# Village of Slocan

# Strategic Community Energy & Emissions Plan

**December 7 and 8, 2015**

**Report adopted by Council February 9, 2016**

Community Energy Association

FORTIS BC™

Columbia Basin trust

# Table of Contents

# 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 |
| RGS | Regional Growth Strategy |
| SCEEP | Strategic Community Energy and Emissions Plan |

# Executive Summary

On December 7 and 8, 2015, a workshop was held with Village of Slocan Mayor, Village staff, Area H Regional District of Central Kootenay Director, members of the Slocan Valley Senior Housing Society and community member volunteers. The workshop was facilitated by Community Energy Association and Fortis BC. The project is funded by the FortisBC and Columbia Basin Trust.

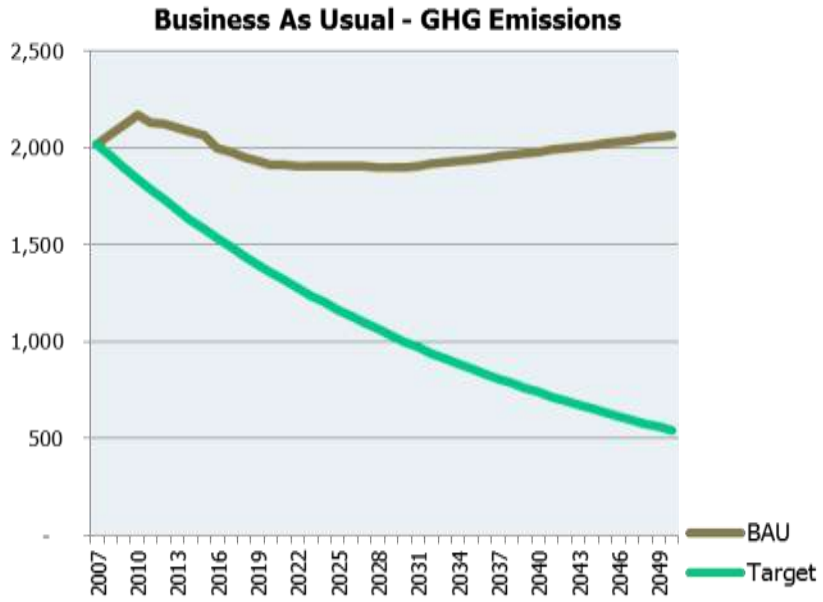
Many thanks to the workshop group who spent their day to look at energy, emissions, and energy expenditure data for the community as a whole and develop an action plan.

## 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 0.50% and used the Village of Slocan OCP GHG reduction target which is to reduce emissions 33% below 2007 levels by 2020.

In 2010 total community annual energy expenditure was approximately $1.8 million, and GHG emissions were approximately 2,100 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:



Village of Slocan is a climate action leader and has already initiated a number of actions. The workshop group identified an action plan to further reduce community energy consumption & emissions:

| Actions | Already done | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| **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 | | | | | M |
| 2.3 Review zoning bylaw for opportunities to encourage energy performance | | | | | M |
| 2.5 Expediting permit approvals to encourage energy performance | x | | | | |
| 2.6 Fee rebates to encourage improved energy performance | | | | | M |
| 2.7 Revitalization tax exemption bylaw for buildings with improved energy performance | | | | | M |
| 2.9 Development Permit Area - to enhance energy performance (e.g. orientation, landscaping) | | | | x | |
| 2.10 Development Permit Area - for on-site renewable energy | | | | x | |
| **3 Residential Buildings** | | | | | |
| 3.1 Sign on to solar-ready building code provision | | x | | | |
| 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 | | | x | | |
| 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 | | | |
| 4.2 Encourage biomass heating through education or leading by example | | | | | 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 | | | |
| 5.6 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 | x | | | | |
| 6.7 Intercommunity transit services | | x | | | |
| 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 | | |
| NEW ACTION Free Community Bikes | | 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 | | | |
| 8.2 Organizational structure for climate action | | x | | | |
| 8.3 Establish a regional energy co-operative | | x | | | |
| 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 | | | |

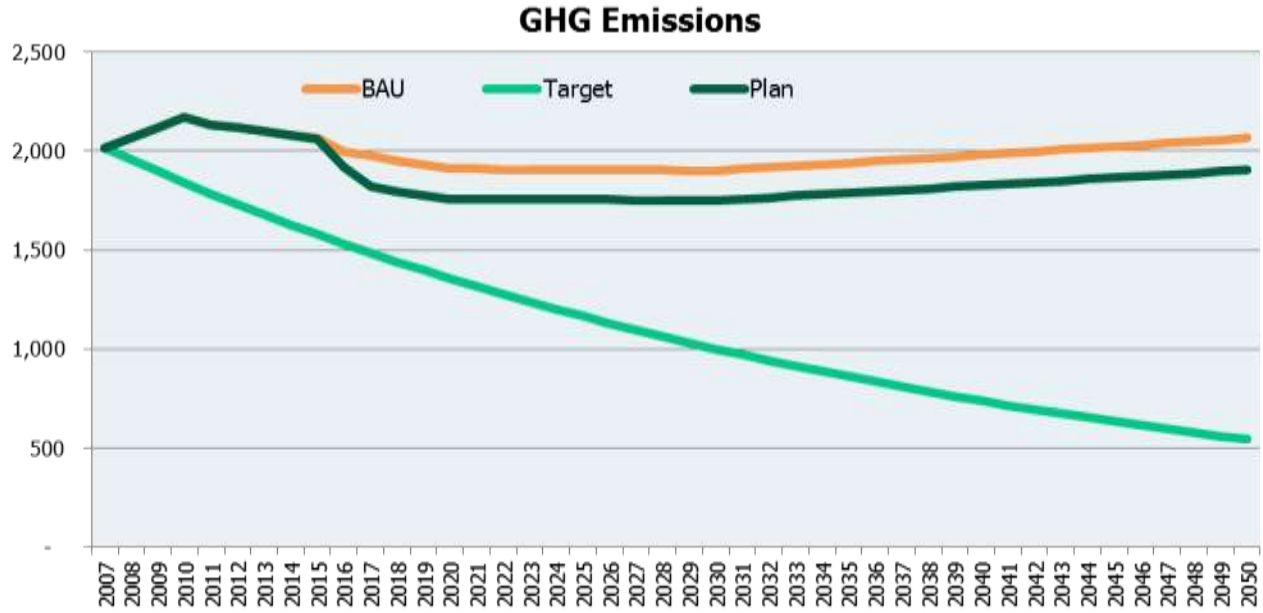
The actions marked with an 'M' were categorised as 'maybes'.

The numbers of the actions listed in the table 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). Further detail 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 Village of Slocan has levers to reduce community energy and emissions and can move closer towards its target, but many things do remain outside of the Village'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 Slocan, listed by impacts in terms of annual GHG savings in the year 2020 are:

- 7.1 – Organics diversion – 44 tonnes / year
- 5.2 – Land use suite "enhanced" – 40 tonnes / year
- 6.5 – Collaborate with major employers on work related transportation – 10 tonnes / year

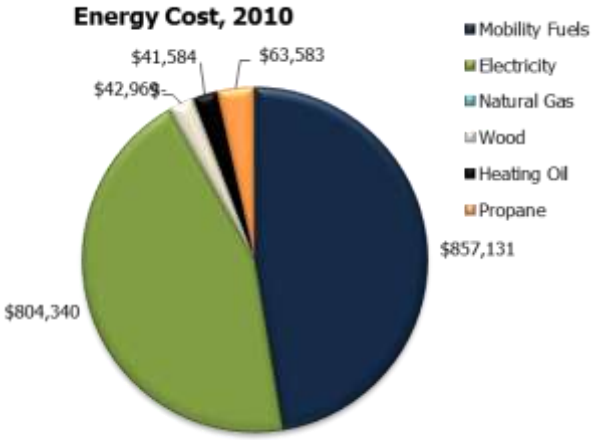
## Next Steps

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

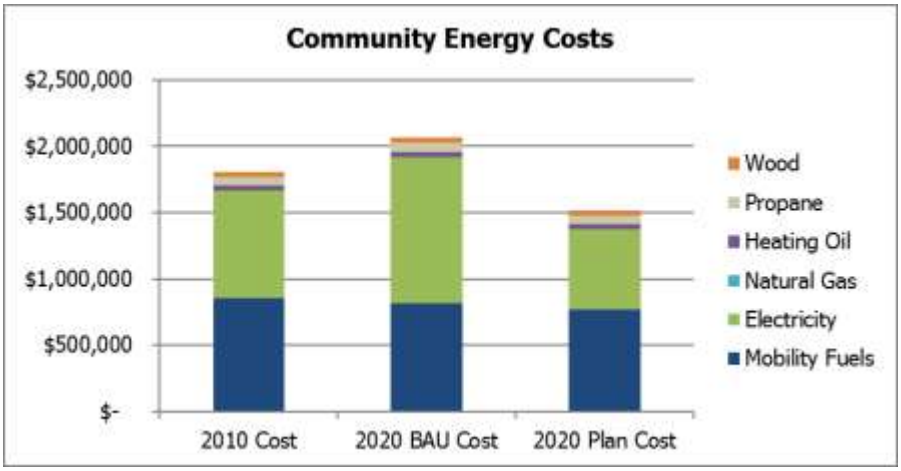
## Community Financial Savings

For the Village of Slocan, only a small percentage of the energy dollars spent within the community remains 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 $1.8 million ($4,500 per capita) of Slocan 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 27% through plan implementation. (20% cost reduction alone is attributed to the implementation of the Slocan micro hydro project to generate local hydro production.) The model assumes that energy prices will increase to 2020. So, the 27% plan cost reduction equates to about $550,000 per year ($1700 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 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.

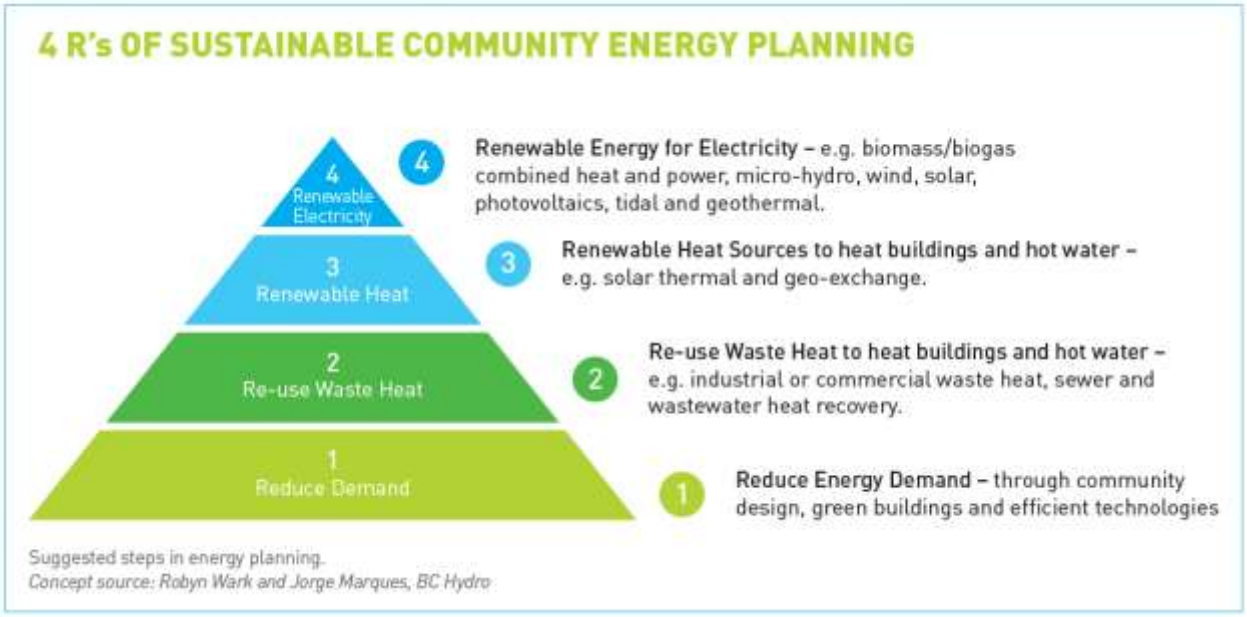
## *Strategic Community Energy and Emissions Planning*

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.

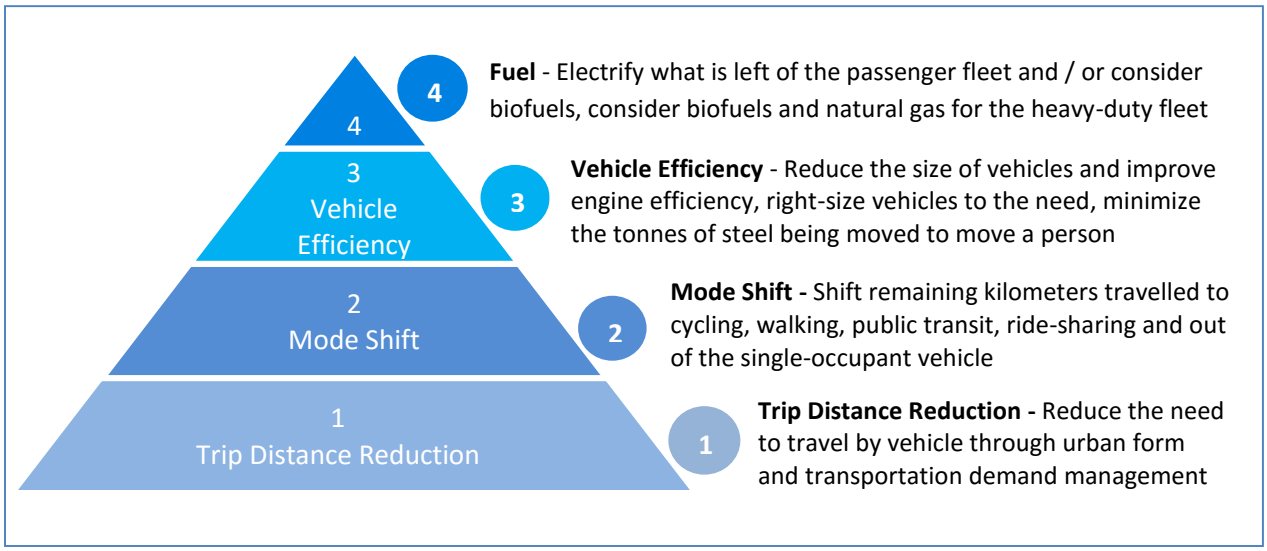
Most GHG emissions within a local government's jurisdiction result from energy consumption and the burning of fossil fuels. With this relationship it makes sense to combine GHG and energy planning into one integrated plan. While some communities have completed stand-alone energy or GHG action plans, 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.

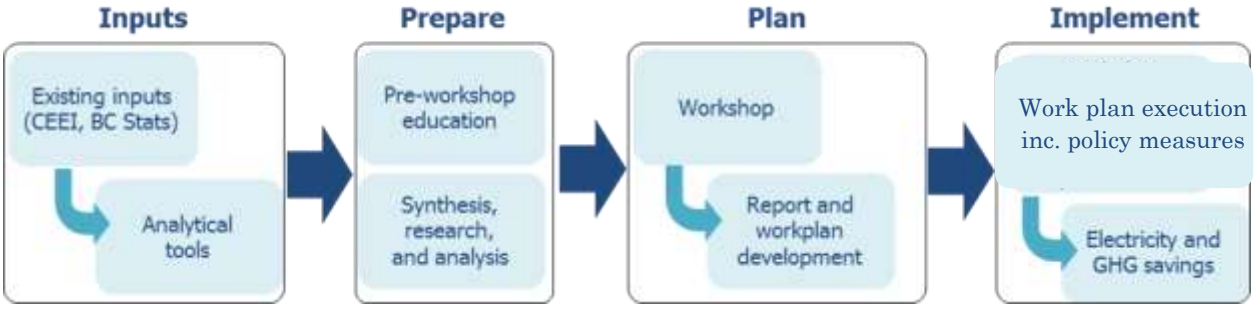



A similar hierarchy can be applied to the transportation sector. The easiest step to take is to reduce vehicular trip distances through appropriate urban form (planning) and transportation demand management.



