

May 2022 Environmental Quality Board meeting

Wednesday, May 18 from 1 – 4 p.m.

Join in person or online

- In person: [520 Lafayette Road, St. Paul, MN 55155](#), lower level conference rooms
 - Join online via [Webex](#)
-

Participating in board meetings

Attending in person

The Environmental Quality Board (EQB) will convene its board meeting in person in the lower level conference rooms at the Minnesota Pollution Control Agency St. Paul office building. All visitors must sign in at the front desk. Transportation options:

- Bicycle: Visit the [Saint Paul Bike Map](#) webpage for route information. Outdoor bicycle parking is available to the left of the front doors near the loading dock.
- Transit: Use [Metro Transit's Trip Planner](#) to determine the best routes and times.
- Car: You may park in the Visitor Jupiter Lot (on Grove Street across from the Ramsey County Law Enforcement Center); please see the [parking map](#). Parking in this lots is free of charge. You must register your vehicle at the front desk upon arrival.

Attending virtually

Members of the public may join the meeting virtually using the Webex link above. Please review the [Guide to WebEx Participation](#) for additional information.

Accessibility

Please contact EQB staff at least one week prior to the event at info.EQB@state.mn.us to arrange an accommodation. Meeting materials can be provided in different forms, such as large print, braille, or on a recording.

Public engagement opportunities

EQB encourages public input and appreciates the opportunity to build shared understanding with members of the public. The opportunities for public engagement for this meeting are below.

Oral public comment

In this meeting, the board will accept oral public comment during agenda item 8.

Procedure and guidelines for giving oral public comment:

- If you wish to speak:
 - In person: Sign up at the welcome table before the meeting starts.
 - Virtual: When prompted, use the “raise hand” feature in Webex, located at the bottom of your screen.
- Your remarks will be limited to two (2) minutes. When necessary, the chairperson may limit commenters’ time for remarks to ensure there is equal opportunity for the public to comment.
- When the chairperson calls on you to speak:
 - Introduce yourself before beginning your comment.
 - Please keep your remarks to those facts which are relevant and specific, as determined by the chairperson, to the agenda item at hand.
 - Please be respectful of board members, staff, and other meeting participants. Avoid questioning motives. The chair, vice-chair, or other presiding officer will not tolerate personal attacks.
 - Please note that the chair will use their discretion for directing public comment to ensure the board’s ability to effectively conduct business.

Written public comment

You may submit written comment to the board by emailing your letter to info.EQB@state.mn.us or mailing to: Environmental Quality Board, 520 Lafayette Road, Saint Paul, MN 55155. Comments must be received by EQB staff **by noon the day before the meeting**. Staff will compile letters, make them available to board members and the public online, and attach them to the public record. Any written comments received after this deadline will be included in the next board meeting packet.

May welcome back open house

Please join us for an open house in the cafeteria after the board meeting adjourns. This is a chance for board members, staff, and members of the public to socialize and celebrate the return to in-person meetings.

Preliminary agenda

1. Welcome and introductions

Board members:

- Grace Arnold – Commissioner, Department of Commerce
- Peter Bakken – Public Member, Congressional District 1
- Joseph Bauerkemper – Public Member, Congressional District 8
- Nancy Daubenger – Temporary Commissioner, Department of Transportation
- Julie Goehring – Public Member, Congressional District 7
- Steve Grove – Commissioner, Department of Employment and Economic Development
- Rylee Hince – Public Member, Congressional District 2
- Katrina Kessler – Commissioner, Pollution Control Agency
- Mehmet Konar-Steenberg – Public Member, Congressional District 5
- Jan Malcolm – Commissioner, Department of Health
- Nicholas Martin – Public Member, Congressional District 4
- Paul Nelson – Public Member, Congressional District 6
- Thom Petersen – Commissioner, Department of Agriculture
- Alice Roberts-Davis – Commissioner, Department of Administration
- Sarah Strommen – Commissioner, Department of Natural Resources
- Gerald Van Amburg – Vice-chair, EQB; Chair, Board of Water and Soil Resources
- Charles Zelle – Chair, Metropolitan Council

2. Approval of consent agenda

- Meeting minutes from February 16, 2022, Environmental Quality Board meeting (packet page 5)
- Preliminary agenda for May 18, 2022, Environmental Quality Board meeting

3. Executive Director's report

Katie Pratt – Executive Director, EQB

4. Update from the Subcommittee on Pilot Program Implementation

The board will hear an update on the Pilot Program for integrating climate change into environmental review.

Presenter: Denise Wilson – Environmental Review Program Director, EQB

5. Emerging Environmental Leaders update

The board will hear an update on planning for ongoing and sustainable youth engagement at EQB. EQB has collaborated with young people in years past, culminating in youth-led meetings and activities that brought young people's voices to the board and the wider public on Minnesota's environment issues. Past engagement efforts have been time intensive, and EQB received feedback from participants that they wanted young people to have a more sustained and formal role with the board. With this in mind, EQB staff is exploring ways to redesign the Emerging Environmental Leaders program.

Presenter: Faith Krogstad, Engagement and Communications Director, EQB

6. Environment and Energy Report Card update

The board will hear an overview of the [Environment and Energy Report Card](#) and discuss possible approaches to a report card update.

Project background:

The EQB's mission is to enhance Minnesota's environmental quality for current and future generations by leading interagency work to advance meaningful public engagement and facilitate informed decision-making on critical environmental issues. With the help of staff from several state agencies, EQB prepared the 2017 and 2019 report cards to provide a snapshot of Minnesota's environment, providing valuable information for the public and policymakers.

The report card focuses on five key areas of Minnesota's environment: climate, energy, air, water and land. Each section presents three metrics that help assess the state of the environment. The report card team selected metrics through a Results Based Accountability process. Metrics either have a red, yellow, or green score depending on whether state goals for progress are being met.

Presenter: Erik Cedarleaf Dahl – Planning Director, EQB

Materials enclosed:

- [2019 Environment and Energy Report Card](#) (packet page 9)
- [2019 Environment and Energy Report Card criteria](#) (packet page 29)

7. Interagency Pollinator Protection Team update

The board will hear an update on the work of the Interagency Pollinator Protection Team. In 2022, the team is focusing their efforts in the development of a pollinator action framework to identify strategic actions to move progress forward on pollinator protection in Minnesota.

Additionally, the board will hear an update on the plans for an event to kick off this year's Pollinator Week.

Presenters:

- Faith Krogstad – Engagement and Communications Director, EQB
- Christina Locke – Pollinator Conservation Coordinator, Department of Natural Resources

8. Public comment

The board welcomes oral public comment on agenda items 4–7. Please see guidance and procedures on packet page 1.

9. Closing and adjournment

Open house to follow the meeting

Please join us for an open house in the cafeteria after the board meeting adjourns. This is a chance for board members, staff, and members of the public to socialize and celebrate the return to in-person meetings.



February Environmental Quality Board Meeting

Wednesday, February 16, 2022 | 1 – 4 p.m. | Online via Webex

Minutes

1. Welcome and roll call

Vice-chair Gerald Van Amburg called to order the regular meeting of the Environmental Quality Board.

Members Present: Margaret Anderson Kelliher, Grace Arnold, Alan Forsberg, Julie Goehring, Katrina Kessler, Mehmet Konar-Steenberg, Paul Nelson, Nick Martin, Alice Roberts-Davis, Sarah Strommen, Benjamin Yawakie.

Proxies: Kevin McKinnon for Steve Grove, Dan Huff for Jan Malcolm, Steve Roos for Thom Petersen

Excused: Kristen Eide-Tollefson, Steve Grove, Jan Malcolm, Thom Petersen

2. Approval of consent agenda

- Meeting minutes from January 19, 2022 Environmental Quality Board Meeting
- Proposed agenda for February 16, 2022 Environmental Quality Board Meeting

Motion: Katrina Kessler moved the consent agenda; Gerald Van Amburg seconded. Motion carries with a unanimous voice vote.

3. Executive director's report

Katie Pratt – Executive Director, EQB

- Today's agenda and meeting format
- Best practices for today's meeting for Board members and members of the public
- Public comment procedure for today's meeting
- Announced Climate Action Framework Community Conversation event on March 16, hosted jointly by the Climate Change Subcabinet and the Environmental Quality Board

4. Update from the Subcommittee for Pilot Program Implementation (SPPI)

SPPI Chair Nicholas Martin and Environmental Review Program Director Denise Wilson presented an update on the pilot program for integrating climate change into environmental review. Denise also

discussed the upcoming speaker series and cohort meetings to work with responsible governmental units on the draft revised environmental assessment worksheet form. The board held a brief discussion afterward.

5. Potential collaboration to advance goals of the 2020 State Water Plan

Freshwater Society Executive Director John Linc Stine, Director for Engagement and System Change Jen Kader, Participatory Engagement Coordinator Jocelyn Leung, and Intern Olivia Forshée gave a presentation about a proposal to expand statewide partnerships to help advance and shape the goals of the 2020 State Water Plan. The board held a brief discussion. Chair Anderson Kelliher will write a letter of support for the project.

6. Adoption of Fiscal Year 2022-2023 EQB Organizational Work Plan (decision item)

Katie Pratt, Executive Director of EQB, presented a summary of the proposed, updated fiscal year 2022-2023 work plan, including strategic objectives and key deliverables. The board held a brief discussion about the plan. Director Pratt presented a resolution to adopt the work plan. Resolution carries unanimously with 11 votes in favor.

In favor: Margaret Anderson Kelliher, Grace Arnold, Alan Forsberg, Julie Goehring, Katrina Kessler, Mehmet Konar-Steenberg, Nick Martin, Paul Nelson, Sarah Strommen, Gerald Van Amburg, Ben Yawakie

Excused: Kristen Eide-Tollefson, Steve Grove, Jan Malcolm, Bryan Murdock, Thom Petersen, Alice Roberts-Davis

7. Public comment

The board offered to hear public comment; no public comment was presented.

8. Reflections from board members

Outgoing Chair Margaret Anderson Kelliher and Board Member Julie Goehring offered reflections on their time serving on the Environmental Quality Board.

9. Closing & adjournment

Chair Margaret Anderson Kelliher adjourned meeting.



EQB Meeting Voting Record

Date 2-16-2022

Agenda item

Adoption of Fiscal Year 2022-2023 EQB Organizational Work Plan

Resolution

The Board resolves that the EQB Executive Director implement the Fiscal Year 2022-2023 Organizational Work Plan, and manage EQB staff and budget resources accordingly.

Board member votes

	First name	Last name	Aye	Nay	Abstain	Excused
1	Margaret	Anderson Kelliher	1			
2	Grace	Arnold	1			
3	Kristen	Eide-Tollefson				1
4	Alan	Forsberg	1			
5	Julie	Goehring	1			
6	Steve	Grove				1
7	Katrina	Kessler	1			
8	Mehmet	Konar-Steenberg	1			
9	Jan	Malcolm				1
10	Nick	Martin	1			
11	Bryan	Murdock				
12	Paul	Nelson	1			
13	Thom	Petersen				1
14	Alice	Roberts-Davis				
15	Sarah	Strommen	1			
16	Gerald	Van Amburg	1			
17	Ben	Yawakie	1			
		Total	11	0	0	4



RESOLUTION OF THE MINNESOTA ENVIRONMENTAL QUALITY BOARD

The mission of the Environmental Quality Board (EQB or Board) is to enhance Minnesota's environmental quality for current and future generations by leading interagency work to advance meaningful public engagement and facilitate informed decision-making on critical environmental issues.

