

***Advancing
Smart Energy
Communities
in New Brunswick***

***Faire progresser les
collectivités écoénergétiques
intelligentes au Nouveau
Brunswick***

Community Energy Planning: Getting to Implementation in N.B.

Table Top Exercise

November, 2015



*Your Environmental Trust Fund at Work
Votre Fonds en Fiducie au Travail pour l'Environnement*

What is a Smart Energy Community?



1. Integrates Conventional Energy Networks

- So that the electricity, natural gas, thermal / district energy, and transportation fuel networks in a community are better coordinated to match energy needs with the most efficient available energy source.

2. Makes Smart Land Use Decisions

- Recognizing that poor land use can result in energy waste.

3. Harnesses Local Energy Opportunities

- Renewable electricity (solar, wind), renewable natural gas, heat capture, geothermal, and other energy opportunities tailored to the specific community.

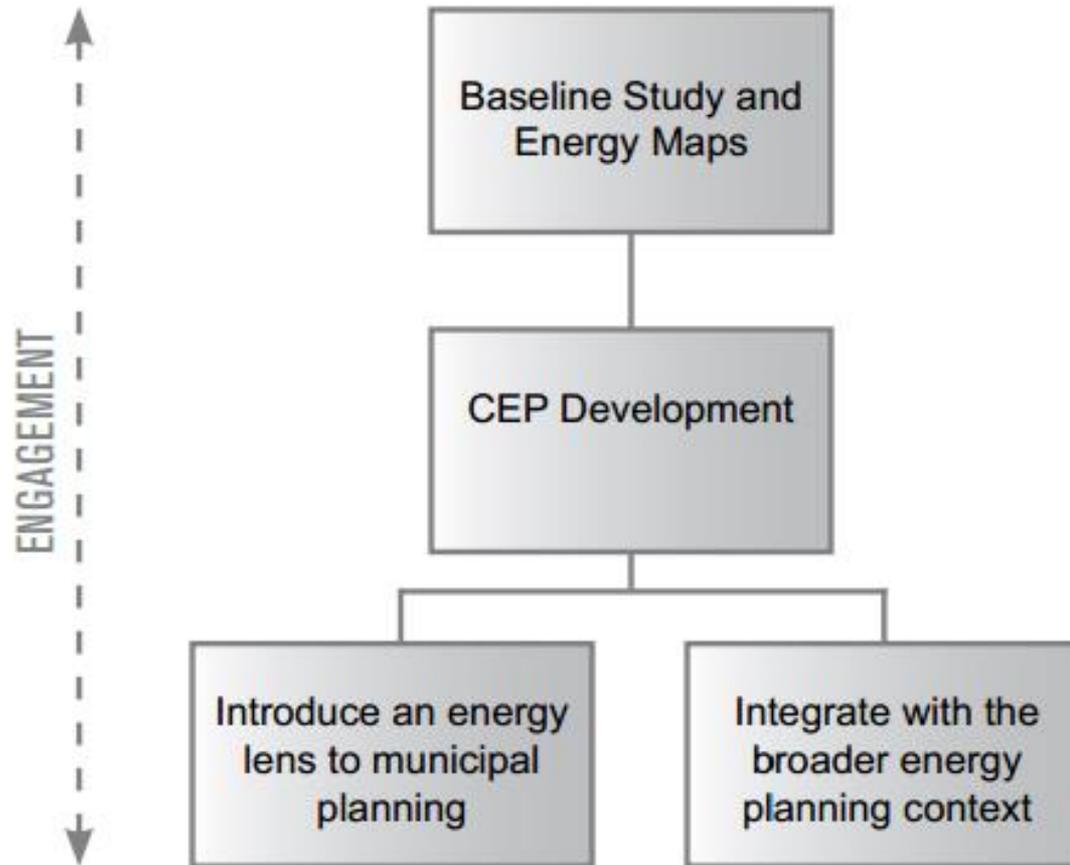
Becoming a Smart Energy Community

...the Community Energy Plan

- To become a Smart Energy Community you can develop a Community Energy Plan. A CEP is a comprehensive, long-term plan to improve energy efficiency, reduce GHG emissions and foster local sustainable energy solutions in the community.
- You can also integrate community energy opportunities into existing municipal plans, bylaws, zoning, or to enhance PCP plans for GHG emissions reduction.

