CITY OF VICTORIA

Committee of the Whole Report
For the Meeting of September 21, 2017

To:	Committee of the Whole	**Date:**	September 14, 2017
From:	Fraser Work, Director of Engineering and Public Works		
Subject:	Climate Change Leadership Plan Update		

RECOMMENDATION

This Report:

That council accept this Climate Action Program Update report for information.

EXECUTIVE SUMMARY

In August 2016, the City of Victoria established a long-term greenhouse gas (GHG) reduction target (for both corporate and community emissions) of 80% by 2050, including a corresponding specific target of 100% renewable energy. This step was taken in light of the recently ratified Paris Agreement, a global agreement to limit impacts and risks of a changing climate by holding global temperature increase to well below 2 degrees centigrade, in effort to avoid the most negative and severe climate change impacts. The Victoria targets align with provincial and federal government GHG reduction targets and are consistent with the goals set by the Paris Agreement. The most severe climate risks may be avoided if we reach our collective, global GHG reduction targets, where cities have a unique role to control near 70% of all global GHG emissions. Cities must act quickly, since 'climate-inaction' comes at a high cost, where each decade of delay imposes disproportionately higher mitigation and adaptation costs to the taxpayer. The climate action imperative is clear, but the solutions are challenging. In order to meet the required targets, all levels of government, business and the community must work in lock-step, to educate, influence and reduce the community's GHG burden.

This report provides an update on current work and describes the development of the City's Climate Leadership Plan (CLP). The CLP is focussed on the goals, understanding relevant barriers and opportunities, and planning for the smartest GHG reduction strategies. The City's plan will include core GHG reduction principles, which include (1) Make Energy Visible, (2) Clean Affordable Energy for all, (3) Make smarter energy decisions easier and (4) Lead and Inspire. The CLP will set targets and goals, and integrate with other City plans and programs so that climate mitigation and adaptation remain core drivers for investment, development, design, operations and maintenance.

A series of GHG reduction projects are currently underway, which include building energy code implementation (new buildings), a plan to address affordable energy retrofits in existing building stock, active transportation programs, electric vehicle charging strategy development, transit improvements, organic waste management strategies, and fleet and facilities electrification. These

projects are outlined in this report, with a full list of draft climate actions, which will be formalized in the CLP presentation in December 2017.

PURPOSE

The purpose of this COTW report is to provide an update to Council on the Climate Action Program, with specific attention to the Climate Leadership Plan (CLP) development.

BACKGROUND

In August 2016, Council committed to a long-term greenhouse gas (GHG) reduction target for both corporate and community emissions of 80% GHG reduction by 2050, including a corresponding specific target of 100% renewable energy. These targets align with Provincial, Federal and international requirements set forth by the United Nations Framework Convention on Climate Change (UNFCCC), and mirror commitments made from hundreds of worldwide cities, some of whom have committed to earlier adoption and even bolder targets.

Council passed the following motion on August 18, 2016:

- Establish a long-term GHG Reduction target for both corporate and community emissions consistent with global reduction goals of 80% GHG reduction and by 2050, including a corresponding target of 100% renewable energy.

And direct staff to:

1. Undertake a series of workshops with Council.
2. Create a staff-led Climate Action Task Force, commencing in October 2016, to define expectations and build strategy around climate action.
3. Develop an action plan based on our existing work done to date, in support of meeting reduction targets. This plan will include:
    a. Priority actions / programs for consideration;
    b. Governance and documentation renewal plan;
    c. Resource plan; and
    d. Internal / external stakeholder communication, education and engagement plans.

By December 2016, staff returned to brief Council with an update on completed actions and further work on the Climate Action Program, which included a commitment of funds to support a temporary 2-year Community Energy manager position and enable a suite of priority climate actions for 2017, including development of the CLP. These items are discussed in more detail throughout this report.

CLIMATE ACTION PROGRAM UPDATE

Recent progress in Victoria's Climate Action Program (CAP) has focussed on the following priorities:

- baselining energy and GHG information and trends for community and corporate emissions;
- development of the CLP;
- staffing of critical positions; and
- progressing other high priority actions that can be confidently advanced as the plan is developed.

