

ADMINISTRATIVE REPORT TO COUNCIL  
ON  
**COMMUNITY CLIMATE ACTION PLAN UPDATE**

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PURPOSE

The purpose of this report is to provide Council with a summary of engagement activities and key findings from the economic analysis on the Community Climate Action Plan's (CCAP's) draft policy options for feedback.

COUNCIL STRATEGIC PLAN

This report supports Council's strategic priorities and areas of focus regarding:

- **Livability**
  - Healthy Community: We foster an environment that supports and promotes healthy living through recreation, community, and social connection.
  - Places and Spaces: We plan community amenities that create great places and spaces for community living.
- **Vibrant Economy**
  - Business Health: We cultivate a positive business environment and maintain a framework that facilitates jobs, economic sustainability, and growth.
  - Economic Strength: We support initiatives that increase our competitive advantage, cultivate growth, and support our residents.
- **Environmental Leadership**
  - Climate Action: We enhance the City's resiliency and capacity for mitigating and adapting to the impacts of climate change.
  - Sustainability: We implement strategies that reduce our impact on the environment.
  - Transportation: We facilitate sustainable transportation options and create community connectivity.

SUMMARY

On July 14, 2020, staff presented strategic policy options to the Committee of the Whole that could limit greenhouse gas (GHG) emissions in Kamloops in line with international efforts to keep global temperature rise to 1.5°C. This includes eight "Big Moves" that encompass 25 policy options identified as having the potential to reduce community emissions by up to 85% by 2050.

In September and October 2020, these policy options were presented to the public and stakeholders for feedback through the following engagement activities:

- online survey and discussion forum (Let's Talk Kamloops)
- three in-person open houses (one on September 30 and two on October 1, 2020)
- virtual engagement webinar (October 8, 2020)

The feedback received was largely in support of the policy options presented, with valuable input provided on ways to refine the policies. Some respondents requested more information on the potential costs of CCAP policy options. A summary of the engagement results is included as Attachment “A”.

As a result of feedback from the Committee of the Whole and public and stakeholder interest, an economic analysis was conducted to provide high-level cost estimates and benefits of the CCAP’s draft policy options. These include potential impacts to the City’s budget and financial implications for residents and businesses. The analysis also assessed the potential local economic benefits arising from the policy options (e.g. fuel savings from switching to electric vehicles).

The following table provides a summary of the economic analysis, with more details provided in the CCAP Economic Analysis Summary (Attachment “B”). Cost, characterized as investments, and benefits are expressed in 2020 dollars. Some are expressed as annual averages over the life of the plan (generally to 2050 unless otherwise noted), while others reflect values that change over time (e.g. due to increasing EV adoption rates).

### Summary of Investments and Benefits

Stakeholder	Policy Area(s)	Investments	Benefits	Notes
City	Buildings, transportation and green infrastructure	\$4.5 million/year	\$1.4 million/year	Average annual figures
	Reduced infrastructure costs from densification	Not applicable	Up to \$4.3 million/year by 2035; up to \$8.7 million/year by 2050	Amounts change as more housing units are built at higher density
Residents	Transportation cost savings from densification	Not applicable	Up to \$7.1 million/year by 2035; up to \$14.1 million/year by 2050	Amounts change as more housing units are built at higher density
	Housing retrofits	\$32 million/year	\$374,000 in 2021, \$11.2 million in 2050	Amounts change as more houses are energy retrofitted
	Electric vehicle adoption	\$2.7 million in 2021, down to \$0 by 2035	\$4.3 million in 2021, up to \$116.8 million in 2050	Amounts change as adoption rates increase and cost premiums decrease
Developers/ Homeowners	Sustainable building standards	\$6.6–\$15.5 million/year	Higher-performance homes	Average annual figures
Community	Economic benefit (e.g. job creation)	Not applicable	\$162–\$164 million/year	Average annual figures
	GHG emissions reductions	As outlined in the economic analysis	538,000–556,000 tonnes CO <sub>2</sub> e	82%–85% reductions by 2050 (over 2007)

*Our corporate mission is...*

**MAKING KAMLOOPS SHINE**

The economic analysis demonstrates that reducing community GHG emissions, which is in line with global efforts to keep global temperature rise to 1.5°C, is going to require significant public, private, and community investment. The opportunities within the CCAP could play an important role in local job creation and long-term economic development.

On November 23, 2020, staff presented a report summarizing engagement activities and the economic analysis on the CCAP's draft policy options to the Development and Sustainability Committee for feedback. The committee's input included a suggestion to make the CCAP's financial impacts more relatable to residents (e.g. average household savings per year) and to highlight the cost-effectiveness of actions to reduce GHG emissions where possible. Based on this feedback, staff revised Attachment "B" to provide illustrative examples of the economic impacts on residents and a clearer summary of overall stakeholder investments and benefits. The Development and Sustainability Committee directed staff to present the CCAP's engagement summary and economic analysis to Council for feedback.

The next steps include using the feedback received from Council, the public, and other stakeholders to develop a draft Community Climate Action Plan for presentation to the Committee of the Whole in Q1 2021. Following that, staff will engage the public and stakeholders on the draft CCAP before bringing a final version of it to Council for adoption in spring 2021.

