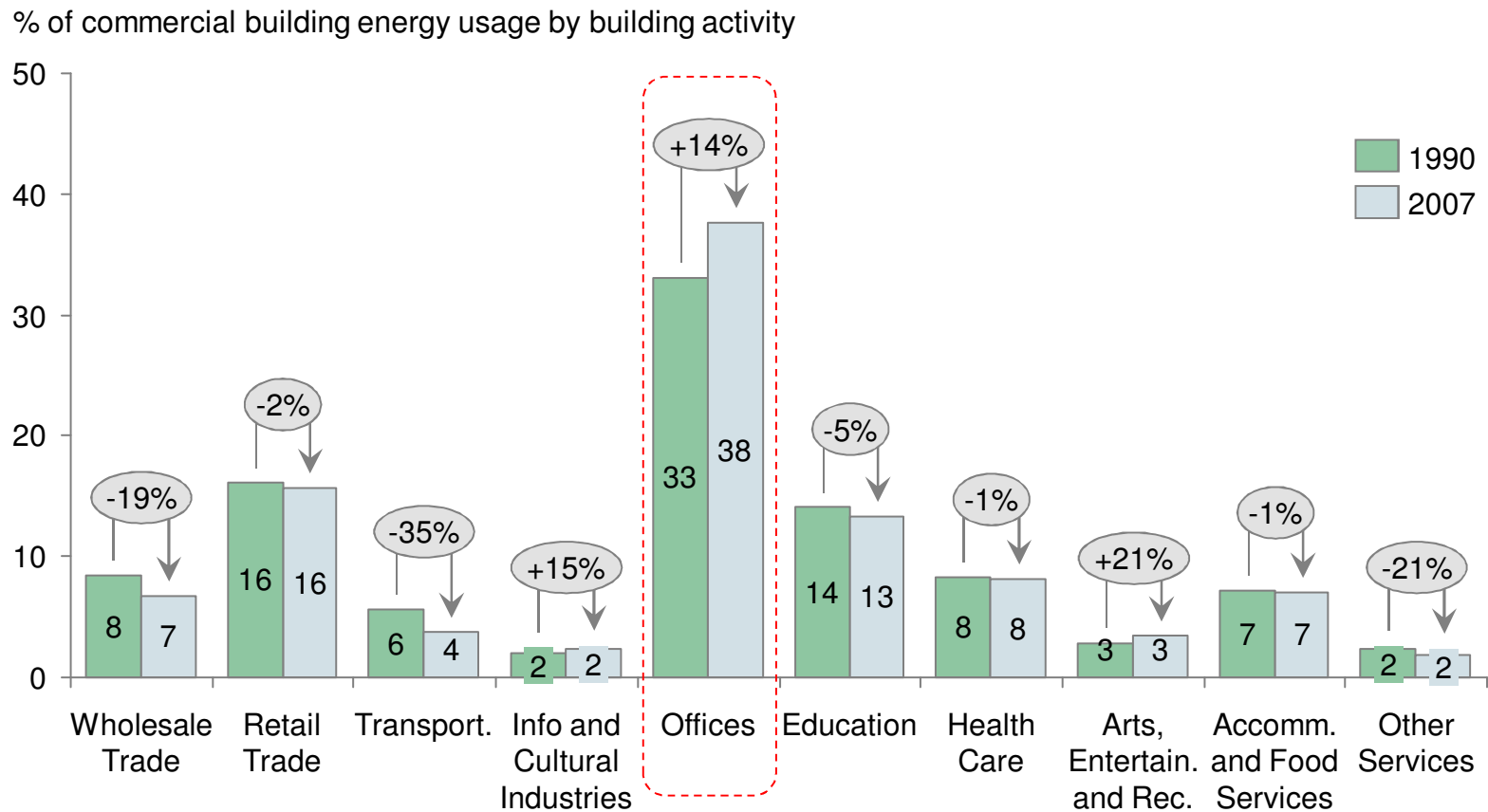


~27% of Toronto's CO₂ emissions generated by commercial buildings

Source: The Boston Consulting Group

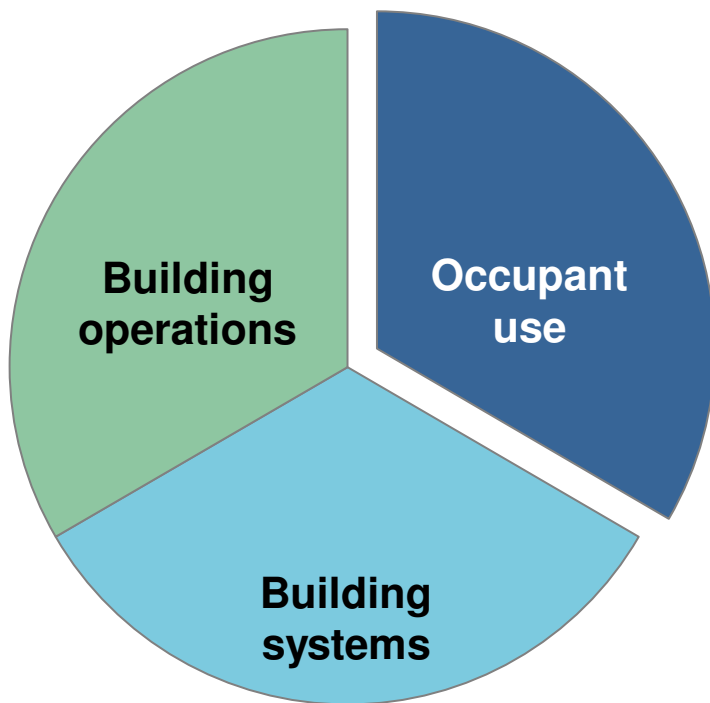
... with offices driving the greatest share of energy use

Office locations also one of the fastest growing sources of energy use



Occupants play a key role in reducing office energy use

Three drivers of office energy usage



Representative of energy usage -- actual split between three drivers will vary by building and use

Occupant use key to achieving improvements

Occupant use constitutes a large portion of a building's total energy use

- Typically 25% to 50%

Several examples of energy uses under full or partial tenant control

- Lighting (fixtures and timing)
- Electronics / appliances
- Timing for heating / cooling

Large scale energy efficiency initiatives often neglect occupant use

