

Smithers Community Energy and Emissions Plan

Town of Smithers

August 2021



Table of Contents

Acknowledgmentsiv

Executive Summary i

Introduction 8

 Setting a Community GHG Target..... 12

 Backcasting and Forecasting 13

Action Plan 17

The Way We Move 19

 Shift Beyond the Car 20

 Electrify Passenger Transportation..... 22

 Decarbonize Commercial Transportation 24

Where We Live and Work..... 26

 Step Up New Buildings..... 27

 Decarbonize Existing Buildings..... 29

How We Manage ‘Waste’ 31

 Close the Loop on Waste 32

Organizational Big Move 34

 Organizational Leadership 34

Appendix A: Implementation Details..... 36

Appendix B: Other Opportunities	50
Appendix C: Sample Key Performance Indicators.....	51
Appendix D: Climate Action at All Levels	53
Appendix E: Inventory and Modelling Methodology	56
Appendix F: Inventory and Modelling Details.....	61
Appendix G: Engagement Summary	63

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Executive Summary

The Town of Smithers Community Energy and Emissions Plan (CEEP) carves a path towards a low carbon future: A future where Town of Smithers residents experience the benefits of a connected, healthy, and economically prosperous community while taking action on climate change and adapting to climate impacts.

The climate is changing in British Columbia (BC) and globally. The average global temperature has already increased by 1 degree Celsius (°C) above pre-industrial levels. The United Nations Intergovernmental Panel on Climate Change (IPCC) is urging a limit of 1.5°C warming, which would require global emissions to be net-zero by 2050.

The Town of Smithers CEEP focuses on leveraging municipal powers to help residents, businesses, and visitors save energy, emissions, and money. It is residents and businesses in Town of Smithers that have the biggest role: A significant reduction in community greenhouse gas (GHG) emissions depends on their individual choices about how to get around, where to live, and how to handle food waste and yard material. The Plan lays out actions for transportation, buildings, waste, and organizational readiness. Actions fall into three categories:

- **Infrastructure:** Investments into the Town of Smithers owned infrastructure that enable residents to make lower-emissions choices, such as active transportation networks and public charging stations
- **Policy:** Changes to Town of Smithers policy and regulation that lead to energy and emission reductions in the community, such as requirements and incentives for enhanced energy efficiency in new buildings.
- **Engagement:** Outreach, education and incentives that inspire residents and businesses to make choices to reduce energy and emissions and prepare for a low carbon future.

The purpose of this Plan is to outline a practical approach for Town of Smithers to use its municipal powers to help residents and businesses save energy and, by doing so, save money and reduce greenhouse gas emissions.

Smithers Recommended Community Greenhouse Gas Reduction Target

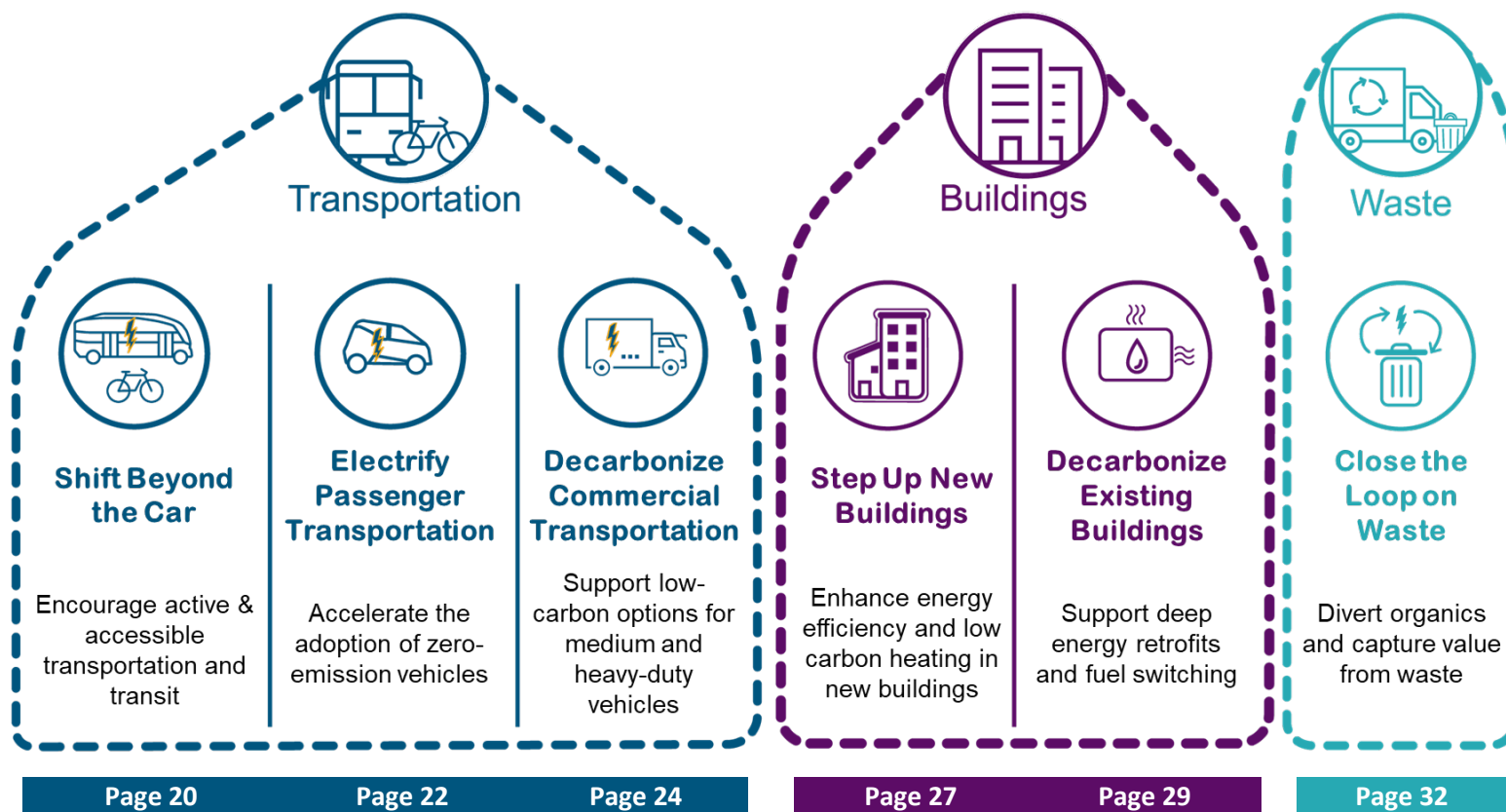
40% reduction from 2007 levels by 2030

100% (Net-zero) by 2050



The Big Moves

The six Big Moves are broad categories of actions that have the biggest impact on reducing emissions in the community. The Big Moves focus on the types of emissions that are most in control of the local government and that are measured in the emissions inventory. The CEEP lays out strategies and actions under each of the six Big Moves.



There is one more important category of actions – Organizational Leadership. This “seventh Big Move” is very important because it ensures that climate action becomes a part of the Town of Smithers’s regular decision-making and operational process. **Page 34**

Our Community’s Low Carbon Vision

During the CEEP planning process, community stakeholders went through a visioning exercise called “backcasting” to imagine what a low carbon future for Town of Smithers could look like. The group chose 2040 as the visioning year to allow for a slightly longer time horizon than 10 years but short enough to imagine the changes happening.

In 2040, emissions in the Town of Smithers will be reduced by at least 70%. The water and the air we breathe will be cleaner and natural systems will be thriving. In 2040, you will walk out the front door into a liveable community where construction with wood is common and natural spaces are abundant. A variety of new mobility services are available to support the needs of all residents and visitors. You can also choose to travel by e-bike, scooter or zero-emission public transit.

The air in Town of Smithers is cleaner because there are far fewer cars on the street and most are electric. There is less noise and much more space for parks and pedestrian-only streets as active and alternative transportation has been prioritized.

People are trying out new types of living arrangements with more shared functions and spaces. Houses are continued to be built with wood, which makes them more comfortable to live in and much better for the climate.

In addition to this community vision, workshop participants defined success for each major sector of community emissions:

The Future of Transportation	The Future of Buildings	The Future of Waste
A complete zero-emission transportation system connects our community and region.	Our community’s buildings are exceptionally energy efficient, and powered, heated and cooled with 100% renewable energy.	Our community diverts all of our organic waste, such as food scraps and yard trimmings, from landfills and recovers value from everything that enters the waste stream.

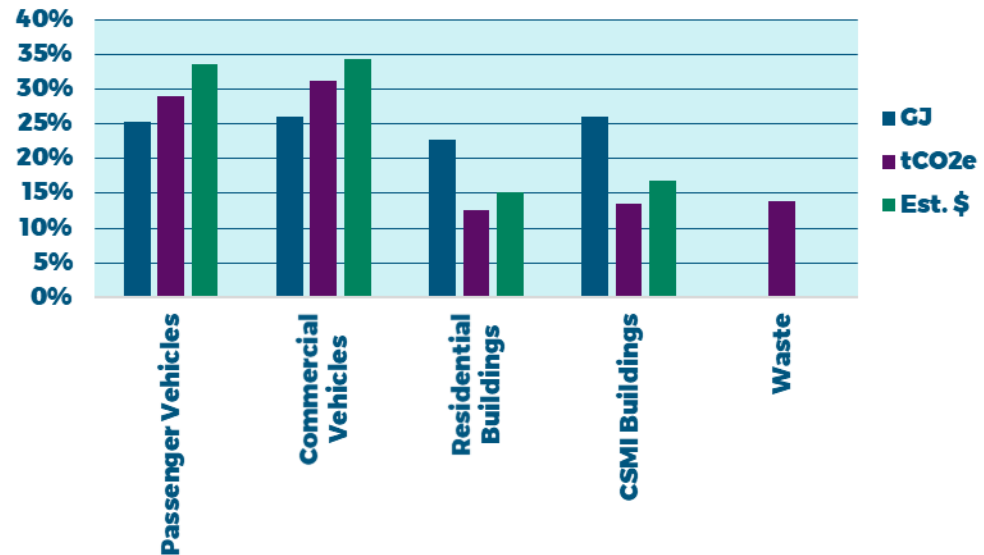
Where We're Starting From

Understanding where we're starting from is just as important as knowing where we want to get to. After visioning, the next phase of the "backcasting" approach identifies our starting point – the current state. Participants identified the current state of buildings, transportation, and waste in Town of Smithers.

Smithers is a small rural community with a population of 5,400 people. The community is growing at a rate of 0.5% per year, with most growth occurring in suburban areas. The majority of our residential buildings are single-family homes, except for a small number of low rise apartment buildings near the town centre. Most residents get around by car and truck, however Smithers has started making roadway improvements to make walking and cycling safer and more convenient. The Town of Smithers operates one level 2 electric vehicle charging station, with another two expecting to be installed through the Charge North program, and two Level 3 fast chargers to be installed by BC Hydro. There is currently no organic waste pick up service or local processing facility, however the Regional District of Bulkley-Nechako administers a rebate program for home composter purchases.

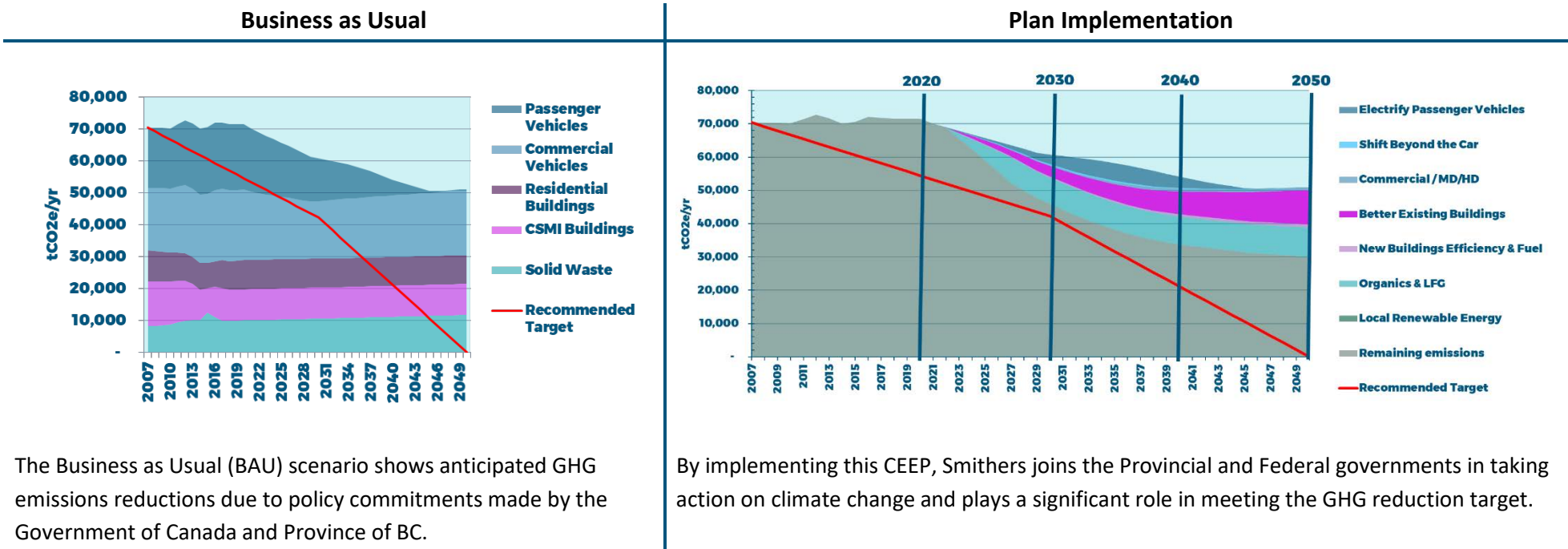
Current Energy, Emissions and Costs by Sector

The current state of energy end emissions is shown in the graph below for each sector.





Working Towards our Future Vision and Target





This CEEP carves a pathway towards our low carbon vision and emissions reduction target of 40% below 2007 levels by 2030. The two graphs below compare the business as usual scenario with the implemented plan scenario.



Plan Summary

Big Move	Strategy	Timeframe ¹		
		Short	Med	Long
Shift Beyond the Car 	SHIFT 1: Optimize land use planning tools to enable compact community growth			
	SHIFT 1.1 – Optimize policies and bylaws for compact growth			
	SHIFT 2: Enable walking, cycling and other forms of zero emission mobility			
	SHIFT 2.1 – Build safe routes for walking, cycling and other forms of zero emission mobility			
	SHIFT 2.2 – Develop and deliver an active transportation outreach strategy			
	SHIFT 2.3 – Normalize car-free and zero-emission zones			
	SHIFT 2.4 – Promote micro e-mobility and on-demand mobility services			
	SHIFT 3: Promote transit ridership and develop a zero emissions transit network			
	SHIFT 3.1 – Promote transit ridership			
	SHIFT 3.2 – Develop a zero emissions transit network			
Total GHG emissions reductions for this Big Move		344 tCO_{2e} by 2030		
Electrify Passenger Transport 	ELECTRIFY 1: Enable charging on-the-go			
	ELECTRIFY 1.1 – Design, fund and build a public EV charging network			
	ELECTRIFY 2: Enable charging at home and work			
	ELECTRIFY 2.1 – Adopt EV-ready building requirements			
	ELECTRIFY 2.2 – Enable EV charging in existing residential and commercial buildings			
	ELECTRIFY 3: Encourage EVs through outreach and supportive policies			
	ELECTRIFY 3.1 – Develop and deliver an EV outreach strategy			
	ELECTRIFY 3.2 – Provide incentives for EV adoption			
	ELECTRIFY 3.3 – Lead by example - Electrify the corporate fleet and providing workplace charging			
Total GHG emissions reductions for this Big Move		2,848 tCO_{2e} by 2030		
Decarbonize Commercial Transport	COMMERCIAL 1: Accelerate the adoption of ZEVs for commercial fleets			
	COMMERCIAL 1.1 Develop a Community Vision and Strategy			
	COMMERCIAL 1.2 Engage Commercial and Industrial Stakeholders			
	COMMERCIAL 2: Lead by example by transitioning municipal fleet			

¹ Refer to legend on page 18

Big Move	Strategy	Timeframe ¹		
		Short	Med	Long
	COMMERCIAL 2.1 – Update corporate policies to prioritize low carbon options			
	Total GHG emissions reductions for this Big Move	228 tCO _{2e} by 2030		
	NEW BUILDINGS 1: Adopt the Energy Step Code with a low carbon approach			
	NEW BUILDINGS 1.1 – Adopt the Energy Step Code			
	NEW BUILDINGS 1.2 – Prioritize a low-carbon approach			
	NEW BUILDINGS 2: Build Industry Capacity			
	NEW BUILDINGS 2.1 – Provide outreach and incentives			
	NEW BUILDINGS 2.2 – Provide training and coordination			
	Total GHG emissions reductions for this Big Move	382 tCO _{2e} by 2030		
	EXISTING BUILDINGS 1: Improve Energy Efficiency and Enable Fuel Switching			
	EXISTING BUILDINGS 1.1 – Encourage and enable deep energy retrofits.			
	EXISTING BUILDINGS 1.2 – Engage utilities to support local retrofit programs			
	EXISTING BUILDINGS 2: Encourage and Enable Fuel Switching			
	EXISTING BUILDINGS 2.1 – Encourage and enable building electrification			
	EXISTING BUILDINGS 2.2 – Lead by example: Corporate policies that prioritize low carbon retrofits			
	EXISTING BUILDINGS 3: Build Industry Capacity and Increase Market Demand			
	EXISTING BUILDINGS 3.1 – Establish a long-term marketing campaign			
	EXISTING BUILDINGS 3.2 – Build industry capacity			
	Total GHG emissions reductions for this Big Move	3,152 tCO _{2e} by 2030		
	WASTE 1: Divert Organics from Landfill			
	WASTE 1.1 – Adopt policies that increase organics diversion.			
	WASTE 1.2 – Implement (or enhance) organics collection and processing.			
	WASTE 1.3 – Divert construction, demolition, agricultural, and industrial wood waste.			
	WASTE 1.4 – Develop and deliver a comprehensive zero-waste outreach program			
	WASTE 2: Advocate to RDBN to Evaluate Landfill Gas			
	WASTE 2.1 – Advocate to RDBN to evaluate opportunities for landfill gas capture			
	Total GHG emissions reductions for this Big Move	7,898 tCO _{2e} by 2030		
Total Plan Reductions		14,868 tCO_{2e} by 2030		

Introduction

Municipal Commitment

The Town of Smithers, like most communities across British Columbia, is responding to climate change. Town of Smithers signed on to the BC Climate Action Charter, which is a voluntary agreement between the Province of British Columbia, the Union of B.C. Municipalities, and individual local government signatories. Local governments commit to:

- Carbon neutrality in corporate operations;
- Measure and report their corporate greenhouse gas emissions; and
- Create complete, compact, and more energy-efficient communities.

Provincial legislation – the Local Government (Green Communities) Statutes Amendment Act (Bill 27, 2008) – also requires that each local government establish targets, plans, and strategies to do their part to mitigate climate change. Having an up-to-date plan such as this Community Energy and Emissions Plan (CEEP) helps with this, and also makes Town of Smithers ready to apply for funding from the Federal or Provincial governments and other funders to implement strategies in the plan.

Implementing the plan will result in numerous social, economic and environmental benefits to the community, as outlined in Figure 1.