### **RECOMMENDATION:**

**That Council provide input on the summary of engagement activities and economic analysis on the Community Climate Action Plan's draft policy options.**

### **SUPPORTING COUNCIL AND CORPORATE DIRECTION**

At the June 18, 2019, Regular Council Meeting, Councillor Singh submitted a Notice of Motion regarding the strategic goal for reducing GHG emissions. At the June 25, 2019, Regular Council Meeting, Council resolved to:


- set a strategic goal for reducing community GHG emissions that is in line with Kamloops' portion of global efforts to keep global temperature rise to 1.5°C
- mandate staff, through the work on the Community Climate Action Plan, to outline a series of actions that would reduce GHG emissions in Kamloops to align with global efforts to keep global temperature rise to 1.5°C

### **FINANCIAL IMPLICATIONS**

Attachment "B" provides more details on the economic analysis of the CCAP's draft policy options.

### **COMMUNICATIONS PLAN**

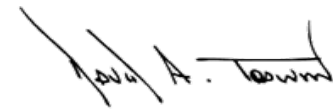
As outlined in the June 2, 2020, Council report on engagement planning for major projects, a variety of engagement techniques will be used to engage Kamloops residents and stakeholders on the draft CCAP, including a combination of online/digital and face-to-face engagement activities.

  
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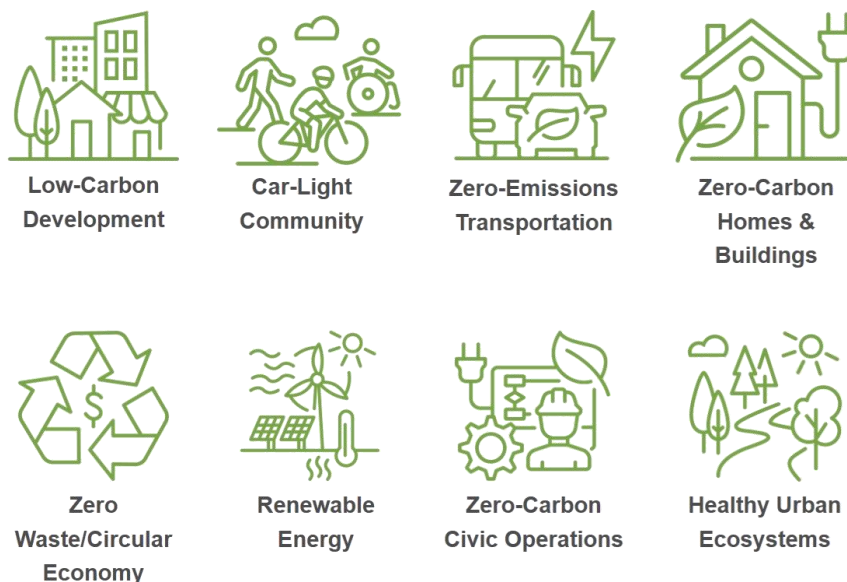
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Attachments

## Community Climate Action Plan: Highlights of Phase 3 Engagement Activities

The Community Climate Action Plan will set the direction for reducing local greenhouse gas (GHG) emissions and supporting a cleaner, healthier, lower-carbon future. Engagement for Phase 3 of the Community Climate Action Plan project asked stakeholders and community members to provide their input on the 25 policy options and actions under the eight "Big Moves" (see Figure 1). These draft options and actions have the potential to reduce community emissions by up to 85% by 2050 and enable Kamloops to align itself with international efforts to limit global temperature rise to 1.5°C.

**Figure 1: Eight Big Move categories to address community GHG emissions**



Engagement activities in Phase 3 were undertaken in September and October 2020 and consisted of an online survey, three in-person open houses, one virtual engagement session, a discussion forum on Let's Talk Kamloops, a stakeholder advisory group, and stakeholder consultations (see Table 1). Participation in the various engagement opportunities represented people from throughout Kamloops neighbourhoods and of various ages. Key questions that guided stakeholder and community feedback included the following:

- What is your level of support for each Big Move and its associated policy options?
- Please share any comments or thoughts you have about these options.

This overview provides brief highlights of engagement results, while the full engagement summary report is available at [LetsTalk.kamloops.ca/ClimateAction](https://LetsTalk.kamloops.ca/ClimateAction).

**Table 1: Reach of Engagement Activities for the Community Climate Action Plan**

Community Engagement (Online and In Person)	Social Media	News Media
<ul style="list-style-type: none"> <li>• 1,200 Let's Talk page views</li> <li>• 532 online survey respondents, with 924 comments</li> <li>• 80 comments on the "Big Moves" discussion forum, from 18 contributors</li> </ul>	<b>Facebook</b> <ul style="list-style-type: none"> <li>• 11 posts, 9,172 reached, 95 link clicks, 43 likes, 6 shares, and 4 comments</li> </ul>	<ul style="list-style-type: none"> <li>• 1 news release</li> <li>• 1 radio interview</li> <li>• 5 news articles</li> <li>• <b>CastanetKamloops.net</b> - 9,363 impressions, 8 click-thrus</li> </ul>