EQB adopts the attached Fiscal Year 2022-2023 Organizational Work Plan (Work Plan), which aligns with EQB's mission, strategic plan, budget, and authorities. The Work Plan identifies key projects, deliverables, desired outcomes, and a timeline with anticipated EQB decision points. Projects are organized under the six priority areas of the strategic plan, and include placeholders to allow flexibility for the Board to respond to emerging issues. The Executive Director will give periodic updates on the work plan and discuss any significant changes with the Board.

Selected relevant authorities:

- Minnesota Statutes 116C and 116D provide the authority to implement the EQB Fiscal Year 2022-2023 Organizational Work Plan.
- Minnesota Statutes 116C and 116D and Rules 4410.0300 and 4410.0400 provide EQB the authority to oversee the Environmental Review program and make updates.
- Executive Order 19-28 directs EQB work related to pollinator health.
- Executive Order 19-37 establishes EQB membership in the Climate Change Subcabinet and directs related duties.

The Board resolves that:

The EQB Executive Director implement the Fiscal Year 2022-2023 Organizational Work Plan, and manage EQB staff and budget resources accordingly.

The Board approved and adopted this resolution on February 16, 2022.

A handwritten signature in blue ink that reads "Margaret Anderson Kelliher". The signature is written in a cursive style and is positioned above a horizontal line.

Margaret Anderson Kelliher, Chair
Minnesota Environmental Quality Board



Minnesota Environment and Energy Report Card

2019

m MINNESOTA

ENVIRONMENTAL QUALITY BOARD

Introduction

The EQB's mission is to enhance Minnesota's environmental quality for current and future generations by leading interagency work to advance meaningful public engagement and facilitate informed decision-making on critical environmental issues. With the help of staff from several state agencies, the 2019 Minnesota Environment and Energy Report Card was prepared to provide a snapshot of Minnesota's environment, providing valuable information for the public and policy-makers.

The report focuses on five key areas of Minnesota's environment: climate, energy, air, water and land. Each section presents three metrics that help assess the state of the environment. Metrics either have a red, yellow, or green score depending on whether state goals for progress are being met. Metrics were selected through a Results Based Accountability process; and are the same indicators used in the 2017 report.

Highlights

The 2017 report card set a baseline for energy and environmental metrics. The current report card shows mixed results. For many indicators, we continue to fall short of goals. Climate change, declining pheasant population, continued reliance on petroleum, nitrate in our groundwater, and a drop in public transit use are all issues that need creative collaboration to find solutions. There are positive highlights since the 2017 report card. Renewable electricity and household energy use are both metrics that changed from yellow to green in 2019 because the state has achieved 25% renewable electricity production and we continue to make energy efficiency improvements to our homes.

Working Together

Minnesota enjoys abundant natural resources and high quality of life, but not all groups and communities share these benefits equally. Some Minnesotans are disproportionately affected by pollution, climate change, and other environmental challenges. Addressing disparities based on race, income, gender, health, and geography is critical for making progress on our statewide environmental goals.

The Environment and Energy Report Card is a living document. We hope that it will inspire new dialogue and forms of action. Tackling the complex issues in this report will require innovative approaches and cross-sector collaboration. The EQB invites you to attend our monthly meetings to learn more and join us in creating solutions. Together we can ensure a clean, healthy environment for all Minnesotans.

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Cover: Lake Nokomis, Minneapolis

Report card

Environment and energy in Minnesota

Tracking progress toward public expectations, state or national goals and established industry or agency benchmarks.

- GOOD Ahead of goals and expectations.
- OKAY Nearly meets goals and expectations.
- POOR Well behind goals and expectations.

Metrics were chosen through extensive interagency dialogue and represent a collaborative effort to comprehensively evaluate our environment. The criteria are based on environmental and social data and were chosen to help tell a larger story about trends, challenges, and opportunities for action. In many cases, the metrics are tied to official state or federal goals.

Sources for data and information can be found here: www.eqb.state.mn.us/content/2019-EE.

Climate

Heat and rainfall

Minnesota’s climate is changing rapidly with more frequent extreme precipitation and increasing temperatures, especially in winter and at night.

Status POOR **Trend** ↶ → ↘ Problems are ahead

Greenhouse gas emissions

Despite success in the electricity generation sector, Minnesota is not on track to meet climate goals.

Status POOR **Trend** ↶ → ↘ Not much change

Climate change and wildlife

Populations of cisco — fish that walleye and trout rely on as a food source — are declining as temperatures rise.

Status OKAY **Trend** ↶ → ↘ Getting worse

Energy

Renewable electricity

Minnesota achieved 25% renewable energy in 2018 and is on track to surpass its renewable electricity standard of 28.5% by 2025. The state has the potential to go much further.

Status GOOD **Trend** ↗ → ↘ On track

Household energy use

Minnesota homes are becoming more energy efficient, but increased use of air conditioners, appliances, and personal devices is driving up overall energy consumption.

Status GOOD **Trend** ↗ → ↘ Improving

Transportation fuel

Use of fossil fuels for transportation must decline steadily to achieve the state’s greenhouse gas reduction goal. Instead, fossil fuel use has been flat or growing for the past six years.

Status POOR **Trend** ↶ → ↘ Problems are ahead

Air



Air pollution

Minnesota is meeting national air standards, but air quality is still periodically unhealthy for sensitive populations.


Status **Trend**

GOOD  Improving

Asthma

Asthma emergency room visits, which are linked to poor air quality, disproportionately impact communities of color and those living in poverty.


Status **Trend**

OKAY  Not much change

Transit

Public transit use is decreasing, and the Twin Cities metro is not meeting its ridership goals, and transit needs in the rest of the state are unmet.

Status **Trend**

POOR  Getting worse


Water



Lakes and rivers

We have reduced pollution from sewers and industry in the last several decades. However, pollution from agriculture, lawns, and roads is increasingly found in our drinking water supplies, rivers, and lakes.


Status **Trend**

OKAY  About the same

Nitrate in water

Nitrate is one of the most common water pollutants in MN groundwater. In areas with vulnerable groundwater, wells are more likely to have elevated nitrate. Elevated nitrate in drinking water is a health hazard, especially for infants.


Status **Trend**

POOR  About the same

Sustainable water use

Minnesota is at risk of depleting its water supplies in several areas of the state. Sufficient water supply is vital to our public health, economy, and ecosystems.

Status **Trend**

OKAY  About the same


Land



Pheasants

Recent declines in pheasant and other grassland bird populations reflect significant losses of prairie and grassland habitat.

Status **Trend**

POOR  Getting worse

Sprawl

Since 2002, the rate at which farmland, forest, wetlands, and wildlife habitat is converted into urban and suburban development has decreased.


Status **Trend**

OKAY  On the right path

Recycling

About one-third of our waste is still sent to landfills. More of this waste could be recycled.


Status **Trend**

POOR  About the same

Summary Minnesota's climate is changing rapidly with more frequent extreme precipitation and increasing temperatures, especially in winter and at night.

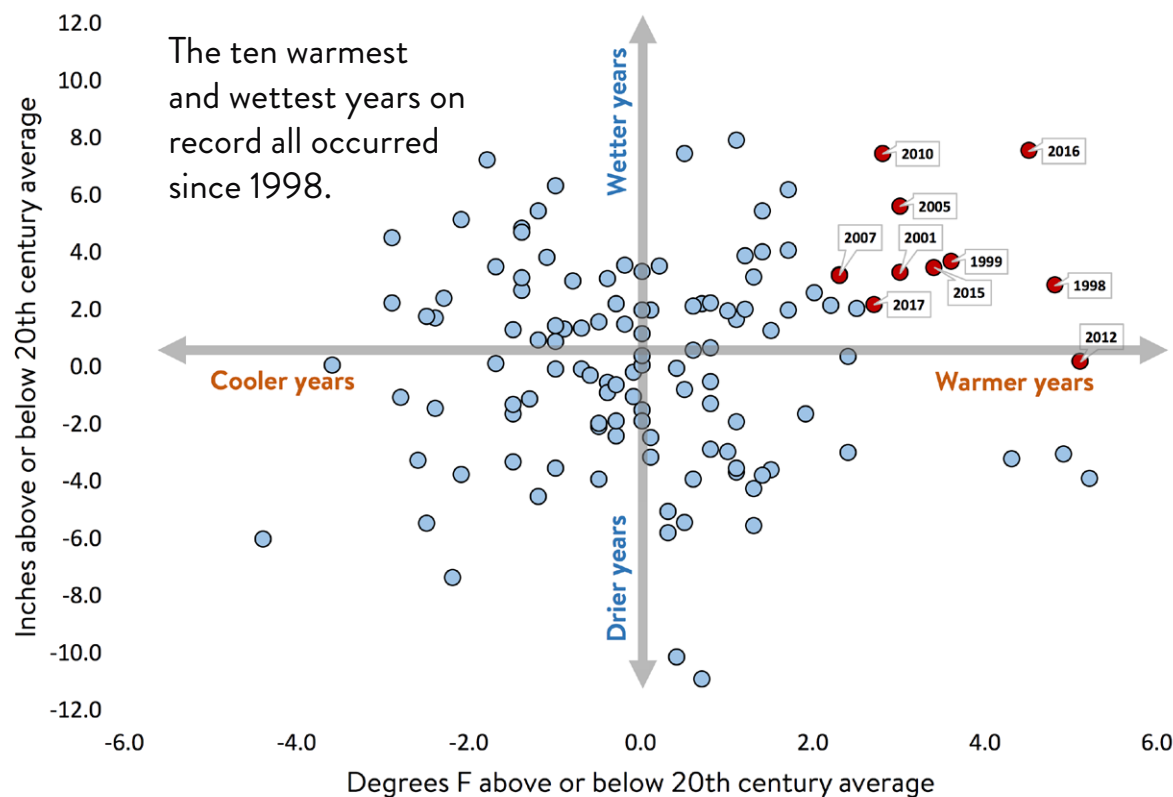
Status POOR

Moving the needle on climate change takes global coordination

Trend 
Problems are ahead

Minnesota is warmer and wetter

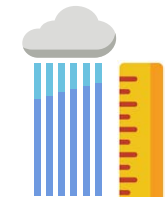
Minnesota's climate has become much warmer and wetter in the past several decades; the top ten warmest and wettest years since 1895 occurred between 1998 and 2017. Since 1970, nights have warmed 55% faster than days, and winter has warmed 13 times faster than summer. The frequency of -35F readings in northern Minnesota and -25F readings in the south have fallen by up to 90%. Minnesota is also experiencing more frequent and intense rainstorms than at any other time on record. The number of one-inch and three-inch rains, and the size of the heaviest annual rainfall have all increased dramatically.



