

Putting Energy and Emissions on the Map:

A hands-on guide to integrated community energy mapping

Goal: Provide participants with a hands-on energy mapping experience to enable them to apply some basic techniques and appreciate its power for managing energy and greenhouse gas emissions as part of use, transportation and infrastructure planning.

Overview: Participants will physically draw out and denote bio heat opportunities on the map provided. Use the colour/design code in the legend to denote waste heat, renewable heat and district energy opportunities.

Building Energy Demand & Heat Supply

40 Minutes

Part A. Energy Efficiency Opportunities

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

Older Neighbourhood

Notes: look for older neighborhoods. Building age is a key variable determining building performance.

Part B. Renewable Heat Sources

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

Waste Heat

- Paper Mill
- Brewery
- Rink
- Food processing plant (refrigeration)
- Sewage treatment plant
- Sewage pump stations
- Other



Renewable Heat Sources

- Pulp/Paper Mill (waste wood)
- Log Sort Yard (waste wood)
- Landfill
- Solar hot water
- Geoexchange
- Other



Notes: It is likely that there are some sources with both heat and power potential

Part B. Renewable Heat: Spatial (Locational) Considerations

What are some **key** spatial/locational considerations influencing the appropriateness of using renewable heat? Very brief discussion. Acknowledge all these issues, but make sure the first two are addressed.

- Located **near heat demand** (e.g. large buildings, industry or swimming pool)
- Or
- **New heat demand could be located there** (e.g. new buildings, neighborhoods, swimming pool)
- Miscellaneous (not necessary to explore, but people could raise.)
 - Public concern regarding odour from solid waste
 - Public concern about biomass combustion from air pollution
 - Sufficient space for loading bays, space/noise/pollution about trucks
 - Transporting biomass from far distances
 - Sensitive habitat

Part C: District Energy

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

Notes: -This is NOT a feasibility study. There are, however, several “typical” variables to consider in determining whether there may be a district energy opportunity.

key considerations:

1. Secure Energy Supply

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



2. Density

- **Anchor:** Identify a potential anchor tenant, e.g. industry, hospital –operate 365; requires backup plant or has own plant; *good consistent base load*)
- **Building Density:** Residential/commercial building density essentially 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



3. 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.



(Build Out: speed, phasing and integration of the build out is another important factor)