NEW RELATIONSHIP TRUST
Empowering First Nations in British Columbia

Community Energy Diesel Reduction (CEDR)

Community Energy Plan Checklist

A Community Energy Plan (CEP) is a long-term plan to meet a community's future energy needs while improving energy efficiency, reducing greenhouse gas (GHG) emissions and fostering local sustainable and community-supported energy solutions. An effective CEP identifies opportunities to meet both demand and supply-side objectives while enabling community priorities related to capacity building, economic development, and environmental stewardship.

This CEP checklist has been developed with partners and is based on emerging best practices as well as the uniqueness of remote community energy planning. While not every item on this checklist is a requirement of all CEPs, there is value in having a comprehensive assessment to develop a strong and actionable plan that can be updated regularly. This checklist represents current best practices that communities and consultants may use to develop a scope of work. The CEDR Program recommends that remote community CEP development includes, but is not limited to, the following:

Background

1. Executive Summary
2. Community introduction by Council / Advisory Board / Community Champion(s) / Climate Action Coordinator(s)
3. Review of any existing CEP or other relevant study (CEEP / CCP / etc.)
4. Description of CEP Methodology
5. Community Overview:
    a. Location & Geography
    b. General Description, History, Population
    c. Governance & Public Services
    d. Local Economy
    e. Local environment, Weather, Climate, Potential future climate implications
6. Community Goals & Values:
    a. Sustainable Development Vision & Energy Goals
    b. Objectives
    c. Purpose of CEP

Community Energy Use Overview

1. Current Hourly Load Profile
    a. Electricity Load:
        i. Data collection methodology (preferably metered)
        ii. Sources of electricity (diesel, hydro, etc.) and efficiency of diesel genset (i.e. L/kWh)
        iii. Demand: residential, commercial and industrial
        iv. Seasonal, monthly and if appropriate, daily load shape analysis
        v. Statistics: peak, average, low and annual demand
    b. Thermal Load:
        i. Data collection methodology

   ii. Source of heat (diesel, woodstove, heating oil etc.)
   iii. Demand: residential, commercial and industrial
   iv. Seasonal, monthly and if appropriate, daily load shape analysis
   v. Statistics: peak, average, low and annual demand

2. Future Load Forecast (near and long term):
   a. Potential growth and associated new construction (residential, commercial and industrial)
   b. Near term forecast that is less than 2 years old
   c. Communities may also want to consider opportunities such as installing meters to obtain data for further analysis

Demand Side Management – Analysis

3. Identification of DSM opportunities – Residential:
   a. Detailed energy assessment of a representative number (10-15%) of community homes
   b. Recommendations for upgrades which consider insulation, space and water heating equipment, control & lighting systems, appliances, hot water system measures, ventilation, and energy related safety measures
   c. Financial analysis of recommended options (including estimated cost of implementation, estimated energy savings, payback period)
   d. Extrapolation from assessed homes to generate and prioritize recommended upgrades for the community based on:
      i. Community priorities and vision
      ii. Consideration for renewable energy generation supply
      iii. Funding availability
      iv. Logistical considerations

4. Identification of DSM opportunities - community/commercial buildings:
   a. Description of the types of commercial/community buildings
   b. Detailed energy assessment (ASHRAE Level 2 where possible) of at least 1 community building
   c. Identification of appropriate upgrades to be considered for each type of community building
   d. Engagement with community on issues and needs (for example, ventilation concerns, occupancy, future use)
   e. Identification of where further analysis may be required

Demand Side Management – Planning & Implementation

5. Creation of community-wide implementation scenarios:
   a. Consideration of community priorities, funding and other logistical factors to generate planning scenarios for the implementation of community DSM initiatives:
      i. Should include: estimated energy savings, load impacts and implementation costs of each scenario
      ii. May include recommendation for community-wide implementation of upgrades that require a common piece of equipment, and bundles of upgrades for 'typical' homes to be completed in phases
      iii. Discussion of impacts on renewable generation projects. Can be in the form of an adjusted load forecast building off previous sections

b. Implementation plan: identify the community's preferred DSM scenario and devise a plan for its implementation:
    i. High-level analysis of potential available funding including pertinent information related to funding cycles and intakes, funding gaps, phasing consideration and other logistical issues related to implementation
    ii. High-level quotes or bulk purchasing possibilities for preferred DSM activities
    iii. Discussion of barriers to implementation & proposed mitigation actions

Renewable Energy Generation – Analysis

6. High-level overview of microgrid:
    a. Review of existing equipment and governing philosophy
    b. Grid capacity and limitations
    c. Transmission & distribution system overview
    d. Grid stability analysis
7. Summarize any previous studies pertaining to renewable energy and grid integrity in the community
8. Desktop renewable energy prefeasibility assessment, including hydroelectric, solar PV, wind, bioenergy and geothermal, etc. This list can be adjusted or added to based on the needs and wants of the community. For example, some communities may wish to explore hydrogen, tidal and wave energy using industry software such as HOMER, PVSyst, Windographer, etc.:
    a. Site suitability
    b. Resource assessment (i.e. wind speed data, PV shading analysis, biomass and/or hydrogen feedstock study)
    c. Technological maturity
    d. Financial analysis (including total capital cost, expected lifespan, revenue, Net Present Value (NPV), Payback Period, Levelized Cost of Energy (LCOE), litres of diesel displaced, and jobs created etc.)
    e. High-level overview of O&M (including human resources, costs etc.)
9. Battery analysis including analysis of current grid stability, emergency load requirements, interaction with proposed renewable energy systems and governing system philosophies
10. Communities may want to consider:
    a. Permitting requirements for renewable energy projects
    b. High-level cost estimate of extending the provincial electricity transmission and/or distribution to bring the community on-grid as per BC First Nations Climate Strategy and Action Plan
    c. Clean Transportation (i.e. Zero Emission Vehicles (ZEVs) and marine electrification)

Renewable Energy Generation – Planning & Implementation

11. Strategy for renewable energy development based on above
12. Implementation timelines and considerations
13. Renewable energy risk assessment
14. Funding opportunities

Community Engagement, Jobs, and Education

15. On-going Community Engagement:

a. Community engagement plan
b. Collaboration with other departments (i.e. housing, land)
c. Communications plan

16. Capacity building opportunities that may include:
    a. Community employment
    b. Community skill development
    c. Community education & material/resource development (i.e. energy literacy, website)
17. Description of site visits that may include:
    a. Community-wide kick-off meeting
    b. Data collection
    c. Results presentation

Optional Sections (based on remote community priorities & preferences)

18. GHG emissions inventory
19. Assessing and identifying other infrastructure needs in communities to protect community and ecosystem health, and reduce GHG emissions and reliance on fossil fuels as per BC First Nations Climate Strategy and Action Plan
20. Analysis of energy consumption for transportation
21. Climate Change Adaptation & resilience
22. An exploration of carbon offsets to build sustainable revenue streams for communities

Implementation & Next Steps

23. Recommendations:
    a. Strategy for near/medium/long-term implementation planning of either DSM or REG projects, or both
    b. High level cost/benefit analysis
    c. Actionable Implementation Plan(s) including timeline and high-level budget
    d. Ongoing community engagement plan
    e. Roles & responsibilities for implementation

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