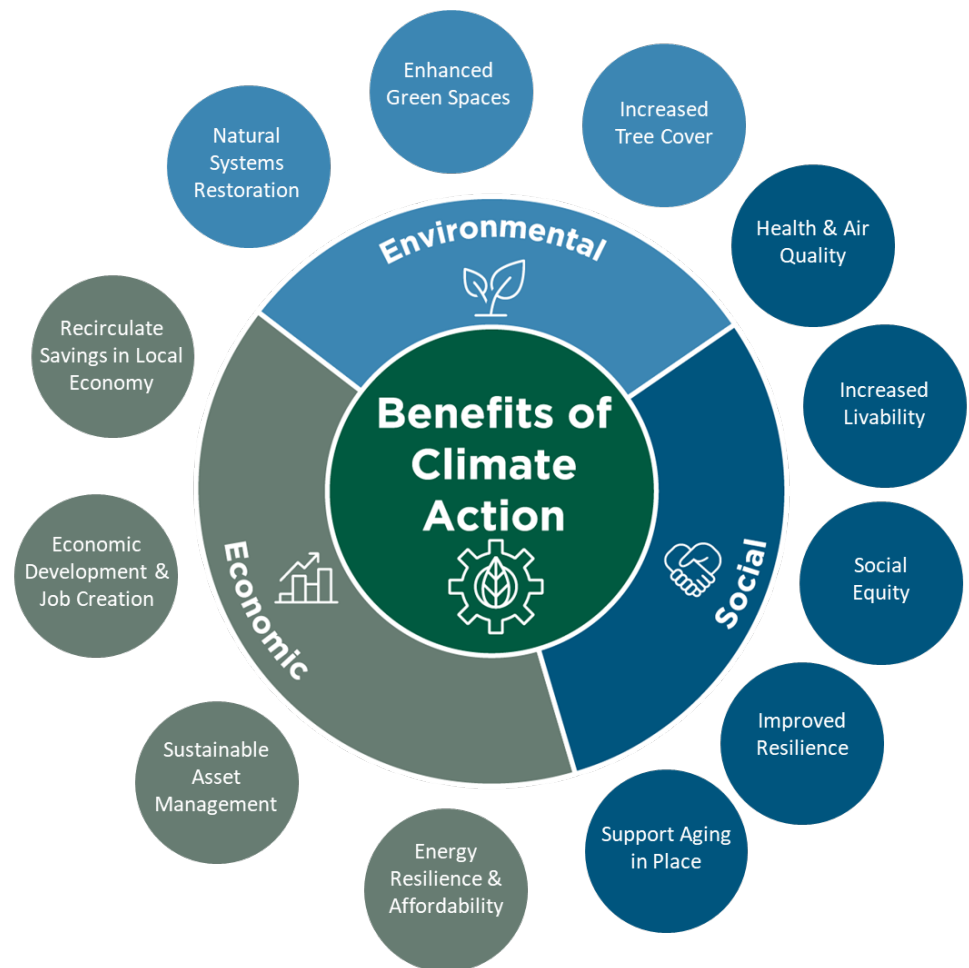


Figure 1 - Climate Action Co-Benefits

Local governments take climate action by:

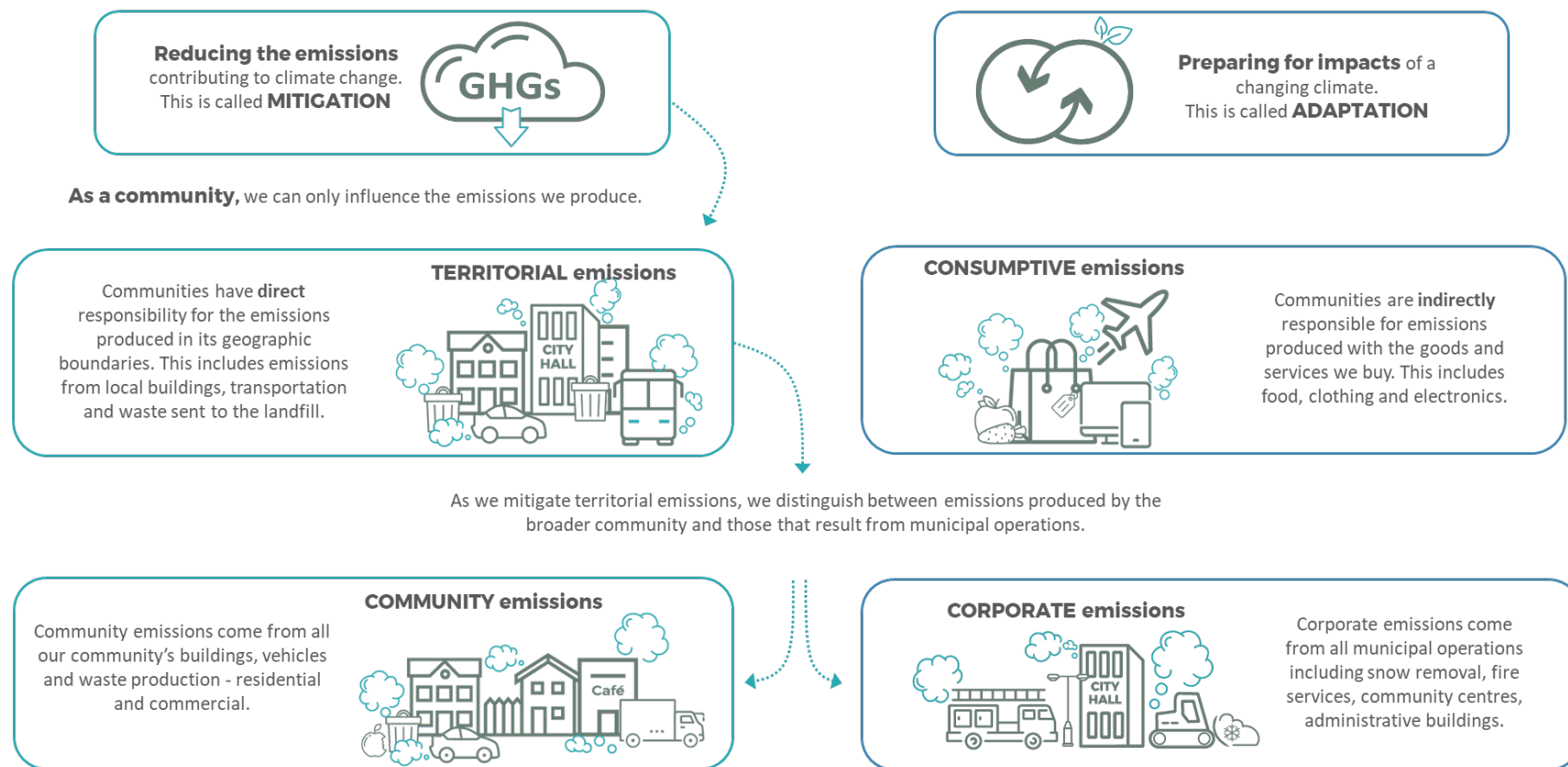


Figure 2 – Local Government Climate Action - The scope of this plan includes the elements on the left: mitigation, territorial emissions, and community emissions

What is the Community Energy and Emissions Plan?




Climate action consists of both reducing emissions, or *mitigation*, and preparing for the impacts of a changing climate, or *adaptation*. This Community Energy and Emissions Plan (CEEP) is an important component of a local government's overall climate action strategy, which should also include a plan to address emissions from the local government's own operations and a climate adaptation plan.

The Town of Smithers CEEP focuses on leveraging municipal powers to help residents and businesses save energy, emissions, and money. It is residents and businesses in Town of Smithers that have the biggest role: A significant reduction in community greenhouse gas (GHG) emissions depends on their individual choices about how to get around, where to live, and how to handle food waste and yard material. Successful implementation of this plan depends on ongoing, sustained engagement to help residents and businesses sort through what their choices are and how those choices impact the direction of the community.

The Plan lays out actions across 7 Big Moves for transportation, buildings, waste, and organizational readiness.



Actions fall into three categories of municipal powers:

Infrastructure	Policy & Regulation	Engagement & Outreach
 <p>Investments into the Town of Smithers owned infrastructure that enable residents to make lower-emissions choices, such as active transportation networks and public charging stations</p>	 <p>Changes to Town of Smithers policy and regulation that lead to energy and emission reductions in the community, such as requirements and incentives for enhanced energy efficiency in new buildings.</p>	 <p>Outreach, education and incentives that inspire residents and businesses to make choices to reduce energy and emissions and prepare for a low carbon future.</p>



Also, look for this icon to see what actions the Town of Smithers are taking on their own assets to demonstrate leadership on climate action.

Process



Modelling & Analysis

- Review and analyze community energy use and emissions in relation to baseline year
- Model “business as usual” projections



Engagement

- Conduct a staff workshop to review existing and possible future actions, and discuss GHG emission reduction targets
- Facilitate a stakeholder workshop to gather feedback on potential climate actions and how stakeholders may collaborate on climate initiatives
- Host a public open house to receive input from community members on priority action items



Recommend Actions and Draft Plan

- Draft potential actions and recommend targets based on engagement, modelling and analysis
- Model the possible impact of new proposed actions and targets on energy use and emissions
- Create an implantation strategy



Deliver Final Plan

- Refine draft plan following feedback from staff
- Present final draft plan to Council
- Community engagement and final edits
- Final presentation to Council

Setting a Community GHG Target

GHG targets provide a quantifiable endpoint for communities to strive for in their climate action journey. They require a baseline year of emissions to be measured against, an end year, and the percentage reduction relative to the baseline year. The target can be short or long term, pragmatic or aspirational, or some combination of both. The Province of BC, Government of Canada have committed to their own GHG targets, and the Intergovernmental Panel on Climate Change (IPCC) has recommended GHG targets necessary to limit global temperature increases to 1.5°C. They are listed below:

	Baseline year	Targets
Province of BC	2007	40% by 2030
		60% by 2040
		80% by 2050
Government of Canada	2005	40-45% by 2030 Net-zero by 2050
IPCC	2010	45% by 2030 Net-zero by 2050

The Town of Smithers did have its own community GHG target of 13% below 2007 levels by 2017. In that time, community emissions have risen by 2%. Therefore, significant action is necessary to bring the community in line with the Provincial and IPCC targets. Combining a shorter term pragmatic target aligned with the Province and long-term aspirational target aligned with IPCC:

The Town of Smithers GHG reduction target is:

40% below 2007 levels by 2030, and net-zero by 2050

See Figure 3 for a comparison of all GHG targets up to 2050.

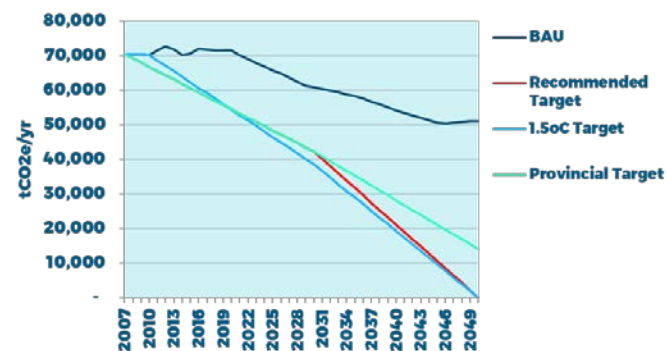


Figure 3 – GHG Targets to 2050

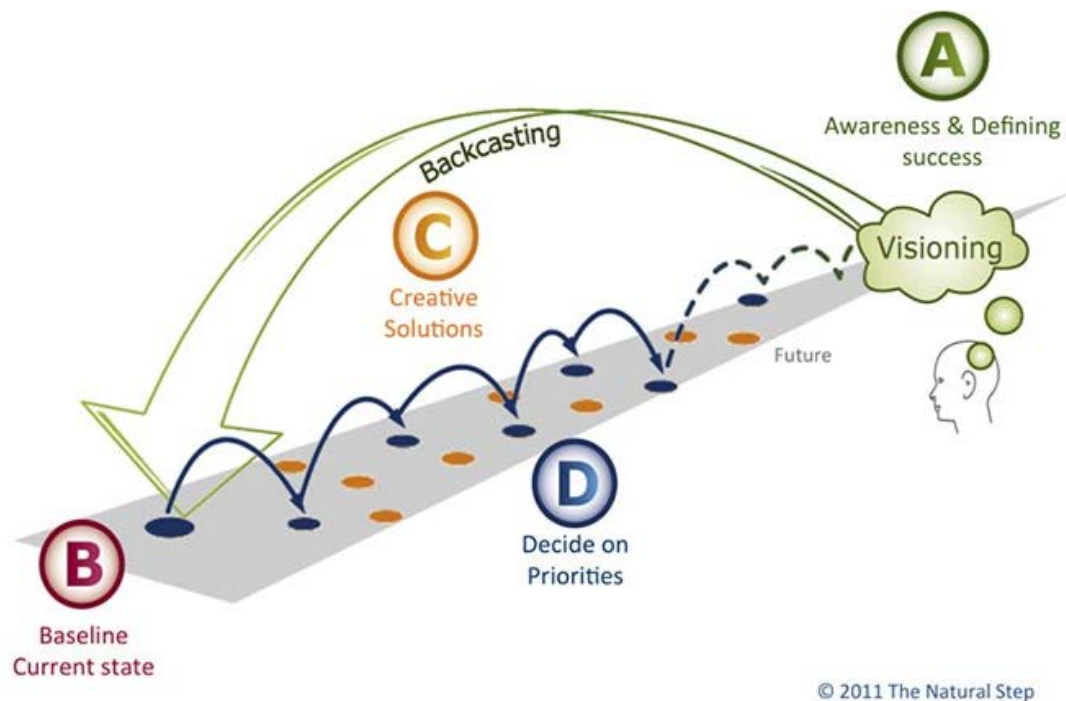


Smithers is also developing a Corporate Energy & Emissions Plan, which has its own recommended GHG target. Since the Town has more control over its own assets, the corporate target is more ambitious: **50% below 2009 levels by 2030, and net-zero by 2050.**

Backcasting and Forecasting

There were two different approaches used in the development of the Smithers CEEP: Forecasting and Backcasting. Forecasting is a common approach used to create estimates of future emissions using current inventory data and projections. Backcasting, on the other hand, starts by imagining the desired future scenario that is not limited by current projections or past experience. Used in combination, these two approaches provide us with a clear positive vision of the future and a measurable plan to start us on the pathway to our destination.

Backcasting Approach: Envisioning our Future



Backcasting is a planning approach that starts by defining the future vision before working backwards to identify and prioritize creative solutions to reach that desired future.

The concept of “backcasting” as used in this planning processes was developed by the Natural Step.

Over the course of two workshops, Town of Smithers staff and stakeholders:

- Developed a vision of their desired low carbon future, focusing on three sectors: transportation, buildings, and waste
- Identified the current state of the sectors
- Brainstormed creative solutions to compliment the Big Moves
- Prioritized the solutions

Forecasting Approach: Inventory and Modelling

Local governments have varying degrees of influence over different sources of emissions within their boundaries. Our emissions come from both ‘local’ sources (emissions that are created here) and ‘global’ sources from local consumption (emissions that include everything from the extraction of raw materials through to processing and transport as well as emissions that may be counted elsewhere but are still ultimately our emissions).

Smithers’s GHG reduction target references only local (territorial) emissions. The major categories of emissions included in this inventory are: buildings (commercial and residential), transportation (passenger and commercial), and waste.

The last complete inventory year dataset available was from 2018, and was used to describe Smithers’s current energy consumption and emissions. See Appendix E: Inventory and Modelling Methodology for a full description.

In 2018, for the whole community of Smithers:

- Total energy consumption is estimated at 1,212,675 GJ
- Total GHG emissions are estimated at 71,567 tonnes of CO₂e
- Total energy expenditures are estimated at \$32,503,962

As Figure 4 shows, commercial and passenger vehicles produced the highest emission splits at 31% and 29%, and considerable cost splits of 34% each. Residential and Commercial-Small Medium and Industrial (CSMI) buildings contributed 13% of emissions each, at a cost split of 15% and 17%, respectively. Figure 5 shows a breakdown of emissions by fuel, with Mobility Fuels at 43,036 tCO₂e (60%), followed by natural gas at 15,345 tCO₂e (21%).

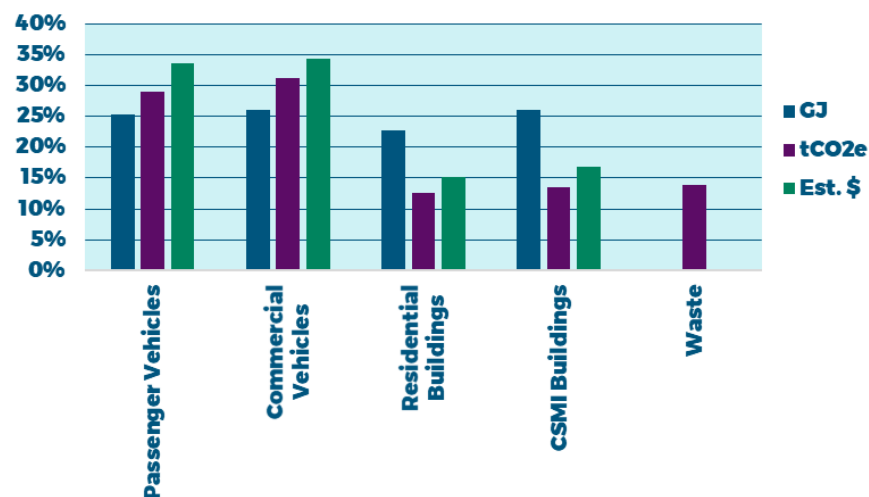


Figure 4 Community Energy, Emissions, and Cost Split in 2018

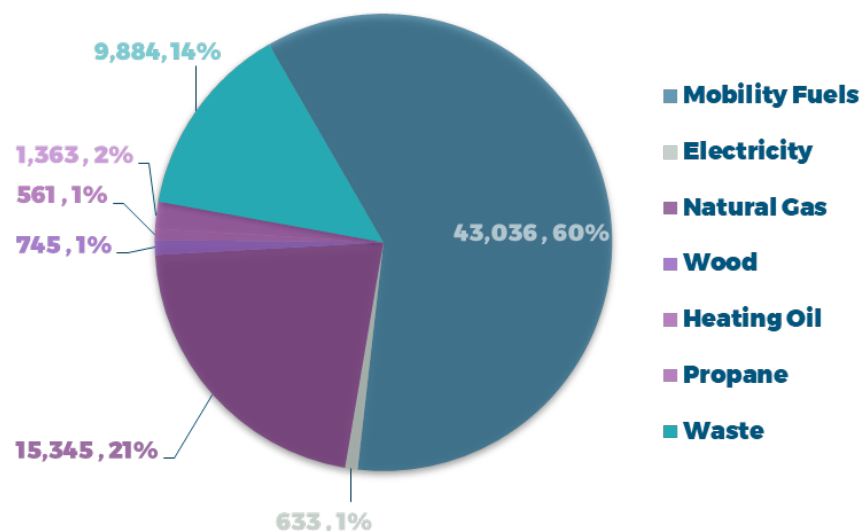


Figure 5 Community Emissions by Fuel in 2018

What does 'Business As Usual' mean?

Business As Usual, or BAU, is a way of describing what is estimated to happen to Smithers's emissions if the Town takes no further action to decrease emissions beyond what they are already doing and plan to do. A number of factors are taken into account to develop BAU emissions scenarios, population growth being one of the most important considerations. As the number of people increase in a community, more buildings are needed/used and more vehicles are driven on roads.

Other considerations that were taken into account to develop Town of Smithers's BAU emissions scenario for this report include the following:

- Changing climate patterns — as warmer winters and hotter summers occur, they are and will continue to change the way that energy is consumed in buildings
- Likely future impacts of policies already adopted by other orders of government, such as:
 - Renewable and low carbon fuel standards
 - Vehicle tailpipe emissions standards
 - Zero-Emission Vehicle (ZEV) mandate as part of the CleanBC Plan, requiring 10% of new vehicle purchases by 2025 as ZEVs, 30% by 2030, and 100% by 2035.
 - The greening of the BC Building Code by 2032 (progressive steps towards net zero energy).

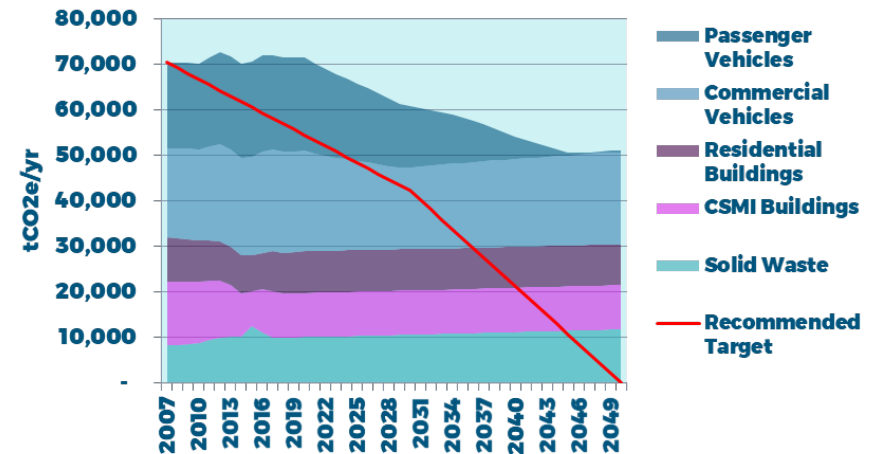


Figure 6 BAU Emissions Projections Breakdown by Sector

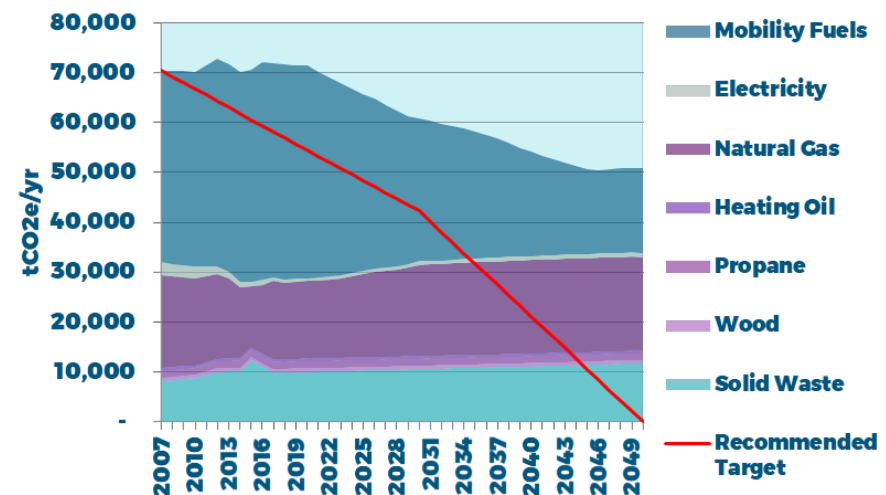


Figure 7 BAU Emissions Projections Breakdown by Fuel

Forecasted Emissions Reductions

Based on the discussions during the workshops, as well as survey results from the public, GHG emissions in 2030 are expected to be reduced by 24,567 tonnes of CO₂/year, or 35% below 2007 levels, nearly achieving the community's 2030 target of 40%. Versus the 2030 BAU scenario, these reductions amount to 14,928 tCO₂e/yr.

Figure 7 provides a breakdown of 2030 reductions vs. 2030 BAU by Big Move. Organics & LFG have the highest reductions at 7,898 tonnes of CO₂e/yr, followed by Electrify Passenger Vehicles at a total reduction of 2,898 tCO₂e/yr, then Better Existing Buildings sub-actions Fuel Switching and Retrofits at 1,168 and 973 tCO₂e/yr, respectively.

Annual reductions by Big Move up to 2050 are shown in Figure 8. In 2050, GHG emissions are reduced by over 40,400 tCO₂e vs. 2007, or 57%. Organics & LFG is the dominant Big Move for reduction throughout, followed by Better Existing Buildings. Of note, reductions from Electrify Passenger Vehicles reduce starting in 2035, as the share of EVs under the project scenario is nearly capped at 100%, while the BAU scenario EV share begins to catch up. Better Existing Buildings become the dominant reduction Big Moves towards 2050.