Heavy rains getting heavier and more common



20% increase in the number of 1-inch rains over past 100 years.



65% increase in the number of 3-inch rains over past 100 years.



Large-area "mega rains" four times more common after the year 2000, compared to the previous 30 years.

15.1

15.1 inch daily rainfall record set in Hokah, Minn., in 2007. It was 39% larger than the previous record.

Heat stress
Warmer nights in summer can pose health risks to elderly people who lack air conditioning.



Summary Despite success in the electricity generation sector, Minnesota is not on track to meet climate goals.

Status

POOR

We still put too much CO₂ in the air.

Trend



Goal

Reduce emissions 30% below 2005 levels by 2025, and 80% by 2050

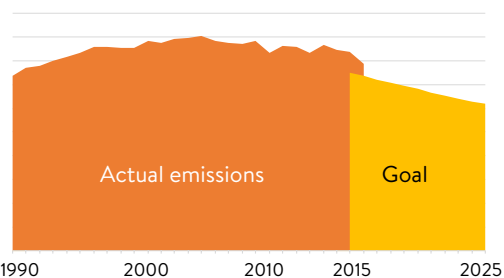
Minnesota's Next Generation Energy Act of 2007 calls for reducing annual GHG emissions by 80% between 2005 and 2050, with interim goals of 15% by 2015 and 30% by 2025. While we've made progress, achieving the 2050 goal will require much more aggressive state and federal policies. Fortunately, Minnesota is in a position to lead the efforts.

Minnesota's GHG reductions

GHG emissions from power generation have fallen dramatically in Minnesota, so the state has started focusing on other reduction opportunities. For example, transportation is now the largest contributor to GHG emissions, so Minnesota is supporting efforts by utilities, auto manufacturers, and other partners to expand electric vehicle use. Money from Minnesota's share of the Volkswagen legal settlement is being used to create fast-charging electric vehicle corridors throughout Minnesota and to incentivize the purchase of heavy-duty hybrid and electric vehicles.

Individual Minnesotans, their communities, and our industries are working together to become more energy efficient, increase renewable energy production, and reduce our dependence on imported energy.

Greenhouse gas emissions: Not on target to meet 2025 goal



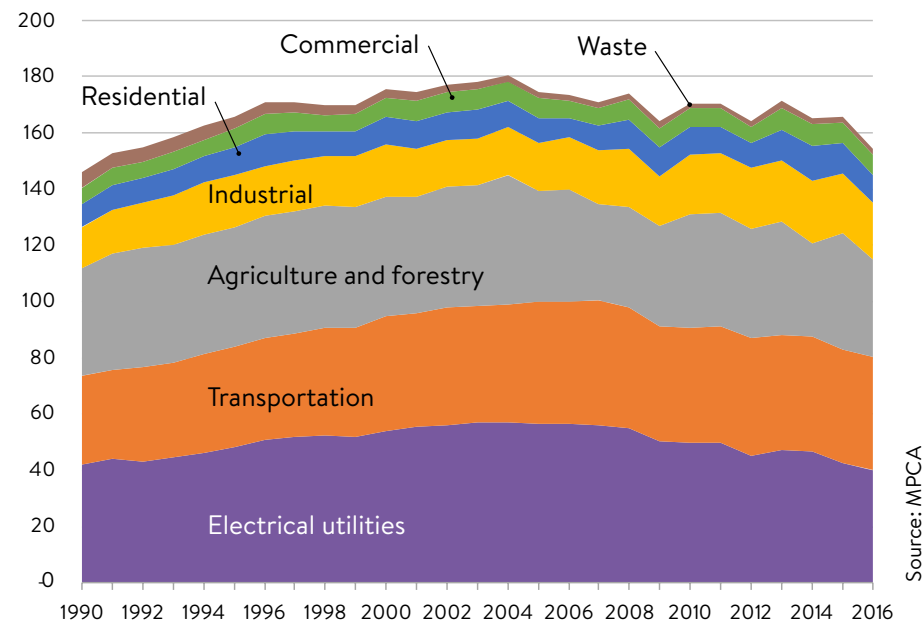
Leading by example



Minnesota state government has a goal of reducing greenhouse gases by **30%** by 2025. (Baseline year 2005)

Some sectors improving, others worsening

Greenhouse gas emissions by sector Millions of tons of CO₂-e



In 2016, the transportation sector surpassed electricity as the largest source of carbon dioxide emissions in Minnesota.

Summary Populations of cisco — fish that walleye and trout rely on as a food source — are declining as temperatures rise.

Status

OKAY

Warning from the bottom of the food chain.

Trend



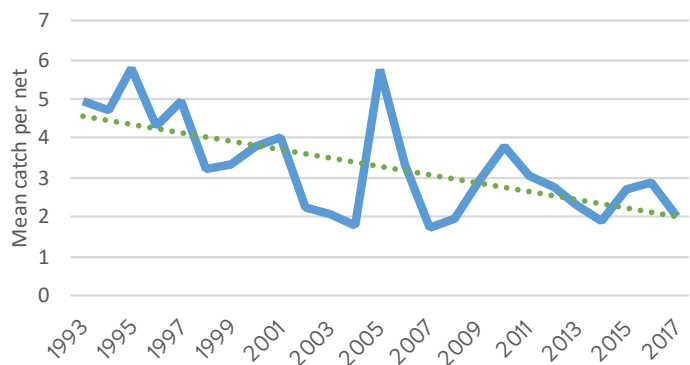
Getting worse

Climate change driving population decline

Minnesota has about 650 cisco lakes, more than any other state in the lower 48. Many are prized by anglers because ciscoes (also known as tullibees, or lake herring in Lake Superior) provide a high-energy feast for walleye, northern pike, muskellunge, and lake trout.

Changes in land use and climate have led to declines in cisco populations in the past 30 years. Cisco fish can't tolerate warm water — 76 degrees is lethal and 54 degrees is optimal—so they need to stay deep in the warmer months. But in late summer when water near the surface is too warm, the water near the bottom has too little oxygen. Ciscoes become trapped in a narrow band — sometimes only a few feet — of habitat, which leads to die-offs.

Cisco populations, an indicator of the health of other fish species, are declining



Source: MN DNR



There's been a 57% decline in cisco populations between 1993 and 2017.



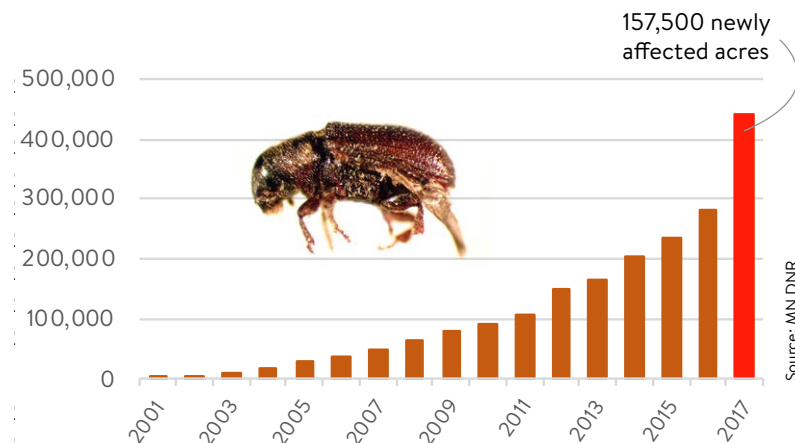
Seeking refuge from the heat

DNR and UMN researchers have evaluated the 620 cisco lakes and identified 176 refuge lakes that are deep and clear enough to sustain ciscoes in a warming climate, if water quality is maintained. Preserving forested land can help maintain water quality in lakes with tullibees and other cold-water species.

Eastern larch beetles march continues

The eastern larch beetle is taking advantage of longer summers related to climate change to reproduce twice each year rather than just once. The larger beetle population is killing more tamarack trees. As the forest composition changes, other forest wildlife feels the effects.

Accumulated acres affected by eastern larch beetles



Source: MN DNR

In just 17 years, the Eastern larch beetle has killed or damaged more than a third of the state's 1.25 million acres of tamarack.



U.S.F.S.

Summary Minnesota achieved 25% renewable energy in 2018 and is on track to surpass its renewable electricity standard of 28.5% by 2025. The state has the potential to go much further.

Status

GOOD

We can do more.

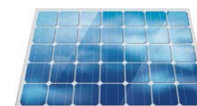
Trend



Minnesota's cleaner electricity generation

Minnesota has no in-state fossil fuel but abundant renewable resources, including wind, solar, and biomass. The state passed a renewable electricity standard in 2007 requiring that 28.5% of the state's electricity use be generated with renewable resources by 2025.

In response to state policy, our electricity production has become cleaner at a pace faster than the nation as a whole. Minnesota was the 6th largest state solar market in 2017 and the 3rd largest non-residential market. Minnesota ranked 7th in the nation for the share of electricity generated from wind energy. Solar and wind energy costs are decreasing rapidly due to technology advances. Due to increases in efficient and renewable generation, electricity generation is now second to transportation for carbon emissions. As renewable resources are paired with an increasing number of electric vehicles, carbon emissions within the transportation sector will also be reduced.



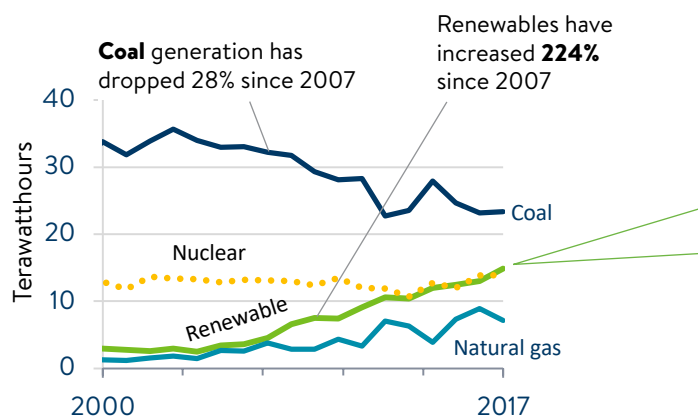
2017 solar industry economic activity in the state: **\$1 billion**

Minnesota can produce 10% of its electricity from solar by 2025 and 70% from solar and wind by 2050.

Source: Minnesota Solar Pathways, a DOE funded project

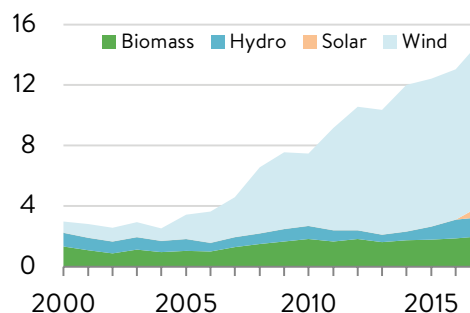


Electricity generated in Minnesota: Renewables rising



Source: U.S. EIA

Renewable generation (terawatt hours)



Utilities aiming higher

Xcel Energy announced a goal to reduce CO2 emissions 80% below 2005 levels by 2030, and zero-carbon electricity by 2050, across all eight states it serves. In the Upper Midwest, Xcel Energy is targeting a generation mix that is 85% carbon-free by 2030, with about 60% coming from renewable and nuclear power supplying the remainder.

