

DRAFT

Minnesota's Climate Action Framework

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CHARGE

In December 2019, Governor Tim Walz signed Executive Order 19-37, establishing a **Climate Change Subcabinet** and a **Climate Change Advisory Council**, and directing state agencies to take action to reduce greenhouse gas emissions, build community resilience, and engage with Minnesotans. This Framework will help guide the work of the Climate Change Subcabinet in achieving those goals.

ACKNOWLEDGEMENT

The draft Climate Action Framework was developed by leadership and staff from the 15 agencies, departments, and boards that make up the Climate Change Subcabinet:

- Board of Water and Soil Resources
- Department of Administration
- Department of Agriculture
- Department of Commerce
- Department of Employment and Economic Development
- Department of Health
- Department of Labor and Industry
- Department of Management and Budget
- Department of Natural Resources
- Department of Public Safety
- Department of Transportation
- Environmental Quality Board
- Housing Finance Agency
- Metropolitan Council
- Pollution Control Agency

Drafts of the document also received review and input by members of the Climate Change Advisory Council and the 11 Tribal Nations who share Minnesota's geography.

Contents

Vision	4	The important role and leadership of Tribal Nations	18
A note on the draft	5	Goal 1: Clean transportation	21
Introduction	6	Goal 2: Climate-smart natural and working lands	28
a. The need for action	8	Goal 3: Resilient communities	37
b. The economic opportunity	11	Goal 4: Clean energy and efficient buildings	45
c. Minnesota’s progress	12	Goal 5: Healthy lives and communities	52
d. Climate equity	14	Goal 6: Clean economy	59
e. How to use this Framework	16		
f. Working together	17		
		Appendix 1: State action steps	
		Appendix 2: Greenhouse gas emission reductions and carbon sequestration	
		Glossary and list of acronyms	

These are available at mn.gov/framework

Vision

Climate change threatens the things Minnesotans love. Our four seasons. Our clean air and water. Our outdoor traditions like hunting and fishing. Our health. And much more.

Climate change is here and happening now. The signs are all around us and we must act.

Yet addressing climate impacts also presents us with a historical opportunity to strengthen our economy, improve our health, and create a more equitable Minnesota for everyone. Minnesotans have always excelled at transforming necessity into opportunity, and the challenge presented by climate change calls on that innovative spirit once again. It will take all of us working together to seize this moment and create a Minnesota that is carbon-neutral, resilient, and equitable.

But if we do, and if we come together like we have so many times in the past, what we achieve will be a Minnesota where everyone feels safe, included, more prosperous, and optimistic about the future for our children and our children's children.



A note on this draft

Climate change is happening now and we are on a course for worse impacts to come. **Communities, businesses, and individuals across Minnesota are acting** to reduce our climate-changing pollution and build resiliency against the changes to come. However, we all need to do more. We also need a plan to ensure we fulfill the tremendous economic opportunity addressing climate change presents.

The Climate Action Framework sets a vision for how Minnesota will address and prepare for climate change. It identifies immediate, near-term actions we must take to achieve our long-term goal of a carbon-neutral, resilient and equitable future for our state. The Framework will **spur our action on climate change**, both as state agencies and beyond.

The Climate Action Framework is a draft. The Climate Change Subcabinet is publishing this draft to advance our conversation with Minnesotans on the work we all must do to reduce greenhouse gas emissions and build resilient communities across our state. This draft is informed by public input received as a part of previous climate work, as well as specific input received on initial Framework concepts during the summer and fall of 2021.

By publishing this draft, we are asking Minnesotans to continue to help us plan and prioritize what we will do together to address climate change. Let us know where we can be bolder, what we may have missed, or what excites or concerns you.

Please take a look, participate in our online input tools, send us an email, and generally **let us know your thoughts.**

Learn how to participate at
mn.gov/framework

Introduction

Climate change is already here and now.

Minnesota's climate is already changing, and that change is impacting the health and economy of all of Minnesota's communities. Damaging storms and floods have increased in frequency, impacting our cities and farms alike. The summer of 2021 brought multiple days of very poor air quality across the entire state from wildfires in Canada and the western U.S., where climate change creates very high fire risks every summer. On average Minnesota has lost 10 to 14 days of lake ice over the past 50 years, impacting lake and fish health and outdoor winter sports enthusiasts and business owners.

Every sector needs to reduce emissions.

To reduce the severity of these kinds of impacts and others, we will need significant emission reductions from every sector of our economy by 2050. These long-term emission reductions will rely on accelerating our current transition to clean electricity, using this clean electricity in our buildings and industrial processes, developing more efficient ways to move around and cleaner transportation fuels, and reducing emissions from and storing carbon in our natural and working lands.

Technology will help us.

Technological transformations are already helping us solve climate changes. Electric vehicles, low-cost electricity from wind and solar, better battery storage, and more are providing opportunities to reduce greenhouse gas (GHG) emissions. New technologies are emerging all the time. By investing in research and design we can lay the foundation for these future solutions, which will help us meet the challenge of avoiding large temperature increases from GHG emissions.

But it won't save us.

Technology alone will not solve our climate change challenges, however. We also need smart planning and new ways of working and collaborating. Investments in job training, grants to organizations to build expertise, and peer-to-peer learning among businesses are just some examples of how we build skills and create opportunity across the state. We also need to support communities in planning for and implementing new technologies so they are prepared to capitalize on innovations.

The Framework is about taking action.

The primary purpose of this Framework is to identify the immediate actions needed to build the foundations that will give us the best chance of avoiding the worst impacts of climate change and being resilient to the changes ahead. While we have made excellent progress in reducing emissions through clean electricity, we have not made the same level of progress in any other source of emissions.

The Framework outlines the body of work we need to accomplish together to build a carbon-neutral, resilient, and equitable future for Minnesota. It also outlines short- and medium-term action steps to set us on the path to achieving this vision. These near-term actions will not achieve all the emission reductions and resiliency that Minnesota needs by 2050. They will, however, accelerate the progress Minnesota has already made and be foundational to the ambitious work we must do together over the next decades. Through both taking immediate action steps and understanding the best science and projections for the future, we can ensure future generations experience a vibrant, resilient, and sustainable Minnesota.

The vision for our state

The vision for our state embodied in this Framework is:



Carbon-neutral

Minnesota substantially reduces GHG emissions and any remaining GHGs released are balanced by an equal amount being removed.



Resilient

Minnesota communities, businesses, and natural environment can prepare, respond to, and recover from the impacts of climate change.



Equitable

Acknowledge and address disproportionate impacts of climate change and their roots in past and present systems; ensure fair distribution of the costs and benefits of action, including to future generations; and ensure meaningful participation in planning.

To get there, we all have a role to play, and state agencies cannot do it alone. This Climate Action Framework outlines priorities and next steps to help Minnesota achieve that vision. The Framework is also an invitation to you, your organization, and your community to join us to achieve a shared vision.

The need for action

A code red for humanity.

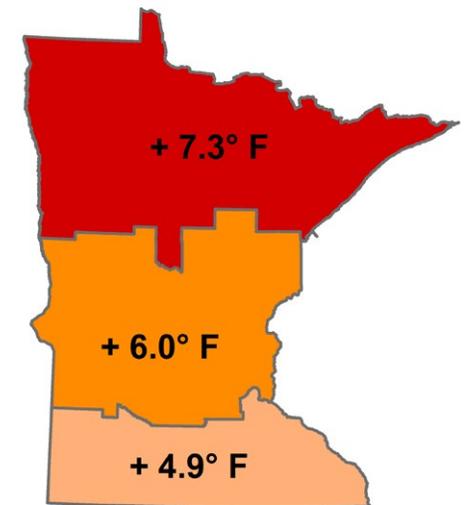
Scientists are clear that we must act in this decade to keep temperature increases in the range of 1.5° and 2.0° Celsius and create resiliency and self-reliance for our communities for the expected temperature increases. In August 2021, the Intergovernmental Panel on Climate Change (IPCC) report issued “a code red for humanity,” saying that urgent action was required if we were to ward off the worst consequences of a warming climate.

Minnesota is already much warmer and wetter.

In Minnesota we are already feeling these effects. Our climate is changing now with unprecedented wetness and warmth. Minnesota’s climate has been undergoing rapid change in recent decades, threatening communities with excessive precipitation, erratic winters, and warmer nights. Winter nights in northern Minnesota are 7.3° Fahrenheit warmer than a century ago, and annual precipitation across the state has increased by an average of 3.4 inches, with southeast Minnesota increasing by twice that amount. Of all our seasons, winter has warmed the most, especially at night and in the northern part of the state.

Most devastating rains on record.

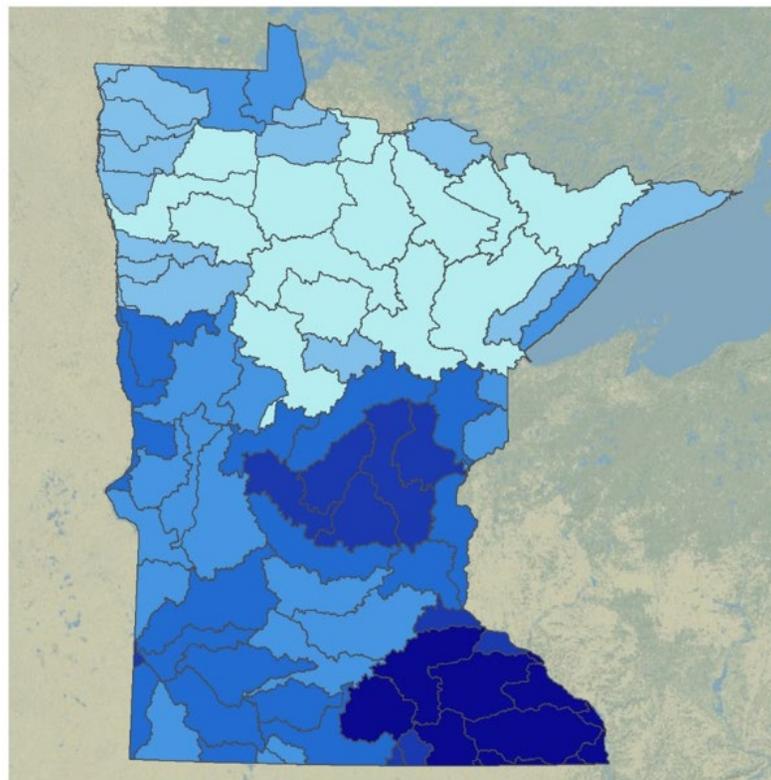
Minnesota now experiences more damaging rains than at any other time on record. Excessive downpours have become more frequent and more intense over the past several decades, and projections indicate that even more extreme precipitation is coming. Extreme storms from climate change are a risk to public health and safety, damage our infrastructure, increase insurance costs, and can have devastating effects on communities resulting in costly clean-ups for families, homes, and businesses.



Change in daily average minimum temperature during winter (Dec-Feb), 1895-2021. Minnesota is getting warmer, especially winter nights in the northern parts of the state.

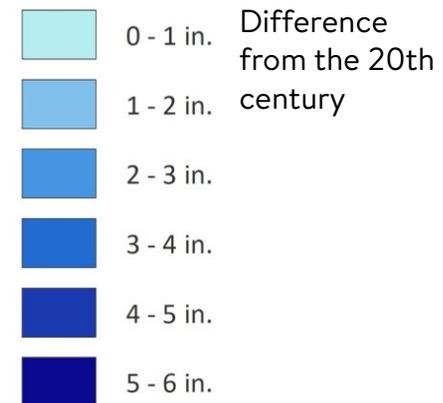
There's more flooding.

Historic flooding feels like it's becoming the norm, rather than exception, in Minnesota. While the images of the devastating flood of 2012 in Duluth are easy to recall, Duluth is not the only city dealing with significant flooding. In 2016, Faribault experienced a large flood event, just six years after a record flood in 2010. These floods caused significant damages to the city's streets and wastewater treatment facility, as well as the city's businesses. These businesses had to close due to the flooding, take immediate actions to try to stave off the flood waters, and then clean up and rebuild when the waters receded. In response, the city of Faribault spent millions of dollars for modifications at their wastewater treatment facility to protect it from future floods and maintain their ability to provide this critical service to their residents in a warmer and wetter climate. These types of impacts harm Minnesotans' financial, physical, and emotional well-being.



Annual precipitation change 2000-2019

Annual precipitation change by watershed for 2000-2019, compared to 20th century averages. Minnesota is getting wetter, especially the southern parts of the state.



There are impacts to our state and our people.

Wherever these events hit, people's lives and health are disrupted and put at risk. Their property is damaged or destroyed, requiring them to rebuild. City services and infrastructure are severely impacted, requiring local, state, and federal funds to assist with the rebuilding. Adapting to our changing climate, creating resiliency in our communities and landscapes, and reducing emissions to minimize the risks for future events are the only ways we can keep Minnesota vibrant and sustainable.



