REGIONAL INDICATORS INITIATIVE: Data and Tools for Community Climate Action

Becky Alexander, LHB Inc.



RegionalIndicatorsMN.com

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BACKGROUND



Data Source: Minnesota Pollution Control Agency





Minnesota GreenStep Cities



METRICS



ENERGY (BTUS): electricity, gas, and other heating fuels consumed citywide (subdivided into residential and commercial/industrial)Data Source: Energy utilities for gas and electricity, MPCA and ACS for other fuels



WATER (GALLONS): potable water consumed citywide (subdivided into residential and commercial/industrial)

Data Source: Minnesota Department of Natural Resources



TRAVEL (VEHICLE MILES TRAVELED): on-road distance traveled within city limits *Data Source: Minnesota Department of Transportation*



WASTE (SHORT TONS): citywide municipal solid waste managed via recycling, combustion, and landfilling (prorated from countywide data)

Data Source: Minnesota Pollution Control Agency



Includes: carbon dioxide, methane, nitrous oxide

Excludes: biogenic emissions

SCOPE

72 CITIES WITH 1+ YEAR OF COMPLETE DATA

- A Andover, Apple Valley, Arlington, Austin
- **B** Belle Plaine, Bemidji, Big Lake, Blaine, Bloomington, Brainerd, Brooklyn Center, Brooklyn Park, Burnsville
- **C-D** Columbia Heights, Coon Rapids, Crystal, Duluth
- **E-F** Eagan, Eden Prairie, Edina, Elk River, Falcon Heights, Fridley
- **G-H** Golden Valley, Grand Marais, Hastings, Hopkins, Hutchinson
- I-L Inver Grove Heights, Isanti, Jordan, Lake Elmo, Lauderdale, Lexington
- **M** Mahtomedi, Maplewood, Marine on St. Croix, Minneapolis, Minnetonka, Moorhead, Morris
- N New Brighton, New Germany, Newport, Nisswa, North Saint Paul, Northfield
- **O-R** Oak Park Heights, Oakdale, Orono, Red Wing, Richfield, Robbinsdale, Rochester, Rosemount, Roseville, Royalton
- **S** Saint Anthony Village, St. Louis Park, Saint Paul, St. Paul Park, Shoreview, South St. Paul, Stillwater, Sunfish Lake
- **V-W** Victoria, Warren, Wayzata, White Bear Lake, Willmar, Winona, Woodbury

SCOPE

31 CITIES WITH COMPLETE 2020 DATA

- A Andover, Apple Valley, Arlington, Austin
- B Belle Plaine, Bemidji, Big Lake, Blaine, Bloomington, Brainerd, Brooklyn Center, Brooklyn Park,
 Burnsville
- C-D Columbia Heights, Coon Rapids, Crystal, Duluth
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- V-W Victoria, Warren, Wayzata, White Bear Lake, Willmar, Winona, Woodbury

SCOPE

18 CITIES WITH COMPLETE 2007-2020 DATA

- A Andover, Apple Valley, Arlington, Austin
- B Belle Plaine, Bemidji, Big Lake, Blaine, Bloomington, Brainerd, Brooklyn Center, Brooklyn Park,
 Burnsville
- **C-D** Columbia Heights, Coon Rapids, Crystal, Duluth
- E-F Eagan, Eden Prairie, Edina, Elk River, Falcon Heights, Fridley
- **G-H** Golden Valley, Grand Marais, Hastings, Hopkins, **Hutchinson**
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- V-W Victoria, Warren, Wayzata, White Bear Lake, Willmar, Winona, Woodbury

2020 – TOTAL FOR 31 CITIES



Non-travel energy is the largest contributor to community-wide emissions.

Focus efforts there.

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AVERAGE



Emissions from local government operations are a very small percentage of a community's total.

Think bigger.

100% 90% 80% % of total emissions 70% 60% 50% 40% 30% 20% 10% 0% Duluth Elk River Nisswa Eagan Edina Northfield Falcon Heights Saint Anthony Village Rochester Moorhead Mahtomedi Apple Valley North Saint Paul Saint Paul Red Wing Burnsville Eden Prairie Saint Louis Park South Saint Paul Bloomington Roseville New Brighton White Bear Lake Shoreview Minnetonka Maplewood Golden Valley **Grove Heights** Oakdale Hutchinson Woodbury Inver

Emissions from non-travel energy range from 50-70% for most cities.

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GREENHOUSE GAS EMISSIONS

2020

Energy Travel Waste

2020



Breakdowns vary by city.

Prioritize actions that are most impactful for your city.

