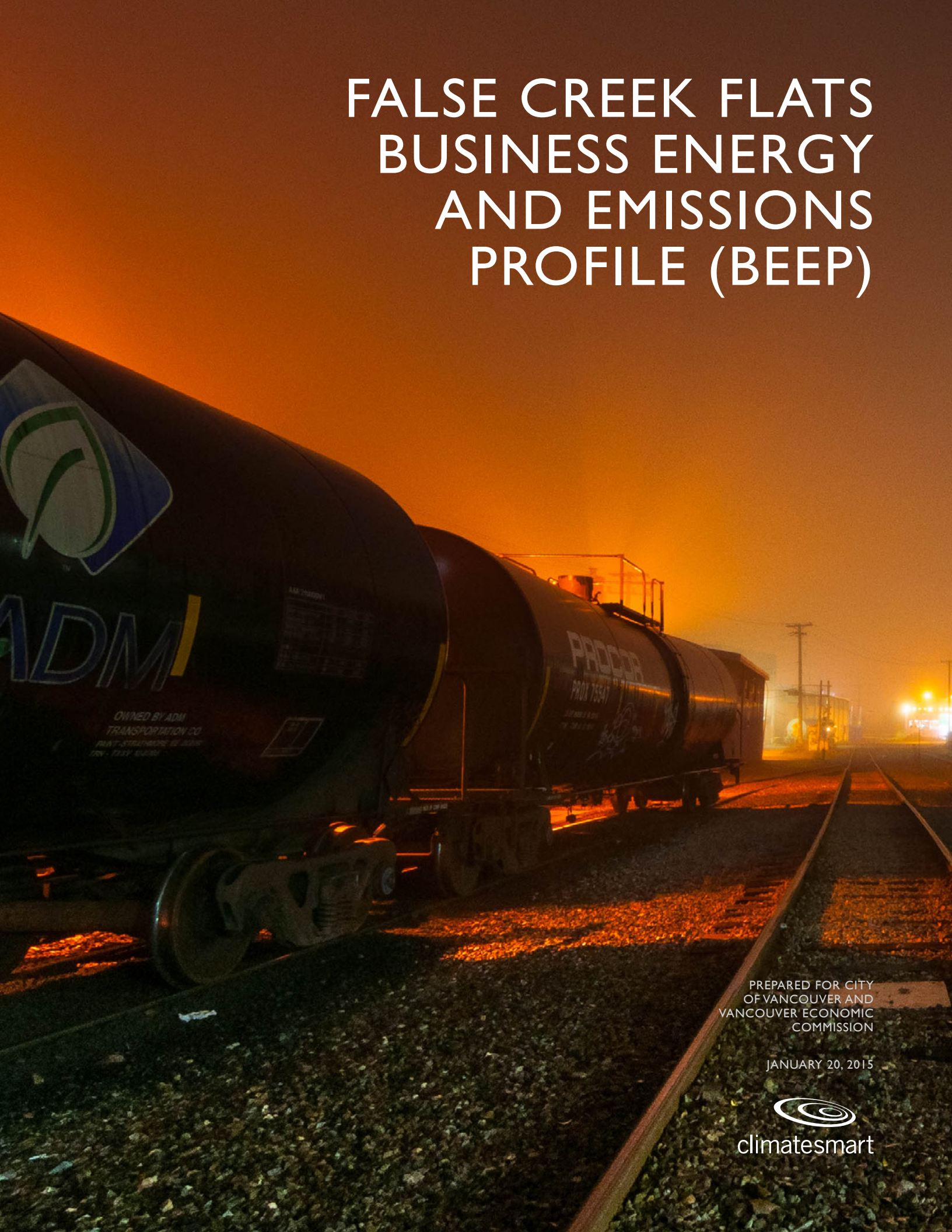
FALSE CREEK FLATS BUSINESS ENERGY AND EMISSIONS PROFILE (BEEP)



PREPARED FOR CITY OF VANCOUVER AND VANCOUVER' ECONOMIC COMMISSION

JANUARY 20, 2015

climatesmart

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Empowering businesses to reduce carbon emissions and cut costs

Climate Smart Businesses Inc. is a social enterprise that provides a training and certification program for businesses to measure their carbon emissions, identify opportunities for cost, energy, and carbon savings, and communicate their efforts internally and externally.

We work not as consultants, but as teachers, using a capacity-building curriculum, top-rated software tool, and one-on-one client support. Businesses and organizations renew their Climate Smart certification by measuring their carbon emissions annually to track progress toward reducing emissions and add to their reduction plans. Individuals coming through our training learn to measure, analyze and reduce their company's impact: key skills in the emerging green economy.

Climate Smart also works with local governments, utilities, industry associations and other corporate partners to engage their business communities. We catalyze innovation, which strengthens businesses in the face of risks from volatile energy and fuel prices, the rising cost of waste disposal, and an increase in climate change impacts.

Climate Smart businesses cut unnecessary consumption of energy, fuel, and materials, as well as waste generation, tying climate action to smart business practice. Since 2008, we have helped more than 775 businesses and organizations of all sizes and sectors prepare for the future.

Using our growing set of data, Climate Smart develops reports, case studies and analysis for community emission modeling, utilized by both local governments and businesses to benchmark their progress against emission and cost-saving goals and amongst their peers.

Climate Smart business training session (photo credit: Climate Smart)

775+ Climate Smart businesses to date (trained or in training)

9.6% average carbon reductions seen by Climate Smart businesses by year 2 following program

1,231,000 total emissions measured by Climate Smart to date (tonnes CO_2e)

$397 projected cost savings to a business, per tonne CO_2e reduced

30%+ GHG reduction achieved by year two by 20 top performing businesses

2.7% average increase in staff seen by Climate Smart businesses by year 2 following program

EXECUTIVE SUMMARY

The False Creek Flats Business Energy and Emissions Profile (BEEP) provides a unique view of the greenhouse gas emissions generated in the neighbourhood by industry and highlights the areas with greatest potential for achieving reductions.

By creating a baseline for False Creek Flats (FCF) emissions, this report helps the City of Vancouver and the Vancouver Economic Commission better understand and engage businesses in transitioning to a low-carbon economy. Municipal planners, sustainability staff and community energy managers can utilize BEEP analysis as a benchmarking tool and planning document. The business sector profile approach offers an industry sector lens into the neighbourhood emissions which we hope will serve to inform the City's planning around emissions/energy reductions projects and business engagement programs.

FCF businesses included in this study represent seventeen NAICS (North American Industry Classification System) sectors, covering 96% of businesses in the area. These businesses have an estimated 7,800+ employees and are projected to be responsible for 36,040 tonnes of CO_2e emissions annually from electricity, natural gas use, transportation, and waste.

These four activities account for 60% of emissions measured by Climate Smart to date, with other activities such as scope 3 transportation (reimbursed mileage, staff commuting), paper use, refrigerant use, and third party shipping accounting for a significant portion – 40% – of emissions measured. Applying this ratio to businesses in FCF, we project 60,000 tonnes of CO_2e potentially under management in the area.

The following table highlights, in descending order, the largest sectors by the number of businesses, by total emissions, and by emissions per business:

Rank	By number of businesses	By emissions	By emissions per business
1	Wholesale Trade (NAICS 41)	Wholesale Trade (NAICS 41)	Administrative, Support, Waste Management and Remediation Services (NAICS 56)
2	Manufacturing (NAICS 31-33)	Manufacturing (NAICS 31-33)	Accommodation and Food Services (NAICS 72)
3	Arts, Entertainment and Recreation (NAICS 71)	Administrative, Support, Waste Management and Remediation Services (NAICS 56)	Manufacturing (NAICS 31-33)

Natural gas and transportation are the top two emission sources for the area overall. The top three highest emitting sectors in this study are Wholesale Trade (NAICS 41), Manufacturing (NAICS 31-33), and Administrative, Support, Waste Management and Remediation Services (NAICS 56). Combined, these three sectors account for 66% of emissions projected in the BEEP (23,600 tonnes of CO_2e).

The highest natural gas emissions (35% of all natural gas emissions) are attributed to the Manufacturing sector, followed by Wholesale Trade (18%). Transportation emissions are led by the Wholesale Trade sector (45% of all transportation emissions), followed by the Administrative, Support, Waste Management and Remediation Services sector (17%). The largest amount of waste is generated by the Manufacturing sector (38%), and Wholesale Trade sector (28%). The largest consumers of electricity are Wholesale Trade and Manufacturing, together accounting for over 50% of electricity used in the FCF.

In addition to emissions projections, this study highlights the motivations for businesses to take on carbon management as well as a summary of reduction strategies implemented by businesses after the first year of GHG measurement. In recent years, Climate Smart is seeing more and more businesses cite "anticipating future requirements", "existing requirements", and "customer/investor/partner demand" in addition to the common motives of marketing and cost cutting. This trend is showing to be especially strong for the Construction sector, with 29% of businesses entering the Climate Smart program citing "anticipating future requirements" as a reason to participate. With more municipalities adjusting their procurement policies to favour businesses that manage their fuel use and emissions, more businesses will be motivated to take action on their emissions in order to stay competitive on RFPs. Climate Smart sees this as one of the most powerful ways local governments can drive emission reductions in their communities.

A summary of reduction strategies implemented by Climate Smart businesses after the first year of measurement is presented where data is sufficient. Most sectors include a case study highlighting success stories of Climate Smart businesses achieving notable emissions and cost reductions.

When considering business engagement approaches, it is helpful to know not only the total emissions generated by a given sector, but also average per-business emissions. "A View of Emissions per Business" section of this report highlights the sectors with the highest average business emissions. Administrative, Support, Waste Management and Remediation Services, Manufacturing, and Accommodation and Food Services sector businesses show the highest average emissions per business in FCF.

We hope that this report will assist the City of Vancouver in better understanding how to strategically engage FCF businesses in emissions reduction.

CONTENTS

INTRODUCTION

WHAT IS A BEEP?

A Business Energy and Emissions Profile (BEEP) is an analysis of emissions produced and energy used by the key sectors within the False Creek Flats (FCF) business community. This BEEP estimates emissions generated by industry sectors within FCF, highlighting the opportunities for business engagement and emissions reductions. Within each industry sector, emissions are broken down into the four key activities—electricity and natural gas use in buildings, transportation, and waste.

This allows comparison between sectors and activity types, informing local government planning around emissions and energy reduction projects and business engagement programs. In addition, BEEP analysis can serve as a foundation for data-driven communication pieces to facilitate engagement of local business communities and stakeholders such as utilities.

CONTEXT FOR BEEP

In BC, Community Energy and Emissions Inventory (CEEI) reports provide local governments with community-wide data on building energy use, transportation, waste, and associated greenhouse gas (GHG) emissions. CEEIs support policy direction and target setting around GHG reductions as mandated by the Local Government (Green Communities) Statutes Amendment Act (Bill 27, 2008). CEEI reports provide high-level information on community energy and emissions; however, they do not provide resolution into business sector emissions.

The BEEP was first developed in partnership with the Climate Action Secretariat and the City of Victoria as a reporting framework to augment municipal emissions data provided by CEEI or a community's own reporting. This profile is generated from Climate Smart's growing business emissions database along with local business demographic data to create an estimated profile of emissions generated by the key sectors in the business community.

The FCF BEEP is the first BEEP report produced by Climate Smart that looks at the emissions profile of a neighbourhood rather than an entire municipality and Climate Smart is excited to be able to assist community emission reduction initiatives by looking at emissions at this more granular neighbourhood level.

METHODOLOGY

Energy and emissions projections made in this report were created using the following data sources: Climate Smart database, FCF 2013 business list, Statistics Canada Establishment Counts for four Census Tracts covering the FCF area, 2013 BC Assessment building data for Vancouver, and the NRCAN Comprehensive Energy Use Database.