Minnesota Power met Minnesota's renewable electricity standard a decade early. By 2015, 26% of Minnesota Power's retail and wholesale electric sales were from renewable energy sources.

Summary Minnesota homes are becoming more energy efficient, but increased use of air conditioning, appliances, and personal devices is driving up overall residential energy consumption.

Status

Trend ↗ → ↘
Improving

As a cold climate state, energy efficiency is critical.

Minnesota homes are more efficient

More than 20% of the total energy used in Minnesota is consumed in our homes. Advances in heating and cooling systems, weatherization technology, and efficient lighting make newer and retrofitted homes more energy efficient. Appliances like refrigerators more than doubled in efficiency between 1987 and 2012. However, the prevalent use of new devices (tablets, smart phones, TVs, gaming consoles) is increasing overall household energy use. The graph at right shows the combined residential electric and natural gas consumption in comparison to gross domestic product and population growth.

Energy efficiency and conservation by homeowners can help cost-effectively reduce carbon emissions by reducing the use of fossil fuels to generate electricity and heat homes.



Conservation success

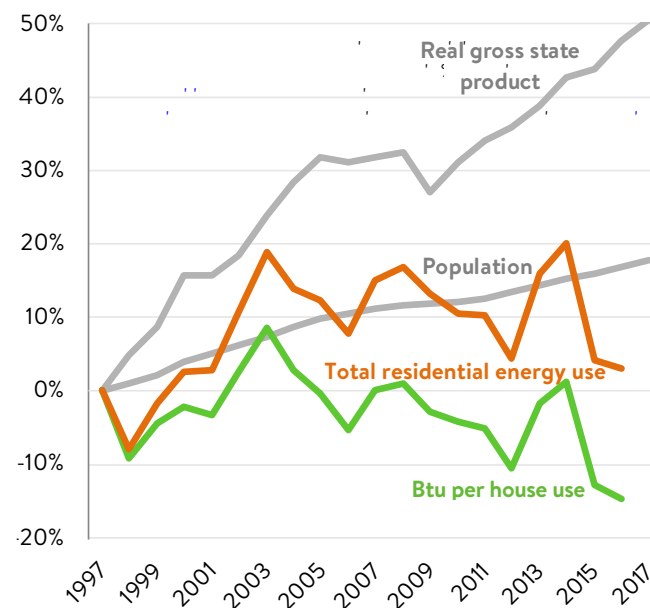
In 2007, a savings goal of a 1.5% per year decrease in electricity and a 1% decrease in natural gas sold was established within the Conservation Improvement Program. More than 130 Minnesota utilities provide technical assistance and financial incentives to their customers to help meet the goal.

Every \$1 spent on Conservation Improvement Programs returns \$4 to Minnesota's economy.



Less energy used per household, but overall use is increasing

Percent change since 1997



BEA, MN State Demographer, EIA



Leading by example

By 2027, Minnesota state government plans to reduce its energy use by **30%** of its 2017 consumption in state buildings.

Summary Use of fossil fuels for transportation must decline steadily to achieve the state’s greenhouse gas reduction goal. Instead fossil fuel use has been flat or growing for the past six years.

Status



Fuel use is increasing

Trend



Problems are ahead

Transportation priorities

Fuel use has been steadily increasing over the last few years – almost back to peak 2004 levels as low fuel prices have led many people to purchase less fuel efficient vehicles. Transportation fuel is used as an indicator of air pollution and carbon emissions from transportation. For decades, Minnesota policy and investment has emphasized automobile travel. Mass transit, walking, and biking are available at some level across the state, but additional investment is needed to make these viable travel options for all Minnesotans.

Reducing fossil fuel use in transportation is directly connected to achieving the state’s greenhouse gas reduction targets outlined in the 2007 Next Generation Energy Act, which calls for a 30% reduction in greenhouse gas emissions between 2005 and 2025.

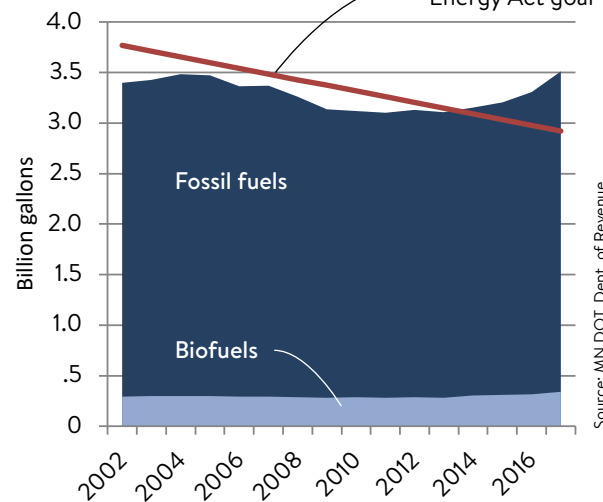
Fuel economy standards

In August 2018 the federal administration proposed rolling back higher fuel economy standards for auto manufactures. The higher standards were put in place in 2011 so that more fuel efficient vehicles were available to American families. According to NHTSA, weakening these fuel economy standards is forecasted to reduce the nationwide fuel economy of each new vehicle by up to eight miles per gallon in 2025.

Transportation fuel consumption

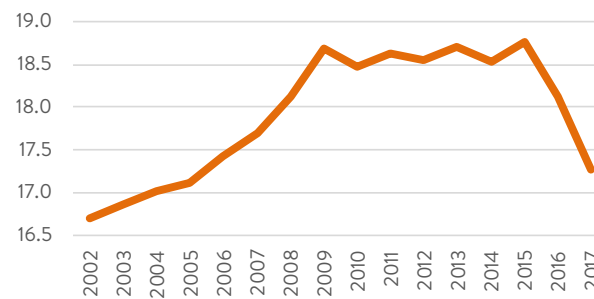
Heading upward again

Next Generation Energy Act goal



Average miles per gallon (roadway)

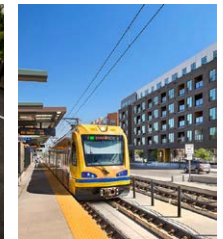
After years of increasing, a reversal



Low fuel prices are influencing Minnesotans to buy SUV’s and trucks with larger carbon footprints.

Leading by example

In 2017 state agencies reduced their fossil fuel consumption by **702,669 gallons** primarily by purchasing hybrids and electric vehicles.



Tools for reducing transportation fuel use

- Promote electric vehicles.
- Support compact, energy-efficient development to reduce trip lengths and increase non-automobile trips.
- Investing in transit and active transportation infrastructure and operations.
- Reducing the carbon content of liquid fuels by supporting lower carbon biofuels.

Summary Minnesota is meeting national air standards, but air quality is still periodically unhealthy for sensitive populations.

Status

GOOD

Air is life.

Trend



Improving

Goal

Meet standards and improve air quality

Tracking pollution

Minnesota's air currently meets all federal health standards. However, even air pollution at levels below those standards can affect people's health.

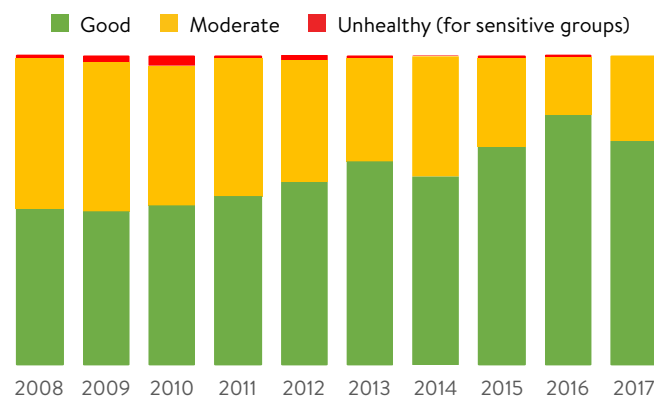
Minnesota's air quality is always changing due to weather patterns and can differ across the state. Wildfire smoke from other regions, ozone on hot summer days, and wintertime stagnation episodes are the most common recent causes of poor air quality in Minnesota. Air quality forecasts and alerts let the public know when they should take precautions to protect their health.

Personal decisions

We make decisions every day that can negatively affect air quality, including driving, using gas-powered lawnmowers, and having backyard fires. Together, we can improve air quality by replacing car trips with riding mass transit, bicycling, and walking, and using electric or push mowers.

More good days, less bad days

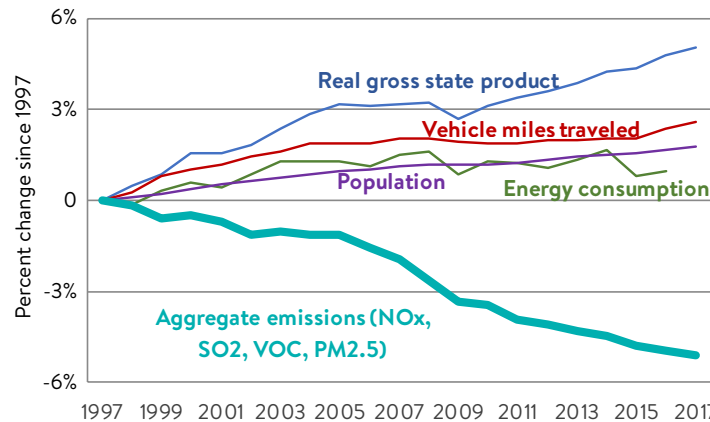
Proportion of days each year rated good in the Air Quality Index compared to poorer air quality days



Source: MPCA

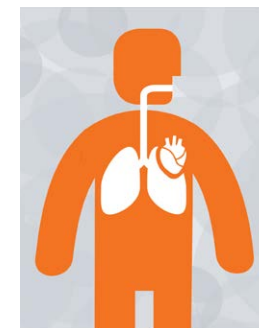
Air is improving despite more activity

Pollutants have dropped, even with more people, cars, and economic activity



Source: MPCA, MN State Demographer, BEA

When we breathe, pollution enters our lungs and bloodstream. Air pollution can cause coughing or itchy eyes, or, more significantly, worsen lung diseases and breathing, leading to hospitalizations, cancer, or even premature death.



The high cost of air pollution

The Minnesota Pollution Control Agency estimates the economic impact of air pollution on health in Minnesota may exceed \$30 billion per year.

- Air pollution contributed to around 2,000 deaths per year in the Twin Cities metro area in 2008.
- Populations with higher rates of heart and lung disease, including people of color, the elderly, children with uncontrolled asthma, and people in poverty are most affected by air pollution.



Summary Asthma emergency room visits, which are linked to poor air quality, disproportionately impact communities of color, those living in poverty, and children.

Status

OKAY

Asthma inequities persist over time, despite overall gains.

