

200 Million Tonnes of Opportunity

How small and medium-sized businesses
can drive Canada's clean economy



climatesmart

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Cover photo:
There is potential in every little block. Gathering those blocks together can yield impressive results.

Introduction

For the better part of a decade, Climate Smart has helped hundreds of Canadian small and medium-sized enterprises (SMEs) track and profitably reduce their greenhouse gas (GHG) emissions.

The work has given our team a front-row seat in Canada's low-carbon transition. We've witnessed first-hand how Canadian business leaders are substantially reducing their emissions while cutting operating costs. After crunching 10 years worth of data, we have gained a rich and unique perspective on what motivates these leaders, and the benefits they are capturing—including reduced operating costs, increased competitiveness, and improved employee loyalty and retention.

This report compiles these findings and insights, and scales them up to the national level. It offers, for the first time, a detailed picture of how, why, and where Canada's small and mid-sized businesses are reducing greenhouse gas emissions and driving clean growth. We identify trends and highlight lessons gleaned from businesses that are successfully driving down emissions within the 12 industry sectors that have the highest SME participation.

Small and medium-sized enterprises sometimes “fly under the radar” of policymakers, but these businesses can and must be key partners in Canada's effort to meet its climate commitments and grow the clean economy. We hope this report will help inspire and inform Canadian businesses of every size and type. We also hope it will help policy makers better understand this opportunity, and help them optimize their time and resources when they engage with the private sector.

About Climate Smart

Climate Smart, an award-winning, certified B Corp, has developed a practical and solutions-based program specifically for SMEs to profitably track and reduce GHG emissions. Using a data-driven approach, Climate Smart provides innovative tools and programming for our “host partners” on the front lines—cities, ports, airports and financial institutions—to disrupt old economic trajectories and invest in more efficient technologies to deliver cleaner products and services.

Since 2007, Climate Smart has worked with 40+ host partners to engage close to 900 businesses—representing over 80,000 employees—to prepare for and participate in the low-carbon economy. Climate Smart has trained 1,600+ people through 135 cohorts. On average, businesses achieve an impressive 11% reduction in GHG emissions, and annual savings of \$27,000. Top performers achieve a 30% reduction. Climate Smart was awarded the Grand Prize in the 2016 MIT Climate CoLab contest for our Business Energy and Emissions Profiles (BEEPs). We have produced BEEPs for cities in BC, Ontario, Alberta, and the US. Our goal is to produce 100 BEEPs across Canada and the US. Track our progress on the interactive map: **beep.eco**.

By the numbers

Small and medium-sized businesses represent a significant portion of Canada's economy.

What is a small or medium-sized business?

A **small** business employs between one and 99 people.

A **medium**-sized business employs between 100 and 499 people.

A **large** business employs more than 500 people.

Canada's Economic Backbone:

99.7% of Canadian businesses are SMEs. Taken together, these companies contribute more than half of Canada's private-sector GDP.

An Employment Powerhouse:

In Canada, SMEs employ nine out of 10 private-sector workers.

A Job-Creation Juggernaut:

Between 2005 and 2015, SMEs created 1.2 million jobs, or over 95% of all new positions added to the economy over that period.

A Hotbed of Innovation:

SMEs account for close to half (45%) of all Canadian business R&D spending.

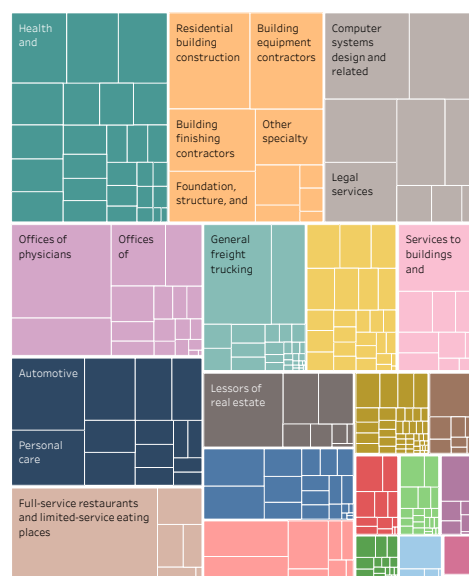
Source: Statistics Canada

Canada's SME Landscape

Explore our interactive dashboard to see where Canada's small and medium-sized businesses operate, and what they do.

<http://bit.ly/CanadaSMEs>

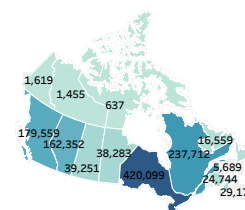
SMEs by 4-digit NAICS



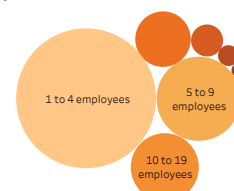
Total SMEs

1,157,132

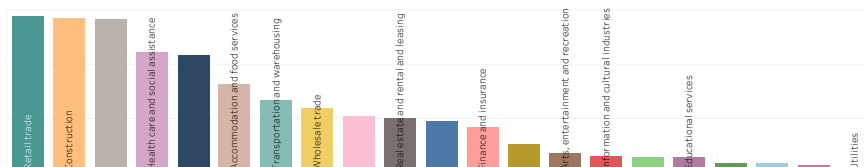
SMEs by Province



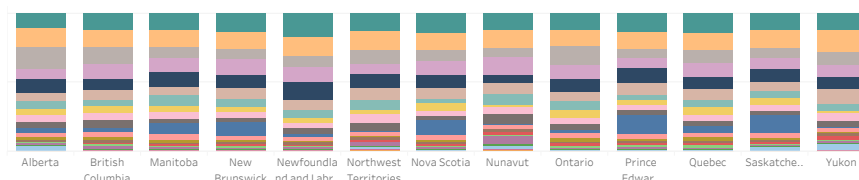
SMEs by Size



SMEs by 2-digit NAICS



% of SMEs by 2-digit NAICS & Province



Source: Statistics Canada. Table 552-0006 - Canadian business counts, location counts with employees, by employment size and North American Industry Classification System (NAICS), Canada and provinces, June 2017, semi-annual (number), CANSIM (database). (accessed: 01/23/2018)

Canada's 200 Million-Tonne Opportunity

As SMEs constitute a large portion of Canada's economy, they also make a significant contribution to the nation's GHG inventory. We estimate¹ total emissions from Canadian SMEs to be more than **200 million tonnes** of carbon dioxide equivalent (CO₂e), nearly 30% of the national total².

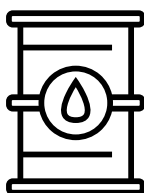
This amount of carbon pollution is equivalent to:



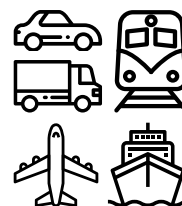
the quantity of GHG reductions that Canada will need to secure between today and 2030 in order to meet its Paris Agreement commitment³.



almost twice the combined GHG emissions of the Greater Toronto Area, Calgary, Edmonton, Montreal, and Metro Vancouver⁴.



six percent more annual GHG emissions than Canada's oil and gas sector.



more than Canada's total annual transportation emissions—including all of the nation's cars, trucks, trains, domestic aircraft and ships.



the combined annual emissions of Quebec, Manitoba, Saskatchewan, and the Atlantic Provinces.



more than five times the annual GHG emissions of all cars on the roads in Canada today⁵.

1 Climate Smart-compliant GHG inventories follow the GHG Protocol Corporate Standard, an international standard developed by the World Resources Institute and the World Business Council for Sustainable Development. Emissions are divided into three scopes:

Scope 1 (mandatory): direct sources (owned/controlled by the reporting business) such as heating fuel combustion, fleet vehicles, owned/leased equipment, refrigerant leakage from company-owned machinery.

Scope 2 (mandatory): indirect emissions from purchased energy: electricity, heat, and steam.

Scope 3 (optional): all other indirect emissions such as from materials and paper use, landfilled waste, people and goods transport with vehicles not owned or controlled (business travel, third-party shipping, staff commuting) etc.

2 Projected based on Climate Smart data by industry sector, Canadian business counts, and Canada's national GHG inventory. For more details on the methodology please visit beep.eco or contact info@climatesmartbusiness.com.

3 "Canada is 200 million tonnes away from meeting international emissions promise," Mia Rabson, The Canadian Press, May 01, 2017.

4 The Atmospheric Fund: Greenhouse Gas Emissions Inventory for the Greater Toronto and Hamilton Area, December 2017

5 Environment and Climate Change Canada (2017) National Inventory Report 1990-2015: Greenhouse Gas Sources and Sinks in Canada.

How This Report Can Help You

Owners and Managers of Small and Medium-Sized Businesses

If you own or manage a small or medium-sized business and you are tracking your greenhouse gas emissions, you already have a competitive advantage over many of your peers. We hope that this report will offer ideas and strategies that you can apply to your business and that will help you identify additional emissions reductions.

If you are new to GHG management, the case studies in this report will give you a sense of where your company's emissions likely originate. These should offer initial ideas for reduction opportunities and, we hope, will inspire you to start measuring and reducing emissions within your organization.

Owners and Managers of Large Businesses and Organizations

If you own or manage a large business/organization, we hope this report will spotlight the opportunities to drive clean growth via the SMEs in your supply chain or client base. Your organization can play a leading role in supporting these companies⁶.

Policy Makers

If you are a policy maker, we hope this report will equip you with a richer understanding of what drives SMEs to measure and reduce greenhouse gas emissions, the actions they are pursuing to reduce them, and the kinds of policies, programs, and incentives that will scale up this action and enable a wider array of SMEs to participate in the shift to a low-carbon economy.

How We Have Organized this Report

We present our findings in 12 sections—each addressing one of the dozen sectors with the highest SME participation⁷. Within each section, we present:

Motivations: The leading reasons why SMEs in that sector have chosen to reduce GHGs;

Sources: Typical sources of greenhouse gas emissions;

Actions: Lead actions businesses are taking to reduce emissions, by category; and

Examples: Specific reduction actions that Canadian SMEs have undertaken, presented via case studies.

We source motivation and reduction data from the proprietary Climate Smart Database. We also share case studies graciously provided to us by Sustainability CoLab, QUEST, and The Natural Step Canada, organizations that we have partnered with in The Low Carbon Partnership⁸.

⁶ For more case studies, see Climate Smart's 2017 Industry Brief "New Climate Partnerships: Accelerating Climate Action Through Business Engagement."

⁷ In this report, we use the standard North American Industry Classification System or NAICS. See <https://www.statcan.gc.ca/eng/subjects/standard/naics/2017/index>

⁸ The Low Carbon Partnership is a coalition of four organizations that help Canadian businesses and communities take action on climate change, increase profitability, and grow the low-carbon economy. For more information, visit lowcarbonpartnership.ca

Sector Profile: NAICS 23

Construction

The construction sector includes residential building contractors (they account for a quarter of all construction businesses), building finishing, equipment, foundation, structure and exterior contractors, specialty trade contractors such as electrical, plumbing, and HVAC installers, as well as road builders and infrastructure contractors. For a detailed sector breakdown, see the accompanying interactive SME dashboard at <http://bit.ly/CanadaSMEs>.

Number of SMEs in Canada*

142,358



Construction businesses typically have high transportation emissions that can be reduced through fleet fuel switching and vehicle efficiency upgrades, route optimization, and behaviour change strategies such as anti-idling and smart driving habits. Construction waste is another area of opportunity for this sector—many companies are finding ways to reduce and divert waste from the landfill through better sorting and recycling.

Climate Smart case studies show

4,485

tCO₂e reduced

\$967,000+

saved annually

* Statistics Canada. Table 552-0006, June 2017.

Why do businesses in this sector manage their emissions?

**Small/
medium-sized
construction
businesses
are motivated
by education,
improving
their company
brand and
cutting costs.**

"We are realizing that environmentally friendly work and products are the future. Our desire is to be among the first to actively implement such a program (GHG management) for our field."

**Heavy-infrastructure
builder**

"It is our corporate responsibility to have a method of measuring and calculating GHGs."

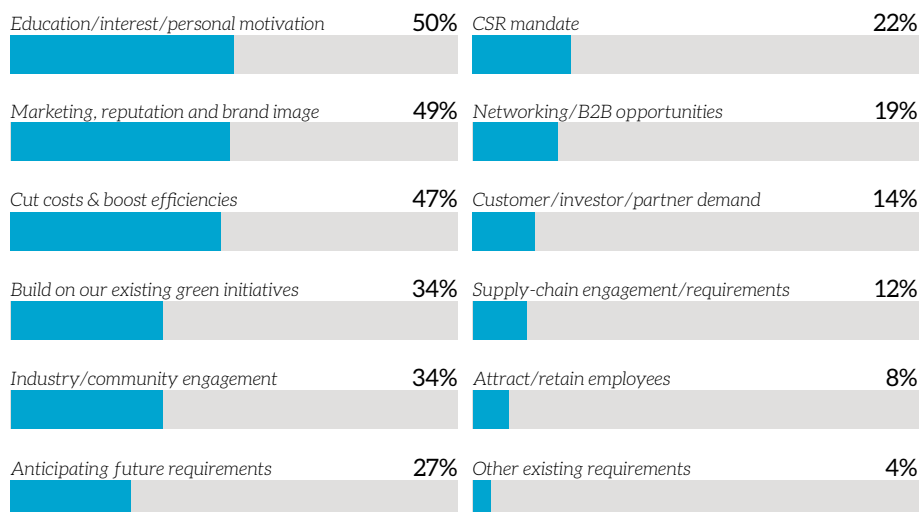
**Road construction and
maintenance company**

"We are interested in discovering ways to save costs on redundant practices and equipment. Reducing emissions will be a direct result of this."

**Fire and flood
restoration company**

Motivation For Taking Action

Climate Smart Construction Businesses



Construction businesses cite education, marketing and brand image, and cutting costs as their top reasons for measuring and taking steps to reduce greenhouse gas emissions. Anticipation of future requirements was mentioned by nearly a third of the businesses as construction companies encounter requirements such as fuel tracking in their municipal contracts and waste diversion rates for LEED certified building projects.

Where do emissions come from in this sector?

Emissions come from vehicles and equipment, garbage and heating.*

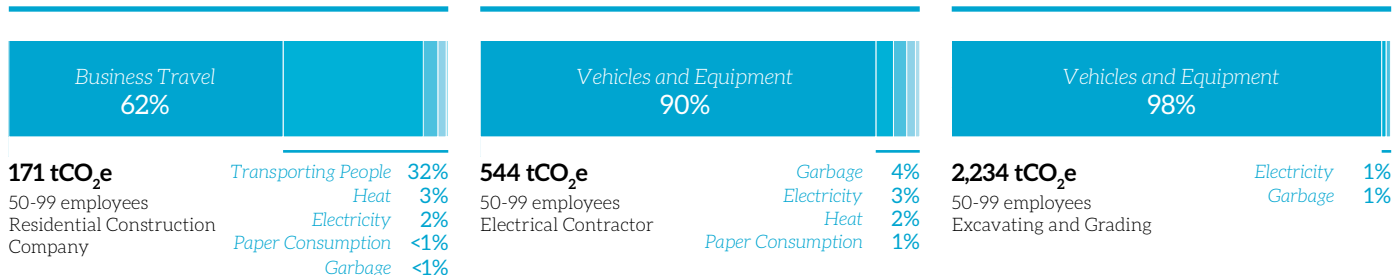


Greenhouse Gas Emissions

Measured by Climate Smart Construction Businesses



Company vehicles and equipment as well as waste are the top emissions sources measured by construction businesses. With frequent trips to construction sites and material pick-ups, this does not come as a surprise. Note that not all the construction businesses measure construction site waste, but it is a significant source of emissions for many. The charts below show sample profiles of three individual construction businesses.



For this residential builder, business travel (employees travelling to sites and to pick up supplies in their personal vehicles), is the largest emission source followed by the company fleet.

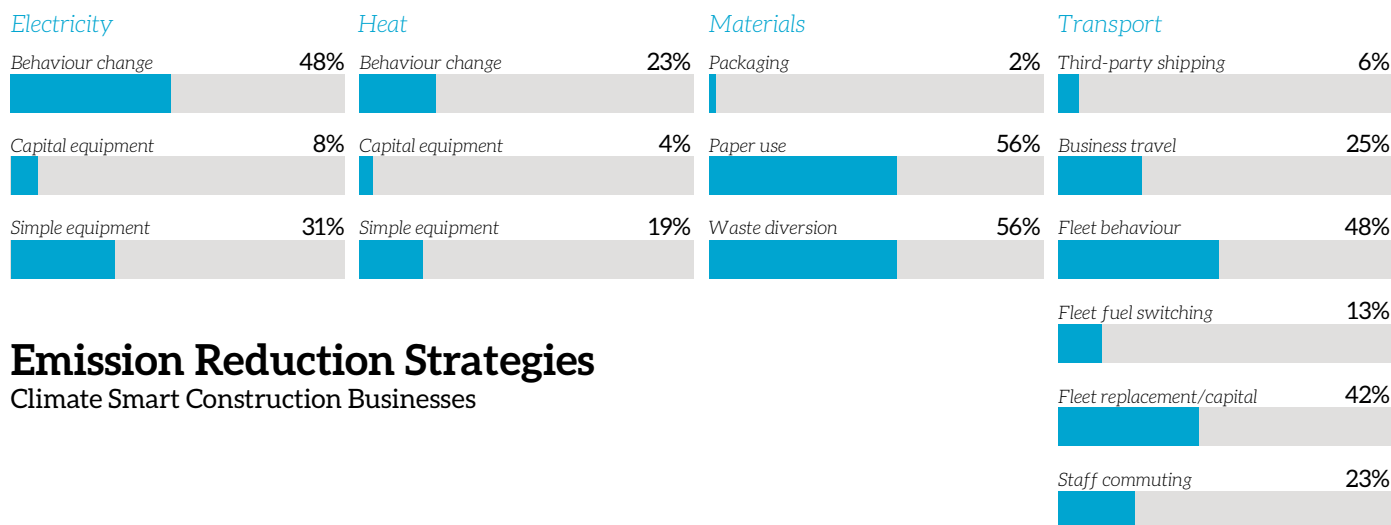
This electrical contractor's emissions come primarily from the company fleet used to travel to clients' locations.

For this excavating and grading contractor, diesel fuel used in dump trucks and other equipment is the biggest emissions source, with electricity and garbage for the office contributing just 2% to the overall footprint.

* In this and subsequent sectors, this chart shows total emissions tracked by Climate Smart businesses to date. Note that while all businesses measure their Scope 1 and 2 emissions (electricity, natural gas heat, fleet and equipment fuel), Scope 3 emissions are optional to measure according to the GHG Protocol (see page 6 for more details on emission scopes).

How do businesses in this sector reduce emissions?

SME construction businesses choose to target their waste and vehicle/equipment emissions.



Emission Reduction Strategies

Climate Smart Construction Businesses

Many businesses take up **vehicle and equipment**-related initiatives such as driver training and idle reduction as a policy, as well as equipment solutions such as GPS tracking for their fleet. After measuring their emissions, over 40% of businesses choose to upgrade or replace their vehicles with more fuel efficient models.

*"We have implemented driver training and our drivers have participated in the first two of three training steps. **Fuel savings of up to 19%** were demonstrated by our drivers after training."*

*"We have installed four GPS tracking units to track mileage, route dispersal, idling and to monitor overall fleet behaviour and vehicle use. We've also implemented a no-idling policy. So far our estimated **fuel reduction is 5 to 8%.**"*

*"We are switching our service vehicles to propane. One van is completed, and two more are in progress. This should **cut our emissions by 20% and save over 30% in fuel costs.**"*

Many companies realize the significant impact of their **construction waste** and develop strategies to increase the proportion of waste diverted from landfill by expanding their recycling programs and educating staff on waste separation.

“Waste disposal is easily our largest GHG emitter. We will continue recycling on site in new subdivisions, and transition from single waste bins to three bins: general construction garbage, wood recycling, cardboard and paper recycling.”

“We have ordered and started using a 40 gallon tote for all of our plastics. As a side note, all these new sustainability measures are seen as a way to engage employees. We have two new apprentices who are really keen on this stuff and it keeps them engaged.”

Many construction businesses target their **electricity use** through behaviour change and simple equipment strategies. Capital upgrades are not common as many construction businesses operate out of small leased offices with most of the staff working on sites. Many construction companies also consider the footprint and energy use of the buildings they create.

“We will continue to construct homes that have a minimum of Energuide 80 rating (an Energuide 80 rating can be obtained with the use of triple-paned windows, spray-in-place insulation, and a heat-recovery ventilator system). We actively sell potential buyers on the benefits of utilizing these passive systems, as well as alternate heat sources such as solar, geothermal, or wind. These new homes are not reflected in our carbon footprint, but these features do reduce the carbon footprint of the homes we build for many years to come.”

Waste diversion saves one contractor over \$64,000 a year

After completing their baseline inventory, Glacier Creek performed a waste audit to assess waste streams from their construction sites and divert as much as possible from being sent to landfill. They worked with their waste hauling service to provide separate bins for sorting recyclable materials from unrecyclable garbage.

Through these efforts, they were able to reduce their waste sent to landfill by 35% and their emissions from landfilled waste by 226 tonnes CO₂e. They were also able to reduce their waste hauling fees by more than \$64,500 from their baseline year.

226
tonnes CO₂e reduced
from waste alone

> \$64,500
annual savings

Case Study

BC Comfort Air Conditioning Ltd.

25%
reduction
in fuel use

41%
reduction
in paper use

\$57,000
annual cost savings



fleet right-sizing



lighting retrofit



*electronic document
management*

BC Comfort Air Conditioning has reduced energy, fuel and paper use.

For over four decades, BC Comfort Air Conditioning Limited has provided air conditioning and heating (HVAC) solutions, mechanical design build and contracting services for the Vancouver area.

The 2012 calendar year marked the beginning of measuring and creating their first GHG emissions inventory. Since then, the company has implemented a variety of strategies that have both reduced their emissions and significantly cut operating costs.

BC Comfort addressed its single largest emission source—service vehicles—by replacing conventional full-size vans with smaller, more fuel-efficient vehicles. Their new fleet includes lighter truck-style vehicles with four-

cylinder engines. They also equipped the vehicles with GPS units to optimize the routes and receive speeding alerts. BC Comfort's customer database is now linked to the vehicles' GPS so that the nearest vehicle can be deployed to respond to a service call. Together these initiatives have reduced the fuel use by 25% and resulted in impressive annual savings of over \$57,000.

Upgrading incandescent spotlights with LEDs, retrofitting fluorescent tube lighting and replacing the outside lights with LEDs has resulted in a 19% reduction in electricity use. To reduce emissions from space heating, BC Comfort installed insulated bay doors for the warehouse and doubled the roof insulation from one to two inches thick. They also added direct digital controls to heaters and interlocked unit heaters to overhead doors so the heaters do not run if the doors are open.

An impressive 41% reduction in paper use was achieved through a number of initiatives including e-billing for customers, a paperless document management system for the office and an electronic reporting system for service technicians. The technicians now do their reporting on iPads, get an electronic signature from the customer, and send it to the office electronically, saving paper and technicians' time.

BC Comfort's most recent initiatives include an installation of a level 2 electric car charging station and implementation of additional energy saving algorithms for their direct digital control building system.

"It's not only about sustainability," said Robert Noel, President of BC Comfort. "It's about doing what's right both for the company and for our customers. We're taking steps to reduce waste and improve our operational efficiency."

Case Study

Penfolds Roofing & Solar



fleet fuel switch

reduction strategy
cross-pollination

30 tCO₂e
total emissions
reduction

\$20,000
annual cost savings

A fleet fuel-switch to propane drove substantial savings.

Penfolds Roofing & Solar was founded in 1937 and today completes over 1,500 residential and commercial projects a year. In addition to all roofing services, Penfolds installs solar panels on residential and commercial roofs to generate electricity on-site. With over 1,000 panels installed to date, Penfolds has extensive solar experience under its belt.

Shaun Mayhew, Sales Manager, says they joined the Climate Smart program to find similar companies to trade ideas with, and together find ways to green their operations. At the Climate Smart training sessions, Shaun learned the story of another Climate Smart business—Van Houtte Coffee Services—which converted their fleet vehicles to a dual fuel gasoline and propane system and realized substantial cost

savings as well as emission reductions. One of Penfolds' largest emission sources is their fleet, so Shaun decided to investigate alternative fuel opportunities further.

Fast forward to the end of 2016, Penfolds had converted 13 vehicles to the propane and gasoline system. Over just a few months, the conversions saved the company more than \$4,700 in fuel costs—a reduction of 28% compared to running the vehicles on gasoline alone. The savings are projected to increase as they continue to educate drivers and fuel up on propane more and more. So far, 62% of all converted fleet re-fuellings have been with propane.