<b>Community Engagement (Online and In Person)</b>	<b>Social Media</b>	<b>News Media</b>
<ul style="list-style-type: none"> <li>• 17 quick poll respondents</li> <li>• 22 participants at in-person open houses</li> <li>• 25 participants in the virtual engagement session (including 4 City Councillors)</li> <li>• Over 1,500 recipients of Sustainability Newsletter with project information and opportunities to provide feedback</li> <li>• 30+ community, business, industry and neighborhood groups targeted via direct email</li> <li>• 4 individual stakeholder group meetings</li> <li>• ~80 project posters distributed internally and to several Kamloops businesses and community development agencies</li> </ul>	<p><b>Twitter</b></p> <ul style="list-style-type: none"> <li>• 10 posts, 11,342 impressions, 265 engagements, 20 retweets, 18 likes, and 63 link clicks</li> </ul> <p><b>Instagram</b></p> <ul style="list-style-type: none"> <li>• 9 posts, 10,782 reached, 94 likes, 3 shares, and 1 comment</li> </ul> <p><b>LinkedIn</b></p> <ul style="list-style-type: none"> <li>• 4 posts, 974 reached, 13 likes, 24 clicks</li> </ul>	<ul style="list-style-type: none"> <li>• <b>KamloopsThisWeek.com</b> - 28,877 impressions, 46 click-thrus</li> </ul>

The feedback received from all engagement activities was largely in support of the policy options presented, with valuable input provided on ways to refine the policies. Respondents also commented on which jurisdictions could lead or support actions (e.g. the City, provincial or federal governments, individual citizens, or the private sector). Some also called for more information on the costs of actions, which is being addressed through the development of an economic analysis of CCAP policy options.

The online survey offered an opportunity for broader public participation, with 532 people responding. With the majority of respondents (89%) viewing climate change as a somewhat or very serious problem, it would be expected that these respondents may be more likely to support climate action policies. However, there was variation in responses that indicated relative levels of support and enabled a distinction between some of the most unanimously supported policies and those that may be more sensitive (see Table 2). Being able to identify the relative level of support for policy options is helpful in guiding efforts for refinement, exploring further implementation considerations, or additional consultation during the next phase of engagement.

**Table 2: Survey Results of Top 5 and Bottom 5 Ranked Policy Options**

<b>Top 5 Ranked Policy Options</b>	<b>Percentage in Support</b>	<b>Percentage Opposed</b>	<b>Bottom 5 Ranked Policy Options</b>	<b>Percentage in Support</b>	<b>Percentage Opposed</b>
5C: Waste Diversion	94%	4%	1B: Hidden Housing Solutions (residential suites)	75%	20%
8C: Green Infrastructure	93%	5%	1D: Urban Containment	76%	19%
5B: Local Organics Collection and Processing	93%	5%	2E: Kamloops Car Share	77%	18%

<b>Top 5 Ranked Policy Options</b>	<b>Percentage in Support</b>	<b>Percentage Opposed</b>	<b>Bottom 5 Ranked Policy Options</b>	<b>Percentage in Support</b>	<b>Percentage Opposed</b>
2C: Optimize Transit and School Bus Service	91%	6%	3A: Zero-Emissions Vehicle Strategy (Light Duty)	82%	15%
8A: Urban Forests for Climate Cooling	91%	8%	2A: Low-Emissions Superblocks and Zones	82%	15%

The survey also collected 924 open-ended comments related to the policy options, while both in-person and virtual open houses also provided opportunities for in depth discussion. This detailed, qualitative feedback has been summarized within the full engagement summary report, which will be available on the Let's Talk website in December 2020.



## Economic Analysis Summary: Introduction

The City of Kamloops is developing a Community Climate Action Plan (CCAP), which includes a broad range of actions to reduce community-wide greenhouse gas (GHG) emissions in the transportation, building, and solid waste sectors. The following eight ambitious, longer-term actions—characterized as “Big Moves”—have been identified as having the potential to move Kamloops towards a zero-carbon future by 2050:



Low-Carbon Development



Car-Light Community



Zero-Emissions Transportation



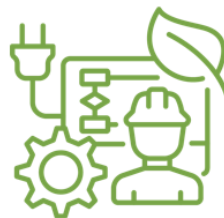
Zero-Carbon Homes & Buildings



Zero Waste/Circular Economy



Renewable Energy



Zero-Carbon Civic Operations



Healthy Urban Ecosystems

Details on the CCAP's draft policy options are available at [LetsTalk.Kamloops.ca/ClimateAction](https://LetsTalk.Kamloops.ca/ClimateAction).

This document summarizes an economic analysis conducted by Licker Geospatial Consulting Ltd. to provide high-level, order-of-magnitude cost estimates and benefits of the CCAP's draft policy options. Costs, characterized as investments, and benefits are expressed in 2020 dollars. Some are expressed as annual averages over the life of the plan (generally to 2050 unless otherwise noted), while others reflect amounts that change over time (e.g. due to increasing EV adoption rates).

In addition to costs, this analysis estimates potential benefits of the CCAP's draft policy options on the local economy based on work completed in other jurisdictions that can feasibly be adapted and applied in Kamloops. Some of the benefits identified are more complex to quantify (e.g. improved health and livability) and therefore do not have a specific dollar value attached.

