CEEP Quickstart Plan




District of Lake Country Community Energy & Emissions Plan – DRAFT

April 4, 2012

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List of Acronyms

BAU	Business As Usual
CEEI	Community Energy and Emissions Inventory, inventories created by the Province for local governments in BC.
CEEP	Community Energy and Emissions Plan
CO_2	Carbon Dioxide
DCC	Development Cost Charge
DSM	Demand Side Management, which refers to measures used to reduce energy consumption.
GHG	Greenhouse Gas
GJ	Gigajoule, one of the standard measures of energy.
HDV	Heavy Duty Vehicles are commercial vehicles, like heavy trucks.
kWh	Kilowatt Hour, another standard measure of energy, typically used with electricity.
LDV	Light Duty Vehicles refers to passenger cars and sport utility vehicles.
OCP	Official Community Plan
RGS	Regional Growth Strategy

Executive Summary

Through Bill 27, the local government is required to make efforts towards reducing the greenhouse gas emissions of the community. In addition, considering the energy and emissions from the community can give opportunities for increased efficiency and local economic development.

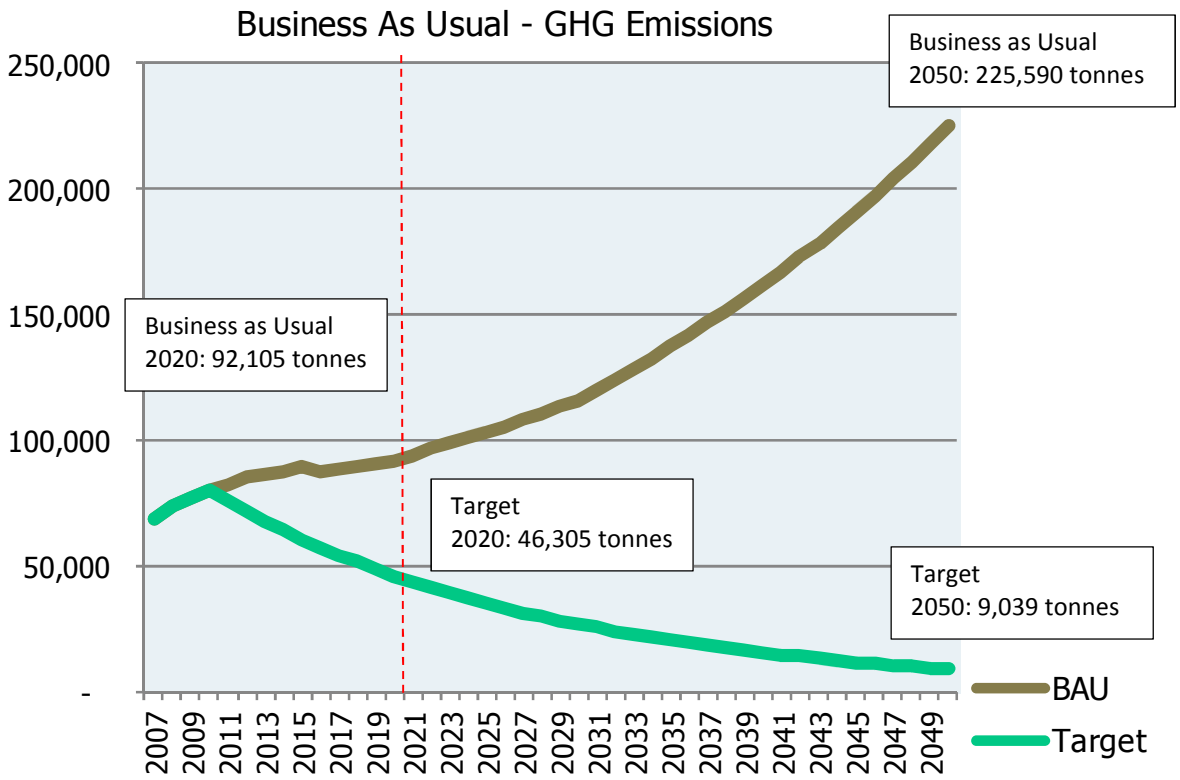
On January 17-18th, 2012 a workshop was held with Council and staff from the District of Lake Country and an additional community stakeholder, facilitated by BC Hydro and the Community Energy Association. The workshop group looked at the energy and emissions data for the community as a whole and decided on an action plan.

Community Energy & Emissions – Current Status & Business As Usual

For the modelling process, the workshop group decided on an annual community population growth rate of 3.5%. It was decided that this figure is a relatively good approximation of current growth in dwelling units, which is likely a more important figure for energy and emission forecasting than just population.

In 2007 total community annual energy expenditure was approximately $34.5 million, and GHG emissions were approximately 69,086 tonnes. With no action plan, but taking into account Provincial policies, community emissions are predicted to change according to the following chart:

The target in the OCP is to reduce emissions 33% below 2007 levels by 2020, matching the Provincial target for 2020.



Further detail on the current energy and emissions for the community can be found in the CEEI produced by the Province.

Action Plan

The action plan decided on by the workshop group is shown below:

STEP 3 - SELECT ACTIONS AND TIMING	Year				
Actions	2011	2012	2013	2014	2015
1 Buildings Basics					
1.1 Promote BC Hydro DSM programs		x			
1.2 Promote natural gas DSM programs		x			
1.3 Promote provincial / federal DSM		x			
1.4 District energy / renewable energy systems				x	
1.5 Improve building code enforcement			x		
2 Buildings High-Growth Measures					
2.1 Sustainability checklist for buildings			x		
2.3 Density bonus for energy performance		x			
2.4 Expediting permit approvals, fee rebates, other financial incentives	x				
2.6 Development cost charge (DCC) reductions or waivers for GHG's		x			
3 Residential Buildings					
3.1 Lobby Province to make solar-ready building code provision mandatory		x			
3.2 Education to developers - renewable energy technologies and efficiency		x			
3.3 Efficient wood stove program	x				
5 LDV Transportation Urban Form					
5.1 Land use suite "lite"	x				
5.2 Land use suite "enhanced"	x				
5.3 Street design		x			
5.4 Flow RGS, OCP, and local area plans through to zoning	x				
6 LDV Transportation – Infrastructure & Collaboration					
6.1 Active transportation planning		x			
6.2 Improve walking infrastructure		x			
6.3 Cycling & alternative transportation infrastructure improvements		x			
6.4 Special event planning					x
6.5 Collaborate with major employers on work-related transportation					x
6.6 Transit suite		x			
6.7 Ride-sharing and guaranteed ride home programs			x		
6.8 Intercommunity transit services & Bus Rapid Transit connection	x				
6.9 Low carbon and electric vehicle suite				x	
7 Waste					
7.1 Organics diversion	x				
8 Enabling Actions					
8.1 Organizational structure for climate action	x				
8.3 Identify green economy opportunities	x				
8.4 Leverage Local Government assets into community change					x
8.5 Long-term, deep community engagement (culture change)					x

