



# 2020 CLIMATE CHANGE MITIGATION PLAN



# LETTER FROM THE MAYOR



To be completed following adoption of plan.

# ACKNOWLEDGEMENTS

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The City of Prince George (The City) would like to acknowledge the contributions of several people and organizations that were involved in the development of this plan.

- Community members who attended the public open houses and/or completed the online survey and provided comments on possible climate actions
- Stakeholders who offered feedback on potential climate actions and opportunities to collaborate with the City including: University of Northern BC, Lakeland Mill, Fortis BC, Chamber of Commerce, Canfor, Northern Health, College of New Caledonia, Home Tech Energy Advisors, PGAir, Northern Real Estate Board, Pelican Consulting, Fraser Basin Council, Pacific Bioenergy, McElhanney Consulting, Regional District of Fraser-Fort George (RDFFG), and Aboriginal Housing Society
- Staff from numerous departments at the City

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The Fraser River at Paddlewheel Park.



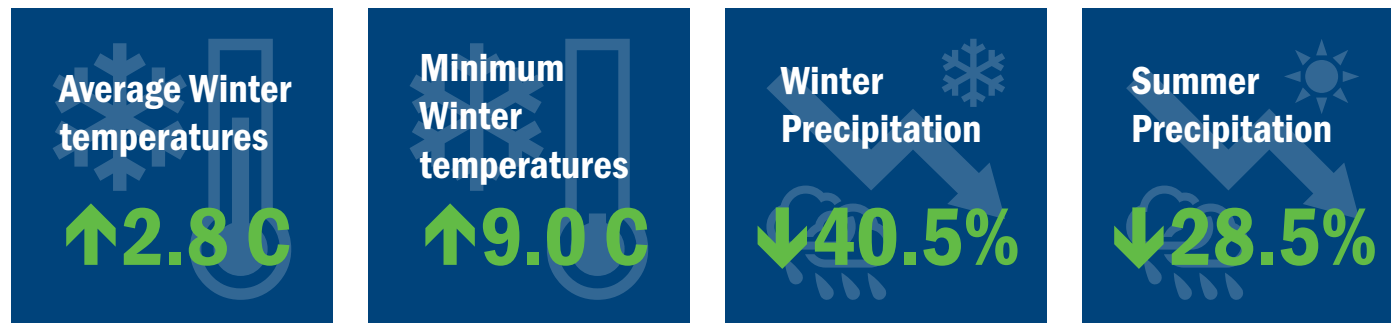
## THE LOCAL CLIMATE IS CHANGING

The climate is changing in Prince George and around the world. In fact, while the average global temperature has increased by one degree Celsius (1°C) above pre-industrial levels<sup>1</sup>, Prince George's annual average temperature has already increased by 1.7° C since 1942<sup>2</sup>. Over the past ten years, the impacts of climate change have become more visible in our region with:

- Warmer winters, leading to rain-on-snow events flooding low-lying areas, and to more trees being killed by beetles;
- Hotter and drier summers which have resulted in historic wildfire events; and,
- Long winter cold snaps, known as the polar vortex, caused by a weakened jet stream.

By 2050, Prince George expects to experience an additional increase in annual mean temperatures by almost 2°C, as well as six additional days above 30°C. Projections show that there will be more rainfall in the winter months, more frost-free days, and more extreme precipitation events, which will affect local buildings, infrastructure, public health and safety, drainage, air quality, and the natural environment.

### Between 1942 & 2018:



## REDUCING GREENHOUSE GAS EMISSIONS

Climate change mitigation focuses on minimizing or preventing climate change. It means taking action to reduce the sources of climate change by decreasing the amount of heat-trapping greenhouse gases, or GHGs, getting into the atmosphere. One example of climate change mitigation is reducing the burning of fossil fuels, used to heat buildings and operate gasoline and diesel powered vehicles. This can be done by transitioning to renewable fuel sources and increasing energy efficiency. Natural environments such as wetlands, forests, and soil naturally absorb carbon dioxide – a greenhouse gas – from the atmosphere, acting as a carbon sink. Because of this, preserving the natural environment, planting trees, and restoring forests and wetlands are also ways to lessen our impact on the climate.

## THE LOCAL BENEFITS OF TAKING ACTION

An important consideration in the City's approach to climate change mitigation has been the complementary benefits that can be realized from GHG reduction. Beyond environmental benefits, reducing GHG emissions offers valuable economic, social and health benefits to communities. Reducing community energy expenditures can help to keep money in people's pockets and/or enable energy expenditures to be retained within the local community, as in the case of the City's Downtown Renewable Energy System. In addition, greater use of wood in energy-efficient buildings, as demonstrated in the Wood Innovation Research Laboratory, supports local industry and jobs, and stimulates product development for additional markets. Local expertise and capacity have the potential to serve a rapidly growing global demand for low-carbon materials and techniques.

Many strategies to address climate change, such as active transportation and access to local, healthy food, also improve physical and mental health.

<sup>1</sup> IPCC 2018: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. In Press.

<sup>2</sup> Environment Canada (2019) Historical Data Prince George.  
[https://climate.weather.gc.ca/historical\\_data/search\\_historic\\_data\\_e.html](https://climate.weather.gc.ca/historical_data/search_historic_data_e.html)



## A HISTORY OF CLIMATE LEADERSHIP

The City of Prince George has been a leader on climate action over the past two decades. The City was one of the first municipalities in Canada to complete all five milestones of the Federation of Canadian Municipalities (FCM) Partners for Climate Protection Program (PCP). Prince George established a GHG inventory, and developed the 2007 Energy and Greenhouse Gas Management Plan to achieve a corporate GHGs reduction target of 10% below 2002 levels by 2012, and a community GHGs reduction target of 2% below 2002 levels by 2012.

Since then, the City has made significant efforts to reduce energy consumption and GHGs for both corporate operations and the community. The single greatest contributor to reducing the City's corporate GHGs has been the installation of the Downtown Renewable Energy System (DRES). Operational since 2012, the system now distributes hot water through underground piping to eleven buildings in the downtown area, almost completely offsetting their natural gas consumption for heat. For community emissions, the City has increased public transit, expanded its active transportation infrastructure, and is putting forth funding for electric vehicle charging stations.

## CITY OF PRINCE GEORGE CORPORATE EMISSIONS

Despite these efforts, the corporate target was not reached, with an estimated 7% increase by 2012 and a 9.5% increase by 2017 due to growth in diesel consumption.

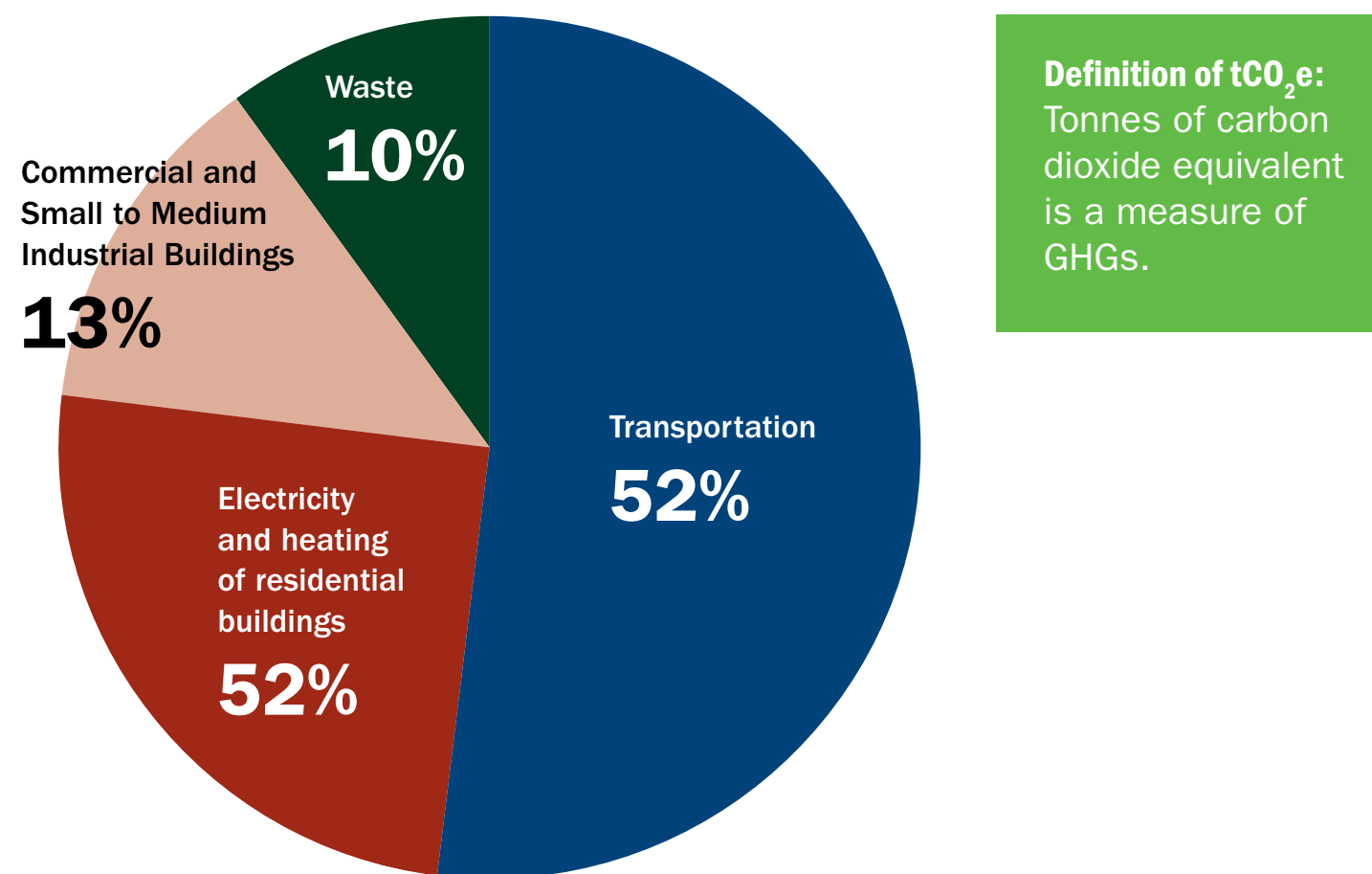
Now, more than a decade since the 2007 Energy and Greenhouse Gas Management Plan was implemented, the City of Prince George is refreshing greenhouse gas reduction targets to continue on the path of climate leadership and work towards important long-term emissions reductions.

The City operations emitted 8,152 tCO<sub>2</sub>e and spent \$6.09 million on energy in 2017. Those emissions were mainly due to burning fossil fuels for heating buildings and powering vehicles.

## PRINCE GEORGE'S COMMUNITY EMISSIONS

The community GHG reduction target was also missed, with a 0.8% increase by 2012 and a 3.9% increase by 2017 due to growth in vehicle emissions. The community of Prince George excluding industry emitted 550,000 tCO<sub>2</sub>e in 2017 and spent \$245 million on energy consumption. The breakdown of community emissions is shown in Figure 1.

Figure 1 – 2017 Prince George Community GHGs



**Definition of tCO<sub>2</sub>e:**  
Tonnes of carbon dioxide equivalent is a measure of GHGs.

The City's corporate activities account for about 1% of the community's GHGs, however, local governments directly and indirectly influence about 40% of the GHGs emitted by the community. The City has direct influence over the design of the city and where people live, how they travel to work, and how waste is managed.



## SETTING TARGETS

The Federal Government of Canada has committed to reducing GHG emissions by 30% below 2005 levels by 2030, and working towards net-zero emissions by 2050. The Provincial Government set targets to reduce GHG emissions by 40% below 2007 levels by 2030, 60% by 2040, and 80% by 2050.

The City of Prince George has set updated GHG reduction targets for both corporate operations and the community. Targets have been set for 2025, 2030, 2040 ,and 2050 to ensure progress is made to reach the long-term target of an 80% GHG reduction by 2050, which aligns with the Provincial government.

Table 1 – 2020 Climate Change Mitigation Plan GHGs Reduction Targets

Corporate Targets:	Community Targets:
5% reduction by 2025	5% reduction by 2025
17% reduction by 2030	12% reduction by 2030
50% reduction by 2040	50% reduction by 2040
80% reduction by 2050	80% reduction by 2050

## GETTING THERE

The year 2017 was selected as the baseline for the 2020 Climate Change Mitigation Plan due to the accuracy and reliability of the GHG emissions dataset. Additionally, since it is a more recent dataset, 2017 accurately depicts Prince George’s current state, and demonstrates where best to target emissions reductions.

Based on staff consultation, best practices and feedback from stakeholder and public engagement sessions, the 2020 Climate Change Mitigation Plan identifies 34 corporate and 35 community actions to implement over the next five to ten years to achieve reduction targets set for 2025 and 2030.

These actions fall under six focus areas:

- Transportation:** Shifting to active transportation, public transit, and increasing the uptake of electric vehicles;
- Land Use:** Concentrating growth in certain areas to limit sprawl and promote compact, transit and pedestrian oriented development;
- Buildings:** Improving energy performance in new and existing building stocks;
- Waste:** Diverting organics from the landfill and increasing recycling and water conservation;
- Renewable Energy:** Increasing the use of renewable energy; and,
- Policy Decision Making and Reporting:** Embedding climate action into policies and budgets, and building partnerships with other community organizations to support these actions.



Public Participation Session at the Bob Harkins Public Library.



## HIGH-IMPACT ACTIONS

Of the 34 corporate and 35 community actions, some actions stand out as having the highest impact on reducing GHGs based on modeling work.

### **For reducing corporate GHGs, high-impact actions include:**

- Conducting and implementing a Green Fleet Study (270 tonnes/year);
- Conducting energy audits on buildings, and implementing recommended improvements (195 tonnes/ year); and,
- Leading by example: constructing civic facilities at least one step above baseline in Energy Step Code and utilizing wood (145 tonnes/year).

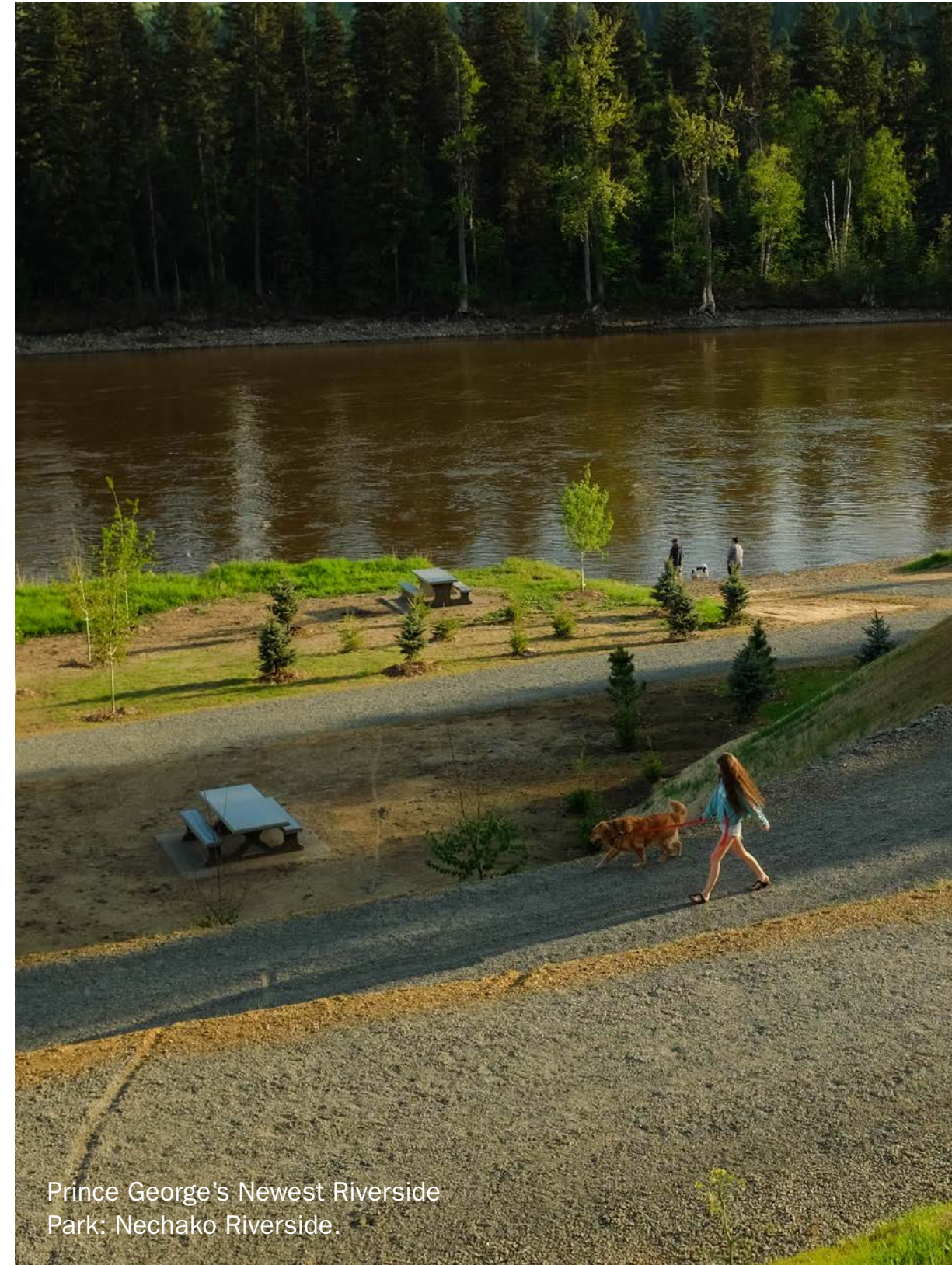
### **For reducing community GHGs, high-impact actions include:**

- Investigating financing models for a comprehensive residential energy efficiency retrofit campaign, and assuming implementation thereof (2,100 tonnes/year);
- Partnering with BC Transit to look at opportunities to convert the transit fleet to low-carbon fuel (2,100 tonnes/year); and,
- Developing an Electric Vehicle Strategy to identify initiatives that will increase the community-wide uptake of low-carbon fuels (1,800 tonnes/year).

## ACTIONS WITH GREATEST PUBLIC SUPPORT

Approximately eight hundred responses were received from the public through three open houses and an online survey regarding community actions. For reducing community GHGs, the actions with greatest support from public participants include:

- Investigating opportunities to expand existing organics program and divert organics from the landfill;
- Continuing to support local food production by providing space for farmers' markets and community gardens; and,
- Identifying regulatory measures to protect and grow the urban forest canopy.



Prince George's Newest Riverside  
Park: Nechako Riverside.



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# CLIMATE CHANGE – WHAT'S THE DEAL?



