#14: RENEWABLE ENERGY

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

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

METRICS

14.1 **Number of city owned and private renewable energy generation sites**
14.2 **Generation capacity at city and at private renewable energy generation sites (kW)**
14.2a **Storage and off-grid capacity of renewable energy, generated by city-owned and private renewable energy sites (kW)**
14.3 Annual production at city-owned renewable energy generation sites (MWhr/yr)
14.4 **Annual renewable energy purchases for city operations (MWhr/yr)**
14.5 Number of non-city entities participating in renewable energy purchasing/green power programs
14.6 Percent of total city operations energy use that is generated and purchased renewable energy

METRIC DEFINITION

- **Renewable energy sources** includes power from wind (turbines) and water (hydroelectric), from the sun (powering photovoltaic panels, hot-air and hot-water panels), from biofuels, from biomass (burning wood, and biogas produced by anaerobic digestion of organic matter such as at a waste water plant), and from trash incineration and landfill gas.
- **Resource recovery** (incineration of trash) and landfill gas recovery is not considered renewable energy under some definitions, but they are defined in Minnesota law as renewable and should be included in your metrics.
- **Ground-sourced geothermal** heating/cooling, while accessing a huge thermal mass, is technically not renewable energy but rather the efficient use of an electric motor to move energy between a building and the subsurface.
- **Off-grid storage** includes battery backup, pumped hydro, thermal storage and off-grid solar and other energy production that can be used without connection to or availability of grid-connected power. Additional information at https://www.eesi.org/papers/view/energy-storage-2019 (Metric 14.2a)
- **City sites** include renewable energy generation sites inside and outside city limits, such as at a waste water treatment plant, owned or leased by city government. Include sites owned by a municipal utility. (Metric 14.1 – 14.3; 14.6)
- **Private sites** include private, non-profit, governmental (other than city), residential, commercial, institutional and industrial sites within city limits owned or leased by an entity other than city government. Include community solar gardens and gas stations selling ethanol or biodiesel blends above the state mandated 10%. (Metric 14.1 & 14.2)
- **Generation capacity** is the rated (or "nameplate") theoretical generation capacity in kilowatts (kW) and includes generation in facilities at city (public) sites, and at private sites such as solar arrays, landfill gas, etc. (Metric 14.2)
- **Annual production** counts megawatt hours (MWh/yr.) generated by city-owned sites in the year prior to the GreenStep reporting year. (Metric 14.3)
- **City and private purchases** include renewable energy amounts above the amounts already in the baseline mix from the electric utilities supplying power and gas, and above the mandated 10% biofuels mix from liquid fuel stations in the city. Include voluntary "green power purchases" or REC (renewable energy credit) purchases by the city, and by residents, businesses and other governmental units. Among these amounts are purchase agreements with renewable energy facilities owned by another provider. Note that sometimes such purchases may be from generators such as community solar gardens where the renewable energy credit may not be purchased/held by the entity using the energy. While ideally purchases should be documented with renewable energy credits (RECs) held by the user

and be Green-E certified, it can be hard to know just who holds the RECs (as, for example, a city might hold them but only for the first 10 years). (Metrics 14.4 - 14.6)

DATA SOURCES

- City and local utility records for permitted sites and capacities, and for the number and size of green power purchases (Metrics 14.1-14.6)
- The MN Solar App allows a view of existing solar installations at https://solar.maps.umn.edu/app/ (Metric 14.1)
- For cities in Xcel Energy territory, their Community Energy Reports include number of solar installations, total capacity, energy produced, and number of solar gardens and subscribed capacity and energy produced, at https://www.xcelenergy.com/working_with_us/municipalities/community_energy_reports (Metrics 14.1 & 14.2)

METRIC CALCULATION AND PUBLIC REPORTING

- **Number of sites and generation capacity**, from city records, is measured on December 31st before the reporting year. (Metrics 14.1, 14.2, and 14.2a)
- **Annual production** amounts are for the calendar year before the reporting year. If the city owns or leases a portion of a renewable energy facility it should count the percentage share of that facility's generation allocated for use by government operations.
- **For energy conversions** see http://www.eia.gov/Energyexplained/index.cfm?page=about_energy_conversion_calculator (Metric 14.3, 14.4)
- **The amount of annual renewable energy purchases** by city operations are for the calendar year before the reporting year and include purchases from community solar gardens and other third-party solar installations, and biofuel purchases above the mandated 10% biofuels mix. (Metric 14.4)
- **Number of non-city entities participating in renewable energy purchasing/green power programs** includes individuals, businesses, institutions and other units of government within the city that have signed up for programs such as green tags, green power pricing, RECs, Community Solar Gardens. Xcel Energy, for example, maintains public lists of number participants in its programs in each city in its territory. (Metric 14.5)
- **Report the ratio** of renewable energy generated and purchased by city government to total energy used by city government, using data for the calendar year prior to the GreenStep reporting year. (Metric 14.6)

METRIC RATIONALE

Minnesota is almost completely dependent on energy sources outside state borders. Annually we spend over $18 billion on coal, natural gas, uranium, petroleum, and electricity produced from a variety of these non-renewable (and a small proportion of renewable) sources. Adding renewable energy generation capacity that is owned by local government, residents, businesses and educational institutions:

- Develops underused local energy resources, keeping dollars available for re-spending in the community
- Increases a community's resilience to energy supply and price shocks
- Cuts greenhouse gas emissions in support of the state's Next Generation Energy Act goals
- Decreases health care costs to individuals and the state by eliminating air emissions from the burning of coal

Annual tracking of renewable energy generated/purchased within the city provides a moving baseline measure, facilitating city decisions on what actions to take to increase these amounts. While city government generation and purchasing of renewable energy will always be a small portion of total energy used within city limits, the example and experience of these city actions helps propel residents and businesses to invest in renewable energy.

Stored energy that can be used without relying on the grid may be essential to communities undergoing a natural or other disaster and to prepare for climate change impacts such as excessive heat or flooding. Accessible energy is necessary for cities to keep their public safety, community centers, hospitals, and other critical infrastructure functioning. Learn more about the benefits of solar+storage at https://www.energy.gov/sites/prod/files/2018/03/f49/Valuing-Resilience.pdf.

STEP 5 METRIC TARGETS

The State of Minnesota, as part of the Next Generation Energy Act, has a goal of generating 25% of electricity used in 2025 from renewable sources. In addition, the state has set a solar standard for achieving an additional 1.5% of electric energy generation from solar energy systems by 2020 and 10% by 2030.

NEED HELP? CONTACT

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