

5 Practical Approaches to Managing your 'Green' Options

Presented by
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Today's Agenda

- Drivers for Sustainability
- 5 practical things that will contribute to 'green' facilities
- How to calculate your carbon footprint
- What others are doing

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When 'Opportunity' gets your attention

- Reduced recruiting costs
 - 71% of employees want to work for companies that commit to social and community concerns ---Conference Board of Canada, 2000
- Retaining talented workers
 - 87% of employees in Europe would be more loyal to a company involved in activities that help to improve society ---Fleishman-Hillard study, 1999
- Increased productivity
 - Green buildings can increase occupant productivity by between 6% and 26% ---Rocky Mountain Institute
- Reduced operating expenses
 - Xerox Corporation saved or avoided \$2 billion in costs by designing green products and redesigning manufacturing processes over a 10 year period

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When 'Threat' gets your attention

- Climate change
 - Financial risk due to severe weather event
 - New regulations – training, penalties
 - Damage to reputation
 - Increased cost for fossil fuels
- Pollution
 - Air pollution claims 70,000 lives every year in the US ---World Health Organization, 2002 report
 - Air pollution costs \$1 billion a year in Ontario in hospital admissions, emergency room visits and absenteeism ---Ontario Medical Association (OMA)

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When 'Threat' gets your attention

- The energy crunch
 - Prediction: world oil and gas supplies will be unable to meet demand sometime between 2010 and 2020 ---University of Uppsala in Sweden
 - Brownouts and blackouts
- Erosion of trust
- The power of the internet
- Demanding stakeholders

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The Triple Bottom Line

- Planet
 - Reduced environmental impact
 - Optimal performance
 - Peak efficiency
- Profit
 - Higher productivity
 - Increased occupancy rates
 - Lower operational costs
 - Decreased churn rates
 - Increased asset value
 - Increase health
 - Decrease risk
- People
 - Increased occupant satisfaction
 - Improved productivity
 - Reduced absenteeism

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National Geographic Society

World Headquarters Washington, D.C.


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National Geographic Society


- One of the world's largest scientific and educational non-profit organizations
- Headquarters complex has four buildings




Hubbard Hall
100 years old



17th Street
40 years old



16th Street
60 years old



M Street
20 years old

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NGS - Financial impact

- Tremendous savings
 - \$600,000 in total savings
 - 10% reduction in energy expenses (\$300K)
 - \$300K annual savings in other operating costs
 - Lower water consumption, waste disposal expenses
- Increased Market Value
 - \$7 million investment increased real estate value by \$24 million
 - Improved equity, credit rating, debt borrowing capacity
- Results align with National Geographic Society mission

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What you can do....

1. Energy conservation
2. Water conservation
3. Improve air quality
4. Recycle
5. Green your supply chain



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1. Energy conservation


- Lighting
 - Increase access to daylighting
 - Fixtures
 - Bulbs
 - Occupancy/motion sensors
 - Design for lighting intensity of 1.0 watts per square foot or less
- Equipment
 - Energy star
 - <http://eee.nrcan.gc.ca/energystar/english/consumers/products.cfm?PrintView=N&Text=N>
- Separate zoning and controls



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1. Energy conservation

- Reduce use of CFC-based refrigerants
- Use renewable energy
- Install separate meters and include a direct pay clause in your lease
- Install continuous meters for lighting, HVAC, etc.
- Ensure commissioning occurs after construction
- Make more use of video conferencing rather than air travel



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Initiative	Yearly CO ₂ Savings
A low-energy, low-water-use washing machine	440 lbs
A high-efficiency refrigerator	500 lbs
Change five lights to compact fluorescent	700 lbs
Reduce your garbage by 25 percent	1000 lbs
Wrap your 5 year old water heater in an insulating jacket. Set water heater thermostat no higher than 120°F.	1,000 + 550 lbs
Leave your car at home two days a week	1590 lbs
Caulk and weather strip doors and windows	1700 lbs
Programmable thermostat	1800 lbs
A car that gets 32 miles per gallon	5600 lbs

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NGS – Energy Conservation

- Boiler/cooling tower upgrades
- Chiller replacements with HFC refrigerants
- Air-handling unit upgrades, zone dampers, and fan VFDs
- Building automation system (BAS) DDC conversion & upgrade
- Green Power



