



Town of Creston Strategic Community Energy & Emissions Plan

Workshop dates: November 3 and 4, 2015

Received by Creston Town Council: May 31, 2016



**CRESTON
VALLEY**

TOWN of CRESTON



Table of Contents

List of Acronyms..... 2

Executive Summary 3

Introduction..... 8

Action Plan 12

Results of Actions 41

Community Financial Savings..... 50

Appendix 1 – Community Energy & Emissions Inventory for Creston..... 52

Appendix 2 – Actions Descriptions 60

List of Acronyms

BAU	Business As Usual
BCH	BC Hydro
CBT	Columbia Basin Trust
CEA	Community Energy Association
cea	a certified energy advisor (depending on context).
CEEI	Community Energy and Emissions Inventory (inventories created by the Province for each local government)
CO ₂	Carbon Dioxide
DCC	Development Cost Charge
DSM	Demand Side Management (name for measures used to reduce energy consumption)
EEC	Energy efficiency and conservation
FBC	Fortis BC (electricity and gas) utility
GHG	Greenhouse Gas (there are several different anthropogenic GHGs and they have different relative impacts. When tonnes of GHGs are stated in the document the standard practice of stating this in equivalent of tonnes of carbon dioxide is followed. Carbon dioxide is the most important anthropogenic GHG.)
GJ	Gigajoules (one of the standard measures of energy)
HERO	Home Energy Rebate Offer, a program offered through FortisBC and BC Hydro to provide rebates to homeowners for energy efficient renovations.
HPO	Homeowners Protection Office
HDV	Heavy Duty Vehicles (i.e. commercial vehicles, like trucks)
ICSP	Integrated Community Sustainability Plan
kWh	kilowatt hours (standard measure of energy, typically used with electricity)
LAP	Local Area Plan
LDV	Light Duty Vehicles (i.e. the types of vehicles driven by ordinary people)
OCP	Official Community Plan
RDCK	Regional District of Central Kootenay
RGS	Regional Growth Strategy
SCEEP	Strategic Community Energy and Emissions Plan

Executive Summary

On November 3 and 4, 2015, a workshop was held with Town of Creston Council members, staff, Rural Area Regional District of Central Kootenay Directors, staff from Regional Recreation Commission, Interior Health Authority and Labatts Brewery. The workshop was facilitated by Community Energy Association and FortisBC. The project is funded by FortisBC and the Columbia Basin Trust.

Many thanks to the workshop group who spent their day to look at energy, emissions, and energy expenditure data for the community as a whole and develop an action plan.

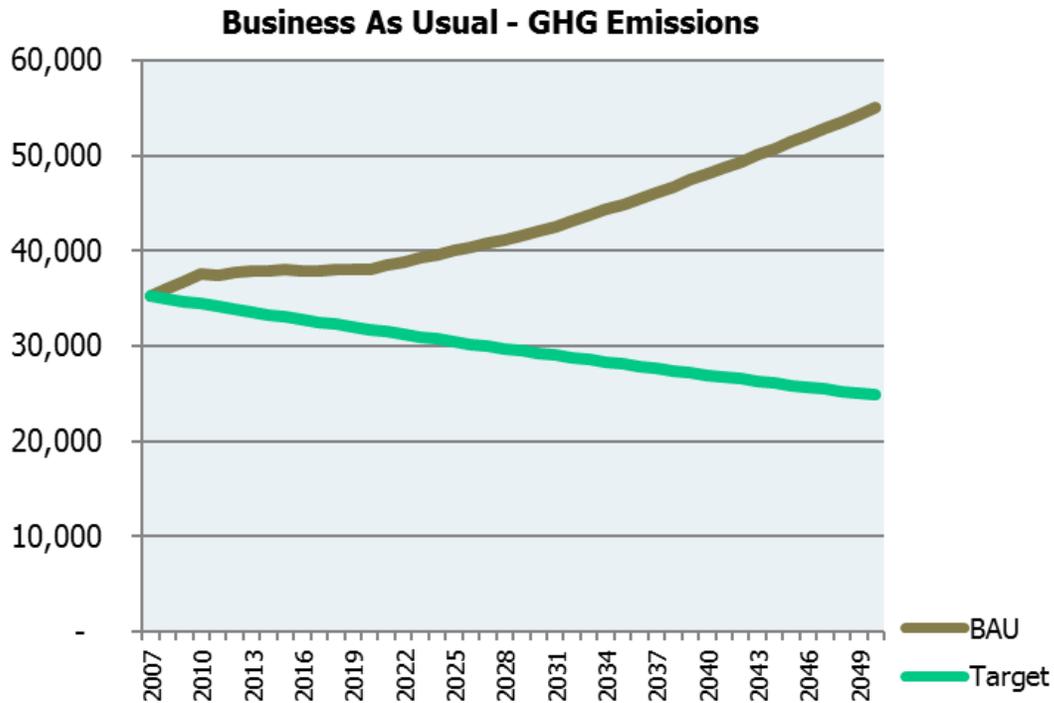
Colin Farynowski	Town of Creston	Colin.Farynowski@creston.ca
Helene Miles	Town of Creston	Helene.Miles@creston.ca
Ross Beddoes	Town of Creston	Ross.Belloes@creston.ca
Councillor Jen Comer	Town of Creston	Jen.Comer@creston.ca
Councillor Jim Elford	Town of Creston	Jim.Elford@creston.ca
Councillor Joanna Wilson	Town of Creston	joanna.wilson@creston.ca
Director Tanya Wall	RDCK Area B	twall@rdck.bc.ca
Director Garry Jackman	RDCK Area A	gjackman@rdck.bc.ca
Neil Ostafichuk	RDCK Recreation Supervisor	neil.ostafichuk@rdck.bc.ca
Randy Fediuk	RDCK Manager of Recreation	rfediuk@rdck.bc.ca
David Butt	Interior Health	david.butt@interiorhealth.ca
Faraz Nayebi	Labatt Breweries	faraz.nayebi@labatt.com
Mike Adams	Interior Health - healthy built environment	Mike.Adams@interiorhealth.ca
Jannine Kowalchuk	Interior Health	jannine.kowalchuk@interiorhealth.ca
Larry Brown	School District 8 Operations	lbrown@sd8.bc.ca
Lorne Eckersley	Creston Valley Advance	publisher@crestonvalleyadvance.ca
Carol Suhan	Fortis BC	carol.suhan@fortisbc.com
Doug Lamminen	Fortis BC	doug.lamminen@fortisbc.com
Patricia Dehnel	Community Energy Association	pdehnel@communityenergy.bc.ca
Jane McRae	Community Energy Association	jmcrac@communityenergy.bc.ca
Megan Lohmann	Community Energy Association	mlohmann@communityenergy.bc.ca
David Dubois	Community Energy Association	ddubois@communityenergy.bc.ca

Community energy and emissions – current status and business as usual

For the modelling process, the workshop group used an annual community population growth rate of 1.50% and used the OCP target which is to reduce emissions 10% below 2007 levels by 2020.

In 2010 total community annual energy expenditure was approximately \$20.3 million, and GHG emissions were approximately 37,500 tonnes. Further detail on the energy and emissions for the community can be found in the 2010 Community Energy and Emissions Inventory (CEEI) produced by the Province (see Appendix 1).

With no action plan, but taking into account the GHG reducing impact of Provincial and Federal policies already in place, community emissions are predicted to change relative to the target trajectory according to the following chart:



The Town of Creston is a climate action leader and has already initiated a number of actions. These include installing LED lights in the new intersection, installing 3 electric vehicle charging stations, participating in the WaterSmart Program and developing the ICSP “Cultivating Creston Integrated Community Sustainability Plan. The workshop group identified an action plan to further reduce community energy consumption & emissions:

Actions	done/ongoing	2016	2017	2018	2019	2020
1 Buildings Basics						
1.1 Promote electricity, natural gas, & other energy efficiency programs		X				
1.2 District energy / renewable energy systems				X		
1.3 Building code energy efficiency - educate & support compliance		X				
1.4 Reduce local government barriers to building scale renewable energy	X					
2 Buildings High-Growth Measures						
2.1 Sustainability checklist for buildings		X				
2.2 Create rezoning policy to achieve desired energy performance		X				
2.3 Review zoning bylaw for opportunities to encourage energy performance		X				
2.4 Density bonus for energy performance				X		
2.6 Fee rebates to encourage improved energy performance						X
2.7 Revitalization tax exemption bylaw for buildings with improved energy performance				X		
2.8 Development Cost Charge (DCC) reductions or waivers for GHG's			X			
2.9 Development Permit Area - to enhance energy performance (e.g. orientation, landscaping)		M				
2.10 Development Permit Area - for on-site renewable energy				M		
3 Residential Buildings						
3.1 Sign on to solar-ready building code provision				M		
3.2 Education for developers - energy efficiency & renewable energy			X			
3.3 Education for realtors - energy efficiency & renewable energy			X			
3.4 Comprehensive energy efficiency retrofit campaign (e.g. Energy Diet)	X					
3.5 Voluntary or mandatory energy labelling of existing or new homes			M			
3.6 Efficient wood stove program & bylaws	X					
3.7 Helping people source wood fuel (e.g. from community forest)	X					
4 Commercial / Institutional Buildings and Transportation						
4.1 Promote the free Business Energy Advisor assessments		X				
4.3 Convert City owned ornamental streetlights to LED	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 Implement 30 km/hr speed limit in parts of the community		X				
5.5 Variable DCC's to encourage infill development		X				
5.6 Flow RGS, OCP, and local area plans through to zoning+B160		X				
6 LDV Transportation – Infrastructure & Collaboration						
6.1 Active transportation planning				X		
6.2 Improve active transportation infrastructure				X		
6.3 Anti-idling campaign / bylaw		X				
6.4 Special event planning		X				
6.5 Collaborate with major employers on work-related transportation			X			
6.6 Transit suite	M					
6.7 Intercommunity transit services	M					
6.8 Support car share cooperatives		X				
6.9 Raising awareness of ride sharing and guaranteed ride home programs		X				
6.10 Low carbon and electric vehicle fuelling/charging stations	X					
6.11 Electric vehicle & e-bike awareness event		X				
6.12 Natural gas vehicle collaboration						X
7 Waste						
7.1 Organics diversion	X					
7.2 Encourage water conservation	X					
7.3 Support local food production, e.g. farmers markets, community gardens	X					
8 Enabling Actions						
8.1 Review land use & transportation plans / policies for SCEEP incorporation		X				
8.3 Establish a regional energy co-operative						M
8.4 Identify green economy opportunities			X			
8.5 Leverage local government assets into community change			X			
8.6 Long-term, deep community engagement (culture change)			X			

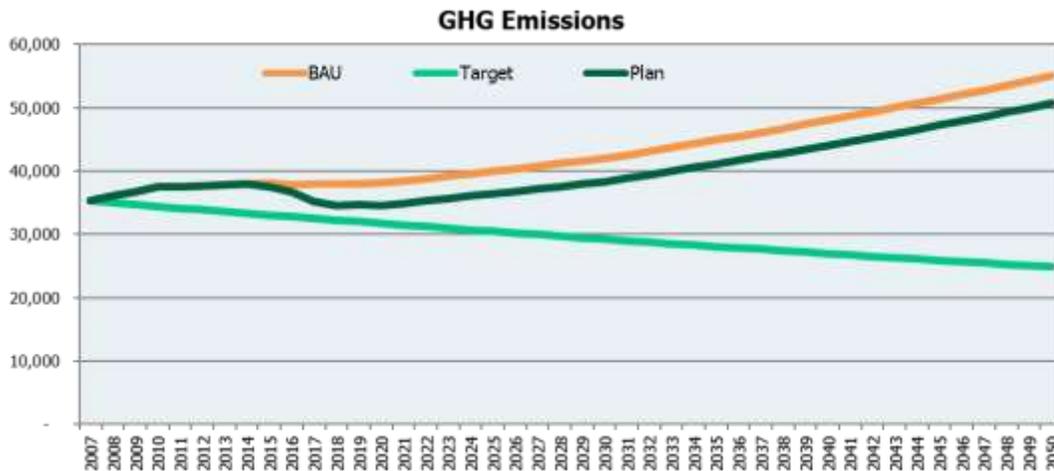
The actions marked with an 'M' were categorised as 'maybes'.

The numbers of the actions listed above correspond to their numbers in the SCEEP Actions Guide (see Appendix 2), which contains further detail about each of them. Some new actions were also created and not listed in the SCEEP Actions Guide (for further details on this see the "Unpacking Actions" sub-section). Information on FortisBC DSM program incentives found on the website: <http://www.fortisbc.com/Rebates/RebatesOffers/>. An in-depth discussion on all of the opportunities and most of the actions occurred at the workshop.

Results

The estimated impact of the plan on community greenhouse gas emissions (in tonnes of GHGs per year) is shown below. Significant emissions reductions will be achieved beyond Business As Usual, however there is still a considerable gap to the GHG target trajectory.

The Town of Creston has levers to reduce community energy and emissions and can move closer towards its target, but many things do remain outside of the Town's control including Federal and Provincial actions, and technological changes. These may provide significant assistance towards meeting the target.



Note that actions to reduce electricity consumption will result in financial savings for the community, but will not result in significant savings in emissions. Electricity in BC has a very low greenhouse gas intensity, and should be carbon neutral from 2016.

The major actions for Creston, listed by impacts in terms of annual GHG savings in the year 2020 are:

- 5.2 – Land use suite “enhanced” – 613 tonnes / year
- 1.2 – District Energy / Renewable energy systems – 488 tonnes / year
- 5.5 – Variable DCC's to encourage infill development – 392 tonnes / year

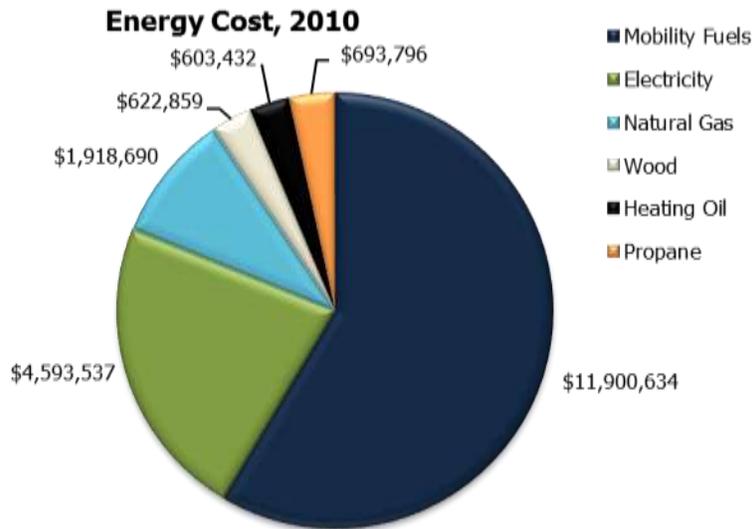
Next Steps

1. Circulate DRAFT report to workshop participants, and identify additional stakeholders to contribute, e.g. Local Business Community
2. Submit final Strategic Community Energy and Emissions Plan (SCEEP) to Council, with goals, policies, and recommendations
3. Incorporate SCEEP into the Town of Creston policy framework
4. Ongoing SCEEP implementation

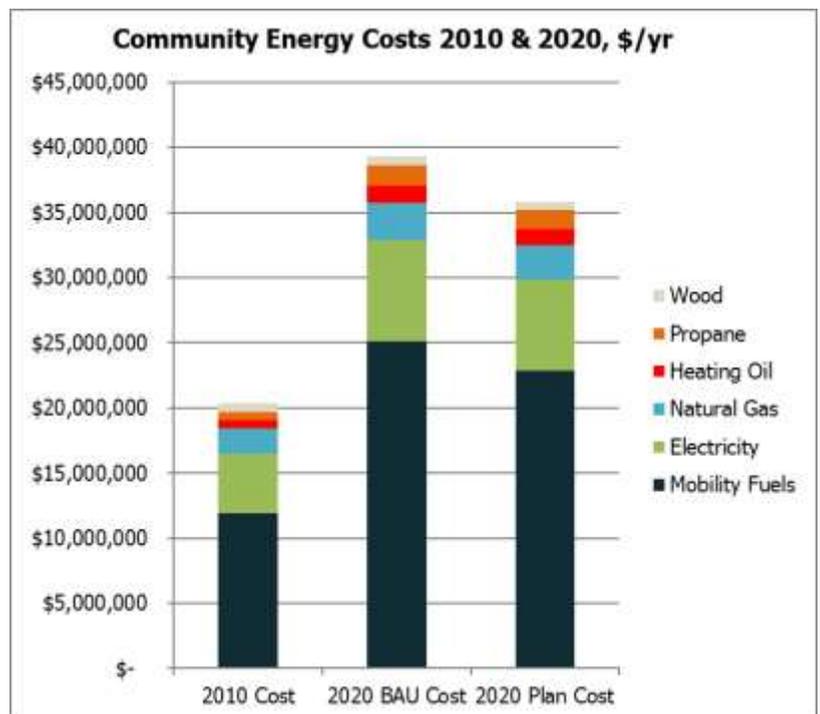
Community Financial Savings

For the Town of Creston, only a small percentage of the energy dollars spent within the community remain within the community. A significant co-benefit of implementing this plan to reduce energy consumption and emissions is that reducing energy dollars spent helps residents and businesses reduce expenses. In addition, locally generated energy helps to keep energy dollars local rather than exported.

The following chart shows the approximately \$20.3 million (\$3,877 per capita) of Creston community energy expenditures made in 2010, split by fuel type.



The impacts of the plan are shown in the following chart, comparing 2010 and 2020. Community energy costs are projected to be reduced by approximately 9% through plan implementation. The model assumes that energy prices will increase to 2020. So, the 9% plan cost reduction equates to about \$3.5 million per year (\$577 per capita). Although energy prices are very difficult to predict, there is confidence that the price of electricity will increase over the next few years.



Introduction

Through Bill 27, local governments in BC are required to make efforts towards reducing the greenhouse gas emissions of their communities. In addition, considering the energy and emissions from the community can give opportunities for increased efficiency and financial savings for this community of approximately 5,300 people. The figures in this report are based on 2010 energy and emissions inventory data from the Province, and recent 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.

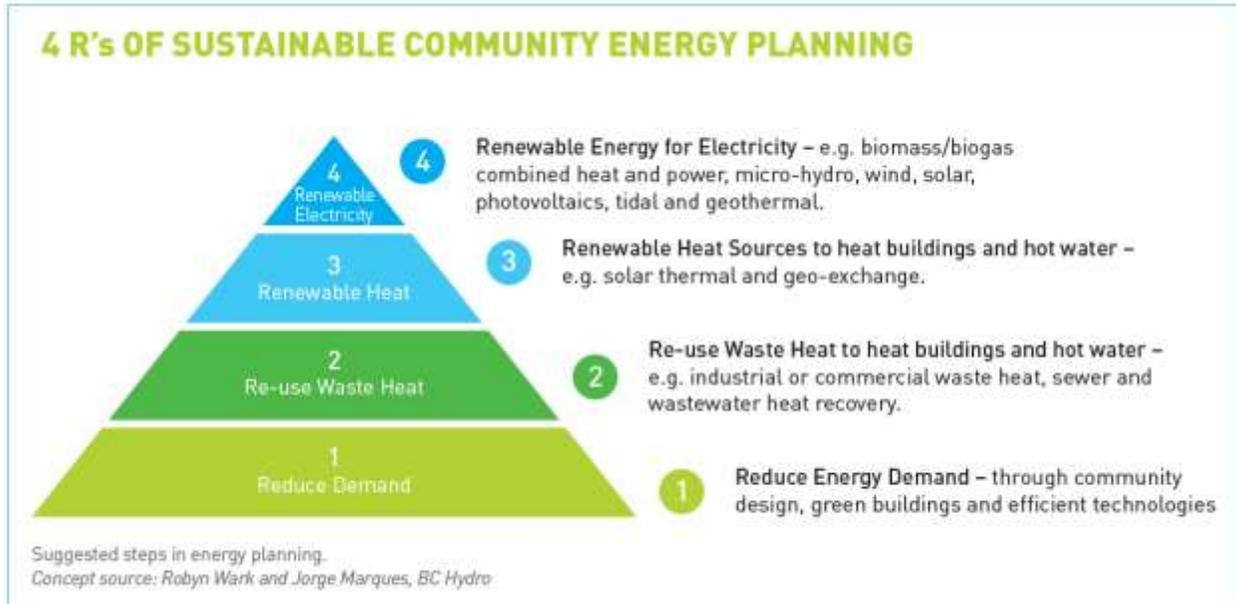
Strategic Community Energy and Emissions Planning

A Strategic Community Energy and Emissions Plan (SCEEP) evaluates a community's existing energy use and greenhouse gas (GHG) emissions with a view to improving efficiency, cutting emissions, enhancing community resilience, managing future risks, and driving economic development. A SCEEP usually encompasses building and site planning, renewable energy supply, land use and transportation planning, and infrastructure (including solid and liquid waste management). It provides guidance to a local government in long-term decision making processes.

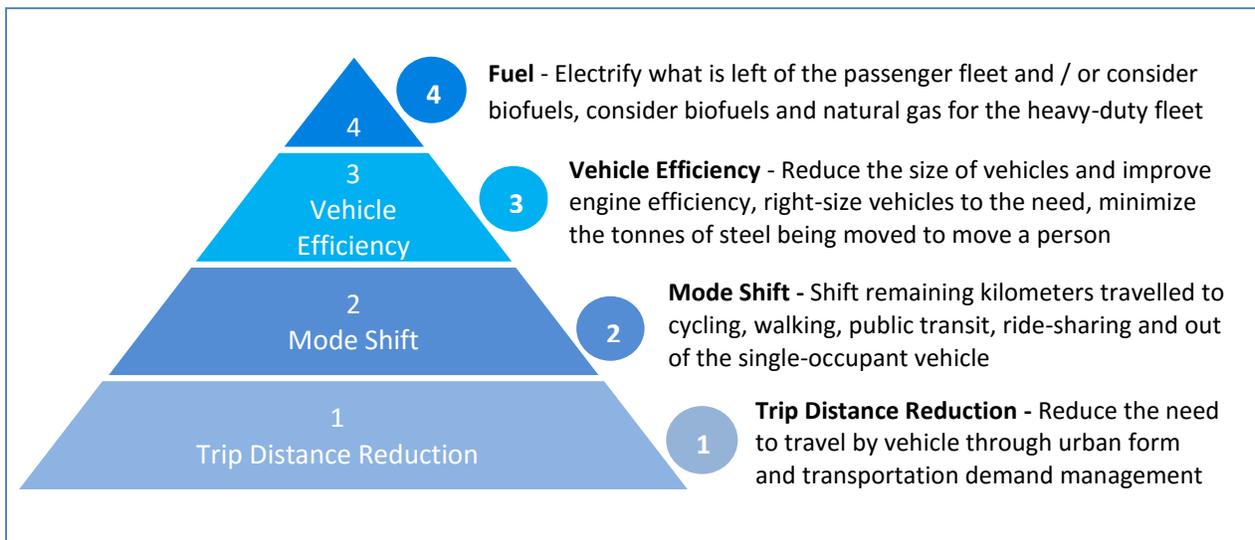
Most GHG emissions within a local government's jurisdiction result from energy consumption and the burning of fossil fuels. With this relationship it makes sense to combine GHG and energy planning into one integrated plan. While some communities have completed stand-alone energy or GHG action plans, the close linkages between energy and GHG emissions suggest that a combined plan is preferable. In this guide the term Strategic Community Energy and Emissions Plan (and the acronym SCEEP) 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. It makes sense to reduce demand as much as possible first, since usually the best business cases are found through improving efficiency.