Emissions impacts of the CCAP's draft policy options are also noted. As many of the policies are still in development, any modifications or additions to the policy options could materially impact their effectiveness, cost and benefits.





Target

## Community Climate Action Plan

### Big Move: Low-Carbon Development



By **2050, 90% of residents** can access their daily needs and efficient transit within an easy walk/roll.

## Policy Options

- 1A: Ten-Minute City
- 1B: Hidden Housing Solutions (i.e. residential suites)
- 1C: Urban Containment

## Emissions Reductions

~35,000-50,000 tCO<sub>2</sub>e reduction/year by 2050

## Investments

- **City:** planning and administration of policies
- **Developers/property owners:** increasing density of development may increase land and property values

## Benefits

Households that live, work, and play in close proximity are less dependent upon automobiles, spend less on transportation, and emit fewer emissions as a result of increased access and use of transit and active transportation for meeting their daily needs. Moreover, compact, complete neighbourhoods are easier to service with efficient transit and active transportation networks than peripheral developments. New developments in existing neighbourhoods also require less infrastructure (e.g. roads and pipes) and are more cost-effective to operate and maintain<sup>i</sup>.

Households in higher-density areas spend on average 25% less on transportation, which represents a savings of **\$3,600** per year in Kamloops.

The cost saving scenarios below are based on shifting new development from single-family housing units to higher density multi-family housing units by 20% and 40% respectively:

Density Shift (single-family housing units to higher-density multi-family housing)	Annual Household Transportation Cost Savings*		Annual City Infrastructure Cost Savings*	
	2035	2050	2035	2050
20% of new construction	<b>\$2.4 million</b>	<b>\$4.7 million</b>	<b>\$1.9 million</b>	<b>\$3.8 million</b>
40% of new construction	<b>\$7.1 million</b>	<b>\$14.1 million</b>	<b>\$4.3 million</b>	<b>\$8.7 million</b>

*\*cost savings total increases each year as more higher-density units are built*

## Other Benefits

- Preservation of ecosystems, agricultural land and recreation land by avoiding greenfield development.
- Cycling and walking are good for health and reducing pollution.
- Income for homeowners renting out secondary suites or accessory dwellings.

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**Economic Analysis Summary for Big Move 1****Investments**

City: planning and administration of policies  
Developers/property owners: potential impact  
to land and property values from increasing  
density

**Benefits**

City: \$3.8–\$8.7 million/year in 2050  
Households: \$7.1–\$14.1 million/year in 2050



## Community Climate Action Plan

# Big Move: Car-Light Community



### Target

By **2050, 50% of trips** in Kamloops to be by active transportation and transit.

## Policy Options

- 2A: Low-Emissions Superblocks and Zones
- 2B: Active Mobility
- 2C: Transit and School Bus Service Tune-Up
- 2D: City-Wide Transportation Demand Management
- 2E: Kamloops Car Share

## Emissions Reductions

~40,000-60,000 tCO<sub>2</sub>e/year reduction by 2050

## Investments

- Accelerate completion of active transportation projects: **\$1.5 million/year** (in addition to current budget of \$1.35 million/year after accounting for the \$650,000 allocated to pedestrian crosswalk upgrades). To significantly increase trips by active transportation modes, additional investment is required to accelerate the build out of the City's planned active transportation network by 10 years.
- Transportation Demand Management<sup>ii</sup> programs to facilitate the uptake of sustainable transportation options: **\$50,000/year**
- Electric Vehicle and E-Bikes Initiatives: **\$240,000/year<sup>iii</sup>**
- Increase planned BC Transit Expansion from 4,500 hours to 6,725 hours<sup>iv</sup>: **\$112,000/year** (estimated municipal share)
- Transit infrastructure and amenity improvements: **\$250,000/year**

## Benefits

Community economic benefit: **+\$46 million/year<sup>v</sup>**

- Based on a \$2.85 million/year spend on active transportation infrastructure
- For every dollar of active transportation spending, an economic benefit of \$16 is estimated due to increased sales output, personal income, and value added.

Investments in active transportation have been shown to have positive economic, social, and health benefits, including:

- Reduced household transportation costs from using active transportation increases disposable income and consumer spending.
- Health cost savings from lower air pollution and increased physical activity due to using active modes of transportation.
- Lively, walkable neighbourhood centres and separated bike lanes are good for local businesses.<sup>vi</sup>
- Walking infrastructure enhances pedestrian safety and increases accessibility for those who cannot drive.

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**Economic Analysis Summary for Big Move 2****Investments**

City: \$2.15 million/year

**Benefits**Community economic benefit: +\$46  
million/year

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3

## Community Climate Action Plan

**Big Move: Zero-Emissions Transportation****Target**

By **2050, 85% of kilometres driven** by Kamloops registered passenger vehicle owners to be by zero-emissions vehicles.

