Greenhouse Gas Strategy Planning Tool

Committee of the Whole

METROPOLITAN COUNCIL

July 12, 2023

Direction in *Thrive MSP 2040*

Stewardship Prosperity Equity Livability Sustainability

Sustainability Outcome

Providing leadership, information, and technical assistance to support local governments' consideration of climate change mitigation, adaptation, and resilience.

The Council will:

- Develop, collect, and disseminate information about climate change, including **energy and climate data** and the next generation of Regional Indicators data.
- Work with the State of Minnesota on a **greenhouse gas emissions inventory** that informs regional discussion on emissions reduction.
- **Provide technical assistance to the region's local governments**, including identifying risks, best practices, and model ordinances for climate change mitigation and adaptation.

Climate Action Work Plan

Reducing the Council's contributions to greenhouse gas emissions in the region and making our services and facilities resilient to the impacts of climate change.

- Internal to our planning and operations; it is not a regional climate action plan
- Five-year timeframe
- Lays the groundwork for more action beyond 2027
- Organized by commitments, strategies, and actions

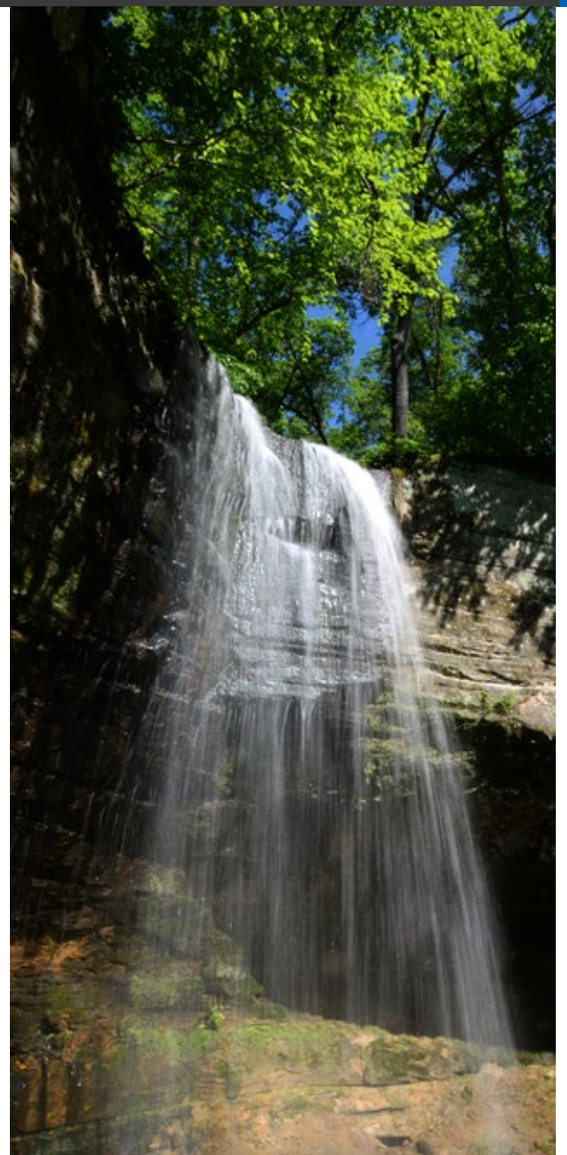
2050 Regional Development Guide

Working Regional Goals

Five shared regional goals addressing 1) equity, 2) healthy and safe communities, 3) economy, 4) natural systems, and 5) climate change

We lead on addressing climate change

We have mitigated greenhouse gas emissions and have adapted to ensure that our communities and systems are resilient to climate impacts.