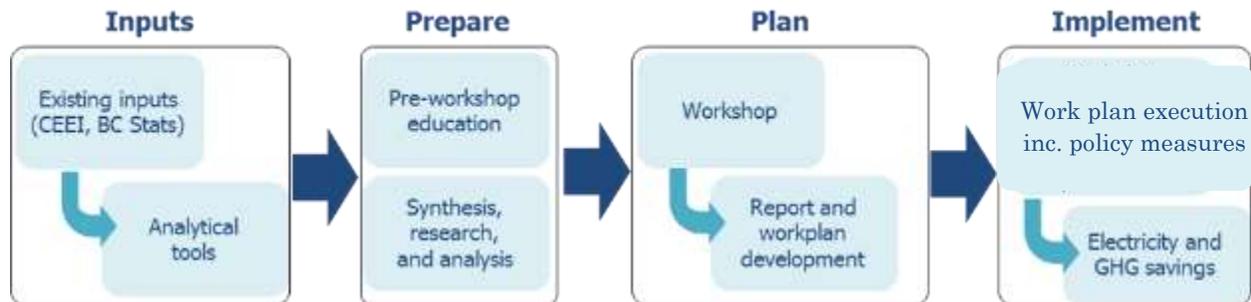


A similar hierarchy can be applied to the transportation sector. The easiest step to take is to reduce vehicular trip distances through appropriate urban form (planning) and transportation demand management.



SCEEP Actions Overview

Strategic Community Energy and Emissions Planning (SCEEP) is initiative assisting Kootenay communities within the Columbia Basin and FortisBC electrical service area to develop a cost effective and practical SCEEP including an implementation timeline. The SCEEP process is depicted in the graphic below:



REGISTRATION

- Initial call with key staff to determine comprehensive community information for analysis by CEA and select preferred SCEEP workshop dates

PREPARATION

- Engage in a 1 hour webinar approximately 1 week prior to your workshop to build on foundations from the pre-workshop reading

PLANNING

- Develop a SCEEP in your 1.5 day workshop, led by an expert in the field, funded by FortisBC and Columbia Basin Trust

IMPLEMENTATION

- Complete report and gain Council approval, with up to 12 hours of support funded by FortisBC and CBT
- Work on implementing policy measures with up to 35 hours of funded coaching
- Keep CEA, FortisBC, and CBT informed of success stories
- Green your community and achieve electricity and GHG savings

Participant Commitments

SCEEP participants commit to and are responsible for:

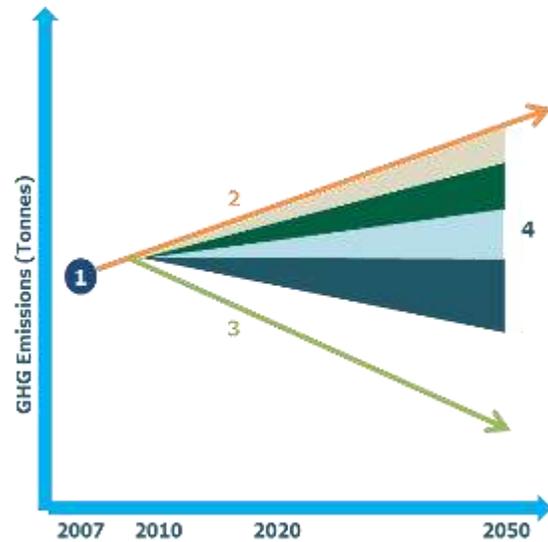
- Taking ownership and demonstrating leadership concerning the SCEEP
- Submitting SCEEP to Council for approval
- Implementing the SCEEP in their community

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

A Strategic Community Energy and Emissions Plan evaluates a community’s existing energy use and GHG emissions in order to reduce energy consumption and emissions, improve efficiency, and increase the local renewable energy supply. A SCEEP encompasses buildings, land use and transportation 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.

There are four elements of a SCEEP:

1. **BASELINE:** 2007 Energy and Emissions, from the Community Energy and Emissions Inventory (CEEI), provided by the Province
2. **BUSINESS-AS-USUAL FORECAST**
 - a. Population forecast (BC Stats and local government)
 - b. Impact of provincial commitments (tailpipe standards, fuel standards, building code)
3. **TARGET:** From OCP or RGS GHG reduction target (legally required), expressed as an annual percentage
4. **ACTION PLAN:** To be developed from the SCEEP menu of 50 actions plus locally specific opportunities; and including an approach to estimating impacts.



Benefits of Developing a SCEEP

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 saves money.

Creation of jobs and stimulation of the local economy: a SCEEP can highlight opportunities for community development.

An opportunity to demonstrate leadership: a SCEEP contributes to a smart community plan, more efficient infrastructure, more livable neighbourhoods, and protection of the environment; showing leadership on multiple fronts.

Action Plan

On November 3 and 4, 2015, a workshop was held with Town of Creston Council members, staff, Rural Area Regional District of Central Kootenay Directors, staff from Regional Recreation, Interior Health Authority and Labatts Brewery. The workshop was facilitated by Community Energy Association and Fortis BC. The project is funded by the FortisBC and Columbia Basin Trust.

Community Stakeholders are invited to participate in the Strategic Community Energy and Emissions Plan development. The stakeholders provide their perspective on collaborative opportunities to develop a plan to reduce energy and emissions and to enhance community health and livability.

Diagram source: *Healthy Built Environments, Interior Health*



Message from Interior Health:

Healthy Communities in IH is a set of complementary programs that work with local governments around the region to promote health and the creation of healthy public policy and planning. The rates of chronic diseases such as diabetes and cardiovascular disease are rising in Interior Health. Much of this increase is attributable to physical inactivity, tobacco use, and unhealthy diets, and is preventable. Community planning and design can influence the health of the population and reduce chronic disease. The IH healthy built environment (HBE) team, the community health facilitators, the tobacco reduction team, and the community food security team are available to collaborate with Local Government.

The workshop group looked at energy, emissions, and energy expenditure data for the community as a whole and decided on an action plan. The workshop group also noted that many actions from this plan will help to inform the OCP update scheduled for 2016.

To assist with pre-workshop preparation, a one-hour preparatory webinar was held to provide background information on how energy planning initiatives can influence carbon emissions while also providing opportunities for financial savings within the community.

At the workshop a GHG reduction assessment tool was introduced. The tool has been provided to staff for use in further analysis, and 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.

The workshop group was provided with a collection of actions. Each action was discussed within the group and placed in one of four categories: “yes”, “no”, “maybe”, and “done”.

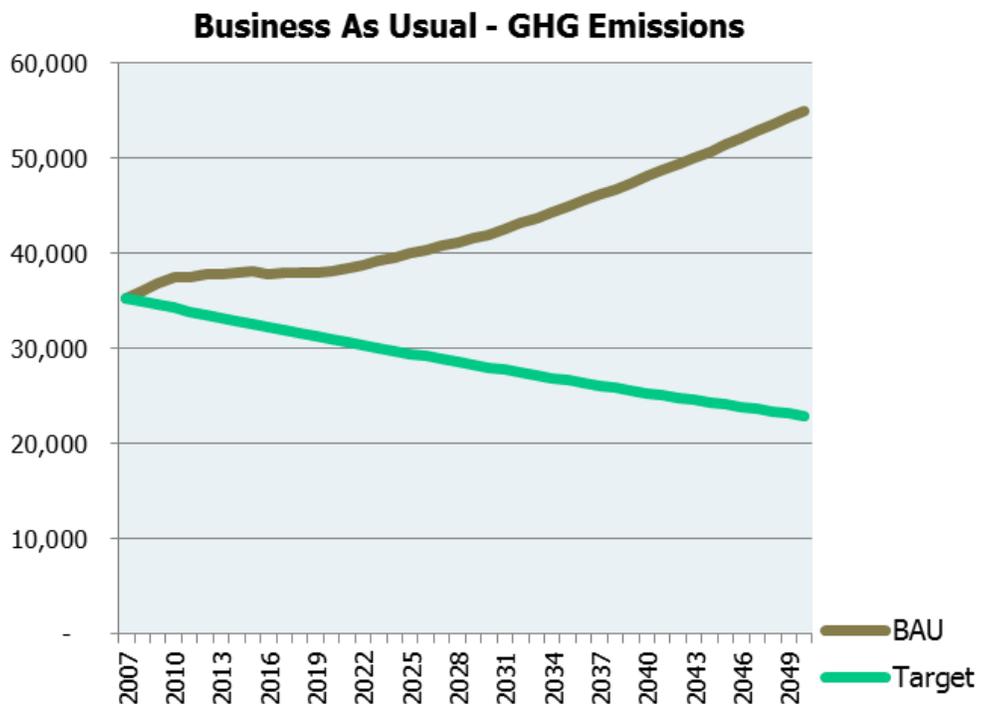
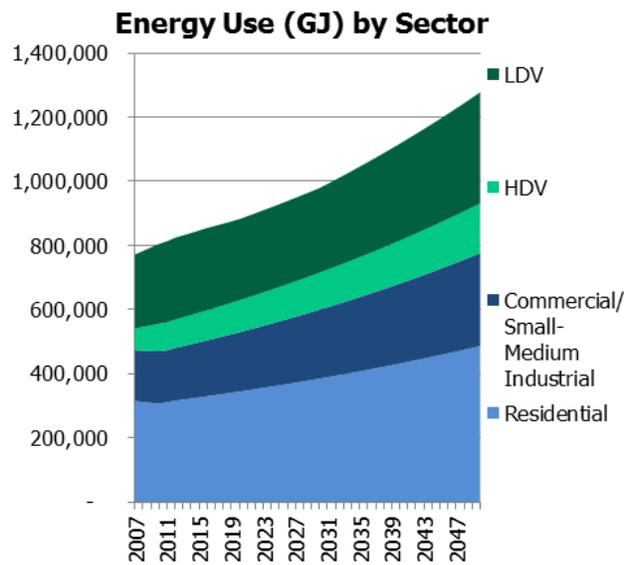
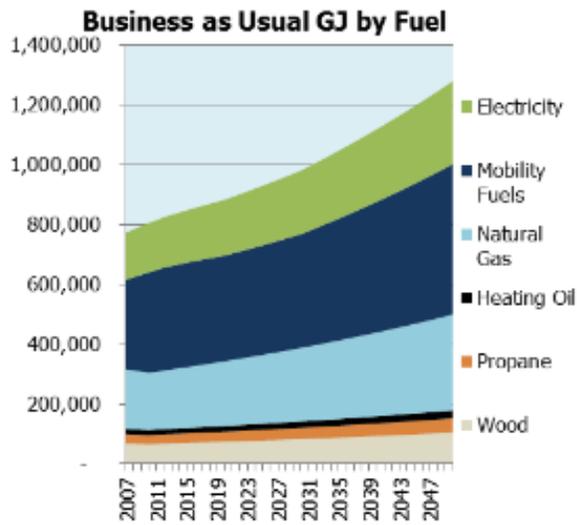
The actions were placed on a chart to create a plan for the years from 2016-2020. The group was invited to provide input on timing and sequencing of actions. Following this, key actions were discussed in more detail.

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 2010 through the Community Energy and Emissions Inventory (CEEI). In 2010 total community annual energy expenditure was approximately \$20.3 million (\$3,900 per capita), and GHG emissions were approximately 37,500 tonnes (7.1 tonnes per capita). Further detail on the energy and emissions for the community can be found in the 2010 CEEI, which is in Appendix 1.

For the modelling process, the workshop group used an annual community population growth rate of 1.50% and used the initial reduction target of the Town of Creston Official Community Plan OCP, which is to reduce emissions 10% below 2007 levels by 2020. Without an action plan, and taking into account the population projection and Provincial policies, community emissions are predicted to change according to the tables and charts in the rest of this section as "Business as Usual".

"Business As Usual" Projections & Target Overview				
Community	Creston Town			
Annual % target change in ghg	-0.81%			
Population growth	1.50%			
Default population growth	1.91%			
2007 Population	4,988			
Start-year for actions	2016			
Emissions Summary				
2007 Emissions	35,273			
2010 Emissions	37,549			
Total Energy Expenditure	\$	20,332,948		
Per-capita energy cost	\$	3,877		
2010 Per-capita emissions	7.16			
Targets Summary				
	2016	2020	2030	2050
Total reduction	-7.1%	-10%	-17%	-30%
Per-capita reduction	-19%	-26%	-41%	-63%
Total GHG	32,784	31,734	29,256	24,864
Per-Capita GHG	5.7	5.2	4.1	2.6
Business as Usual (BAU) Summary				
	2016	2020	2030	2050
GHG's	37,868	38,078	41,990	55,015
GHG growth	7%	8%	19%	56%
Population	5,735	6,087	7,064	9,515
Pop growth	747	1,099	2,076	4,527
Pop Grow %	15%	22%	42%	91%
Per capita emissions	6.60	6.26	5.94	5.78



Actions Already Initiated

The Town of Creston is a climate action leader and has undertaken an array of actions relating to reductions in community energy and emissions. These are summarized in the following table.

Actions reported completed by the workshop team:

Action	Year	Comments
1.4 Reduce local government barriers to building scale renewable energy	DONE	No existing barriers; very open to new ideas
3.4 Kootenay Energy Diet	2013	Town of Creston will support future home energy efficient retrofit campaigns.
3.7 Helping people source wood fuel (e.g. from community forest)	Done	Consider assisting seniors or people new to area.
6.10 Low carbon and electric vehicle fuelling / charging stations	DONE	3 electric vehicle charging stations have been installed.



Action Plan

The action plan developed by the workshop group is shown below. Actions that are in the SCEEP Actions Guide but considered inapplicable, are not included below. The actions in the plan were categorised according to which year it was believed that they will be implemented or investigated.

Actions	done / ongoing	2016	2017	2018	2019	2020
1 Buildings Basics						
1.1 Promote electricity, natural gas, & other energy efficiency programs		x				
1.2 District energy / renewable energy systems				x		
1.3 Building code energy efficiency - educate & support compliance		x				
1.4 Reduce local government barriers to building scale renewable energy	x					
2 Buildings High-Growth Measures						
2.1 Sustainability checklist for buildings		x				
2.2 Create rezoning policy to achieve desired energy performance		x				
2.3 Review zoning bylaw for opportunities to encourage energy performance						
2.4 Density bonus for energy performance					x	
2.6 Fee rebates to encourage improved energy performance						x
2.7 Revitalization tax exemption bylaw for buildings with improved energy performance					x	
2.8 Development Cost Charge (DCC) reductions or waivers for GHG's				x		
2.9 Development Permit Area - to enhance energy performance (e.g. orientation, landscaping)		M				
2.10 Development Permit Area - for on-site renewable energy					M	
3 Residential Buildings						
3.1 Sign on to solar-ready building code provision					M	
3.2 Education for developers - energy efficiency & renewable energy				x		
3.3 Education for realtors - energy efficiency & renewable energy				x		
3.4 Comprehensive energy efficiency retrofit campaign (e.g. Energy Diet)	x					
3.5 Voluntary or mandatory energy labeling of existing or new homes				M		
3.6 Efficient wood stove program & bylaws	x					
3.7 Helping people source wood fuel (e.g. from community forest)	x					
4 Commercial / Institutional Buildings and Transportation						
4.1 Promote the free Business Energy Advisor assessments		x				
4.3 Convert City owned ornamental streetlights to LED	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 Implement 30 km/hr speed limit in parts of the community		x				
5.5 Variable DCC's to encourage infill development		x				
5.6 Flow RGS, OCP, and local area plans through to zoning+B160		x				
6 LDV Transportation - Infrastructure & Collaboration						
6.1 Active transportation planning						x
6.2 Improve active transportation infrastructure						x
6.3 Anti-idling campaign / bylaw		x				
6.4 Special event planning		x				
6.5 Collaborate with major employers on work-related transportation				x		
6.6 Transit suite	M					
6.7 Intercommunity transit services	M					
6.8 Support car share cooperatives		x				
6.9 Raising awareness of ride sharing and guaranteed ride home programs		x				
6.10 Low carbon and electric vehicle fuelling/charging stations	x					
6.11 Electric vehicle & e-bike awareness event		x				
6.12 Natural gas vehicle collaboration						x
7 Waste						
7.1 Organics diversion	x					
7.2 Encourage water conservation	x					
7.3 Support local food production, e.g. farmers markets, community gardens	x					
8 Enabling Actions						
8.1 Review land use & transportation plans / policies for SCEEP incorporation		x				
8.3 Establish a regional energy co-operative						M
8.4 Identify green economy opportunities				x		
8.5 Leverage local government assets into community change				x		
8.6 Long-term, deep community engagement (culture change)				x		

The actions marked with an 'M' were categorised as 'maybes'.

The numbers of the actions listed above correspond to their numbers in the SCEEP Actions Guide (see Appendix 2), which contains further detail about each of them. However, any new action created is not listed in the SCEEP Actions Guide. Information on FortisBC DSM program incentives found on the website: <http://www.fortisbc.com/Rebates/RebatesOffers/>.

Unpacking Actions from the Action Plan

The main workshop day of November 3 included an in-depth discussion of all the opportunities and actions.

Ways to proceed with the actions were discussed and are outlined in the table. Some Action items are noted as “Ongoing” which are already in place or occur annually. Other “Action Items” will be worked upon within the next five years or “maybe” worked upon in the timeframe.

Action	Year	Effort	Comments
Buildings - Basics			
1.1 Promote electricity, natural gas, and other energy efficiency programs	1	Low	<p>Promote through: City website; Mayor’s newsletter; Booths at farmer’s market (create theme: Fall fair, Green Fair)</p> <p>Next Steps/Lead Fortis determine where partnership opportunities exist Fortis investigate the showcase of successful Energy Efficient case studies on their website Fortis to meet with Town Manager during OCP process to input on EE measures</p> <p>Partners Regional water smart ambassador program (existing) RDCK wood stove exchange partnership/coordinate with program Creston Valley Community Services promotion of Fortis low income programs Kootenay Community Centre Society KCCSED@Telus.net</p> <p>Barriers and Opportunities Home builder trade show in April – <i>Revisit partnership with Fortis and Credit Union to provide low cost loans for energy efficient retrofits.</i></p>
1.2 District energy / renewable energy systems	3	High	<p>Already capture methane gas from BBF at waste water treatment plant.</p> <p>Action Planning Year 2 Project completion Year 3 Re-visit opportunities of District Energy on 10th Ave North</p> <p>Partners RDCK Sustainability Service</p>

Action	Year	Effort	Comments
1.3 Building code energy efficiency - educate & support compliance	1	Low	<p>Creston builders are interested in energy efficiency. Building Inspector provides information in the field.</p> <p>Next Steps/Lead Fortis to lead + identify local champions + partners Fortis to work with Town Manager and provide input to OCP (public select committee) Identify local champions to help coordinate awareness events Add Energy Efficiency information to building checklist. Cost comparisons of energy efficient building practice vs non energy efficient useful for Fortis website.</p> <p>Partners Invite Homeowners Protection Office to hold workshop in Creston; include contractors, building supply store staff, inspectors FortisBC include Energy Efficiency education and cost comparison on website</p> <p>Opportunities Creston Fall Fair to promote Fortis programs, incentives, demo in home displays Town help promote the HPO workshops.</p>
Buildings – Growth Measures			

Action	Year	Effort	Comments
2.1 Sustainability checklist for buildings	1	Low	<p>Sustainability checklist would initially be used as an educational tool. Introduce as a voluntary checklist, and work towards pairing with an incentive and requiring the completion of the checklist. Building permit applicants (for new builds and retrofits) would receive the checklist with an accompanying educational package summarizing best practices and currently available utility incentives. The intent is to increase knowledge about energy efficiency.</p> <p>Next Steps/Lead CEA will provide some sample checklist language. Work with Creston as needed to refine. Creston to request Fortis BC incentive pamphlets for distribution as part of the educational package. Council will need to adopt initially as a voluntary measure.</p> <p>Partners Fortis BC, Community Energy Association Potentially College of the Rockies – could partner to offer workshops on energy efficient building and retrofits.</p> <p>Opportunities Providing information at the point of a building permit application ensures that all applicants are considering energy efficiency in their building plans. Awareness of available incentives may encourage some builders to increase the efficiency of some technologies or building techniques.</p>

Action	Year	Effort	Comments
2.2 Create rezoning policy to achieve desired energy performance	1	Medium	<p>A rezoning policy can be used to strongly encourage a higher standard of energy performance.</p> <p>Next Steps/Lead CEA to provide examples (Bowen Island Municipality is a good, small community examples) and provide additional support to refine as needed. Creston to include in OCP review process.</p> <p>Partners CEA</p> <p>Opportunities The OCP review is a natural opportunity to establish a rezoning policy with clear objectives around energy performance.</p>
2.3 Review zoning bylaw for opportunities to encourage energy performance	1	Medium	<p>The zoning bylaw should be reviewed to identify opportunities to encourage energy performance.</p> <p>Next Steps/Lead To be completed as part of the OCP process.</p> <p>Partners – Creston lead.</p> <p>Opportunities Occasionally a zoning bylaw will have language that precludes or conflicts with energy efficient design or development. A zoning bylaw review is an opportunity to ensure the language is consistent toward improved energy performance.</p>

Action	Year	Effort	Comments
2.4 Density bonus for energy performance	3	Medium	<p>Although density bonuses are typically implemented in higher growth communities, there may be opportunity in the rural context. The RDCK may be interested in a collaboration with the municipality on a policy around density bonusing. The density of existing sites and a compilation of all amenities in the community and proximity to developments could be developed.</p> <p>Next Steps/Lead CEA to provide some examples of density bonuses for energy performance in the rural context.</p> <p>Partners CEA, potentially RDCK</p> <p>Opportunities Creston could be an example community for successful implementation of a density bonus for energy efficiency in the rural/slower growth context.</p>