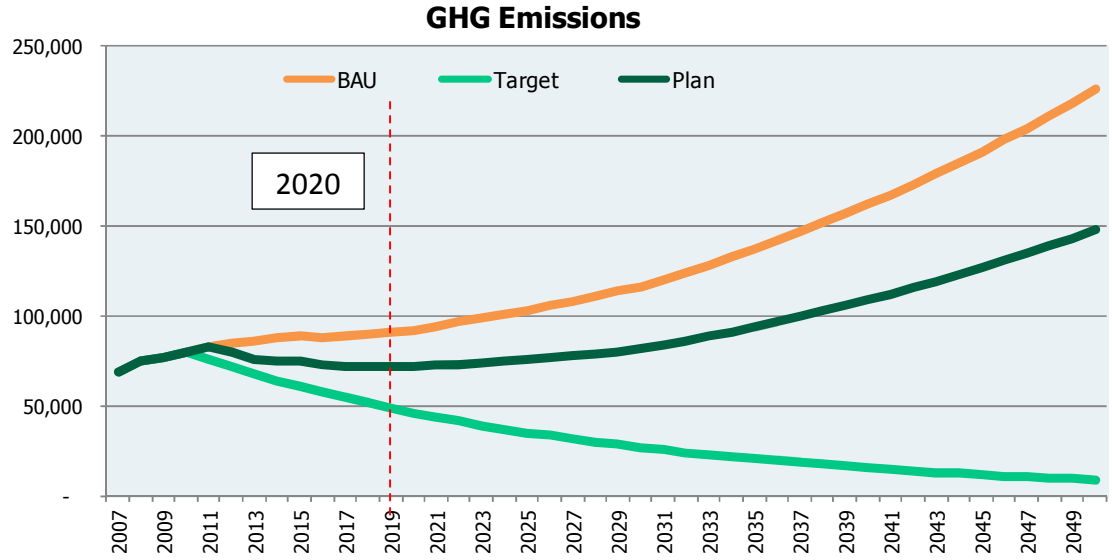
The numbers of the actions listed above correspond to their numbers in the CEEP QuickStart Action Guide, which contains further detail about each of them. For further detail on BC Hydro DSM program incentives consult the BC Hydro Power Smart programs sheet.

Discussion around the actions included discussion of the following opportunities:

- Actions 1.1, 1.2, 1.3 - Promote utility DSM programs and LiveSmartBC for residential retrofits
- Action 1.5 - Improve building code enforcement
- Action 5.2 - Land use suite “enhanced”
- Action 6.3 - Cycling and alternative transportation improvements
- Action 6.7 - Ride-sharing and guaranteed ride home programs
- Action 6.8 - Action Intercommunity transit service & Bus Rapid Transit connection

Results

The estimated impact of the plan on the community greenhouse gas emissions in tonnes of GHGs per year is shown below. Significant emissions reductions will be achieved, but at present it is predicted that the Plan will be required to be revisited to achieve the targeted savings.



It should be noted that under Business As Usual, electricity consumption for 2020 and 2050 are estimated at 530,000 GJ/yr and 1,500,000 GJ/yr respectively. Under the plan, electricity consumption for 2020 and 2050 are instead estimated to be 250,000 GJ/yr and 280,000 GJ/yr.

The major actions, listed by impacts in terms of GHG savings is:

- Promote BC Hydro, FortisBC, and LiveSmartBC programs – (3,200 tonnes per year)
- Intercommunity transit services and Bus Rapid Transit connection - (1,500 tonnes per year)
- Land use suite “lite” - (610 tonnes per year)

Next Steps to Finalize Community Energy & Emissions Plan

1. Optional - conduct initial community engagement workshop for engagement, feedback & ideas
2. Submit District of Lake Country Community Energy & Emissions Plan to Council for approval.
3. Where applicable, integrate CEEP actions into statements in the District of Lake Country OCP and future planning activities.
4. Where applicable, include the CEEP in Financial and other plan discussions.
5. Include statement in financial budgets.
6. Begin plan implementation.

7. Introduction

Through Bill 27, the local government is required to make efforts towards reducing the greenhouse gas emissions of the community. In addition, considering the energy and emissions from the community can give opportunities for increased efficiency and local economic development for this community of approximately 12,000 people. The figures in this report are based on 2007 energy and emissions information, and 2011 energy costing data.

Bill 27 background

Through the Local Government (Green Communities) Statutes Amendment Act, also known as Bill 27, municipalities and regional districts are required to include targets, policies, and actions towards reducing greenhouse gas emissions from their communities in their Official Community Plans and Regional Growth Strategies.

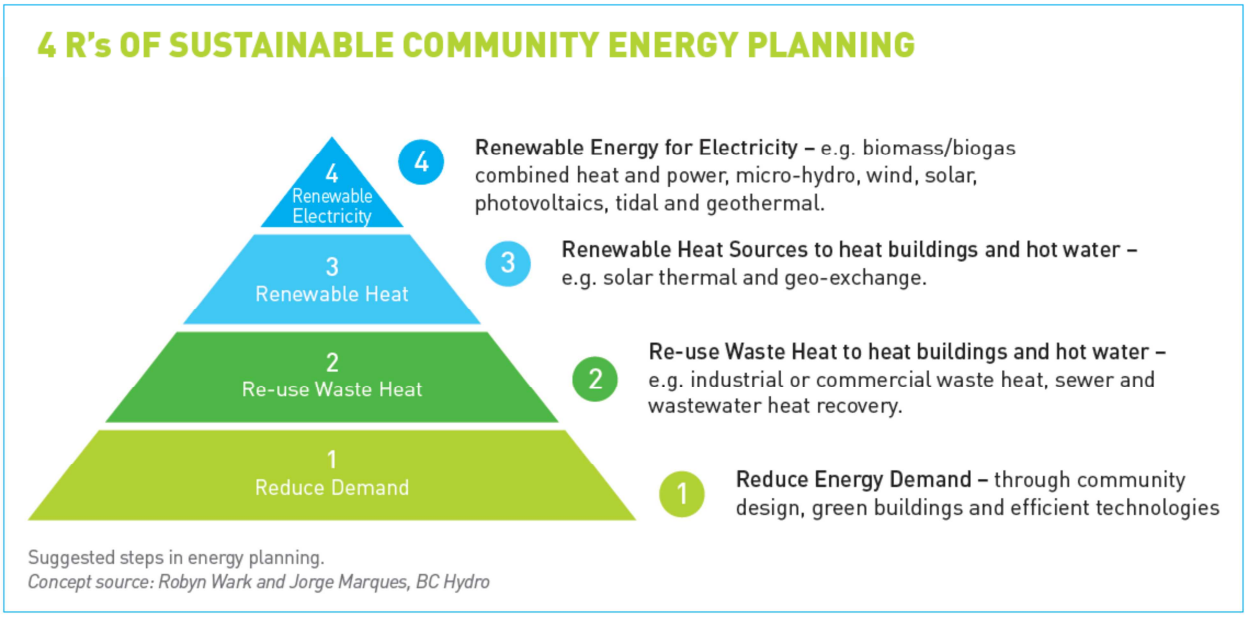
Community Energy & Emissions Planning

A community energy and emissions plan (CEEP) evaluates a community's existing energy use and greenhouse gas (GHG) emissions in order to reduce energy consumption and emissions, improve efficiency, and increase the local renewable energy supply. A CEEP encompasses land use and transportation planning, building and site planning, infrastructure, including solid and liquid waste management, and renewable energy supply. It provides guidance to a local government in planning future developments and in long-term decision making processes.

