



# Business Guide to Eco-efficiency:

## 10 Strategies to Maximizing Efficiency, Improving Profits and Competitiveness

**SmartSteps™** is GVRD's program of technical assistance, tools and information to help your business become more eco-efficient. The program helps you find specific, cost-effective actions you can take to become more efficient, protect profits and add value to your community.

## What is eco-efficiency?

According to the World Business Council for Sustainable Development, "it means creating more goods and services with ever less use of resources, waste and pollution."

***A business can improve eco-efficiency by:***

- Minimizing material use
- Maximizing energy efficiency
- Replacing the use of toxic substances
- Enhancing the recyclability of their products
- Maximizing the use of renewables
- Enhancing product durability
- Considering a new model; offering a service instead of a product

Source: [www.wbcsd.org](http://www.wbcsd.org)



Clean Air



Waste Reduction



Sustainable  
Purchasing



Recycling



Water Conservation



Energy Efficiency





## Why try to be more eco-efficient?

- **Cut costs:** Spend less on energy and materials.
- **Reduce risk and liability:** Renewable resources may provide a more secure source of materials as supplies dwindle, and non-toxic materials do not expose workers and neighbours to contaminants.
- **Raise revenues:** Innovative product designs and improved brand image increase market share.
- **Improve productivity and employee morale:** Aligning company values with employee and community values helps raise staff morale and productivity.
- **Improve environmental performance:** Reducing waste and emissions improves relations with governments and local communities.



### How do I get started?

The GVRD's **SmartSteps** Sustainable Business program offers **10 Strategies to Improve Eco-efficiency**. This guide walks you through the best places to start improving eco-efficiency in your business. Next, look to the **Sector-specific Guides** that provide more focused information tailored to your business sector. Look for ideas in the **Case studies**. And check out **SmartSteps technical resources** on line at: [www.gvrd.bc.ca/smartsteps](http://www.gvrd.bc.ca/smartsteps).

If you require additional information or want technical assistance contact a **SmartSteps Business Advisor** at 604-451-6575.



# 10 Strategies to Improve Eco-efficiency



## 1. Engage Your Employees

Your employees, working in the front lines, are in a unique position to identify eco-efficient opportunities and act on them. You will be surprised at their insights on waste and inefficiency in your operations. Employers can encourage employee support of improvement initiatives by clearly communicating senior management's endorsement of eco-efficiency strategies and sustainability goals. Employee support for eco-efficiency initiatives will be strengthened by designing them to mitigate your firm's impacts on the local community.

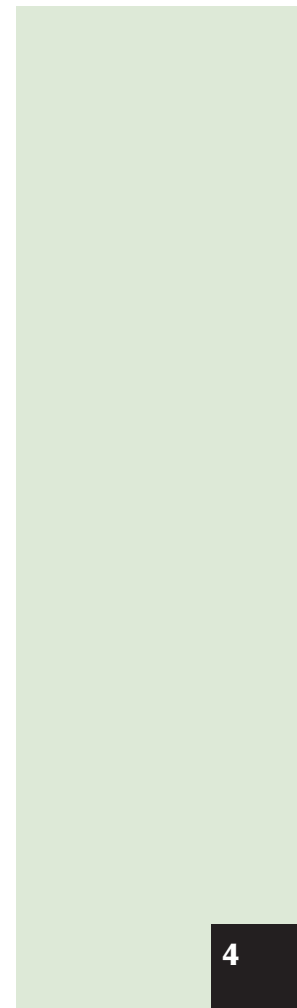


### If you do just **one** thing...

Ask your employees for suggestions on how to improve efficiency and reduce waste.



- Identify environmental problems and set performance goals. Aligning environmental performance goals with strategic business goals is a step towards integrating sustainability criteria into your business decision-making.
- Raise awareness through training and education. Recognize that employees may need guidance on how to apply eco-efficiency in their day-to-day work and how their efforts contribute to meaningful change. Throughout the year renew and reinforce the environmental message in every way (e.g. email/intranet, posters, group discussions).
- Appoint a "champion." Leadership committed to sustainable values is often indispensable for organizational change. Enlist a leader to promote your program development and guide implementation. Empower the champion to act.
- Recognize and honour employees for advancing valuable ideas and setting good examples.
- Monitor and measure progress. Use this information to keep employees informed and up-to-date.





two

## 2. Maintain or Upgrade Process Equipment

Proper maintenance and upgrading of process equipment, such as heating and ventilation systems, motors and compressed air systems, can yield dramatic energy and cost savings, increased process efficiency and improved air quality for the community.



