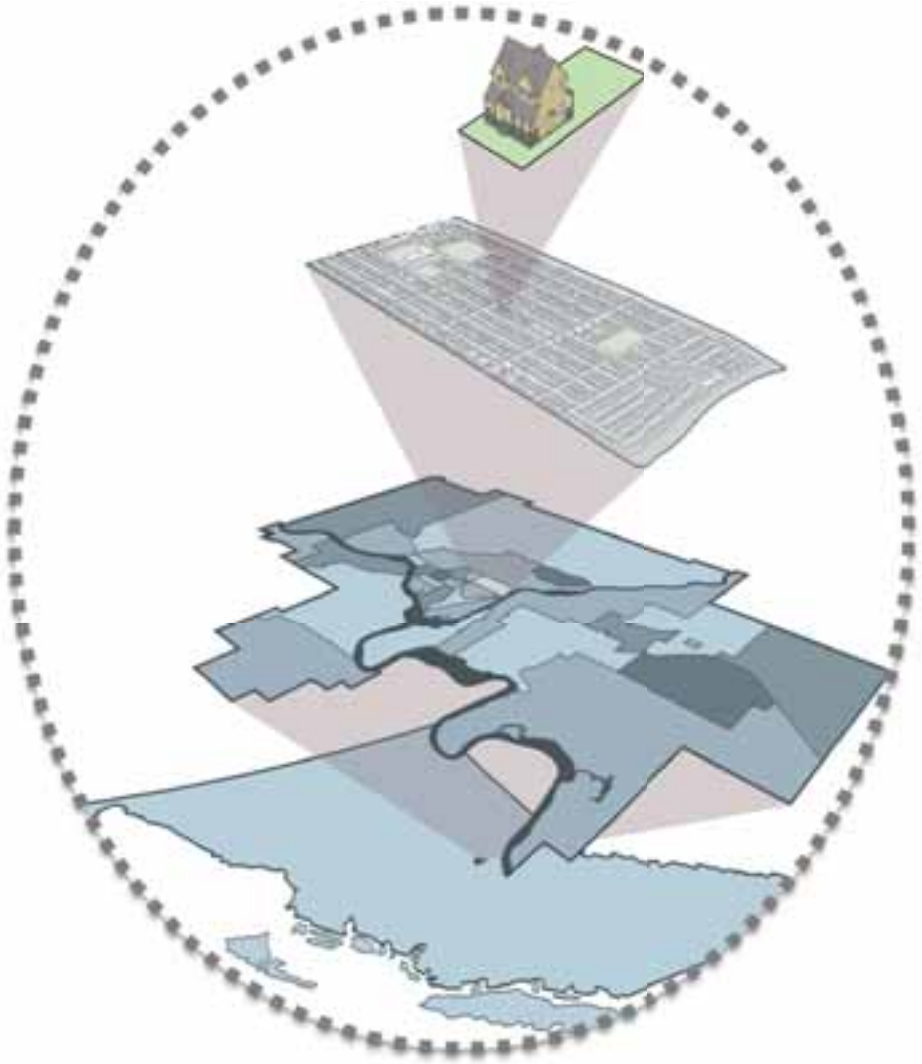
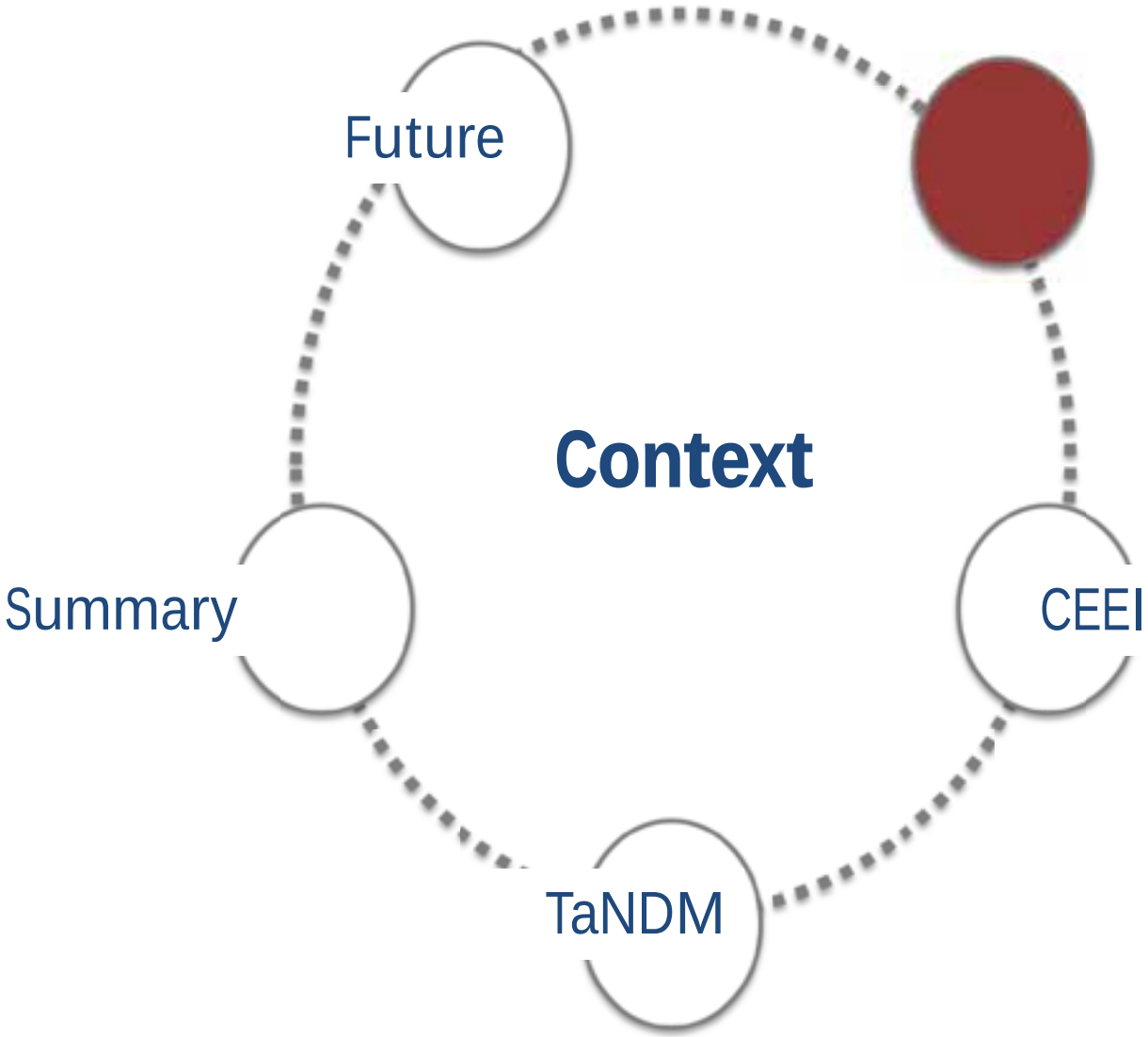


Spatially Enabling the Community Energy and Emissions Inventory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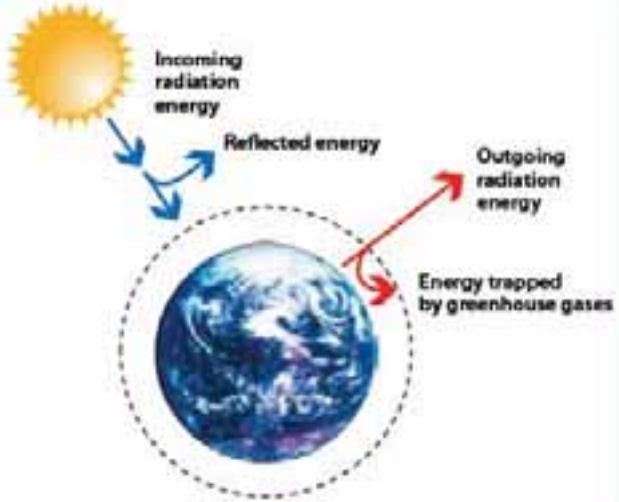
Climate Change



The Greenhouse Effect

When the sun's energy reaches earth most of the energy warms the atmosphere and the earth's surface. The earth then radiates some of this energy back into space as infrared rays. Greenhouse gases in the atmosphere trap some of the infrared rays before they escape resulting in additional warming of the earth.

Burning fossil fuels, and other human activities, have increased levels of greenhouse gases in the atmosphere. This has increased the atmosphere's capacity to trap energy by accentuating the greenhouse effect and raising global temperatures.

Why are we working on this?