## *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:

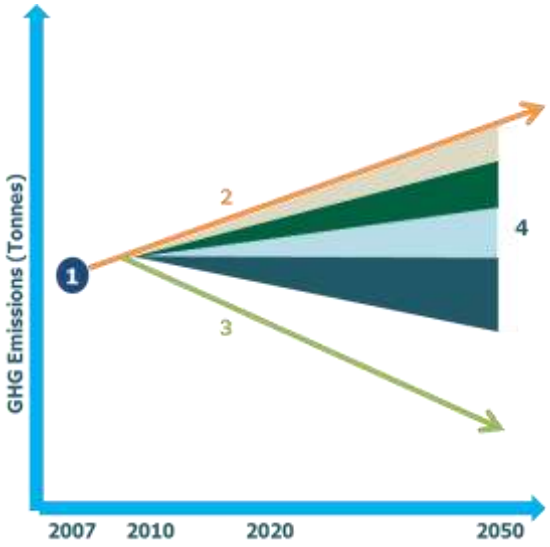
- Taking ownership and demonstrating leadership concerning the SCEEP
- Submitting SCEEP to Council for approval
- Implementing the SCEEP in their community

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 December 7 and 8, 2015, a workshop was held with Village of Slocan Mayor, Village staff, Area H Regional District of Central Kootenay Director, members of the Slocan Valley Senior Housing Society and community member volunteers. The workshop was facilitated by Community Energy Association and FortisBC. 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. It was noted that the OCP, the Village Age Friendly Vision and the recently completed Healthy Living Community Survey are supportive of many of the actions discussed.

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 2016-2019. The group was invited to provide input on timing and sequencing of actions.

Following this, key actions were discussed in more detail.

Stakeholders were invited to provide comment to the Draft Action Plan. Interior Health, Healthy Built Environment (HBE) Team, unable to attend the Slocan workshop, did provide the following comment on the draft plan by providing a health perspective as follows:

- *The support that the HBE team can provide is within three focus areas: healthy neighbourhood design, healthy transportation networks and healthy natural environments. The following Sections of the plan have been identified as areas where IHA can be of support.*
    - *5.3 Street Design*
    - *6.2 Improve Active Transportation Infrastructure*
- *Active transportation has the ability to reduce community GHG’s by shifting personal behaviours. A significant percentage of GHG’s produced are associated with mobility fuel consumption. From a health perspective creating a societal shift towards more active travel increases the physical activity options for community members. Physical inactivity and unhealthy eating are two of the risk factors associated with chronic diseases such as; cardiovascular disease, diabetes, and some cancers.*
- *IHA has a number of programs that work with local governments to create partnerships and engage the community in the planning process. One of these examples is Clearwater’s Road-Cross Section Bylaw. In this example, the District of Clearwater engaged a number of stakeholders in order to address the risks to the economic sustainability and the health of its residents. This included developing a long-term road-networking plan to help increase economic activity and to improve connectivity so that residents would be inclined to choose active transportation over vehicle transportation.*
- *IHA can also be of assistance when developing a transportation plan, as per Section 8.1 (Land Use and Transportation Plans for SCEEP Implementation) by providing a health lens and offering support. In addition, IHA welcomes the opportunity to provide comment on site-specific land use referrals, such as OCP amendments’ and rezoning, as well as larger community based plans, such as OCPs and Regional Growth Strategies.*
- *Interior Health supports the Energy Efficiency plan, as the actions identified, if implemented, will help to create a cultural shift towards a healthier environment and improve physical health of the residents. Contact Healthy Built Environment team for assistance in implementing the Action items of the SCEEP.*

## *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 $1.8 million, and GHG emissions were approximately 2,100 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).

For the modelling process, the workshop group used an annual community population growth rate of 0.50% and used the Village of Slocan OCP GHG reduction target which is to reduce emissions 33% below 2007 levels by 2020.

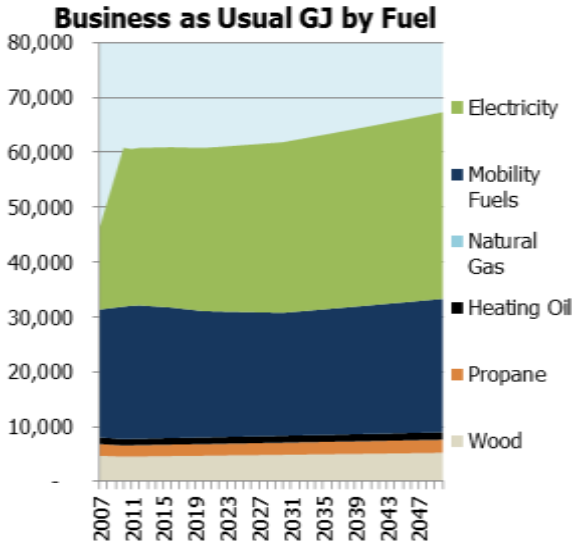
Without an action plan, and taking into account the population projection and Provincial policies, community emissions are predicted to change according to the tables and charts in the rest of this section as "Business as Usual".

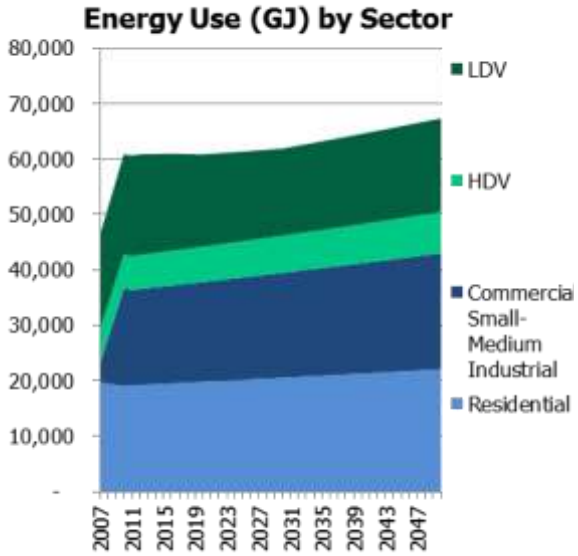
| "Business As Usual" Projections & Target Overview | |
|---|---|
| Community | Slocan Village |
| Annual % target change in ghg | -3.00% |
| Population growth | 0.50% |
| Default population growth | -1.17% |
| 2007 Population | 345 |
| Start-year for actions | 2016 |

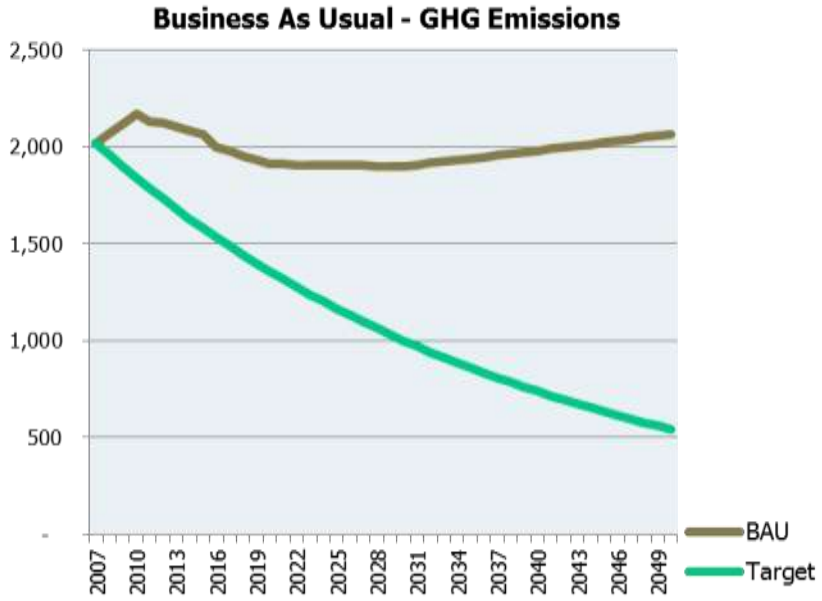
| Emissions Summary | | |
|---|---|---|
| 2007 Emissions | | 2,016 |
| 2010 Emissions | | 2,171 |
| Total Energy Expenditure | $ | 1,809,606 |
| Per-capita energy cost | $ | 4,558 |
| 2010 Per-capita emissions | | **5.47** |

| Targets Summary | 2016 | 2020 | 2030 | 2050 |
|---|---|---|---|---|
| Total reduction | -24.0% | -33% | -50% | -73% |
| Per-capita reduction | -36% | -44% | -61% | -81% |
| Total GHG | 1,532 | 1,357 | 1,000 | 544 |
| Per-Capita GHG | 3.7 | 3.3 | 2.3 | 1.1 |

| Business as Usual (BAU) Summary | 2016 | 2020 | 2030 | 2050 |
|---|---|---|---|---|
| GHG's | 1,998 | 1,910 | 1,900 | 2,065 |
| GHG growth | -1% | -5% | -6% | 2% |
| Population | 409 | 417 | 439 | 485 |
| Pop growth | 64 | 72 | 94 | 140 |
| Pop Grow % | 19% | 21% | 27% | 40% |
| Per capita emissions | 4.88 | 4.58 | 4.33 | 4.26 |


Business as Usual GJ by Fuel
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
-
2007
2011
2015
2019
2023
2027
2031
2035
2039
2043
2047
Electricity
Mobility Fuels
Natural Gas
Heating Oil
Propane
Wood


Energy Use (GJ) by Sector
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
-
2007
2011
2015
2019
2023
2027
2031
2035
2039
2043
2047
LDV
HDV
Commercial
Small-Medium Industrial
Residential


Business As Usual - GHG Emissions
2,500
2,000
1,500
1,000
500
-
2007
2010
2013
2016
2019
2022
2025
2028
2031
2034
2037
2040
2043
2046
2049
BAU
Target

## *Actions Already Initiated*

The Village of Slocan is already a climate action leader, and for its size has undertaken an impressive 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 |
|---|---|---|
| 2.5 Expediting permit approvals to encourage energy performance | Ongoing | All permits are expedited in the Village |
| 3.6 Efficient wood stove program & bylaws | Ongoing | Partner with RDCK on Wood stove Exchange program |
| 3.7 Helping people source wood fuel (e.g. from community forest) | Ongoing | Local business Kootenay Furnace provides notes about clean burning awareness.<br>Ongoing education in Village Newsletter |
| 5.1 Land use suite lite and<br>5.2 Land use suite enhanced | Done | Development in the Village is compact. |
| 5.6 Flow RGS, OCP, and LAP through to zoning | Done | The OCP and Zoning Bylaw are aligned |
| 6.1 Active transportation planning | Done | |
| 6.4 Special event planning | Ongoing | Unity Festival encourages carpooling; park and walk |
| 6.6 Transit suite | Ongoing | Regional shift, working from home and promoting shift. Educating employers on ability to use remote work. |
| 7.2 Encourage water conservation | Ongoing | Village has sprinkling and water restrictions and actively sourcing/fixing water leaks. |
| 7.3 Support local food production, e.g. farmers markets, community gardens, community greenhouse | Ongoing | There is a community market in Winlaw; A COBB oven has been installed at WEGSS where food is prepared and electricity savings achieved; Food dehydrating.<br>Partners: Columbia Basin Trust for cold storage and outdoor kitchen<br>Opportunities: Seed exchange idea |
| Established CARIP Reserve Fund | Annual | |
| Healthy Living Community Survey | 2015 | Survey of Village residents concerning exercise, social services, Community Health, Community Food, Healthy Living events. |
| Screech Owl Walk Project | 2015 | Promote walking trails, outdoor classroom, environmental sustainability |
| Corporate Strategic Plan | 2015 | |
| Kootenay Energy Diet | 2013 | Participant local government in FortisBC program and contributed to home energy assessments. |
| Draft Integrated Sustainability Community Plan | 2011 | Review of Economy, Infrastructure, Neighbourhood/Housing, Land Use/Natural Area, Health, Leisure/Learning/Recreation |
| Age Friendly Vision | 2010 | Promote healthy living |

## *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 | Already done / ongoing | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| **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 | | | | | M |
| 2.3 Review zoning bylaw for opportunities to encourage energy performance | | | | | M |
| 2.5 Expediting permit approvals to encourage energy performance | x | | | | |
| 2.6 Fee rebates to encourage improved energy performance | | | | | M |
| 2.7 Revitalization tax exemption bylaw for buildings with improved energy performance | | | | | M |
| 2.9 Development Permit Area - to enhance energy performance (e.g. orientation, landscaping) | | | | x | |
| 2.10 Development Permit Area - for on-site renewable energy | | | | x | |
| **3 Residential Buildings** | | | | | |
| 3.1 Sign on to solar-ready building code provision | | x | | | |
| 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 | | | x | | |
| 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 | | | |
| 4.2 Encourage biomass heating through education or leading by example | | | | | 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 | | | |
| 5.6 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 | x | | | | |
| 6.7 Intercommunity transit services | | x | | | |
| 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 | | |
| NEW ACTION Free Community Bikes | | 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 | | | |
| 8.2 Organizational structure for climate action | | x | | | |
| 8.3 Establish a regional energy co-operative | | x | | | |
| 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. For further detail on FortisBC DSM program incentives consult the website, http://www.fortisbc.com/Rebates/RebatesOffers.