**Policy Options**

- 3A: Zero-Emissions Vehicle Strategy (Light-Duty)
- 3B: ZEV Strategy (Medium- and Heavy-Duty Vehicles)

**Emissions Reductions**

~30,000 to 50,000 tCO<sub>2</sub>e/year reduction by 2050

**Investments**

The current spending on vehicle purchases in Kamloops is \$261 million/year<sup>vii</sup>. Currently, the cost premium to purchase an EV over a comparable gas-powered vehicle ranges from 9% (light-duty vehicles) to 35% (heavy-duty trucks).<sup>viii</sup> It should be noted, however, that these premiums are dropping quickly, with electric versions of light-duty vehicles projected to be at cost parity with comparable gas-powered vehicles by as early as 2026.<sup>ix</sup>

- EV adoption cost premium to owners - **\$27 million over 10 years, or \$2.7 million/year until 2030.**

Note: assumes cost parity of all personal vehicles by 2031, including pickup trucks

Investments that increase access to EV charging infrastructure will help to accelerate EV adoption rates.<sup>x</sup> City staff resources will be required to coordinate supporting programs (e.g. advocacy, public charging network, EV Car Share, ZEV transit and school buses, and vehicle to grid charging).

- EV charging network - **\$20,000/year** (\$600,000 amortized over 30 years; City-owned and/or private sector incentives)

**Benefits**

- Operational cost savings of electric vs. gas-powered vehicle<sup>xi</sup>: **\$4.3 million/year in 2021; \$116.8 million/year in 2050**
  - Assumes 100% of new vehicles purchased by Kamloops drivers are EVs by 2050.
  - Operational cost savings include fuel and maintenance expenditures

Being more efficient and having fewer moving parts, EVs cost less to fuel and maintain than gas-powered vehicles.

EVs also produce no tailpipe emissions, which will help to improve local air quality. Furthermore, electricity generation in British Columbia has a relatively low carbon footprint, making EVs a low carbon transportation choice.

In 2050, the average household cost to operate and maintain a vehicle will be nearly **\$3,000** less than it is in 2020, as a result of increased EV ownership.

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**Economic Analysis Summary for Big Move 3****Investments**

City: \$20,000/year  
Vehicle owners: \$2.7 million/year until 2030

**Benefits**

Vehicle owners: \$4.3 million/year in 2021;  
\$116.8 million/year in 2050 (operating cost savings)

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4

## Community Climate Action Plan

**Big Move: Zero-Carbon Homes & Buildings****Target**

By **2030**, all new and replacement heating and hot water systems to be zero emissions.

**Policy Options**

- 4A: New Buildings - Community-Wide
- 4B: Existing Buildings - Community-Wide
- 4C: Thompson Rivers University Electrification
- 4D: Green New Neighbourhoods

**Emissions Reductions**

~120,000 to 150,000 tCO<sub>2</sub>e/year by 2050

**Investments**

**New Buildings:** The estimate below represents the incremental cost of measures that will reduce the GHG emissions intensity (i.e. kgCO<sub>2</sub>/m<sup>2</sup>) of new construction alongside the efficiency requirements of the higher steps of the BC Energy Step Code, a provincial standard that aims to support market transformation from the current energy-efficiency requirements in the BC Building Code to net-zero energy-ready construction by 2032. An example of a measure to reduce GHG emissions intensity is using an electric-powered heat pump for space and water heating instead of a natural gas furnace and hot water tank.

- Incremental cost of reducing GHG emissions intensity of construction<sup>xii</sup>: **\$6.6 million to \$7.5 million/year (developers/property owners)**
  - Represents construction cost premiums of between 2.85% and 3.24% (i.e. \$9,455 to \$10,745 per unit) based on the projected mix of different building types and average incremental construction costs<sup>xiii</sup>.

**Existing Buildings:** The estimate below represents the average, annual costs of retrofitting existing building stock at a pace that is consistent with achieving overall emissions reductions of 80% by 2050 (over 2017 levels).

- Cost to retrofit existing building stock: **\$32 million/year (homeowners)**
  - Assumes an average incremental cost of \$30,000 for single-family homes and \$16,000 for multi-family residential units<sup>xiv</sup>
  - Represents a 26% cost premium on current estimated retrofit spending in Kamloops (i.e. ~\$119 million/year<sup>xv</sup>) to increase energy efficiency and emissions reductions outcomes

**Green New Neighbourhoods:** 12% premium on construction costs: **\$8 million/year (developers/property owners).**

This premium would be to achieve higher sustainable development standards (e.g. enhanced energy efficiency and low-carbon heating) for the 1,600 units that are projected to be constructed in undeveloped areas, based on the City's Official Community Plan growth modeling. *This is an*

*alternative to the Urban Containment policy presented in Big Move No. 1: Low-Carbon Development.*

City staff resources will be need to be monitored in light of additional administration and/or inspection requirements from increasing construction standards and building retrofit activity.

**Benefits**

Efforts to improve the energy and emissions performance of new and existing buildings will generate local economic activity<sup>xvi</sup>.

- Economic impact of measures to reduce emissions intensity of Step Code construction: **+ \$20 million to \$22 million/year**
- Economic impact of energy efficiency retrofits: **+ \$96 million/year**
- Household cost savings based on a 20% improvement in energy efficiency post-retrofit<sup>xvii</sup>: **\$6 million/year** (averaged over 30 years; total savings increase each year as more units are retrofitted)
- Switching to electric heating and cooling improves indoor air quality in buildings.
- After transportation, buildings are the second highest source of GHG emissions in Kamloops.