Action	Year	Effort	Comments
2.6 Fee rebates to encourage improved energy performance	5	Medium	<p>Currently the Town of Creston is not covering all costs associated with building permit fees. A longer term outlook on the possibility of raising fees and then rebating based on energy performance could be considered. The fee structure needs to be reviewed in the longer-term context. In the meantime, the Town would like to provide information to builders and other groups regarding energy efficiency, and the rebates and incentives available through utilities. This would be leveraged through Action 2.1 and the development of informational packages.</p> <p>Next Steps/Lead Town of Creston to schedule fee review. CEA to assist in the development of educational materials to get information out more immediately to relevant groups.</p> <p>Partners Wide range of potential partners through which the education material could be distributed:</p> <ul style="list-style-type: none"> - TAPS – seniors’ organization - Ministerial group - Trails society - Farmers market - Leadership class at high school <p>Opportunities Establish a reward/incentive based system which would tie back into the checklist. This is a natural fit with the checklist – depending on the ‘score’ a rebate is provided. No penalty if a certain score is not achieved.</p>

Action	Year	Effort	Comments
2.7 Revitalization tax exemption bylaw for buildings with improved energy performance	3	Medium	<p>Town of Creston has a revitalization tax exemption. Energy efficiency could be integrated into the tax exemption. There is an unclear potential barrier in the implications of the amount of tax that would be exempted based on the results of the assessed value of the property. Requirements around measuring are also unknown – how to prove energy efficiency measures have been taken without burdening the building owner or the Town staff resources. Consider requiring energy management through the free tool, Portfolio Manager (Natural Resources Canada). Easy to use and helpful for business owners to measure and monitor energy consumption.</p> <p>Next Steps/Lead Creston staff to revisit and consider adaptation of the existing tax exemption bylaw to include energy efficiency. CEA to provide input on way to measure impact, as well as monitoring tools for commercial property owners.</p> <p>Partners CEA</p> <p>Opportunities This could be another avenue through which education materials are distributed to businesses. Incentives exist for commercial building retrofits, and this could be included in a revitalization tax exemption information package.</p>

Action	Year	Effort	Comments
2.8 Development Cost Charge (DCC) reductions or waivers, for GHG's	2	Medium	<p>Despite the challenge in the timing of the DCC payment (i.e. at the time of subdivision vs time of building), this could be an opportunity to review and revise the DCC structure. The Town would like to consider what other local governments do. For commercial buildings, DCCs are paid at the time of construction, so perhaps easier to integrate incentives for GHG emission reductions.</p> <p>Next Steps/Lead Staff will review DCC documents and look at the recommendations around increased DCCs as well as an incentive structure to reward GHG emission reductions. Council direction is required to change DCC bylaw in Year 1; update structure for year 2 or 3.</p> <p>Partners – Creston lead</p> <p>Opportunities As with other incentive-based policies, this should be accompanied with an informational package that would provide any relevant utility programs that would assist with GHG emission reduction opportunities.</p>

Action	Year	Effort	Comments
2.9 Development Permit Area (DPA) - to enhance energy performance (e.g. orientation, landscaping)	Maybe 1		<p>The Local Government Act gives local governments the authority to require energy efficient and GHG emission reduction for parameters exterior to the building. It is unclear what impact the forthcoming Building Act regulations will have on DPAs for energy efficiency. CEA is participating in conversations with the Province and will update local governments as necessary.</p> <p>Next Steps/Lead CEA to provide updates regarding the implications of the Building Act regulations on flexibility of DPAs for energy efficiency. DPA review as part of the OCP process.</p> <p>Partners CEA</p> <p>Opportunities DPAs can be created to address water conservation - including xeriscaping and on-site storm water management.</p>
2.10 DPA - for on-site renewable energy	Maybe 3		<p>Currently the Building Act regulations are unclear as to the implication of DPAs for renewable energy.</p> <p>Next Steps/Lead CEA to communicate implications of Building Act regulations on DPAs for on-site renewable energy.</p> <p>Partners CEA</p> <p>Opportunities Some communities have implemented DPAs for energy efficiency using a 'Merton Rule' approach – meaning a trade-off is offered for energy efficiency measures implemented inside the building.</p>

Action	Year	Effort	Comments
Subdivision Bylaw Review			<p>There could be opportunities to integrate active transportation requirements into the Subdivision Bylaw, for example, standards for sidewalks, etc. Interior Health Authority may have funding and/or other resources to assist with the development of active transportation infrastructure.</p> <p>Next Steps/Lead Staff to review Subdivision Bylaw and identify opportunities to integrate active transportation opportunities, or other GHG emission reduction options.</p> <p>Partners Explore opportunities to work with Interior Health Authority or ICBC for funding for improved active transportation infrastructure and improved road/pedestrian safety.</p> <p>Opportunities Further supports the integration of energy and emissions related activities across all policies. This is an opportunity to integrate requirements for long-term active transportation infrastructure.</p>
Residential Buildings			
3.1 Sign on to solar-ready building code provision	Maybe 3		<p>This action is a maybe.</p> <p>Concentrate on energy efficient retrofits of existing housing stock. I.e. insulation. A local builder currently reports building solar ready at minimal cost.</p>

Action	Year	Effort	Comments
3.2 Education for developers – energy efficiency & renewable energy	2	Low to Medium	<p>Next Steps Ensure developers are aware of FortisBC rebate program Homeowner and business owner event tied to home and garden fare. “Fall fair – Green fair”: link homeowners and business owners to event, tie with agriculture, market green aspect. Showcase solar tractor; real opportunities in local area; Fortis show home to show what an Energy Efficient home looks like; micro homes; blower door test. Local example: Nelson EcoSave Green Home and Energy Show</p> <p>Partners College of the Rockies – Kimberley Timber Frame program FortisBC BC Real Estate education component Water conservation group</p> <p>Funding FortisBC can provide funds to non-profit group to organize event/attend planning meetings</p>
3.3 Education for realtors - energy efficiency & renewable energy	2	Low to Medium	<p>Next Steps Develop and deliver a program to support energy efficient education of realtors Assist realtors to recognize the opportunities of an energy efficient home and EnerGuide rating. Fortis upgrades add resale value to homes. Realtors can promote the rebates as method of getting homes ready for sale. Eventually climate for buyers is to have home inspection and energy audit as condition of purchase. Consumers should demand that utility costs are noted in home sale specs.</p> <p>Partners Real Estate organization</p>
3.4 Comprehensive energy efficiency retrofit campaign (e.g. Energy Diet)	Ongoing	Medium	Town of Creston participated in Kootenay Energy Diet in 2013 and supports further initiatives.

Action	Year	Effort	Comments
3.5 Voluntary energy labelling of existing or new homes	Maybe 2	Medium	<p>This action is a Maybe</p> <p>Action In conjunction with realtor education. Add EnerGuide rating to building permit application Idea to create a simple survey on house size and annual utility costs to capture data and for chance to win prize at “Fall Fair”. (potential to expand it as Green Fair at the same time.)</p> <p>Partner Real Estate</p>
3.6 Efficient wood stove program & bylaws	Ongoing	Low	Increase promotion / communications in partnership with RDCK.
Commercial /Institutional Buildings and Transportation			
4.1 Promote the free Business Energy Advisor assessments	1	Low	<p>Next Steps Link Fortis Programs to Town website Invite building supply stores to build awareness. Showcase success (i.e. Brewery experience) Town add energy component information to building permit / building demolition package; discuss at design stage, send out on business license renewal notice. Add information to building inspectors checklist/business license application Use application form as communication tool to reach out to building professionals, contractors, owners wanting green buildings</p> <p>Partners FortisBC Building Supply stores Brewery</p>
4.3 Convert local government owned streetlights to LED	Ongoing	Medium to High	<p>LED lighting technology offers large energy savings. Payback is about 5 years converting sodium lights to LED.</p> <p>Program to convert Creston lights is underway. Crossing lights have been changed to solar powered.</p> <p>Funding Gas Tax</p>

Action	Year	Effort	Comments
Light Duty Vehicle Transportation – Urban Form			
5.1/5.2 Land use suite lite and enhanced	1		<p>The land use suites encourage the development of a vision for the design of neighbourhoods in the community. Effective design of neighbourhoods – optimizing active transportation opportunities and enhancing connectivity to trails and transit options – can result in more active, healthy and lower-carbon communities.</p> <p>Next Steps/Lead Consider design of neighbourhoods with a focus on pedestrian movement and connectivity. Carry the concepts of sprawl containment and active transportation through to OCP update.</p> <p>Partners Interior Health Authority may have resources/funding to support active neighbourhoods CEA can provide some examples. OCP consultants could be a resource.</p> <p>Opportunities Designing neighbourhoods to optimize connectivity and active transportation can be a fun and educational engagement opportunity for the community. Through the OCP, design charrettes could be used to design the ideal neighbourhood, integrating components from 5.1 and 5.2 but other actions as well: street design, development permit areas (for water conservation, for example).</p>
5.2 Land use suite enhanced	1		

Action	Year	Effort	Comments
5.3 Street design	1		<p>Street design ties very closely to the neighbourhood vision of the 'landuse suite' actions. There will be limitations in a community where snow removal is of concern, but efforts to design streets to better accommodate pedestrians/bikes, etc. will define how streets are used for decades to come.</p> <p>Next Steps/Lead Staff to integrate street design considerations as part of OCP. Look at how to integrate into Subdivision Bylaws</p> <p>Partners – Creston to lead</p> <p>Opportunities As with the landuse suite actions, community engagement can be a great way to get acceptance for new and progressive street design approaches. The co-benefits are also significant – healthy residents, attractive streets for tourism and it can have positive synergies with revitalization efforts.</p>

Action	Year	Effort	Comments
5.4 Implement 30 km/hr speed limit in parts of the community	1	Medium	<p>The Town of Creston has been monitoring speeds throughout the community in order to justify a reduction in the speed limit. The suggested speed is 40 km/hr. The challenge with a change of speed, particularly where it is located within an established speed zone is the extra signage required. Designing streets to have more of a pedestrian focus, adding vegetation and other design features can also result in reductions of speed.</p> <p>Next Steps/Lead CEA to assist in finding out how other towns have done this, Rossland for example. Staff to examine the speed monitoring data and explore opportunities/limitations with the Province.</p> <p>Partners CEA, Ministry of Transportation</p> <p>Opportunities There is an opportunity to take a comprehensive approach to this action by integrating elements of street design and urban form.</p>
5.5 Variable Development Cost Charges (DCC's) to encourage infill development	1	Medium	<p>The current OCP has language throughout that encourages infill, particularly in commercial development. Urban sprawl containment and infill for residential or mixed used could be further enhanced in the OCP review.</p> <p>Next Steps/Lead Staff to look at applying variable DCCs to encouraging infill.</p> <p>Partners – Creston to lead</p> <p>Opportunities There are many co-benefits to infill development. In addition to the impact on distance of vehicle trips, there are benefits to reducing the amount of infrastructure required for a development (pipes, lights, etc.).</p>

Action	Year	Effort	Comments
5.6 Flow RGS, OCP, and LAP through to zoning	1		<p>The timing of the OCP review provides a natural opportunity to integrate the SCEEP report into the appropriate planning documents.</p> <p>Next Steps/Lead Town of Creston to work with consultants, staff and the community to identify priorities for the OCP. This initiative will look at flowing elements of the SCEEP into the appropriate planning processes.</p> <p>Partners – Town of Creston to lead</p> <p>Opportunities There is an opportunity to “operationalize” climate and energy. The actions identified through the SCEEP do not need to remain in a standalone document; rather, they should be integrated throughout documents such as the OCP to become part of the way that Creston grows and develops.</p>
Vehicle Transportation – Infrastructure & Collaboration			
6.1 Active transportation planning	3		<p>Town of Creston will do a Master Transportation Plan (multi-modal) BC Transit very responsive to route changes but ridership is low In Budget for 2016 but may be pushed to 2017</p> <p>Next Steps/ Lead Manager of Engineering to lead Master Transportation Plan process</p>

Action	Year	Effort	Comments
6.2 Improve active transportation infrastructure	3	High	<p>Next Steps Will support walking, biking trail development in accordance with the Master plan Have a sidewalk budget to make improvements to existing sidewalk and desire to evolve this into a sidewalk plan to develop continuity. Already have a Trails + Greenway Plan, so incorporate in the Master Plan</p> <p>Partners Ongoing collaboration with Volunteer Trails for Creston Valley Society Include Interior Health as active collaborators during Master Transportation Plan process to provide info on health benefits; http://www.phsa.ca/Documents/linkagestoolkitrevisedoct16_2014_full.pdf Content expertise; potential support for sidewalk construction hbe@interiorhealth.ca School District 8 promote safe routes to schools & active transportation plans IHA and SD8 to do walks together to determine routes. School District 8: determine drop off zones away from schools.</p>
6.3 Anti-idling campaign	1		<p>Creston has idle free policy</p> <p>Yes, to campaign, (Not a by-law) Already have an anti-idling campaign but will look at new ways to promote, such as through the brewery, and School programs</p> <p>Next Steps/Lead Need supplier of stickers, brochures etc. for campaign Councillor Wilson to approach province for support (materials, etc.) through Idle Free BC program</p>

Action	Year	Effort	Comments
6.4 Special event planning	1	Medium	<p>Has been done; could be improved</p> <p>Next Steps/Lead Director Binks to connect with Creston Valley Services committee to look into impact on community of special events at recreation facilities and identify opportunities to organize shuttles</p> <p>Partners Event organizers – i.e. spring home + garden show – to organize shuttle Parades along highway; Town Clerk could review opportunities for organizing shuttles BC Transit</p> <p>Barriers/Opportunities Question of availability of vans in Creston. Good to know for emergency planning. Town should create list and create a centralized page on alternative transportation</p>
6.5 Collaborate with major employers on work-related transportation	2	Medium	<p>Lead/Next Steps Creston Valley Services Committee(CVSC) School District 8 to discuss with senior management a policy to allow employees/teachers to ride school buses Investigate combining student transportation with BC transit service (i.e. provision of bus passes to students to consolidate + improve school district routes)</p>
6.6 Transit suite	Maybe		CVSC (Creston Valley Services) to discuss with BCTransit
6.7 Intercommunity transit services	Maybe	Medium to high	CVSC to discuss with BCTransit
6.8 Support car share cooperatives	1	Medium	<p>Next Steps/Lead Town of Creston Intern to Investigate website link to Kootenay Car Ride Share</p>

Action	Year	Effort	Comments
6.9 Raising awareness of ride sharing and guaranteed ride home programs	1	Medium	<p>Next Steps Town could host Ride Share Notice Board – coordinated by Town Intern Town develop alternate transportation page for website: ride-share; car share, taxi service etc. Kootenay Carshare: overnight parking available in Creston, open dialogue to have car in Creston.</p> <p>Example City of Kelowna is member of the Okanagan Car Share co-op and has one city-owned truck used in the co-op on weekends/when not in use by City.</p>
6.11 Electric vehicle & e-bike awareness event	1	Low to Medium	<p>Next Steps Fire Department to expand existing safety program for electric vehicles. Town to promote electric vehicle charging stations on website Town to explore use of electric vehicles or hybrids in vehicle fleet.</p>
6.12 Natural Gas Vehicle Collaboration	5		Town to investigate bio-fuel options
Waste			

Action	Year	Effort	Comments
7.1 Organics diversion	Ongoing	Medium to High	<p>Organics diversion is very much about waste reduction. The Town has drafted a bylaw to permit backyard chickens, which relates to an organic diversion program – diverting waste food to chickens for feed. The Town offers a \$25 compost rebate program.</p> <p>Town has done a small scale organics pilot project. Lower Kootenay Band is looking at a model. This is an agricultural community and much being done; i.e., branch chippers. Brewery reports little waste with spent grains being used as feed.</p> <p>Next steps/Lead Education: bylaw enforcement, food separation, collaboration within Town departments. Promote to resident background composting information; and suggestions like do not send wasted cherries to land fill. Conversations with municipalities and Regional District on opportunities for collaboration and best practices Review Grand Forks experience Bin at feed store available to drop off food waste/pick up food for backyard farmers to feed animals Animal control bylaw with backyard chickens in draft, adopt bylaw in Year 1. Director Jackman to liaise with RDCK</p> <p>Partners IHA for discussion on storage for feed Chamber to discuss waste diversion Potentially Regional District of East Kootenay regarding their compost system, and discussion whether Creston organics could be sent to Cranbrook. RDCK resource recovery, composting requirements.</p> <p>Opportunities Grocery stores and restaurants: opportunity to reduce organic waste Agricultural community and mills: sell waste to hog fuels group/materials for bedding. Brewery mash going to industry. Green cone for meats. Review landfill initiatives in Europe and keep good food from going to waste.</p>

Action	Year	Effort	Comments
7.2 Encourage water conservation	Ongoing	Medium	<p>Next Steps Continue education Stage 3 water conservation in summer of 2015 was not policed but community very aware and it became evident who was respecting and embarrassing for those who were not. Rules for all work best. Take lessons from WaterSmart ambassador</p>
7.3 Support local food production, e.g. farmers markets, community gardens, community greenhouse	ongoing	Medium	<p>Next Steps Community garden enhancement Establish additional partners for Food Action/Farmers market Town of Creston to lead and tie with IHA on community food health funding</p> <p>Partners IHA – community food health funding Regional District Board – support to investigate process.</p>
Enabling Actions			
8.1 Review land use & transportation plans / policies for SCEEP incorporation	1	Low to Medium	<p>Next Steps/Lead Creston staff will be facilitating the OCP process, which will look at integrating the SCEEP and other relevant documents into that master planning document.</p> <p>Partners – Creston to lead</p> <p>Opportunities The revision of the OCP is a perfect opportunity to move away from the silo-approach to climate and energy planning and action. There are natural opportunities to integrate climate and energy into existing planning documents, municipal processes and even operational processes.</p>

Action	Year	Effort	Comments
8.3 Establish a regional energy cooperative	5 (maybe)	High	<p>The SCEEP group identified the need for a champion in order to see an energy cooperative established. There is great opportunity to develop renewable/local energy projects, but a lead person or group is key.</p> <p>Next Steps/Lead Communicate the opportunity through relevant networks – there may be a group of citizens interested in pursuing local energy projects. Connecting folks through the hosting of an energy workshop or other similar event may be a start.</p> <p>Partners Potential for a variety of partners. Identification of a champion is key.</p> <p>Opportunities Economic development is a natural opportunity and is discussed in 8.4.</p>
8.4 Identify green economy opportunities	2	Medium	<p>There is an Economic Development group that is facilitated through the Regional District. This could be a start in terms of integrating green economy opportunities into the discussion about economic diversification.</p> <p>Next Steps/Lead Identify a member of the Economic Development committee that could bring the ideas of green economy and economic diversification to the table.</p> <p>Partners Economic Development committee, possibly.</p> <p>Opportunities There are examples in the Kootenays of economic development focussing on green energy opportunities – Kimberley’s solar mine, for example. There may be other ideas from residents – again a workshop may help to identify expertise within the community.</p>

Action	Year	Effort	Comments
8.5 Leverage local government assets to create expertise and community-wide change	2	Low to High	<p>Local governments need to be a leader in the community in terms of addressing climate and energy in municipal operations. Leveraging the work that has been done by communicating impacts and results to citizens can help create community-wide awareness and change.</p> <p>Next Steps/Lead Consider integrating a ‘green’ column or something similar into a community newsletter. If actions have been taken at community facilities, develop a poster to communicate the impacts to the community.</p> <p>Partners – Creston to lead</p> <p>Opportunities Leading by example can be an effective way of inspiring change.</p>
8.6 Long-term, deep community engagement (culture change)	2	Medium to High	<p>Culture change is a long process, and requires consistent and clear communications with messaging that will resonate with a wide range of audiences. There are a variety of ways to approach community engagement – but it will be important to engage with groups that can help to communicate the message. There are a variety of community groups that will have an interest in components of the SCEEP. Reaching out to the groups and connecting them with information that is relevant to them is a good way to start.</p> <p>Next Steps/Lead Staff to identify community groups and their contacts.</p> <p>Partners Possibility for a wide range of community groups.</p> <p>Opportunities Culture change, although challenging, has a great opportunity of harnessing ‘energy’ from a wide range of individuals and groups in the community.</p>

Potential Community Engagement Opportunities

Community engagement provides an opportunity for the local government to present the SCEEP, and to highlight some of the energy and emission reduction actions already in place. This demonstrates commitment and leadership, and sets a positive example for the community. i.e.

- Invite local experts or relevant businesses/organizations to set-up a booth at an event to share the services or products they offer that will support GHG emission reductions and energy efficiency
- Encourage input into the SCEEP through an interactive wall chart timeline of energy and emissions actions. Invite participants to add their own ideas or commitments to the timeline
- Invite FortisBC to share information about incentives or other programs that are available to encourage energy efficiency.

Next Steps

Suggested next steps for the SCEEP are:

1. Circulate DRAFT report to workshop participants, and identify additional stakeholders to contribute, e.g. Local Business Community.
2. Submit final Strategic Community Energy and Emissions Plan (SCEEP) to Council, with goals, policies, and recommendations.
3. Once SCEEP has been approved by Council, incorporate into Planning Documents and budgets.
4. Incorporate SCEEP into Town’s policy framework
5. Implementation
6. Renew by reviewing SCEEP in 5 years.

Incorporating	Budgeting	Monitoring	Convening	Reporting	Renewing
SCEEP into other planning documents: <ul style="list-style-type: none"> • OCP • Zoning Bylaw • Subdivision Bylaw • Master Transportation Plan 	SCEEP Actions into budgeting process	SCEEP implementation <ul style="list-style-type: none"> • Indicators for specific Actions, i.e., Amount organics diverted 	Regular meetings to discuss implementation: <ul style="list-style-type: none"> • Staff meetings • Committee meetings 	Reports to Council <ul style="list-style-type: none"> • Integrate with reports on other plans. 	Prepare for plan renewal every 5 years.