Wildlife habitats are also being harmed, like those of trout and walleye. Beloved north woods species like spruce, aspen, and birch are expected to decline.



Minnesotans' pocketbooks are feeling the effects as well, with increasing costs to home and crop insurance rates. Home energy costs are expected to increase as it costs more to keep houses cool in the summer.



Our health is being threatened by more floods, longer allergy seasons, warming temperatures, expanded tick ranges, and increasing physical and mental health illnesses, injuries, and even deaths.

There is no question we must do more.

The economic opportunity

The need for action to address climate change is also a once-in-a-generation opportunity to create well-paying jobs and save consumers, businesses, and taxpayers money. Weatherizing homes and buildings will reduce energy use and lower Minnesotans' energy costs. Increasing wind production could lower property taxes and provide additional revenue for rural Minnesota counties. Installing and maintaining thousands of new electric vehicle charging stations will bring more jobs to communities across Minnesota.

Currently over 55,000 Minnesotans work in clean energy and energy efficiency jobs, but the potential exists to exponentially increase that number. Minnesota is already an innovation hub with more Fortune 500 companies per capita than nearly any other state in America, and we have strong post-secondary and labor trade schools ready to train the next generation of workers in the skills they need to excel in a clean energy economy.

There will both be many jobs in relatively new sectors of the economy, such as electric vehicles, and also expanded job opportunities in more traditional areas of Minnesota's economy such as agriculture, forest products, natural resource management, and construction. Across these sectors workers will be needed to develop new products, implement new land management practices, grow and maintain trees, improve our heating and cooling systems, retrofit our existing buildings, and more.

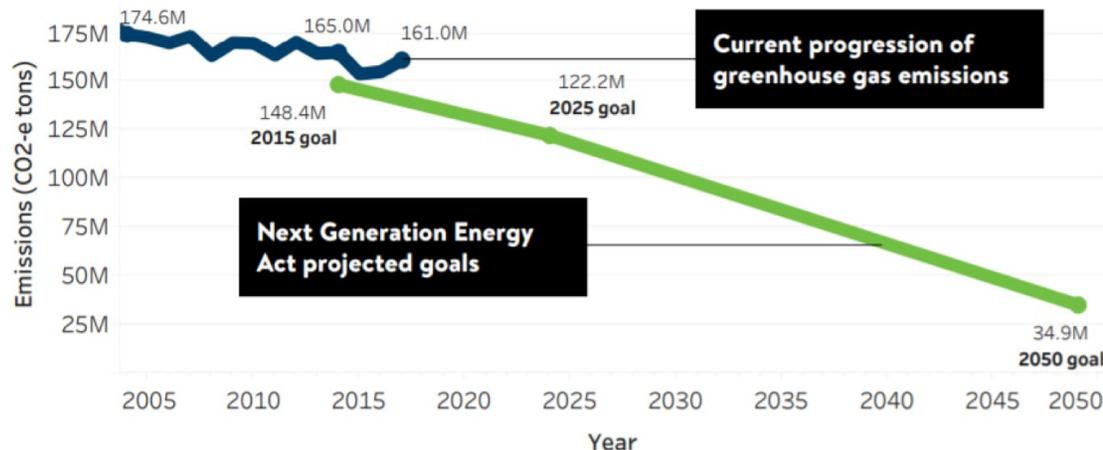
With recent passage of the federal bipartisan Infrastructure Investment and Jobs Act, Minnesota is in line to receive \$6.8 billion in federal funds to rebuild and expand our state's infrastructure, including new electric vehicle charging stations. These funds can be used to help create more resilient communities by investing in transit opportunities and upgrading critical infrastructure vulnerable to climate impacts, such as wastewater treatment facilities, roads, bridges, and more. Additional federal investment could provide even more opportunity for Minnesota.



Minnesota's progress

We are not a leader anymore, and not on track.

In 2007, Minnesota was a national leader in climate action with the adoption of the bipartisan Next Generation Energy Act, setting statutory goals to reduce GHG emissions by 15% from 2005 levels by 2015, 30% by 2025, and 80% by 2050. Minnesota missed its goal in 2015, and currently is not on track to meet future goals, either. Since 2005, overall GHG emissions have declined just eight percent.



In Minnesota, the largest sources of GHG emissions are transportation, electricity generation, and agriculture, forestry, and land use. While Minnesota has made important progress towards these goals in some sectors, in particular the electricity generation sector, we must do more to achieve our Next Generation Energy Act goals and reduce our contribution to global climate change.

We've done research and planning, and engaged Minnesotans.

Since the adoption of the Next Generation Energy Act, the state has completed several significant planning and modeling efforts to understand critical opportunities and challenges for reducing GHG emissions and adapting to climate change. The state agencies and the Governor's Advisory Council on Climate Change have engaged Minnesotans from all across the state in conversations about climate challenges and priorities in their communities.

While Minnesota has slipped as a national leader, we are primed to again lead the way in GHG reductions. Minnesota recently became the first state in the Midwest to adopt Clean Car vehicle emissions standards, which will bring more electric vehicles to Minnesota, and passed the Energy Conservation and Optimization (ECO) Act, a critical upgrade to our Conservation Improvement Program that will create more energy conservation opportunities. Minnesota is poised to make tremendous progress across all parts of our economy and society.

It is not just the state agencies that are working to get Minnesota back on track to achieve our GHG reduction and resiliency goals. Local and Tribal governments are leading the way on adaptation planning, expanding our urban and community forests, and transitioning to clean energy. Our utilities are taking bold steps to phase out coal plants and increase investments in renewable energy. Businesses large and small have made commitments to reduce their emissions and develop the technology that will help the world do so as well.

Minnesota has a strong foundation for climate action, and now is the time to recommit our state to accelerating our work.

Major planning efforts

- **2007:** Adopted the **Next Generation Energy Act**, which created economy-wide GHG emission reduction goals.
- **2008:** Released the Final Report of the Minnesota Climate Change Advisory Group, which offered a preliminary climate change **action plan for the state to achieve the Next Generation Energy Act** emission reduction goals for 2015 and 2025.
- **2010, 2013, and 2017:** Released reports identifying priority areas for Minnesota to **adapt to climate change and build resiliency** and reporting on progress.
- **2016:** Published the Climate Solutions and Economic Opportunity report, which identified **near-term emission reduction** opportunities between 2016 and 2030.
- **2019:** Executive Order 19-37 established a Climate Change Subcabinet and Governor's Advisory Council on Climate Change and directed state agencies to engage communities and identify policies to reduce emissions and build resiliency.

Critical policies

- **2007:** Established Renewable Energy Standard, with a goal of **25% renewable energy by 2025**. Minnesota's utilities are on track to meet and exceed their milestones.
- **2007:** Established an Energy Efficiency Resource Standard that requires utilities to achieve **energy savings equal to 1.5% of their annual sales**.
- **2021:** The Legislature approved funding for **local water infrastructure grants** to help communities plan for stormwater, wastewater, and other community focused resilience.
- **2021:** Passed the ECO Act, a critical update to Minnesota's Conservation Improvement Program, creating additional **energy efficiency opportunities**.
- **2021:** Adopted the Clean Cars Minnesota rule, which preserves **access for Minnesotans to the cleanest, most efficient vehicles** and increases access to electric vehicles.

Climate equity



Let's acknowledge: Some people carry a bigger burden.

While all Minnesotans are affected by climate change, we are not affected the same way. Some individuals, families, and communities will face a bigger burden from climate change than others. Those who are already vulnerable due to a range of social, economic, historical and political factors have less ability to prepare for, cope with, and recover from climate change impacts. Understanding the comparative vulnerabilities in populations is essential to developing effective and equitable strategies for responding to climate change. Likewise, some Minnesotans will benefit from the economic opportunities of climate change, and still others will have greater access to decision-making around climate change solutions. These are all forms of inequity and, if left unaddressed, will make our state less resilient and prosperous for all.

Across Minnesota we know that some groups are at greater risk from climate change than others:

- People of color
- Indigenous people
- Older adults
- People with disabilities and chronic illnesses
- People in rural areas
- People who are socially and economically disadvantaged
- Pregnant persons
- Children
- Future generations

Addressing equity alongside climate change is one of the core principles of this Framework. To do this, we must understand underlying social and economic inequalities that intersect with climate change.

Inequalities & climate change



- Developers, planners, and civic officials have placed industries and highways that have negative health impacts in low-income and communities of color at great rates. These communities already have an unequal health burden that could be made worse by climate change.



- Rural communities are more likely to have less access to communications technologies and broadband, which impacts their ability to fully participate in the economy and decision making.



- Racist housing policies have historically prevented Minnesotans of color from obtaining home ownership, which has impacted families across generations in many ways, including limiting their ability to access money-saving weatherization and efficiency investments in their homes.



- Indigenous communities forced off their original homelands depend on enforcement of treaty rights to be able to access fish and other species for subsistence, cultural practices, and ways of life that are now threatened by climate change.

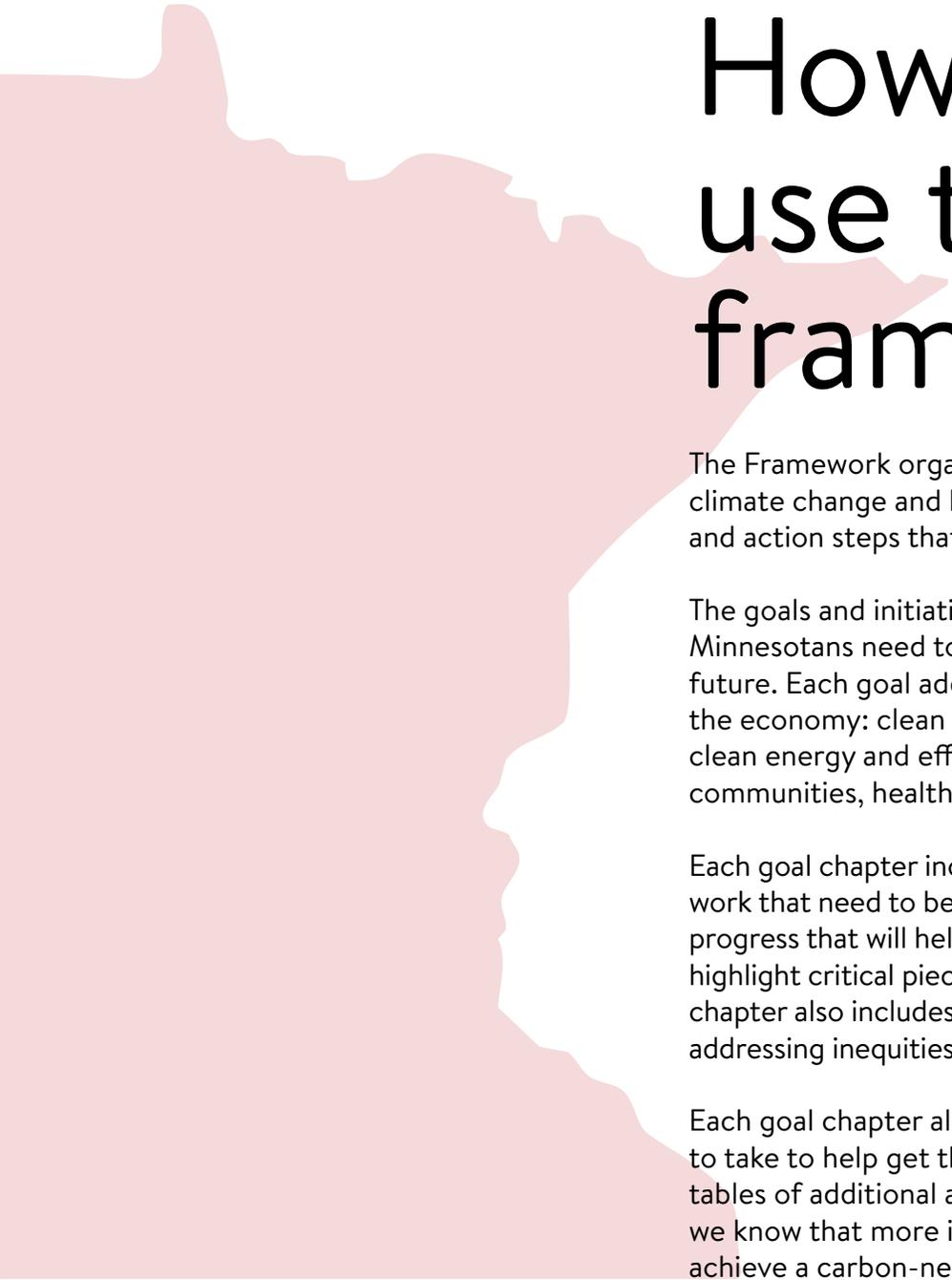


- Children and elderly with underlying health conditions such as asthma may face worse health outcomes from poor air quality, increased pollen, and wildfire smoke.