As the first step, the FCF business list provided by the Vancouver Economic Commission was re-classified and standardized using 2-digit North American Industrial Classification System (NAICS). The initial business list contained industry classification that was similar to NAICS codes but was inconsistent and a data clean-up was conducted to ensure the businesses were correctly split into industry sectors. Correct classification was imperative since the emissions projections were made based on industry-specific emission intensities.

Businesses were then summarized by NAICS to identify the key sectors within the area and determine the data availability for creating projections. For the majority of sectors, Climate Smart sector-specific per-employee energy and emission intensities served to generate the projections. Note that one third of the businesses did not have employee numbers. For those businesses, employee numbers were estimated using the average business size for the given sector in the FCF area derived from the Statistics Canada Establishment data.

For those few sectors outside Climate Smart's data base, energy and emissions projections were developed using the per-square-meter energy intensities from the NRCAN Comprehensive Energy Use Database. Each business mailing address was traced to the BC Assessment data property address using VanMap, in order to ascertain the building floor area occupied by these sectors. In situations where multiple businesses were sharing a building, the total building square footage was assumed to be evenly divided between the tenants. The sector-specific per-square-meter electricity and natural gas use intensities from the NRCAN Compressive Energy Database were then applied to the total building square footage occupied by the given sector to project the total energy use.

This building area-based methodology was applied to the following sectors: NAICS 71 (Arts, Entertainment and Recreation), NAICS 81 (Other Services), and NAICS 61 (Education). In addition, building area estimates were used for the Office-Based Businesses (NAICS 51-55). While Climate Smart has extensive data on office-based businesses, in FCF many of them operate out of warehouse spaces rather than typical office spaces. To take that into account an area-based estimate was used to better reflect building energy use for the sector. For the Education sector, waste was estimated from building area using per-square-foot waste generation intensity, and transportation emissions were assumed to be zero since small FCF educational institutions are unlikely to operate a fleet. For the Arts and Entertainment sector, waste and transportation emissions were not projected due to the lack of data on the sector.

// METHODOLOGY

All projections are made in units of energy as well as in tonnes of CO_2e for electricity and natural gas. The City of Vancouver 2013 inventory emission factors are used to calculate emissions from electricity and natural gas. Transportation emissions include company vehicles and are projected in tonnes of CO_2e only, as the sample sizes did not allow breaking down the usage into fuel types. Waste projections are made based on the weight of landfilled and incinerated waste reported by businesses, and are listed in tonnes of waste as well as tonnes of CO_2e. Waste emissions are calculated using an emission factor derived from the 2010 Vancouver CEEI report by dividing the total emissions by the total waste generated as reported in the CEEI. Because the City uses a complex model to project waste emissions for its inventory, a single waste emission factor for the City's inventory was not available and the CEEI-derived factor was used to illustrate the emissions. Waste projections are made in base units (tonnes of waste), and allow for an application of any emission factor if needed.

Motivations for implementing carbon management and reduction strategies pursued after the first year of measurement are presented for each sector. These are based on the data collected from the Climate Smart businesses going through the program. The number of businesses in each sector's business sample is presented below each graph. The sample size for motivations is always larger than the sample size for reductions since motivations data is collected as the companies enter the program, and reduction strategies at the very end. Many businesses are currently working on compiling their reduction plans, which is why the numbers differ.

BUSINESS SECTORS INCLUDED IN THE BEEP

NAICS Sector (2-digit)	# of businesses	# of employees
23 Construction	46	577
31–33 Manufacturing	143	1,914
41 Wholesale Trade	229	2,254
44–45 Retail	28	560
51–55 Office-Based Businesses	86	934
56 Administrative, Support, Waste Management and Remediation Services	16	422
61 Education	6	53
71 Arts, Entertainment and Recreation	101	404
72 Accommodation and Food Services	25	395
81 Other Services (Except Public Administration)	65	321
TOTAL	**745**	**7,822**

The table above summarizes the FCF business data by sector and lists the sectors included in the projections made in this report. Note that while the business counts are exact, the numbers of employees are estimated for a third of the businesses (see Methodology section for more details). Businesses covered in this study represent 96% of all businesses in FCF, and include 745 businesses employing nearly 8,000 people.

The largest sectors by number of businesses are Wholesale Trade (229 businesses), Manufacturing (143 businesses), and Arts, Entertainment, and Recreation (101 businesses). Combined, these three sectors account for over 60% of businesses in FCF.

The remaining 29 businesses that were not included in the projections due to the lack of sufficient data are Transportation and Warehousing sector businesses (NAICS 48-49), which include bus, taxi, courier, moving, and warehousing companies.

EMISSIONS PROJECTION

Total Emissions Breakdown tonnes CO_2e

36,040 total BEEP-projected emissions (tonnes CO_2e)

The chart above summarizes the projections made in this report and shows the breakdown of the total emissions for FCF area.

The largest emission source in FCF is transportation (44%). It accounts for an estimated 15,770 tonnes of emissions. These emissions include company vehicles, and do not account for other transportation emissions indirectly attributed to businesses, such as reimbursed business travel in personal vehicles, staff commuting, and third-party shipping.

Transportation is closely followed by natural gas (43%), which accounts for 15,630 tonnes of emissions. This includes natural gas used for space and water heating, as well as process heat (e.g., for food manufacturers).

Waste comprises a smaller portion (10%) of emissions, and accounts for 3,440 tonnes of CO_2e. Note that this emissions projection uses the CEEI-based emission factor to illustrate the emissions. Projections in base units (tonnes of waste) are also presented under each sector as well as in the summary table in the Appendix.

Electricity used by businesses in FCF is projected to account for 1,200 tonnes of emissions: about 3% of the total.

IMPORTANCE OF EMISSIONS BEYOND ELECTRICITY, NATURAL GAS, TRANSPORTATION, AND WASTE

36,040 total BEEP-projected emissions (tonnes CO_2e)

60,000 total emissions potentially under management in FCF (tonnes CO_2e)

It is important to acknowledge that business emissions projections in this report measure only company fleets, electricity, natural gas, and waste generated by businesses. These are large emission sources for many organizations; however, the impact of business operations goes beyond these figures and includes emissions that result from the use of personal vehicles for business, staff commuting, refrigerants, third-party shipping, business travel, paper use, product use, and other activities that are part of day-to-day business operations. For many businesses in the Climate Smart dataset, these additional emissions are greater than company fleet, electricity, natural gas, and waste emissions combined.

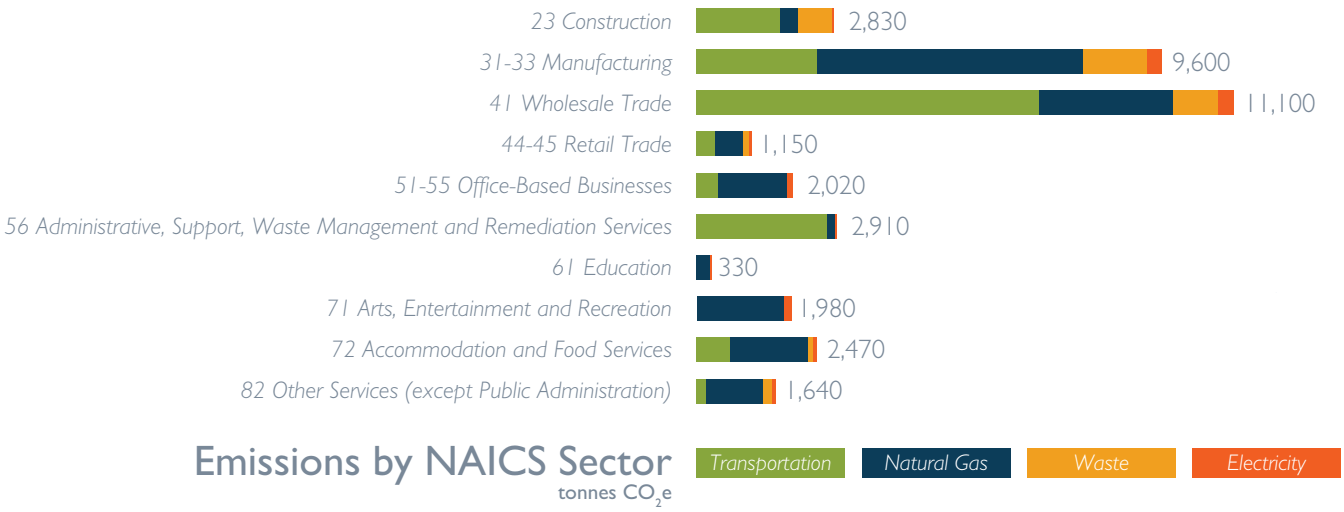
For example, if we take the median per-employee staff commuting emissions of 0.72 tonnes from the Climate Smart dataset and apply this figure to the 7,800 people employed by businesses in FCF, we will arrive at a projected 5,600 tonnes in staff commuting emissions.

In addition, many businesses provide services or deliver goods that influence a community's emissions beyond business operations. Examples of this include construction companies, lighting and heating contractors and equipment distributors, car dealerships, and others. Climate Smart businesses implement strategies that will affect not just their direct business emissions, but community emissions overall. For example, Solus Décor – a Vancouver outdoor fire pit manufacturer – is replacing wooden crates with recycled cardboard to reduce the weight of their shipments and shipping emissions. In addition, cardboard crates can be easily recycled while wooden crates would often end up in the landfill. Miles Industries, a North Vancouver fireplace manufacturer, has developed a pilot light system with a timed shut-off that is projected to reduce GHGs associated with the use of their product by 1,165 tonnes.

The impact of businesses in the community goes well beyond the fleets and buildings they operate. This highlights the importance of engaging businesses in the community's emissions reduction efforts as partners in building a more efficient, cleaner economy.

Of the total emissions measured by Climate Smart to date, the BEEP activities – electricity, heat, scope 1transportation, and waste – comprise 60% of emissions measured, with the other activities accounting for a significant portion (40%) of emissions measured to date. If we add 40% to the total of 36,040 tonnes of emissions projected above, we will arrive at an additional 24,000 tonnes of emissions that could be measured and managed by FCF businesses. This increases the total FCF business emissions to 60,000 tonnes.

EMISSIONS SUMMARY BY INDUSTRY SECTOR

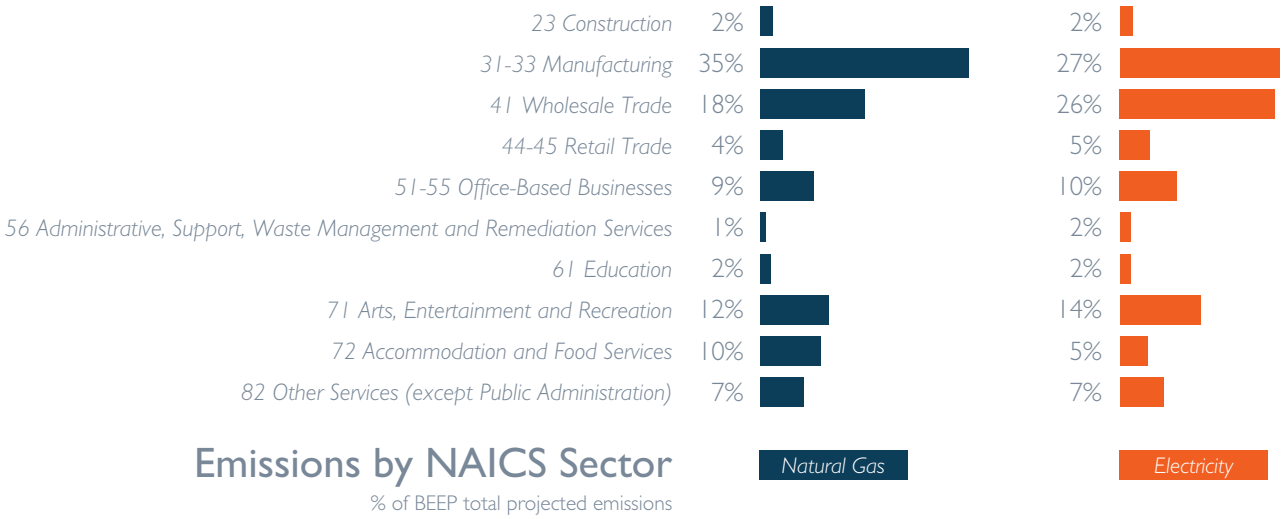


Emissions by NAICS Sector
tonnes CO_2e

This chart summarizes emissions for each sector by activity: electricity, natural gas, transportation, and waste. The top three emission generating sectors are Wholesale Trade (11,100 tonnes of CO_2e), Manufacturing (9,600 tonnes of CO_2e), and Administrative and Support, Waste Management and Remediation Services (2,910 tonnes of CO_2e).