Becoming a Smart Energy Community

FIG. 1 COMMUNITY ENERGY PLANNING PROCESS

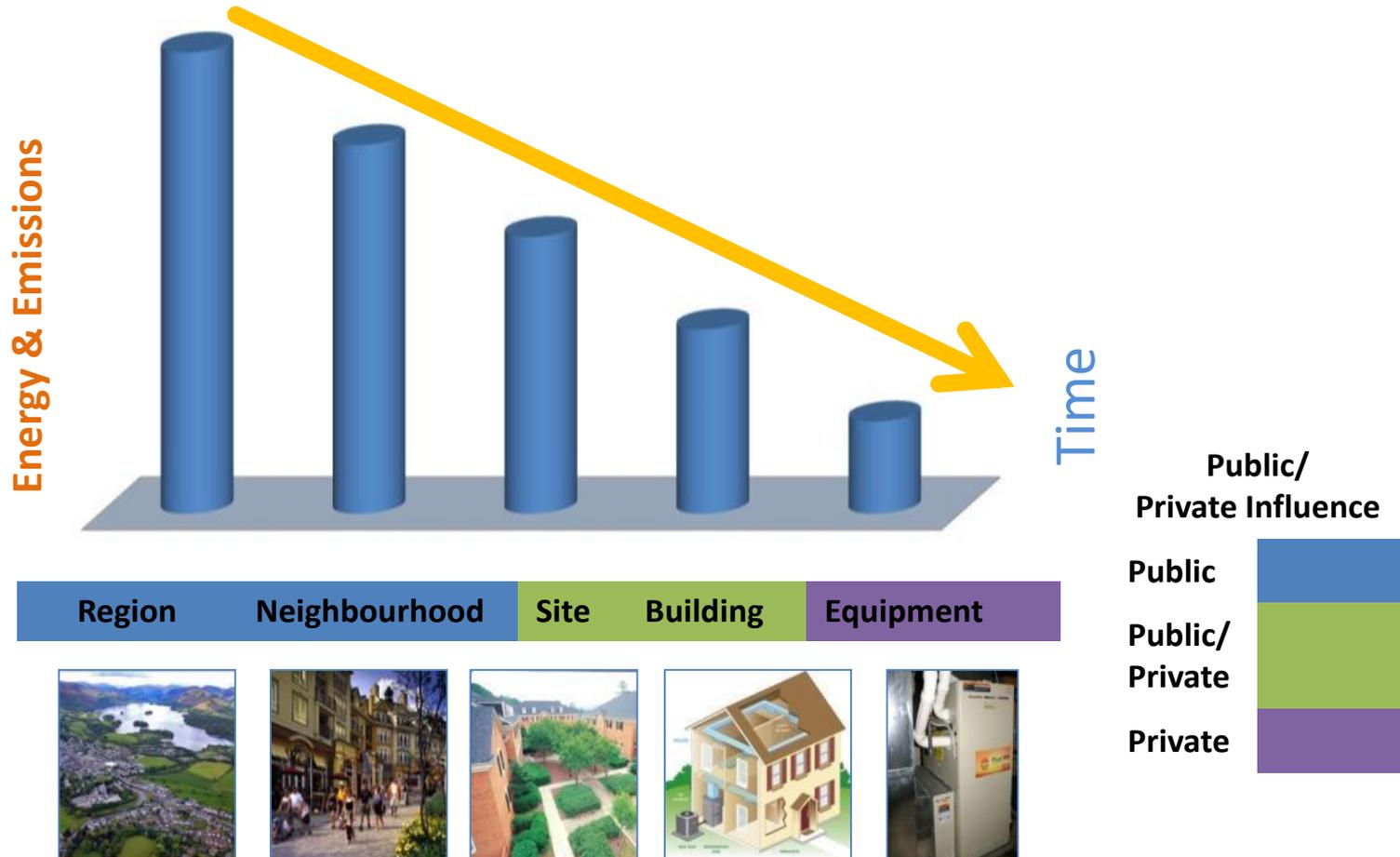


Source: QUEST, Community Energy Planning Primer for Ontario

QUEST - Quality Urban Energy Systems of Tomorrow (www.questcanada.org)