- People with low incomes spend larger amounts of their income on their home energy bills and their transportation and have fewer financial resources available to deal with the impacts of a changing climate.

Throughout this document, we show how climate actions can address equity. Whether it is electrifying transportation or building soil health, climate solutions can help all Minnesotans thrive and reduce impacts to the hardest hit communities. Equity is cross-cutting through all sectors and goals in this Framework. By bringing many voices to the table and reducing barriers to participation, we can build a climate vision that Minnesotans can stand behind.



How to use this framework

The Framework organizes and sets a vision for what we need to accomplish to address climate change and build resiliency. It is organized around six key goals with initiatives and action steps that could help Minnesota achieve those goals.

The goals and initiatives throughout the Framework broadly describe the work that Minnesotans need to do together to achieve a carbon-neutral, resilient, and equitable future. Each goal addresses an area of climate action. Three are based on sectors of the economy: clean transportation, climate-smart natural and working lands, and clean energy and efficient buildings. The other three goals cut across sectors: resilient communities, healthy lives and communities, and a clean economy.

Each goal chapter includes initiatives and sub-initiatives that identify the types of work that need to be accomplished within each goal. It also includes measures of progress that will help us know if we are on track to meet our goals. The chapters highlight critical pieces of context, as well as opportunities for working together. Each chapter also includes some background on equity considerations and opportunities for addressing inequities as we move toward achieving our climate goals.

Each goal chapter also highlights priority actions the state agencies are proposing to take to help get the state on track to achieve that goal. The appendix includes tables of additional action steps the State could take. These are important steps, but we know that more is needed and the State can't do it alone. It will take all of us to achieve a carbon-neutral, resilient, and equitable Minnesota.

Working together [to shape our future]

Who does what

The Minnesota state government has an important role to play in reducing GHG emissions and building resiliency across Minnesota. State scientists track and project climate change impacts in our state and data analysts quantify GHG emissions. State agencies have regulatory programs that can require cleaner vehicles and more efficient buildings. Agencies manage grant and loan programs that can help individuals, businesses, and local and Tribal governments reduce emissions and adapt to our changing climate. While state agencies have an important role to play, we cannot achieve our climate goals alone. Tribal Nations, local governments, businesses, the non-profit sector, communities, and individual Minnesotans will all contribute to our climate future.

The state legislature and federal government both direct state agencies to act through passing laws and allocating funds. Individuals, businesses, and local and Tribal governments own and control much of Minnesota's land and buildings. While state government can regulate, support, and encourage action by these groups, it takes the willingness of people across Minnesota to act for us to achieve our goals.

How Minnesotans are shaping the framework

This document is a draft of the Minnesota Climate Action Framework (Framework) and an opportunity for your input. Minnesota state agency staff teams developed the Framework using expertise, analysis, and public input. They then shared Framework concepts with Minnesotans during the summer and fall of 2021 on the Our Minnesota Climate webpage, through stakeholder meetings, and through government-to-government conversations with the Tribal Nations who share our geography. The Governor's Advisory Council on Climate Change also reviewed and provided input on the draft concepts and priority actions. The Climate Change Subcabinet considered those ideas when identifying and shaping the goals, initiatives, and action steps contained in this Framework.

Next steps

The Climate Change Subcabinet and Advisory Council on Climate Change are now sharing this draft with Minnesotans to uncover new ideas and improve on the ideas in the draft. Visit mn.gov/framework to share your opinions. The Climate Change Subcabinet plans to finalize the Framework later in 2022.

You: join us!

Addressing climate change will require us all to act. We all have a role to play. As you review the Climate Action Framework, the Subcabinet and Advisory Council encourage you to think about your role and how you, your community, and your organization might fit into the Framework and your role in achieving its vision.

DRAFT

The important role and leadership of Tribal Nations

The Dakota, Anishinaabe, and numerous other Indigenous peoples, whose cultural, spiritual, and economic practices are intrinsically woven into this landscape, hold this land sacred. The relationship that the Anishinaabe and Dakota people have with the natural environment is interwoven in their cultural identity and traditional practices. The State of Minnesota recognizes them as original stewards of this land and all the relatives within it, who had thriving and vibrant communities prior to European settlement.

A shared climate fate

Today, the State of Minnesota shares geography with 11 Tribal Nations: Bois Forte Band of Chippewa, Fond du Lac Band of Lake Superior Chippewa, Grand Portage Band of Lake Superior Chippewa, Leech Lake Band of Ojibwe, Lower Sioux Indian Community, Mille Lacs Band of Ojibwe, Prairie Island Indian Community, Red Lake Band of Chippewa, Shakopee Mdewakanton Sioux Community, Upper Sioux Community, and the White Earth Nation. In addition, the Ho-Chunk, Cheyenne, Oto, Iowa, Hidatsa, Arikara, A'aninin, Cree, Blackfeet, Assiniboine, and the Sac and Fox Tribes all also acknowledge Minnesota as important to their Tribal histories. By offering this land acknowledgement, the State affirms Tribal sovereignty and holds itself accountable to recognize, respect, and counter the historical and contemporary

injustices that continue to impact Indigenous people, through mutually beneficial partnerships, research, policies, and practices that respect Indigeneity.

Due to shared geography, history, and people, the climate fate of the State of Minnesota and Tribal

Nations are deeply intertwined. Treaties are nation-to-nation agreements among sovereign entities – political groups with the ability to set rules for their own communities, determine their own membership, care for their own territory, and enter agreements with other sovereign entities. Dakota and Anishinaabe are inherently sovereign as Indigenous people of this land; sovereignty isn't given, nor can it be taken away. As sovereign governments, Tribal Nations have a unique relationship with the State of Minnesota and each Tribal Nation in Minnesota has their own individual priorities, practices, and histories. The State recognizes and respects the need to coordinate and consult with each individual Tribal Nation on climate actions.



Mni Sota Maḵoḵe

Minnesota comes from the Dakota name for this region, Mni Sota Maḵoḵe — “the land where the waters reflect the clouds.”

Honoring our responsibility

Tribal Nations and their communities simply cannot remove themselves from their homeland and move to another location due to impacts from climate change. Most of the land in what is now Minnesota was ceded by the Anishinaabe and Dakota people to the United States. These treaties allowed the United States to remove Indigenous people from their original homelands and move them to smaller land bases. These land bases are federally and state recognized to this day, but the connection that Anishinaabe and Dakota people have to their original homelands remain. Additionally, the Anishinaabe and Dakota people reserved rights to hunt, fish, and harvest natural resources from ceded lands and waters. The ability to exercise those treaty rights depends on clean water, air, and healthy ecosystems. The State of Minnesota must uphold treaty responsibilities in all State decisions, public processes, and policies by protecting the land, native foods, and the cultural heritage of Indigenous Minnesotans.

Indigenous knowledge about the interconnectedness of place, subsistence lifeways, and the natural environment has been passed on for generations. In Anishinaabe and Dakota knowledge systems, the Earth is sacred and all living beings – plants, animals, land, and water – are relatives and ancestors. Actions and decisions made by Tribal Nations are based on this holistic knowledge and also consider potential impacts to the next seven generations. The interconnectedness that Tribal Nations have with everything that surrounds them and the related teachings passed down from generation to generation, is founded in the principles of science, sustainability, resource protection, and environmental health. The State respects and acknowledges these principles from Indigenous knowledge and will work with Tribal Nations on how to apply this knowledge to address climate change.

Consultation and collaboration

State policies have impacts on Tribal Nations and their members living within and outside of reservation and community boundaries. The State of Minnesota is committed to working with Tribal Governments both through formal consultation between government leaders and informal coordination and collaboration. Consultation is required by Minnesota statute 10.65, Government-to-Government Relationship with Tribal Governments. Coordination with Tribal government staff is not the same as formal consultation between government leadership, but is founded on the principles of formal consultation set forth in Minnesota Statute 10.65.

Climate change policies have the potential to impact Tribal Nations; timely and meaningful consultation establishes mutually beneficial outcomes. As states develop, review, and implement policy, rules, and law, Tribes are also developing, reviewing, and implementing policies, rules, and laws within their territories. Consultation with Tribes helps with smoother interaction across these interconnected regulatory structures. The State must maintain ongoing collaboration and initiate government-to-government consultation at the beginning of climate policy or program development and not in the final stages when decisions have already been made.

Supporting Tribal priorities

Shared priorities with each individual Tribal Nation and the State are a necessary and integral part of the decision-making process for State climate actions. These priorities include opportunities for collaboration in monitoring, assessments, funding, policy, and restoring culturally important habitats and species in areas where they have been lost or degraded due to

climate change. Some Tribal environmental, energy, housing, or other policy priorities may not be pursued explicitly to address climate change, but contribute to reducing emissions and building resiliency. Supporting Tribal-led efforts across all sectors including energy, waste management, air quality, forestry, wildlife, carbon sequestration, fisheries, and others contributes to mitigating impacts of climate change and benefits all residents of Minnesota.

Through coordination meetings with Tribal environmental staff, review of Tribal climate assessments and plans, and formal comments on a variety of State actions, the State recognizes that water quality is a priority shared by all Tribal Nations. Water supports and connects all life including culturally significant resources, such as wild rice, and aquatic species that support subsistence lifeways. Another important shared priority is adequate and affordable housing and energy for all Tribal communities and members.

Strategies to minimize the impacts of climate change will require a range of options for financing. As the State pursues climate funding opportunities, the State will consider shared Tribal-State priorities. The State will also collaborate with and support Tribal Nations on their pursuit of funding. When the State creates a grant opportunity, the State will ensure the Tribal governments are eligible to apply and that the requirements for reporting, matching funds, and eligibility consider Tribal needs and constraints.

The State will explore with the Tribal Nations additional opportunities for collaboration and partnerships in this shared climate change work, such as through data sharing and collaborative resource management. The State partners with individual Tribal Nations on a variety of projects through Memorandums of Agreements. These agreements are

important to recognize and respect Tribal sovereignty as well as traditional knowledge. The State will continue to support the need of Memorandum of Agreements, as appropriate, for climate projects with Tribal Nations. State agencies have information and data to support Tribal climate efforts and will continue to make this information available to Tribal Nations and look for additional opportunities to collaborate on gathering, analyzing, and sharing data. When requested and where possible, the State will also provide letters of support for projects and funding applications that advance shared priorities.

The State recognizes that the time and energy Tribal Nations and their respective Tribal staff working on climate change strategies is valuable. The state will continue to share information with respective Tribal Nations early and often regarding climate actions and will continue to strive for just and equitable outcomes while recognizing and respecting Tribes' sovereign status. Climate change directly impacts Tribal Nations and communities, their members, and their lifeways. As the State of Minnesota works toward solutions to climate change, these solutions must include the knowledge and voices of Tribal Nations.

Clean transportation

GOAL
1

MN CLIMATE
ACTION
FRAMEWORK

Connect and serve all people through a safe, equitable, and sustainable transportation system



SHORT FORM

The challenges Transportation is the #1 source of greenhouse gases in Minnesota. Land use patterns and unsafe, inconvenient, and unaffordable options to driving alone make car travel the most convenient choice for many Minnesotans. Cars in Minnesota are mostly powered by fossil fuels that emit climate pollution and air pollutants that negatively affect health, especially for disadvantaged communities. A warmer and wetter Minnesota causes risks to our infrastructure.

The vision Minnesota's transportation system is sustainable and resilient to a changing climate and supports transportation options for all Minnesotans as well as technology to reduce pollution. Walking, biking, rolling, and transit options are plentiful.

Priority actions

More funding for non-motorized transportation.

Evaluate current funding priorities and direct more resources towards non-motorized transportation to support a comprehensive statewide pedestrian and bicycle network.

Increase transit service to create more reliable and convenient transit networks, with initial priority given to routes in communities where transit is essential for travel and residents are disproportionately impacted by air pollution.

Promote more transport options – land use planning that prioritizes multimodal transportation options.

Develop a Clean Fuels Standard to incentivize increased investment in a broad portfolio of cleaner fuels, including ethanol, biomethane, lower-carbon biofuels, renewable fuels, electricity, and charging infrastructure.

Regional charging. Coordinate with neighboring states, Tribes, and other partners to implement the Regional Electric Vehicle Midwest Memorandum of Understanding, which will establish an EV charging network across the Midwest.

Develop a Minnesota Strategic Electric Vehicle Plan that includes state actions to increase EV charging infrastructure, increase EV access and availability, and educate communities about the benefits of EVs.

Measures of progress



Reduce GHG in the transportation sector 30% by 2025 and 80% by 2050.



Decrease vehicle miles traveled by 2050.



Increase the number of electric cars and light trucks on Minnesota roads to 20% by 2030.