## *Unpacking Actions from the Action Plan*

The main workshop day of December 7 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. “Action Items” that have agreed to be worked upon within the next five years or “maybe” worked upon in the timeframe are outlined in the table. The Actions in the table have been sorted by Year Action to take place to assist in coordinating implementation.

| Action | Year | Effort | Comments |
|---|---|---|---|
| **Year 1 Actions** | | | |
| **Buildings - Basics** | | | |
| 1.1 Promote electricity, natural gas, and other energy efficiency programs | 1 | Low | A FortisBC low income program “ECAP” is of interest in the Village.<br><br>**Next Steps/Lead**<br>• FortisBC programs focus on improving energy efficiency of the building envelopes<br>• Village to promote programs in newsletter and in conjunction with utility billings.<br><br>**Partners**<br>• FortisBC to lead<br>• Village<br>• W E Graham Community Services<br><br>**Barriers/Opportunities**<br>• The wellness centre (library) has done energy efficient upgrades and reports $10,000 annual electric savings. |

| Action | Year | Effort | Comments |
|---|---|---|---|
| 1.2 District energy / renewable energy systems | 1 | High | **Next Steps/Lead**<br>• Investigate options at curling rink<br>• Village ongoing development of IPP at Springer Creek<br><br>**Partners**<br>• FortisBC<br>• CEA<br>• Funding opportunities: CELP, Gas Tax<br>• Columbia Basin Trust<br><br>**Barriers/Opportunities**<br>• A local run of river hydro plant on Springer Creek is an economic generator. 20% of the community energy cost reduction noted by this Action Plan in 2020 are attributed to micro hydro implementation. |
| 1.3 Building code energy efficiency - educate & support compliance | 1 | Low | **Next Steps/Lead**<br>• Education events/opportunities for Regional District Building Department<br>• RD Building Department sends out circulars on building code<br><br>**Partners**<br>• RDCK<br>•<br><br>**Barriers/Opportunities**<br>• |

| | | | |
|---|---|---|---|
| **Buildings: Growth Measures** | | | |
| 2.1 Sustainability checklist for buildings | 1 | Low | Checklist provides information as part of development and building permit applications. The intent is to provide information on energy efficient building practice and not to make barriers for development.<br><br>**Next Steps/Lead**<br>• Education piece<br>• Review notion of region wide checklist at RDCK SCEEP<br><br>**Partners**<br>• CEA to provide sample checklist (Nanaimo)<br>• RDCK<br>• Slocan Valley Seniors Housing Society<br><br>**Barriers/Opportunities**<br>• The new Seniors Housing proposed for the Village is in the design stage. Energy efficient building practices and renewable energy opportunities should be incorporated into design. |
| **Residential Buildings** | | | |
| 3.1 Sign on to solar-ready building code provision | 1 | Low | **Next Steps/Lead**<br>• Include with sustainability checklist action 2.1 |
| 3.2 Education for developers – energy efficiency & renewable energy | 1 | Low to Medium | Ensure developers are aware of FortisBC rebate programs. Workshops are being planned for the area.<br><br>**Next Steps/Lead**<br>• Participate in a regional workshop<br><br>**Partners**<br>• FortisBC<br>• RDCK<br><br>**Barriers/Opportunities**<br>• |

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|---|---|---|---|
| 3.3 Education for realtors - energy efficiency & renewable energy | 1 | Low to Medium | A realtor education workshop would use a sample home, demonstrate a blower door test, discuss EnerGuide rating, etc.<br><br>The Federal Government will increase profile and introduce a new EnerGuide rating in April 2016.<br><br>**Next Steps/Lead**<br>• A Nelson realtor education workshop is in the planning stage for early 2016.<br>•<br><br>**Partners**<br>• FortisBC<br>• Slocan/Nelson area realtors<br>• RDCK building department<br><br>**Barriers/Opportunities**<br>• |
| **Commercial / Institutional Buildings & Transportation** | | | |
| 4.1 Promote the free Business Energy Advisor assessments | 1 | Low | **Next Steps/Lead**<br>• Include notice to businesses in the annual business license renewals and/or utility billings.<br><br>**Partners**<br>• FortisBC<br>• CEA<br>• Slocan Lake District Chamber of Commerce<br>• Slocan Valley Seniors Housing Society<br><br>**Barriers/Opportunities**<br>• A promotional opportunity to provide information on FortisBC rebate programs. |

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|---|---|---|---|
| 4.3 Convert local government owned streetlights to LED | 1 | Medium to High | Slocan has 66 streetlights; 38 are owned by FortisBC; 28 owned by the Village. Fortis maintains street lights<br><br>**Next Steps/Lead**<br>• Encourage Fortis to switch to LED lights.<br>• Fortis to develop standard on streetlight change out<br><br>**Partners**<br>• FortisBC<br><br>**Barriers/Opportunities**<br>• LED lighting technology offers large energy savings. Payback is about 2 years converting sodium lights to LED<br>• Fortis has standardized rebate for customer owned street lights online at http://www.fortisbc.com/Rebates/RebatesOffers. Lights need to be DLC certified. To obtain a rebate after installation, fill out the online application form and send in receipts<br>• For FortisBC lights, call Customer Contact Centre 1-866-436-7847 and ask for a Quote to change for FortisBC to supply and install LED lights.<br>• Slocan owned and Fortis owned LED streetlight manufacturer should match |

| **Light Duty Vehicle Transportation Urban Forum** | | | |
|---|---|---|---|
| 5.3 Street design | 1 | | Slocan is a walkable community.<br><br>Discussion from IHA that 1 in 3 people are living with a chronic disease. 50% of adults and maybe 90% of kids aren't getting enough physical activity. Make streets more walkable, so people want to get out on their bikes, get out walking.<br><br>**Next Steps/Lead**<br>• Investigate opportunities<br>• Ongoing as part of operations, reviewing ways to improve streets for walking/cycling.<br><br>**Partners**<br>• IH can provide health evidence to support more sustainable planning and active transportation. IH can bring resources in the way of information, and complimentary expertise, and health information on land use and community planning, and sharing/resourcing of other programs. IH programs work with local governments to create partnerships and engage the community in the planning process. One of these examples is Clearwater's Road-Cross Section Bylaw, where the District of Clearwater engaged stakeholders to address the risks to the economic sustainability and the health of its residents. This included developing a long-term road-networking plan to help increase economic activity and to improve connectivity so that residents would be inclined to choose active transportation over vehicle transportation. |
| 5.4 Implement 30 km/hr speed limit in parts of the community | 1 | Low | The Village speed limit is 30 km/hr in school zone and 40 km/hr in the rest of the community. New comers and visitors need to be reminded. Residents do respect the speed limit.<br><br>**Next Steps/Lead**<br>• Update Signage<br>• Educational Campaign: "Slow-Can"<br><br>**Partners**<br>• School/Youth ambassadors |

| **Vehicle Transportation – Infrastructure/Collaboration** | | | |
|---|---|---|---|
| 6.2 Improve active transportation infrastructure | 1 | High | Village residents enjoy the popular "Circle": 5 km walking circle over the Slocan River. Safety of walking is a concern. Night time walking is challenging.<br><br>The Village would benefit from bike racks in visible places to help promote cycling.<br><br>**Next Steps/Lead**<br>• Implement walking areas and make them safer: winter sand, tree removal for visibility<br>• Investigate where risk areas are for walking<br>• Education of safety for walkers and drivers<br>• Signage for walking route<br>• Install bike racks at bus stops and beach<br><br>**Partners**<br>• Possibly forestry companies/WorkSafeBC to improve safety for pedestrians walking on Gravel Pit Road bridge<br>• ICBC/FortisBC to promote safety vests or clip-on walking lights.<br>• Interior Health (HBE team) to promote the health benefits of active transportation and support to create healthier communities. IH resources link community design, planning and health to promote active living and shape a healthier environment. See: http://www.phsa.ca/Documents/linkagestoolkitrevisedoct16_2014_full.pdf |
| 6.3 Anti-idling campaign / bylaw | 1 | | **Next Steps/Lead**<br>• Education Campaign in newsletter<br>• Communicate with school<br><br>**Partners**<br>• Idle Free BC for signage www.idlefreebc.ca<br>• School/youth ambassadors to promote anti idling at school<br><br>**Barriers/Opportunities**<br>• |

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| 6.5 Collaborate with major employers on work-related transportation | 1 | Medium | Pacific Insight and the school are addressing work related transportation.<br><br>**Next Steps/Lead**<br>• Discussion with employers on the benefits of remote work and carpooling.<br>• Improve broadband infrastructure for remote work<br>• Develop park and ride lots in region to promote carpooling to Slocan events<br><br>**Partners**<br>• Pacific Insight<br>• WE Graham School<br>• Columbia Basin Trust<br>• Economic Development<br>• RDCK SCEEP<br><br>**Barriers/Opportunities**<br>• Work to minimize trips by having community events in Slocan. |
| 6.7 Intercommunity transit services | 1 | Medium to high | A community bus is in place to transport youth to events in the larger centres.<br><br>**Next Steps/Lead**<br>• Advocate evening bus service<br>•<br><br>**Partners**<br>• BC Transit<br>• WE Graham Community Service Society<br><br>**Barriers/Opportunities**<br>• |

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| 6.8 Support car share cooperatives | 1 | Medium | **Next Steps/Lead**<br>• Promote the Kootenay Car share in Village newsletter http://www.carsharecoop.ca/car-locations/nelson/<br>• Consider the Village becoming a member of Kootenay Car share<br>• Investigate the use of the Village truck in a carshare program for use by resident members of co-op<br>• Promote in village newsletter the informal/entrepreneurial opportunity of local resident's sharing trucks for occasional use.<br><br>**Partners**<br>• Resident truck owners<br>• Kootenay Car Share<br><br>**Barriers/Opportunities**<br>• Note Kelowna has a City truck used in the Kelowna carshare program |
| 6.9 Raising awareness of ride sharing and guaranteed ride home programs | 1 | Medium | **Next Steps/Lead**<br>• Raise awareness – use facebook and website<br>• Website to share rides: http://kootenayrideshare.com/<br>• www.hitchplanet.com<br>• Consider a commuter challenge<br><br>**Partners**<br>•<br><br>**Barriers/Opportunities**<br>• App for hitchplanet now available. www.hitchplanet.com. Allows drivers to reduce their travel costs and provides riders cheaper travel options. |
| 6.10 Low carbon and electric vehicle (EV) fuelling / charging stations | 1 | Medium | Having an electric vehicle station in Slocan encourages tourists to stop and stay a while in the community. EV's can be great commuter vehicles for Slocan residents working in nearby communities.<br><br>**Next Steps/Lead**<br>• Determine costs<br>• Install EV station in Village<br><br>**Partners**<br>• Chamber of Commerce<br>• West Koot Route to promote Slocan as an EV destination. |

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| NEW ACTION Free Community Bikes | 1 | | Slocan is well suited to cycling. A free bike program encourages residents to consider cycling.<br><br>**Next Steps/Lead**<br>• Promote donation of bikes to the Village<br>• Have community group clean up and maintain bikes<br>• Place bikes in visible locations around the Village (i.e., bus stops and beach.<br><br>**Partners**<br>• Community volunteers<br>• IHA to promote active transportation<br>• CBT<br><br>**Barriers/Opportunities**<br>• |
| **Enabling Actions** | | | |
| 8.1 Review land use & transportation plans / policies for SCEEP incorporation | 1 | Low to Medium | **Next Steps/Lead**<br>• Education piece to assist in SCEEP implementation.<br>• Incorporate into OCP/Zoning Bylaw at renewal<br><br>**Partners**<br>• IH can assist when developing a transportation plan, as per Section 8.1 (Land Use and by providing a health lens and offering support. In addition, IH welcomes the opportunity to provide comment on site-specific land use referrals, such as OCP amendments' and rezoning, as well as larger community based plans, such as OCPs and Regional Growth Strategies. |
| 8.2 Organizational structure for climate action | 1 Education | Low to Medium | **Next Steps/Lead**<br>• Establish a Village Green Committee<br><br>**Barriers/Opportunities**<br>• Green Committee could be body to review grant applications/CARIP Fund allotment. |
| 8.3 Establish a regional energy cooperative | 1 Education | High | **Next Steps/Lead**<br>• Investigate opportunities<br><br>**Partners**<br>• RDCK SCEEP<br><br>**Barriers/Opportunities**<br>• Economic Development |

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|---|---|---|---|
| 8.4 Identify green economy opportunities | 1 Education | Medium | **Next Steps/Lead**<br>• Encourage Innovation<br><br>**Partners**<br>• Economic Development<br>• RDCK SCEEP<br><br>**Barriers/Opportunities**<br>• Review community food hub, community bus<br>• Work to minimize trips by having community events in Slocan. |
| 8.5 Leverage local government assets to create expertise and community-wide change | 1 Education | Low to High | **Next Steps/Lead**<br>• Promote in Village newsletter; website; facebook and other communication channels<br>• Promote Village achievements on line and in the newsletter.<br>• Ideas: the public CARIP reports on line; do-able small actions; develop a community energy dashboard to show online; celebrate successes; the wellness centre has reduced electricity bills by $10,000 annually due to improvements made; show a graphic as a thermostat being turned down; annual village accomplishments; amount of water being saved.<br>• Consider a fund to put energy savings from facilities (i.e., wellness centre) into.<br>• Consider a public works Might E Truck as used in Village of Montrose. The EV is perfect for short trips around Village to support parks and village utility operation and maintenance<br><br>**Partners**<br>• Community Volunteers<br><br>**Barriers/Opportunities**<br>• |

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|---|---|---|---|
| 8.6 Long-term, deep community engagement (culture change) | 1 Education | Medium to High | Culture change is a long process, and requires consistent and clear communications with messaging that will resonate with a wide range of audiences. Community groups will have an interest in components of the SCEEP. Reaching out to the groups and connecting them with information that is relevant is a good way to start.<br><br>**Next Steps/Lead**<br>• Education to make people more aware<br>• Think local/act global<br><br>**Partners**<br>• Community groups<br><br>**Barriers/Opportunities**<br>• Culture change, although challenging, has a great opportunity of harnessing 'energy' from a wide range of individuals and groups in the community.<br>• Find community champions to help promote education of the deep culture change; i.e., Solar panel house and garden; electric vehicle use. |

| Year 2 Actions | | | |
|---|---|---|---|
| **Residential Buildings** | | | |
| 3.5 Voluntary or mandatory energy labelling of existing or new homes | 2 | Medium | This action seen as voluntary. It would be part of home inspection at time of home sale/purchase. Homeowners would be encouraged to have an EnerGuide rating.<br><br>Some communities provide rebates towards the cost of the EnerGuide rating.<br><br>**Next Steps/Lead**<br>• Investigate opportunities of "bulk buying" home energy assessments.<br><br>**Partners**<br>• RDCK SCEEP and building inspection for region wide approach<br>• FortisBC<br>• CEA can provide examples of what other communities have done.<br>• Local certified energy assessors<br><br>**Barriers/Opportunities**<br>• |
| **Vehicle Transportation – Infrastructure/Collaboration** | | | |
| 6.11 Electric vehicle & e-bike awareness event | 2 | Low to Medium | **Next Steps/Lead**<br>• At Unity Festival promote electric vehicle and bike awareness.<br><br>**Partners**<br>• Unity Festival<br>• Rail Trails<br><br>**Barriers/Opportunities**<br>• website: http://kootenayevfamily.ca/ Blogger commutes daily Nelson to Trail in his Nissan Leaf advocates that a family of 4 can operate with an EV in the Kootenays |

| | | | |
|---|---|---|---|
| **Waste** | | | |
| 7.1 Organics diversion | 2 | Medium to High | Discussion on the opportunity to compost locally at the Community Garden<br><br>**Next Steps/Lead**<br>• Support ongoing discussion with Regional District<br>• Use CARIP fund to develop compost plan for community garden; potentially a stipend to support food bank.<br>• Continue Village yard waste pickup program<br><br>**Partners**<br>• RDCK sub-regional organics diversion<br>• WEGSS /Slocan Food bank for a local composting program at community garden.<br><br>**Barriers/Opportunities**<br>• Organic diversion is an action that can reduce greenhouse gas emissions substantially. |
| **Year 3 Actions** | | | |
| **Buildings - Basics** | | | |
| 1.4 Reduce local government barriers to building scale renewable energy | 3 | | **Next Steps/Lead**<br>• Review Zoning for height restriction for windmill.<br>• Consider impacts to noise bylaw<br><br>**Partners**<br>•<br><br>**Barriers/Opportunities**<br>• |
| **Buildings: Growth Measures** | | | |
| 2.9 Development Permit Area (DPA) - to enhance energy performance (e.g. orientation, landscaping)<br><br>And<br><br>2.10 DPA - for on-site renewable energy | 3 | | **Next Steps/Lead**<br>• Part of OCP review<br>• Consider south sloping roofs a requirement of DPA<br><br>**Partners**<br>•<br><br>**Barriers/Opportunities**<br>• |

| | | | |
|---|---|---|---|
| **Residential Buildings** | | | |
| 3.4 Comprehensive energy efficiency retrofit campaign (e.g. Energy Diet) | 3 | Medium | Slocan participated in 2013 Kootenay Energy Diet. Fortis would like to re-establish the campaign, contingent on funding from Provincial and Federal governments.<br><br>**Next Steps/Lead**<br>• Village to promote campaign in Newsletter.<br>•<br><br>**Partners**<br>• FortisBC<br>• Provincial and Federal government funding<br><br>**Barriers/Opportunities**<br>• |
| **Year 4 Actions** | | | |
| **Buildings: Growth Measures** | | | |
| 2.2 Create rezoning policy to achieve desired energy performance | 4<br>Maybe | Medium | This action is a Maybe<br><br>A rezoning policy can be used to strongly encourage a higher standard of energy performance.<br><br>**Next Steps/Lead**<br>•<br><br>**Partners**<br>• CEA to provides samples<br><br>**Barriers/Opportunities**<br>• A rezoning policy is to be strictly for guidance. The policy needs to be flexible to support new development if an opportunity arises<br>• Bylaw enforcement is challenging |
| 2.3 Review zoning bylaw for opportunities to encourage energy performance | 4<br>Maybe | Medium | This action is a Maybe<br><br>**Next Steps/Lead**<br>• Bylaw to be reviewed to enhance energy efficiency opportunities<br>• Review opportunities to enhance energy efficiencies for multifamily homes.<br>•<br><br>**Partners**<br>•<br><br>**Barriers/Opportunities**<br>• |

| | | | |
|---|---|---|---|
| 2.6 Fee rebates to encourage improved energy performance | 4<br>Maybe | Medium | This action is a Maybe<br><br>Homes built to a defined standard could receive a reduction in building permit fees.<br><br>**Next Steps/Lead**<br>• Investigate a small incentive to promote Energy Star homes or EnerGuide ratings.<br>• RDCK may investigate on a regional scale<br><br>**Partners**<br>• CEA to provide examples from other communities<br>• RDCK<br>• FortisBC<br><br>**Barriers/Opportunities**<br>• Noted that in Fernie home are built with double barriers. The building code has increased energy performance requirements. |
| 2.7 Revitalization tax exemption bylaw for buildings with improved energy performance | 4<br>Maybe | Medium | This action is a Maybe<br><br>**Barriers/Opportunities**<br>• This could encourage improvements to small commercial buildings<br>• This is an opportunity for new development on mill site to be built to high energy efficiency standards |
| **Commercial / Institutional Buildings & Transportation** | | | |
| 4.2 Encourage biomass heating through education or leading by example | 4 | | **Next Steps/Lead**<br>• Investigate the future potential for biomass heating at mill site.<br><br>**Partners**<br>• Columbia Basin Trust<br>• Property owner<br>•<br><br>**Barriers/Opportunities**<br>• |