Becoming a Smart Energy Community

...connecting energy to land-use and mobility



Integrated Energy Solutions

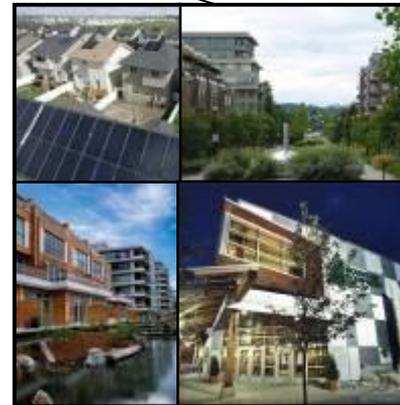
integrate
energy
across
multiple
sectors



Integrated
Transportation Systems



Integrated Heating,
Cooling, Power Systems,
Industrial Waste Heat,
Municipal



Energy Efficient Housing,
Buildings, Industry



Community Form

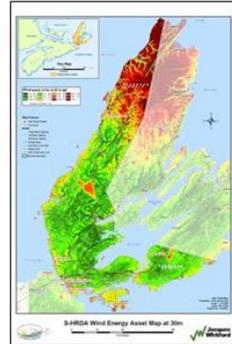
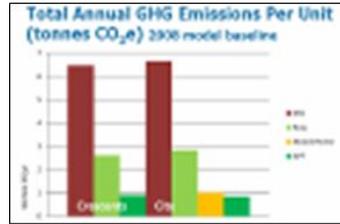
Community Energy Mapping

Data Collection

Modelling

Decision Support

Implementation



Visioning & Target Setting

Select Scenarios

Select Actions

Implementation & Monitoring

Mapping - Areas of Application

End-use or demand characterization

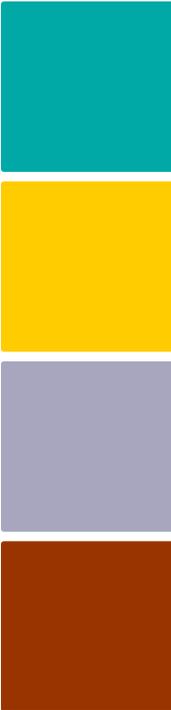
- Housing and building energy
- Transportation

District Energy 'Prospecting'

- Clusters of buildings with loads that can be matched
- Ageing boilers

Renewable Energy Technology Integration

- Resource assessment
- Pre-feasibility for RETs



Exercise Orientation

Tools:

- Table-Top Map
- Stickers, Markers
- Questions / Guide
- Knowledge & Creativity
- Note-Taker



Identify a participant at your table that will report highlights.

Table Top Exercise Instructions

1. Identify a couple candidate neighborhoods for a geographically focused residential energy efficiency retrofit program.

Older Neighbourhood

2. Identify potential sites that could have potential for low impact grid-scale renewable electricity generation worthy of pre-feasibility analysis:

- a) Wind
- b) Micro-hydro
- c) Biomass combined heat and power
- d) Mill (waste wood)
- e) Log Sort Yard (waste wood)
- f) Landfill (methane, possibly biomass combustion)
- g) Solar PV (large roofs), likely the institutional buildings (blocks).

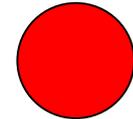


Table Top Exercise Instructions

3. Identify some sources of renewable heat. This could be either recovering waste heat or combusting a renewable feedstock/fuel.

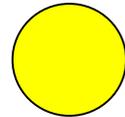
Waste Heat

- a) Paper Mill
- b) Brewery
- c) Rink
- d) Food processing plant (refrigeration)
- e) Sewage treatment plant
- f) Sewage pump stations



Renewable Heat Feedstocks/Fuels

- a) Pulp/Paper Mill (waste wood)
- b) Log Sort Yard (waste wood)
- c) Landfill



Is it located near heat demand (e.g. large buildings or swimming pool); or could New heat demand be located there (e.g. new buildings, neighborhoods, pools, etc)?

4. It is likely that there are some sources with both heat and power potential

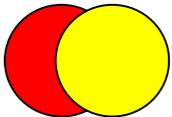


Table Top Exercise Instructions

5. What are some **key considerations** for locating and phasing growth to support a **district energy system**?

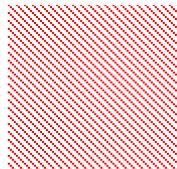
- **Secure Energy Supply**

- **Candidate Heat Source/DE Plant:** Select one of the previous heat sources to be a potential plant for the district energy system. (You may pick more than one. Appropriateness will be influenced by a convergence of the other considerations below.)