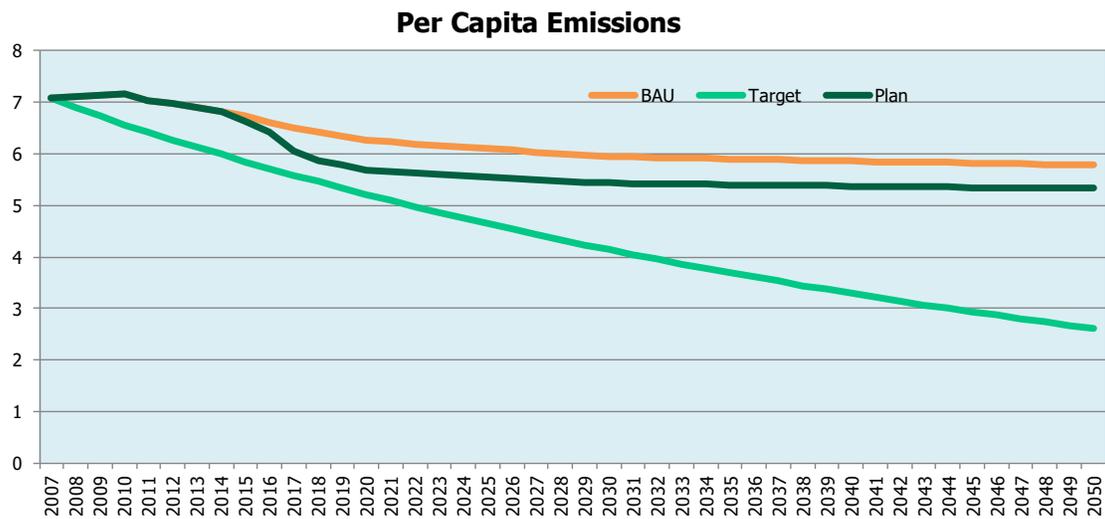
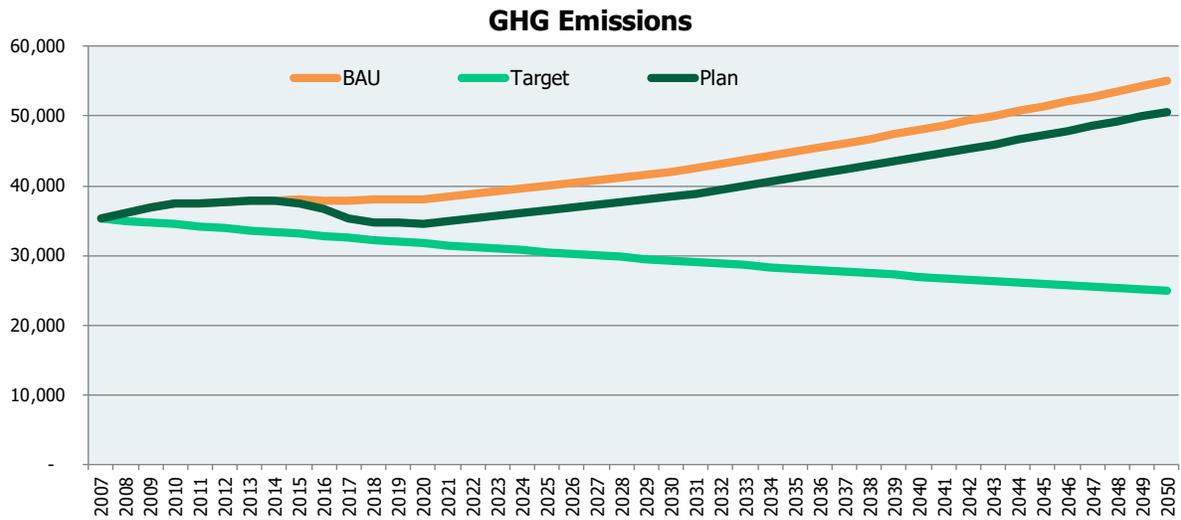
Results of Actions

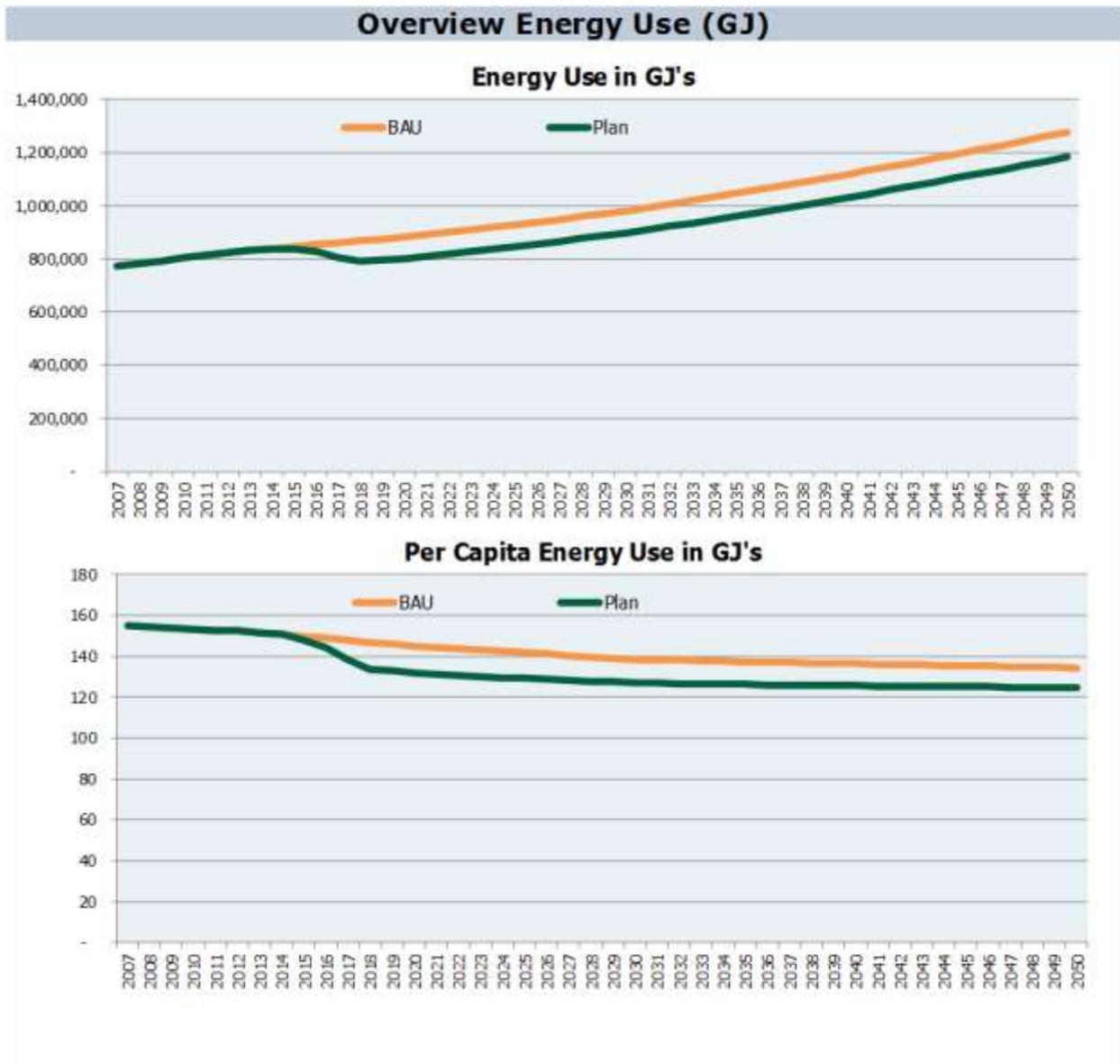
The estimated impact of the plan on community greenhouse gas emissions (in tonnes of GHGs per year) is shown in the next tables. Significant emissions reductions will be achieved beyond Business As Usual, however there is still a considerable gap to the GHG target trajectory.

The Town of Creston has levers to reduce community energy and emissions and can move closer towards its target, but many things do remain outside of the Town's control including Federal and Provincial actions, and technological changes. These may provide significant assistance towards meeting the target.

Note that actions to reduce electricity consumption will result in financial savings for the community, but will not result in significant savings in emissions. Electricity in BC has a very low greenhouse gas intensity, and should be carbon neutral from 2016.