Trend

Not much change

Goal

Reduce ER visits caused by poor air quality

Air and health

Even levels of air pollution below federal standards can contribute to serious illness and early death. Asthma, a condition exacerbated by poor air quality, is one of the most common chronic diseases in the U.S. In Minnesota, one in 14 people has asthma. Asthma can be managed with tools such as an Asthma Action Plan, but thousands of Minnesotans visit the emergency room each year; **in 2016, 76 people in the state died due to asthma.**

Some people more vulnerable

Breathing polluted air is not good for anyone, but people with preexisting conditions or uncontrolled asthma, children, the elderly, and people in particular communities are affected more than others. Children in the Twin Cities metro area go to the ER for asthma at a rate nearly twice that of children in Greater Minnesota. In some Minneapolis zip codes, asthma hospitalization rates for children are four times higher than the rest of the state. Poorer air quality in the metro area could be a contributing factor, and efforts to reduce air pollution are a critical part of addressing the disparities.

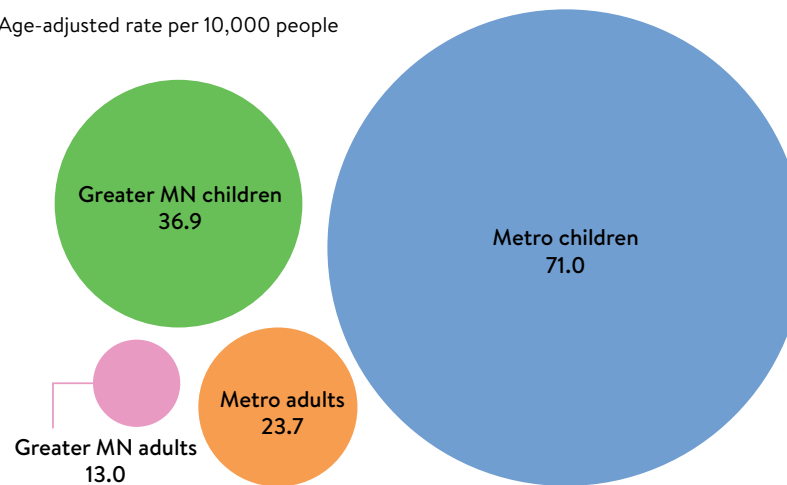
American Indian and African American middle/high school students are more likely than other students to have been diagnosed with asthma.

2016 Minnesota Student Survey

Asthma: Where you live matters

Minnesota rates of asthma emergency department visits by age and region, 2016

Age-adjusted rate per 10,000 people



Source: Minnesota Hospital Association, MDH



Stats

- In Minnesota in 2016, 18,200 emergency department visits and 1,900 hospitalizations were for asthma.
- In 2014, asthma cost an estimated \$669 million, including \$615 million in direct medical expenses and \$54 million in lost work days.

What can we do?

Improving air quality can provide significant public health benefits. If we reduce fine particles and ground-level ozone by 10% from 2008 levels, we can reduce the annual number of deaths, hospitalizations, and emergency room visits due to heart and lung conditions.

Summary Public transit use is decreasing, the Twin Cities metro is not meeting its ridership goals, and transit needs in the rest of the state are also unmet.

Status POOR Transit ridership growth is slowing

Trend ↻ → ↘
Getting worse

Goal Double ridership between 2003 and 2030

Transit and air quality

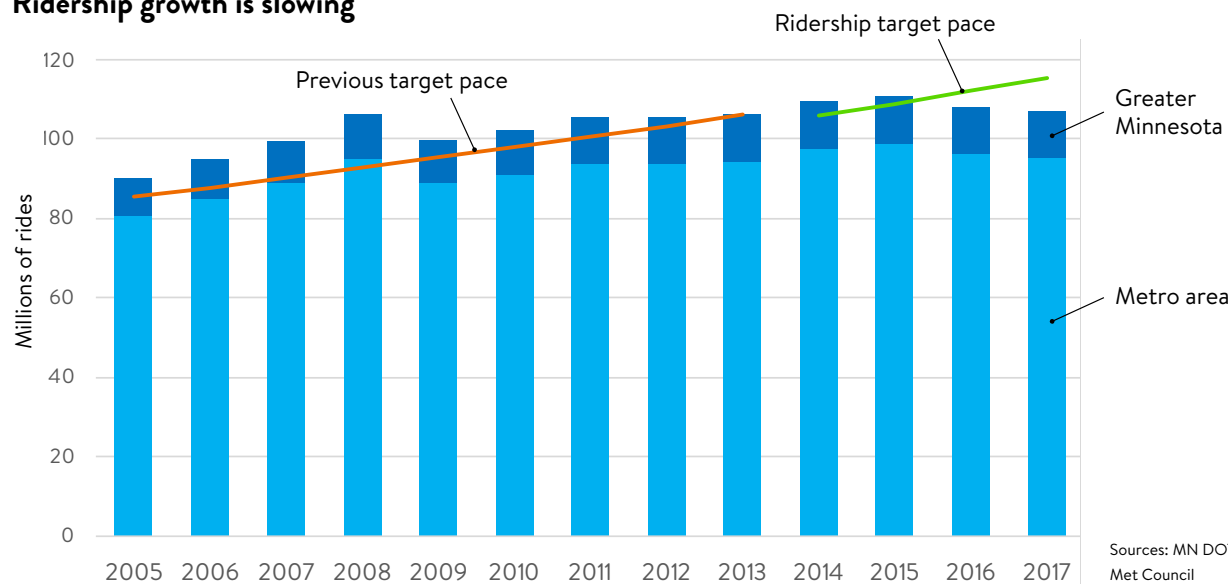
Increasing public transit options and improving access to them reduces demand for automobile travel and lessens tailpipe emissions. Areas with traffic congestion are in particular need of air quality improvements. Public transit, such as light rail and buses, also improve health equity by providing safe, convenient, reliable, and affordable access to jobs, schools, healthy food options, parks, and other opportunities for physical activity.

After many years of steady growth, transit ridership began to decline in the past two years. Ridership across the state dropped by 3% in 2016 and another 1% in 2017. Currently, Minnesota is not on pace to meet the state’s transit ridership targets. A 2017 regional fare increase, low gas prices, and shifting travel patterns are influencing the decline in ridership, which is a trend happening nationwide.

Switching to transit reduces an individual’s transportation-related carbon emissions by up to 70 percent.



Ridership growth is slowing

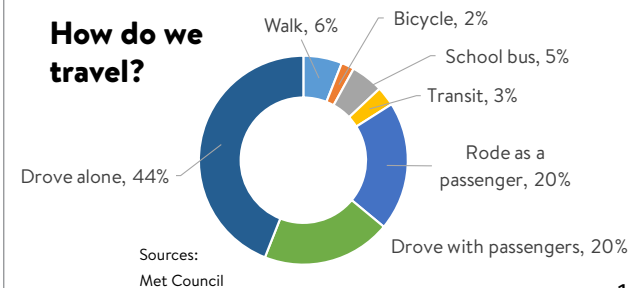


Transit success

- Ridership on light rail transit is up 3% and continues to see year over year increases.
- The A line, the region’s first rapid bus line, saw around 830,000 riders in its first six months of service, beating projections.

These successes demonstrate that Transit ridership growth happens when there is *frequent* options and people feel that the length of time in transit will be *consistent*.

How do we travel?



Summary We have reduced pollution from sewers and industry in the last several decades. However, pollution from agriculture, lawns, and roads is increasingly found in our drinking water supplies, rivers, and lakes.

Status

OKAY

Improvements in some areas but many challenges ahead.

Trend



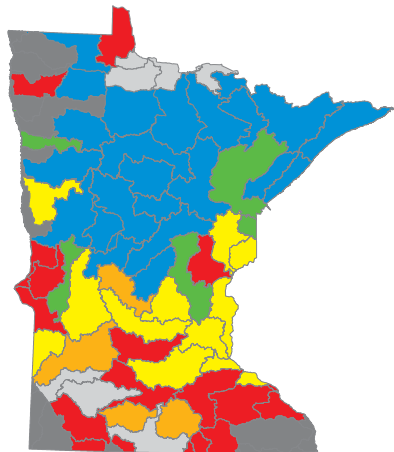
About the same

Goal

Swimmable, fishable lakes and rivers

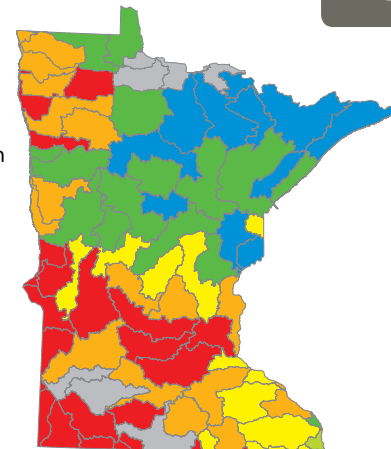
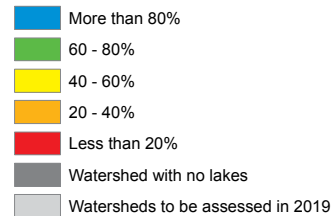
**Lakes:
Too many nutrients**

Percent of lakes with good water quality



**Rivers and streams:
Fish and bugs are struggling**

Percent of streams with healthy aquatic life



MPCA assessments through 2018

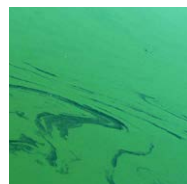
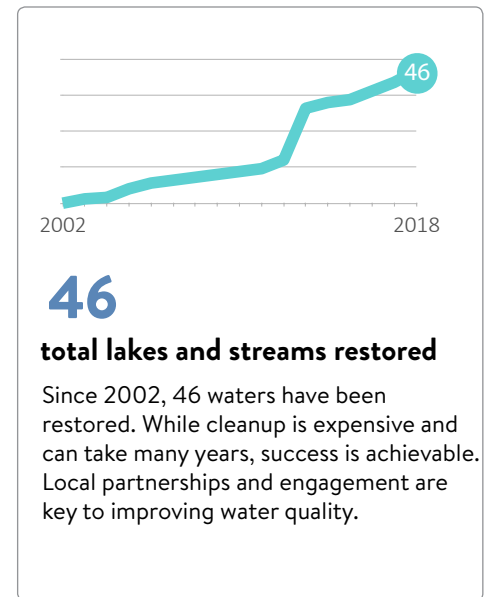
Way of life

Lakes are central to Minnesota’s economy and our way of life, and we need to continue to protect and restore our waters. Many lakes and streams are polluted by nutrients, particularly chloride from road and water softener salt and phosphorus. Fish and bugs in streams can be harmed by poor habitat, excess flow from modified drainage, and sediment. Runoff from agricultural land and lakeshore development increases phosphorus in lakes, which in turn causes algae growth. Algae-covered lakes are less attractive for fishing and swimming — highly valued pastimes in Minnesota and uses that are protected under the federal Clean Water Act.

Improving water quality

With the investment of the Clean Water Fund from the Legacy Amendment, the state has been assessing each watershed to understand where pollution is a concern. The One Watershed One Plan program supports local governments using this data to develop strategies and a plan to protect and restore their waters. Without additional action, water quality is expected to improve only 6% to 8% by 2034.

60% of lakes and rivers meet water quality standards for fishing and swimming



Health concerns

Cyanobacteria or **blue-green algae** are naturally occurring in Minnesota lakes. While often just a slimy nuisance, some blue-green algae can produce toxins that endanger pets, livestock, and children. Reducing runoff into lakes can help reduce algal blooms, but longer, warmer summers increase the bloom season. Take care to keep pets and children away from algal blooms and shoreline scum. Drinking water can also be affected by blue-green algae, though it has not yet become an issue in Minnesota.