Climate Action at the City is managed by sector, with a focus on building energy (new and existing), Transportation (clean, sustainable human mobility options), Waste management (organic waste diversion), Climate Adaptation (preparing for the impacts from climate change), corporate emissions

reduction programs, and overall program management activities (information management, project delivery, strategy development etc). These action areas are updated in more detail below:

Community Emissions: A community GHG emissions model is being updated as part of the climate action program. The model will more accurately and comprehensively quantify emissions by source, to help invest in the required energy reductions to meet our GHG targets.

a. **Buildings** (51% of Community GHG Emissions):
   i. New Buildings (BC Step Code Implementation): The new Provincial Step-Code stipulates net-zero energy standards for new buildings by 2032. The City is progressing stakeholder engagement and staff training on the technical aspects of the new system. Cities have a choice of how quickly to adopt the code's incremental energy improvement steps. Staff will return to Council in Dec 2017 with a comprehensive plan and timelines for implementation.

   ii. Existing Buildings (ie. an affordable energy retrofit program):
   Market Rental Revitalization Study (MaRRS): Landlord BC estimates that over the next 10 years 10,000 rental apartment units will require renovation in Victoria. The City is currently working with RDH Building Science and the Community Social Planning Council to identify policy levers and incentives that can deliver simultaneous energy efficiency upgrades in our aging housing market that align with upcoming renovations to maximize affordability and minimize disruption.
   Residential Energy Retrofit Incentive Programs: to increase the uptake of energy retrofits and promote conversion away from heating oil, the City is supporting the Provincial Oil to Heat Pump program and BC Hydro's Home Renovation Rebates through "top up" incentives, marketing and promotion support.

b. **Transportation** (39% of Community GHG Emissions): Rapid decarbonisation of the transportation system requires a transformation shift to public transit, increased cycling and walking mode share, and electrification of the community vehicle fleet. GHG and energy targets and some specific initiatives will be led by the CLP, while primary transportation improvement programs that enhance the health, well-being, prosperity and sustainability of the community will be governed by the City's Sustainable Mobility Strategy. Primary focus for sustainable transportation initiatives are as follows:
   i. **Public Transit:** The City continues to partner with BC Transit on priority, improvement projects such as Douglas Street widening. Adoption of other important initiatives will be critical to reach the desired mode shift to transit, which include: bus rapid transit, dedicated bus lanes, all door loading, single and auto payment systems, transit signal priority, improved road design, optimal routing/convenience/performance, quiet and emissions free propulsion. Such enhancements are required to out-perform the conventional passenger vehicle, and incent people to make transit their first-choice in mobility.
   ii. **Cycling and Walking**: Construction of the All Ages and Abilities Bicycle Network is underway, with Fort Street as the next project for construction. Capital initiatives to upgrade the harbour pedestrian pathways and City sidewalks and crosswalks are also underway to support pedestrian connectivity, safety and accessibility.
   iii. **Electric Vehicle Adoption and Infrastructure**: Staff are consulting with BC Hydro in the development of a draft EV Charging Strategy, which will include

charging guidelines for buildings, public spaces, City assets, with a focus on multi-family installations.

c. **Waste Management** (10% of Community GHG Emissions): The CLP will focus mainly on organic waste GHG emissions, while the emerging Sustainable Waste Management Strategy will focus on all other waste issues, with a primary focus on principles of Circular Economy and zero-waste approach, aligned with regional programs.

d. **Consumption-Based' Emissions (embedded emissions)**:
Pioneering cities are seeking to tackle one of the root causes of climate change: our individual and collective consumption choices and habits. The City has partnered with BCIT and USDN in support of the "ecoCity Footprint" study. The ecoCity footprint is a tool that generates an ecological footprint and a consumption-based GHG emissions inventory for communities. This project will create a City inventory to identify activities and consumption habits that are having the greatest impact on our carbon footprint and GHG emissions, but also expand the tool's capabilities and make it more widely available to others.

e. **Climate Adaptation**: Storm severity, intensity and sea level rise are already central planning requirements in everyday City infrastructure projects, especially those nearest the coastline. Increased planning and programs around all aspects of adaptation will be addressed in the CLP.

f. **GHG Information and Modelling**: This work will include an improved community GHG inventory and emissions model, which is currently being updated, and aims to define important GHG emissions data missing from the last five years of historical, provincial inventories.