Combined, these three sectors account for over 65% of emissions projected in this BEEP. For the Wholesale Trade and Administrative and Support, Waste Management and Remediation Services sectors, the key emission source is transportation. For the Manufacturing sector, it is natural gas used for space and water heating as well as manufacturing processes.

// EMISSIONS SUMMARY BY INDUSTRY SECTOR



Emissions by NAICS Sector

% of BEEP total projected emissions

NATURAL GAS

Natural gas emissions from businesses in this BEEP are projected at over 15,000 tonnes of CO_2e. Over a third of these emissions are attributed to the Manufacturing sector. This includes natural gas used for space and water heating as well as for manufacturing processes.

The second largest contributor to natural gas emissions is the Wholesale Trade sector. It accounts for nearly a fifth of natural gas consumption in the area. These businesses operate large heated storage spaces and represent a large portion – nearly a third – of FCF businesses.

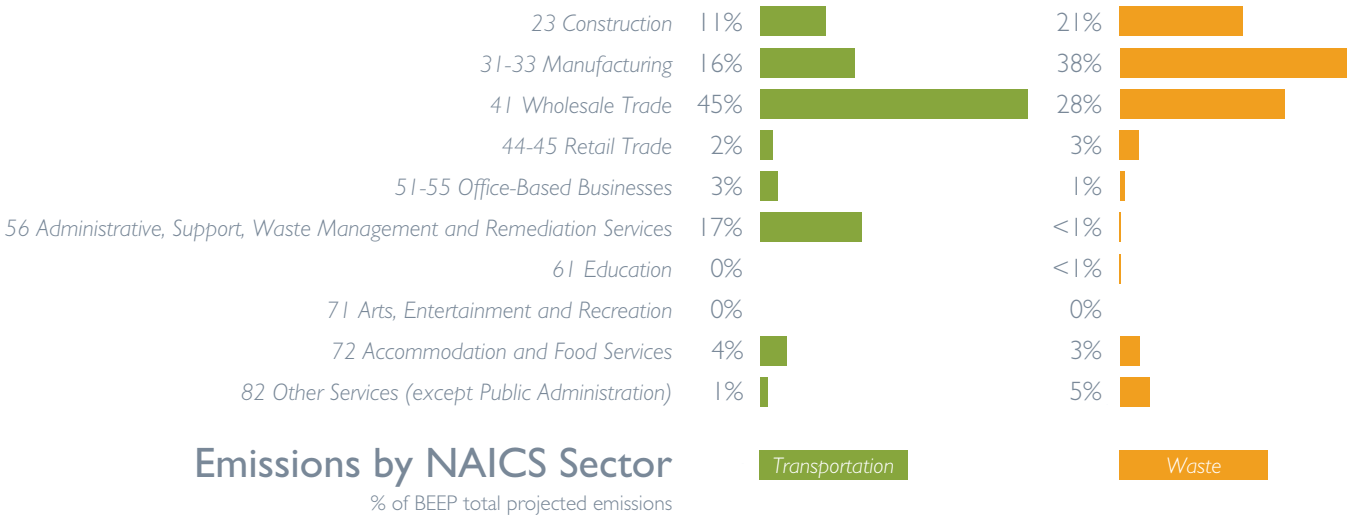
The third largest natural gas user is the Arts, Entertainment and Recreation sector (12%). While this sector is composed mainly of small artist studios, it includes over 100 businesses and their collective impact is significant.

ELECTRICITY

Electricity emissions for FCF businesses are projected at 1,200 tonnes of CO_2e. The top two electricity consumers are Manufacturing and Wholesale Trade sectors. Together, they account for over one half of electricity consumption in FCF.

The Arts, Entertainment and Recreation sector is the third largest and it is responsible for 14% of electricity use.

// EMISSIONS SUMMARY BY INDUSTRY SECTOR



Emissions by NAICS Sector

% of BEEP total projected emissions

TRANSPORTATION

Transportation emissions in FCF are estimated at over 15,000 tonnes of CO_2e. The Wholesale Trade sector generates nearly one half of those emissions.

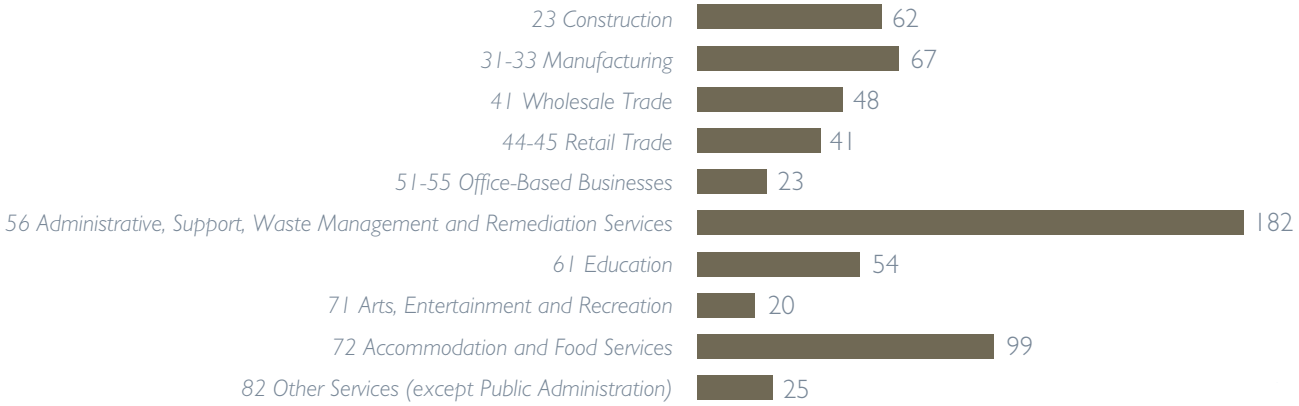
The second largest emitter is the Administrative and Support, Waste Management and Remediation Services Sector. It accounts for 17% of transportation emissions. This sector includes waste haulers, landscaping companies, cleaning companies, and building maintenance service providers – businesses that deliver their services at multiple clients' locations and often operate large fleets.

WASTE

FCF businesses generate over 7,200 tonnes of waste. The Manufacturing sector generates the most waste, accounting for nearly 40% of all waste being generated.

The Wholesale Trade sector is the second largest waste producer (28%), followed by the Construction sector (21%). Together, these three sectors account for 87% of all waste generated.

A VIEW OF EMISSIONS PER BUSINESS

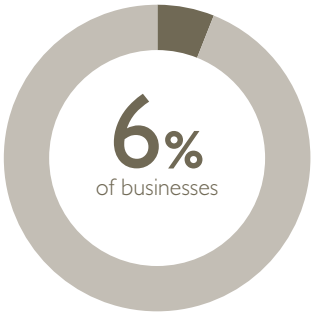


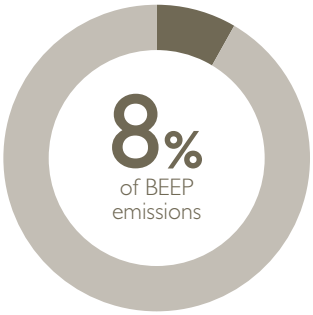
This chart presents the average emissions per business in each sector. The sector's projected emissions are divided by the number of businesses to arrive at the average. The Administrative and Support, Waste Management and Remediation Services sector has the highest emissions per business (182 tonnes of CO_2e). The sector includes businesses such as cleaning companies, building maintanace service providers, landscaping firms, waste haulers and recycling facilities. These businesses provide their services at clients' sites and travel to multiple locations, leading to high transportation emissions.

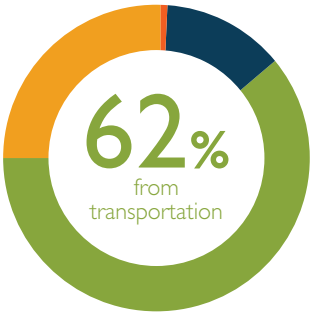
The Accommodation and Food Service sector has the second highest emissions per business (99 tonnes CO_2e), with the majority (65%) of emissions coming from natural gas used for space and water heating as well as food preparation. The Manufacturing sector has the third highest per-business emissions (67 tonnes CO_2e). The primary emission source for this sector is natural gas used in the manufacturing process as well as for heating.

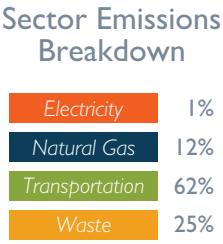
NAICS 23: CONSTRUCTION

SECTOR PROFILE









577 employees

46 number of businesses

13 average business size (employees)

2,830 sector emissions (tonnes CO_2e)

6,900 natural gas usage (GJ)

1,893,000 electricity usage (kWh)

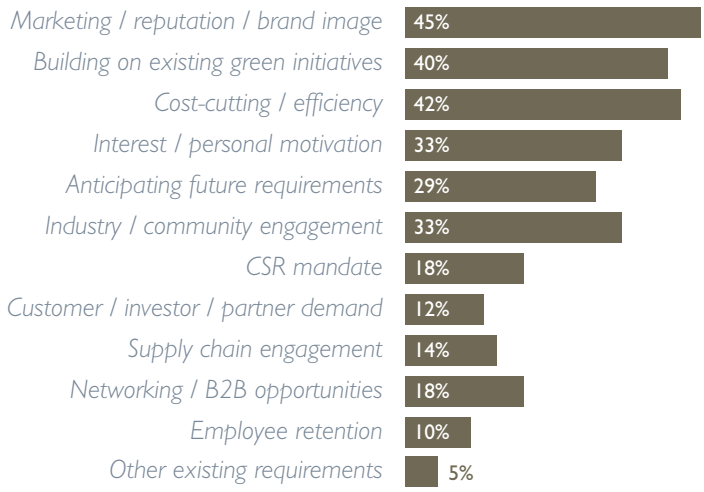
1,740 transportation emissions (tonnes CO_2e)

1,498 waste generated (tonnes)

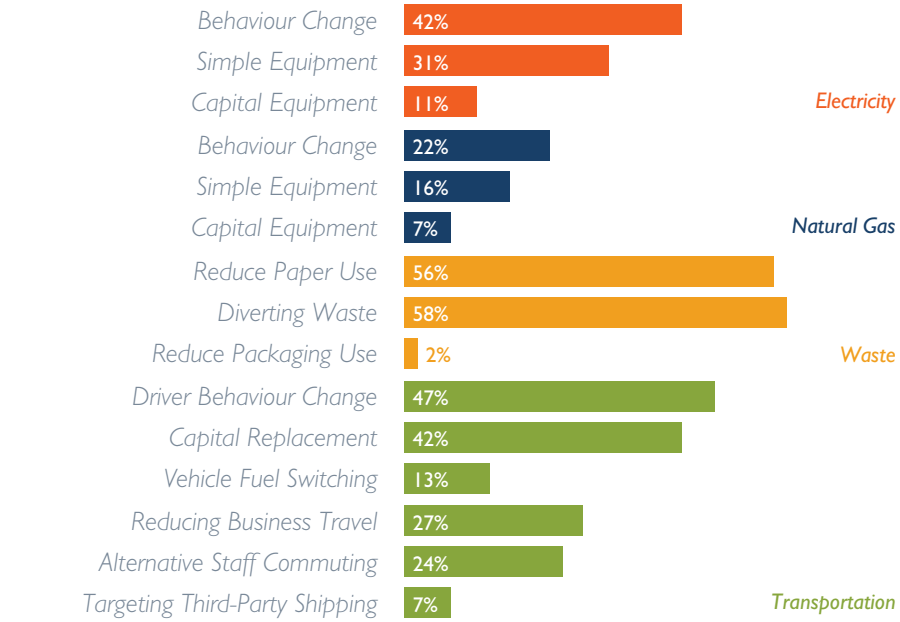
The Construction sector in FCF consists of just under 50 businesses (6% of all businesses in the area), with the majority (31 businesses) representing the Specialty Trade Contractors subsector (NAICS 238). This subsector includes electric, refrigeration and air conditioning, lighting, plumbing, painting, and other contractors. The second largest subsector is Construction of Buildings (NAICS 236), containing 14 businesses such as general contractors and construction management firms. The Heavy and Civil Engineering Construction subsector is represented by just one business.