CONTEXT

The largest sector

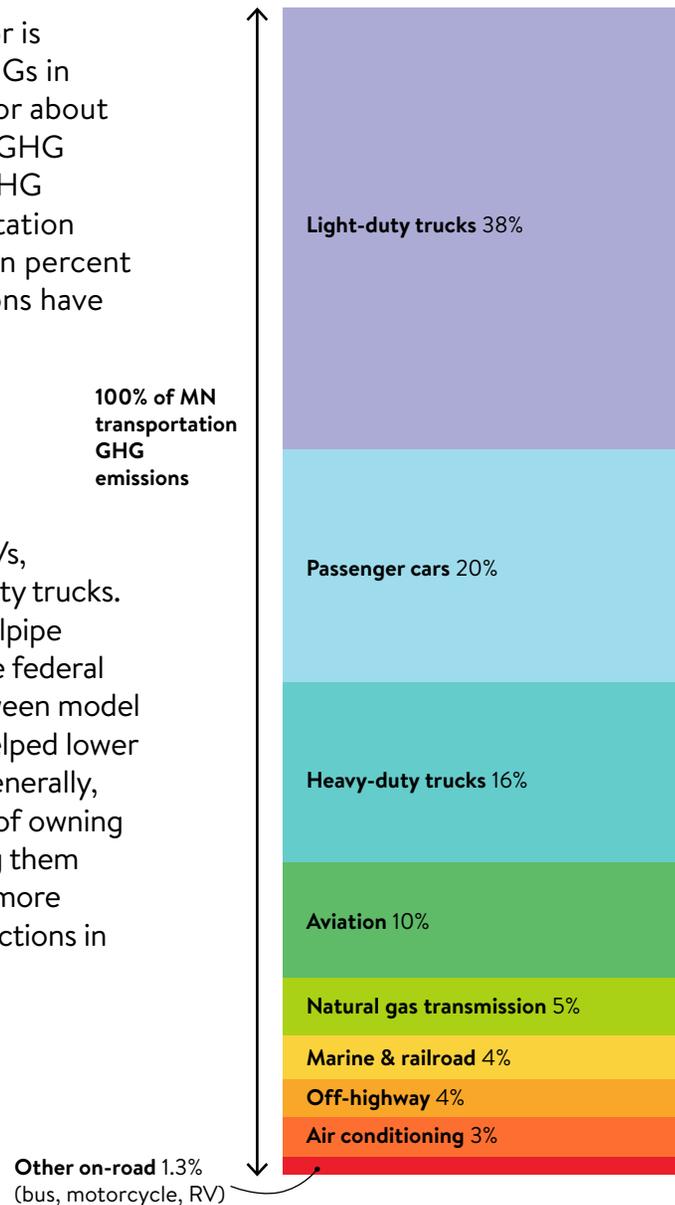
The transportation sector is the largest source of GHGs in Minnesota, accounting for about one quarter of the total GHG emissions in the state. GHG emissions from transportation decreased by about seven percent since 2005, but reductions have leveled off since 2016.

Within the transportation sector, more than 70% of emissions come from passenger vehicles, light-duty trucks, including SUVs, and medium- to heavy-duty trucks. More stringent vehicle tailpipe emissions standards at the federal level – implemented between model years 2012 and 2020 – helped lower vehicle GHG emissions generally, but the consumer trends of owning larger vehicles and driving them more miles is preventing more significant emissions reductions in this sector.

100% of MN transportation GHG emissions

Transportation sector 2018

Breakdown of sources of greenhouse gas emissions



Supporting multimodal transportation options

More walkable, bikeable, and transit-oriented communities can reduce the need for vehicle travel and related emissions. Transportation options like walking, biking, and transit advance transportation equity for those who cannot drive due to disability, age, economics, or personal preference. Minnesota has an opportunity to add new and complete existing walking, biking, and transit networks in our state.

Electric vehicles

Robust and readily available electric vehicle charging infrastructure is necessary for Minnesota to move forward toward a cleaner transportation future. While Minnesota has made progress by building out over 1,171 EV chargers, more work is needed along corridors and in communities to create a fast, reliable EV charging network.



Minnesota is building out a network of EV fast chargers along highway corridors.

WHAT WE WILL DO TOGETHER

Make a cleaner, low-carbon transportation future

Minnesota's future transportation system will be safer, cleaner, and more comfortable, affordable, and convenient for all users, whether they drive, bike, walk, or roll where they need to go.

Initiative 1.1

Connected communities

Maintain and improve multimodal transportation connections to reduce emissions and congestion

► Increase investment in safe, comfortable, and convenient walking, biking, and transit opportunities

Improving infrastructure for biking, walking, and transit and increasing transit service will make these options more reliable, safe, convenient, and affordable for all Minnesotans. A comprehensive and connected statewide bicycle network, expanded transit networks and increased service, and safe walking environments will benefit all Minnesotans.



► Create more opportunities for biking, walking, transit, and telecommuting

Encouraging Minnesotans to use new modes of travel takes more than developing the infrastructure – understanding active transportation needs and preferences, providing education and outreach, and demonstrating success can be powerful ways to encourage uptake in biking, walking, transit, and telecommuting.



► Plan for land use that supports multimodal transportation options

Climate-smart land use planning and development can make it safe, pleasant, convenient, and affordable to bike, walk, roll, or ride transit to the places where they work, live, learn, and play. Governments and communities can plan to support options that will bring lasting benefits to communities.



► Maintain and improve transportation infrastructure for resiliency, GHG mitigation, and other benefits

Transportation infrastructure construction and maintenance can apply reused materials, equipment, and work practices that minimize the carbon footprint of transportation construction projects. Minnesota can leverage transportation infrastructure to provide additional benefits like broadband connectivity and stormwater management.



Initiative 1.2 Clean and efficient vehicles

Accelerate the transition to electric vehicles, alternative fuels, and greater fuel efficiency

► Increase the use of clean fuels, including lower-carbon biofuels

Cleaner fuels can reduce GHG emissions and other harmful air pollution from vehicles. Cleaner fuels can include electricity and biofuels, and both electricity and biofuels can get cleaner with investments in renewable energy, best agricultural management practices, and advanced industrial technology.



► Expand electric vehicle (EV) charging infrastructure

To enable all Minnesotans to drive electric, we need to expand the network of EV charging stations across the state and within in every community. A robust EV charging network with investments from public and private sectors will support charging both at home and on the go.



► Increase electric vehicle availability and access

To encourage Minnesotans to switch to an EV for light-, medium-, and heavy-duty vehicle purchases, EVs must be widely available and affordable. Providing incentives and supporting dealerships in supplying and selling a wide variety of EVs for different lifestyles, work, and price points will encourage EV adoption.



► Accelerate the transition to EVs through education, training, and outreach

As EV technology has rapidly improved, opportunities for consumer choice, EV-related jobs, and clean transportation investment are expanding. Minnesota needs to improve consumer understanding of EVs through education and outreach in partnership with auto dealers, especially in underserved communities; train the clean transportation workforce; and attract transportation investment to support clean, family-sustaining jobs in Minnesota.



► Improve vehicle efficiency and emissions standards

State and federal rules can require improved vehicle efficiency and reduced emissions from new vehicles. GHG emissions go down over time as older vehicles are replaced with new, cleaner ones. Programs can encourage more rapid replacement of older vehicles.



We all have a role

Transportation touches all Minnesotans, all levels of government, and all parts of our economy, and we all have a role to play in achieving a cleaner transportation system.



- Federal, state, Tribal, and local governments must all work together to plan, fund, and build a resilient transportation system that prioritizes safe, affordable, and clean multimodal transportation options.
- Governments, businesses, and non-profits all invest in expanding the infrastructure needed to support low-carbon fuels and electric vehicles.
- Organizations can encourage their employees and visitors to use cleaner transportation options through education and incentives.
- When safe and affordable options are available to them, individuals can walk, roll, bike, take transit, telecommute, consolidate short trips, rideshare, and prioritize electric transportation options.

Co-benefits of action

Connected communities and clean fuels support many additional benefits:



- Jobs in installing and maintaining clean fuel infrastructure and manufacturing clean transportation technology
- Healthier communities from more active transportation and reduced pollution
- Safer communities with fewer traffic accidents
- More accessible transportation that supports the movement of all Minnesotans, regardless of physical abilities
- Cleaner air and water
- Economic growth in rural communities

Big impacts

What actions will reduce the most GHG emissions?

With transportation, these action steps that could have the biggest impact:

- ★ Transitioning to cleaner fuels, including electricity and biofuels, through incentives and policies such as a Low Carbon Fuel Standard
- ★ Increasing EV adoption through making EVs more convenient and affordable, requiring and incentivizing manufacturers to sell EVs in Minnesota, and increasing charging infrastructure
- ★ Increase efficiency of vehicles fueled by traditional transportation fuels, such as gasoline and diesel so they produce less emissions per mile

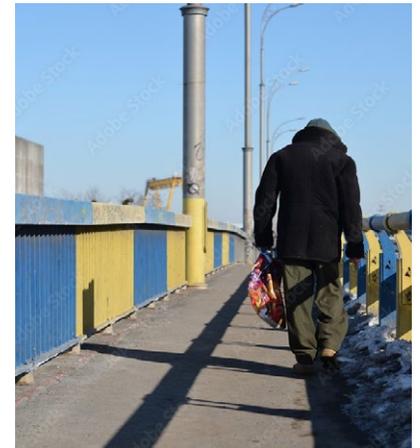
EQUITY

Transportation is critical for all Minnesotans to access jobs, education, healthcare, recreation, family, and more. An equitable transportation system would fairly distribute the benefits and burdens of transportation spending, services, and systems and ensure that all Minnesotans can access the places they need to travel safely, conveniently, and affordably. Understanding how the transportation system, services and decision-making processes help or hinder the lives of people in underserved and underrepresented communities in Minnesota is necessary to ensure equitable clean transportation strategies that support the needs of underserved and underrepresented communities.

Rural areas have less reliable, safe, and practical options for transportation, such as public transit and non-motorized transport. Rural areas are also home to more elderly populations and lower income individuals, so providing reliable and affordable transportation options is important for these communities to access work, food, healthcare, and more. Investments in cleaner fuels, EV infrastructure, and alternative modes of transportation, where feasible, can help rural communities thrive while transitioning away from internal combustion engines. Supporting cleaner fuel development can ignite new businesses in rural areas that develop innovate fuels and energies for our changing transportation system.

Historically and today, communities of color disproportionately bear the burdens of our transportation system without having fair access to its benefits. In Minnesota, Black, Indigenous, and People of Color as well as lower-income individuals are exposed to higher levels of air pollution as a result of an ongoing history of structural racism and inequitable policies. Policies such as racial covenants, redlining, and the destruction of Black communities to build Interstates 94 and 35W, as well as zoning and permitting decisions that concentrate pollution sources in communities of color and under-resourced communities continue to harm these communities. These communities continue to be placed at greater risk of negative health impacts from traffic's pollution, noise, and physical hazards, such as traffic accidents.

As Minnesota plans for climate action, we must begin to address these inequities by prioritizing investments in clean and safe transportation infrastructure and improved transportation affordability, safety, and options in the communities that have historically been underserved or harmed by our transportation system.



Climate-smart natural and working lands

Enhance climate benefits by absorbing and storing carbon, reducing emissions, and sustaining resilient landscapes



SHORT FORM

The challenges Long-term trends in climate and weather patterns throughout the year, such as increasing temperatures and more extreme rain events, present formidable challenges to management of natural and working lands.

The vision Healthy natural and working lands absorb and store more carbon, produce food and other products, sustain local economies, enhance climate resiliency, and improve the quality of life for all Minnesotans.

Priority actions

Accelerate forest, grassland, and wetland restoration and management in a way that increases carbon sequestration and storage in the wood and other products harvested from these areas.

Store more carbon. Promote actions by all Minnesotans to store more carbon on their croplands, in their yards, in open spaces and on public lands.

Restore and expand habitat complexes and corridors and increase species diversity to promote climate resiliency and adaptation of natural lands.

Priority actions

Incentivize and expand climate-resilient agricultural and forestry.

Best Management Practices (BMPs) and implementation assistance (such as access to technologies, equipment, and seed and plant material).

Increase water storage, infiltration, and drainage management

to reduce runoff and minimize downstream flooding, erosion and habitat loss.

Invest in new markets and supply chains

for crops that keep soil covered year-round, and for wood products that increase carbon storage and substitute for more fossil-fuel intensive materials.

Avoid grassland, forest, and wetland conversion to other land uses that reduce carbon storage.

Prioritize groundwater and drinking water protection in vulnerable areas.

Promote local and community-based agriculture

to reduce transportation needs and increase food access, especially in underserved communities.

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Measures of progress



Increase carbon annually sequestered in natural and working lands by 25% by 2035 from 2014-2018 average levels, through restoration, management, and using climate-smart practices.