- Achieving optimum energy use requires partnership between tenants and owners

Range of options to "green" your workplace

Programs should begin with measuring current consumption

1

Measure: Understand your current-state

2

Organizational changes
(Occupant use)

Identify opportunities to make changes to current practices

- E.g., Adjust start-time for heating / cooling / lighting to reflect employee start / end times

3

Re-commissioning
(Building operations)

Re-commission existing equipment to meet actual/reduced demand requirements

- E.g., Optimize settings for air handling systems to reflect actual building usage

4

Retrofitting
(Building systems)

Redesign and install new workplace equipment

- E.g., Replace heating and air conditioning systems

Low

Medium

High

Difficulty & cost of implementation

Energy costs typically low portion of overall tenant costs



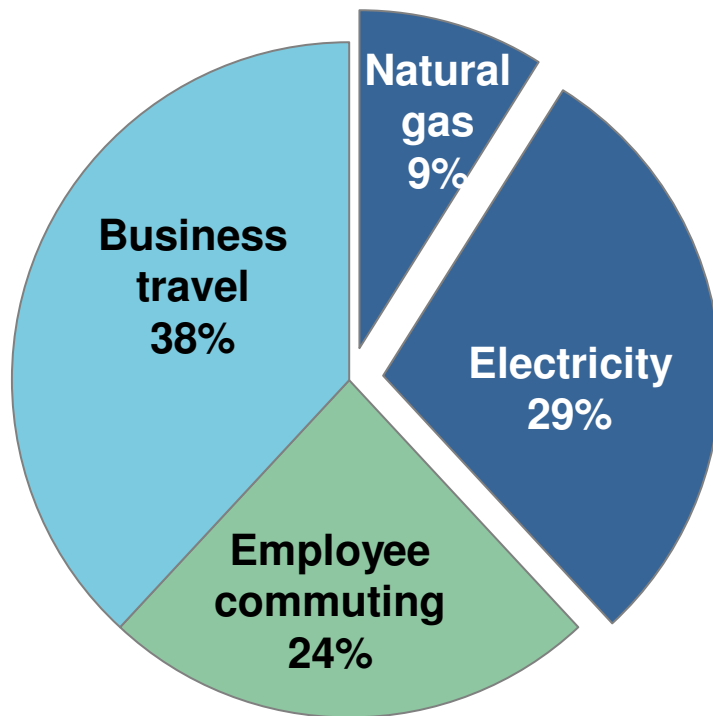
** Actual percentages will vary by company*