Note that although the 2050 emission reduction target is not met, this forecast does not account for potential electrification of commercial vehicles on a broad level, nor for possible action at the regional level on organics diversion or landfill gas capture.

For a description of the methodology, see Appendix E: Inventory and Modelling Methodology.

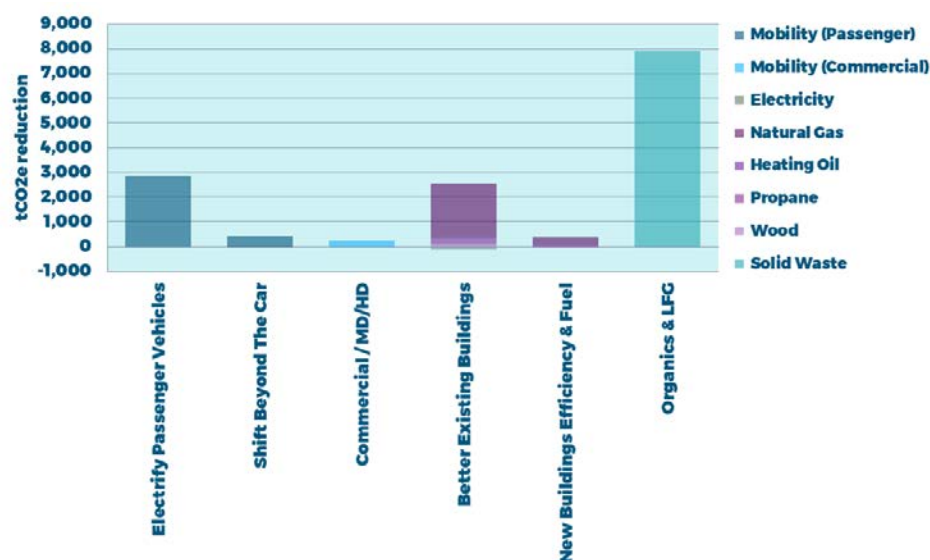


Figure 9 Emission Reductions in 2030 by Big Move

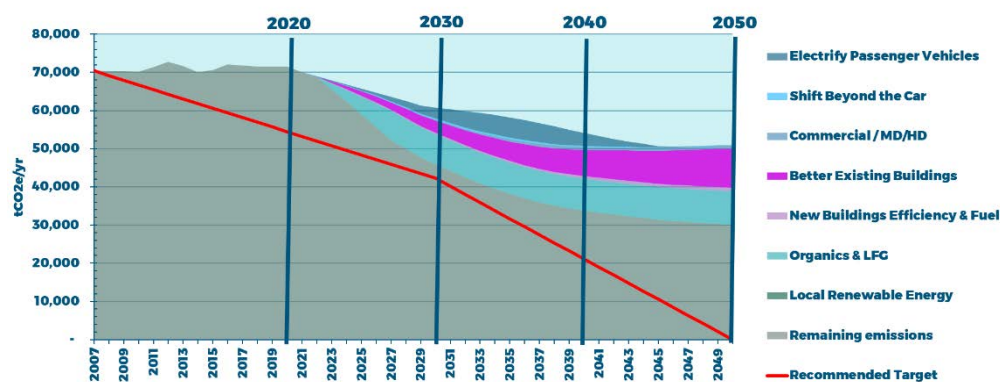
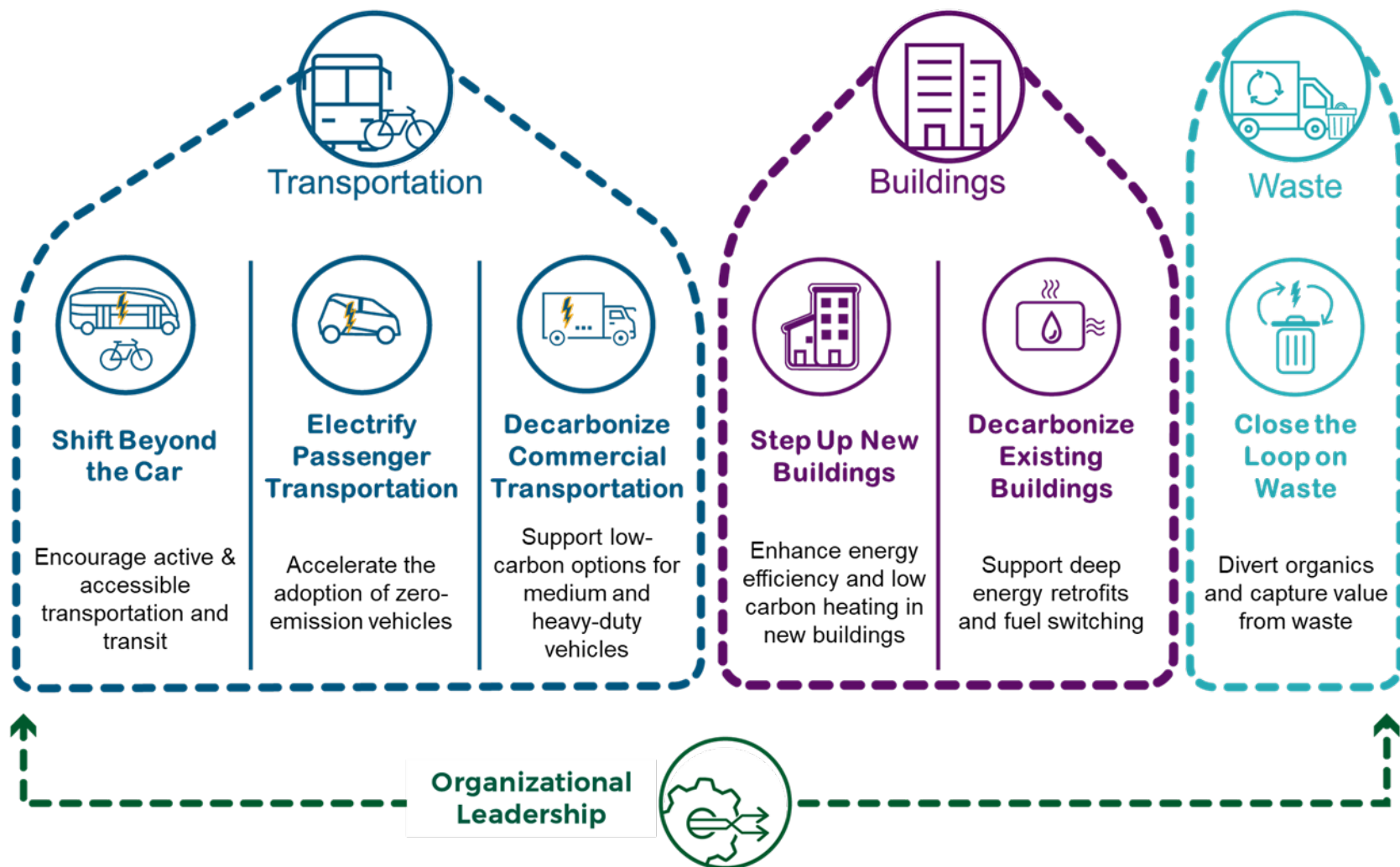



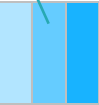
Figure 8 Emission Reductions by Big Move to 2050

Action Plan



Action Plan Guide

The following pages outline each of the six Big Moves – and their associated objectives, strategies and actions – organized by sector (transportation, buildings, and waste). Below is an example of a strategy from Shift Beyond the Car, showing the types of information displayed.

Strategy	Actions Summary	Lever	Time	Cost
SHIFT 1: Compact community growth				
SHIFT 1.1 – Optimize policies and bylaws for compact growth	Apply OPC policies, development permit guidelines and zoning bylaws that focus development in complete, compact centres and transit-oriented corridors.			\$

Objective

Timeframe (short, med, long)




Strategy

Summary of actions under the strategy

Primary local government lever (infrastructure, policy, engagement)

Investment (low, med, high)

Legend

Lever			Timeframe					Cost	Definition	
Infrastructure			Short (1-2 years)					Low	<\$25,000	\$
Policy & Regulation			Medium (3-5 years)					Med	\$25,000 - \$100,000	\$\$
Engagement & Outreach			Long (5+ years)					High	>\$100,000	\$\$\$

Notes:

- Lever: Many strategies utilize more than one local government lever. The following tables show only the primary lever, however Appendix 1: Implementation Plan Details, indicate all levers involved.
- Timeframe: Many strategies span more than one timeframe, with some actions starting in the short term and full deployment of the strategy occurring in the longer term.

The Way We Move



Vision:

A complete zero-emission transportation system connects our community and region.

Current State:

Vehicles are responsible for 58% of the greenhouse gas emissions generated from residents and businesses in Smithers. Transportation fuels such as gasoline and diesel are the largest expenditure on energy in the community at almost \$22 million per year.

Big Moves for Transportation

Shift Beyond the Car



Encourage active and accessible transportation and transit.

Electrify Passenger Transportation



Accelerate the adoption of zero-emission vehicles.

Decarbonize Commercial Transportation



Support low carbon options for medium and heavy-duty vehicles.



Shift Beyond the Car

Encourage active and accessible transportation and transit.

Overview

Walking and cycling are not just weekend recreational activities – they are viable, beneficial, economical and environmentally-friendly modes of transportation. The Town of Smithers can design and build well-connected, accessible, safe and enjoyable routes. This will encourage residents and visitors to choose an active mode of travel such as walking and cycling. Good sidewalks, bike lanes, and trails make active transportation a viable choice when traveling through neighbourhoods, communities, and town centers. The same infrastructure also affords access for those who use mobility aids, such as scooters and wheelchairs.

Planning for a zero-carbon transportation system requires a paradigm shift. Rather than solve traffic and infrastructure problems by expanding roads or building more of them, communities can support all transportation options and facilitate alternative travel choices that reduce the need for more, or bigger roads. Not only does this reduce transportation-related emissions, but this shift can also result in reduced infrastructure and maintenance costs down the road.

Smithers has developed an [Active Transportation Plan](#), which identifies specific infrastructure needs to improve safety and connectivity of the active transportation network.

Looking Forward to 2030

- Half of all trips taken in our community are with active/assisted transportation or transit.
- Streets have been reimagined to prioritize active, public and low carbon transportation options.
- New neighbourhoods are designed to maximize car-free options and are fully connected via bike paths and transit options.
- Appropriate facilities for bike storage and e-bike charging are located in strategic hubs to support emission-free commuting.

Objectives

1. Optimize land use planning tools to enable compact community growth
2. Enable walking, cycling and other forms of zero emission mobility
3. Promote transit ridership and support a zero emissions transit network

Provincial Action








As part of the Province of British Columbia's commitment through [CleanBC](#) to embrace clean and renewable energy across the board, the government developed [Move Commute Connect – B.C.'s Active Transportation Strategy](#). The strategy established a new target for active and assisted transportation:

By 2030, double the percentage of trips taken with active transportation

Federal Action

The Government of Canada's [Pan Canadian Framework on Clean Growth and Climate Change](#) commits to supporting a shift from higher- to lower-emitting modes of transportation as well as investing in infrastructure.

Strategies for Shifting Beyond the Car

Strategy	Actions Summary	Lever	Time	Cost
SHIFT 1: Optimize land-use planning for compact community growth				
SHIFT 1.1 – Optimize policies and bylaws	Apply OCP policies, development permit guidelines and zoning bylaws that focus development in complete, compact centres and transit-oriented corridors.		<div><div></div><div></div><div></div></div>	\$
SHIFT 2: Increase walking, cycling and other forms of zero emission mobility				
SHIFT 2.1 – Build safe routes for walking, cycling and other forms of zero emission mobility	Continuously improve active transportation infrastructure including reconfiguring existing streets and building safe and convenient active transportation paths to connect all neighbourhoods. Identify partner organizations to help lead.		<div><div></div><div></div><div></div></div>	\$\$\$
SHIFT 2.2 – Deliver an active transportation outreach strategy	Connect with community members to learn about their active transportation needs. Dedicate staff time for promotion and education around active transportation.		<div><div></div><div></div><div></div></div>	\$
SHIFT 2.3 – Normalize car-free and zero-emission zones	Beginning with a car free day on a key street 1 day a year, progress to more frequent car free days on a variety of streets. This may lead to a permanent establishment of a car free zone.		<div><div></div><div></div><div></div></div>	\$
SHIFT 2.4 – Promote micro e-mobility and on-demand mobility services	Understand when and where on-demand services are most useful and remove policy barriers and update bylaws. Host awareness events for e-bikes (and other forms of micro mobility) and work with vendors. Work with car sharing and ride hailing providers to expand programs and transition to electric fleets.		<div><div></div><div></div><div></div></div>	\$
SHIFT 3: Promote transit ridership and develop a zero emissions transit network				
SHIFT 3.1 – Promote transit ridership	Promote transit ridership by offering free transit days and celebrating new routes. Ultimately explore universal free transit with transit providers.		<div><div></div><div></div><div></div></div>	\$\$
SHIFT 3.2 – Develop a zero emissions transit network	Work with BC Transit and neighbouring communities to ensure that transit progressively transitions to zero emissions vehicles (e.g. electric)		<div><div></div><div></div><div></div></div>	\$
Total GHG emissions reductions for this Big Move: 344 tCO₂e by 2030				



Electrify Passenger Transportation

Accelerate the adoption of zero-emission vehicles.

Overview

Zero-emission vehicles (ZEVs) are clean, efficient, and cost-effective. In British Columbia, where at least 94% of all electricity is renewable and non-emitting, electric vehicles (EVs) are already a viable near zero-emission option.

The Town of Smithers can make zero-emission vehicles an easier choice for residents and businesses by investing in infrastructure, enacting supportive policies, and by engaging with companies and organizations that operate large fleets. The Town can also deliver community outreach and education on zero-emission transportation choices.

Smithers is already participating in [Charge North](#), a community-led initiative to develop an EV charging network to facilitate travel to and within central and northern BC. The Town can further increase uptake of EVs by responding to future charging needs, hosting outreach events, and supporting private charging in homes and workplaces.

Looking Forward to 2030

- Half of the kilometers driven in our community are by zero emission vehicles.
- New buildings are required to provide an electrified, dedicated service for EV charging.
- A robust and strategically designed charging network ensures infrastructure is available at workplaces and public parking spaces.
- Town of Smithers continues to demonstrate leadership by prioritizing electric for their fleet replacement policy and all service contracts require low emission vehicles as part of municipal contracts.

Objectives

1. Enable charging on-the-go
2. Enable charging at home and work
3. Encourage EVs through outreach and supportive policies

Provincial Action








In May 2019 the Province enacted the [Zero Emissions Vehicle Act](#) to follow through on the transportation commitments in its [CleanBC](#) climate plan. The legislation requires manufacturers to ensure that a steadily increasing proportion of all new light-duty cars and trucks sold or leased in British Columbia will be zero-emission vehicles, leading up to 100% by 2040.

The Province established its [Clean Energy Vehicle Program](#) to support the transition. The program provides incentives to reduce the price of new zero-emissions vehicles and charging stations, and works to raise awareness of the benefits of such vehicles. businesses.

Federal Action

The Government of Canada recently mandated all new passenger vehicles to be zero emission by 2035, while also provides purchase and lease [incentives](#) for new zero-emission vehicles, and offers tax deductions for businesses.

Strategies for Electrifying Passenger Transportation

Strategy	Actions Summary	Lever	Time	Cost
ELECTRIFY 1: Enable charging on-the-go				
ELECTRIFY 1.1 – Design, fund and build a public EV charging network	Leverage grant opportunities to install an annually increasing number of EV charging stations at key locations throughout the community. Collaborate with other local governments on a regional charging network strategy.		<div><div></div><div></div><div></div></div>	\$\$\$
ELECTRIFY 2: Enable charging at home and work				
ELECTRIFY 2.1 – Adopt EV-ready building requirements	Incentivize or require all new homes to be EV-ready including single family homes, townhouses and apartments.		<div><div></div><div></div><div></div></div>	\$
ELECTRIFY 2.2 – Enable EV charging in existing residential and commercial buildings	Work with stratas and property management companies on navigating the process to retrofit existing parking stalls with EV charging equipment.		<div><div></div><div></div><div></div></div>	\$
ELECTRIFY 3: Encourage EVs through outreach and supportive policies				
ELECTRIFY 3.1 – Develop and deliver an EV outreach strategy	Educate builders and developers on EV charging requirements through open houses and workshops. Partner with other organizations to host engagement events such as test-drives and ride-alongs.		<div><div></div><div></div><div></div></div>	\$
ELECTRIFY 3.2 – Provide incentives for EV adoption	Adjust speed limits to enable low-speed EVs on select streets. Provide perks to EV drivers such as priority parking. Incent ride hailing, taxi operators and other fleet operators to switch to EVs.		<div><div></div><div></div><div></div></div>	\$
ELECTRIFY 3.3 – Lead by example - Electrify the corporate fleet and providing workplace charging	Adapt corporate vehicle purchasing policy to incorporate EV purchases at end of life as technology permits. Where technology is unavailable, consider purchasing used vehicles in the interim until technology is available. Install Level 2 chargers for workplace staff to encourage more staff to use EVs.	 	<div><div></div><div></div><div></div></div>	\$\$\$
Total GHG emissions reductions for this Big Move: 2,848 tCO_{2e} by 2030				



Smithers will develop a vehicle purchasing policy that will maximize usage, and consider life-cycle costs and emissions. Zero / low carbon vehicles will be considered as part of this process as technologies mature.



Decarbonize Commercial Transportation

Accelerate the transition to zero emission medium and heavy-duty vehicles

Overview

The Town of Smithers has limited influence over emissions from medium and heavy-duty commercial vehicles; however, these vehicles represent the highest segment of our community emissions at 31%. The Town can start to engage with fleet operators so they are aware of technology changes and can show leadership by transitioning its own fleet.

Looking Forward to 2030

- Commercial fleets have leveraged their investment in charging infrastructure to establish high-powered charging hubs.
- Transit buses and school buses are electric, providing clean, emission-free travel options for the young and old.

Objective

1. Accelerate the adoption of zero-emission vehicles for commercial fleets



Provincial Action

The Province has set targets for 10% of heavy-duty vehicles and 94% of buses to be electric, and 16% of heavy-duty vehicles to run on LNG by 2030.

Federal Action

The Federal Government has set a target of a 40% reduction in tailpipe emission intensity by 2025 from 2015 levels.

Strategies for Decarbonizing Commercial Transportation

Strategy	Actions Summary	Lever	Time	Cost
COMMERCIAL 1: Accelerate the adoption of ZEVs for commercial fleets				
COMMERCIAL 1.1 – Develop a Community Vision and Strategy	Carry out a needs assessment through to 2040 and design a commercial/institutional charging network strategy.		<div><div></div><div></div><div></div></div>	\$
COMMERCIAL 1.2 – Engage Commercial and Industrial Stakeholders	Support a pilot fleet electrification program with a commercial/institutional partner.		<div><div></div><div></div><div></div></div>	\$\$
COMMERCIAL 2: Lead by example by transitioning municipal fleet				
COMMERCIAL 2.1 – Update corporate policies to prioritize low carbon options	Review and integrate contractual requirements for municipal services to require lower emissions vehicles, increasing over time; Update purchasing policy to buy used vehicles if no low-carbon options are available or cost effective.		<div><div></div><div></div><div></div><div></div></div>	\$\$\$
Total GHG emissions reductions for this Big Move: 228 tCO_{2e} by 2030				



Smithers will develop a vehicle purchasing policy that incorporates elements of fleet certification policies such as E-Fleet. The policy will include fuel monitoring, optimizing fleet routes, and efficient vehicle use.

Where We Live and Work



Vision:

Our community's buildings are exceptionally energy efficient, and powered, heated and cooled with 100% renewable energy.

Current State:

Our homes and commercial buildings are responsible for 26% of the greenhouse gas emissions generated in Town of Smithers. The vast majority of emissions are from natural gas used for space and water heating.

Big Moves for Buildings

Step Up New Buildings



Enhance energy efficiency and low carbon heating in new buildings

Decarbonize Existing Buildings



Support deep energy retrofits and fuel switching



Step Up New Buildings

Enhance energy efficiency and low carbon heating in new buildings

Overview

While existing buildings generate the majority of building-related greenhouse gas emissions, local governments have greater authority to influence new construction. They can do so via the BC Energy Step Code, a section of the BC Building Code that local governments may use to require or incentivize better-than-code energy performance in new construction. While the Step Code is a great tool for improving overall building energy performance, it does not explicitly address emissions from new buildings. Local governments can influence emissions by implementing the regulation in tandem with incentives that target zero-emission heating and cooling systems or opting-in to Provincial GHG regulation when available.

Smithers is growing at a rate of 0.5%. (Or, there are about 16 new dwelling units constructed every year in Smithers.) Every new building built to minimum code standards is a lost opportunity for improved energy efficiency and reduced carbon emissions and is one more building that will have to be retrofitted down the road.

Looking Forward to 2030

- All our community's new buildings are built to meet the requirements of the top step of the BC Energy Step Code, and use only zero carbon energy sources for space and water heating.
- The building industry is now focused on whole building performance, as opposed to prescriptive code requirements.
- Energy performance is quantified and verified, so homeowners and buyers now have a better understanding on the long-term operations cost of the home.
- Homes are quiet, comfortable and durable. Energy costs are minimized through efficient design that reduces demand.

