



Community Energy & Emissions Planning

A Guide For B.C. Local Governments

September 2008

The 'first stop' for local government leaders addressing energy sustainability and climate change

Community Energy Association | British Columbia The Best Place on Earth

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Disclaimer
Support for this project does not necessarily imply Province of British Columbia endorsement of the findings or contents of this report and the views expressed herein do not represent the views of the funder. The information contained in the following pages is for informational purposes only and should not be considered technical or legal advice.

About the Community Energy Association
The Community Energy Association is a charitable organization that assists local governments throughout B.C. to promote energy efficiency and alternative energy through community energy planning and project implementation. For information and many more local government resources, please visit our website.

Contact information
Community Energy Association
Vancouver, B.C.
info@communityenergy.bc.ca
Tel: 604-628-7076 Fax: 778-786-1613
www.communityenergy.bc.ca

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Lead author
Michael Wilson, P.Eng.

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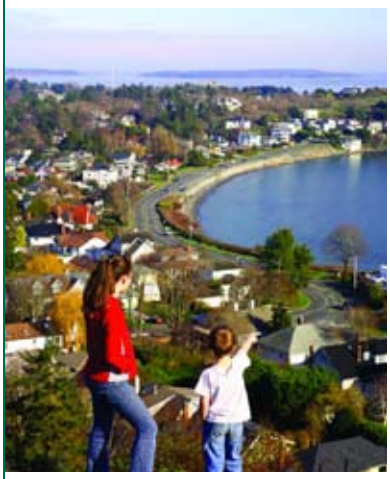


1. Introduction

As awareness of climate change grows and energy prices escalate, British Columbia local governments are becoming more interested in completing an energy and greenhouse gas emissions plan for their community. This planning guide is intended to support local government elected officials and staff to undertake an energy and emissions planning process.

Purpose of this Document

This guide describes the purpose and content of a community energy and emissions plan, its benefits, and how to go about creating one. The guide provides practical tips, examples from B.C. communities, and links to more detailed information. It is not intended to be comprehensive, but rather to provide sufficient information for local government staff and elected officials to understand the key components of a successful plan and point to further resources.

What is a Community Energy and Emissions Plan?

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

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

Corporate vs. Community plans

A community energy and emissions plan is one in which energy use and GHG emissions throughout the community are considered, including in both public and private sectors. This differs from a corporate energy and emissions plan, which only looks at energy and GHG emissions that are a direct result of local government's own operations (such as local government buildings, fleets, etc).

This guide covers community-wide plans only. The Province of British Columbia will provide guidance to local governments on corporate inventories and plans in the near future. Several programs have been established to assist local governments with aspects of their corporate operations, including:

- **Green Buildings BC for Local Governments:** www.greenbuildingsbc.com
- **E3 Fleets:** www.e3fleet.com

For more information on corporate or community energy/GHG plans, contact the Community Energy Association.

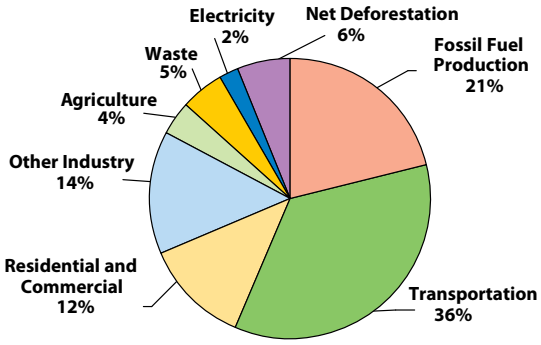
Community Greenhouse Gas Emissions

Most GHG emissions within a local government's jurisdiction result from energy consumption, largely in the buildings and transportation sectors. Methane emissions resulting from organic waste in landfills are another significant local GHG source, and a potential energy source.

Provincial Context

In British Columbia, climate change has been recognized by the Provincial Government as an issue of critical importance. GHG emissions are the primary cause of climate change, and reducing them is one of the foremost challenges of the next few decades. Provincial legislation adopted in 2007 calls for reducing B.C.'s GHG emissions by at least 33% below 2007 levels by 2020, and by 80% below 2007 levels by 2050. Provincial legislation adopted in 2008 requires all local governments to identify GHG reduction targets, policies, and actions in their Official Community Plans (OCP) and Regional Growth Strategies (RGS).

B.C. Greenhouse Gas Emissions (2006)



It has been estimated that nearly half of GHG emissions are under the influence of B.C. local governments and it is expected that regional districts and municipalities will play a major role in achieving Provincial GHG reduction goals. As of September 2008 more than 130 local governments have signed the British Columbia Climate Action Charter: www.cd.gov.bc.ca/ministry/whatsnew/climate_action_charter.htm, committing to carbon neutral operations by 2012, measuring their community emissions profile, and creating more complete, compact and energy-efficient communities.

What does it cost?

One of the most frequently asked questions is, "What will it cost to develop an energy and greenhouse gas plan?" There are many different ways in which to go about developing a plan. Community size, location, comprehensiveness of the plan, detail of the inventory, and amount of public participation are all factors that can significantly impact cost. Community energy and emissions plans developed in B.C. have ranged from $20,000 to well over $100,000. Most plans for small-to-medium-sized communities have been in the $25,000 to $50,000 range. To keep costs down, try to focus a plan on high-level policies and actions. Detailed engineering analysis can be done later.

More information on funding can be found in the last section of this guide.

Benefits of a Community Energy and Emissions Plan

While energy has not traditionally played a major role in local government planning, local governments are now realizing the many benefits of energy planning across their communities. These benefits go far beyond just reducing energy bills.

Economic development

For most communities, 70-80% of money spent on energy leaves town, going to utilities, oil companies, and provincial and federal taxes. By investing in energy efficiency or local renewable energy projects, a large portion of that money will remain in the community, stimulating the local economy. In addition, energy efficiency and renewable energy investments create local employment both directly and indirectly.