When Penfolds reaches their goal of converting 90% of their fleet, the company will be saving \$20,000, and reducing their GHG emissions by 30 tonnes—each year. Energized by their

successes, Penfolds plans to continue tracking and reducing their emissions going forward.

"The great benefit to being Climate Smart certified is trading ideas with similar type companies who work on greening their operation. In trading stories we can find ways to green our own operation. This helps the organization to minimize our own greenhouse gases allowing for better employee engagement, in many cases even saving the organization money and overall shows to our customers that we care about the shared community," said Shaun.

Sector Profile: NAICS 31

Manufacturing

Food, Textiles, Leather

The food and textiles manufacturing sector in Canada includes bakeries (one out of five businesses in this sector), beverage manufacturers such as breweries and wineries, seafood and meat processors, clothing and accessories makers, dairy product manufacturers, coffee roasters and more. For a detailed sector breakdown, see the accompanying interactive SME dashboard at <http://bit.ly/CanadaSMEs>.

Number of SMEs in Canada

9,357



Employees

Canadian SME Manufacturers

50-99 7%
100-199 4%
200-499 3%

The largest source of emissions for this sector is natural gas used for food processing. Businesses tackle their natural gas use through strategies such as closing and insulating the warehouse bay doors, turning down the thermostat, recovering waste heat, and fine-tuning the process equipment. Achieving dramatic natural gas reductions remains a challenge for this sector with much of the manufacturing process equipment relying on natural gas.

Climate Smart case studies show

4,732
tCO₂e reduced

\$676,000+
saved annually

* Statistics Canada. Table 552-0006, June 2017.

Why do businesses in this sector manage their emissions?

These small/medium-sized manufacturers are motivated by education, building on green initiatives and improving their company brand.

"We operate our business in an environmentally responsible way and we are interested in learning more ways to reduce our footprint and operate as leaders in our industry. This is important to us and our stakeholders, including our investors and our customers—they expect this from us."

Apparel manufacturer

"We want to create a baseline and set goals for continuous improvement and a higher sustainability standard."

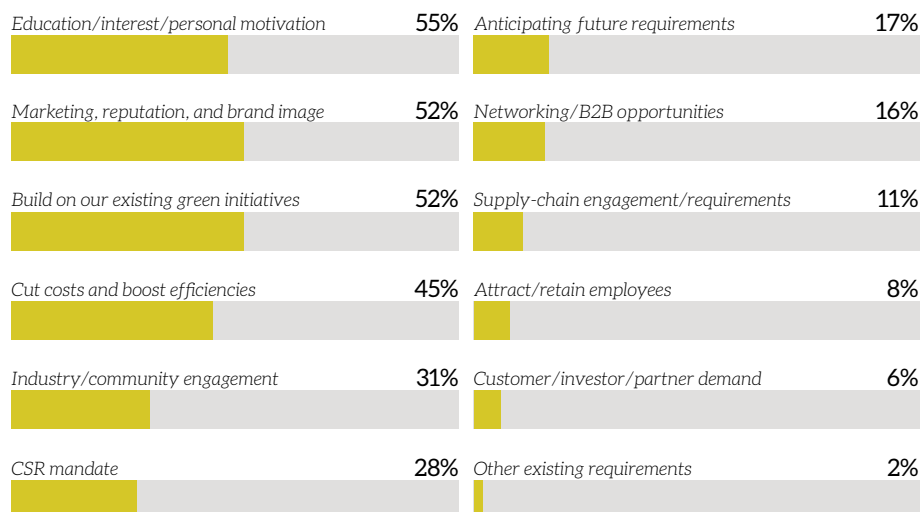
Coffee roaster

"We have always been conscientious of the environment, even with construction of our facility, this continues to be our focus. We currently have projects to reduce energy costs. We want to learn to be better equipped, reduce our energy consumption and give back to the environment."

Meat products manufacturer

Motivation For Taking Action

Climate Smart Manufacturing Businesses



Education, building on green initiatives and marketing are the top drivers cited by food and textile manufacturers. With the growing demand for environmentally responsible products and services, companies are looking to meet demands of a changing market.

Where do emissions come from in this sector?

Emissions come from heat, third-party shipping and company fleets.



Greenhouse Gas Emissions

Measured by Climate Smart Manufacturing Businesses



Natural gas accounts for over a third of the emissions measured by food manufacturers. This includes natural gas used for process heat as well as space and water heating. Third-party shipping is the second largest emission source measured, accounting for one fifth of the total emissions. This can include emissions from shipping raw ingredients to the manufacturing facility as well as shipping the final product to the customers.

Note that third-party shipping is optional to measure according to the GHG Protocol and not all businesses track it in their inventories.

The charts below show sample profiles of three individual food manufacturers.



1,882 tCO₂e
20-49 employees
Bakery



For this bakery, refrigerant leaks were the top emission source. By simply monitoring and addressing the leaks monthly, they were able to reduce refrigerant emissions by 85% and dramatically cut their overall footprint.



635 tCO₂e
10-19 employees
Brewery



This brewery's top emission sources are electricity, natural gas heat, and company vehicles. The third-party shipping measured in this particular inventory included only packaging shipped to the facility.



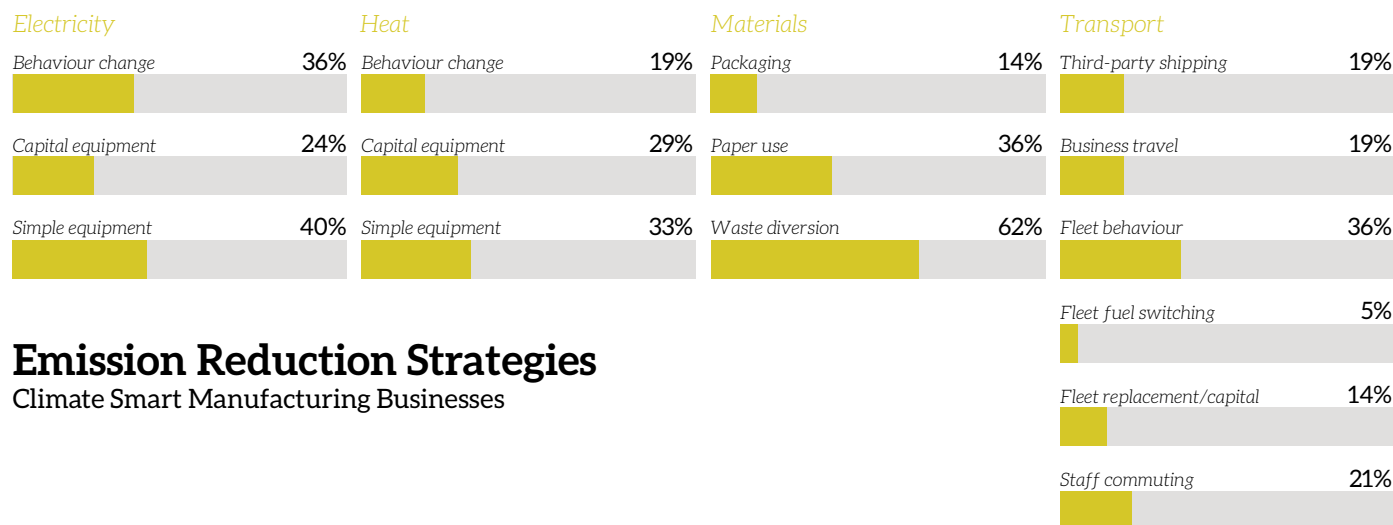
410 tCO₂e
50-99 employees
Meat Processor



The largest emission sources for this meat processor are electricity and refrigeration. Electricity use is high due to all the electric cooling equipment used at the facility.

How do businesses in this sector reduce emissions?

These SME manufacturers choose to target their waste and electricity use.



Emission Reduction Strategies

Climate Smart Manufacturing Businesses

Waste diversion initiatives are common, with over 60% of the businesses implementing strategies to reduce waste sent to the landfill. Some businesses also tackle their product packaging through reducing its size or using recycled materials.

“Albion Fisheries Ltd. is Western Canada’s largest wholesale seafood distributor and is very conscious of our impact on the environment. Since we began measuring our carbon emissions in 2011, we have been working to reduce them by taking steps like: switching to cold water to wash equipment, aligning delivery orders to reduce their frequency, routing trucks for optimum fuel efficiency, reducing internal paper use and **working with suppliers to minimize incoming packaging** at all of our locations.

In our Haida Gwaii location, Albion began offering off-cuts from our seafood production to local crab boats as bait and to local farmers as fertilizer. This project has **diverted approximately 3,000kg of waste** from the landfill and reduced emissions by more than **four tonnes of CO₂e**.

More recently, we relocated to a new, energy efficient facility in Richmond that was built with innovative technology focused on reducing our energy use.”

Guy Dean - Vice-President Import/Export, Albion Fisheries, Richmond, BC

Electricity use is a significant source of emissions, powering the manufacturing process equipment, facility lights and refrigeration.

"The fact that it (electricity) accounts for a relatively large portion of our footprint surprised us. We have never done a lights-out campaign and we believe that we can make some immediate progress in this area."

"The lights we had used in the past were not the most efficient and changing the bulbs and ballasts will increase efficiency."

"We are upgrading the warehouse lights and retrofitting the air compressor with a variable-speed drive."

Natural gas used for **process, space and water heating** is a significant emission source and manufacturers are tackling it through both behavioural strategies and equipment upgrades.

"We have installed self-closing doors at the warehouse and improved insulation on large warehouse doors; we also turn the office temperature down at night. Although the warehouse has to be kept warm for the fermentation process, the temperature is turned down when there is no fermentation."

"We are reducing natural gas consumption by replacing and retrofitting boilers and capturing waste heat for the office."

"We plan to add plastic curtains to reduce heating requirements when the loading bay doors are open."

Eliminating two excess boilers through process innovation

Freybe Gourmet Foods, Ltd. is a 6th-generation family-run business, manufacturing deli meats, sausages, hams and other specialties according to European traditions. In re-examining their high-pressure boiler set-up, staff determined that the risk of boiler failure was low. They decided that they didn't need to keep a back-up boiler on constantly. By shifting to a "dry-layup" procedure where the back-up is only fired when needed, they could practically eliminate its use. In addition, they found a way to step down excess high-pressure steam to provide low-pressure steam for other processes, eliminating the need for their low-pressure boiler. Changing how they use their equipment effectively reduced their requirement for three boilers down to one. The actual annual savings will not be determined until they have tracked the current year's natural gas usage and compared it with that of last year; however, over 15% savings were expected, equating to a 5-month payback. Adding insulation on piping and feed water systems were projected to further reduce wasted heat.

15%
annual natural
gas savings

5-month payback

Case Study

Van Houtte Coffee Services



fleet fuel switch



quick payback

27%

total emissions
reduction\$100,000+
annual cost savings

A willingness to learn and share knowledge with other businesses

Van Houtte Coffee Services' British Columbia operations directly services 10,000 customers, including offices, entertainment centres, and convenience store locations.

Since establishing their baseline for 2009, Van Houtte has realized a reduction of 27% of their baseline annual emissions and more than \$100,000 in cost savings annually. Some of the emissions reductions initiatives undertaken to date include: implementing a no-idling policy; optimizing truck fleet routes by conducting eco-driver training and installing GPS units on all trucks; establishing a robust recycling program; upgrading lighting systems; reducing paper use and purchasing paper with 100% recycled content.

One of Van Houtte's most compelling emissions reduction projects has been

the retrofit of 28 conventional gasoline cube-vans to a hybrid gasoline-propane fuel system. Propane costs less than gasoline, and produces considerably less GHG emissions per distance travelled (~35% less expensive, and ~25% less GHG emissions). With fuel-conscious driving habits, Van Houtte has found that the vehicles are capable of operating using propane 95% of the time, and gasoline for only 5% of their driving time. With an approximate cost of \$5,000 to retrofit each vehicle, the investment was paid for in one year.

As a company continually striving to find further areas of efficiency, Van Houtte has made a conscious effort to reinvest their savings in additional projects, such as purchasing hybrid and electric cars for sales staff, improving end-of-life recycling for its coffee machines and water coolers, performing lighting retrofits and continuing to educate and engage employees to build a culture of conservation.

Van Houtte Coffee Services also demonstrates their leadership in business-to-business engagement and sharing of knowledge. The company has reduced paper use simply by surveying clients and switching many accounts over to paperless e-statements. In speaking with another Climate Smart business, Van Houtte's vice president learned about using cardboard baling machines. Installing one in the warehouse, Van Houtte has now cut down significantly on the frequency of cardboard pick-ups. As well, Van Houtte now gets paid per tonne for their baled cardboard, helping to offset the cost of recycling and processing waste. Van Houtte's experience and willingness to share lessons learned with others has inspired many Climate Smart businesses to look into driver training, vehicle fleet fuel conversion and other strategies to reduce emissions and improve their operations.

Case Study

Nature's Path Foods Inc.

917 tCO₂e
total emissions
reduction

750,000 kWh
electricity reduction

\$344,000
annual cost savings



sustainable
commuting



third-party shipping
mode switch



manufacturing
process
improvements

Incentivizing sustainable commutes and cutting third-party shipping and waste aligns with company values.

Nature's Path is a family-run, fiercely independent and sustainably-driven organic breakfast and snack company that believes in "always leaving the earth better than we found it."

Green My Ride: To engage staff and reduce emissions related to commuting to and from work, Nature's Path has the "Green My Ride" program, where team members earn credits for each trip they take on transit, or by walking, cycling or carpooling. The credits are redeemed either for monetary compensation or a donation to the Greater Vancouver Food Bank. For staff members who commute by transit daily, they can defray about half the cost of a monthly bus pass. This program has contributed to a 12 tCO₂e, or 11 percent, reduction in emissions associated with staff commuting compared to 2014.

Third-Party Shipping: In 2016, Nature's Path focused on how they conduct third-party shipping and has since saved 799 tCO₂e (a reduction of 17 percent) by situating production closer to where their customers are, and by promoting efficient use of intermodal transport (including rail), rather than relying solely on trucks.

Zero Waste: Nature's Path takes waste reduction seriously and as of 2017, attained Zero Waste certifications for all three of its manufacturing plants. This means they each divert more than 90 percent of waste from the landfill—amounting to a total of 2,875 short tons each year. Not only has this initiative made environmental sense, but it also makes business sense, with more than \$344,000 in annual savings.

Nature's Path joined How2Recycle, a standardized labelling system that helps the consumer to properly recycle their cereal boxes and granola pouches.

Process Improvements: For the past two years, Nature's Path has focused on improved efficiency at its plants through continuous improvement projects. The two major efforts:

Reducing the amount of waste and spills off the line and reducing overall production waste to below four percent in 2017. While waste product is composted or recycled, the energy spent recycling it is still wasted and leaves room for improvement.

Change-over and cleaning time reduction. Reducing the amount of time that the lines are "down" for cleaning and change-overs improves efficiency and reduces energy use.

Across all manufacturing plants, Nature's Path saved 757,184 kWh, and 615 tCO₂e.

Sector Profile: NAICS 32

Manufacturing

Wood, Printing, Oil, Plastic

This manufacturing sector includes printing companies (one out of four businesses), wood product (pallets, doors, building materials), window, plastic product, cement product and other manufacturers. For a detailed sector breakdown, see the accompanying interactive SME dashboard at <http://bit.ly/CanadaSMEs>.

Number of SMEs in Canada*

14,115

1-4 31%	5-9 20%	10-19 16%	20-49 17%	50-99 8%	100-199 5%	200-499 3%
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Employees

Canadian SME Manufacturers

50-99 8%
100-199 5%
200-499 3%

For the printing companies, paper use is a large source of emissions. Not all printing companies choose to measure emissions from paper for client printing, but some take responsibility for those emissions and choose to promote recycled paper options or offer optional offset programs to their clients.

Climate Smart case studies show

3,296

tCO₂e reduced

\$200,000+

saved annually

* Statistics Canada. Table 552-0006, June 2017.

Why do businesses in this sector manage their emissions?

These small/medium-sized manufacturers are motivated by cost-cutting, improving their company brand and education.

"We use salvaged, FSC-certified wood. We are also trying to reduce waste or close the loop on by-products. We want to become clear enough on issues and the information that we can communicate to regular people (customers and others)."

Wood building-product manufacturer

"We would like to become carbon neutral and we need to be trained in how to accomplish this."

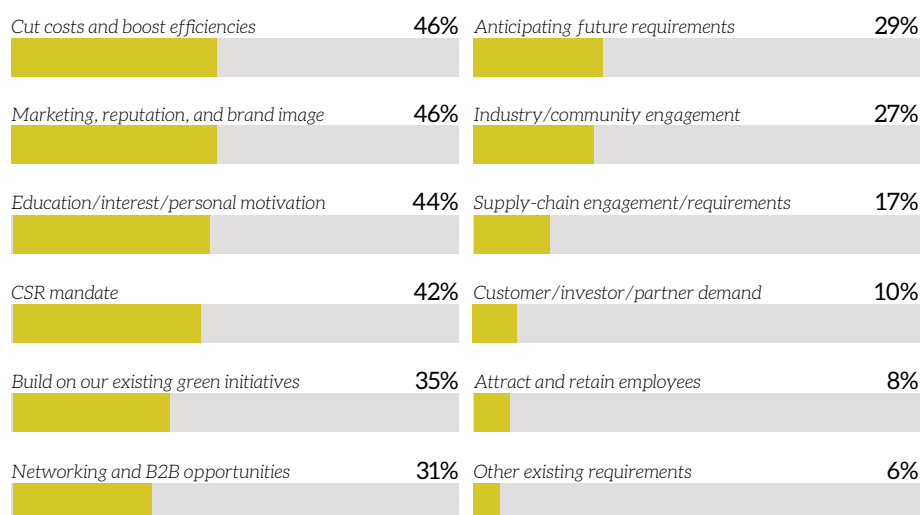
Printing company

"To learn about possibilities for energy conservation, and potential savings on our utility bills."

Chemical product manufacturer

Motivation For Taking Action

Climate Smart Manufacturing Businesses



Cost cutting and marketing go hand in hand for this sector, with many businesses facing consumers directly and wanting to set themselves apart through their sustainability initiatives. Some manufacturers are already using recycled or sustainable raw materials and want to be able to communicate the benefits of this to their customers.

Where do emissions come from in this sector?

Emissions come from paper consumption, third-party shipping and heat (natural gas).



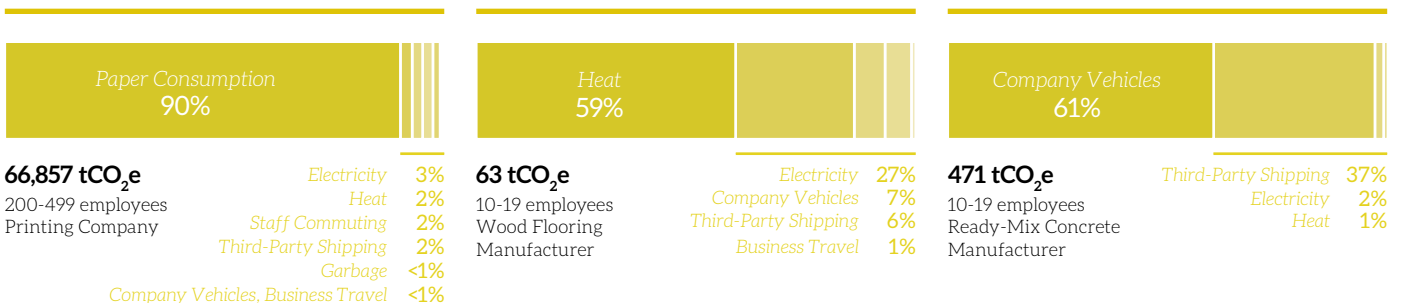
Greenhouse Gas Emissions

Measured by Climate Smart Manufacturing Businesses



The top three emission sources measured by climate smart manufacturers are paper consumption, third-party shipping and natural gas heating. Most of the paper consumption emissions are indirect emissions that come from the manufacturing of paper used by printing companies for their clients' jobs. Not all printing companies choose to track the paper associated with printing for the clients. Those that do often promote the use of recycled paper and/or offer clients the option of offsetting the associated footprint.

Third-party shipping is the second largest emission source measured, with some businesses choosing to track emissions from transporting the raw materials to their facility and/or their product to customers. Natural gas heating is the third largest emission source and is mostly related to manufacturing process heat (e.g., kiln drying and treating wood products).



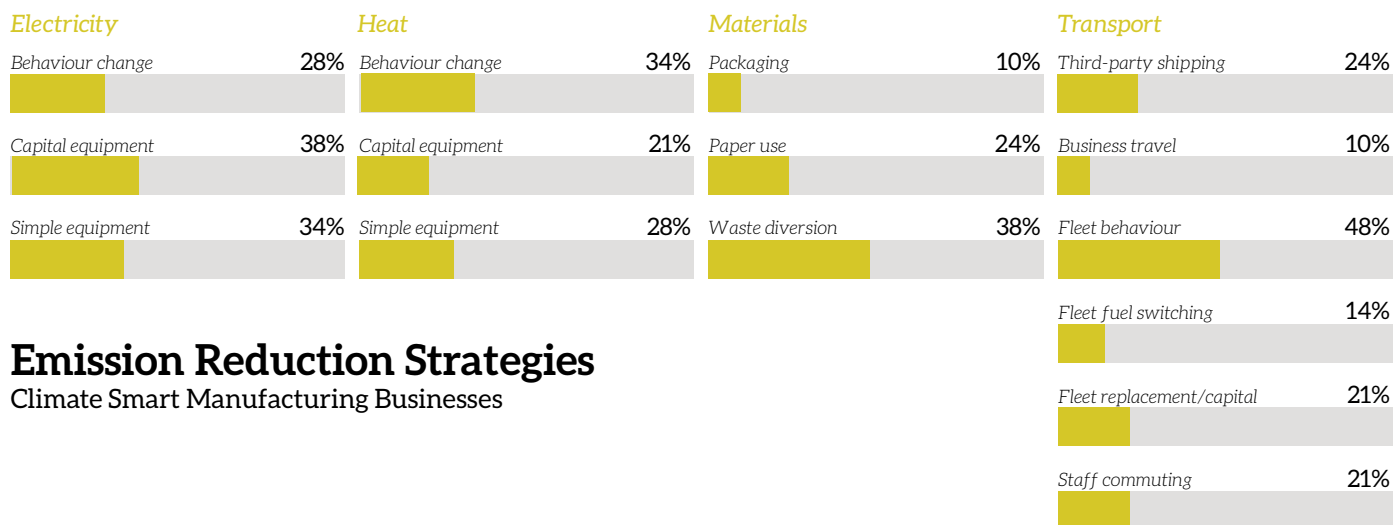
This printing company tracked the emissions associated with the paper they use for clients. It accounted for the vast majority (90%) of their footprint.

For this wood flooring manufacturer, natural gas is the largest emissions source at nearly 60%. This is mostly natural gas used for kiln drying the wood.

For this ready-mix concrete manufacturer, company vehicles delivering concrete to clients are the largest emission source, followed by shipping the raw materials—aggregates and cement—to the facility.

How do businesses in this sector reduce emissions?

These SME manufacturers choose to target their waste and fleet.



Emission Reduction Strategies

Climate Smart Manufacturing Businesses

Nearly half of the manufacturers implement **fleet behaviour change strategies** such as route optimization, with every fifth business considering vehicle replacements with more efficient models.

“Through planning efficient routes for company vehicle trips, we experienced a **15% reduction** in fleet gasoline use and emissions. We plan on continuing to reduce emissions by utilizing route-planning software for all sales staff, consolidating suppliers to reduce shipping, developing a team challenge to reduce utility natural gas and electricity use, as well as eventually converting our last non-hybrid vehicle to a fully electric vehicle.”

“We will install an individual card lock system to track fuel distribution and evaluate our fleet and equipment to ensure the most efficient and productive methods of operation are used.”

Electricity reduction strategies

such as optimizing the use of or upgrading the manufacturing equipment are implemented by about a third of the businesses.

"We determined the biggest two machines in our shop that use significant amount of energy and realized that our large 50,000-lb presses are by far the biggest issue here. The amount of power it takes to heat these things up is huge. I contacted the manufacturer and they just happened to have a partial solution to this. They offer a metal wall structure that covers the presses all around, this structure is covered in a paint that reflects heat. This significantly shortens the amount of time this machine needs to heat up, as well as limiting the heat loss.

Another machine is like a great, big pressure cooker. It "cooks" rubber under high heat. It has a very out of date insulating layer that had many breaks, missing chunks etc. We took the outer insulating layer off completely, cleaned the surface and re-covered the whole machine (including the front door) with brand new, top of the line insulating material. Once again, this upgrade is resulting in significant savings from eliminating most of the energy loss from heat escaping into the cold environment."