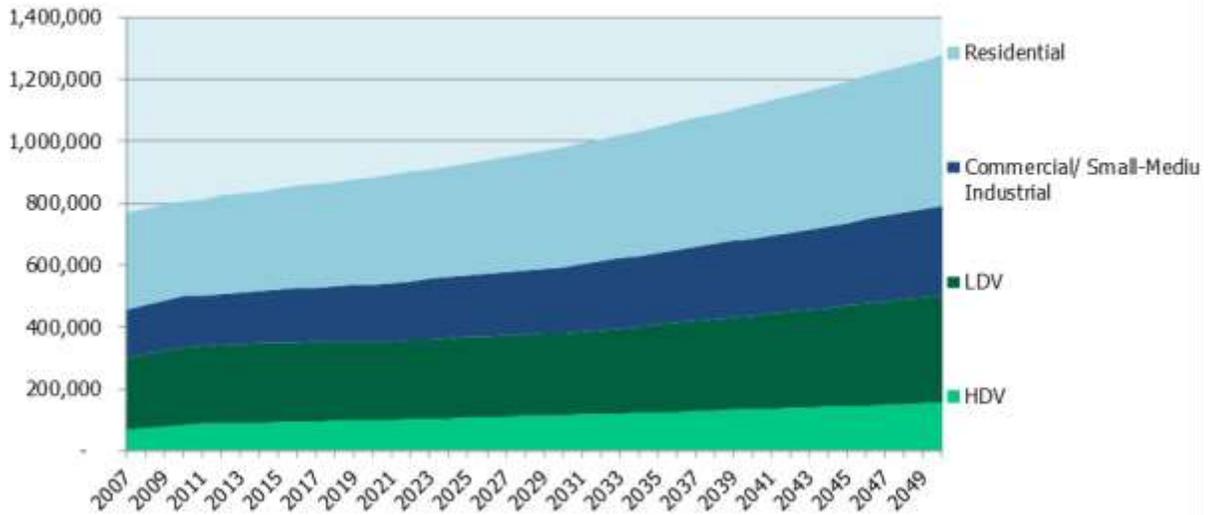
Overview GHG Emissions



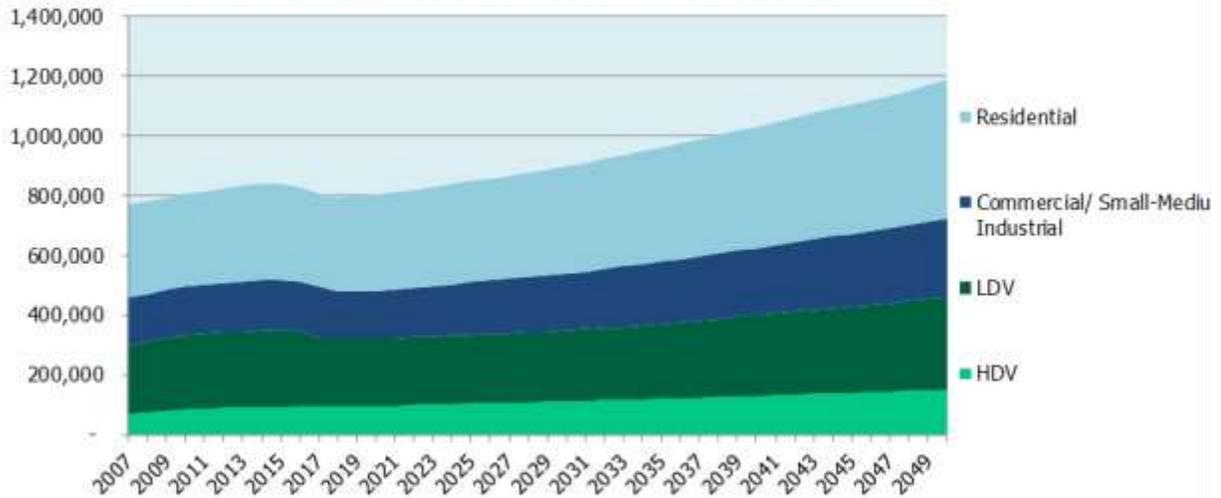


Energy Use by Sector

BAU Energy Use by Sector, GJ/year

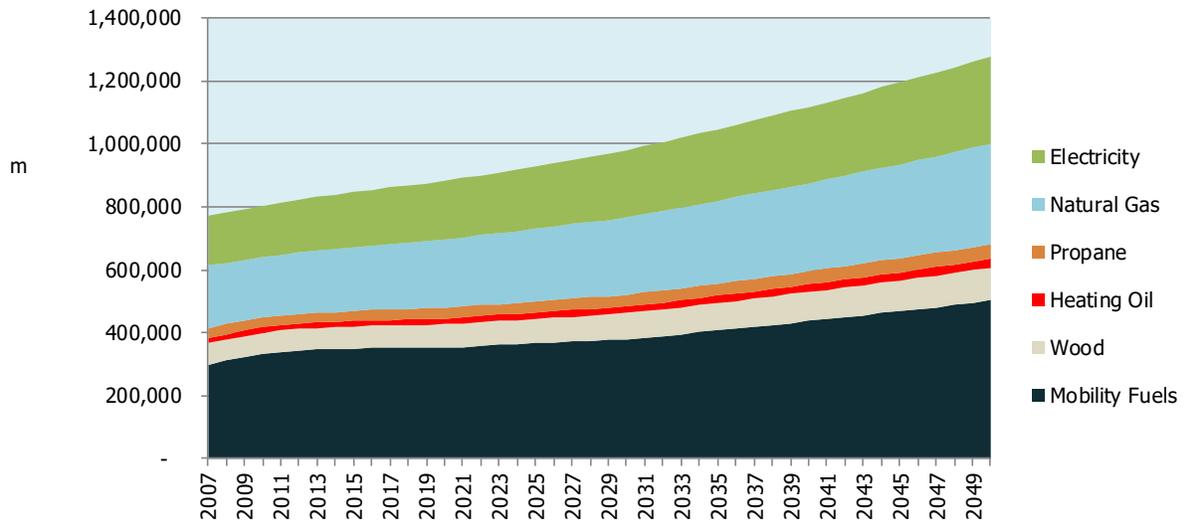


Planned Energy Use by Sector, GJ/year

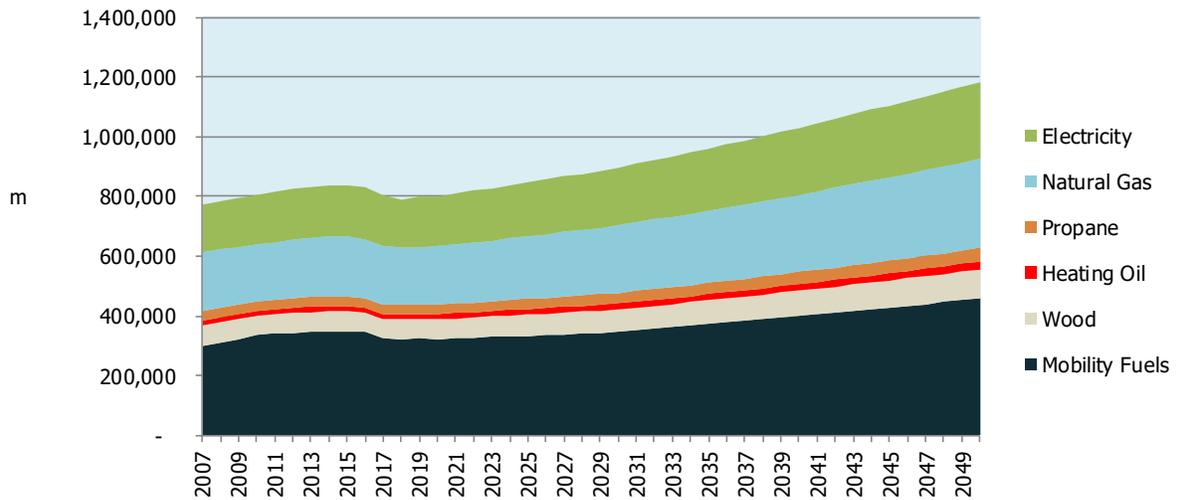


Energy Use by Fuel

BAU Energy Use by Fuel, GJ/year

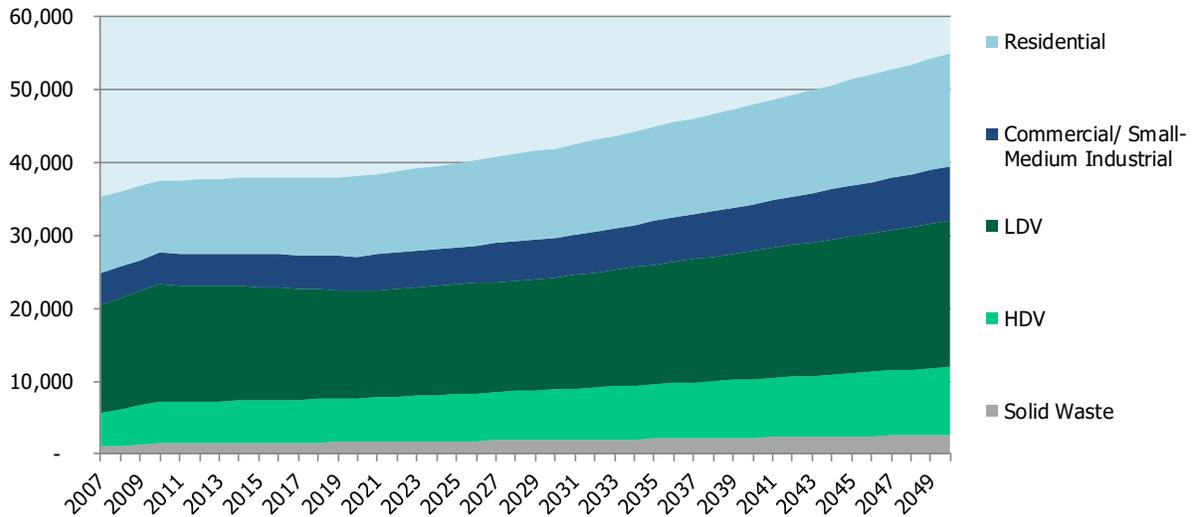


Planned Energy Use by Fuel, GJ/year

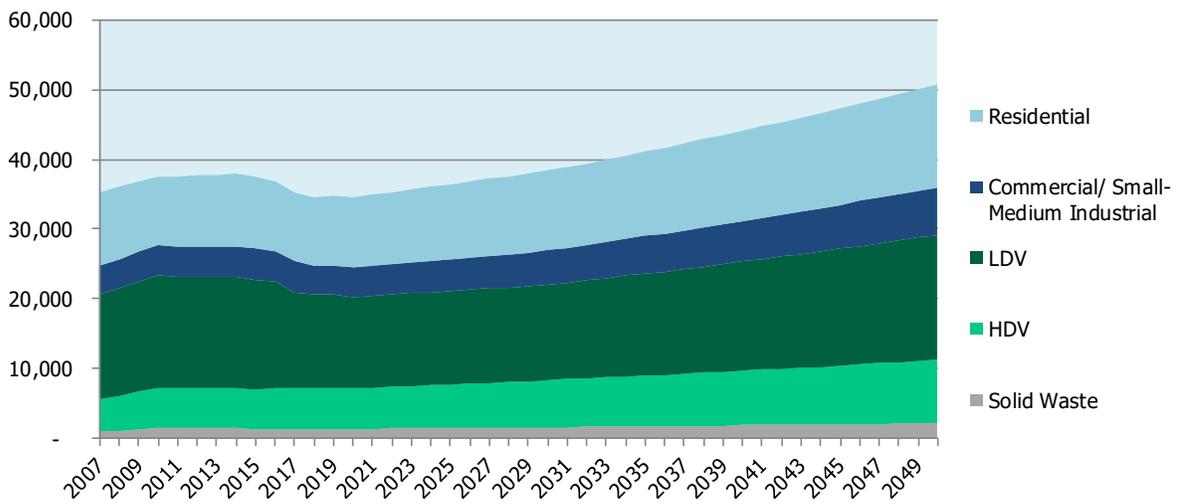


GHGs by Sector

BAU GHGs by Sector, tonnes/year

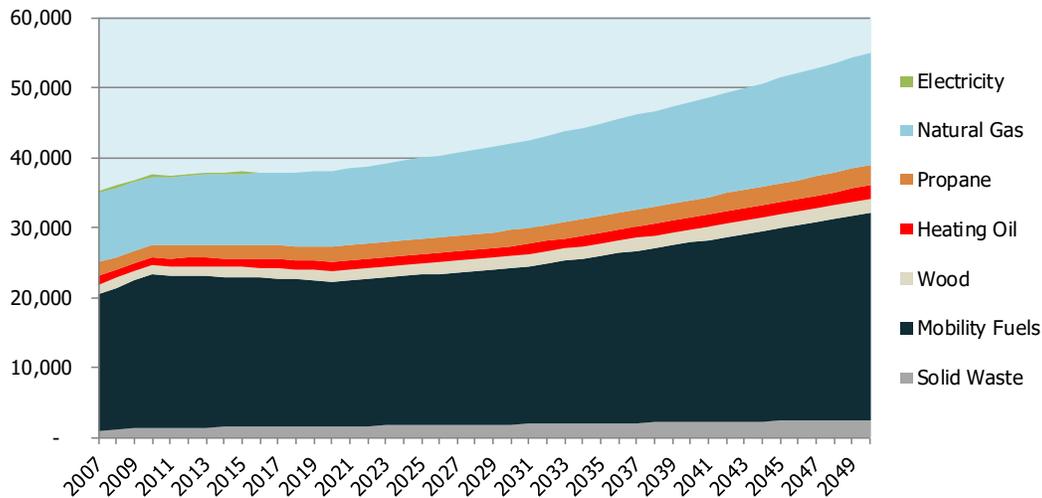


Planned GHGs by Sector, tonnes/year

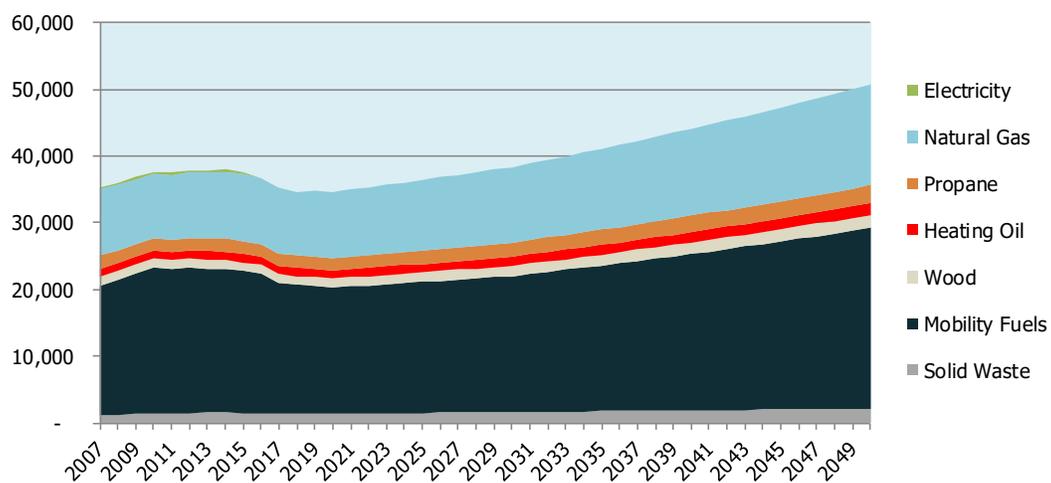


GHGs by Fuels & Waste

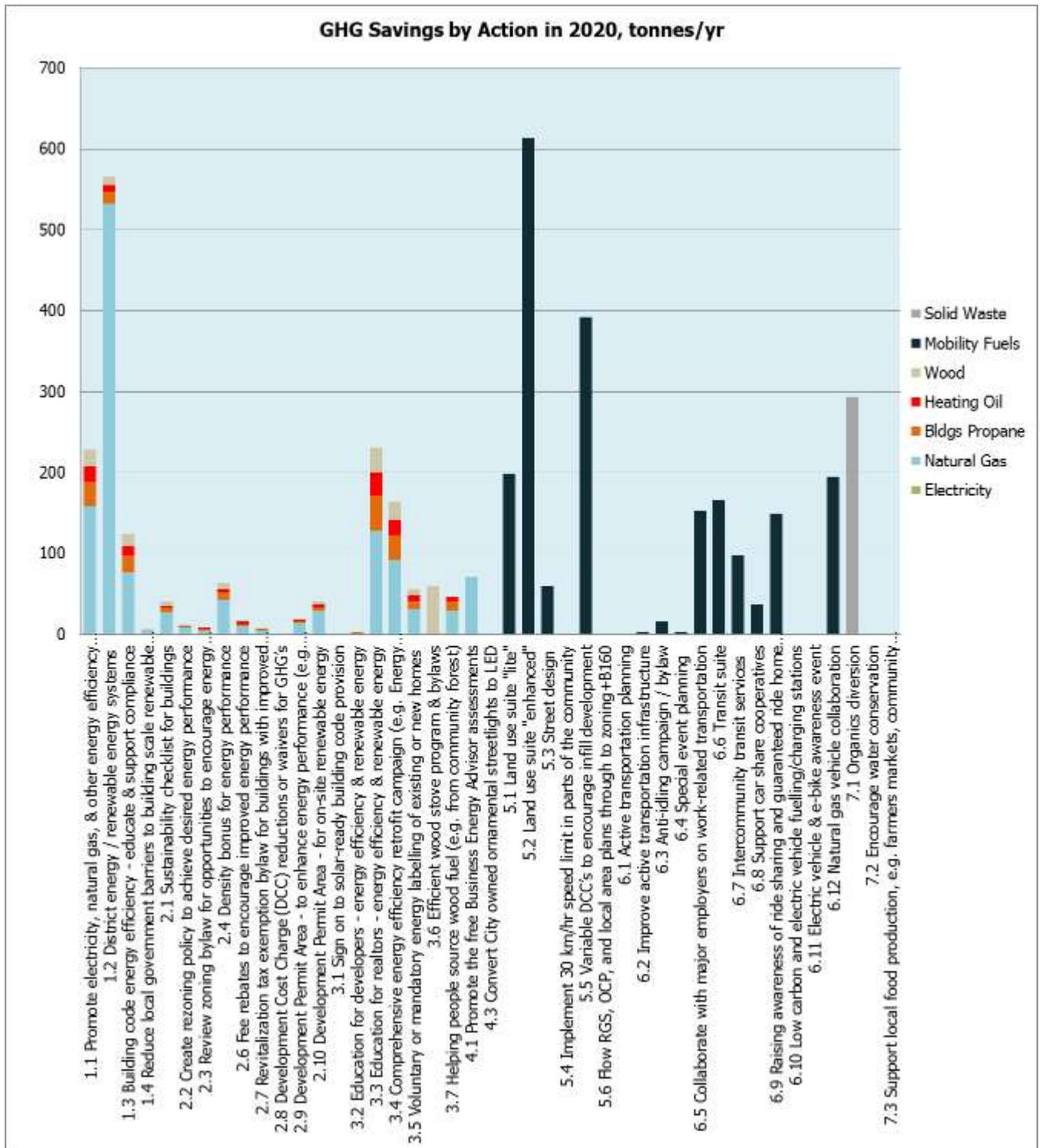
BAU GHGs by Fuels & Waste, tonnes/year

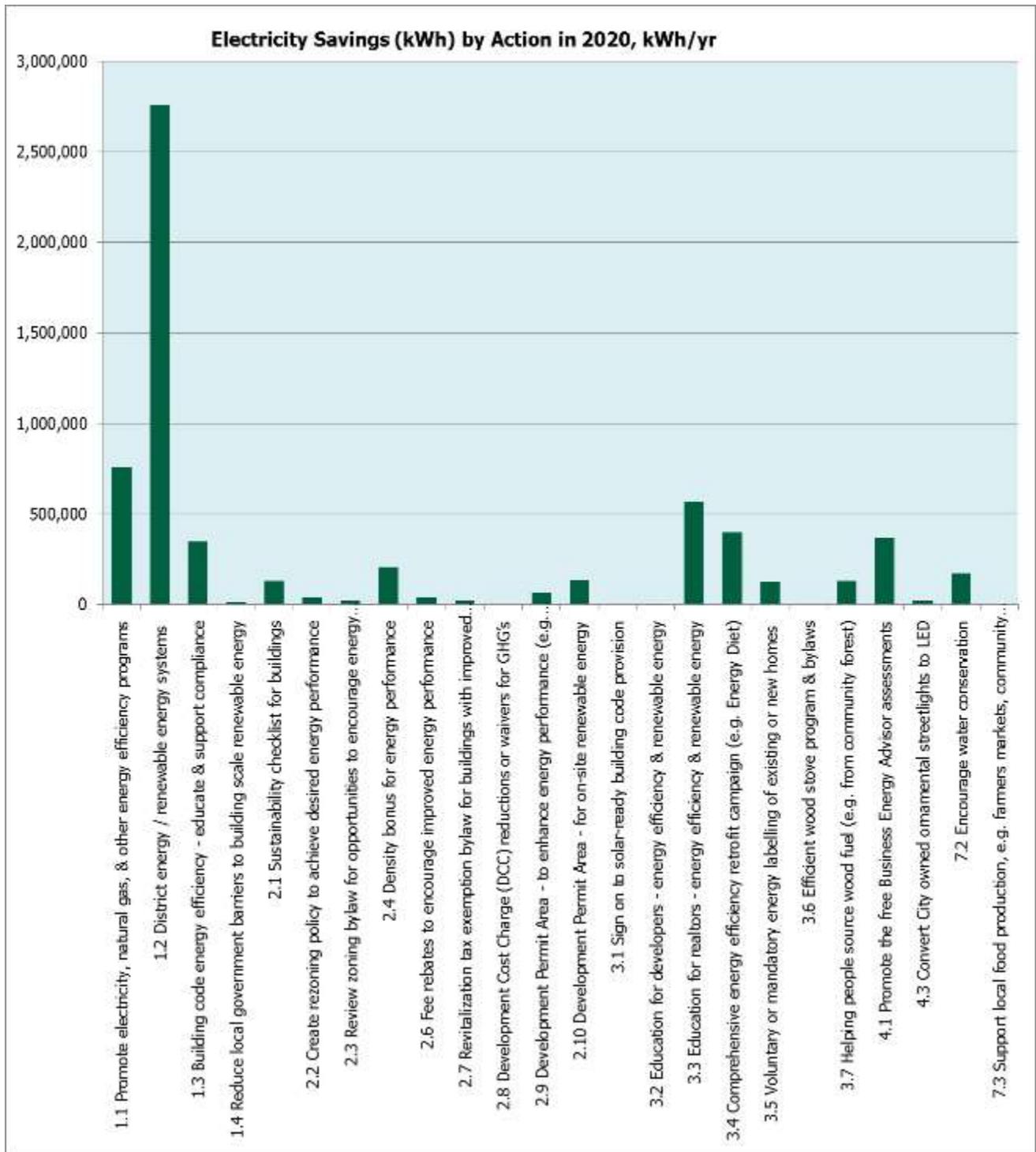


Planned GHGs by Fuels & Waste, tonnes/year



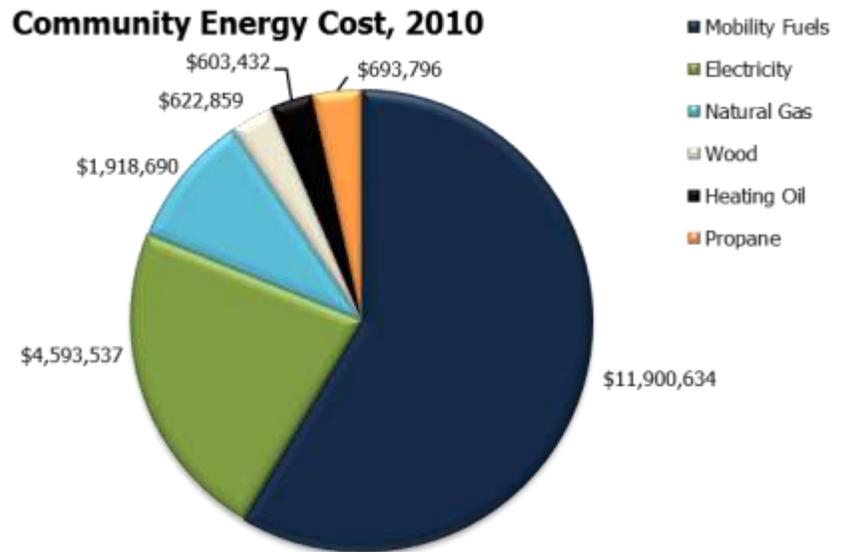
Note that the Province of BC has committed to a carbon-neutral electricity grid by 2016. In the model electricity emissions become zero from 2016 and remain there for the duration of the projected period.



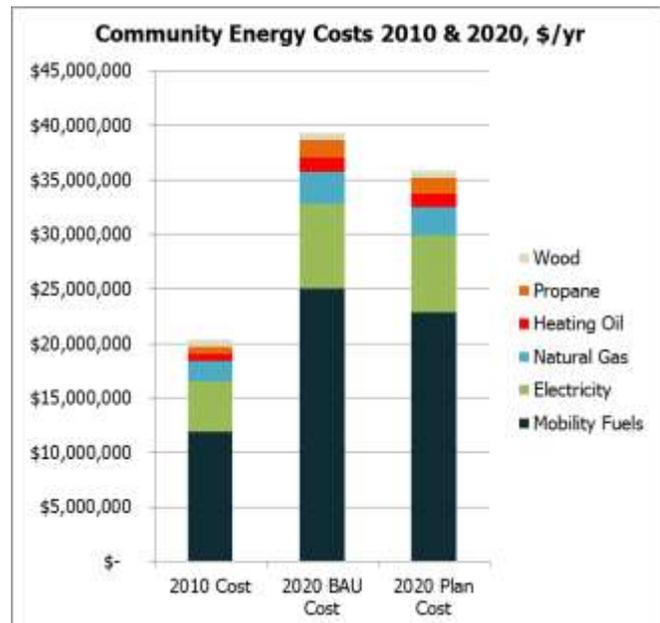


Community Financial Savings

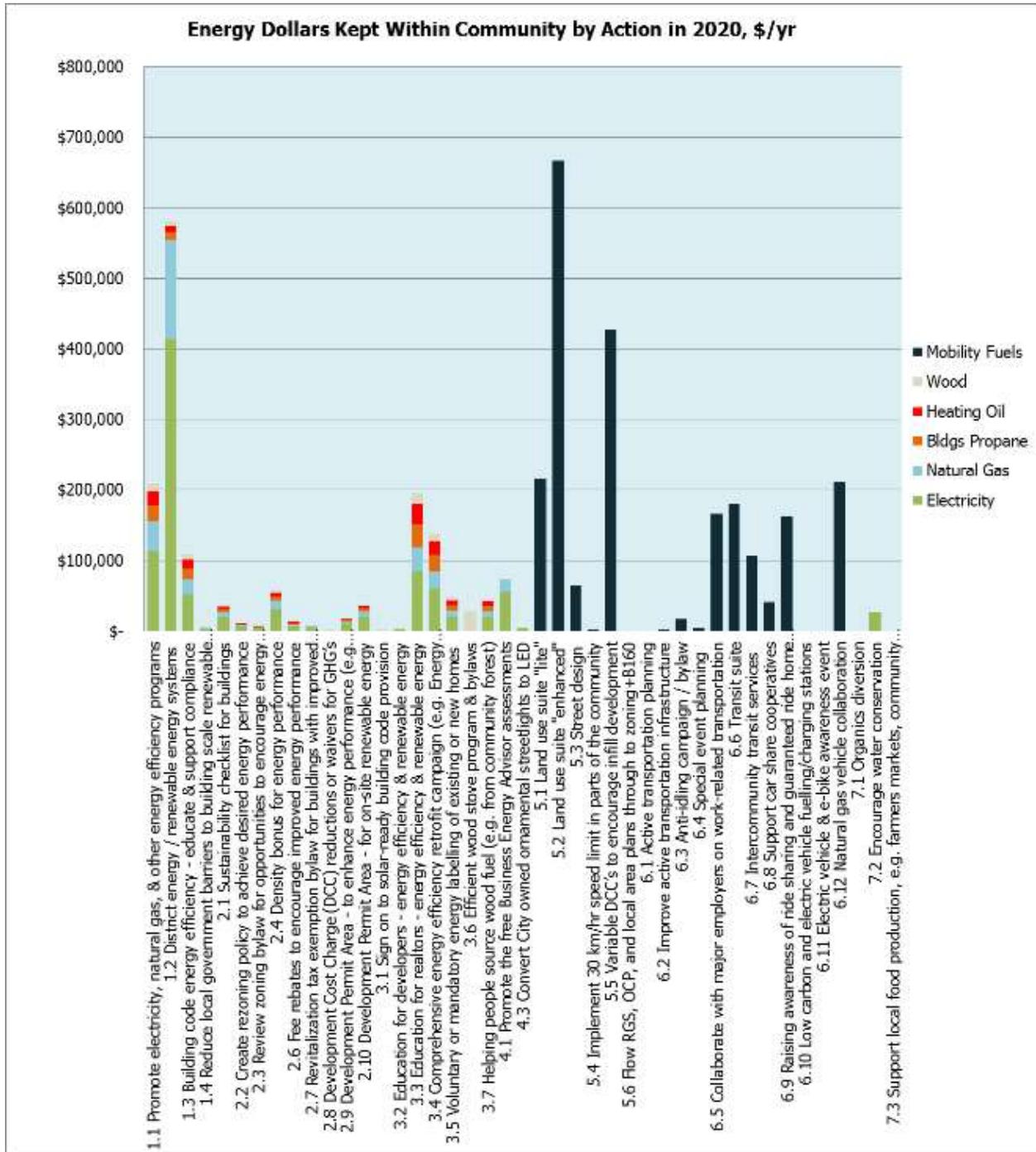
For the Town of Creston, only a small percentage of the energy dollars spent within the community remain within the community. Therefore, a significant co-benefit of implementing this plan to reduce energy consumption and emissions is that reducing the energy dollars spent will help people, families, and businesses to reduce their expenses. In addition, using locally generated energy will help to keep energy dollars local rather than exporting them, just as consumption of local food helps the local economy. The following chart shows the approximately \$20.3 million (\$3,877 per capita) of Creston community energy expenditures made in 2010, split by fuel type.



The impacts of the plan are shown in the following chart, comparing 2010 and 2020. Community energy costs are projected to be reduced by approximately 9% through plan implementation. The model assumes that energy prices will increase to 2020. So, the 9% plan cost reduction equates to about \$3.5 million per year (\$577 per capita). Although energy prices are very difficult to predict, there is confidence that the price of electricity will increase over the next few years.



This chart can be considered against estimates for the level of effort and resources needed to implement each action, for a cost benefit consideration. Note that several actions can have additional benefits, including financial benefits, that are not included in the calculation of “community energy dollars saved” (e.g. implementing land use suite “lite” and “enhanced” can reduce municipal infrastructure capital and operating costs).



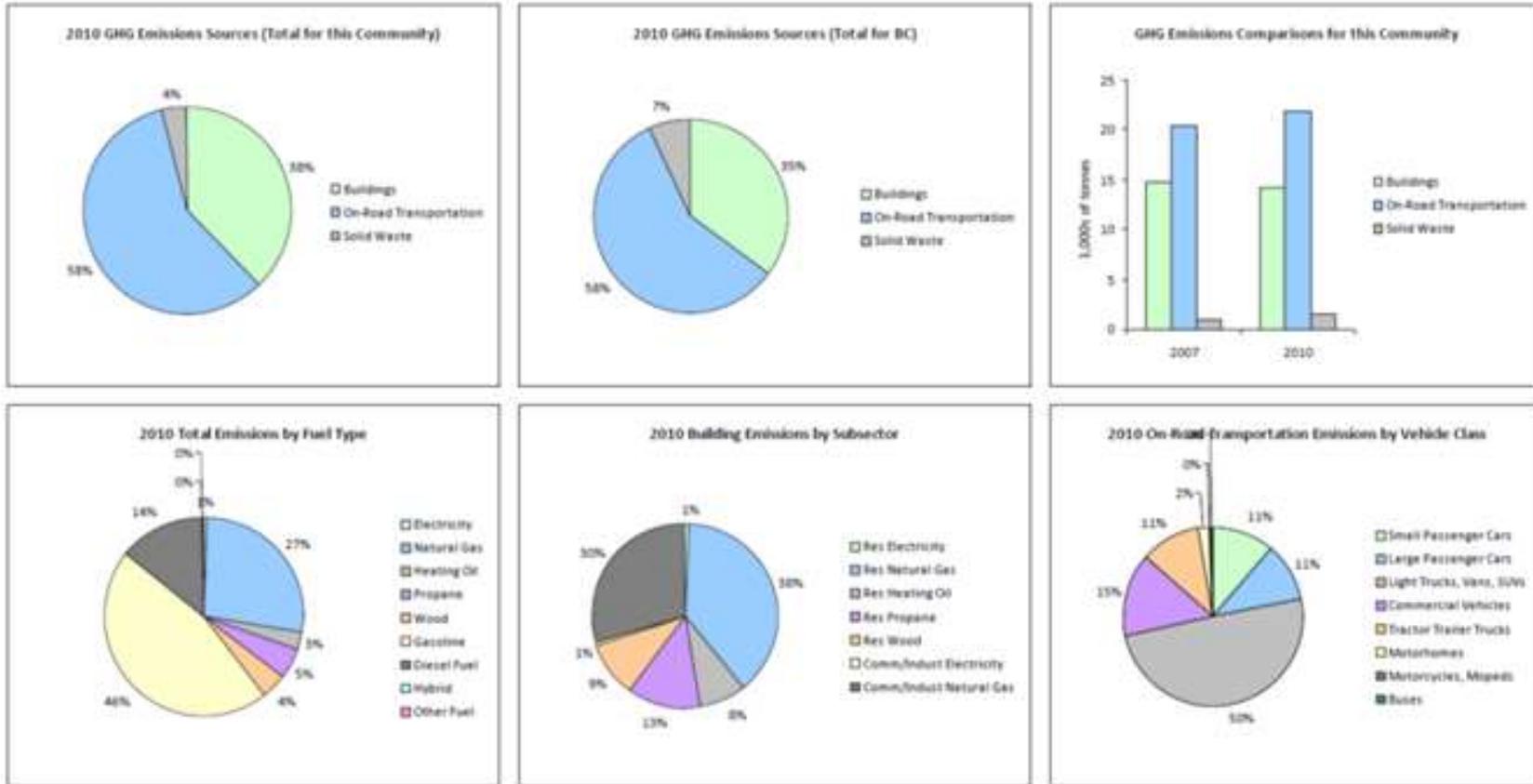
Appendix 1 – 2010 Community Energy & Emissions Inventory for Creston



Creston Town 2010 Community Energy and Emissions Inventory

Page 1 of 7
February 20, 2014

Monitoring and reporting on progress towards greenhouse gas emissions reduction targets





Creston Town
2010 Community Energy and Emissions Inventory
Monitoring and reporting on progress towards greenhouse gas emissions reduction targets

Core Items

On-Road Transportation		2007					2010				
		Connections	Consumption	Avg VKT (km)	Energy (GJ)	CO2e (t)	Connections	Consumption	Avg VKT (km)	Energy (GJ)	CO2e (t)
Small Passenger Cars	Gasoline	747	1,047,051 L	15,000	36,647	2,490	749	1,029,684 L	14,700	36,039	2,314
	Diesel Fuel	36	54,492 L	22,100	2,087	149	38	56,700 L	21,700	2,172	151
	Other Fuel			8,100	21	0					
Large Passenger Cars	Hybrid			18,800	212	15	13	14,356 L	19,400	502	31
	Gasoline	728	1,154,755 L	14,100	40,416	2,742	676	1,032,300 L	13,600	36,131	2,322
	Diesel Fuel			11,600	308	22			12,200	316	22
Light Trucks, Vans, SUVs	Hybrid							23,500	215	15	
	Gasoline	1,623	3,945,023 L	16,600	138,077	9,454	1,886	4,613,801 L	16,900	161,483	10,463
	Diesel Fuel	74	143,315 L	10,900	5,489	389	57	117,951 L	11,800	4,517	310
	Other Fuel	10	21,322 L	12,600	540	33		10,000	343	21	
Commercial Vehicles	Hybrid							23,200	95	6	
	Gasoline	147	456,917 L	18,200	15,992	1,074	197	599,171 L	17,900	20,971	1,341
	Diesel Fuel	182	600,857 L	18,200	23,013	1,616	212	747,136 L	19,700	28,615	1,951
	Other Fuel			12,000	456	27		10,900	201	13	
Tractor Trailer Trucks	Gasoline			31,800	280	19					
	Diesel Fuel	47	700,715 L	34,400	26,837	1,886	50	904,755 L	40,400	34,652	2,363
	Other Fuel			13,400	79	4		11,000	139	8	
Motorhomes	Gasoline	37	104,171 L	19,200	3,646	244	41	113,136 L	19,100	3,960	251
	Diesel Fuel	24	71,324 L	16,400	2,732	192	23	69,953 L	16,100	2,679	183
	Other Fuel							19,700	157	10	
Motorcycles, Mopeds	Gasoline	58	12,261 L	4,600	429	28	76	19,967 L	5,700	699	45
Buses	Gasoline			15,700	456	30			16,600	538	34
	Diesel Fuel			18,000	769	54			16,700	361	25
	Other Fuel			12,600	66	4		9,000	46	3	
Totals		3,713	8,312,203 L	15,921	298,552	20,452	4,018	8,312,203 L	16,211	334,833	21,882