- Landslides and floods
- Infrastructure damage
- Loss of life
- Natural Resource Disruption

Community Actions

land use

transportation

buildings

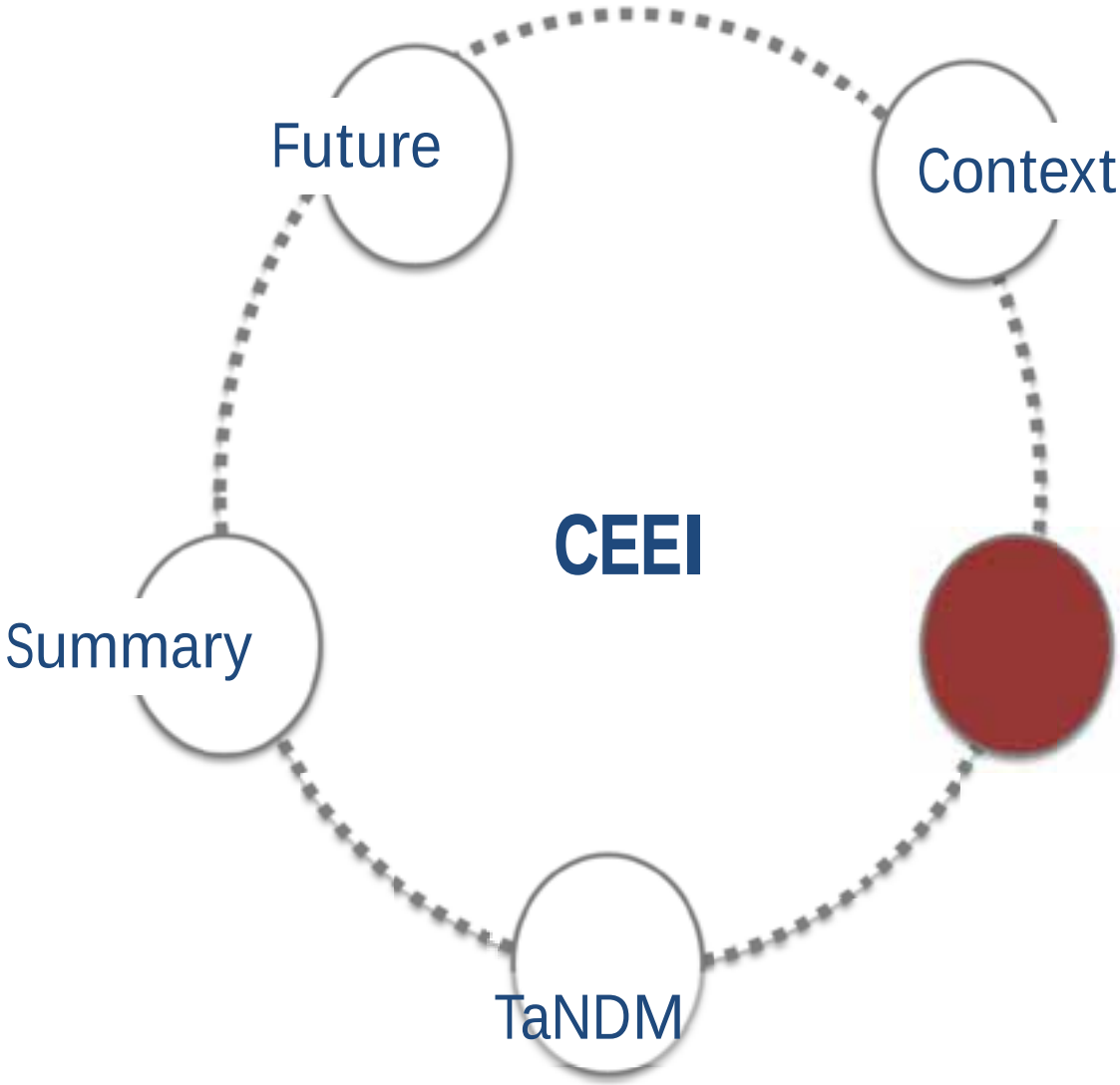
district energy

waste

Legislation and Policy

BIG PICTURE: Reduce energy use and GHG emissions

- **2007 Greenhouse Gas Reduction Targets Act**
  - 33% reduction in GHGs by 2020
  - 80% reduction in GHGs by 2050
- **2007 Climate Action Charter (voluntary commitment)**
  - Includes commitment to Monitor and Report on community GHG emissions profile
- **2008 Bill 27 Green Communities**
  - Requires Local Governments to set GHG Reduction Targets in their Official Community Plans by 2010; in Regional Growth Strategies by 2011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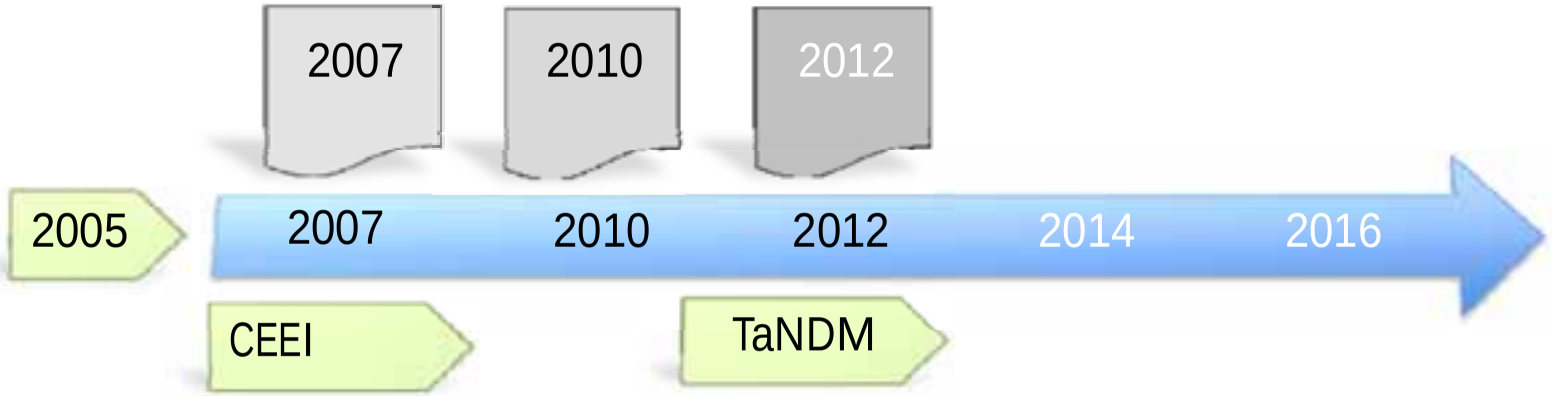
CEEI: Community Energy and Emissions Inventory

PURPOSE: to provide a provincial solution for tracking and reporting energy and greenhouse gas (GHG) emission indicators at a community (municipal or regional district) level.



CEEI GOAL: continuous improvement

Project Partners

- Climate Action Secretariat
- Community, Sport and Cultural Development

Project Sponsors

- MOE
- MCSCD
- IMB
- GeoBC

CEEI Working Group

- Data modeling
- Architecture
- Database & Infrastructure

Information Management Branch

- Spatial views
- GIS analysis
- Data management and loading

GeoBC

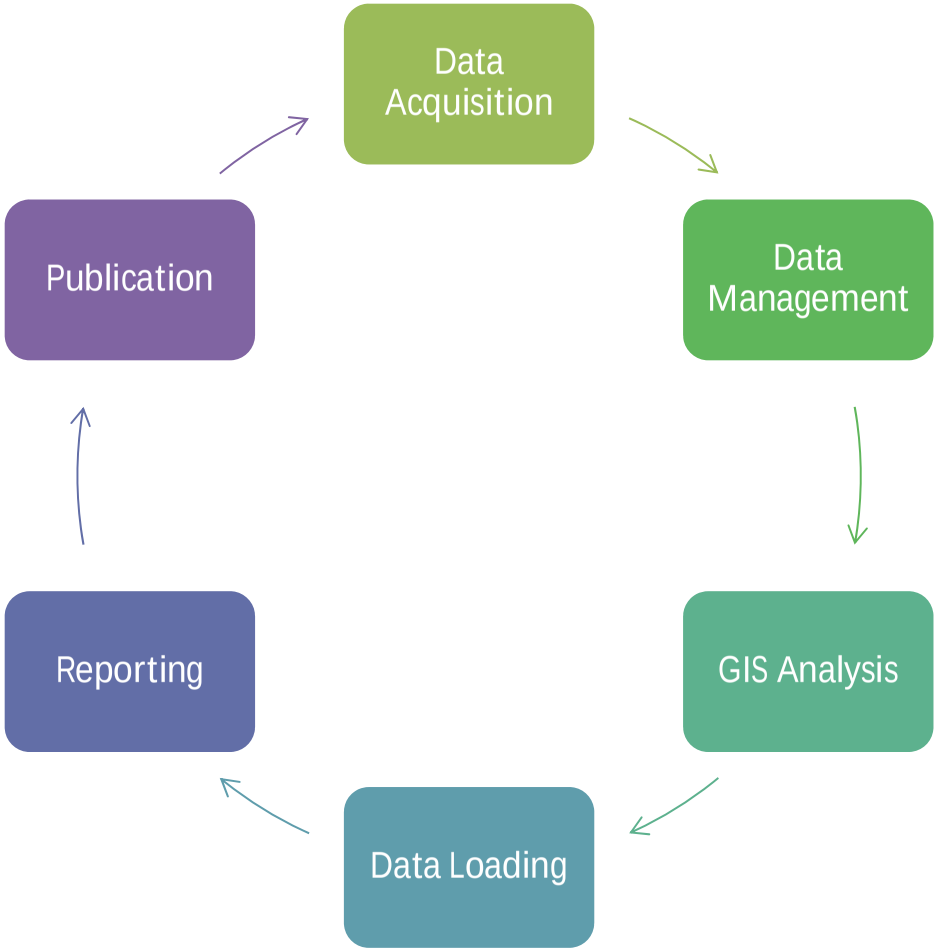
- Business area experts
- Transportation
- Buildings
- Outreach