### If you do just **one** thing...

Follow equipment manufacturers' recommended maintenance schedules to increase service life, improve process efficiency and save energy and costs.

#### Process Heating Systems

- Start a water treatment regimen. To prevent scale formation in boiler tubes and save energy, frequently clean heat transfer surfaces (steam coils, radiant tubes and electrical elements) on the water side of the boiler heat exchange tubes. Reduce heat loss by installing or repairing insulation on valves, pipes and fittings. Regularly inspect steam distribution systems (piping, valves, steam traps, flanges and seals) for leaks, and repair as necessary.
- Control the air-to-fuel ratio to improve combustion and reduce heat loss. Tune the damper settings on boiler draft fans. Install over-fire air control systems to reduce emissions. Seal doors properly. Lower water temperature settings in boilers to reduce short-cycle losses of convective and radiant heat.

#### Motors, Fans and Pumps

- Properly lubricate moving parts and bearings to minimize wear. Correct shaft alignment to ensure smooth transmission of power from motor to load and longer service life.
- Consider adjustable-speed drives on motors. These drives allow fans and pumps, for example, to run more of the time at their most efficient speed to reduce energy consumption.

#### Compressed Air Systems

- Minimize compressed air leaks. Check all point-of-use connections. Inspect regularly.
- Match system supply with demand. Regulate all applications to the lowest practical pressure using a good quality regulator.
- Eliminate inappropriate uses of compressed air. For example, mechanical or hydraulic devices designed to move goods may be more cost-effective for such uses than compressed air.

#### fact:

Optimizing compressed air systems could provide energy efficiency improvements of 20 to 50 per cent.

US DEPARTMENT OF ENERGY

#### links and resources

US Department of Energy, Office of Industrial Technology, Best Practices  
<http://www.oit.doe.gov/bestpractices/>



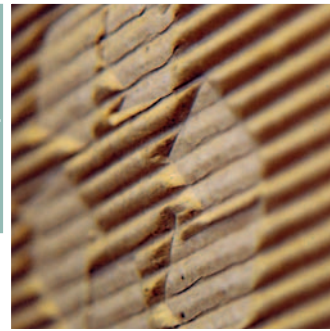
### 3. Start or Improve Your Recycling Program

Recycling makes good business sense and improves your company's image. Recycling saves money by reducing the size and number of garbage containers you use or the frequency of pick-up. For example, paper and cardboard bulk up both your garbage bin and your disposal costs. Corrugated cardboard, office paper and newspapers are banned from landfills – if you're still putting these materials in the garbage, you may be charged extra for disposal.

three

#### If you do just **one** thing...

Recycle all paper and cardboard and at least one other high-volume material.



- Reduce all types of garbage.
- Reuse materials. The Recycling Council of BC offers a free waste exchange service for businesses with waste to dispose of and businesses seeking materials.
- Assess and improve the effectiveness of your recycling program. Ask your recycling contractor to identify material types and weights on your invoices so you can track your firm's waste reduction progress.
- Recycle at least one additional high-volume material. Check your garbage bin to determine which material takes up the most space. Then talk to your recycling contractor to assess recycling options. Materials such as glass, plastics, wood pallets, scrap metal and fluorescent tubes are readily recyclable in the Greater Vancouver Region.

#### fact:

Nine jobs are created by the recycling industry for every 15,000 tonnes of material recycled. Only two jobs are created for every 15,000 tonnes of waste incinerated, and landfilling the same amount only creates one job.

VANCOUVER SUN,  
APRIL 2003

#### links and resources

Greater Vancouver Regional District, Recycling and Garbage  
<http://www.gvrd.bc.ca/recycling-and-garbage/business-services.htm>



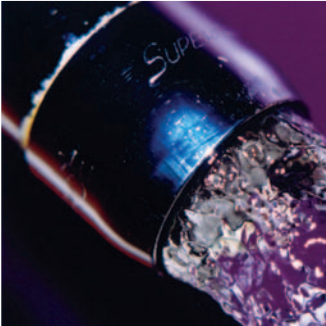
# four

## 4. Conserve Water

Population growth and industrial expansion have increased the demand for water. The GVRD gets a lot of rain, but most of it falls in autumn or winter. Because of limited storage capacity in our reservoirs, the water supply is not as abundant in summer, when demand is high and rainfall low.