Reduce annual GHG emissions in the working lands sector by 25% by 2035 from 2018 levels.



Enhance biodiversity and protect habitat corridors on 350,000 acres by 2035.

CONTEXT

Opportunity to absorb and store carbon and reduce emissions

Minnesota's varied landscapes – croplands, pastures, forests, woodlands, prairies, wetlands, and our more than 10,000 lakes – are part of our identity. They are also an essential part of our climate solution. An acre of grassland can hold as much as 78 tons of carbon while an acre of mature evergreen forest can hold as much as 140 tons of carbon. Forest products store carbon outside of forests—sometimes for long periods of time—and can replace fossil-fuel intensive products. Furthermore, agricultural lands not only provide food, fiber, and energy, they also offer great opportunities to store carbon in healthy soils, and reduce GHG emissions from fertilizer, livestock, and by generating renewable energy.

Economically viable solutions are important and possible

Most farms in Minnesota are family-owned small businesses operating in competitive national and international markets, with limited control over price and profit margins. In this environment, innovations that benefit climate must be made carefully to avoid undue risk of financial losses. There are also no “one-size-fits-all” solutions for increasing carbon sequestration in forests, grasslands and other landscape types – effectiveness depends on site conditions, climate vulnerability, timber markets (for forested lands) and commodity markets (for agricultural lands), and federal, state and local policies and practices.

Land stewardship

Actions that sequester and store more carbon and enhance the climate resiliency of natural and working lands have many added benefits – from improving habitats for deer, waterfowl, pheasants, pollinators, and many threatened and endangered species, to protecting future food production, and water quality. And by supporting and taking climate action on natural and working lands – whether on their own property or by advocating for good stewardship of public lands – all Minnesotans can join the effort to mitigate and adapt to climate change so we, and future generations, can continue to benefit from the amazing landscapes that Minnesota provides.

WHAT WE WILL DO TOGETHER

Innovative approaches to create a more resilient landscape

Agricultural and natural lands are integral both to reducing climate change and creating a more resilient landscape that can better adapt to the effects of climate change.

Initiative 2.1 Carbon sequestration and storage in forests/woodlands, grasslands, and wetlands

Manage forests, grasslands and wetlands for increased carbon sequestration and storage

► **Maintain, expand, and actively manage forestlands**

Active forest management promotes carbon uptake, adapts forests to future climate stressors, and reduces emissions from diseases, pests, and wildfires. Expanding forest cover where ecologically and economically appropriate strengthens the carbon sink.



► **Protect, restore, and manage peatlands and other wetlands**

Protecting existing peatlands and other wetlands, and restoring drained peatlands currently used for crops and pasture will increase carbon storage.



► **Protect, restore, and manage grasslands**

Grasslands with high native plant species diversity are of greater value for wildlife and pollinators, and store more carbon, than low diversity grasslands. Grasslands provide an array of other ecosystem services and contribute to the livestock sector of the agricultural economy.



► **Promote actions by all Minnesotans to store more carbon on natural and working lands**

Small-scale actions can add up to store carbon and bolster community resiliency. Residential and urban pollinator gardens, community boulevard trees, and woodland stewardship projects have important roles to play.



Initiative 2.2 Climate adaptation of natural and working lands

Enhance the climate adaptation potential of plant and animal communities – including crops – of natural and working lands.

► Conserve and enhance biodiversity

Areas with high levels of native plant diversity provide the best wildlife and pollinator habitat, are most resistant to invasive species, and are best able to adapt to our future climate.



► Identify and promote land management practices that enhance climate resiliency

Many land management practices, such as timber harvest, soil health practices, and grazing, can be done in a way that enhances climate resiliency, creates wildlife habitat, and contributes to the economy. Strategic habitat restoration helps connect plant and wildlife populations.



► Promote added benefits of natural lands in climate change adaptation

Grasslands, wetlands, and forests store and absorb potential floodwaters, reduce erosion, provide wildlife and pollinator habitat. They also contribute to the livestock, timber, recreation, and tourism economies as well as our state's cultural values.



Initiative 2.3 Healthy farmland soils and systems

Accelerate soil health practices that reduce emissions and enhance carbon storage, water quality, and habitat.

► Increase soil organic carbon content and reduce erosion

Practices such as cover crops, conservation tillage, diverse crop rotations, buffers, shelterbelts and hedgerows can help to store carbon in soils and biomass, reduce use of fertilizers and improve resilience to precipitation fluctuations. Emerging practices such as the use of biochar on cropland and pastureland should be considered as well.



► Manage nutrients to reduce emissions

Nitrous oxide from fertilizer and manure and methane from manure are respectively about 300 and 30 times more powerful GHGs than carbon dioxide. Precision agriculture technologies, nitrification inhibitors, split nitrogen fertilizer applications, and similar nutrient management practices can reduce nitrous oxide emissions. Advanced technologies for manure management,



such as acidification and anaerobic digestion, can reduce methane emissions. Proper nutrient management also provides agronomic benefits and improves profitability.

► **Enhance carbon capture on livestock grazing land and cropland**

Practices such as managed grazing of pasture, short-rotation woody crops, and planting of shelterbelts and windbreaks can all increase carbon sequestration and diversify the agricultural economy.



► **Manage land for multiple climate benefits**

Support for farmers to combine climate-resilient best management practices (BMPs) through programs such as the Minnesota Agricultural Water Quality Certification Program (MAWQCP) and various State and USDA endorsed conservation practices can improve profitability while decreasing emissions and improving soil health, water quality, and wildlife habitat.



Initiative 2.4

Sustainable landscapes and water management

Reduce GHGs and improve landscape resiliency through multi-purpose water storage and management practices.

► **Manage landscapes to hold nitrogen and retain rainfall and snowmelt**

Planting native vegetation and perennial crops in source water protection areas can promote infiltration, store more carbon, reduce nitrous oxide emissions, and protect drinking water supplies.



► **Manage landscapes to hold water and reduce runoff**

Climate change is making Minnesota's climate wetter, with more frequent and higher-intensity storms. Water storage and treatment in targeted areas can reduce downstream flooding and erosion. Practices such as wetland restoration, drainage water management, and buffer establishment can build resiliency by reducing flow rates and velocities, improving stream stability and enhancing wildlife habitat.



Initiative 2.5 Investments in emerging crops, products, and local economies

Invest and support research in emerging agricultural and forest products, reduce waste and expand economic opportunities.

► **Invest in climate-smart agricultural products and practices through development of new or expanded markets, supply chains, research, and promotion**

Perennial and winter annual cover crops, such as those developed through the University of Minnesota's Forever Green Initiative, (i.e., Kernza and winter camelina) keep soil covered and increase carbon storage. By seeking out and purchasing products made from these crops, consumers can support local economies. Research is needed to assess the carbon, nitrogen and methane reduction potential of such crops and cropland systems. Research and development of emerging technologies (for example, nitrogen-fixing corn or low-emissions farm equipment) will also open new pathways toward climate-smart agriculture. Expanding uses and demand for proven perennial crops such as alfalfa are also important.



► **Promote the use of forest products that store carbon and reduce GHG emissions**

Enhancing markets for existing long-lived wood products is an effective pathway for storing carbon. Stimulating research on emerging forest products—engineered wood products, biochemicals, biofuels, and environmental remediation products—will lead to low-carbon substitutes for fossil-fuel intensive products. Beneficial uses of waste wood also have the potential to reduce GHG emissions.



► **Support local food markets, urban agriculture, and emerging farmers**

Food produced and consumed locally can reduce emissions from transportation of goods. It can also support local farmers and entrepreneurs, promoting economic vitality, and provide underserved communities with access to healthy, fresh food, and economic opportunities.



► **Reduce waste and promote beneficial uses of materials**

Incorporating composting as an accepted agricultural practice (as determined by the Natural Resources Conservation Service) would enhance soil health. Supporting local and regional composting programs, Zero Waste challenges, and beneficial uses of waste wood will contribute to emissions reductions.



Big impacts

What actions will reduce the most GHG emissions?

How we manage our natural resources and lands can help reduce GHG emissions and store carbon. The key action steps that will have the biggest impacts on GHG emissions and storage are:

- ★ Protecting, restoring, and managing our forests, prairies, and wetlands
- ★ Applying agricultural practices that can sequester carbon

We all have a role

Minnesotans are surrounded by their natural and working lands, whether they live in a rural community, the suburbs, or the urban core. How our parks, agricultural lands, forests, wetlands, and grasslands are managed affects our climate and our quality of life. We all have a role to play in managing, protecting, and restoring our natural and working lands.



- Businesses, educational institutions, and governments need to work together to fund research and development of the best climate-smart land practices and then educate landowners on their use and benefits.
- Governments and organizations can protect key natural lands and implement best practices such as green infrastructure on developed lands.
- Individuals can purchase locally-produced food and consumer goods, reduce food waste, and plant and tend trees and native plants.

Co-benefits of action



Climate-smart natural and working land management supports a broad array of ecological services and cultural benefits, including:

- Reduced surface and groundwater pollution, which in turn supports safe drinking water and swimmable and fishable lakes and rivers
- Stronger agricultural, forest, recreation, and tourism economies, especially in rural communities
- A more resilient food supply that supports healthy lives, especially in under-resourced communities
- The many cultural, recreational, health, and spiritual benefits of natural lands and the plant and animal communities they support

EQUITY

All Minnesotans need clean air and water, rely on sustainably produced foods, and suffer from events such as floods, heat waves, and prolonged droughts, but opportunities to enjoy and benefit from Minnesota’s natural and working lands are not equitably distributed. Structural injustices have historically influenced land access, ownership, management, and protection. Tribal communities have been displaced, lost sacred lands and species. Underserved racial and ethnic communities have also been disproportionately impacted by limited access to nature, exposure to pollution, lack of shared decision making, and opportunities to co-manage lands. Agricultural opportunity has not been equally accessible to all Minnesotans due in part to laws and programs, such as the 1862 Homestead Act, which distributed essentially free land to mostly white Americans and immigrants, and 20th-century U.S. Department of Agriculture grant and loan programs, which had documented racial bias in their distribution. Challenges continue today, including access to capital, government programs, and land.



While acting to address climate change, we must also reduce inequities in access to the benefits of our natural and working lands by:

- Removing barriers that prevent entry into and competitive markets for sustainable farming and timber production, such as lack of access to capital and land.
- Developing employment programs in urban areas and with populations who are underrepresented in agriculture, forestry, and natural resource conservation professions, to provide career paths into those sectors.
- Increasing access to and availability of healthy food choices, especially in under-resourced communities, to improve community health, reduce emissions, and support the local economy.
- Taking steps to ensure all Minnesotans should have access to, and feel welcome in, natural lands and open spaces, especially the public lands we all own together.
- Preserving and protecting traditional cultural resources and outdoor spaces.
- Empowering communities through capacity building, education, enhanced engagement, technical assistance, and funding opportunities.

Resilient communities

GOAL
3

MN CLIMATE
ACTION
FRAMEWORK

Each Minnesota community plans for and is resilient to its unique climate impacts.



SHORT FORM

The challenges Communities experience the impacts of climate change differently, such as stormwater flooding, shoreline erosion or drought, and some communities are at higher risk. Solutions must be tailored to each community's needs.

The vision Communities across Minnesota have the resources and support to plan for and implement projects to build a more resilient future for themselves. Physical infrastructure, natural systems, and communities are more prepared for climate impacts and can recover from extreme events.

Priority actions

More resources for adapting. Expand funding and staff resources for the assessment, planning, design, and implementation of adaptation and resiliency projects.

Increase capacity of the GreenStep Cities program to share resilience best practices and adaptation resources with communities, and expand pilot programs that include Tribal nations, schools, counties and townships.

Preserve existing mature trees by encouraging heritage tree preservation and establishing tree maintenance.

Grow and support climate-adaptive shade trees native to the midwest in urban areas to decrease energy use in homes and buildings, mitigate heat islands and replace pest infected or diseased trees.

Adopt resiliency provisions in codes, permits, and policies for new construction, rehabilitation and adaptive reuse, and create resilient design standards.

Assess vulnerabilities of critical facilities and use climate projections to identify ways to ensure continuity of operation.

Help for heat islands. Provide funding and technical assistance to help communities to reduce their urban heat island effect.

Measures of progress



100% of Minnesota's local, tribal and regional governments have begun planning to assess climate vulnerability and build resiliency by 2030.



Funding approved for implementing 15 adaptation projects that increase community resilience by 2026.



Increase and maintain the overall tree canopy cover of community forests to 30% by 2030 and to 40% by 2050.