2. **Corporate Emissions**:
   a. **Facilities**: Energy reduction programs, upgrades and new-facility energy-efficient design will be formalized and prioritised through the CLP. Fuel-switching to Renewable Natural Gas (RNG) will also be a key enabler for reduced GHG production. The City has initiated the procurement of RNG for the Victoria Conference Centre (VCC) and will be among the first municipalities in BC to use RNG in its facilities.

   b. **City Fleet**: Fleet improvements include electrification, operational GPS monitoring and fuel-switching. The fleet GPS telematics program sensors are being installed on City fleet vehicles in 2017 to better track fuel efficiency and improve operational efficiency. Electrification of the City's utility vehicle fleet is in progress. Electrical vehicle options are now becoming competitive at the tendering process, and are being assessed for sustainable vehicle replacement programs. A corporate e-bike pilot has been launched, providing access to staff and elected officials to e-bikes for travel on city business.

3. **Program Management:**
   a. **Climate Leadership Plan:** The draft Climate Leadership Plan is progressing to a full presentation in Dec 2017. Full details on the work completed, plan format, content and timeline are provided in the main body of the report.
   b. **Staff Resource Update:** The City has filled a two-year contract position in partnership with BC Hydro as a part of the Community Energy Manager program to focus on managing the building energy portfolio. The City has recently filled a one-year term position in partnership with Fortis BC to assist in the development and implementation of on building heating retrofits and fuel-switching to renewable natural gas. Due to the

gap at the portfolio manager position, the City has retained the services of Stantec to progress the CLP.

Program Dependencies: The Climate Action Program will inform and integrate with a number of other City programs, including the Sustainable Mobility Strategy (i.e. Transportation Master Plan), Sustainable Waste Management Plan, Fleet Management Plan, Facilities Asset Management Plans, Building Code Implementation, etc. The Climate Leadership Plan (also referred to as the "Climate Leadership Strategy", below) will set goals, targets and dictate energy reduction requirements, priorities and key considerations. The other City programs will be accountable to these performance requirements, and feedback on status, challenges and issues regarding implementation (see Figure 1).

Figure 1. Programs and Dependencies

4. Community Engagement:

a. Staff continue to develop a detailed engagement strategy and will provide Council with an update and recommendation in December 2017. Pointed engagement activity has been progressed via ongoing liaison with community climate advisory teams with representatives from industry, business, academia, non-profits, think tanks, experts and government officials. The following community events are upcoming:

   i. Fostering Sustainable and Healthy Behaviour Workshop: The City is hosting a two-day workshop for local government partners to explore the use of Community-Based Social Marketing tools to foster sustainable innovation and behaviours. The workshop will be presented by Dr. Doug McKenzie-Mohr in October 2017.

ii. Livable Cities Forum (18-20 September 2017): The City is hosting this year's LCF, which is widely known for its high-caliber presentations, collaboration, and diverse speakers on climate action and sustainability.

5. **Education and Awareness**:
   Education and awareness is emerging as a common theme across many action areas in the CLP. A comprehensive set of actions are being analysed, and will be assessed to determine which actions could deliver the biggest improvement in community and corporate emissions performance.

ISSUES & ANALYSIS

Climate Leadership Plan (CLP) Development

The development of the CLP has been evolving and has involved a combination of activities such as research on policy and best practices, updating of the City's community and corporate GHG inventory, GHG Emissions forecast to 2050, input from staff and stakeholders, and priority action progress.

Several stakeholders (the City's "Climate Action Network") participated in the development of climate mitigation and adaptation strategies and actions (38 subject matter experts, and key stakeholders from 27 different regional organizations).

CLP Document Structure and Content

The draft CLP is broken down into the following main sections: Introduction, GHG emissions information and forecast, Breakthrough Goal Areas and Action, Implementation Plan, and Performance and Reporting.

The City has defined three types of roles it will fulfil in supporting and dictating climate mitigation and adaptation in order to guide, control and assist community reach our 2050 goals (see figure below for GHG footprint share):

a. **Educate, Inform and Encourage**: Creative and intelligent programs to support improved energy and GHG reduction behaviours and decision making (ex. provide information brochures, training, social media, data and trends, and presentations on relevant topics);
b. **Influence**: Wise action to promote and support the desired GHG reductions (ex. providing financial top-ups to energy efficiency programs such as the provincial Oil to Heat Pump Incentive Program, partnering with other levels of government on policy design); and
c. **Control**: Prudent and direct action to reduce climate change or its impacts (ex. using local regulatory tools to mandate energy efficient buildings).

The CLP will define the City's role and strategies for energy reduction across transportation, buildings and waste sectors will be enabled by one or many spans of control. These could take the form of policy action, regulation, funding, information, tools, engagement, incentives, etc.

