

**TEMPLATE:**

**COMMUNITY ENERGY PLANNING**

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## **Executive Summary**

In this section, provide a high level summary of the entire document.

Examples of what to include in Summary:

- Purpose, scope and deliverables of the CEP (see bullet points below for deliverables).
- List of current energy challenges and opportunities associated with community;
- The community energy objectives;
- A community energy profile;
- A summary of community engagement and awareness activities;
- A high level summary of the analysis taken to arrive at recommendations for actions to meet the community energy objectives, and address needs, challenges and opportunities; and
- List of potential actions for how energy challenges can be resolved or opportunities developed;

Include a brief summary of the recommended energy efficiency and supply option(s) and next steps for implementing these options.

## **Section 1: Introduction**

This section should introduce the purpose, objectives and scope of the CEP. Example wording is below.

This Community Energy Plan (CEP) addresses the supply and use of all forms of energy in community XX. This is the comprehensive plan for addressing the community's energy needs, challenges and opportunities, and recommends options for energy efficiency and clean energy projects to address the needs and / or opportunities. If applicable, it also includes recommendations related to utility services (electricity or heating fuels). The CEP may also include recommendations related to clean transportation.

The purpose of developing this CEP, and keeping it up to date, is to:

- Build community awareness on energy issues and environmental impacts of energy supplies through community meetings and educational activities, including programs at the school;
- Identify potential job opportunities and other economic benefits in the energy sector for the community members;
- Consult with the community members on their specific objectives related to energy and develop a community vision in support of shared objectives;
- Estimate the current community energy demand and forecast future energy demands;
- Evaluate the clean energy resource potential;
- Assess the environmental, social, and economic feasibility of energy supply options for meeting the energy needs of the community; and
- Develop a long-term energy action plan for the community that includes actions on both energy efficiency and energy supply projects, and that can be updated regularly.

If a community is considering receiving services from a regulated utility (e.g. for the provision of electricity or for the provision of heating), the CEP is one of the documents that can be used to support a utility's regulatory application for the provision of energy utility services in the community. If this is applicable to your community, include introductory wording highlighting the utility service the community is considering, and the scope and objectives for exploring this within the CEP.

Elements of the CEP should be forward looking and require many assumptions for predictive purposes. There is a high degree of uncertainty associated with these assumptions and considerable opportunity for actual outcomes to diverge from those predicted. This CEP is therefore intended as a first approximation, to be revisited as newer and more in-depth information becomes available.

## **Section 2: Methodology**

It is crucial to have community input and involvement throughout the development of the CEP and particularly in the design and implementation of the CEP engagement strategy.

Provide an explanation of the community engagement process, who was involved in producing the CEP and what their roles were. Examples of participants:

- Community champion (required) – this is someone who has an interest in energy, will lead the CEP process and be ultimately responsible for overseeing its implementation;
- Community members;
- Community staff;
- BC Hydro or Fortis;
- Funders (e.g. government, foundations, financial institutions, etc.); and
- Contracted experts (e.g. energy assessors, planners, engineers, workshop facilitators, project manager for the CEP, etc.).

Provide an explanation of how the community information was collected. Examples may include:

- Utility bills, or community-level data for the electricity and fuel providers
- Surveys: written, telephone or other;
- Community meetings and visioning sessions;
- Focus Groups;
- Open houses; and
- Presentations to youth and education sessions

Provide a summary of the key steps and milestones that were conducted as part of the CEP process. Establish a time frame for the CEP.

- 25 years is recommended, but it may be more appropriate to align to the service life of major projects or community events.

## **Section 3: Sustainable Development Vision & Energy Goals**

Community energy planning leads to:

- Increased local awareness around energy; and
- Community energy objectives and prioritized actions related to energy.

The projects and policies that result from community energy actions can support:

- Resilient communities and economies;
- Diversification of rural economies;
- Reduced energy bills at the community, residential and commercial/industrial level;
- New and skilled jobs in a growing sector;
- Opportunities for new types of partnerships;
- Reduced environmental impacts
- Improved reliability (remote or end-of-line communities);
- Investment in energy infrastructure; and
- Increased economic development opportunities.