Nearly half of the businesses implement **waste reduction strategies**: extending recycling programs, improving their manufacturing processes to reduce wasted materials, requesting suppliers to minimize packaging and more.

Refurbishing print-press materials diverts 3,000 pounds of waste from landfill

Looking for ways to fine-tune their existing green initiatives, **MET Fine Printers** chose to tackle their waste. Paper-recycling is already well received and has almost become business-as-usual for printers, so MET began looking at the other materials used in their printing processes. In offset printing, rubber press blankets are used to transfer ink to the printing surface. Implementing a process to refurbish used blankets, MET cut the rubber material being sent to landfill by 3,000 pounds annually.

MET also pioneered the use of UV-ink printing locally. UV inks are cured nearly instantaneously using short bursts of ultraviolet light, and do not require the lengthy "drying times" of conventional inks. As a result, no drying racks are needed, and printed material can be stacked "hot off the press" into vertical stacks that take up far less space. Thanks to this, MET estimates they can manage the throughput of a facility twice their size.

An additional environmental benefit is the reduction of chemicals necessary to prepare and clean up their presses. When working with conventional inks, chemicals are often necessary to prevent them from drying and hardening with exposure to air. MET's switch to UV inks means they use far less chemistry in their processes as compared to a conventional printer.

3,000
pounds of material
diverted from landfill

Case Study

Stella-Jones



19%
total emissions
reduction

\$60,000+
annual cost savings

Reducing natural gas use and waste pick-ups results in cost and emissions savings.

Stella-Jones is a leading North American manufacturer of pressure treated wood products. The company's core products—railway ties and utility poles—serve many of North America's railroads, telecom providers and electrical utilities. Stella-Jones' network of 37 wood treating facilities are spread across 16 US states and five Canadian provinces. Stella-Jones (New Westminster, BC, facility) has been tracking its greenhouse gas emissions since 2012. The company has implemented an array of strategies leading to an impressive 19% reduction in its emissions.

Stella-Jones' single largest emission source is a natural gas process boiler. New steam lines and process changes have reduced the load on the main boiler, reducing natural gas use by 17% and saving \$11,000 a year.

Ensuring that waste pick-ups are made for full loads only has saved over \$33,000 annually on waste disposal. The amount of waste sent to landfill and incineration has decreased by 30% due to the development of a better system for organizing the waste.

Implementing a no idling policy and using the most efficient vehicles in the fleet whenever possible has led to an 18% reduction in fuel and savings of over \$4,000 annually. Ongoing replacement of lights with LEDs and

installation of variable frequency drives on pumps have cut electricity use by 8% and saved over \$13,000 annually (not including the reduction in maintenance costs).

Simply raising awareness around paper use and encouraging staff to reduce printing has led to an impressive 40% reduction in copy paper use and savings of nearly \$500 a year.

In the near future, the company plans to further reduce emissions by better managing yard equipment (loaders and cranes), reducing unnecessary equipment travel, investigating replacing yard vehicles with electric golf carts, and researching process boiler upgrade options.

Case Study

Hemlock Printers Ltd.



client engagement

product/service
innovation

1,890 tCO₂e
offset in 2017

Helping clients make sustainable choices

In operation for almost 50 years, Hemlock Printers Ltd. is a Burnaby, BC-based, leading commercial print provider. Hemlock has long been committed to excellence in environmental sustainability, and is an industry leader when it comes to sustainable product lines. Hemlock began measuring its carbon footprint in 2007, and quickly realized that paper for clients' jobs was by far its biggest emission source. Hemlock also realized it couldn't tackle this emission source alone – it needed to engage everyone from clients to suppliers.

ZERO Program

In going through the GHG inventory process, Hemlock realized that the carbon footprint of paper was very closely related to the location of production and recycled content. Hemlock quickly saw the value in sharing this information with clients to allow them to choose more environmentally sustainable printing paper for their projects.

With support from Offsetters, The Paper Calculator and the GRI

Transportation Metrics, Hemlock created a database of papers showing their carbon footprint per pound, post-consumer recycled content, and location of production. In partnering with Offsetters, Hemlock offered clients the option to make print jobs carbon neutral. The resulting ZERO program encourages clients to use the environmental information provided by Hemlock's paper database, and supports carbon reduction projects via Offsetters. Clients that opt into ZERO are given a logo to communicate out about their actions and commitment to sustainability. Clients also receive a report that gives them the carbon footprint of their project, which can in turn be used for their own internal reporting.

Over the years, Hemlock has witnessed a steady growth in clients participating in ZERO. In 2016, Hemlock's clients offset more than 1,400 tonnes of CO₂e, and in 2017, this number increased by 32% to more than 1,890 tonnes. This program has also helped Hemlock win clients in industries that have sustainability as a core value, like the outdoor industry.

Carbon Neutral Paper

In 2015, Hemlock was approached by

a supplier, Neenah Paper, interested in developing a paper that is carbon neutral through its entire life cycle. Neenah subsequently launched Coronado paper, a 100% post-consumer carbon neutral paper, the first paper of its kind to be certified carbon-neutral through the ZERO program and Offsetters. Hemlock became the only printer in North America to carry this paper. In February of 2018, Hemlock will be launching its second carbon neutral paper, with one more to follow.

In the beginning, Hemlock made the conscious choice not to make all its printing carbon neutral by default, instead offering clients a choice. At the start of its journey Hemlock focused on educating and building relationships. By keeping the program voluntary, it has encouraged clients to become more knowledgeable, and allowed them to make their own decisions based on a high level of transparency of process provided by Hemlock. Now, as the program has proved its success, Hemlock is moving towards building carbon neutrality into certain items, such as business cards. Hemlock continues to grow its work to engage its supply chain to achieve more positive environmental impact.

Sector Profile: NAICS 33

Manufacturing

Machinery, Goods, Furniture, Miscellaneous

This diverse sector includes metal product manufacturers, machine shops, furniture makers, agricultural equipment fabricators, and makers of motor vehicle, industrial machinery, and electrical components. For a detailed sector breakdown, see the accompanying interactive SME dashboard at <http://bit.ly/CanadaSMEs>.

Number of SMEs in Canada*

26,547

1-4 38%	5-9 20%	10-19 16%	20-49 14%		
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Employees

Canadian SME Manufacturers

50-99	6%
100-199	3%
200-499	2%

This sector is characterized by its relatively high electricity and natural gas usage. This is both a challenge and an opportunity, with many manufacturers finding effective solutions that reduce their energy use, greenhouse gas emissions and operating costs.

Climate Smart case studies show

2,275

tCO₂e reduced

\$254,000+

saved annually

* Statistics Canada. Table 552-0006, June 2017.

Why do businesses in this sector manage their emissions?

These small/medium manufacturers are motivated by cost-cutting, education, and improving their company brand.

"Understanding sustainability is the single greatest investment that a small business can make towards its future success. Tracking carbon emissions is one of the smartest and most practical ways for any business to start understanding sustainability as it relates to their organization."

Cabinet manufacturer

"Our goal is to reduce costs while improving our efficiency and reducing carbon footprint of our business."

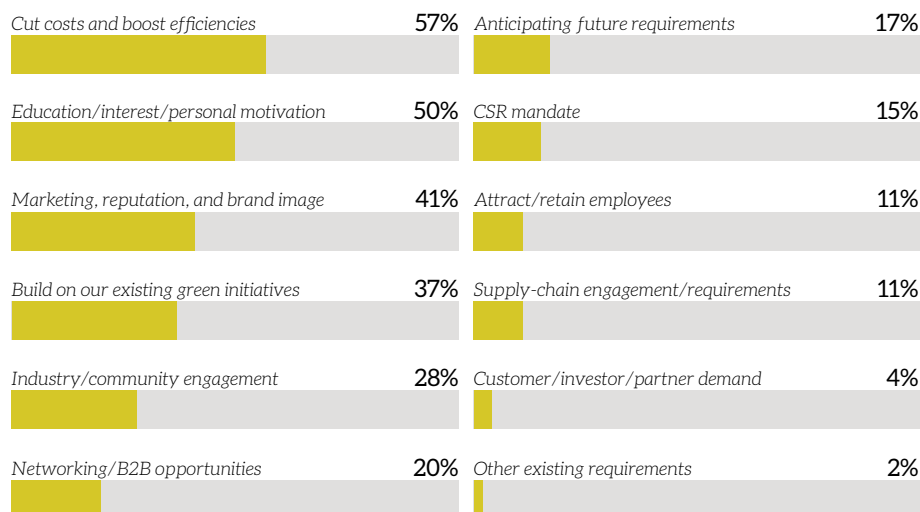
Natural gas appliance manufacturer

"We want to attempt to reduce our energy consumption and acquire knowledge with which to assess our vendors' energy footprint."

Award plaques manufacturer

Motivation For Taking Action

Climate Smart Manufacturing Businesses

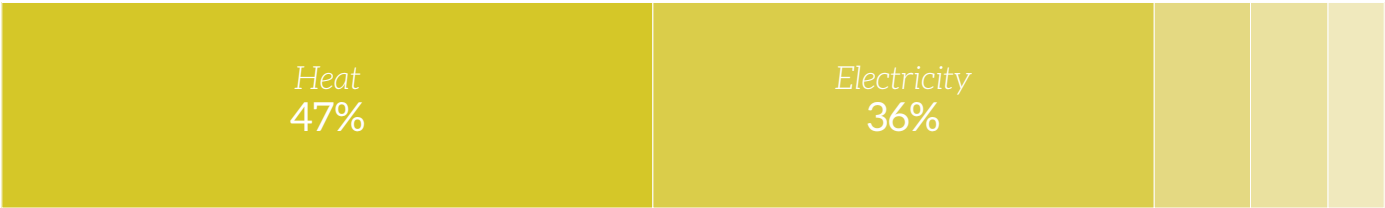


When asked why they chose to start measuring and reducing greenhouse gas emissions, these manufacturers cited cutting costs, education, and marketing/brand image improvement as their top three motivators.

Cost cutting is the strongest driver for manufacturers as energy and fuel use, waste disposal and other carbon-emitting activities represent a significant portion of the costs of running a manufacturing business.

Where do emissions come from in this sector?

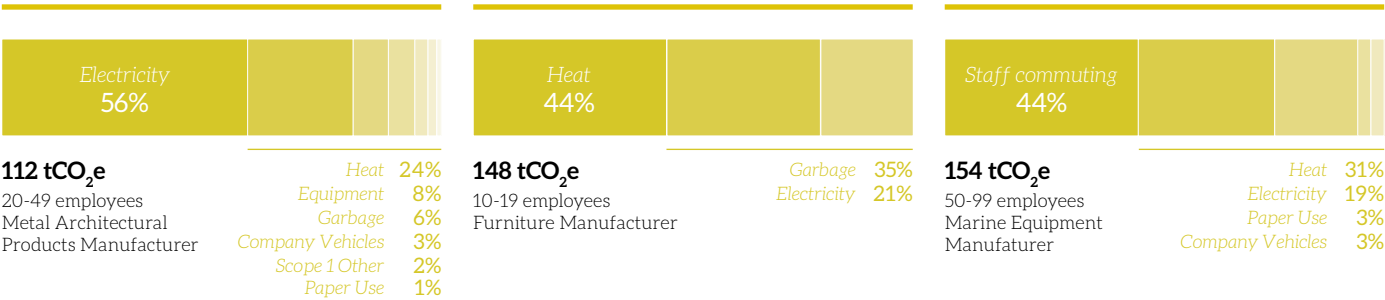
Emissions come from heat (natural gas), electricity, and staff commuting.



Greenhouse Gas Emissions
Measured by Climate Smart Manufacturing Businesses

Electricity and natural gas are often the most significant emissions sources for manufacturers, with electricity used to run the manufacturing equipment and natural gas used for generating process heat. Note that electricity emissions depend significantly on the carbon intensity/content of the provincial electricity grid. The charts shown here use a Canadian average electricity emission factor. In provinces with carbon-intensive (e.g., coal-powered) grids the electricity portion of the emissions profile would be much larger.

Individual emission profiles vary depending on the specific manufacturing process requirements, labour intensity, equipment efficiency and operation workflow. The three charts below show sample profiles of individual manufacturers.



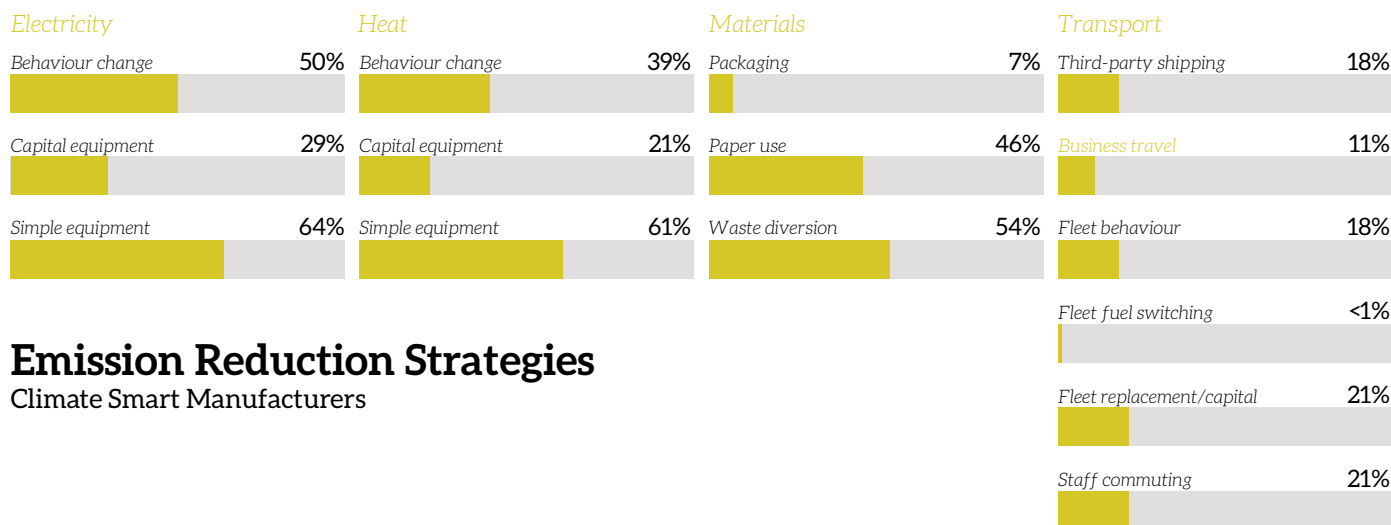
For this metal architectural products manufacturer, electricity powering the welding equipment is the largest emission source.

For a furniture manufacturer, natural gas heating and wood waste sent to the landfill make up a big portion of their emissions profile.

A marine equipment manufacturer chose to include staff commuting in their inventory, which amounted to over 40% of their emissions. They discovered that the emission intensity of their manufacturing process (primarily electronics assembly) is relatively low.

How do businesses in this sector reduce emissions?

These SME manufacturers choose to target their electricity and heating use.



Emission Reduction Strategies

Climate Smart Manufacturers

Electricity reduction strategies

are the most common among manufacturing business. Electricity reduction strategies range from no-cost behavioural strategies, such as turning off the equipment when not in use, and low-cost 'simple' equipment strategies, such as motion sensors to capital equipment and lighting upgrades. Electricity often represents a high cost to the business as well as many opportunities for reduction and savings. Nearly 30% of Climate Smart businesses report capital upgrades to reduce their electricity usage: lighting and equipment retrofits and equipment right-sizing. The payback period for these investments is typically short – under two years.

"We are currently looking at installing motion sensors to control the lighting in washrooms, lunch rooms, meeting rooms, the copier room and show room."

"We have installed a new efficient variable speed air compressor that will significantly reduce our electricity consumption."

*"We have three large dust collectors, two are older and a lot less energy efficient. Our dust collection requirements have changed over the last couple years and we are planning on removing the second older unit which is 100HP and the machinery connected to it only requires a 20HP unit. The machines requiring the 20HP will then be connected to our newer more efficient unit. The projected energy savings are **265,200 kWh** annually (approximately **\$20,000** in annual savings)."*

Heating emissions is the second most commonly targeted area. This includes space heating for production, office, and storage spaces as well as heat used in the manufacturing process. Behaviour change and simple equipment strategies such as installing insulation and optimizing process temperatures are common. One out of five businesses pursue capital equipment upgrades.

"We are insulating all fourteen of our bay doors."

"We have significantly reduced paint baking temperatures to eliminate unnecessary natural gas consumption in manufacturing process."

*"We have major dryer upgrades planned for next year. Study estimates an annual reduction of **27,000 GJ**. This will likely result in about **\$170,000** in cost savings and **1,500 tonnes CO₂e** reduced."*

Over half of these manufacturers work to increase their **waste diversion** by improving the sorting of waste and introducing new recycling streams.

*"Effective the end of next year we are targeting recycling 90% of our wood waste. Presently this waste is going to the landfill. We anticipate this will reduce our GHG emissions by **100 tonnes CO₂e** per annum. We are in the process of setting up designated wood waste containers and educating our staff on this new process."*

*"By switching to low-VOC wood, which has health benefits to our customers, we can now divert our wood waste from landfill to a high-heat biomass burner at a local pulp mill. Doing this has cut our emissions by **50%** and resulted in significant financial savings."*

New paint formation saves one manufacturer \$49,000 a year

Arpac Storage Systems is the largest manufacturer of pallet racking in western Canada. The final stage in manufacturing is baking the enamel paint onto the product utilizing a bake oven process at 350°F. The natural gas energy cost required to power the oven annually is in excess of \$100,000.

Arpac experimented with a new paint formula that requires ~180°F, equivalent to an annual reduction in energy demand of 49%. The new paint formulation requires a catalyzing agent to be added into the paint stream by a specialized mixer. Initial capital cost expenditure for equipment is approximately \$25,000. Including higher paint and labour costs, Arpac expects to see a return on their investment within 1.5-2 years.

49%
annual natural gas
savings (projected)

< 2 year payback

Case Study

Aggressive Tube Bending



electric equipment
upgrade



equipment
right-sizing



quick payback

25%
total emissions
reduction

\$8,900
annual cost savings

Aggressive Tube Bending has reduced their overall emissions by 25%.

Aggressive Tube Bending is a manufacturer employing 50 people between their two industrial facilities. It offers a wide spectrum of products and services, including pipe, tube and structural steel forming and custom fabricating and manufacturing. The company measured its baseline emissions for the 2010/2011 fiscal year at a time when it was undergoing extensive renovations. This experience gave the company an additional lens—energy efficiency—through which to evaluate renovation options.

Aggressive Tube Bending worked to reduce its emissions by improving insulation in its new facilities, introducing anti-idling practices for vehicles and heavy equipment, retrofitting lighting for maximum efficiency, reducing emissions from welding gases, increasing recycling

efforts and eliminating unnecessary paper use. Aggressive Tube Bending reduced their overall emissions by 25%.

One of the company's most successful projects was the replacement of two aging air compressors integral to its operations with a newer, considerably more efficient model in late 2012. The move followed a seven-day evaluation of the older compressors' usage and efficiency, which found they were significantly oversized for the output that was required of them.

The higher upfront cost of moving to a right-sized, higher-efficiency variable frequency drive compressor, compared to a standard model, was manageable due to energy savings and utility incentives.

By replacing their two aging compressors with the high-efficiency model, and lowering the pressure of the compressor by 20 pounds-per-square-inch (psi)—which provides ~1% electricity savings per 1 psi lowered—

Aggressive Tube projected saving \$7,700 annually and 109,500 kWh. After BC Hydro provided an incentive of \$15,300, the projected payback on this \$27,800 investment was lowered to 1.6 years.

Further highlights:

Emissions from heat reduced by nine tonnes of CO₂e, a 33% reduction. This translated into cost savings of \$1,200 and was the result of using individual space heaters and keeping bay doors shut whenever possible.

Emissions from waste reduced by four tonnes of CO₂e, a 27% reduction, as the company made efforts to segregate cardboard and wood from landfilled waste, to reduce packaging materials as much as possible and expand their recycling program.

Case Study

Miles Industries



product/service
innovation

10,000+ tCO₂e
total emissions
reduction

210,000 GJ
natural gas use
reduction

\$1,000,000+
annual customer cost
savings

Product redesign results in significant energy savings for customers and paves way to new industry standards.

Miles Industries Ltd. is North America's exclusive designer, manufacturer and distributor of Valor Radiant Gas Fireplaces.

The company first took stock of their greenhouse gas emissions in 2010. In their overall GHG inventory, they measured emissions from the use of their fireplace products—their single largest emission source—and looked for ways to reduce them. The company worked with their control devices supplier to design an

on-demand pilot light system for the fireplaces. In an on-demand system, the pilot is automatically extinguished after the gas valve has not been operating for a set period of time.

This product innovation has reduced the company's total GHG inventory by over 50% through extensive reductions in natural gas consumed by their product. This has also resulted in significant cost savings to the fireplace users.

The on-demand system created through the collaboration between Miles Industries and their supplier has been adopted by many other manufacturers of gas fireplaces and is now making its way into other natural gas products such as furnaces.

"It has been exciting to see the on-demand system being adopted by the provincial regulations here in British Columbia. We also anticipate similar regulations to soon appear in the federal NRCAN standards for gas fireplaces," says Martin Miles, the CEO of Miles Industries.

Miles' voluntary extension of the scope of their GHG-reduction efforts highlights the innovation taking place in the SME sector, and the potential for substantial natural gas conservation through thoughtful product redesign and refinement by industry leaders.

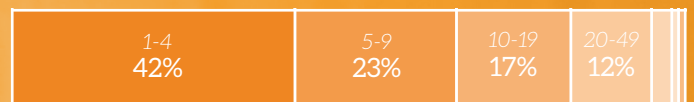
Sector Profile: NAICS 41

Wholesale Trade

Food wholesalers, construction, forestry and industrial equipment suppliers, building material, computer and vehicle parts merchants, and many other wholesalers are part of this large sector covering nearly 60,000 SMEs in Canada. For a detailed sector breakdown, see the accompanying interactive SME dashboard at <http://bit.ly/CanadaSMEs>.

Number of SMEs in Canada*

58,536



Employees

Canadian SME Wholesalers

50-99 3%
100-199 1%
200-499 1%

Emissions in this sector come primarily from company vehicles. While businesses are successfully reducing fleet emissions through route optimization and driver behaviour change, vehicle upgrades are still a challenge for many due to the upfront costs. Nevertheless, businesses are curious about the new technologies such as electric vehicles and some are making the leap to fleet electrification.

Climate Smart case studies show

547

tCO₂e reduced

\$145,000+

saved annually

* Statistics Canada. Table 552-0006, June 2017.

Why do businesses in this sector manage their emissions?

These small/medium wholesalers are motivated by education, improving their company brand and cutting costs.

"We want to learn how to track our greenhouse gas emissions. As a young company, we would like to develop a baseline and find out early on where we can cut emissions."

Office products supplier

"We want to be a leader in our industry when it comes to environment."

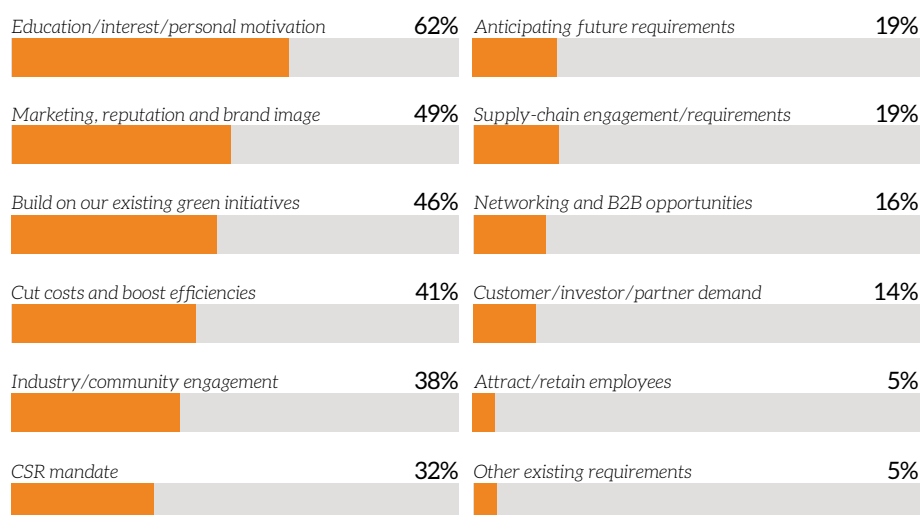
Stationery supplier

"We are pursuing sustainability as an organization and are looking for solutions to measure, reduce, and offset our emissions."