## *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 invitees, and identify additional stakeholders to contribute, e.g. Slocan Valley Chamber of Commerce
2. Submit final Strategic Community Energy and Emissions Plan (SCEEP) to Council, with goals, policies, and recommendations
3. Consider establishment of a Council Green Committee as the body to review and monitor SCEEP progress. The Committee could provide in depth feedback and analysis of the SCEEP model assumptions to customize them to the Village of Slocan.
4. Once SCEEP has been approved by Council, incorporate into Planning Documents and budgets and incorporate SCEEP into the Village policy framework
5. Ongoing SCEEP Implementation
6. Renew by reviewing SCEEP in 3 to 5 years.

| Incorporating | Budgeting | Monitoring | Convening | Reporting | Renewing |
|---|---|---|---|---|---|
| SCEEP into other planning documents:<br>• OCP<br>• Healthy Living Community Survey | SCEEP Actions into budgeting process | SCEEP implementation<br>• Indicators for specific Actions, i.e., # home energy assessments<br>• # new bike racks | Regular meetings to discuss implementation:<br>• Establish Green Committee<br>• Staff meetings | Reports to Council<br>• Integrate with reports on other plans<br>• Integrate with request for decision form | Prepare for plan renewal every 3-5 years. |

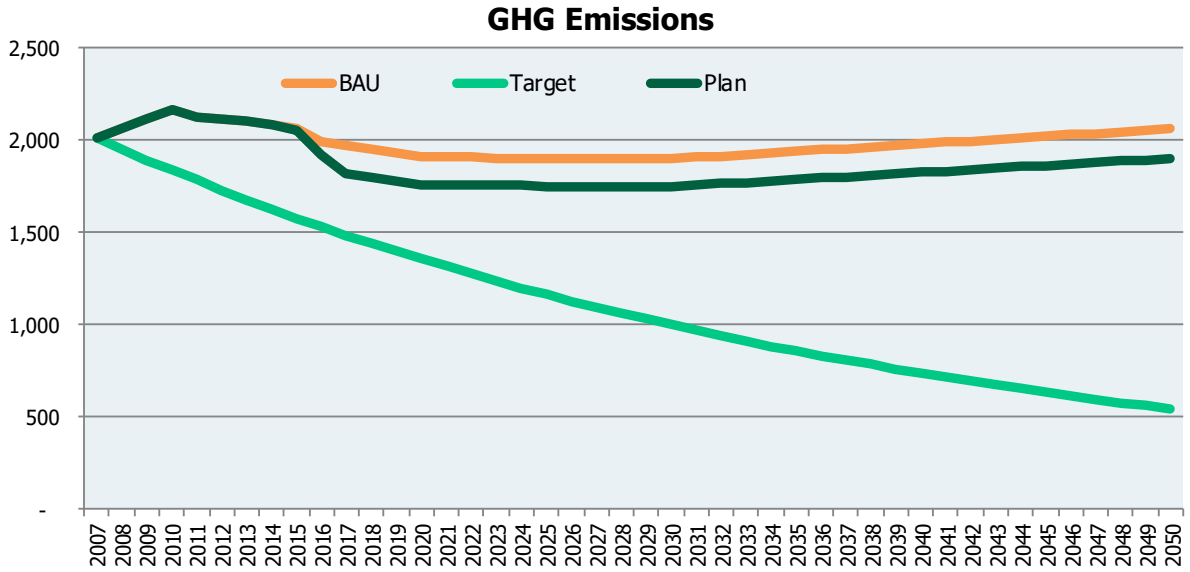
## Results of Actions

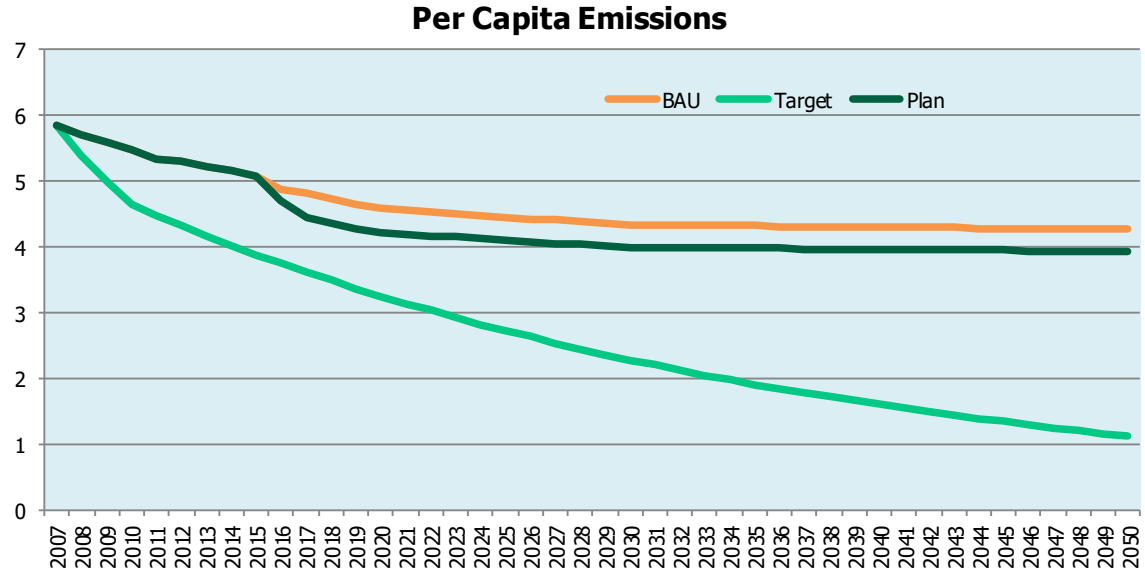
The estimated impact of the plan on community greenhouse gas emissions (in tonnes of GHGs per year) is shown below. Significant emissions reductions will be achieved beyond Business As Usual, however there is still a considerable gap to the GHG target trajectory.

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

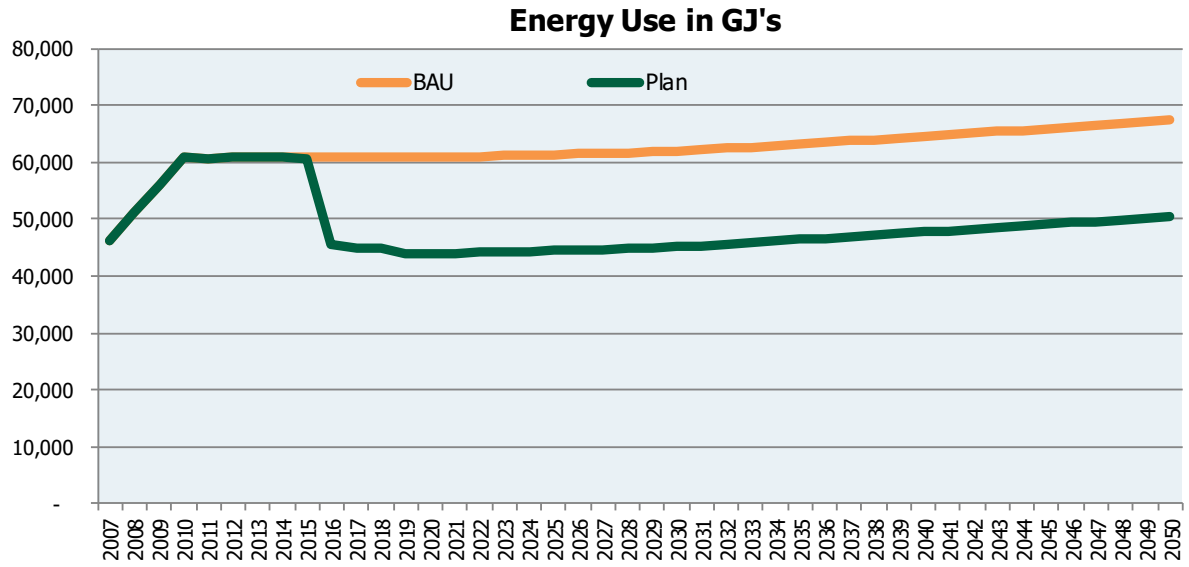
Note that actions to reduce electricity consumption will result in financial savings for the community, but will not result in significant savings in emissions. Electricity in BC has a very low greenhouse gas intensity, and should be carbon neutral from 2016.

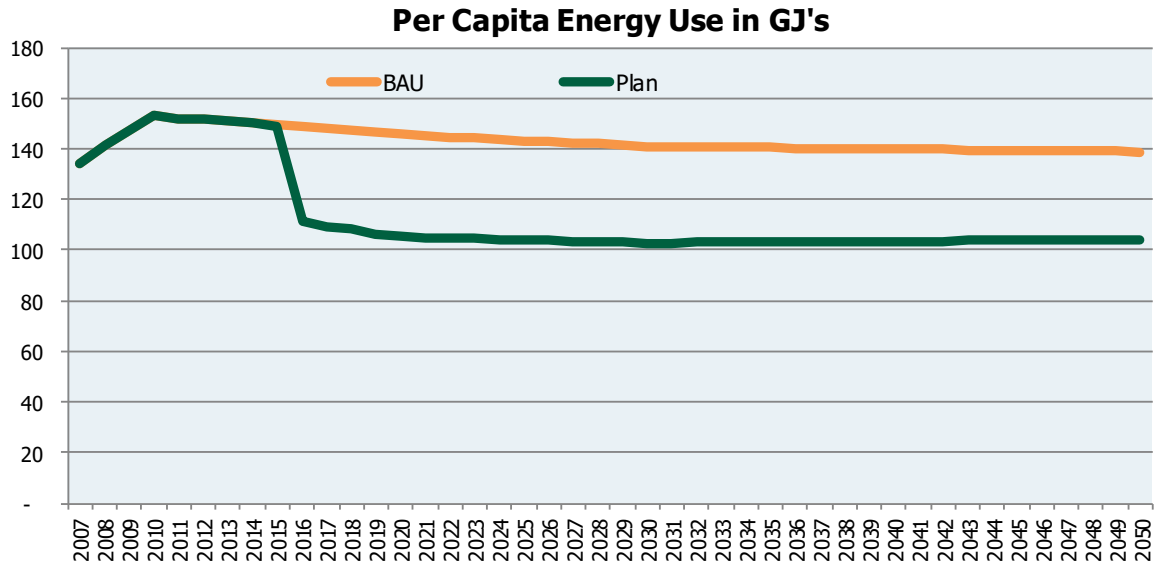
# Overview GHG Emissions



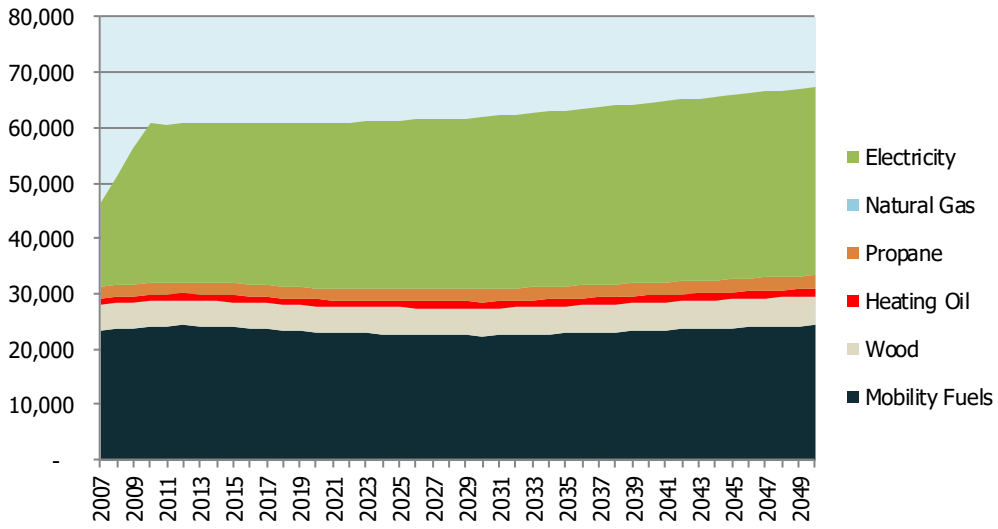
# Overview Energy Use (GJ)