Creston Town
2010 Community Energy and Emissions Inventory
Monitoring and reporting on progress towards greenhouse gas emissions reduction targets

Page 3 of 7
 February 20, 2014

Buildings		2007				2010			
		Connections	Consumption	Energy (GJ)	CO2e (t)	Connections	Consumption	Energy (GJ)	CO2e (t)
Residential	Wood	N/A	68,477 GJ	68,477	1,387	N/A	65,911 GJ	65,911	1,335
	Heating Oil	N/A	17,639 GJ	17,639	1,243	N/A	16,978 GJ	16,978	1,161
	Propane	N/A	31,069 GJ	31,069	1,896	N/A	29,905 GJ	29,905	1,825
	Natural Gas	1,740	116,675 GJ	116,675	5,852	1,736	107,954 GJ	107,954	5,415
	Electricity	2,661	22,465,648 kWh	80,876	135	2,306	23,820,377 kWh	85,753	143
Commercial/Small-Medium Industrial	Natural Gas	261	82,282 GJ	82,282	4,127	250	83,915 GJ	83,915	4,209
	Electricity	428	21,174,576 kWh	76,228	127	392	22,114,889 kWh	79,613	133
Totals		5,090		473,246	14,767	4,684		470,029	14,221

Solid Waste		2007				2010			
		Connections	Consumption	Energy (GJ)	CO2e (t)	Connections	Consumption	Energy (GJ)	CO2e (t)
Community Solid Waste	Solid Waste	0	2,541 t	N/A	1,051	0	3,445 t	N/A	1,446
Totals		0			1,051	0			1,446

Memo Items

Buildings		2007				2010			
		Connections	Consumption	Energy (GJ)	CO2e (t)	Connections	Consumption	Energy (GJ)	CO2e (t)
Large Industrial	Natural Gas	2		0	0	2		0	0
Totals		2		0	0	2		0	0





Creston Town
2010 Community Energy and Emissions Inventory
Monitoring and reporting on progress towards greenhouse gas emissions reduction targets

Totals for Transportation, Buildings and Solid Waste

Fuel Type	2007 (Population: 4,988)			2010 (Population: 5,245)		
	Consumption	Energy (GJ)	CO2e (t)	Consumption	Energy (GJ)	CO2e (t)
Hybrid	0 L	212	15	14,356 L	812	52
Gasoline	6,720,178 L	235,943	16,061	7,408,059 L	259,821	16,770
Diesel Fuel	1,570,703 L	61,235	4,308	1,896,495 L	73,312	5,005
Other Fuel	21,322 L	1,162	68	0 L	888	55
Wood	68,477 GJ	68,477	1,387	65,911 GJ	65,911	1,335
Heating Oil	17,639 GJ	17,639	1,243	16,978 GJ	16,978	1,161
Propane	31,069 GJ	31,069	1,896	29,905 GJ	29,905	1,825
Natural Gas	198,957 GJ	198,957	9,979	191,869 GJ	191,869	9,624
Electricity	43,640,224 kWh	157,104	262	45,935,066 kWh	165,366	276
Solid Waste	2,541 t	0	1,051	3,445 t	0	1,446
Grand Totals		771,798	36,270		804,862	37,549





Creston Town
2010 Community Energy and Emissions Inventory
Monitoring and reporting on progress towards greenhouse gas emissions reduction targets

Supporting Indicators

No new supporting indicator data have been provided in the 2010 reports. Work is currently underway to produce a complete second round of data for the indicators below in the 2012 reports (available in 2014). In the interim, we are including the same supporting indicator data that was provided in the 2007 reports. Feedback is requested on all supporting indicators; please contact us directly at

Housing Type - Private dwellings by structural type

Housing type is important for reducing building-related GHG emissions and energy consumption. A trend toward fewer single family dwellings indicates an increase in residential density, which is known to reduce transportation-related GHG emissions.

	1996		2001		2006	
	Units	%	Units	%	Units	%
Single Detached House	1,585	43	1,575	71	1,695	72
Semi-Detached House	15	0	40	2	55	2
Row House	190	3	135	6	110	5
Apartment, Duplex	130	3	100	5	65	3
Apartment, 5 storeys or higher	0	0	0	0	5	0
Apartment, under 5 storeys	215	6	230	10	320	14
Other Single Attached House	10	0	10	0	10	0
Movable Dwelling	50	1	125	6	90	4

Commute to Work - Employed labour force - by mode of commute

An increase in the number of people choosing to walk, cycle and use transit reduces GHG emissions. More compact, complete, connected communities should see an increase in the use of these transportation modes.

	1996		2001		2006	
	Units	%	Units	%	Units	%
Car, Truck, Van as Driver	1,115	71	1,165	70	1,145	77
Car, Truck, Van as Passenger	70	4	110	7	75	5
Public Transit	10	1	10	1	20	1
Walked	370	23	365	22	245	16
Bicycle	0	0	15	1	10	1
Motorcycle	0	0	0	0	0	0
Taxicab	0	0	0	0	0	0
Other Method	10	1	10	1	0	0

Parks and Protected Greenspace

Parks and protected greenspaces are important for the protection and enhancement of community carbon sinks.

	2009	
	Units	%
National Parks	0	0
Provincial Parks / Protected Areas	0	0
Local Parks	7	1
Agricultural Land Reserve	44	5
Other land use	765	94
Total Parks and Protected Area	7	1
Total Land Area	814	100

* Total is net of Indian Reserves
 ** Quantity of parkland may be underestimated

Residential Density

Increasing residential densities is known to reduce vehicle use resulting in fewer transportation-related GHG emissions. There are many additional benefits from more compact development.

	2009	
	Units	%
National Parks	0	0
Provincial Parks / Protected Areas	0	0
Local Parks	7	1
Agricultural Land Reserve	44	5
Other land use	765	94
Total Parks and Protected Area	7	1
Total Land Area	814	100

* Net of Crown land, parks, Indian Reserves, water features, airports, ALR, waste disposal site





Creston Town
2010 Community Energy and Emissions Inventory
Monitoring and reporting on progress towards greenhouse gas emissions reduction targets

Page 6 of 7
February 20, 2014

This page
intentionally left
blank





Creston Town
2010 Community Energy and Emissions Inventory
Monitoring and reporting on progress towards greenhouse gas emissions reduction targets

Page 7 of 7
 February 20, 2014

Supporting Indicators Under Consideration

Work is currently underway to produce a complete second round of supporting indicators for the 2012 reports (available in 2014). These reports will new data for the five supporting indicators included in the 2007 and 2010 Reports:

- **Housing Type:** Private dwellings by structural type
- **Commute to Work:** Employed labour force - by mode of commute
- **Commute Distance**
- **Residential Density**
- **Parks and Protected Greenspace**

And in addition, the 2012 reports we are working to be able to include:

- **Proximity to Transit**
- **Building Energy Intensity**
- **Building Floor Space**
- **Waste Diversion**

We are continuing to work towards reporting on even more supporting indicators in the future including:

- **Proximity to Services** (e.g. destinations such as grocery store, school, other retail etc.)
- **Transit Ridership**
- **Water Use**
- **Impervious Surface Cover:** % change in impervious surface cover
- **Tree Canopy Cover:** % change in tree canopy cover
- **District Energy:** # and energy output (e.g. buildings connected, energy consumed in GJ or kWh) of district energy systems by energy type e.g. renewable or non-renewable)
- **On-Site Renewable Energy:** # and energy output (in GJ or kWh) from households producing and/or consuming on-site renewable heat (e.g. biomass, solar thermal, geo-exchange) and/or electrical (e.g. solar photovoltaic, small wind, small scale hydro) energy
- **Energy Recovery** from waste energy (GJ or kWh) recovered from waste (e.g. from landfill gas, sewage treatment, industrial operations, farm)

Please give us feedback by contacting us directly at CEEIRPT@gov.bc.ca

Many local governments have been undertaking a significant amount of climate action in both the corporate and community-wide spheres, as demonstrated in both the public reports from the Climate Action Revenue Incentive Program (CARIP) <http://www.cscd.gov.bc.ca/lgd/greencommunities/carip.htm>, and on the <http://toolkit.bc.ca> website. These two resources may be helpful to those who are interested in learning from other BC local governments. The toolkit also contains additional information and resources including decision-support/planning frameworks and tools for undertaking actions to reduce GHG emissions and energy consumption.





Creston Town
2010 Community Energy and Emissions Inventory
Monitoring and reporting on progress towards greenhouse gas emissions reduction targets

Page 8 of 7
 February 20, 2014

This is your local government's 2010 Community Energy and Emissions Inventory (CEEI) Report

What is a CEEI Report?

CEEI Reports are a result of a multi-agency effort to provide a province-wide solution to assist local governments in BC to track and report on community-wide energy consumption and greenhouse gas (GHG) emissions as well as supporting indicators every two years. CEEI Reports are one of the many resources available through the Climate Action Toolkit (<http://www.toolkit.bc.ca>), a web-based service provided through the ongoing collaboration between UBCM and the Province.

Why does my local government need a CEEI Report?

A community energy and GHG emissions inventory can be a valuable tool that helps local governments plan and implement GHG and energy management strategies, while at the same time strengthening broader sustainability planning at the local level. CEEI reports fulfill local governments' Climate Action Charter commitment to measure and report their community's GHG emissions profile, establish a base year inventory for local governments to consider as they develop targets, policies, and actions related to BC's Local Government Act requirements, fulfill Milestone One requirements for those local government members of the Federation of Canadian Municipalities' (FCM's) Partners in Climate Protection (PCP) program, as well as supporting local government efforts to monitor progress towards Regional Growth Strategy objectives.

A first in North America!

CEEI is a first in North America and a first step for BC communities. The 2010 CEEI Reports are based on best available province-wide data. The accuracy and detail of CEEI reports will continue to improve to meet increasing local and provincial government information needs. Improvements have been made from the original draft 2007 CEEI Reports posted in Spring 2009. These include estimates for residential heating oil, propane and wood use, breaking out small from large industrial buildings, including updated land-use change and new agricultural sectors as 'memo items'. Following the 2010 CEEI Reports, inventories will be generated every two years, and will continue to improve as government information needs, international protocols and new data sources emerge.

For More Information

The full list of all BC local government 2010 CEEI Reports, User Guide, Technical Methods and Guidance Document, and additional information on the Supporting Indicators are available at: <http://www.env.gov.bc.ca/cas/mitigation/ceei/index.html> For guidance on target setting and community actions, go to <http://www.toolkit.bc.ca> and <http://www.cd.gov.bc.ca/lgd/greencommunities/targets.htm>

We Need Your Feedback

To continue to guide us on CEEI, please take the time to contact us directly at CEEIRPT@gov.bc.ca

Notice to the Reader

This CEEI Report uses information from a variety of sources to estimate GHG emissions. While the methodologies, assumptions and data used are intended to provide reasonable estimates of greenhouse gas emissions, the information presented in this report may not be appropriate for all purposes. The Province of BC and the data providers do not provide any warranty to the user or guarantee the accuracy or reliability of the data contained in this report. The user accepts responsibility for the ultimate use of such data. We need your help to make these reports better.



Appendix 2 – Actions Descriptions

The descriptions below are taken from the SCEEP Actions Guide.

1. Buildings - Basics

These actions are recommended for all local governments unless there is a compelling reason that a particular measure should not be implemented.

Action	Description
1.1 Promote electricity, natural gas, and other energy efficiency programs	<p>Key Question: This action is recommended unless there is a reason why it cannot be done.</p> <p>Description: FortisBC offers many electricity and natural gas conservation programs. At times, the Federal and Provincial governments also offer energy conservation programs. Local governments can assist in promotion of these programs, increasing awareness and encouraging local participation in residential and commercial sectors (e.g. communicating about PowerSense programs during building permit application processes), so residents and businesses can save electricity and money.</p>
	<p>% Energy Savings Calculation: Commercial = $a*b*c$, Residential = $d*e*f$</p> <p>a. % of commercial customers reached b. % of reached commercial that implement c. average improvement from implementing d. % of residential customers reached e. % of those reached that implement f. average % improvement from implementing</p> <p>Example: $(a*b*c) = (90\% * 5\% * 30\%) = 1.4\%$ (commercial buildings sector) $(d*e*f) = (90\% * 5\% * 30\%) = 1.4\%$ (residential buildings sector)</p>
1.2 District energy / renewable energy systems	<p>Key Question: Is there a source of waste heat (rink, industry, sewer pipes, wastewater treatment plant, ...) near to heat demand (pool, hospital, ...) OR are several public-sector (municipality, regional district, provincial ministry, health authority, school district, ...) facilities located close to each other?</p> <p>Description: Development permit area (DPA) guidelines can be used to require renewable energy systems external to buildings, such as a renewable district energy system. DPA's can enable the maximization of passive solar opportunities. District energy (DE) example: Revelstoke Community Energy Corporation.</p>
	<p>Calculation: Existing Residential = $a*b*c$, New Residential = $a*d*c$ Existing Commercial = $c*f*g$, New Commercial = $e*f*h$</p> <p>a. % of energy used for heating & cooling for residential (77%) b. % of existing residential connected to DE c. % reduction of energy from DE for residential d. % of new residential connected to DE e. % of energy for heating and cooling in industrial/commercial/institutional (ICI) f. % reduction in heating / cooling from DE for ICI g. % of existing ICI connected to DE h. % of new ICI connected to DE</p> <p>Example: Energy improvements in indicated sectors: $(a*b*c) = (77\% * 1\% * 66\%) = 0.3\%$ (existing residential buildings sector) $(a*d*c) = (77\% * 5\% * 66\%) = 2.5\%$ (new residential buildings sector) $(e*f*g) = (63\% * 66\% * 1\%) = 0.4\%$ (existing commercial sector) $(e*f*h) = (63\% * 66\% * 25\%) = 4.2\%$ (new commercial sector)</p>

Action	Description
<p>1.3 Building code energy efficiency - educate & support compliance</p>	<p>Key Question: Would buildings be more energy efficient with enhanced building code enforcement and inspection, and if builders / developers have a better understanding of the code?</p> <p>Description: Greening the Building Code is an ongoing provincial initiative, improving energy performance of new housing.</p> <p>The energy efficiency requirements of the BC Building Code may not be reflected in some buildings due to a lack of knowledge by builders, and limited number of required inspection or enforcement practices.</p> <p>Local governments can help fix this by:</p> <ul style="list-style-type: none"> • Changing building inspection requirements or practices. • Increasing the number of Certified Energy Assessors. • Promoting educational sessions on the BC Building Code to builders / developers in their community. The Homeowner’s Protection Office regularly runs such sessions. <hr/> <p>% Energy Savings Calculation: New Residential = a*b, New Commercial = c*d</p> <p>a. % new residential buildings captured by improved enforcement b. % improvement in new commercial buildings by energy type through better enforcement c. % new commercial buildings captured by improved enforcement d. % improvement in new residential buildings by energy type through better enforcement</p> <p>Example: (a*b) = (80% * 15%) = 12% (new residential buildings) (c*d) = (80% * 5%) = 4% (new commercial buildings)</p>
<p>1.4 Reduce local government barriers to building scale renewable energy</p>	<p>Key Question: What barriers are people aware of for building scale renewable energy systems?</p> <p>Description: Some local governments have barriers in place for building scale renewable energy systems, e.g. exceedingly high fees and requirements for the installation of solar photovoltaic panels in some communities, while minimal fees and requirements in others. The fees and costs for meeting requirements in some communities for solar systems can comprise up to 20+% of the installation cost, acting as a considerable deterrent. Barriers like these can be reduced.</p> <hr/> <p>% Energy Savings Calculation: Residential = a*b, Commercial = c*d</p> <p>a. % of homes that may install solar photovoltaics or other renewable energy systems per year b. % of annual electricity reduction for those properties that will be generated by those systems c. % of commercial buildings that may install solar photovoltaics or other renewable energy systems per year d. % of annual electricity reduction that will be generated by those systems</p> <p>Example: Energy improvements in indicated sectors: (a*b) = (0.1% * 50%) = 0.05% per year (residential buildings sector) (c*d) = (0.1% * 10%) = 0.01% per year (commercial sector)</p>

2. Buildings - Growth Measures

These measures typically have the greatest applicability in communities that are growing or are land-constrained. Communities with a low/no growth rate may also find some measures useful.

Action	Description
<p>2.1 Sustainability checklist for buildings</p>	<p>Key Question: Is the community growing?</p> <p>Description: Developers can be required to complete a sustainability or smart growth checklist as part of development permit or rezoning application processes. The checklist might include, for example, questions about sustainable energy features incorporated into new developments.</p> <p>Checklist measures are not compulsory; the aim of the checklist is to highlight local government sustainability and clean energy objectives, and to educate developers about the potential for including energy efficiency measures or renewable energy technologies in new buildings. A checklist can be combined with other policy tools in order to maximize effect.</p> <hr/> <p>% Energy Savings Calculation: New Buildings = $a*b*c$, Existing Buildings = $d*e*f$</p> <ul style="list-style-type: none"> a. % new buildings exposed to checklist b. % of those in (a) who improve performance c. Average % impact in new buildings by energy type d. % major renovations exposed to checklist e. % of existing buildings doing major renovations f. Average % impact by energy type for major renovations <p>Example: $(a*b*c) = (90%*10%*15%) = 1.4\%$ new buildings $(d*e*f) = (90%* 1%*15%) = 0.7\%$ existing buildings</p>
<p>2.2 Create rezoning policy to achieve desired energy performance</p>	<p>Key Question: Is the community growing?</p> <p>Description: Council can adopt a rezoning policy that encourages developments that are more energy efficient and/or incorporate renewable energy. Any development that requires a rezoning must be approved by Council, which can consider benefits to the community as part of its decision. While the OCP lays out general expectations of the community, Council can also adopt a rezoning policy, which provides a clear statement of attributes that Council will seek in making rezoning decisions. It is important to note that a rezoning policy cannot set requirements for rezoning, because Councillors are required to approach rezoning hearings with an 'open mind.' However, if a development does not meet stated expectations of Council, it is unlikely to be recommended by staff or approved by Council. The rezoning policy must be designed carefully to be legal and effective. Example: Bowen Island Municipality.</p> <hr/> <p>% Energy Savings Calculation: $(a*b*c)$</p> <ul style="list-style-type: none"> a. % new buildings covered by policy b. % of those in (a) who improve performance c. Average % impact in new buildings by energy type <p>Example: $(a*b*c) = (30% * 10% * 30%) = 0.9\%$ for new buildings</p>

Action	Description
<p>2.3 Review zoning bylaw for opportunities to encourage energy performance</p>	<p>Key Question: Is the community growing?</p> <p>Description: Local governments can find opportunities to encourage energy performance through finding opportunities in the zoning bylaw. Example: City of North Vancouver reviewed their zoning bylaw and found a number of ways that better energy performance was unfairly penalized, such as homes that would install significantly greater insulation beyond the BC Building Code.</p> <hr/> <p>% Energy Savings Calculation: (a*b*c)</p> <ul style="list-style-type: none"> a. % new homes covered by policy b. % of those in (a) who improve performance c. Average % impact in new buildings by energy type <p>Example: (a*b*c) = (100% * 5% * 20%) = 1% for new homes</p>
<p>2.4 Density bonus for energy performance</p>	<p>Key Question: Is the community growing?</p> <p>Description: Density bonusing means that a developer may be allowed to build to a higher density than is normally permitted in the zone (in terms of floor space ratio, site coverage or buildings per parcel) in exchange for the provision of amenities. It is possible that this could be used to promote better energy performance, if GHG reduction, energy security, improved air quality and economic benefits from improved energy performance are considered community amenities. Example: the City of North Vancouver has a density bonus for single family homes, duplexes, mid-rise residential, and high rise / mixed use construction.</p> <hr/> <p>% Energy Savings Calculation: (a*b*c)</p> <ul style="list-style-type: none"> a. % new buildings covered by policy b. % of those in (a) that improve performance c. Average % impact in new buildings by energy type <p>Example: (a*b*c) = (25% * 75% * 25%) = 4.7% for new buildings</p>
<p>2.5 Expediting permit approvals to encourage energy performance</p>	<p>Key Question: Is the community growing?</p> <p>Description: Expedited approvals may provide an incentive for developers, depending on how long wait times currently are. Some local governments have found that rather than delay other applications, it is better to ask a developer to pay for staff overtime so that their application can be expedited. Example: District of Saanich</p> <hr/> <p>% Energy Savings Calculation: (a*b*c)</p> <ul style="list-style-type: none"> a. % new buildings covered by policy b. % of those in (a) who improve performance c. Average % impact in new buildings by energy type <p>Example: (a*b*c) = (25% * 10% * 25%) = 0.6% for new buildings</p>

Action	Description
2.6 Fee rebates to encourage improved energy performance	<p>Key Question: Is the community growing?</p> <p>Description: Fee rebates, e.g. on building permit fees, can help to encourage more energy efficient new housing. This incentive can be matched with utility incentives for new housing for improved effectiveness. Examples: District of Invermere, Township of Langley</p>
	<p>% Energy Savings Calculation: (a*b*c)</p> <ul style="list-style-type: none"> a. % new houses covered by policy b. % of those in (a) who improve performance c. Average % impact in new buildings by energy type <p>Example: (a*b*c) = (100% * 10% * 20%) = 2% for new homes</p>
2.7 Revitalization tax exemption bylaw for buildings with improved energy performance	<p>Key Question: Is the community growing?</p> <p>Description: A Revitalization Tax Exemption (RVTE) program may be designed to encourage energy efficient development in a small area (e.g. downtown) or throughout a jurisdiction. This tool could allow property owners to make energy improvements to their property and apply for a tax exemption. The benefit of a RVTE is tied to the property. Example: District of Maple Ridge</p>
	<p>% Energy Savings Calculation: (a*b*c)</p> <ul style="list-style-type: none"> a. % new buildings covered by policy b. % of those in (a) who improve performance c. Average % impact in new buildings by energy type <p>Example: (a*b*c) = (25% * 10% * 25%) = 0.6% for new buildings</p>
2.8 Development Cost Charge (DCC) reductions or waivers, for GHG's	<p>Key Question: Is the community growing?</p> <p>Description: A development cost charge (DCC) reduction or exemption provides financial incentive for developers, with costs directly borne by the local government. Example: City of Penticton</p>
	<p>% Energy Savings Calculation: (a*b*c)</p> <ul style="list-style-type: none"> a. % new buildings covered by policy b. % of those in (a) who improve performance c. Average % impact in new buildings by energy type <p>Example: (a*b*c) = (5% * 5% * 25%) = 0.1% for new buildings</p>
2.9 Development Permit Area (DPA) - to enhance energy performance (e.g. orientation, landscaping)	<p>Key Question: Is the community growing?</p> <p>Description: Communities can use DPA guidelines so that buildings, e.g. in new areas to be developed, are oriented to be south-facing, considerably reducing building energy costs. In addition, DPA guidelines can encourage or mandate water efficient landscaping, helping to reduce water consumption and associated electricity costs.</p>
	<p>% Energy Savings Calculation: (a*b*c)</p> <ul style="list-style-type: none"> a. % new buildings covered by policy b. % of those in (a) who improve performance c. Average % impact in new buildings by energy type <p>Example: (a*b*c) = (10% * 75% * 20%) = 1.5% for new buildings</p>

Action	Description
<p>2.10 DPA - for on-site renewable energy</p>	<p>Key Questions: Is the community growing, and is the community interested in cutting edge policy?</p> <p>Description: Communities can use DPA guidelines to encourage or mandate on-site renewable energy exterior to a building, e.g. district energy pipes, or geoexchange systems.</p>
	<p>% Energy Savings Calculation: (a*b*c)</p> <ul style="list-style-type: none"> a. % new buildings covered by policy b. % of those in (a) who improve performance c. Average % impact in new buildings by energy type <p>Example: (a*b*c) = (10% * 50% * 66%) = 3.3% for new buildings</p>

3. Residential Buildings

The following actions may be applicable to residential buildings.