Objectives

1. Adopt the Energy Step Code with a low carbon approach
2. Build industry capacity

Provincial Action

The province's CleanBC climate plan outlines the dates when the base *BC Building Code* will adopt BC Energy Step Code performance targets:





- In 2022, all new buildings will be 20% more energy efficient than those built to meet today's minimum code requirements.
- By 2027, all new buildings will be 40% more energy efficient
- By 2032, all new buildings will be "net zero energy ready" and 80% more energy efficient.

CleanBC [Better Homes](#) links homeowners and residential builders to rebates and resources, and CleanBC [Better Buildings](#) provides funding and capital incentives to encourage energy efficient design, construction and renovation in larger buildings.

Federal Action

Natural Resources Canada's [Build Smart: Canada's Buildings Strategy](#) establishes the goal that all provinces and territories will adopt a net-zero energy-ready model building code by 2030.

Strategies for Stepping Up New Buildings

Strategy	Actions Summary	Lever	Time	Cost
NEW BUILDINGS 1: Adopt the Energy Step Code with a Low Carbon Approach				
NEW BUILDINGS 1.1 – Adopt the Energy Step Code	Begin by adopting one of the lower levels of the Energy Step Code with a plan to move up through the levels. Adopt policies and programs to incentivize adoption of higher steps, e.g. subsidies for Energy Advisors and blower door tests			\$
NEW BUILDINGS 1.2 – Prioritize a low-carbon approach	Opt-in to Provincial carbon metrics for new buildings if/when they become available or adopt a tiered approach (e.g. Step 3 or Step 2 with a low carbon energy system).			\$
NEW BUILDINGS 2: Build Industry Capacity				
NEW BUILDINGS 2.1 – Provide outreach and incentives	Promote existing Clean BC new construction incentives and provide additional incentives to subsidize costs of working with an Energy Advisor and/or mid-construction testing.			\$
NEW BUILDINGS 2.2 – Provide training and coordination	Collaborate across the region to provide relevant training to the building industry and realtors. Assemble a list of local or regional Energy Advisors and develop a plan to train more Energy Advisors in the area.			\$
Total GHG emissions reductions for this Big Move: 382 tCO_{2e} by 2030				



Smithers will employ energy efficient building practices, including the Energy Step Code, to future proof assets. This will reduce GHG emissions, limit risk to energy volatility, and improve resiliency to a changing climate.



Decarbonize Existing Buildings

Support deep energy retrofits and fuel switching

Overview

In 2030, 90% of the all buildings in Smithers will be ones that are already standing today. Many buildings use more energy than is necessary. Owners of 20-year-old natural gas-heated homes can lower their energy bills by as much as 30% through energy efficiency retrofits and reduce about 1.1 tonnes of greenhouse gas emissions per year. Homeowners can pursue various degrees of building energy retrofits—from replacing individual pieces of equipment to comprehensive overhauls of the whole building, known as deep energy retrofits.

Deep energy retrofits involve changes to the entire building, including insulation, windows and doors, and air barrier, as well as ventilation and space and water heating equipment. To ensure emissions reductions as well as energy reductions, the energy retrofit must include fuel switching, from fossil fuel sources to zero-carbon sources such as electricity. Such projects usually rely on the expertise of an energy advisor, who conducts energy modelling and airtightness testing.

The Town of Smithers has limited jurisdiction over requirements for existing building retrofits but has an opportunity to influence and enable building owners to make investments in the energy efficiency of their buildings. The Province has committed to an Alterations Code for existing buildings by 2024, so the Town can participate in consultation as that regulation is being developed.

Looking Forward to 2030

- 30% of buildings will have undergone deep energy retrofits
- All replacement heating and hot water systems are zero emissions, powered by electricity.

Objectives

1. Improve energy efficiency
2. Encourage and enable fuel switching
3. Build industry capacity and increase demand


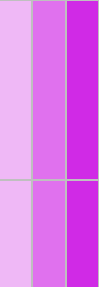

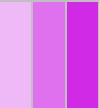




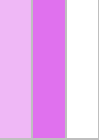

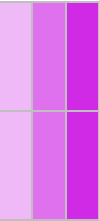

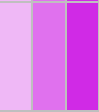
Provincial Action

CleanBC [Better Homes](#) links homeowners and renovators to rebates and resources, and CleanBC [Better Buildings](#) provides funding and capital incentives to encourage energy efficient renovation in larger buildings. The Province is currently working on an Existing Buildings Renewal Strategy, which will enable increased energy efficiency retrofits in the existing building stock.

Federal Action

The Government of Canada's [Home Energy Retrofit Initiative](#) provides grants for energy efficiency upgrades and free EnerGuide assessments. The program also supports training Energy Advisors across Canada to meet increasing demand.

Strategies for Decarbonizing Existing Buildings

Strategy	Actions Summary	Lever	Time	Cost
EXISTING BUILDINGS 1: Improve Energy Efficiency				
EXISTING BUILDINGS 1.1 – Encourage and enable deep energy retrofits.	Educate building owners about how to make their home or business more energy efficient and the benefits of doing so, including resources such as <i>Better Homes</i> and <i>Better Buildings BC</i> . Help building owners to understand the rebates and incentives available. Explore financing options to assist homeowners with implementation of energy retrofits. Increase the use of energy labelling and benchmarking.			\$
EXISTING BUILDINGS 1.2 – Engage utilities to support local retrofit programs	Work with BC Hydro and PNG to target retrofit incentives and funding for Smithers residents			\$
EXISTING BUILDINGS 2: Encourage and Enable Fuel Switching				
EXISTING BUILDINGS 2.1 – Encourage and enable building electrification	Identify and remove barriers to heat pump installation, including streamlining permitting processes, optimizing noise regulations, and restructuring permit fees. Continue topping-up Provincial air source heat pump incentives through Bring it Home 4 the Climate .			\$
EXISTING BUILDINGS 2.2 – Lead by example: Corporate policies that prioritize low carbon retrofits	Town of Smithers does have some energy efficiency studies already complete. Funding to complete upgrades could be identified. Integrate carbon and energy efficiency into decision making matrix.	 		\$\$
EXISTING BUILDINGS 3: Build Industry Capacity and Increase Market Demand				
EXISTING BUILDINGS 3.1 – Establish a long-term marketing campaign	Establish a 10-year program for a community-wide marketing campaign to encourage building envelope improvements, electrification or other low carbon fuel sources.			\$
EXISTING BUILDINGS 3.2 – Build industry capacity	Educate renovators and realtors on energy efficiency and low carbon choices for space and water heating, provide incentives for energy advisors to increase knowledge around opportunity			\$
Total GHG emissions reductions for this Big Move: 3,152 tCO₂e by 2030				



Smithers will be conducting energy audits on its corporate buildings, and implementing high priority, high impact actions. Energy management will also be built into building maintenance procedures.

How We Manage 'Waste'



Vision:

Our community diverts all of our organic waste, such as food scraps and yard trimmings, from landfills and recovers value from everything that enters the waste stream.

Current State:

Organic waste ending up in our landfill accounts for 14% of our communities GHG emissions. Currently, Town of Smithers does not have an organics collection program or processing facility, however the Regional District of Bulkley-Nechako does have a rebate program for purchasing home composters.

Big Move for Waste

Close the Loop on Waste



Divert organics and capture value from waste

How We Manage 'Waste'



Close the Loop on Waste

Divert organics and capture value from waste

Overview

Emissions from waste occur when organic waste mixed in with garbage decomposes in the landfill and produces methane, a potent greenhouse gas that is released into the atmosphere. Organic waste makes up about 35-40% of landfill waste, and includes food waste from homes and businesses, yard and garden waste, wood waste, and paper that cannot be recycled, such as food-soiled paper. Organic material decomposes over approximately 10 years in the local landfill. Organic diversion reduces or eliminates the new waste added every year but the waste that is already in place at the landfill continues its decomposition process. Because of this, it takes a number of years for the emissions reductions from organics diversion to scale up. Of course, how much waste is diverted (the diversion rate) is key to emissions savings.

By diverting organic waste from the landfill, it can be turned into compost that can be sold. There are other technologies that can capture value from the waste stream, such as landfill gas capture, biogas digesters, gasification plants, and waste heat recovery systems. Part of this Big Move is investigating opportunities for these technologies locally or regionally.

Looking Forward to 2030

- All of our community's residential food and yard waste will be converted to useable compost at a regional processing facility
- All construction, demolition, agricultural, and industrial wood waste will be collected

Objectives

1. Divert organics from the landfill
2. Capture landfill gas and/or explore other resource recovery technologies






Provincial Action

The Province of British Columbia has committed to ensuring that, by 2030, 95% of organic waste will be diverted from landfills, and 75% of landfill gas will be captured. The province has also committed to fund workforce training.

Federal Action

The Government of Canada, through its Investing in Canada Infrastructure Program (ICIP) provides funding for infrastructure that enables resource recovery, such as generating renewable fuel from waste.

Strategies for Closing the Loop on Waste

Strategy	Actions Summary	Lever	Time	Cost
WASTE 1: Divert Organics from Landfill				
WASTE 1.1 – Adopt policies that increase organics diversion.	Initiate staff consultation on organics, processes and targets. Adopt organics diversion targets for the community.		<div><div></div><div></div><div></div></div>	\$
WASTE 1.2 – Implement (or enhance) organics collection and processing.	Support RDBN with their composting program, and ensure infrastructure for Town residents is prepared - Implement curbside kitchen waste collection for single-family homes. Install central collection points that are regularly picked up for multi-family units, work camps, etc.		<div><div></div><div></div><div></div></div>	\$\$
WASTE 1.3 – Divert construction, demolition, agricultural, and industrial wood waste.	Identify wood waste landfills in the community, develop inventory, and attempt to evaluate opportunity from those. Identify and pursue options to support and grow the market for salvaged forest clearing and deconstruction materials.		<div><div></div><div></div><div></div></div>	\$
WASTE 1.4 – Develop and deliver a comprehensive zero-waste outreach program	A zero-waste outreach program may include community-led composting projects, school programs, participation in Provincial “Love Food Hate Waste” campaign and education around source-separation requirements.		<div><div></div><div></div><div></div></div>	\$\$
WASTE 2: Advocate to RDBN to Evaluate Landfill Gas Capture				
WASTE 2.1 – Advocate to RDBN to evaluate opportunities for landfill gas capture	Advocate to Regional District of Bulkley-Nechako to analyze the opportunities for landfill gas capture, including potential to capture and sell to the gas grid.		<div><div></div><div></div><div></div></div>	\$\$
Total GHG emissions reductions for this Big Move: 7,898 tCO₂e by 2030				

Organizational Big Move



Organizational Leadership

Implementation for Success

Several key factors are important for the successful implementation of community energy and emission reduction plans based on research conducted by CEA, QUEST, and Smart Prosperity.² Among others, they include establishing broad support for implementation, building staff and financial capacity for implementation, and institutionalizing the plan in order to withstand political and staff turnover.

With regards to institutionalization, ideas on how this can be done are shown in the table below.

Incorporate	Embed climate action into other planning documents such as the OCP, bylaws and policies, and departmental/master plans. Climate action could also be incorporated into Town staff job descriptions. Some communities report on climate action or sustainability implications in reports to Council.
Budget	Embed climate action into the budgeting process.
Monitor	Monitor indicators as outlined in the Monitoring and Evaluation section.
Convene	Host regular meetings to discuss implementation with internal and/or external stakeholders.
Report	Report regularly to Council on progress and accomplishments. Annual reporting is recommended. It can be integrated with CARIP, or equivalent, reporting.
Renew	Prepare for plan renewal approximately every five years.

Monitoring and Evaluation

Monitoring and evaluating the implementation of the Community Energy & Emissions Plan is critical for its success. Key Performance Indicators (KPIs) enable communities to measure the outcomes of a plan's implementation. When KPIs are monitored regularly, communities can determine how to best allocate resources to support implementation, and what success different actions are having.

Suggested indicators are shown in Appendix B.

² Community Energy Implementation Framework, <https://questcanada.org/project/getting-to-implementation-in-canada/?dc=framework>

Funding

Funding sources that communities typically use for climate action are shown in the table below.

Internal Funding Sources	External Funding Sources
<ol style="list-style-type: none">1. Allocation from operating budget2. Revolving energy efficiency fund (from corporate projects)3. Forgone revenue (charge less for a municipal service to use the difference to fund a climate initiative)4. General revenue (e.g. property taxes)5. Recycling and solid waste user fees6. Building permit fees and other service fees charged by Development Services7. Electrical utility and water user fees8. Replacement funding for CARIP for climate action (if available)	<ol style="list-style-type: none">1. UBCM Gas Tax Agreement Funds2. FCM's Green Municipal Fund supports plans, studies, capital projects and pilot projects for environmental initiatives in a number of focus areas3. Federal government programs such as the Low Carbon Economy Challenge and Clean Energy Innovation Program4. Provincial government programs such as the Clean Energy Vehicle Program, BikeBC Program, and CleanBC Communities Fund5. Emotive grants for EV educational events to foster greater EV adoption6. CleanBC and PNG energy efficiency incentives for new home construction and for increasing energy efficiency in existing buildings7. BC Housing and PNG for education or demonstration projects to encourage the building industry to construct low energy and GHG emission homes.




Appendix A: Implementation Details

The following pages include detailed template actions for each of the Big Move strategies. The actions are presented in four tiers: Tier 1 represents foundational actions that any community can begin with and Tier 4 represents full deployment of the strategy. The Big Move will be considered fully deployed when all four tiers are complete. Highlighted columns indicate the level of implementation modelled in the Town of Smithers CEEP.

At the bottom of each column is the relative cost, uncertainty, difficulty, and impact of each tier of the Big Move.

Cost	Low – Staff time and minimal consulting fees	Moderate – More extensive staff time and consulting fees	High – Capital investments, new staff positions
Uncertainty	Low – History of success in other jurisdictions and clear policy direction	Moderate – Some previous examples or studies and likely policy direction	High – Significant dependence on Sr. Gov policy or technology advancements
Difficulty	Low – High public acceptance and implementation feasible with existing resources	Moderate -	
Impact	High	Moderate -	Low – Within margin of error of projections



Municipal levers are noted for each strategy:

Infrastructure	Policy & Regulation	Engagement & Outreach
 <p>Investments into the Town of Smithers owned infrastructure that enable residents to make lower-emissions choices, such as active transportation networks and public charging stations</p>	 <p>Changes to Town of Smithers policy and regulation that lead to energy and emission reductions in the community, such as requirements and incentives for enhanced energy efficiency in new buildings.</p>	 <p>Outreach, education and incentives that inspire residents and businesses to make choices to reduce energy and emissions and prepare for a low carbon future.</p>


Transportation – Shift Beyond the Car

The combination of land use (being near where you need to go daily) and infrastructure (active and accessible paths & prioritization, transit) and policy (parking pricing) combine to shift from fossil vehicles to active accessible and transit. Land use policy effects are long term rather than short term partly due to the long time-scale of development.

Shaded regions indicate the level of action being taken by the Town of Smithers.



Strategy	Tier 1	Tier 2	Tier 3	Tier 4
SHIFT 1.1 Optimize policies and bylaws for compact growth 	Review OCP and planned development to identify opportunities to further incent or require infill development; Review employment locations and link location/land use to local economic development strategy; Add mixed-use neighborhood commercial as a permitted use in the R-1 and R-2 zone in specified locations such as corner lots and centrally located larger properties.	Leverage CLIC tool to assess financial impacts of development proposals; Increase density along active transportation network;	Create a density bonus structure for development within short walking distance of the network; Increase Density for neighbourhood node viability; Utilize DCC to support densification	Require all new developments to have walk-scores greater than the community average and expected transportation emissions below the community average
SHIFT 2.1 Build safe routes for walking, cycling and other forms of zero emission mobility 	Continuously improve active transportation infrastructure per existing plans	Implement Complete Streets Policy to reconfigure streets to be 'complete streets' as streets are regularly scheduled for resurfacing / reconstruction for pavement maintenance or installation of utilities. If new streets are required, design to support connectivity	Prioritize budgeting for key transportation infrastructure that will connect major destinations (schools, shopping) to main residential areas; Invest in enhanced transit	Initiate a 10-year program to connect all neighborhoods to safe and convenient active transportation paths.




<p>SHIFT 2.2</p> <p>Develop and deliver an active transportation outreach strategy</p> 	Promote new routes and end of trip facilities; Promote events such as Bike to Work Week.	Expand active transportation promotion. E.g. education events for new 'all ages and abilities' routes (e.g. priority for disabled users, etiquette when passing others).	Contract dedicated, permanent, part-time outreach capacity to engage the community on active transportation and transit.	Collaborate with communities in the region on shared outreach capacity
<p>SHIFT 2.3</p> <p>Normalize car-free and zero-emission zones</p> 	Establish car free days on a key street - 1 day a year. Combine with a special event and create a festival experience.	Expand car free days on a key street to more days of the year / more streets; Consider car free days once a week during warmer seasons (e.g. combined with weekly farmers market)	Establish high-profile car-free areas within the community	
<p>SHIFT 2.4</p> <p>Promote micro e-mobility and on-demand mobility services</p> 	Host awareness events for e-bikes, e-scooters and EV golf carts, including demonstrations	Conduct an analysis to understand when and where on-demand service will be most useful	Collaborate with a technology vendor to bring e-mobility on demand solutions to the community, such as electric kick-scooters or e-bikes available for rent through an app.	
<p>SHIFT 3.1</p> <p>Collaborate with transit providers to promote transit ridership</p> 	Promote transit ridership by celebrating new routes and offering free transit days.	Collaborate with transit providers to enable free transit programs for children/seniors, and during bad air quality or very cold weather		Explore universal free transit with transit providers
<p>SHIFT 3.2</p> <p>Collaborate with transit providers to transition to a zero emission transit network</p>		Collaborate with neighboring communities on safe and convenient inter-community transit that is safe and	Start working with transit providers and neighbouring communities to ensure that	Initiate a 10-year transit investment program to connect all neighborhoods and connect to other

		responsive to the needs of the communities.	transit shifts to zero emissions vehicles (e.g. electric).	communities with zero emissions transit.
	Tier 1	Tier 2	Tier 3	Tier 4
Cost				
Uncertainty				
Difficulty				
Impact				

Transportation – Electrify Passenger Vehicles



New vehicle sales are approximately 10% of total vehicle stock annually. Switching to an EV from a fossil vehicle eliminates almost 100% of the emissions in BC. The more that people can walk, cycle and take transit in the community and between communities may reduce the % of EV's required for the first target year. In 2019, 10% of car sales (not including trucks and SUVs) were EV's, though this is not even across BC. Provincial ZEV mandates do not require even portions of sales regionally so Town of Smithers can help influence local EV adoption.


Strategy	Tier 1	Tier 2	Tier 3	Tier 4
ELECTRIFY 1.1 Design, fund and build a public EV charging network 	Install public Level 2 charging at one municipally owned parking lot to demonstrate leadership. Consider up to 4 Level 2s as a demonstration at that location.	Develop a community EV charging infrastructure strategy (current/future demand for L2 and DCFC, garage orphans). Through engagement and network design, consider opportunities to leverage public institution (or other Part 3) charging infrastructure to address garage orphans.	Collaborate with other local and regional governments on a regional charging network strategy.	Leverage grants to implement community EV charging infrastructure strategy. Consider implementation to focus on supporting other actions, such as integrated transportation hubs (connectivity of charging infrastructure to e-bike shares, transit options, etc.).
ELECTRIFY 2.1 Adopt EV-ready building requirements 	Initiate staff consultation on Part 9 and Part 3 new construction charging infrastructure requirements.	Draft building bylaw amendment to integrate Part 9 EV readiness requirement for 100% of all new non-street parking. For Part 3, consider requiring smart chargers, to facilitate load management in the future.	Implement Part 3 EV charger readiness policy (i.e., 100% electrified, EV-ready stalls for new MURBs (energized outlet capable of supporting Level 2 charger - integrate load management); 25% of stalls at new, non-residential Part 3 buildings)	Require EV readiness reflective of new Part 3 construction for rezoning or development permits for major redevelopment/renovation.
ELECTRIFY 2.2 Enable EV charging in existing residential and commercial buildings	Provide information to homeowners about Provincial EV charging incentives	Work with stratas and property management companies on navigating the process to retrofit existing parking stalls with EV charging equipment.	Top up provincial residential/MURB and workplace L2 retrofit incentives.	Provide or advocate for Tier 2 exemptions or kWh allowances to protect EV owners against increased electricity prices.

				
<p>ELECTRIFY 3.1 Develop and deliver an EV outreach strategy</p> 	<p>Advise local groups of EV outreach incentives from Emotive; Create a communications plan to support engagement; Deliver builder/developer education on EV charging requirement for part 9 and part 3 such as an Open House for electrical trades to engage on EV charging readiness requirement.</p>	<p>Continue outreach to builders, public, auto dealers in including workshops and stakeholder engagement. Partner with other organizations to host engagement events such as test-drives and ride-alongs.</p>	<p>Facilitate a regional workshop to identify opportunities to leverage community EV charging network implementation to support regional travel; Partner with neighboring communities on ongoing active outreach to public and car dealers, implementing the communications plan (Tier 1) to support community identity around EVs.</p>	<p>Create a community or regional brand around electric vehicle adoption, reflective of the local priorities and context to encourage adoption.</p>
<p>ELECTRIFY 3.3 Lead by example - Electrify the corporate fleet and providing workplace charging</p> 	<p>Take inventory of vehicle fleet, determine expected end of life for each vehicle; amend vehicle purchasing policy to consider electric vehicles for replacement;</p>	<p>Integrate vehicle purchasing policy with budgeting to build capital for vehicle replacement</p>	<p>Examine current vehicle technologies available for replacement; install Level 2 chargers at Town Hall and other staff-heavy corporate buildings for staff (and possibly public use)</p>	<p>Replace vehicles at end of life with electric vehicles where available, or with used vehicles as interim solution until electric options become available.</p>
	Tier 1	Tier 2	Tier 3	Tier 4
Cost				
Uncertainty				
Difficulty				
Impact				

Transportation – Decarbonize Commercial Transportation




Commercial vehicles represent 20% of Smithers’s GHG emissions profile, however there are limited solutions available for local governments at present due to limited jurisdictional levers, as well as the lack of technologies available for medium and heavy-duty electric trucks. This is expected to change significantly over the next 2-5 years, though, so the Town can and should anticipate this by taking a proactive approach.