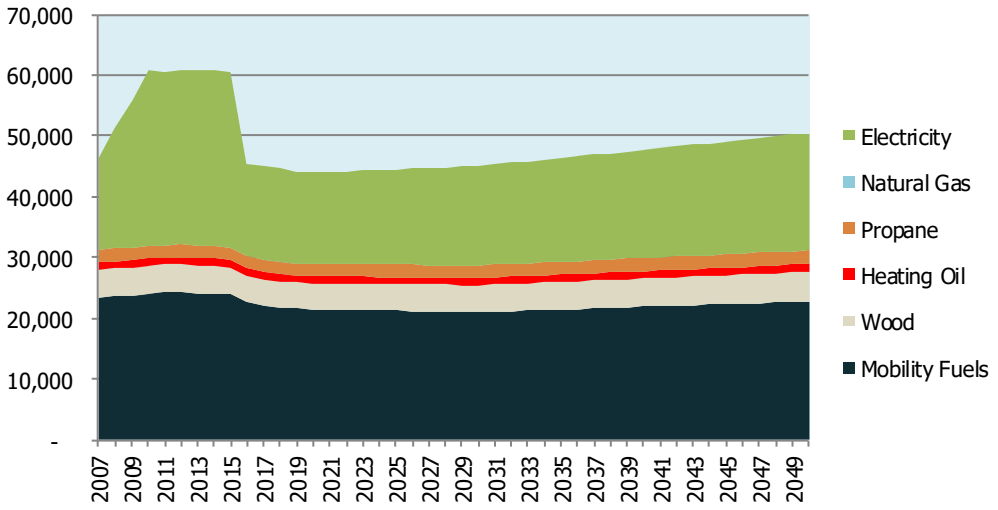



# Energy Use by Fuel

## BAU Energy Use by Fuel, GJ/year

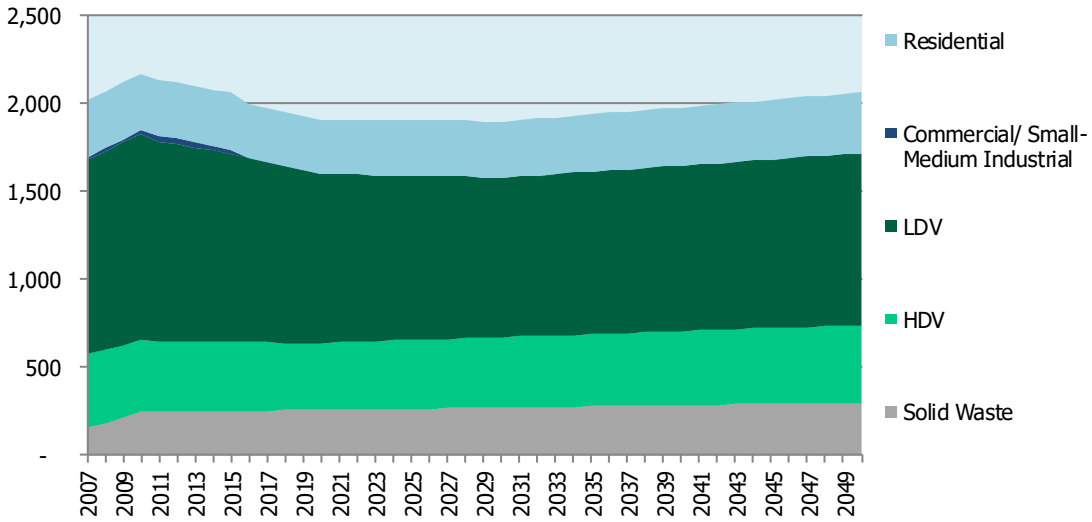



## Planned Energy Use by Fuel, GJ/year

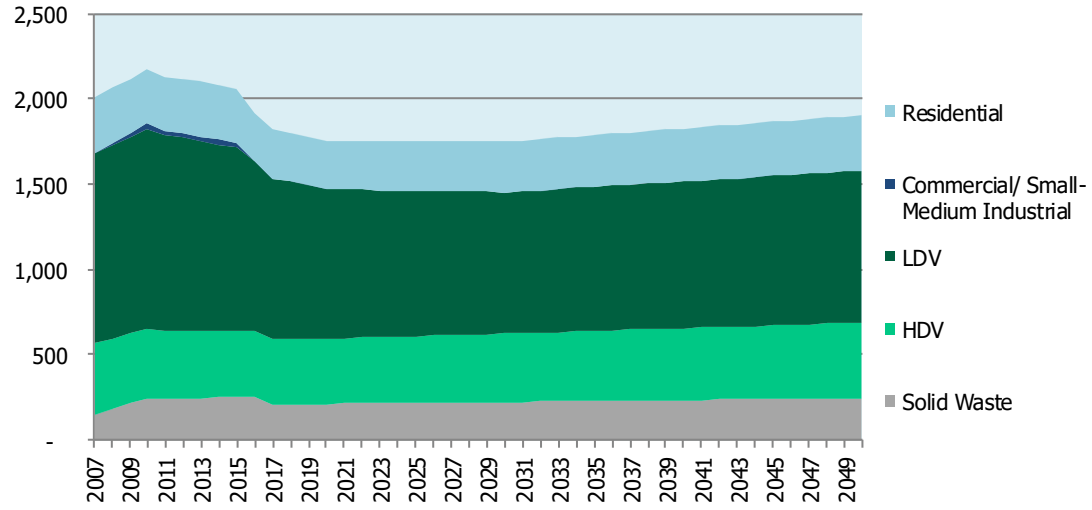


# GHGs by Sector

## BAU GHGs by Sector, tonnes/year

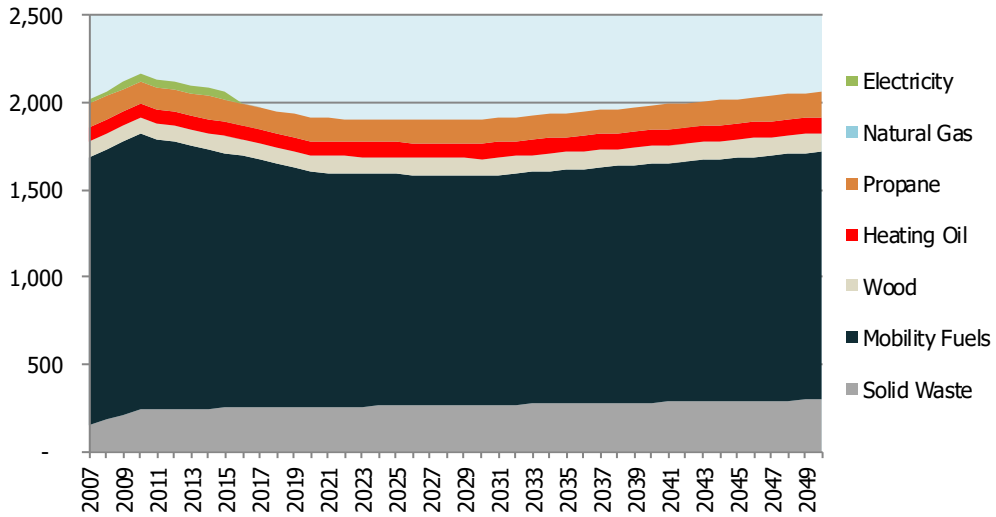



## Planned GHGs by Sector, tonnes/year

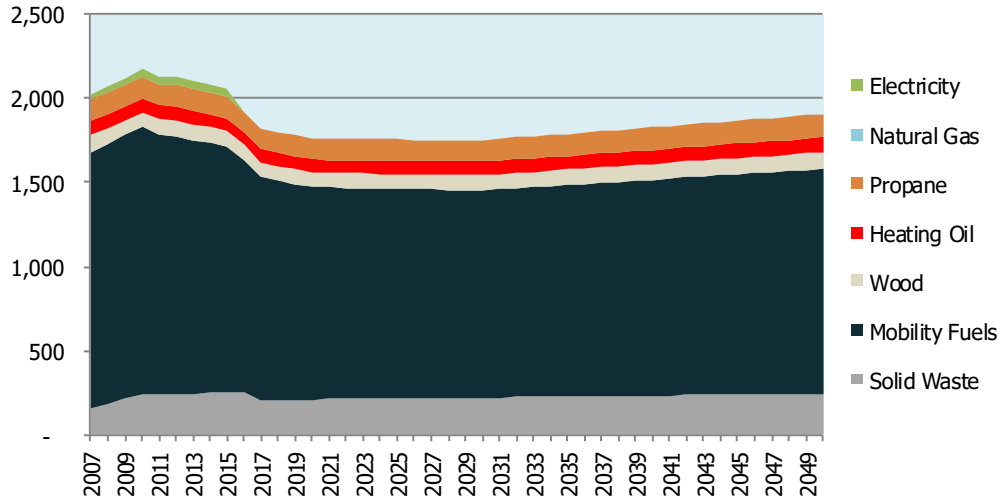


# GHGs by Fuels & Waste

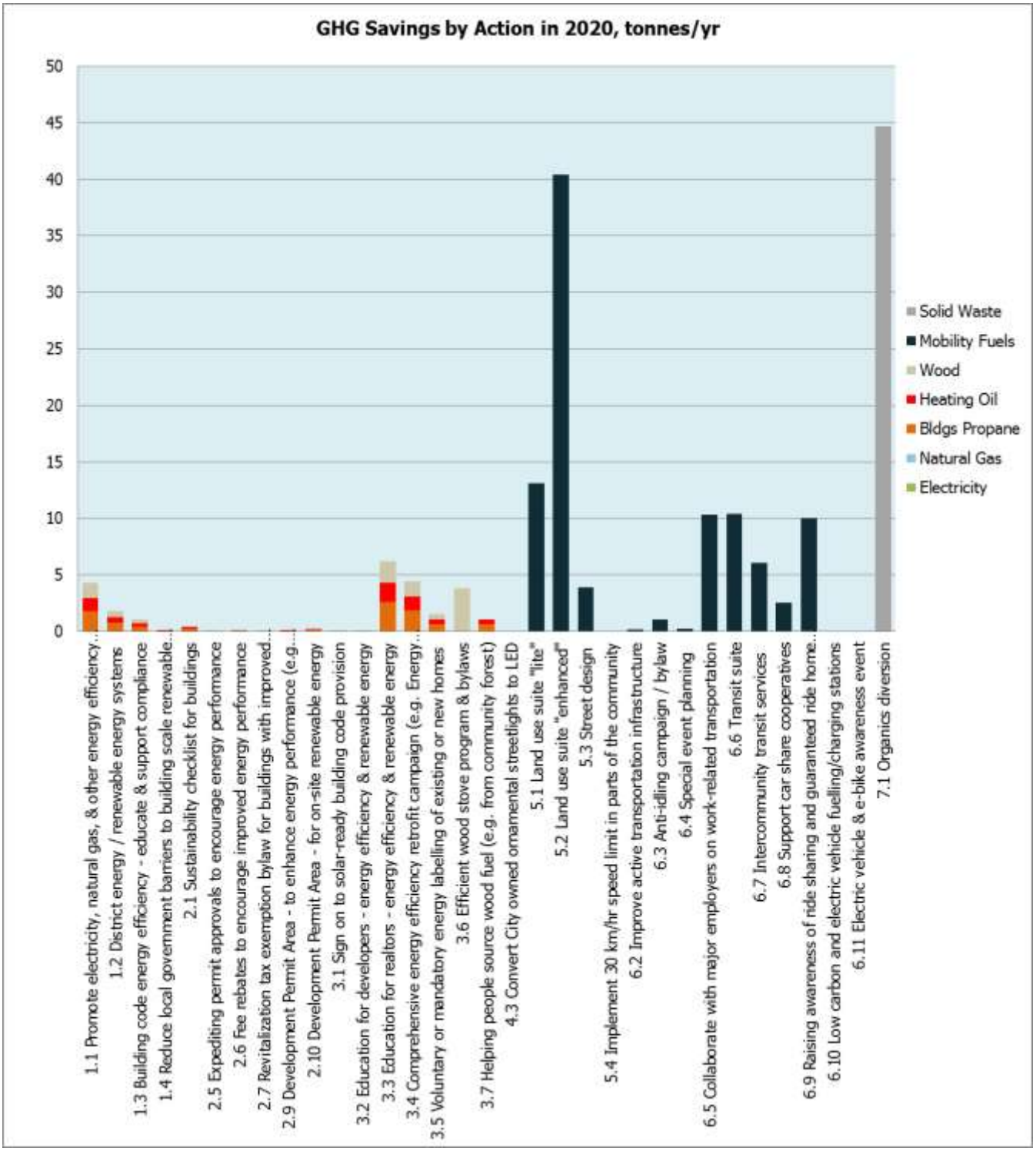
## BAU GHGs by Fuels & Waste, tonnes/year

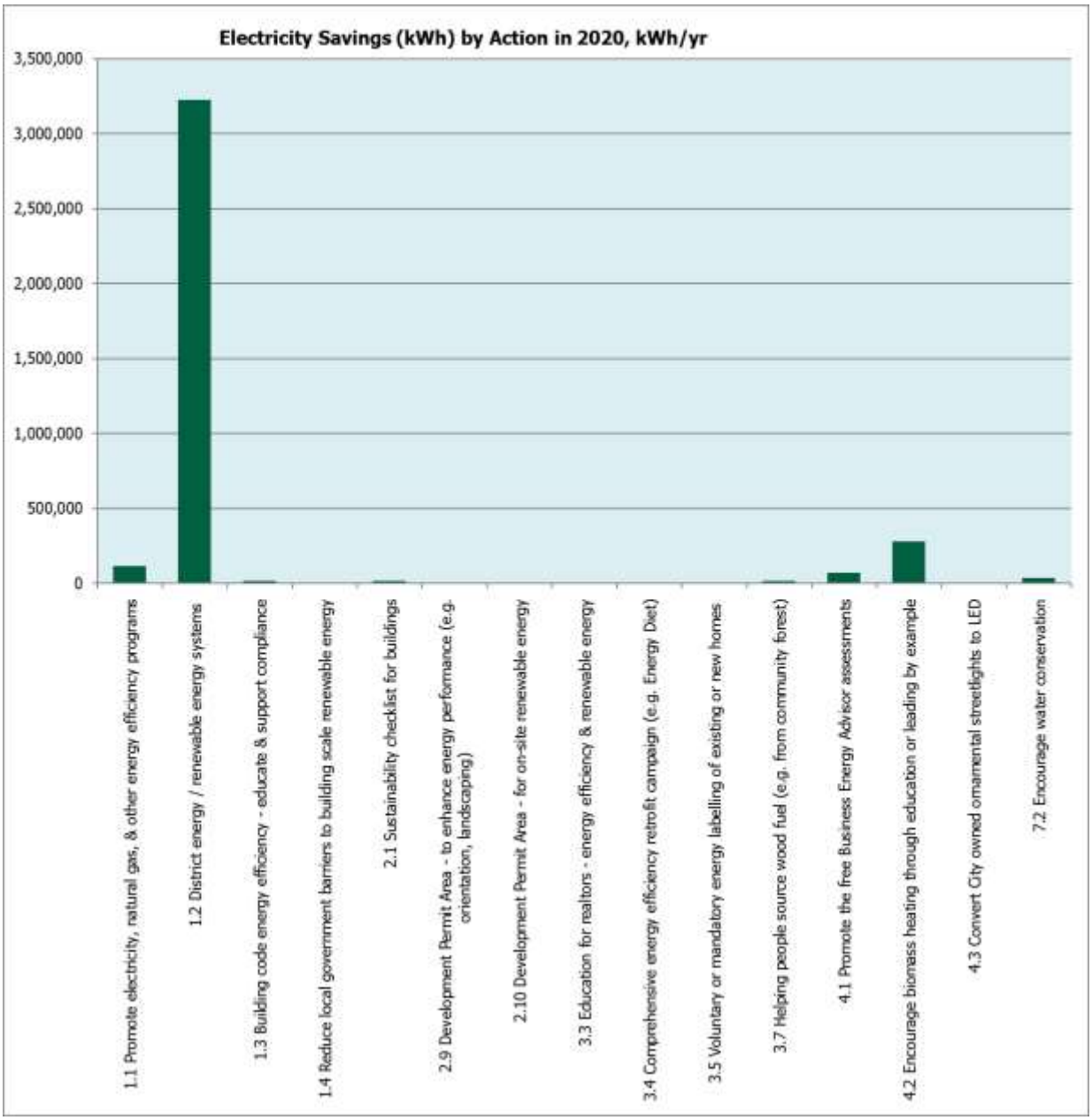



## Planned GHGs by Fuels & Waste, tonnes/year



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.