Action	Description
3.1 Sign on to solar-ready building code provision	<p>Key Question: This action should be considered.</p> <p>Description: The Province of BC has developed a model solar-ready bylaw (link below) http://www2.gov.bc.ca/gov/content/industry/construction-industry/building-codes-standards/the-codes/other-regulations/solar-hot-water-ready that local governments can sign on to and implement in their jurisdictions. This bylaw reduces the cost of installing solar hot water (SHW) after construction at minimal cost at construction time. Domestic hot water is approximately 30% of building energy use. Solar hot water can provide up to 50% - 60% of domestic hot water use cost effectively. Applies to residential only.</p>
	<p>% Energy Savings Calculation: (a*b*c)</p> <ul style="list-style-type: none"> a. % of new residential that is single family b. % of new residential that installs SHW c. Average % reduction on total household fuel use by fuel type from SHW (typically 30% of household energy use is hot water, typical SHW installations cover 50% of domestic hot water) improvements <p>Example: (a*b*c) = (60% * 1% * (30% * 50%)) = 0.1% for new residences</p>
3.2 Education for developers – energy efficiency & renewable energy	<p>Key Question: This action is recommended unless there is a compelling reason not to implement.</p> <p>Description: Developers make key decisions as projects are being developed, that affect the energy performance of buildings over their lifecycle. While some developers pursue high performance buildings and renewable heating/cooling systems, many lack awareness of these systems and view them as increasing cost and risk. Education and showcasing can build awareness that leads to action. Applies primarily to residential development.</p>
	<p>% Energy Savings Calculation: (a*b*c)</p> <ul style="list-style-type: none"> a. % of development community reached b. % of those in (a) who integrate energy improvements into their developments c. Average % impact by energy type of improvements <p>Example: (a*b*c) = (20% * 10% * 20%) = 0.4% for new buildings</p>
3.3 Education for realtors - energy efficiency & renewable energy	<p>Key Question: This action should be considered.</p> <p>Description: Realtors help homeowners with their purchasing decisions, but many lack knowledge of energy efficiency and what EnerGuide or ENERGY STAR® for New Homes ratings are. This is despite the fact that energy costs can be significant for a homeowner, and should be taken into account when considering affordability. This education helps to create consumer demand for energy efficiency, and can also help to set the stage for greater use of these rating systems by a local government. Example: Nanaimo.</p>

Action	Description
	<p>% Energy Savings Calculation: (a*b)</p> <ul style="list-style-type: none"> a. % penetration into housing market b. Average % improvement in energy efficiency <p>Example: (a*b) = (10% * 20%) = 2% for new & existing homes</p>
<p>3.4 Comprehensive energy efficiency retrofit campaign (e.g. Energy Diet)</p>	<p>Key Questions: Are there a lot of existing older homes in the community (built prior to 2006)? Are utility or other incentives sufficient to proceed? And how much effort and resources is the local government, utility, and/or local non-profit able to put in to a campaign?</p> <p>Description: Energy efficiency retrofit campaigns in BC have been very successful in increasing the energy efficiency of the existing housing stock. The most successful campaigns take place at times of high rebate levels from utilities, Provincial or Federal government, and have local government participation as well. CEA has written a comprehensive publication on these campaigns, which can be found here: http://communityenergy.bc.ca/download/947/. It may be worthwhile to still conduct a campaign even when incentive levels are not particularly high, and/or when a local government, utility, or local non-profit cannot put in significant effort or resources towards a campaign. Examples: Rossland Energy Diet, Nelson EcoSave.</p> <hr/> <p>% Energy Savings Calculation: (a*b*c)</p> <ul style="list-style-type: none"> a. % of existing housing stock built before 2006 b. % of those in (a) who are reached through the campaign and incorporate energy improvements c. Average % impact by energy type of improvements <p>Example: (a*b*c) = (75% * 10% * 20%) = 1.5% for existing homes</p>

Action	Description
<p>3.5 Voluntary or mandatory energy labelling of existing or new homes</p>	<p>Key Questions: Are there a lot of existing older homes in the community (built prior to 2006)? And/or could residents benefit from education on energy efficiency?</p> <p>Description: Local governments can encourage or mandate energy labelling of existing and/or new homes.</p> <p>Labelling of new homes can be encouraged or mandated at the point of sale, while for existing homes it can also take place at the point of renovation. Energy labelling can be conducted through EnerGuide ratings, which are the most widely used form of residential energy labelling in Canada, and was developed by Natural Resources Canada.</p> <p>EnerGuide ratings on homes can help a prospective homeowner compare different homes according to their energy efficiency, and thus allows the market to assign a value to this. It also provides encouragement to homeowners and builders to improve energy efficiency. Plus, EnerGuide ratings are educational, they come supplied with reports identifying ways homes can have their energy efficiency improved. The cost for existing homes is \$325 + taxes and travel, and the cost for new homes ranges from \$450-700.</p> <p>Local governments can choose to make this voluntary or mandatory. Voluntary applications should likely include incentives to reduce the cost of EnerGuide ratings in order to improve uptake. Both voluntary and mandatory applications should likely be coupled with education, e.g. for realtors.</p> <p>Example: the City of Vancouver has made EnerGuide ratings mandatory for all homes undergoing renovations with a value of \$5,000 or greater (with some exemptions). Note that the City of Victoria has received a legal opinion which states that local governments have the authority to require energy audits as a condition of obtaining a building permit (existing or new homes), provided it is done by bylaw.</p> <hr/> <p>% Energy Savings Calculation: (a*b*c)</p> <ul style="list-style-type: none"> a. % of houses that will undergo assessments each year b. % of those in (a) that will improve energy efficiency c. Average % impact by energy type of improvements <p>Example: (a*b*c) = (5% * 50% * 20%) = 0.5%, <i>per year</i></p>

Action	Description
<p>3.6 Efficient wood stove program & bylaws</p>	<p>Key Question: Do many residents use inefficient wood fireplaces / stoves?</p> <p>Description: The Provincial Wood Stove Exchange Program encourages residents to change out their older, smoky wood stoves for low-emission appliances — including new CSA-/EPA-certified clean-burning wood stoves. Offered at the community level, the program involves funding and incentives to promote the exchange and replacement of old wood stoves. It also delivers education to help people operate their wood-burning appliances efficiently.</p> <p>In the Skeena region, communities contributed between \$7,000 and \$15,000 to offer their residents extra incentives. In addition, permit fees for installation of new appliances were waived, and additional incentives were established in the form of bylaws requiring mandatory removal of old wood stoves.</p> <p>Also, the City of Duncan has put in place a bylaw whereby any property sold must have wood burning stoves removed if they are not CSA / EPA certified.</p> <p>Many communities also hold workshops on clean & safe operation of woodstoves.</p> <p>Note: assumes increased efficiency of burning, results in less wood being consumed, and has little impact on fossil fuels and GHGs (since wood-burning is considered low carbon).</p> <hr/> <p>% Energy Savings Calculation: (<i>for wood fuel only</i>) = (a*b)</p> <p>a. % of wood-stoves changed as a result of the program b. Average % improvement in efficiency per stove</p> <p>Example: (a*b) = (10% * 40%) = 4% for wood fuel for existing homes</p>
<p>3.7 Helping people source wood fuel (e.g. from community forest)</p>	<p>Key Question: Do many residents struggle to source wood fuel for their stoves, at a reasonable price?</p> <p>Description: In some rural BC communities it can be difficult to source wood fuel for wood stoves, due to restrictions on the use of waste material from the forestry industry. A local government or local non-profit may be able to help people source wood fuel, e.g. if there is a community forest, and using the waste wood from its operations.</p> <hr/> <p>% Energy Savings Calculation: (<i>all building energy types except wood fuel</i>)</p> <p>a. % of people who use the cheaper sourced wood fuel b. % decrease in use of other energy types</p> <p>Example: (a*b) = (5% * 10%) = 0.5% for existing buildings</p>

4. Commercial / Institutional Buildings and Transportation

The following measures apply to the commercial / institutional sector. Note that there are likely other specific opportunities to engage this sector in specific communities.

Action	Description
4.1 Promote the free Business Energy Advisor assessments	<p>Key Question: Are there small and mid-sized businesses that are genuinely interested in conducting energy efficiency upgrades to help eliminate energy waste and improve profitability?</p> <p>Description: Thanks to FortisBC and BC Hydro, free energy efficiency assessments are available for small and mid-sized businesses through the Business Energy Advisor (BEA) program. A BEA can help you understand what your energy-efficiency opportunities are, and show you how to take advantage of rebates and programs. Assessments are focussed on businesses that are genuinely interested in making upgrades. Local governments can promote the BEA program through its channels, e.g. Chamber of Commerce, information with business licence renewals, local newsletter, and website.</p>
	<p>% Energy Savings Calculation: for commercial sector buildings= (a*b)</p> <p>a. % of commercial sector that take up the offer</p> <p>b. % improvement in building energy efficiency as a result of participating in the program</p> <p>Example: (a*b) = (10% * 15%) = 1.5% for existing commercial buildings</p>
4.2 Encourage biomass heating through education or leading by example	<p>Key Question: Is there a local or regional biomass supply that could be used for heating?</p> <p>Description: Buildings heating primarily with propane, heating oil, or in some cases electricity may have a strong financial case for conversion to automated forms of bioenergy such as wood pellet and woodchip. The reasons that some buildings may have not yet converted to wood pellet, despite the substantial cost savings in energy include knowledge and capital costs. Commercial buildings can be excellent candidates. Biomass heating can also have good potential for local economic development, through developing local wood fuel supply chains. Note that modern biomass heating systems are extremely clean burning.</p> <p>Local governments can encourage biomass heating through education or leading by example (biomass installations in local government buildings).</p> <p>Wood Waste 2 Rural Heat (www.woodwastetoruralheat.com) is an unbiased non-profit resource that local governments can draw upon for assistance. In addition, the Community Energy Association has written two comprehensive publications on biomass heating, which can be found here: http://communityenergy.bc.ca/?dln_download_category=heating</p> <p>Further calculations available in "Option 1B: Project Profile Efficient Building Retrofits and Fuel Switching" at the 'how' tab of www.toolkit.bc.ca/carbon-neutral-government.</p>

Action	Description
	<p>% Emissions Savings Calculation = (a*b*c)</p> <ul style="list-style-type: none"> a. % of existing buildings that convert to biomass b. %of building GHG’s associated with space heating c. %of heat load that biomass covers <p>Example: (a*b*c) = (10%*70%*80%) = 5.6%, for commercial buildings</p>
<p>4.3 Convert local government owned streetlights to LED</p>	<p>Key Question: This action is recommended unless there is a compelling reason not to implement.</p> <p>Description: Although this is a corporate action, it is very popular among local governments, and can also be very visible to a community, providing a good example of leading by example. It could help to encourage privately owned outdoor lights to convert to LED as well. Note that in most communities, a portion of streetlights are owned by the utility, and another portion are owned by the local government. At present, it is easier to change local government owned streetlights to LED than utility owned streetlights.</p> <hr/> <p>% Emissions Savings Calculation = (a*b) (electricity only)</p> <ul style="list-style-type: none"> a. % of community commercial electricity consumption associated with local government owned streetlights b. % of reduction in electricity consumption <p>Example: (a*b) = (0.3%*30%) = 0.1%, for commercial electricity</p>

5. Light Duty Vehicle Transportation – Urban Form

Urban form including smart growth and street design offer the greatest single opportunity for many communities to reduce emissions.

Action	Description
<p>5.1 Land use suite lite</p>	<p>Key Question: Recommended for communities wherever politically practical.</p> <p>Description: Designate growth areas and set minimum lot sizes outside growth area; apply mixed-use zoning for downtown. This can preserve the rural character outside of downtown while enabling more residents to live in proximity to services. This can reduce transportation needs while developing areas that are most economically maintained by the local government (rather than sprawling infrastructure). Specific zoning is required for primary and secondary growth areas as well as areas outside the designated growth areas.</p> <p>Conservation covenants (such as through land trusts) may also be considered for agricultural lands or natural habitats.</p> <hr/> <p>% Energy Savings Calculation: for Light Duty Vehicle sector= (a*b*c)</p> <ul style="list-style-type: none"> a. % of community in downtown b. Degree to which the area in (a) exhibits the full implementation of supportive land use c. % reduction in transportation emissions (see Background section for guidance on emissions reduction potential) <p>Example: (a*b*c) = (20% * 20% * 30%) = 1.2% for LDV sector</p>
<p>5.2 Land use suite enhanced</p>	<p>Key Question: Recommended for communities seeking significant GHG reductions</p> <p>Description: This measure extends 'Land use suite lite'. Beyond designating growth areas, urban containment boundaries could be established to further enforce where growth occurs. Also, the type of growth could be further defined through establishing zones for transit-oriented development or pedestrian-oriented development. An industrial/commercial land strategy may also be required to facilitate eco-industrial networking, transit provisioning and mobility.</p> <hr/> <p>% Energy Savings Calculation: for LDV sector = (a*b*c)</p> <ul style="list-style-type: none"> a. % of community covered by program b. Degree to which the area in (a) exhibits the full implementation of supportive land use c. % reduction in transportation emissions (see Background section for guidance on emissions reduction potential) <p>Example: (a*b*c) = (50% * 25% * 30%) = 3.8% for LDV</p>

Action	Description
<p>5.3 Street design</p>	<p>Key Question: This action is recommended for all communities unless there is a reason why it should not be implemented.</p> <p>Description: Reconfigure streets to be 'living streets' / 'complete streets' - including formalizing hierarchy (pedestrian - bike - transit - truck - car). Typically, this is a policy decision, followed by street reconfiguration as streets are regularly scheduled for resurfacing / reconstruction for pavement maintenance or installation of utilities. If new streets are required, design to support a grid pattern.</p> <hr/> <p>% Energy Savings Calculation: for LDV sector = (a*b*c)</p> <ul style="list-style-type: none"> a. % of community covered by program b. Degree to which the area in (a) exhibits the full implementation of supportive land use c. % reduction in transportation emissions (see Background section for guidance on emissions reduction potential) <p>Example: (a*b*c) = (5% * 25% * 30%) = 0.4% for LDV</p>
<p>5.4 Implement 30 km/hr speed limit in parts of the community</p>	<p>Key Question: Is a 30km/hr speed limit feasible in parts of the community?</p> <p>Description: A 30km/hr speed limit helps to make the community safer and more appealing for pedestrians and cyclists. It also improves accessibility around the community for people of all ages. Examples: Rossland, Wells, Summerland, Penticton</p> <hr/> <p>% Energy Savings Calculation: for LDV sector= (a*b*c)/d</p> <ul style="list-style-type: none"> a. Number of walking/cycling trips per year b. % of trips that would have been by car c. average walking/cycling trip length d. Total LDV vehicle kilometers travelled (VKT) (estimation can be derived from CEEI data) <p>Example: (a*b*c)/d = (36,500 * 20% * 1.5) / 200,000,000 = 0.01% LDV emissions</p>
<p>5.5 Variable Development Cost Charges (DCC's) to encourage infill development</p>	<p>Key Question: Is the community growing?</p> <p>Description: Some communities have flat DCC's, however real infrastructure costs can vary based on where a new building or development is located. Infrastructure costs for infill development (e.g. using existing roads and streetlights) may be much lower than for development in an outlying area. This could help encourage development near existing infrastructure, and discourage sprawl, reducing vehicle emissions.</p> <hr/> <p>% Energy Savings Calculation: (a*b*c)</p> <ul style="list-style-type: none"> a. % new developments covered by policy b. % of those in (a) who locate closer to existing infrastructure c. Average % reduction in trip distances achieved <p>Example: (a*b*c) = (100% * 10% * 25%) = 2.5% reduction in vehicle emissions</p>

Action	Description
<p>5.6 Flow RGS, OCP, and LAP through to zoning</p>	<p>Key Question: Recommended for all communities.</p> <p>Description: It is important to flow climate and energy-related statements from the RGS or OCP through to local area / neighbourhood plans and zoning. Often good statements in the RGS/OCP just need to be implemented all the way through in a rigorous way.</p>
	<p>% Energy Savings Calculation: N/A – depends on OCP policies.</p>

6. Vehicle Transportation – Infrastructure & Collaboration

Action	Description
<p>6.1 Active transportation planning</p>	<p>Key Question: This action is recommended for all communities considering transportation demand management.</p> <p>Description: Active transportation planning processes can lead to future policy and infrastructure changes. A number of communities have researched, developed and planned active transportation initiatives through funding grants offered by the Built Environment and Active Transportation (BEAT) initiative of the BC Recreation and Parks Association (BCRPA) and UBCM. Many of these communities are small yet have started ambitious active transportation plans. Such programs can kick-start a transportation demand management (TDM) program for small or mid-size communities, especially those with little or no public transit.</p>
	<p>Calculation: N/A - this is a planning process which will not produce direct results itself, but may lead to projects that will produce savings.</p>
<p>6.2 Improve active transportation infrastructure</p>	<p>Key Question: Are there major trip destinations (commercial services, schools, hospital, employers, etc.) less than 3km from a significant number of residences for walking, and within 5-8km for cycling?</p> <p>Description: Local governments can easily promote walking. Walking is suitable for trips in small and mid-size communities where distances in town are short. Most people can walk a kilometre in 10 minutes and can walk for 30 minutes, or approximately 3 km, during good-weather months. It is reasonable to target distances of 3 km or less for the promotion of active transportation (if combined with strategies to change people’s perception of the time and effort it takes to walk).</p> <p>Cycling is perhaps the fastest way to make a trip of less than 5 km. It is reasonable to target distances of 5 to 8 km for cycling in an active transportation strategy. Cyclists travelling 8 km or more value shower facilities at their final destination, and all cyclists value safe, secure storage for their bikes. These facilities can be installed at various sites of employment in a community, such as public institutions, businesses and regional district or municipal offices. A major barrier to increasing the number of cycling trips to workplaces is lack of secure bike lock-ups and change-room facilities. Requiring these basic facilities can be made part of the development process through a community’s planning bylaw.</p> <p>Online tools and guidance to estimate the demand for bike routes is available. In BC, it is estimated that 2% of all trips are by bike as a default.</p> <p>Other important parameters include percentage of cyclists using the bike route that would otherwise have driven, and average bike trip length. Where locally-specific data are not available, the following benchmarks may be used:</p> <ul style="list-style-type: none"> • % of non-recreational cyclists who would have driven, if they were not cycling: 50%. • Average BC cycling commuter distance: 5km each way, 10km return trip.