Improving / greening office space important to employee productivity and managing carbon footprint

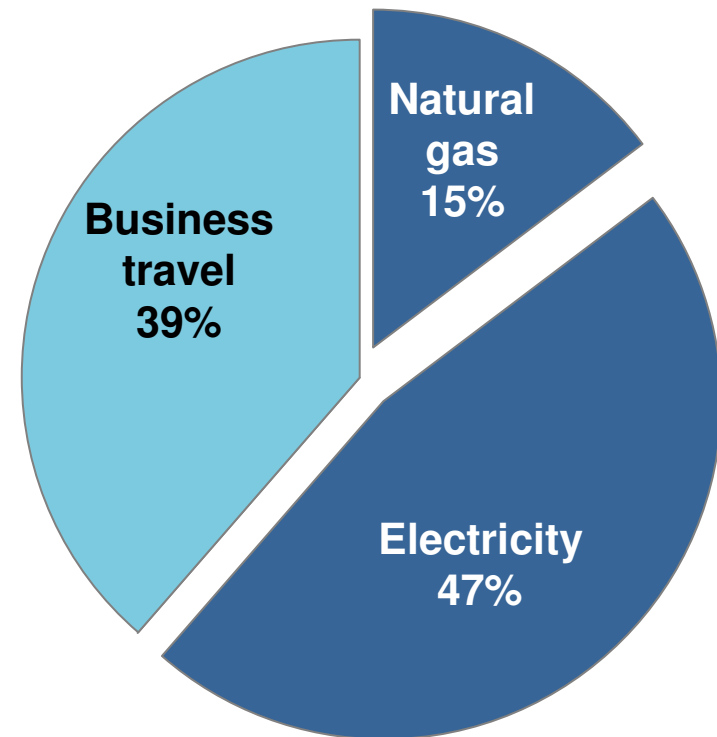
Source, Halsall Associates

Focusing on office energy offers greatest potential to address organizational climate change drivers

Typical organization sources of carbon
(inc. employee commuting)



Typical organization sources of carbon
(ex. employee commuting)



40% to 60% of a professional service firm's CO2 emissions can be from office energy use – to effectively reduce CO2 office use must be targeted

So, why are companies investing in "greening" their workspaces?