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2. Water conservation

- Only .013% of the world's water is potable
- Reduce the use of potable water used
- Fixtures in private washrooms, kitchens, staff lounges
 - Low flow
 - Aerators on taps
 - Fix dripping faucets
 - Turn the water temperature down
 - On-demand hot water

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NGS – Water conservation

- Efficient flush valve diaphragm replacements
- Low flow faucet aerators and controls
- Irrigation system rain gauge controls



Water Sensor

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3. Air quality

- **Commuting options**
 - Bicycles
 - Car pooling and preferred parking spaces
 - Consider financial support for employees using green transportation
 - Telecommuting
 - Electric car recharging station
- Trap dirt at entry to your space
- Enclosed rooms with separate exhaust for gasses or chemicals
- Mitigate the impact of floods and excess humidity (keep it below 60%) immediately
- Don't let employees store food in their personal workspace – helps eliminate chemicals from pesticides

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3. Air quality

- **Construction**
 - Order of construction
 - Flush out procedure
- **Increase ventilation**
- **CO₂ sensors and alarms**
 - Today's atmosphere contains 32% more carbon dioxide, one of the main greenhouse gases, than at the start of the industrial era
- **Personal environmental controls**
 - Air temperature, air flow
- **Kinds and types of filters**
 - Regularly changed
- **Material selection**
 - Better planning up front
 - Use salvaged, refurbished or reused
 - Dismantle not demolish
 - Recycled content
 - Rapidly renewable products
 - Regional manufacturing
 - Certified wood
 - Low Volatile Organic Compounds (VOC's)

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Where VOC's are found

<ul style="list-style-type: none"> ■ Furniture ■ Paint ■ Paint strippers ■ Adhesives/glues ■ Solvents ■ Upholstery ■ Contaminated water ■ Draperies ■ Carpet ■ Spray cans ■ Clothing ■ Cleaning products ■ Copy machine toners ■ Felt-tip markers/pens ■ Correction fluid 	<ul style="list-style-type: none"> ■ Carbonless (NCR) copy paper ■ Building materials ■ Aerosol sprays ■ Disinfectants ■ Fuels ■ Tobacco smoke ■ Air fresheners/deodorizers ■ Pesticides ■ Mothballs ■ Dry-cleaned clothing ■ Hairsprays ■ Perfumes ■ Nail polish ■ Fabric softeners
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Source: www.greenguard.org

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Immediate health effects of VOC's

- Eye, nose, and throat irritation
- Headaches
- Allergic skin reaction like a rash
- Difficulty breathing
- Nausea and/or vomiting
- Nosebleeds
- Fatigue
- Dizziness
- Loss of coordination
- Confusion

Source: www.greenguard.org

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NGS – Indoor air quality

- Complete asbestos abatement
- Ventilation and exhaust air flow verification
- BAS based CO₂ monitoring system
- Improved temperature and humidity control through upgraded BAS control and window film



Air-handling unit upgrades

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4. Types of recycling

<ul style="list-style-type: none"> ■ Electronics (disassembly and reclamation) ■ Aggregates and concrete ■ Batteries ■ Ferrous metals ■ Non-ferrous metals ■ Printer cartridges and toners ■ Glass ■ Paper ■ Plastic 	<ul style="list-style-type: none"> ■ Biodegradable waste ■ Textiles ■ Household hazardous waste <ul style="list-style-type: none"> ■ electronics (computers, cell phones, etc) ■ medical waste ■ paint products ■ Used motor oil recycling ■ Reduce water waste and pollution ■ Aluminum cans
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5. Green your supply chain

- Future planning for flexibility and multiplicity of uses
- Establish green protocols for purchasing
 - Office supplies
 - Recycled content
 - Biodegradable or compostable
 - Reduced chemical content
 - Third party certified
 - Furniture
 - Fixtures
 - Equipment
 - Construction materials
 - Service providers
 - PWGSC Green Procurement Checklist
<http://www.pwgsc.gc.ca/greening/text/proc/enviro4-e.html>
- Reduce use of plastic packaging

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NGS - Adopted operating policies