Consultants

- ICBC
- Utilities
- BC Assessment

Data providers

Project Cycle



CEEI Report Content

Core Sectors

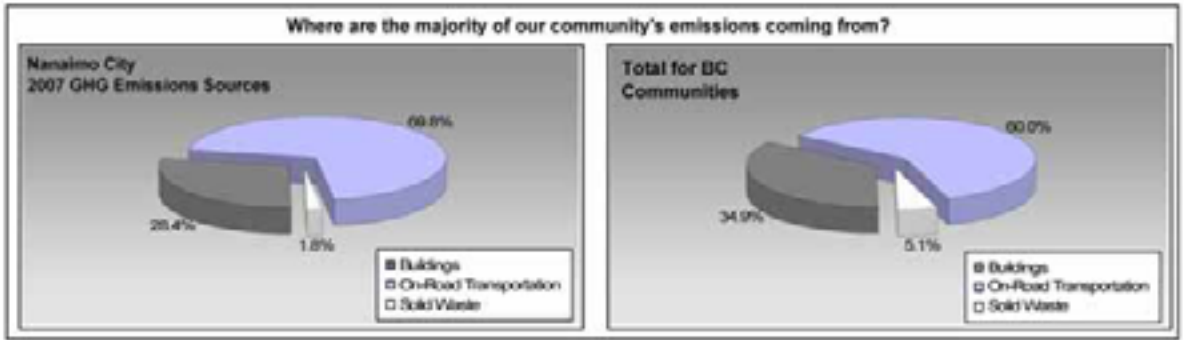
- Buildings
- Transportation
- Solid Waste

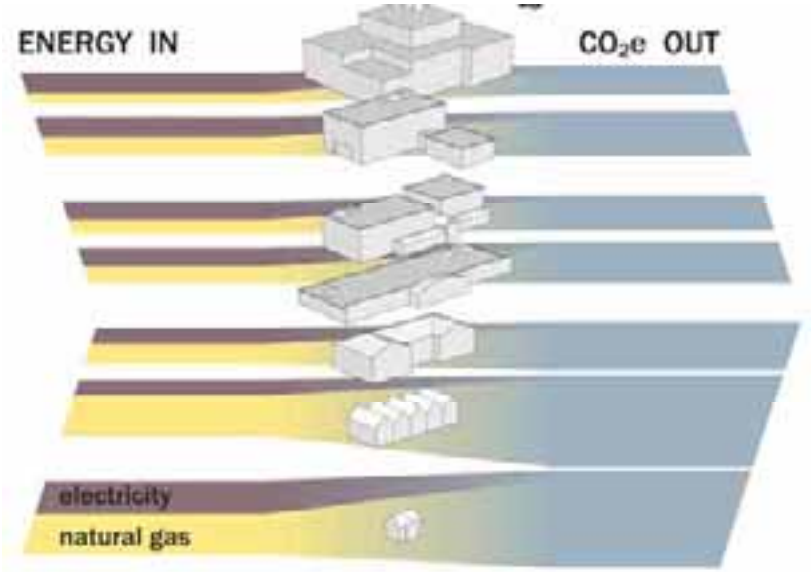
Memo Items

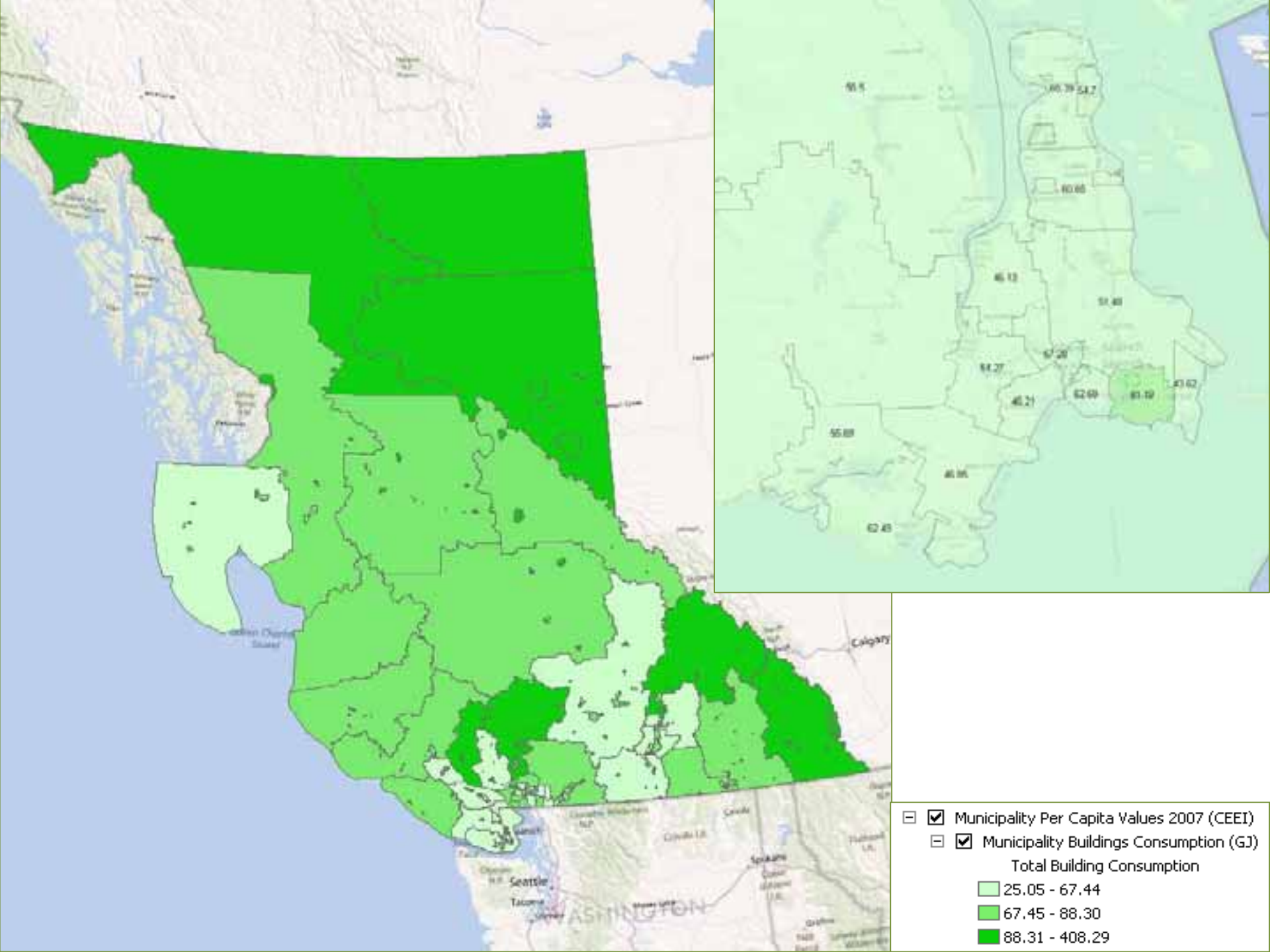
- Agriculture
- Deforestation
- Large Industrial Buildings