## CLIMATE CHANGE MITIGATION PLAN



# WHAT IS CLIMATE CHANGE?

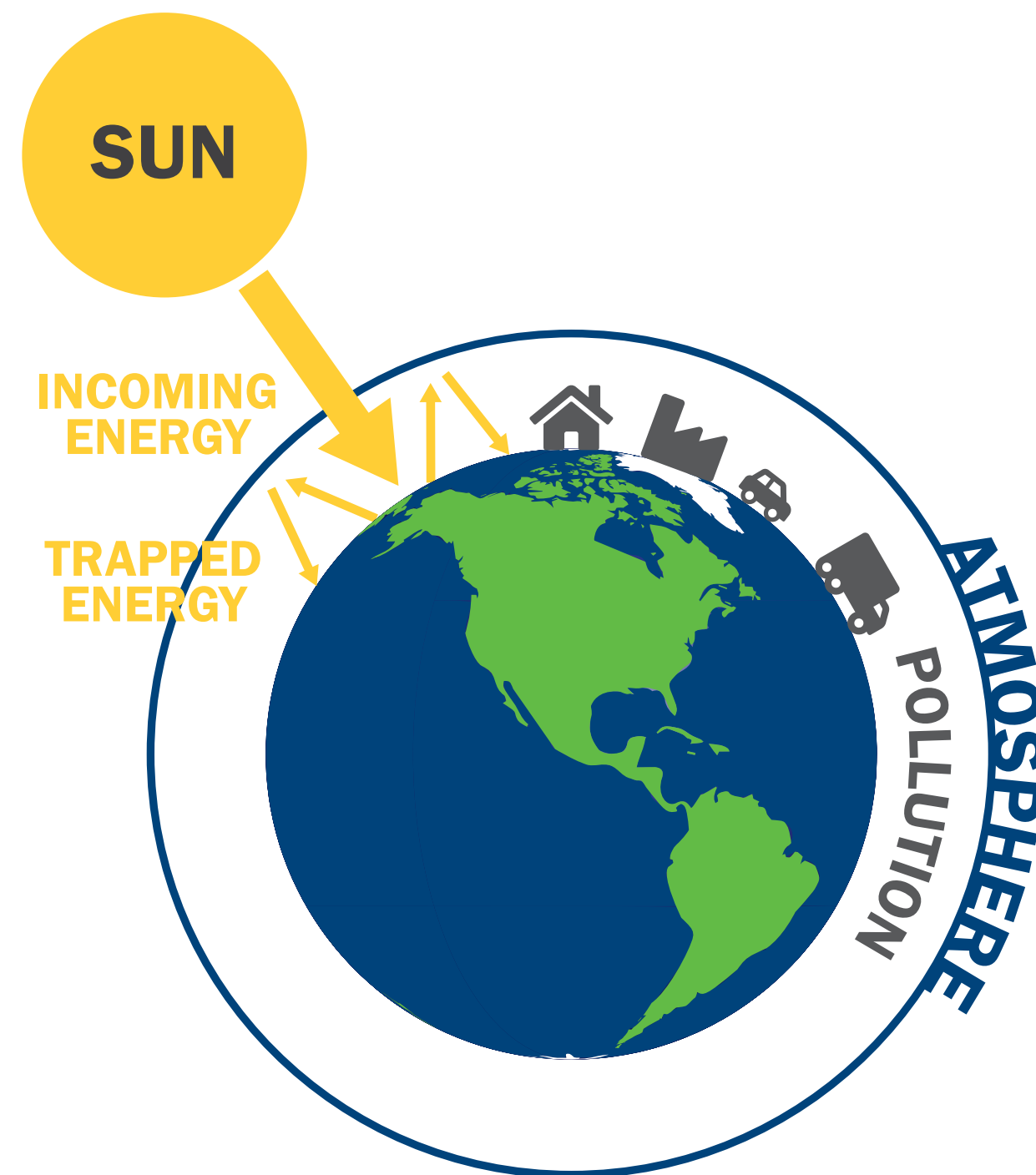
While the Earth's climate has fluctuated naturally for millions of years, the speed at which changes in climate have occurred globally has increased in the last one hundred years due to human activities. These activities largely relate to changes in the natural environment, including the loss of natural carbon absorbers such as trees and wetlands, and changing the Earth's concentration of greenhouse gas emissions (GHGs) through the burning of fossil fuels such as gasoline, oil, coal, and natural gas.

GHGs, such as carbon dioxide (CO<sub>2</sub>), occur naturally within the atmosphere and trap heat from the sun on Earth, allowing living systems such as humans to survive. However, the burning of fossil fuels has resulted in an increase of GHGs, which has changed the atmosphere's composition, preventing extra energy from being reflected back into space. The GHG emissions act like a "greenhouse", trapping heat within the atmosphere and leading to changes in the Earth's surface temperature and evaporation and precipitation patterns.

According to the World Meteorological Organization, the last five years have been the hottest years on record, and the ten hottest years ever recorded have all been measured within the past fifteen years. The average temperatures on Earth have already increased by 1°C above pre-industrial levels and are expected to reach 1.5°C between 2030-2052, based on the current rate, according to the Intergovernmental Panel on Climate Change<sup>1</sup>. Although climate change may feel like a problem of the future, we know that the local climate is already changing, and its impacts are already being experienced in Prince George.

<sup>1</sup> IPCC 2018: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels, and related global greenhouse gas emission pathways in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. In Press.

Figure 2 – Additional greenhouse gases, such as carbon dioxide, in the atmosphere lead to too much energy being trapped on Earth.





## CLIMATE CHANGE IN PRINCE GEORGE

The climate is changing everywhere, but in Prince George, it is changing at a faster rate than the global average. While the average global temperature has increased by 1°C above preindustrial levels, Prince George's annual average temperature has already increased by 1.7°C<sup>1</sup> since 1942.

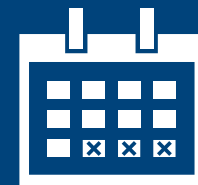
Climatic changes have occurred mostly in the winter months, from October to March, in Prince George. Winter average temperatures in Prince George have increased by about 2.8°C since 1942, and extreme cold days (below -25°C) are becoming less frequent<sup>2</sup>.

Over the past decade, the impacts of climate change have become more evident, with:

- Warmer winters leading to rain-on-snow events flooding low-lying areas, and to more trees being killed by beetles;
- Hotter and drier summers, leading to historic wildfire events; and,
- Long winter cold snaps, known as the polar vortex, caused by a weakened jet stream.



### Between 1942 & 2018:



Annual days below -25°C decreased from  
**18 to 7 days/year**



Average Winter Temperatures  
**↑ 2.8 C**



Minimum Winter Temperatures  
**↑ 9.0 C**



Winter Precipitation  
**↓ 40.5%**



Summer Precipitation  
**↓ 28.5%**

<sup>1</sup> Environment Canada (2019) Historical Data Prince George.  
[https://climate.weather.gc.ca/historical\\_data/search\\_historic\\_data\\_e.html](https://climate.weather.gc.ca/historical_data/search_historic_data_e.html)

<sup>2</sup> Ibid.



## FUTURE CLIMATE CHANGE

Looking to the future, Prince George can expect additional warming trends and changes to precipitation patterns. By 2050, Prince George expects to experience an additional increase in annual mean temperatures by 2°, as well as six additional days above 30°C. We'll also see more rain and less snow in the winter, more frost-free days, and more extreme precipitation events. The impacts associated with these changes include increased risk of wildfire, localized flooding due to rain on - snow events, more accidents, and higher demand on emergency services.

These changes to the local climate can affect our buildings and infrastructure, physical safety and health, water supply, agricultural resources, and natural environment. Prince George also expects to see population growth over the next several decades, which may contribute to additional GHG emissions. All of these forces will put a strain on Prince George residents. Thus, it is important to adapt to climate impacts, as well as to take action to lower our GHG emissions. Actively working to reduce emissions that contribute to climate change is called Climate Change Mitigation.

## Forecasted Climatic Changes for Prince George to 2080

Climate Indices	1976 - 2005 (Baseline)	2021 - 2050	2051 - 2080
Mean Annual Temperature	3.9°	5.8°	7.6°
Days over 30°C	1	7	18
Days below -30°C	3.7	1.2	0.5
Freeze/Thaw Days	97	76.3	62
Mean Annual Precipitation	624mm	665mm	692mm

## By 2050, Prince George can expect:

Annual  
Temperature to  
Increase by an  
Additional 2°C



6 More Days  
Above 30°C



2.5 Fewer  
Days Below  
-30°C



More Extreme  
Precipitation  
Events





# WHAT IS CLIMATE CHANGE MITIGATION?

When taking action on climate change, there are two main methods of management: climate change *mitigation* and climate change *adaptation*.

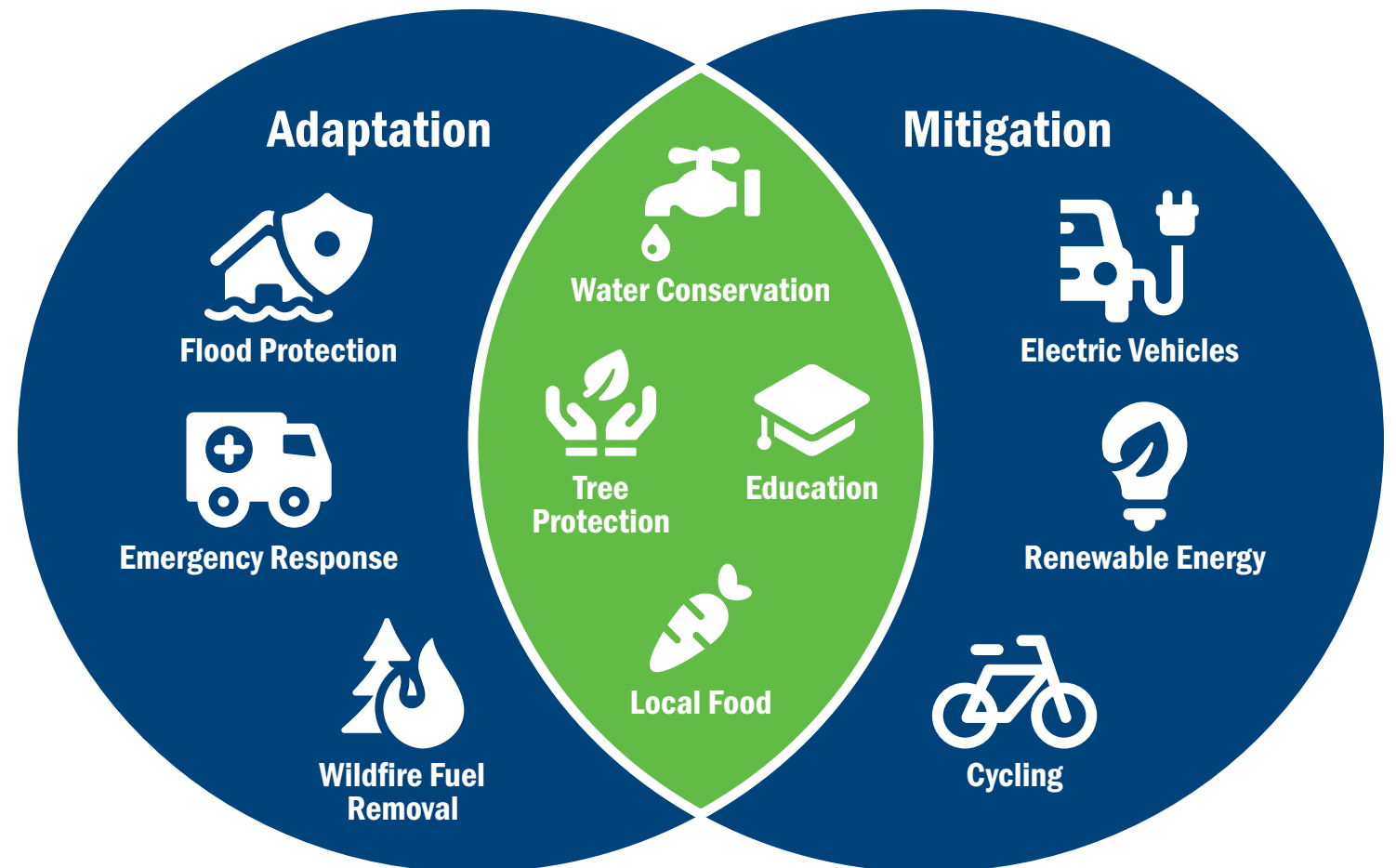
**Climate change mitigation** focuses on minimizing or preventing climate change. It means taking action to reduce the sources of climate change by decreasing the amount of heat-trapping GHGs emitted into the atmosphere. Transitioning to cleaner fuel sources and increasing energy efficiency are examples of climate change mitigation. These can be achieved by reducing reliance on the burning of fossil fuels for heating buildings and operating gasoline and diesel powered vehicles. Wetlands, forests, and soil naturally absorb carbon dioxide – a GHG – from the atmosphere, acting as a natural carbon sink. Because of this, preserving the natural environment, planting trees, and restoring forests and wetlands are also ways to mitigate.

**Climate change adaptation** is another way to take action on climate change. Adaptation acknowledges that climate change impacts are already happening and are likely to worsen, and includes changing everyday activities to adjust to a changing climate. It means planning and preparing for climate change. Adaptation actions include protecting homes from flooding and wildfire, improving emergency response procedures, and upgrading infrastructure to handle projected climate conditions.

There are several actions that can be taken that have both climate change mitigation and adaptation benefits.

This 2020 Climate Change Mitigation Plan focuses on mitigation actions that can be undertaken to reduce energy usage and GHGs emitted by the City of Prince George and the community. However, the City also has recently completed an updated report titled *Climate Change Adaptation Strategies for the Community of Prince George* to assist in reducing the vulnerabilities of built infrastructure and natural, social, and economic systems to the changing climate. The City plans to work on the identified mitigation actions and adaptation strategies under a Climate Action Strategy.

Figure 3 – Intersection Between Climate Change Mitigation and Adaptation Actions





A changing climate has global, national, and local implications that affect our daily lives and global systems, such as food production, the water cycle, biodiversity, and economic growth. A worldwide collective effort is necessary to combat an issue of this scale, but efforts made at the local scale can also have a tremendous effect and contribute to an improved quality of life, sense of community and economic diversification.



## THE ROLE OF THE CITY OF PRINCE GEORGE ON CLIMATE ACTION

Local governments like the City of Prince George have a significant role to play in climate action and in creating cleaner, healthier, and fiscally sustainable futures for the community, as cities are drivers of both climate change and climate action. High GHGs are related to low-density suburban sprawl, which has created a reliance on fossil fuel-burning vehicles and communities that lack access to alternative transportation systems. Vehicle traffic and energy-inefficient buildings contribute a large majority to Prince George's carbon footprint.

The City's corporate activities account for about 1% of the community's GHGs, however, local governments directly and indirectly influence about 40% of the GHGs emitted by the community. The City has direct influence over the design of the city and where people live, how they travel to work, and how waste is managed.

Prince George is also an industrial hub of British Columbia, surrounded by abundant natural resources. The City of Prince George has an indirect influence on industrial and business activities within the region, and has already taken steps toward becoming a leader in the Clean Technology Sector, starting with locally-generated renewable energy.

Table 2 – The City has control and influence over activities that can reduce corporate and community GHGs.

Control	Direct: Leading by example through municipal operations
	Indirect: Changes to land use and transportation planning and policy, and providing development incentives
Influence	Direct: Collaborative programs and partnerships with other organizations and levels of government
	Indirect: Advocacy, information sharing and municipal education programs

As a local government, the City is responsible for ensuring that future generations will not be negatively impacted by decisions made today. Therefore, the actions identified in this plan are intended as a means of reducing the consequences of a changing climate.



## PARTNERS IN CLIMATE CHANGE MITIGATION

In 2016, the Federal Government introduced the Pan Canadian Framework on Clean Growth and Climate Change to help reach its target of reducing national GHG emissions by 30% below 2005 levels by 2030 and net-zero emissions by 2050. The framework outlines actions to decrease emissions in electricity, buildings, transportation, industry, forestry, agriculture, and waste with the use of funding, regulation, standards, and other policy tools.

In December 2018, the Province of BC created CleanBC. This plan outlines bold actions to lower emissions in buildings, transportation, waste and industry to achieve a 40% emissions reduction target below 2007 levels by 2030, 60% by 2040, and 80% by 2050. Both levels of government have also devoted considerable funding for local government climate action initiatives.

Residents and small to medium-sized businesses also have a role in climate action. Individual choices about how to travel around our communities, where to live, how to handle household waste, and what types of food to consume affect the amount of GHG emissions that are emitted. Meanwhile, businesses' decisions regarding their current operations and future plans, as well as leadership and innovation, impact community based emissions. Residential and business decisions can be shaped by other levels of government, including local government.

Federal and Municipal governments working together to expand electric vehicle charging infrastructure following an announcement at UNBC.



Figure 4 – BC Climate Action Planning Through the Three Levels of Government

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 and vehicles are.**



	PLANS	AUTHORITY	ACTIONS/LEVERS
<b>FEDERAL</b>	Pan-Canadian Framework on Clean Growth and Climate Change	<ul style="list-style-type: none"> <li>National standards</li> <li>Funding</li> <li>International commitments</li> <li>Taxation</li> </ul>	<ul style="list-style-type: none"> <li>Vehicle fuel efficiency standards</li> <li>Green infrastructure funding</li> <li>Model national building codes</li> <li>Energy ratings and tools (E.G. EnerGuide)</li> <li>Green infrastructure bank</li> <li>National carbon price</li> <li>CCS (Carbon Capture &amp; Sequestration)</li> </ul>
<b>PROVINCIAL</b>	CleanBC	<ul style="list-style-type: none"> <li>Constitutional authority for Energy and for Municipalities</li> <li>Taxation</li> </ul>	<ul style="list-style-type: none"> <li>Codes ie Building code (including Step Code)</li> <li>Data (e.g. Community Energy &amp; Emission Inventory)</li> <li>Green Infrastructure (e.g. EV Charging)</li> <li>Provincial roads and transit funding</li> <li>Direction to BCUC on BC Hydro, FortisBC, ICBC</li> <li>Municipal regulation &amp; authority</li> <li>Carbon neutral government operations</li> <li>Carbon tax</li> <li>RNG (Renewable Natural Gas)</li> <li>ZEV (Zero Emissions Vehicle Mandate)</li> </ul>
<b>LOCAL</b>	> 120 Community Energy & Emissions plans	<ul style="list-style-type: none"> <li>Land-use / community form</li> <li>Local infrastructure</li> <li>Local engagement</li> <li>Waste management</li> </ul>	<ul style="list-style-type: none"> <li>Sidewalks/bike and scooter lanes</li> <li>Complete compact walkable communities</li> <li>Transit</li> <li>EV Strategy</li> <li>BC Energy Step Code</li> <li>Local engagement</li> <li>Energy retrofit programs</li> <li>Organics Diversion</li> <li>Natural Assets</li> </ul>



**Governments set the stage, but it is residents and businesses who reduce their emissions through individual choices:**

- where you locate/live/work
- heating
- vehicle & travel choices

Source: CEA



## PARTNERS FOR CLIMATE PROTECTION

The City joined the FCM-ICLEI Partners for Climate Protection (PCP) program in 2002, and was one of the first municipalities in Canada to achieve all five milestones for both corporate and community categories in 2011. This revised 2020 Climate Change Mitigation Plan includes new targets and actions that will update the first three milestones of the PCP Framework, following approval of the report by Council.