Water conservation means reducing the amount of water used for the same level of service.

Using less water lowers both your water bill and your sewer charges. If you heat a lot of water, using it more efficiently can lower your energy bill. At the same time you preserve water resources in your community.



### If you do just **one** thing...

Implement a leak detection and system maintenance program to save water and energy costs.

- Change from being a water consumer to a water manager. Start with a baseline water-use audit showing where, how and in what quantities your firm uses water. Review your municipal water and wastewater invoices for statistics about your water use and wastewater production over time. Tracking water use will help you identify trends, seasonal variations and opportunities to conserve. This baseline will help you monitor your conservation progress.
- Evaluate water conservation opportunities and set reduction goals. Make the goals realistic. Operate dishwashers and laundry equipment only when full. If retrofitting equipment, consider ultra-low-flush toilets and urinals, low-flow showerheads, faucet aerators, flow-control restrictors, counter-current rinsing and eliminating once-through non-contact cooling water.

### fact:

A leak of only one drop per second wastes about 10,000 litres of water a year. Most leaks are easy to find and inexpensive to fix.

### links and resources

American Waterworks Association  
<http://www.awwa.org/waterwiser/>



## 5. Be Energy Efficient

British Columbia is fortunate to have a reliable, renewable source of hydroelectric power. But it's not limitless. If consumption continues to grow at current rates, demand will exceed supply by the end of the decade. Energy conservation can help reverse this trend. Otherwise we will be forced to add new sources to our supply, at considerable cost and environmental impact.

Being energy efficient pays off, particularly in times of rising energy prices. Companies that conserve energy reduce operating costs and improve their bottom line. Customers, tenants and employees also appreciate the benefits of more efficient technology: better lighting, climate control and ventilation. Energy efficiency contributes to better air quality by reducing combustion emissions from fossil fuel electricity generation. Reducing greenhouse gas emissions also helps Canada meet its Kyoto commitments and slow the pace of climate change.

five

### If you do just **one** thing...

Turn off lights in unoccupied rooms and equipment when not in use.

- Track your energy use over time. Review your electricity invoices from BC Hydro for statistics about your energy demand and electricity consumption to identify trends, seasonal variations and opportunities to conserve. Identifying energy consumption patterns also provides a baseline from which you can monitor progress.
- Commission all energy systems. With new systems the commissioning process ensures they are installed and functioning properly from the start. With existing systems consider recommissioning to optimize their operation through low-cost or no-cost repairs and operational changes. Recommissioning can provide energy savings of 25% with paybacks of between 1 to 2 years.
- Prioritize and implement cost-effective energy savings that best fit your business. For most businesses the best opportunities are in lighting, HVAC (heating, ventilation and air conditioning), office equipment and plug loads; turning off equipment when not in use.
- Talk to your landlord or property manager. Ask about installation of energy efficiency measures that can lower your utility bills.
- Consider joining Natural Resources Canada's Energy Innovators Initiative and receive funding support of up to \$25,000 for retrofit planning and up to \$250,000 for retrofit projects.
- Become a BC Hydro Power Smart Partner or participate in their Power Smart Product Incentive Program and receive financial rebates for installing energy efficient technologies.



### fact:

Peak demands that are infrequent represent a cost-saving opportunity since it may be possible to easily identify and avoid the occasional activity that sets the peak ... As little as 10kW of peak demand saved could reduce costs by \$50 to \$100 per month, contingent upon your rate.

NATURAL RESOURCES CANADA

### links and resources

Natural Resources Canada, Office of Energy Efficiency  
<http://oe.e.nrcan.gc.ca/english/>

BC Hydro Power Smart Technical Guides for Business  
<http://www.bchydro.com/business/>

Terasen Gas  
<http://www.terasengas.com>



# six

## 6. Reduce single-occupant vehicle trips to and from work.

The Greater Vancouver Region is one of the fastest growing regions in North America. Growing traffic congestion increasingly delays shipments stalled in traffic and lengthens commute times for employees. The inefficient transportation of goods and added stress for employees contributes to decreased productivity, absenteeism and economic losses.

Employee trip-reduction programs can provide at least a partial solution to the problem of traffic congestion and provide employees an opportunity to save money and improve their health and well-being.