Summary Nitrate is one of the most common water pollutants in MN groundwater. In areas with vulnerable groundwater, wells are more likely to have elevated nitrate. Elevated nitrate in drinking water is a health hazard, especially for infants.

Status

POOR

Removing nitrate from tap water is expensive.

Trend



Goal

Why is nitrate a concern?

A growing body of literature suggests associations between nitrate exposure and health effects such as increased heart rate, nausea, headaches, and abdominal cramps. Some studies suggest an increased risk of cancer, especially gastric cancer, from consuming nitrate/nitrite in drinking water, but there's not scientific consensus. High levels of nitrate can also cause a fatal condition called methemoglobinemia (blue baby syndrome) in infants.

How is drinking water being protected in Minnesota?

The Minnesota Nitrogen Fertilizer Management Plan is the state's blueprint to prevent, evaluate, and mitigate nonpoint source pollution from nitrogen fertilizer in groundwater. Its primary goal is to involve the agricultural community in problem-solving at the local level to respond to and address localized concerns about unsafe levels of nitrate.

Proper well construction, sealing, and education are tools the Minnesota Dept. of Health (MDH) uses to protect people's health. MDH also tests public water for nitrate and advises systems on ways to protect surface and groundwater from nitrate contamination.

Nitrate contamination is impacting rural communities

Bill increases In Randall, Minn. (pop. 650), one of the town's two drinking water wells is contaminated with nitrate. A new treatment plant will cost \$1.37 million. Residents' water bill increases will be \$100-\$120 in the first year, and \$160-\$180 in the following years.

Protecting health As part of Dakota County's Delegated Well Program, when a well is constructed, repaired, or ownership changes, the water must be tested and meet standards for nitrate and bacteria.

Disrupted supply In May 2016, Fairmont was the first Minnesota community using surface water (Budd Lake) for its water supply to experience elevated nitrate levels. The utility notified residents and used its backup well to dilute the nitrate-contaminated water.

Township testing program

25% of MDA tested private wells are above 3 mg/L, a level at which MDH prevention measures are recommended. **10%** exceed 10 mg/L, above the safe drinking water limit.

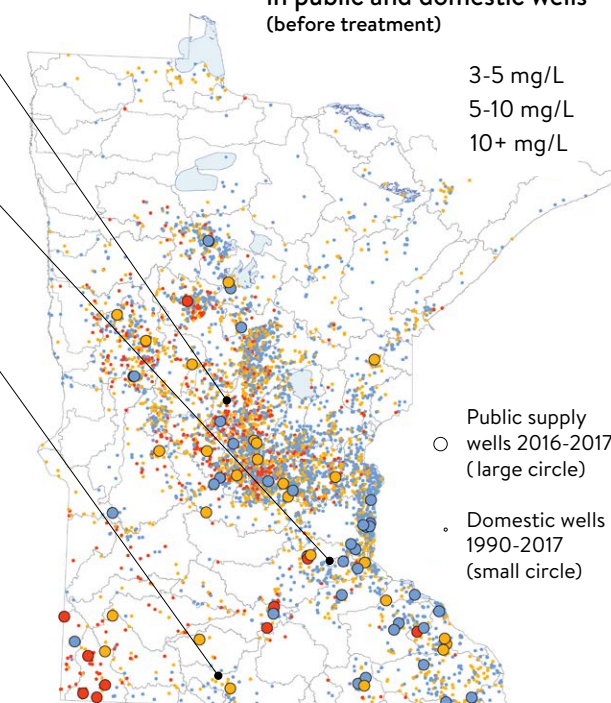
Source: MDA Township Testing Program Update-March 2018



Minnesota Agricultural Water Quality Certified farms

Since 2014, the Water Quality Certification Program (MAWQCP) has worked with 680 farmers to implement conservation practices and commit to sustainability. The program has enrolled nearly 450,000 acres, saved 120 million lbs. of soil per year, and reduced nitrogen losses on farms up to 49%. New private-sector partnerships can help the program reach its goal of 1 million acres by 2020.

Highest nitrate concentrations in public and domestic wells (before treatment)



Source: MDH, Wells and MNDWIS databases

Summary Minnesota is at risk of depleting its water supplies in several areas of the state. Sufficient water supply is vital to our public health, economy, and ecosystems.

Status

OKAY

We need to better understand ground water use

Trend

About the same

Goal

Reliable water supplies for future generations

Protecting our water supply

Water is our most precious resource, but it's often taken for granted in the "Land of 10,000 Lakes". Minnesota appears to have a good supply of water, but increasing demand from domestic, agricultural, and industrial users can strain water resources. Average water use per person has been stable for decades, however as population has grown so has overall water use. In some areas groundwater use has caused aquifer water levels to decline. If this overuse continues, groundwater may not be available as needed in the future.

The Department of Natural Resources is assessing the impacts of groundwater use in areas with historical concerns. They are collaborating with large water users and conducting long-term planning to ensure the sustainability of aquifer resources.

The future of sustainable water use

Moving forward, the focus must be on building resilient and flexible water supply systems and determining how much water use is sustainable for Minnesota communities. Improving water efficiency and reducing waste are critical to achieving resilience.



A recent survey of residential irrigation systems found that most have leaking components and are watering streets and sidewalks.

Leading by example



Minnesota state government has a goal of reducing water use by **15%** by 2025.

(Baseline year 2017)

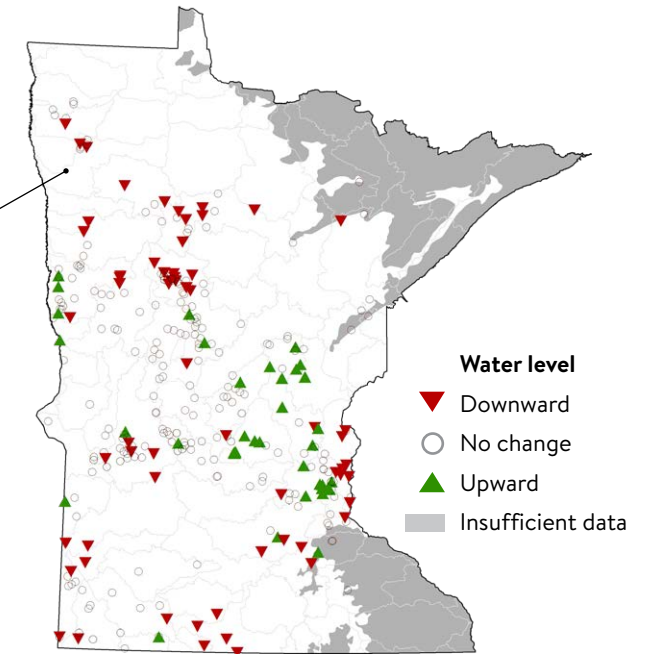
Irrigation and water supplies

Agricultural irrigation is relatively new to the Polk County/Red Lake County area. Most of the water use permits for irrigation were issued within the past five years. High water use caused several out of water conditions (well interferences) to private domestic wells. The area's aquifer system is highly complex and only partly understood. The long-term effect on the aquifers has yet to be determined. Prevention of additional well interferences and ensuring a sustainable water supply to all area water users is of utmost importance.

Well water levels 1997-2016

The water levels in many wells around the state have decreased in recent years.

Downward trends can result from drier climate conditions or increased local groundwater use.



Source: MN DNR

Summary Recent declines in pheasant and other grassland bird populations reflect significant losses of prairie and grassland habitat.

Status

POOR

Our grasslands are disappearing.

Trend



Getting worse

Goal

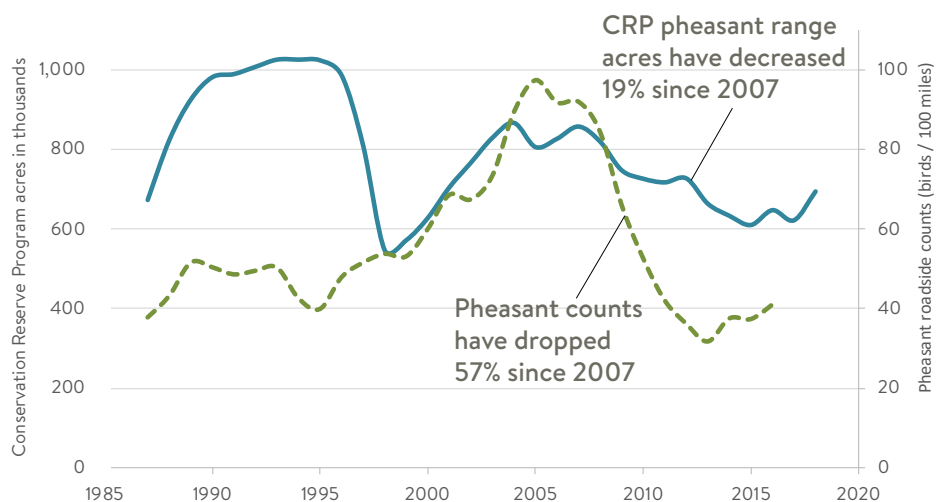
Return pheasant population and harvest to 2005-2007 levels (peak CRP years)

Lost habitat

In the past decade, the Conservation Reserve Program (CRP), the most important private-lands conservation tool for preserving grassland habitat in Minnesota, has shrunk significantly. The federal program pays farmers to remove environmentally sensitive land from agricultural production and restore vegetation to reduce soil erosion, improve water quality, and provide habitat for wildlife and pollinators. Since 2007, about 700,000 acres of CRP have expired in Minnesota and an additional 296,000 acres are expected to expire by September 2019.

Declining pheasant population and harvest

Loss of habitat in the state's farmland region has contributed to declines in Minnesota's pheasant index and harvest. Although the 2018 pheasant index was similar to the previous 10-year average, it was less than half of what the index was from 2005-2007. The 2017 harvest was one of the lowest in state history.



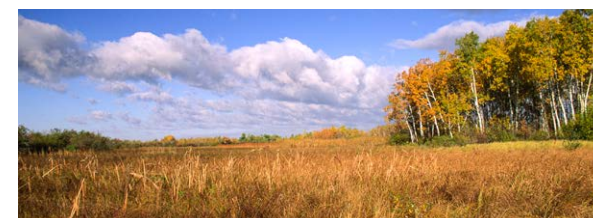
Source: MN DNR



Grassland birds are one of the fastest declining groups of birds in North America.



Since 2007, the state has lost more than 163,000 acres of CRP in the pheasant range alone.



Saving prairies and pheasants

Just west of Regal, Minn., is a 3,000 acre habitat complex that is the result of partnerships between DNR, U.S. Fish and Wildlife Service, The Nature Conservancy, and Pheasants Forever, among others. The complex includes DNR Wildlife Management Areas, Federal Waterfowl Production Areas, and the Nature Conservancy's Regal Meadows – Knutson Tract, which was purchased with Outdoor Heritage Funds and is open to hunting, and multiple permanent conservation easements on private land.