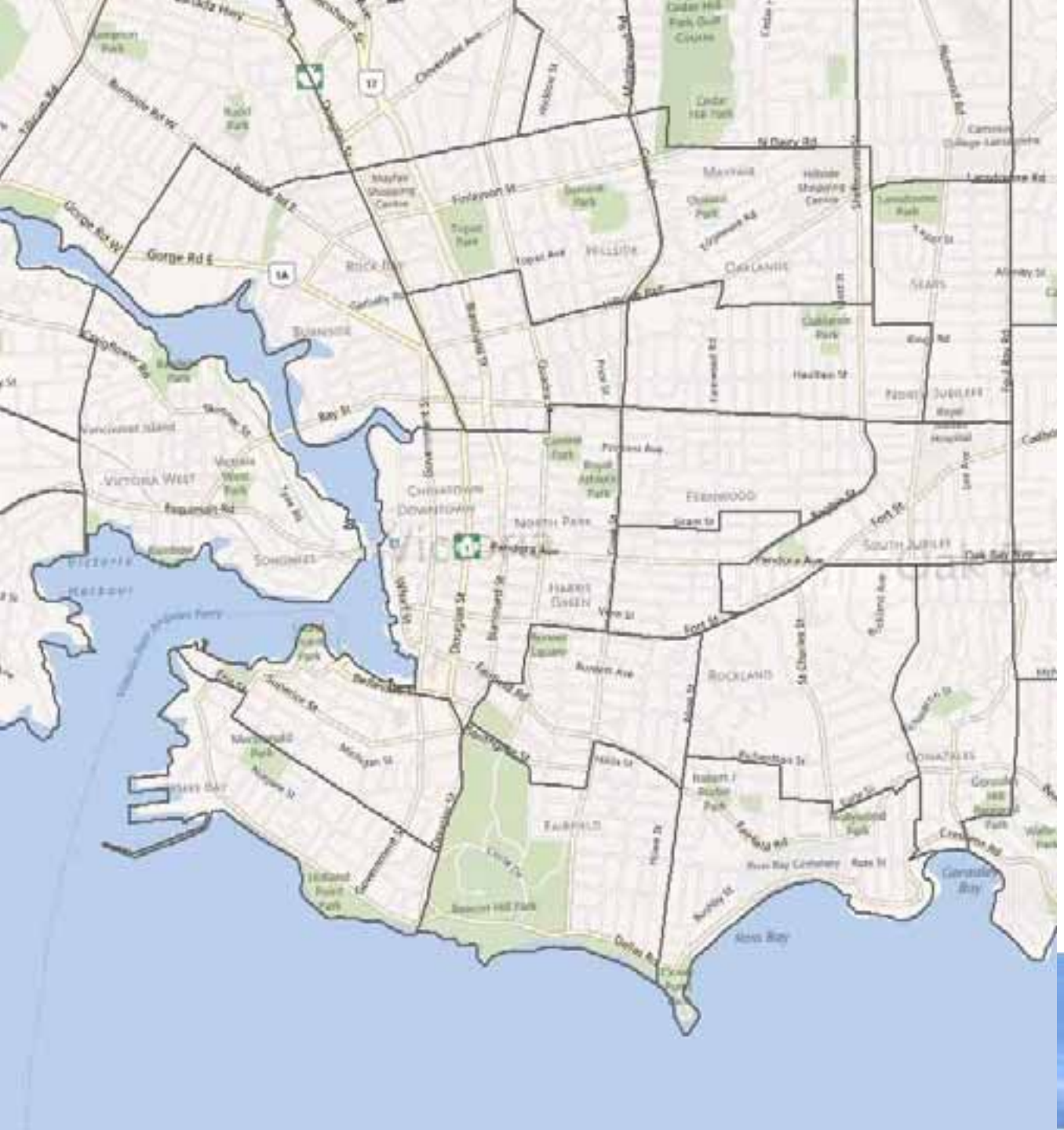
Supporting Indicators

- Housing Type
- Commute Mode
- Commute Distance
- Residential Density
- Parks and Protected Areas





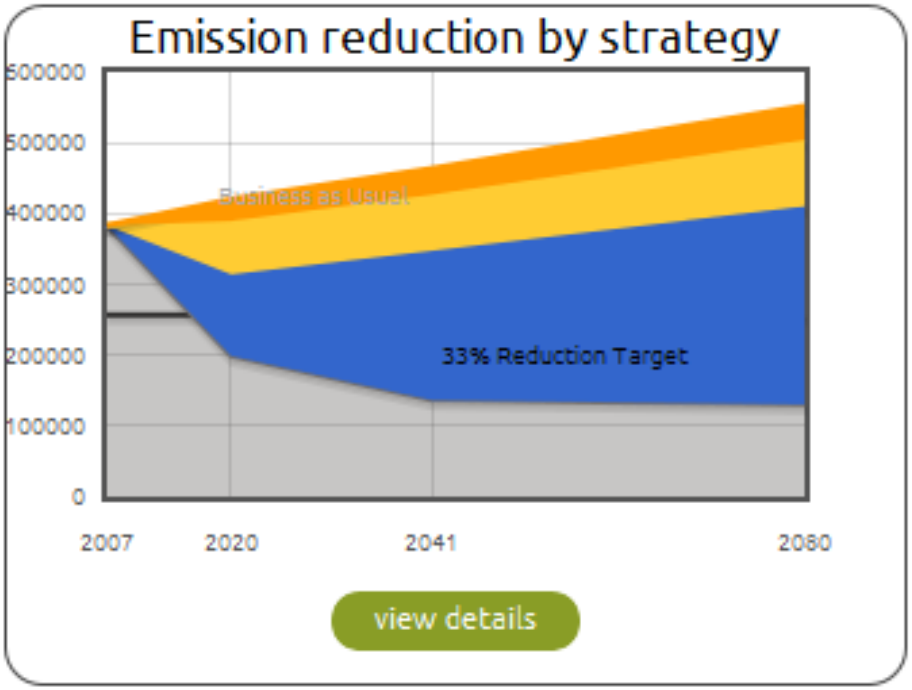

Municipality Per Capita Values 2007 (CEEI)
Municipality Buildings Consumption (GJ)
Total Building Consumption
25.05 - 67.44
67.45 - 88.30
88.31 - 408.29
Seattle
Tacoma
WASHINGTON



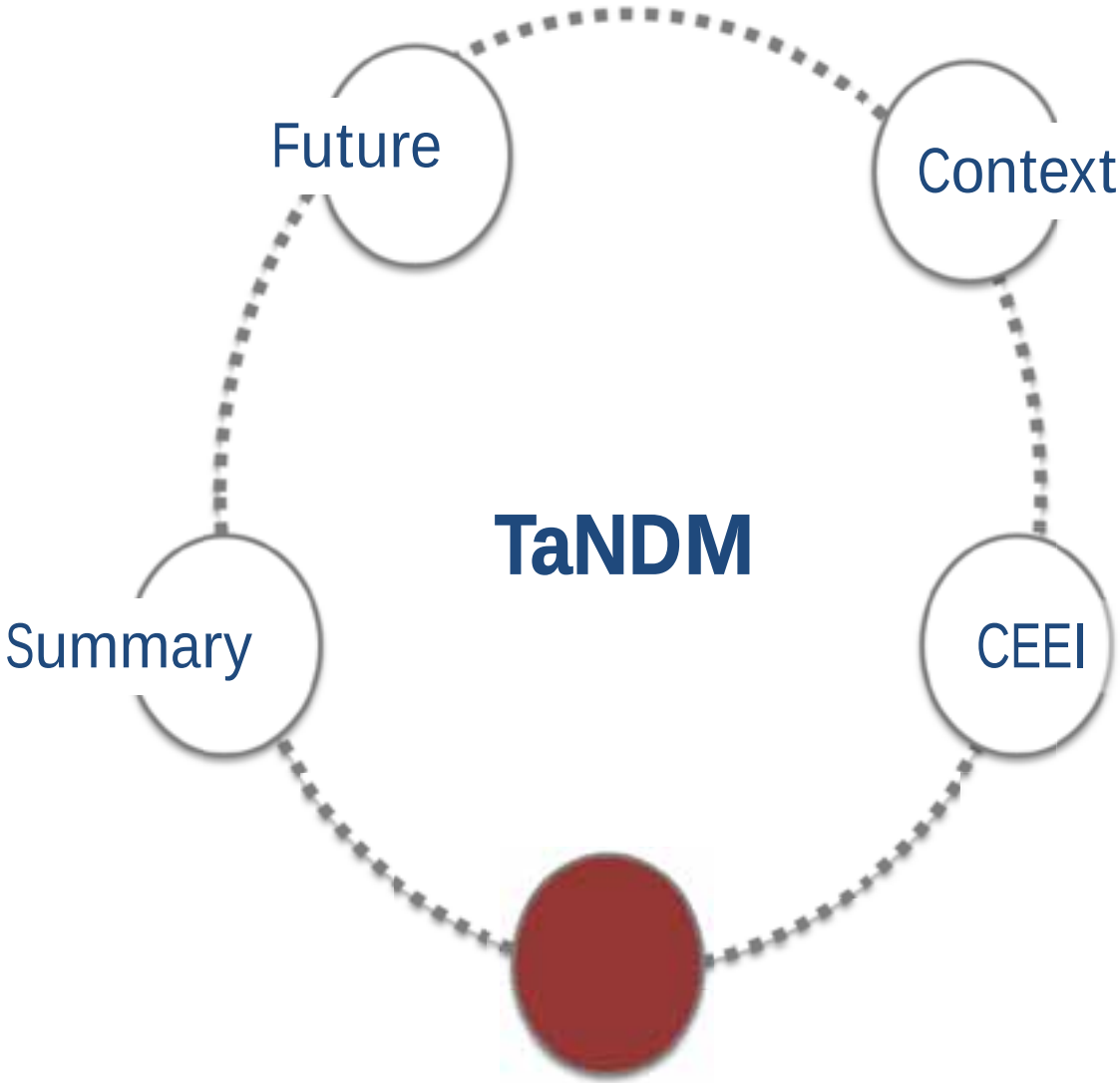
limitations of the community and regional reporting approach