The Partners for Climate Protection (PCP) program is a network of Canadian municipal governments that have committed to reducing GHG's and to acting on climate change. Since the program's inception in 1994, over 350 municipalities have joined PCP, making a public commitment to reduce GHG emissions. PCP membership covers all provinces and territories, and includes cities that together account for more than 65% of the Canadian population.

An overview of Prince George's downtown.

FCM Partners for Climate Protection Milestones. The 2020 Climate Change Mitigation Plan (CCMP) replaces the first three milestones for the City of Prince George.

**1** | Establish a baseline  
GHG inventory and forecast

**2** | Set emissions reduction  
targets

**3** | Develop a local  
action plan

**4** | Implement the plan  
or set of activities



To update Milestone 4, the City will need to implement actions in the CCMP.

**5** | Monitor progress  
and report results



To update Milestone 5, the City will need to create a rigorous report that contains updated inventory information and quantifies the impacts of actions that have been conducted.





# PRINCE GEORGE'S LEADERSHIP

The City has been a leader on climate action over the past two decades. It was one of the first municipalities in Canada to complete all five milestones of the Federation of Canadian Municipalities (FCM) Partners for Climate Protection Program (PCP). Prince George established a GHG inventory, set targets, and developed action plans from 2005 to 2011. Now, a decade later, the City is refreshing reduction targets to continue on the path of climate leadership.

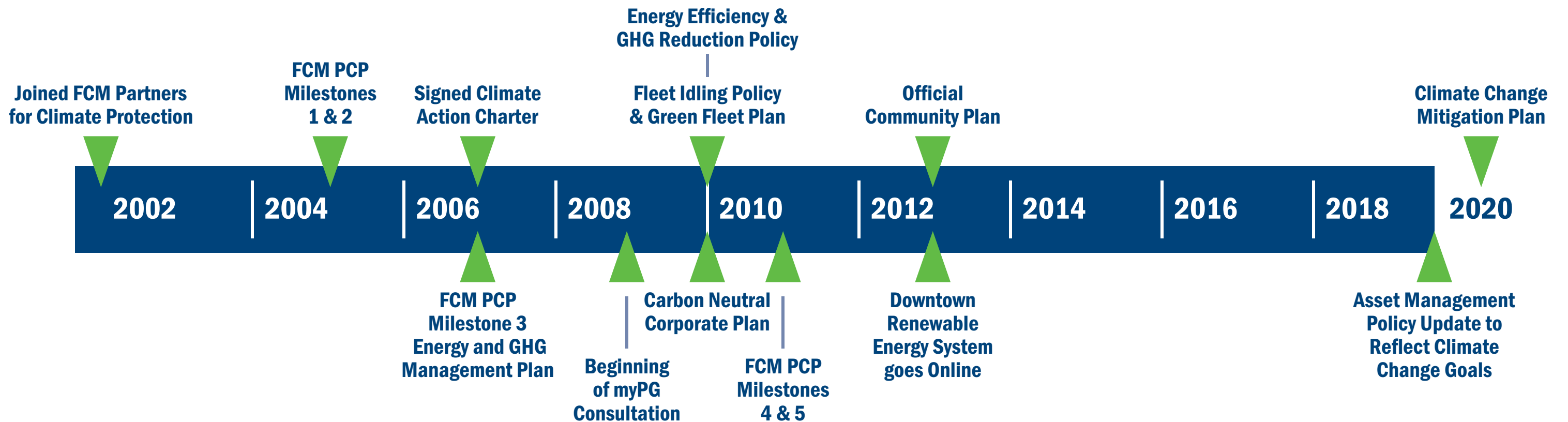
The 2007 Energy and GHG Management Plan outlined nine (9) goal areas and twenty (20) actions to reduce community GHG emissions, as well as an implementation and monitoring strategy. Since then, the City has made significant efforts to reduce energy consumption and GHGs for both corporate operations and the community. This has involved performing corporate energy audits and implementing energy-tracking systems for City buildings and infrastructure, and upgrading facilities to LED lighting and more energy efficient boiler systems. The City also collaborated with Natural Resources Canada to produce an energy map of the community to identify building stock that would

benefit from energy efficiency upgrades, entitled the *Spatial Community Energy, Cost and Carbon Characterization Model* (SCEC<sup>3</sup>). To reduce emissions from idling vehicles, the City implemented a City Fleet Idling Policy and collaborated on a community-wide Vehicle Idle-Free Program. The U-PASS program was deployed for UNBC students to encourage a wider usage of the transit system.

Recent actions have included the addition of electric vehicles to the City fleet, the construction of the new RCMP detachment to LEED standards, converting biogas produced at the wastewater treatment plant into electricity and trialing a solar road in the City Hall parking lot. In addition, the City is a strong advocate for Bike to Work Week, and has an Active Transportation Plan to increase walking and cycling paths and corridors.

City Council also approved the updated Asset Management Policy which provides clarity on how the City will approach climate change from an asset management perspective and support climate change mitigation and adaptation goals.

Figure 5 – City of Prince George's Climate Change Mitigation Timeline





# DOWNTOWN RENEWABLE ENERGY SYSTEM

The single greatest contributor to reducing the City's corporate GHGs has been the installation of the Downtown Renewable Energy System (DRES). Operational since 2012, the system distributes hot water through underground piping to eleven buildings in the downtown area, including City Hall, the pool and arena, the library, the art gallery, and the Provincial Court House and Plaza 400 building, almost completely offsetting their natural gas consumption for heat. The hot water is produced at Lakeland Mills using wood chips and shavings that are by-products from lumber production; this "wood waste" might have previously been burned in beehive burners. The use of the system reduces the City's corporate GHGs by approximately 1,500 tonnes per year.

The fuel source is local, renewable, and carbon-neutral. Prince George is one of only a handful of municipal district energy systems in Canada that uses renewable resources as its primary source of energy. Even through extremely cold temperatures, the City's DRES has proven to be a reliable fuel source. In addition, the system contributes to improved air quality, strengthens industry sustainability through partnerships, ensures energy dollars remain within the community, and generates new non-tax revenue.

Figure 6 – Map of City of Prince George Downtown Renewable Energy System, indicating most of the distribution piping network and connected buildings.





# THE CASE FOR MITIGATION





# THE CASE FOR MITIGATION

Although Prince George contributes only a small part of global emissions, there are many reasons to reduce GHG emissions locally.

Climate change can be seen as an example of a “tragedy of the commons”. This is defined as a situation where individual users, in pursuing self-interest in the exploitation of a shared resource, act in a way that is detrimental to the interests of the whole.

**Ethically, mitigating climate change is the right thing to do.** The good news is that most major communities around the world are working to control their emissions, with varying degrees of effort and success. In BC alone, over 120 cities and towns have a plan to reduce emissions.

In addition to the moral basis, there are legal, economic, health, social, and local environmental reasons for taking action.

## LEGAL REQUIREMENTS

Through Bill 27, the *Local Government (Green Communities) Statutes Amendment Act*, the Province of BC amended the *Local Government Act* and *Community Charter* to require local governments to set GHG reduction targets in addition to actions and policies for achieving those targets in their Official Community Plans (OCP's) and Regional Growth Strategies (RGS's).

In 2007, the City of Prince George completed its first Energy and GHG Management Plan to support this legislation. The plan included emissions reduction targets for 2012 and a broad range of climate actions which were incorporated into the OCP. Since 2012 has passed, it is important for Prince George to assess its progress to date, determine new potential actions, and set new targets for the future.

The Province of BC also established a voluntary Climate Action Charter. By signing it, local governments acknowledge that they and the Provincial government have an important role in addressing climate change. Municipalities make a commitment to create complete, compact, and energy efficient communities; measure and report on their community emissions; and become carbon neutral in their own operations. Prince George is a signatory to this charter, along with almost every local government in BC.

**Definition of Co-Benefit:** Positive benefits related to the reduction of GHGs. For example, supporting active modes of transportation, such as walking or cycling, not only results in reduced GHGs, it can result in improved air quality, reduced vehicle costs, and decreased obesity.



Bird's eye view of the confluence of the Fraser and Nechako Rivers.



Climate change carries a large economic cost to residents, businesses, industries, and the Canadian economy. A report by the National Roundtable on the Environment and the Economy (NRTEE) has estimated that the physical effects of climate change could cost the Canadian economy as much as \$34 billion per year by 2050<sup>1</sup>. Arguably, the biggest economic advantage of climate change mitigation, therefore, is that it seeks to minimize climate change over time, thereby minimizing the costs needed to adapt to the changing climate.

Climate change mitigation also offers other economic advantages. Perhaps the greatest of these is the opportunity for businesses and residents to save money by reducing energy bills through increased energy efficiencies. Lowering corporate and community GHG emissions in Prince George reduces the number of energy dollars exported from the community. For 2017, it was calculated that approximately \$3,300 was spent on energy for each person residing in Prince George, with a vast majority of this money leaving the community. This equates to approximately \$247 million for the City as a whole. Measures to reduce energy consumption and generate energy locally can result in more money retained locally; a clear benefit for the City, the business community, and residents.

Investing in energy-efficient building technologies and renewable energy supports local economic development opportunities, and can lead to jobs. It also results in more resiliency to fluctuating global energy prices. Green technologies and innovations, such as using wood products for construction and the generation of bio-diesel from wood waste, can help to create employment and business opportunities. Prince George is well positioned for involvement in the clean technology sector given its established forest products industry, the presence of the university and college, and its location within an extensive and diverse transportation network.

From a funding perspective, a growing number of Federal and Provincial grant funding sources are available, which require municipalities to demonstrate what they are doing locally to decrease GHGs. Taking action to reduce GHG emissions can be used to leverage incoming grant funding opportunities for the City.

<sup>1</sup> National Round Table on the Environment and the Economy (2011) Paying the Price: The Economic Impacts of Climate Change for Canada.  
Retrieved at: <http://nrt-trn.ca/wp-content/uploads/2011/09/paying-the-price>.

Energy efficient multi-family developments offer economic advantages such as reduced energy bills.



Green technologies open up employment and business opportunities, such as the Wood Innovation Research Lab at UNBC.





# SOCIAL AND PUBLIC HEALTH BENEFITS

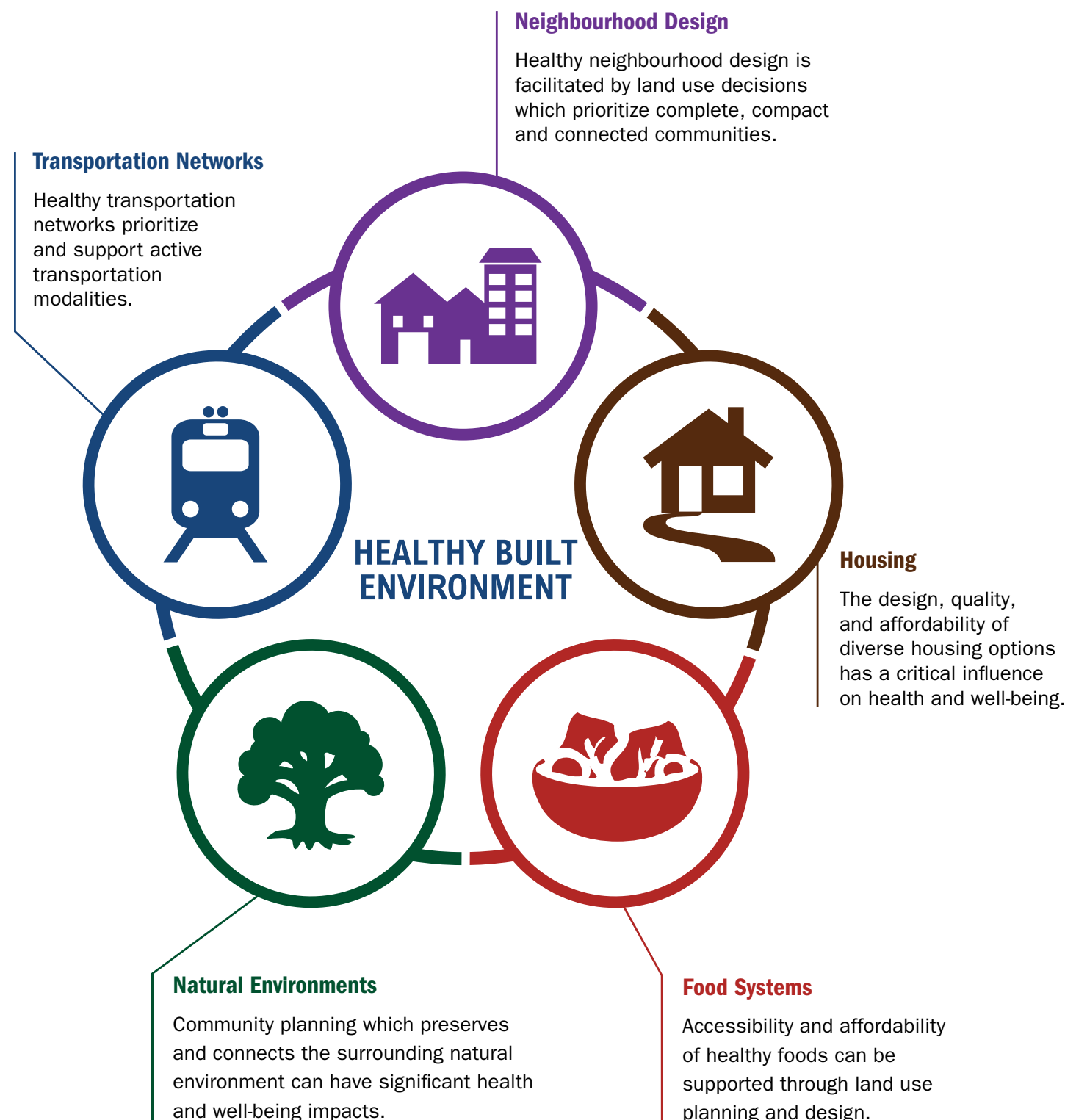
The social and health implications of climate change are diverse and far-reaching. The World Health Organization has gone so far as to say that climate change is the greatest threat to world health in the 21<sup>st</sup> Century. With the recent forest fires and associated smoke and evacuations, we have already experienced some of these effects locally. Reducing climate change therefore has large social and health benefits.

Fortunately, many strategies that mitigate climate change also support vibrant and healthy communities. For instance, compact, walkable communities and active transportation support improved physical and mental health and social connectivity. Improving public transportation furthers accessibility. Energy efficient homes and buildings can reduce monthly bills and improve affordability. Supporting local agriculture increases access to healthy foods and reduces food insecurity, and planting more trees in urban settings provides protection from extreme heat, and adds to the aesthetics of the community. All of these initiatives are identified as climate change mitigation activities that offer many more co-benefits to the social and well-being of residents.

The Healthy Built Environment Linkages Toolkit identifies a framework for a Healthy Built Environment, as shown in Figure 7, which, if followed, will result in positive health-related outcomes, improved social well-being, decreased health care costs, and improved physical and mental well-being. All five of the core features are well aligned with a low GHG community.

Infants, children, the elderly, those with existing health conditions, and those that are already socially and economically disadvantaged are impacted the most by climate change and will see the greatest social and public health benefits from climate change mitigation.

Figure 7 – A Framework for Healthy Built Environment<sup>1</sup>



<sup>1</sup> BCCDC (2018) Healthy Built Environment Linkages Toolkit.  
[http://www.bccdc.ca/pop-public-health/Documents/HBE\\_linkages\\_toolkit\\_2018.pdf](http://www.bccdc.ca/pop-public-health/Documents/HBE_linkages_toolkit_2018.pdf)



# ENVIRONMENTAL BENEFITS

There can also be many local environmental benefits to climate action, in addition to global environmental benefits. By reducing GHG emissions and air pollutants, air quality improves in communities, which naturally also has positive health benefits. Actions that address climate change can also foster healthier and more resilient ecosystems, such as increasing parklands and the urban tree canopy, or helping to protect or re-establish wetlands.

Fall colours in Cottonwood Island Park: Park space provides opportunities for active modes of transportation and increased tree canopies which support climate change mitigation actions.



# PLAN DEVELOPMENT





# ALIGNING WITH THE myPG VISION

Figure 8 – City of Prince George planning documents that align with the 2020 Climate Change Mitigation Plan



**As a part of the myPG process, Prince George residents identified their vision for the community in 2040:**

- **A healthy environment that supports a robust and stable local economy;**
- **Affordable housing and lifestyles that support a high quality of life for residents; and,**
- **A vibrant downtown core, a strong community, and the city’s natural setting serving as Prince George’s greatest strengths.**

Climate change poses both a challenge to and an opportunity for achieving this vision for Prince George. The actions taken today will determine which one of the two it will be.

The City of Prince George 2020 Climate Change Mitigation Plan provides a base to deliver on the community’s vision and supports several myPG Goals, as shown in Table 3.

In addition, the actions identified in this Plan support other community plans, such as the Transit Future Action Plan, Park Strategy Economic Development Strategy, Smart Growth on the Ground Downtown, Asset Management Policy, Age-Friendly Plan, and efforts to reduce poverty.

The development of this updated plan supports the achievement of the four objectives outlined in the Green Energy and Reduce Carbon Emissions section of Prince George’s Official Community Plan:

1. Reduce energy use and GHG emissions generated by existing buildings through retrofits or redevelopment and the introduction of renewable energy technologies.
2. Increase energy efficiency, use of renewable energy, and reduce GHG emissions for new buildings.
3. Improve energy efficiency, use of renewable energy, and reduce GHG emissions for City-owned buildings and facilities.
4. Recognize the role of our natural environment in climate change mitigation and greenhouse gas emissions reduction in land use decisions.

Table 3 – myPG Goals are supported by the 2020 Climate Change Mitigation Plan

ENVIRONMENTAL	SOCIAL	ECONOMIC
Reduce Carbon Emissions and Adapt to Climate Change	Clear Identity and Pride	Diverse Economy
Clean Air	Culturally Rich	Fiscal Responsibility
Clean Water	Equitable Community	Sustainable Business
Green City Green Practices	Healthy and Active	Vibrant Economy
Reduced Waste	Safe Community	Employment Diversity and Accessibility
Green Energy	Supportive and Engaged	International Connections
	Affordable, Accessible Housing	



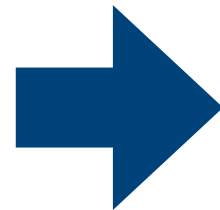
# PHASED APPROACH AND TIMELINES

In summer 2018, the City of Prince George, in collaboration with the Community Energy Association, began the process of creating an updated 2020 Climate Change Mitigation Plan (CCMP). The planning process consisted of four main steps.