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**Economic Analysis Summary for Big Move 4**

**Investments**

Developers/property owners: \$6.6 million to \$7.5 million/year (enhanced Step Code)  
Homeowners (retrofits): \$32 million/year  
Developers/property owners: \$8 million/year (Green New Neighbourhoods option)

**Benefits**

Community economic impact: +\$116 million/year  
Household energy savings: \$6 million/year





## Community Climate Action Plan

# Big Move: Zero-Waste/Circular Economy



### Target

Kamloops to be a **zero-waste community by 2040.**

## Policy Options

- 5A: Zero-Waste Research and Innovation Centre
- 5B: Local Organics Collection and Processing
- 5C: Waste Diversion

## Emissions Reductions

~25,000 to 50,000 tCO<sub>2</sub>e/year reduction by 2050

## Investments

Establishing systems to increase the diversion of organic waste material from the landfill for other beneficial end uses will require some capital investment and ongoing operational costs. Planning for residential organic waste collection to increase diversion from landfill and reduce greenhouse gas emissions is being undertaken currently by Environmental Services staff.<sup>xviii</sup>

- Biofuel facility (Public-Private Partnership): ~\$43 million construction
  - Use waste products (organics, feedstock, etc.) to generate low carbon biofuel
  - Cost estimate from scaling Surrey facility<sup>xix</sup> for Kamloops population; assumes no cost to the City

## Benefits

- Savings to the City from extending the life of the landfill by decreasing the amount of solid waste received
- Potential opportunity to use locally-produced biofuel to decarbonize vehicles that are not easily converted to electric (i.e. medium-/heavy-duty), which may increase the feasibility of decarbonizing the City's fleet.
- Repurposing materials and upcycling can keep more value in the local economy.
- Capturing emissions from green and wood waste reduces methane emissions, a potent GHG.

### Economic Analysis Summary for Big Move 5

#### Investments

Private sector: ~\$43 million (biofuel facility)

#### Benefits

Savings from extending life of landfill  
Economic activity from a biofuel facility



## Community Climate Action Plan

# Big Move: Renewable Energy



### Target

This Big Move is ongoing and does not have a specific target.

## Policy Options

- 6A: Neighbourhood Scale Energy
- 6B: Green Industrial Park

## Emissions Reductions

Minor reductions by 2050, as current emissions from electricity generation in BC are minimal

## Investments

Exploring community and neighbourhood-scale renewable energy systems and storage for long-term energy security and flexibility.

- District energy system similar to River District development in Vancouver<sup>xx</sup> ~ **\$10 million**

Supporting the development of local green industries in research, technology, and manufacturing.

- Support research on green industrial parks, flexible storage, and grid integration options for locally generated (i.e. distributed) renewable energy (e.g. solar and wind)

## Benefits

- Working to develop local industry capacity in the clean energy sector creates green jobs that support provincial, national and international efforts to transition to a low carbon economy.
- District energy projects can potentially reduce energy costs for building owners or occupants. Profit margin for district energy project operator.
- With higher demand for electricity (e.g. from EVs and heat pumps), local energy production makes the grid more efficient and flexible.
- Communities that invest in renewable and other distributed energy systems are more resilient during natural disasters or other potential grid disruptions, which are likely to increase in frequency and severity with climate change.

### Economic Analysis Summary for Big Move 6

#### Investments

Private sector: \$10 million (District Energy System)

#### Benefits

Job creation



## Community Climate Action Plan

# Big Move: Zero-Carbon Civic Operations



### Target

The City of Kamloops to strive to reduce carbon emissions from municipal operations by **40% by 2030 and 100% by 2050.**

## Policy Options

- 7A: Zero-Carbon Civic Operations
- 7B: Finance and Implementation
- 7C: Communication and Engagement

## Emissions Reductions

~8,000 to 10,000 tCO<sub>2</sub>e/year by 2050

## Investments

In 2019, Kamloops' municipal operations emitted 8,256 tonnes of CO<sub>2</sub>e (~1.5% of total community emissions) from the consumption of natural gas for space and water heating (52%), transportation fuels for fleet (42%), and electricity (7%). Achieving carbon neutrality by 2050 will require significant investments in improving the energy efficiency of civic facilities, fleet, and utilities, including building and fleet electrification.

- This analysis assumes that fleet electrification will be spread over 15 years; this could be accelerated as costs for zero emission vehicles<sup>xxi</sup> decline: **\$1.1 million/year**
- Retrofitting civic facilities<sup>xxii</sup>: **\$1 million/year**
- Recognizing that technology to decarbonize heavy duty equipment and vehicles is still maturing, this analysis assumes that lower carbon biofuels (e.g. B5-B20 BioDiesel) would be used to partially offset fleet emissions until suitable zero emissions options are available/feasible: **up to \$52,000/year** (dependent upon proportion of biofuel content).<sup>xxiii</sup>

City staff resources will be required to coordinate the implementation of the strategic energy management plan, facility assessments and energy audits, and internal communication and engagement.

## Benefits

In 2019, **\$8.5 million** of energy was purchased for municipal operations, including electricity, natural gas and transportation fuels. Actions that increase the energy efficiency of civic buildings and fleet will result in costs savings over time.