CONTEXT



Minnesota communities are on the front line of dealing with extreme weather

Every community has assets that provide resources to the people who call it home. Parks, athletic fields, lakes and rivers; local businesses and associations; and health clinics and community services are fundamental to a community's prosperity. By identifying, planning and implementing adaptation strategies to protect community assets, our towns and cities will be more resilient, and will more quickly recover from the impact of storms of increased frequency and intensity as a result of climate change.



Aging infrastructure makes us vulnerable

Many communities have aging and inadequate water infrastructure (stormwater systems, sewers, and wastewater treatment plants) that can't handle this extreme precipitation. The result is flooded streets, sewers backing up into homes and businesses, wastewater treatment system overflows, and millions of dollars in damages to public and private property. Development of resilient design standards can help communities build and upgrade infrastructure to better handle current and future climate impacts.

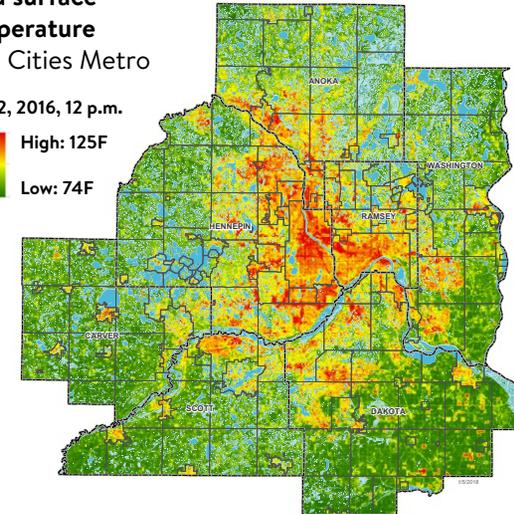
Urban heat

Within the built environment hard surfaces and buildings absorb and radiate heat; and can increase temperatures significantly. This is called the heat island effect. Green infrastructure, including growing and maintaining trees, and making smart land use decisions can help offset and lower temperatures and reduce the heat island effect.

Land surface temperature Twin Cities Metro

July 22, 2016, 12 p.m.

High: 125F
Low: 74F



Support for communities

We can help our cities, towns, and other local communities adapt to our changing climate by providing information resources, funding, and technical expertise for their infrastructure and vulnerability assessments, adaptation planning, and the engineering design and financing essential for project implementation.

WHAT WE WILL DO TOGETHER

Minnesota communities will be prepared for impacts caused by our changing climate

Minnesota communities will have the data, tools, and knowledge necessary to assess vulnerabilities to climate change and choose the adaptation solutions most beneficial to their individual needs to plan, design, and implement actions that will increase their resilience and address environmental justice.

Initiative 3.1 Climate-smart communities

Help Minnesota communities – urban and rural, large and small – become more resilient to climate change.

► Support communities with asset management and resiliency planning

Communities need technical resources and tools to assess, plan, and implement adaptation strategies that will increase the resilience of public and critical facilities, reduce private property damage, and limit public health impacts from climate change. Training, technical assistance, and better access to climate information are essential for successful adaptation and resilience.



► Develop new and updated resiliency financing mechanisms

Communities need financial resources to engage in the assessment, planning, design and implementation of adaptation and resiliency projects. Private and public funds, from the federal, state, and local levels will be invested in building community resilience.



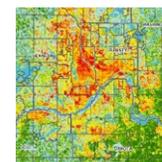
► Promote climate education, technical assistance, and learning networks

Increase opportunities to develop and share more resilience best practices and adaptation resources among communities through programs such as GreenStep Cities and expand pilot programs that include Tribal Nations, schools, counties and townships. Sharing resources from the Minnesota Climate Adaptation Partnership will provide communities climate modeling data, technical assistance, and adaptation strategies.



► Improve climate change-related data sources

Communities need access to high quality climate-projection data to assist in their resilience planning, along with the data and maps that show areas likely to flood, locations of key infrastructure and community vulnerabilities. To promote equity in resilience planning it is



important to map areas where people with the greatest vulnerabilities to climate impacts live along with climate-related data, such as urban heat and drought.

Initiative 3.2

Healthy community forests and green spaces

Expand and protect tree canopies and green spaces that provide multiple community resilience benefits.

► **Expand community tree plantings and tree preservation especially within low-income and historically marginalized areas**

Growing and maintaining climate-adaptive shade trees in urban areas is a cost-effective strategy that reduces heat islands and decreases energy use in homes and buildings. By preserving mature trees and managing emerald ash borer and other emerging plant pests and diseases, communities can implement an adaptation strategy that provides multiple resilience benefits.



► **Increase biodiversity and use of climate-adapted species native to Minnesota**

Parks, community gardens, yards, and other green spaces in communities provide habitat for pollinators and other plant and wildlife species impacted by our changing climate. Pollinators are essential to providing food production, and their habitat will need protection and climate-adapted plant species to increase biodiversity and ecosystem resiliency.



Initiative 3.3

Resilient buildings, infrastructure, and business

Prepare the built environment and local economies to become more resilient to climate change.

► **Advance climate adaptation in residential & commercial developments**

New and existing buildings need to be able to withstand climate changes, including extreme precipitation, flooding, extended heat waves, urban heat island effects, and grid failure from extreme weather. Building codes, permits, and policies for new construction and rehabilitation are tools to encourage and require adaptive planning and building. Research, innovation and climate change specific design standards are necessary to help build adaptation-designed architecture and climate resilient buildings.



► **Fund resilient infrastructure and critical facilities**

Water and wastewater treatment facilities, hospitals, energy infrastructure, roadways, and other critical facilities and infrastructure must be built and maintained with a changing climate in mind.



Adapting to climate change also requires planning for continuity of operations at critical facilities during and after extreme weather events.

► **Expand green infrastructure and natural stormwater management**

Green infrastructure and natural stormwater management are methods that use plants, soils, and permeable surfaces to reduce runoff and demand on storm drains. These nature-based adaptation methods in urban areas can restore lost habitat, control flooding, improve water quality, and provide other benefits to vulnerable people. These tools are particularly important for adapting to large or intense rain events, and to help protect infrastructure and support watershed health.



► **Reduce the urban heat island effect in communities**

Communities of all sizes in major urban centers and in smaller towns in rural areas need funding and technical assistance to reduce their urban heat island effect. Replacing or limiting hard surfaces, adding green infrastructure, and preserving mature trees will significantly lower temperatures and reduce the impacts of excessive heat.



► **Support local businesses in adapting to climate change**

Businesses will also need to build resiliency to climate change. Some industries, such as construction and remodeling, may be able to use their skills to support their communities in building resiliency. Others may be less directly impacted, but still need to plan for impacts such as flooding or supply chain disruptions due to extreme weather. Small businesses may not be prepared due to a lack of access to capital or technical expertise.



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We all have a role

Climate change impacts our communities in innumerable ways, large and small, and building resiliency will require localized planning for this wide spectrum of impacts. Building and fostering resilient communities requires action and expertise from federal, state, Tribal, and local governments, researchers, businesses, and more.



- Federal, state, Tribal, and local governments need to collaborate to develop, share, and use the data necessary for analyzing and planning for climate impacts.
- Educational institutions and organizations can provide training and technical expertise to help communities understand their vulnerabilities to climate change and implement strategies to build resilience.

Co-benefits of action

Resilient communities provide social, economic, and environmental opportunities that allow residents to thrive despite climate change impacts. Action to build resiliency and adapt to climate change can also support:



- Resilience of ecosystems and native species that provide habitat and water quality benefits; promote the right to exist and inherent value of wildlife and plants; and support Tribal authority to hunt and gather.
- Significant reductions of GHG emissions as communities choose nature-based and other adaptation options that sequester carbon or require less energy to construct and maintain.
- Jobs in the field of resilience planning, design, and implementation, including residential and commercial construction stormwater systems assessments and adaptation, wastewater facility resilience, community resource and asset management, and emergency preparedness.
- Parks, natural areas, and community forests also help sequester carbon.
- Buildings, critical facilities, and infrastructure that are better able to withstand extreme weather and don't require as frequent funding for rehabilitation or rebuilding.
- Residents feeling safe and healthy in their communities.

EQUITY

Communities of color and lower income communities are disproportionately impacted by climate change and are often least able to invest in adaptive strategies. Historical policies of housing segregation such as redlining and mortgage discrimination have meant that communities of color and lower income communities often experience housing insecurity and are located on land vulnerable to flooding, erosion, and other climate change impacts. In addition, Minnesotans with fewer financial resources or who rent rather than own homes experience more barriers to accessing funding for and investing in upgrades to their homes to maintain their indoor air quality and safely and affordably heat and cool their home.

Industries and large highways have also played a role in environmental injustices and climate vulnerability, often being placed in and near underrepresented and underserved communities, increasing their daily exposure to pollutants and putting them at greater risk for chemical exposures from flooding and other extreme weather events. Under-investment in these communities means that they often have fewer trees and parks and therefore also more vulnerable to urban heat islands. Climate vulnerable communities should be prioritized through practices of meaningful involvement and fair treatment at all stages of the planning, implementation and enforcement of environmental law, policies and regulations, regardless of race, color, national origin, or income.

An equitable transition to a more resilient Minnesota for everyone, especially those most vulnerable to climate change will:

- Prioritize engagement of underserved communities in work to assess climate risks and identify priority actions to mitigate risks.
- Fund resiliency planning and infrastructure improvements in communities that have been under invested in historically through use of a Climate & Equity Index and other resources.
- Fund and empower communities most vulnerable to heat and flooding to expand and protect tree canopy and green infrastructure.
- Prioritize clean up strategies and investments in neighborhoods with fewer resources to adapt to climate change that are already disproportionately compromised by unhealthy water, soil, and air.



Clean energy and efficient buildings

Electricity that is carbon-free and buildings that are less costly to operate, less polluting, healthier, and more comfortable.



SHORT FORM

The challenges While the electricity sector is decarbonizing, challenges remain around adequate transmission and community access to clean energy. In the building sector, there are increasing GHG emissions partly driven by greater heating and cooling demands from climate change.

The vision Minnesotans statewide benefit from investments in clean energy, lower-emitting technology, and energy efficiency through more jobs, lower energy costs, and a more stable climate.

Priority actions

Establish a standard to achieve 100% carbon-free electricity and 55% renewable electricity by 2040.

Adapt the grid Promote electrical grid upgrades, greater access to renewable energy and fund research and development to integrate more renewable energy in the grid.

Expand the use of low carbon heating sources through new policies and implementation of existing policies such as the Energy Conservation Optimization Act and Natural Gas Innovation Act.

Improve codes and standards for all new commercial and large multi-family buildings to achieve net-zero by 2036.

Explore creating new markets. Explore policies and strategies to create markets and attract capital to lower GHG emissions.

Expand the use of low-carbon building materials such as sustainably produced wood, concrete, steel and reused and recycled construction materials.

Reduce energy use. Boost opportunities and create supports such as incentives, loans and policies for existing homes, businesses, and government, commercial, and educational buildings in order to reduce the energy use and energy burden as well as to improve health through better air quality.

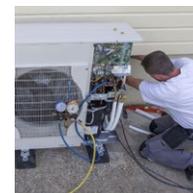
Measures of progress



Increase number of income-qualified households receiving full weatherization services to 10,000 each year.



Increase percentage of electricity that is carbon-free to 100% by 2040.



Reduce GHG emissions from existing buildings by 50% by 2035.

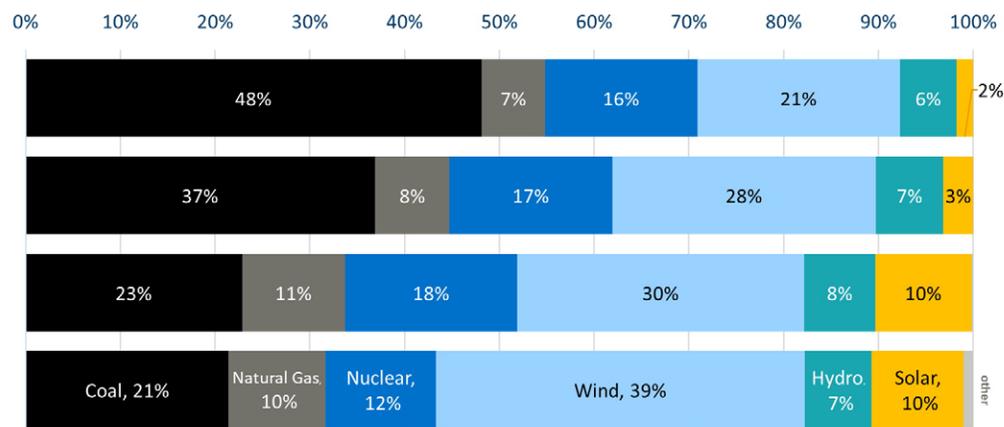


CONTEXT

Making strides in electricity generation

Minnesota’s electricity generation is getting cleaner: 55% came from carbon-free resources in 2020. Our electric power sector has reduced its GHG emissions by 40% over the past 10 years. Minnesota is ranked #9 on energy efficiency out of 50 states by American Council for an Energy-Efficient Economy. At the same time, some Tribes and community members in both urban and rural Minnesota want greater access to energy conservation opportunities and more renewable energy options. As the grid gets cleaner, it is also imperative to adequately plan for and address reliability, transmission, and distribution costs and barriers.