Most GHG emissions within a local government's jurisdiction result from energy consumption and the burning of fossil fuels. With this relationship it makes sense to combine greenhouse gas emissions and energy planning into one integrated plan. While some communities have completed stand-alone energy or GHG action plans, the close linkages between energy and GHG emissions suggest that a combined plan is preferable. In this guide the term community energy and emissions plan is intended to incorporate both energy and GHG emissions, but not other emissions such as particulates or criteria air contaminants.

Energy Planning Hierarchy

Not all opportunities to influence energy and emissions across a community are created equally. Reducing demand through energy efficiency measures should be the first step in addressing energy and emissions in the community. Reducing demand, or demand-side management, saves money and is a 'low-hanging fruit' in energy and emissions planning. The following graphic demonstrates the recommended stages of sustainable community energy planning.



CEEPs for Small Communities Overview

CEA's Community Energy and Emissions Planning for small communities is designed to provide a cost-effective way for small to mid-sized local governments to rapidly develop a practical CEEP including an implementation timeline. The CEEP process is depicted in the graphic below.

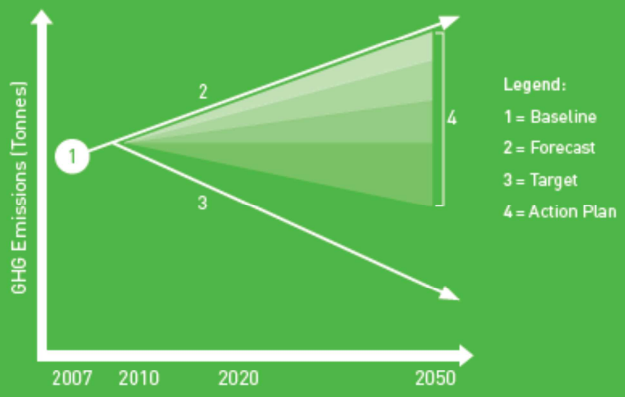
The graphic below explores the 'planning' step in the CEEP process as well as the benefits of developing a CEEP.

WHAT IS A CEEP?

A Community Energy and Emissions Plan is a comprehensive, long-term plan to improve energy efficiency, reduce GHG emissions, and foster local green energy solutions in your community.

There are 4 elements to a CEEP:

1. **Baseline:** 2007 Energy and Emissions from CEEI (Province of BC)
2. **Forecast:** Population forecast (BC Stats and local government)
3. **Target:** From Official Community Plan (legal requirement for GHG reduction target)
4. **Action Plan:** List of actions and approaches, developed by quarter, spanning several years, to estimate impacts and locally specific opportunities



BENEFITS OF DEVELOPING A CEEP:

- Reduce GHG emissions: Energy planning helps local government effectively manage GHG emissions. This contributes to mitigating climate change, and helps manage costs associated with carbon taxes and offsetting
- Reduction of energy costs: Energy planning improves budgeting and save money
- Creation of jobs and stimulation of the local economy: a CEEP can highlight opportunities for community development
- An opportunity to demonstrate leadership: Your CEEP contributes to a smart community plan, more efficient infrastructure, more livable neighbourhoods, and protection of the environment, showing leadership on multiple fronts

These steps create an action plan. A plan to implement actions over several years is also developed as part of this process.

On January 17-18th 2012 a workshop was held with Council and staff from the municipality and an external stakeholder, facilitated by BC Hydro and the Community Energy Association. To assist with pre-workshop preparation, reading material was distributed to workshop participants beforehand. This reading gave participants background information on how energy planning initiatives can influence long term carbon emissions while also providing economic opportunities. In addition, a short preparatory webinar was held.

At the workshop the facilitators gave a brief presentation and introduced a GHG reduction assessment tool that has been provided to staff for use in further analysis. This tool is populated with data derived from calculations developed to assess the impact that various actions and strategies may have on GHG emissions into the future. The tool shows the final results in user friendly charts and graphs.

Then the workshop group was provided with a collection of actions, and each action was discussed within the group and placed in one of four categories: “yes”, “no”, “maybe”, and “already done”. Additional actions that were not on the cards were also discussed.

The actions were placed on a chart in order to create a plan that covered the years from 2012-2015. Each member of the workshop group was invited to look at the plan and provide input as to the timing and sequencing of the actions. In this way a consensus on an action plan was arrived at by the workshop participants.

Following this, some of the key actions were “unpacked”, meaning that they were discussed in detail, with appropriate steps highlighted, likely impacts, and other considerations.

Action Plan

Current Emissions and ‘Business As Usual’ Projections

The Province of BC has calculated the total energy use and greenhouse gas emissions from the community for 2007 through the Community Energy and Emissions Inventory (CEEI). In 2007 the people, organizations, and businesses in the municipality emitted approximately 69,086 tonnes of greenhouse gases through the use of electricity, natural gas, propane, and petroleum fuels. Community wide energy spending was approximately $34.5 million in 2007.

There was discussion before and during the workshop on reasonable population growth projections. The annual growth figure for population for the purpose of this plan was set at 3.5%.

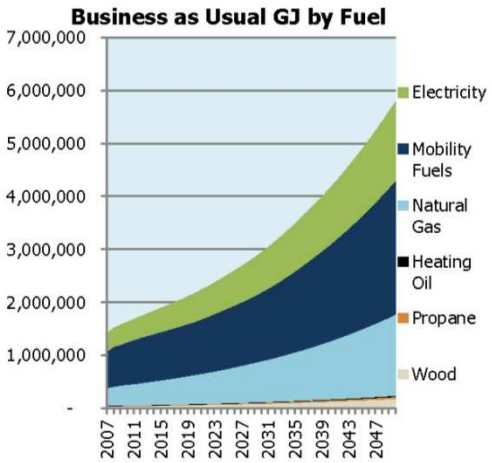
The charts on the following page provide an overview of the current emissions and projected emissions based on this population projection.

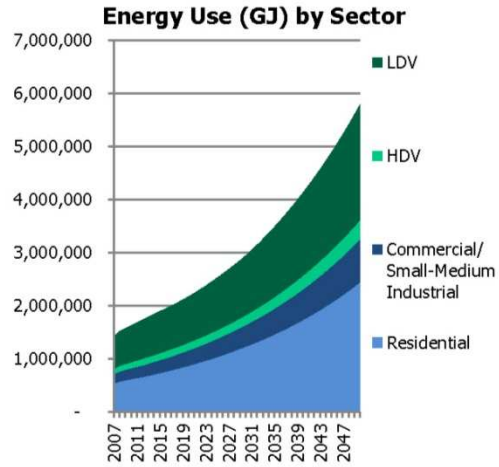
Step 1 Select Community and Target	
Community	Lake Country District Municipality
Annual % target change in ghg	-5.30%
Population growth	3.5%
Default population growth	5.25%
2007 Population	10,220
Start-year for actions	2011