Strategy	Tier 1	Tier 2	Tier 3	Tier 4
COMMERCIAL 1.1 Develop a community vision and strategy for commercial ZEV infrastructure 	Conduct a needs assessment for fleet charging requirements, through to 2040.	Design a non-municipal commercial/institutional EV charging network strategy, with emphasis on hub-style charging to leverage fleet needs and electrification of delivery bays.	Support a pilot fleet electrification initiative with one commercial/institutional partner. (e.g. land use/zoning change to allow for transit charging hub, or electric school bus parking zone, etc.), OR: (Renewable) Natural gas vehicle collaboration for heavy duty vehicles. (Collaborating with other local return-to-base fleets such as BC Transit, school board, waste haulers, and industry / commercial operators).	Facilitate joint procurement/joint funding in coordination with commercial fleet operators for the implementation of the commercial/institutional EV charging network strategy.
COMMERCIAL 1.2 Engage commercial and industrial stakeholders 	Develop communications strategy to support outreach/engagement with commercial sector; Advocate to provincial government for commercial decarbonization legislation, leveraging collaborations with commercial sector and regional districts.	Convene a Commercial & Industrial fleet operators workshop to discuss current and future opportunities around low emissions/electrification of fleets; Engage with BC Transit and School District to identify early adoption opportunities of electric bus and transit options (recognizing 100%	Engage with stakeholders on design of the commercial EV charging network. Integrate as much as possible with public and municipal charging strategies.).	Host an emerging and future technology workshop for MD/HD fleet operators, and facilitation of driver training courses on emission-reducing techniques.

		electric transit target for BC Transit, and currently available school bus funding for School Districts).		
<p>COMMERCIAL 2.1</p> <p>Update corporate policies to prioritize low carbon options</p> 	Review and integrate contractual requirements for municipal services to require low emission vehicles, increasing over time with 100% requirement by 2040. (applies to commercial entities that are contracted for municipal services).		Require Corporate fleet electrification policy to buy used vehicles at time of replacement if no low-carbon options are available.	Corporate fleet electrification policy fully implemented (to extent that available technology allows) for 100% EV.
	Tier 1	Tier 2	Tier 3	Tier 4
Cost				
Uncertainty				
Difficulty				
Impact				

Buildings – Step Up New Buildings


Step Code is an efficiency code, not a GHG code. Efficiency is a good first step, but to get deep emissions reductions the heating fuel must be low/no emissions. Electricity is nearly emissions free in BC and heat pumps use 1/2 to 1/4 the energy of a baseboard heater, saving energy and money over the long run. Each new building that is inefficient and has a fossil heating system is one more building that will need to be retrofitted at some point.

Strategy	Tier 1	Tier 2	Tier 3	Tier 4
NEW BUILD 1.1 Adopt the Energy Step Code 	Designate departments and individuals to attend the local government Step Code Peer Network and start working on an implementation strategy.	Adopt the Energy Step Code with a community-wide requirement for one of the lower steps; Adopt policies and programs to incentivize adoption of higher steps.	Determine timelines for adopting upper steps; Adopt a rezoning policy to require upper steps for new developments that add significant density.	Adopt upper steps of the Energy Step Code community-wide at the earliest opportunity, and signal intent require top step in advance of 2032.
NEW BUILD 1.2 Adopt a low-carbon approach to the Energy Step Code 	Conduct consultation with the local building industry about low carbon approaches to the Energy Step Code.	Adopt a tiered approach encouraging low carbon energy systems (e.g. Step 3 community wide, Step 2 if they connect their project to a district energy system or implement a low carbon energy system.	Adopt the Provincial GHG metrics when they become available.	Investigate opportunities to address embodied carbon in the construction sector.
NEW BUILD 2.1 Provide outreach and incentives 	Promote existing incentives for building more efficient new homes via Better Homes BC.	Leverage BC Hydro funding to provide subsidies to builders that offset the additional cost of Energy Advisors and/or provide incentives for mid-construction air tightness testing; Fee rebates could also be considered for new homes that install solar or electric vehicle charging stations.	Top up provincial incentives (betterhomesbc.ca) for heat pumps to replace fossil heating systems in new buildings.	

NEW BUILD 2.2 Provide training and coordination 	Collaborate across the region to provide relevant training to building industry and realtors; Assemble and promote list of local or regional Energy Advisors.	Continue providing locally relevant training; Work with building industry partners to accelerate Energy Advisor training; Develop quota for minimum number of local Energy Advisors by 2022.	Continue partnering to provide training to building industry, focusing on meeting Upper Steps;	
	Tier 1	Tier 2	Tier 3	Tier 4
Cost				
Uncertainty				
Difficulty				
Impact				




Buildings – Retrofit Existing Buildings



Building envelope improvements reduce energy needed to heat the building. An average retrofit can save 10% to 20% of energy while a deep retrofit (\$80,000-\$100,000) can save 50% to 60%. Heat pumps use 1/2 to 1/4 of the energy of baseboard heaters. Electricity has >80% less emissions than natural gas.

Strategy	Tier 1	Tier 2	Tier 3	Tier 4
EXISTING BUILDINGS 1.1 Encourage and enable deep energy retrofits. 	Promote <i>Better Buildings</i> and <i>Better Homes BC</i> at front counter and in property tax mailings as well as business license renewal mailings.		Require EnerGuide assessments (Part 9 buildings) and building energy benchmarking (Part 3 buildings) as a condition of a renovation permit over a value threshold.	Require minimum energy performance standards aligning with the Province's upcoming retrofit code (*as more information becomes available).
EXISTING BUILDINGS 1.2 Engage utilities and other orders of government to support local retrofit programs 	Engage with PNG and BC Hydro to target retrofit incentives and funding for Smithers residents	Engage with PNG on finding renewable alternatives for grid natural gas		
EXISTING BUILDINGS 2.1 Encourage and enable building electrification 	Provide information about heat pumps to renovators and homeowners at time of permit.	Identify and remove barriers to heat pump installation, including streamlining permitting process, optimizing noise regulations, restructuring permitting fees, and others.	Top up Provincial (<i>Better Buildings</i> and <i>Better Homes BC</i>) heat pump incentives.	Establish a local government department or company to rent/lease heat pumps to replace fossil fuel heating and to assure quality and manage installers.

<p>EXISTING BUILDINGS 2.2 Lead by example through corporate policies that prioritize low carbon retrofits</p> 	Review energy efficiency studies already completed, and identify priority upgrades;	Identify funding sources to complete priority upgrades; highlight co-benefits of low-carbon retrofits (health, economic development, progressive reputation)	Integrate carbon and energy efficiency into decision making matrix	
<p>EXISTING BUILDINGS 3.1 Establish a long-term marketing campaign</p> 	Promote "Better Buildings and Better Homes BC" at front counter and in property tax mailings as well as business license renewal mailings.	Establish a 10-year program for a community-wide marketing campaign (based on 'energy diets') to encourage building envelope improvements, electrification or other low carbon fuel sources.	Collaborate with local governments in the region on a coordinated 10-year campaign to market deep energy retrofits and fuel-switching from natural gas and heating oil to heat pumps.	
<p>EXISTING BUILDINGS 3.2 Build industry capacity</p> 	Educate renovators and realtors on energy efficiency and low carbon choices for space and water heating.	Provide a building energy benchmarking workshop to large portfolio operators.	As part of the 10-year marketing campaign, collaborate with others to provide extensive training and development for heat pump system designers and installers.	Signal intention to adopt 'retrofit code' when it becomes available (outreach to public, retailers, realtors, trades).
	Tier 1	Tier 2	Tier 3	Tier 4
Cost				
Uncertainty				
Difficulty				
Impact				

Waste – Close the Loop on Waste

Strategy	Tier 1	Tier 2	Tier 3	Tier 4
WASTE 1.1 Adopt policies that increase organics diversion. 	Collaborate with the Regional District to initiate staff consultation on organics, processes & targets.	Adopt organics diversion targets for community and corporate.	Require diversion (away from landfill) for construction and demolition waste; Require organics diversion for event permitting.	Ban all (residential, commercial, institutional) organics (food waste, yard waste, etc.) from landfill.
WASTE 1.2 Implement (or enhance) organics collection and processing 	Complete assessment (inventory) of community organic waste volumes and feasibility of landfill diversion.	Evaluate local opportunities for organic handling and composting. Consider partnering with Regional District and neighboring communities; Implement curbside kitchen waste collection for single-family homes.	Allocate resources (include in five- year budget) for dedicated compost facility manager and required training (site management, odour, leachate, safety, etc.); Install central collection points that are regularly picked up for multi-family units.	Establish public program for compost pick-up from all buildings; Integrate organics collection in streetscapes, where appropriate.
WASTE 1.3 Divert construction, demolition, agricultural and industrial wood waste 		Identify wood waste landfills in the community, develop inventory, and attempt to evaluate opportunity from those.	Identify and pursue options to support and grow the market for salvaged deconstruction materials.	Identify opportunities to salvage surplus and used construction materials, and promote reuse, donation, repair, and sharing opportunities.
WASTE 1.4 Develop and deliver a comprehensive zero-waste outreach program	Support (funding or land donation) community-led composting projects; Support existing and new capacity for reusable resources, including Free	Fund/Support a part or full-time position dedicated to organic diversion (and waste reduction) to support implementation;	Educate and communicate the source-separation requirements; Outreach to wood waste landfill owners, and other	Establish a waste reduction working group consisting of key staff across the organizational structure that institutionalizes support for organic diversion and zero

	<p>Swaps, Share Sheds, free-store for unwanted goods, and building materials depot; Provide funding to School District to implement programs on educating about waste reduction/diversion.</p>	<p>Conduct annual community zero-waste drives to enhance awareness, streamline with school and business programs.</p>	<p>people who can help identify the opportunity.</p>	<p>waste initiatives, include external organizations where possible.</p>
<p>WASTE 2.1 Evaluate and implement landfill gas capture</p> 	<p>Establish a target for landfill gas capture from Regional District landfill.</p>	<p>Analyze the opportunities for landfill gas capture, including potential to capture and sell to the gas grid.</p>	<p>Implement or increase efficiency of landfill gas capture. Extract maximum use possible, e.g. sell to PNG for Renewable Natural Gas. At minimum capture & flare. Investigate selling credits to the Province's Climate Investment Branch.</p>	<p>Capture maximum landfill gas from wood waste landfills.</p>
	Tier 1	Tier 2	Tier 3	Tier 4
Cost				
Uncertainty				
Difficulty				
Impact				

Appendix B: Other Opportunities

Local Renewable Energy, Sequestration and Food

Strategy	Actions Summary	2021	2022	2023	2024	2025	Later
LOCAL RENEWABLE ENERGY							
RENEWABLE 1.1 Pursue community-scale renewable energy systems.	Conduct a renewable energy scan to determine financially and technically feasible renewable energy options. These may include biomass district heat, solar, wind and renewable gas.				X	X	
RENEWABLE 1.2 Support building-level renewable energy projects.	Provide Municipal incentives for renewable energy installations in buildings.			X			
SEQUESTRATION							
SEQUESTER 2.1 Preserve park lands within the municipal boundary	Identify and then use policy measures to prevent clearing of old growth forests, and other forests of other special significance (cultural, archaeological, etc.). Use policy measures to reduce clearing of other forested lands, e.g. density bonus for developments.		X				
SEQUESTER 2.2 Encourage low-carbon buildings	Consider ways to support or encourage building materials that store carbon / are low embodied carbon, e.g. by relaxing Step Code requirements for wood-frame Part 3 buildings and encouraging larger wood-frame Part 3 buildings.		X				
SEQUESTER 2.3 Collaborate with other governments, organizations and industry to pursue low-carbon and carbon capture technologies	Encourage and support local industrial emitters of CO ₂ to capture and store CO ₂ to reduce their industrial emissions. Keep abreast of ways that local governments can be involved in, and support carbon capture & sequestration, e.g. through Province of BC, CEA, and Pacific Institute for Climate Solutions.			X	X		

Appendix C: Sample Key Performance Indicators

Two types of indicators are recommended. Primary indicators measure community energy consumption and GHG emissions, while secondary indicators can quantify the indirect success of various actions. The following table provides a description of these indicators, the measures of success, data sources for each indicator, and frequency of reporting. Annual progress reporting should be planned by the Town of Smithers.

	Indicators	Measures of Success	Data Sources
Overall	1. Community GHG emissions	40% reduction in emissions from 2007 levels by 2030 100% reduction in emissions from 2007 levels by 2050	Provincial energy & emissions data at the community level, and Kalibrate Global's fuel sales data for area gas stations converted into emissions using latest factors from the Province
Overall	2. Per capita energy usage	Average household and commercial energy use declines over time to 2050 Annual fuel sales (gas & diesel) decreases over time to 2050	Provincial energy & emissions data at the community level, Kalibrate Global's fuel sales data for area gas stations
Transportation	3. kWh/year used recharging EVs at public charging stations	Increase in number of kWh/year of charging at EV stations	Usage data already available to the Town
	4. Infrastructure to promote active transportation	Progress towards outcomes of the following plans: <ul style="list-style-type: none"> • Active Transportation Plan • Downtown Re-Landscaping Plan • Age Friendly Assessment and Action Plan • Sustainable Resiliency Plan 	Town of Smithers Integrated Growth and Infrastructure Department
	5. Commuting / personal travel mode split	Increase in travel around Smithers and between Smithers and Prince George/Prince Rupert by ride share, public transit, walking or cycling	BC Transit ridership data, and Census

	Indicators	Measures of Success	Data Sources
Existing buildings	6. # of energy efficiency incentives distributed for building efficiency upgrades	Average increase in incentive use	Summary data from PNG (and other entities as applicable, e.g. Province)
New buildings	7. # of buildings at each level of the BC Energy Step Code	Increase in number or percentage of new buildings constructed to various levels of the Step Code	Permit applications <i>(Notes: suggest setting this up in advance for GIS; Some builders may currently be building to Step Code and getting PNG rebates without the Town knowing, by following the prescriptive pathway. Advising local builders and front counter staff of the Step Code compliance pathway in the building code should solve this.)</i>
Renewable Energy	8. # of renewable energy buildings installations	Increase in percentage of buildings adding solar and other renewable energy sources	Distributed Generation Program applications <i>(Note: this only covers renewable energy systems that generate electricity. Others will not be possible to track.)</i>
Waste	9. Amount of organics diverted from landfill	Increase in organics at composting facility	Town of Smithers
	10. Recycling rates	Increase in recycling rates	Town of Smithers
	11. Tonnes of waste per capita to landfill	Decrease in waste per capita sent to landfill	Town of Smithers
Other	12. Urban tree canopy cover	Increase in canopy	Development applications; Public Works tree planting data <i>Note: due to complications with GIS, this indicator will only be possible to track in the medium-term, if at all.</i>
	13. Per capita water consumption	Decline in water use	Usage data on water utility bills / metering system
	14. # of participants at building community & citizen educational events / workshops	High participation levels at events	Registration/Attendee lists for events

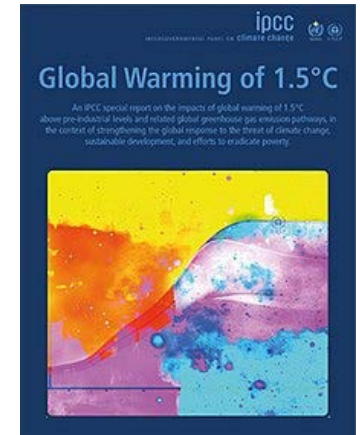
Appendix D: Climate Action at All Levels

Global Action

When Canada signed the Paris Agreement in 2015, we joined a global commitment to keep global warming below 2°C, and as close to 1.5°C as possible. In October 2018, the United Nations Intergovernmental Panel on Climate Change (IPCC) released a major report that emphasized the dramatic difference in consequences between a 1.5°C and 2°C world. Every degree of warming beyond this threshold will lead to increased impacts of extreme weather, more wildfires and floods, increases in sea-level rise, and severe threats to human health and well-being.

By limiting these impacts, we can ensure a healthy environment, economy and society for ourselves and future generations. While it is not too late, time is of the essence.

The key finding of the IPCC report is that limiting warming to 1.5°C is possible, but requires deep emissions reductions across all areas of society – reducing global emissions by 45% from 2010 levels by 2030 and reaching net zero emissions by 2050.



PAN-CANADIAN FRAMEWORK



on Clean Growth and Climate Change

Canada's Plan to Address Climate
Change and Grow the Economy

National Action

In 2016, the Government of Canada released its Pan-Canadian Framework on Clean Growth and Climate Change. The framework sets out the federal government's strategy to meet its commitment under the Paris Agreement to reduce national greenhouse gas (GHG) emissions 30% below 2005 levels by the year 2030. In 2017, the most recent emissions inventory year, Canada's emissions were 716 megatonnes of CO₂ equivalent (Mt CO₂e), which is a 2% decrease from 2005 levels. This means that in order for Canada to meet its emissions reduction target, we need a decrease of 28% from 2005 levels in just ten years. More recently, the Government of Canada has established a target of net-zero emissions by 2050, requiring an acceleration of action by all levels of government.

Actions available to the federal government include vehicle fuel-efficiency standards, model national building codes, energy ratings, and carbon pricing.

Provincial Action

In December 2018, the Province of British Columbia released its CleanBC climate plan. The plan reaffirmed the province's previous target to reduce emissions 80 per cent below 2007 levels by the year 2050, and established a new interim target to reduce emissions 40 per cent by 2030. In 2017, BC's provincial emissions were 0.5% below 2007 levels, which means that in order for BC to meet its emissions reduction target, we need a decrease of 40% from 2007 levels in just ten years.



CleanBC outlines a path to meeting the 2030 targets, outlining a range of actions to meet 75% of the target. These actions include sourcing clean and renewable electricity, incremental increases in building-energy performance in the BC Building Code,

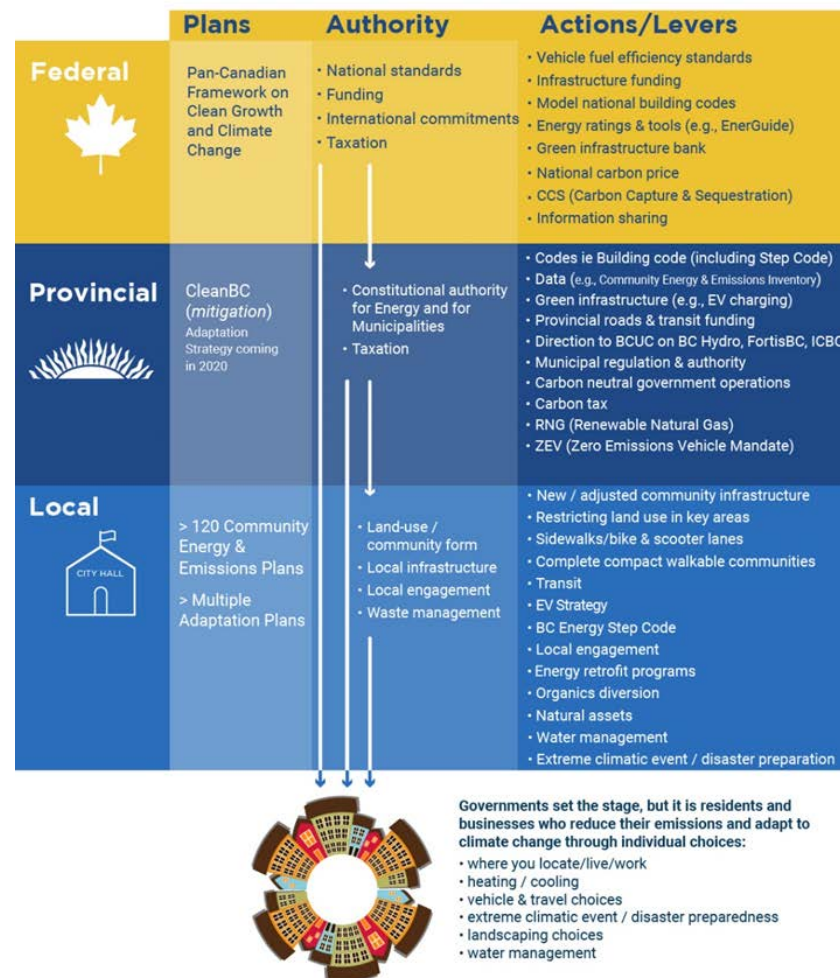
tailpipe emissions standards, and measures to reduce emissions from industry. The Province is currently identifying the actions to achieve the remaining 25% of emissions reductions.

CleanBC builds on a history of provincial climate action: The provincial government has enacted laws and regulations to reduce emissions and transition to a low-carbon economy. These include the Climate Change Accountability Act, Carbon Tax Act, Greenhouse Gas Industrial Reporting and Control Act, and Clean Energy Act.

As shown in **figure (#)**, senior levels of government have recognized the need for strong climate action (particularly on mitigation), and provide support to local governments.