Projected electricity generation by source for the Upper Midwest, 2020-2034



Generation is getting cleaner as coal plants retire and renewable energy grows, but more needs to be done.

Buildings and industrial sectors going in the wrong direction

The industrial and the building sector are both experiencing a rise in GHG emissions. Since 2005, GHG in the industrial sector have increased by 18%. In that same time period, GHG emissions in the commercial building sector have increased by 15% and emissions in the residential building sector have increased by 32%. This is partly driven by greater heating and cooling demands caused by our changing climate. Minnesota’s cold winters and hot summers require our buildings to consume a lot of energy for heating and cooling. In 2017, Minnesota’s buildings consumed 40.6% of the total energy use in the state, 19.5% of which was from commercial buildings, including large multifamily buildings.

Low-carbon and energy efficient building technology is available but requires upfront investment that can be a barrier. Retrofitting existing building stock, including addressing health hazards such as unhealthy indoor air quality, is a prime opportunity to improve quality of life, reduce pollution, and reduce energy costs. There are currently over 55,000 clean energy and energy efficiency jobs in Minnesota, the majority of which are in the energy efficiency sector. Additional investments in building energy efficiency, renewable energy, and resiliency will not only help address climate change, but will also create jobs in small and large companies across the state.



WHAT WE WILL DO TOGETHER

Transitioning to clean energy and more efficient and cleaner buildings

Our electric power sector has reduced its GHG emissions by 40% over the past 10 years, and we can support continued progress through policy and planning efforts. Investments in renewable energy, electrification, energy efficiency, lower-emitting technologies and materials, and resiliency in new and existing buildings will not only help address climate change, but will also improve quality of life and create jobs across the state.

Initiative 4.1 Clean energy

Transitioning to 100% carbon-free electrical power and heat through policies, investments, and partnerships.

► Transition to 100% carbon-free electricity

Minnesota needs to transition to fully carbon-free electricity by 2040, while ensuring grid reliability and adequate transmission. This transition can lay the groundwork for emission reductions in other sectors as they move towards electric vehicles, heating, and other electric alternatives. New policies along with improvements to existing programs can also improve access for families and businesses to energy efficiency opportunities and renewable energy and to lower-cost and lower carbon heating and cooling.

► Utilize and reduce waste heat and gas

Currently, over half of all heat generated through electricity and heating and cooling production in Minnesota is wasted. This heat can be made more efficient and/or recaptured and reused to supply heat directly to local buildings. This would reduce demand for space heating, improve efficiency, reduce GHG emissions, and save businesses and industry money over time.

Initiative 4.2 Smarter buildings and materials

Reducing GHG emissions in the building sector by promoting conservation, efficiency, and lower-carbon design, materials, and fuels.

► Increase efficiency and reduce emissions from existing buildings

Buildings last for decades and existing homes and commercial and industrial buildings can be inefficient and rely on older technologies for heating and cooling. Lower income communities



face the particular challenges of older housing stock, lack of financial resources for upgrades, and mis-aligned economic incentives between building owners who would need to invest in upgrades and renters who pay for utilities. Upgrading existing buildings to be more more energy efficient and lower-carbon can also save residents and businesses money, improve indoor air quality, and help them adapt to our changing climate. There is also a great opportunity to get the word out to families and businesses about how they can conserve energy and lower their energy bill. Contractors and building owners may need information or training support as they incorporate newer technologies.

► **Increase efficiency and reduce emissions in new buildings and appliances and use climate smart building materials**

New buildings constructed today will be around for decades. Therefore, designing and constructing new buildings can have a big impact on future emission reductions. Building for energy efficiency and resiliency, combined with renewable energy have GHG emissions benefits and can often also reduce the cost of owning and operating buildings. Additionally, expanding the use of low-carbon building materials will reduce emissions.



► **Prevent waste and increase reuse and recycling**

Buildings are often torn down for new construction before the end of their useful life. Those buildings could instead be repurposed and renovated for new uses. In addition, typically when buildings are torn down, most or all of their materials are thrown away. However, often many of those materials are not and could be reused if the building were to be deconstructed properly. Repurposing buildings and reusing materials can reduce emissions by reducing the demand for new construction products.



Big impacts

What actions will reduce the most GHG emissions?

The **electricity generation sector** is already making important progress. Key action steps:

- ★ 100% carbon-free electricity by 2040
- ★ Increasing the renewable energy standard

The **buildings sector** has more work to do. Critical actions here include:

- ★ Updating building codes to ensure new buildings are as efficient and low-emitting as possible
- ★ Providing tools and incentives to improve the efficiency and reduce emissions from existing buildings

We all have a role

Utility and transmission planning require many levels of government, different types of utilities, and communities across Minnesota and the region. The power sector touches all Minnesotans every time they turn on a light or heat their home in the winter, and access to these basic functions must be ensured for everyone. Buildings provide space for Minnesotans' homes, businesses, schools, and community gatherings. There are many partners who will need to contribute to a lower-carbon future in these sectors.



- Individuals can review their energy use and take advantage of utility and government programs to help fund weatherization and other efficiency and technology upgrades to their homes.
- All levels of government need to work together to provide education and funding and implementation assistance for home owners and renters to weatherize their homes and increase their efficiency to save money and have a more comfortable and safe place to live.
- Businesses, nonprofit organizations, governments, and utilities can work together to identify and implement energy efficiency and carbon reduction opportunities in their existing and new buildings.

Co-benefits of action

Actions to reduce emissions and improve efficiency in the power sector and buildings have other benefits such as:



- Generating additional economic activity— in 2017 and 2018, energy conservation programs saved Minnesota businesses and residents over \$279 million in energy costs. Every dollar spent on conservation improvement activities generates \$3.75 benefits in society
- Additional benefits— in addition to energy, a national study found that comprehensive weatherization results in \$2.78 in non-energy benefits for every \$1.00 invested in the Low-Income Weatherization Assistance Program. These non-energy benefits include health benefits along with fewer missed days of school and work and decreased medical costs.
- Spurring job creation— currently over 48,000 jobs in Minnesota are energy-efficiency related. Additional investments will lead to more jobs in this sector.
- Creating substantial benefits for health, by reducing emissions of harmful indoor and outdoor air pollution which can contribute to asthma and other respiratory disease, cardiovascular disease, and even premature death.
- Saving Minnesotans money by meeting consumers' energy needs at lower cost.

Equity

The power sector impacts all Minnesotans through the critical services it provides as well as its impacts on our health and environment. Buildings, too, are part of the fabric of our landscape and critical for keeping Minnesotans healthy and our economy thriving. However, these sectors do not impact all Minnesotans equally.

The costs of energy and housing are disproportionately a burden on lower-income Minnesotans as these necessities consume a larger portion of their income. Racially restrictive covenants which increased housing segregation, redlining and other policies that created a systemic exclusion of people of color from accessing capital, and other racist policies and practices have meant that Minnesotans of color disproportionately rent homes rather than own them, which can limit their access to energy efficiency and renewable energy opportunities. These communities also suffer disproportionate rates of utility disconnection which, in Minnesota, can be life-threatening.

An equitable transition to our clean energy future would include:

- Expanding incentives and other mechanisms for businesses in overburdened communities to transition to renewable energy sources.
- Invest in multifamily and single family energy efficiency and structure programs to target access for communities of color, Tribal Nations, and lower-income communities.
- Develop mechanisms for lower-income households to access local and affordable renewable energy through offerings such as community and rooftop solar.
- Support job-training programs in rural and low-income communities that help retrofit current housing stock to be more efficient and healthier.
- Ensure policies are in place to protect low-income households from utility disconnections during extreme weather events, such as heatwaves and very cold temperatures.
- Ensure access to energy conservation and renewable energy opportunities is equitable and equally available for all Minnesotans, eliminating inequities by fuel used, or where you live in the state.
- Support community-driven solutions to efficient and healthy affordable housing that take into account gentrification and prevents and addresses climate-related displacement.



Renewable Energy Partners in Minneapolis does solar installation and skill training in an underserved part of the city.

Healthy lives and communities

Protect the health and wellbeing of all Minnesotans in the face of climate change.



SHORT FORM

The challenges Changes in Minnesota’s climate threaten the health of all our communities, but not everyone contributes to nor experiences these impacts equally. Existing inequities based on race, age, gender, geography, economic status, and more place some communities at greater risk.

The vision Minnesotans are healthy, safe, and resilient in the face of climate change, especially those that live in the communities that are most impacted.

Priority actions

Educate communities about the health impacts of climate change and provide resources and strategies to prevent negative health impacts.

Track, monitor, and report on the health impacts of climate change in diverse populations in Minnesota.

Adapt outdoor recreation on public lands for a changing climate and to serve changing demographics.

Ensure hospitals and healthcare facilities

perform extreme weather and multiple hazard assessments for climate resiliency.

Ensure access to culturally-appropriate mental health services for issues related to climate-driven events.

Measures of progress



Reduce the age-adjusted rate of emergency department visits due to heat from its peak in 2011 of 24.5 per 100,000 to 15 per 100,000 by 2025.



Meet or exceed the goals of the federal Justice40 Initiative which targets 40% of benefits of climate and certain other federal investments and parallel state investments in disadvantaged communities by 2025.

CONTEXT

Our greatest health challenge

Climate change has been called the greatest health challenge of the 21st century because it threatens the very basics we depend upon for life including safe and available drinking water, clean air, and a reliable food supply. We all want our families and communities to be healthy, but what creates health? Health is created by much more than access to quality medical care. Optimal health for everyone requires economic opportunities, safe housing, healthy food, reliable transportation, supportive communities, and much more.



Some of the known direct health impacts of climate change:

- Increasing societal and healthcare costs from more emergency departments visits, hospitalizations, and premature deaths
- More heat-related illnesses due to increasing heat waves
- Injuries and death from extreme precipitation and flooding
- Increase in diseases transmitted by changing tick and mosquito populations
- Respiratory and cardiovascular impacts from increases in air pollution from wildfire smoke and pollen
- Mental health impacts from experiencing an extreme weather event or from a loss of sense of place

Impacting things that support our health

Climate change also impacts our health indirectly, by affecting the many things that create our health, such as safe housing, reliable transportation, and job stability. Indirect impacts can make other health conditions worse. For example, if increased precipitation creates problems with mold in a family's home, this could increase their child's allergies. Other indirect health impacts include:

- Disruptions to transportation systems from extreme weather making it more difficult to access grocery stores, jobs, and medical care.
- Loss of neighborhood tree canopy from invasive pests making extreme heat worse.
- Loss of income to families when businesses and farms are impacted by drought or extreme weather.



Health is affected by all parts of our society

All parts of our economy and society affect our health, including transportation, jobs, energy, housing, and agriculture. The rest of the actions in the Framework will support healthier communities as we address climate change and build resiliency across Minnesota. It is also necessary to specifically focus on supporting community health, public health infrastructure, healthcare systems, and other ways climate change impacts our health.

WHAT WE WILL DO TOGETHER

Protect health and improve health equity

Minnesota will invest resources and implement policies and strategies that address the health impacts of climate change for individuals and communities.

Initiative 5.1 Healthy communities

Support health through protecting communities and Minnesota ways of life from the impacts of climate change

► Support healthy communities and workplaces

Healthy communities and workplaces must be addressed from multiple fronts. Our workplaces must address the risks from climate change, especially risks to outdoor workers from extreme heat and weather. Communities need access to safe places during climate-related disasters. We also need to invest in community infrastructure that reduces existing environmental damage and pollution. Building clean air, water, and soil at the community level will help curb impacts from climate change. Finally, educating Minnesotans on the health effects of climate change, and providing resources to communities to address health impacts, is critical for protecting our wellbeing across the state.

► Protect Minnesota cultures and ways of life

Minnesota embraces diverse cultures and traditions based on our climate and the history of the people who live here. Outdoor sports and recreation such as ice fishing, hunting, swimming, hiking, biking, and skiing, are important activities for mental and physical health and a way of life for many Minnesotans. Climate change threatens many of our outdoor activities, especially winter activities, as well as culturally important habitat and species. We want to ensure that recreational opportunities and important habitats and species are protected for current and future generations.



Initiative 5.2 Climate smart public health infrastructure and healthcare systems

Support public health infrastructure and data systems that protect the public's health and promote climate-smart health care systems.