Energy independence and security

Reduced reliance on external energy sources can insulate residents and businesses from worldwide energy price shocks and supply shortages.

Efficient communities

Energy and emissions planning leads to more efficient communities based on more compact and efficient use of land, leading to shorter travel times and lower operating costs for businesses and residents.

Healthier communities

Reduced energy use can lead to improved local air quality and associated health benefits. Efficient land use and transportation planning can also promote walking and cycling opportunities, thus promoting a healthier lifestyle and a viable alternative to the automobile.

Environmental benefits

Energy efficiency and renewable energy result in reduced GHG emissions, improved air quality, and healthier ecosystems.

Future revenue streams

Energy projects may result in future sources of non-tax revenue for local governments, through the sale of energy or GHG emission credits.

Future funding

Energy and emissions planning can help increase the chances of future funding. The Province's commitment to reducing GHG emissions will likely mean that grant applications from communities taking action on climate change are looked upon more favourably.

Partners for Climate Protection

The Federation of Canadian Municipalities operates the Partners for Climate Protection (PCP) program. This program provides a framework for municipalities to reduce their GHG emissions.

The framework utilizes five milestones towards achieving emissions reduction goals:

1. Develop an inventory and forecast
2. Set a target
3. Create a local action plan
4. Implement the plan or a set of activities
5. Monitor progress and report results.

PCP has certain requirements for each milestone, and local governments looking for PCP recognition of their achievements should confirm those requirements before undertaking a CEEP. Joining PCP is free, and as of April 2008, over 50 B.C. local governments have signed up to participate in the program. See www.sustainablecommunities.fcm.ca/Partners-for-Climate-Protection/

No Two Communities are the Same

Community energy and emissions planning will mean different things to different communities. Although many of the strategies for reducing energy consumption may be similar, each community will have its own priorities and reasons for taking action. One community may prioritize transit, while another may be interested in developing a district heating system. Economic development may be the driving force in some areas, while limiting sprawl will be a priority for others. And smart growth development may mean very different things to a rural community versus an urban centre. Each community needs to develop its own community energy and emissions plan and establish those strategies most meaningful to achieving local objectives.

Although there are many different ways to arrive at a community energy and emissions plan, there are some goals and strategies that are generally included in the process. The following pages will discuss these, and provide practical tips, examples from B.C. communities, ideas to consider, and links to more detailed information.

Integrating with other sustainability processes

A community energy and emissions plan is just one of a number of sustainability initiatives that may be ongoing within the community. While most often written as a stand-alone document, a CEEP should dovetail with broader, higher level planning frameworks such as a Regional Growth Strategy (RGS) or Official Community Plan (OCP). It can also integrate with a neighbourhood plan, air quality management plan (AQMP), or broader environmental or sustainability plan. However, care should be taken that the CEEP does not become an overlooked component of a larger plan (e.g. an OCP) or become overly complex and time-consuming (e.g. in integrating with an AQMP). Whether it makes sense to integrate the CEEP with other plans is up to the community, taking into context the timing and scope of the other related plans.

Air Quality Planning Tool: www.airqualityplanning.ca
Integration of Air Quality-Related Planning Processes: www.env.gov.bc.ca/air/airquality/pdfs/int_aq_rep_may04.pdf

2. Engagement

To ensure a successful plan, the importance of involvement and buy-in of council/board, civic staff, and the general public cannot be overemphasized. Public engagement is a standard part of most planning processes, and a community energy and emissions planning process should be no different.

Council/Board and Staff

The success of a community energy and emissions plan is contingent on having buy-in from both council/board and staff, at the outset of the planning process as well as at the plan adoption and implementation stages. The best energy planning processes have been led by a few council/board representatives, with strong staff support; it is important to have at least one elected champion to lead the planning process.

It is important to involve a wide range of staff, including Chief Administrative Officer, Finance Officer, Planning Director, Engineering Director, Communications Director, and Environmental Manager, recognizing that, in smaller communities, staff may fill multiple roles. One approach is to begin with a broad workshop for staff, explaining the energy planning process and its importance, and to gather initial ideas. A lack of understanding, awareness or involvement by staff can mean the best laid plans will languish on the shelf.

Project champions, whether elected or staff, typically get energy plans or projects started, and drive them through to completion and implementation. While champions can be vital to success, there can also be a risk in placing too great an emphasis on a single champion, as they may leave office or switch jobs. A plan may be seen as belonging to that champion, so care must be taken to ensure that several council and staff members are behind the plan and take ownership of it.

Energy Planning Committee

One way to ensure wider involvement and avoid problems of discontinuity is to establish an energy planning committee. This can be made up of members of council/board, staff, and outside stakeholders such as utilities, industry groups, and interested members of the public. Staff members should include planning, finance, and engineering. The benefit of having an established committee is that it can be responsible for ensuring the plan's recommendations are carried out in a timely and effective manner. In addition to managing the community energy and emissions plan, the committee (or a sub-committee) can also be responsible for developing a corporate energy plan and undertaking projects to reduce energy use and incorporate the use of renewable energy in civic facilities.

Kelowna Energy Management Committee

Kelowna's Energy Management Committee (EMC) was formed in 1995 to identify and implement ways to save money and conserve energy in civic facilities. It has since expanded its scope to look at broader energy planning issues throughout the community. Participating on the committee are representatives from various City departments as well as from Fortis B.C. and Terasen Gas. Some of the projects initiated by the EMC include energy retrofits of civic facilities, sustainable building workshops, a solar power pilot, and a landfill gas micro-turbine pilot.

www.city.kelowna.bc.ca/CM/Page887.aspx

Public Engagement

An energy and emissions plan involves the whole community, and is likely to have a significant impact on the public, particularly with regards to land use and transportation planning. At some point in the development of a CEEP, the public should be involved. Ideally this would happen earlier rather than later, but such things as cost, timeliness, and participant burnout also have to be considered. There are many forms of public engagement, and different methods should be considered at different points in the process; creative thinking can result in effective public involvement approaches for your community. Some possibilities are:

Workshops/open houses

These are a common form of public participation. They are generally used to provide information and receive feedback, but tend to draw a limited number of people. Open houses should be attended by members of staff and council so feedback can be heard directly.

