
Natural Resources Canada
Ressources naturelles Canada
User Story Exercise Summary
TaNDM Kelowna Iteration, 2022
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Overview

- Exercise explained in steering committee meeting with format
  - Longer list of questions discussed
- Follow-up email sent with format and a deadline
  - Some phone calls were scheduled to elicit responses from some members
- Results summarized on individual slides
- Content analysis to produce summary analysis and stakeholder diagram
- Results used to confirm project scope and objectives

Set Up

User Story and General Interest

User Story

- *A small, concise statement of functionality or quality needed to deliver value to a stakeholder*
- Captures the needs of a specific stakeholder **who seeks to use the outputs directly**
- Enables teams to define features of value to a stakeholder using short, simple documentation
- Serves as a basis for prioritizing, estimating and planning of solutions

General Interest

- Short statement expressing general aspirations for the initiative

Uses for TaNDM

- Identifying:
  - Any additional stakeholders anticipating receiving data in this iteration
  - Stakeholders that might want the data in future
  - Clarify stakeholder relationships to inform strategy

Format

Title

Statement of Value

- **Who**
- **What**
- **Why**
- **Timeframe – specify immediate (this iteration of TaNDM through March 2023) or potential future use, timing TBD**

- ***What if I don't have a User Story?***
- If you don't have a User Story, in other words you don't see yourself or your organization either contributing to the development of the data and deriving some benefit from that (i.e. BCA) or using the data now or in the future, please **reply with 1-2 sentences on your general interest in the initiative.**

Longer list of questions

- In the context of your organization and role, what are one or more use cases that you could envision the outputs of TaNDM being applied to in future?
- What are relevant legislation or regulation to which these one or more use cases are linked?
- For each use case:
  - In an ideal scenario, what spatial resolution would it be most useful to you to have the buildings and energy data on?
    - i.e. building, dissemination area, census tract, postal code, FSA, city-wide scale, provincial scale
  - In an ideal scenario, what temporal resolution would be the most useful to you to have the TaNDM energy and emissions inventory report be most useful on?
    - i.e. annual, monthly, daily, hourly, sub-hourly
- What would you consider an optimal frequency on which these reports would be issued?
  - On-demand, for any time period
  - Annual basis for the prior calendar year
  - Bi-annual basis for
  - Another timeframe, please specify
- Would any of your use cases be supported by having access to the buildings data independently of the energy and emissions data (i.e. the BCA BIR report on its own, not including the energy and emissions data)
- Do you see yourself wanting the data outputs from this iteration of TaNDM or do you envision future potential use/applicability if such outputs are more broadly made available? (idea to identify immediate and future receptors)
- What would be the benefits to your organization of having the buildings data
- What would be the benefits to your organization of having the CEEI built according to TaNDM
- Based on the description of the original method and outputs, what improvements would you like to see in this iteration?
- End-goal: Confirmation and consensus on TaNDM scope for present initiative, with a very clear idea of other potential out of scope applications.

Results:
Individual User Stories +
Statements of General Interest

User Story: Province of BC, BSSB

- **Title:** Retrofit Code 2024
- **Who:** BSSB staff
- **What:** For the Retrofit Code, BSSB's interest is on the scale of individual buildings, including their assets. What systems are being employed specifically relating to both Part 9 and Part 3 buildings. BSSB is seeking to gain a better understanding of typical building performance with regards to total energy use and GHG emissions. Efforts to compile such data to date have resulted in a patchwork of datasets and previously executed reports. While building level data would be extremely useful, aggregated data would still be helpful if categorized to enable analysis and defendable assumptions.
- **Why:** Informing provincial policy towards energy efficiency and GHG emission reductions.
- **Timeframe:** The Retrofit Code is slated to be released in 2024. BSSB is interested in whatever data is available prior.