Using CEEI Data for Modeling

Measured Data (present)



Modeling future scenarios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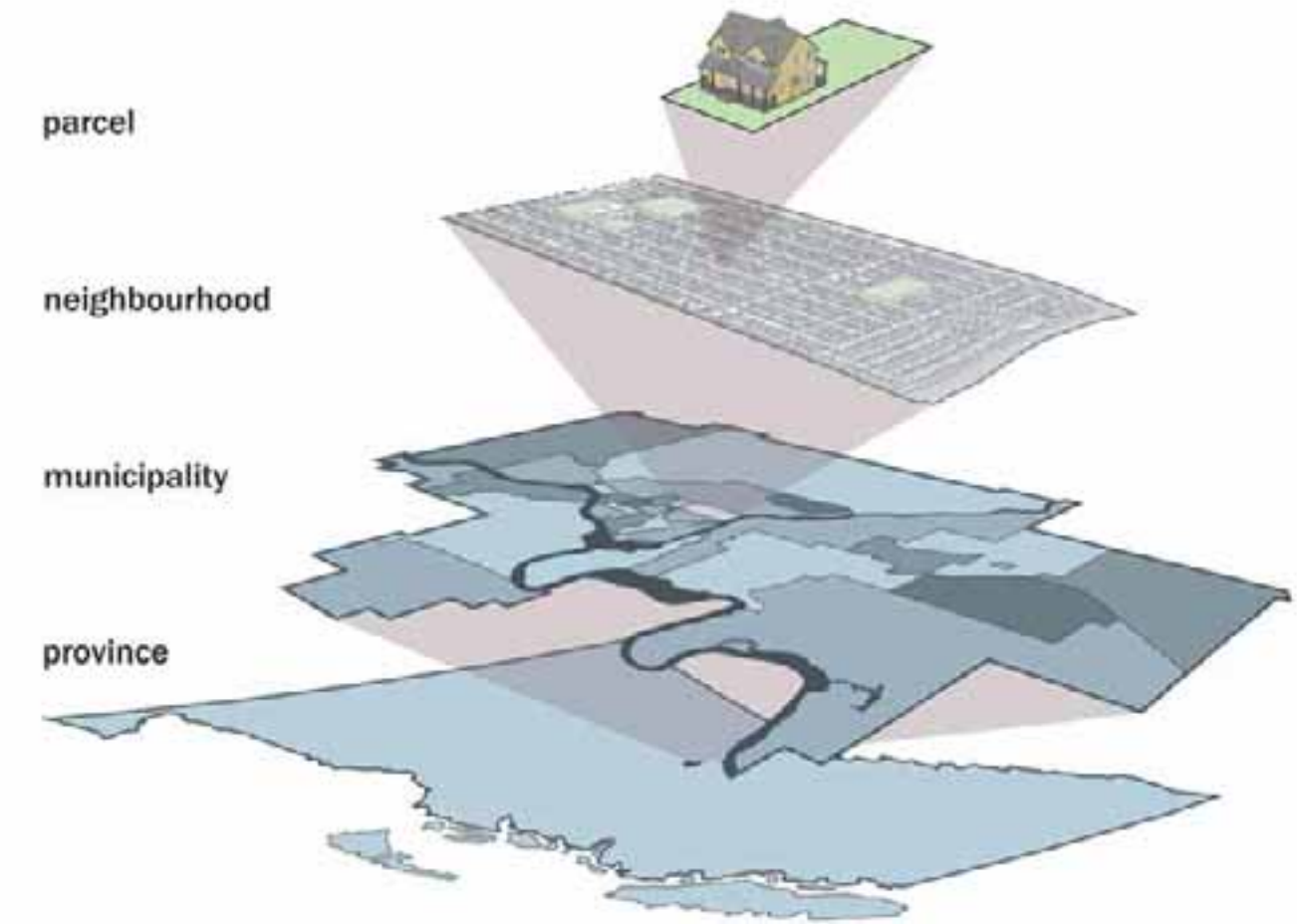
TaNDM: Tract and Neighbourhood Data Modelling

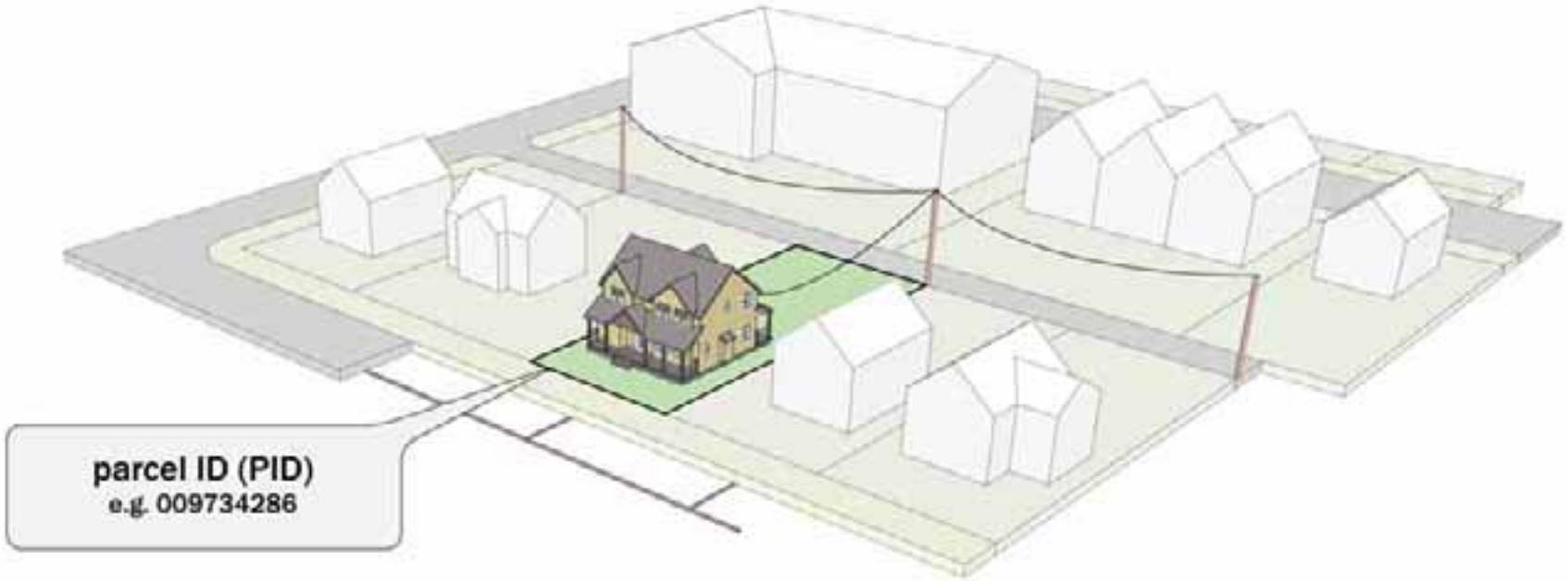
PURPOSE: explore opportunities and challenges for mapping CEEI at the neighbourhood (census tract) scale, focusing on building indicators.