1

CORPORATE RESPONSIBILITY EFFORTS – CARBON REDUCTION

2

BUILD BRAND / REPUTATION

3

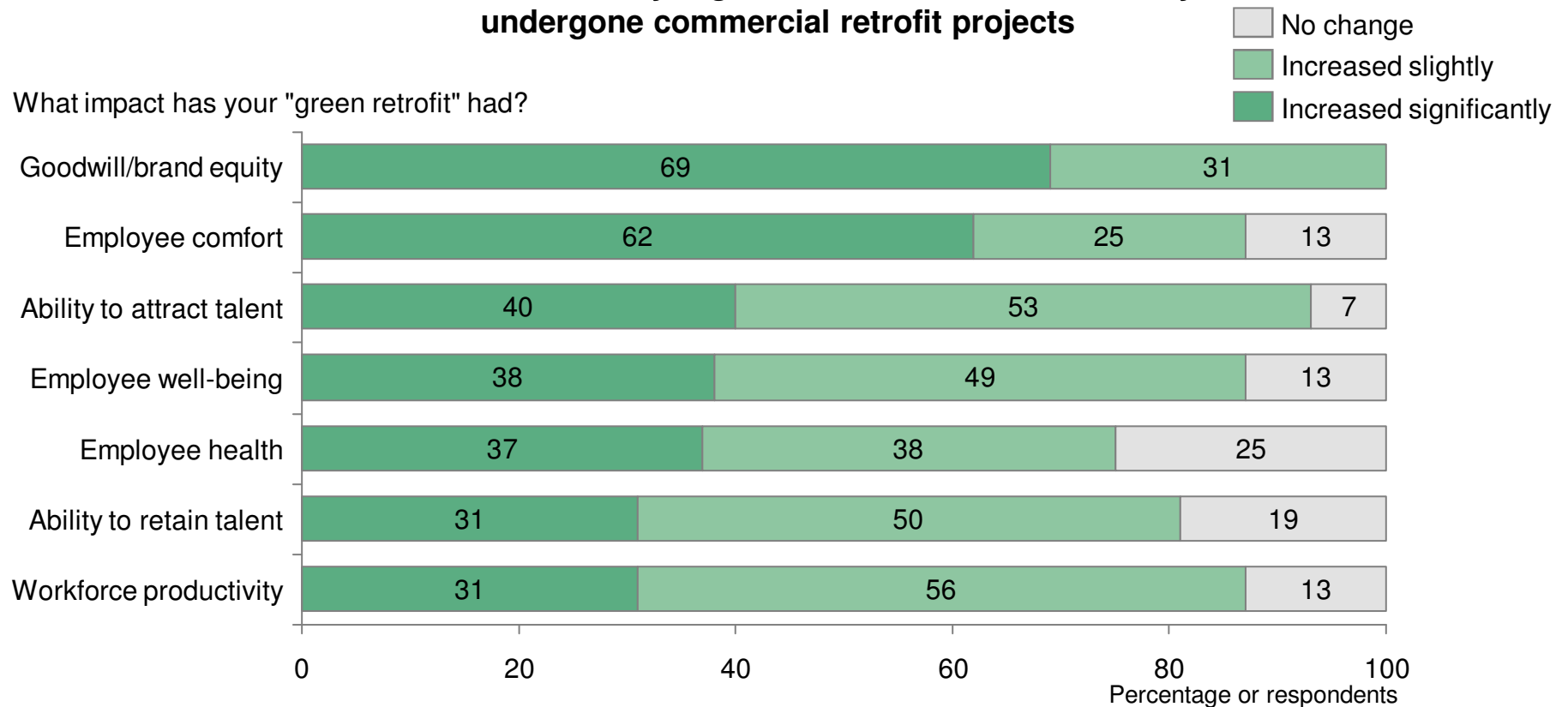
IMPROVE PRODUCTIVITY

4

ACHIEVE COST SAVINGS

Organizations performing retrofits seeing substantial benefits

Benefits as cited by organizations which have recently undergone commercial retrofit projects



Brand benefits and productivity (right employees in good working conditions) key reasons to "green" your office

"Many organizations...have realized that the workplace has a critical impact on the performance of the people who work there."

– "Measuring the performance of innovative workplaces." Journal of Facilities Management, 2002

"Green" buildings shown to improve employee health and productivity

Key findings?

Recent study of over 500 tenants who have moved into either LEED or Energy Star labeled buildings to identify benefits of "green" buildings

Providing a "green" workplace for your employees has a significant impact on both employee health and overall workplace productivity

Workplace improvements

- Better ventilation systems and air quality
- Improved lighting
- More comfortable work environment








Impact on employees

- Improved overall workplace productivity
- Fewer employee sick days and lower absenteeism
- Higher employee retention

Local example: SAS Canada absenteeism dropped 35% after creating "green" work space

Energy efficiency initiatives often offer high ROI

Examples from energy efficiency programs in the Toronto region

Potential efficiency project	Example		Average payback period (yrs)
Eliminate simultaneous heat / cool	Remove personal heaters, fans, etc.		0.1
Air handlers	Modify variable air control system settings		0.8
Re-commissioning	Quality assurance review of building to ensure it is operating properly / as intended		2.0
Lighting retrofits	Upgrade of lighting equipment to T8 or better		5.1
Variable speed drives	Device to optimize the energy usage of electric motors (on pumps, fans, etc.) by matching to actual demand usage		5.5
Lighting controls	Installing control systems to regulate the operation and intensity of lighting systems		6.6
HVAC system upgrade	Upgrading to cutting edge, high efficiency HVAC systems		9.6

Source: Range from ~130 select case examples from BOMA after available incentives; RBC experience; BCG analysis

Suggested starter list for high impact changes to organizational practice

Measurement

- Have you measured your office footprint (energy / environmental)?

Lighting / heating and cooling

- Is your lighting schedule appropriate given typical business hours?
- Have you looked into setting-back heating and cooling temperatures / timing?
- Do you heat / cool simultaneously (e.g., space heaters while A/C is on)?
- Can you maintain sufficient lighting with fewer light fixtures / lights per fixture?
- Are you only lighting areas where people are working?