### If you do just **one** thing...

Keep books of FareSaver tickets to promote the use of public transportation for your business.

- Offer discounted transit tickets or passes for commuting. Contact Translink and take advantage of group transit pass discounts. Companies with 25 or more employees interested in group transit passes can benefit from 15 per cent off the price of an annual pass as part of the Employer Pass Program.
- Promote carpooling. Provide a ride-matching service and reserved or subsidized parking for registered pool vehicles.
- Provide bike racks and shower facilities. Encourage staff to bicycle to work.
- Reduce your employees' commute. Offer flexible work hours, a compressed workweek, or telecommuting where it does not interfere with the conduct of business.
- Use energy-efficient vehicles. Consider purchasing or leasing vehicles with the highest possible fuel economy or those that use alternative fuels such as gas-electric hybrids or natural gas.

### links and resources

Go Green  
<http://www.gogreen.com/INDEX.html>

Better Environmentally Sound Transportation – Driving Home the Costs  
[http://www.best.bc.ca/\\_etc/pdfs/driving\\_.pdf](http://www.best.bc.ca/_etc/pdfs/driving_.pdf)

### fact:

It costs almost \$8,000 a year to drive a car in Greater Vancouver. This figure does not include the costs of road construction and maintenance, nor does it encompass the negative effects of air pollution and greenhouse gas emissions.



## 7. Purchase products and services with reduced environmental impacts.



seven

Environmental labelling aims to stimulate market-driven environmental improvement by attracting buyers. The designation of a product or service as “environmentally preferred” indicates that it is designed and produced to reduce environmental impacts throughout its lifecycle – from raw material extraction through product design to manufacturing, end-use and disposal. Third-party certifications, such as Environment Canada’s EcoLogo or the U.S. Green Seal, affirm that the product or service has been tested and certified to meet strict environmental criteria.

Of the self-declared environmental claims used by many products and services, a few may consider the broader lifecycle. But most are single-attribute claims that consider only one aspect of a product such as “biodegradable,” “recycled content,” or “non hazardous.” To help avoid unreliable or deceptive claims, watch for qualifications. Qualified environmental claims must include an explanatory statement. For example, if a product is labeled “recyclable” it must be 100 per cent recyclable or include a qualifying statement that indicates which parts of the product are recyclable.

### If you do just **one** thing...

Buy only the amount of product you need to avoid the cost of purchasing and disposing of unused products.

- Consider the environmental attributes of the products you buy. Work with your suppliers. Ask them to help you find products that are:
  - Designed to minimize waste (e.g. reduced packaging)
  - Energy efficient (consuming less energy during production or operation)
  - Less polluting than other competing products (e.g. material substitution using water- or aqueous-based compounds rather than petroleum solvents)
  - Free from hazardous compounds (see Canadian Environmental Protection Act Environmental Registry™ Substances List)
  - Manufactured from recycled materials, including a high percentage of post-consumer recycled content
  - Durable, with a long service life.
- Before purchase, consider how a product and its packaging will be disposed of. Are the materials reusable or contain reusable parts? Can the materials be returned to the supplier for reuse, recycling or recovery? Can the materials be recycled locally through existing channels?



### fact:

What most people see in their garbage cans is just the tip of the material iceberg. A product itself contains, on average, only 5 per cent of the materials used in the process of making and delivering it.

### links and resources

Environmental Choice Program: <http://www.environmentalchoice.com>

City of Richmond Environmental Purchasing Guide  
[http://www.city.richmond.bc.ca/environment/policy/purchasing\\_guide/purchasing\\_guide.htm](http://www.city.richmond.bc.ca/environment/policy/purchasing_guide/purchasing_guide.htm)

Canadian Environmental Protection Act Environmental Registry Substances List  
[http://www.ec.gc.ca/CEPARRegistry/subs\\_list/](http://www.ec.gc.ca/CEPARRegistry/subs_list/)



# eight

## 8. Manage your Supply Chain

Your supply chain consists of the firms that together help your business to secure materials and distribute products to the proper place at the desired time in the quantities required. The supply chain represents a unique opportunity for your firm to influence suppliers to the benefit of the environment. You can require your suppliers to meet the same level of environmental responsibility, performance and efficiencies expected of your own company. Businesses that work cooperatively with their suppliers to coordinate shipments improve their performance (fewer product losses, less waste, better bottom line) while reducing their impact on the environment ... a true win-win.



