

Driving Down Emissions in MINNESOTA

Transportation, land use,
and climate change

move

MINNESOTA



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McKNIGHT FOUNDATION



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Transportation for America, a program of Smart Growth America, is an alliance of elected, business, and civic leaders from communities across the country, united to ensure that states and the federal government step up to invest in smart, homegrown, locally-driven transportation solutions. These are the investments that hold the key to our future economic prosperity.



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How Minnesota can Drive Down Emissions

Overview

Transportation for America’s national report, *Driving Down Emissions*, analyzes how car-oriented land use and community design play a significant role in the nation’s transportation emissions.¹ The same principles and practices described in that report apply at the state and local level: more vehicle lanes and more parking spaces spur higher driving rates, a phenomenon known as “induced demand.” Higher driving rates increase tailpipe emissions of gas powered cars, which represent the vast majority of vehicles on the road today.²

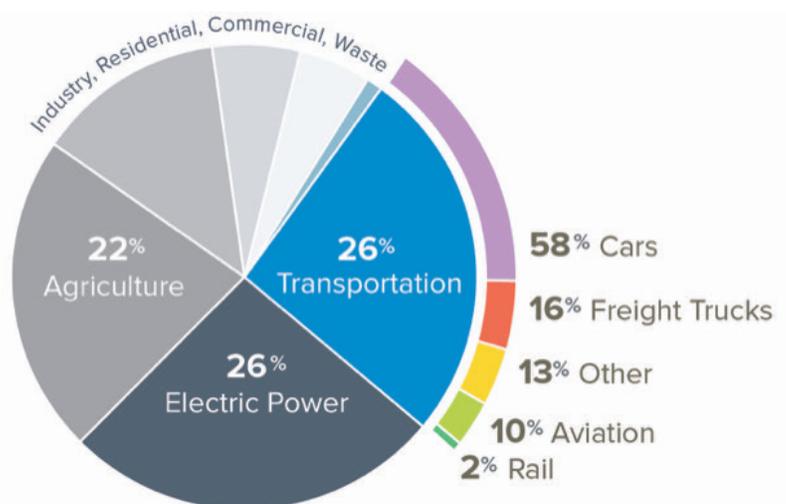
Because action on climate is an urgent need, we should not wait for vehicles to be electrified and leave other emissions reduction strategies unused, especially ones that reduce the need for driving. These strategies not only reduce emissions but also reduce transportation costs and provide more equitable access to jobs and necessities for everyone—whether they can afford a car or not.

Minnesota has had some success reducing driving per capita in recent years, particularly compared to some of its peers, but that progress will not be sufficient to address the urgent need for emissions reductions if the state stays on the same trajectory. Fortunately, further reducing the need to drive is doable in the near term. This is what many Minnesotans want, and the state and its cities are already well-positioned to do so—but they need to address the barriers standing in the way.

Climate change in Minnesota

Between 1951 and 2012, temperatures across Minnesota increased between 0.5° and 1.8° Celsius, with the Twin Cities urban area experiencing a 1.8° Celsius average temperature increase during that period. (Minneapolis’s winters have warmed faster, at an average of 3.3° Celsius since 1970,

2016 MINNESOTA GHG EMISSIONS BY SECTOR & SOURCE



1 View the full national *Driving Down Emissions* report at t4america.org/maps-tools/driving-down-emissions
2 For a broader discussion of induced demand and the emissions caused by driving, see: Schneider, B. (2018, Sept. 6). When traffic-clogged highways are expanded, new drivers quickly materialize to fill them. What gives? Here’s how “induced demand” works. Bloomberg CityLab. www.citylab.com/transportation/2018/09/citylab-university-induced-demand/569455/

making it the second fastest warming city in the United States). As a result, flooding has increased across the state, northern Minnesota forests are likely to change from boreal to deciduous, and the state bird—the common loon—is projected to disappear in the state by the end of the century. According to Minnesota’s Pollution Control Agency, “the cumulative impacts of climate change are having real impacts on Minnesotans and [the state] economy by forcing early and costly repairs to infrastructure.”^{3,4}