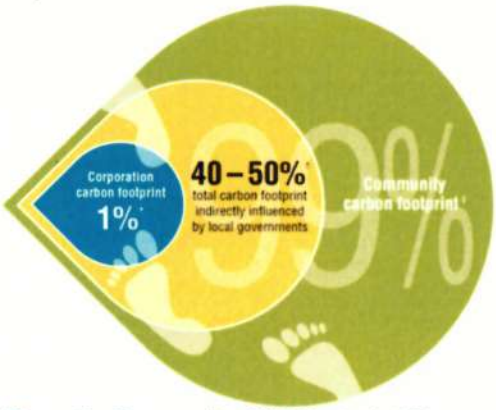

Figure 2. Community GHG Footprint Share.

The Climate Leadership Plan will define the type and nature of the City's role in each strategic area, described in more detail below.

- **Introduction (Includes Background, Vision, Mission and Values, Plan Overview).** The CLP vision should build on the OCP's sustainability vision (see OCP Consistency Statement, below), and should both inspire and focus the City's on a path for a new energy future.

  CLP Core Values / Principles (preliminary):
  - **Energy is visible** – energy use, trends and impacts are clearly known, owned and actioned;
  - **Clean, affordable energy for all** – The public has access to affordable, renewable and smart energy options;
  - **Help make smarter energy choices, easier** – The City has a role to help the community reach a clear understanding of energy options, trade-offs, performance, risks and benefits; and
  - **Lead and Inspire** – The City is a leader on climate mitigation and adaptation, investing prudently and wisely to inspire meaningful GHG improvements and reduce long-term risks.

- **GHG Emissions Baseline & Forecast** A detailed inventory of GHG emissions by sector will describe the community emissions pattern. Emissions modelling, based on criteria such as growth, plans, policy, and regulatory changes are used to identify possible future GHG emission trends.

- **Climate Action Goals Areas - Buildings, Transportation, Waste, Adaptation, and Municipal Operations:** The plan will present a synopsis of the barriers preventing energy reduction, and important opportunities for GHG and energy reduction. Each specific goal area will include a status update, aspirational target, metrics and indicators, prioritized 2020 initiatives, total estimated carbon reduction potential, possible co-benefits, and coordination / partnering requirements.

  Energy reductions can be achieved via a number of pathways. These pathways are used as the 'building-blocks' of our strategy development. Energy and GHG reduction initiatives will focus on reducing energy demand, reducing energy intensity, and fuel switching to cleaner fuels. Carbon removal from the atmosphere could potentially be a part of the GHG reduction portfolio in years to come, but remains outside of the scope of current plans (see figure 3).

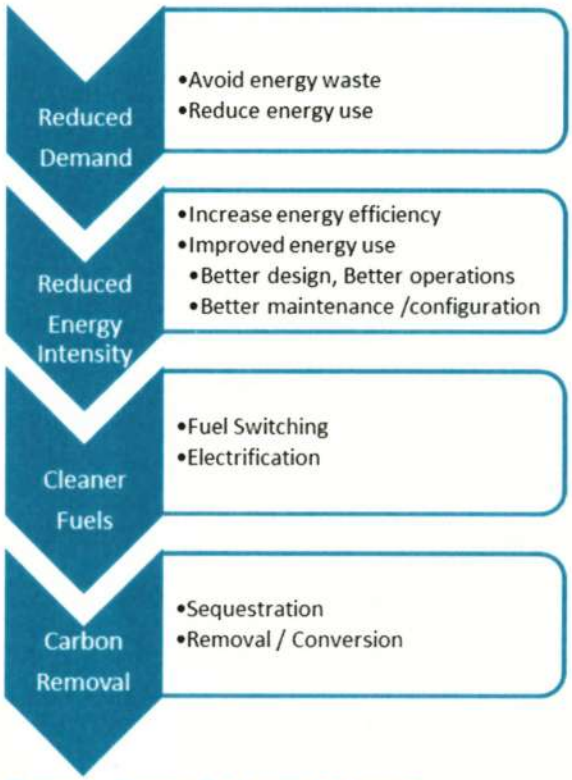

Figure 3. Energy Reduction Pathways

- **Implementation Plan**. The CLP will priority actions and the role of the City in achieving those GHG reductions. Initiatives that can only succeed with the involvement of all community partners and residents. Communication and supporting behavioural shifts will be essential components of this plan.