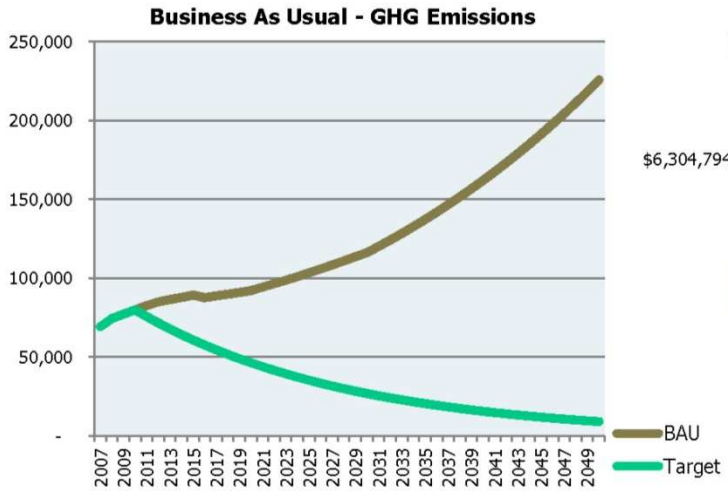
Emissions Summary		
2007 Emissions		69,086
2010 Estimated Emissions		79,823
Total Energy Expenditure	$	34,549,400
Per-capita energy cost	$	3,381
2007 Per-capita emissions		**6.76**

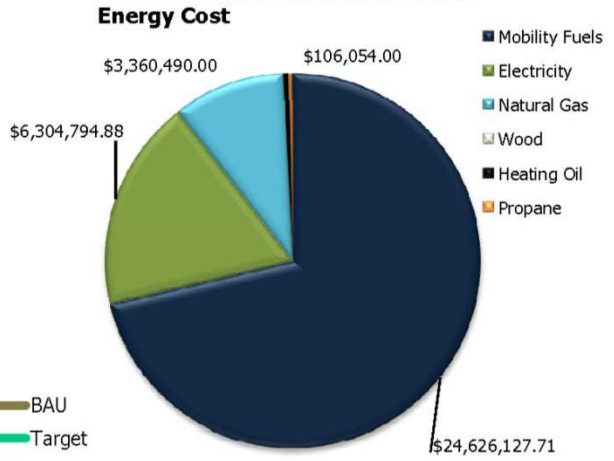
Targets Summary	2016	2020	2030	2050
Total reduction	-16.7%	-33%	-61%	-87%
Per-capita reduction	-41%	-59%	-82%	-97%
Total GHG	57,574	46,305	26,861	9,039
Per-Capita GHG	4.0	2.8	1.2	0.2

Business as Usual (BAU) Summary	2016	2020	2030	2050
GHG's	87,648	92,105	116,141	225,590
GHG growth	27%	33%	68%	227%
Population	14,515	16,657	23,496	46,752
Pop growth	4,295	6,437	13,276	36,532
Pop Grow %	42%	63%	130%	357%
Per capita emissions	6.04	5.53	4.94	4.83









Further detail on the current energy and emissions for the community can be found in the CEEI produced by the Province.

Action Plan

The action plan decided on by the workshop group is shown below. Actions that were considered to be inapplicable are not included in the plan. Some actions were already being implemented by the community. The actions in the plan were categorised according to what year it was believed that they could be implemented.

The numbers of the actions listed above correspond to their numbers in the CEEP QuickStart Action Guide, which contains further detail about each of them. For further detail on BC Hydro DSM program incentives consult the BC Hydro Power Smart programs sheet.

Section	Action	In Progress/ Undertaken	2012				2013				2014				2015			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1. Buildings Basics																		
	1.1 Promote BC Hydro DSM Program																	
	1.2 Promote Natural Gas DSM Projects																	
	1.3 Promote Provincial/Federal DSM																	
	1.4 Explore District Energy/Renewable Projects																	
	1.5 Improve Code Enforcement																	
2. Buildings High-Growth Measures																		
	2.1 Sustainability Checklist for Buildings																	
	2.2 Density bonus for energy performance																	
	2.3 Expediting permit approvals, fee rebates, other financial incentives																	
	2.4 Consider Development Cost Charge reductions or waives																	
3. Residential Buildings																		
	3.1 Lobby Province to make solar ready building code provision mandatory																	
	3.2 Education to developers - renewable energy technologies and efficiency																	
	3.3 Efficient Wood Stove program																	
4. LDV transportation and Urban Form																		
	4.1 Land use suite "lite"																	
	4.2 Land use suite "enhanced"																	
	4.3 Street Design																	
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	5.7 Ride sharing and guaranteed ride home programs																	
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	5.9 Low carbon and electric vehicle suite																	
6. Waste																		
	6.1 Organics Diversion																	
7. Enabling Actions																		
	7.1 Organizational structure for climate action																	
	7.2 Identify green economy opportunities																	
	7.3 Leverage local government assets into community change																	
	7.4 Long-term, deep community engagement and cultural change																	

Unpacking actions

Indepth discussion around several actions was held in the workshop.

The action items discussed in detail were:

- Actions 1.1, 1.2, 1.3 - Promote utility DSM programs and LiveSmartBC for residential retrofits
- Action 1.5 - Improve building code enforcement
- Action 5.2 - Land use suite “enhanced”
- Action 6.3 - Cycling and alternative transportation improvements
- Action 6.7 - Ride-sharing and guaranteed ride home programs
- Action 6.8 - Action Intercommunity transit service & Bus Rapid Transit connection

During the full day and half day workshops, ways to proceed with the actions were discussed, and are outlined in the table on the next page.

Action	Yr	Effort	Comments
1.1 Promote BC Hydro DSM programs	1	Low	Communications initially, staff to connect with BC Hydro, FortisBC Natural Gas, and LiveSmartBC to obtain program information and leaflets to distribute
1.2 Promote natural gas DSM programs	1		
1.3 Promote provincial / federal DSM	1		
1.4 District energy / renewable energy	3	Moderate to high	Starting in year 3, staff to consider how best to proceed with implementation of district energy and/or renewable energy projects in the community Potential ways to begin include contacting relevant companies, and/or commissioning a pre-feasibility assessment.
1.5 Improve building code enforcement	2	Low	
2.1 Sustainability checklist for buildings	2	Moderate	Staff to obtain an existing checklist and adapt for Lake Country. Consider inclusion of incentive programs from 1.1, 1.2, and 1.3
2.3 Density bonus for energy performance	1	Low	Bylaw amendment
2.6 Development cost charge (DCC) reductions or waivers for GHG's	1	Moderate	Bylaw amendment. Likely to happen anyway
3.1 Sign on to solar-ready building code provision	1	Low	Staff to lobby the Province, e.g. through a UBCM resolution, for the building code sign-on to be adopted across the Province, so that development does not shift from one community to another. Lobbying can take place in year 1, but because of potential time it may take the Province, the impact of solar ready is not included until year 5.
3.2 Education to developers - renewable energy technologies and efficiency	1	Moderate	Should be conducted through UDI. One approach discussed was valley wide educational and feedback session with UDI in conjunction with other local governments.
5.3 Street design	1	Moderate	Initial effort already conducted. Hierarchy of street profiles developed, and construction on first example
6.1 Active	1		

transportation planning			started. Some Council endorsement required, more detailed designs needed, and requirement to find more funding for construction. Street design work includes consideration for active transportation planning, improving walking infrastructure, and improving cycling and other alternative transportation infrastructure.
6.2 Improve walking infrastructure	1		
6.3 Cycling & alternative transportation infrastructure improvements	1		
6.4 Special event planning	4	Moderate	Measure to be used as a means to help stimulate increased transit ridership. Potential to target special events such as festivals like Komasket
6.5 Collaborate with major employers on work-related transportation	4	Moderate	
6.6 Transit suite	1	Moderate	
6.7 Ride-sharing and guaranteed ride home programs	2	Low	Put on Council website, and other quick promotional activities
6.8 Intercommunity transit services & Bus Rapid Transit connection	1	High	In progress, but extending Bus Rapid Transit likely to involve considerable effort
6.9 Low carbon and electric vehicle suite	3	Low to moderate	Consider highly visible public charging point. Good time to consider this is if & when the municipality purchases a plug-in hybrid or pure electric vehicle, and needs to install a charging point for that. Also request information from CEA on measures communities can implement.
8.4 Leverage Local Government assets into community change	4	Moderate	Examples given in the CEEP QuickStart Guide.
8.5 Long-term, deep community engagement	4	Moderate	To an extent, all the previous actions will help to enact deep community engagement. At this point staff should consider impacts of plan so far with any community feedback, and consider if & how

			community could be further engaged.