## MODELING AND ANALYSIS

- Review Data
- Model Emissions

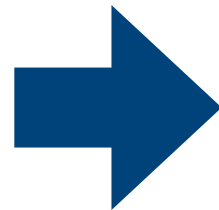
August 2018 to April 2019



## ENGAGEMENT

- Internal and External Stakeholder Workshops
- Public Open Houses
- Farmers' Market
- Online Survey

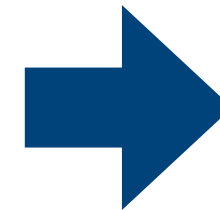
October 2018 to August 2019



## RECOMMENDED ACTIONS & DRAFT PLAN

- Draft Actions
- Identify Targets
- Create Strategy

April 2019 to April 2020



## DELIVER FINAL PLAN

- Finalize Plan
- Present to Council

December 2019 to May 2020





Engagement with internal City staff, external stakeholders, and the public shaped the development of the 2020 Climate Change Mitigation Plan through the identification of actions that were relevant for Prince George. Multiple stakeholder engagement workshops occurred throughout 2018 and 2019 that included both City staff and public and private stakeholders. In these workshops, priority actions were identified, such as encouraging uptake of residential energy retrofit rebates, providing educational and public outreach opportunities, and diverting organic waste from the landfill.

Public engagement was conducted through in-person and online events: two public open houses, a booth at the community Farmers' Market, and an online survey, engaging over 800 community members in the process.

Priority recommended actions spanned all sectors, including improved active transportation corridors and public transportation, more electric vehicle charging infrastructure and electrifying City fleets, organics diversion and improved curbside recycling, increased tree planting and associated incentives, and inclusion of energy efficiency measures and solar installations as part of updates to building codes.



Bob Harkins Branch Downtown Public Library: Public Open House - June 13 2019.

## What did we hear from the community?

Based on the feedback received from the approximately 800 community members, the public would like to see the City focus on actions reducing community GHGs in the areas of Transportation and Waste Management.



The actions that were identified as the highest priority for community members generically are:

- Organics Diversion
- Support Local Food Production
- Plant and Grow More Trees
- Increase Connections to Downtown Renewable Energy System
- Support Active Travel

This feedback guided the development of the climate change mitigation action items.



# EMISSIONS INVENTORY AND TARGETS



**CLIMATE CHANGE  
MITIGATION PLAN**



# CORPORATE VERSUS COMMUNITY EMISSIONS

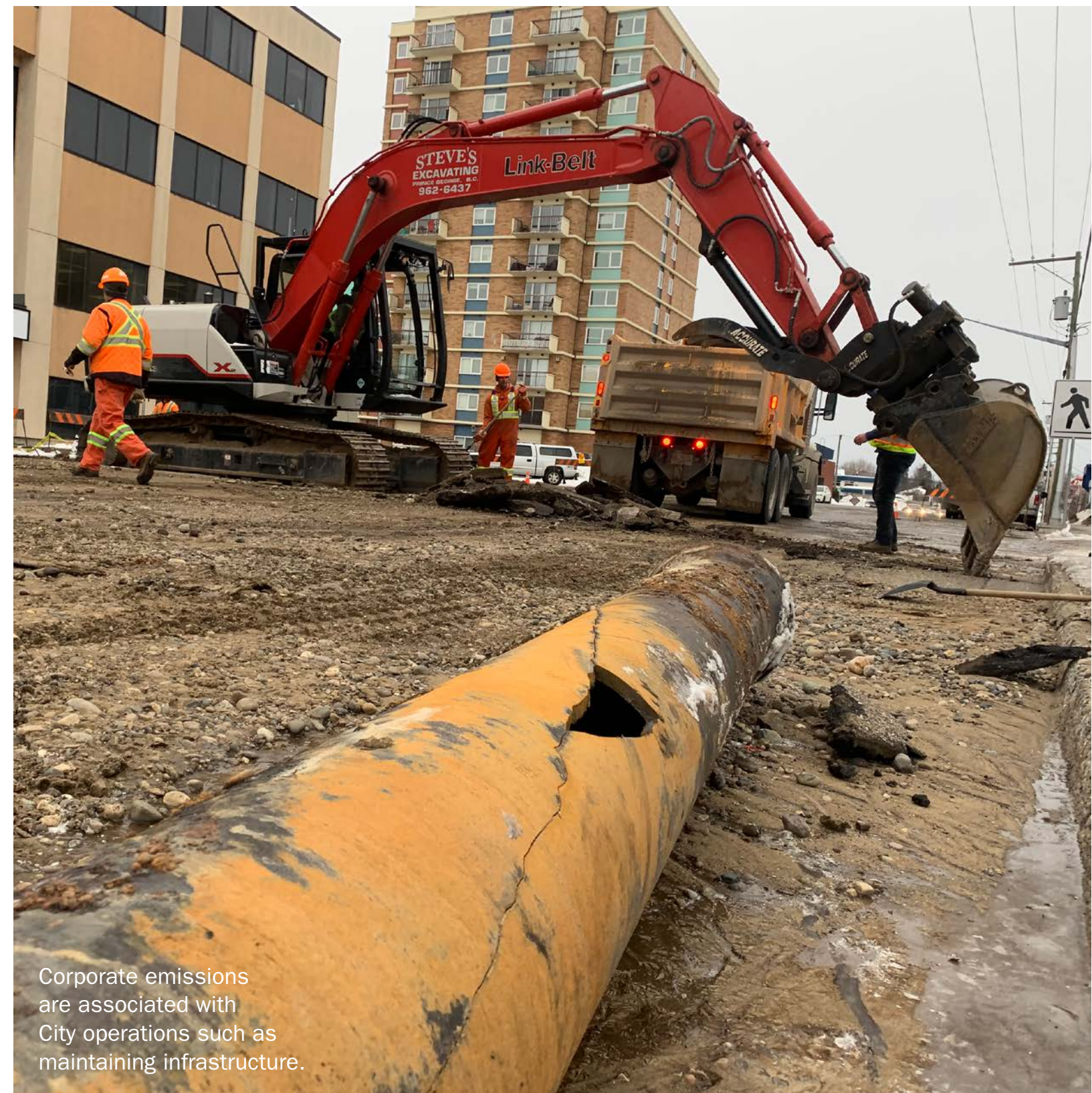
In 2007, the City of Prince George established voluntary GHG emissions targets to reduce corporate GHG emissions by 10% below 2002 levels by 2012, and community GHG emissions by 2% below 2002 levels by 2012.

The City of Prince George reports corporate GHG emissions to the Provincial Government annually, and demonstrates how the City is working towards reducing GHGs. Prince George has been identified as a BC Climate Leader for demonstrating efforts to reduce GHGs in corporate operations.



The updated 2020 Climate Change Mitigation Plan sets updated targets for both corporate and community emissions. To understand what these reduction targets mean, we must first define what constitutes corporate versus community emissions in Prince George.

<b>CORPORATE EMISSIONS</b>	Emissions that are directly related to corporate operations. These include energy and electricity used in City buildings, gasoline and diesel used by City fleets and contractors, and waste generated by City facilities.
<b>COMMUNITY EMISSIONS</b>	<p>Emissions that the City has influence over. This includes:</p> <ul style="list-style-type: none"> <li>• Residential home and small commercial buildings since the City issues building permits and business licenses.</li> <li>• Vehicle traffic since the City builds and manages roads, walkways and bike lanes and supports the transit system.</li> <li>• Waste production since the City provides curbside pickup for residential garbage.</li> </ul> <p>It does not include industry emissions since the City does not have jurisdiction over industrial activities.</p>



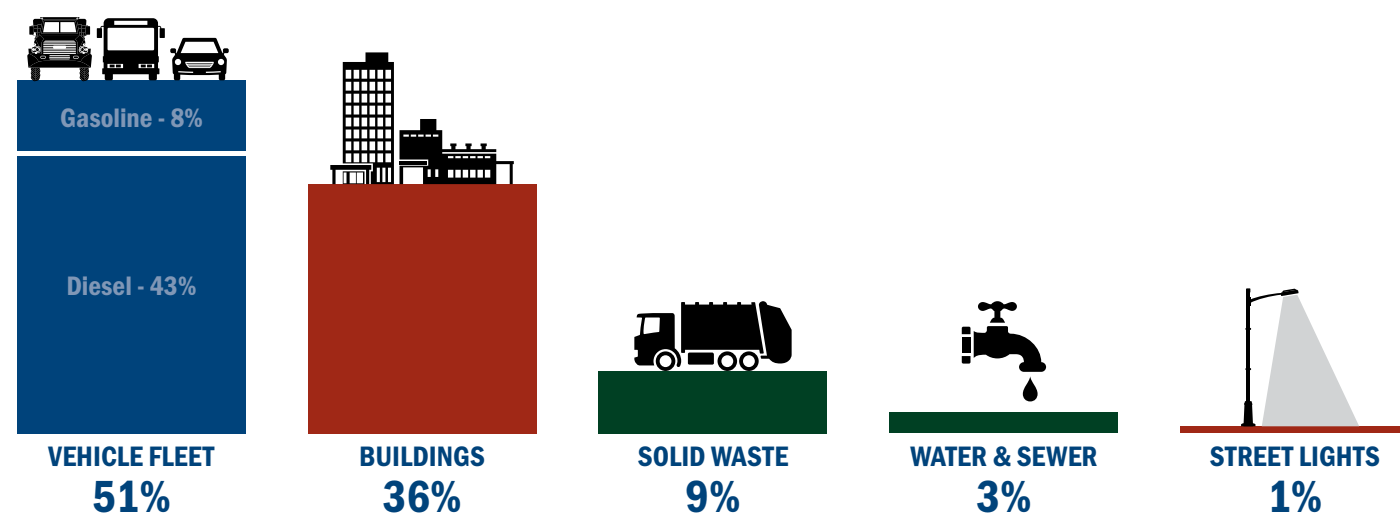
Corporate emissions are associated with City operations such as maintaining infrastructure.



Corporate emissions are those resulting from energy consumption required for all City operations, which create direct (fuel) and indirect (for electricity only) GHG emissions.

In 2017, the City of Prince George emitted 8,148 tCO<sub>2</sub>e. The sector breakdown of corporate greenhouse gas emissions is illustrated in Figure 9.

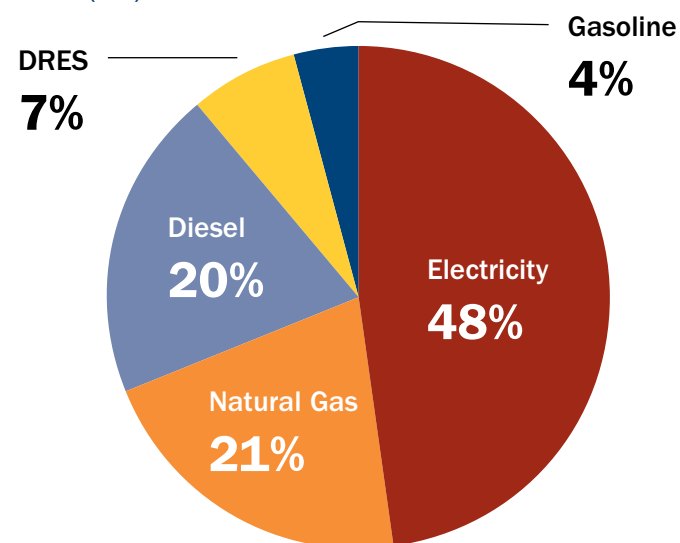
Figure 9 – Breakdown of City of Prince George Corporate Greenhouse Gas Emissions



GHG emissions are not directly associated with energy consumption or energy costs. The vehicle fleet accounts for 51% of the City's corporate emissions, but 24% of energy use (GJ). Electricity used in buildings and street lights contributes limited GHG emissions, but accounts for 48% of corporate energy use. It is important to keep in mind both emissions and energy consumption when undertaking energy reduction actions.

The City spent \$6.01 million dollars on energy consumption in 2017. The breakdown of corporate energy use (GJ) is shown in Figure 10.

Figure 10 – City of Prince George Corporate Energy Use (GJ)



There are different methodologies for the calculation of GHG inventories. The City of Prince George tabulates a corporate energy and emissions inventory annually related to the BC Climate Action Charter (CAC) and Climate Action Revenue Incentive Program (CARIP) requirements.

For the purpose of this updated 2020 Climate Change Mitigation Plan, which replaces milestones 1-3 of the FCM Partner for Climate Protection Program for Prince George, corporate emissions inventories will be shown using the FCM PCP Methodology.

## BC Climate Action Charter (CAC) Reporting

is conducted by local governments annually to receive the CARIP grant. It includes fuels used through the local governments' traditional services including:

- Administration & Governance
- Drinking, Storm & Waste Water
- Solid Waste Collection, Transportation & Diversion
- Roads & Traffic Operations
- Arts, Recreation & Cultural Services
- Fire Protection

It does not include emissions from policing or solid waste.

## FCM's Partners for Climate Protection (PCP) Reporting

is conducted by local governments participating in FCM's PCP. It includes anything that is under "operational control" of the local government:

- All Buildings (electricity, natural gas)
- Street Lights (electricity)
- Water & Sewer (electricity, natural gas, propane)
- Vehicle Fleet (gasoline and diesel)
- Solid Waste



## HOW HAVE EMISSIONS CHANGED SINCE 2002?

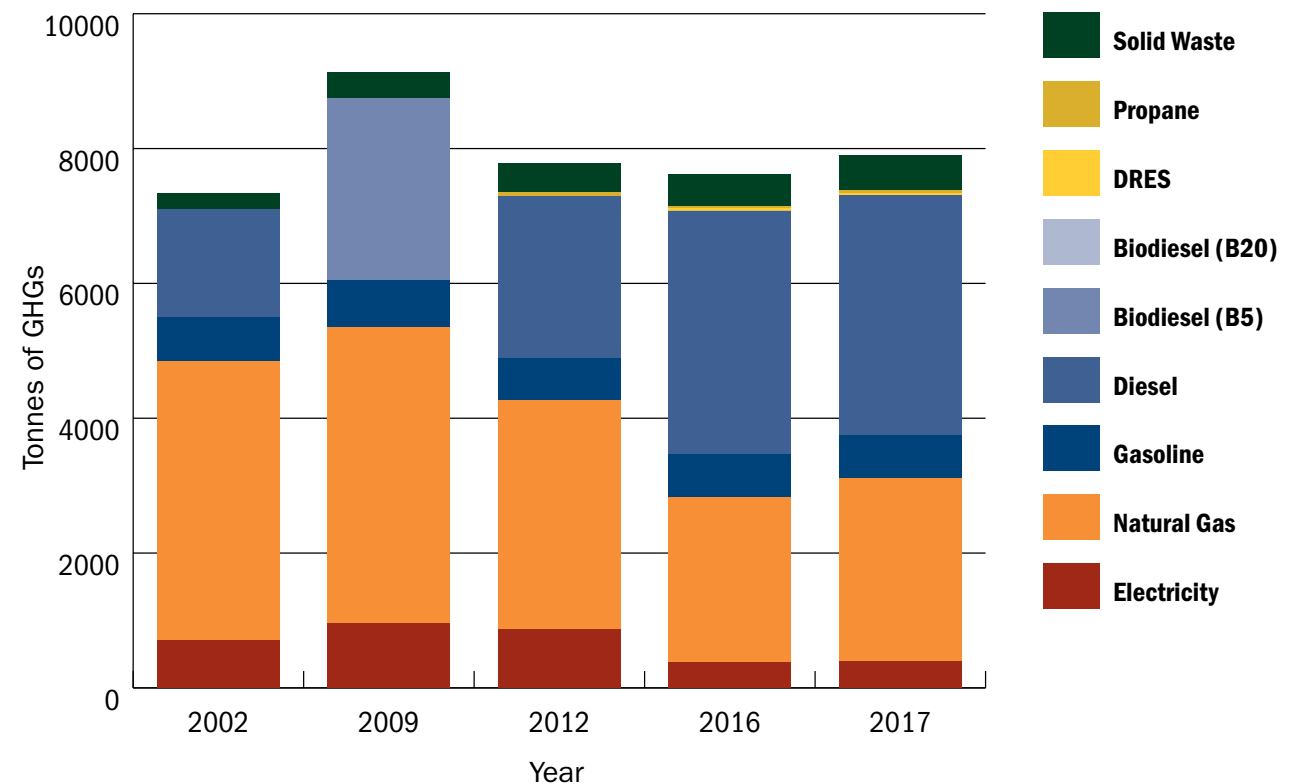
The City of Prince George has been tracking GHGs associated with corporate energy consumption since 2002, varying from a low of 7,445 tCO<sub>2</sub>e in 2002 to a high of 9,253 tCO<sub>2</sub>e in 2009 as shown in Figure 11.

In 2007, as part of the City of Prince George Energy and GHG Management Plan, a corporate reduction target of 10% below 2002 levels by 2012 was identified. Despite significant efforts and leadership in climate change mitigation, this target was not successfully met, and instead the City saw a 7% increase in emissions by 2012 and a 9.5% increase by 2017 due to growth in diesel consumption.

The most notable achievement associated with corporate emissions was the reduction of natural gas consumption for building space heating with the commissioning of the City's Downtown Renewable Energy System (DRES). After the 2012-2013 commissioning period for the DRES, corporate data shows a significant decline in natural gas consumption; however, starting in 2016, this decrease in GHGs is offset by a 50% increase in diesel for the years 2016 and 2017 compared to 2012, and an uptick in natural gas usage in 2017.

Should the City continue business as usual and not take action to reduce corporate GHGs emissions are expected to consistently hover around 8000 tCO<sub>2</sub>e to 2050.

Figure 11 – Five Inventory Years Showing Corporate GHG Emissions in tCO<sub>2</sub>e



- Business as Usual (BAU):** What is estimated to happen if the City does not try to reduce emissions going forwards. A number of factors are taken into account. Population growth is key: as the number of people increase in a community, more buildings are needed and more vehicles are driven on roads. Other things that are taken into account include:
- Changing climate patterns that alter the way that energy is consumed in buildings.
  - Impacts of policies already adopted by higher levels of government, such as:
    - Renewable and low carbon fuel standards;
    - Vehicle emissions standards;
    - The Zero Emissions Vehicle mandate, which supports electric vehicle purchases; and,
    - The greening of the BC Building Code (progressive steps towards net zero energy-ready buildings by 2032).