Construction businesses account for 8% of emissions in FCF. The largest emission source for this sector is transportation, accounting for over 60% of total emissions. Note that these emissions include company fleets as well as fuel-powered equipment. Waste comprises 25% of emissions, and is followed by natural gas (12% of emissions). The majority (over 80%) of the total emissions are attributed to the Specialty Trade subsector.

MOTIVATION AND REDUCTION STRATEGIES IMPLEMENTED AFTER FIRST YEAR OF MEASUREMENT



Motivations



Reduction Strategies

Personal interest, marketing, and cost savings are the top three motives for carbon management cited by construction businesses entering the Climate Smart program. Anticipation of future requirements and responding to existing regulations are starting to appear as drivers, as construction businesses encounter more requirements such as fuel use tracking for their municipal contracts and waste diversion rates for LEED projects.

Waste diversion is an area tackled by nearly 60% of businesses in this sector after their first year of Climate Smart. This often includes providing separate bins for recyclable materials at the site and educating workers and contractors on proper waste separation.

To reduce their transportation emissions and costs nearly half of businesses are implementing low-hanging fruit strategies such as driver behavior change. This often includes company anti-idling policies and driver training. Over 40% of businesses are choosing to replace their fleet vehicles with more fuel-efficient models.

Building construction subsector is unique in that in addition to controlling its own operations, these businesses have influence over the operational footprint of buildings they create for years to come. By committing to sustainable building practices, they can have positive impact well beyond their operational boundaries.

CASE STUDY

CONCERT PROPERTIES

Concert has been developing and managing real estate for almost 25 years: rental apartments, condominium homes, retirement communities and commercial properties. Concert is involved in development, construction, sales and leasing, property management and ultimately customer service. Over the past three years Concert has worked with Climate Smart to inventory their greenhouse gas emissions and work towards a 20% reduction by 2020.

As a showcase, they have implemented a number of changes at 1190 Hornby Street, the office building that serves as their headquarters. A film applied to all windows reduces solar heat gain, helping to improve occupant comfort and reduce the energy needed to cool the building in summertime. Additionally, the boilers and chillers in their HVAC system were changed over to high-efficiency models. Adding direct digital control technology to their HVAC system allows the building operator to monitor and adjust energy performance throughout the building in real time. This combination of initiatives has reduced their electricity use at 1190 Hornby by 25%; likewise, their natural gas consumption has decreased by 50%.

All new Concert rental developments target LEED Gold or equivalent environmental construction standards. An example is their new Axis rental development currently underway at the University of British Columbia: Concert is aiming for a Gold rating under the UBC-specific Residential Environmental Assessment Program (REAP). One of the requirements of these programs is the diversion and recycling of construction waste, which includes wood, metal, cardboard, plastics, and drywall. Concert has set a goal of 75% waste diverted from landfill at Axis. They have engaged their trade subcontractors to ensure everyone involved in the project understands how their actions affect Concert's sustainability goals. By placing the responsibility of diversion on their subtrades, and monitoring waste diversion throughout the project, Concert has achieved 82% diversion from landfill on the Axis construction site.

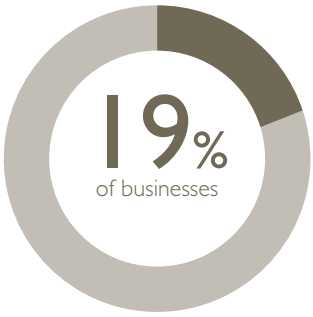
With many different properties and many facets of their business where change could be achieved, it was important to engage staff from across the organization. The creation of a dedicated Sustainability Manager position, to act as a resource for different projects and departments across the organization, highlights the degree to which sustainability is embedded at Concert.

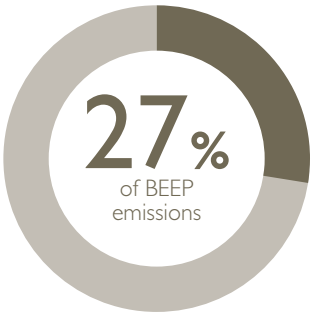
Working with Climate Smart has helped draw the link between operational expenses and carbon/energy performance, and has catalyzed the development of internal systems for data management. For instance, gathering building energy data from across their portfolio, Concert now monitors energy use per square metre, and can identify particular properties on which to focus their efficiency efforts. Concert sees an additional benefit in the collaborative Climate Smart network of like-minded businesses, of which they are now a member. Knowledge-sharing with other companies yields strategies that they can implement within Concert's own operations.

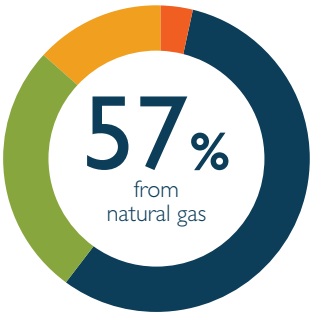
View Concert's case study video: http://bit.ly/ConcertProperties_CS_Video

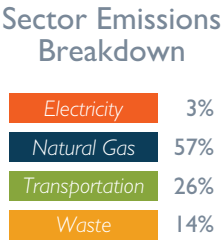
NAICS 31–33: MANUFACTURING

SECTOR PROFILE









1,914 employees

143 number of businesses

13 average business size (employees)

9,600 sector emissions (tonnes CO_2e)

106,000 natural gas usage (GJ)

22,996,000 electricity usage (kWh)

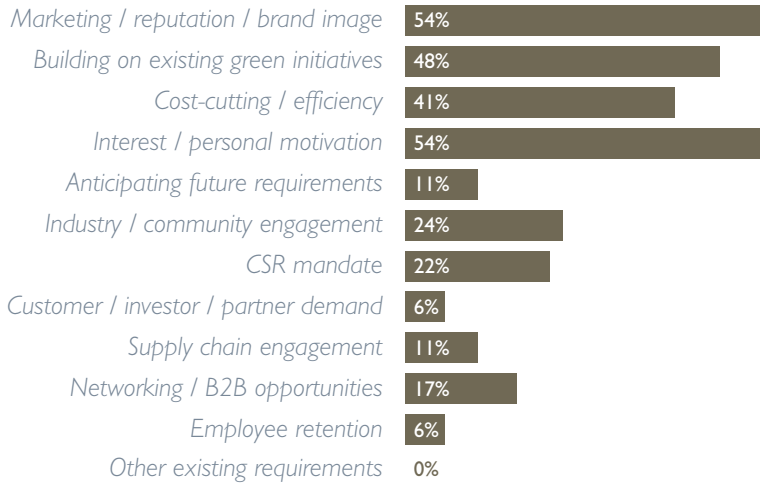
2,510 transportation emissions (tonnes CO_2e)

2,757 waste generated (tonnes)

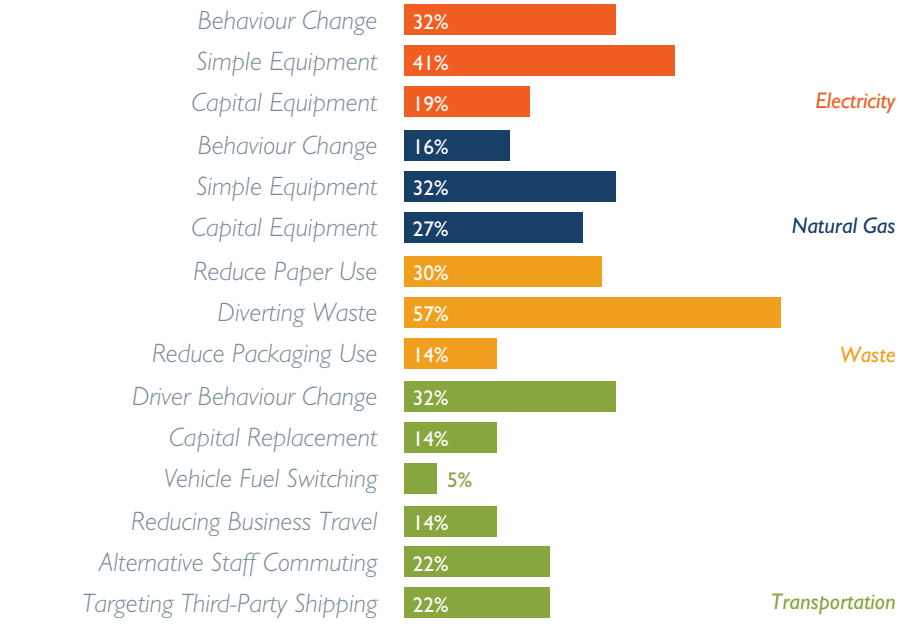
The Manufacturing sector is the second largest sector in FCF after Wholesale Trade, containing over 140 businesses and employing nearly 2,000 people. This sector includes 19% of all businesses in the area, and is responsible for a larger portion (27%) of emissions due to its relatively high emission intensity. Over a half of manufacturing businesses in FCF are textiles/ fashion manufacturers, food manufacturers, and printing companies. The majority of emissions in manufacturing are from natural gas (57%), followed by transportation (26%) and waste (14%).

Food manufacturers have the highest per-employee natural gas use intensity of all manufacturing subsectors. This is because of the natural gas used for process heat. Natural gas emissions for food manufacturers are projected at nearly 1,500 tonnes of CO_2e, or over 25% of total natural gas emissions for the whole sector.

MOTIVATION AND REDUCTION STRATEGIES IMPLEMENTED AFTER FIRST YEAR OF MEASUREMENT



Motivations



Reduction Strategies

Marketing alongside personal interest are the primary drivers for carbon management in this sector. With the growing demand for environmentally responsible products and services, companies are looking to improve their brand images. Building on existing green initiatives is another common motive, with many manufacturers already moving down the road of sustainability.

Strategies aimed at reducing waste going to landfill are widely adopted by this sector after going through Climate Smart program—nearly 60% of businesses targeted waste in their reduction plan.

Over 40% of businesses chose to purchase simple equipment such as motion sensors to cut their electricity usage and costs, with nearly a fifth of businesses opting for capital electric upgrades such as lighting retrofits.

Nearly a third of businesses chose to tackle their natural gas use through capital equipment upgrades.

CASE STUDIES

PURDYS CHOCOLATIER

47.2% waste emissions reduction achieved

112.3 emissions reduction (tonnes CO_2e)

Purdy's Chocolates, the iconic Canadian chocolatier, was able to reduce their largest single source of emissions, solid waste, by nearly half in just one year through their work with Climate Smart. By the end of 2011, Purdy's had reduced emissions from this source by 47.2% compared to their 2010 baseline measurement year. This waste diversion effort cut Purdy's' emissions in this area by 112.3 tonnes of carbon dioxide, from 2010 to 2011.