User Story: City of Kelowna

- **Title:** Community Energy and Emissions Planning
- **Who:** City of Kelowna Staff
- **What:** Use TaNDM outputs (i.e., annual measured energy and emissions data, by building type or sector at either the census tract or municipal scale) for more granular and informed climate action planning in the building sector. Currently community energy and emissions data are presented at a high level (and not spatially), which prevents customized / targeted policies and programs at the municipal level.
- **Why:** The City sees value in TaNDM
  - (1) a reporting perspective by being able to see/report spatial or sectoral energy and emissions trends over time;
  - (2) a predictive perspective by modelling the energy and emissions performance needed within various areas/sectors to reach targets.
  - (3) By participating in the steering committee, the City hopes to understand the model accuracy and generate a sound scientific basis for energy and emissions policy and program design
- **Timeframe:** Use of outputs this iteration, 2023

User Story: Licker Geospatial

- **Title:** Calibrate Provincial Policy Attribution Model and Grid Load Planning
- **Who:** Licker Geospatial Consulting staff
- **What:** Use TaNDM output data for Kelowna, to calibrate provincial scale information in conjunction with the Ministry of Environment policy attribution stock model. Interest is in using the Kelowna data to check and calibrate the model for Kelowna only, including associated indicators such as energy use intensity (EUI) and greenhouse gas intensity (GHGi).
- **Why:** Typically, the firm consults with federal departments to obtain provincial-level data for calibration. There's value for model calibration and accuracy in having benchmarking data at the municipal scale for a whole municipality. Policy and program value would be in improved estimates of floor area and numbers of retrofits required for CleanBC program.
- **Timeframe:** Interest in outputs from Kelowna during this iteration, 2023

User Story: Sustainability Solutions Group

- **Title:** Community scale modelling to assess potential for energy and emissions reductions
- **Who:** Sustainability Solutions Group
- **What:** SSG performs community scale modelling to help with energy and emissions planning. The ability to accurately depict the energy use of the existing housing stock and to understand the vintage of the housing stock will help with modelling the potential for retrofits to lessen energy use and related emissions
- **Why:** The ability to more accurately model the potential for different retrofits to influence future energy and emissions will help local governments plan effectively. SGG is currently busy completing this work and will continue to help local governments set and achieve future targets.
- **Timeframe:** Interest in future use of the method and data especially if accessible more broadly.

User Story: Province – MENV CAS

- **Title:** Support development of evidenced-based policy
- **Who:** Climate Action Secretariat (CAS)
- **What:** would use TaNDM outputs to support the development of evidenced based policy, track the impacts of climate action policies, programs, investments, and to monitor/recalibrate climate action approaches moving forward.
- **Why:** Enhanced spatial and temporal granularity would support climate action at both the provincial level, and with our key stakeholders at the local government level. As local governments have direct control or influence over 50% of energy and emissions in British Columbia, TaNDM will help facilitate climate action at these enhanced levels of geography.
- **Timeframe:** Use of outputs this iteration, 2023.

User Story: Province – GeoBC

- **Title:** Potential Use by GeoBC
- **Who:** GeoBC Staff - provides geospatial services to provincial agencies. We create business solutions for multiple internal and external stakeholders and clients.
- **What:** Any data produced through the TANDM projects would be particularly useful to develop dashboards and maps at provincial scale that are managed locally.
- **Why:** Integration of the data with business specific data would inform policy and decision-making activities for Clean BC and Climate Preparedness and Adaptation Strategy.
- **Timeframe:** A prototype could be created as part of the current integration that could be scaled provincially when data is available.

User Story: NRCan – OEE – DPAD

- **Title: Exploring the potential to improve NEUD**
- **Who:** The market analysis team of the Demand Policy and Analysis Division (DPAD) at NRCan's Office of Energy Efficiency
- **What:** The team would like to learn and examine the method to estimate and present energy use and GHG emission data, to explore the potential, to improve the National Energy Use database (NEUD) at the national and provincial level; and for NEUD to go to more detailed level (e.g. municipality).
- **Why:** An improved NEUD provides more accurate and, potentially, more granular data for policy, program, and project development, analysis and evaluation, to improve energy efficiency and reduce GHG emissions.
- **Timeframe:** Learn the method this iteration, 2023. Potential use of outputs in future, if scaled.

User Story: NRCan – CanmetENERGY-Ottawa

- **Title: Validation of Housing Stock Model (aka CEE Map Dashboard)**
- **Who:** CEE Map project researchers (project manager, housing energy specialists and spatial analysts)
- **What:** measured electricity and natural gas data for Single Detached and Attached Dwellings in the City of Kelowna at either the City-wide scale or Census Tract, for the period of one year **(WHAT)** would enable comparison with modelled results by dwelling category from the model, an assessment of accuracy for electricity and natural gas use. Depending on granularity (e.g. by housing type and vintage), the data could potentially be used for model calibration if the model was found to vary significantly from measured data.
- **Why:** The value is in ensuring model accuracy and a sound scientific basis for energy and emissions policy and program design by the City of Kelowna directly and best practice documentation on the topic for Canadian municipalities more generally.
- **Timeframe:** Use of outputs this iteration, 2023.