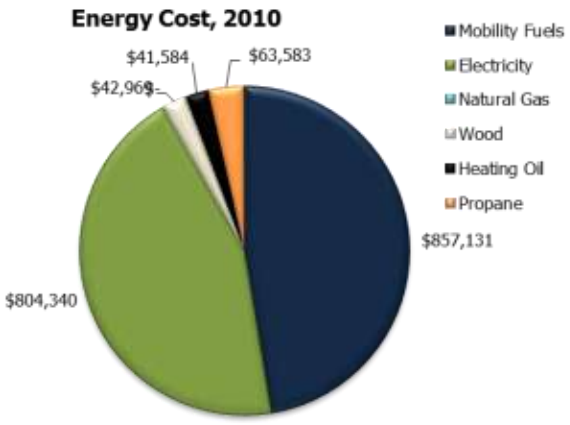



Electricity Savings (kWh) by Action in 2020, kWh/yr
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
1.1 Promote electricity, natural gas, & other energy efficiency programs
1.2 District energy / renewable energy systems
1.3 Building code energy efficiency - educate & support compliance
1.4 Reduce local government barriers to building scale renewable energy
2.1 Sustainability checklist for buildings
2.9 Development Permit Area - to enhance energy performance (e.g. orientation, landscaping)
2.10 Development Permit Area - for on-site renewable energy
3.3 Education for realtors - energy efficiency & renewable energy
3.4 Comprehensive energy efficiency retrofit campaign (e.g. Energy Diet)
3.5 Voluntary or mandatory energy labelling of existing or new homes
3.7 Helping people source wood fuel (e.g. from community forest)
4.1 Promote the free Business Energy Advisor assessments
4.2 Encourage biomass heating through education or leading by example
4.3 Convert City owned ornamental streetlights to LED
7.2 Encourage water conservation

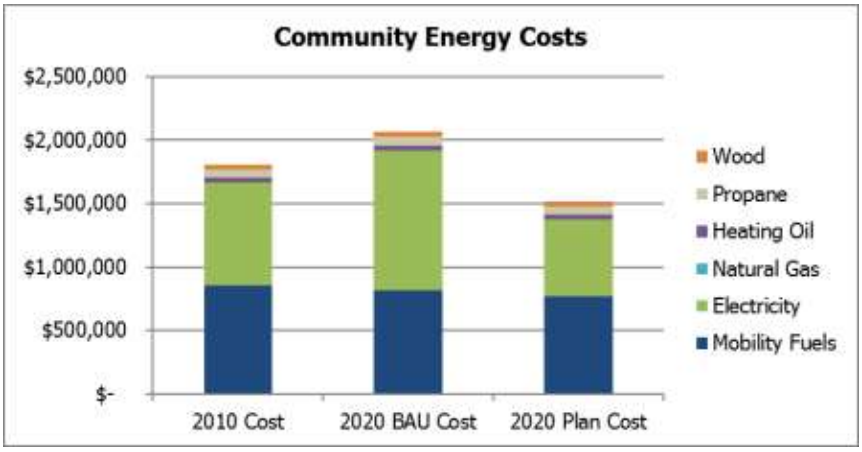
## Community Financial Savings

For the Village of Slocan, 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 reduce their expenses. In addition, using locally generated energy (i.e., the local run of river project) will help to keep energy dollars local rather than exporting them, just as consumption of local food helps the local economy.

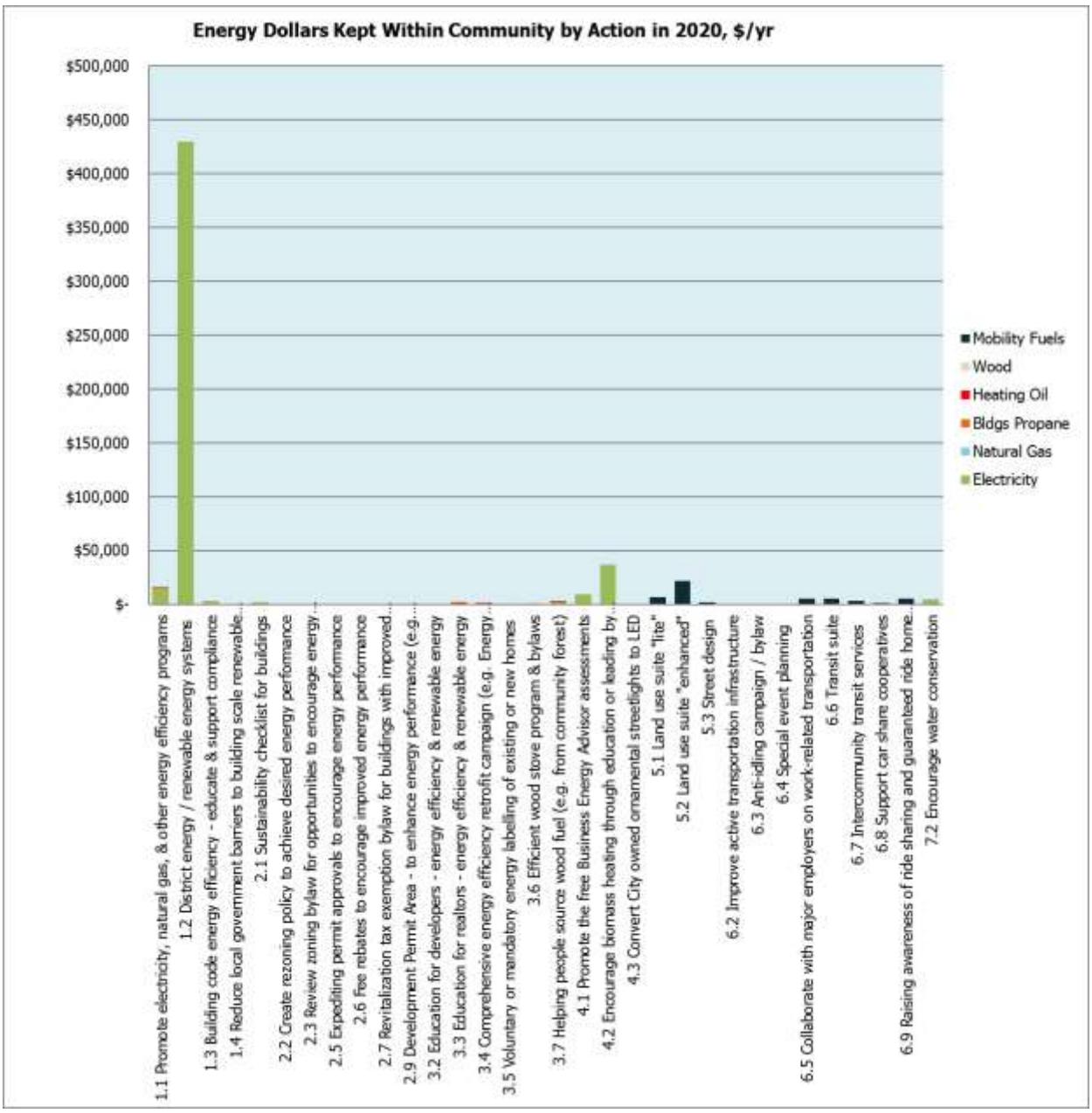
The following chart shows the approximately $1.8 million ($4,500 per capita) of Slocan community energy expenditures made in 2010, split by fuel type.




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 27% through plan implementation. (20% cost reduction alone is attributed to the implementation of the Slocan micro hydro project to generate local hydro production.) The model assumes that energy prices will increase to 2020. So, the 27% plan cost reduction equates to about $550,000 per year ($1700 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.



The following 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.



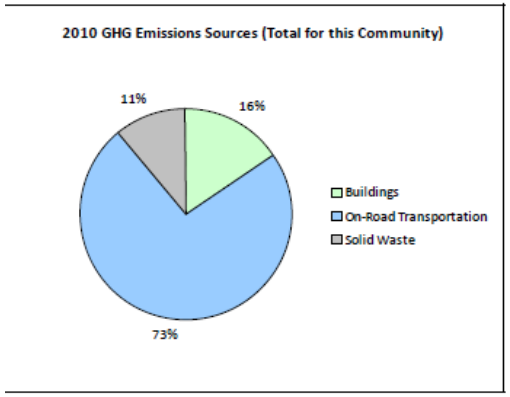
# Appendix 1 – 2010 Community Energy & Emissions Inventory for Slocan

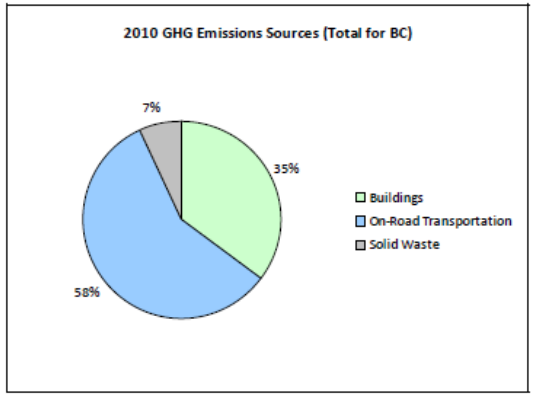
**Slocan Village**

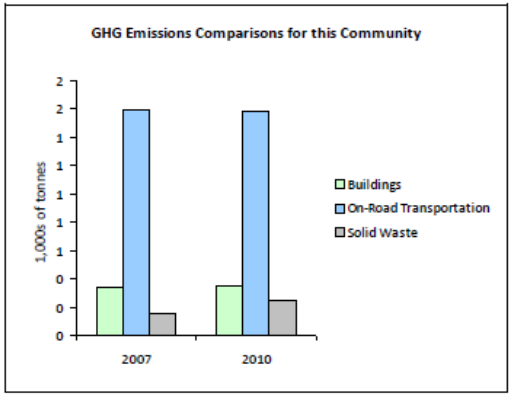
**2010 Community Energy and Emissions Inventory**

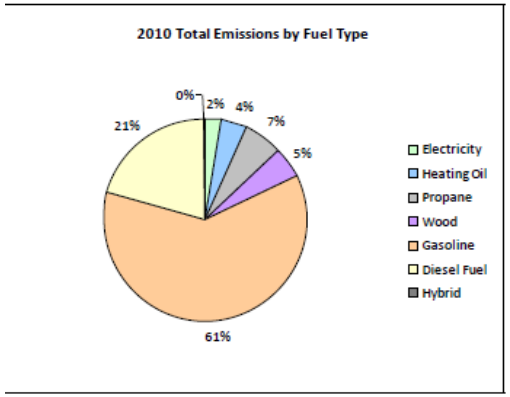
*Monitoring and reporting on progress towards greenhouse gas emissions reduction targets*

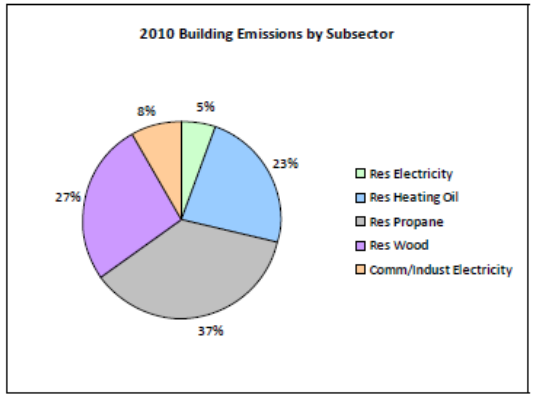


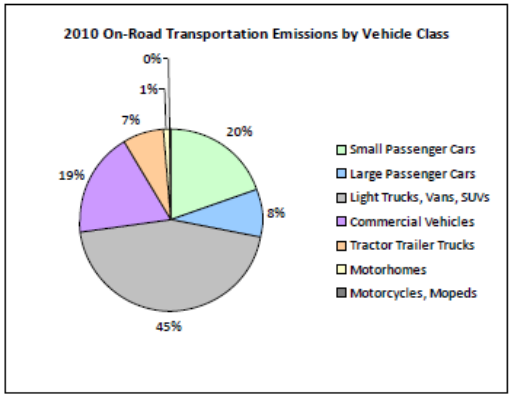


## Slocan Village

### 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) | C02e (t) | Connections | Consumption | Avg VKT (km) | Energy (GJ) | C02e (t) |
| Small Passenger Cars | Hybrid | | | | | | | | 14,100 | 22 | 0 |
| | Gasoline | 77 | 113,531 L | 15,900 | 3,973 | 269 | 87 | 126,970 L | 15,600 | 4,443 | 285 |
| | Diesel Fuel | | | 17,900 | 192 | 13 | | | 23,000 | 371 | 27 |
| Large Passenger Cars | Gasoline | 32 | 52,369 L | 14,700 | 1,833 | 123 | 36 | 57,195 L | 14,300 | 2,002 | 128 |
| | Diesel Fuel | | | 13,400 | 45 | 4 | | | 14,000 | 48 | 4 |
| Light Trucks, Vans, SUVs | Hybrid | | | 27,800 | 76 | 4 | | | 25,700 | 71 | 4 |
| | Gasoline | 125 | 281,947 L | 15,400 | 9,868 | 678 | 137 | 288,257 L | 14,400 | 10,089 | 658 |
| | Diesel Fuel | | | 9,500 | 454 | 32 | | | 13,800 | 637 | 44 |
| Commercial Vehicles | Gasoline | 15 | 39,988 L | 15,300 | 1,399 | 95 | 15 | 38,755 L | 14,900 | 1,356 | 87 |
| | Diesel Fuel | 18 | 67,310 L | 21,000 | 2,579 | 181 | 21 | 80,517 L | 21,200 | 3,083 | 210 |
| | Other Fuel | | | 13,500 | 66 | 4 | | | | | |
| Tractor Trailer Trucks | Diesel Fuel | | | 63,400 | 2,155 | 151 | | | 46,900 | 1,619 | 111 |
| Motorhomes | Gasoline | | | 18,800 | 391 | 26 | | | 20,300 | 308 | 20 |
| | Diesel Fuel | | | 14,300 | 207 | 14 | | | | | |
| Motorcycles, Mopeds | Gasoline | | | 6,100 | 48 | 3 | | | 4,700 | 67 | 4 |
| **Totals** | | **267** | **555,145 L** | **15,832** | **23,286** | **1,597** | **296** | **555,145 L** | **15,248** | **24,116** | **1,582** |

| Buildings | | 2007 | | | | 2010 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Connections | Consumption | Energy (GJ) | C02e (t) | Connections | Consumption | Energy (GJ) | C02e (t) |
| Residential | Wood | N/A | 4,724 GJ | 4,724 | 96 | N/A | 4,547 GJ | 4,547 | 92 |
| | Heating Oil | N/A | 1,216 GJ | 1,216 | 86 | N/A | 1,170 GJ | 1,170 | 80 |
| | Propane | N/A | 2,140 GJ | 2,140 | 131 | N/A | 2,060 GJ | 2,060 | 126 |
| | Electricity | 204 | 3,216,168 kWh | 11,578 | 19 | 181 | 3,128,384 kWh | 11,262 | 19 |
| Commercial/Small-Medium Industrial | Electricity | 32 | 946,063 kWh | 3,406 | 6 | 33 | 4,914,956 kWh | 17,694 | 29 |
| **Totals** | | **236** | | **23,064** | **338** | **214** | | **36,733** | **346** |

## Slocan Village

### 2010 Community Energy and Emissions Inventory

*Monitoring and reporting on progress towards greenhouse gas emissions reduction targets*

| Solid Waste | | 2007 | | | | 2010 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Connections | Consumption | Energy (GJ) | C02e (t) | Connections | Consumption | Energy (GJ) | C02e (t) |
| Community Solid Waste | Solid Waste | 0 | 176 t | N/A | 153 | 0 | 261 t | N/A | 243 |
| **Totals** | | **0** | | | **153** | **0** | | | **243** |

### Memo Items

| Buildings | | 2007 | | | | 2010 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Connections | Consumption | Energy (GJ) | C02e (t) | Connections | Consumption | Energy (GJ) | C02e (t) |
| Large Industrial | Electricity | 1 | | 0 | 0 | | | | |
| **Totals** | | **1** | | | **0** | **0** | | | |