Charrettes

Charrettes are a more involved form of public participation, usually by invitation. Participants work through issues in detail under the guidance of a facilitator, often over several days, to generate potential solutions.

Surveys

Surveys can provide a much broader-based indication of the community's interest and concerns than open houses or workshops. New web-based survey tools have made surveys much easier and cheaper to develop, distribute, and administer. To increase response rates, surveys should be kept fairly short and simple. Offering a draw prize to those who complete the survey can also significantly increase participation.

Display booths

A display booth can be set up to attract participation from audiences that might not otherwise be involved. Locations could include shopping malls, trade shows, or community events. A display booth offers the opportunity to both provide information and receive feedback.

Information campaigns

These would involve the outflow of information to the community, but without an opportunity to provide feedback. This is probably best used early in CEEP development, to build community awareness, with the opportunity for public input coming later. Information can be distributed through mailouts, newspaper or other forms of advertising, community cable programming, web postings, or unstaffed display booths.

Links:

Partners for Climate Protection - Citizen Participation and Community Engagement in the Local Action Plan Process: www.sustainablecommunities.fcm.ca/files/PDF/final_CP_eng_layout_2003.pdf

Alberta Urban Municipalities Association - Citizen Engagement Toolkit: www.auma.ca/live/AUMA/Toolkits/Citizen_Engagement_Toolkit

Stakeholder participation

It may be beneficial to target the public participation to representatives of larger groups, those with knowledge in the area, or those likely most impacted. Potential stakeholders might include neighbourhood associations, regional growth planning groups, transit officials, major employers and industries, utility representatives and energy or environmental organizations.

Partner with other organizations

Communities may have non-profit groups or other organizations interested in promoting energy planning and climate change mitigation. Partnering with these groups early in the process can be valuable in getting public buy-in and can also provide volunteer time with which to stretch staff resources and consultant budgets.

Engagement Examples

District of Squamish held a target setting workshop for council. This was a chance for council to learn about and understand various target options, and make an informed decision in a facilitated workshop environment.

District of Vanderhoof set up an energy planning committee as part of their energy planning process. Members included three councillors, the public works superintendent, a local custom home builder, a representative of a sheet metal business, and a Ministry of Forests district manager.

City of Kamloops, in partnership with the local chapter of the B.C. Sustainable Energy Association, held a Community Energy Fair. The City was a full participant and sponsor of this event, along with many other local businesses and groups. Over 1,500 residents attended the event, considered by all participants to be a major success.

Capital Regional District established a Community Energy Planning Steering Committee, led by elected officials and including staff and key stakeholders, to guide the energy/GHG planning process. Engagement activities included a stakeholder input session, a public meeting, and a full day session for all elected officials in the region.

City of Quesnel hired an energy manager to provide advice and information to businesses, builders, and members of the public, following development of a Community Energy Plan led by its Council Environment Committee.

District of Ucluelet held an "Energy Day" for the public, which included a home energy audit demonstration, electric car demonstration, wave energy information booth, and energy efficiency information. The District used this event to release the results of their energy and emissions inventory.

City of Vancouver developed a public engagement campaign and website for community outreach, called One Day Vancouver. The One Day site content is freely available for use by other communities; the Capital Regional District adopted the One Day model for community outreach and engagement to support their Community Energy Plan. This allows for continued public engagement as the community energy plan is implemented. http://vancouver.ca/oneday/

3. Inventories

One of the first steps in a successful energy and emissions plan is to conduct a community-wide inventory of energy use and GHG emissions. An inventory is a summary of all the energy consumed and GHG emissions produced within the community. It provides a snapshot of how much energy is consumed and GHG emissions are produced, and by what sources and sectors. It is important to include both energy consumption and GHG emissions figures in the inventory, to provide a more complete picture.

A community can use the inventory for several purposes:

- To identify where energy is being used and emissions created, to identify key sectors for action
- To set targets and milestones
- To track progress in reducing energy consumption and emissions over time
- To make comparisons with other jurisdictions (although this should be done with care, as there may be many influencing factors in energy use, and variability in inventory methodologies).

Although developing a community inventory is not overly technical, it does require a certain level of expertise that is likely not found within most local governments. Gathering the information can be time consuming and difficult. To address these concerns, the Province is compiling energy and emission inventories, through the Community Energy & Emissions Inventory (CEEI) initiative. Inventories will be provided to every B.C. local government, starting late 2008.

It is important that local governments understand the components of an inventory and its limitations, and how this information can be used to inform energy and emissions planning and action. Some local governments may wish to expand the level of detail and accuracy beyond what the Province provides, or include additional sectors (see below).

Emissions Sources

Typically a community inventory includes emissions from energy in buildings, vehicle transportation and solid waste. It may also include other energy and emissions sources, such as agriculture, air travel or non-energy process emissions from industry. Various current and pending international protocols are helping to clarify what should be included and how to measure each sector. Regardless of what protocol is followed, a good inventory should follow five internationally accepted principles: relevance, completeness, consistency over time, transparency, and accuracy.

Buildings

The buildings sector is usually partitioned into residential, commercial, and industrial sectors, and includes all energy use within those facilities (i.e. energy used in commercial/industrial production is included, as well as that needed for heating, cooling, lights, etc). Electricity and natural gas use are usually included, while other building fuels such as propane or oil are often ignored, either because they do not account for a significant percentage of consumption or data is difficult to obtain from the relevant suppliers. Wood is generally not included, as wood used for fuel is considered GHG-neutral under the Kyoto Protocol. If wood or other fuels are a significant heat source in the community, including estimates of their use will provide a more complete energy profile. Non-energy industrial emissions (e.g. chemical GHG emissions from cement manufacture) are usually not included in the buildings sector.