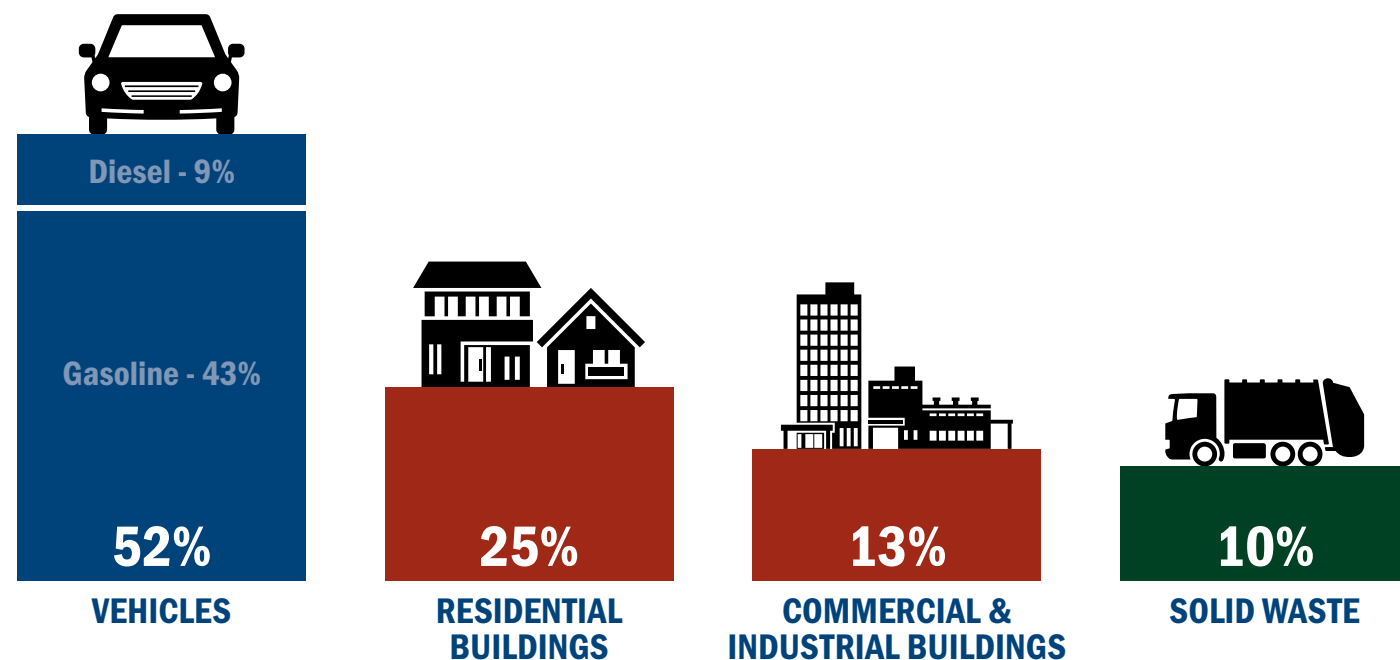


# COMMUNITY EMISSIONS

Community emissions are those resulting from energy consumption activities that the City of Prince George has an influence over, such as heat and electricity use in residential and commercial buildings, fuel used by transportation, and waste production. The community emissions inventory does not take into consideration industrial emissions, as the City does not have influence over those emissions.

In 2017, Prince George emitted 555,000 tonnes of CO<sub>2</sub>e. The breakdown of these emissions is illustrated in Figure 12.

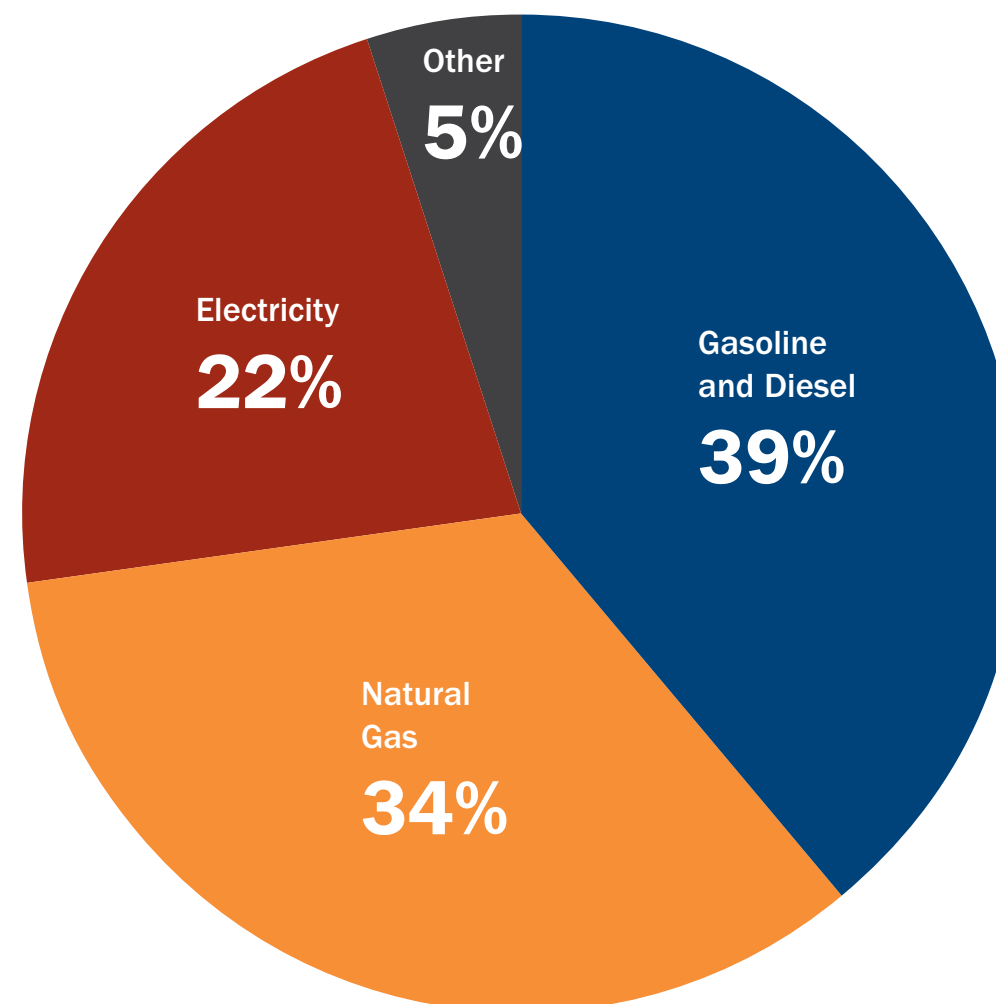
Figure 12 – Sources of Prince George Community Greenhouse Gas Emissions



GHG emissions are not directly related to energy use (GJ). For instance, electricity emits lower GHG emissions than natural gas for each unit of energy. Gasoline and diesel fuels used in vehicles make up 52% of community GHG emissions and 39% of community energy use.

The community of Prince George spent \$245 million on energy costs in 2017. The breakdown of community energy use (GJ) is shown in Figure 13.

Figure 13 – Prince George Community Energy Use (GJ) in 2017





## HOW HAVE EMISSIONS CHANGED SINCE 2002?

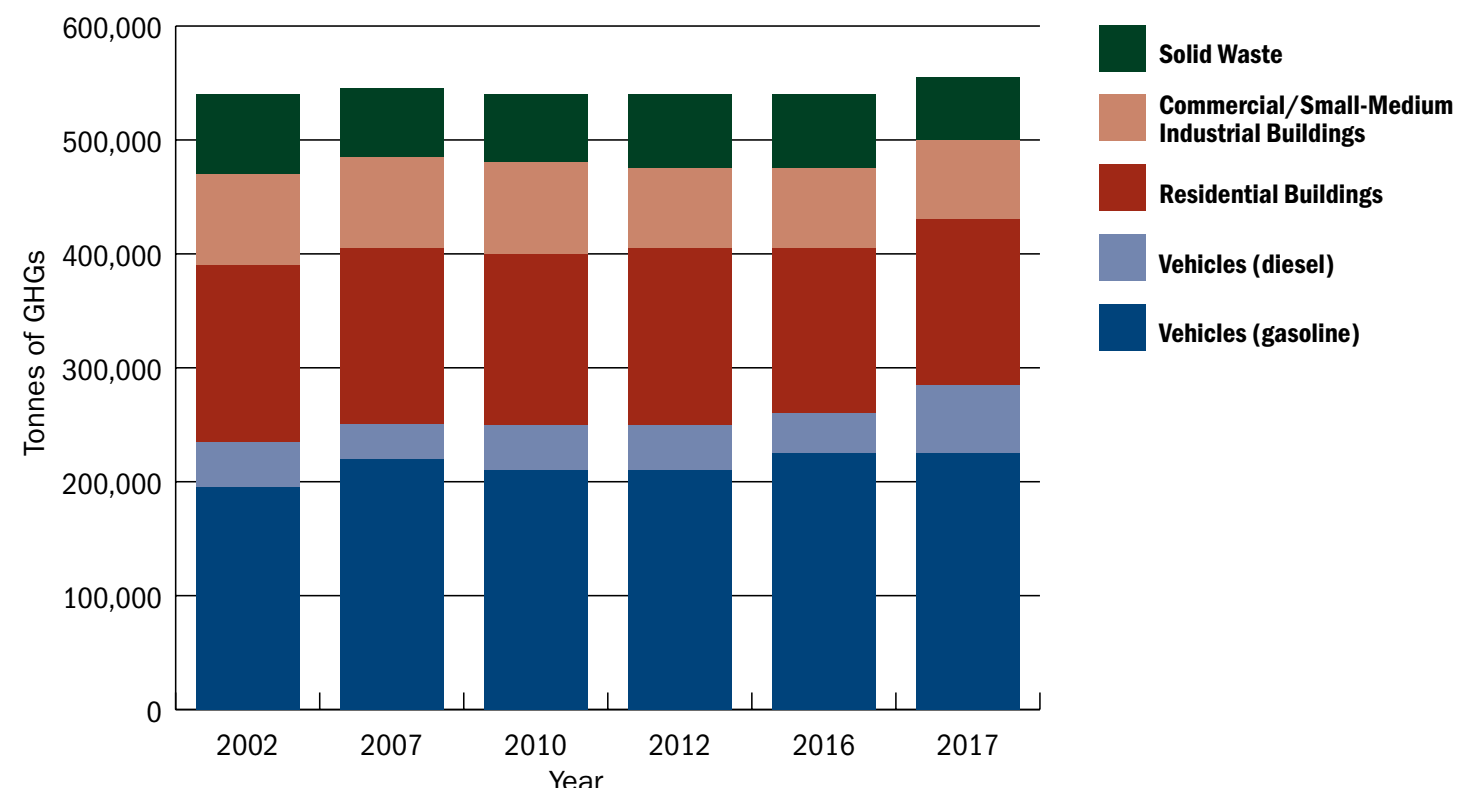
The Provincial government prepared Community Energy and Emissions Inventories (CEEI) for communities across the province in 2007, 2010, and 2012. As a part of the FCM Partners for Climate Protection Program, Prince George supplemented this data by providing community emissions inventories for 2002. As a part of the 2020 Climate Change Mitigation Plan, the following inventories were recreated to ensure a consistent methodology: 2002, 2007, 2010, 2012, 2016, and 2017. Figure 14 shows the results of these six inventory years.

Community emissions in Prince George have varied from a low of 534,000 tonnes in 2002 to a high of 555,000 tonnes in 2017, with some fluctuation in the intermediary years. As shown in Figure 14, emissions from gasoline and diesel increased substantially from 2002 to 2017, with gasoline increasing by 20% and diesel by 31%. To compensate for these increases, emissions from the residential and commercial/small-medium industrial sectors saw decreases by 12% and 10%, respectively while solid waste emissions decreased by 6.6%.

As part of the City's Energy and GHG Management Plan from 2007, a community GHGs reduction target of 2% below 2002 levels by 2012 was set. Although it was a modest community GHG reduction target, it still proved difficult to achieve. The community emissions increased by 0.8% between 2002 and 2012. By 2017, community emissions increased by approximately 4% since 2002 levels, mostly due to a growth in gasoline consumption.



Figure 14 – Six Inventory Years Showing Community GHG Emissions in tCO<sub>2</sub>e



Per capita emissions for Prince George, which amount to approximately 7.5 tonnes of CO<sub>2</sub>e per resident, remained nearly the same between 2002 and 2017. This demonstrates that the increase in community emissions is likely associated with growth. It should be recognized that most growing communities in British Columbia have been able to reduce their per capita emissions principally by keeping growth compact.

Looking to the future, community emissions are expected to decrease steadily due to impacts of current Federal and Provincial policies. Knowing that policies may change with changing political priorities, it is important to drive reductions at the local level to ensure continuous efforts in climate change mitigation.



# COMMUNITY ENERGY USE, EMISSIONS AND COSTS

In Prince George there are several different fuel types that are relied on to provide energy to vehicles, homes and businesses. Some fuel types emit higher amounts of greenhouse gas emissions (GHGs) than others, and they vary in cost per unit (GJ). Figure 15 demonstrates the breakdown of community energy use (GJ), GHG emissions (tCO<sub>2</sub>e) and cost (\$) by sector. As shown in Figure 16, fuel types vary in GHG emissions and cost. Fossil fuels, such as mobility fuels, emit more GHG emissions per GJ than renewable energy sources such as electricity (hydro), wood and the DRES. Mobility fuels also have one of the highest costs per GJ. Electricity emits very low GHG emissions per GJ, but does have a higher cost compared to other options such as Natural Gas, which emits much higher GHG emissions per GJ.

Looking to the future it is important to take both GHGs and energy costs into account when undertaking mitigation actions. Figure 17 shows how community emissions are expected to decline by sector given policy changes at the Federal and Provincial levels without taking into account actions taken by the City. This shows a decline of approximately 25% in GHG emissions by 2040. The most significant reduction will likely be associated with transitioning light duty vehicles away from gasoline to other sources as required by the CleanBC Plan.

Figure 15 – Energy, Emissions and Cost by Sector

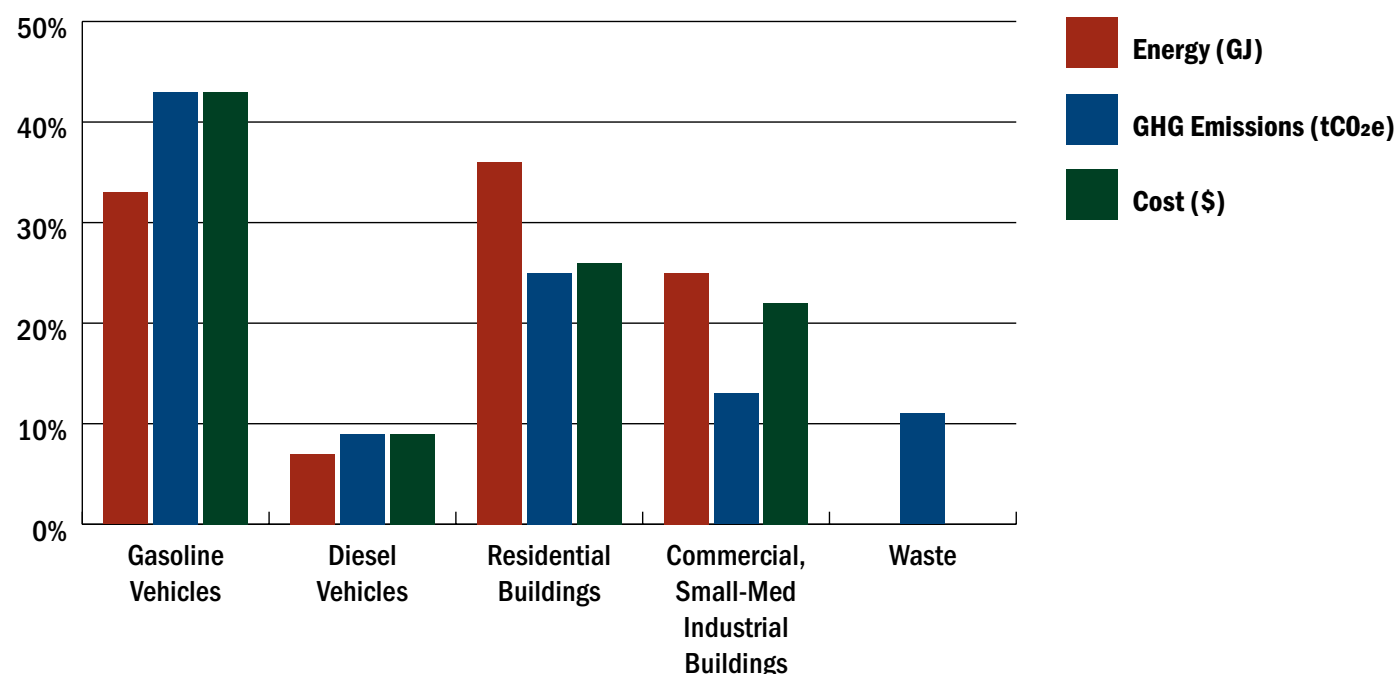


Figure 16 – Greenhouse Gas Emissions (Tonnes) per Gigajoule (GJ) and Cost (\$) per Gigajoule (GJ) by Fuel Type