<p>Site</p> <ul style="list-style-type: none"> • Erosion control during site improvements • Hybrid vehicle parking and telecommuting • Green landscaping, snow and pest management <p>Energy</p> <ul style="list-style-type: none"> • Measurement & verification plan 	<p>Materials & Resources</p> <ul style="list-style-type: none"> • Construction waste management • Resource reuse and recycled content policy • Certified wood • Green housekeeping management • Contractor materials management and reporting policy <p>Indoor Environmental Quality</p> <ul style="list-style-type: none"> • Construction IAQ management plan
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Decision cycles

- Leasing
- Construction, fit-up and renovation
- Daily operations
- Future planning, strategic planning

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Go 'Carbon Neutral'

If you add polluting emissions to the atmosphere, you can effectively subtract them by purchasing "carbon offsets"

- A "carbon offset" is an emission reduction credit from another organization's project that results in less carbon dioxide or other greenhouse gases in the atmosphere than would otherwise occur.
- Carbon offsets are typically measured in tons of CO₂-equivalents (or 'CO₂e') and are bought and sold through a number of international brokers, online retailers, and trading platforms.

Source: www.davidsuzuki.org

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What is your carbon footprint?

- <http://www.earthlab.com/carbonProfile/LiveEarth.htm?ver=14>
- <http://www.liveclean.ca/>
- Environmental Choice Program (ECP) rating – average rating in US is 325 per person, and in Canada is 305 per person – a lower rating is better
- An average acre of fully stocked forest will remove 3.6 tons of carbon dioxide per acre per year. An average tree will remove 1 ton of carbon dioxide from the atmosphere over a 40 year period.
Source: www.vfearthinstitute.org/carbonwksht.html

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Beyond 'greening' to corporate social responsibility

- Step 1
 - Question wasteful practices, and design steps to benefit funding/profit and the planet
- Step 2
 - Gain endorsement for sustainable ideas using business language
- Step 3
 - Collaborate throughout the organization to meet goals
- Step 4
 - Measure your organization's progress, and strive continuously to improve

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Step 1 - Watch

- For one week, look at and question every practice, process and procurement – is it wasteful?
 - Document your findings
- Find out what colleagues are doing at other organizations as environmental leaders
- Pick a 'Big Hairy Audacious Goal (BHAG)' for improvement

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Step 2 – Gain support

- Use appropriate language
 - What are the financial metrics used to determine funding priorities?
 - What are the governance and accountability targets?
- Know who your champion is
- Avoid alienating your SMT with your environmental message – keep focused on benefits or risks to the organization

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Step 3 - Collaborate

- Get support at the SMT and then throughout the organization
- Include employees
 - Ideas
 - Implementation
 - Make it part of performance expectations
 - Use empathy
- Expand your network
 - Work with others who will share best practices
 - Suppliers – look for 'lowest responsible bid'

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Step 4 - Measure

- Measure what you can and relate it to organization's strategic objectives
 - Stakeholder perspective – customer satisfaction and loyalty
 - People perspective – improved productivity, reduced sick leave, faster hiring, improved retention
 - Operational perspective – designed a better 'mouse trap,' less downtime
 - Financial perspective – reduced costs, funding available for other priorities

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What type of organization do you want to be known for?



Locusts

- High negative impact



Caterpillars

- Have potential for transformation



Honeybees

- Cultivate human, social and natural capitals, working in inclusive partnership. They cross-pollinate, incubate innovative new ideas.



Butterflies

- They generate environmental, social and economic value. They 'get-it.'

---Source: The Chrysalis Economy, John Elkington

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Resources

- Ottawa Go Green Expo, March 21, 22, 2009
<http://www.ottawagreenexpo.com/exhibitor/features/guests.html>
- Alliance for Sustainable Built Environments (ASBE)
www.greenfacilities.org
- Calculate your personal carbon footprint
<http://www.earthlab.com/carbonProfile/LiveEarth.htm?ver=14>
- Products certified for indoor air quality
www.greenguard.org
- PWGSC Green Procurement Checklist
<http://www.pwgsc.gc.ca/greening/text/proc/enviro4-e.html>
- 'EcoLogo' is North America's most widely recognized and respected multi-attribute environmental certification mark www.environmentalchoice.com
- Gordon, Pamela J., Lean and Green, Profit for Your Workplace and The Environment, Berrett-Koehler Publishers, Inc., San Francisco, 2001
- Willard, Bob, The Next Sustainability Wave, New Society Publishers, Canada, 2005

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