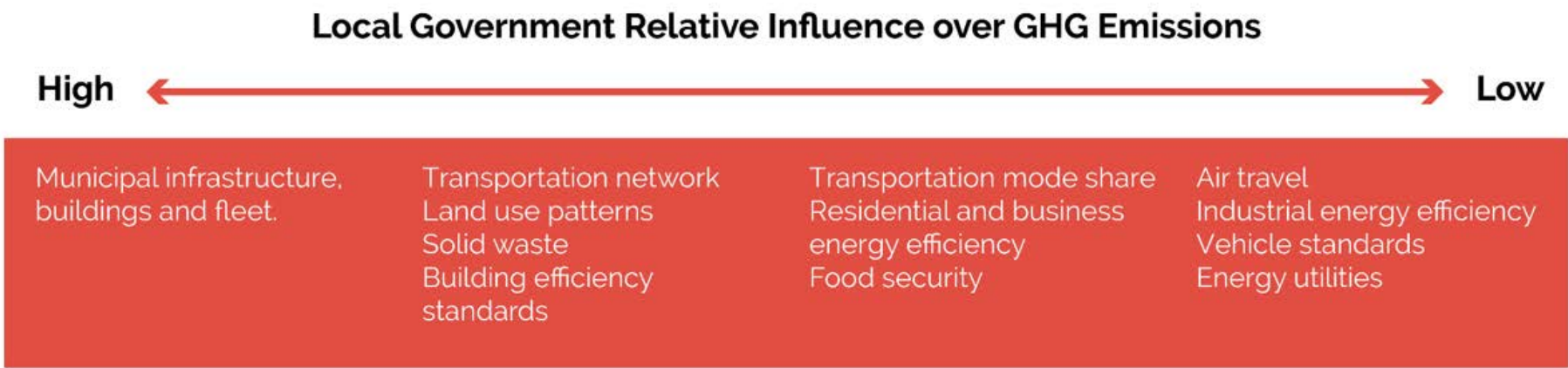
The federal government uses national standards and funding in climate action because provinces have constitutional jurisdiction over both energy and local governments.

Local governments are the front lines of climate action because communities are where the buildings, vehicles & infrastructure are.



Local Action

More than 120 British Columbia local governments have to date enacted community climate action plans or Community Energy and Emissions Plans (CEEPs), which outline actions they can take, or are taking, to reduce greenhouse gas emissions. Local governments have varying degrees of influence over different sources of emissions within their boundaries, as shown below.



If local governments are to succeed, they will need leadership and/or support from other orders of government, as well as commitments from residents and businesses. Further, the outputs of this Plan and the targets/actions prioritized for implementation will need to be embedded into relevant policy, operational, budgetary and asset management plans or strategies. Communities and regional districts play an important role in climate mitigation and adaptation. Almost every British Columbia local government has committed to some degree of action under the B.C. Climate Action Charter. Across Canada, local and regional governments directly and indirectly influence approximately 60 per cent of the nation’s overall energy use and 50 per cent of its GHG emissions.

Residents and Businesses

Residents and businesses also have an important role in climate action, such as individual choices on where to live, how to heat or cool, how to travel, how to handle household waste, preparing for extreme events such as extreme heat, making landscaping choices that affect the urban tree canopy and are wildfire smart, and being careful with water use. Meanwhile, businesses’ decisions regarding their current operations and future plans as well as factors such as leadership and innovation also impact community-based emissions and affect a community’s resilience to a changing climate. Residential and business decisions are shaped by other levels of government, including local government, creating an opportunity for governments to influence those choices in a way that addresses environmental issues and climate action.

Appendix E: Inventory and Modelling Methodology

This appendix contains details on the community energy & emissions inventory and projections for Town of Smithers.

Inventory

Smithers's inventories were created using data for buildings, transportation and waste obtained from the Province of BC. Full inventory years for buildings and waste are: 2007, 2010, and 2012-2018. Full inventory years for transportation are 2007 and 2010.

Emissions factors for inventory years are shown in the following table, and are sourced from the Province of BC.

Table 1 – Emissions factors used for inventory years

GHG/GJ, by Year		2007	2010	2012	2013	2014	2015	2016	2017
Gasoline		0.068	0.065	0.069	0.069	0.069	0.069	0.070	0.068
Diesel		0.070	0.068	0.070	0.070	0.070	0.070	0.072	0.071
Electricity		0.007	0.007	0.004	0.004	0.003	0.003	0.003	0.003
Natural gas		0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
Wood		0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019
Heating oil		0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068
Propane		0.061	0.061	0.061	0.061	0.061	0.061	0.061	0.061

As can be seen, some of the emission factors have changed over time. The emissions factor for electricity has decreased as a result of ongoing efforts to decarbonise the electricity grid, however this will be updated as detailed below.

Electricity emissions factor subject to change

Information received from the Province of BC in December 2020 and January 2021 states that the electricity emissions factor used for electricity consumption across BC will change, effective for reporting for the 2021 year. But because of the lag in reporting cycles it will not appear in reports until June 1st 2022, and the Province will not officially change the electricity emission factors in the forthcoming *2019 BC Methodological Guidance for Quantifying Greenhouse Gas Emissions*.

Despite this it is official that there is an intention to change, which will take effect in 2022, and the change will be backdated as well for previous years.

Previously, emissions from electricity use was calculated using a three-year rolling average of emissions from BC utility owned and operated facilities, and did not include emissions associated with importing electricity from outside of BC. Those emissions will now be included. (Note that no credit will be made for clean electricity generated in BC used to displace electricity generated in other jurisdictions.)

Under the old methodology the Province calculated the Town of Smithers's electricity emissions factor to be 10.67 tCO₂e/GWh for 2018. Based on the limited information currently available, under the new methodology the Province has calculated the figure for the 2019 year to be 29.9 tCO₂e/GWh. *If* the 2018 and 2019 years are comparable (and it is probable that they are at least approximately comparable), this would be an increase of 2.8 times. Despite the increase, emissions from electricity would still be far lower than for natural gas on a per unit of energy basis, and electricity used in the Town would still have among the lowest GHG emissions in the world (e.g. still about 30 times lower than Australia's, 8 times lower than New York's, or 40% lower than Ontario's).

If the 2018 and 2019 figures are comparable, this change would increase the Town's corporate 2019 GHG emissions from electricity from 28 to 78 tCO₂e, and increase its overall 2019 GHG emissions from 962 to 1,012 tCO₂e, or 5%.

This change would slightly impact how actions that reduce electricity or generate renewable electricity are considered as they would reduce more GHG emissions than previously anticipated. This change would also slightly impact the consideration of actions that may increase electricity consumption, e.g. heat pumps.

Transportation data was sourced from a previous release of the Province of BC's Community Energy & Emissions Inventory (CEEI) data,³ and building energy and landfill waste data was sourced from the latest CEEI data and the Province's release of Provincial Inventory data at the community level.⁴

Assumptions made with respect to the inventories are as follows:

- The Province of BC made a series of standard assumptions in the creation of the CEEI data, which are outlined on the CEEI webpage: <https://www2.gov.bc.ca/gov/content/environment/climate-change/data/ceei>. The CEEI inventory years in the preceding charts are 2007, 2010, and 2012.
- The Province of BC made assumptions for buildings and landfill waste emissions information, which are outlined in the community level spreadsheets on the Provincial Inventory webpage: <https://www2.gov.bc.ca/gov/content/environment/climate-change/data/provincial-inventory>

³ <https://www2.gov.bc.ca/gov/content/environment/climate-change/data/ceei>

⁴ <https://www2.gov.bc.ca/gov/content/environment/climate-change/data/provincial-inventory>

- In creating the inventories, CEA made other assumptions in addition to these:
 - Because the Province removed transportation data from its most recent release of the 2007 and 2010 CEEI data, and has not provided this data for any other year, CEA has used population data to extrapolate transportation data for any year post-2010.

Solid waste emissions data provided by the Province had two calculation methodologies:

- Waste-In-Place (WIP): WIP calculates based on the landfill that community solid waste is sent to. Decomposition emissions occur over the span of 15+ years, are landfill-specific, and incorporate physical and meteorological characteristics of the landfill. This method has been used historically by the Province, but is subject to significant changes in emissions if a community switches landfills despite similar tonnage.
- Waste Commitment (WC): WC assumes that all waste emissions are released in the span of one year, and is independent of the physical characteristics of the landfill that the waste is being sent to, except in the case of a landfill gas capture system present. This method eliminates issues associated with emission allocation being split into two or more landfills if the community switches landfills. **This emissions calculation method was selected for the inventory.**

The following are not included in the inventory:

- Emissions from Agriculture, Forestry and Other Land Use (AFOLU)
- Emissions from large industry
- Consumptive emissions (e.g. food, services, consumer goods)

Business As Usual Projection

CEA's QuickStart model was used both to calculate the BAU trajectory, and to estimate the potential GHG reductions that could be achieved. Developed in 2010 on behalf of BC Hydro and used by approximately 70 communities to date, the model builds on information including population and community energy and emissions inventory data.

The model uses formulas both to calculate the BAU trajectory, and to estimate the impacts of implementing each Big Move.

The BAU trajectory was calculated by using available inventory data, and then projecting forwards using a population forecast provided based on census data.

There are full or partial inventory years that describe the community's emissions profile from 2007-2018. From 2019 onwards, all of the data is an estimate as a BAU projection.

For the BAU projection modelling, the assumption is that energy consumption and emissions will increase proportionally with increases to population, although the impact of policies from higher levels of government are also incorporated, and other assumptions. Only policies that have already been adopted and that will have quantifiable impacts are incorporated. Assumptions are:

- The Province's incremental steps to net zero energy ready buildings by 2032.
- Tailpipe emissions standards.
- Renewable & low carbon transportation fuel standards.
- Federal Zero-Emissions Vehicle Act, requiring every new LDV sold in Canada to be a zero-emission vehicle by 2035 (with a ramp up in advance of that date).
- How the impacts of a changing climate will affect building energy consumption, as outlined below.

The final assumption had the following methodology:

- Climate change data for the region obtained from ClimateData.ca.
- Projected global emissions to 2030 currently places the world in the range for the IPCC's Fifth Assessment Report's Representative Concentration Pathway (RCP) 6.0 scenario.
- RCP 6.0 scenario not available on ClimateData.ca, therefore RCP 4.5 (median impact scenario) used as a (conservative) proxy.
- Decreases in residential heating oil and natural gas consumption assumed to be proportional to projected decreases in Heating Degree Days (HDDs).
- Decreases in residential and commercial natural gas consumption assumed to be proportional to decreases in HDDs and the proportions of natural gas consumed for space heating for each sector, with that proportion obtained from the Navigant 2017 Conservation Potential Review for PNG. It is assumed that the space heating proportion for residential and commercial is the same with natural gas heating as it is for natural gas heating.
- Decreases in residential and commercial electricity consumption assumed to be proportional to decreases in HDDs and the proportions of electricity consumed for space heating for each sector. However, proportions of electricity consumed for space cooling for each sector and how this will increase proportional to projected increases to Cooling Degree Days (CDDs) also included. These proportions obtained from the Navigant 2016 Conservation Potential Review for FortisBC Electric.

Although CEA's model assumes that projections will be linear, there will be annual variability due to factors such as economic conditions (on mobility fuels and building energy consumption) and climatic variations (particularly on building energy consumption). These variations mean that it may often be necessary to collect several years of data before one can see the success or lack of it in implementation of an action, in the primary indicators.

Modelling the Big Moves

The QuickStart model estimates the impacts of the Big Moves compared to the BAU trajectory. The impacts of the Big Moves can vary greatly between communities, and depend on the assumptions made. The assumptions made for each Big Move are based on research that CEA has conducted and can be tailored for individual communities.

GHG emission reductions by Big Move are described in the main body of this report in the Action Plan section.

The QuickStart model allows Big Move implementation at five levels; 0%, 25%, 50%, 75% and 100%. This allows for varying levels of ambition within each Big Move. The model also requires an implementation start year.

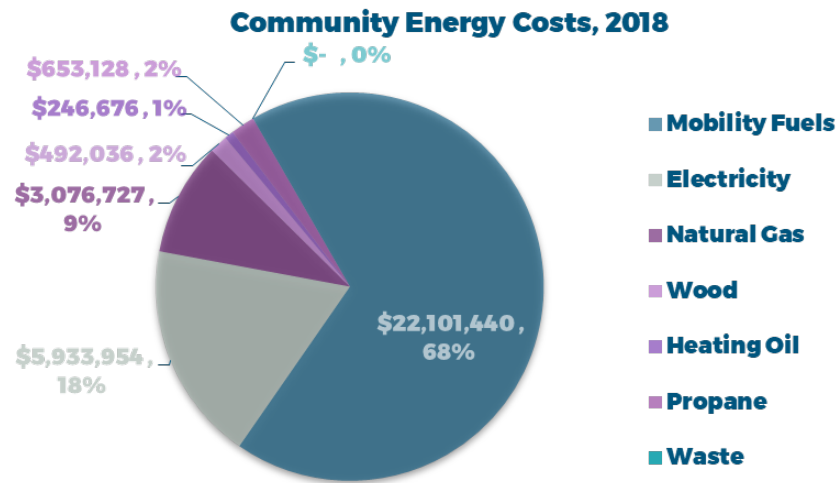
The QuickStart model makes the following assumptions based on full implementation (100% ambition level).

Big Move	Modelling Assumptions	
Step Up New Buildings	90%	New homes with zero-carbon heating
Decarbonize Existing Buildings	3%	Homes retrofit per year
	33%	Energy reduction per retrofit
	2%	Homes replacing fossil fuel heating with heat pumps
Shift Beyond the Car	1 year	Lag time from implementation for initial impact
	20 years	Full implementation takes 20 years
	17%	Maximum VKT reduction after 20 years from Active Transportation, Transit and Land Use
	33%	Attribution of VKT reduction to Active Transportation
	33%	Attribution of VKT reduction to Transit
Electrify Passenger Vehicles	5%	Current % of vehicle sales as EV
	50%	Compound Annual Growth Rate of new car purchases as EV in year 1
	20%	Compound Annual Growth Rate of new car purchases as EV in year 5
Decarbonize Commercial Transportation	1%	Percentage GHG reduction per year
	10%	Maximum GHG reduction after 10 years
	5	Lag time from implementation for initial impact
Waste	75%	Percentage GHG reduction from organics diversion or landfill gas capture
	5	Full implementation takes 5 years.

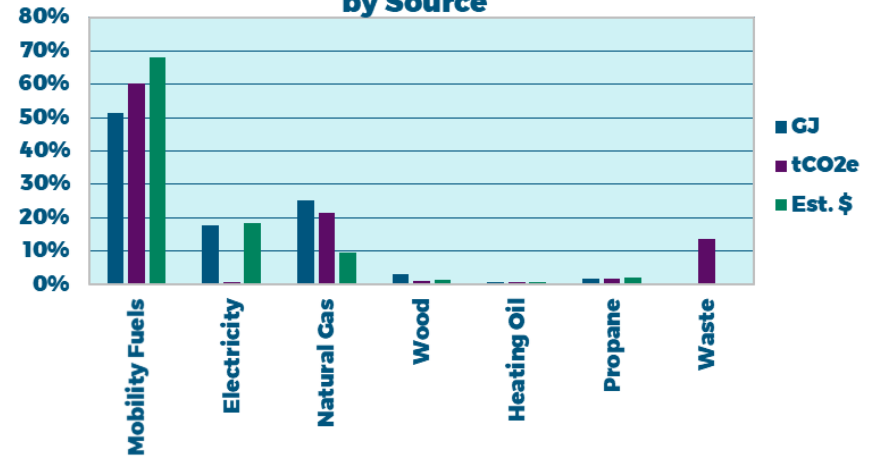
If a lower level of ambition is selected, then that would be applied in the model. For example, if a community selects a 50% ambition level for Waste, then the GHG reduction would be 50% of 75% (or 37.5%) but would still take 5 years to ramp up to that diversion level.

Appendix F: Inventory and Modelling Details

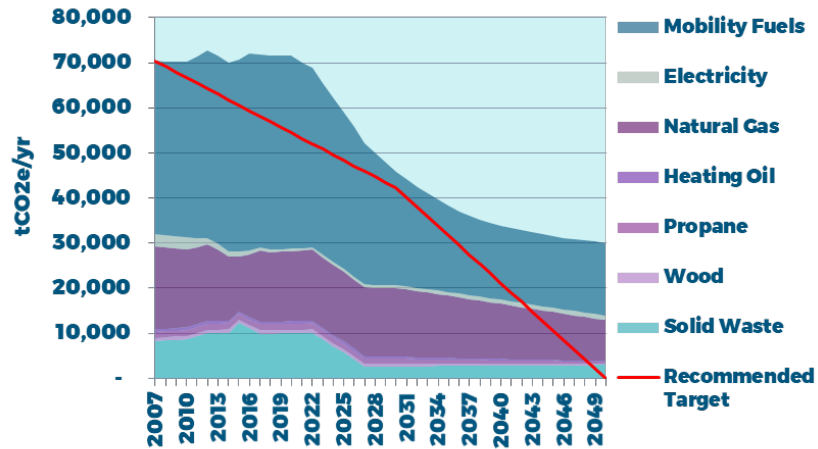
Below are some additional charts that were not included in the main body of the report, but provide additional context.



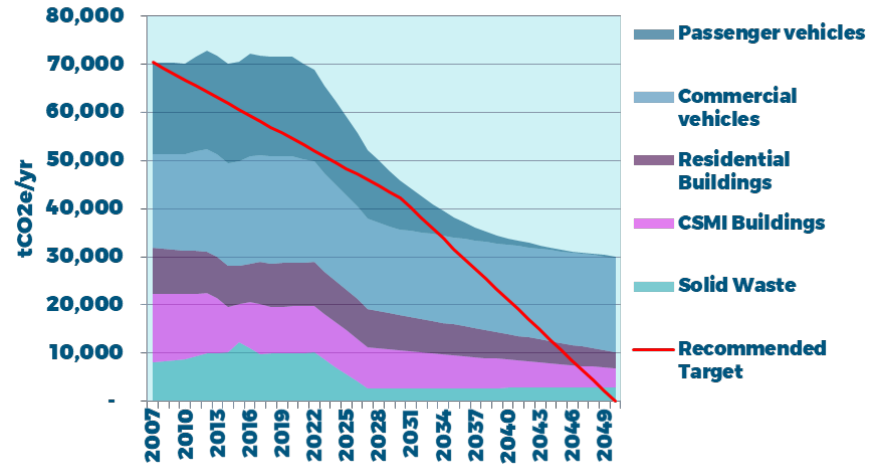
2018 % Energy, Emissions, and Expenditures by Source



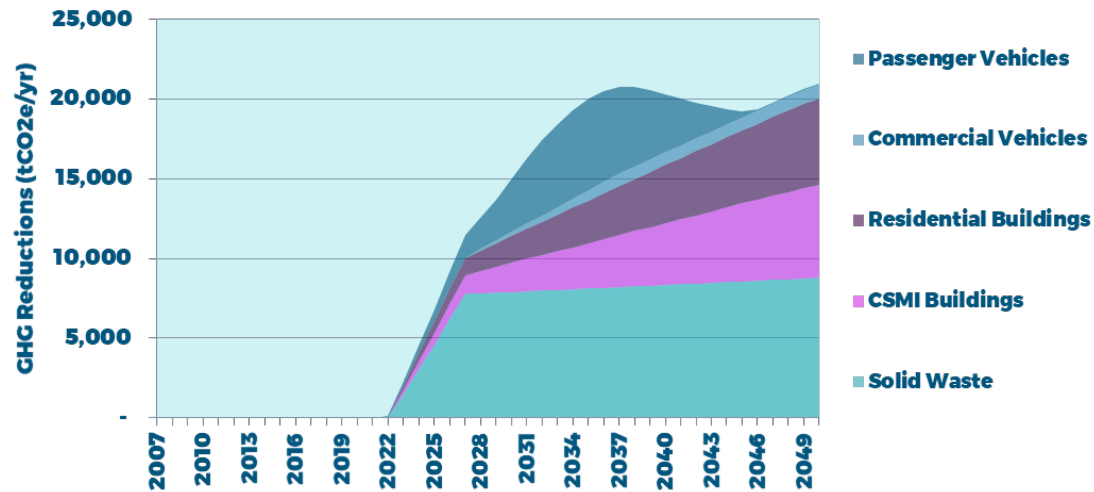
Planned GHGs by Fuels & Waste, tonnes/year



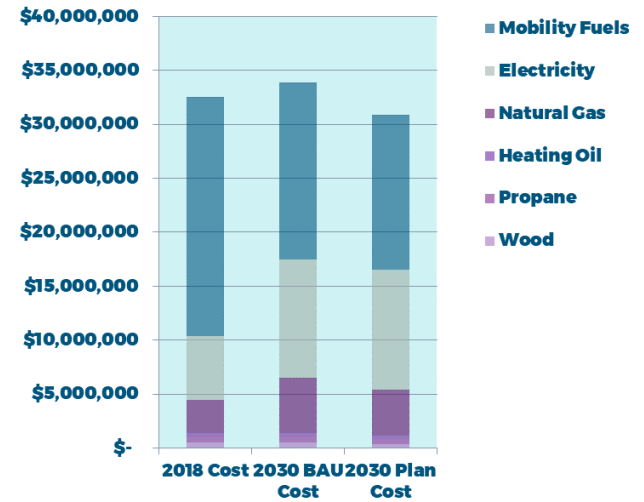
Planned GHGs by Sector, tonnes/year



GHG Impacts of Plan by Sector, tonnes/year



Community Energy Costs, 2018 and 2030, \$/yr



Appendix G: Engagement Summary

Stakeholder Workshop

Date: February 11, 2020

This workshop introduced the concept of the Big Moves, and the backcasting approach. Attendees were split into three sectors (transportation, buildings, waste), and went through the backcasting approach to produce visions for what they'd ideally see for Smithers. Attendees then were led through an exercise to determine the current state of each sector as means of setting a benchmark, and to balance the vision against reality, to ultimately determine a practical approach forward.