► Support public health infrastructure and adaptation resources to improve health

Public health institutions are at the forefront of protecting the public's health from all sorts of diseases and calamities, including climate change. Bolstering public health infrastructure will aid our ability to track changes in the health impacts of climate change, implement strategies that protect the public's health from climate change, and ensure that healthcare systems are available pre-, during, and post-climate-related disasters.



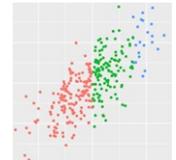
► Support climate-smart healthcare systems

Climate-smart healthcare systems combine climate resiliency with environmental sustainability for a win-win approach. The healthcare industry generates a substantial amount of waste and is a major emitter of GHG. Healthcare systems can become climate champions by promoting climate-smart policies and procedures that reduce GHG emissions and waste. Climate-smart healthcare systems improve the health of the environment and cut costs that can be redirected toward enhancing patient health.



► Improve data sources related to health, equity, and climate risk

To better understand the risks of climate change to health and equity, we need to improve data sources that support decision making. This includes providing more resources for data collection and development, such as climate projection modeling, and engaging with data stewards and communities that the data represent so that datasets can be more reflective of people's lived experience. Improved health and climate data can provide us a more accurate picture of our baseline of where we are now and help us prepare for and direct resources to where they are needed most into the future.



We all have a role

We all desire healthy and climate-resilient communities, but some communities will be disproportionately impacted by climate change. Working with these communities and partnering with businesses, philanthropy, educational institutions, public health, healthcare systems, and local organizations, we can create innovative resiliency solutions while reducing health disparities for those most impacted by climate change.



- Local governments in collaboration with communities can create resiliency hubs to protect people during extreme weather events and partner with the federal government, state government, businesses, and local communities to remediate and develop thriving neighborhoods in areas of environmental justice concern.
- Businesses and organizations can follow guidance to protect workers from extreme weather, offer telecommuting options to their employees, and work with local organizations to help protect the communities in which they are situated.
- Educational institutions can research the health impacts of climate change, educate the public and medical students on climate change impacts, and support building resiliency and health in rural and urban communities.
- Healthcare systems can be climate resiliency leaders by preparing for multi-hazard events, reducing GHGs and medical waste, and providing healthcare to people, pre-, during, and post-extreme weather events.
- Local and state public health can track the health impacts of climate change, educate on health-protective measures, and support communities in implementing climate resiliency strategies.
- The State respects and acknowledges principles from Indigenous knowledge about the interconnectedness of place, subsistence lifeways, and the natural environment and will work with Tribal Nations on how to apply this knowledge to address climate change.

Co-benefits of action

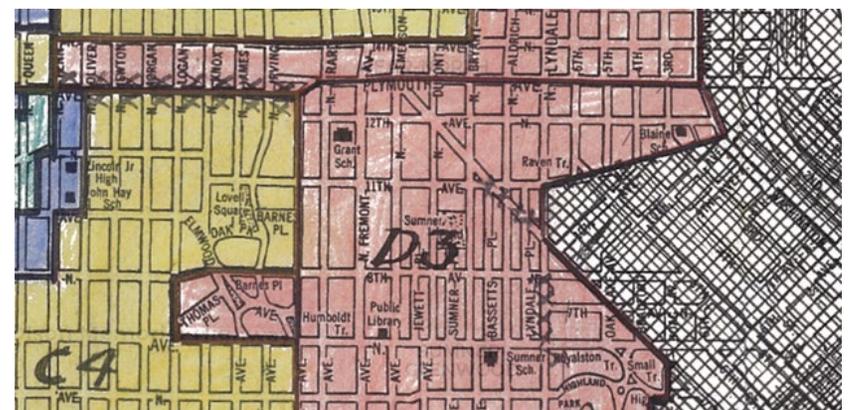


Addressing the health impacts of climate change through mitigation and adaptation actions that leave no communities behind serves to:

- Protect public health and reduce health disparities
- Protect the environment and culturally important places
- Improve community climate resiliency

Equity

Health is created by many social, economic, and geographic factors that are not equally distributed nor shared across the many groups of people who call Minnesota their home. This unequal access to factors that shape our health have created deep health disparities in Minnesota that are worsened by climate change. For example, American Indian and African American middle and high school-aged kids are more likely than other students to have been diagnosed with asthma. Having asthma increases a person's likelihood of a negative health outcome from poor air quality and wildfire smoke. Historic racist housing policies (such as redlining) are associated with lack of tree canopy and urban heat islands in low-income neighborhoods of color, unfairly increasing extreme heat exposure to people living in these neighborhoods. Climate change strains communities that already lack resources, such as low-income communities, making it difficult to recover from climate impacts. Additionally, climbing health care costs from increased visits to emergency departments and clinics will fall disproportionately on communities with less access to these resources and less means to cover the costs, placing more financial hardship on those that can least afford it. Climate change amplifies existing health and economic inequities in our communities, stressing already overburdened neighborhoods, and necessitating additional resources to prevent the impact of and/or recovery from climate-related events. Protecting the health of our communities and families from climate change means protecting everyone, but especially those people who are at risk of greater health burdens.



Clean economy

GOAL
6

MN CLIMATE
ACTION
FRAMEWORK

Minnesota will build a cleaner economy that addresses climate change and equitably provides family-sustaining job opportunities.



SHORT FORM

The challenges Transitioning to a cleaner economy must include solutions that benefit everyone – especially residents who are disproportionately impacted by climate change – reduce existing inequities, and don't leave workers or businesses behind.

The vision From manufacturing energy efficient windows to management of private and public lands, there are tens of thousands of homegrown job opportunities that help mitigate and adapt to climate change. We can sell clean products to the world. To achieve a stronger economy, public and private investment is needed in emerging research, technology, and businesses, as well as collaboration with labor, businesses, and educational institutions to ensure skills training for in-demand jobs.

Priority actions

Train, upskill, and reskill Minnesotans for clean economy jobs, with a focus on equitable outcomes, in collaboration with unions, education institutions and businesses.

Grow clean economy businesses and jobs through innovation in partnership with Tribal Nations and universities, commercial consortiums, private research labs and public support.

Complete a clean economy jobs workforce development plan for the state that includes transitioning displaced workers and connecting workers to job opportunities in and beyond the energy sector.

Support existing large electricity generation power plant host communities to plan and implement strategies for a successful transition. Transition planning and support should be long-term and take into account the amount of time it may take to train workers, execute economic development strategies, and other considerations.

Develop worker skills. Create workforce strategies that train, upskill, and reskill workers to adapt to changing technologies and job needs.

Measures of progress



Completion of a clean economy jobs workforce development plan will enable future refinement of these measures of success by 2023.



Increase number of apprentices in the building and construction trades registered apprenticeship programs, increase percentages of apprentice enrollment and completion who are people of color and women.



Increase number of jobs provided in new sectors that expand the concept of clean economy jobs (e.g., land management, transportation, long-lived wood products, and others).



Increase number of jobs provided by clean technology businesses and number of clean technology businesses.



CONTEXT

An economy in transition

Climate change is negatively affecting jobs, natural environments, and our economy. Customers and businesses are increasingly asking for energy efficient, lower-carbon products and building owners want options to reduce their carbon footprint and save money. Businesses need help adapting to remain competitive. Workers also need support to transition or upskill, to successfully adapt new technologies and methods. Several communities host large electric-generating power facilities that will face retirement in the coming years, which will impact jobs, tax base and the whole community.



Growing clean economy opportunities

Minnesota boasts more than 55,000 clean energy and energy efficiency jobs, with more than one-third of clean energy jobs located in Greater Minnesota. In the 3 years prior to 2020, clean energy jobs grew three times as fast as overall statewide employment. Small businesses are at the heart of the green economy: 70 percent of clean energy jobs come from businesses with less than 20 employees. Clean energy jobs include work in energy efficiency, renewable energy, clean transportation, grid and storage, and clean fuels. Yet many more businesses and workers beyond these contribute positively to building a more climate-resilient state such as jobs in natural resources management. People of color are underrepresented in clean energy jobs and there is work to do in addressing systemic racism that has led to a lack of diversity in the clean energy workforce. Training for the clean economy can focus on communities disproportionately impacted by climate change and workers disadvantaged by systemic racism and other barriers.



Help workers and businesses transition

Climate change is affecting the jobs and businesses where many Minnesotans are currently employed, and more change can be expected as the economy becomes cleaner and more climate-resilient. Currently assistance for economic development and training programs is available for Minnesota's industries, businesses, and workers, but more will be needed to ensure we are supporting the people who will power this transition. Business innovation and entrepreneurship spurs job growth, and a well-trained workforce is necessary to fill those jobs. The movement towards an inclusive clean economy is a win-win-win for employees, consumers, and businesses.

WHAT WE WILL DO TOGETHER

Grow clean economy jobs and businesses that provide equitable opportunities for all Minnesotans

Through partnerships, policies, training, applied research and incentives, we will support the transition to a cleaner economy and the workers and businesses who will power it.

Initiative 6.1 Greening jobs and businesses

Prepare and support workers and businesses for a clean economy through training, investments in research and development, and partnerships.

► Grow clean economy jobs through innovation

Innovative technologies, businesses, and industries can create new jobs and grow the economy. Minnesota has a history of being a hub for innovation in healthcare and industry and now can be a center of green innovation. We must attract new industries and innovative thinkers through multi-sector partnerships and technical and financial support for entrepreneurs.



► Develop career pathways

Minnesota has a vital workforce with diverse skills. Growing and adapting that workforce to cleaner jobs will be critical to our state's economic and climate success. Outreach, education, and training should lead to employment in clean economy jobs that pay a family sustaining wage with skills that can be adapted to new and cleaner technologies as they develop.



Initiative 6.2 Just transition

Support workers in industries impacted by climate change and the transition to a cleaner economy to adapt and evolve their skills to new family-sustaining jobs.

► Support transitions as industries evolve

The clean economy will impact Minnesota's economy and workforce both by creating new jobs and industries and changing and disrupting existing ones. Some changes will provide opportunities for more Minnesotans to apply their skills and earn family-sustaining wages, while others may pose challenges to Minnesota's existing workforce. We must plan to help Minnesotans through this transition by planning for upskilling and reskilling workers and connecting people with training and apprenticeship opportunities.



► **Ensure good wages and benefits for workers and address systemic barriers**

Engage with business, education institutions and policymakers to develop actions that ensure jobs provide family-sustaining wages and benefits and there is equitable access to job opportunities and training for communities that have faced structural bias and discrimination and communities that are disproportionately impacted by climate change.



We all have a role

Minnesota's economy and workforce ranges from agriculture, forestry, healthcare, tourism, technology, and more. All parts of our economy will be affected by climate change and the transition to a cleaner future. Helping Minnesota's workforce and businesses through that transition and coming out better off in the end will require partnerships across government, unions, industry, trades, colleges and universities, training programs, and businesses of all sizes. To achieve a robust clean economy:



- The federal government can support fair and favorable trade policies to support the global reach of cleaner technologies and products.
- Local governments are often the hub of job enterprise zones — areas where incentives are offered for economic development — and can help link businesses and communities together to retain and create homegrown jobs.
- Businesses and industry can develop and seek the best technologies, participate in energy efficiency programs, and optimize supply chain and production proficiencies.
- Educational institutions and labor training programs can work with governments and businesses to train Minnesotans and connect them to clean jobs with family-sustaining wages.

Co-benefits of action

Benefits of a clean economy and assisting industries and workers with the transition include:



- Reducing GHG emissions, as well as other air and water pollution
- Increasing the number and access to jobs that offer family-sustaining wages
- Increasing awareness of climate change as an issue
- Increasing the use of homegrown renewable materials

Equity

Currently, men and white people hold approximately 73% of clean energy jobs in Minnesota. Nationally, the clean energy workforce tends to be older, male, and lacks racial diversity. Fewer than 20% of clean energy sector jobs are held by women and less than 10% by Black Minnesotans.

Many clean economy jobs are and will continue to be in the construction trades. While overall construction jobs tend to provide good wages and benefits, the industry continues to be dominated by men. Attracting and retaining women and people of color in the trades – through outreach in schools, career guidance programs to align education and training, safe, hands-on learning opportunities, mentoring, and financial support during seasonal layoffs— will be critical to achieving an inclusive and equitable clean economy.

We know that health, environmental, and economic crises disproportionately impact overburdened communities and can displace workers. Job training and job placement efforts should focus on reaching communities disproportionately impacted by climate change and those communities that have faced structural bias and discrimination. In addition, the newly established Energy Transition Office at the Department of Employment and Economic Development can work to assist communities and workers in areas with retiring electric generation facilities.

Other key activities will include:

- Ensuring unique regional needs are addressed and there is equitable access to training.
- Identifying future high-demand clean economy sectors, as well as training resources and needs by region, with an emphasis on targeting training to underrepresented populations in the trades.
- Consulting and coordinating with Tribal Nations, such as to support and learn from their workforce development efforts.



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