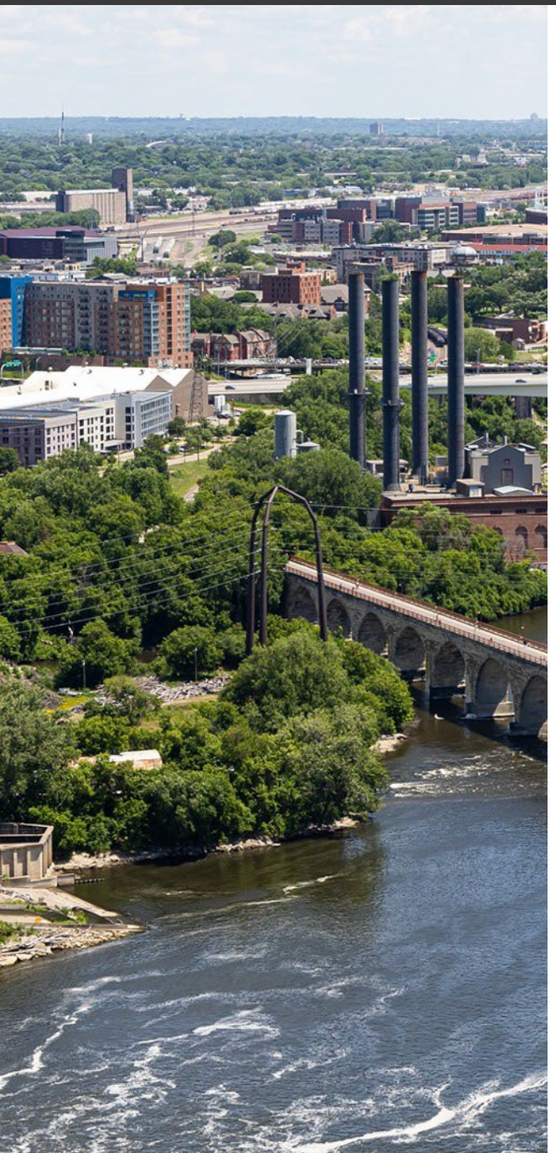


Climate Pollution Reduction Grant, EPA

Objectives of the grant

1. Encourage states, air agencies, municipalities, and Tribes to **work together to create comprehensive pathways for reducing pollution** and ensuring that investments maximize benefits, **especially for low-income and disadvantaged communities.**
2. Provide state, local, and Tribal partners with **flexible planning resources to assess and prepare to deploy resources** provided by the Inflation Reduction Act, Bipartisan Infrastructure Law, American Rescue Plan, and Creating Helpful Incentives to Produce Semiconductors (CHIPS) Act, and to develop new state and local laws and policies to maximize emission reduction.
3. Drive **transformative and scalable decarbonization efforts** in key sectors by enacting innovative policies and programs that can scale across jurisdictions.

Greenhouse Gas Strategy Planning Tool



Greenhouse Gas Strategy Planning Tool

an analytical model that quantifies how specific strategies may reduce future greenhouse gas (GHG) emissions relative to a 2018 baseline at the city- and township-level.

Three-year collaborative development process (2020 – now)

Expands local capacity for climate action

Planning tool's key stakeholders:

Local Governments. Cities and townships in our region aspire to act on climate change. While there is vast information, there are often not enough data or tools that are city-specific

- **Sustainability Coordinators.** Some cities have staff dedicated to incorporating sustainability into the cities plans and operations.
- **Planners.** Many cities have already climate change action in their goals
- **Elected officials.** Some city officials want to respond to their constituencies with action on climate change. They need tools to guide them through the process.

Offers high-value technical assistance

Source: City of St. Louis Park

How local governments benefit

- **Decision-making.** Local governments can better understand what actions they should implement to reduce greenhouse gas emissions.
  - **Climate Action Plans.** Climate Action Plans often need to identify measures to curb emissions.
  - **Priorities.** Making decisions about what to prioritize based on data.

- **Save time and resources.** Local governments can invest more of their resources on engagement, outreach, and implementation versus technical analysis.

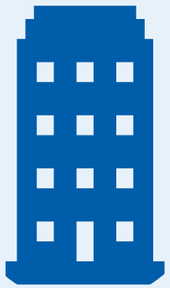
Tool: Sectors, strategies, and impacts

Three sectors
Each sector establishes a baseline, then applies tailored assumptions and calculates an emissions reduction

17 strategies
- Explore by theme
- Customize

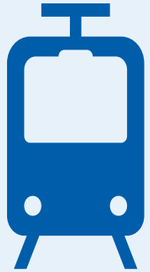
Taken together, what is the impact on greenhouse gas emissions?

Building Energy



- Retrofitting
- Smart tech
- Energy efficiency

Transportation



- Increase people & job densities
- Encourage carpooling
- More transit service

Conservation & Carbon Stock

- Promote tree planting
- Conservation tillage

Land use, travel demand, population & job forecasts

Example: Richfield and strategy bundles

Greenhouse Gas Strategy Planning Tool

This tool combines baseline data, forecasted assumptions, and theoretical emissions reductions modeled for selected strategies to help contextualize the potential impact of different interventions and policies to reduce greenhouse gas emissions.

Select a city or township

Richfield

Select a strategy method

◉ Use strategy bundles ○ Customize strategies

SUBMIT

☑ Compact Land Use and Planning

- Increase population density by 30%
- Increase employment (job) density by 30%
- Increase transit service by 60%
- 40% of expected new single family housing built as multifamily

☑ Clean Energy Supply

- 100% decarbonized grid

☑ Energy Efficient Technology

- 100% of new homes built to LEED-Gold standards
- 100% of residential buildings use smart technology

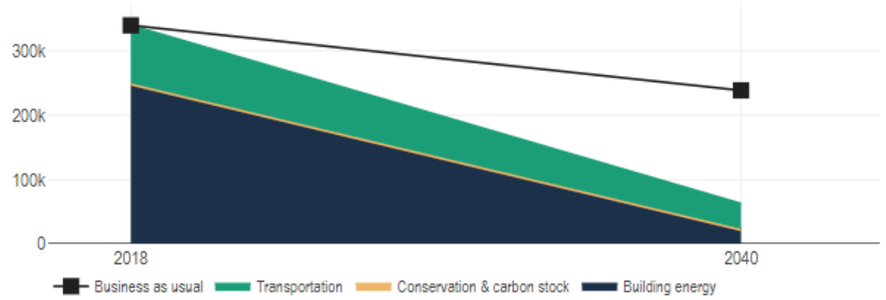
☑ Sequestering Carbon

- 100% of agricultural land uses no-till cultivation
- Tree planting rate per capita and hectare matches LA Million-Tree goal

☑ Conservation and Sustainable Behavior

Total emissions change | Sources of emissions change | Your strategy summary

Richfield emissions by sector



Sector	Change in 2040 emissions (tonnes CO_2)
Transportation	-34,600
Building energy	-141,500
Conservation & carbon stock	-300

Example: Dials up in Minneapolis

Greenhouse Gas Strategy Planning Tool

This tool combines baseline data, forecasted assumptions, and theoretical emissions reductions modeled for selected strategies to help contextualize the potential impact of different interventions and policies to reduce greenhouse gas emissions.