Prairie loss puts pollinators at risk

Native bee populations are down 23% in the U.S. from 2008 to 2013. Several native Minnesota bee and butterfly species have experienced declines in population and geographic range, with some once-common species now gone from the state.



Summary Since 2002, the rate at which farmland, forest, wetlands, and wildlife habitat is converted to urban and suburban development has decreased.

Status

OKAY

Trend



On the right path

Goal

More efficient development

Efficient use of land

As our population and economy grows, we need room for housing, businesses, recreation, shopping, transportation, government services, and more. In the process, we convert farm and forested land and other open areas to developed lands. By doing so, we lose irreplaceable natural resources and risk damaging ecosystems.

Development patterns across the state have been changing. The amount of land per new person and per new household has fallen, while the population continues to grow. Reuse and cleanup of existing contaminated sites, reuse of existing buildings, smaller residential lots, and more apartments and other multi-family dwellings have contributed to this more efficient land use, and reduced the rate we impact our natural areas and farmland.

The benefits of efficient land use include improved accessibility, less costly utilities, public services, and transportation, open space preservation, and less pollution and impervious surfaces (such as pavement).



What can we do?

Thrive MSP 2040 The Metropolitan Council's vision for the next 30 years includes aiming to responsibly manage the region's finite natural and financial resources, and our existing investments in infrastructure.

Land use policies Align land use, development patterns, and infrastructure to make the best use of public and private investment, and reduce development pressures on rural and natural areas.

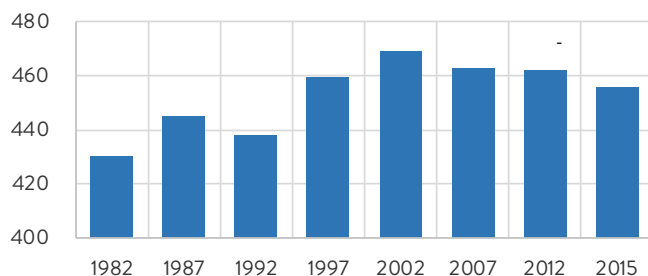
Green development Locate and design new developments to benefit the natural environment and reduce development pressures. Promote growth in already urbanized areas.

Careful location of development Where growth must occur outside of urbanized areas, avoid locating development, roads, and utilities on prime farmland, areas important for habitat, or areas containing important natural features.

Developed land

We are converting open areas to developed land at a slower rate since 2002.

Developed land per 1000 people (in acres)



Sources: MN State Demographic Center, 2015 National Resources Inventory (USDA/NRCS)



Camp Ripley Sentinel Landscape

The Sentinel Landscapes Partnership, a joint initiative of the U.S. Departments of Agriculture, Defense, and Interior, along with state agencies, local governments, and nonprofits, is an effort to protect Camp Ripley's training mission, while protecting and enhancing natural and cultural resources. The Camp Ripley Sentinel Landscape and the preceding Army Compatible Use Buffer program have protected approximately 35,000 acres to date, using land acquisitions and easements. (sentinellandscapes.org)

Summary About one-third of our waste is still sent to landfills. More of this waste could be recycled.

Status

POOR

We can recycle more.

Trend



About the same

Goal

75% recycling for Twin Cities, and 35% for outstate counties

System change

Individuals and organizations all play critical roles in meeting Minnesota's 2030 recycling goals. We must shift our thinking from "How do I get rid of waste?" to "How can I avoid generating waste?"

We must also effectively manage waste by prioritizing recycling, organics management, and waste-to-energy over landfilling. To achieve our goals, we'll need to target large commercial waste generators, recover more residential organics and recyclables, process waste before disposal, increase reuse, and focus on recovering large categories of materials.

The problem

One barrier to achieving our recycling goals is the common assumption that everyone recycles and current recycling solves the problem.

In addition, single-stream recycling causes contamination problems, which cost sorters more money and has led China to stop accepting our material.

Minnesota has set aggressive goals to increase recycling and organics collection and aims to reduce land disposal as much as possible. We need to continue to employ creative solutions to address market problems.

Emerald ash borer aftermath

Ultimately, all of Minnesota's 1 billion ash trees—2.65 million located in communities—are expected to be lost, creating a huge waste issue.



Source-separated organics recycling has more than doubled since 2011.

Recycling is good for Minnesota's economy. It supports more than 60,000 jobs in our state, paying almost \$3.4 billion in wages, and adds \$15.7 billion to our economy.

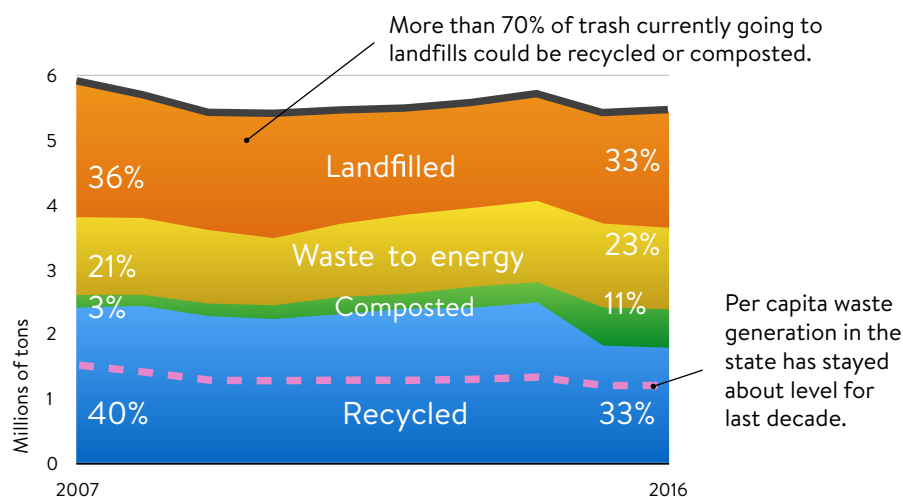


China has stopped taking recyclables

As a result, U.S. markets have become saturated with material, creating more supply than demand. Local markets can be more selective and are buying the higher quality (clean) material. It doesn't appear that China will be changing its policy soon, so this is an opportunity for Minnesota facilities to improve their processes.



Where does our waste go?

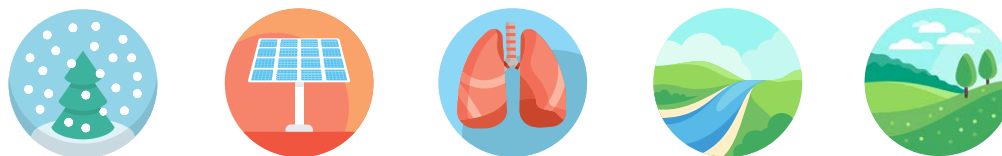


A reporting change, which no longer accepts estimates, only actual numbers, began in 2015.

Source: MPCA



Wish-cycling means the practice of tossing unacceptable items in the recycling bin, hoping they can somehow be recycled.



WATER

LAKES AND RIVER WATER QUALITY	<p>Goal: All waters in Minnesota be fishable and swimmable (100%).</p> <p>This metric is based on Minnesota’s level of attainment toward state and national goals for the Clean Water Act to have all waters be fishable and swimmable. It is yellow because a moderate number (60%) of Minnesota’s lakes and streams support swimming and fishing.</p>		
	RED	YELLOW	GREEN
	Less than 40% of lakes and streams support swimming and fishing	40 to 70% of lakes and streams support swimming and fishing	Greater than 70% lakes and streams support swimming and fishing
	DOWN ARROW	FLAT ARROW	UP ARROW
	<p>Work continues to complete the first round of lake monitoring across the state. Beginning in 2019, trends will become available.</p>		

WATER USE	<p>Goal: Reduce per capita water consumption use by 1.5% per year.</p> <p>This is metric based on water consumption data. It is yellow because our goal is to reduce per capita water consumption use by 1.5% per year and we are close to, but not exceeding, that goal. This metric is trending flat because average water consumption per capita over a ten-year period is not decreasing fast enough to ensure we continue to meet this goal.</p>		
	RED	YELLOW	GREEN
	Per capita water consumption increasing > .5% per year.	Per capital water consumption change between +.5% to - 1.5% per year.	Decreasing per capita water consumption – exceeding 1.5 percent per year.
	DOWN ARROW	FLAT ARROW	UP ARROW
	10-year linear trend line for rolling 3-year average of per capita water consumption has a positive slope of at least 500 gal. per person	10-year linear trend line for rolling 3-year average per capita water consumption has a slope of between 500 gal. and -500 gal.	10-year linear trend line for rolling 3-year average per capita water consumption has a negative slope of at least -500 gal.

NITRATE	<p>Goal: 100% of private wells are below the Health Risk Limit (HRL) for nitrate.</p> <p>This metric is based on Minnesota Department of Agriculture’s private well monitoring network for nitrate in two vulnerable areas of the state (southeast and central Minnesota) to determine nitrate concentrations and trends. It is red because 96% of the private wells sampled in central Minnesota and 89% of private wells sampled in southeast Minnesota are below the state’s Health Risk Limit (HRL). This metric is trending flat because there is no statistically significant upward or downward trend in the percentage of wells below the HRL.</p>		
	RED	YELLOW	GREEN
	<98% -nitrate below the HRL in Central <95% -below the HRL in SE	≥ 98% nitrate below the HRL in Central ≥95% nitrate below the HRL in SE	100% nitrate below the HRL in Central 100% nitrate below the HRL in SE
	DOWN ARROW	FLAT ARROW	UP ARROW
	Statistically significant downward trend in nitrate concentrations.	No statistically significant upward or downward trend in nitrate concentrations.	Statistically significant upward trend in nitrate concentrations.

LAND

PHEASANT	<p>Goal: Stable and healthy pheasant population.</p> <p>This metric is based on the August Road Side Survey (ARS) of pheasants (which counts birds per 100 miles), is the long-standing measure of population health. It is red because populations are low (<42) compared to historic levels. This metric is trending downward because the average number of birds observed per mile has been decreasing over a five-year period.</p>		
	RED	YELLOW	GREEN
	ARS <42	ARS 42 – 69	ARS > 69
	DOWN ARROW	FLAT ARROW	UP ARROW
	5-year linear trend line for rolling 5-year average ARS has a negative slope of at least -1.	5-year linear trend line for rolling 5-year average ARS has a slope of between 1 and -1	5-year linear trend line for rolling 5-year average ARS has a positive slope of at least 1

LAND CONVERSION	<p>Goal: There is no stated goal, but we are looking at historic trends for how to use land efficiently. We want to better understand land conversion patterns and the impact of trends.</p> <p>This metric is based on levels of land conversion and how efficiently we develop land as our population and economy grows. It is yellow because the amount of land developed per 1,000 people is between 428.06 acres and 468.54 acres—which is a moderate amount compared to historic patterns. This metric is trending up because the 15-year trend of land developed per person is trending down (.5% of less positive or negative)</p>		
	RED	YELLOW	GREEN
	Developed acres per 1,000 persons exceeds 468.54 acres.	Developed acres per 1,000 persons is between 428.06 acres and 468.54 acres.	Developed acres per 1,000 persons is less than 428.06 acres.
	DOWN ARROW	FLAT ARROW	UP ARROW
	15-year trend (percent change) in developed acres per 1,000 persons is greater than 0.5% upward (i.e., is positive)	15-year trend is relatively flat (0.5% or less positive or negative)	15-year trend is greater than 0.5% downward (i.e., is negative)

RECYCLING	<p>Goals: Twin Cities recycling goal = 75% of generated waste. Greater Minnesota recycling goal =35% of generated waste.</p> <p>This metric is red because we are not meeting our recycling goals as a state. Currently, as a state we recycle approximately 43.2% of all waste in Minnesota. Currently, the Twin Cities recycles 43.4% of waste; Greater Minnesota (up from the 2017 report) recycles 43%. The arrow is flat because recycling and organics management are at or above historic levels but are not on track to meet goals.</p>		
	RED	YELLOW	GREEN
	≤44.4% Recycling & Organics Management	44.5-48.5% Recycling & Organics Management	≥48.6% Recycling & Organics Management
	DOWN ARROW	FLAT ARROW	UP ARROW
	Recycling and Organics management rates are below historical levels.	Recycling and Organics management rates are at or above historical levels but are not on track to meet goals.	Recycling and Organics management rates are on track to meet goals.