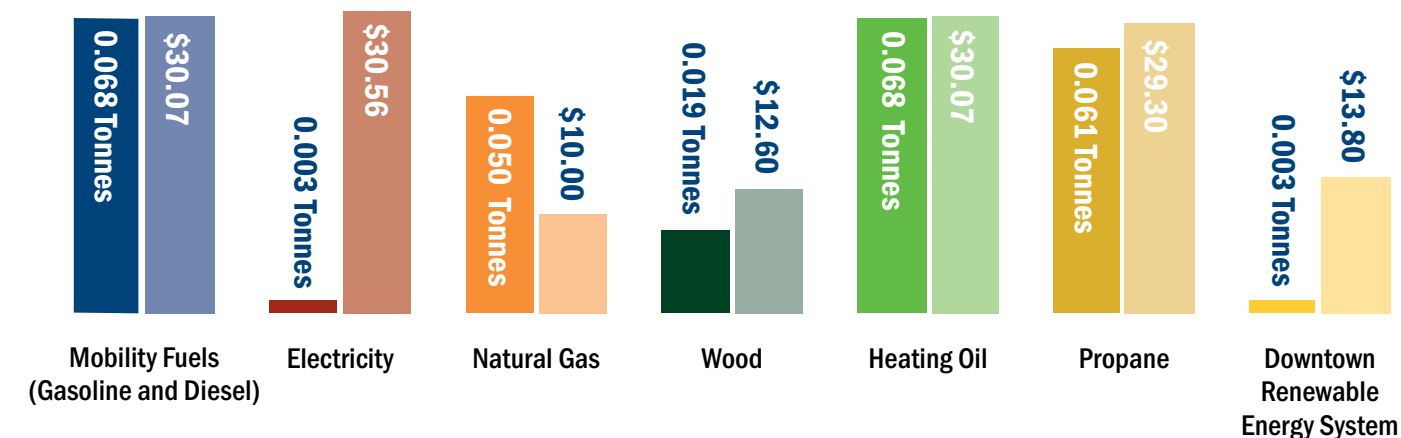
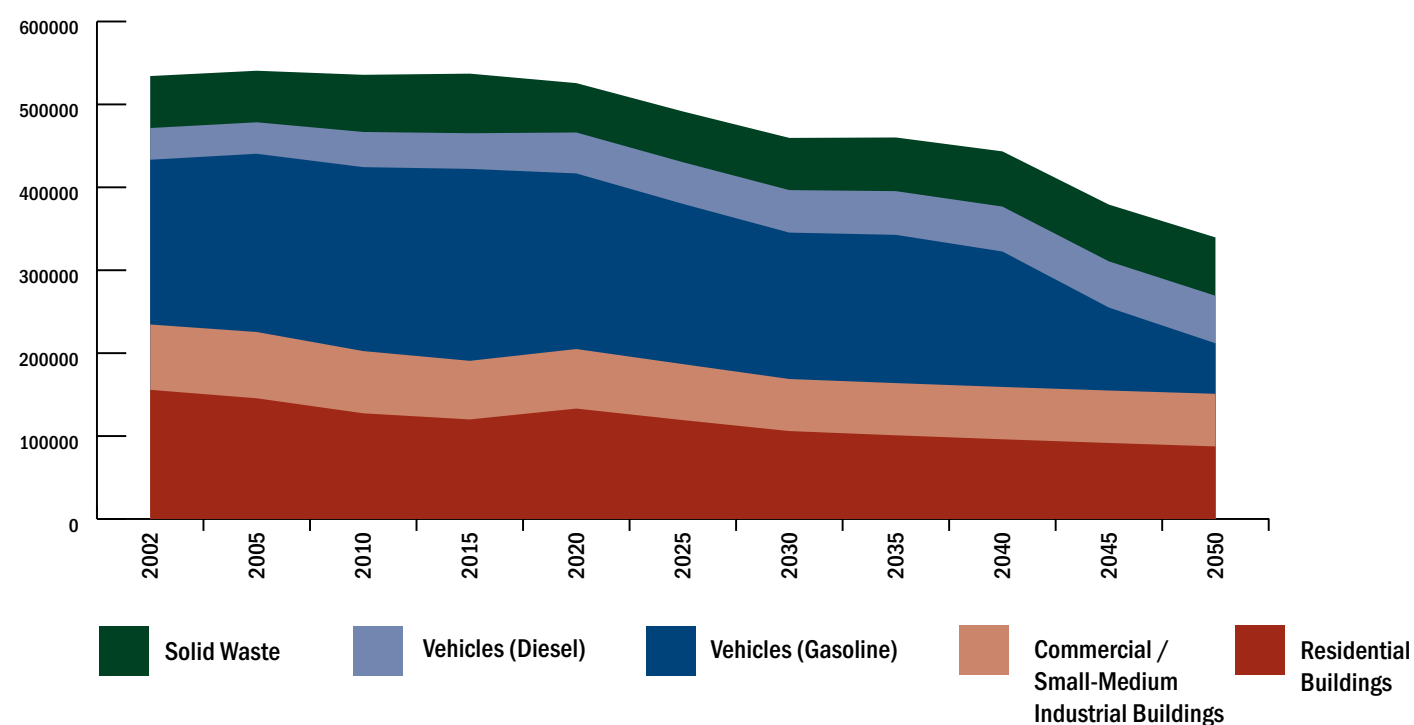


Figure 17 – Forecast Emissions by Sector: GHG Tonnes per Year to 2050 assuming Business as Usual





# NEW TARGETS FOR PRINCE GEORGE

The City of Prince George aims to reduce corporate and community GHGs over the long term, and has set ambitious but achievable targets. Targets have been set for 2025, 2030, 2040 and 2050 to ensure progress is made to reach the long term target of 80% GHG reduction by 2050. The 80% target by 2050 aligns with the targets set by the Provincial governments as well as most municipalities that have set targets. The year 2017 was selected as the baseline for the 2020 Climate Change Mitigation Plan due to the accuracy and reliability of the GHG emissions dataset. Additionally, since it is a more recent dataset, 2017 accurately depicts Prince George's current state, and demonstrates where best to target emissions reductions.

Canada

**30%** reduction in emissions  
from 2005 levels by **2030**

**Net-zero** emissions by **2050**



**40%** reduction in emissions  
from 2007 levels by **2030**

**80%** reduction in emissions  
from 2007 levels by **2050**



## CORPORATE TARGETS

**5%** reduction in emissions  
from 2017 levels by **2025**

**17%** reduction in emissions  
from 2017 levels by **2030**

**50%** reduction in emissions  
from 2017 levels by **2040**

**80%** reduction in emissions  
from 2017 levels by **2050**



## COMMUNITY TARGETS

**5%** reduction in emissions  
from 2017 levels by **2025**

**12%** reduction in emissions  
from 2017 levels by **2030**

**50%** reduction in emissions  
from 2017 levels by **2040**

**80%** reduction in emissions  
from 2017 levels by **2050**



# CLIMATE CHANGE MITIGATION ACTIONS



**CLIMATE CHANGE  
MITIGATION PLAN**



**There are several avenues that a local government can take to reduce GHGs and to achieve the goals and targets of this plan.**

Table 4 – Examples of approaches that can be taken for Mitigation Actions

POLICY TOOLS FOR LOCAL GOVERNMENT	
Regulation	Legally require a specific action.
	<b>Example:</b> Amend parking requirements to require electric vehicle chargers in parking lots.
Incentive	Provide financial benefit to reduce cost of action.
	<b>Example:</b> Provide financial benefit or tax exemption to builders who employ an energy manager to improve energy efficiency in new builds.
Advocate	Actively support a particular policy beyond the control of the local government.
	<b>Example:</b> Encourage BC Transit to transition fleet to a low-carbon fuel source.
Capacity Building	Provide information and resources to build awareness and understanding surrounding an action.
	<b>Example:</b> Develop education campaigns or support education opportunities for residents to learn about the benefits of undertaking energy retrofits in their own home.
Demonstration Project	Create a small-scale project to test viability of wide-spread action.
	<b>Example:</b> Trial a car-pooling initiative for City staff.
Funding	Provide funding to implement an action.
	<b>Example:</b> Utilize CARIP funding to implement energy retrofits in City-owned buildings.

Based on staff consultation, best practices and feedback from stakeholder and public engagement sessions, **34 corporate and 35 community actions were identified to implement over the next five years and beyond.** The sections below identify actions that the City of Prince George intends to undertake to achieve the greenhouse gas reduction targets. These actions fall under six focus areas:

## 1. Transportation

Shifting vehicle travel to cycling, walking, public transit, and ride sharing; increasing the use of electric vehicles through expanded public EV charging stations and EV parking requirements.

## 2. Land Use

Concentrating growth in certain areas to limit sprawl and promote compact, transit- and pedestrian-oriented development.

## 3. Buildings

Improving energy performance and lowering GHG emissions in new residential and commercial buildings; increasing energy efficiency and reducing GHG emissions in current residential and commercial buildings; and expanding the number of green and sustainable businesses.

## 4. Waste

Diverting organics from the landfill, and increasing recycling and water conservation.

## 5. Renewable Energy

Increasing the use of renewable energy.

## 6. Policy, Decision Making and Reporting

Embedding climate action into policies and budgets, and building partnerships with other community organizations to support these actions.



## INTRODUCTION

In Prince George, transportation emissions account for the majority of both corporate and community GHGs inventories and energy costs. The use of gasoline and diesel for vehicles and heavy equipment amounts to 51% of the City of Prince George's corporate emissions, and 52% of the community's emissions. The City of Prince George spent approximately \$1.6 million on transportation fuels in 2017, while residents spent approximately \$127.4 million.

Prince George has a high degree of vehicle reliance compared to the provincial and national averages. This is due to low-density, spread-out development, winter weather, difficult topography, and limited connectivity of the active transportation and transit networks, which can make walking, cycling, and transit use less feasible or desirable.

According to the 2010 Active Transportation Plan, approximately 89% of trips within Prince George are made by vehicle, compared to 7% by walking or cycling and 2% by public transit.

Best planning practices for reducing GHG emissions associated with transportation focuses on community reliance on vehicles by providing safe and reliable transportation alternatives, such as pedestrian pathways, bike lanes, and efficient public transit. This is followed by transitioning to more fuel-efficient and/or low-carbon vehicle options for trips that require a vehicle.

Supporting alternative transportation options assists in decreasing GHGs, but also provides social, health, and economic benefits. Walking, cycling, or taking public transit to work or school drastically reduces household costs, as owning a vehicle costs the average Canadian approximately \$1000 a month. Moreover, reducing vehicle traffic reduces road maintenance and replacement costs.

Active transportation options also support public health and quality of life initiatives, such as decreasing obesity rates, improving cardiovascular health, increasing social interaction, reducing traffic congestion, and improving air quality.

Residents of Prince George identified reducing GHG emissions associated with transportation as a priority, and would like to see actions taken to improve public transit and provide safe and reliable active transportation options.

The seven (7) corporate actions and twelve (12) community actions recommended in this plan aim to reduce transportation emissions to align with both corporate and community targets.

Prince George has 287 km of bike lanes.





## RECOMMENDED ACTION PLAN FOR CORPORATE TRANSPORTATION EMISSIONS

MT stands for Municipal Transportation

ACTIONS ONGOING OR IN PROGRESS	
MT1	Maintain membership in and progress through fleet certification programs, such as Fleet Champions.
MT2	Continue to phase out light-duty diesel trucks and replace with high-efficiency gasoline models, and consider hybrid and electric options for all light-duty fleet when appropriate for use.
ACTIONS TO IMPLEMENT IN NEAR FUTURE (2 - 5 YEARS)	
MT3	Re-activate Anti-idling campaign with all City staff.
MT4	Analyse fleet fuel consumption data semi-annually, and implement efficiency opportunities.
MT5	Conduct and implement a green fleet study, including a phased implementation schedule.
MT6	Encourage City staff to walk or cycle to work beyond Bike to Work Week, such as offering flexible start times, providing secure bicycle parking and shower facilities, and/or offering prizes.
MT7	Explore and implement online digital options for office functions.



## RECOMMENDED ACTION PLAN FOR COMMUNITY TRANSPORTATION EMISSIONS

**T stands for Transportation**

ACTIONS ONGOING OR IN PROGRESS	
<b>T1</b>	Expand efforts on planning and implementation of pedestrian and cycling infrastructure.
<b>T2</b>	Implement recommendations identified in the Transit Future Plan to improve frequency and reliability of public transit service.
<b>T3</b>	Continue to support PGAIR initiatives that seek to reduce greenhouse gas emissions and improve air quality.
ACTIONS TO IMPLEMENT IN NEAR FUTURE (2 - 5 YEARS)	
<b>T4</b>	Develop an electric vehicle strategy to identify initiatives that will increase the community-wide uptake of low-carbon and electric vehicles.
<b>T5</b>	Enforce the annual Anti-idling campaign.
<b>T6</b>	Partner with BC Transit to look at opportunities to convert the local BC Transit fleet to a low-carbon fuel.
ACTIONS TO INVESTIGATE FEASIBILITY	
<b>T7</b>	Consider including car idling restrictions in Clean Air Bylaw.
<b>T8</b>	Consider supporting carshare cooperatives and ride-hailing services.
<b>T9</b>	Investigate collaboration opportunities with major local employers to encourage carpooling or offer work-related transportation to reduce emissions associated with commuting to work.
<b>T10</b>	Consider collaborations with energy suppliers for low-carbon fuel options.
<b>T11</b>	Develop a downtown Transportation Demand Management Strategy for single-occupancy vehicles.
<b>T12</b>	Consider surveying residents to improve dataset on travel modal split.



## INTRODUCTION

Land use planning plays a significant role in GHGs emissions. Communities that are compact are more efficient and use less energy than communities that are spread out. Prince George is unique in that home ownership is still relatively affordable, and the average family can afford to have a single-family dwelling. In addition, the availability of land and the benefits that the forested surrounding areas have to offer to residents have favoured building out rather than building up. Topography and air quality concerns have also led residents of Prince George to choose to live in outlying areas. Due to all of this, Prince George has become a low-density, car-dependent community, which has spread outwards to natural areas and has required a vast and expensive infrastructure network.

Prince George has seen recent growth, which has resulted in the development of new subdivisions and multi-family developments. Prioritizing growth in designated urban areas and encouraging multi-family developments versus subdivision development in outlying areas ensures that infrastructure costs are minimized and allows residents to be closer to work, school, and services. Compact communities can reduce the need for driving by 20-40% which, in turn reduces community GHGs and road maintenance requirements. In addition, reducing the need for driving alleviates the financial burden of parking lots.

The City's Official Community Plan identifies reducing urban sprawl and protecting agricultural and natural areas as key issues for the financial health of Prince George. Decreasing urban sprawl reduces pressure on natural and agricultural areas, which are important for sequestering carbon and reducing GHGs associated with transportation. Trees and natural wetlands absorb GHGs from the atmosphere, so it is important to protect and enhance Prince George's environmental features. Sustainable agricultural practices also contribute to the absorption of GHGs, and support local food production.

Prioritizing compact communities, supporting local food production, and protecting tree cover were identified as priority actions for reducing GHG emissions by Prince George residents.

The eleven (11) community actions recommended in this plan aim to reduce emissions associated with land use to align with community targets.



Compact walkable communities are critical for encouraging residents to reduce GHG emissions.



## RECOMMENDED ACTION PLAN FOR COMMUNITY LAND USE EMISSIONS

L stands for Land Use

ACTIONS ONGOING OR IN PROGRESS	
L1	Continue to encourage a complete, compact community through appropriate measures.
L2	Continue to support local food production by preserving properties in the Agricultural Land Reserve (ALR).
L3	Continue to support local food production by providing space for farmers' markets and community gardens.
ACTIONS TO IMPLEMENT IN NEAR FUTURE (2 - 5 YEARS)	
L4	Identify regulatory measures to protect and grow the urban forest canopy.
L5	Update the Urban Forestry Management Plan to include climate change targets.
L6	Amend parking requirements to require bike parking and electric vehicle charging stations.
L7	Apply the Community Lifecycle Infrastructure Costing (CLIC) Tool to all major OCP amendment and rezoning applications to assess both short-term and long-term costs to the City of Prince George.
L8	Update the subdivision and development servicing bylaw to allow alternative design standards such as LED streetlights and alternative permeable surfaces.
L9	Investigate opportunities to prioritize and implement safe and reliable active transportation options into street design for new, rehabilitated and replacement roads.
ACTIONS TO INVESTIGATE FEASIBILITY	
L10	Investigate the ability to implement 30 km/hr speed limit in the downtown core to encourage walking and cycling over vehicle usage.
L11	Investigate opportunities to expand the City's support to improve local food production.



# BUILDINGS AND INFRASTRUCTURE ACTIONS

## INTRODUCTION

After transportation, electricity and heating used in buildings are the second-largest contributors to corporate and community GHGs. City buildings account for 39% of corporate GHGs, but 74% of energy expenditures. In 2017, the City of Prince George spent \$3.9 million on electricity, \$380,000 on natural gas, and \$280,000 on buildings connected to the District Energy System. Electricity expenditures also account for City streetlights.

Buildings account for 39% of Prince George's community greenhouse gases and 48% of energy expenditures. In 2017, Prince George residents and businesses spent approximately \$71 million on electricity, \$37 million on natural gas, and \$9.8 million on heating oil, propane, wood, and bioenergy.

The most effective way to reduce energy costs and GHGs associated with buildings is to increase building efficiency. This can be achieved by retrofitting existing buildings, upgrading inefficient appliances, replacing drafty windows and doors, improving building envelopes through insulation, and installing smart thermostats.

Requiring new buildings to be more efficient is more economical than needing to retrofit an inefficient existing building. The Provincial government will require all new buildings to follow the BC Energy Step Code, which expects buildings to be built to Step 3 by 2022 and net zero ready by 2032.

Improving energy efficiency in buildings can provide significant economic and social benefits. As energy efficiency is improved, energy bills will decrease and comfort levels will increase. High energy costs greatly impact low-income households, and reducing these household costs assists in poverty reduction. The Provincial government and energy providers contribute financial incentives to businesses and homeowners to improve the efficiency of building stocks.

Although public support for taking action on reducing GHG emissions related to buildings was low compared to other focus areas, modelling efforts demonstrate that prioritizing energy reduction in existing buildings may have the greatest impact on community GHG emissions and energy costs.

The seven (7) corporate actions and seven (7) community actions recommended in this section aim to reduce building emissions to align with both corporate and community targets.

Multi-family developments made from wood products are less energy intensive than single family developments per resident.





# BUILDINGS AND INFRASTRUCTURE ACTIONS

## RECOMMENDED ACTION PLAN FOR CORPORATE BUILDING AND INFRASTRUCTURE EMISSIONS

MB stands for Municipal Buildings and Infrastructure

ACTIONS ONGOING OR IN PROGRESS	
<b>MB1</b>	Lead by example, and construct new civic facilities that are at least one step above the current level in the Energy Step Code and demonstrate utilization of wood in the structural components of buildings.
<b>MB2</b>	Continue to convert local government-owned streetlights to LED when up for replacement.
<b>MB3</b>	Utilize an energy management tracking and information system for City-owned buildings and infrastructure.
ACTIONS TO IMPLEMENT IN NEAR FUTURE (2 - 5 YEARS)	
<b>MB4</b>	Conduct energy audits of existing facilities and infrastructure, and implement energy efficiency improvements.
<b>MB5</b>	Implement energy management practices into annual building maintenance procedures.
ACTIONS TO INVESTIGATE FEASIBILITY	
<b>MB6</b>	Examine optimal siting, orientation and design options for new buildings for emissions reductions and energy savings opportunities.
<b>MB7</b>	Investigate energy recovery options from facilities, and feasibility of implementation.



# BUILDINGS AND INFRASTRUCTURE ACTIONS

## RECOMMENDED ACTION PLAN FOR COMMUNITY BUILDING AND INFRASTRUCTURE EMISSIONS

B stands for Buildings and Infrastructure

ACTIONS ONGOING OR IN PROGRESS	
<b>B1</b>	Continue to support capacity-building opportunities to ensure building industry professionals are knowledgeable in the construction of energy-efficient buildings.
<b>B2</b>	Engage with the building community on the BC Energy Step Code.
ACTIONS TO IMPLEMENT IN NEAR FUTURE (2 - 5 YEARS)	
<b>B3</b>	Plan for the Provincial implementation of the BC Energy Step Code, and consider requiring higher levels of energy efficiency for new builds.
<b>B4</b>	Partner with grant providers and energy companies on delivery and promotion of energy conservation education and grant programs for new and existing buildings.
ACTIONS TO INVESTIGATE FEASIBILITY	
<b>B5</b>	Investigate opportunities to work with industry and higher education partners on economic opportunities around energy-efficient new buildings.
<b>B6</b>	Investigate methods to encourage local businesses to improve efficiency, such as through collaboration with the Chamber of Commerce Carbon Reduction Project.
<b>B7</b>	Investigate financing models for implementing a comprehensive residential energy efficiency retrofit campaign.