### Totals for Transportation, Buildings and Solid Waste

| Fuel Type | 2007 (Population: 345) | | | 2010 (Population: 397) | | |
|---|---|---|---|---|---|---|
| | Consumption | Energy (GJ) | C02e (t) | Consumption | Energy (GJ) | C02e (t) |
| Hybrid | 0 L | 76 | 4 | 0 L | 93 | 4 |
| Gasoline | 487,835 L | 17,512 | 1,194 | 511,177 L | 18,265 | 1,182 |
| Diesel Fuel | 67,310 L | 5,632 | 395 | 80,517 L | 5,758 | 396 |
| Other Fuel | 0 L | 66 | 4 | 0 L | 0 | |
| Wood | 4,724 GJ | 4,724 | 96 | 4,547 GJ | 4,547 | 92 |
| Heating Oil | 1,216 GJ | 1,216 | 86 | 1,170 GJ | 1,170 | 80 |
| Propane | 2,140 GJ | 2,140 | 131 | 2,060 GJ | 2,060 | 126 |
| Electricity | 4,162,231 kWh | 14,984 | 25 | 8,043,340 kWh | 28,956 | 48 |
| Solid Waste | 176 t | 0 | 153 | 261 t | 0 | 243 |
| **Grand Totals** | | **46,350** | **2,088** | | **60,849** | **2,171** |

# Slocan Village

## 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 | 130 | 50 | 120 | 83 | 125 | 83 |
| Semi-Detached House | 0 | 0 | 0 | 0 | 0 | 0 |
| Row House | 0 | 0 | 0 | 0 | 0 | 0 |
| Apartment, Duplex | 0 | 0 | 5 | 3 | 0 | 0 |
| Apartment, 5 storeys or higher | 0 | 0 | 0 | 0 | 0 | 0 |
| Apartment, under 5 storeys | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Single Attached House | 0 | 0 | 5 | 3 | 5 | 3 |
| Movable Dwelling | 0 | 0 | 15 | 10 | 20 | 13 |

### 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 | 35 | 64 | 70 | 50 | 25 | 22 |
| Car, Truck,Van as Passenger | 0 | 0 | 0 | 0 | 0 | 0 |
| Public Transit | 0 | 0 | 0 | 0 | 10 | 9 |
| Walked | 20 | 36 | 70 | 50 | 80 | 70 |
| Bicycle | 0 | 0 | 0 | 0 | 0 | 0 |
| Motorcycle | 0 | 0 | 0 | 0 | 0 | 0 |
| Taxicab | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Method | 0 | 0 | 0 | 0 | 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 | 2 | 3 |
| Agricultural Land Reserve | 0 | 0 |
| Other land use | 90 | 97 |
| Total Parks and Protected Area | 2 | 3 |
| Total Land Area | 93 | 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 | 2 | 3 |
| Agricultural Land Reserve | 0 | 0 |
| Other land use | 90 | 97 |
| Total Parks and Protected Area | 2 | 3 |
| Total Land Area | 93 | 100 |

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

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## 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.

## 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** | **Key Question**: This action is recommended unless there is a reason why it cannot be done.<br><br>**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. |
| | **% Energy Savings Calculation**: Commercial = a*b*c, Residential = d*e*f<br><br>a. % of commercial customers reached<br>b. % of reached commercial that implement<br>c. average improvement from implementing<br>d. % of residential customers reached<br>e. % of those reached that implement<br>f. average % improvement from implementing<br><br>Example: (a*b*c) = (90% * 5% * 30%) = 1.4% (commercial buildings sector)<br>(d*e*f) = (90% * 5% * 30%) = 1.4% (residential buildings sector) |
| **1.2 District energy / renewable energy systems** | **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?<br><br>**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. |
| | **Calculation**: Existing Residential = a*b*c, New Residential = a*d*c<br>Existing Commercial = c*f*g, New Commercial = e*f*h<br><br>a. % of energy used for heating & cooling for residential (77%)<br>b. % of existing residential connected to DE<br>c. % reduction of energy from DE for residential<br>d. % of new residential connected to DE<br>e. % of energy for heating and cooling in industrial/commercial/institutional (ICI)<br>f. % reduction in heating / cooling from DE for ICI<br>g. % of existing ICI connected to DE<br>h. % of new ICI connected to DE<br><br>Example: Energy improvements in indicated sectors:<br>(a*b*c) = (77% * 1% * 66%) = 0.3% (existing residential buildings sector)<br>(a*d*c) = (77% * 5% * 66%) = 2.5% (new residential buildings sector)<br>(e*f*g) = (63% * 66% * 1%) = 0.4% (existing commercial sector)<br>(e*f*h) = (63% * 66% * 25%) = 4.2% (new commercial sector) |
| | |

| Action | Description |
|---|---|
| **1.3 Building code energy efficiency - educate & support compliance** | **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?<br><br>**Description:** Greening the Building Code is an ongoing provincial initiative, improving energy performance of new housing.<br><br>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.<br><br>Local governments can help fix this by:<br>• Changing building inspection requirements or practices.<br>• Increasing the number of Certified Energy Assessors.<br>• Promoting educational sessions on the BC Building Code to builders / developers in their community. The Homeowner's Protection Office regularly runs such sessions. |
| | **% Energy Savings Calculation**: New Residential = a*b, New Commercial = c*d<br><br>a. % new residential buildings captured by improved enforcement<br>b. % improvement in new commercial buildings by energy type through better enforcement<br>c. % new commercial buildings captured by improved enforcement<br>d. % improvement in new residential buildings by energy type through better enforcement<br><br>Example: (a*b) = (80% * 15%) = 12% (new residential buildings)<br>(c*d) = (80% * 5%) = 4% (new commercial buildings) |
| **1.4 Reduce local government barriers to building scale renewable energy** | **Key Question:** What barriers are people aware of for building scale renewable energy systems?<br><br>**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. |
| | **% Energy Savings Calculation**: Residential = a*b, Commercial = c*d<br><br>a. % of homes that may install solar photovoltaics or other renewable energy systems per year<br>b. % of annual electricity reduction for those properties that will be generated by those systems<br>c. % of commercial buildings that may install solar photovoltaics or other renewable energy systems per year<br>d. % of annual electricity reduction that will be generated by those systems<br><br>Example: Energy improvements in indicated sectors:<br>(a*b) = (0.1% * 50%) = 0.05% per year (residential buildings sector)<br>(c*d) = (0.1% * 10%) = 0.01% per year (commercial sector) |

## 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 |
|---|---|
| **2.1 Sustainability checklist for buildings** | **Key Question**: Is the community growing?<br><br>**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.<br><br>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. |
| | **% Energy Savings Calculation**: New Buildings = a*b*c, Existing Buildings = d*e*f<br><br>a. % new buildings exposed to checklist<br>b. % of those in (a) who improve performance<br>c. Average % impact in new buildings by energy type<br>d. % major renovations exposed to checklist<br>e. % of existing buildings doing major renovations<br>f. Average % impact by energy type for major renovations<br><br>Example: (a*b*c) = (90%*10%*15%) = 1.4 % new buildings<br>(d*e*f) = (90%* 1%*15%) = 0.7% existing buildings |
| **2.2 Create rezoning policy to achieve desired energy performance** | **Key Question**: Is the community growing?<br><br>**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. |
| | **% Energy Savings Calculation**: (a*b*c)<br><br>a. % new buildings covered by policy<br>b. % of those in (a) who improve performance<br>c. Average % impact in new buildings by energy type<br><br>Example: (a*b*c) = (30% * 10% * 30%) = 0.9% for new buildings |

| Action | Description |
|---|---|
| **2.3 Review zoning bylaw for opportunities to encourage energy performance** | **Key Question:** Is the community growing?<br><br>**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. |
| | **% Energy Savings Calculation**: (a*b*c)<br><br>a. % new homes covered by policy<br>b. % of those in (a) who improve performance<br>c. Average % impact in new buildings by energy type<br><br>Example: (a*b*c) = (100% * 5% * 20%) = 1% for new homes |
| **2.4 Density bonus for energy performance** | **Key Question**: Is the community growing?<br><br>**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. |
| | **% Energy Savings Calculation**: (a*b*c)<br><br>a. % new buildings covered by policy<br>b. % of those in (a) that improve performance<br>c. Average % impact in new buildings by energy type<br><br>Example: (a*b*c) = (25% * 75% * 25%) = 4.7% for new buildings |
| **2.5 Expediting permit approvals to encourage energy performance** | **Key Question**: Is the community growing?<br><br>**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 |
| | **% Energy Savings Calculation**: (a*b*c)<br><br>a. % new buildings covered by policy<br>b. % of those in (a) who improve performance<br>c. Average % impact in new buildings by energy type<br><br>Example: (a*b*c) = (25% * 10% * 25%) = 0.6% for new buildings |

| Action | Description |
|---|---|
| **2.6 Fee rebates to encourage improved energy performance** | **Key Question**: Is the community growing?<br><br>**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 |
| | **% Energy Savings Calculation**: (a*b*c)<br>a. % new houses covered by policy<br>b. % of those in (a) who improve performance<br>c. Average % impact in new buildings by energy type<br><br>Example: (a*b*c) = (100% * 10% * 20%) = 2% for new homes |
| **2.7 Revitalization tax exemption bylaw for buildings with improved energy performance** | **Key Question**: Is the community growing?<br><br>**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.<br>Example: District of Maple Ridge |
| | **% Energy Savings Calculation**: (a*b*c)<br><br>a. % new buildings covered by policy<br>b. % of those in (a) who improve performance<br>c. Average % impact in new buildings by energy type<br><br>Example: (a*b*c) = (25% * 10% * 25%) = 0.6% for new buildings |
| **2.8 Development Cost Charge (DCC) reductions or waivers, for GHG's** | **Key Question**: Is the community growing?<br><br>**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 |
| | **% Energy Savings Calculation**: (a*b*c)<br><br>a. % new buildings covered by policy<br>b. % of those in (a) who improve performance<br>c. Average % impact in new buildings by energy type<br><br>Example: (a*b*c) = (5% * 5% * 25%) = 0.1% for new buildings |
| **2.9 Development Permit Area (DPA) - to enhance energy performance (e.g. orientation, landscaping)** | **Key Question**: Is the community growing?<br><br>**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. |
| | **% Energy Savings Calculation**: (a*b*c)<br><br>a. % new buildings covered by policy<br>b. % of those in (a) who improve performance<br>c. Average % impact in new buildings by energy type<br><br>Example: (a*b*c) = (10% * 75% * 20%) = 1.5% for new buildings |

| Action | Description |
|---|---|
| **2.10 DPA - for on-site renewable energy** | **Key Questions**: Is the community growing, and is the community interested in cutting edge policy?<br><br>**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. |
| | **% Energy Savings Calculation**: (a*b*c)<br><br>a. % new buildings covered by policy<br>b. % of those in (a) who improve performance<br>c. Average % impact in new buildings by energy type<br><br>Example: (a*b*c) = (10% * 50% * 66%) = 3.3% for new buildings |

## 3. Residential Buildings

The following actions may be applicable to residential buildings.

| Action | Description |
|---|---|
| **3.1 Sign on to solar-ready building code provision** | **Key Question**: This action should be considered.<br><br>**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. |
| | **% Energy Savings Calculation**: (a*b*c)<br><br>a. % of new residential that is single family<br>b. % of new residential that installs SHW<br>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<br><br>Example: (a*b*c) = (60% * 1% * (30% * 50%) = 0.1% for new residences |
| **3.2 Education for developers – energy efficiency & renewable energy** | **Key Question:** This action is recommended unless there is a compelling reason not to implement.<br><br>**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. |
| | **% Energy Savings Calculation:** (a*b*c)<br><br>a. % of development community reached<br>b. % of those in (a) who integrate energy improvements into their developments<br>c. Average % impact by energy type of improvements<br><br>Example: (a*b*c) = (20% * 10% * 20%) = 0.4% for new buildings |
| **3.3 Education for realtors - energy efficiency & renewable energy** | **Key Question:** This action should be considered.<br><br>**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. |

| Action | Description |
|---|---|
| | **% Energy Savings Calculation:** (a*b)<br><br>a. % penetration into housing market<br>b. Average % improvement in energy efficiency<br><br>Example: (a*b) = (5% * 20%) = 1% for new & existing homes |
| **3.4 Comprehensive energy efficiency retrofit campaign (e.g. Energy Diet)** | **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?<br><br>**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. |
| | **% Energy Savings Calculation:** (a*b*c)<br><br>a. % of existing housing stock built before 2006<br>b. % of those in (a) who are reached through the campaign and incorporate energy improvements<br>c. Average % impact by energy type of improvements<br><br>Example: (a*b*c) = (75% * 10% * 20%) = 1.5% for existing homes |

| Action | Description |
|---|---|
| **3.5 Voluntary or mandatory energy labelling of existing or new homes** | **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?<br><br>**Description:** Local governments can encourage or mandate energy labelling of existing and/or new homes.<br><br>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.<br><br>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.<br><br>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.<br><br>Example: 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. |
| | **% Energy Savings Calculation:** (a*b*c)<br><br>a. % of houses that will undergo assessments each year<br>b. % of those in (a) that will improve energy efficiency<br>c. Average % impact by energy type of improvements<br><br>Example: (a*b*c) = (5% * 50% * 20%) = 0.5%, ***per year*** |

| Action | Description |
|---|---|
| **3.6 Efficient wood stove program & bylaws** | **Key Question**: Do many residents use inefficient wood fireplaces / stoves?<br><br>**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.<br><br>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.<br><br>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.<br><br>Many communities also hold workshops on clean & safe operation of woodstoves.<br><br>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). |
| | **% Energy Savings Calculation**: (*for wood fuel only*) = (a*b)<br><br>a. % of wood-stoves changed as a result of the program<br>b. Average % improvement in efficiency per stove<br><br>Example: (a*b) = (10% * 40%) = 4% for wood fuel for existing homes |
| **3.7 Helping people source wood fuel (e.g. from community forest)** | **Key Question**: Do many residents struggle to source wood fuel for their stoves, at a reasonable price?<br><br>**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. |
| | **% Energy Savings Calculation**: *(all building energy types except wood fuel)*<br><br>a. % of people who use the cheaper sourced wood fuel<br>b. % decrease in use of other energy types<br><br>Example: (a*b) = (5% * 10%) = 0.5% for existing buildings |

## 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** | **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?<br><br>**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. |
| | **% Energy Savings Calculation**: for commercial sector buildings= (a*b)<br><br>a. % of commercial sector that take up the offer<br>b. % improvement in building energy efficiency as a result of participating in the program<br><br>Example: (a*b) = (10% * 15%) = 1.5% for existing commercial buildings |
| **4.2 Encourage biomass heating through education or leading by example** | **Key Question**: Is there a local or regional biomass supply that could be used for heating?<br><br>**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.<br><br>Local governments can encourage biomass heating through education or leading by example (biomass installations in local government buildings).<br><br>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/?dlm_download_category=heating<br><br>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. |

| Action | Description |
|---|---|
| | **% Emissions Savings Calculation =** (a*b*c)<br><br>a. % of existing buildings that convert to biomass<br>b. %of building GHG's associated with space heating<br>c. %of heat load that biomass covers<br><br>Example: (a*b*c) = (10%*70%*80%) = 5.6%, for commercial buildings |
| **4.3 Convert local government owned streetlights to LED** | **Key Question:** This action is recommended unless there is a compelling reason not to implement.<br><br>**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. |
| | **% Emissions Savings Calculation =** (a*b) *(electricity only)*<br><br>a. % of community commercial electricity consumption associated with local government owned streetlights<br>b. % of reduction in electricity consumption<br><br>Example: (a*b) = (0.3%*30%) = 0.1%, for commercial electricity |