Vehicles

Vehicle transportation includes passenger and commercial vehicles, and is usually the largest contributor to community GHG emissions. Gasoline and diesel are the major transportation fuels. There may be some minor amounts of propane, natural gas, or even electricity used in vehicles, but these are usually not significant enough to include.

Solid waste

Solid waste emissions are a result of methane production from organic waste within landfills. Often these emissions are estimated by using a nominal emissions factor per tonne of solid waste deposited in the landfill, although more detailed information will sometimes be available. This information is likely to improve over time as, under provincial legislation, landfills will be required to track their emissions by 2012. Where landfills are shared by a number of municipalities, emissions are pro-rated on a per capita basis.

Other emissions sources

There are several other sources of energy consumption and GHG emissions within a community. In many cases these are small and not significant enough to include. At other times they may be too complex to accurately calculate, or beyond the local government's control. Nonetheless, a community should at least consider whether it wants to include these sources within the inventory, if only as a rough estimate. Some of the other sources include:

- Wastewater treatment
- Agriculture
- Land-use change (e.g. deforestation)
- Air transportation
- Marine transportation
- Rail transportation
- Non-energy industrial processes.

Accuracy

It should be recognized that there are many factors that may limit the accuracy of a community inventory. These inaccuracies do not invalidate the inventory, but local governments should be aware of the issues and treat the data accordingly. In particular, minor variations from year to year should be treated with caution. Some of the main accuracy issues are outlined below.

Weather

Weather will impact the amount of energy used for heating and cooling, resulting in fluctuations from year to year. It may be possible to adjust for weather differences, but it is best to look at long-term trends.

Consistency

The overall emissions estimate for the buildings sector is generally highly accurate. However, different utilities may use different account designations or coding systems for different building types. Therefore the breakdown of building data into residential, commercial, and industrial sectors may not be consistent between utilities.

Vehicle emissions

Vehicle emissions are difficult to determine, due to a lack of detailed information about the number of kilometres travelled, and because vehicles move between jurisdictions.

Averaging

The use of average solid-waste data may not reflect individual community efforts to reduce organics in the waste stream or methane emissions from the landfill.

Future comparisons

It is important that methodologies, assumptions, and missing information are clearly articulated for a community inventory, so that comparisons made in future years can take past assumptions into account.

Base Year & Forecast

A primary question for every community is, "What year do we use as the inventory baseline?" Although it might seem reasonable to use the most recent year for which data is available, there may be other years that are preferable. For example, the Kyoto Protocol uses 1990 as a baseline for GHG emissions, against which targets are compared, while the B.C. Government has chosen 2007 as a baseline. Other protocols and initiatives may use different years. If a community wishes to compare its energy and emissions against these protocols/initiatives, it will be necessary to develop an inventory

Links

Partners for Climate Protection – Developing Inventories for Greenhouse Gas Emissions and Energy Consumption: www.sustainablecommunities.fcm.ca/files/Capacity_Building_-_PCP/pcp-ismd-pub-en.pdf

ICLEI International Local Government GHG Emissions Analysis Protocol: www.iclei.org/fileadmin/user_upload/documents/Global/Progams/GHG/LGGHGEmissionsProtocol.pdf

Partners for Climate Protection, GHG Inventory Quantification Support Spreadsheet: www.sustainablecommunities.fcm.ca/Partners-for-Climate-Protection/Resources-Tools.asp

Community Energy & Emissions Inventory initiative: www.env.gov.bc.ca/epd/climate/reduce-ghg/ceei-reports.htm

for the appropriate year. However, energy data for each community is usually only available going back a few years. It may be necessary to obtain a few years of recent data, assess any trends, and use this to estimate earlier years (backcast), adjusting for population change.

Some protocols and initiatives, notably PCP, require a "Business As Usual" (BAU) forecast of future energy consumption and emissions. Future forecasts are notoriously unreliable and do not take into account changes in technology or practices. Generally, future forecasts for residential buildings, personal vehicles and solid waste are extrapolated at the rate of population growth, while commercial and industrial buildings and vehicles are extrapolated at the rate of economic growth. Alternatively, growth trends from the most recent few years of data can be used to extrapolate the BAU scenario. Neither method is likely to be highly accurate, but it should meet the requirements of the protocols and can provide an interesting picture of the future should consumption continue unabated.

Secondary Indicators

Secondary indicators are inventory data that directly influence energy consumption or GHG emissions, and can be useful in assessing progress in those areas. Secondary indicators help to inform community decision makers by providing a more complete picture of energy consumption and greenhouse gas emissions in each of the major sectors. When an inventory is being developed, serious consideration should be given to the type of additional data that will be useful in developing the CEEP or in assessing progress in the future. The following are examples of secondary indicators for key sectors:

Building/ Land use

- Residential density
- Percentage of new homes/buildings meeting efficiency standards
- Diversity of housing types
- Average commercial building area

Transportation/ Land use

- Average commuting distance
- Modal split (between single occupant vehicles, transit, walking, biking)
- Transit ridership

Solid Waste

- Central composting volume

4. Target-setting

A community-wide energy consumption and GHG reduction target is an important part of a CEEP. A target sets a goal for the community and allows policies and projects to be developed with the objective of meeting the target. A target can also make a statement about a community's commitment to addressing climate change and other community objectives. Provincial legislation requires local governments to include GHG reduction targets and strategies in OCP's and RGS's by 2010 and 2011 respectively.

Visionary vs. Pragmatic Targets (Top-down vs. Bottom-up)

A visionary or top-down target is one which sets goals for the community, based on the perceived need for action. It is based on community objectives rather than on a feasibility analysis. A visionary target is usually chosen to match a well-known target such as provincial objectives for climate change (i.e. reducing GHG emissions by 33% below 2007 levels by 2020). Aligning with provincial targets may have added benefits in terms of increased eligibility for provincial government funding and support. A visionary target makes a statement about the importance to the community of taking action on energy and climate change. It should be bold and aggressive, although not unrealistic. The target can be set before or after the inventory is completed.