Equipment

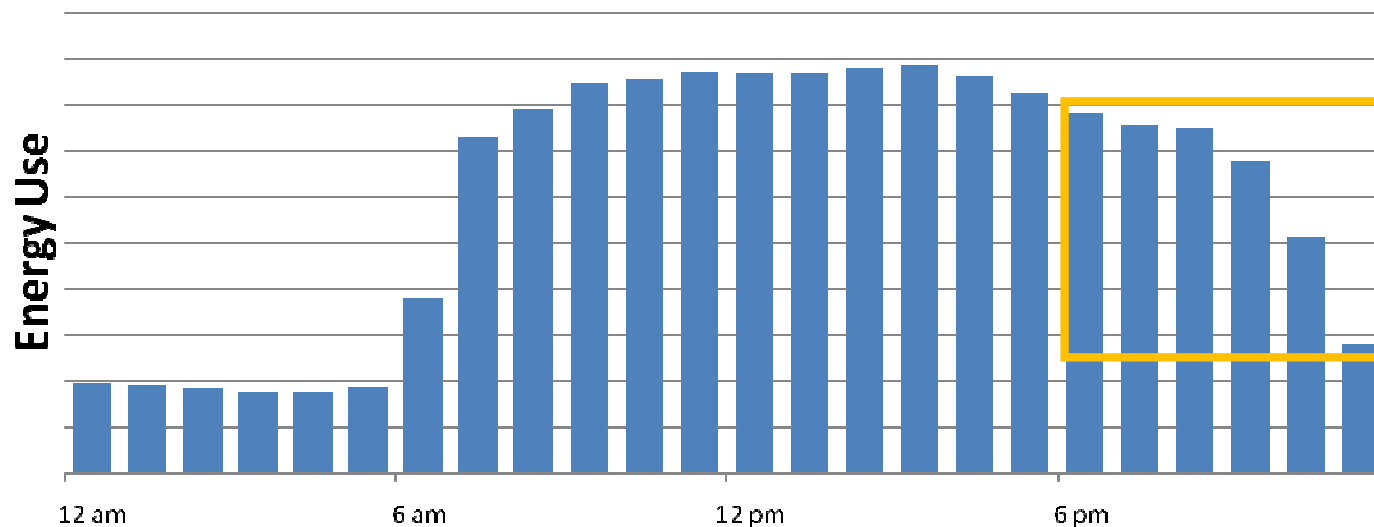
- Is anything operating 24 hrs/day that does not need to?
- Are computers / electronic equipment turned off when not in use (e.g., sleep mode)?
- Are additional machines you have brought to the office (e.g., pop / coffee machines) energy efficient?
- Is there an appropriate maintenance schedule for equipment you are responsible for?
- Are your machines and equipment running properly?
- Is your equipment over-spec'd given usage requirements?

Lease

- Can you incorporate appropriate recommendations from RealPac's green lease guide (www.realpac.ca) in your next round of lease negotiations?
- Will you look into "green" credentials the next time you grow your office space?

Opportunity for improvement (example 1): Analyze energy to determine if high use during non-working hours

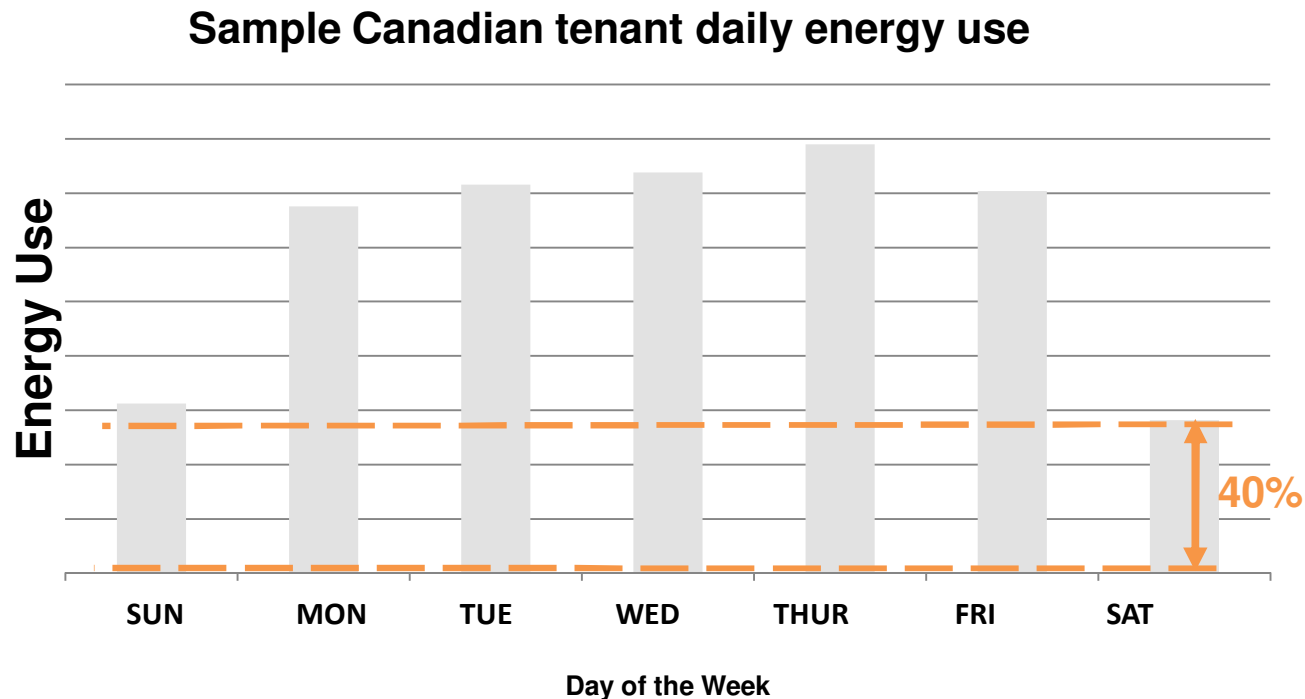
Sample Canadian tenant hourly energy use