Purdy's is also rigorously evaluating their emissions from areas such as electricity, transport and natural gas.

In terms of waste, however, Jim Pritchard, Director of Chocolate Operations at Purdy's, had encouraging words to say about the straightforward nature of their initiatives.

"There really [wasn't] much to it. I had asked [an employee] to try to find a company that would take items we were sending to landfill. He found one company that would take everything and we just had to separate it and store for them to pick up." The absolute number of waste and recycling-hauling trips made to the Purdy's facility have also been decreased.

Not only has Purdy's addressed their waste diversion and sorting, however, initiatives such as the installation of energy-efficient hand dryers has reduced the production of wastepaper at their facilities. In addition, by discouraging the use of disposable plastic bags at the retail end of their operations, Purdy's has managed to reduce this waste stream by 10%.

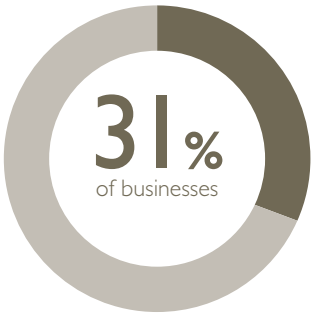
Duncan Johnston, Chief Financial Officer at Purdy's, and a participant in the Climate Smart program, was also able to provide some insight into the implementation of these waste reductions strategies, estimating that it required "30% education, 60% follow up and 10% inspiration."

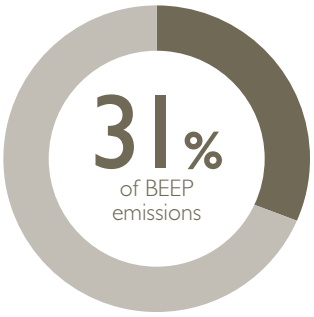
Purdy's continues to work towards reducing their emissions further by improving the recycling program at the factory, implementing a lower emission delivery program, performing a natural gas audit at the factory, and investigating alternative packaging. Through this process, Purdy's has retrofitted lighting, windows, heating systems and roofing materials in various areas of the Purdy's business. Says Johnston, "new opportunities are always coming up", and Purdy's is projecting a wide array of efficiency gains that have potential to reflect an even lighter organizational footprint in future years.

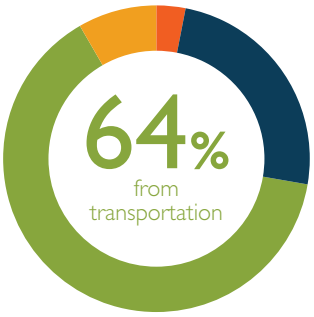
Paramount in the process has been the education of employees on electricity, paper and waste reduction strategies using staff, department manager and supervisor meetings in tandem with newsletters. Though it may seem impossible, it is initiatives like these that make Purdy's Chocolates that much more enjoyable.

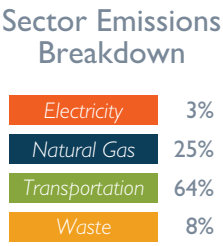
NAICS 41: WHOLESALE TRADE

SECTOR PROFILE









2,254	employees
229	number of businesses
10	average business size (employees)
11,100	sector emissions (tonnes CO_2e)
53,600	natural gas usage (GJ)
22,494,000	electricity usage (kWh)
7,070	transportation emissions (tonnes CO_2e)
2,010	waste generated (tonnes)

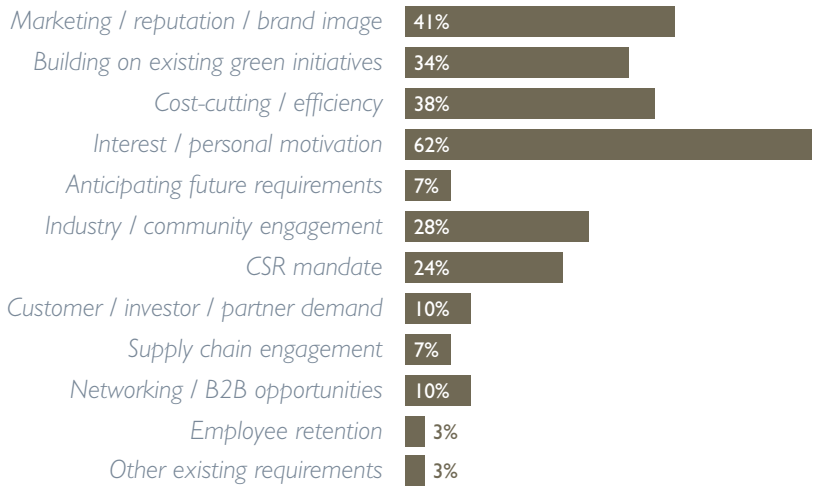
The Wholesale Trade sector is the largest sector in FCF: it accounts for over 30% of businesses and emissions in the area. The largest emission source for this sector is transportation – wholesale businesses often operate delivery trucks which contribute significantly to their carbon footprint.

The FCF Wholesale Trade sector consists primarily of textiles/fashion wholesalers (60% of businesses), food and beverage wholesalers (14%) and construction supplies wholesalers (10%).

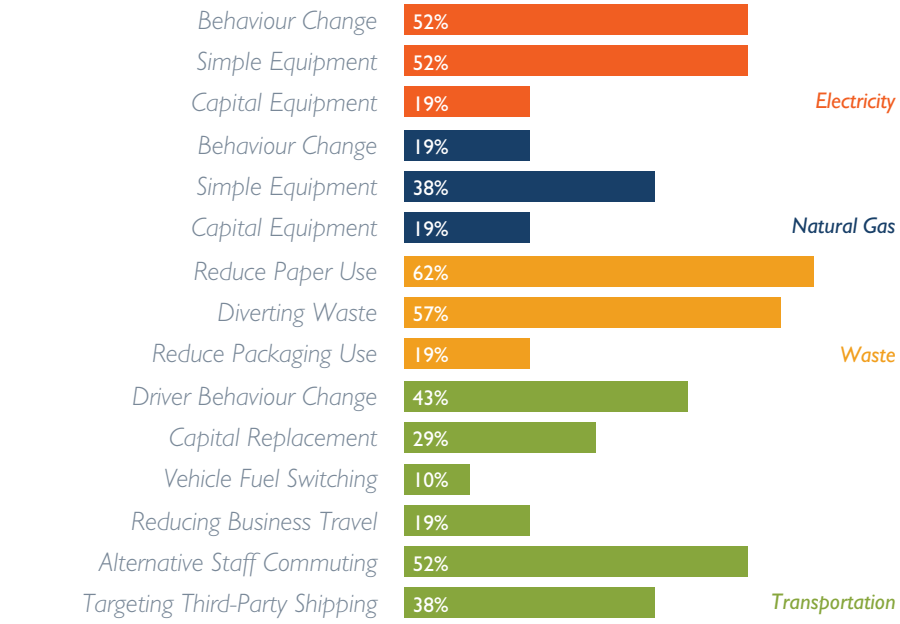
Food and Beverage Wholesalers, while accounting for just 14% of businesses, contribute over a third of the total sector emissions, primarily due to the larger average size of these businesses. In addition, businesses in this subsector have higher electricity use due to refrigeration.

Refrigeration is another significant emission source for Food and Beverage Wholesalers. Refrigerant emissions are higher than fleet emissions for some wholesalers in the Climate Smart dataset. Refrigeration leakages often go unnoticed as the cost of topping up refrigerants is negligible compared to other operating costs for a business. For example, a meat distributor that has gone through Climate Smart program recorded 88 tonnes of CO_2e in refrigeration emissions, 4 tonnes more than emissions from their fleet. The cost of the topped up refrigerants was only $1,300 compared to the company's $70,000 Hydro bill and $42,000 in annual fuel costs. In addition, a leaking cooling system is less efficient and leads to a higher electric bill.

MOTIVATION AND REDUCTION STRATEGIES IMPLEMENTED AFTER FIRST YEAR OF MEASUREMENT



Motivations



Reduction Strategies

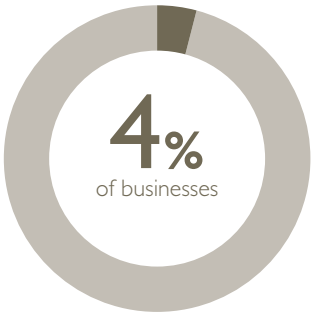
Marketing, personal interest, cost reduction, and building upon existing green initiatives top the list of drivers for carbon management is this sector. Responding to existing requirements and anticipating future requirements do not appear as strongly for this sector as they do for, for example, construction; where companies often compete on bids and tenders for municipal governments.

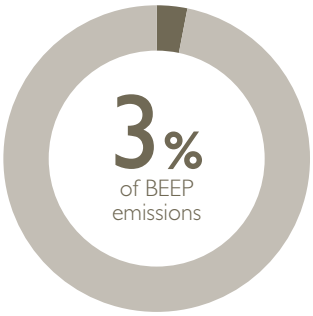
Following the Climate Smart program, nearly 60% implement initiatives aimed at increasing their waste diversion rate, such as starting to recycle their Styrofoam and soft plastics. Paper use is an area addressed by over 60% of businesses, as wholesalers often have good opportunities to reduce paper used for packaging slips and invoices. While paper use is a relatively small source of emissions for these businesses, reducing paper is a low-cost strategy that touches everyone in the organization and helps promote a culture of conservation.

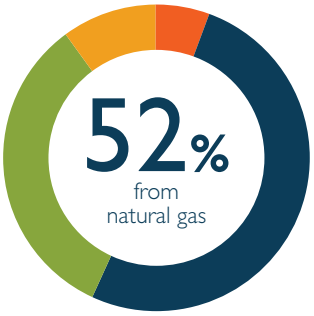
Reducing natural gas use through installing simple equipment such as strip curtains is another widely adopted tactic, with one out of five businesses going a step further and choosing to implement capital lighting or heating upgrades.