A pragmatic or bottom-up target is based on an assessment of reductions that can likely be achieved. These targets tend to be conservative, looking to ensure the feasibility of any reductions estimates prior to committing to them. A bottom-up target is set after completion of the inventory, which forms part of the feasibility analysis. This type of analysis can be time-consuming and costly, and is difficult to do with a high level of accuracy due to the broad scope of the analysis. If setting a bottom-up target, it may be necessary to develop a more detailed inventory on which to base the feasibility analysis.

Given the importance of achieving significant energy and GHG reductions, and the depth of the Province's commitment to doing so, a visionary target is recommended by the provincial government, particularly in setting an overall target. A bottom-up analysis may be more appropriate for additional targets (see the following section), although a visionary target is often the best choice here as well.

Target-setting workshop

Since targets are of considerable importance, a council/board should have a clear understanding of the issues and implications before committing. A target-setting workshop is a good way to present the options and enable the council/board to work toward consensus on a target. Various types of targets and dates can be presented along with benefits, options and implications. If available, the inventory can also be presented and explained to help with the decision.

What is Targeted?

Most communities set a single target, usually an overall GHG reduction target. It is helpful to include an overall energy reduction target as well, to work toward energy efficiency, energy security and reduced energy costs, particularly as electricity in B.C. is mostly generated from hydro, which has minimal GHG emissions.

In addition to overall GHG and energy targets, additional targets can help draw attention to different goals within the plan. Such additional targets may be focused on individual sectors (e.g. transportation or solid waste) or they may be linked to secondary indicators (see Section 3). In particular, local governments may want to focus targets on areas within their influence or control. Examples that could be considered include public transit ridership, residential energy use, renewable energy generation, solid waste recycling, etc.

Target Periods

It is important for a plan to include both long-term and short-term targets. Long-term targets (e.g. to 2020 or 2050) reflect the overall vision, while short-term target(s) (e.g. to 2012 or 2016) can build momentum toward the longer-term vision. A plan with only short-term targets will overlook key actions (e.g. land use planning, education), which are critical for long-term change, but are not effective in creating short-term energy/emissions reductions. A plan with only long-term targets may not provide sufficient impetus for spearheading action, and may be relegated to 'sitting on the shelf'.

If aligning with recognized standards, the date for achieving the target is usually set (e.g. 2020 for B.C. Government targets). Alternatively, a community may choose to meet an established target, but by a different date, or to set a variety of targets and dates. Interim targets can be important in assessing progress, particularly if they align with recognized standards (e.g. 2012 and 2016 for B.C. Government interim targets). It is best to be realistic in selecting target dates, as it can take time to put programs and projects in place. Missing an early target can be demoralizing and lead to abandoning the target altogether. It may be useful to set some early milestones to enable monitoring of achievable targets along the way to a more significant target.

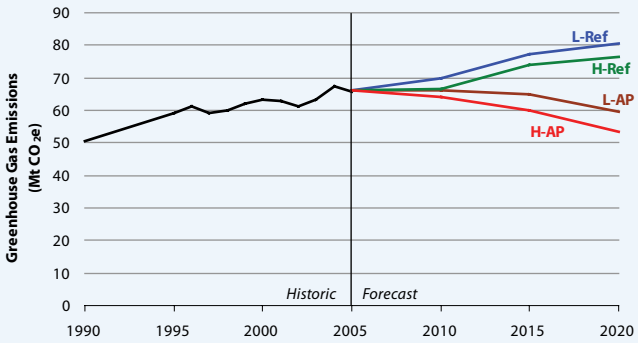
Links:

Province of B.C. targets: www.livesmartbc.ca/targets/index.html

Examples of targets

The B.C. Government has committed to a GHG reduction of 33% by 2020, and 80% by 2050, relative to 2007 levels. Interim targets for 2012 and 2016 are to be set by the end of 2008. The Province also has targets for energy use in buildings and for electricity generation.

Figure 4: Greenhouse gas emissions project with announced policies



Source: Historic data are from Environment Canada, 2008, "Greenhouse gas Inventory".

Source: British Columbia Climate Action Plan

Other examples of targets

The Kyoto Protocol is the best known target for GHG reductions. Established by international agreement in 1997, and ratified by Canada in 2002, it requires Canada to reduce emissions by 6% relative to 1990 levels, by 2012. It does not appear that Canada will achieve this target, with GHG emissions having risen 27% above 1990 levels by 2004. For communities, it will be difficult to obtain emissions data as far back as 1990.

Partners for Climate Protection recommends a community wide target of 6% reduction below the selected base year, within 10 years.

Various local governments have set GHG reduction targets:

City of Dawson Creek: 85% below 2006 levels by 2050; 33% below 2006 levels by 2020; 14% below 2006 levels by 2012.

City of Vancouver: 33% reduction by 2020, relative to 2007 (match B.C.), plus all new buildings carbon neutral by 2030.

Capital Regional District: 33% by 2020, relative to 2007 (match B.C.)

City of North Vancouver: 6% reduction by 2012, relative to 2002 (match PCP)

Prince George: 2% reduction by 2012, relative to 2002

Calgary: 6% reduction by 2012, relative to 1990 (match Kyoto)

Seattle: 7% reduction by 2012, relative to 1990 (match Kyoto target for USA)

Berkeley, California: 80% reduction by 2050

City of Santa Monica: 15% below 1990 by 2015

5. Action Plan

A CEEP will provide a roadmap to the community on how to address energy consumption and greenhouse gas reduction. It incorporates the inventory information and public feedback, and addresses targets that have been set. The plan should achieve a number of goals:

- Raising awareness of the importance of energy to the community
- Drawing attention to the inventory and how energy is used in the community, and the importance of ongoing monitoring and reporting
- Identifying actions that will contribute to reducing energy and GHG emissions
- Identifying local government policies needed to facilitate these actions
- Identifying key community partnerships.