As is the case nationwide, transportation accounts for the largest share of carbon emissions in Minnesota, closely followed by electricity and agriculture. Cars and light trucks account for the majority of these transportation emissions. The state’s transportation emissions have increased 30.5 percent overall since 1990, driven in part by a 21 percent increase in driving per capita over that same period.^{5,6} Minnesota’s GHG emissions per capita attributable to transportation in 2017 were near the middle when ranked against other states.⁷

State and local climate plans and targets

To address climate change, Minnesota established emissions targets in its 2007 Next Generation Energy Act. State greenhouse gas reduction goals are to cut emissions from 2005 levels by 15 percent by 2015, 30 percent by 2025, and 80 percent by 2050.⁸ Minneapolis and St. Paul, the state’s largest cities, also have citywide targets: Minneapolis’s targets mirror those of the state, and St. Paul’s 2019 *Climate Action and Resilience Plan* targets carbon neutrality by 2050.⁹

The state and its major cities have established varying targets for the transportation sector and for the reduction of vehicle miles traveled (VMT). At the state level, the Minnesota Department of Transportation (MnDOT) released *Pathways to Decarbonizing Transportation in Minnesota* in 2019, which outlines paths to attain an 80 percent emissions reduction or a 100 percent emissions reduction in the transportation sector by 2050.¹⁰

3 Minnesota Pollution Control Agency. *Effects of Climate Change in Minnesota*. <https://www.pca.state.mn.us/air/effects-climate-change-minnesota>

4 Mosendale, M. (2019, July). *How climate change will impact Minnesota*. Mpls St. Paul Magazine.

5 U.S. Energy Information Administration. (2020, May 20). *Transportation energy-related carbon dioxide emissions*. Retrieved from: www.eia.gov/environment/emissions/state/

6 Eno Center for Transportation. (2019, June 7). *U.S. VMT per capita by state, 1981-2017*. www.enotrans.org/eno-resources/u-s-vmt-per-capita-by-state-1981-2017/

7 Third Way. (2020, June 18). *Transportation emissions keep rising*. See map: www.thirdway.org/blog/transportation-emissions-keep-rising

8 MnDOT. *Climate change mitigation*. www.dot.state.mn.us/climate/mitigation.html

9 City of Minneapolis (2018, March). *Climate Action Goals*. www2.minneapolismn.gov/sustainability/climate-action-goals/index.htm#:~:text=Minneapolis%20won%20the%20designation%20because,Plan%20and%20greenhouse%20gas%20emissions; City of St. Paul. (2019, December). *Saint Paul Climate Action & Resilience Plan; A framework for our community to address the impact of climate change*. www.stpaul.gov/sites/default/files/Media%20Root/Mayor%27s%20Office/Saint%20Paul%20Climate%20Action%20%26%20Resilience%20Plan.pdf

10 MnDOT. (2019, August). *Pathways to Decarbonizing Transportation in Minnesota*, 5. www.dot.state.mn.us/sustainability/docs/pathways-report-2019.pdf