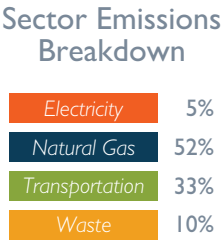
NAICS 44–45: RETAIL TRADE

SECTOR PROFILE









550 employees

28 number of businesses

20 average business size (employees)

1,150 sector emissions (tonnes CO_2e)

11,600 natural gas usage (GJ)

4,552,000 electricity usage (kWh)

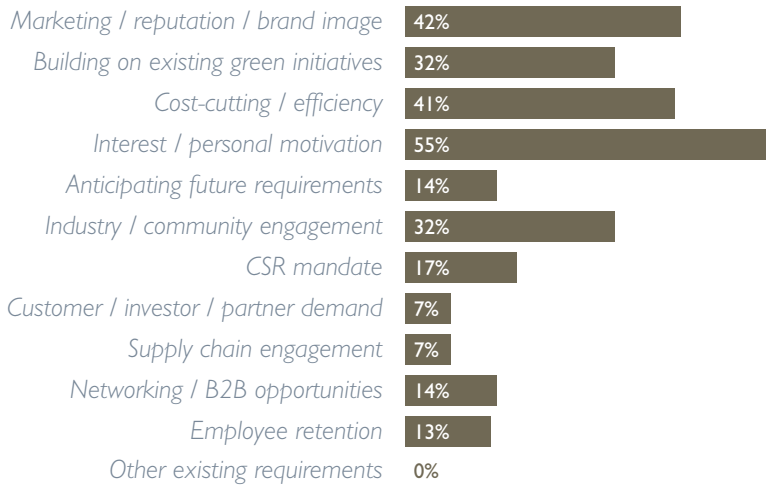
380 transportation emissions (tonnes CO_2e)

245 waste generated (tonnes)

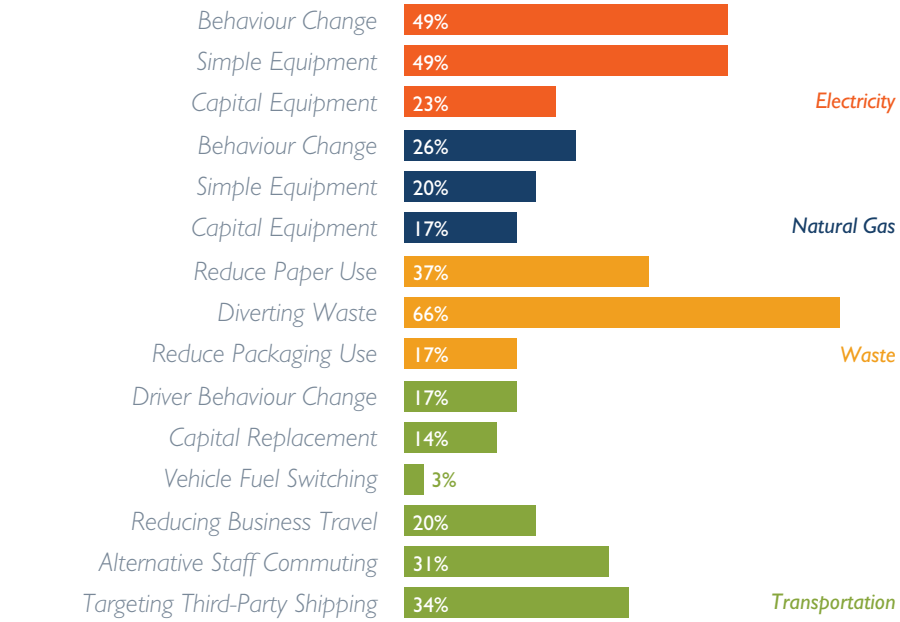
The Retail Trade sector in FCF consists of just under 30 businesses employing 550 people. It includes businesses such as car dealerships, home supply stores, food stores, and art stores.

The Retail Trade sector represents 4% of businesses in the area and is responsible for 3% of the emissions. The majority of the emissions for this sector come from natural gas (52%) and transportation (33%).

MOTIVATION AND REDUCTION STRATEGIES IMPLEMENTED AFTER FIRST YEAR OF MEASUREMENT



Motivations



Reduction Strategies

Personal interest and education, marketing, cost reduction and community engagement appear as the top drivers for retail businesses to manage their carbon emissions.

Following the Climate Smart program, over 60% of businesses in this sector choose to implement strategies aimed at reducing their landfilled waste.

Reducing electricity use through installing simple equipment such as light timers and dimmers as well as behavior change campaigns (e.g., implementing a turn-it-off policy) are often-cited strategies for retail business.

Over 30% of participating businesses choose to tackle their third-party shipping. While this activity is outside of their direct emissions, retail businesses recognize its significant environmental impact and implement strategies such as bulk ordering and avoiding rush shipments.

Staff commuting is another emissions source commonly addressed by retailers. Aligning staff shifts with transit schedules, promoting carpooling, and providing secure bike parking are some of the initiatives tackling staff commuting emissions.

CASE STUDIES

THE OTTER FARM AND HOME CO-OP

$7,700 annual cost savings

5 emissions reduction (tonnes CO_2e)

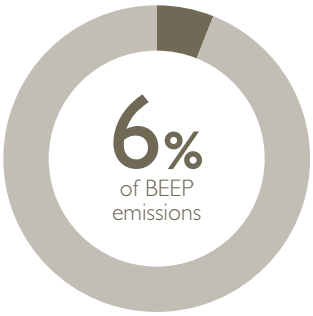
The Otter Farm and Home Co-operative is an agricultural and home product co-op located in the Township of Langley. They operate a retail centre, a bulk plant, feed plant, and several gas bars and convenience stores.

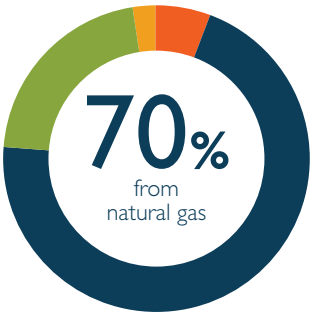
Otter Co-op has retrofitted their retail location with energy-efficient lighting. With an investment of $5,800 and a $1,200 rebate from BC Hydro, they project a savings of $750 a year, with an ROI of approximately 6 years. Switching off lights in their retail centre for 4 hours a day when the space is not in use will additionally reduce their electricity costs by nearly $17,500.

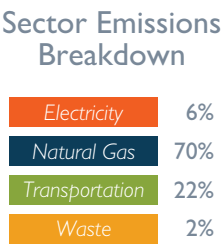
In their newly renovated deli, a modest investment of $100 in reusable glasses means a savings of nearly $600 a year in paper cups. Nearly 600 pounds of magazines arrive at the store every week, many of which go unsold. By reducing their order, Otter Co-op will save 1,560 pounds of paper annually, as well as the 5 hours of labour a week required to process the unsold copies.

NAICS 51-55: OFFICE-BASED BUSINESSES

SECTOR PROFILE







934 employees

86 number of businesses

11 average business size (employees)

2,020 sector emissions (tonnes CO_2e)

27,500 natural gas usage (GJ)

8,329,000 electricity usage (kWh)

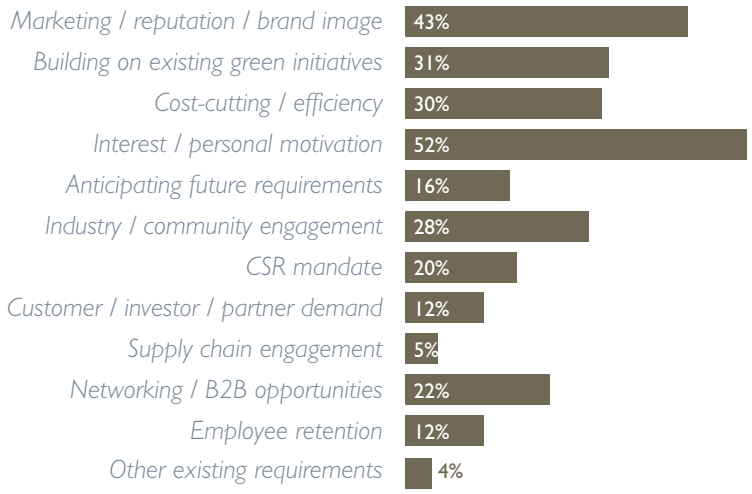
450 transportation emissions (tonnes CO_2e)

69 waste generated (tonnes)

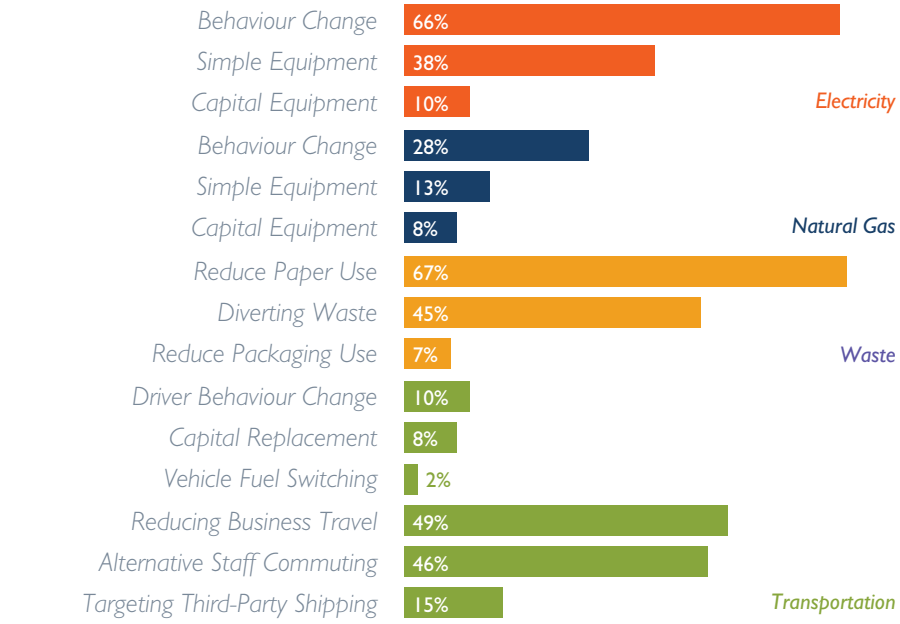
The Office-Based group of businesses spans five NAICS sectors and encompasses a diverse range of organizations including software firms, consulting companies, societies and associations, marketing firms, and rental companies. These businesses represent 12% of the area's businesses and are responsible for just 6% of emissions due to their relativaly low emission intensity.

The highest emission source for these businesses is natural gas (70%), followed by transportation (22%), and electricity (6%). Office-based businesses generate a small amount of waste, accounting for just 2% of their footprint.

MOTIVATION AND REDUCTION STRATEGIES IMPLEMENTED AFTER FIRST YEAR OF MEASUREMENT



Motivations



Reduction Strategies

Personal interest and education is the top driver for office-based businesses to take up carbon management, followed closely by marketing and brand image. Building upon existing sustainable initiatives and cutting costs also appear as strong drivers cited by nearly a third of businesses entering the Climate Smart program. Anticipation of future requirements is star ting to appear as a strong driver: 16% of businesses cited it as a reason to enter the Climate Smart program.

Office-based businesses often operate out of shared leased spaces where they do not have direct control over their heating and lighting, which is why capital heating and lighting upgrades are not as common for these businesses. Most widely chosen reduction strategies include tackling paper use, business travel, electricity through behavior change, and staff commuting. Staff commuting is often the largest emission source for office-based businesses after air travel. While staff commuting is not included in the projections made in this report, it does contribute significantly to emissions at the community level. Ample opportunities exist for influencing commuting habits through initiatives implemented by the businesses, such as providing discounted passes, bike facilities, and shifting the company culture towards sustainable commuting and business travel.

CASE STUDIES

STARFISH MEDICAL

$7,000 annual cost savings

7.7 emissions reduction (tonnes CO_2e)

Starfish Medical works with clients all over North America and around the world to design, develop and manufacture medical devices. The company employs 51 people in Saanich, operating out of one facility. Starfish first measured its emissions inventory over fiscal 2011-2012, leading to emissions reduction strategies that included conducting waste and energy assessments, supporting sustainable commuting with incentives and improved facilities, purchasing Forest Stewardship Council certified paper, and teleconferencing with clients when possible.

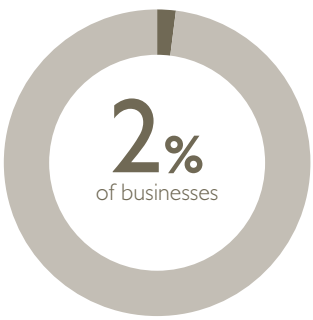
Starfish Medical's most innovative emissions reduction strategy is also likely the most impactful the company could pursue: encouraging project managers and clients to reduce their business air travel. On average, for office-based professional services firms, business air travel represents the largest source of emissions, at 37%9. Starfish encouraged this behaviour by proactively supplying and encouraging the use of videoconferencing and webcam technology to both employees and clients. This initiative has worked well for the bottom line, with a nearly immediate payoff thanks to savings achieved from reduced air travel.