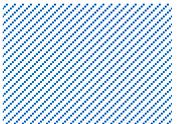
- **Density**

- **Anchor:** Identify a potential anchor, e.g. New Hospital –operates 24/7, 365; requires backup plant or has own plant; *good consistent base load*
- **(Building) Density:** Residential/commercial building density, heat density.
- **New Build:** The site will likely require some *new build*. This could be intensification, or appropriate green or brown field. After established, it may be possible to extend into existing areas



- **A Balanced Load**

- **Some Mixed-Use:** Residential/commercial/institutional to allow energy use during day, mornings, evenings, weekends, weekdays



- **Draw a circle around your potential district energy node.**

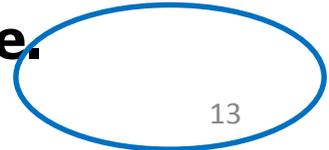


Table Top Exercise Instructions

Identify **location and characteristics of growth and transportation system** to reduce energy and emissions in the transportation sector.

A. Land use considerations that support walking, cycling, and public transit

- **Density:**
existing density is labeled; draw in some new, focusing along corridors, commercial nodes and downtown
- **Mixed use:**
existing is labeled; draw in some new, potentially even a small village node
- **Key destination access:**
grocery stores, restaurants/cafés...
- **Job Creation**
local jobs in *downtown* or key employment centre (mill) to reduce travel outside community (not more distributed big box retail around edge)

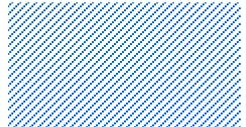
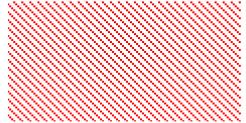


Table Top Exercise Instructions

B. Transportation Infrastructure & Additional Land Use/Network Design

- **Major transit backbone:**

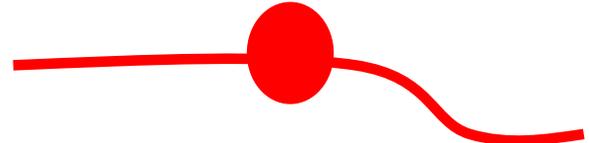
Draw in one major transit backbone that would support significant passengers

- *Connectivity* with at least one, maybe two *major* destinations (e.g. downtown)
- Through high density and mixed use areas



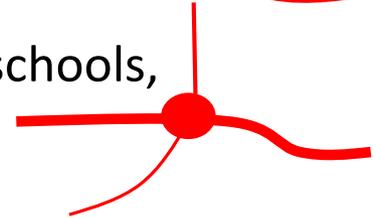
- **Major stops/stations**

Identify 1 or 2 stops enroute near key destinations (or residential concentrations)



- **Connectivity to key destinations (land use)**

Draw in pedestrian/bike connectivity to key destinations like schools, hospital, commercial areas, etc..



Some of the workforce commutes in/out of the community for work.

- Identify some **Inter City low carbon transportation solutions**, e.g. *Major inter-community transit route*. Draw this.



- Major multi modal transportation hub (connected to greenway bus, street/car networks, transit routes..). Draw this.



Additional Questions to Consider

- What is your energy vision for the community?
- What energy related resources do we have? E.g. energy sources, existing infrastructure, groups, knowledge...
- What are the priority areas to focus on?
- What can the community (residents, businesses, institutions and industry) do to reduce emissions and save energy?
- What opportunities exist to integrate energy into your organization's policies, plans and processes (or your home or business)?
- How can we make energy efficiency a business as usual practice for everyone in the community?

Additional Questions to Consider

- Who should take the lead on the projects?
- Who should the partners be? How can we engage them to help with implementation?
- What resources do we need to make the activities happen?
- What should the timelines be? (Immediate within the year, mid-term 2-5 year, long term e.g. 5-6 years or longer).
- How do we get the whole community to help achieve the target?
- If applicable: Do we need financing for our activities?
- Could a CEP lead to economic development opportunities?

Post-Exercise Debriefing

- What energy and GHG emissions reduction opportunities did your roundtable identify?
- What are some local resources, priorities, actions identified?

A participant at your table reports discussion highlights using Map as visual reference.



QUEST

Quality Urban Energy
Systems of Tomorrow

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