General Interest – Discussion Prompts

- *What are your hopes and aspirations for this initiative?*
- *What impact do you anticipate TaNDM would have on your organization?*

General Interest: BC Assessment

BC ASSESSMENT

- BCA is always interested in learning more about how the assessment data generated is used for activities beyond assessment and taxation purposes. By learning how our data is used, BCA can create better products and assist other organizations through experience.
- The Building Inventory Report (BIR) was created and still exists because of the original TaNDM exercise. BCA hopes to see similar updates and possibly even new products as a result of this new endeavor.

General Interest: Licker Geospatial

- ***What do we need know?*** Where are the intersecting spheres of gas use or low efficiency to target for benchmarking, retrofits or renewal. Organizing the TaNDM archetyping effort around policy effectiveness.
- Currently building energy and emissions plans are created based on modelling data. The building energy modelling step is expensive. The **development of a repeatable method** by which measured data could be reliably obtained would free up more money for policy analysis and interpretation. **Interest in seeing this scale to province-wide and then nation-wide.**
- General interest in refining the TaNDM method and building categories/archetypes to **make it as policy-relevant as possible**. Specific to electricity data, referencing the circuit or substation that data is on would be helpful to plan for building demand loading for EVs and shifts to heat pumps. Understanding where loads would have constraints would be useful for system peaking planning.
- **Collaborative research processes such as TaNDM are promising for understanding and refining methods**. Specific interest in the parcel and assessment data matching process. Looking forward to a discussion to understand what others are doing and improve how the data is connected.

General Interest: OEE- DPAD

- Better understanding of the method to generate/estimate and present energy use and GHG emissions data.
- Potential use of (some components of) the method to improve the National Energy End-use Database (NEUD) in terms of data accuracy and granularity.

General Interest: CanmetENERGY-Ottawa

- Publication of method, scripts and results from this iteration
- Scaling of method to province-wide and national scales to enable consistent, privacy-compliant and useful energy and emissions data on buildings to be open and accessible
- Data standardization and interoperability to shift level of effort on data acquisition and integration towards analysis and action

Summary Analysis

User Story Exercise Summary 1/2

Pain points

- Considerable effort goes into to collecting data
- Decisions based on a patchwork of data stemming from available datasets, reports etc…
- The data that is available is at too high a spatial scale for effective planning
- The data that is available is not available spatially
- The federal government receives requests for municipal-scale data, but can't downscale existing survey datasets*
- Current wasted effort on modelling; degree of uncertainty around accuracy

Many use cases for the same/similar data:

- Model validation (x3)
- Community energy planning
- Provincial policy
- CleanBC
- Retrofit codes
- Electricity system planning
- EV charging planning

See the final draft summary on Teams in the User Story Exercise folder: https://bcgov.sharepoint.com/:w:/r/teams/05107/Shared%20Documents/General/User%20Story%20Exercise/User%20Story%20Exercise-SummaryDRAFT-06052022.docx?d=w7dc2f3bb17c74b3591521770f9291040&csf=1&web=1&e=1tIyzp

*Note: that this has been done by SSG in the MEED database, although accuracy has not been validated

User Story Exercise Summary 2/2

Broad need for buildings and energy data across all parties

- Many more stakeholders than anticipated expressed interest in using the data this iteration of TaNDM
- Interest expressed in granular building scale data but *"Aggregated data would still be helpful if categorized to enable analysis and defendable assumptions"*
- Interest also expressed in learning the methodology for potential future application

Efficiency and effectiveness in repeatable method of obtaining [properly categorized] measured energy data

- Would enable a shift resources to policy analysis, interpretation and implementation.
- Important to make revised method as policy-relevant as possible
- NRCan made explicit the interest to open-source the TaNDM method and publish results

Ambitions to scale to province and nation-wide

- Opportunity this iteration for GeoBC to build prototype for holding the data spatially, could enable scaling province-wide