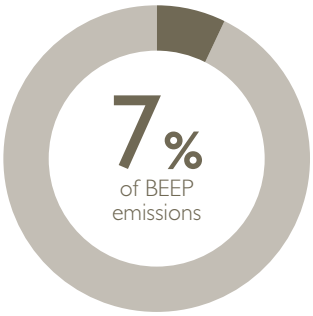
Since launching this strategy in 2009, Starfish has outfitted all project managers, senior management and numerous clients with top-of-the-line webcams and headsets, using either Skype or GoToMeeting as the software component. Each unit costs $106 per set-up (not including shipping to clients). Starfish has invested $2,755 to date, purchasing 26 of the webcams and headsets. Important to note is that the barrier to this type of initiative is much less likely to be technological than it is to be cultural. Perhaps the most important aspect of this "investment" has been the encouragement by senior management that project managers utilize teleconferencing whenever feasible.

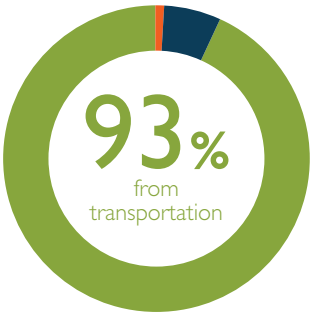
While Starfish has found it difficult to provide exact figures for the value of air travel not expensed, and kilometres not flown, over the past three years encouraging this style of work has proven to be a positive investment, with a nearly immediate payback. Anecdotally, the company knows that numerous, otherwise necessary flights to clients (e.g., Charlottesville, West Virginia and San Mateo, California) have been avoided.

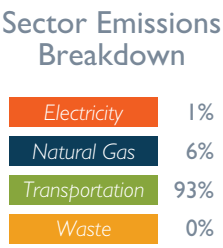
NAICS 56: ADMINISTRATIVE SUPPORT, WASTE MANAGEMENT, REMEDIATION

SECTOR PROFILE







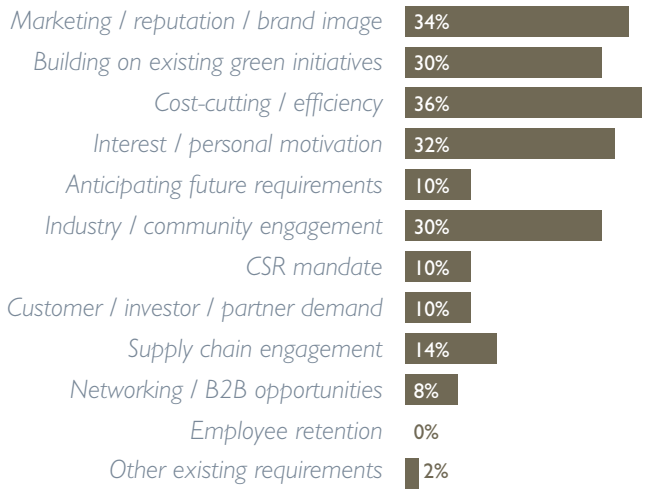


422	employees
16	number of businesses
26	average business size (employees)
2,910	sector emissions (tonnes CO_2e)
3,300	natural gas usage (GJ)
1,711,000	electricity usage (kWh)
2,710	transportation emissions (tonnes CO_2e)
21	waste generated (tonnes)

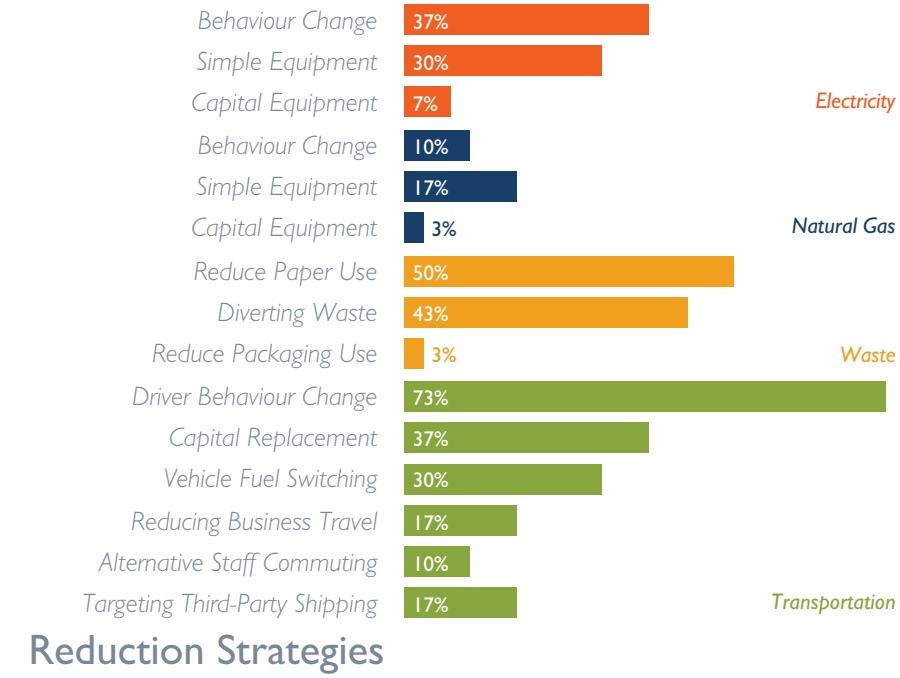
The Admininstrative and Support, Waste Management and Remidiation Services sector in FCF is relatively small, accounting for just 2% of businesses in the area. However, these businesses are emission intensive and the emission contribution of the sector is significant - 7% of the total emissions projected in this report. Transportation emissions account for the majority of the sector's footprint – 93% of total emissions.

The sector includes businesses such as cleaning companies, building maintenance service providers, landscaping firms, waste haulers and recycling facilities. These businesses provide their services at clients' sites and travel to multiple locations, leading to high transportation emissions.

MOTIVATION AND REDUCTION STRATEGIES IMPLEMENTED AFTER FIRST YEAR OF MEASUREMENT



Motivations



Reduction Strategies

Cutting costs appeared as the strongest motivating factor for businesses in this sector to take on carbon management. Marketing and brand image, education, and expanding existing sustainability initiatives are other strong factors cited by businesses. Responding to existing and anticipating future requirements also appeared as drivers for this sector, as some of the businesses are starting to see requests from their municipal and private clients for measurable sustainability action.

With transportation emissions forming a large part of emissions for this sector, the most oft-cited reduction strategy is reducing transportation emissions through behavior change. This includes low-cost strategies such as eliminating idling, speeding, and abrupt breaking, as well as purchasing equipment and software for vehicle tracking to optimize routes and monitor idling and speed. Nearly 40% of businesses coming through the program choose to replace some of their fleet vehicles with more fuel efficient models.

CASE STUDIES

SECURIGUARD

$80,000+ annual cost savings

97+ emissions reduction (tonnes CO_2e)

Securiguard is a full-service integrated security solutions company offering customized corporate security services, security guards and security consulting. Through participating in the Climate Smart program, the company measured their baseline inventory for their North American operations for the 2010 fiscal year, and is currently measuring their footprint for 2011 and 2012.

Presently, the Securiguard fleet includes 17 hybrid vehicles and one diesel vehicle in their 47-vehicle fleet. In addition to replacing conventional vehicles with the 17 efficient hybrids vehicles, Securiguard was actually able to reduce the total number of vehicles in their fleet over the past two years by better optimizing their route planning. Securiguard is working to replace an additional 12 vehicles with leased hybrids in the next year.

The per-vehicle savings that Securiguard has realized from these changes are $100 per month, taking the additional leasing costs into account. The overall yearly savings amount to $21,000 in fuel costs (assuming a gas price of $1.30 per litre). These savings translate into a projected greenhouse gas (GHG) emissions reduction of 97 tonnes CO_2e, or a 13% reduction in emissions from Securiguard's 2010 baseline measurement, with further reductions to come from increased fleet efficiency.

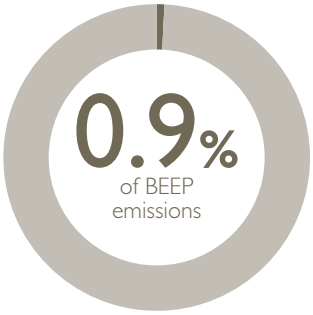
Securiguard is further reducing emissions significantly through the route optimization software implemented in their vehicles. Financial returns due to the implementation of this on-board software, and the subsequent fuel savings and reduced size of the Securiguard fleet have been substantial. Securiguard is realizing savings of $5,000 on a monthly basis.

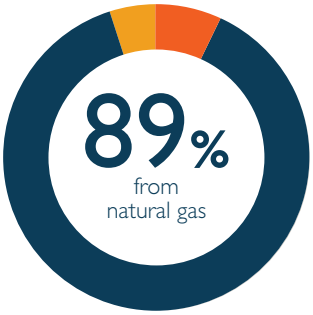
In total, Securiguard's fleet efficiency initiatives have achieved the company annual fuel savings of more than $80,000, and reduced their carbon footprint extremely effectively.

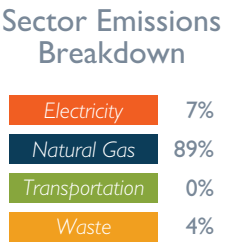
Cutting down on vehicle idling, implementing electronic invoicing, improving their recycling infrastructure and reducing energy consumption by implementing 'turn-it-off' programs and reducing vampire power complete the Securiguard effort to thoroughly and thoughtfully green their operations.

NAICS 61: EDUCATION

SECTOR PROFILE







53 employees

6 number of businesses

9 average business size (employees)

330 sector emissions (tonnes CO_2e)

5,700 natural gas usage (GJ)

1,619,000 electricity usage (kWh)

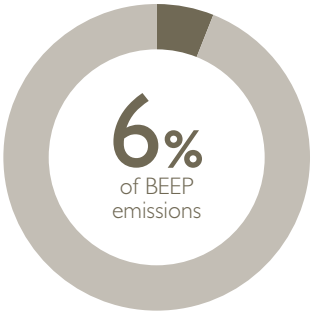
0 transportation emissions (tonnes CO_2e)

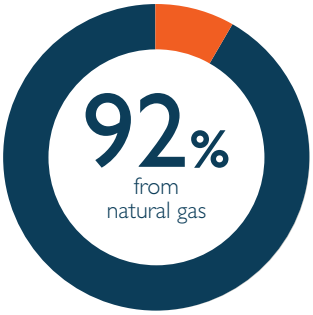
27 waste generated (tonnes)

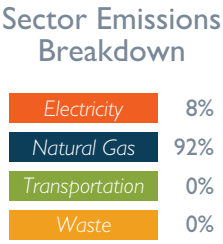
The Education sector in FCF includes six businesses and accounts for under 1% of businesses and emissions profiled in this report. The majority (nearly 90%) of emissions in this sector are from natural gas used for space and water heating. Smaller educational institutions usually don't operate fleets, which is why the transportation emissions are projected at zero for this sector. The second largest emission source after natural gas is electricity use (7%) followed by waste (4%).

NAICS 71: ARTS, ENTERTAINMENT AND RECREATION

SECTOR PROFILE







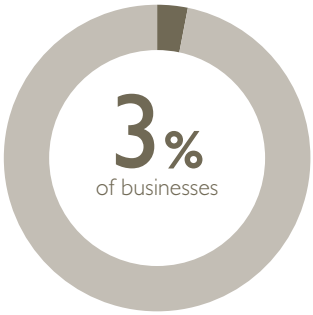
404	employees
101	number of businesses
4	average business size (employees)
1,980+	sector emissions (tonnes CO_2e)
35,300	natural gas usage (GJ)
11,776,000	electricity usage (kWh)
n/a	transportation emissions (tonnes CO_2e)
n/a	waste generated (tonnes)

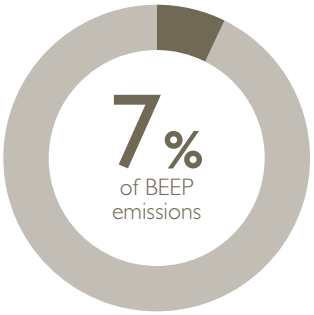
The Arts, Entertainment, and Recreation sector in FCF encompasses over 100 businesses, the majority of which are small artist studios. The sector also includes businesses such as production companies, galleries and gyms. Note that for this sector projections are made for natural gas use and electricity use based on the square footage of building space occupied by the businesses.