The plan should identify both short-term and long-term actions. Short-term actions help keep momentum going after the plan is developed, and can pave the way for longer-term actions. The plan should be realistic about the timing and scope of short-term actions, as failing to implement them can lead to discouragement with the plan. Long-term actions can be more ambitious. Where possible, set a schedule for completion of the actions, along with identifying who will be responsible for carrying them out.

An energy and emissions plan should not be confused with a feasibility study. The aim of a plan is to set broad goals and objectives, and identify actions and policies. It is not intended to investigate actions or projects in great detail, or to prove their viability. That work can be done separately, after the plan is developed. The plan might recommend that potential projects be investigated in future pre-feasibility studies.

A CEEP is not intended to be a static document; it will likely need to be reviewed and updated every few years. Energy availability, technologies, the legislative environment, and public opinion related to energy and GHG emissions are constantly changing. An action plan should be flexible enough that actions can evolve and grow over time, with emphasis on policies and decision-making processes that will enable and encourage this evolution to occur.

Photo credits (top to bottom): CEA, Revelstoke Community Energy Corporation, City of North Vancouver

Policies and the Official Community Plan or Regional Growth Strategy

Links:

Energy Efficiency & Buildings—A Resource for B.C.'s Local Governments: www.communityenergy.bc.ca/sites/default/files/Policy_Manual_final.pdf

West Coast Environmental Law - Smart Bylaws Guide: www.wcel.org/issues/urban/sbg/

Community Energy Association - Renewable Energy Guide for Local Governments in B.C.: www.communityenergy.bc.ca/resources/cea-publications-0

One of the most important aspects of a CEEP is to identify objectives and policies that will enable long-term actions and goals to be achieved. These policies and objectives may be incorporated within the Official Community Plan (OCP) or Regional Growth Strategy (RGS), or they may be stand-alone bylaws or policies. OCP's are the guiding document for a community and provide staff and council with the mandate to pursue energy and GHG objectives in both civic and private sector development. Provincial 2008 legislation requires greenhouse gas targets, policies, and actions to be incorporated into all OCP's and RGS's.

Once the overarching goals are incorporated into the OCP, there are many specific policy strategies that can be used to influence energy use and emissions within the community. Some of these include:

- Sustainability checklists
- Rezoning policies
- Development permit area guidelines
- Service area bylaws
- Development cost charges
- Tax exemption bylaws
- Parking management policies
- Anti-idling bylaws
- Recycling programs and landfill restrictions.

A CEEP may identify specific policies that are recommended for implementation or identify applicable policy areas so further action can be taken.

Decision & Management Processes

Links:

ISO14000: www.iso.org/iso/iso_catalogue/management_standards/iso_9000_iso_14000/iso_14000_essentials.htm

The Natural Step: www.naturalstep.ca

One of the goals of a CEEP should be to have energy and GHG emission considerations taken into account in all local government decisions. While incorporating language to this effect in the OCP can help move communities in this direction, it may be beneficial to have a more structured sustainable decision-making system in place.

There is a variety of environmental management systems available, with some of the best known being ISO14000 and The Natural Step. These systems can help ensure that every decision made by the local government takes energy/GHG considerations into account. Environmental management systems can apply to both community development and to local government operations.

The City of Dawson Creek is at the forefront of sustainability planning in Canada, winner of FCM's 2007 Sustainable Community Award for Energy. The City has incorporated sustainability planning into all aspects of planning and operations through the use of The Natural Step program.

The Natural Step is a program developed in Sweden and used around the world. It provides a practical strategic planning framework to help organizations make sound economic decisions while moving toward sustainability goals. The program includes four elements:

1. Awareness
2. Baseline mapping
3. Visioning
4. Action.

Among other things, emphasis is placed on long-term thinking and consideration of municipal operations as a complete system, rather than as separate departments.

Since adopting The Natural Step in 2005, Dawson Creek has completed a community energy plan, an integrated sustainability plan, a green fleet policy, energy efficiency improvements, and installation of solar hot water systems in municipal buildings. Under The Natural Step, staff reports submitted to Council must explain not just the financial, but also environmental, social and cultural implications of proposed recommendations.

Recommendations for Action

The CEEP can identify a wide range of recommended actions, from guiding policies to major infrastructure projects. The CEEP is generally not detailed enough to say whether specific projects are viable or not, but will identify the main actions for a local government to consider. It is important to identify the steps that should be taken to move forward with implementing the plan. This may include a schedule and identification of responsibility for specific actions.

There are generally thought to be five main areas in energy and GHG planning:

1. Land use
2. Transportation
3. Buildings
4. Infrastructure
5. Energy supply.

It is important to cover each of these areas in a CEEP. While a CEEP may get started with one or two projects in mind, there may be unforeseen opportunities in other areas, and/or complementary actions that could be accomplished simultaneously. While some areas may be more important to a community than others, raising awareness of how energy impacts all aspects of a community is important in achieving overall community energy and emissions goals.

Many action items will be similar from one community's plan to the next. Common actions can be found in the Community Energy Association energy planning toolkit (*A Tool Kit for Community Energy Planning in British Columbia*), PCP's Quick Action Guide as well as other guides, and energy plans of various communities. None of these generic lists will be an exact fit for your community; there may be new ideas that will emerge from your own CEEP process. Rather than simply listing a wide range of potential actions without a recommended strategy for moving forward on the most promising ones, communities are encouraged to organize, prioritize, and develop an implementation strategy that matches each community's objectives and targets.

Identifying catalyst projects can be a useful means of maintaining momentum while keeping an eye on the long-term objectives. Catalyst projects are small-scale projects that can be expanded to large-scale projects or advance long-term goals. Examples would include establishing a district heating plant for one or two buildings with the intent that it be expanded in the future, or establishing a small solar neighbourhood in order to test municipal policies.