Food products wholesaler

Motivation For Taking Action

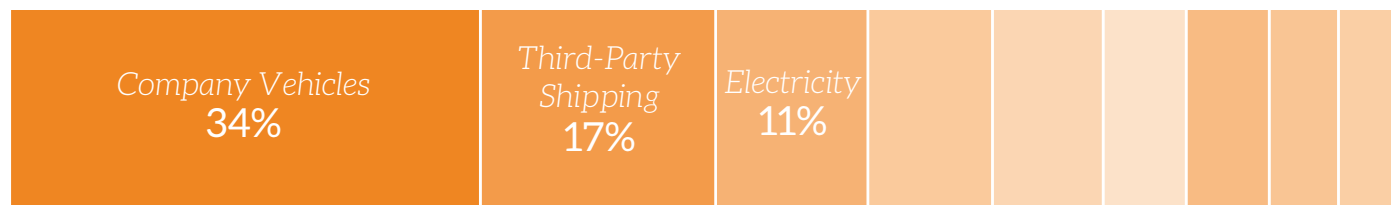
Climate Smart Wholesale Businesses



Wholesalers are looking to understand the environmental impact of their operations, improve their brands, and reduce costs. One fifth mention anticipation of future requirements and supply chain engagement or requirements as motives for managing carbon.

Where do emissions come from in this sector?

Emissions come from company vehicles, third-party shipping and electricity.

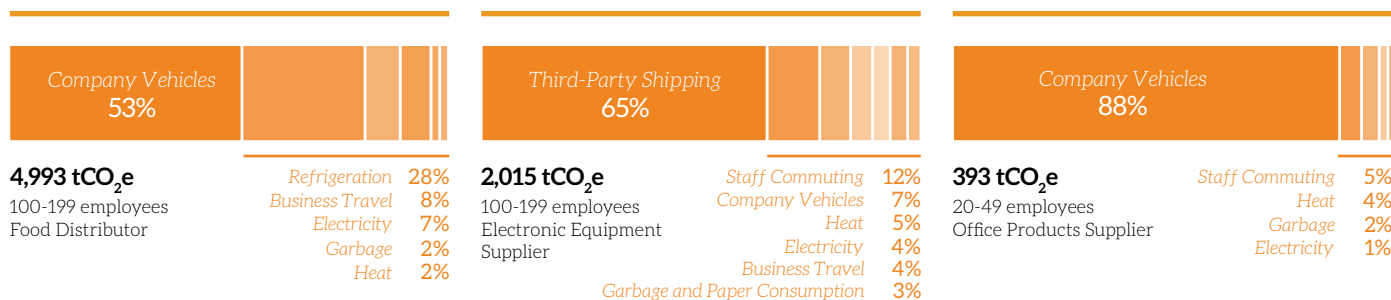


Greenhouse Gas Emissions

Measured by Climate Smart Wholesale Businesses

Company vehicles, third-party shipping, and electricity are the top three emission sources tracked by Climate Smart wholesalers. Note that third-party shipping is optional to measure according to the GHG Protocol and not all the businesses include it in their emission profiles.

Refrigeration is another significant source of emissions (nearly 10% of emissions measured). This represents refrigerants leaking from the cooling systems (both in buildings and refrigeration units installed on vehicles). These emissions are measured through top-ups of refrigerants made during the inventory year.



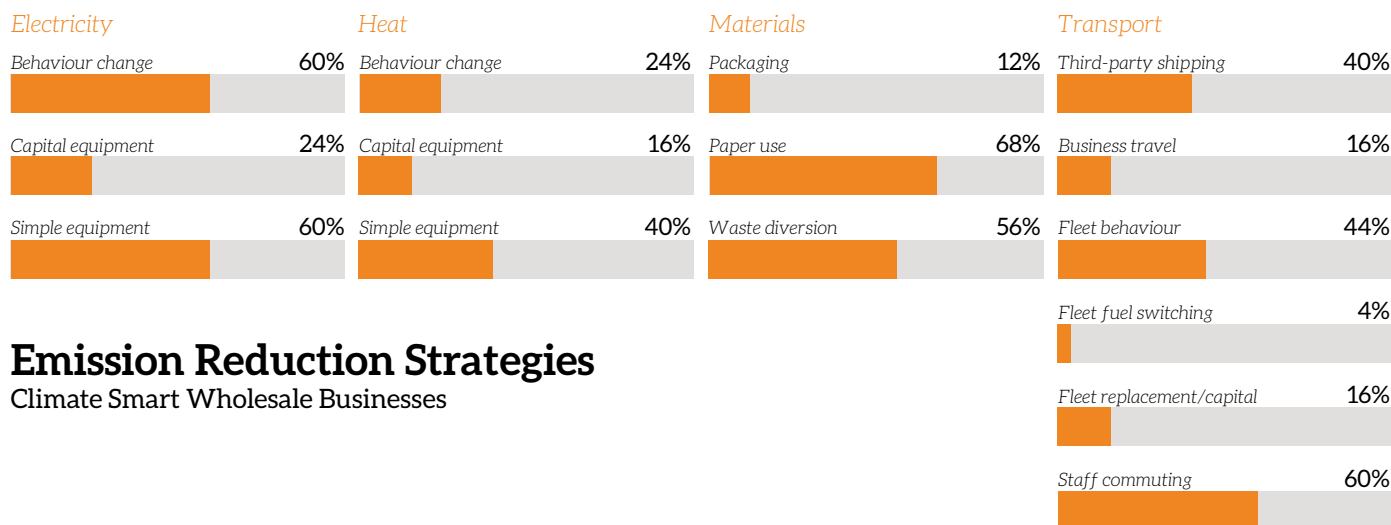
Emissions for this food distributor come primarily from company vehicles and refrigeration. This includes refrigerants used in the cooling units installed on trucks.

This equipment supplier ships their product across Canada using third-party shippers. These third-party shipping emissions account for over 60% of the company's emissions profile.

This office products supplier delivers locally using their company fleet. The company vehicles account for nearly 90% of their emissions profile.

How do businesses in this sector reduce emissions?

SME wholesalers choose to target their electricity, paper use and waste.



Emission Reduction Strategies

Climate Smart Wholesale Businesses

Wholesalers target **electricity use** through behavioural strategies, with a quarter of the businesses pursuing capital upgrades such as lighting retrofits.

“For the POS area (the extension of warehouse) we have decided to reduce the lighting 50% to save energy. This area is not frequently in use. We are also planning to install a motion sensor to control lights for this area. We decided to bring a company policy to turn off computers and personal printers for evenings, holidays and weekends.”

*“We had a walkthrough and identified a lighting retrofit opportunity that will save us around **\$7,400 per year** with a simple payback of 3.3 years.”*

Businesses work to reduce **third-party shipping** emissions through bundling orders, avoiding rush shipments, and switching to less emission intensive modes of transport where possible.

"The new scanning system will help us to reduce shipping mistakes that cause re-ships. Warehouse and order desk departments will continue to work together to optimize orders by shipping only perishable items by air, or items that need to be shipped by air for seasonal reasons to minimize the air shipments. They will also

continue to combine orders for the same account to reduce transportation. We will create a color coding system for the perishable items in our software to help the order desk team to choose the appropriate shipping option."

"Focus on lowest emissions for shipping product: water, then rail, then road, then air (most expensive)."

Company fleet is the largest emission source measured by Climate Smart wholesalers. Many businesses tackle it through reviewing fleet routing and reducing idling. Some are investigating fleet upgrades and are interested in alternatives such as electric or hybrid vehicles, but costs remain a barrier.

"We will implement green routing of our vehicles, limit the number of trips per day our vehicles take and adjust our delivery routes to limit time spent on the road. We also plan to implement incentives to reduce idling by our vehicles."

"We will hold a driver meeting and deliver information about the GHG inventory. We will ask our team of drivers to bring their ideas about how we can improve our fleet efficiency. At that meeting, we will show the options for driver training programs. We will formalize our idle free policy and hand it out to drivers. We will also post a sign at our loading dock reminding delivery drivers to observe the idle free policy."

"Our trucks are in poor shape and we have been exploring options for a new fleet of trucks that would be more fuel efficient. We are not yet able to commit to the purchase of these new trucks for several reasons including cash on hand, and a reticence to commit to technology that seems to be changing daily. We will continue to explore options, and though we acknowledge that by the end of the current fiscal year we will likely have new trucks, we cannot yet say what type of technology we will decide on."

"We plan to install the fleet tracking device on the truck and convert to propane by the end of next year."

Case Study

Ecotrend Ecologics



consolidating
shipments

25%
total emissions
reduction per full-time
equivalent employee

14%
emissions reduction
per \$1,000 revenue

Consolidated shipments cut emissions from distribution.

Ecotrend Ecologics Ltd., based in Vancouver, Canada, is a distributor of premium natural health products. Ecotrend's founder, John Harrison, sees environmental sustainability as a key business goal from an ethical standpoint, and also for the company's bottom line. "You may spend more money up front," says John, "but if you factor in the lifecycle costs you find that sustainability makes sense for the bottom line in the long run. It would be great to see our whole industry standing up, leading by example, and taking steps to become more sustainable."

Ecotrend began measuring its carbon footprint with Climate Smart in 2011. Since then, Ecotrend has implemented a number of innovative solutions that have led to a carbon reduction of 25% per full-time equivalent employee and 14% per \$1000 in revenue.

Shipping goods to its facilities and to customers is Ecotrend's largest source of emissions, making up 58% of the company's entire carbon footprint. To tackle this emissions source, Ecotrend focused on consolidating orders and shipments from each supplier into one trip instead of multiple shipments. Altogether, efforts in this area led to a 6% reduction in emissions associated with third-party shipping by road.

Ecotrend manages waste on-site by reusing and diverting as much as possible, and also reduces packaging before sending products to clients. Ecotrend has also partnered with other organizations to purchase gently used cardboard boxes to reduce the number of new boxes needed for shipping. Rather than using fossil fuel-derived packing peanuts, Ecotrend has sourced biodegradable, plant starch-based packing peanuts for its packages.

After searching for and experimenting with more environmentally friendly

copy paper, Ecotrend now uses Sugar Sheet, which is made from sugar cane fibre left over from sugar manufacturing. According to a life cycle analysis conducted by Trucost, Sugar Sheet paper emits 55% fewer GHGs than uncoated wood-derived paper with no recycled content, and 29% fewer GHGs than uncoated wood-derived paper made entirely from recycled pulp.

Ecotrend also commits to purchasing renewable energy certificates (RECs) from Bullfrog Power to help reduce its environmental impact even more. Purchases from Bullfrog ensure that clean, renewable energy enters the grid for every REC purchased. Ecotrend purchases electricity, renewable natural gas, and green fuel certificates from Bullfrog. In 2017, these purchases were applied against Ecotrend's footprint to reduce it by 25%.

Case Study

Stone Event



landlord engagement

third-party shipping
mode switch

8%

natural gas reduction
across whole building

10%

emissions reduction
per tonne of stone sold**Engaging the landlord cuts heating bills.**

Stone Event supplies natural stone landscaping products and Romex® permeable hardscape solutions to landscape architects, designers, and installers across Canada. Stone Event became the first company in the industry to achieve Climate Smart certification, and to become carbon neutral.

Stone Event has taken a number of actions to reduce its own emissions.

1. Switching the company vehicle to a hybrid Prius to reduce fuel use;
2. Using electric space heaters instead of their old building's on/off system;
3. Implementing composting and expanding recycling;
4. Closing unused air vents (to minimize drafts);
5. Using paper with recycled content and switching to paperless invoicing;

6. Trying, where possible, to use marine shipping instead of road or air; and

7. Purchasing offsets to become carbon neutral.

Leveraging Influence to Reduce Emissions:

With a small office footprint, and stone shipments that are client-driven, at first blush, it may seem that Stone Event doesn't have a lot of control over its GHG footprint. However, in addition to making internal improvements where possible, Stone Event has had great influence encouraging others within its supply chain to reduce their environmental footprints. Stone Event has also established itself as a market leader, using its platform to share and educate, and to set industry standards for environmental sustainability.

Heating: Stone Event occupies a small portion (8% by square footage) of a larger building. Stone Event has encouraged its landlord to make energy efficient upgrades and change policies to save on heat use. These changes have included weather stripping

and policies to ensure doors on the warehouse stay closed and have led to an 8% reduction in gigajoules of natural gas used by the entire building.

Shipping: Stone Event set out to calculate all emissions produced through the transport of their goods alone, thinking this was the biggest contributor to their GHG impact. It took some time and effort, but that turned out to be over 90% of the company's emissions. Stone Event has made great efforts to control and manage shipping and also strongly encourages customers to use marine shipping wherever possible. Stone Event has implemented a policy, that includes in client contracts a cost-sharing of offsets for air shipments, to incentivize lower carbon forms of shipping.

Altogether, Stone Event's efforts have led to a 10% reduction per tonne of stone sold.

Sector Profile: NAICS 44-45

Retail Trade

The retail trade sector is the largest in Canada by the number of SME businesses—over 12% of all Canadian SMEs are retailers. This sector includes health and personal care, clothing, grocery, and electronics stores, and gas stations, auto dealers and other stores. It also includes online retailers. For a detailed sector breakdown, see the accompanying interactive SME dashboard at <http://bit.ly/CanadaSMEs>.

Number of SMEs in Canada*

144,090

1-4 36%	5-9 29%	10-19 19%	20-49 10%
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Employees
Canadian SME Retailers

50-99	4%
100-199	1%
200-499	1%

Electricity and heating are the largest emission sources measured by Climate Smart retailers, with many businesses finding ways to reduce them through simple strategies such as lower night-time temperatures and turn-it-off policies for lighting. One in three retailers pursues capital upgrades such as lighting retrofits to reduce electricity use.

Climate Smart case studies show

173

tCO₂e reduced

\$25,000+

saved annually

* Statistics Canada. Table 552-0006, June 2017.

Why do businesses in this sector manage their emissions?

Small/medium retailers are motivated by education, cutting costs and marketing their brand.

"To fulfill our role as part of a community initiative to reduce greenhouse gases and to act as an ambassador for other business members of the community to encourage more buy-in to reduce GHG emissions."

Specialty food store

"Every RFP we respond to has a LEED, green, or other sustainability component."

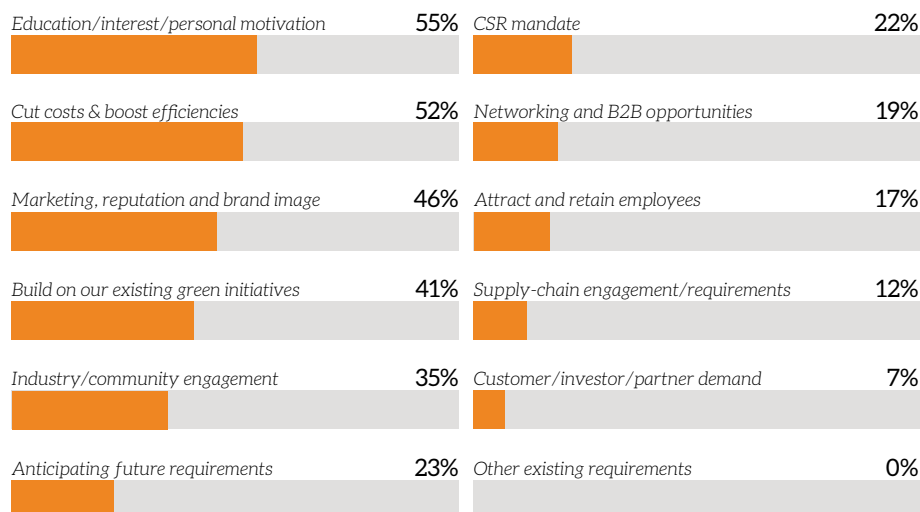
Office furniture retailer

"Our goal is to gain knowledge and discover ways to become more responsible corporate leaders, while being able to garner savings and increase employee engagement in the process."

Online retailer

Motivation For Taking Action

Climate Smart Retail Businesses



Education, cost cutting, and marketing are top drivers for retailers to manage their emissions. Many (over 40%) already have some sustainability initiatives in place and are looking to deepen their commitment to sustainable operations.

Where do emissions come from in this sector?

Emissions come from electricity, heat and waste.

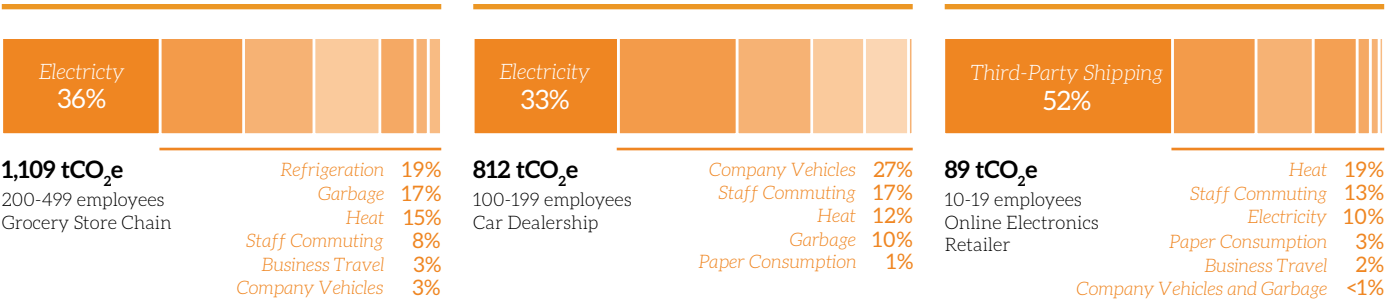


Greenhouse Gas Emissions
Measured by Climate Smart Retail Businesses

Company Vehicles	8%
Staff Commuting	3%
Business Travel	3%
Third-Party Shipping	1%
Paper Consumption	<1%

Electricity (this includes retail lighting and refrigeration equipment), natural gas heating (retail spaces are often large and must be heated for customer comfort), garbage, and refrigeration (refrigerant leaks) are the

largest emission sources measured by Climate Smart retailers. These four activities combined account for over 80% of emissions tracked by retailers.



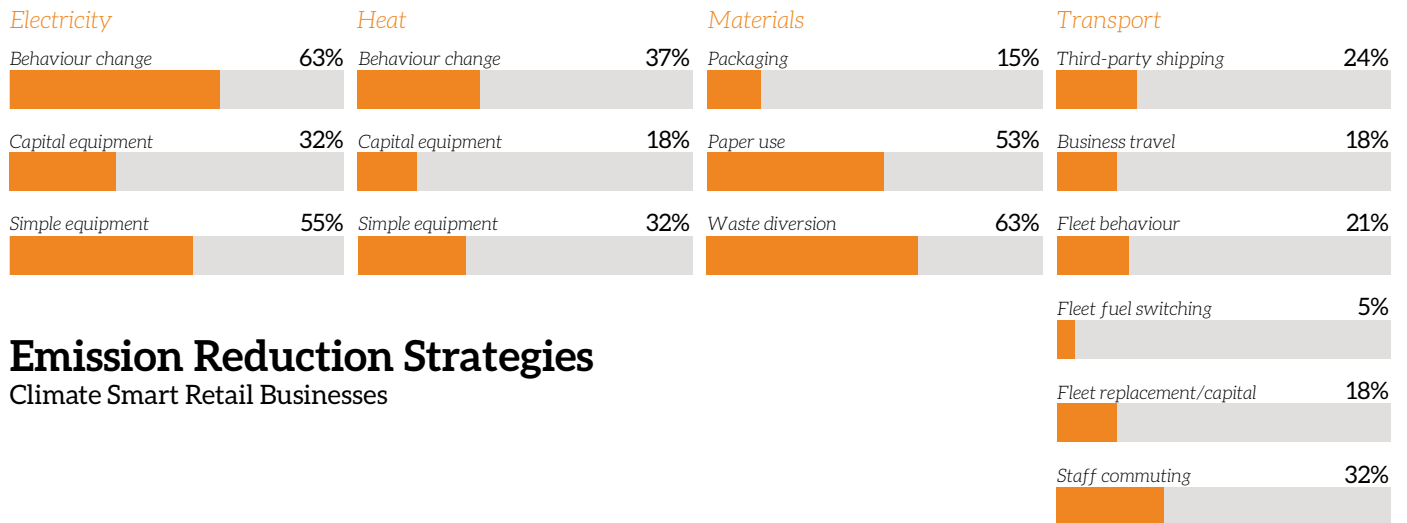
Over one half of this grocery chain's emissions come from electricity use (this includes store lighting and powering refrigeration equipment) and refrigerant leaks (these are measured based on the refrigerant top-ups made).

This car dealership's top two emission sources are electricity (one third of the footprint), followed by fuel usage from courtesy car and test drives (one quarter of the emissions).

For this online retailer, third-party shipping makes up over one half of the emissions (this particular company tracked both incoming shipments of products and shipping to its customers).

How do businesses in this sector reduce emissions?

SME retailers choose to target their electricity and waste.



Emission Reduction Strategies

Climate Smart Retail Businesses

Electricity is the largest source of emissions tracked by Climate Smart retailers. Retail businesses are cutting electricity use through behavioural strategies such as turn-it-off campaigns, simple equipment like lighting timers, and night curtains for refrigerated displays. Over 30% of businesses make capital upgrades (most commonly lighting retrofits).

“We are reviewing the lighting of all retail and storage locations for opportunities to install lower energy consuming alternatives. We are installing lighting timers where appropriate and adding turn-off posters and stickers and other energy-saving information (e.g., close cooler doors, case lighting, turn off monitors, etc.) throughout the four locations.”

“We will review the temperature of all hot water heaters and reduce where possible. We plan to determine alternatives to Freon (refrigerant) to find types with smallest carbon footprint. We also plan to perform a review of installing night curtains at all locations.”

Over one third of retailers are reducing **heating** through behaviour change and simple equipment strategies, with one in five considering capital upgrades such as boiler replacements or more innovative solutions like solar hot water.

“We plan to recapture heat from the commercial kitchen to heat the head office.”

“We installed a programmable thermostat and decreased night time store temperature.”

“We are looking into a solar thermal system to preheat the hot water.”

Over 60% of retailers work to reduce **waste** sent to landfill, usually through diverting recyclables and organics. Engaging and training employees on better waste sorting are a big part of this effort.

“We will be building an outdoor composter at head office to deal with commercial kitchen waste and staff garbage production—all stores will have composters put in the back for customer waste and for produce waste. Partnerships with local farmers to pick up compost are currently in existence for all stores (still trying to determine a way to compost regularly in stores through the winter).”

“We use behaviour-based incentives and pay a bonus to employees based on reductions in utility use and waste.”

Case Study

Reid's Automotive Recycling Ltd.



insulation
improvements



expanded recycling

39%
total emissions
reduction

33%
building heat
emissions reduction

85%
waste emissions
reduction

Insulating their space and expanding their recycling program cut emissions drastically.

Reid's Automotive Recycling Ltd. was established in 1995 to serve the need for quality used auto parts in BC and Alberta. The company re-purposes parts, refinishes alloy wheels and recycles end-of-life vehicles.

In 2014, Reid's began working with Climate Smart, learning how to measure its greenhouse gas emissions, and developing strategies to reduce its carbon footprint. Through this work, the company identified three primary sources of emissions: staff commuting, natural gas used to heat their building, and garbage. Armed with this new information, Reid's spent the next year implementing a number of initiatives in an effort to reduce their impact:

- Improving insulation in the walls, roof and bay doors of the building, leading to a 32% reduction in natural gas consumption.
- Expanding their recycling to include plastics, wood and metal, as well as implementing compost pick-up. This led to an 85% reduction in emissions from waste (not including the avoided emissions from less frequent bin removal).
- Building awareness amongst their staff on the environmental impacts of their commuting choices and promoting carpooling and low-carbon commuting options, leading to a 50% reduction in emissions from staff commuting.
- Printing double sided, providing paperless invoicing, limiting internal communication with paper, and purchasing paper with 100% recycled content, leading to a 16% reduction

in paper consumption and a 72% reduction in related emissions.

According to owner Teresa Reid, "We know that automotive recyclers aren't necessarily perceived as protectors of the environment, but the very nature of our business—recovering and supplying used auto parts—has significant environmental benefits. We are very proud of being part of the solution and providing a green option in automotive repair. Extending this commitment to our operations was not only a logical next step for us, it resonated strongly with all of us who work here. The results have benefitted us on many levels. Our expenses are lower and our staff are more engaged and work more collaboratively. This has assisted a growth in our revenue, increased our efficiency, and helps us deliver a higher level of service to our customers. It's really been win, win, win."

Case Study

World Duty Free (Hudson Group)



staff engagement



power of competition

14%
paper-use reduction

30%
waste reduction

The “paper police” take charge, while employees challenge one another to reduce waste.

Hudson Group operates sixteen specialty luxury retail stores at the Vancouver International Airport under the World Duty Free banner.

World Duty Free (WDF) measured their greenhouse gas emissions baseline for 2015 and created an emissions reduction plan with an emphasis on waste diversion and paper conservation.