	<p>Goal: Zero air quality alert days in Minnesota.</p> <p>This metric is based on number of days per year with air quality alerts. It is green because Minnesota has experienced very few air quality alerts and we could get closer to the goal of zero air quality alert days. This metric is trending up because the average number of air quality alert days over the last three years is more than 2 days fewer than the average number of alert days from the previous 3-years.</p>		
	RED	YELLOW	GREEN
	19 or more days of unhealthy air (>5% of days)	8 to 18 days of unhealthy air (2-5% of days)	7 or less days of unhealthy air (<2% of days)
	DOWN ARROW	FLAT ARROW	UP ARROW
	Average number of air quality alert days over the last 3-years is more than 2 days greater than the average number of alert days from the previous 3-years.	Difference in average alert days between the most recent 3-years and the previous 3-years is less than or equal to 2 days.	Average number of air quality alert days over the last three years is more than 2 days fewer than the average number of alert days from the previous 3-years.

ASTHMA	<p>Goal: The goal is to reduce asthma Emergency Room (ER) visits.</p> <p>This metric is tied to the number of asthma ER visits within three age groups (0-4, 5-64, and 65+). There is a target goal for reducing asthma ER visits in each of these groups. <u>The metric is yellow because Minnesota is only meeting targets for two of the three age groups.</u> This metric is trending flat because the 2016 data—which is the most recent—does not show improvement compared to the previous year. In 2015, Minnesota was also meeting two of the three age group goals.</p>		
	RED	YELLOW	GREEN
	Meeting 0 of 3 age group targets	Meeting 1 or 2 age group targets	Meeting all 3 age group targets
	DOWN ARROW	FLAT ARROW	UP ARROW
	Meeting fewer age group targets than previous year	Meeting the same number of age group targets as previous year	Meeting more age group targets than previous year

TRANSIT RIDERSHIP	<p>Goal: Double transit ridership in the Twin Cities (2003 to 2030) and meet 90% of demand for transit in Greater Minnesota counties.</p> <p>Annual targets for statewide transit ridership are calculated by adding together separate targets for the Twin Cities metro-area and Greater Minnesota. The basis of the metro-area target is the Met Council's 2030 Transportation Policy Plan (TPP), which set the goal of doubling 2003 ridership by 2030¹. The basis of the Greater Minnesota target is a legislative requirement that transit service providers in Greater Minnesota counties provide service sufficient to meet 90% of estimated demand for transit by 2025. Transit ridership did not exceed 2015 targets in both the metro-area and Greater Minnesota, but year-over-year growth was significantly less than the pace needed to achieve the longer-term goals.</p> <p>¹This goal was not included in the 2040 TPP and will be reassessed as part of a future TPP update.</p>		
	RED	YELLOW	GREEN
	Statewide ridership <u>less</u> than 95% of targeted ridership; AND Statewide ridership growth <u>less</u> than targeted growth.	Statewide ridership <u>less</u> than 95% of targeted ridership; BUT statewide ridership growth <u>greater</u> than targeted growth. ----- Statewide ridership <u>greater</u> than 95% of targeted ridership; BUT statewide ridership growth <u>less</u> than targeted growth.	Statewide ridership <u>greater</u> than 95% of targeted ridership; AND Statewide ridership growth <u>greater</u> than targeted growth.
	DOWN ARROW	FLAT ARROW	UP ARROW
	Growth < 0	Growth ≥ 0 but less than targeted growth.	Growth > targeted growth

ENERGY

RENEWABLE ENERGY 25%	<p>Goal: Minnesota achieved 25% renewable energy in 2018 and is on track to surpass its renewable electricity standard of 28.5% by 2025. The state has the potential to go much further.</p> <p>This metric is green because 100% of reporting utilities are met this goal, however the opportunity exists to go much further towards a 50% goal. This metric is trending upward because 100% of reporting utilities are on track to supply 25% of energy supply from renewable energy by 2025.</p>		
	RED	YELLOW	GREEN
	Less than 80% of reporting utilities are on track to meet or exceed 25% by 2025.	80% -100% of reporting utilities are on track to meet 25% by 2025.	100% of reporting utilities are on track to meet or exceed 25% by 2025.
	DOWN ARROW	FLAT ARROW	UP ARROW
100% of reporting utilities are not on track to meet the 25% by 2025.	100% of reporting utilities are only on track to meet 25% by 2025.	100% of reporting utilities are on track to exceed the 25% RPS.	

HOUSEHOLD ENERGY	<p>Goal: Reduce household energy use to help meet Next Generation Energy Goals.</p> <p>Minnesota is making its homes more energy efficient, however, energy consumption continues to increase with the growth in air conditioning use, appliances, and personal devices. This metric is green because household energy use in Minnesota has decreased by 1% or more. This metric is trending up because there has been three consecutive years in which there was a decrease in household energy use .</p>		
	RED	YELLOW	GREEN
	+1% HH residential energy use (EIA data)	-1 to 0% HH residential energy use (EIA data)	-1% and below HH residential energy use (EIA data)
	DOWN ARROW	FLAT ARROW	UP ARROW
3 consecutive years of +1% HH residential energy use demonstrates a downward trend (which would be signified by an upward trend line in the graphical representation of use)	3 consecutive years of -1 to 0% HH residential energy use which indicate a steady trend of no significant change.	3 consecutive years of -1% and below HH residential use demonstrates an upward trend (which would be signified by a downward trend line in the graphical representation of use)	

TRANSPORTATION FUEL USE	<p>Goal: Reduce transportation fuel use at a pace sufficient to support the state's greenhouse gas reduction goals.</p> <p>Transportation fuel use is evaluated by comparing actual fuel use in a given year to a fuel use target that aligns with Next Generation Energy Act greenhouse gas reduction goals. Converted to transportation fuel use, these goals call for reductions in transportation fuel use equal to 15 percent of 2005 levels by 2015 and 25 percent of 2005 levels by 2025.</p>		
	RED	YELLOW	GREEN
	Total transportation fuel use greater than targeted fuel use and year-over-year decrease less than targeted decrease.	Total transportation fuel use greater than targeted fuel use but year-over-year decrease in fuel use greater than the targeted year-over-year decrease OR Total transportation fuel use less than targeted fuel use but year-over-year decrease in fuel use less than targeted year-over-year decrease	Total transportation fuel use less than targeted fuel use and year-over-year decrease in fuel use greater than targeted year-over-year decrease
	DOWN ARROW	FLAT ARROW	UP ARROW
Year-over year increase in fuel use	Year-over-year decrease in fuel use less than targeted year-over-year decrease.	Year-over-year decrease in fuel use greater than targeted year-over-year decrease	

CLIMATE

	<p>Goal: Less than 2° Celsius globally, MN consistent with this based on international goal</p> <p>This metric is red because statewide low temperatures have been increasing rapidly in Minnesota. This metric is trending down because the rate of low temperature increases has accelerated in more recent decades, i.e. the statewide low temperature trend in the last 50 is worse than the trends between 1895-2015.</p>		
	RED	YELLOW	GREEN
	1895-2015 statewide low temperatures increasing by average rate of at least 0.2° F per decade	1895-2015 statewide low temperatures increasing by less than 0.2° F per decade	1895-2015 statewide low temperatures either not changing or decreasing (indicating that nighttime warming has stopped or been reversed)
	DOWN ARROW	FLAT ARROW	UP ARROW
Statewide low temperature trend for most recent 50 years <i>is positive</i> and <i>exceeds</i> 1895-2015 trend by more than 0.05° F per decade	Statewide low temperature trend for most recent 50 years <i>is positive or neutral</i> and <i>is within</i> +/- 0.05° F of 1895-2015 trend.	Statewide low temperature trend for most recent 50 years <i>is less than</i> 1895-2015 trend by more than 0.05° F. Any negative trend (cooling) gets this designation automatically.	

GHG	<p>Goal: Next Generation Energy Act of 2007 GHG goals.</p> <p>This metric shows progress toward meeting the Greenhouse Gas reduction goals in the Next Generation Energy Act of 2007. It is red because Minnesota had only an 12% reduction in GHG emissions since 2005 which is much less than 80% of the reduction necessary to be on track to meet the Next Generation Energy Act Reduction Goal. While progress has been made and the steps we have taken mean that total emissions are not increasing above the baseline, the trend over the past five years (2009-2016) shows flat emissions. MPCA. (published December 2018) Greenhouse Gas Emissions Reduction: Biennial report to the Minnesota Legislature. Available at: https://www.pca.state.mn.us/air/greenhouse-gas-emissions-minnesota-0</p>		
	RED	YELLOW	GREEN
	Less than 80% of Next Generation Energy Act Reduction Goal	80%-100% of Next Generation Energy Act Reduction Goal	Meeting or better than Next Generation Energy Act Reduction Goal
	DOWN ARROW	FLAT ARROW	UP ARROW
Emissions increasing, positive slope of 5-year linear trend.	Emissions flat, insignificant slope	Decreasing emissions, negative slope	

CISCO POPULATION	<p>Goal: Healthy and stable cisco population</p> <p>This metric is based on the health of cisco populations. Cisco is a main food source for walleye and trout. The metric is yellow because cisco abundance is low compared to historic levels but not yet dangerously low. The metric is trending downward because populations have declined over a ten-year period.</p>		
	RED	YELLOW	GREEN
	Mean fish per net, less than 1	Mean fish per net: greater than 1 less than 5	Mean fish per net: 5 or greater
	DOWN ARROW	FLAT ARROW	UP ARROW
Based on a ten-year trend line for cisco abundance trend (mean fish per net of sampled lakes) - A negative linear trend with slope of less than -0.1	Based on a ten-year trend line for cisco abundance trend (mean fish per net of sampled lakes) - A flat linear trend with slope between -0.1 and 0.1	Based on a ten-year trend line for cisco abundance trend (mean fish per net of sampled lakes) - A positive linear trend with slope of more than 0.1	