### **3.1 Community Goals and Values**

Use this section to highlight what values are common throughout the community and may have a bearing on the Community Energy Plan. Identify the most important values and discuss trade-offs that may be necessary to preserve these above others. Examples of value statements include:

- Preserve way of life
- Encourage community growth
- Discourage community growth
- Population return to community
- Self sufficiency
- Youth opportunities
- Preserve local environment
- Preserve global environment
- Increase jobs and local economic opportunities.

### **3.2 Community Energy Objectives**

Use the general community goals and values to define the Community Energy Objectives by which energy options (e.g. energy efficiency and clean energy projects) will be evaluated to determine the CEP recommendations. Objectives may be developed in conjunction with a community and stakeholder consultation process. Examples of objectives to be used for evaluating energy options include:

- Increased local job creation
- Net zero greenhouse gas emissions
- Financially viable (e.g. positive net present value)
- Opportunity for training in the energy sector

## **Section 4: Community Profile and Expected Community Growth**

This section provides an overview of the community. A general description of the community should include the following, as they may relate to energy demand and / or energy options:

### **4.1 General Description:**

Include the following information:

- Name
- Location
- Location Map and community layout map
- General description of surrounding geography and terrain
- Population and demographics (For First Nation Communities, provide on and off-reserve populations)
- To what extent is the population seasonal or year-round?
- Brief history
- Governance: Organizational structure (i.e., elected officials, chief and council, is it part of a regional district, municipality?)
- Public and private services (e.g. who the electric utility provider is, who provides heating fuel services, what commercial services exist, etc.)
- Climate and Local environment: climatic region, any known sensitive habitat, species, fish-bearing streams, etc.
- Economy: description of local economy including main economic activities; employment rate; types of jobs that community members hold, etc.
- Any other items that you think describe the community

### **4.2 Location and Geography:**

4.3 Expected Community Growth: Community growth is an important part of understanding long term energy needs.

- Project the community's population for the CEP's time frame (25 years, or what was determined appropriate in the methodology section).
- Take into account the community's goals and values, economic development plans, impacts of energy on way of life, and other factors that may influence population.
- Methods of estimating population may include:
  - Extrapolation from historic community data
  - Extrapolation from similar community historic data
  - Community estimates
  - Local government land use or development policies
  - Provincial statistics and projections (BC STATS, Service BC, BC Ministry of Labour and Citizens' Services)
- Use several methods, with one forming the primary estimate on which later calculations are based, and others to provide corroboration.

- If applicable, discuss any significant contradictions between estimating methods and provide support for the one chosen as primary.
- Discuss the uncertainty of forward projections.

## **Section 5: Energy Profile**

### **5.1 Current Community Energy Demand:**

**Present the community's current energy demand in terms of:**

- Total energy demand (including all types of energy demand, such as for electric power, for heating, for transportation)
- Peak and average energy demand (electric and heating fuel)
- Energy supply break-down (electric grid, heating fuels, etc.)
- Energy demand break-down (e.g. residential, industrial, transportation)

**Present the community's financial aspect of energy in terms of:**

- cost per energy unit (kWh or GJ) for different fuel types
- average amount that a community member spends on energy per year
- total per year that the community spends on energy
- Separately identify any energy related external funding or subsidies the community receives, including a clear explanation of the Aboriginal Affairs and Northern Development Canada (AANDC) contribution to community energy costs and any cost over runs

**Obtain data for this analysis from the following sources:**

- Current fuel bills.
- Current electric bills.
- Building energy assessments: 25% of the residential energy assessments should be scheduled and completed by Energy Auditors available through the LiveSmart Program; administration and / or commercial buildings should be assessed by professionals with expertise and experience in energy assessments for the relevant buildings

Describe your methodology for obtaining, analysing and presenting the information contained in this section.

## 5.2 Future Community Energy Demand Forecasting

Now estimate the community's energy needs for the future.

Present population projections for 5 – 20 years away (or more if you think that is relevant for your plan). Discuss economic development plans that may have an influence on energy demand for 5 – 20 years away (or more if you think that is relevant for your plan).