Paper Police Take Charge

As part of the plan, the WDF Green Committee set a goal of reducing paper use by 10% in a year. They exceeded this goal and reduced paper use by 14%, with the warehouse achieving an impressive paper reduction of over 40%. This reduction was achieved through a number of initiatives.

For example, on St. Patrick’s Day, the Green Committee challenged the staff to wear green and submit a green idea for saving paper to be entered into a prize draw. One of the suggestions collected was to get rid of disposable paper cups for the water cooler, as well as to use tap water for the cooler instead of ordering plastic water jugs.

In the summer of 2016, the Green Committee hosted a Paper Consumption Challenge. During the challenge, the staff were asked to reuse scrap paper. Access to fresh paper was restricted and monitored by the “paper police”.

Waste Challenge and Other Battles

The WDF Green Committee has launched a number of initiatives to tackle waste.

In the fall of 2016, they hosted a waste challenge to educate staff about the company’s recycling program, and

encourage better separation of waste streams. Contestants were given a selection of waste items to sort as fast they could into the correct bins (recycling streams). The winner was chosen based on speed and the number of items sorted correctly. Competition was fierce, with employees trying the challenge more than once in order to improve their result. In addition, the Green Committee implemented a composting program in the lunch room. Through these efforts, the warehouse waste going to landfill was reduced by over 30%.

“We are a highly motivated and environmentally conscious team who are committed to bringing awareness to reducing waste so that we can proudly minimize our environmental footprint.” says Elaine Xu, the Director of Travel Trade Development at WDF YVR.

Case Study

Mills Office Productivity



fleet fuel switch



driver education

32%
total emissions
reduction
per \$1M revenue

Fleet conversions and driver training helped cut emissions while growing the company.

Mills Office Productivity is a dealer of business supplies and educational products. At Mills, environmental leadership is a priority and a long-standing tradition. By working closely with their family of customers, employees and suppliers, the company brings to life a vision of environmental responsibility and care that encourages and supports sustainable practices in office productivity. Mills' social responsibility management practices are based on the principle that businesses have an important role to play in addressing the social interests and sustainable development goals of their community.

Since 2007, Mills has taken concrete steps towards reducing emissions, while growing in revenue by 63%.

Overall, Mills has achieved an intensity reduction of 10.05 tonnes of carbon dioxide equivalent, or 32%, per one million revenue dollars.

Perhaps not surprisingly, Mills' largest source of GHG emissions is the delivery of products to customers. The company has tackled this challenge with a number of initiatives, which helped them increase revenue by 63% while only increasing transportation related emissions by 21%.

Mills partnered with Eco Options Energy Cooperative to convert two diesel vehicles to propane. These conversions helped reduce fuel expenses as well as emissions. Mills also invested in an electric truck to replace a diesel model. For delivery within the city, Mills partnered with Shift Delivery, an electric cargo tricycle delivery service.

Mills also partnered with Recycling Alternative, another Climate Smart-

certified business, to offer Smart Driver training (a past program of Natural Resources Canada) to their drivers. Smart Driver training emphasizes safe and efficient driving. Michelle Reid, Sustainability Czar at Mills, said, "The Smart Driver training was positive in so many ways. It was an excellent team-building activity, and it was great to learn from the drivers and see how much expertise they have. It was also great for drivers to see how important their roles are within the company."

Mills has moved away from its old practice of supplying every employee with a company car, to providing cars only to certain sales reps. As most business travel occurs within the city, most company cars are fuel efficient Smart Cars —well suited to urban driving and parking.

Sector Profile: NAICS 48-49

Transportation and Warehousing

The transportation and warehousing sector in Canada includes over 65,000 SMEs and covers businesses such as freight trucking companies, logistics services providers, couriers, bus and taxi companies, as well as businesses that support transportation companies: road, marine, and air transport terminals, cargo handling service providers, and others. For a detailed sector breakdown, see the accompanying interactive SME dashboard at <http://bit.ly/CanadaSMEs>.

Number of SMEs in Canada*

66,330



Employees

Canadian SME Transportation and Warehousing Businesses

20-49	6%
50-99	2%
100-199	1%
200-499	1%

Vehicles and third-party shipping are the top emissions sources measured by Climate Smart businesses in this sector. Many are trucking companies that work with truck owner-operators, where vehicle emissions are tracked under third-party shipping.

Climate Smart case studies show

2,060

tCO₂e reduced

\$543,000+

saved annually

* Statistics Canada. Table 552-0006, June 2017.

Why do businesses in this sector manage their emissions?

Small/medium transport and warehousing businesses are motivated by education, building on their existing green initiatives and cutting costs.

"We operate in a heavy impacting sector. We have engineered a number of internal initiatives to reduce environmental impact and feel a measuring guideline and framework for continuing improvement would be beneficial. We want to work with like-minded companies and share knowledge with a wider sphere of the business community."

Trucking company

"We see opportunity to take a leadership role in reducing carbon footprint within 3PL industry and win additional business."

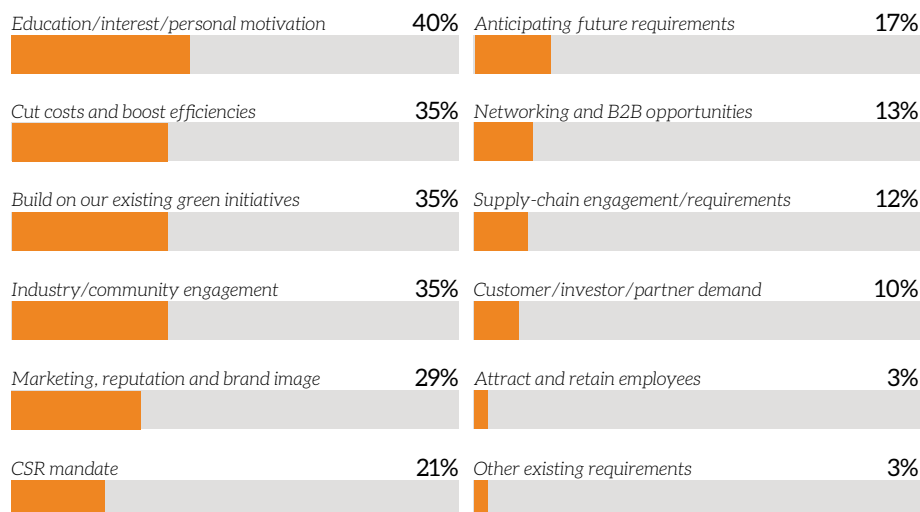
Logistics company

"We strive to minimize the carbon footprint of our business and would like to better understand how we can accomplish that. We would also like to quantify this so our customers have this information as well."

Moving company

Motivation For Taking Action

Climate Smart Transportation and Warehousing Businesses



Education, building on existing green initiatives and cost cutting are the top drivers cited by transportation and warehousing SMEs.

Transportation businesses are looking to understand and reduce their greenhouse gas impact and associated costs while building their brand and positioning themselves as industry leaders.

Where do emissions come from in this sector?

Emissions come from company vehicles, third-party shipping and equipment.

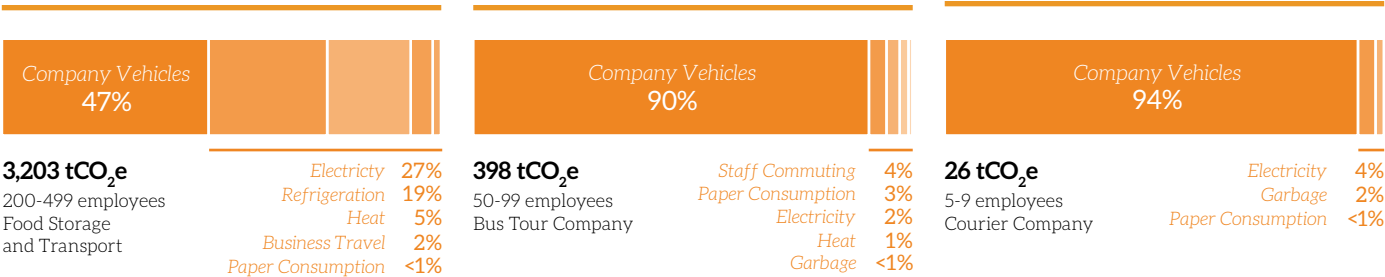


Greenhouse Gas Emissions

Measured by Climate Smart Transportation and Warehousing Businesses

It doesn't come as a surprise that company vehicles are the highest emission source in this sector, accounting for nearly one half of the emissions measured by Climate Smart businesses. Third-party shipping is the

second largest emission source measured. For a trucking company, third-party shipping can include drivers who own their own trucks and are hired by the company.



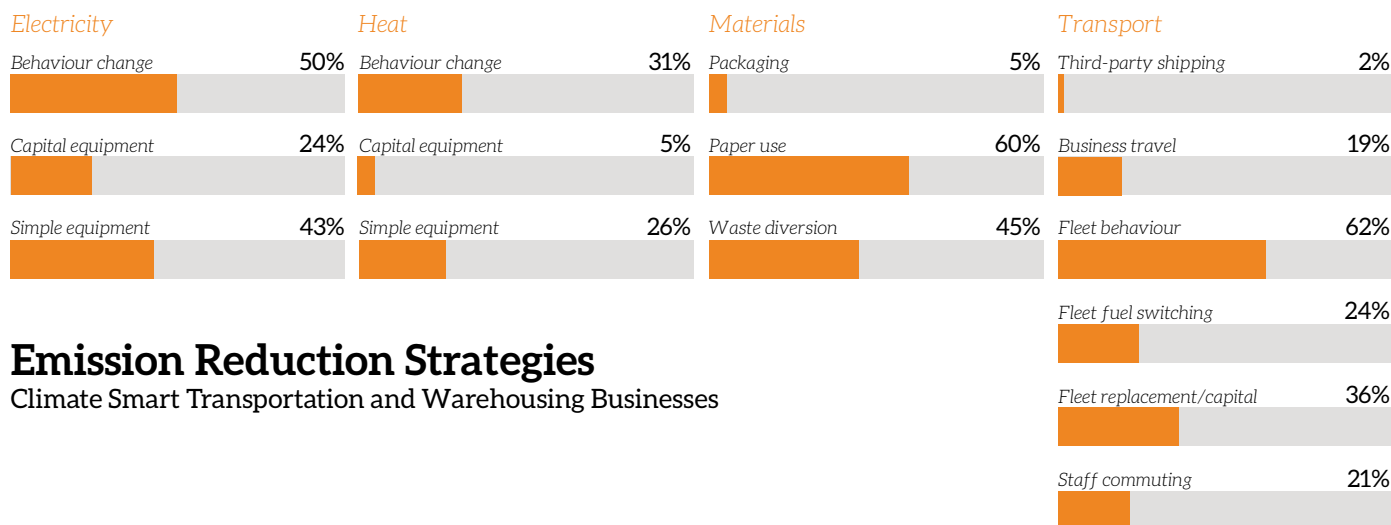
This food storage and transportation company's primary emission sources are company vehicles, electricity and refrigeration (this includes refrigerant leaks that are measured through the top-ups required for both warehouse cooling systems and refrigeration units installed on trucks). The high electricity usage is largely due to cooling the warehouse spaces.

For this bus tour company, vehicles are the primary emission source. Emissions from office operations (commuting, electricity, heating, etc.) make up a small portion of the overall footprint.

Similarly, almost all of this courier company's emissions are attributed to the company fleet.

How do businesses in this sector reduce emissions?

SME transport and warehousing companies choose to target their fleets and electricity.



Emission Reduction Strategies

Climate Smart Transportation and Warehousing Businesses

Third-party shipping is the second largest emission source measured by Climate Smart businesses in this sector; however, not many businesses tackle it. Some do address it through optimizing their distribution networks, encouraging owner-operator drivers to improve their vehicle efficiency and other initiatives.

"We will reduce emissions caused by third-party freight carriers by encouraging clients that distribute nationally to use both of our strategically placed locations in Toronto and Vancouver. A multi-location approach to national distribution will lower emissions, while at the same time reducing freight costs and transit times."

"We will encourage the use of biodiesel fuel for our owner-operator fleet as well as encourage the installation of various idle reduction technologies. We are installing GPS in all tractors. It will include EOBRs (electronic on-board recorders) which will eliminate paper logbooks."

Fleet is the largest emission source for most businesses in the transportation sector. Businesses tackle it through behaviour change strategies such as idling reduction, speed monitoring, route optimization, using alternative fuels such as biodiesel blends and others. Over a third of the businesses plan to upgrade their vehicles with more fuel-efficient models and one quarter are investigating fuel switching.

"100% biodiesel is used in our tour buses from April to October (earlier or later depending on weather outlook). GPS is installed in all equipment to keep track of mileage and help with regular servicing of vehicles at set intervals. ECM's (Engine Control Modules) are on all vehicles. There is an alarm set on the GPS if drivers are going over set speed limits. Tires are regularly checked by a company to ensure proper inflation, wear, etc. A no-idling policy is already in place for all driving staff. We will continue with driver education on the importance of the no-idling and speed limit policies. Sourcing alternative fuels with environmental benefits for winter months will be ongoing. Replacement of older model equipment with newer more fuel efficient buses is in our 10 year fleet plan. We also use mini buses when group sizes allow."

"We use electric golf carts for some of our site operations. We also use 5% biodiesel for our diesel trucks and we plan to work on reducing idling, as well as monitoring and metering diesel and gasoline usage. We plan to replace older, larger vehicles with appropriately sized hybrid and fuel-efficient models."

While **waste** and **electricity** are not the largest emission sources for this sector, many businesses reduce them through simple strategies such as better waste separation and turn-it-off policies. A quarter of the businesses pursue capital upgrades (typically lighting retrofits).

"We plan to use a compacter or a baler to reduce cardboard pickups. "

"The electricians have been here and spoken to the contact at the utility. We are going to go ahead with a full lighting retrofit."

"We are expanding our oil recycling area to accept basically everything that comes onto our site; we have created a list of places that we can properly dispose of anything from batteries, to oil filters, paint and paint cans, broken machinery, etc."

Case Study

Western Stevedoring - Lynnterm



electric lift trucks



lift equipment and vehicle upgrades

15%
total emissions
reduction

\$250,000+
annual fuel cost savings

“Being a Climate Smart business further embeds our commitment to reducing our environmental footprint and reminds us all that we have the ability to make a difference.”

John Crique, Manager – Health & Safety, Quality & Environment

As the largest and most diversified stevedoring company in British Columbia, Western Stevedoring loads and unloads more than five million metric tons of cargo at 20 different ports and terminals along the coast of Vancouver Island and throughout the Lower Mainland of British Columbia.

Since their first inventory, Western Stevedoring has been measuring emissions annually and identifying short and long-term emissions reductions strategies that have included both behaviour-based and capital investment solutions. Western Stevedoring has shown a commitment

towards fostering a culture of environmentally-conscious employees.

In 2016, Western Stevedoring made a considerable investment in their on-site equipment and undertook the following projects at Lynnterm Terminal:

- Added six new electric lift trucks to increase total number to 10;
- Retrofitted a heavy-duty lift truck with a more efficient, cleaner burning tier-4 engine;
- Continued ongoing/regular maintenance with remainder of heavy lift trucks; and
- Phased out propane pick-up trucks and replaced with higher efficiency gasoline models.

Despite an increase in the number of full-time equivalents and hours worked, these upgrades led to a 15% reduction in emissions. This also led to a 17% reduction in emissions per FTE and 18% reduction in emissions per 1,000 hours

worked between 2015 and 2016.

All the fleet initiatives combined are saving the company more than \$250,000 annually in fuel expenses.

Western Stevedoring is continuing to review areas where they can reduce the emissions of their mobile equipment fleet. Further, their Green Team is developing additional sustainability strategies, informing the organization of the source and scope of their footprint and exploring possibilities to further engage employees in taking green actions.

Case Study

Paradise Island Foods



savings shared
with staff



quick payback

64%
fuel reduction

2.4-year
payback period

“A lot of these improvements aren’t rocket science. You don’t always need fancy technology – just change the culture, and you can see immediate results.”

Jason Kozubal, Operations Manager

Paradise Island Foods is a family-owned and operated company in Nanaimo, BC that produces, packages, and sells a variety of food and dairy products. Since 2011, Paradise Island has been working to reduce the company’s fuel consumption and related carbon emissions.

Paradise Island first aimed to reduce fuel use through changing driver behaviour through training. To further improve the fleet’s fuel efficiency and safety, the company utilized onboard computer technology and existing electronic control modules in its fleet of tractor-trailers. This technology enabled: setting a corporate speed limit of 90 km/h; automatic shutdown

controls after three minutes of idling; electronic driver logs; GPS tracking; and progressive shifting controls to avoid over-revving.

Jason Kozubal, Operations Manager, noted that addressing specific behaviour barriers and myths was key to success. For example, drivers expressed concern about being the slowest trucks on the road, and wondered if repeatedly shutting off trucks would damage the starters. Jason was able to show that wear and tear on the vehicles was decreased by limiting speed, and that safety was increased. “When you slow down, you give yourself that much more braking distance, not to mention increasing your time to make decisions.”

By creating a staff profit sharing program, and sharing fuel savings, Paradise Island was able to effectively address the question of “what’s in it for me?,” and get buy-in from its employees. These initiatives achieved a 21% fuel reduction within the first month of

implementation. Maintenance and tire replacement costs also decreased by an estimated 15%.

A capital investment with a noteworthy return for Paradise Island was the upgrade of its refrigerated trailer fleet to the Carrier Vector Hybrid multi-temp refrigeration unit. The new hybrid trailer units are plugged into the company’s building to run on electricity during loading, unloading or while waiting to dispatch. Paradise Island achieved a fuel reduction of more than 64% using this technology.

The investment in the new trucks and trailers qualified with both Green Fleet BC’s Envirotruck program and Transport Canada’s Freight Technology Demonstration Fund project. The corresponding incentives available to Paradise Island totaled \$155,000. Therefore, the 9.6-year payback for the \$206,000 investment was reduced to 2.4 years, after available incentives cut the capital cost by nearly three-quarters.

Sector Profile: NAICS 52

Finance and Insurance

Insurance agencies, financial institutions, investment advisors, portfolio managers, credit unions, mortgage brokers, consumer lenders, pension funds, etc. comprise the Canadian finance and insurance sector. For a detailed sector breakdown, see the accompanying interactive SME dashboard at <http://bit.ly/CanadaSMEs>.

Number of SMEs in Canada*

41,921

1-4 51%	5-9 18%	10-19 15%	20-49 11%
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Employees

Canadian SME Finance Businesses

50-99 3%
100-199 1%
200-499 1%

Businesses in this sector have many opportunities to reduce emissions, from reviewing their printing procedures and cutting down on paper use, to reducing business travel through webconferencing and cutting commuting emissions by allowing employees to work from home. Some even consider client trips to their locations and rethink their operations to avoid the need for customer travel.

Climate Smart case studies show

454

tCO₂e reduced

\$37,000+

saved annually

* Statistics Canada. Table 552-0006, June 2017.

Why do businesses in this sector manage their emissions?

Small/medium finance and insurance businesses are motivated by marketing their brands and meeting corporate social responsibility mandates.

"Our branch is under renovation and we would like to incorporate the sustainability lessons learned, to lower our costs while achieving benefits and to communicate our green activity to our members."

Credit union

"CSR is a priority for us, sustainability and environmental wellness is our current focus area."

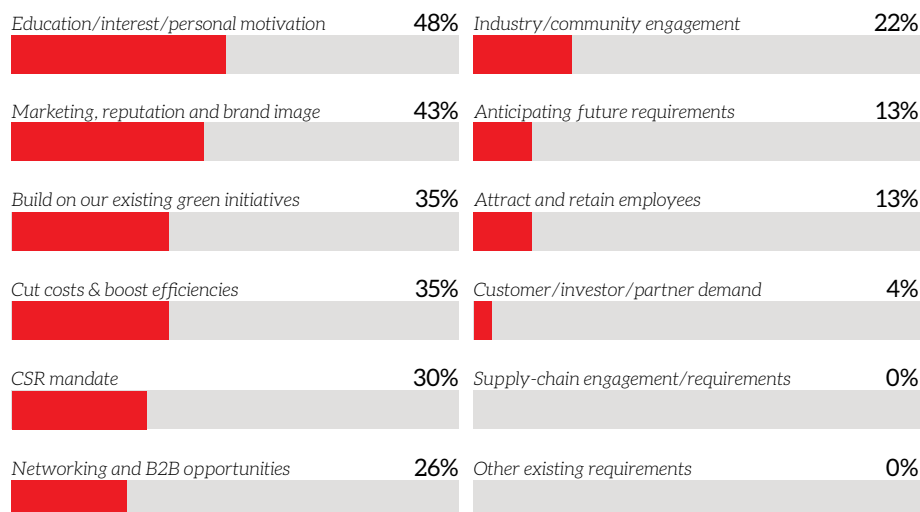
Financial institution

"As an organization we want to minimize our impact on the environment, for external public relations benefits as well as internal employee engagement benefits."

Asset management firm

Motivation For Taking Action

Climate Smart Finance Businesses



Businesses in the financial sector are driven by the desire to build their brand images and meet their corporate social responsibility mandate. Over a third of the businesses indicate that they would like to expand their existing sustainability initiatives.

Where do emissions come from in this sector?

Emissions come from electricity, heat and staff commuting.

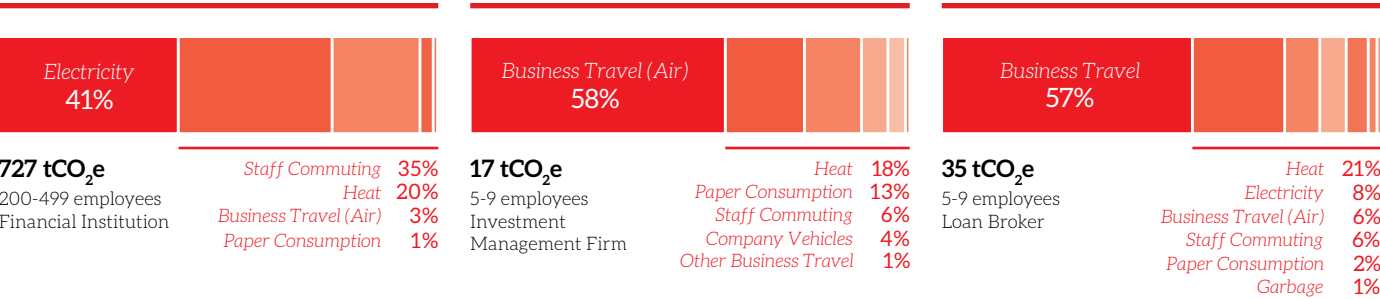


Greenhouse Gas Emissions
Measured by Climate Smart Finance Businesses



Electricity, heating (primarily natural gas) and staff commuting are the top three emission sources measured by Climate Smart financial institutions.

Note that emissions from staff commuting and business travel are Scope 3 and therefore optional to measure; not all businesses choose to include them.



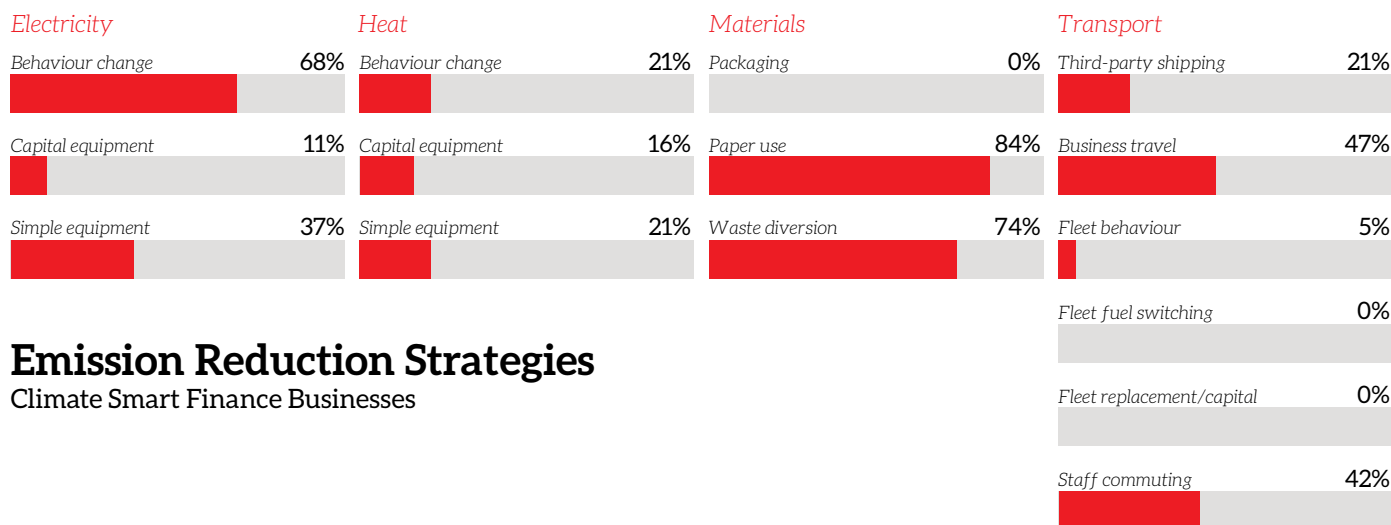
For this financial institution, electricity is the largest emission source, closely followed by staff commuting.