- **Performance, Climate Accountabilities, Reporting and Communication.** The CLP will commit the City to reporting on its progress towards its goals on an annual basis. To support annual reporting, the CLP will include several primary and secondary indicators that the City can readily report on with respect to progress towards the Breakthrough Climate Action Goals, the interim and 2050 GHG reduction target, and the 100% renewable energy target.

GHG Scenario & Forecast Modelling

Using the information collected from our workshops, and the 2015 core community GHG inventory, we established three planning GHG scenarios

- "business as usual" (BAU) if we do nothing at all,
- "locked-in" reflects current infrastructure, and planned changes, and
- "no-looking back" which illuminates 80% GHG reduction by 2050 targets.

The scenarios are being assessed to understand what level of investment is required to drive meaningful GHG reductions. The actions to reach 80% GHG reduction by 2050 are aggressive, and require substantial planning, resources, political commitment, and coordination with stakeholders, as they are long-term and complex (some require behaviour change, others financial incentives, etc). The current forecasting models enable us to analyse GHG reduction pathways, as illustrated in the following graphs, which are subject to further refinement:

The 'locked-in' and 'no looking back' scenarios are presented below. Both scenario's present the BAU trajectory of the City's GHG emissions (the total area of each chart). The 2050 imperative targets are achievable, with deliberate and rapid improvements in a shift to clean transportation modes, a leap in building energy improvements, and fuel switching to clean, renewable energy. The CLP will increase the details of these opportunities and challenges for the public's understanding.

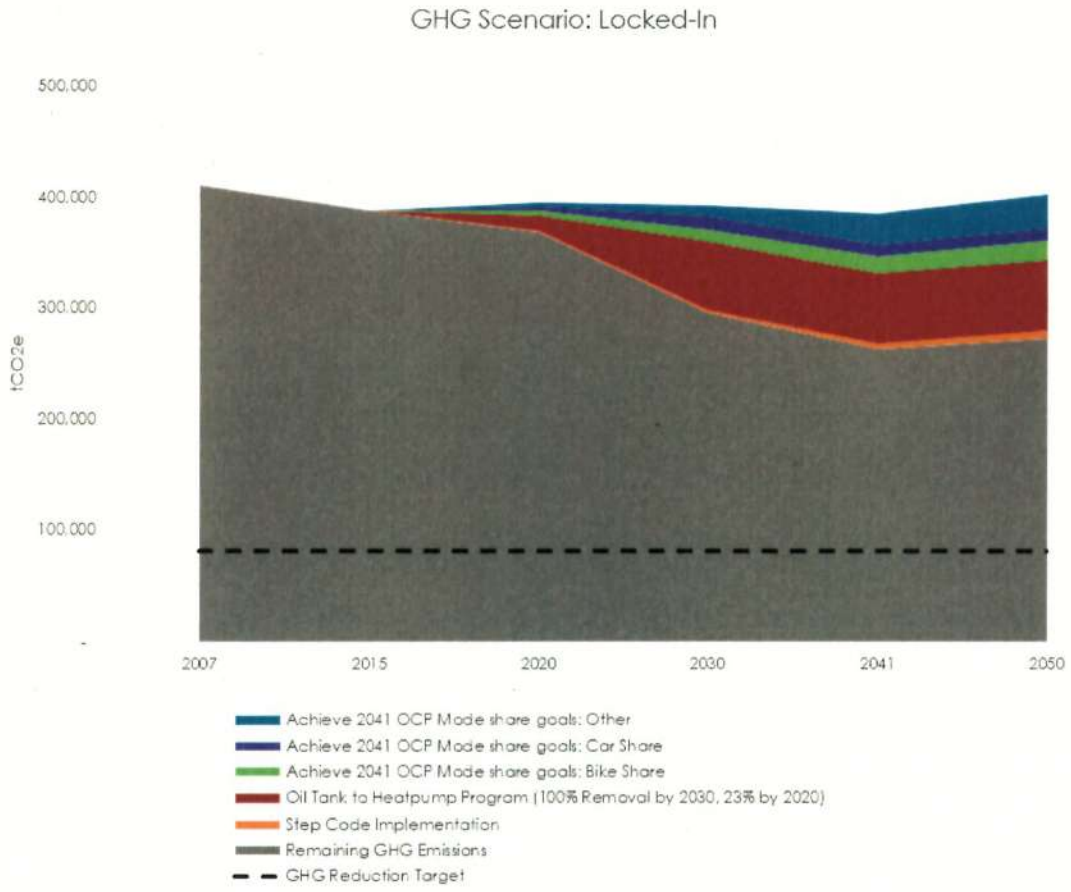

Figure 4. Trajectory of GHG emission reductions in the 'locked-in' scenario relative to the 80% reduction target (preliminary).