2020



Emissions vary between cities. The statewide average is 25 tonnes CO_2e per capita and the global average is 5.5.

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Aim for under 3 tonnes CO₂e per capita by 2030.

2020



Many variables impact city totals.

Use caution when comparing cities.

* some commercial/industrial energy data excluded to protect customer privacy

GREENHOUSE GAS EMISSIONS – TRAVEL

2019 – TOTAL FOR 31 CITIES



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GREENHOUSE GAS EMISSIONS – RESIDENTIAL

2020 – TOTAL FOR 31 CITIES



Household emissions are lowest in urban areas.

RESIDENTIAL ENERGY USE 2019 – 31 CITIES



Cities with high percentages of single-family homes and owner occupancy used more energy.

Increase housing density where appropriate.

Cities with more new homes do not use less energy than cities with older homes.

Improve energy efficiency of new construction.

TOTAL – 18 CITIES



Greenhouse gas emissions have decreased by 31% since 2007 – achieving the 2025 state goal.

Build on this momentum.

-50%

TOTAL GREENHOUSE GAS EMISSIONS – 18 CITIES



City specific greenhouse gas reductions range from 19% to 42%

Track your own progress.

2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020

TOTAL – 18 CITIES



Electricity emissions decreased by 53%. Gas and waste varied and travel stayed relatively flat until the pandemic.

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Keep pushing electricity while finding long-term solutions for gas and travel.

ELECTRICITY

TOTAL – 18 CITIES



Electricity emissions decreased due to using less electricity and using cleaner generation sources.

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Both policy and local actions make a difference.

ELECTRICITY EMISSIONS FACTORS

MINNESOTA UTILITIES



Clean energy adoption varies across the state.

If your electricity is carbonintensive, invest in renewable energy.

RENEWABLE ELECTRICITY

NORTHFIELD – 2017



Grid decarbonization is driven in part by local action.

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Local actions make a difference.

ENERGY USE

TOTAL – 18 CITIES



- - Commercial/Industrial Electricity - - - Residential Electricity

Residential electricity use stayed relatively constant while commercial/industrial decreased by 18%.

ENERGY USE

TOTAL – 18 CITIES



Gas use is highly variable but is trending up in non-residential uses.

RESIDENTIAL GAS

RESIDENTIAL GAS USE PER HOUSEHOLD – 18 CITIES



Residential gas use is very weather dependent and has not decreased over time.

Weatherize and electrify homes.

---- Heating degree days

RESIDENTIAL ELECTRICITY

RESIDENTIAL ELECTRICITY USE PER HOUSEHOLD – 18 CITIES



Household electricity use decreased by an average of 11%.

Continue supporting household energy efficiency.

······ Cooling degree days

COMMERCIAL/INDUSTRIAL ELECTRICITY

COMMERCIAL/INDUSTRIAL ELECTRICITY USE – 18 CITIES



Commercial/industrial electricity use decreased by an average of 19%.

Continue supporting energy efficiency in commercial and industrial buildings.

COMMERCIAL/INDUSTRIAL GAS

COMMERCIAL/INDUSTRIAL GAS USE – 18 CITIES



Commercial/industrial gas use is weather dependent.

Commission commercial buildings.

----- Heating degree days



COMMERCIAL/INDUSTRIAL GAS

COMMERCIAL/INDUSTRIAL GAS USE PER HEATING DEGREE DAY – 18 CITIES



Commercial/industrial gas use per heating degree day increased by an average of 7%.

Invest in electrification.

Design and operate buildings to meet changing energy needs.

-40%

ENERGY USE

TOTAL – 18 CITIES



ENERGY EMISSIONS

TOTAL – 18 CITIES



Gas emissions are now comparable to electricity emissions and are not decreasing.

Electrify building and process loads.

Promote district energy systems.

VEHICLE TRAVEL 18 CITIES



Prior to 2020, a decrease in the carbon intensity of each mile counterbalanced an increase in vehicle miles traveled.

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Accelerate VMT reduction and electric vehicle adoption.

2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020

VEHICLE MILES TRAVELED

VMT – 18 CITIES



VMT trends vary by city.

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Track your own data.

2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021

WASTE

18 CITIES



Increase recycling rates counterbalanced an increase in waste disposed for an overall decrease in waste emissions.

Focus on waste reduction strategies.

^{2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020}

WASTE

WASTE EMISSIONS PER PERSON – 7 COUNTIES



Waste-related emissions vary based on waste disposed and disposal method.

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Support efforts to get cityspecific data.