## INTRODUCTION

Solid waste accounts for 10% of both the City's corporate GHGs and community emissions. It does not however equate to any energy expenditures, because the energy input is the solid waste material itself, which breaks down and emits GHGs. When organic material, such as food and yard waste, ends up in the landfill, it is not able to decompose properly, because it is covered up with dirt and does not have access to oxygen. This emits methane into the atmosphere, a GHG that is 25 times more potent than carbon dioxide.

The Foothills Boulevard Regional Landfill is maintained by the Regional District of Fraser Fort-George, which is estimated to be at capacity by 2027<sup>1</sup>. According to the 2015 Regional Solid Waste Management Plan, the average person generates 1,142 kg of waste per year, of which 74% ends up in the landfill and the remaining 24% is recycled or composted<sup>2</sup>. Prince George's waste disposal rates are significantly higher than the provincial average of 506 kg per person.

Reducing solid waste was identified as an environmental myPG goal of the community, and is supported by the City's Official Community Plan. Composting, reducing single-use items, and recycling are important waste-reduction strategies that also decrease GHGs. There is ample opportunity for reducing waste production in Prince George, as 31% of what ends up in the landfill is compostable organic material.

High water consumption can also be considered waste. Prince George has high water consumption rates, which also relates to energy use, given the energy needed to heat the water. By reducing water consumption, energy consumption and GHGs also decrease. The City of Prince George prepared an updated Water Conservation Plan in 2016 that aims to reduce per capita water consumption by 20% by 2026.

Reducing GHGs associated with waste production was identified as a priority focus area for Prince George residents.

The three (3) corporate and two (2) community actions recommended in this section aim to reduce emissions associated with waste and water to align with both corporate and community targets.

<sup>1</sup> City of Prince George (2011) Official Community Plan. <https://www.princegeorge.ca/Business%20and%20Development/Pages/Planning%20and%20Development/OfficialCommunityPlan.aspx>

<sup>2</sup> Maura Walker & Associates (2015) FFGRD Regional Solid Waste Management Plan. <http://www.rdffg.bc.ca/uploads/reports/Solid-Waste/RSWMP2015.pdf>



Prince George has ample opportunity to reduce waste production.



# WASTE MANAGEMENT ACTIONS

## RECOMMENDED ACTION PLAN FOR CORPORATE WASTE MANAGEMENT EMISSIONS

MW stands for Municipal Waste Management

ACTIONS ONGOING OR IN PROGRESS	
<b>MW1</b>	Continue implementation of recommendations identified in 2016 Water Conservation Plan to reduce City operations' water usage.
<b>MW2</b>	Evaluate waste creation from City facilities and provide educational information to internal staff members.
ACTIONS TO IMPLEMENT IN NEAR FUTURE (2 - 5 YEARS)	
<b>MW3</b>	Manage waste creation at City facilities, such as composting food waste and reducing use of single-use products.

## RECOMMENDED ACTION PLAN FOR COMMUNITY WASTE MANAGEMENT EMISSIONS

W stands for Waste Management

ACTIONS ONGOING OR IN PROGRESS	
<b>W1</b>	Continue implementation of recommendations identified in 2016 Water Conservation Plan to reduce community-wide water usage.
ACTIONS TO IMPLEMENT IN NEAR FUTURE (2 - 5 YEARS)	
<b>W2</b>	Investigate opportunities to expand existing organics program and divert organics from the landfill.



## INTRODUCTION

Renewable energy comes from natural processes that are able to be replenished on a human timescale, and are considered cleaner sources of energy than fossil fuels. Sources include wind, sun, hydropower, organic material, and geothermal heat. Transitioning to cleaner, renewable fuel sources is an important element in climate change mitigation and reducing fossil fuel use.

The City is a national renewable energy leader, being one of the few municipalities in Canada to have several municipal buildings connected to a renewable energy system. The Downtown Renewable Energy System (DRES) provides heat and hot water to nine (9) municipal buildings, which keeps energy-related funds within the community. The DRES has been the single most effective action in reducing corporate GHGs undertaken by the City of Prince George, reducing corporate GHG emissions by approximately 1,500 tonnes per year.

In addition, the City's Aquatic Centre and RCMP building operate solar panels to offset heating and cooling needs, and the Wastewater Treatment Centre (WWTC) utilizes the biogas produced during treatment processes to power boilers for biosolids production and space heating.

Opportunities exist to increase connections to the DRES and expand the production of biogas at the WWTC. The City aims to investigate the potential to increase both supply and demand of renewable energy options within corporate operations and the community.

The two (2) corporate and three (3) community actions identified in this section aim to reduce emissions associated with expanding renewable energy sources to align with both corporate and community targets.



Installation of a solar panels on a City bus stop.



## RECOMMENDED ACTION PLAN FOR CORPORATE RENEWABLE ENERGY

**ME stands for Municipal Renewable Energy**

ACTIONS ONGOING OR IN PROGRESS	
<b>ME1</b>	Continue to identify municipal connection opportunities for the Downtown Renewable Energy System.
ACTIONS TO IMPLEMENT IN NEAR FUTURE (2 - 5 YEARS)	
<b>ME2</b>	Investigate opportunities to increase both supply and demand of renewable energy options for municipal buildings and infrastructure.

## RECOMMENDED ACTION PLAN FOR COMMUNITY RENEWABLE ENERGY

**E stands for Renewable Energy**

ACTIONS ONGOING OR IN PROGRESS	
<b>E1</b>	Continue to identify community connection opportunities for the Downtown Renewable Energy System.
<b>E2</b>	Utilize the Downtown Renewable Energy System in a public information campaign that demonstrates operations and the wide-ranging environmental and economic benefits.
ACTIONS TO INVESTIGATE FEASIBILITY	
<b>E3</b>	Investigate opportunities to increase both supply and demand of community-based renewable energy options.



# POLICY, DECISION-MAKING AND REPORTING ACTIONS

## INTRODUCTION

Climate change has been described as the greatest challenge of this generation by the United Nations, and scientists around the globe are warning of the narrowing window available to mitigate its impacts. Mitigating climate change cannot be achieved without the combined actions of governments, businesses, and residents. Collaborations between the City of Prince George and community partners are essential for the successful implementation of the 2020 Climate Change Mitigation Plan.

Taking action on climate change starts with administrative leadership and changes in policy and decision-making that identify climate change mitigation as a priority through dedicated resources. These include considering GHGs in decisions related to City projects and integrating emissions targets into long-term plans and policies. In addition, reporting on actions taken to reduce GHGs maintains the conversation on climate change mitigation and supports working towards the targets identified in this plan. Embedding climate change mitigation into corporate activities, such as in reports to Council, budgeting decisions, and human resources policies, will help to ensure progress is made.

The fifteen (15) corporate actions identified in this section aim to reduce emissions through policy, decision making, and reporting to align with both corporate and community targets.



City staff working together with other jurisdictions at the Emergency Operation Centre during the 2017 wildfire season.



# POLICY, DECISION-MAKING AND REPORTING ACTIONS

## RECOMMENDED ACTION PLAN FOR CORPORATE POLICY, DECISION MAKING AND REPORTING

MA stands for Municipal Administration

ACTIONS ONGOING OR IN PROGRESS	
MA1	Prepare Climate Action Strategy and 5-year work plans.
MA2	Report on climate action in the City Annual Report and incorporate actions/measures into public information materials.
MA3	Identify local GHG emissions reduction priorities and successes in federal/provincial infrastructure grants.
MA4	Update methodology for calculating corporate GHG emissions.
MA5	Continue to run staff behavioural initiatives and campaigns to encourage energy efficiency practices in the workplace.
MA6	Integrate emissions reduction targets into new and existing City plans and policies and continue to report on progress annually.
ACTIONS TO IMPLEMENT IN NEAR FUTURE (2 - 5 YEARS)	
MA7	Consider appropriate resourcing (financial and staff) for realizing climate action goals and priorities.
MA8	Formalize assignment of the CARIP grant into an energy and GHGs reduction fund that can support municipal and community projects.
MA9	Update current Sustainable Procurement Policy.
MA10	Perform a review every 5 years of emissions reduction targets and actions to identify if implemented actions are achieving targets.
MA11	Incorporate Community Based Social Marketing (CBSM) training into actions.
ACTIONS TO INVESTIGATE FEASIBILITY	
MA12	Demonstrate leadership as a municipality on climate change mitigation through having an elected official join the BC Municipal Climate Leadership Council, and engage with local partners on research development and education and capacity building opportunities.
MA13	Commit to long-term community engagement on carbon emissions reduction.
MA14	Review and update Climate Change Mitigation Plan every 5 to 10 years to ensure targets and actions are on-track and align with leading practices.
MA15	Investigate opportunities to provide community grants related to energy and GHGs reduction, in alignment with the actions laid out in this plan.



# HOW WILL ACTIONS REDUCE EMISSIONS?

## INTRODUCTION

The implementation of the actions identified in this plan were modelled to estimate how they will decrease corporate and community GHGs. Some actions will have significantly more of an impact reducing GHGs than others.

## CORPORATE EMISSIONS

Undertaking all 34 corporate action items is expected to reduce the City of Prince George's GHGs by more than the short-term reduction targets for 2025 and 2030. Although the identified actions are expected to achieve short-term reduction targets, additional planning and action evaluation will be necessary to meet 2040 and 2050 reduction targets.

Figure 18 identifies some high-impact actions, and the amount of GHGs each action is expected to save per year. The most significant reductions will be from conducting and implementing a Green Fleet Study; conducting energy audits on buildings and implementing recommended improvements; and leading by example in constructing civic facilities at least one step above baseline in Energy Step Code and utilizing wood.

Figure 18 – Recommended High-Impact Corporate Actions

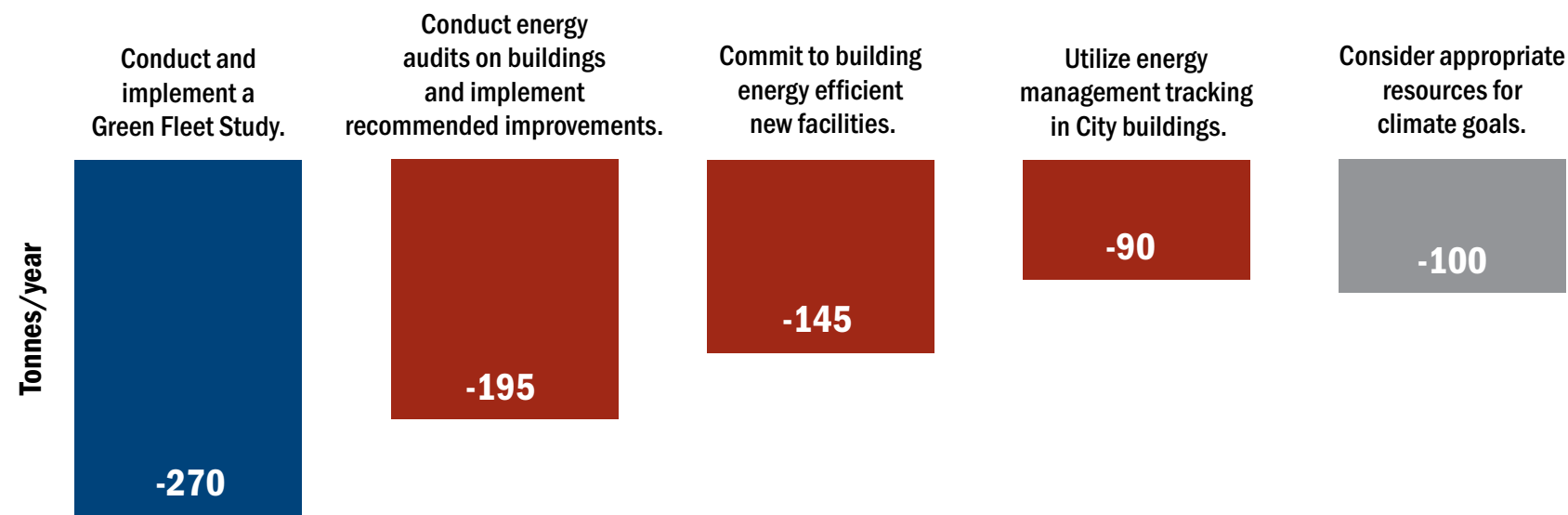
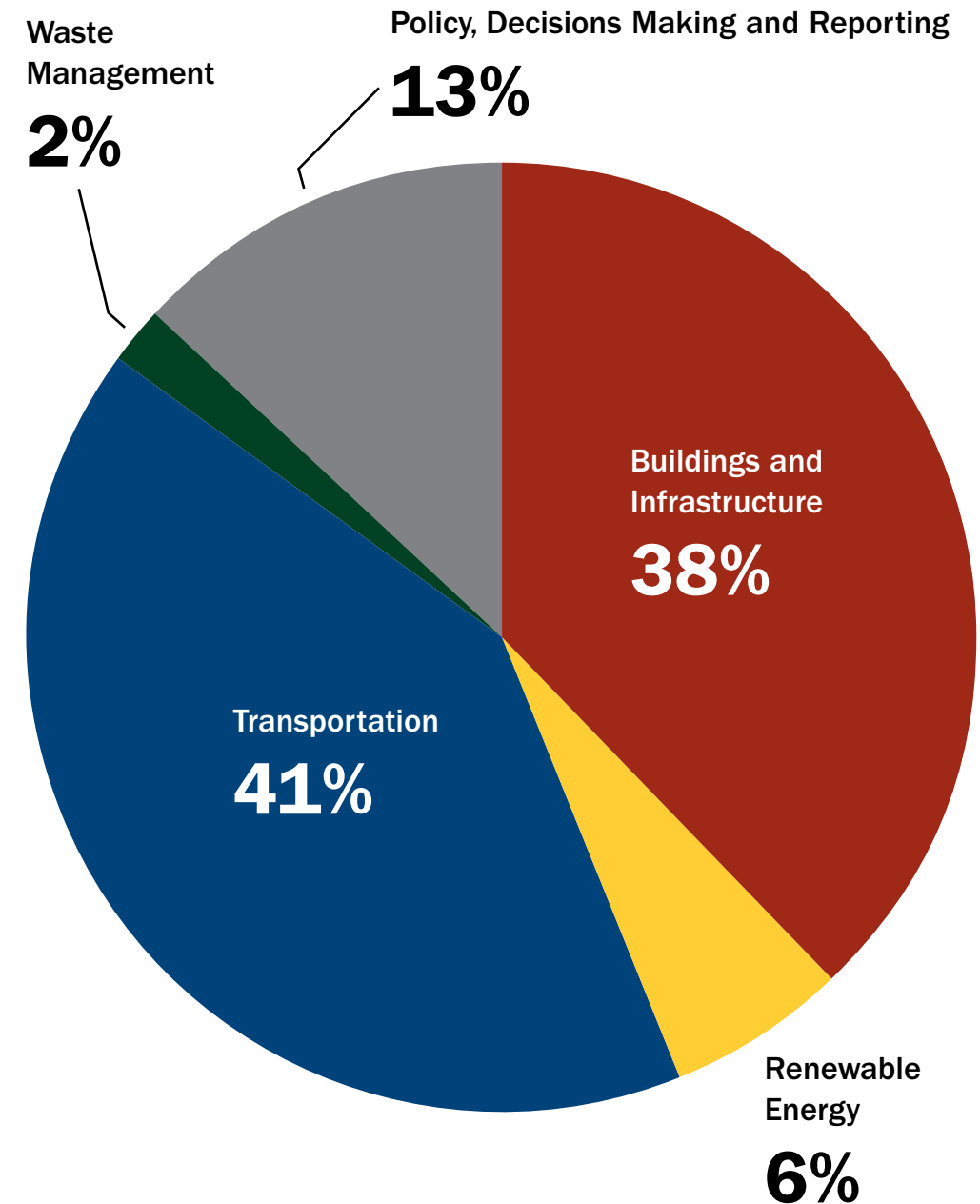


Figure 19 demonstrates how each focus area will contribute to achieving the corporate 2025 emissions target. In addition to reducing emissions, the planned corporate climate actions are expected to lower energy costs in 2025. Total corporate energy costs in Prince George are forecasted to be about \$7.7 million in 2025, compared to \$6.1 million in 2017. Executing the planned climate actions is expected to save \$1.7 million in energy costs in 2025.

Figure 19 – Corporate GHG Reductions by Focus Area by 2025





# HOW WILL ACTIONS REDUCE EMISSIONS?

## COMMUNITY EMISSIONS

Undertaking all 35 community action items is expected to reduce Prince George's community GHGs by more than the short-term reduction targets for 2025 and 2030. Like the corporate emissions, the listed actions are expected to achieve short-term reduction targets, however, additional planning and evaluation will be needed to meet long-term targets.

Figure 20 identifies high-impact community actions that will have significant effects in reducing community GHGs. The most significant reductions will be from a comprehensive energy efficiency retrofit campaign, working with BC Transit to switch to low carbon fuels and improve transit inefficiencies, and prioritizing compact development.

