#1: CITY OR TRIBAL GOVERNMENT BUILDINGS & LIGHTING

CORE METRIC FOR CATEGORY **A** & **B** & **C** COMMUNITIES

Bold, green font indicates metrics that must improve to be recognized at Step 5

METRICS

City or Tribal Buildings:

1.1 kBtu per square foot, per year (kBtu/ft^2/year)
1.2 Dollars spent on energy per square foot, per year ($/ft^2/year)
1.3 Ratio of actual energy use to predicted energy use (Actual:Predicted)

Percent of LEDs in:

1.4 Street lights (% LEDs)
1.5 Traffic signals (% LEDs)
1.6 City or Tribal buildings & property (%LEDs)

See CO2e Guidance Document for Metrics **A**, **B**, and **C**

METRIC DEFINITION

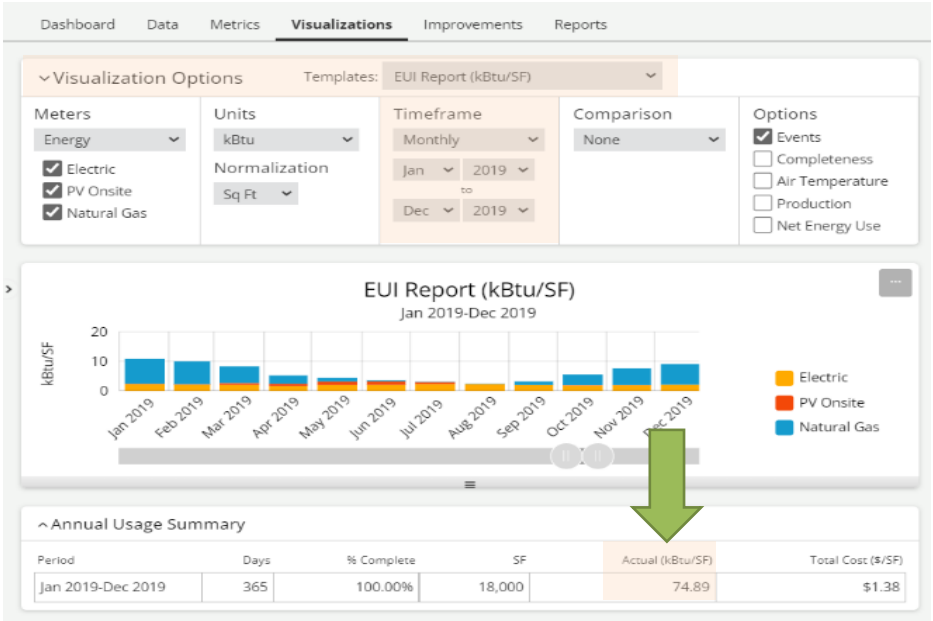
- **City or Tribal buildings** include all city/tribe-owned (and leased, if possible) buildings fueled by two or more sources of energy. Excluded are unheated garages, pump houses, and some park buildings. Category C participants may not own or lease such buildings and thus do not report these three data points. **Water use** by city/tribe buildings and properties is reported under Metric 10: Drinking Water. (Metrics 1.1-1.3)
- **Ratio of actual energy use to predicted energy use** – This is called the B3 Benchmark Index Ratio – it is an engineering model that predicts how much energy all buildings would use if they were built to and operated under the current State energy code. This ratio divides the actual energy use for the most recent twelve months of data available by the predicted energy use for the same period, and expresses the result as a number. Numbers 1.0 or under mean the city's buildings are performing better than predicted. (Metric 1.3)
- **Street lights** include all street lights owned by the city/tribe and all those owned by any utility under a franchise agreement and should be counted as one fixture, regardless of the number of bulbs contained. (Metric 1.4)
- Each **traffic signal,** owned by the city/tribe or other unit of government, should be counted as one for purposes of calculating a percentage; thus, as sometimes only one of the three colors is changed out before changing out another color, counts may include 0.33 of a signal. (Metric 1.5)
- **City or Tribal buildings & property** includes both interior and exterior lighting for buildings (interior includes ambient and task lighting fixtures), garages, other city facilities (e.g. drinking/waste water plant), parking lots and ramps, ball fields, park lighting, trails, and the like. (Metric 1.6)
- **Alternative metrics**: if you have been gathering or want to gather slightly different metrics, report those and explain in the notes section of the GreenStep reporting survey why they are a better fit for your community. For example, you may use Energy Star's Portfolio Manager or a proprietary building program, though GreenStep has not seen the ability of these programs to calculate actual-to-predicted ratios based on Minnesota's changing building code, nor to compare your data to other data by type of building in Minnesota.