Energy use analysis useful in identifying opportunities for improvement (e.g., reduce energy use during off-hours)

“Separately metered tenants on average had an eye-opening 21% lower utility costs compared with those occupying buildings with a consolidated meter. Clearly, making tenants accountable for their own utility usage has a significant impact on consumption behaviors.” - “Do green buildings make dollars and sense?”, Sustainable Industries, 2010

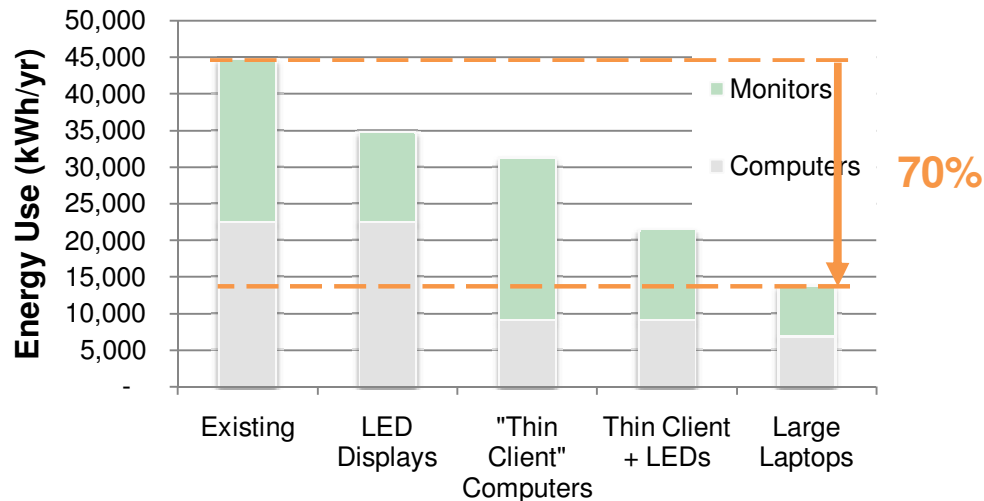
Opportunity for improvement (example 2): Review daily energy use to determine if energy wasted on weekends