### If you do just **one** thing...

Engage your suppliers to minimize the environmental impacts of the products they supply to you.

- Practice just-in-time inventory management. This reduces storage requirements, product losses and waste.
- Identify environmental concerns with your own products or services:
  - Minimize packaging and switch to reusable shipping materials.
  - Reduce or eliminate your use of hazardous materials.
  - Implement product take-back programs to recover valuable materials and wastes. One firm's waste can become another's raw material. List reusable wastes with the Recycling Council of BC's Material Exchange Program.
- Assess suppliers' environmental performance. Questionnaires and auditing can establish key facts. Recognize that suppliers may need your technical assistance and support as well as time to meet new environmental expectations.
- Collaborate on design-for-environment initiatives. Work with suppliers to reformulate key components or materials and to ensure products are designed for disassembly and remanufacture.
- Include environmental criteria in the specifications for products and services you buy. Use Business Case TCA (see 9 below) to estimate how much more you can pay for environmentally friendly purchases because of the overall savings they bring.

### links and resources

Industry Canada, Logistics and Supply Chain Management, Overview and Prospects

[http://strategis.ic.gc.ca/pics/dm/logistics\\_e.pdf](http://strategis.ic.gc.ca/pics/dm/logistics_e.pdf)

Recycling Council of BC, Materials Exchange

<http://www.rcbc.bc.ca/resource/matexframe.htm>



## 9. Consider the Total Cost of Your Investment Decisions

Integrating Total Cost Assessment (TCA) into your financial practices can help you identify the true costs and profitability of business investments under consideration. Conventional financial analysis typically considers only simple payback and often overlooks potential savings because they are either misallocated into general overhead (e.g. costs for energy, waste disposal), uncertain or hard to quantify (environmental risk and liability), or occur more than three to five years after the initial investment. Total Cost Assessment considers the time value of money and assigns costs to the products and services that are responsible for them, thereby providing a more accurate business case on which to base decisions. Business Case TCA is a web-based tool developed by the GVRD to help businesses use TCA for their business decisions.

nine

### If you do just **one** thing...

Use Business Case TCA to determine the total cost of decisions involving processes that use large amounts of energy, water, or other resources.



- Business Case TCA is also suited for use where:
  - the decision involves a large amount of money relative to the size of the company or operation
  - the decision involves potential risk or uncertain outcome
  - there is stiff competition within the company for financial resources
  - a process generates significant waste, particularly hazardous wastes
  - indirect costs such as permitting, spill prevention and clean-up may be significant.

### fact:

As a rule of thumb, 20 per cent of a company's production is responsible for 80 per cent of its environmental costs. Make sure all costs for the production responsible are accounted for against that production to understand the full benefits of pollution prevention and eco-efficiency.

### links and resources

Greater Vancouver Regional District, SmartSteps, Business Case TCA application  
<http://www.gvrd.bc.ca/BusCaseTCA/>



# ten

## 10. Put policies and practices into place.

When you have implemented some of the Top 10 Ways to Improve Eco-efficiency, these new practices should be formally recognized as part of your corporate management system. Developing corporate policies, setting goals and monitoring performance will strategically move your business toward continuous improvement, greater efficiencies, reduced waste and lower environmental impacts. Leadership from the top and input from throughout the organization will help you meet your goals. Be patient and persistent. Change will be gradual as awareness grows and the benefits of eco-efficiency are recognized.

### If you do just **one** thing...

Identify goals to address priority environmental issues.

- Incorporate your environmental policies and practices into your corporate management systems and purchasing practices.
- Monitor your performance to track progress. See the National Round Table on the Environment and Economy's Eco-Efficiency Indicators Workbook for more information about monitoring environmental performance.
- Communicate your commitment and your successes to shareholders, employees, vendors, suppliers and customers - everyone who plays a role in the overall success of your business.
- Strive for excellence. Become a leader in your industry sector. Aim to outperform your competitors in eco-efficiency.

### links and resources

National Round Table on the Environment

[http://www.nrtee-trnee.ca/eng/programs/Archived\\_Programs/Eco-efficiency/eco-efficiency\\_e.htm](http://www.nrtee-trnee.ca/eng/programs/Archived_Programs/Eco-efficiency/eco-efficiency_e.htm)