DATA SOURCES

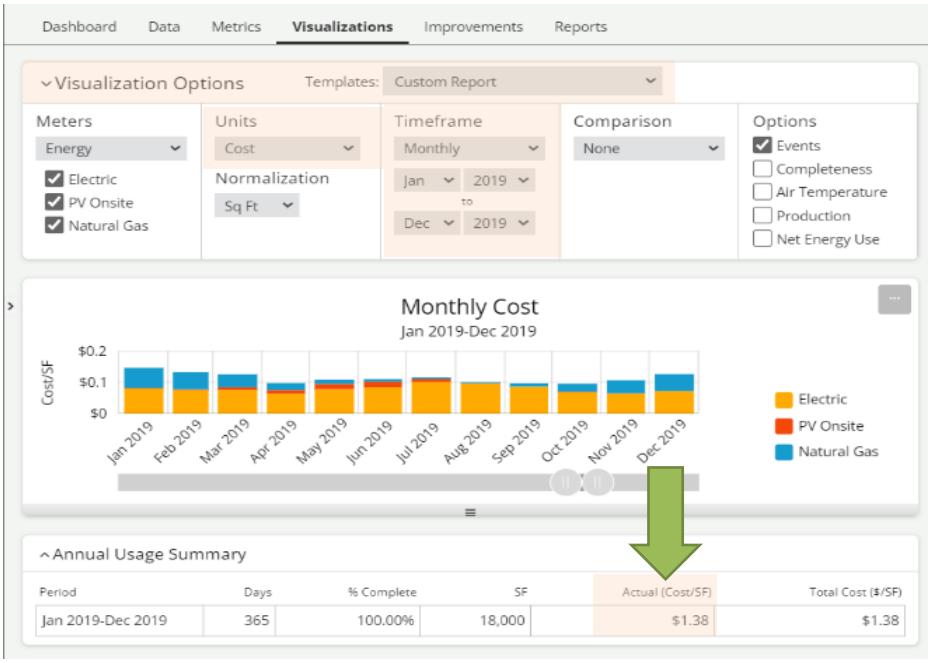
- B3 Benchmarking Program Data at https://mn.b3benchmarking.com (Metrics 1.1-1.3)
  - Note: Energy bill data through December 31st for all buildings must be put into the B3 system before the system can accurately calculate the GreenStep measures.
- Public works data; work orders; city/tribal purchasing data. (Metrics 1.4-1.6)
- Utility data reported under franchise agreements. (Metric 1.4)
- See the Data Collection Process Guide for more sources and optional methods for:
  - Building Total Square Footage
  - Utility Generation and Emissions Factor
  - Total Electricity use (annually)
  - Total Natural Gas use (annually)
  - Energy Efficiency Potential
  - Permitted Facilities