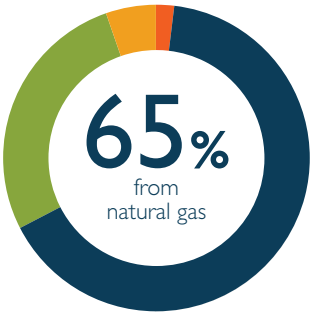
Electricity and natural gas emissions account for nearly 2,000 tonnes of CO_2e. Projections for transportation and waste are not made due to the lack of data on these activities for the sector.

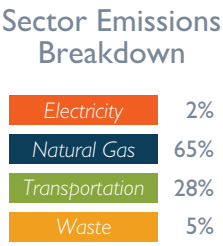
NAICS 72: ACCOMMODATION AND FOOD SERVICES

SECTOR PROFILE







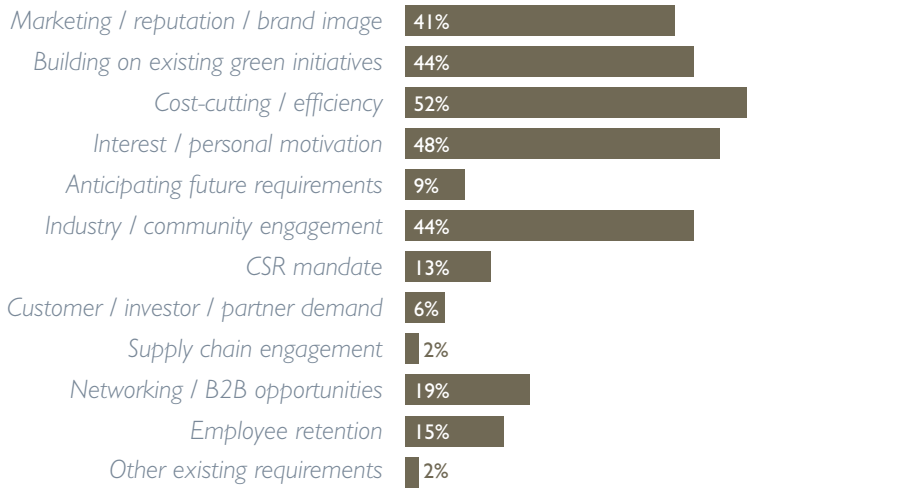


395	employees
25	number of businesses
16	average business size (employees)
2,470	sector emissions (tonnes CO_2e)
31,100	natural gas usage (GJ)
4,024,000	electricity usage (kWh)
700	transportation emissions (tonnes CO_2e)
251	waste generated (tonnes)

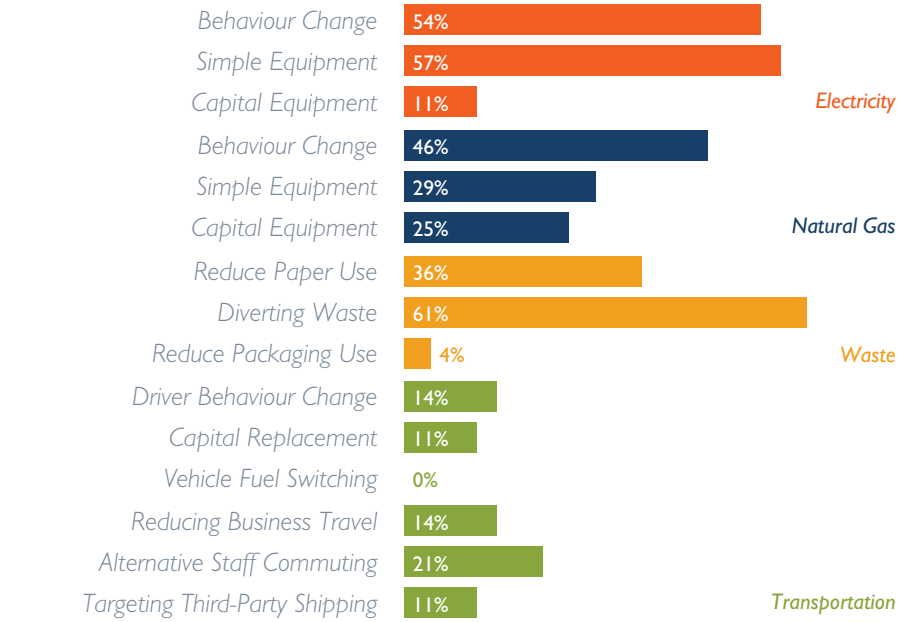
The Accommodation and Food Services sector in FCF includes 25 businesses, or 3% of all businesses in this report. It is relatively emission intensive, and accounts for 7% of emissions.

The sector is composed of hotels, restaurants, and catering companies. The largest emission source for the sector is natural gas, accounting for 65% of emissions. This is natural gas used for space and water heating, as well as food preparation. The second largest emission source for the sector is transportation. 95% of transportation emissions are projected to be generated by the catering companies that operate fleets to deliver their products to clients.

MOTIVATION AND REDUCTION STRATEGIES IMPLEMENTED AFTER FIRST YEAR OF MEASUREMENT



Motivations



Reduction Strategies

Cutting costs appeared as the strongest driver for businesses in this sector to manage their carbon — over a half of businesses mentioned it as a reason for entering the Climate Smart program. Industry and community engagement, education, and expanding existing green initiatives are other strong drivers for businesses in this sector. Networking and business-to-business opportunities also appeared as a common motive as many hotels are looking for ways to attract business travelers from organizations with strong sustainability commitments.

Improving waste diversion rate is the most widely-adopted strategy for businesses in this sector. While waste is not the largest emission source for this sector, its impact is significant and businesses often find easy ways to reduce their waste emissions—e.g., composting organics.

Over a half of businesses implement behavioral strategies and purchase simple equipment such as motion sensor or dimmers to reduce their electricity use and cut associated costs.

Natural gas, the largest emission source for the sector, is targeted by many businesses through simple equipment (low flow spray nozzles and programmable thermostats) and behavioral change initiatives such as "turn it off" campaigns for kitchen equipment.

CASE STUDIES

LISTEL HOTEL

heating retrofit initiative

unknown project cost

unknown incentive

$250,000 total investment

$55,000 annual savings

5.5 payback period (years)

18.1% rate of return

150 emissions reduction (tonnes CO_2e)

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. In 2008 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.

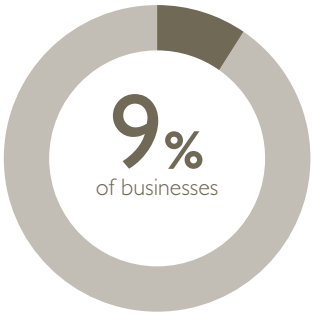
The heat recovery system uses waste heat from the cooling system to pre-heat water and as a support for heating the building. Solar panels also pre-heat water and with the two systems in place, natural gas is used only to heat water 10–20 degrees Celsius rather than approximately 60 degrees Celsius without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

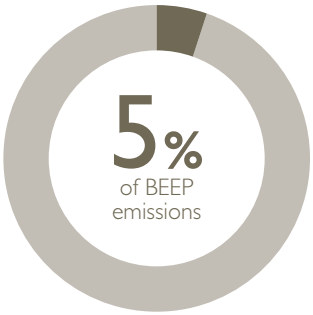
Together the two systems helped reduce GHG emissions from heating by approximately 150 tonnes and costs by over 27% annually. With a grant from NRCan contributing to the purchase of the solar panels, the payback period on the hotel's investment is anticipated to be 5.5 years.

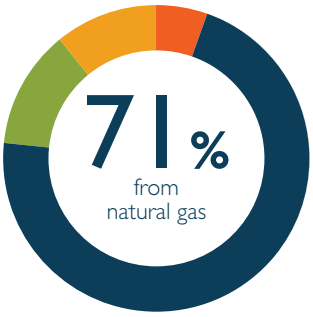
The last fiscal year versus baseline fiscal year saw savings of $43,183 after factoring out commodity-price variation (actual savings were over $55,000). Total cost for the system (after NRCan grant) was roughly $250,000.

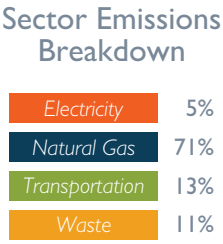
NAICS 81: OTHER SERVICES (EXCEPT PUBLIC ADMINISTRATION)

SECTOR PROFILE









321	employees
65	number of businesses
5	average business size (employees)
1,640	sector emissions (tonnes CO_2e)
22,700	natural gas usage (GJ)
6,320,000	electricity usage (kWh)
210	transportation emissions (tonnes CO_2e)
371	waste generated (tonnes)

The Other Services sector in FCF is composed almost exclusively of auto service businesses. It is the fifth largest sector in the area, including 65 businesses and employing over 300 people. The sector accounts for 9% of businesses, and for 5% of emissions projected in this report. The average business size for the sector is small – 5 employees. The majority of the emissions (71%) come from natural gas, followed by transportation (13%) and waste (11%).

CONCLUSION

This report provides a projected overview of business sector emissions in the False Creek Flats. It highlights the sectors with the highest emissions (Wholesale Trade, Manufacturing, and Administrative and Support, Waste Management and Remediation Services) and identifies specific activities within those sectors that generate them. It allows comparison between sectors and activities, which we hope will serve to inform the City's planning around emissions/energy reduction projects and business engagement programs in the False Creek Flats area.

This study can serve as a foundation for future in-depth sector-specific analysis by Climate Smart and development of business communication pieces and programs.

APPENDIX

SECTOR EMISSIONS DATA TABLE

NAICS Industry Sector	% of Emissions	Total Emissions (tonnes CO_2e)	Natural Gas Use (GJ)	Natural Gas Emissions (tonnes CO_2e)	Electricity Use (GJ / kWh)	Electricity Emissions (tonnes CO_2e)	Transport Emissions (tonnes CO_2e)	Waste Produced (tonnes)	Waste Emissions (tonnes CO_2e)
23 Construction	**8%**	**2,830**	6,900	350	6,800 / 1,893,000	27	1,740	1,498	710
31–33 Manufacturing	**27%**	**9,600**	106,100	5,460	82,800 / 22,996,000	322	2,510	2,757	1,308
41 Wholesale Trade	**31%**	**11,100**	53,600	2,760	81,000 / 22,494,000	315	7,070	2,010	953
44-45 Retail Trade	**3%**	**1,150**	11,600	590	16,400 / 4,552,000	64	380	245	116
51-55 Office-Based Businesses	**6%**	**2,020**	27,500	1,410	30,000 / 8,329,000	117	450	69	33
56 Administrative and Support, Waste Mgmt and Remediation Services	**8%**	**2,910**	3,300	170	6,200 / 1,711,000	24	2,710	21	10
61 Education	**1%**	**330**	5,700	290	5,800 / 1,619,000	23	0	27	13
71 Arts, Entertainment and Recreation	**6%**	**1,980**	35,300	1,820	42,400 / 11,776,000	165	N/A	N/A	N/A
72 Accommodation and Food Services	**7%**	**2,470**	31,100	1,600	14,500 / 4,024,000	56	700	251	119
81 Other Services (Except Public Administration)	**5%**	**1,640**	22,700	1,170	22,700 / 6,320,000	88	210	371	176
TOTAL:	**100%**	**36,040**	**303,800**	**15,630**	**308,600 / 87,715,000**	**1,201**	**15,770**	**7,250**	**3,440**

Note: Projections have been rounded; therefore totals may not exactly match the sum of row values.

FALSE CREEK FLATS
BUSINESS ENERGY AND EMISSIONS PROFILE

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