- 3 Project goals
- 4 Project requirements
- 6 Pilot communities

Big Concept: scalable analysis



Parcel Data Method

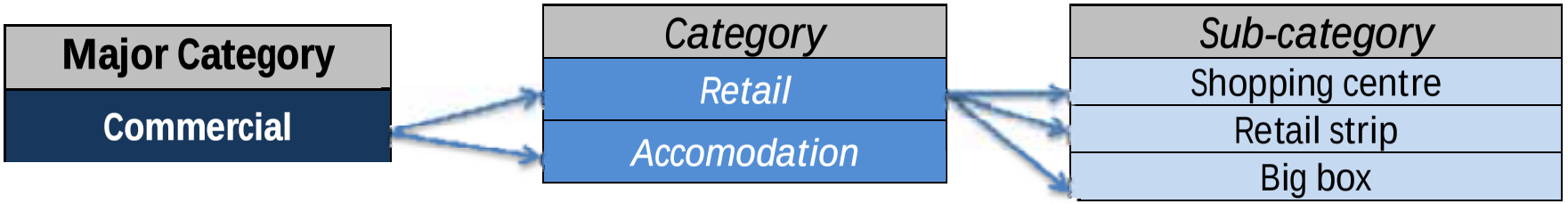


CURRENT CONDITIONS
assigned to parcels

- **category** e.g. single family, apartment, commercial
- **attribute** e.g. age, floor area
- **measured baseline** for electricity and natural gas

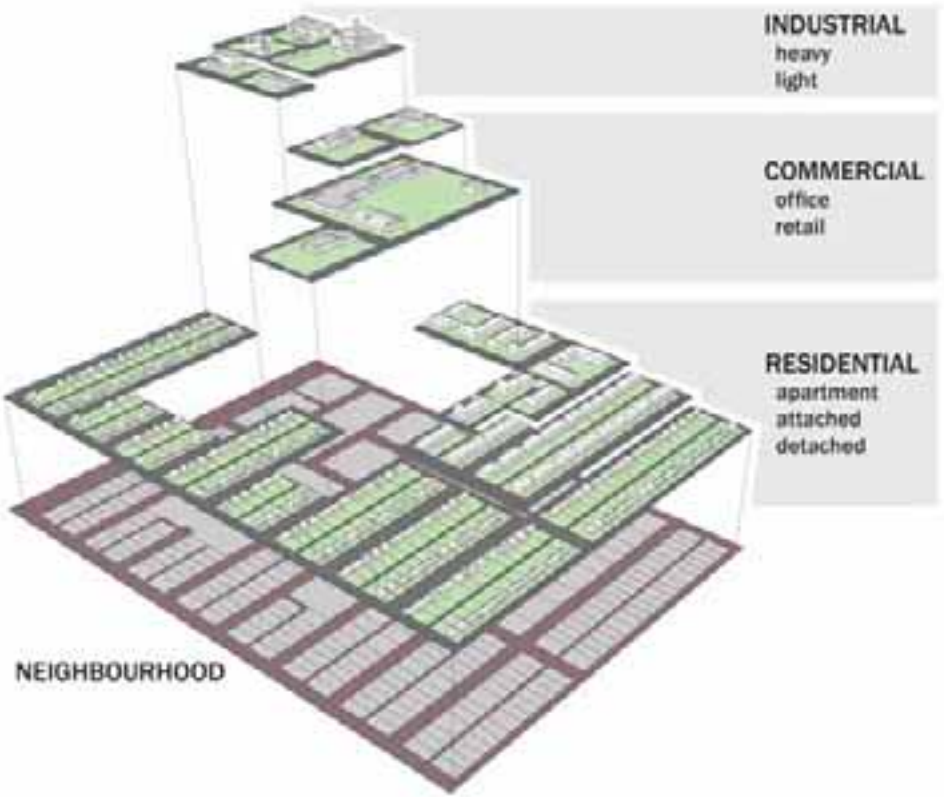
BC Assessment Building Information Report

Major Category	Category	Sub-category
Residential	Single family	Movable dwelling
		Single detached
		Single detached with suite
	Multi family	Single attached - duplex, row, townhouse
		Low-rise apartment
		Hi-rise apartment
	Mixed-use commercial and residential	Mixed-use residential
	Other residential	Seasonal dwelling
		Other residential
Commercial/Institutional	Office	Office - large
		Office - medium
		Office - small
	Healthcare	Hospital
		Care facility
	Education	Elementary school
		Secondary school
		University/college
	Retail	Shopping centre
		Retail strip
		Big box
		Retail - other
		Food - retail
	Accommodation	Hotel
		Motel/motel
		Accommodation - other
	Restaurant/Pub	Restaurant/Pub
		Fast food
	Warehouse	Closed warehouse
		Open warehouse
		Refrigerated warehouse
	Mixed-use commercial and residential	Mixed-use commercial
	Other	Other - farm
		Other - information and cultural services
		Other - arts, entertainment and recreation
		Other - commercial/institutional
Industrial	Light industrial	Light industrial
	Heavy industrial	Heavy industrial