Action	Description
	<p>% Energy Savings Calculation: for LDV sector= $(a*b*c)/d$</p> <ul style="list-style-type: none"> a. Number of active transportation trips/year b. % of trips that would have been by car c. average trip length d. Total LDV vehicle kilometers travelled (VKT) (estimation can be derived from CEEI data) <p>Example: $(a*b*c)/d = (36,500 * 25% * 4) / 200,000,000 = 0.02\%$ LDV emissions</p>
<p>6.3 Anti-idling campaign / bylaw</p>	<p>Key Question: Do a significant number of people idle vehicles in the community?</p> <p>Description: Natural Resources Canada has the position that idling for over 10 seconds uses more fuel, costs more money, and produces more CO₂ emissions than restarting your engine. There can also be substantial air quality savings.</p> <p>Many communities in BC have bylaws in place that prohibit idling at certain times of the year in certain places. Good places to target may be at schools and nurseries, in order to help protect the health of children. Outside the municipal office can also help to set a good example, and can be an easy place to enforce.</p> <p>Northern Rockies Regional Municipality has an innovative approach, using a carrot rather than a stick to encourage people not to idle. The municipality runs a campaign called "Idle-less October" in Fort Nelson, with sweet treats left on the windshields of non-idling vehicles and labels saying "Thank you for not idling!".</p> <hr/> <p>% Energy Savings Calculation: for LDV sector = $(a*b)$</p> <ul style="list-style-type: none"> a. Estimated LDV fuel consumption from idling b. Estimated reduction from anti-idling activities <p>Example: $(a*b) = (1% * 10%) = 0.1\%$ LDV emissions</p> <hr/> <p>% Energy Savings Calculation: for LDV sector = $(a*b*c)/d$</p> <ul style="list-style-type: none"> c. Number of cycling trips/year d. % of trips that would have been by car e. average cycling trip length f. Total LDV vehicle kilometers travelled <p>Example: $(a*b*c)/d = (36,500 * 30% * 5) / 200,000,000 = 0.03\%$ LDV emissions</p> <p>This calculation methodology is only relevant where bicycle facilities are constructed on commuter routes, or to other major destinations to which people travel by car. Recreational bike paths will not lead to a reduction in emissions, and may even lead to an increase in emissions, since people may drive to them.</p>

Action	Description
<p>6.4 Special event planning</p>	<p>Key Question: Are large special events planned?</p> <p>Description: Local governments often promote transit for transportation to major community or sporting events in their area. There are direct benefits to having people try alternative modes of transportation during large events. Experience has shown that people will be more likely (at worst, less reluctant) to use transit after having a good experience at a special event. This was the case in Victoria in 1994 when a 12-day major sporting event saw record modal splits for transit (50% and up), which set the stage for an impressive five-year growth in ridership.</p> <hr/> <p>% Energy Savings Calculation: for LDV sector = (a*b*c)</p> <p>a. % of LDV travel associated with travel to/from event b. % of travel population in (b) affected by action c. Average % reduction in vehicle kilometers travelled by population in (c)</p> <p>Example: (a*b*c) = (1% * 20% * 10%) = 0.002% LDV sector</p>
<p>6.5 Collaborate with major employers on work-related transportation</p>	<p>Key Question: Is there a major employer(s) in the community?</p> <p>Description: Collaboration with major employers such as industries, schools and hospitals can uncover opportunities to reduce commuting-related transportation emissions.</p> <p>UVic achieved a 27% reduction in campus parking during a 30% growth in student population and major new building activity in the past 16 years. Single-occupant vehicle traffic to campus plunged from 58% in 1992 to 37.5% in 2008, while parking rates soared from minimally priced to market-rate priced.</p> <hr/> <p>% Energy Savings Calculation: for LDV sector = (a*b*c)</p> <p>a. % of LDV travel associated with travel to/from employer/institution b. % of travel population in (a) affected by action c. Average % reduction in vehicle kilometers travelled by population in (b)</p> <p>Example: (a*b*c) = (10% * 50% * 20%) = 1.0% LDV emissions</p>

Action	Description
<p>6.6 Transit suite</p>	<p>Key Question: Are there major trip destinations beyond 8km that are not sufficiently served by transit?</p> <p>Description: There are 82 transit systems serving 50 communities in BC. Three types of transit service are operated through BC Transit: conventional transit, paratransit and custom transit.</p> <ul style="list-style-type: none"> • Conventional transit serves the general population using mid-size, large or double-decker buses with fixed routes and fixed schedules. Most buses are fully wheelchair accessible, with door ramps that lower. • Paratransit offers small-town, rural and suburban areas flexible routing and schedules for passengers using minibuses, taxis and vans. Many paratransit systems offer trips beyond their immediate community one or more days a week. • Custom transit serves those who cannot use conventional transit because of a disability. It operates vans and minibuses for dial-a-ride, door-to-door handyDART service. Service is also offered through contracted Taxi Supplement and Taxi Saver (discounted coupon) programs. <p>Many factors affect transit deployment, key ones being residential density and form.</p> <hr/> <p>% Energy Savings Calculation: for LDV sector = (a*b)</p> <p>a. % of population affected by transit measures (within approx. 400 meters of stops) b. Average % reduction in vehicle kilometers traveled for population in (b)</p> <p>Example: = (20% * 5%) = 1% LDV emissions</p>
<p>6.7 Intercommunity transit services</p>	<p>Key Question: Is there significant inter-community travel?</p> <p>Description: While trips between BC communities have typically relied on the private automobile, there are publicly funded transportation links between many communities, some covering distances of several hundred kilometres. These transportation links are usually established for a specific purpose and are not well known or publicized. The transit link between Vernon and UBC Okanagan in Kelowna is a key example, providing a long-distance transit link from one community to a post-secondary institution in another community. This practice is not common in small or mid-size communities and could be more widely implemented.</p> <p>Health Connections is a provincially funded program to address regional travel needs for rural residents who must travel long distances to access specialized nonemergency medical services. Regional health authorities have full discretion in how they seek to deliver this service. Service restrictions vary region to region, but many include intercommunity bus services.</p> <p>The Interior Health Authority provided an estimated 25,000 rides in 2008, with 35% of trips being medical in nature. Within the 200,000-square-kilometre Interior health region, encompassing the East Kootenay, Kootenay-Boundary, Okanagan and Thompson Cariboo Shuswap areas, these trips are a largely untapped resource for the area’s 700,000-plus residents. Few people know about this service because it is not well advertised outside of doctors’ offices and the medical community. Promoting these services is an opportunity for local governments.</p>

Action	Description
	<p>% Energy Savings Calculation: for LDV sector = (a*b*c)</p> <ul style="list-style-type: none"> a. % of population affected by inter-community transit b. % of VKT related to inter-community travel c. % of LDV trips avoided <p>Example: = (60% * 10% * 10%) = 0.6% LDV emissions</p>
<p>6.8 Support car share cooperatives</p>	<p>Key Question: Is there a sizeable population within walking distance of a potential shared vehicle?</p> <p>Description: Car cooperatives help people to become single car families, or even live in a community without owning a vehicle. This in turn can help to reduce the number of vehicle trips taken. Local governments can support car co-ops by providing them with free parking, and also enacting bylaws reducing the parking requirement for residential developments near a car share co-op space. Examples: Kootenay Carshare Coop, Okanagan Carshare Coop, MODO (Vancouver).</p> <hr/> <p>% Energy Savings Calculation: for LDV sector = (a*b*c)</p> <ul style="list-style-type: none"> a. % of population near potential car share co-op space b. % of (a) that would use the service c. % reduction in their LDV trips <p>Example: = (50% * 5% * 10%) = 0.3% LDV emissions</p>
<p>6.9 Raising awareness of ride sharing and guaranteed ride home programs</p>	<p>Key Question: Are there major trip destinations beyond 8km that are not sufficiently served by transit?</p> <p>Description: Carpooling is a simple way for local governments to begin TDM while saving money, reducing congestion and conserving energy along the way.</p> <p>Founders of the Kootenay Carshare Coop set up a ride-sharing system for longer-distance intercommunity travel where rides could be offered or sought for travel between communities. This ride-matching service is now run by the Kootenay Rideshare and is undergoing expansion; details can be found at www.kootenayrideshare.com.</p> <p>"With car sharing as a choice, Car Co-op members drive much less (1400 km/year) than the average driver (6000-24,000 km/year) in the Lower Mainland." Source: Cooperative Auto Network. (75%-94% reduction but much of this cannot be directly attributed to a coop.)</p> <p>Other ride sharing services exist, including Hitch Planet, Jack Bell, and people posting messages on websites such as Kijiji.</p> <p>Local governments can promote these services.</p> <hr/> <p>% Energy Savings Calculation: for LDV sector= (a*b)</p> <ul style="list-style-type: none"> a. % of population affected by ride-share b. Average % reduction in vehicle kilometers traveled for population in (b) <p>Example: = (10% * 10%) = 1% LDV emissions</p>

Action	Description
<p>6.10 Low carbon and electric vehicle fuelling / charging stations</p>	<p>Key Question: Can adequate resources be allocated to implement these recommended actions?</p> <p>Description: Low carbon and electric vehicles can play a significant role in reducing emissions from light duty (passenger) vehicles. Local governments can play an enabling role in this transition. Measurement may be difficult, but without this suite or a similar one, the local transition to low carbon and electric vehicles may be delayed by many years.</p> <p>Battery electric vehicles may be appropriate in some communities, with current models that travel on highways and can travel for over 100km. In other areas, plug-in-electric-hybrids (PHEV) may be a more practical option. With PHEVs, most travel within the community can be done on electricity and the gasoline engine can provide power to the batteries for extended highway driving. Some models have an option to heat the cabin up before unplugging.</p> <p>There are several specific actions all local governments can take to prepare for low carbon and electric vehicles.</p> <ul style="list-style-type: none"> • Sign on to provincial 'EV-Ready' bylaw if & when it is available. Analysis indicates 80% of charging will be done at home. • Include EV charging infrastructure in sustainability guidelines • Ensure permitting processes (for renovations particularly) are set up to smoothly address electric vehicle charging infrastructure • Consider low carbon vehicles (see action 4.3) and electric vehicles for the local government fleet to demonstrate the viability of the technology • Set up charging stations at highly visible locations, preferably where there are many amenities (e.g. downtown) <p>For higher growth communities, a requirement for alternative fuelling could be established for new gas stations. Surrey City Council passed an innovative new fuel initiative. All new service stations in Surrey will be required to provide at least one alternative fuel source, such as hydrogen, compressed natural gas, or electric vehicle recharging, in addition to conventional gasoline, diesel and propane energy.</p> <hr/> <p>% Emissions Savings Calculation: N/A – unqualifiable at this time, however given national and international projections, with supportive measures as outlined above, electric vehicles (split between PHEV and battery electric vehicles) could comprise up to 2% of passenger vehicles on the road by 2020.</p>
<p>6.11 Electric vehicle & e-bike awareness event</p>	<p>Key Question: Are there electric vehicles in or near the local community, e.g. being sold by local businesses?</p> <p>Description: Public curiosity on electric vehicles can be very high. A recent event in Kelowna run by a volunteer organization attracted approximately 100 people. Many people are unfamiliar with electric vehicles, electric scooters, and electric bikes, and could benefit from learning more about them and how they could be applied to their life. Electric vehicles have much cheaper running costs than conventional gasoline vehicles, and can help people save money.</p> <hr/> <p>% Emissions Savings Calculation: N/A – unqualifiable at this time</p>

Action	Description
<p>6.12 Natural Gas Vehicle Collaboration</p>	<p>Key Question: Are there heavy-duty fleets that could refuel where local government fleets refuel?</p> <p>Description: Gasoline and diesel have approximately 140% of the emissions per unit of energy as natural gas. Natural gas refuelling stations need a critical mass of return-to-base heavy duty vehicles (often ten or more) to be viable. The local government may have some fleet vehicles that could be converted to natural gas from diesel to meet its carbon-neutral operations commitments. Collaborating with other local return-to-base fleets (such as BC Transit, school board, waste haulers, and commercial operators) could provide the critical mass to make a refuelling station viable. This can lower the emissions from all of the participating entities. Example: BC Transit buses in Kamloops and Nanaimo, and School District 23 (Central Okanagan) school buses.</p> <p>Further calculations available in "Option 1A: Project Profile Low Emissions Vehicles" at the 'how' tab of www.toolkit.bc.ca/carbon-neutral-government.</p> <hr/> <p>% Energy Savings Calculation = (a/b)*c, where:</p> <ul style="list-style-type: none"> a. Number of heavy duty vehicle-kilometers traveled from vehicles converting to natural gas b. Total number of heavy duty vehicle-kilometers traveled c. % difference in emissions from original configuration to natural gas configuration (efficiency and carbon intensity) <p>Example: (a/b)*c = (10,000/100,000) * 30% = 3% of emissions from existing heavy duty commercial vehicles</p>

7. Waste

Action	Description
<p>7.1 Organics diversion</p>	<p>Key Question: Is a significant amount of organics going to landfill that could be economically diverted?</p> <p>Description: GHG emissions from landfills are primarily from the decomposition of buried organics. Create a comprehensive composting program:</p> <ul style="list-style-type: none"> • Encourage grass swapping and back-yard composting. • Create a public compost pick-up site and program. • Support existing and new capacity for reusable resources, including Free Swaps, Share Sheds, free-store for unwanted goods, and building materials depot. <p>Organics make up approximately 43 percent of solid waste in Metro Vancouver according to the Recycling Council of BC, which also states that on average, each British Columbian generates over 600 kilograms of waste annually. By diverting organics, each of us has the opportunity to remove approximately 200 kilograms from the solid waste stream every year. Much of this “waste” can be turned into valuable compost that can be used on gardens and landscaping. Example: City of Kelowna landfill producing GlenGrow and OgoGrow.</p> <p>Further calculations available in “Option 1D: Project Profile Household Organic Waste Composting” at the ‘how’ tab of www.toolkit.bc.ca/carbon-neutral-government</p> <hr/> <p>% Energy Savings Calculation for municipal solid waste sector: = (a – c)*b</p> <p>a. % of landfill GHG’s from organics b. % of organics diverted annually c. Average % of emissions over planning period (to 2050?) from organics currently in landfill under BAU scenario</p> <p>Example: (a –c)*b = (80% - 25%) * 10% = 35% waste emissions</p>
<p>7.2 Encourage water conservation</p>	<p>Key Question: Could the community benefit if water consumption was reduced?</p> <p>Description: Many BC communities could benefit if water consumption was reduced. Reduced water consumption could reduce City operations costs (including energy costs) for treatment and pumping. Growing communities can defer the need for new capital investment. And communities in water challenged areas can greatly benefit through ensuring water supplies are more secure.</p> <p>Communities can encourage water conservation through many means, including restrictions on garden watering in summer, public education, water metering, and providing rebates. Regarding rebates, communities can partner with utilities in order to reduce the purchase cost of energy and water efficient appliances in their communities.</p> <p>Example: over a few years, the City of Fort St John ran a highly successful toilet rebate program, managing to exchange over 3,500 old toilets, saving 87 million litres of water over 2009. The City said this deferred the need for reservoir expansions, and saved millions of dollars.</p>

Action	Description
	<p>% Emissions Savings Calculation = (a*b) (electricity only)</p> <p>a. % of community commercial electricity consumption associated with water and wastewater treatment and pumping (8% for Cache Creek, 6% for Lumby)</p> <p>b. % of reduction in electricity consumption</p> <p>Example: (a*b) = (7%*10%) = 0.7%, for commercial electricity</p>
<p>7.3 Support local food production, e.g. farmers markets, community gardens, community greenhouse</p>	<p>Key Question: Is there local interest in growing your own food, and is it feasible locally?</p> <p>Description: Many communities support local food production through farmers markets and community gardens. Some go further and have edible landscaping, or support community greenhouses. This reduces trips required to go to the grocery store, and "food miles" i.e. the number of miles food must travel to get from the producer to the plate. There can also be economic benefits by keeping food dollars local and not exporting them.</p> <p>Examples: community greenhouse in Invermere, food forest at a Regional District of Central Okanagan park.</p> <hr/> <p>% Emissions Savings Calculation: N/A – unqualifiable at this time. Will vary between communities.</p>

8. Enabling Actions

Action	Description
8.1 Review land use & transportation plans / policies for SCEEP incorporation	<p>Key Question: Recommended for all communities.</p> <p>Description: It can be necessary or helpful to review land use & transportation plans / policies to ensure that the SCEEP is incorporated. This can help to ensure that the SCEEP is embedded into the local government's processes, and will not be forgotten.</p>
	<p>Calculation: This enabling action does not have direct impacts itself, however it may help achieve results from other actions.</p>
8.2 Organizational structure for climate action	<p>Key Questions: Are there questions about who is accountable within council / board as well as within staff for climate action? Can there be benefits from establishing a committee, or incorporating into an existing committee?</p> <p>Description: Climate action crosses all departments and levels within a local government. Establishing decision-making, communication, accountability, and resourcing structures that are appropriate for the size and culture of the local government has repeatedly been proven to be critical to implementing actions in a cost-effective manner and achieving results. Taking time up-front to establish such structures is a worthwhile investment in setting implementation up for success. Key questions to answer include:</p> <ul style="list-style-type: none"> • Who makes which decisions regarding climate action? • Who is expected to do what and how are they held accountable? • What new / different communication / planning is required (sewer or road work and district energy)? • What organizational structure changes are required to operationalize this? (Council climate committee? cross-departmental working group? updated job descriptions / resource allocation to include climate action? new positions? ...) • How will capital, operating and human resource elements of the SCEEP be funded?
	<p>Calculation: This enabling action does not have direct impacts itself, however it may be critical to achieving results from other actions.</p>
8.3 Establish a regional energy cooperative	<p>Key Question: Is there strong interest in clean energy in the community?</p> <p>Description: Energy cooperatives are companies owned by their members, rather than by shareholders, with each member having an equal vote. Community energy cooperatives have provided an important vehicle for development of local renewable energy in Denmark, the Netherlands and Germany. In Germany, 200,000 people own shares in local wind turbines. City of Dawson Creek played an important role in establishment of the Peace Energy Cooperative, providing advice and other forms of non-financial support.</p>
	<p>Calculation: Impacts from this enabling action will be dependent on actions and investments of the co-op. This can provide funding and a sense of community and buy-in to climate actions.</p>

Action	Description												
<p>8.4 Identify green economy opportunities</p>	<p>Key Question: This enabling action is recommended to all local governments who want to achieve economic development / diversification benefits from climate action.</p> <p>Description: British Columbians pay on average \$4200 per person annually for energy in their communities (i.e. electricity, natural gas and transportation fuels), not including energy consumed by industry, airlines, ferries, etc. For most communities, 70-80% of money spent on energy leaves town, going to utilities, oil companies, and provincial and federal taxes. Local clean energy development and energy efficiency can be drivers of economic diversification in rural BC, presenting opportunities for communities to transition to a green economy, thereby generating long-term economic and community development benefits. A “green economy” is characterized by low carbon (with renewable energies replacing fossil fuels), low resource depletion and low environmental degradation.</p> <p>A guide to achieving economic development potential of climate action is <i>Clean Energy for a Green Economy</i> available at http://communityenergy.bc.ca/?dln_download_category=economics</p> <hr/> <p>Calculation: This enabling action will assist in moving other actions forward.</p>												
<p>8.5 Leverage local government assets to create expertise and community-wide change</p>	<p>Key Question: Are actions being taken in local government (LG) operations that could be leveraged to support community-wide action?</p> <p>Description:</p> <table border="1" data-bbox="414 1003 1429 1606"> <thead> <tr> <th data-bbox="414 1003 625 1060"></th> <th data-bbox="625 1003 876 1060">LG Action</th> <th data-bbox="876 1003 1429 1060">Community Opportunities</th> </tr> </thead> <tbody> <tr> <td data-bbox="414 1060 625 1360">Buildings</td> <td data-bbox="625 1060 876 1360"> <ul style="list-style-type: none"> - District energy systems - Building energy efficiency retrofits - New green buildings </td> <td data-bbox="876 1060 1429 1360"> <p>Awareness: Increasing public awareness of clean energy and conservation, leading to a greater willingness to explore clean energy and conservation, particularly if corporate actions are deployed in a way to maximize public visibility.</p> <p>Association: Visible actions that others are implementing clean energy and conservation.</p> <p>Action: Local governments across BC are exploring district energy systems with their own buildings as the first buildings that provide critical mass for the system. Many local governments are also connecting public sector organizations in BC which all have carbon neutral commitments. These systems then extend to the surrounding community.</p> </td> </tr> <tr> <td data-bbox="414 1360 625 1474">Fleet</td> <td data-bbox="625 1360 876 1474"> <ul style="list-style-type: none"> - Biofuels - Hybrids / EV's </td> <td data-bbox="876 1360 1429 1474"> <p>Agency: Improved access to fuels and mechanics who can service biofuel, hybrid, or electric vehicles.</p> </td> </tr> <tr> <td data-bbox="414 1474 625 1606">Other</td> <td data-bbox="625 1474 876 1606"> <ul style="list-style-type: none"> - Carbon neutral actions </td> <td data-bbox="876 1474 1429 1606"> <p>Awareness and Association: Provides local government leaders (staff and elected officials) an opportunity to gain knowledge of clean energy and conservation so they can more confidently demonstrate community leadership by implementing them where appropriate in their own business or residence.</p> </td> </tr> </tbody> </table> <hr/> <p>Calculation: Impacts of these enabling actions are highly dependent on specific actions planned for local government operations.</p>		LG Action	Community Opportunities	Buildings	<ul style="list-style-type: none"> - District energy systems - Building energy efficiency retrofits - New green buildings 	<p>Awareness: Increasing public awareness of clean energy and conservation, leading to a greater willingness to explore clean energy and conservation, particularly if corporate actions are deployed in a way to maximize public visibility.</p> <p>Association: Visible actions that others are implementing clean energy and conservation.</p> <p>Action: Local governments across BC are exploring district energy systems with their own buildings as the first buildings that provide critical mass for the system. Many local governments are also connecting public sector organizations in BC which all have carbon neutral commitments. These systems then extend to the surrounding community.</p>	Fleet	<ul style="list-style-type: none"> - Biofuels - Hybrids / EV's 	<p>Agency: Improved access to fuels and mechanics who can service biofuel, hybrid, or electric vehicles.</p>	Other	<ul style="list-style-type: none"> - Carbon neutral actions 	<p>Awareness and Association: Provides local government leaders (staff and elected officials) an opportunity to gain knowledge of clean energy and conservation so they can more confidently demonstrate community leadership by implementing them where appropriate in their own business or residence.</p>
	LG Action	Community Opportunities											
Buildings	<ul style="list-style-type: none"> - District energy systems - Building energy efficiency retrofits - New green buildings 	<p>Awareness: Increasing public awareness of clean energy and conservation, leading to a greater willingness to explore clean energy and conservation, particularly if corporate actions are deployed in a way to maximize public visibility.</p> <p>Association: Visible actions that others are implementing clean energy and conservation.</p> <p>Action: Local governments across BC are exploring district energy systems with their own buildings as the first buildings that provide critical mass for the system. Many local governments are also connecting public sector organizations in BC which all have carbon neutral commitments. These systems then extend to the surrounding community.</p>											
Fleet	<ul style="list-style-type: none"> - Biofuels - Hybrids / EV's 	<p>Agency: Improved access to fuels and mechanics who can service biofuel, hybrid, or electric vehicles.</p>											
Other	<ul style="list-style-type: none"> - Carbon neutral actions 	<p>Awareness and Association: Provides local government leaders (staff and elected officials) an opportunity to gain knowledge of clean energy and conservation so they can more confidently demonstrate community leadership by implementing them where appropriate in their own business or residence.</p>											

Action	Description
<p>8.6 Long-term, deep community engagement (culture change)</p>	<p>Key Question: Do the other actions identified fall short of the desired change?</p> <p>Description: Overall, the purpose of social mobilization for British Columbia climate action is to:</p> <ol style="list-style-type: none"> 1. Engage residents in developing and implementing climate solutions through collective, 'bottom-up', informal, organizational and institutional initiatives. 2. Change collective behaviour to reduce carbon footprints. 3. Build public support for (and contributions to) low-carbon climate policies and actions focused on the green economy, ecological resilience and sustainable communities, in order to achieve GHG targets, short- and long-term, as well as other provincial climate change goals. 4. Build capacity and resilience to plan and respond to climate change adaptation and mitigation. <p>Active mechanisms can be established to pilot, replicate and monitor successful social engagement techniques, such as the Columbia Basin Community Adaptation program, and the UK Rural Community Councils community-led planning, which writes:</p> <p style="padding-left: 40px;"><i>People need ... information, a realistic assessment of the threat or diagnosis, a sense of personal control over their circumstances, a clear goal, an understanding of the strategies to reach that goal, a sense of support, and frequent feedback that allows them to see that they are moving in the right direction.</i></p> <p>A recent study found that reasonably achievable emissions reductions are approximately 20% in the US household sector in 10 years, if "most effective non-regulatory interventions are used," such as incentives and social marking (Dietz, T., Gardner, G. T., Gilligan, J., Stern, P. C., Vandenberg, M. P.: Household actions can provide a behavioural wedge to rapidly reduce U.S. carbon emissions, in <i>Proceedings of the National Academy of Sciences</i>, 106: 44, 18452-18456, 2009).</p> <hr/> <p>Calculation: Impacts can be substantial but are highly dependent on the specific program implemented.</p>