Using the current energy demand, and the population and economic development projections, estimate the community's energy needs for 5 – 20 years away. Estimate the future energy demand by:

- sector (residential, commercial, industrial),
- total demand,
- peak demand

Include different scenarios, such as a low-population-growth and high-population-growth scenario, and different economic development level scenarios.

Discuss the methodology, uncertainties and explain how future economic or community development plans may impact the demand forecast and how this will be managed.

## **Section 6: Demand Side Management**

Demand side management is the first option for meeting current and future energy demands that should be considered as part of a CEP, before energy supply projects are pursued. This section is intended to explore the potential for energy savings, as well as the electric or heating fuel demand which could result from fuel switching. (Fuel switching refers to the ability of customers to choose between multiple fuels in order to meet their energy needs. For example, some communities may decide to switch from electric heating to natural gas heating, leading to a lower electricity demand but a higher natural gas demand in the community.)

Actions:  
Energy efficiency retrofit projects with homes and buildings  
New buildings designed to high energy efficiency standards  
Community energy efficiency policies  
Awareness and education programs  
Land use planning that reduces transportation

### **6.1 Energy Efficiency Opportunities**

Use building energy assessments (LiveSmart assessments on residential buildings, and energy assessments on commercial / administration buildings) to identify existing energy ratings for buildings and building & equipment upgrades or behaviour changes that can improve energy ratings.

Use sustainable housing design workshops to identify energy efficiency & alternative energy supply options for new buildings.



Run a baseline scenario representing current energy use practices, and then compare with a second scenario that includes appropriate energy efficiency measures. Present energy totals, also distinguish between electrical and non-electrical energy. Include a summary of upfront and ongoing costs and savings, and payback periods.

Involve your utility (BC Hydro, FortisBC) in assisting you with determining energy efficiency measures, and in accessing utility and government programs.

#### Present ideas for facilitating energy efficiency in homes and buildings:

- sustainable housing or building development policies
- allocating renovation funding for energy efficiency upgrades
- financing of energy efficiency upgrades
- awareness and education programs that are delivered every year
- inclusion of energy efficiency considerations in land use planning, economic development planning, or other planning and development activities

### 6.3 Analysis and Recommendations

Analyze energy efficiency options in terms of:

- their alignment with the goals and values of both the community and the utility;
- costs and benefits (e.g. construction costs; energy savings benefits)
- funding available to offset up-front costs

Present the energy efficiency projects that the community will implement and the policies that the community will adopt to ensure energy efficiency is a component of all future planning.

Summarize the barriers related to the recommended energy efficiency actions and what the community will do to address and overcome the barriers.

## **Section 7: Clean Energy Generation Opportunities**

This section of the report addresses electricity generating supply options with potential for deployment in the community under study. Describe the risks and benefits of each supply option. Relate these back to the uncertainties discussed around load estimates for the near and long term consumption forecasts.

Desktop studies are an appropriate level of analysis for CEPs; information may be derived from prior research and experience as well as statistical and numeric models. The CEP will identify the resources, if any, that warrant a more rigorous analysis including site surveying and/or site-specific resource monitoring. This deeper feasibility-level analysis is beyond the CEP's scope, but should follow from recommendations made in it. If a resource is identified as having high potential, it may be valuable to commence site surveying and site-specific resource monitoring while completing the CEP.

It is a good idea to think of the “post planning phase” while you are doing the community energy plan, to help guide the detailed action plan that comes out of the energy planning process. It may also give the community an idea of where education and training efforts should be focussed.

### 7.1 Renewable Energy Resource Assessment and Development Options

Describe each potential supply option and its applicability to the community. This should include a basic overview of how the technology works, what resources it requires and the estimating method used to estimate resource availability. Complete desktop studies, review of other resource studies in the territory, and other high level estimates to determine the clean energy resource potential in the territory.

The executive summaries of each of the options should contain equivalent information to the summary table for each supply options under consideration.