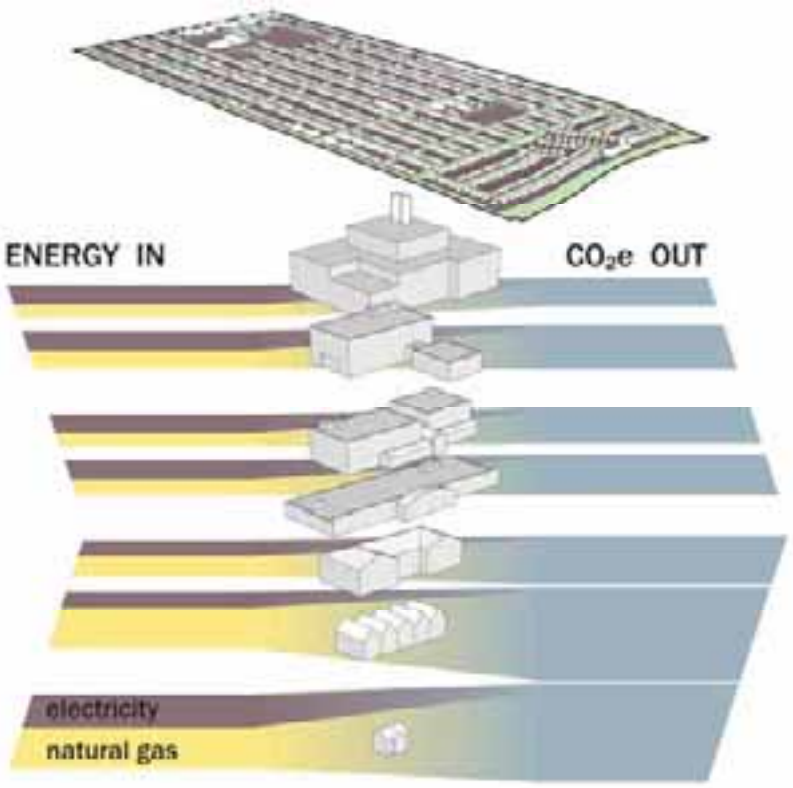


Integrate and Categorize

energy data for reporting



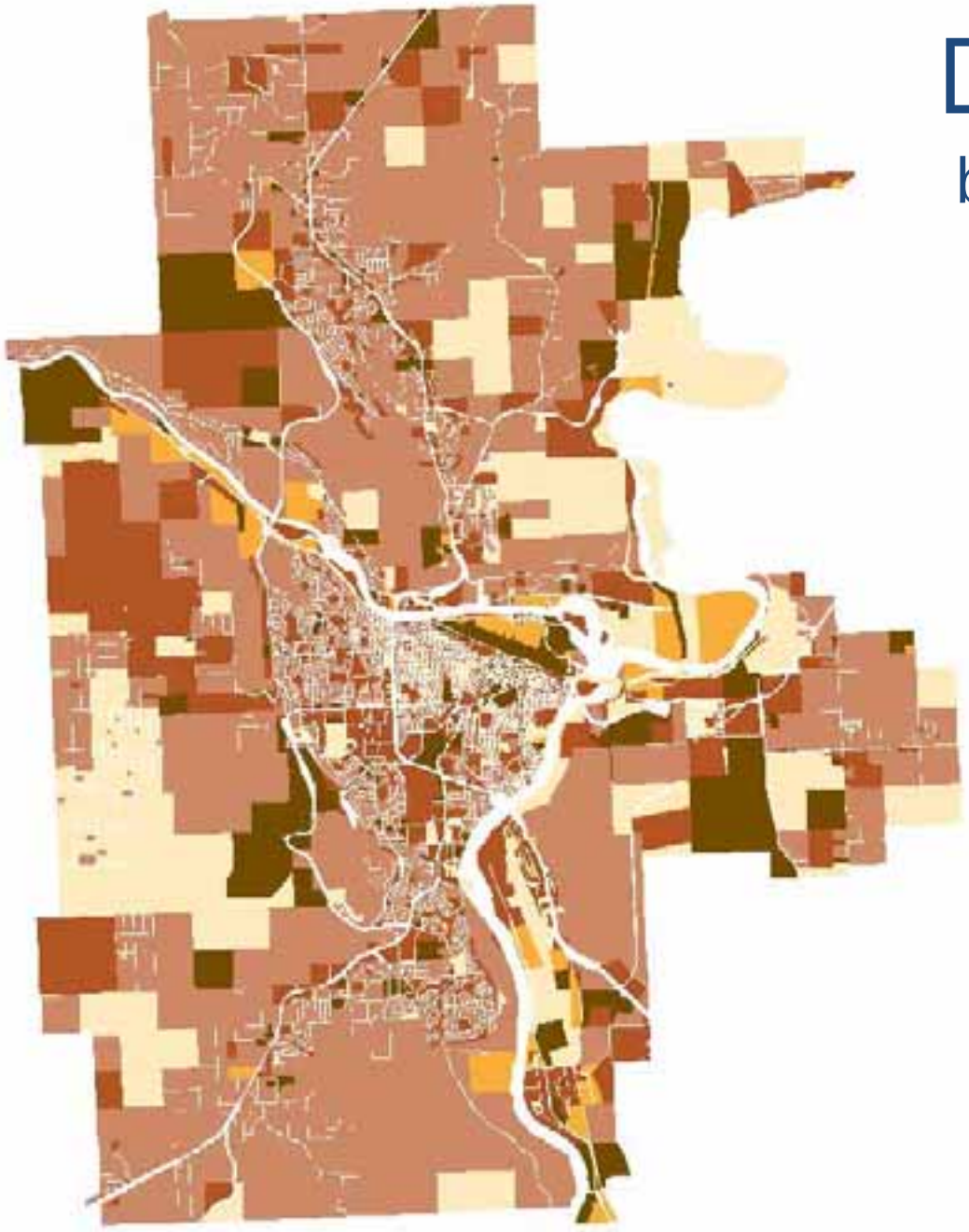
Utility data

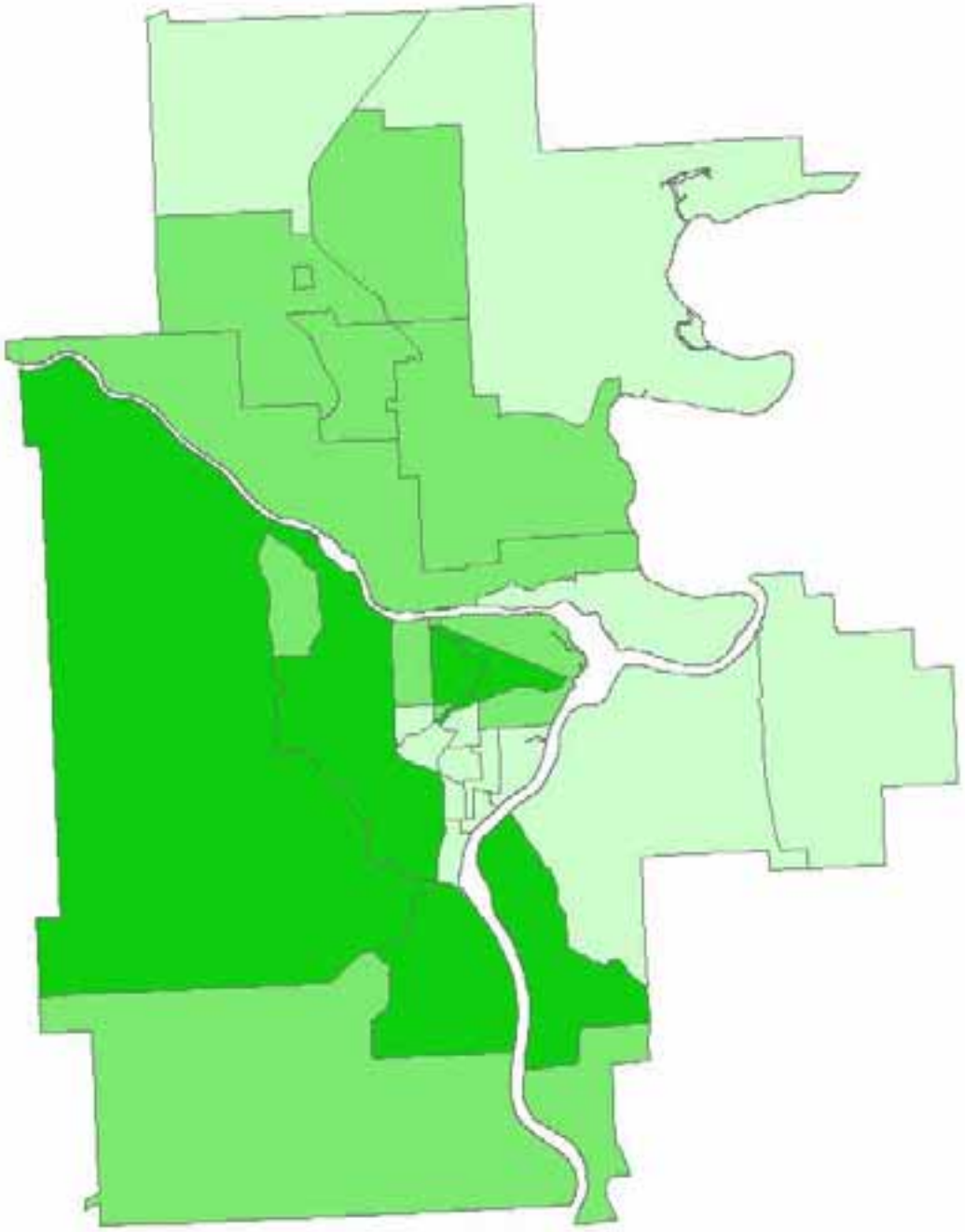


Deliverable: methodology

Deliverable:

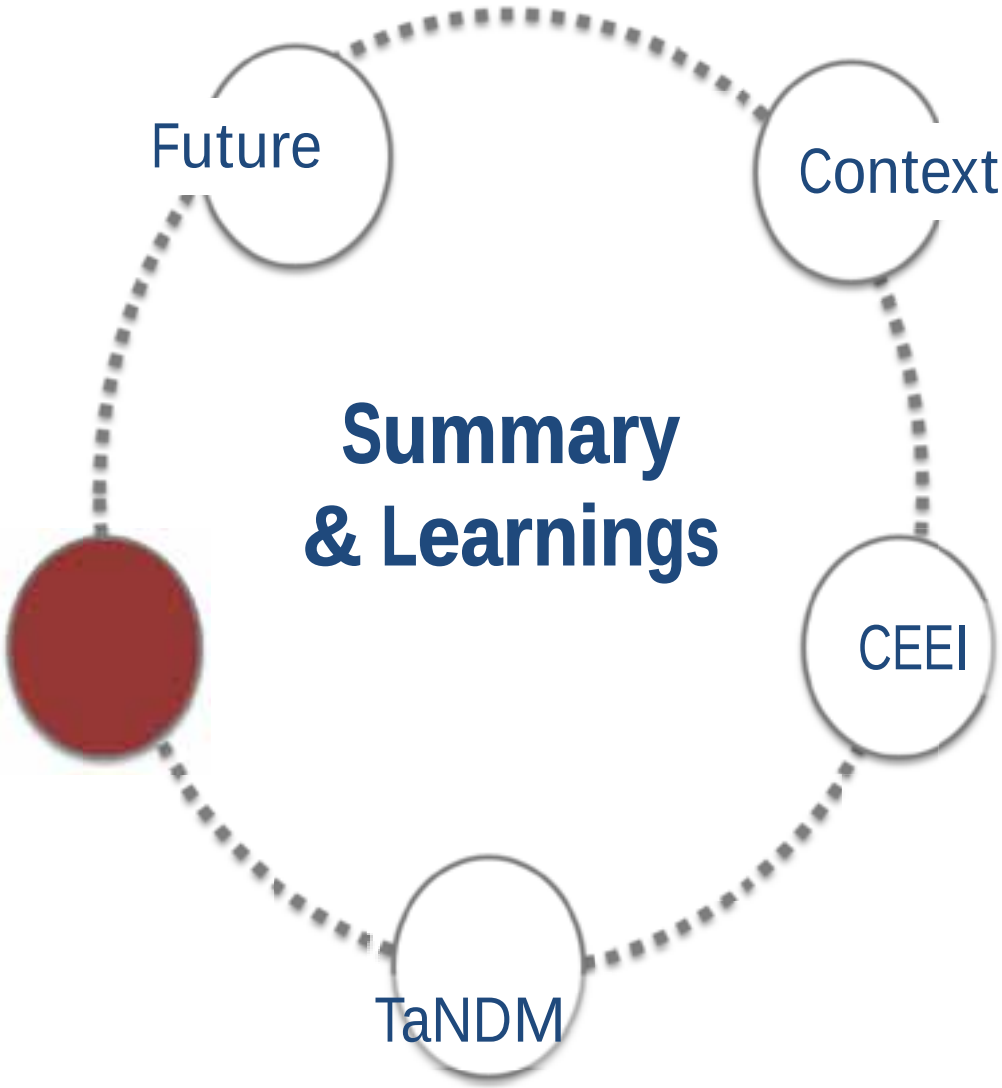
building categories reporting (maps)





Deliverable:

neighbourhood energy reporting (maps)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Relationship Building