Initial Community Engagement Workshop

Planning a community engagement event provides an opportunity for the local government to not only present the CEEP, but to highlight some of the actions that have already been taken by the municipality to save energy and reduce emissions. This demonstrates commitment and leadership, and sets a positive example for the community. A public event can be an opportunity to showcase the resources that are available in the community to help the public take action. One effective engagement approach is to host a community Open House/Tradeshow. There are many ways of implementing an Open House, and the level of engagement will depend on the resources available. Some suggested approaches are provided below:

- Invite local experts or relevant businesses/organizations to set-up a booth at your Open House to share the services or products they offer that will support GHG emission redutions and energy efficiency
- Encourage input into the CEEP through an interactive wallchart timeline of energy and emissions actions – invite participants to add their own ideas or commitments to the timeline
- Invite the local utilities to share information about incentives or other programs that are available to encourage efficiency in residential homes
- The local government may wish to engage community groups and individuals in addition to, or instead of hosting an Open House. It may be useful to liase with the Chamber of Commerce, the local UDI chapter, local interest groups or specialists in applicable fields

Next Steps to Finalize Community Energy & Emissions Plan

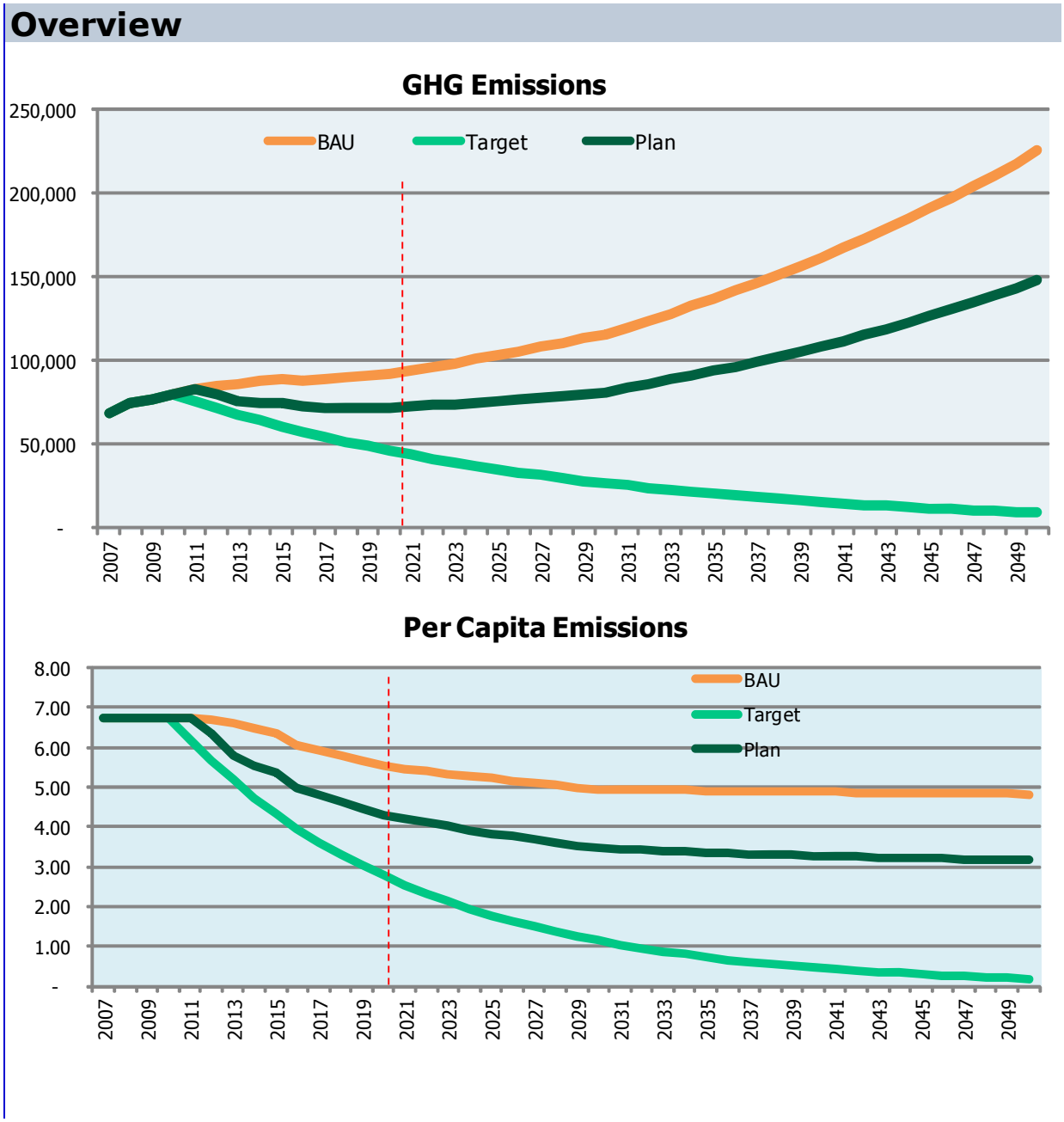
Suggested next steps are:

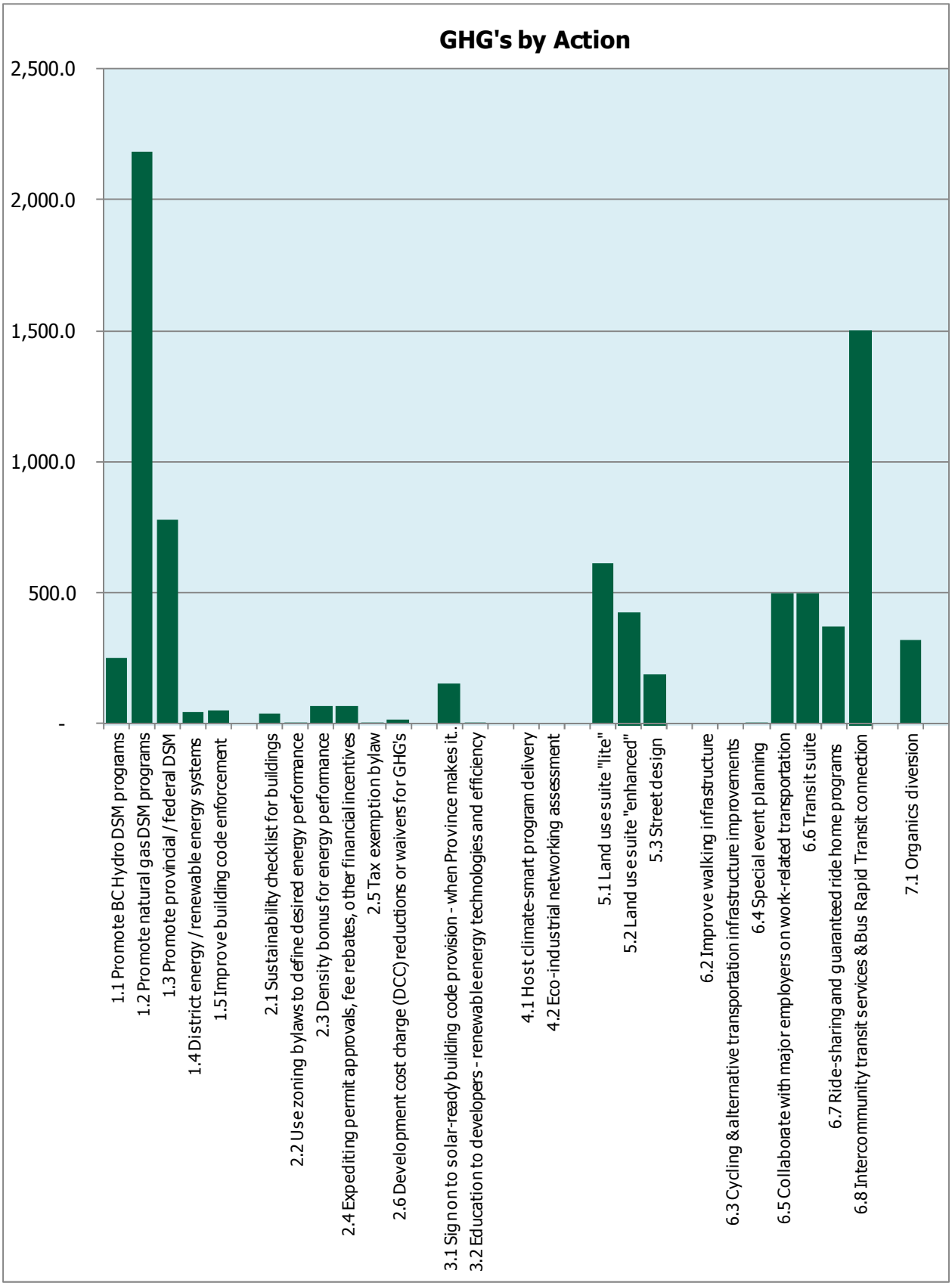
1. Optional - conduct initial community engagement workshop for engagement, feedback & ideas
2. Submit District of Lake Country Community Energy & Emissions Plan to Council for approval.
3. Where applicable, integrate Community Energy and Emissions Plan actions into statements in the District of Lake Country OCP and future planning activities.
4. Where applicable, include the CEEP in Financial and other plan discussions.
5. Include statement in financial budgets.
6. Begin plan implementation.

Results of Actions

The anticipated results of the action plan, and the unpacked actions, are shown in the charts below. Significant greenhouse gas emission savings are feasible by implementing the actions, although at present it is predicted that a rising population will begin to create a net increase in emissions over time.

It should be noted that under Business As Usual, electricity consumption for 2020 and 2050 are estimated at 530,000 GJ/yr and 1,500,000 GJ/yr respectively. Under the plan, electricity consumption for 2020 and 2050 are instead estimated to be 250,000 GJ/yr and 280,000 GJ/yr.




GHG's by Action
2,500.0
2,000.0
1,500.0
1,000.0
500.0
-
1.1 Promote BC Hydro DSM programs
1.2 Promote natural gas DSM programs
1.3 Promote provincial / federal DSM
1.4 District energy / renewable energy systems
1.5 Improve building code enforcement
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2.3 Density bonus for energy performance
2.4 Expediting permit approvals, fee rebates, other financial incentives
2.5 Tax exemption bylaw
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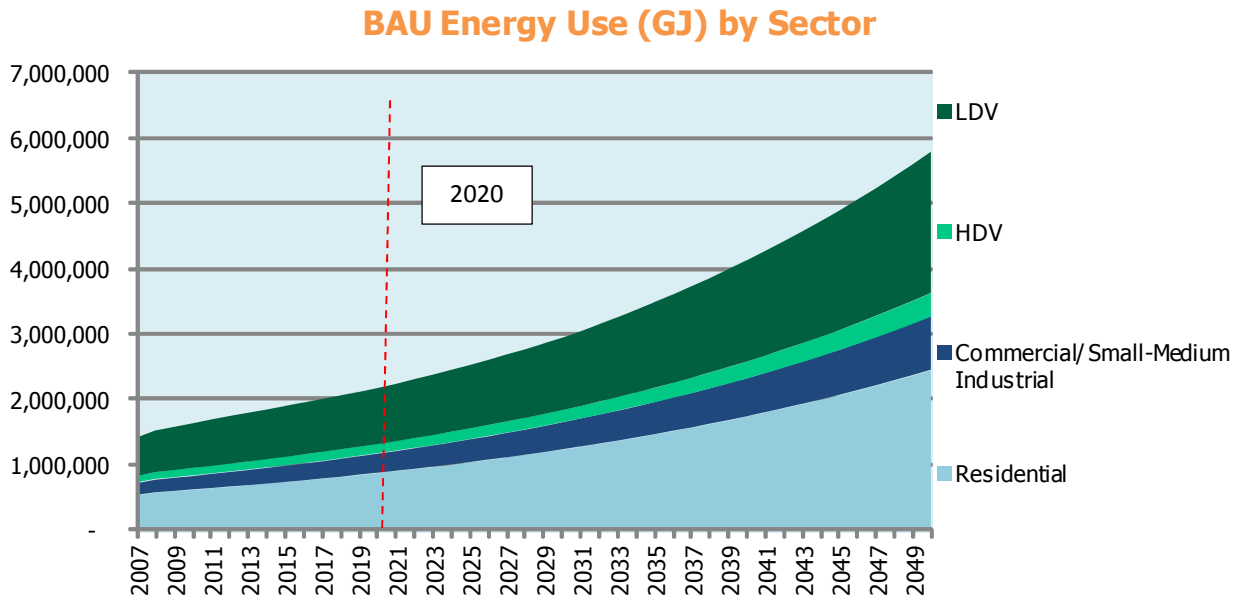
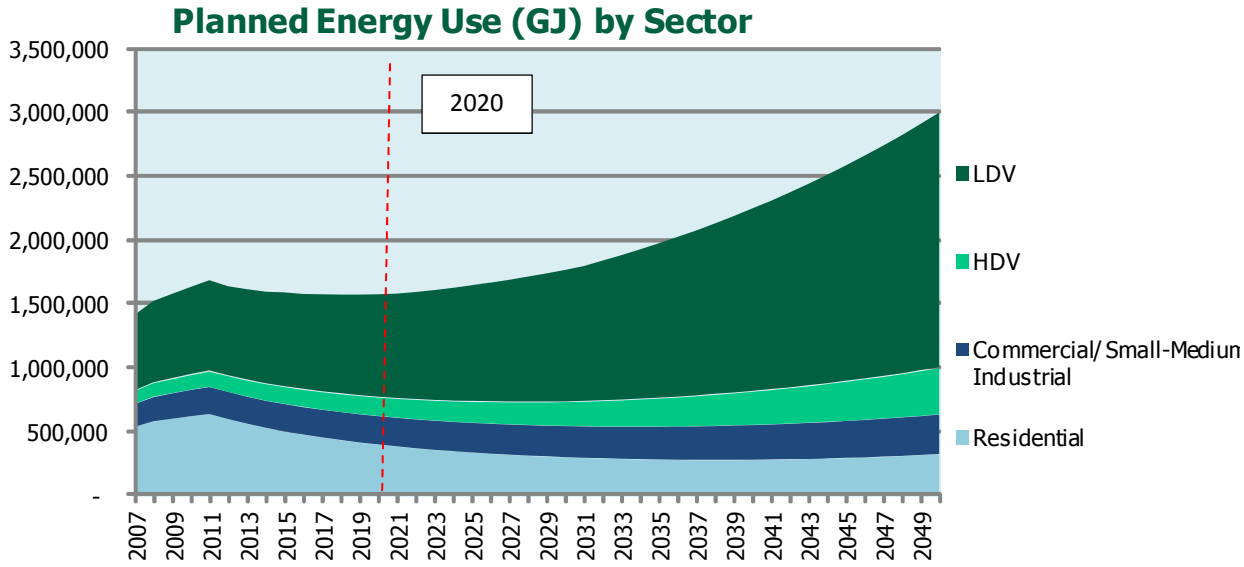
6.4 Special event planning
6.5 Collaborate with major employers on work-related transportation
6.6 Transit suite
6.7 Ride-sharing and guaranteed ride home programs
6.8 Intercommunity transit services & Bus Rapid Transit connection
7.1 Organics diversion