METRIC CALCULATION AND PUBLIC REPORTING

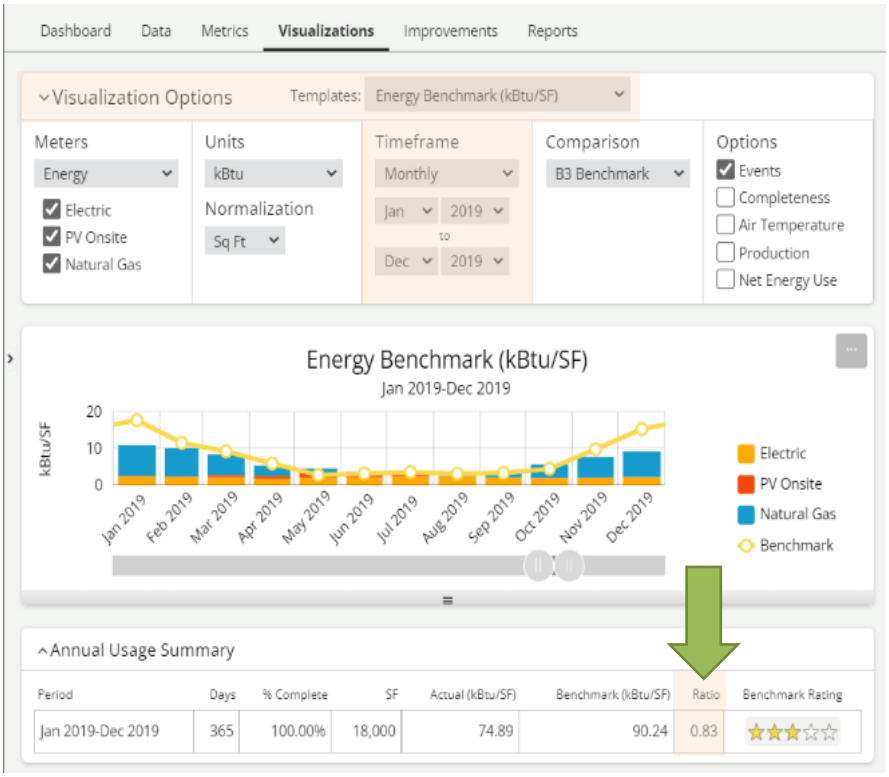
- **Category C GreenStep participants** that do not own or lease buildings should note that on the Step 4 reporting spreadsheet.
- **kBtu per square foot, per year** in all city buildings is calculated by B3 Benchmarking for the year proceeding the reporting year. When logged into your City's B3 Benchmarking portfolio and at the organization level, click "Visualizations" and select EUI Report in Templates dropdown. Click "Visualization Options" and set the "Timeframe" section as Jan to Dec for the reporting calendar year. In the "Annual Usage Summary" table, report the metric shown under "Actual (kBtu/SF)." Note, only sites with square footage will be included. (Metric 1.1)



- **Dollars spent on energy per square foot, per year** in all city buildings is calculated in a similar way by B3 Benchmarking for the year proceeding the reporting year. When logged into your City's B3 Benchmarking portfolio and at the organization level, click "Visualizations", select EUI Report in Templates dropdown. Click "Visualization Options", then set the "Units" dropdown to Cost. This will change the template to 'custom report'. Set the "Timeframe" section as Jan to Dec for the reporting calendar year. In the "Annual Usage Summary" table, report the metric shown under "Actual (Cost/SF)." Note, only sites with square footage will be included. (Metric 1.2)



- **Ratio of actual energy use to predicted energy use** is also calculated in a similar way by B3 Benchmarking for the year proceeding the reporting year. When logged into your City's B3 Benchmarking portfolio and at the organization level, click "Visualizations", select Energy Benchmark Report in Templates dropdown. Click "Visualization Options" and set the "Timeframe" section as Jan to Dec for the reporting calendar year. In the "Annual Usage Summary" table, report the metric shown under "Ratio". Note, only sites that are Benchmark complete will be included. (Metric 1.3)



- **Percent of LEDs** can be a calculated number or an estimated number. First, count or estimate the number of installed LED fixtures in street lights on the December 31st before the reporting year. Then, divide this installed number by the count or estimate of total street lights. Repeat this procedure for traffic signals and building/property lights. Express the ratios as percentages. (Metrics 1.4-1.6)

METRIC RATIONALE

In city or tribal buildings, the owner is also the tenant and thus all cost savings from short and long-term efficiency investments will accrue to the city and its taxpayers. Additional benefits from such investments include reducing greenhouse gases and lowering exposure to fuel price volatility. Energy efficiency (and other sustainability) opportunities abound in existing buildings, which are in a constant drift toward inefficiency. Many of the opportunities not only reduce operating costs, but improve occupant quality of life, create higher resale value, and improve employee productivity. The B3 database allows communities to compare sq. ft. energy use among all buildings of the same type across Minnesota. This makes it possible to target energy improvements to the lowest-performing buildings, investments which yield the greatest ongoing payback.