<b>TECHNICAL INFORMATION</b>	
Capacity Range (MW)	
Average power available (MW)	
Total energy available over the year (MWh)	
Reliability	
Efficiency	
Load Following Ability	
Modularity/Scalability	
Diesel Backup Required (if applicable)	
<b>FINANCIAL INFORMATION</b>	
Installed Cost	
O&M Costs not including fuel (\$/kWh)	
Fuel Costs (\$/kWh)	
Lifecycle costs (NPV, 50 years)	
<b>SOCIAL AND ENVIRONMENTAL INFORMATION</b>	
Jobs Created	
Safety Issues	
Emissions CO <sub>2</sub> (kg/MWh)	
Emissions CO, NO <sub>x</sub> , PM, UHC (kg/MWh)	
Community Energy Self-Sufficiency	
Community economic, environmental or social impacts (based on community values)	
<b>UNCERTAINTY</b>	
Development Uncertainty	
Price Uncertainty	

## 7.2 Opportunity Analysis

This section presents the financial (Net Present Value, Payback Period, etc.), environmental and social analysis of the supply options discussed in the previous section. Also analyze the options against the community objectives. This evaluation should be used to determine which clean energy opportunity(s) the community will pursue further.

## 7.3 Clean Energy Development Recommendations

Using the analysis in the previous section, provide an overview of the pros and cons of each option, and make recommendations on which clean energy project(s) to pursue further. Include a discussion on the barriers related to the recommended clean energy actions and what the community will do to address and overcome the barriers. Present detailed steps (with a timeline) that the community will need to do to further explore and implement the proposed option.

## **Section 8: Funding**

Complete an overview/summary of the various funding opportunities/sources available to the First Nation community. Each opportunity should be tied to a specific project.

Develop draft financing and funding plans for pursuing and developing the recommended energy efficiency and clean energy options.

## **Section 9 – Community Engagement, Jobs and Education**

Develop education and training goals with actions

### 9.1 Community Engagement:

Describe the broader community engagement strategy/plan beyond completion of the CEP.

### 9.2 Community Jobs:

Compiling a list of jobs related to implementing the CEP actions can help guide the types of education or training programs a community would like to access or support:

- Energy auditors
- Building inspectors
- Construction workers
- Engineers / Project managers
- Financial consultants

- Land use planners
- Environmental biologists
- Community workshop facilitators
- Contract managers and negotiators
- Energy plant operators, maintenance personnel and managers
- Others?

### 9.3 Education and Training:

Identify potential job training programs that would be available to community members.

Outside of specific job training, what type of regular public awareness on energy is important in your community and how is it being communicated to the community elders and leaders, families and youth?

Develop actions that support:

- community members seeking employment in the energy efficiency or clean energy sectors,
- increased youth understanding and awareness of the energy efficiency and clean energy sectors,
- increase local economic development in energy efficiency and clean energy, and
- increased general knowledge of energy efficiency and clean energy

### Section 10: Risk Assessment

Identify major and minor risks to implementing the CEP and risk mitigation strategies.

**Section 11: Recommendations and Implementation Plan**

This section provides a summary of the recommended options and a clear implementation plan to deliver the recommendations developed within the CEP. Include provisions for refining assumptions made in the CEP, or adapting the CEP as some projects are determined to not be viable, projects are completed, and/or new/better information becomes available. An example of a next steps and recommendations table is:

<b>Next Steps and Implementation of the Clean Energy Plan</b>				
<b>Recommended Option</b>	<b>Next Steps</b>	<b>Party Responsible</b>	<b>Funding Source</b>	<b>Intended Timeframe</b>
Develop and Evaluate Demand Side Management Options	<ul style="list-style-type: none"> <li>- Energy efficiency retrofit projects with homes &amp; buildings</li> <li>- New buildings designed to high energy efficiency standards</li> <li>- Community energy efficiency policies</li> <li>- Awareness &amp; education programs</li> </ul>			
Energy Efficiency & Conservation (EE&C)	<ul style="list-style-type: none"> <li>- Energy Savings WG</li> <li>- Opportunity to involve the youth &amp; have discussions about EE&amp;C</li> <li>- Review the LiveSmart Incentives</li> <li>- The WG implement /distribute energy savings kits to the community.</li> </ul>			
Install Solar PV panels on Office Building & schools  Run-of-River Feasibility				

**Section 12: CEP Supporting Statement**

A statement from the Chief and/or Council as well as the community members committing to support the implementation of the CEP.