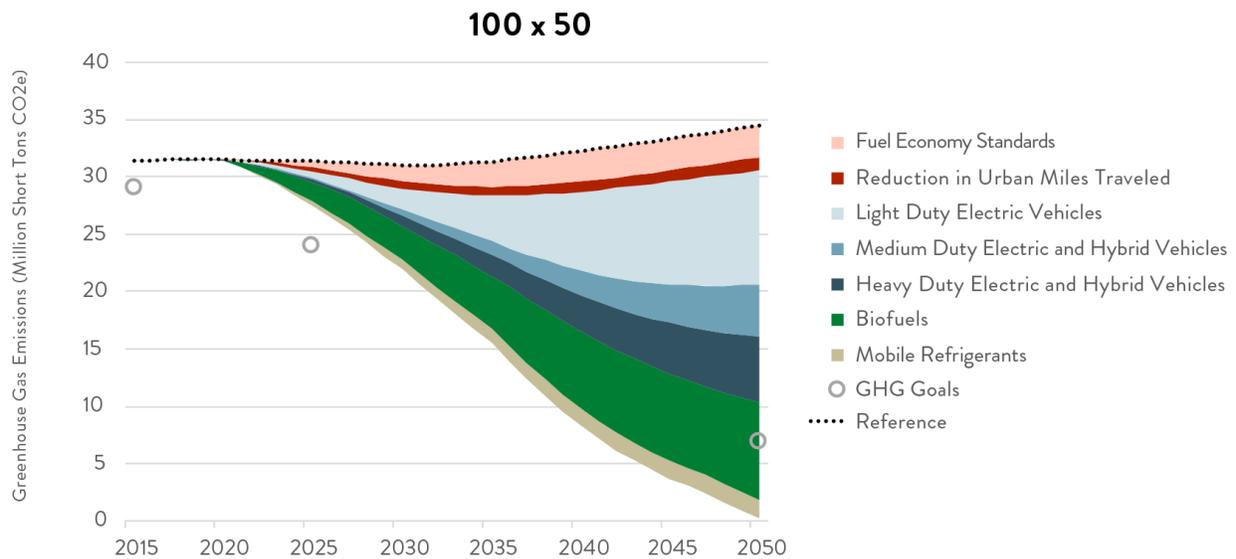


Chart sourced from MnDOT Pathways report, reference in footnote #10

However, the *Pathways* report relies heavily on electric vehicles—and even on as-of-yet undeveloped biofuels technology—to attain the established benchmark reductions, despite the fact that Minnesota has lagged behind the national average in adoption of electric vehicles. Roughly 2.5 percent of new cars sold are some kind of electric or hybrid-electric vehicle.¹¹

Because of this reliance on technology, the report suggests that emissions targets can be achieved with just a 5 percent or 10 percent VMT reduction in the Twin Cities metro area—and even allows for a VMT increase in the rest of the state. The *Pathways* report does not actually set VMT targets, however, and the state has yet to do so.¹²

The assumptions in the *Pathways* report sit uncomfortably beside city-level studies and targets, which establish far bolder benchmarks for VMT reduction. In Minneapolis, an analysis found that the city’s carbon reduction targets would be out of reach unless the city facilitates a 38 percent reduction in VMT by 2050, while St. Paul’s climate plan establishes a goal to reduce VMT by 40 percent by 2040. Both targets far outpace the state’s analysis.

11 MnDOT. *Alternative Fuels & Vehicle Electrification*. <http://minnesotago.org/index.php?cID=217>

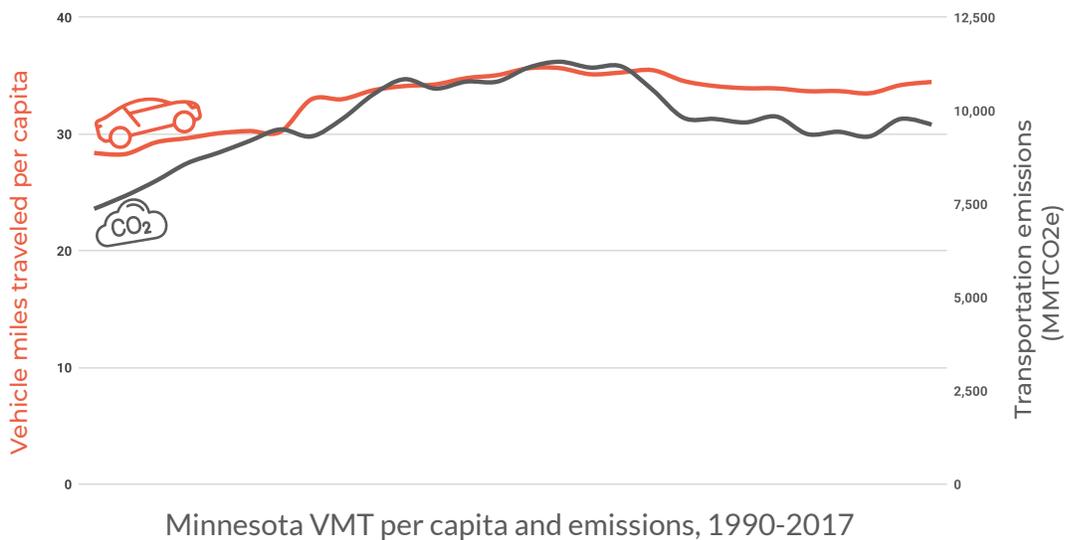
12 MnDOT. (2020, July). *2019 Sustainability Report: Progress and headwinds*, 10. www.dot.state.mn.us/sustainability/docs/2019-sustainability-report.pdf