Select a city or township

Minneapolis

Select a strategy method

○ Use strategy bundles ◉ Customize strategies

SUBMIT

Retrofit existing homes

Cities can incentivize homeowners to retrofit for energy efficiency. We assume retrofitted homes use 33% less energy

% of existing homes retrofitted

0% | 20% | 40% | 60% | 80% | ✔100%

Energy efficient new-build homes

We assume LEED-Gold or equivalent new single family homes use 64% less energy.

% new homes built to LEED-Gold standards

0% | 20% | 40% | 60% | 80% | ✔100%

Clean electricity

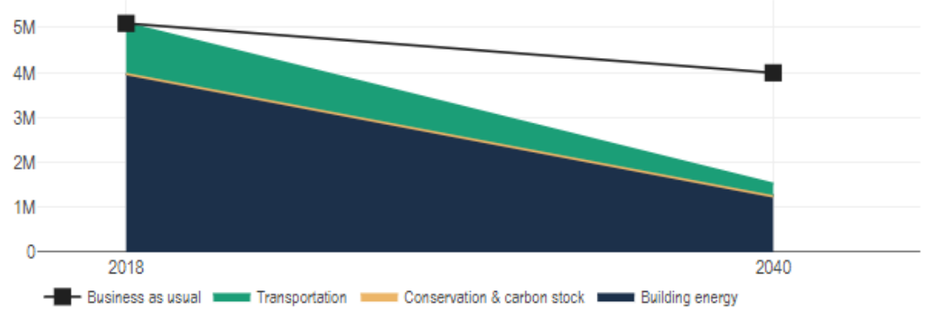
This strategy models CO_2 equivalent emissions decrease due to decarbonizing the electric grid. Percentages are relative to 2018 decarbonization levels. Default is 60% based on **Xcel Energy's published targets from 2019**.

% reduction from 2018 electric grid carbon emissions

0% | 20% | 40% | 60% | 80% | ✔100%

Total emissions change | Sources of emissions change | Your strategy summary

Minneapolis emissions by sector



Sector	Change in 2040 emissions (tonnes CO_2)
Transportation	-629,300
Building energy	-1,824,700
Conservation & carbon stock	-12,600

Metropolitan Council

Example: Belle Plaine and custom strategies

Greenhouse Gas Strategy Planning Tool

This tool combines baseline data, forecasted assumptions, and theoretical emissions reductions modeled for selected strategies to help contextualize the potential impact of different interventions and policies to reduce greenhouse gas emissions.

Select a city or township

Belle Plaine

Select a strategy method

○ Use strategy bundles ◉ Customize strategies

SUBMIT

vehicle miles traveled and encourage more efficient trip planning.

% increase in average passenger vehicle occupancy

✔0% | 25% | 50% | 75% | 100%

Conservation and carbon stock

Increase agricultural conservation tillage

Promoting no-till or reduced-till agriculture can reduce soil carbon emissions from cropping practices and promote carbon storage on agricultural land. **Soil tillage and crop rotation resources**.

% of farmland with conservation tillage

Current rate | ✔Double rate | 100% conservation tillage

Promote urban tree planting

Urban trees can take in atmospheric CO_2 and store it in their woody tissues, potentially offsetting other carbon emissions. Current tree land cover data is at the city/township level. **More information on the LA Million Tree goal**.

Tree planting goal

None | Match LA million tree goal | ✔Double current tree cover

Total emissions change | **Sources of emissions change** | **Your strategy summary**

With no changes, Belle Plaine is projected to emit 68 thousand tonnes of CO_2 in year 2040 (business as usual). With the selected strategy strategies, emissions are modeled to be 51 thousand tonnes CO_2 in year 2040, meanin that the selected strategies **decrease** emissions by about 17 thousand tonnes .

Strategies implemented

Sector	Strategy	Value
Building energy	Retrofit existing homes	20%
Building energy	Energy efficient new-build homes	40%
Building energy	Smart technology in residential homes	20%
Building energy	Retrofit commercial buildings	20%
Building energy	Smart grid electrification	20%
Building energy	Clean electricity	80%
Transportation	Increase BEV market share	60%
Transportation	Increase teleworking	30%
Conservation & carbon stock	Conservation tillage	Double rate
Conservation & carbon stock	Tree planting	Double current tree cover

Emissions reduction by sector

Sector	Sector impact on 2040 emissions (tonnes CO_2)
Transportation	-5,000
Building energy	-10,900
Conservation & carbon stock	-1,400

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