Stakeholders Attended

Regional District of Bulkley-Nechako

Mark Fisher

Pacific Inland Resources (West Fraser)

Dean MacDonald

School District 54

Matt Monkman

Smithers Climate Action Working Group

Tina Portman

Debbie Wellwood

Jesse Hiemstra

Nikki Skuce

Carmen Nikal

Smithers Residents

Ingo Oevermann

Agenda

Time	Activity
9:00	Refreshments and informal discussion
9:10	Opening remarks and introductions <ul style="list-style-type: none">- Name and organization, your favourite thing about Smithers
9:30	Setting the context <ul style="list-style-type: none">- CEEP intro (brief recap from webinar)- Smithers context – Climate Emergency declaration- Backcasting as a tool to structure our discussion
10:00	A – Vision
10:30	B – Current State
10:50	C – Creative Solutions <ul style="list-style-type: none">- Big Moves and the action list- Additional ideas
12:00	Lunch
12:45	D – Decide on Priorities
1:15	Network Mapping to Support Implementation
1:45	Priority Strategy Deep Dive
2:15	Putting it Together – Pixar Pitch

Participants assigned priorities to actions and added new ideas.

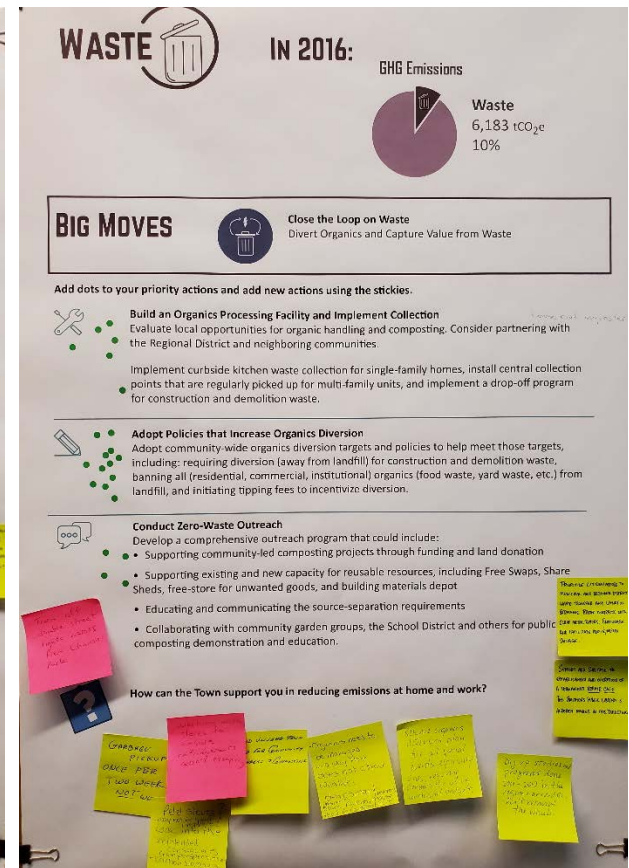
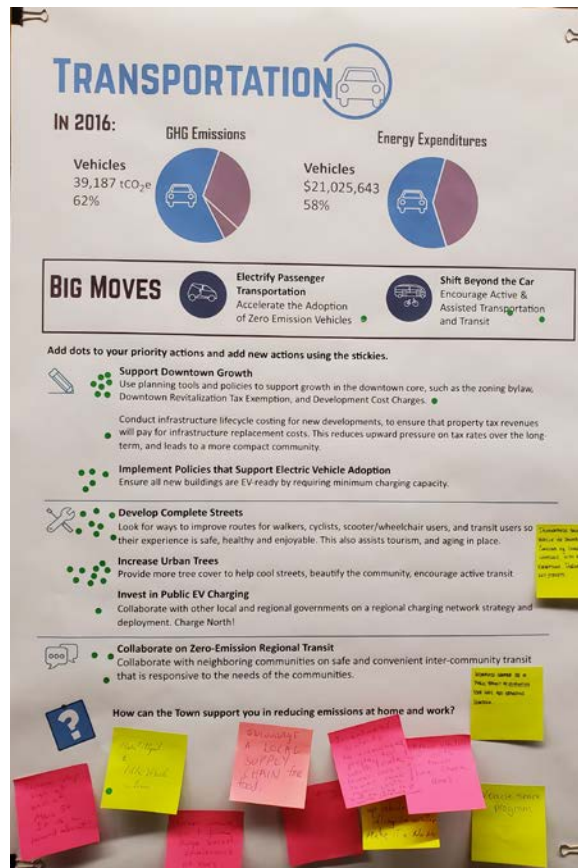
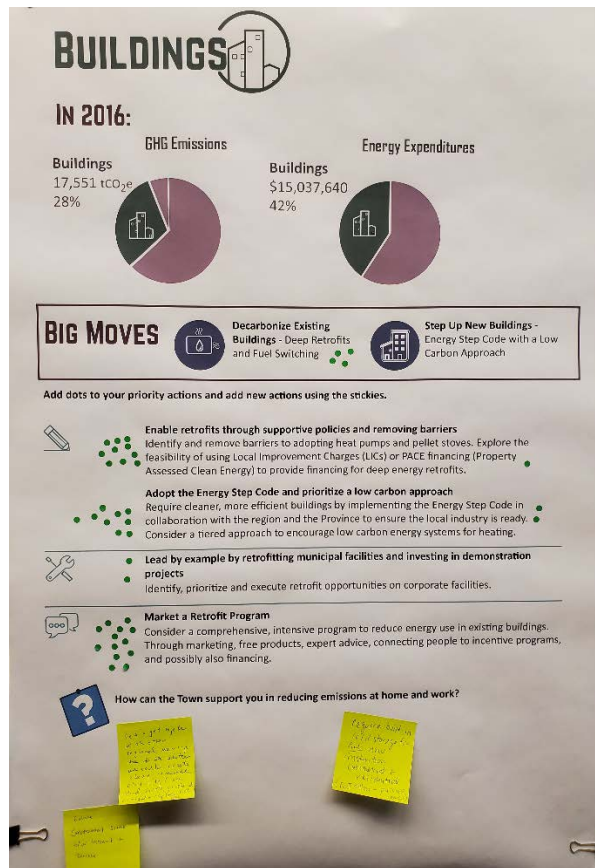


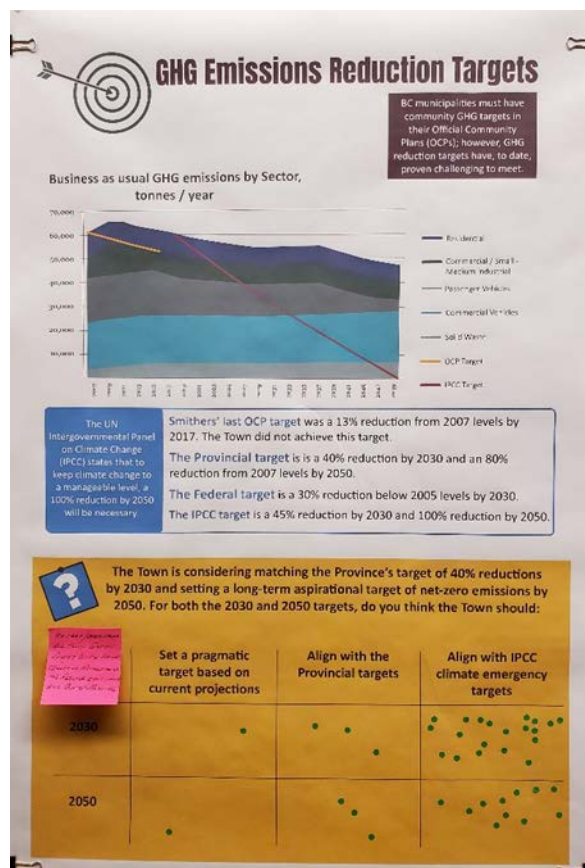
Working in sector groups, participants created “Pixar Pitches” to tell the story of Smithers achieving the climate action visions.



Groups created network maps of sector-specific stakeholders and potential collaborators.

Open House Posters





Open House participants were given dot stickers to vote for the strategies they thought would be the most impactful and relevant for Smithers. Strategies were organized by Big Move and by local government lever (policy/regulation, infrastructure, and outreach/engagement). The most popular strategies were:

Buildings

- Enable retrofits through supportive policies and removing barriers
- Adopt the Energy Step Code and prioritize a low carbon approach
- Market a retrofit program

Transportation

- Support downtown growth
- Develop complete streets
- Increase urban trees

Waste

- Adopt policies that increase organics diversion

A fourth poster (shown to the left) asked participants to vote on community GHG reduction targets. Most participants voted to align with IPCC climate emergency targets.

Smithers CEEP Open House – Survey Results

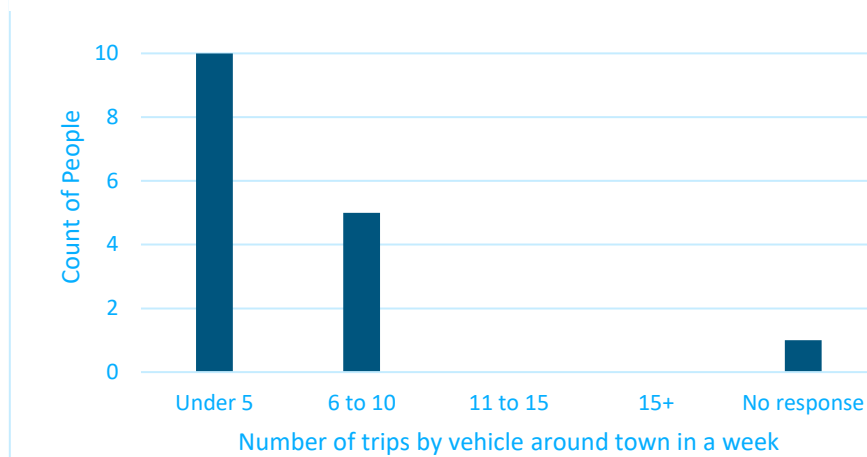
General Notes

- Sixteen surveys were collected for the Smithers CEEP Open House.
- For Potential Action questions, participants were asked to rate their level of support from a scale of 1 (low support) to 5 (high support).

About You

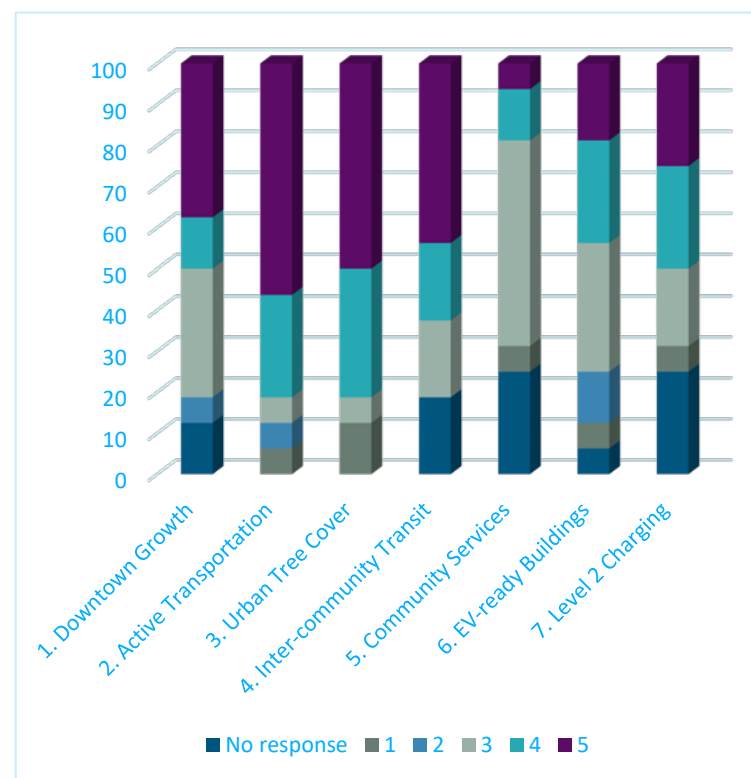
- 63% of respondents lived in Smithers. The rest either lived in a rural area outside of Smithers, or there was one participant from each of the following areas: Telkwa, New Hazelton and Viewmont.
- 50% of the participants wrote that they worked in Smithers. The remaining did not mention where they worked, or listed themselves as retired.
- 100 % of respondents said they take under five trips a month to each of the following locations: Terrace, Prince George and further than Prince George.

Figure 9. Number of participants reporting on how many trips around town by vehicle per week.



Transportation

Figure 10. Percentage Level of support for Transportation potential actions. Legend shows answer options from 1 (low support) to 5 (high support).

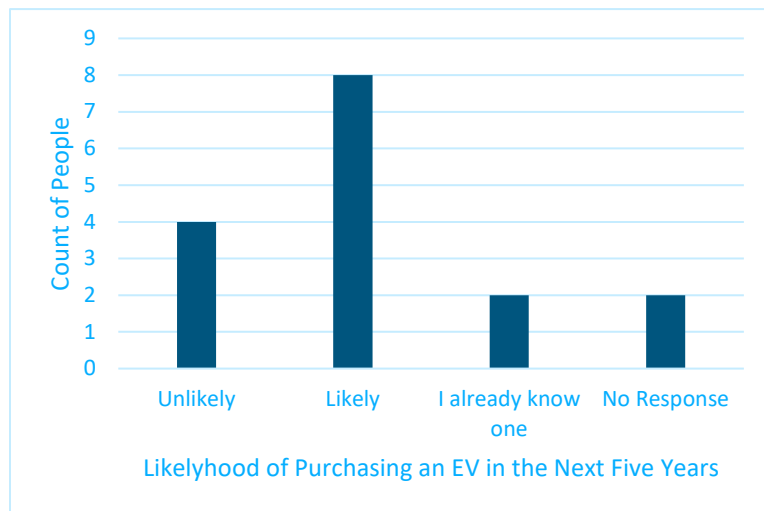


Shift Beyond the Car – Encourage Active and Assisted Transportation and Transit

- Survey responses to what route or infrastructure improvements should the Town prioritize to increase active transportation, included:
 - Complete the perimeter trail;
 - Cycling safety for crossing over Hwy 16;
 - Mention of Bulkley Bridge by two participants;
 - Main Street become non-motorized (two participants);
 - Reduce in town speed limits;
 - Sidewalks and bike lanes.
- The only suggested businesses, services, shops or facilities to try to attract to Smithers included: Costco, local food, recycling depot, geothermal plant, roofing recycling, wind farm and library with video conferencing. No one entity was suggested by more than one person.

Electrify Passenger Transportation – Accelerate the Transition to Electric Vehicles

Figure 11. Number of participants for how likely to purchase an electric vehicle in the next five years

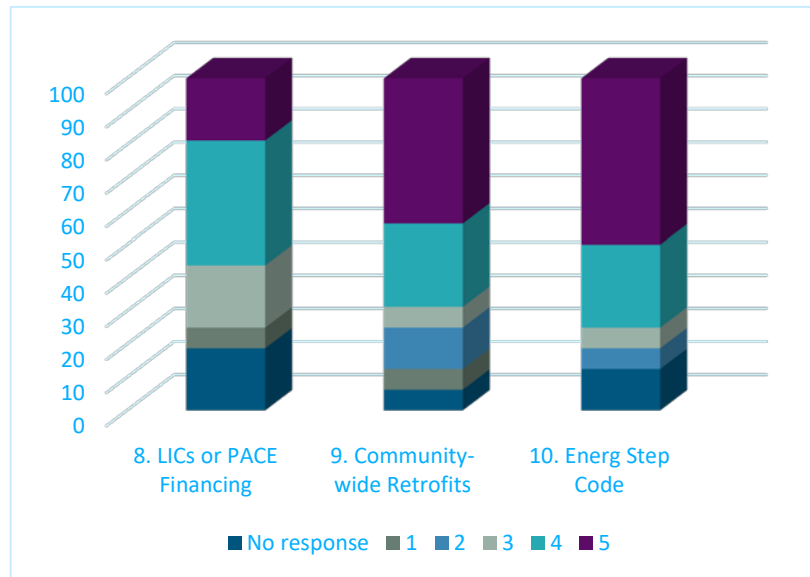


Suggestions for how the Town could help citizens reduce emissions:

- E-bike parking and charging station
- Passenger trains
- Have bicycle facilities right in town, so we don't have to go to a transfer station;
- Encourage and incentivize increased density via multifamily developments;
- Improve walking and biking infrastructure/lanes (mentioned twice in surveys);
- No idling bylaw – ticketing (mentioned twice in surveys);
- Stop transporting snow by dump trucks and reduce amount of plowing time;
- Tax breaks.

Buildings

Figure 12. Percentage level of support for building potential actions.



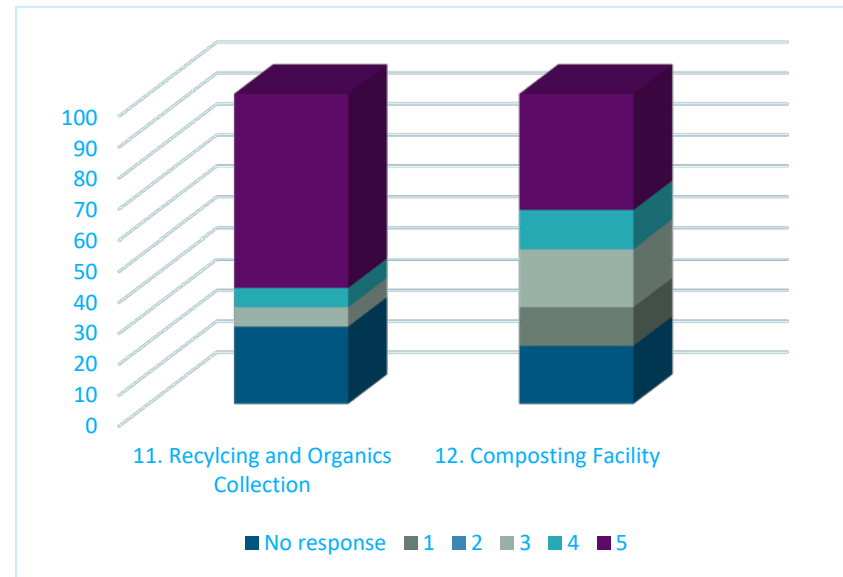
Decarbonize Existing Buildings – Deep Energy Retrofits and Fuel Switching

Suggestions for how else Town can enable residential and commercial retrofits?

- Provide educational awareness on grants that exist
- Need 50% incentives, up to substantial amount (\$5 or \$10k)
- Develop regional (NW BC) plan to produce cheap wind, solar, geothermal electric power; to replace natural gas for heating.

Waste

Figure 13. Percentage level of support for waste potential actions.



Close the Loop on Waste – Divert Organics and Capture Value from Waste

88% of participants said they use a backyard composter—only two of the sixteen respondents said they did not use one.

Suggestions for how else can the Town support a shift towards zero waste?

- Encourage RDBN to provide full solid waste facilities and services;
- User fees/user pay for garbage collection;
- Facilitate connecting people who compost with people who have organics. In town swap shed. Education and outreach;
- Organics collection. Then collect the methane to use as energy (electricity or burning for heat and cooling) (gas collection mentioned twice in survey results).

Smithers CEEP Online Survey to the Public – Results

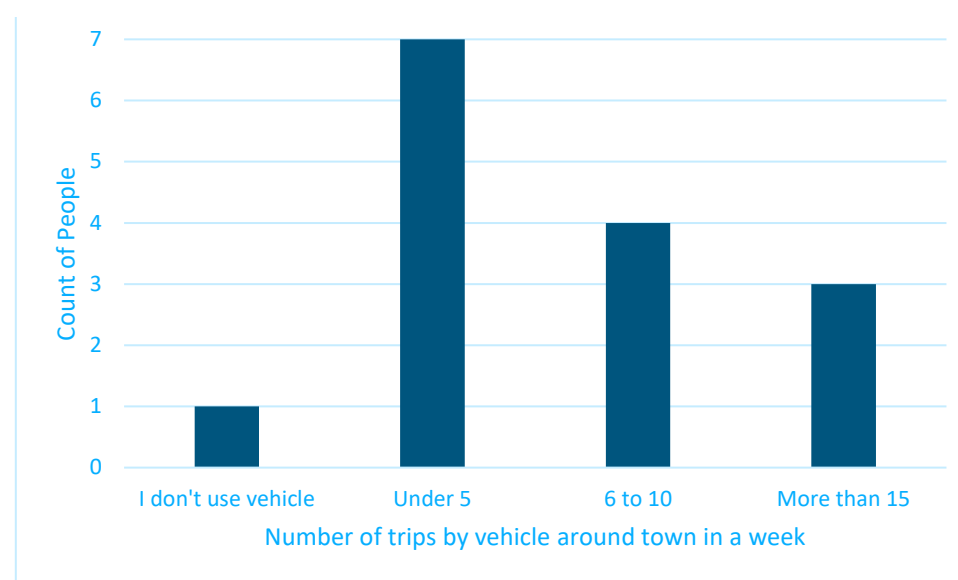
General Notes

- 15 surveys were collected from the public for the Smithers CEEP online survey.
- For Potential Action questions, participants were asked to rate their level of support from a scale of 1 (low support) to 5 (high support).
- Comments that are italicized are direct quotes from the survey. For a full list of comments, see the CEEP Public Survey spreadsheet.
- General comments on the CEEP (last question of the survey):
 - *The CEEP needs to have some goals and accountability built in so another 5 years doesn't pass with no progress.*
 - *Be ambitious and also practical to ensure the Town meets its target! Require public, annual (or semi-annual) reporting on how Town is doing toward meeting its target and reducing emissions.*

About You

- 53% of respondents live in Smithers and 53% said they work in Smithers. Other respondents said they worked and/or lived in places like Freeland, Telkwa, the Driftwood area, and just outside of the Town boundary. Two of the participants listed themselves as retired.
- Almost all of the participants (87%) said they live in a single-family home that they own. Two participants said they lived in a duplex.
- Most of the surveyed participants said they use a car to get around town, except for one. Approximately half of participants take six or more trips around town per week, and the other half are under five trips per week (Figure 14).
- None of respondents take five or more trips a month to each of the following locations: Terrace, Prince George and further than Prince George.