Emissions trajectories in Minnesota

Minnesota missed its last emissions target—to reduce emissions 15 percent by 2015, set in the Next Generation Energy Act—by a large margin, achieving only a 5 percent emissions reduction across sectors statewide.¹³ The state acknowledges in the *Pathways to Decarbonization* report that it is not currently on track to reach the 2025 or 2050 goals. And yet the state continues to leave a major tool—making it possible for Minnesotans to drive less—mostly off the table.



Driving is directly connected to how much we pollute



Transportation emissions trajectories, when analyzed independently, also appear poised to fall short (MnDOT releases annual sustainability reports). Similar to national trends, while transportation emissions in Minnesota increased overall in the 30 years since 1990, they peaked in the mid-2000's. According to EIA data, transportation emissions dropped 13 percent between 2005 and 2009 and the state has maintained that lower level since, despite economic growth over that timeframe.¹⁴

Minnesota has maintained this emissions decline partially because per capita driving amounts have been held in check, with total per-person annual miles driven declining 3.5 percent between 2005 and 2017.¹⁵ Yet total VMT continues to climb, albeit slower than the national trend, counterbalancing any potential emissions gains from fuel efficiencies.

13 Minnesota Pollution Control Agency (2019, January). *Greenhouse gas emissions in Minnesota: 1990-2016: Biennial report to the Legislature tracking the state's contribution to emissions contributing to climate change*, 4. www.pca.state.mn.us/sites/default/files/lraq-2sy19.pdf

14 U.S. Energy Information Administration. (2020, May 20). *Transportation energy-related carbon dioxide emissions*. Retrieved from: www.eia.gov/environment/emissions/state/. State of Minnesota data indicates a smaller percent drop but a similar trend line over the same time period. See: www.pca.state.mn.us/air/greenhouse-gas-emissions-data.

15 MnDOT. (2019, September). *VMT Trends in Minnesota: 1992-2018*. www.dot.state.mn.us/traffic/data/reports/vmt/VMT_Trend_Report_2018.pdf.

Most of the VMT increases have occurred in the counties surrounding the Twin Cities, according to MnDOT, while driving rates in rural areas have remained largely flat and driving rates in the center cities of Minneapolis and St. Paul have fallen 6 percent since 2000.^{16,17} These are the most sprawling areas of the state, where basic necessities are built far from homes and roadways are built for high speed car travel to make up for the large spaces between destinations.

Challenges going forward

With a clear set of climate targets and a relatively robust annual analysis of emissions trends, Minnesota has the tools to successfully address climate emissions in the transportation sector (a review of specific policy advances is below). Challenges remain, however, including a state constitutional mandate for highway funding, a high appetite for gas guzzlers, decreasing transit ridership, and a continually-sprawling metro area.