This investment management firm's primary emission source is air travel, accounting for over half of the emissions.

Reimbursed employee business travel in personal vehicles is the top emission source for this commercial loan brokerage.

How do businesses in this sector reduce emissions?

Finance and insurance SMEs choose to target their paper, waste and electricity.



Emission Reduction Strategies

Climate Smart Finance Businesses

Paper and waste reduction strategies are the most common in this sector. Paper use is a big part of day-to-day operations and most businesses are finding ways to reduce it through changing employee habits and/or updating company procedures.

“Non-sensitive materials that are printed are re-used as notepads; we are sending more PDF documents to commercial clients vs. sending hard copies to them as well as requesting electronic documents from them. We are looking into Citrix software for residential clients to be able to view their policies online. We are contacting the car insurance company to see if both hard copies of policies are necessary.”

“We are implementing an employee composting contest to see who eliminates the most organic waste from the landfill; we plan to eliminate waste bins at employee desks by providing a central waste/compost bin (the majority of desk waste is organic). We will work on staff education on recycling, composting and waste signage and group sessions around what waste belongs where. We have reduced paper mortgage files from 100+ pages to 7-10 pages of paper. Our IT department is working towards online statements so that we may eliminate paper-based statements.”

Capital upgrades such as lighting retrofits are not as common in this sector, with many businesses operating out of leased spaces. The majority (nearly 70%) of businesses tackle their **electricity** use through behaviour change strategies.

"Lights are turned off once it is light enough outside (usually in the afternoon). We shut down the office equipment or place it in sleep/energy saving mode when not in use. We will start shutting off lights and air-conditioning outside business hours."

*"Six of our locations qualify for the utility lighting incentives. An energy advisor identified **over \$16,000 in potential energy savings** and we plan to implement their recommendations."*

Businesses are achieving impressive reductions in **business travel and staff commuting** by encouraging carpooling, subsidizing transit, switching to web-conferencing and transitioning employees to home offices.

*"We have implemented a policy of using WebEx for training whenever possible and consolidating/reducing travel. This resulted in a **19% reduction in emissions from business travel**. We are also transitioning completely to home offices, reducing staff commuting emissions to zero. We plan to eliminate unnecessary client travel to our branches as well by using videoconferencing."*

"We encourage employees with prizes and promotions for carpooling/cycling/public transport (i.e., discounted transit passes, contests by branch). We have also set up a carpooling site to connect employees."

"We have cut employee travel by 60% through web conferencing."

Enabling local enterprises unlocks community benefits

For more than a decade, **Vancity Credit Union** has been making environmental improvements to its business performance. In 2005, Vancity integrated greenhouse gas management into its business strategy and operations, and in 2008 it earned widespread media attention for achieving carbon neutrality, the first North American-based financial institution to do so.

Beyond its ongoing commitment to GHG reductions, Vancity offers value-added products and services to help its members act on climate at home and at work. It is also a long-time supporter and partner of Climate Smart. Since 2008, the credit union has offered Climate Smart scholarships to its business and not-for-profit members. Vancity believes that enabling local enterprises to make their own strategic decisions about GHG management will unlock benefits to these businesses and the broader community.

**CARBON
NEUTRAL**
first financial institution
in North America

Case Study

G&F Financial Group

virtual client
meetings

paperless operations

34%

total emissions
reduction

62%

emissions reduction
per \$1 million of assets
under administration***Paperless initiatives and virtual client meetings improve the client experience.***

G&F Financial Group opened its doors in 1940 as the North Arm Fishermen's Credit Union, and in 1948, became the Gulf and Fraser Fishermen's Credit Union. Today, G&F is one of the ten largest credit unions in British Columbia, with over 30,000 members, over \$2 billion in total assets under administration, and a network of 15 branches. Since it began working with Climate Smart in 2009, G&F has achieved an impressive 34% reduction in GHG emissions.

Members now have access to a whole range of convenient tools that allows them to bank without coming to a branch: from e-signature services and online cheque deposits, to options for tele- and web conferencing and e-chat. G&F's strategic use of technology has the

added benefit of reducing the number of car trips needed by clients. When in-person meetings are necessary, G&F's mobile experts can visit clients. G&F members can also use Skype to connect with employees in other branches who are fluent in the language of their choice, as the organization believes that everyone should be able to empower themselves through financial education, no matter what language they speak. "We meet our members where they are," says Dean Wutke, Manager, IT Infrastructure.

In addition to paperless options for clients, G&F has significantly reduced paper use internally. These initiatives have led to convenience for staff and members, a 45% reduction in emissions associated with paper use, and \$9,240 in savings on paper.

Over time, G&F has also migrated to a more efficient model for its branches,

opening locations with smaller footprints. These decisions have meant that, while growing, G&F has reduced its carbon footprint related to heat by 53%, and to electricity by 36%.

Since 2010 the Green Team has worked hard to engage staff across all its branches through an intranet page, new employee orientation sessions, engagement campaigns (e.g., carpooling and bike-to-work week challenges) and internal social networking. In addition, G&F's annual Green Award recognizes the employee or team that has directly contributed to improving the environment in their communities, or to making G&F a more environmentally sustainable organization.

Fostering a culture of sustainability will help G&F continue to innovate and minimize its carbon footprint as it grows.

Sector Profile: NAICS 54

Professional, Scientific and Technical Services

The Professional, scientific and technical services sector is the third largest in Canada by the number of SMEs. It includes software companies, law, engineering, and accounting firms, architects, marketing agencies, graphic design firms, environmental consulting services and more. For a detailed sector breakdown, see the accompanying interactive SME dashboard at <http://bit.ly/CanadaSMEs>.

Number of SMEs in Canada*

141,406

1-4
75%5-9
12%

Employees

Canadian SME Professional Businesses

10-19 7%

20-49 4%

50-99 2%

100-199 1%

200-499 <1%

Business travel (both air and local road travel) and staff commuting are significant emission sources for this sector, with many companies finding creative ways to reduce them through engaging and incentivizing employees to take transit or bike, moving to web conferencing for meetings, and more.

Climate Smart case studies show

3,085

tCO₂e reduced

\$756,000+

saved annually

* Statistics Canada. Table 552-0006, June 2017.

Why do businesses in this sector manage their emissions?

Small/medium professional, scientific and technical service businesses are motivated by marketing their brand and cutting costs.

"We know we can do things better but we are not sure where to start. We continue to see more and more potential clients requesting info on RFPs about our commitment to the environment. Very few in our industry are committed and this will help our competitive advantage."

Engineering company

"We believe that good design must take the greater good into account. We look at ourselves as leaders and catalysts for change and this is one step in the right direction."

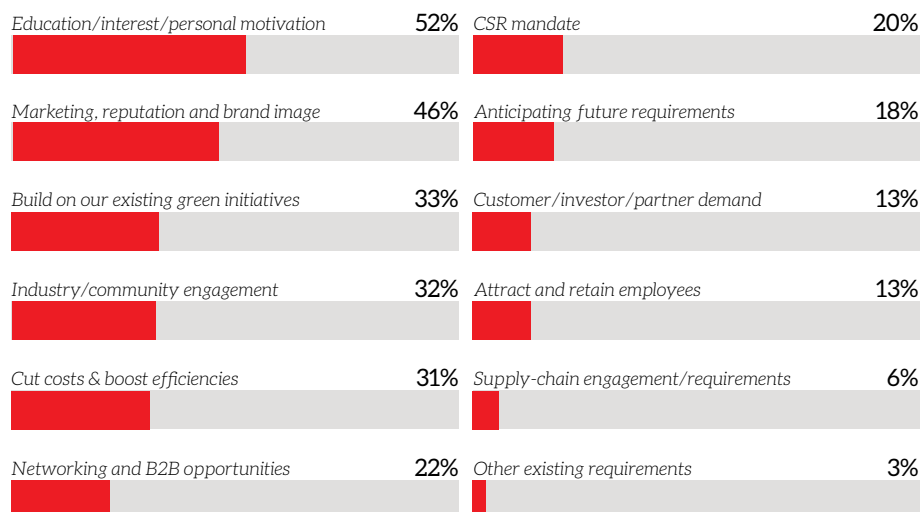
Design firm

"We want to improve our operations internally to be more sustainable. This is also a potential vertical/emerging market that we have thought about creating solutions for."

Management consulting firm

Motivation For Taking Action

Climate Smart Professional Businesses

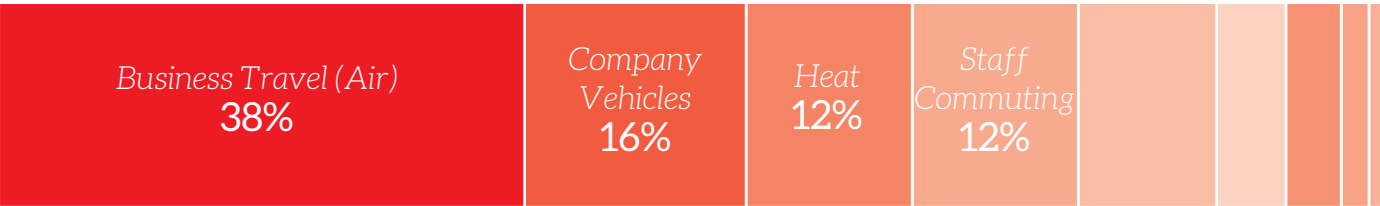


Businesses in this sector are motivated by getting educated on GHG management, building their brand and becoming more competitive.

Some are seeing their customers request information on their sustainability initiatives on RFPs.

Where do emissions come from in this sector?

Emissions come from business flights, company vehicles and heat.

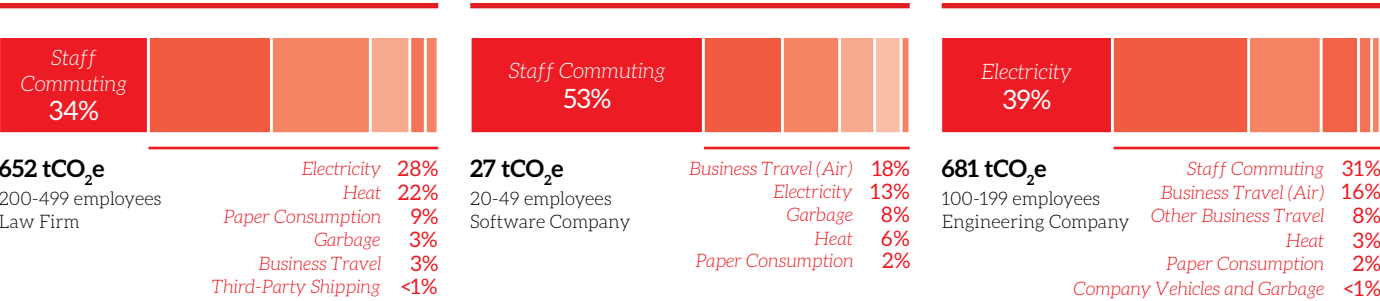


Greenhouse Gas Emissions
Measured by Climate Smart Professional Businesses



Air travel is the largest emission source for this sector, with trips to project sites, client meetings, conferences, etc.

Company vehicles is the second highest emission source at 16%, followed by heat (mostly natural gas) at 12%.



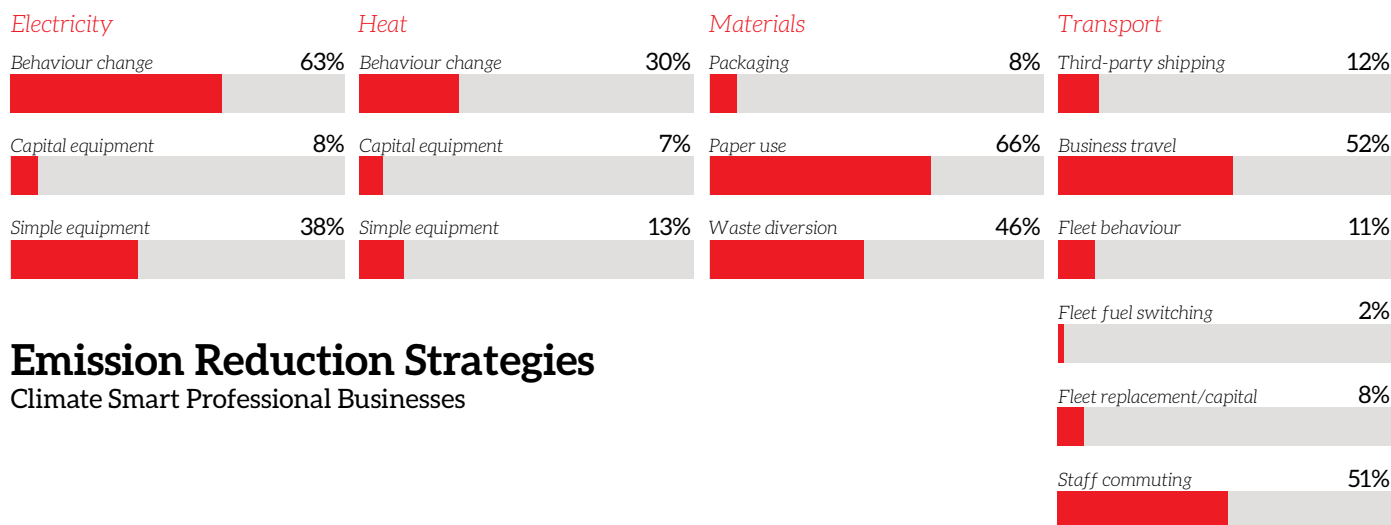
For this law firm, commuting and electricity are the top two emissions sources, accounting for roughly a third of the emissions each.

Similarly, this software company's number one emission source is commuting, accounting for over half of the emissions measured.

This engineering company's largest emission source is electricity at nearly 40% of emissions, followed by commuting at about 30%.

How do businesses in this sector reduce emissions?

Professional service SMEs choose to target their paper and electricity.



Emission Reduction Strategies

Climate Smart Professional Businesses

Staff commuting is the largest emission source for many businesses in this sector. Businesses are reducing it through encouraging and sometimes subsidizing sustainable commuting options such as transit and biking, providing company cars for employees who need a car during the day for work trips and, in some cases, reducing parking spaces available.

"A company car was introduced to allow employees to get to work through sustainable means and use the car for meetings during the day when necessary. Long term, we will consider investing in a hybrid or electric car for this purpose."

"We are promoting the use of car2go for site meetings so that staff can take transit or bicycles to work. Employees can use their personal accounts and expense the car use, or use our corporate account. We have converted one visitor parking space to two car2go parking spaces."

"We would like to take on a 20% reduction target for the staff commute emissions. We are tracking staff commutes on a daily basis and will recognize those with the greatest percentage change towards greener transportation at the monthly company meetings."

Businesses target **electricity** and **paper use** through low or no cost strategies such as turn-it-off policies. Many businesses in this sector operate out of leased spaces; so capital upgrades such as lighting retrofits are rare.

*“Our firm introduced an office supply “amnesty day” in which all employees are periodically invited to “liberate” unused supplies from desks and drawers. The windfall of “liberated” stationery cut four office supply deliveries, **saving thousands of dollars** per year and **reducing the firm’s GHG emissions by 14 tonnes.**”*

“We are instituting a “turn it off” campaign for computer monitors. We will hand out stickers or some other small reward to encourage employees to save power when they are not at their desks.”

Business travel (including air travel and local reimbursed travel in employee cars) is addressed by over half of businesses. Encouraging video conferencing and introducing efficient (and in some cases electric) company vehicles for staff to use during the day are just a few of the strategies used.

“Air travel is our most significant source of emissions, and while it fluctuates year-to-year according to the needs of our clients, we are still interested in reducing wherever possible. We will continue to use programs like GoToMeeting, as well as more traditional conference calls whenever feasible to cut down on the number of trips necessary. We plan to institute a carbon offset purchase policy for unavoidable air travel.”

“As a way to reduce emissions from business travel for meetings, we have a few shared bikes for staff.”

Case Study

Glotman Simpson Consulting Engineers

Glotman Simpson
CONSULTING ENGINEERS50
YEARS

 electronic document management


 improved recycling


 quick payback

8 tCO₂e
total emissions
reduction

\$1,200
annual cost savings

Electronic invoices and a recycling revamp cut paper and waste.

Glotman Simpson Consulting Engineers, an engineering firm with a staff of 75, has been providing innovative structural engineering solutions for over 50 years. Understanding the significance of reducing their carbon footprint, the company has been thoughtfully managing its greenhouse gas emissions with Climate Smart since 2011.

In 2016, the Glotman Simpson team rolled up their sleeves to focus on tackling their garbage and paper usage. The GS Green Team, led by Lauren Semancik, People + Brand Ambassador,

dove in to take a closer look at implementing notable change. The firm's initiatives included changing their accounting process to store incoming invoices electronically, replacing the old practice of printing two copies of each invoice received; and purchasing more paper with 30% recycled content. These initiatives alone led to a reduction of over 70,000 sheets of paper used and savings of over \$1,200 a year.

Glotman Simpson also re-evaluated their recycling program after realizing that the container recycling bin was being emptied into the garbage dumpster each night. They revamped their recycling program, introducing composting and container recycling. This resulted in

over 11,000 pounds of waste diverted from the landfill in 2016.

Lauren says, "This past year was really rewarding for us in terms of seeing a real impact from our green initiatives. Seeing an opportunity for improvement in our inventory data and implementing just a few simple changes generated such a positive outcome. We're always looking for ways to reduce waste, and with the help of the Climate Smart team, we were able to really make a difference this past year in reaching our targets!"

Case Study

RDH Building Science Inc.



building insulation
upgrades



electronic document
management

72%
heating emissions
reduction

82%
waste emissions
reduction

Green office practices and a major building upgrade cut emissions dramatically.

RDH Building Science Inc. focuses on the integration of building science, engineering, architecture, construction management, sustainability and risk assessment services for new construction projects and existing buildings. RDH has offices in Vancouver, Victoria and Courtenay in British Columbia, Waterloo and Toronto in Ontario, and Seattle, Portland, Oakland and Boston in the US. Since starting to manage its carbon emissions with Climate Smart, RDH has reduced emissions by 22% reduction per full-time equivalent employee, while growing in staff size by 62%, and in revenue by 90%.

Green Office Practices: RDH has steadily decreased its consumption of natural gas used for heat since it first measured

its GHG emissions in 2010, and by 2015, had reduced emissions by 72%. RDH accomplished this impressive reduction by doing the following:

- Completed a major building enclosure renewal at its Vancouver office. This included insulating walls, installing new high-performance windows, and reducing air leakage.
- Installed high-efficiency lighting.
- Purchased Energy Star-certified equipment.
- Managed waste through comprehensive compost and recycling programs.
- Developed a sustainable purchasing policy to give preference to local suppliers with environmentally responsible practices.

Paper: RDH has made strides in reducing paper use and reduced

associated emissions by 43%, also saving \$3,150 annually. To accomplish this, the firm encourages electronic document storage, sharing and review internally and also with external clients and team members. RDH uses cloud storage and FTP servers to facilitate file sharing.

Staff Commuting and Business Travel:

As RDH grows, staff commuting and business travel continues to be a significant emissions source. The firm has taken many actions on this front:

- Implemented video-conferencing to reduce travel between offices;
- Provided secure bike storage and showers;
- Participates in the annual Commuter Challenge; and
- Reimburses a portion of the cost of transit passes for staff commuting.

Sector Profile: NAICS 56

Administrative Services

Administrative, Support, Waste Management and Remediation

This diverse sector includes over 50,000 SMEs in Canada and includes businesses providing landscaping, janitorial, administrative, human resources, travel agent, security, waste collection, pest control, cleaning, and other services. For a detailed sector breakdown, see the accompanying interactive SME dashboard at <http://bit.ly/CanadaSMEs>.

Number of SMEs in Canada*

52,159



Employees

Canadian SME Administrative and Support Businesses



Most of these businesses deliver services at clients' locations, leading to company fleet being the largest emission source measured by Climate Smart businesses in this sector. Businesses are finding ways to reduce fleet emissions and cut costs through both behavioural strategies and fleet upgrades. Some are rethinking their business procedures—for example, one landscaping company has started to encourage clients to send photos of the site to assess the scope of work other than driving to the clients' locations.

Climate Smart case studies show

318

tCO₂e reduced

\$120,000+

saved annually

* Statistics Canada. Table 552-0006, June 2017.

Why do businesses in this sector manage their emissions?

**Small/
medium-sized
administrative
service
businesses
are motivated
by marketing
their brand and
cutting costs.**

"We differentiate ourselves by being an environmentally conscious company; we are constantly making efforts to provide earth friendly alternatives to lawn and garden maintenance when possible."

Landscaping company

"The foundation for our credibility has to be that we walk the talk. We want to ensure that what we do is congruent with what we say is important."

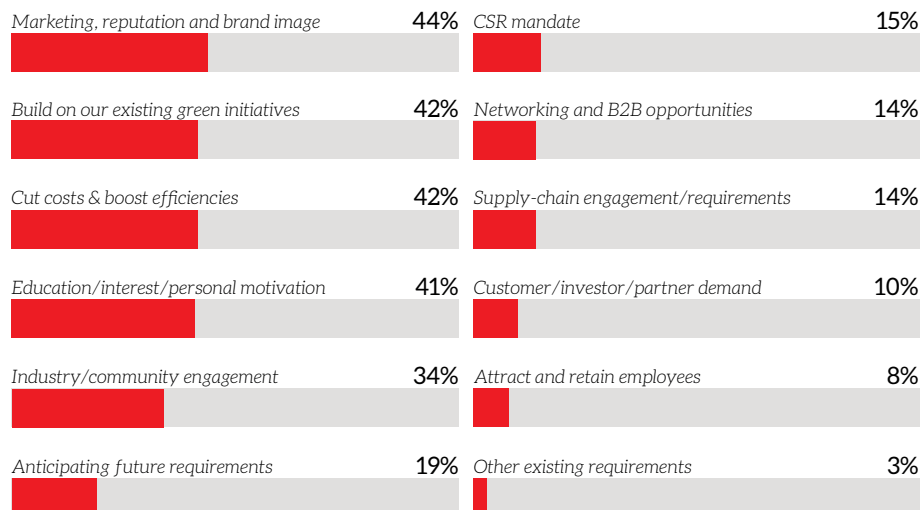
Recycling services provider

"To run a business that is mindful of our impact on the environment, we intend to make the changes necessary to be as carbon neutral as possible as employees, and as a company."

Waste processing facility

Motivation For Taking Action

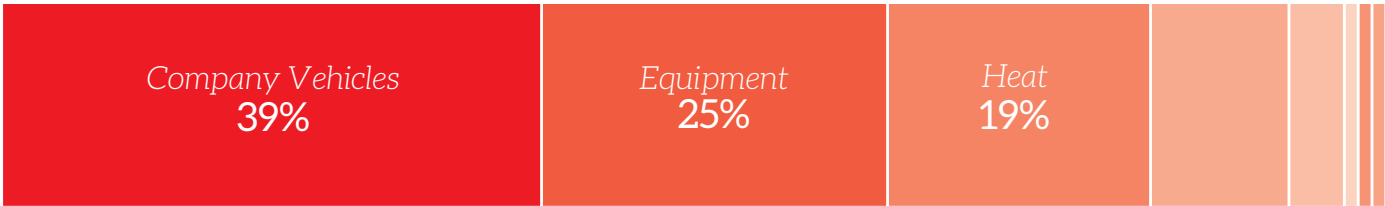
Climate Smart Administrative and Support Businesses



Businesses in this sector are driven by marketing and improving their brand image as well as reducing costs. Many provide services to other businesses and are working to differentiate themselves through their sustainability efforts.

Where do emissions come from in this sector?