WASTE

WASTE MANAGEMENT METHODS – 18 CITIES



The recycling rate for these counties increased from 26% in 2007 to 47% in 2020.

Continue to increase recycling rates.

City of Eden Prairie

Select City

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Eden Prairie

GREENHOUSE GAS EMISSIONS

community-wide greenhouse gas emissions from building energy, vehicle travel, and the management of municipal solid waste



Explore the data at RegionalIndicatorsMN.com

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SETTING GOALS

- A-B Albert Lea, Bloomington, Burnsville
- E-G Eden Prairie, Edina, Elk River, Falcon Heights, Golden Valley, Grand Marais
- I-L Inver Grove Heights, La Crescent
- M-N Mahtomedi, Maplewood, Minneapolis, Minnetonka, Northfield
- O-R Oakdale, Red Wing, Rochester, Rosemount, Roseville

S-W Saint Anthony Village, **St. Louis Park**, Saint Paul, **Warren**, Winona

26 Minnesota cities have climate goals.

The **bold cities** have goals to be carbon neutral by 2040.

Source: MPCA Minnesota Sustainability Index

MAKING PLANS

- A-B Albert Lea, Bloomington, Brainerd, Brooklyn Park, Burnsville
- C-E Crookston, Duluth, Eden Prairie, Edina, Elk River, Ely
- F-G Faribault, Fridley, Golden Valley, Grand Marais, Granite Falls
- H-L Hackensack, Hastings, Inver Grove Heights, La Crescent
- M Mahtomedi, Maplewood, Minneapolis, Minnetonka, Morris
- N-R Northfield, Oakdale, Red Wing, Richfield, Rochester, Rosemount, Roseville
- S St. Cloud, St. Louis Park, Saint Paul, Shorewood, Staples
- W Wayzata, Winona*

These 39 cities each have at least one of the following:

- climate action plan
- energy action plan
- adaptions/resiliency plan

Source: MPCA Minnesota Sustainability Index* Denotes a plan in progress

EXPLORING OUTCOMES

HENNEPIN COUNTY



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https://www.regionalindicatorsmn.com/wedge/city/2/

TRACKING PROGRESS

ST. LOUIS PARK



Track progress compared to:

- Baseline data
- Reduction plans
- Goals

DRIVERS OF CHANGE

HENNEPIN COUNTY

Emissions increases Emissions decreases Total emissions 2007 INVENTORY 17.4 million metric tons CO₂e population growth +5% job growth +4% colder winter +2% other increases +2% less travel per person -2% less commercial electricity -7% cleaner electricity -15% other decreases -4% 2019 INVENTORY 14.7 million metric tons CO₂e -15%

Evaluate impacts of:

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- City growth
- Weather

- Energy mix
- Efficiency

Take high-impact action.

- Electrify buildings
- Weatherize homes and commission commercial buildings
- Reduce reliance on vehicle travel
- Support electric vehicles



ENCOURAGEMENT PUBLIC DEMONSTRATION, LEADERSHIP Promote utility rebate programs through city Install solar on rooftops of public buildings 0 communications Adopt net-zero energy standards for public facilities 0 Encourage net zero energy development Replace City Fleet with electric vehicles Publicize financial resources for efficiency and decarbonization projects Encourage ride-share programs REGULATION **INCENTIVES**

- Implement a sustainable building policy
- Adopt an energy benchmarking ordinance
- Require EV infrastructure at multi-use developments
- Support statewide policies (building energy code updates; clean car standards)

- Enable PACE financing
- Offer regulatory incentives within zoning 0
- Expedite permitting for clean energy projects
- Offer technical assistance for private sector projects



Advocate for state and federal action.

- Clean energy
- Energy codes
- Building electrification
- Electric vehicles
- Ongoing data collection

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Leverage city-specific opportunities.

- Planning and zoning
- Sustainable building policy
- Clean electricity
- Partnership with local institutions & industries
- Energy efficiency for specific building types
- People with knowledge/connections/passion



Create a work plan.

Options include:

- Long-form climate action plan
- Climate action work plan
- To-do list

Any of these can be done at the regional scale rather than city-scale.

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CALL TO ACTION

Track your progress.

- Regional Indicators Initiative
- GreenStep Cities Steps 4 & 5
- City-specific dashboards

GREENHOUSE GAS EMISSIONS

community-wide greenhouse gas emissions from building energy, vehicle travel, and the management of municipal solid waste





QUESTIONS?

Becky Alexander, LHB Inc. becky.alexander@lhbcorp.com

Minnesota Department of Commerce – Clean Energy clean.energy@state.mn.us

GreenStep Cities GreenStep@state.mn.us