## 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 |
|---|---|
| **5.1 Land use suite lite** | **Key Question**: Recommended for communities wherever politically practical.<br><br>**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.<br><br>Conservation covenants (such as through land trusts) may also be considered for agricultural lands or natural habitats. |
| | **% Energy Savings Calculation**: for Light Duty Vehicle sector= (a*b*c)<br><br>a. % of community in downtown<br>b. Degree to which the area in (a) exhibits the full implementation of supportive land use<br>c. % reduction in transportation emissions (see Background section for guidance on emissions reduction potential)<br><br>Example: (a*b*c) = (20% * 20% * 30%) = 1.2% for LDV sector |
| **5.2 Land use suite enhanced** | **Key Question**: Recommended for communities seeking significant GHG reductions<br><br>**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. |
| | **% Energy Savings Calculation**: for LDV sector = (a*b*c)<br><br>a. % of community covered by program<br>b. Degree to which the area in (a) exhibits the full implementation of supportive land use<br>c. % reduction in transportation emissions (see Background section for guidance on emissions reduction potential)<br><br>Example: (a*b*c) = (50% * 25% * 30%) = 3.8% for LDV |

| Action | Description |
|---|---|
| **5.3 Street design** | **Key Question**: This action is recommended for all communities unless there is a reason why it should not be implemented.<br><br>**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. |
| | **% Energy Savings Calculation**: for LDV sector = (a*b*c)<br><br>a. % of community covered by program<br>b. Degree to which the area in (a) exhibits the full implementation of supportive land use<br>c. % reduction in transportation emissions (see Background section for guidance on emissions reduction potential)<br><br>Example: (a*b*c) = (5% * 25% * 30%) = 0.4% for LDV |
| **5.4 Implement 30 km/hr speed limit in parts of the community** | **Key Question**: Is a 30km/hr speed limit feasible in parts of the community?<br><br>**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 |
| | **% Energy Savings Calculation**: for LDV sector= (a*b*c)/d<br><br>a. Number of walking/cycling trips per year<br>b. % of trips that would have been by car<br>c. average walking/cycling trip length<br>d. Total LDV vehicle kilometers travelled (VKT) (estimation can be derived from CEEI data)<br><br>Example: (a*b*c)/d = (36,500 * 20% * 1.5) / 200,000,000 = 0.01% LDV emissions |
| **5.5 Variable Development Cost Charges (DCC's) to encourage infill development** | **Key Question**: Is the community growing?<br><br>**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. |
| | **% Energy Savings Calculation**: (a*b*c)<br><br>a. % new developments covered by policy<br>b. % of those in (a) who locate closer to existing infrastructure<br>c. Average % reduction in trip distances achieved<br><br>Example: (a*b*c) = (100% * 10% * 25%) = 2.5% reduction in vehicle emissions |

| Action | Description |
|---|---|
| **5.6 Flow RGS, OCP, and LAP through to zoning** | **Key Question**: Recommended for all communities.<br><br>**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. |
| | **% Energy Savings Calculation**: N/A – depends on OCP policies. |

## 6. Vehicle Transportation – Infrastructure & Collaboration

| Action | Description |
|---|---|
| **6.1 Active transportation planning** | **Key Question**: This action is recommended for all communities considering transportation demand management.<br><br>**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. |
| | **Calculation**: N/A - this is a planning process which will not produce direct results itself, but may lead to projects that will produce savings. |
| **6.2 Improve active transportation infrastructure** | **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?<br><br>**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).<br><br>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.<br>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.<br><br>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.<br><br>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:<br>• % of non-recreational cyclists who would have driven, if they were not cycling: 50%.<br>• Average BC cycling commuter distance: 5km each way, 10km return trip. |

| Action | Description |
|---|---|
| | **% Energy Savings Calculation**: for LDV sector= (a*b*c)/d<br><br>a. Number of active transportation trips/year<br>b. % of trips that would have been by car<br>c. average trip length<br>d. Total LDV vehicle kilometers travelled (VKT) (estimation can be derived from CEEI data)<br><br>Example: (a*b*c)/d = (36,500 * 25% * 4) / 200,000,000 = 0.02% LDV emissions |
| **6.3 Anti-idling campaign / bylaw** | **Key Question**: Do a significant number of people idle vehicles in the community?<br><br>**Description:**<br>Natural Resources Canada has the position that idling for over 10 seconds uses more fuel, costs more money, and produces more $CO_2$ emissions than restarting your engine. There can also be substantial air quality savings.<br><br>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.<br><br>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!". |
| | **% Energy Savings Calculation**: for LDV sector = (a*b)<br><br>a. Estimated LDV fuel consumption from idling<br>b. Estimated reduction from anti-idling activities<br><br>Example: (a*b) = (1% * 10%) = 0.1% LDV emissions |
| | **% Energy Savings Calculation**: for LDV sector = (a*b*c)/d<br><br>c. Number of cycling trips/year<br>d. % of trips that would have been by car<br>e. average cycling trip length<br>f. Total LDV vehicle kilometers travelled<br><br>Example: (a*b*c)/d = (36,500 * 30% * 5) / 200,000,000 = 0.03% LDV emissions<br><br>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. |

| Action | Description |
|---|---|
| **6.4 Special event planning** | **Key Question**: Are large special events planned?<br><br>**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. |
| | **% Energy Savings Calculation**: for LDV sector = (a*b*c)<br><br>a. % of LDV travel associated with travel to/from event<br>b. % of travel population in (b) affected by action<br>c. Average % reduction in vehicle kilometers travelled by population in (c)<br><br>Example: (a*b*c) = (1% * 20% * 10%) = 0.002% LDV sector |
| **6.5 Collaborate with major employers on work-related transportation** | **Key Question:** Is there a major employer(s) in the community?<br><br>**Description:** Collaboration with major employers such as industries, schools and hospitals can uncover opportunities to reduce commuting-related transportation emissions.<br><br>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. |
| | **% Energy Savings Calculation:** for LDV sector = (a*b*c)<br><br>a. % of LDV travel associated with travel to/from employer/institution<br>b. % of travel population in (a) affected by action<br>c. Average % reduction in vehicle kilometers travelled by population in (b)<br><br>Example: (a*b*c) = (10% * 50% * 20%) = 1.0% LDV emissions |

| Action | Description |
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| **6.6 Transit suite** | **Key Question**: Are there major trip destinations beyond 8km that are not sufficiently served by transit?<br><br>**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.<br>• 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.<br>• 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.<br>• 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.<br><br>Many factors affect transit deployment, key ones being residential density and form. |
| | **% Energy Savings Calculation**: for LDV sector = (a*b)<br><br>a. % of population affected by transit measures (within approx. 400 meters of stops)<br>b. Average % reduction in vehicle kilometers traveled for population in (b)<br><br>Example: = (20% * 5%) = 1% LDV emissions |
| **6.7 Intercommunity transit services** | **Key Question**: Is there significant inter-community travel?<br><br>**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.<br><br>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.<br><br>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. |

| Action | Description |
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| | **% Energy Savings Calculation**: for LDV sector = (a*b*c)<br><br>a. % of population affected by inter-community transit<br>b. % of VKT related to inter-community travel<br>c. % of LDV trips avoided<br><br>Example: = (60% * 10% * 10%) = 0.6% LDV emissions |
| **6.8 Support car share cooperatives** | **Key Question:** Is there a sizeable population within walking distance of a potential shared vehicle?<br><br>**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). |
| | **% Energy Savings Calculation**: for LDV sector = (a*b*c)<br><br>a. % of population near potential car share co-op space<br>b. % of (a) that would use the service<br>c. % reduction in their LDV trips<br><br>Example: = (50% * 5% * 10%) = 0.3% LDV emissions |
| **6.9 Raising awareness of ride sharing and guaranteed ride home programs** | **Key Question**: Are there major trip destinations beyond 8km that are not sufficiently served by transit?<br><br>**Description:** Carpooling is a simple way for local governments to begin TDM while saving money, reducing congestion and conserving energy along the way.<br><br>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.<br><br>"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.)<br><br>Other ride sharing services exist, including Hitch Planet, Jack Bell, and people posting messages on websites such as Kijiji.<br><br>Local governments can promote these services. |
| | **% Energy Savings Calculation**: for LDV sector= (a*b)<br><br>a. % of population affected by ride-share<br>b. Average % reduction in vehicle kilometers traveled for population in (b)<br><br>Example: = (10% * 10%) = 1% LDV emissions |

| Action | Description |
|---|---|
| **6.10 Low carbon and electric vehicle fuelling / charging stations** | **Key Question**: Can adequate resources be allocated to implement these recommended actions?<br><br>**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.<br><br>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.<br><br>There are several specific actions all local governments can take to prepare for low carbon and electric vehicles.<br>• Sign on to provincial 'EV-Ready' bylaw if & when it is available. Analysis indicates 80% of charging will be done at home.<br>• Include EV charging infrastructure in sustainability guidelines<br>• Ensure permitting processes (for renovations particularly) are set up to smoothly address electric vehicle charging infrastructure<br>• Consider low carbon vehicles (see action 4.3) and electric vehicles for the local government fleet to demonstrate the viability of the technology<br>• Set up charging stations at highly visible locations, preferably where there are many amenities (e.g. downtown)<br><br>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. |
| | **% 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. |
| **6.11 Electric vehicle & e-bike awareness event** | **Key Question**: Are there electric vehicles in or near the local community, e.g. being sold by local businesses?<br><br>**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. |
| | **% Emissions Savings Calculation**: N/A – unqualifiable at this time |

| Action | Description |
|---|---|
| **6.12 Natural Gas Vehicle Collaboration** | **Key Question**: Are there heavy-duty fleets that could refuel where local government fleets refuel?<br><br>**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.<br><br>Further calculations available in "Option 1A: Project Profile Low Emissions Vehicles" at the 'how' tab of www.toolkit.bc.ca/carbon-neutral-government. |
| | **% Energy Savings Calculation** = (a/b)*c, where:<br><br>a. Number of heavy duty vehicle-kilometers traveled from vehicles converting to natural gas<br>b. Total number of heavy duty vehicle-kilometers traveled<br>c. % difference in emissions from original configuration to natural gas configuration (efficiency and carbon intensity)<br><br>Example: (a/b)*c = (10,000/100,000) * 30% = 3% of emissions from existing heavy duty commercial vehicles |

# 7. Waste

| Action | Description |
|---|---|
| **7.1 Organics diversion** | **Key Question**: Is a significant amount of organics going to landfill that could be economically diverted?<br><br>**Description:** GHG emissions from landfills are primarily from the decomposition of buried organics. Create a comprehensive composting program:<br>• Encourage grass swapping and back-yard composting.<br>• Create a public compost pick-up site and program.<br>• Support existing and new capacity for reusable resources, including Free Swaps, Share Sheds, free-store for unwanted goods, and building materials depot.<br><br>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.<br><br>Further calculations available in "Option 1D: Project Profile Household Organic Waste Composting" at the 'how' tab of www.toolkit.bc.ca/carbon-neutral-government |
| | **% Energy Savings Calculation for municipal solid waste sector**: = (a – c)*b<br><br>a. % of landfill GHG's from organics<br>b. % of organics diverted annually<br>c. Average % of emissions over planning period (to 2050?) form organics currently in landfill under BAU scenario<br><br>Example: (a –c)*b = (80% - 25%) * 10% = 35% waste emissions |
| **7.2 Encourage water conservation** | **Key Question**: Could the community benefit if water consumption was reduced?<br><br>**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.<br><br>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.<br><br>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. |

| Action | Description |
|---|---|
| | **% Emissions Savings Calculation =** (a*b) *(electricity only)*<br><br>a. % of community commercial electricity consumption associated with water and wastewater treatment and pumping (8% for Cache Creek, 6% for Lumby)<br>b. % of reduction in electricity consumption<br><br>Example: (a*b) = (7%*10%) = 0.7%, for commercial electricity |
| **7.3 Support local food production, e.g. farmers markets, community gardens, community greenhouse** | **Key Question**: Is there local interest in growing your own food, and is it feasible locally?<br><br>**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.<br><br>Examples: community greenhouse in Invermere, food forest at a Regional District of Central Okanagan park. |
| | **% Emissions Savings Calculation**: N/A – unqualifiable at this time. Will vary between communities. |

# 8. Enabling Actions

| Action | Description |
|---|---|
| **8.1 Review land use & transportation plans / policies for SCEEP incorporation** | **Key Question**: Recommended for all communities.<br><br>**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. |
| | **Calculation**: This enabling action does not have direct impacts itself, however it may help achieve results from other actions. |
| **8.2 Organizational structure for climate action** | **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?<br><br>**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.<br>Taking time up-front to establish such structures is a worthwhile investment in setting implementation up for success. Key questions to answer include:<br>• Who makes which decisions regarding climate action?<br>• Who is expected to do what and how are they held accountable?<br>• What new / different communication / planning is required (sewer or road work and district energy)?<br>• 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? …)<br>• How will capital, operating and human resource elements of the SCEEP be funded? |
| | **Calculation**: This enabling action does not have direct impacts itself, however it may be critical to achieving results from other actions. |
| **8.3 Establish a regional energy cooperative** | **Key Question**: Is there strong interest in clean energy in the community?<br><br>**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. |
| | **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. |

<table>
<tr><th>Action</th><th>Description</th></tr>
<tr><td rowspan="2">8.4 Identify green economy opportunities</td><td>Key Question: This enabling action is recommended to all local governments who want to achieve economic development / diversification benefits from climate action.<br><br>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.<br>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.<br><br>A guide to achieving economic development potential of climate action is Clean Energy for a Green Economy available at http://communityenergy.bc.ca/?dlm_download_category=economics</td></tr>
<tr><td>Calculation: This enabling action will assist in moving other actions forward.</td></tr>
<tr><td rowspan="2">8.5 Leverage local government assets to create expertise and community-wide change</td><td>Key Question: Are actions being taken in local government (LG) operations that could be leveraged to support community-wide action?<br><br>Description:
<table>
<tr><th></th><th>LG Action</th><th>Community Opportunities</th></tr>
<tr><td>Buildings</td><td>- District energy systems<br>- Building energy efficiency retrofits<br>- New green buildings</td><td>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.<br>Association: Visible actions that others are implementing clean energy and conservation.<br>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.</td></tr>
<tr><td>Fleet</td><td>- Biofuels<br>- Hybrids / EV's</td><td>Agency: Improved access to fuels and mechanics who can service biofuel, hybrid, or electric vehicles.</td></tr>
<tr><td>Other</td><td>- Carbon neutral actions</td><td>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.</td></tr>
</table></td></tr>
<tr><td>Calculation: Impacts of these enabling actions are highly dependent on specific actions planned for local government operations.</td></tr>
</table>

| Action | Description |
|---|---|
| **8.6 Long-term, deep community engagement (culture change)** | **Key Question**: Do the other actions identified fall short of the desired change?<br><br>**Description:** Overall, the purpose of social mobilization for British Columbia climate action is to:<br>1. Engage residents in developing and implementing climate solutions through collective, 'bottom-up', informal, organizational and institutional initiatives.<br>2. Change collective behaviour to reduce carbon footprints.<br>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.<br>4. Build capacity and resilience to plan and respond to climate change adaptation and mitigation.<br><br>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:<br>*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.*<br><br>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., Vandenbergh, M. P.: Household actions can provide a behavioural wedge to rapidly reduce U.S. carbon emissions, in *Proceedings of the National Academy of Sciences, 106: 44,* 18452-18456, 2009). |
| | **Calculation**: Impacts can be substantial but are highly dependent on the specific program implemented. |