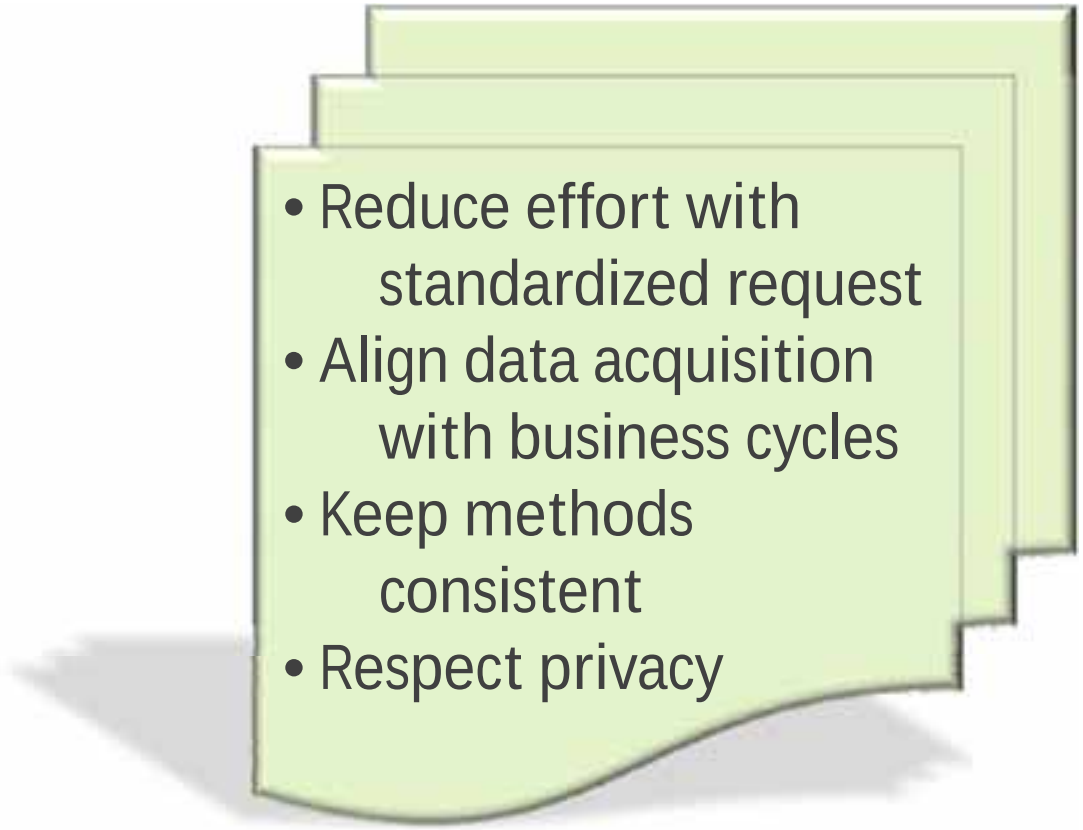
Win-win opportunities

Strengthen new and old relationships

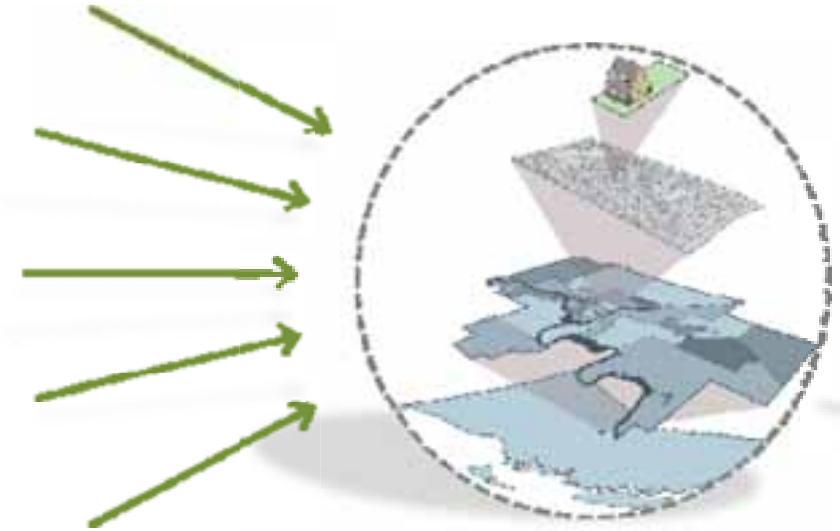
Learn who's doing what

Collaborative spirit

Data Sharing Protocols



Local Government Collaboration



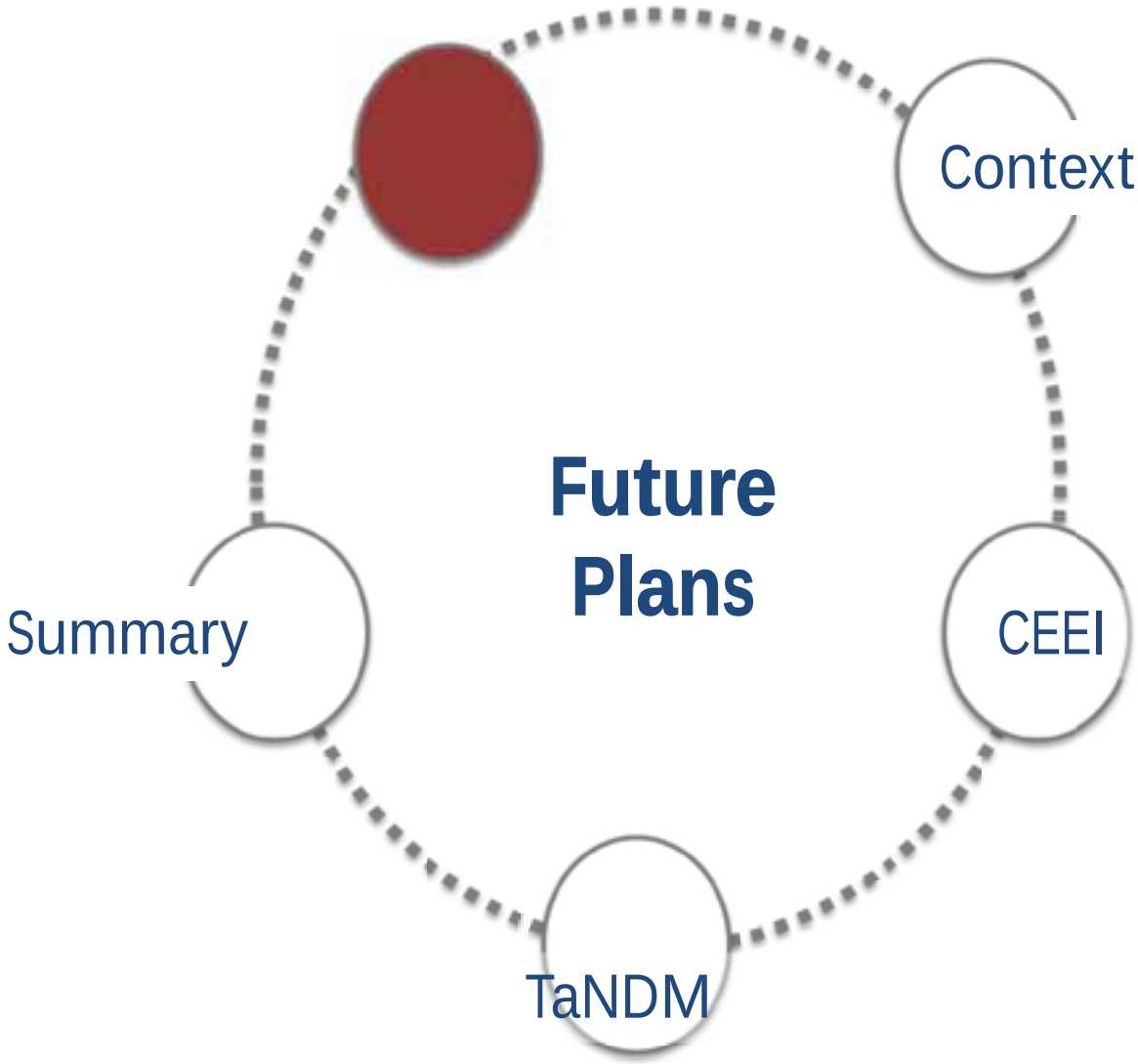
- Less effort and time
- Consistent methods
- Comparison
- Healthy competition

Local government needs

TaNDM

Standardized data request

Potential benefits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Potential Applications

Research Raises More Questions

- Data sharing protocols
- <5 rule needs sorting out
- Data acceptance and integration with CEEI
- Definition of “neighbourhood”
  - Test at local government level

Natural Resources Canada

Ressources naturelles Canada

C·V·R·D

CITY OF VICTORIA

BRITISH COLUMBIA

Fraser Valley Regional District

BC Assessment

CITY OF PRINCE GEORGE

BC hydro

powersmart

the city of north vancouver

VILLAGE OF BURNS LAKE

FORTIS BC™

CASTLEGAR

Ministry of Forests, Lands and Natural Resource Operations

Thank You for listening

Questions?

Ben Clark
Climate Action Secretariat, Ministry of Environment
250-387-5867
Ben.Clark@gov.bc.ca

Per Magnus Wallenius
GeoBC, Ministry of Forests, Lands and Natural Resource Operations
250-952-5092
Per.Wallenius@gov.bc.ca