Figure 14. Number of participants reporting on how many trips around town by vehicle per week.



Targets

- 33% of those surveyed agree that Smithers should come up with their own targets based on planned actions, and 33% thought that Smithers should align with the IPCC 1.5C targets. (Figure 2).
- Some of the comments written for this survey question are listed below:
 - *All targets are insufficient. The only feasible reduction is as much as possible as soon as possible.*
 - *The targets are hard to understand, are we on track with provincial or federal or UN targets.*
 - *We should try to comply with any targets set by provincial, federal and even municipal governments while leaving the door open for local targets if we want or need them.*
 - *All targets are way to high and set up for failure. Its time to stop this wasteful tax grab and redistribution of wealth.*

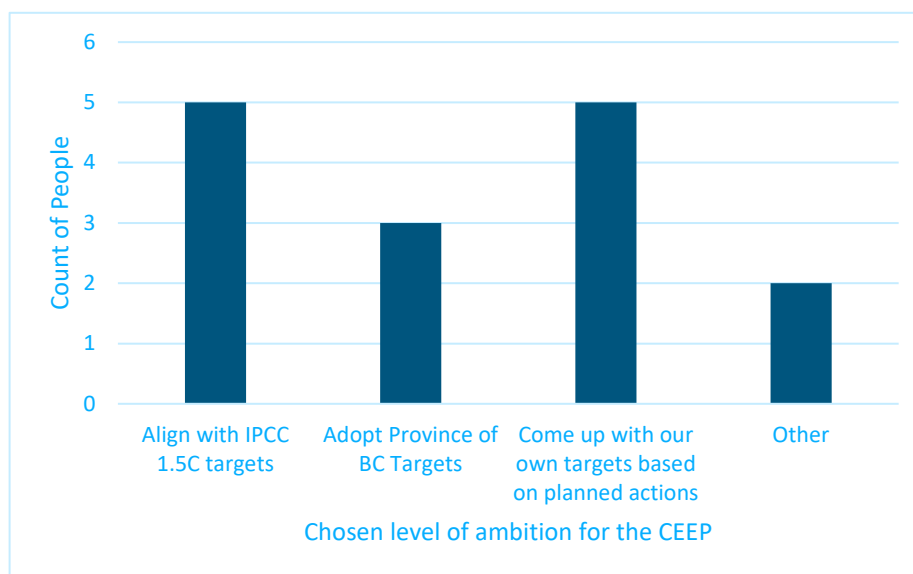


Figure 15. Number of people who chose varying levels of ambition for the proposed CEEP

- When asked what the biggest barrier is to taking an ambitious approach to the Smithers CEEP, participants mentioned (multiple participants mentioned cost and political will):
 - *The affordability of some of the green technologies, ie electric cars, solar heating; convincing the public at large that climate change is real.*
 - *I have a desire to travel overseas or to fly to visit family more frequently. But this does not align with my desire to reduce emissions. I have curtailed by long distance travel significantly.*
 - *Our economic culture and environment, and after covid will we take an aggressive response to reviving the economy. Why are we not taking about population control and driving less, provide incentives to tax payers who ride their bikes.*
 - *Lack of political will. Misunderstanding from the public of the potential benefits, community economic development opportunities and opportunities for increased community and individual self reliance.*
 - *Lack of control over all the policies and incentives.*
 - *Individual behaviour change and understanding that we all require lifestyle adjustments.*
 - *Motor vehicle related infrastructure.*
 - *Weather conditions - family commitments.*
 - *The lack of education that results in people not "believing" in climate change.*

Transportation

- Overall, there seems to be support for the proposed transportation actions for the CEEP (Figure 3).
- 80% of respondents rated the following four actions with a 4 or 5 for support: active transportation, urban tree cover, and EV ready buildings (Figure 3).
- 60% of participants strongly supported installing Level 2 EV charging stations (Figure 3).
- Some of the comments of note on improving streets for active transportation and accessibility included the following ideas:
 - Improve 3rd avenue with dedicated bike lane, bike lanes on King and Queen, bike/e-vehicle lane on Main St (remove parking);
 - Bike path on Bulkley River bridge to Telkwa, and connect existing routes to proposed Cycle 16 Multi-use trail;
 - Remove vehicle sections in downtown;
 - Streets swept to remove gravel and reduce dust in early spring;
 - Creating a points system for tracking walking and biking.
- In regards to increasing tree cover, survey comments included:
 - I believe the town has a bylaw related to planting trees to replace trees that have been cut down. I don't see evidence of this. Even the 4 trees planted along the perimeter trail to the south of 6th ave north of the new subdivision is a dismal attempt. Some are not native species, they were eaten by animals over the winter and there is still a huge area denuded of trees. Encourage people to plant trees in their yards - deciduous are great to plant on the south side of houses to shade in summer and allow sun to reach the houses in the winter.*
 - Retain existing, healthy trees as much as possible. Any new trees added should be of a suitable species that will: 1) thrive in the EXPECTED climate, 2) favour deciduous species that shade in the summer and increase light penetration in the winter months, 3) not require excessive watering in normal conditions.*
- 27% of participants weakly supported (a rating score of 1 or 2) working with economic development partners to attract priority services to reduce out of community travel (Figure 3).

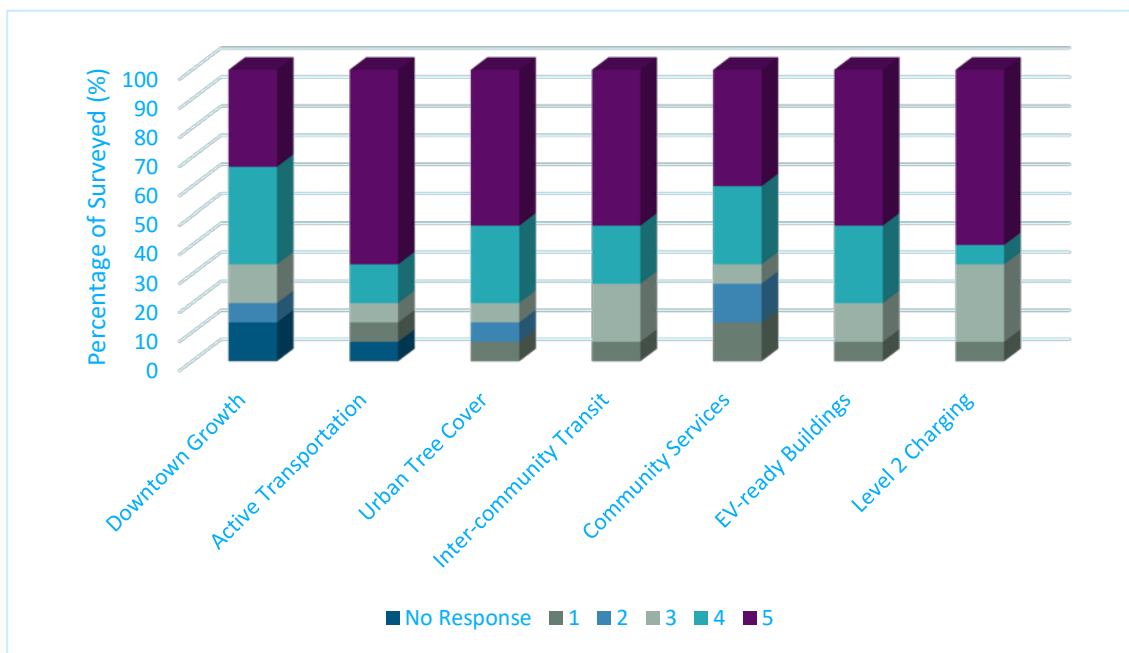


Figure 16. Percentage Level of support for Transportation potential actions. Legend shows answer options from 1 (low support) to 5 (high support).

- One participant wrote in response to supporting downtown growth:
 - *Removing the requirement for downtown businesses to provide parking would go a long way to helping small businesses, and help to densify the downtown core.*
- In response to the action item of collaborating more with neighboring communities on inter-community transit, those surveys had some comments of note:
 - *I would like to see all the various methods of travelling from one community to the other streamlined so their schedules don't overlap. Could the health bus consider taking non-medical passengers when there are seats available?*
 - Support for streamlined transportation services such as BC Transit, VIA Rail, BC Bus North, NH Health Connection bus.
 - Electrification of transit on a large scale.
 - *Prioritize safe off-road routes for scooters and bikes between communities particularly in the North where e-bikes and alternative means of travel might be dangerous with transport trucks, and there a limited to no alternative neighbourhood routes.*
 - Ride share app.
 - Bike route along Hudson Bay Mountain Road.
 - More collaboration could reduce safety issues with hitch hiking.
 - *Access to practical, efficient public transit is paramount to reducing emissions and improving the quality of life (and ability/willingness to stay in Smithers) for -especially - the low-income/elderly/mobility-challenged segment of our population.*
 - *(Transit between) Smithers and Terrace for medical travel*
- In terms of attracting priority services to the community, more than one respondent mentioned health related services being a reason they have to drive out of town.
- Two participants mentioned supporting solar panels in the creation of new EV ready buildings.
- Suggestions from the survey for EV charging stations:
 - Focus on Level 3 stations downtown (multiple participants emphasized downtown);
 - Each parking lot.
 - Public parking lots near Hwy 16.
 - Grocery Stores.
 - *All Town owned parking facilities, grocery stores, restaurants. Anywhere you might spend >30 minutes (Doctor's or Dentist's offices, Library, Airport, Train Station, Museum, Visitor Centre).*
 - *Level 2 stations should be near by other services like restaurants, cafes, shops, work places etc. It would also be beneficial to have Level 3 charging stations for people traveling through town who will then stop and eat and shop while they charge.*
- When asked how else the Town can help individuals reduce emissions from transportation, the following ideas came up:
 - Rural transit;

- Rules against idling;
 - A community truck for borrow/rent;
 - Share the road education;
 - Support bike routes and lanes;
 - Electric golf carts;
 - More plowed sidewalks.
- Only two participants said they wouldn't shift any "around town" trips to active transportation with additional infrastructure in place. 80% of people surveyed would shift some trips to walking and biking or already primarily do so.
- 60% of participants responded that they would shift none or less than 25% of trips to public transit with a regular and improved schedule of service
- 73% said there was a good chance (somewhat likely, likely, or very likely) of them purchasing an EV in the next five years (Figure 6).

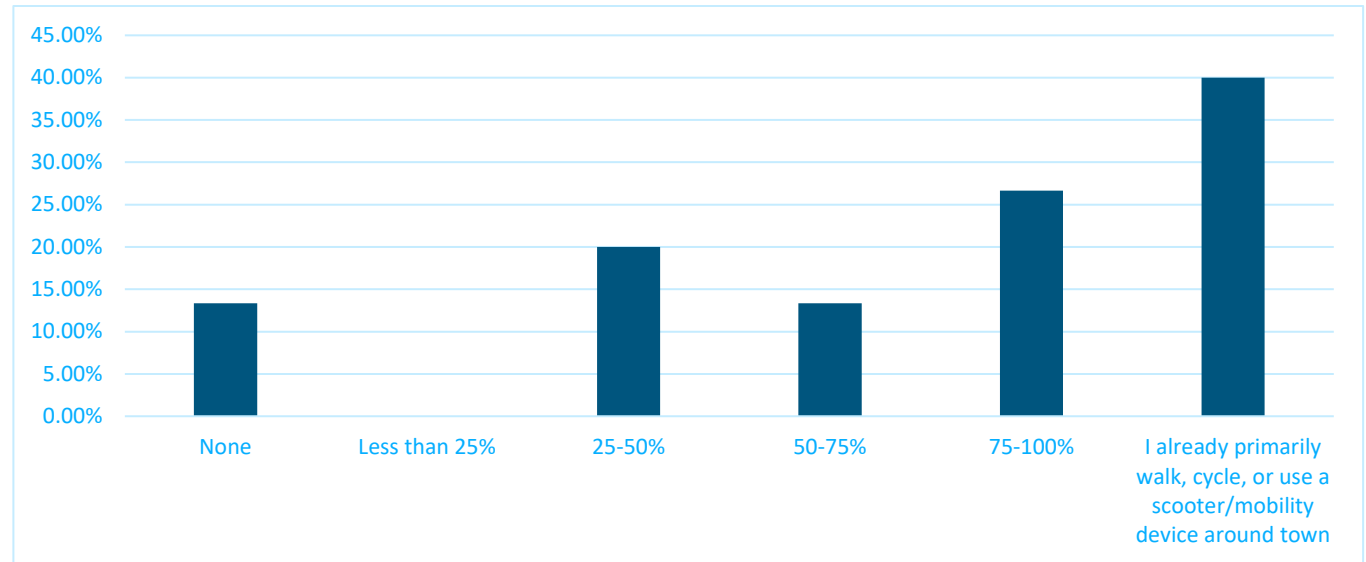


Figure 17. Percentage of trips participants would shift out of a vehicle to walking or cycling if additional infrastructure was in place (graph exported from survey monkey).

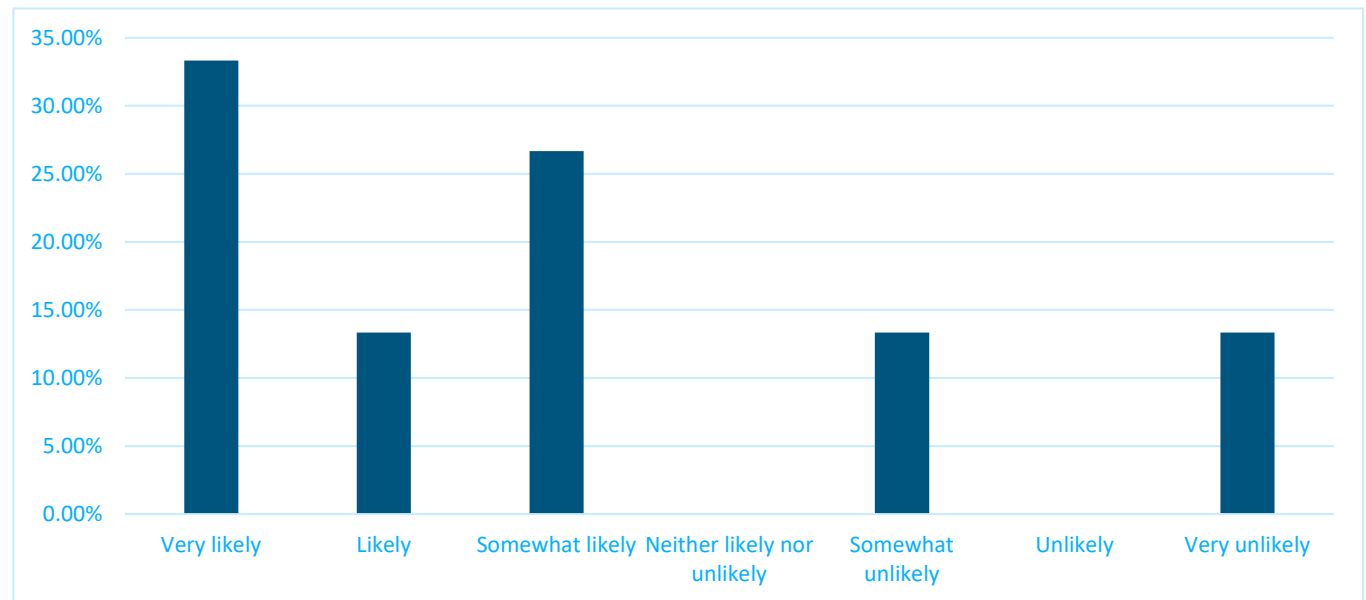


Figure 18. Number of participants for how likely to purchase an electric vehicle in the next five years (exported from survey monkey).

Buildings

- 60% of people rated a 4 or 5 on support for exploring the feasibility of LICs or PACE financing to provide financing for deep energy retrofits, and 60% for the same level of support for initiating a community-wide retrofit campaign with incentives (Figure 7).
- One participant commented the following for support for LICs and PACE:
 - *With many 100-year-old houses in this town this would seem to be a program with employment and long term efficiency benefits.*
- 66% of respondents rated a 4 or 5 on support for adopting the BC Energy Step Code. 20% rated a 1 or 2 on support, which was higher than other proposed building actions.
- Two participants mentioned heat pumps in their comments on building actions:
 - *Building requirements for new homes could require better insulation, use of passive solar, heat pumps, etc.*
 - *Heat pumps can be great, but they need to be maintained and need to contain environmentally safe coolants (refrigerants can contribute hugely to GHG). My neighbour has a heat pump and it is very loud. It keeps us up at night at times.*
- Other themes from the comments on how the Town can enable residential and commercial retrofits:
 - Provide contractors or other groups that can provide work or training;
 - Looking at construction waste;
 - Tax exemptions and reduced building permit charges;
 - Reductions in property taxes.
- In response to adopting Energy Step Code, one participant suggested organized training and information sessions for local contractors.
- 57% of participants said they would be somewhat likely, likely, or very likely to do an energy retrofit on their home in the next five years if the town could offer additional support (Figure 8).

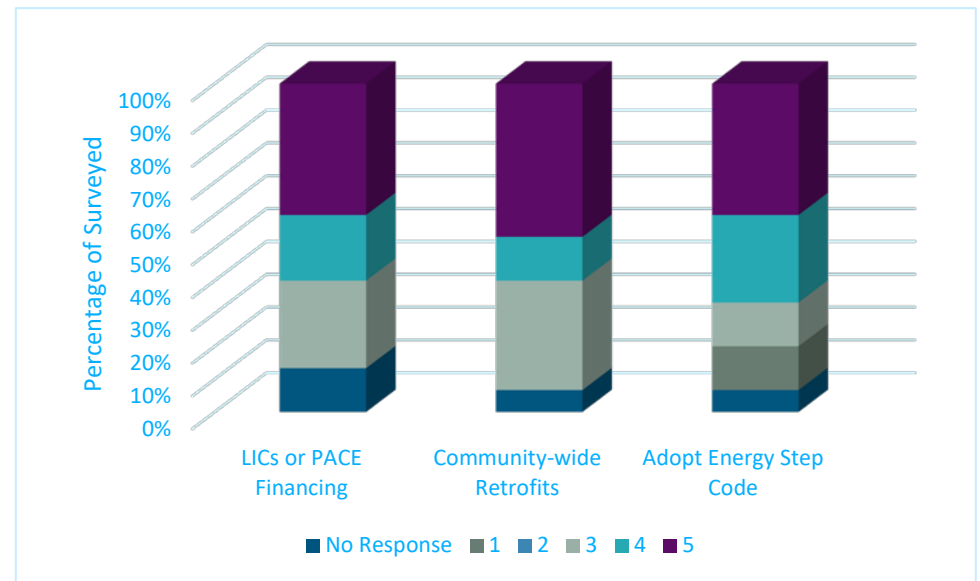


Figure 19. Percentage level of support for building potential actions.

Waste

- There was overall support for all actions related to waste. 87% of participants showed strong support (4 or 5 score) for looking at the feasibility of a composting facility. 80% showed similar support for the other two waste actions (Figure 9).
- Themes in the comments on waste actions included residents having access to soil, focusing on recycling first, and educational campaigns.
- Other suggestions related to waste:
 - Re-fillable container shopping/zero waste stores
 - Collaboration with grocery stores;
 - Circular economy initiatives;
 - Tipping fees at transfer stations;
 - Single-use plastics ban.

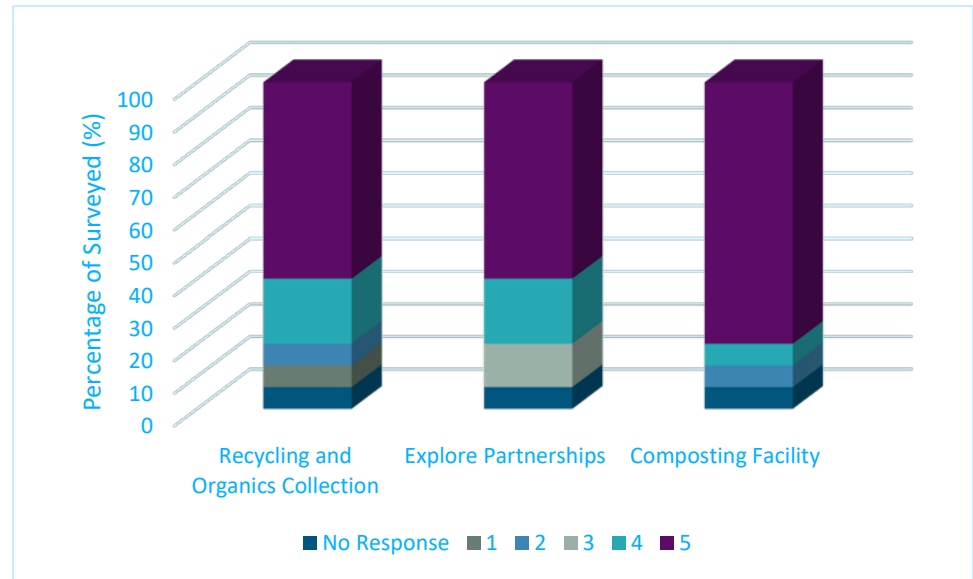


Figure 20. Percentage level of support for waste potential actions.