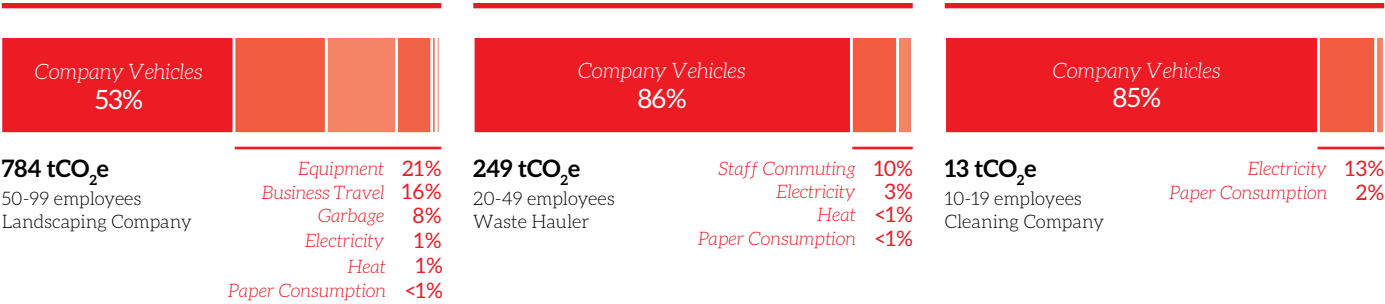
Emissions come from company vehicles, equipment and heat.



Greenhouse Gas Emissions

Measured by Climate Smart Administrative and Support Businesses

Company vehicles and equipment account for over 60% of the emissions measured by Climate Smart businesses in this sector. These businesses often deliver services at the clients' locations and have to travel.



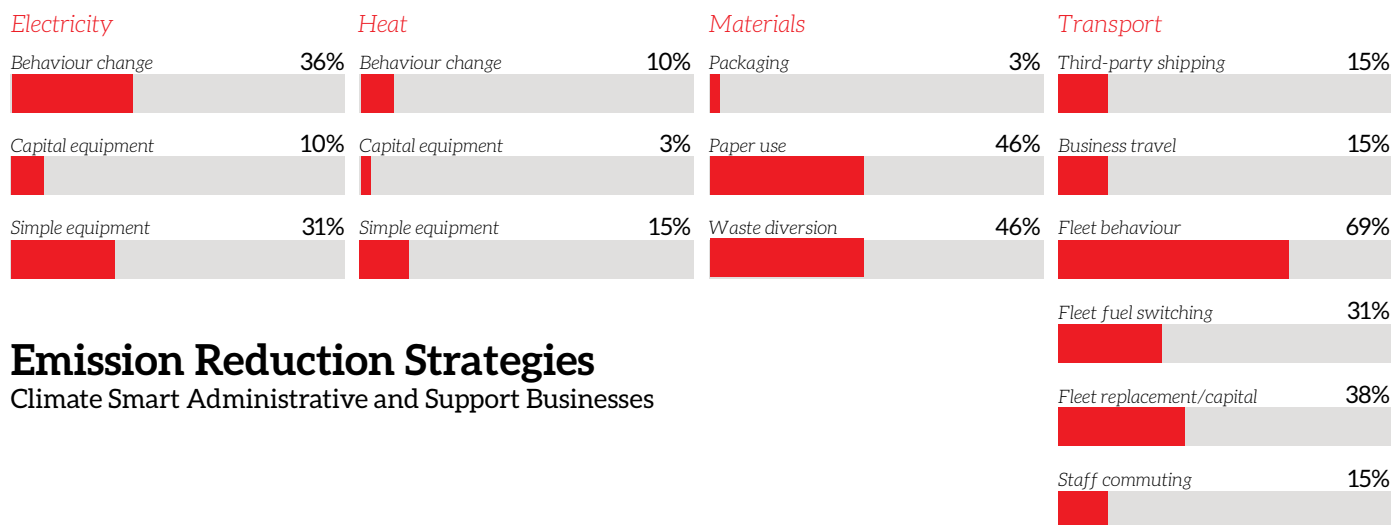
For this landscaping company, company vehicles and equipment account for almost two-thirds of the emissions.

This waste hauling company's emissions are primarily from their waste hauling trucks. Office operations (electricity, heating, etc.) contribute minimally to the overall footprint.

Similarly, the majority of this cleaning company's emissions is attributed to the company fleet.

How do businesses in this sector reduce emissions?

Administrative service SMEs choose to target their fleet, waste and paper.



Emission Reduction Strategies

Climate Smart Administrative and Support Businesses

Nearly half of the businesses implement **waste and paper** reduction strategies. While these are relatively small emission sources for most businesses, they help to engage staff and build a culture of being more sustainable.

"We have a robust recycling and organics diversion program in place. We are looking into double sided printing and exploring paperless invoicing. We are also considering purchasing higher recycled content paper in the future."

"We purchased a Hungry Bin composter yesterday. We will get it going and compost paper towels and food waste from the lunchroom. "

Fleet is the single largest emission source for most businesses in this sector. Nearly 70% of businesses work to reduce fleet emissions through behaviour change, and a third are planning and implementing vehicle upgrades with more fuel efficient models.

*“Our fleet includes 17 hybrid vehicles. We were also able to reduce the total number of fleet vehicles over the past two years by route planning. We are working to replace an additional 12 vehicles with leased hybrids next year. The overall yearly savings amount to **\$21,000 in fuel costs**, and a GHG reduction of **97 tonnes CO₂e**, or a **13% reduction** in emissions from the baseline measurement, with further reductions to come from increased fleet efficiency.*

We are also reducing emissions significantly through route optimization software implemented in vehicles. Financial returns from this software, and the subsequent fuel savings from the reduced size of the fleet have been substantial: **\$5,000 on a monthly basis.**”

*“We have started carefully planning routes and a schedule for site visits to optimize efficiency, and prioritized dispatching employees to jobs near their home location. This led to a **30% decrease** in emissions from our baseline year.”*

While office space **electricity** use is a relatively small contributor to emissions for most businesses in this sector, many implement low or no cost strategies to reduce electricity use and cut costs.

“We will install springs on doors in the staff lunch room to keep doors closed and heat in, motion sensors in washrooms and the lunch room for lighting, programmable thermostats for the lunch room and office, and timers on radiant heaters in the recycling plant. We will also turn down the temperature on hot water tanks.”

“We will encourage employees to turn off computers at night, look into higher efficiency lighting, and introduce a double sided printing policy. We will explain to employees that all these little things effect how much profit the company makes and therefore their profit sharing.”

Case Study

BC Plant Health Care



electric and
hybrid fleet
procurement

9%

emissions reduction
per \$1,000 revenue

132%

growth in revenue

Embracing hybrid and electric vehicles cuts emissions and boosts revenue.

BC Plant Health Care is a 100% Canadian-owned and operated business that provides a wide range of arboricultural and horticultural services for corporate, municipal and residential projects. Founders Cliff and Melissa Hoegler believe strongly in the leadership role BC Plant Health Care plays as environmental stewards and consultants, helping to preserve and enhance the environment for everyone's future.

BC Plant Health Care began measuring its carbon footprint in 2010, and recognized right away that fuel used in company-owned vehicles and equipment dwarfed other emission sources. The company took a variety of initiatives aimed at reducing its fuel-related carbon footprint:

- Purchasing small, fuel efficient,

hybrid, or fully electric vehicles instead of larger vehicles.

- Installing a charging station on-site.
- Implementing an employee carpooling program.
- Purchasing a hybrid aerial lift truck—the first arboriculture company in BC to do so.

Other Initiatives: BC Plant Health Care has also implemented an impressive list of solutions aimed at tackling emissions and water conservation, and furthering sustainable knowledge in the community. These initiatives have included:

- Creating a culture of sustainability— reinforced by building community, promoting best practices, and continuous learning among employees.
- Practicing integrated pest management, using 100%

environmentally friendly products and cultural practices.

- Recapturing roof rainwater run-off in a catchment system to use in plant health care services.
- Purchasing tools and materials locally, with a preference for recycled products.
- Volunteering to plant trees, and supporting public educational opportunities.
- Recycling as much as possible, including wood chips.
- Installing a live green roof in a LEED-qualified building.

Altogether, from its baseline year of 2010 to 2015, the initiatives taken by BC Plant Health Care have led to an intensity reduction of 9% per \$1,000 of revenue. In the same time frame, BC Plant Health Care grew in staff by 81% and in revenue by 132%.

Case Study

505-JUNK

*fleet fuel-efficiency
and onboard scales*



route optimization

15%
increase in margin

50%
vehicle emissions
reduction per vehicle-
kilometre

“While many businesses lose their environmental focus as they grow, we intend to only get better by building stronger networks, and creating more avenues for recycling and better access to low cost reusable goods in each community we enter.”

Barry Hartman – Co-owner

505-JUNK is a recycling company specializing in junk removal for residential, construction and commercial clients. Co-owners Barry Hartman and Scott Foran have always been committed to running their business in an environmentally progressive way. All the materials they pick up are sorted to prioritize upcycling or re-use. Items beyond re-use are sent to local recycling companies.

But how many GHGs are they helping their customers reduce? Barry and Scott wanted to learn to calculate these avoided carbon emissions and

communicate this positive impact to their customers. “Beyond the customer communications opportunities—which was our initial interest—measuring emissions helped us analyze our business to identify changes that could increase efficiencies for us,” says Barry. “By investing in more efficient trucks, on-board scales, and route optimization, we’ve increased our margins and freed up time to expand our business. All this while reducing our greenhouse gas emissions. It doesn’t get any better than that.”

505-Junk installed accurate, Measurement Canada-certified scales in each of its trucks. These scales created a multitude of benefits for both 505-Junk and its clients:

- Clients are able to receive real-time, accurate weights for junk upon pick-up.
- 505-Junk can invoice clients on the spot, reducing paperwork and requirements for multiple trips.

- Clients can dispose of and weigh different types of materials, satisfying municipal construction and demolition diversion bylaws, as well as LEED Building requirements.
- Because 505-Junk knows the weights of each client’s garbage, trucks no longer need to make one trip per client, but can pick up multiple loads in one trip, saving GHGs and fuel costs.

Through a relationship built around measuring emissions, 505-Junk began working with Concert Properties, an award-winning diversified real estate enterprise with properties in BC, Alberta and Ontario. Concert was looking for a service to provide accurate data to reach ambitious diversion rates—505-Junk was able to provide this service.

Sector Profile: NAICS 71

Arts, Entertainment and Recreation

Fitness centres, golf courses, marinas, musical groups and other performers, museums, theatre companies, ski resorts, sports teams and clubs, art galleries and casinos are all part of Canada's Arts, Entertainment and Recreation sector, which includes over 17,000 SMEs. For a detailed sector breakdown, see the accompanying interactive SME dashboard at <http://bit.ly/CanadaSMEs>.

Number of SMEs in Canada*

17,839

1-4 46%	5-9 20%	10-19 14%	20-49 13%	50-99 4%	100-199 2%	200-499 1%
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Employees

Canadian SME Arts and
Entertainment Businesses

50-99 4%
100-199 2%
200-499 1%

Many of these businesses operate large public spaces, resulting in large heating and electricity related emissions. Businesses find multiple ways to reduce these through both behaviour change strategies and capital lighting and heating equipment upgrades.

Climate Smart case studies show

684

tCO₂e reduced

\$88,000+

saved annually

* Statistics Canada. Table 552-0006, June 2017.

Why do businesses in this sector manage their emissions?

Small/medium arts and entertainment businesses are motivated by cutting costs and building on existing green initiatives.

"We would like to know how we can save energy, reduce water consumption and improve our recycling efforts within our operation. Our staff are very interested in supporting the outcomes and recommendations from this program."

Arts centre

"We would not only like to "walk the talk" when it comes to applying modern technology to energy consumption, but we are an ideal public dissemination point. Obviously reducing our annual energy costs would also be brilliant!"

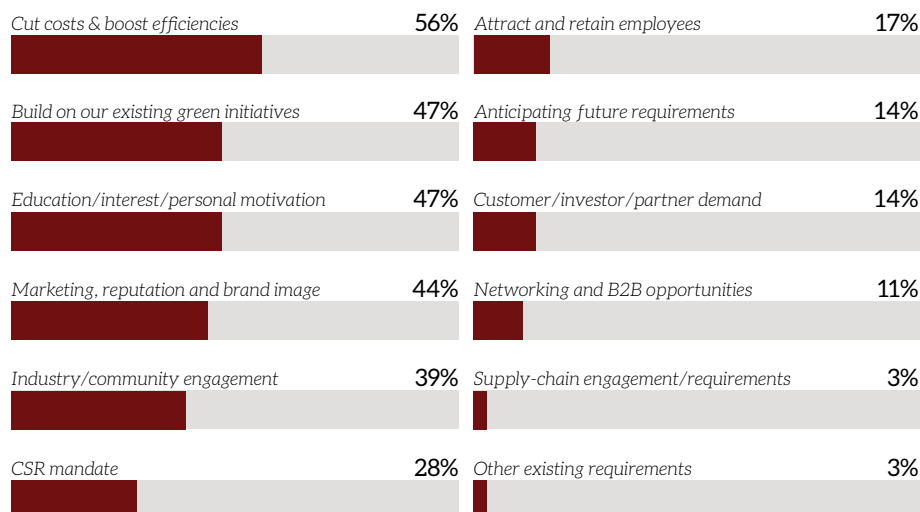
Museum and science centre

"Our goal is to be green, save money, and attract funding."

Arts society

Motivation For Taking Action

Climate Smart Arts and Entertainment Businesses



Over half of the businesses and organizations in this sector list cost cutting as their reason to take on GHG management. Many are expanding their existing green initiatives, and are looking to get educated on tracking and reducing GHGs. Reputation and brand image are also common factors, cited by over 40% of the businesses.

Where do emissions come from in this sector?

Emissions come from heat, electricity, and business flights.



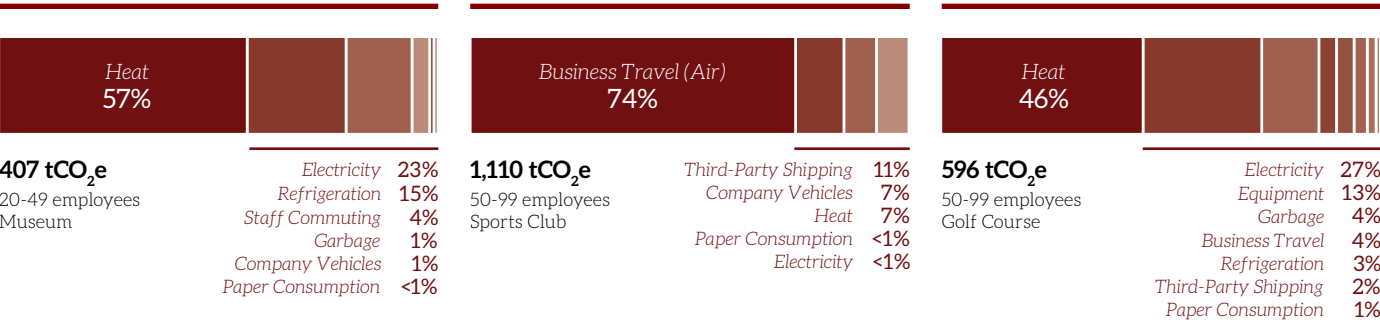
Greenhouse Gas Emissions

Measured by Climate Smart Arts and Entertainment Businesses



The top three emission sources tracked by Climate Smart arts and entertainment businesses are heating, electricity and air travel. Many businesses in this sector operate large public spaces (gyms, museums, art galleries, etc.) that have high heating, air conditioning, ventilation, and lighting requirements.

Air travel is another significant source of emissions with organizations such as theatre companies or groups of artists travelling to their performances around the country and/or the world.



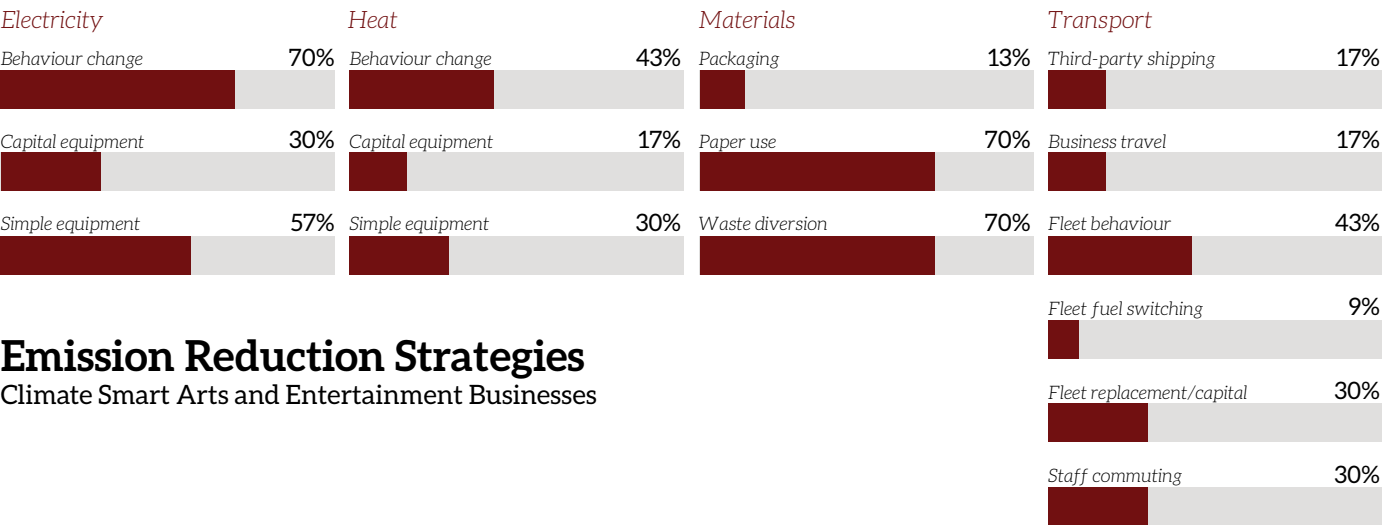
The largest source of emissions for this museum is heating at over 50%. Electricity accounts for nearly a quarter of the emissions profile.

For this sports club, air travel to games and tournaments is the largest emission source, followed by shipping the sporting equipment.

Heating, electricity, and equipment (such as lawnmowers) are the highest emission sources for this golf course.

How do businesses in this sector reduce emissions?

Arts and entertainment SMEs choose to target their waste, paper and electricity.



Emission Reduction Strategies
Climate Smart Arts and Entertainment Businesses

Electricity is a significant emission source and a large cost to many businesses in this sector. Many businesses work to reduce it through low or no cost strategies such as turning off lights and installing motion sensors in seldom used areas like washrooms and storage. About a third of businesses pursue capital upgrades (primarily lighting retrofits).

“Our lighting has been upgraded and exhibit lighting has been changed to dimmer systems to lower light during evenings. All emergency lights that are on 24/7 have been replaced with LED lights. Our IT department has implemented software to automatically shut down computers each night. Motion sensors for lighting have been added to washrooms. We have stickers on light switches reminding people to turn lights off.”

“We have installed occupancy sensor lights in the back closet, two washrooms, and gear room. We also replaced incandescent bulbs with compact fluorescent lighting.”

Waste and paper use are tackled by 70% of the businesses. These strategies typically don't require any capital and can lead to substantial savings for a business.

*"We implemented a composting program that **reduced waste emissions by over 100 tCO₂e**, an impressive **77% reduction**. This translated into **nearly \$5,000 savings: a 30% reduction** in waste disposal costs."*

"We have eliminated bottled water, and replaced it with an Energy Star water cooler for guests and staff. We have set up a comprehensive recycling and compost station which includes returnable drink containers, metals, plastics, and corrugated cardboard."

"We are converting forms and company documents to electronic versions to reduce paper consumption."

Heating is the single largest emissions source for many businesses in this sector. Improving insulation, turning heat and/or ventilation down when the building is unoccupied and upgrading boilers to more efficient models are just some of the strategies businesses implement to reduce heating.

*"Over the course of two years, we installed a new high-efficiency boiler, new energy efficient windows, as well as upgraded insulation and weather stripping. These activities **reduced emissions from heat by 91 tCO₂e**, a **25% reduction**. This translated into **over \$33,000 in natural gas savings**."*

*"We have switched to a new ice-making technology for our indoor ice rinks, REALice, which allows ice to be made with cold water. We are **saving \$6,000 a year** in energy costs and our **annual footprint has been reduced by over 18 tonnes**."*

Case Study

Zajac Ranch for Children



biomass boiler



lighting upgrade



rainwater harvesting

32 tCO₂e
total emissions
reduction

\$28,000+
annual cost savings

Grants and incentives helped a community non-profit upgrade their facility.

Zajac Ranch for Children is a fully accessible and inclusive facility that provides life-changing summer camp experiences to children and young adults with medical conditions and disabilities, and is a community project of The Zajac Foundation.

In 2017, Zajac Foundation measured their baseline greenhouse gas emissions inventory and identified a number of opportunities to reduce emissions while cutting operational expenses.

At the Zajac Children's Ranch in Mission, BC, they are working on a lighting retrofit which will reduce electricity use by 20% and result in savings of over \$11,000 annually. With a \$12,000 utility incentive, this \$34,000 upgrade will pay for itself in just two

years. After those two years, the savings will enable more kids to visit the Ranch and enjoy the camp experience.

The Ranch also tackled propane use (their single largest emission source) by installing a biomass wood pellet boiler for pool heating. The installation reduced emissions associated with the pool heating by 77%, while saving the Ranch over \$17,000 annually in heating expenses. With \$10,000 funding from Vancity and donor support, the payback for this \$150,000 project was reduced considerably.

The next project for Zajac will be harvesting rainwater for use at the Ranch. Currently, the Ranch relies on an underground aquifer for its water supply. Having rainwater capture will help protect this aquifer from overuse, as well as delay the need for costly water utility expansions by reducing

peak summer water demand. It will also reduce consumption of energy that would otherwise be required to pump the water from the aquifer. The water will be used for irrigating the Ranch's gardens and fields. The project is projected to collect and reuse up to 700,000 US gallons of rainwater—enough to fill an Olympic-size swimming pool. This project is supported by a \$5,000 grant from Vancity.

As one of their Climate Smart initiatives, the Ranch conducted an energy audit through the BC Non-Profit Housing Association. The auditors suggested looking into heat pumps and solar hot water installation for the pool, as well as other energy-saving measures for the Ranch buildings. Zajac will be investigating these ideas going forward.

Case Study

Landsea Tours



fleet fuel switch

85%

emissions reduction
from electrifying
buses

\$14,000+

annual cost
savings from bus
electrification

“Supporting local businesses and industries that are doing what they can to protect this world just makes sense to me.”

Scott Mason - Founder

Landsea Tours & Adventures was established in 1985 out of founder Scott Mason's passion for his hometown of Vancouver, BC, and his desire to provide an experience that allowed his guests to engage with his city. Over the years, Landsea has grown to include visits to Victoria and Whistler, BC. By offering personalized tours in “mini-coaches”, Landsea provides an intimate experience that sets the company apart.

While measuring Landsea's carbon footprint, Scott learned that the largest GHG contributor was, not surprisingly, his fleet of 30 buses. This presented the greatest opportunity to reduce emissions and led the company to kick off an ambitious three-pronged plan:

1. Landsea partnered with Vancouver-based eco-Options Energy Cooperative to convert the company's one gasoline bus to dual-fuel propane/gasoline. This conversion is saving Landsea approximately \$5,200 annually, and cutting GHG emissions from this vehicle by over 20%.

2. Working together, Landsea and eco-Options are piloting a renewable diesel cooperative with fuel sourced from Neste. Renewable diesel, or hydrogenation-derived renewable diesel (HDRD), is produced from animal fats and plant oils, and is refined in a similar process to regular diesel. The refining process gives the fuel properties that allow it to perform just like regular diesel, without any of the challenges of traditional biofuels (i.e., viscosity issues in cold weather, impacts to car filters, loss of engine power). The benefits of HDRD include cleaner burning fuel, lower particulate air emissions, and carbon emissions that are 50%-80% lower compared to regular diesel. As a result, this project is expected to cut Landsea's fleet emissions by between 42% and 67%.

3. Landsea is working with Thompson Power and EAS Power to convert a 24-passenger mini coach to plug-in electric. As part of the same project, a vintage double decker bus from Wilson's Transportation is also being converted. Landsea has secured financial support from Sustainable Development Technology Canada for this project. Based on the average annual diesel consumption for these vehicles, once the project is completed, this will prevent the release of

approximately 46 tonnes of GHG emissions (an 85% reduction) and save the company over \$14,000 in annual fuel costs.

Landsea is focused on more than just fleet emissions. In 2016 the company installed a wastewater catchment system for their bus washing station. This water is treated and recycled for use in toilets at the Landsea office. These facilities are used by staff and guests, and will save 180,000 litres of fresh potable water annually. Landsea also uses 100% recycled paper in their operations and brochures, has an electric car charging station, and is separating and diverting waste from the landfill with the help of Urban Impact.

According to Scott, “I am fortunate that my business has reached a stage of maturity where I can spend more time looking for innovative ways to reduce our impact. There are existing technologies that can easily be implemented, and there are also those that need the support of businesses like mine to provide proof of concept. I owe so much of my success to my community and to the beautiful natural environment of BC. Supporting local businesses and industries that are doing what they can to protect this world just makes sense to me.”