Links:

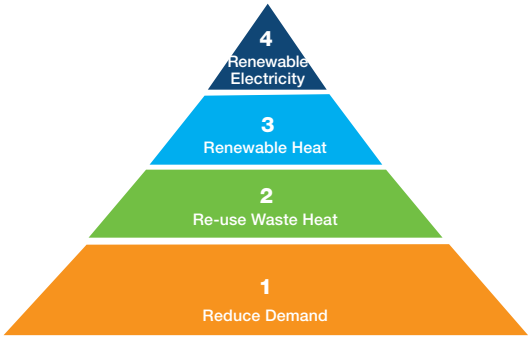
Community Energy Association – A Toolkit for Community Energy Planning in B.C.: www.communityenergy.bc.ca/community-energy-planning-toolkit-rev-2006

Partners for Climate Protection – Quick Action Guide: www.sustainablecommunities.fcm.ca/files/Capacity_Building_-_PCP/pcp-quick-action-guide-En.pdf

Natural Resources Canada - Community Energy Planning Guide: www.sbc.nrcan.gc.ca/documentation/communities/Community%20Energy%20Planning%202007.pdf

FCM-CH2M Hill Sustainable Community Awards Best Practices Guides: www.sustainablecommunities.fcm.ca/Capacity_Building/Best-Practices-Guides.asp

4 R's of Sustainable Community Energy Planning



1. **Reduce Energy Demand** – through community design, green buildings, and efficient technologies.
2. **Re-use Waste Heat to heat buildings and hot water** – e.g. industrial or commercial waste heat, sewer and wastewater heat recovery.
3. **Renewable Heat Sources to heat buildings and hot water** – e.g. solar thermal and geo-exchange.
4. **Renewable Energy for Electricity** – e.g. biomass/biogas combined heat and power, micro-hydro, wind, solar, tidal and geothermal.

Suggested steps in energy planning.

Concept source: Robyn Wark and Jorge Marques, BC Hydro

Examples of Actions in the Community

Bowen Island passed a rezoning policy that calls for all new housing developments undergoing rezoning to meet Built Green Gold and Energuide 80 standards.

Capital Regional District implemented a landfill gas capture system at the Hartland landfill and uses the gas to generate green electricity, which is sold to BC Hydro.

Kelowna allowed Okanagan College to utilize waste heat from the City's wastewater treatment plant. The college uses heat pumps to extract heat from the wastewater effluent to heat the college campus.

Maple Ridge introduced a Revitalization Tax Exemption bylaw for green buildings. This bylaw provides an additional two years of tax exemption for buildings within a revitalization area that are certified LEED Silver or higher.

Prince George undertook a transit study in 2003, which recommended revised routing and schedules, increased service levels, revised fare structures, the addition of bicycle racks, and improved signage and information. Since that time, the system has seen an increase in ridership of more than 40%, with double-digit annual increases.

Revelstoke developed a district heating system using biomass from the local mill. This system reduces air pollution and greenhouse gas emissions, while providing lower energy rates to local businesses and long-term revenues to the City.

West Vancouver developed a micro-hydro electric generating project on its existing municipal water supply at Eagle Lake, and generates over one million kWh annually.

6. Implementation and Monitoring

Getting a plan implemented can be the most difficult part of the energy and emissions management process. Developing an effective implementation strategy and addressing barriers to implementation are keys to seeing a plan come to fruition.

Staff Resources

One of the most significant factors in seeing a plan move forward is ensuring that adequate staff resources are in place to manage the work. Others may do the actual work, but local government staff will be needed to oversee progress and keep the plan on track. Energy efficiency and climate action have reached a point where they should be considered core activities, and dedicated staff resources are necessary to incorporate these issues into everyday operations.

An implementation team should be established with a designated leader and reporting requirement. The implementation team should include representation from both staff and elected officials, and may involve community members. An implementation team can help provide continuity and knowledge transfer in the case of staff turnover. It may be an existing energy planning committee, or a new committee may be established. The team leader should be given adequate time and resources to manage the plan implementation. The staff time and resources required should be accounted for in the annual budget, so that staff members do not have to carry this workload in addition to their regular duties.

It is also important to have buy-in and cooperation from all departments and staff members. A staff workshop will help to explain the plan, how it will impact different departments, and the role of staff in plan implementation. This is where an environmental management system may be beneficial (see Decision and Management Processes in Section 5).

Implementation Strategy

Moving the plan forward will require an implementation strategy. An implementation schedule may have been included in the action plan, but a separate implementation plan will help confirm the division of tasks and allow for updated timelines reflecting recent developments. An implementation strategy should include a team and leader, identification of tasks and responsibility, a timeline, budget and reporting periods.

One of the first things to consider is whether aspects of the plan can be implemented through other planning processes. This is beneficial for both coordination and cost effectiveness. Examples would be neighbourhood plans, transportation plans, and OCPs.

One of the early actions to undertake in implementing the plan is to address barriers and policy requirements. These may be fairly easy to identify, but may take some time for the institutional change to happen. Removing barriers and implementing appropriate policies up front is important so that future projects do not run into roadblocks down the road.

Both the action plan and implementation strategy should be looking to the long-term, as implementing a community energy and emissions plan will be a substantial undertaking. However, it is important to build momentum and see some short-term successes. Try to focus on short-term actions that pave the way for long-term results, rather than one-off projects, as resources will be limited.

Partnerships

Since a CEEP impacts the whole community, it is important to involve others beyond local government staff. Developing partnerships is also a way to lower implementation costs, coordinate activities, and bring potential funders to the table.

Involving community groups and non-profit organizations in the development of your CEEP is an excellent way to enhance community participation and reduce the costs of implementation. Community groups have the advantage of being local and using volunteers to achieve results cost-effectively. Education and awareness campaigns or representation on committees are good avenues for community group involvement. Larger non-profit groups may not be located in the community, but they can be an excellent source of information and expertise, and sometimes also do fee-for-service work at competitive rates.

Businesses are an important part of the community and should be involved. Some may play an important role in energy consumption or supply. Others may simply want to be involved and be willing to participate and contribute.