Sectors


BAU Energy Use (GJ) by Sector
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
-
2020
LDV
HDV
Commercial/ Small-Medium Industrial
Residential
2007 2009 2011 2013 2015 2017 2019 2021 2023 2025 2027 2029 2031 2033 2035 2037 2039 2041 2043 2045 2047 2049


Planned Energy Use (GJ) by Sector
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
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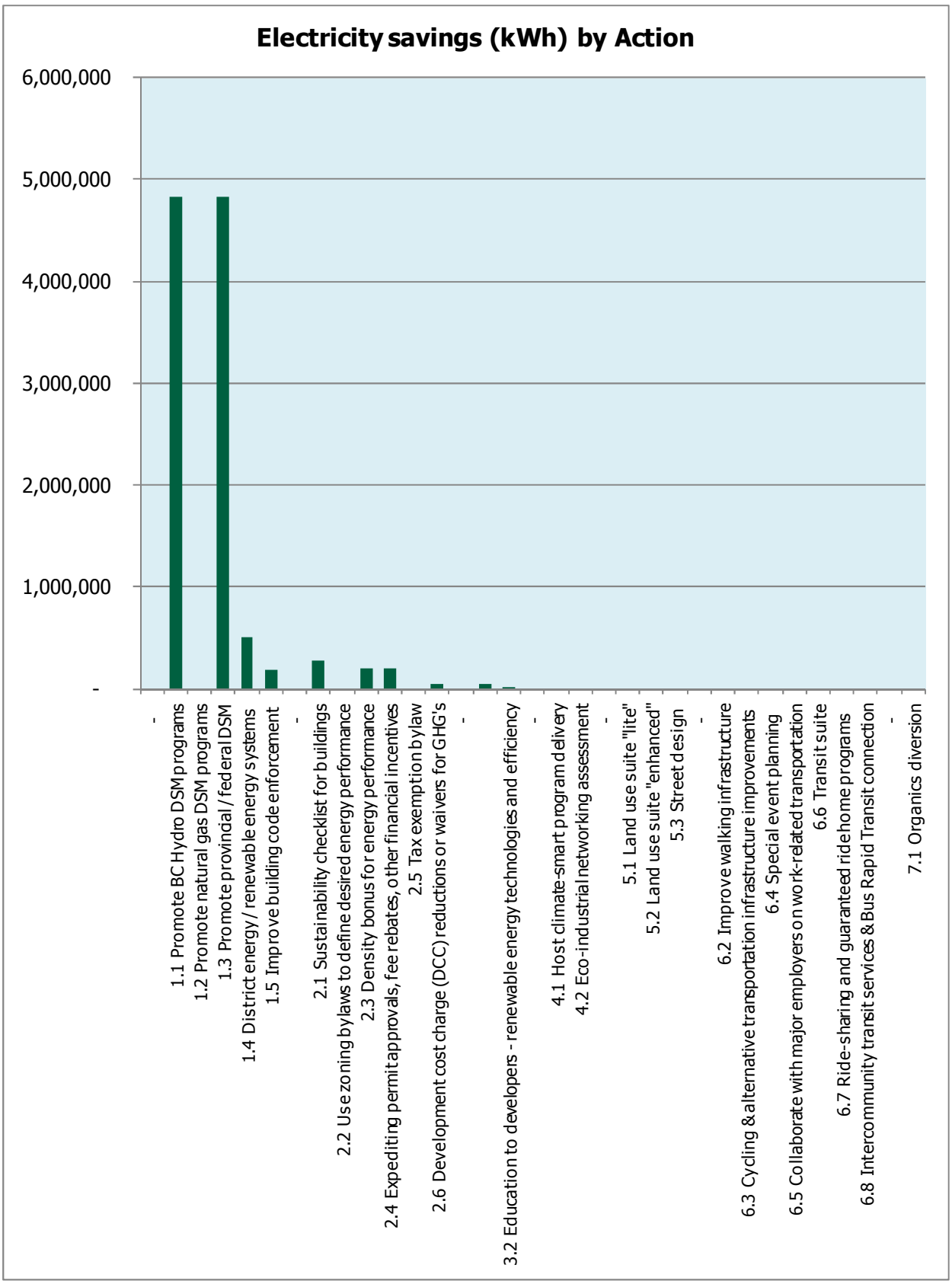
500,000
-
2020
LDV
HDV
Commercial/ Small-Medium Industrial
Residential
2007 2009 2011 2013 2015 2017 2019 2021 2023 2025 2027 2029 2031 2033 2035 2037 2039 2041 2043 2045 2047 2049