Total Square Footage of building space gives insight into the opportunity heating/cooling energy efficiency improvements, deep retrofits, and is necessary to provide some energy use ratios, like natural gas / sq. footage building area. Often this data is difficult to acquire because you may have building footprint data, but no height component.

LEDs: probably the easiest and most cost-effective measure a city can do to improve energy efficiency is to convert lighting to LED technology. Payback periods can often be measured in months, not years. Utility and other financial incentives exist, and staff need only assess and choose equipment, vendors and payment options. Therefore this is a simple measure that aims to focus attention on completing a transition to 100% LED fixtures such that savings begin accruing faster.

STEP 5 METRIC TARGETS

Though no state targets exist for cities, a relevant target is a state goal of reducing energy use per sq. foot in state buildings by 30% by 2027 relative to a 2017 baseline. A 3% annual reduction in city operations energy use is consistent with this state agency operations goal.

LEED FOR CITIES & COMMUNITIES CRITERIA

https://www.usgbc.org/leed/rating-systems/leed-for-cities-communities

IP Credit: Green Building Policy and Incentives

- Option 1. Buildings Owned and/or Operated by the Local Government or Development Authority (1-2 points) Register and certify buildings, above 5000 square feet (465 square meter), owned by the local government or development authority to LEED, EDGE or an equivalent green building rating system. Points are awarded as per the table given below.

Table 1. Points for certified green buildings

Percentage of buildings registered to certify to LEED or equivalent green building rating system	Points
51% to 75 %	1
Greater than 75%	2

EN Credit: Energy Efficiency

- Option 1. Energy Audit and Energy Conservation (1-4 points) Attempt any one or more of the following requirements for a total of up to 4 points:
    - 1. Building Performance Disclosure (1 point)
        - Track, benchmark, and report energy consumption data of city owned and operated buildings using a platform or tool such as ENERGY STAR Portfolio Manager, Arc Skoru, or a locally developed and recognized tool.
        - Include a minimum of 50% of the buildings owned or operated by the city that are 10,000 square feet (930 square meters) or greater. Reporting year must be within the most recent 5-year period.

  - 2. Energy Audit (1 point) Identify city owned buildings falling in the top 25% tier of energy consumption. Submit an energy audit report of the identified buildings. The energy audit must meet both the requirements of the ASHRAE preliminary energy use analysis and an ASHRAE Level 1 walk-through assessment identified in the ASHRAE Procedures for Commercial Building Energy Audits or equivalent. Audit must be conducted within the last 10 years.

- Option 2. Street Lighting and Public Area Lighting (1-2 points) Provide efficient street lighting and public area lighting in the city. The lamps should have a minimum Luminous Efficacy of 100 lumens per watt.

RELATED BEST PRACTICE ACTIONS

- 1.1 Enter/update government-owned building information and monthly usage data into the **MN B3 Benchmarking database, and utilize building/energy audits** to identify potential improvements.
- 1.2 Make **no/low cost** indoor lighting and operational changes in city-owned/school buildings to reduce energy costs.
- 4.1 Require energy efficient, Dark-Sky compliant **new or replacement outdoor lighting** fixtures on city-owned/private buildings and facilities.
- 4.2 Purchase LEDs for **all future street lighting and traffic signals**.
- 4.3 Replace the city's **existing street lighting** with Dark Sky-compliant LEDs, modifying any city franchise/utility agreement and adding smart grid attributes.
- 4.5 Use **LED/solar-powered lighting** for a flashing sign or in a street, parking lot or park project.
- 4.6 **Relamp/improve exterior building lighting** for city-owned buildings/facilities with energy efficient, Dark-Sky compliant lighting.
- 4.7 Replace city-owned **parking lot/ramp lighting** with Dark-Sky compliant, energy efficient, automatic dimming lighting technologies.
- 4.8 Replace the city's **existing traffic signal indications** with LEDs.

NEED HELP? CONTACT

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