Senior levels of government should be involved where possible, for their expertise and potential grants. Neighbouring municipalities and regional districts are also important partners, especially where services are shared between communities. Working together with neighbouring communities can help to increase the scale and cost effectiveness of projects, while avoiding conflict.

Major utilities (BC Hydro, Terasen, Fortis BC, etc.) are another important player in community energy and GHG planning. Like senior government, they can be a source of funding. They have a vested interest in the CEEP as it will affect their supply and distribution and likely involve their demand-side management programs. Utilities may have technical experts on staff available to help.

Energy Service Companies (ESCOs) are companies that specialize in energy efficiency and energy utility systems. They provide a range of services from performance guarantees to financing, ownership, and operation. ESCOs may be potential partners in developing larger projects.

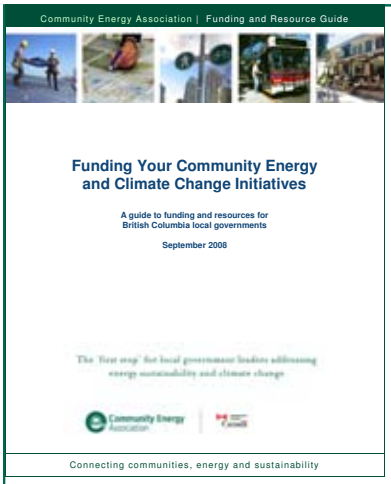
Communication

A key to long-term success is to maintain good communication with council/board, staff and the public. Make sure that people know the work being undertaken, and the results achieved, so that momentum is not lost. Regular reporting to council/board is important, as is reporting to staff in different departments; this will help build broad understanding of why changes are occurring and how everyone can contribute to energy and climate change objectives. Celebrate successes, such as achieving milestones or completing major action items. Public updates through newsletters, newspaper reports, or even an open house or public celebration can help to maintain public support for the plan and its goals.

Monitoring

Monitoring is important to assess progress on specified goals. The Province's CEEI initiative will provide annual energy and emissions reports, therefore greatly simplifying the monitoring process. In the short term however, energy and GHG reductions will likely be small and difficult, if not impossible, to accurately monitor. It would be good to track some secondary indicators as well. Some resources for staff time or consultants should be allocated to do this. Completing short-term actions such as policy changes or education programs may be just as important as larger projects, although the energy reductions may occur later. Such actions should be monitored as to whether they have been completed on schedule.

As results are monitored, and progress (or the lack of it) made towards achieving targets, it is not enough to simply report the results. An attempt should be made to assess why the results are what they are. This is critical if results are not being achieved, but it is also important when things seem to be on track. Reductions may be occurring due to unforeseen circumstances (such as an economic slowdown), which will reverse when things return to normal. Or results may be exceeding expectations in some sectors but lagging in others. Understanding the situation will help keep the plan on track over the long term. Monitoring and reporting is the fifth milestone in the PCP program.



7. Funding and Resources

Funding for energy and GHG planning may be a local government's first concern. CEEPs need not be expensive, but they usually cost at least $20,000, not including staff time, and often more for larger communities or more complex plans. The provincial government's new CEEI initiative will reduce the costs related to inventory work.

There are a number of programs available to help cover the cost of developing a CEEP. These include:

- **Local Government Infrastructure Planning Grant Program:** www.cd.gov.bc.ca/lgd/infra/infrastructure_grants/infrastructure_planning_grant.htm
- **Community Action on Energy & Emissions Program:** www.bcclimateexchange.ca/index.php?p=caee
- **Gas Tax Agreement:** www.civicnet.bc.ca/siteengine/ActivePage.asp?PageID=294&bhcp=1
- **Green Municipal Funds:** www.sustainablecommunities.fcm.ca/GMF/

With more communities initiating energy and emissions plans, requests for CEEP funding from these programs has increased, limiting the funds available. As well, funding programs are continually changing, so check for new programs regularly. The Community Energy Association funding guide, updated quarterly, provides a complete listing of all funding programs related to energy and climate change for which B.C. local governments are eligible.

Although it will usually be necessary to get some outside expertise for the development of a CEEP, there are some components that can be done in-house to reduce costs. These include public, staff, and council/board consultation, and target setting. You may even have the expertise in-house to take on the entire plan, but be careful to consider the best use of staff time.

If you are hiring a consultant to help develop your energy and emissions plan, the Regional Municipality of Halifax has created a generic *Request For Proposals* that can be used as a template. Don't hesitate to innovate and customize it to your needs: www.communityenergy.bc.ca/files/CEP%20RFP%20report%20final.pdf

Link:

Community Energy Association Funding Guide: www.communityenergy.bc.ca/news/funding-your-community-energy-and-climate-change-initiatives

Resources

There are many resources available, whether doing some of the CEEP work in-house, or working with a consultant:

- **Community Energy Association (CEA)** is a non-profit first-stop, supporting B.C. local governments in all aspects of energy/GHG planning. CEA has a three-volume Community Energy Planning toolkit and many other resources: www.communityenergy.bc.ca/community-energy-planning-toolkit-rev-2006
- There are several other comprehensive guides to community energy and emissions planning:
  - **Natural Resources Canada - Community Energy Planning Guide:** www.sbc.nrcan.gc.ca/documentation/communities/Community%20Energy%20Planning%202007.pdf
  - **California Energy Aware Planning Guide:** www.energy.ca.gov/energy_aware_guide/index.html
  - **Arctic Energy Alliance - Community Energy Planning Toolkit:** http://www.aea.nt.ca/library.aspx#cep
- **FCM's Partners for Climate Protection** program has a five-milestone program for addressing climate change. FCM provides a number of tools, including a Model Climate Action Plan template and a GHG calculator to augment inventory reporting: www.sustainablecommunities.fcm.ca/Partners-for-Climate-Protection/
- **Smart Planning for Communities:** www.fraserbasin.bc.ca/programs/smart_planning.html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