- Potential annual net fuel cost savings<sup>xxiv</sup> due to electrification of the entire fleet: **\$1.4 million**
- Cost savings from energy efficiency gains in civic facility retrofits are not quantified in this analysis, but may be partially offset by increased energy costs due to switching from natural gas to electric heating (e.g. heat pumps).
- Demonstrating the City's commitment through action builds community support and buy-in
- Investments by the City will stimulate the local green building and energy economy

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**Economic Analysis Summary for Big Move 7****Investments**

City: \$2.15 million/year

**Benefits**

City: \$1.4 million/year (fleet only)

DRAFT



Community Climate Action Plan  
**Big Move: Healthy Urban Ecosystem**



**Target**

Increase Kamloops' **urban forest canopy cover to 20% by 2030** and **30% by 2050** to enhance our forests' carbon storage capacity and support biodiversity.

**Policy Options**

- 8A: Urban Forests for Climate Cooling
- 8B: Protect and Heal Nature
- 8C: Green Infrastructure

**Emissions Reductions**

Contributes to carbon sequestration

**Investments**

As the city continues to grow in population and density, pressures on our urban forest resources will intensify. These policy options aim to protect and enhance our urban forest by building upon the foundation of the City's Urban Forest Management Strategy (2016).<sup>xxv</sup>

- Incremental cost to increase urban forest canopy target from 20% to 30%: **\$75,000/year**
- Enhanced Green Infrastructure: **\$125,000/year**
  - To support the integration of enhanced greenspace, storm water management and urban tree mediums with ongoing infrastructure upgrades and maintenance.

**Benefits**

- Healthy ecosystems provide us with clean air to breathe and filter the water we drink.
- Trees help keep the city cool, can reduce energy use in buildings and contribute to higher property values.
- Access to urban green spaces and forest enhances psychological well-being.
- Rain gardens can filter out road pollution before it gets into waterways.
- Healthy grasslands and forests capture and store carbon

**Economic Analysis Summary for Big Move 8**

**Investments**

City: \$200,000/year

**Benefits**

Enhanced carbon storage capacity, climate change adaptation, and livability

**Summary of Investments and Benefits**

<b>Stakeholder</b>	<b>Policy Area(s)</b>	<b>Investments</b>	<b>Benefits</b>	<b>Notes</b>
<b>City</b>	Buildings, transportation and green infrastructure	\$4.5 million/year	\$1.4 million/year	Average annual figures
	Reduced infrastructure costs from densification	Not applicable	Up to \$4.3 million/year by 2035; up to \$8.7 million/year by 2050	Amounts change as more housing units are built at higher density
<b>Residents</b>	Transportation cost savings from densification	Not applicable	Up to \$7.1 million/year by 2035; up to \$14.1 million/year by 2050	Amounts change as more housing units are built at higher density
	Housing retrofits	\$32 million/year	\$374,000 in 2021, \$11.2 million in 2050	Amounts change as more houses are energy retrofitted
	Electric vehicle adoption	\$2.7 million in 2021, down to \$0 by 2035	\$4.3 million in 2021, up to \$116.8 million in 2050	Amounts change as adoption rates increase and cost premiums decrease
<b>Developers/ Homeowners</b>	Sustainable building standards	\$6.6–\$15.5 million/year	Higher-performance homes	Average annual figures
<b>Community</b>	Economic benefit (e.g. job creation)	Not applicable	\$162–\$164 million/year	Average annual figures
	GHG emissions reductions	As outlined in the economic analysis	538,000–556,000 tonnes CO <sub>2</sub> e	82%–85% reductions by 2050 (over 2007)

## Key Assumptions and Links to Source Documents used in Calculations

### Big Move 1

<sup>ii</sup> <https://usa.streetsblog.org/wp-content/uploads/sites/5/2015/03/Halifax-data.pdf>

<sup>ii</sup> <https://creston.ca/DocumentCenter/View/1957/Altus-2018-Construction-Cost-Guide-web-1>

### Big Move 2

<sup>ii</sup> <https://mobilitylab.org/about-us/what-is-tdm/>

<sup>iii</sup> Electric Vehicle & Electric Bike Strategy, August 20, 2020, Submitted by AES Engineering, authored by Brendan McEwen, MCP

<sup>iv</sup> [https://www.kamloops.ca/sites/default/files/docs/06\\_appendix\\_a\\_-\\_business\\_cases\\_-\\_2019-2023\\_plan.pdf](https://www.kamloops.ca/sites/default/files/docs/06_appendix_a_-_business_cases_-_2019-2023_plan.pdf)

Pp. 39 Conventional Transit Expansion Hours

<sup>v</sup>

[http://www.ochealthiertogether.org/content/sites/ochca/Local\\_Reports/SCAG\\_Active\\_Transportation\\_Health\\_and\\_Economic\\_Impact\\_Study\\_2016.pdf](http://www.ochealthiertogether.org/content/sites/ochca/Local_Reports/SCAG_Active_Transportation_Health_and_Economic_Impact_Study_2016.pdf)

Note relationship between active transportation and economic activity on pp. 30 of the report.