The last of fourteen articles in the state constitution is titled “Public Highway System.” This establishes the highway system and dictates that proceeds from the gas tax and motor vehicle taxes support various state highway systems at specified amounts.¹⁸ This mandate is part of the reason that Minnesota has the fifth most highway lane miles of any state in the country, even though it ranks 22nd in population and 12th in land area.¹⁹ Further, MnDOT spent nearly as much expanding highways between 2009 and 2014 as it did repairing existing roads—despite an increase in roads in poor condition over that time—a practice that will ultimately induce more driving trips.²⁰ And when the state does look to set aside space for high occupancy vehicles and transit, it too often manifests as expensive added capacity to a highway, rather than repurposing existing capacity.²¹

Finally, more sprawling development in the Twin Cities area continues to induce more driving. The Metropolitan Council, the metropolitan planning organization for most of the region, projects that the part of the Twin Cities metro area under their jurisdiction will see a population increase of 800,000 between 2010 and 2040.²² However, just 28 percent of that population growth is projected to occur in the center cities of Minneapolis and St. Paul and first ring suburbs—the cities that, in general, are most walkable and serviceable by transit, and where emissions per household are typically lower. Outer ring suburbs and exurbs—where zoning and development rules prohibit traditional walkable town center style development—are projected to grow the fastest in the region.

¹⁶ *ibid*

¹⁷ City of St. Paul. (2019, December). *Saint Paul Climate Action & Resilience Plan; A framework for our community to address the impact of climate change*, 43. www.stpaul.gov/sites/default/files/Media%20Root/Mayor%27s%20Office/Saint%20Paul%20Climate%20Action%20%26%20Resilience%20Plan.pdf

¹⁸ Minnesota Constitution. Article XIV: Public Highway System. www.revisor.mn.gov/constitution/#article_14

¹⁹ Schieferdecker, A. (2019, September). To decarbonize transportation, MnDOT needs to challenge itself to reduce VMT. *Streets MN*. <https://streets.mn/2019/09/27/to-decarbonize-transportation-mndot-needs-to-challenge-itself-to-reduce-vmt/>

²⁰ Transportation for America. (2019, May). *Repair Priorities 2019*. <http://t4america.org/maps-tools/repair-priorities/>

²¹ For examples, see: www.startribune.com/mndot-looks-to-add-mnpass-lanes-to-alleviate-congestion-on-i-494-in-bloomington/493500501/; www.dot.state.mn.us/metro/projects/i494-airport-hwy169/background.html

²² Metropolitan Council. (2020, January). *Long-range forecasts*. <https://metrocouncil.org/Data-and-Maps/Research-and-Data/Thrive-2040-Forecasts.aspx>.

Ironically, this is driven in part by the unavailability of housing in the closer-in areas, where the demand for housing is higher.²³ In other words, meeting the demand for more housing in the areas where people want to live will make it easier to reduce VMT and GHG emissions.

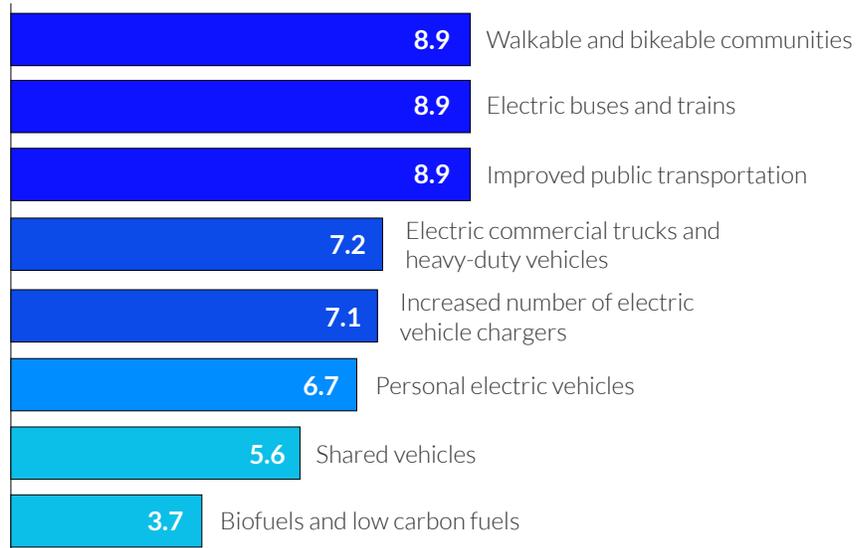
Progress and opportunities at the state level