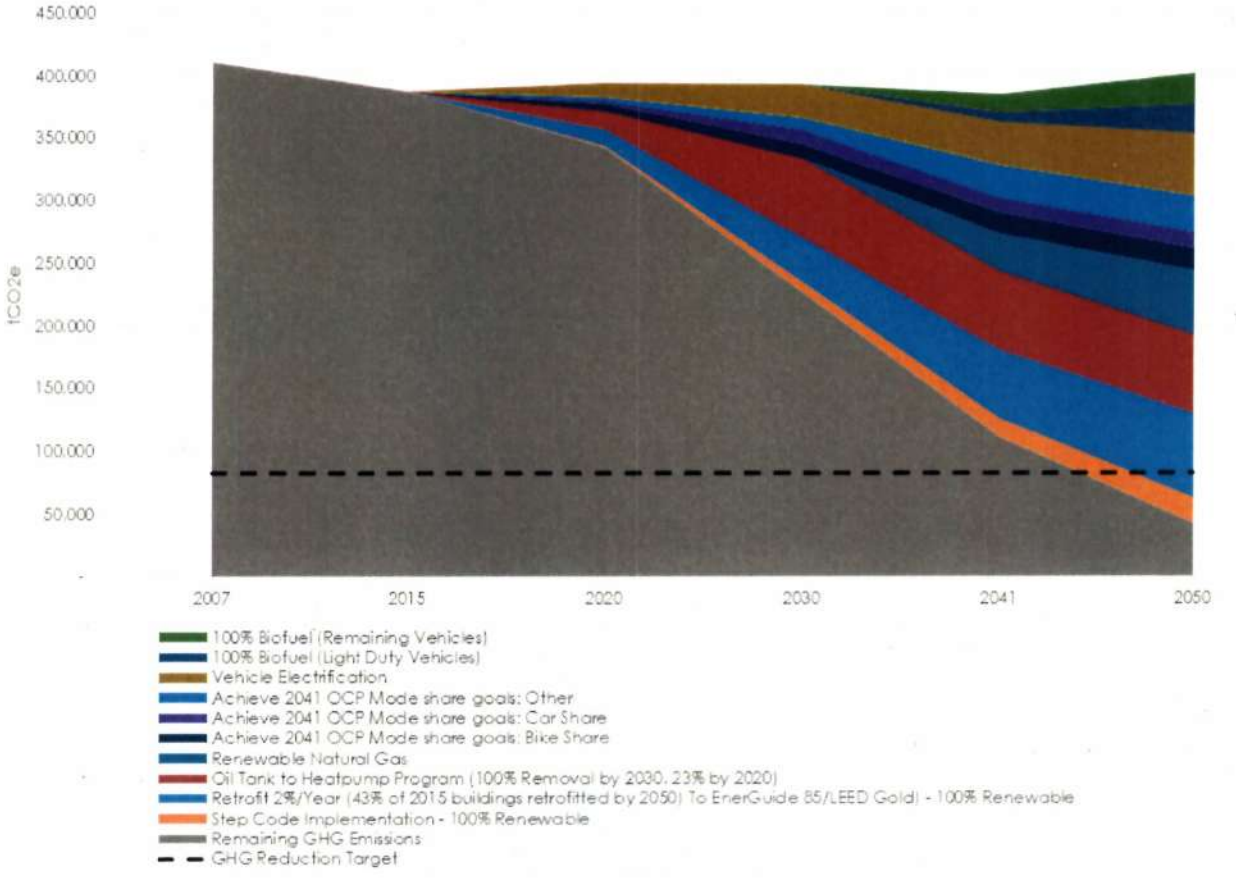

Figure 5. Trajectory of GHG emission reductions in the 'no looking back' scenario relative to the 80% reduction target (preliminary). Note: Model results are preliminary and subject to change during upcoming review. Future work is planned to incorporate economic analysis to refine and expand the results of the model.

CLP Strategy Analysis – Barriers, Priorities, and Reduction Potential

Together, the GHG inventory and GHG scenario modelling provide insights to identify where and when the GHG reductions could or should occur. The CLP will define a 'roadmap' of how to achieve these future, more aggressive milestones. To identify and prioritize near term actions, staff recommend reviewing the CLP after the first two years of implementation (in 2020).