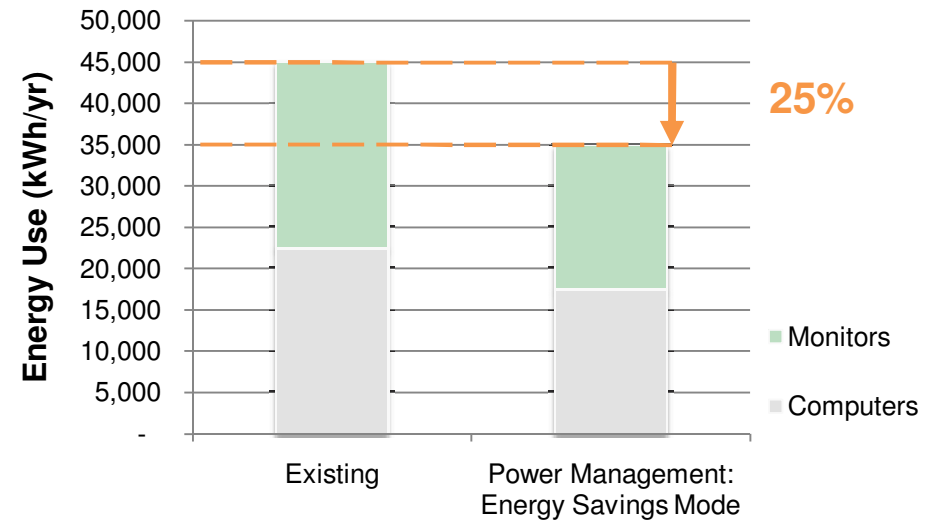
Daily energy use revealed significant energy used even while office empty

Opportunity for improvement (example 3): Review energy usage of office equipment

Energy use of office equipment for sample tenant vs. best-in-class



Energy use of computer and display by power settings



Choosing right equipment and power settings can significantly reduce energy use

Case example 1: "Going Green" at Stikeman Elliott LLP

What was done?

Launched "Going Green" program in an effort to reduce carbon footprint

- First national Canadian law firm to go carbon neutral

Worked with building to reduce overall energy usage by targeting lighting system

- Changed lighting schedules to reduce "on" time
- Installed motion sensors to optimize usage

Partnered with BOMA using CDM program to reduce investment cost

- Received cash-back incentive on capital investment

The result?

Experienced significant savings from lighting initiative

- ~450 kWh saved per year
- ~ \$45K savings per year
- 3 year payback on investment

"Going Green" program & CN¹ certification creating competitive advantage

- Client engagement; recruitment & retention

Plans in place for further energy savings opportunities

- Install high-efficiency T8 lighting system
- Natural light harvesting
- Reduce number of fixtures





Case example 2: Energy reduction initiatives at TD Bank

	What was done?	The results?	Future plans
Corporate portfolio	<ul style="list-style-type: none">• Conducted retro-commissioning audits at TD Centre• Re-commissioned 12 corporate sites• Installed metering• Implemented daylight cleaning at TD Centre & 3500 Steeles	<ul style="list-style-type: none">• Reduced energy consumption by 1,000,000 kWh• Reduced energy costs by \$100,000• Reduced annual GHG emissions by 200 tonnes	<ul style="list-style-type: none">• Expand daylight cleaning to other sites• Continue retro-commissioning audits• Align lighting schedule with operational schedule
TD office buildings at Creekside (Mississauga)	<ul style="list-style-type: none">• Conducted energy audit• Completed re-commissioning activities• Implemented daylight cleaning	<ul style="list-style-type: none">• Reduced annual energy consumption by 1.3 million kWh• Reduced annual energy costs by >\$100,000• Reduced annual GHG emissions by 238 tonnes	<ul style="list-style-type: none">• Continued excellence in energy management



Case example 3: Canadian Tire retail location



One of Canadian Tire's largest dealer-owned retail locations located in Toronto looking to replace lighting system

What was done?

Underwent in-store energy saving lighting retrofit project

Invested in retrofit to entire lighting system

- Installed high efficiency T8 fixtures across retail floor
- Energy efficient Starburst fixtures in Auto service center

Partnered with BOMA using CDM program to reduce investment

- Received cash-back incentive of \$45,000

The result?

Payback on investment of ~2 years

- ~\$90,000 annual savings

Reduced energy usage from 1.5M kWh to 0.8M kWh

Significantly improved lighting quality

- Staff praising quality
- No longer dealing with uneven lighting levels from old system
- Enhanced presentation of product

Next steps

Developing a game plan

- 1 Benchmark / measure** – Is your office space a poor, average or best-in-class performer?
- 2 Investigate energy end-use** – Understand where, when, and how your energy is being used
- 3 Develop a list of energy conservation measures (ECM's)** – Use Greening Greater Toronto's starter list, or consider using an energy specialist
- 4 Execute** – Implement your ECM's and monitor performance
- 5 Continuously improve** – What gets measured gets improved... quarterly energy reports (actual consumption compared to targets and benchmarks) allow managers to address changes

Interested in collaborating with your landlord and fellow tenants? Contact Greening Greater Toronto to see if a "Tenant Series" is right for your building