Sector Profile: NAICS 72

Accommodation and Food Services

Restaurants, cafes, coffee shops, bars, pubs and hotels are all part of the accommodation and food services sector. It is one of the largest sectors in Canada in terms of the number of SMEs and includes over 80,000 businesses. For a detailed sector breakdown, see the accompanying interactive SME dashboard at <http://bit.ly/CanadaSMEs>.

Number of SMEs in Canada*

81,004

1-4 23%	5-9 24%	10-19 24%	20-49 21%	
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Employees

Canadian SME Accommodation and Food Businesses

50-99	6%
100-199	1%
200-499	1%

The largest emission source measured by Climate Smart businesses in this sector is natural gas. Businesses use natural gas for space and water heating, as well to power cooking equipment. Businesses reduce natural gas use through a wide range of strategies from simple temperature adjustments and low-flow spray valve installations to capital upgrades such as boiler retrofits. Achieving drastic reductions of natural gas emissions are still a challenge with many restaurants relying on natural gas for cooking.

Climate Smart case studies show

993

tCO₂e reduced

\$224,000+

saved annually

* Statistics Canada. Table 552-0006, June 2017.

Why do businesses in this sector manage their emissions?

Small/medium accommodation and food businesses are motivated by cutting costs and education.

"We want to find out what more we can do in our business to become more aware of being climate smart and to learn, contribute, and do our part to assist our organization to start changing and improving the way we conduct business."

Resort hotel

"We want to find a way to move forward with the growing interest in environmental issues within our clientele while maintaining cost effectiveness."

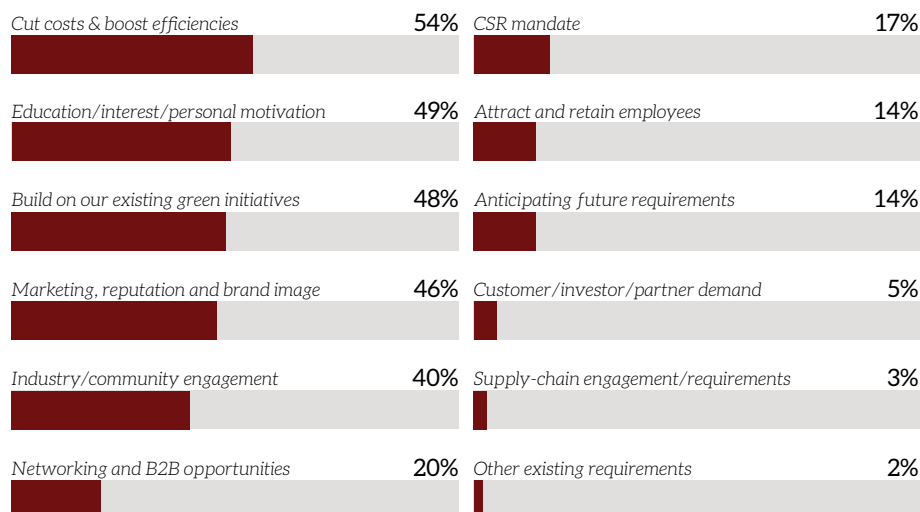
Restaurant

"Our goal is getting our baseline data and moving our company towards a sustainable future."

Hotel

Motivation For Taking Action

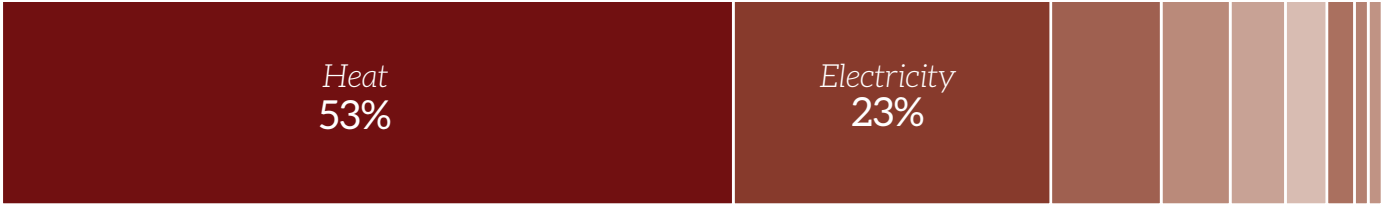
Climate Smart Accommodation and Food Businesses



Businesses in this sector want to learn about ways to cut costs while improving their brand and reducing their environmental impact. Some see it as a way to attract and retain employees and meet their CSR mandate.

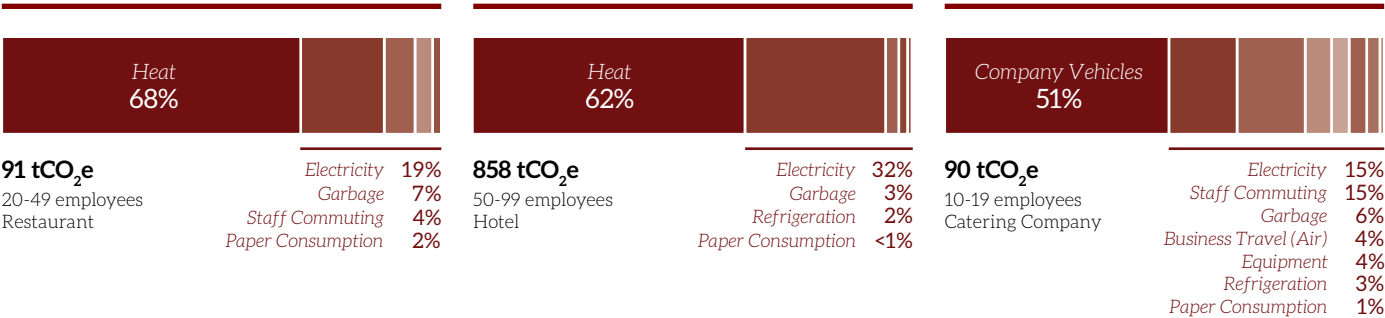
Where do emissions come from in this sector?

Emissions come from heat, electricity and waste.



Greenhouse Gas Emissions
Measured by Climate Smart Accommodation and Food Businesses

Heating and electricity use are the top emission sources for this sector, with heating (primarily natural gas) accounting for over half of the emissions measured by Climate Smart businesses. This includes natural gas used in cooking equipment at the restaurants, as well as gas used for water and space heating.



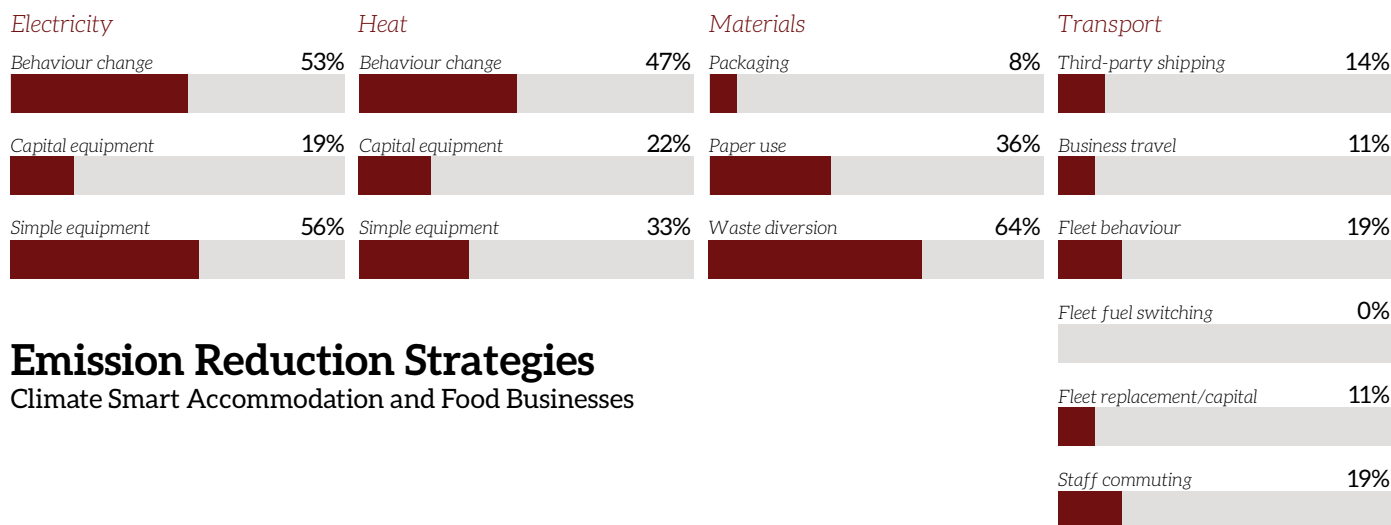
Natural gas used for space and water heating as well as cooking is the largest emission source for this restaurant, accounting for nearly 70% of the emissions.

Natural gas is also the largest emission source for this hotel, followed by electricity. Combined, these two activities account for over 90% of the emissions measured.

This catering company's largest emission source is its fleet, accounting for over half of the emissions.

How do businesses in this sector reduce emissions?

Small/medium-sized accommodations and restaurants target their electricity and waste.



Emission Reduction Strategies

Climate Smart Accommodation and Food Businesses

Accommodation and food businesses generate a lot of organic **waste**. Introducing composting as well as expanding recycling programs are common strategies businesses adopt to reduce waste. Some jurisdictions are implementing organic waste bans, driving more businesses to start diverting organics.

“Items we have been looking to implement in the near future include a composting program to reduce waste emissions since so much of our waste is organic material.”

“We are planning to increase recycling of soft plastics.”

“We will conduct training in-house to reduce waste contamination, e.g., mixing dirty napkins with paper.”

A fifth of the businesses going through the Climate Smart program pursue capital **electricity** upgrades such as LED retrofits. Over a half tackle electricity through simple behaviour changes strategies.

“All our lights at the restaurant have now been switched to LED lightbulbs and most appliances that are not necessary for immediate use the next day are turned off and unplugged. We have also switched one of our freezer units to a newer, more energy efficient model.”

“We have LED bulbs in all areas (guestrooms and public spaces). We also changed all exterior signage from neon to LED and installed motion sensors for lighting in all storage spaces. We have a linen program for all guests to opt out of daily sheet changes and a towel re-use program.”

One in five businesses implement **heat**-related capital upgrades such as boiler and hot water tank retrofits or other upgrades to the HVAC systems. Over half of the businesses make simple changes such as temperature adjustments.

“We installed low flow aerators on the sinks and low flow nozzles in the dishwasher. We are looking into a dimmer switch for the gas heaters on the patio along with offering blankets. Another idea we are investigating is to only use cold water when pre-spraying the dishes before putting them in the dishwasher. We plan to capture the heat from the hood of the stovetop or the dishwasher to preheat hot water or for other uses.”

“Since we found that the majority of our carbon emissions result from burning natural gas during the cooking process, we have been looking at powering down the gas ranges during non-peak hours and fully utilising the stove tops (in that we do preparatory cooking or stewing at the same time) when we have them on. Some of our cooking methods have switched towards using electric appliances rather than relying on the gas ranges.”

Case Study

Listel Hotel



heat recovery



solar hot water

150 tCO₂e
total emissions
reduction

\$55,000+
annual cost savings

Heating costs cut by a quarter thanks to innovative hot water systems.

The Listel Hotel has been dubbed “Vancouver’s most art-full hotel” and is committed to art, elegance and comfort. It is also highly committed to reducing its energy consumption and greenhouse gas emissions.

The hotel installed a solar hot water system and a highly efficient heat recovery system in the 129-room hotel to minimize natural gas used to heat water for showers, laundry, dishwashing, and the like. The heat recovery system uses waste heat

from the cooling system to pre-heat water and as a support for heating the building. Solar panels also pre-heat water and with the two systems in place, natural gas is used only to heat water 10-20 degrees Celsius rather than approximately 60 degrees Celsius without the pre-heating systems.

Together the two systems helped reduce GHG emissions from heating by approximately 150 tonnes CO₂e, and costs by over 27% annually. With a grant from Natural Resources Canada contributing to the purchase of the solar panels, the payback period on the hotel’s investment is anticipated to be 5.5 years.

“At the Listel Hotel we first tackled our greenhouse gas emissions by installing solar hot water panels and a heat exchange system to dramatically reduce the amount of natural gas needed to heat domestic water. With that successful carbon- and cost-cutting initiative under our belts, we’ve continued to find ways to reduce our environmental impact. Most recently, we renovated our hotel restaurant to become a model for energy efficiency and achieving zero waste to landfill. Forage opened its doors in November 2012 and has been widely recognized for its leadership in sustainable dining”, says Jim Mockford, the general manager at The Listel Hotel.

Case Study

Spirit Bear Lodge



consolidating travel

eliminating
disposables

10%
total emissions
reduction

15%
total emissions
reduction per guest



Early wins in cutting transportation and waste emissions leads to experimentation.

Spirit Bear Lodge, in Klemtu, BC, is a community-based ecotourism venture owned and operated by the Kitasoo/Xaixais First Nation. Located on BC's wild and rugged North Coast, Spirit Bear takes guests on a journey that highlights not only the abundant wildlife, but also the compelling historical and cultural narrative of the territory.

At its core, Spirit Bear holds the value of conservation and environmental sustainability, and in an effort to reduce its own environmental impact, began tracking its carbon footprint with Climate Smart in 2014. By 2015, Spirit Bear had reduced its overall carbon emissions by 10%, and by 25% per full-time equivalent employee, by focusing on two key emission sources—transportation and waste.

Transportation: Spirit Bear's main sources of emissions are from

transporting guests, staff and goods by air, water and road to the remote lodge. The lodge has implemented the following initiatives:

- Introduced policies to limit vehicle fuel use, including idle-reduction.
- Installed a high-efficiency diesel heater on board one vessel to allow passengers to stay warm without idling engines.
- Combined guest trips where possible to reduce the number of flights and water taxis to the lodge.
- Established set guest arrival and departure times, maximizing fuel efficiency.
- Goods shipments are coordinated with guest travel to reduce empty vessel trips.
- Improved coordination at season start-up to transport goods in fewer shipments.

Garbage and Recycling: The lodge has worked actively with the community

of Klemtu to implement a recycling program, and now has access to cardboard and aluminum recycling. Moving forward, Spirit Bear will collect and sort all other recyclables and remove them from the community.

Spirit Bear is also working to reduce the amount of waste it generates by reducing the number of disposable items provided to guests. When guests arrive, they are given a reusable coffee mug, water bottle, and lunch bag for the duration of their visit. Single-serving packets of condiments and single-use items, such as straws, have been eliminated. Rather than providing canned soft drinks, the lodge purchased a carbonated beverage machine so guests can make their own.

Finally, Spirit Bear is actively searching for a way to deal with organic waste on-site, and has explored everything from raising pigs, to investing in a digester, to biogas generation and recapture. The search continues!

Case Study

High Country Inn



lighting retrofit

78 tCO₂e
total emissions
reduction

\$180,000+
annual cost savings

Energy-saving incentives catalyze lighting upgrades and a quick payback.

Northern Vision Development LP is one of Yukon's leading real estate companies with a diverse base of commercial, residential, industrial and hospitality properties across the territory. The company is committed to reducing its energy consumption and greenhouse gas emissions.

In 2015, the company developed a business case for upgrading the lighting system in four of its hotels—three located in Whitehorse and another in Dawson City. The hotels in Whitehorse included the 99-room Best Western Gold Rush Inn, the 32-room Edgewater Hotel and the 83-room High Country Inn. The Downtown Hotel in Dawson has 34-rooms and an additional 25 in a neighbouring annex. All hotels include

conference rooms, restaurants, bars and dining rooms.

Prior to 2015, the incandescent lighting systems at the four hotels amounted to 1.5 GWh of electricity and over 100 tonnes of CO₂ per year. Northern Vision Development evaluated the viability of retrofitting to LED lighting systems, including the retrofit and maintenance costs.

Ultimately, the business case determined the payback period on the investment was anticipated to be 4 years. Northern Vision proceeded with upgrading 4,858 lighting fixtures to LED. The cost of the upgrades was \$160,000. Almost \$30,000 was covered by the Government of Yukon's Commercial Energy Incentive Program.

Upgrading hundreds of incandescent to LED bulbs led to substantial energy savings. The annual energy savings for

the four hotels amounted to 1,174,000 kWh. Northern Vision Development was able to save over \$180,000 in energy costs annually and reduced its carbon footprint by an estimated 78 tonnes of CO₂e annually.

"The Commercial Energy Incentive Program was a key factor in our decision to convert all of our hotel properties in Yukon to energy-efficient and long-lasting LED lighting systems," said Northern Vision Development CEO Rich Thompson. "We applaud this program which stimulates investment in energy efficiency. This is good for business and good for all Yukoners as it reduces overall energy use and costs in the territory."

This case study was graciously provided for publication by the Department of Energy, Mines and Resources, Government of Yukon.

Additional Stories

In this section, we share additional clean economy transition success stories from across Canada provided by our partners at The Low Carbon Partnership. The Low Carbon Partnership is a partnership between Climate Smart, Sustainability CoLab, The Natural Step and QUEST Quality Urban Energy Systems of Tomorrow—established organizations with deep roots in communities and local economies across the country. Collectively, the partners reach more than 1,200 businesses generating \$100+ billion in revenue. They're also in direct contact with 200 communities.

For more, visit lowcarbonpartnership.ca.

Case Study

Solar Skills Campaign

***Iron & Earth's Solar Skills Campaign launches with Louis Bull pilot: a partnership devised in the Energy Futures Lab.***

On October 20, 2017 oil and gas workers and members of the Louis Bull Tribe began installing rooftop solar panels on a community daycare. This was part of a five-day upskilling pilot course marking the launch of Iron & Earth's "Solar Skills" program.

Iron & Earth and the Louis Bull Tribe's partnership was conceived by Energy Futures Lab Fellows Lliam Hildebrand—Director of Strategy and Stakeholder Engagement for Iron & Earth, and Desmond Bull—Councillor of the Louis Bull Tribe. The

initiative is both a great example of Indigenous energy leadership and how professionals in transition across the province can contribute to building the energy system of the future.

Through Solar Skills, Iron and Earth intends to upskill 1,000 oil, gas and coal workers, and indigenous community members as solar specialists through hands-on installations. Iron & Earth is led by oilsands workers committed to incorporating more renewable energy projects into their work. The organization is a platform to engage in renewable energy development issues, and to empower workers to advocate for an energy future we can be proud of creating.

The Energy Futures Lab, powered by The Natural Step Canada, is an award-winning, Alberta-based multi-stakeholder initiative that addresses the deeply polarized and polarizing nature of energy and environment issues.

"I've been working in oil and gas my whole career. It got me to where I am today, but I want to stay ahead of the curve. That's why I'm upskilling into renewable energy."

Case Study

Kingston Frontenac Housing Corporation



high-efficiency
furnaces



LED lighting



waste diversion

132 tCO₂e
total emissions
reduction

\$16,000+
annual cost savings

Grants and incentives helped a community non-profit improve efficiency.

Kingston & Frontenac Housing Corporation (KFHC) is a not-for-profit social housing provider, which manages 1,577 subsidized housing units in over 17 properties in and around Kingston, Ontario.

In recent years KFHC has also embedded sustainability into its operations. KFHC installed over 500 high-efficiency furnaces, all of which are variable speed, direct current motors, and are rated at 96% average fuel utilization efficiency. They have further reduced waste-heat by installing programmable thermostats. These changes have contributed to a decrease of nearly 20% of the natural gas used from 2014-2016.

On the electricity side, KFHC has upgraded over 1,000 24-hour light fixtures to LEDs. With a financial incentive of about \$5,000 provided

by Utilities Kingston, the total cost came down to just over \$2,000, with anticipated annual savings of \$16,000. Add to that annual GHG reductions of seven tonnes, and this was an obvious win, both improving KFHC's bottom line and environmental impact. They have also installed Energy Star windows and patio doors to replace the single pane sliding windows.

The introduction of a corporate-wide digital information management system, alongside promotion of paper reduction among staff, has resulted in an impressive 89% decrease in KFHC's paper use over just two years. Their recently-introduced office composting program diverts over 1,000 lbs of food waste from landfills annually. Along with recycling, these measures resulted in KFHC diverting 89% of its waste in 2016.

There is no sign of KFHC slowing down. Current and forthcoming projects include installing new cladding and additional insulation to

their buildings; upgrading stoves to safer, more energy efficient units; the replacement of old windows to energy efficient ones; fruit tree planting; and potentially, the installation of a solar wall to preheat fresh air being supplied to rooftop air handling units. Perhaps more importantly, KFHC wants to ensure that all tenants are engaged in sustainability.

"It's always been important to the corporation to be energy conscious, to try to reduce our carbon footprint," said Scott Vanderschoor, Manager of Technical Services. KFHC has made impressive progress on that front over the last couple of years and with the current lineup of projects in the works, we expect that will only accelerate moving forward.

Kingston & Frontenac Housing Corporation is a member of Sustainable Kingston's Green Economy program and one of over 200 businesses in the CoLab Network setting and achieving sustainability goals. Together, we are demonstrating that a more sustainable economy is possible.

Case Study

TownePlace Suites by Marriott Sudbury

8%
total emissions
reduction

\$2,600+
annual cost savings



"The TownePlace Suites by Marriott Sudbury has ingrained a commitment to sustainability in its DNA. Marriott hotels has a complete green program that ranges from recycling soap to changing the lights to LED. Our staff buy in, and are committed to a better future for our community and the world as a whole."

Gary Farstad - General Manager

TownePlace Suites by Marriott Sudbury is an all-suites hotel tailored for extended stays. It also offers over 2,100 square feet of meeting room space. TownePlace Suites by Marriott Sudbury has been operating in Sudbury since December 2010, and is an active member of Green Economy North.

The management team at TownePlace Suites by Marriott Sudbury is committed to incorporating new energy-saving technologies and waste diversion strategies. In recognition of the hotel's commitment to sustainability, TownePlace Suites was named the 2017 Sustainable Business of the Year

by Green Economy North. It is also a certified Green Key Global establishment.

Staff Awareness and Operating Procedures

Staff uptake and involvement is a key factor for success when implementing sustainable operating procedures. The Green Team at TownePlace Suites by Marriott Sudbury connects management and employees to promote a culture of sustainability in all areas of the hotel's operations. Program highlights include: reducing guest room electricity and water usage with a housekeeping monitoring checklist; running dishwashers and laundry facilities only for a full load; and diverting waste through innovative recycling and reuse programs.

Facility Upgrades

TownePlace Suites by Marriott Sudbury Facility Manager, Kevin Moffatt, is a sustainability champion within the workplace. Kevin is leading a project to change all lightbulbs on the premises to LEDs and anticipates that in 2018, the entire building and parking lot will be upgraded to LED bulbs.

Guest Experience and Education

In 2017, TownePlace Suites by Marriott Sudbury introduced an on-site compost pilot program using all organic material from the daily guest breakfast area. Then, a new garden was planted on the hotel grounds to use the final compost product. The communal garden provides healthy foods for extended-stay guests, and promotes the value of local food systems. On a larger scale, using local foods can reduce greenhouse gas emissions by decreasing reliance on food transported across long distances. To ensure that the garden is visible and accessible to all guests, the Green Team plans to move the garden to the front of the hotel in spring 2018.

TownePlace Suites by Marriott Sudbury is a member of Green Economy North and one of over 200 businesses in the CoLab Network setting and achieving sustainability goals. Together, we are demonstrating that a more sustainable economy is possible.

The Canadian Chamber of Commerce Climate Smart Initiative

In partnership with Climate Smart and with support from Environment and Climate Change Canada, HP Canada and the Port of Vancouver, the Canadian Chamber of Commerce is building capacity for GHG management among SMEs across Canada.

Through webinars and data visualization tools, the Climate Smart Chamber Initiative is educating the Canadian Chamber's network of 450 chambers of commerce representing 200,000 firms on the business case for managing their GHGs. Climate Smart is delivering their award-winning training to a select group of Chambers of Commerce, helping their SME members learn how to assess and reduce their greenhouse gas emissions while improving their competitiveness. The results and methods of the project will be distributed widely through the Chamber network, disseminating best practices and showcasing the power of private sector leadership and innovation.

The Canadian Chamber of Commerce—Climate Smart partnership is also providing a platform for Chambers to pro-actively demonstrate climate leadership in their cities, while leveraging Climate Smart's data and know-how to inform and shape pan-Canadian policy and strengthen local business communities. In the spring of 2018, the Greater Victoria Chamber of Commerce, Mississauga Board of Trade, and St. John's Board of Trade are launching Climate Smart programming and Business Energy and Emissions Profiles (BEEPs) in their communities.



**THE CANADIAN
CHAMBER
OF COMMERCE**

**LA CHAMBRE
DE COMMERCE
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climatesmart

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