CLP Methodology

A structured approach is being followed to develop the plan (see below). Victoria's GHG emissions inventory and modelling has provided the baseline information necessary to inform the scale and extent of actions required to the meet the plan's target. Next, GHG reduction barriers and opportunities were identified and analysed. Each barrier and opportunity was then assessed to those with co-benefits in support of other City goals. An initial priority list was then developed for the most promising actions, which must be now assessed economically to determine what investments will yield the most meaningful GHG reduction potential per dollar of spending. The barriers and actions were categorized across all sectors for commonality and ease of analysis (see figure 6).

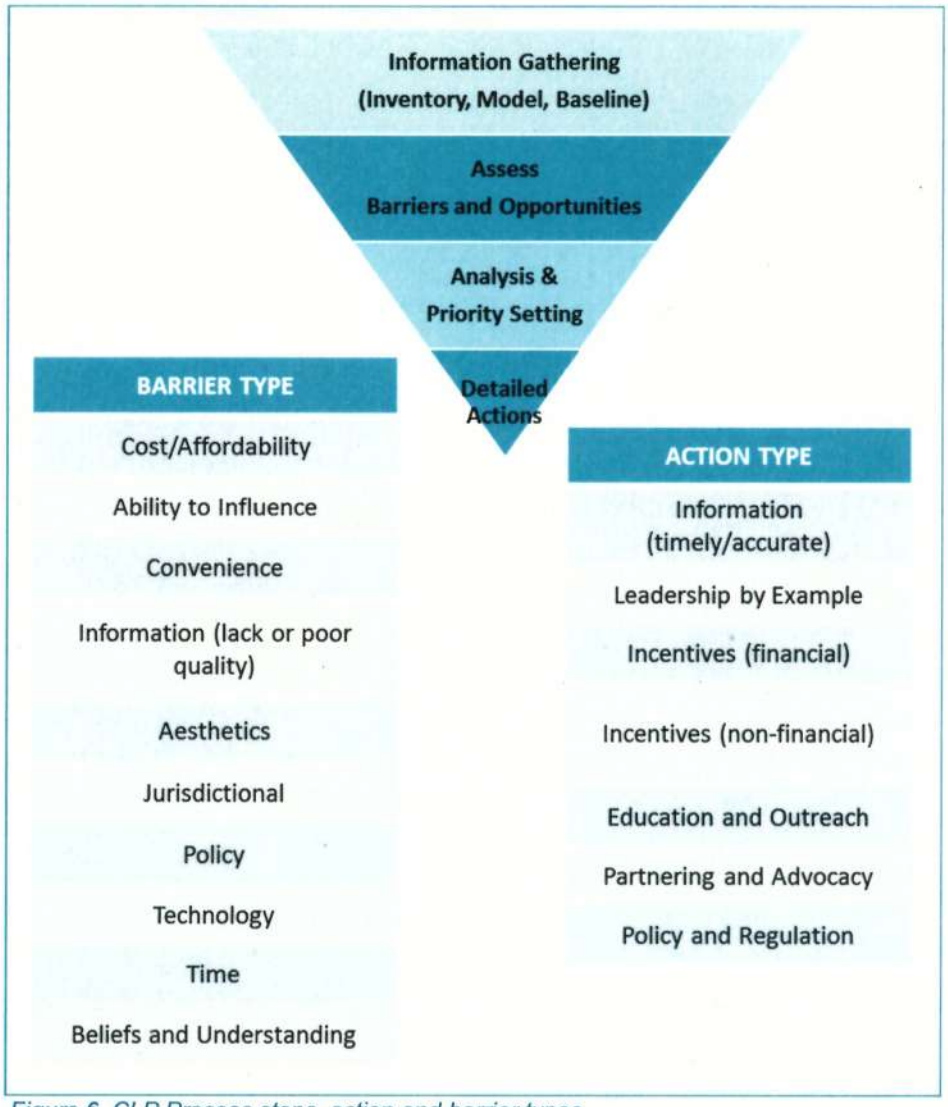

Figure 6. CLP Process steps, action and barrier types

CLP CONSTRAINTS & CONSIDERATIONS

The CLP is currently being drafted with the intent to release for review by the end of October 2017. However, there are several informational / data gaps present which are in the process of being addressed. These are summarized as follows:

- **Data**: Missing or incorrect data prevents accurate representation of inventories, forecasts reduction potential estimates.
    - The City is continuing to work with government stakeholders to ensure data is timely and accurate.
- **Economic Assessment**: The costs of GHG reduction activities must be current and accurate to help the community guide investments.
    - The City is working with UVic and the Provincial government in hopes to develop a tool that can help medium sized cities assess the economic basis for GHG reduction strategy selection.
- **Uncertainty**: The uptake potential and barriers/opportunities are estimates based on a set of assumptions that must be continually assessed. Often, another city's experiences can help guide the City in its wise priority setting and actions, which can be further strengthened by pilots, surveys and engagement activity.