Primary and Secondary Use Cases

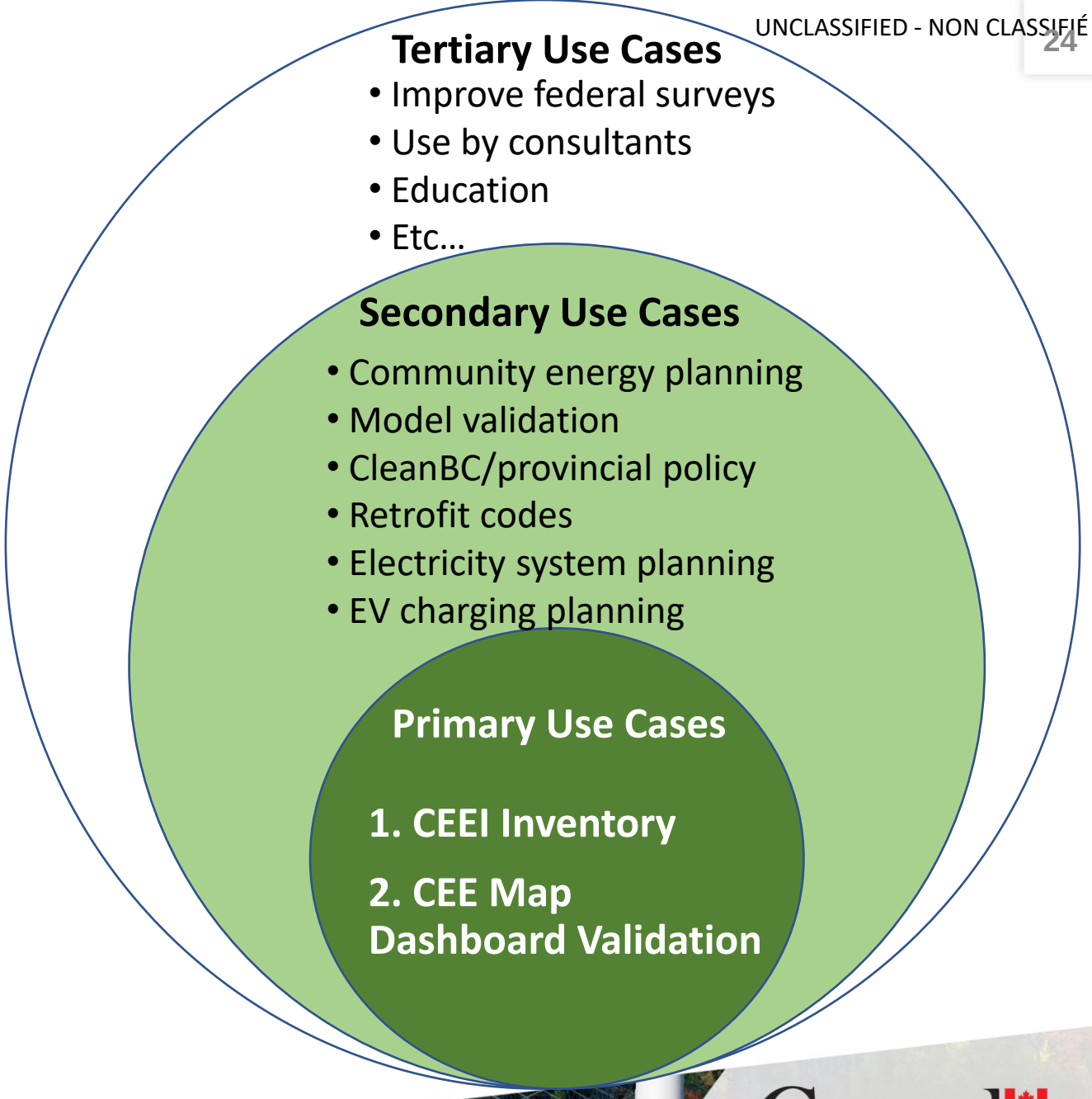
Primary Use Cases:

1. CEEI Inventory

- Purpose of the CEEI is to support community energy planning
- The main CEEI is a published data product

2. CEE Map Dashboard Validation

- Answering the question: *"How accurate is the CEE Map Dashboard for Kelowna?"* developed with modelled energy data
- Developing a validation method that could be used to assess any map-based building stock energy model at scale



Stakeholder Diagram

Based on the User Stories, where do stakeholders sit, in relation to the solution?

- **All -** everyone contributes requirements and to solution design, via the Steering Committee
- **Developers -** organizations directly involved in developing the TaNDM method this iteration, either through data provision, technical or management support
- **Receptors -** organizations that anticipate receiving the aggregated energy and emissions outputs for Kelowna to inform planning and policy
- **Longer-term Potential Users –** organizations with a short-term interest in learning the methodology, but who would require it to be deployed more broadly for planning and policy applications in jurisdictions beyond Kelowna