Figure 20 – Recommended High-Impact Community Actions

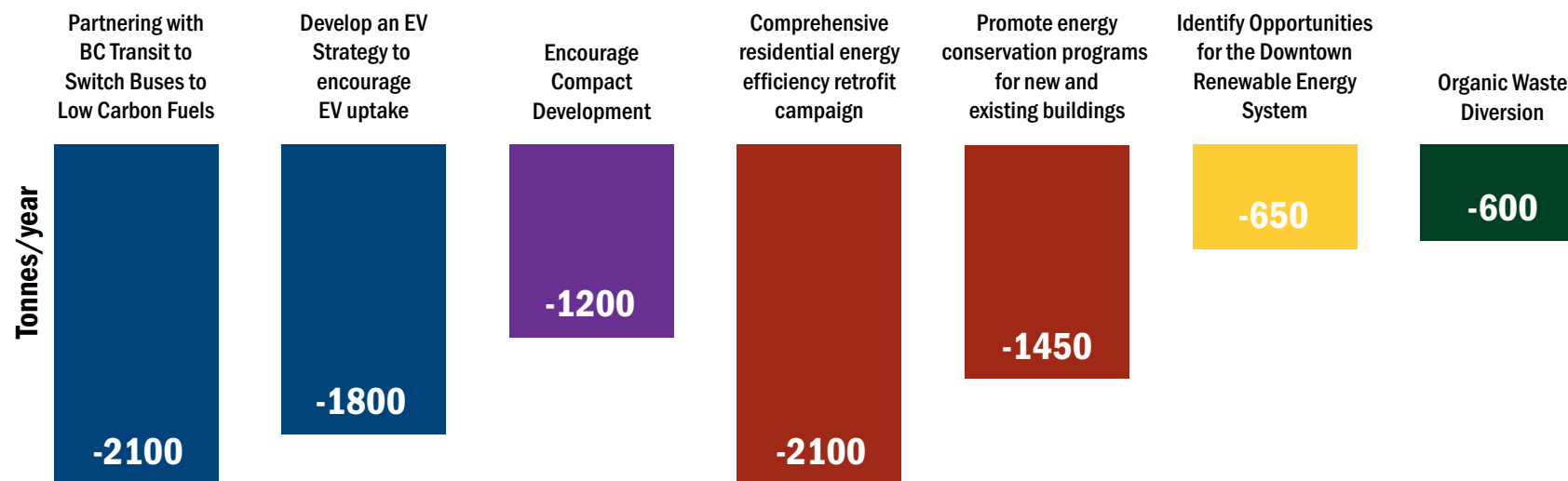
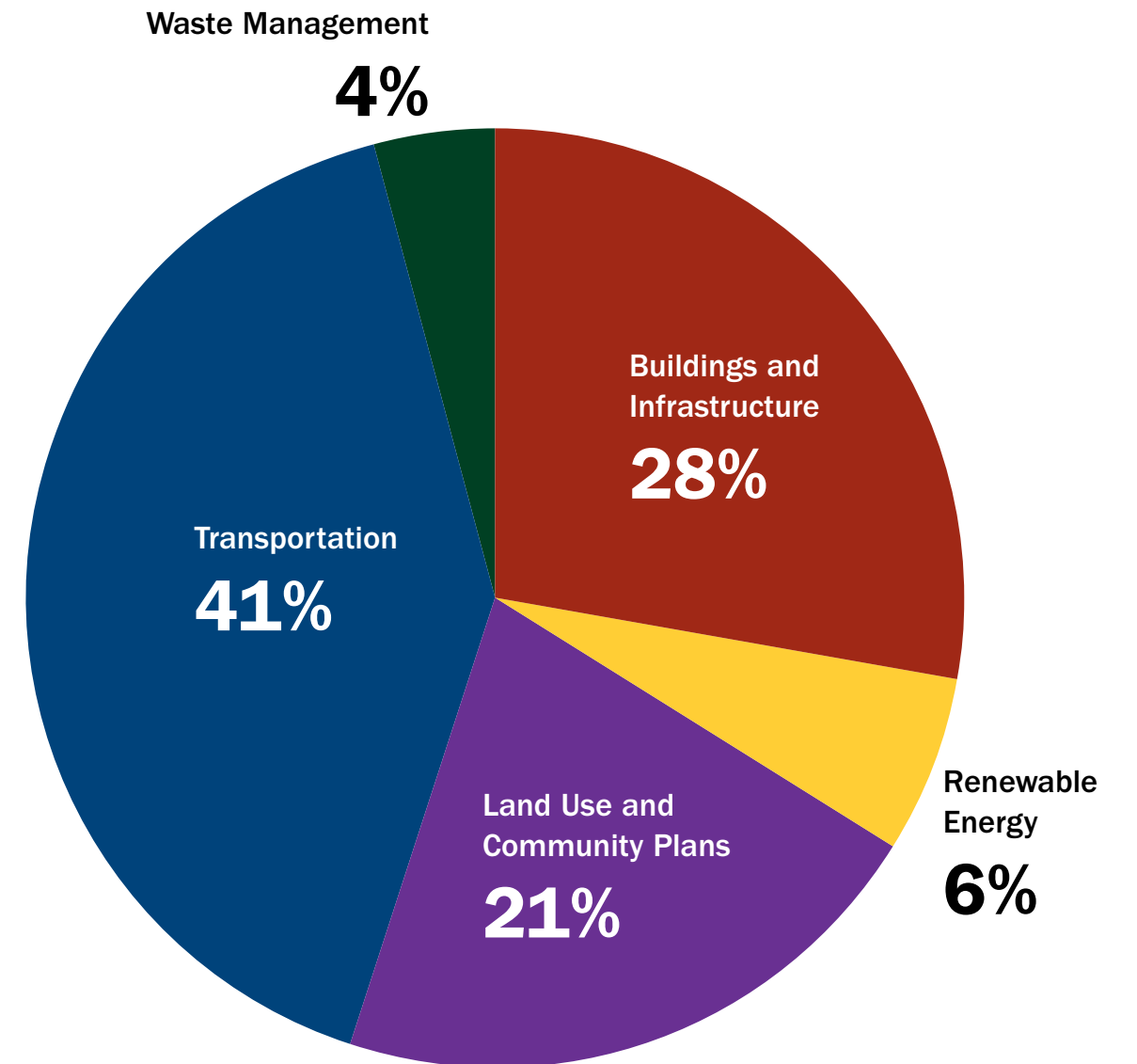


Figure 21 demonstrates how each focus area will contribute to achieving the community 2025 emissions target. Taking action to reduce GHGs will also assist in lowering community energy costs by 2025. Total community energy costs in Prince George are forecasted to be \$270 million in 2025, compared to \$245 million in 2017. By executing the planned climate actions, these energy costs are expected to be \$261 million in 2025, resulting in a \$9 million savings that year.

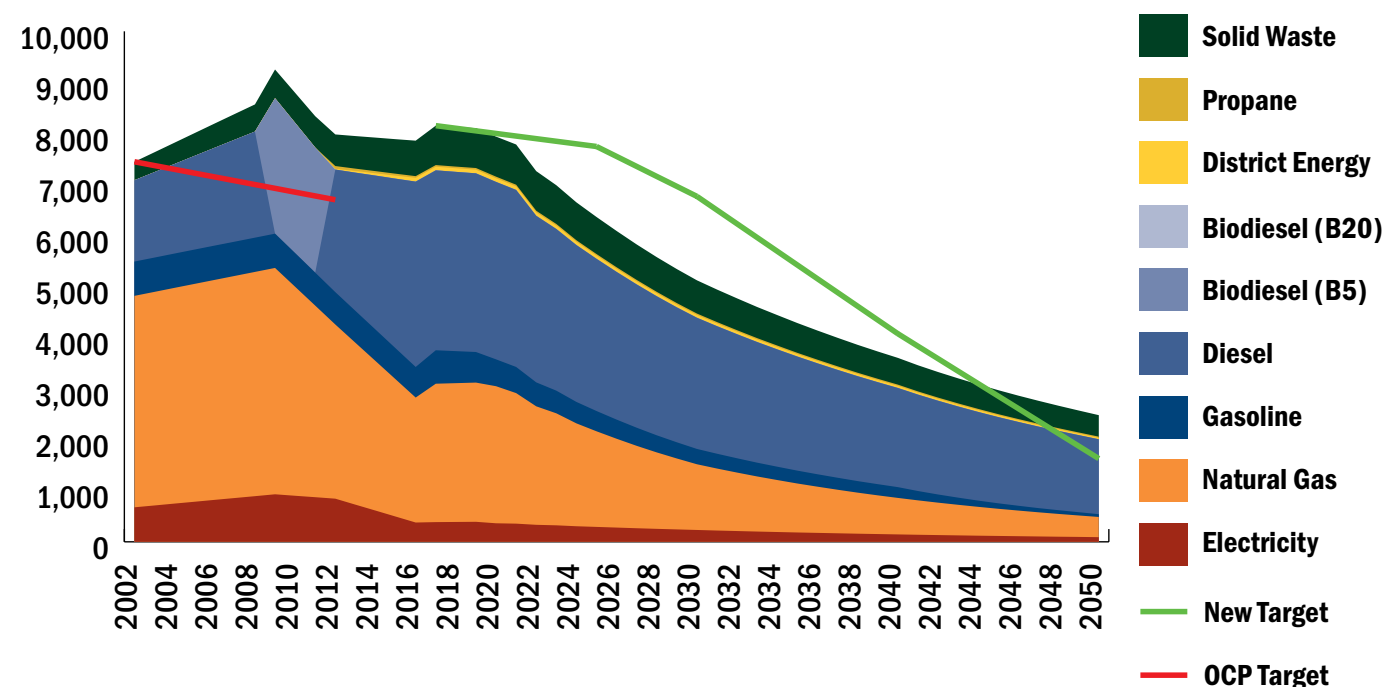
Figure 21 – Community GHG Reductions by Focus Area by 2025





# HOW WILL ACTIONS REDUCE EMISSIONS?

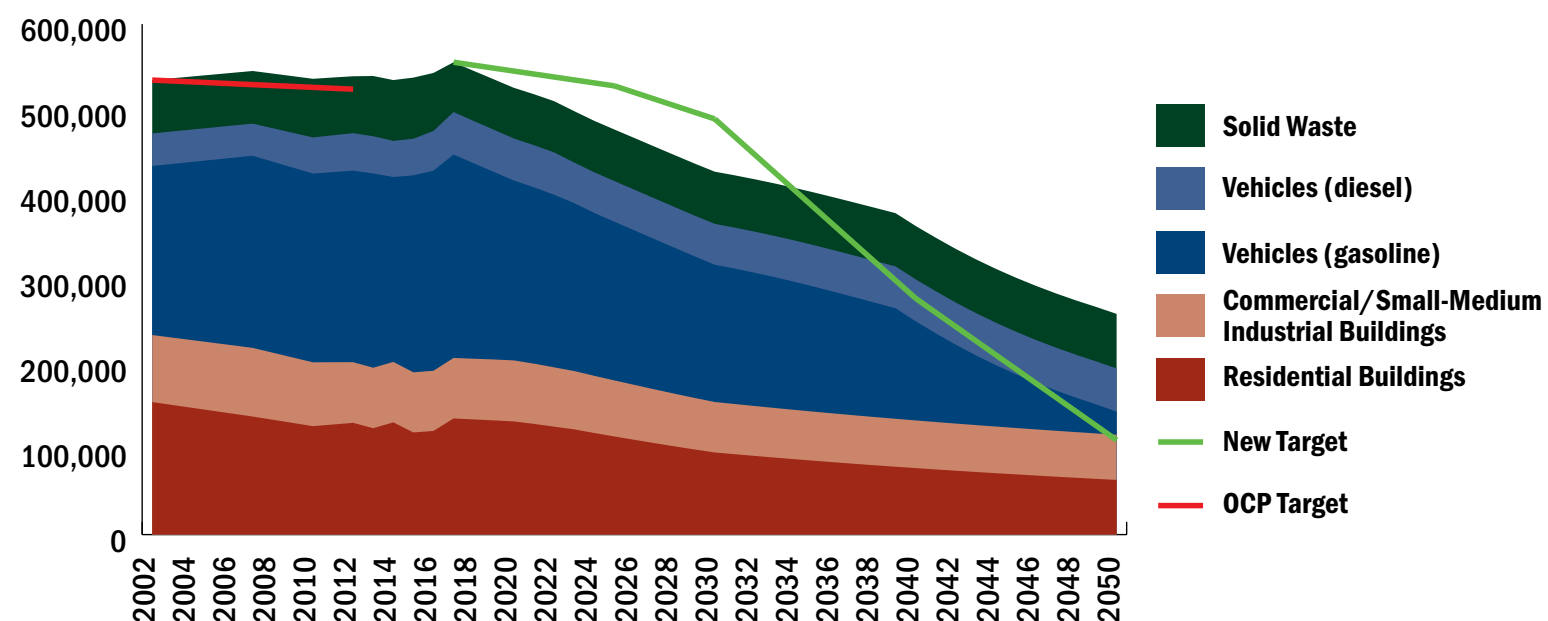
Figure 22 – Planned Corporate GHG Reductions by Sector to 2050 to align with Targets



By undertaking all of the actions identified in this plan, the City of Prince George should be successful in achieving short-term emissions reduction targets for corporate and community emissions. Figures 22 and 23 demonstrate how, as actions are implemented, corporate and community GHGs will decline.

The City of Prince George is not alone in taking action on reducing greenhouse gas emissions. Provincial and Federal policies are expected to support these emissions

Figure 23 – Planned Community GHG Reductions by Sector to 2050 to align with Targets

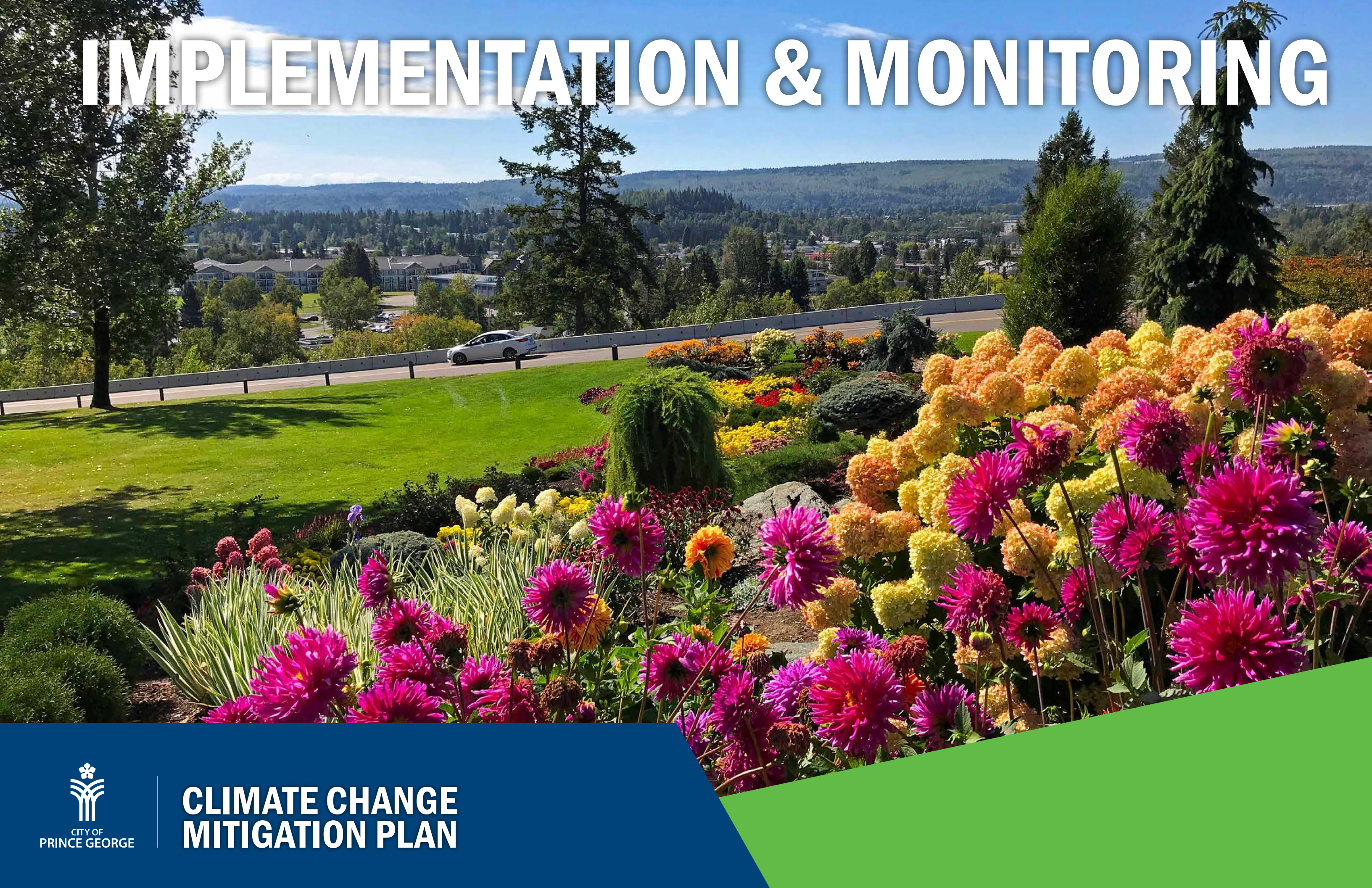


reductions. In British Columbia, the implementation of the CleanBC program is expected to support communities in reducing GHGs through the Energy Step Code, and in requiring all new light-duty vehicles to be zero emissions by 2040.

Additional actions by the City of Prince George will be necessary beyond 2030 to ensure that long-term targets will be met.



# IMPLEMENTATION & MONITORING





Several key factors are important for the successful implementation of the 2020 Climate Change Mitigation Plan, based on research. 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.

The City of Prince George is fortunate to already have political, staff, and community/stakeholder support, yet continued and additional support is needed to ensure that the identified actions and targets can be successfully achieved. An important missing link for successful implementation is having a dedicated staff member or members (one for community actions and one for corporate actions), who have access to funds to implement actions, and who can support the institutionalization of climate action. Fortunately, the City can access funding from both BC Hydro and FortisBC to fund these positions.

Although the City already sets aside its Climate Action Revenue Incentive Program (CARIP) rebate, this should be formalised to ensure that it continues to be set aside in the future and has clear criteria for its use. The City should also consider other internal funding sources in order to accelerate action. Internal funding sources can be used to leverage external funding to great effect. Some common external funding sources include BC Hydro, FortisBC, UBCM Gas Tax Agreement Fund, FCM’s Green Municipal Fund, Northern Development Initiative Trust, the Provincial CleanBC Communities Fund and Vehicle Program, and the Federal Low Carbon Economy Challenge and Clean Energy Innovation Program.

Table 5 – Ways Local Governments can Institutionalize a 2020 Climate Change Mitigation Plan

<b>Incorporate</b>	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 City staff job descriptions. Some communities report on climate action or sustainability implications in reports to Council.
<b>Budget</b>	Embed climate action into the budgeting process.
<b>Monitor</b>	Monitor indicators as outlined in the Monitoring and Evaluation section.
<b>Convene</b>	Host regular meetings to discuss implementation with internal and/or external stakeholders.
<b>Report</b>	Report regularly to Council on progress and accomplishments. Annual reporting is recommended. It can be integrated with CARIP reporting.
<b>Renew</b>	Prepare for plan renewal approximately every five years.



Students learn to plant a tree with City staff on Tree Day.





Cameron Street Replica Bridge at Cottonwood Island Nature Park.

Monitoring and evaluating the implementation of the 2020 CCMP is critical for its success. Key Performance Indicators (KPIs) enable local governments to measure the outcomes of a plan's implementation. When KPIs are monitored regularly, municipalities can determine how to best allocate resources to support implementation, and what success different actions are having.

Two types of indicators are recommended for corporate and community climate change mitigation actions. Primary indicators measure energy consumption and GHG emissions, while secondary indicators can quantify the indirect success of various actions.

Annual progress reporting should be prepared by a dedicated staff person with support from other divisions in collecting and reporting on these indicators on a regular basis.

Monitoring metrics will be defined and prioritized as next steps, and will correspond with other City planning documents, such as the Official Community Plan Five Year Monitoring Report, and the City's Level of Service work.



# NEXT STEPS: CLIMATE ACTION STRATEGY

In conjunction with the development of the 2020 Climate Change Mitigation Plan, the City of Prince George has been working on developing updated Climate Change Adaptation Strategies. The goal is to align the action items from both the Mitigation Plan and Adaptation Strategies. By prioritizing actions based on the benefits of both programs, as well as other co-benefits and alignments, the City aims to create a cohesive Climate Action Strategy.

As a part of this process, actions from existing City plans have been integrated into this strategy to demonstrate the important climate action work that the City is already doing.

This work will continue to allow the City to be a leader in climate action by supporting operational and behavioural changes that aim towards achieving emissions reduction targets.