- The City will prioritize risks and uncertainty solutions in the CLP.
- **Time**: The urgency of GHG reductions requires creative planning and execution of GHG reduction actions.
  - The City will work closely with stakeholders to help support GHG and energy management agility.

CLP NEXT STEPS

The authoring of the CLP is underway and is incorporating lessons and best practice. The CLP is being designed as a living and dynamic document to be updated as conditions and trends change so that the City can better monitor and respond to new barriers and opportunities as they present themselves. The following milestones are planned:

Table 1. CLP Developments and Timing

Action	Proposed Timing
Draft CLP – SME / Peer review and feedback	November 2017
Draft Plan to Council for review and comment	December 2017
CLP Engagement Commences – Community	Jan 2018
Climate Action Economic Assessment Tool Complete	1 Feb 2018
Final Draft Presentation to Council	1 April 2018
Annual Climate Action Program Report	1 June 2018

OPTIONS & IMPACTS

Accessibility Impact Statement

Infrastructure planning may incorporate both accessibility and climate action design requirements.

2015 – 2018 Strategic Plan

Aligns mainly with objective 12 (Plan for Emergencies including Climate Change, Short and Long Term) and closely with 1, 8, and 13.

Impacts to Financial Plan

The 2017 Financial Plan includes funding to complete the current approved work. Additional funding requests will be brought forward for Council's consideration once the Climate Leadership Plan is approved.

Official Community Plan Consistency Statement

OCP Sustainability Vision:

"Victoria is an urban sustainability leader inspiring innovation, pride and progress towards greater ecological integrity, livability, economic vitality, and community resiliency confronting the changes facing society and the planet today and for generations to come, while building on Victoria's strengths as a harbour-centred, historic, capital city that provides exceptional quality of life through a beautiful natural setting, walkable neighbourhoods of unique character, and a thriving Downtown that is the heart of the region."

Section 12 - Climate Change and Energy Goals:

- 12(A) Victoria and Victorians are more resilient to climate change and energy scarcity and costs.
- 12(B) New and existing buildings are energy efficient and produce few greenhouse gas emissions.

- 12(C) Transportation options reduce fossil fuel dependence, help conserve energy and produce low greenhouse gas emissions and other air contaminants.
- 12(D). The waste stream to the regional landfill is reduced to a minimum, with recovery, re-use, recycling and composting of resources undertaken as standard practice.
- 12(E) Victoria relies on clean renewable, diverse and efficient energy sources.

Section 12 – Climate Change and Energy Broad Objectives:

- 12(a) That climate change is mitigated through the reduction of greenhouse gas emissions from buildings, transportation and solid waste.
- 12(b) That the community is prepared for climate change through adaptation planning that reduces future impacts on public health, property and the natural environment.
- 12(c) That community energy consumption and generation are managed to give priority to conservation and efficiency, diversification of supply, renewable energy, and low carbon fuels.
- 12(d)That the supply, distribution and efficient use of energy, including the provision of renewable energy at the district scale, is achieved in alignment with the urban Place Guidelines in this plan

CONCLUSIONS

The CLP and Climate Action Program continue to evolve and will be formalized by the upcoming presentation in December 2017, followed by engagement and refinement and an endorsed action plan. Staff continue to progress priority GHG reduction programs, with a keen focus on risks and opportunities, in effort to ensure that all future investments are the wisest allocation of funds that pose the highest potential for long term GHG reduction. Departments are incorporating GHG targets and energy improvements into capital and operating plans, to improve the corporate energy footprint. Only through a continual and meaningful dialogue across the community, can the City hope to educate, influence and / or control the City's overall GHG emissions reductions.

Respectfully submitted,

Fraser Work,
Director, Engineering and Public Works

Report accepted and recommended by the City Manager: Evelyn Jenkyns

Date: Sept. 15, 2017

List of Attachments

Annex A – Draft List of Climate Action Goals & Initiatives