### Big Move 3

<sup>vi</sup> <https://medium.com/sidewalk-talk/the-latest-evidence-that-bike-lanes-are-good-for-business-f3a99cda9b80>

<sup>vii</sup> Environics data accessed November 2020. Total spending on vehicle purchases in Kamloops: \$261 million/year

<sup>viii</sup> <https://canadianautodealer.ca/2019/08/vehicle-prices-rise-yoy/#:~:text=The%20national%20median%20price%20of,a%20used%20vehicle%20was%20%2418%2C799>

<https://www.ratehub.ca/blog/best-selling-minivans-canada/>

<https://www.ratehub.ca/blog/the-best-pickup-trucks-in-canada-a-buying-guide/>

<sup>ix</sup> [https://theicct.org/sites/default/files/publications/EV\\_cost\\_2020\\_2030\\_20190401.pdf](https://theicct.org/sites/default/files/publications/EV_cost_2020_2030_20190401.pdf)

<sup>x</sup> Electric Vehicle & Electric Bike Strategy, August 20, 2020, Submitted by AES Engineering, authored by Brendan McEwen, MCP

<sup>xi</sup> <https://electricvehicles.bchydro.com/learn/costs-of-electric-vehicles>

Assumption that there is a reduction of approximately 78% of the fuel costs resulting from a switch to an EV

### Big Move 4

<sup>xii</sup> [http://energystepcode.ca/app/uploads/sites/257/2019/11/BC-Step-Code-GHGI-Report\\_Nov-2019.pdf](http://energystepcode.ca/app/uploads/sites/257/2019/11/BC-Step-Code-GHGI-Report_Nov-2019.pdf)

<sup>xiii</sup> <http://energystepcode.ca/app/uploads/sites/257/2019/11/BC-Energy-Step-Code-Costing-Studies-Analysis-Rev1.pdf>

Energy step code costing was used to indicate a range of potential costs to homeowners, with the low estimate for Step Code 4, and the high estimate for Step Code 5 used to indicate the potential range in costs.

<sup>xiv</sup> Recent infographic and estimate created by Pembina Institute, not yet published, but available upon request.

<sup>xv</sup> EnviroNics data accessed October 2020. Retrofit spend: \$118,878,661.04

<sup>xvi</sup> [https://taf.ca/wp-content/uploads/2020/08/TAF-Pre-Budget-Consultation\\_2020-08-07.pdf](https://taf.ca/wp-content/uploads/2020/08/TAF-Pre-Budget-Consultation_2020-08-07.pdf)  
[https://sencanada.ca/content/sen/committee/421/ENEV/reports/ENEV\\_Buildings\\_FINAL\\_e.pdf](https://sencanada.ca/content/sen/committee/421/ENEV/reports/ENEV_Buildings_FINAL_e.pdf)  
Economic impact of retrofits and additional step code requirements - estimate that for each \$1 invested, \$3-4, and up to 11 job years per \$1million of investment in energy efficiency retrofits. For our purposes we assumed \$3 economic activity per \$1 of investment.

<sup>xvii</sup> [https://www.crea.ca/wp-content/uploads/2016/02/Homeowners-Guide\\_Energy-Efficiency\\_En\\_DM\\_WEB.pdf](https://www.crea.ca/wp-content/uploads/2016/02/Homeowners-Guide_Energy-Efficiency_En_DM_WEB.pdf)

Energy Star reduces energy bills by approximately 20%. There are a variety of measures that can be taken within a home to reduce costs (<https://betterbuildingsbc.ca/>).

### Big Move 5

<sup>xviii</sup>

[https://kamloops.civicweb.net/document/120828/05\\_CTE%20Organic%20Waste%20Collection%20Planning\\_Combined.pdf?handle=28776947C5B04352A5E727A2A17222A0](https://kamloops.civicweb.net/document/120828/05_CTE%20Organic%20Waste%20Collection%20Planning_Combined.pdf?handle=28776947C5B04352A5E727A2A17222A0)

<sup>xix</sup> <http://biomassmagazine.com/articles/15133/british-columbia-city-converts-organic-waste-into-biofuel>

<https://www.surrey.ca/services-payments/waste-collection/surrey-biofuel-facility>

### Big Move 6

<sup>xx</sup> <http://www.rdenenergy.ca/>

### Big Move 7

<sup>xxi</sup> [https://theicct.org/sites/default/files/publications/EV\\_cost\\_2020\\_2030\\_20190401.pdf](https://theicct.org/sites/default/files/publications/EV_cost_2020_2030_20190401.pdf)

<sup>xxii</sup> Reference from Michael Wilson, Enerficiency Consulting in Oct, 2020. "\$23/ft for a program targeting 75% reduction in GHGs. Mix of res and comm part 3."

<sup>xxiii</sup> <https://afdc.energy.gov/fuels/prices.html> - Biodiesel(B20) \$2.35/Gallon, Diesel \$2.48/Gallon, BioDiesel (B99-B100) \$3.15/Gallon (note B20 = %20 renewable content)

<sup>xxiv</sup> <https://www.corporateknights.com/wp-content/uploads/2020/05/CK-Transport-Calculator-200611-V9.xlsx>

### Big Move 8

<sup>xxv</sup> <https://www.kamloops.ca/sites/default/files/docs/our-community/urbanforestmanagementplan.pdf>