Electricity savings (kWh) by Action
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
-
-
1.1 Promote BC Hydro DSM programs
1.2 Promote natural gas DSM programs
1.3 Promote provincial / federal DSM
1.4 District energy / renewable energy systems
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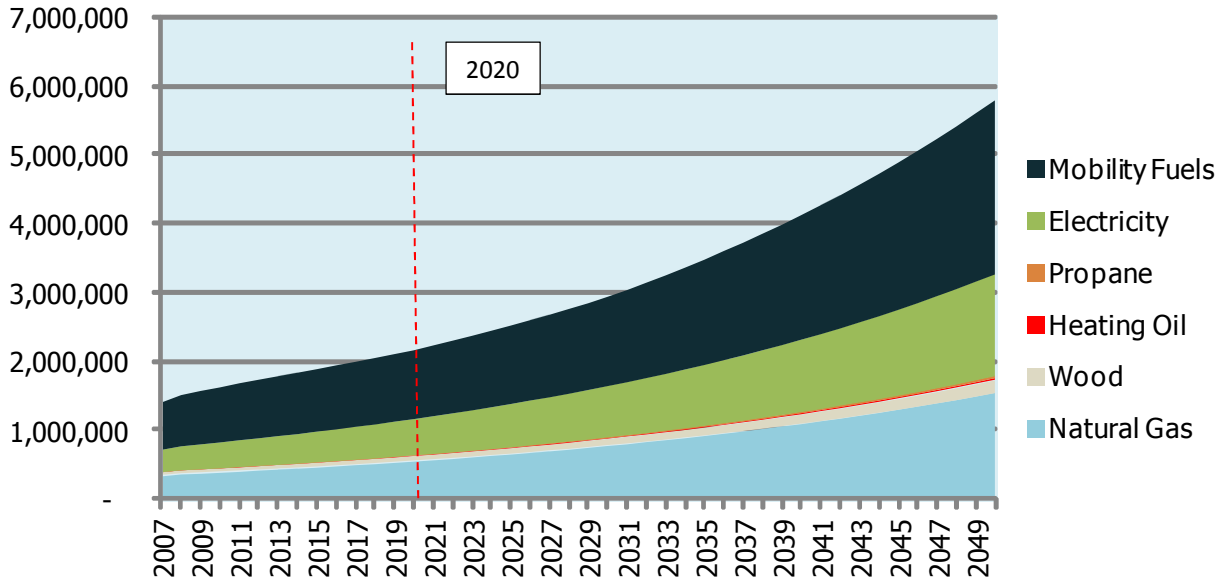
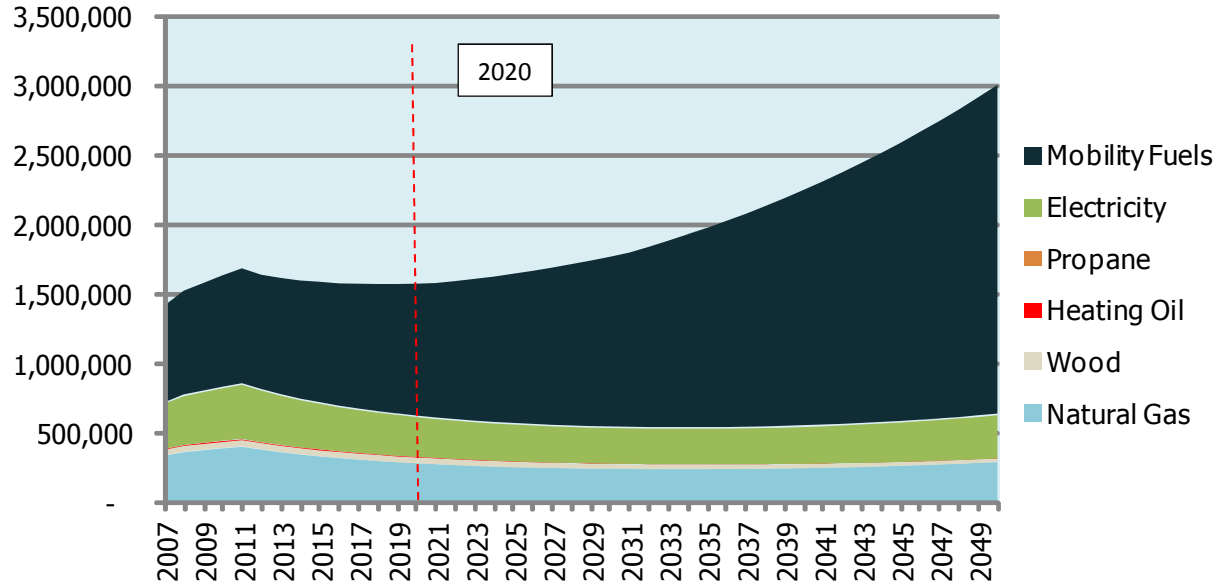
6.5 Collaborate with major employers on work-related transportation
6.6 Transit suite
6.7 Ride-sharing and guaranteed ride home programs
6.8 Intercommunity transit services & Bus Rapid Transit connection
-
7.1 Organics diversion

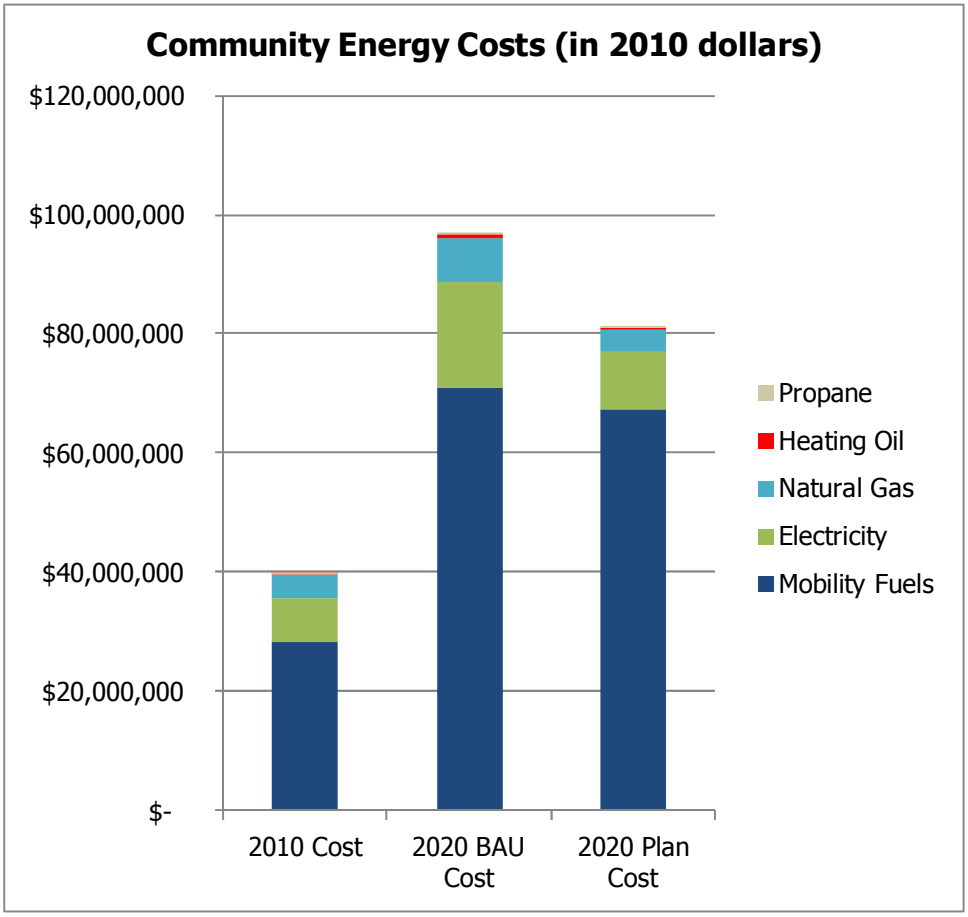
Fuels

Business as Usual GJ by Fuel



Planned Energy Use (GJ) by Fuel





The model assumes that energy costs will increase with time.

The chart above shows overall energy costs for the community. Per capita energy costs are expected to be:

- 2010 - $3,324
- 2020 BAU - $4,841
- 2020 Plan - $4,055