Despite challenges, there are numerous examples of progress, and opportunities for future progress, at the state level. These include widespread public support for walkable communities, funding for popular transit projects (descriptions in the Opportunities in the Twin Cities section), a state Safe Routes to School program, staff dedicated to walking and biking within MnDOT, and several community transformations on main streets around the state.

MnDOT’s 2019 *Pathways* report shows a broad public appetite for more walkable and less car-dependent communities to reduce transportation emissions.

“Walkable and bikeable communities” and “improved public transit” received the greatest support in MnDOT’s public engagement process for the report, along with electric buses and trains (see figure at right). MnDOT also heard feedback that while vehicle electrification will help reduce emissions, it will not solve the equity, safety, health, economic, and other problems caused by designing communities for cars.

Public scoring results for transportation decarbonization strategies (10 = support)



Survey results from MnDOT Pathways report

There are successful examples of bike, walk, and transit investments and support around the state. Biwabik, a town of about 1,000, used the state’s complete streets approach to deliver everything from wider sidewalks to boulevard plantings to street furniture, lighting, and more.²⁴ In Alexandria, a city of 11,000, MnDOT supported robust community engagement—including pop-up infrastructure demonstrations—to showcase the benefits of narrowed lanes, greening, and bicycle infrastructure.²⁵ These kinds of initiatives have been supported by interagency cooperation to create safe, walkable, and bikeable streets around the state, alongside statewide planning efforts. Minnesota has numerous

23 Uren, A. (2019, May). Population estimates reveal fastest-growing parts of Twin Cities metro. *Bring me the news*. <https://bring-methenews.com/minnesota-lifestyle/population-estimates-reveal-fastest-growing-parts-of-twin-cities>

24 MnDOT. (2020, July). 2019 Sustainability Report: Progress and headwinds, 11. <http://www.dot.state.mn.us/sustainability/docs/2019-sustainability-report.pdf>

25 MnDOT. (2016, December). Minnesota Walks, 52. <https://www.dot.state.mn.us/peds/documents/planning-research/minnesota-walks-2017-final.pdf>

plans, including a developed Statewide Bicycle System Plan, a Statewide Pedestrian System Plan in development, and shared principles around encouraging walking and biking lifestyles.^{26,27,28} These plans are delivered in part through initiatives to reduce traffic fatalities (Toward Zero Deaths), a statewide Safe Routes to School program, and a process for integrating complete streets considerations in every project.^{29,30,31} Yet despite these plans and positive examples, funding formulas at the state level too often preclude bike, walk, and transit funding; amending them will be critical for expanding multimodal infrastructure on the ground.

Opportunities in the Twin Cities

Strong support for biking, walking, and transit exists in the Twin Cities as well, home to 64 percent of the state's population. For example, Minneapolis, while conducting community engagement for its *Transportation Action Plan*, asked "what would transform transportation in Minneapolis in the next decade?" The overwhelming response was "transit" (see word cloud at right), and numerous respondents also expressed support for reducing the prevalence of automobiles.³²



The City of Minneapolis also passed a comprehensive plan in 2018 that legalized the addition of more housing in neighborhoods throughout the city while eliminating parking requirements, which together could have a substantial impact on transportation emissions in the region.³³ These changes will encourage denser urban development and make it more affordable to live in the city by encouraging more housing to be built, mitigating future sprawl and the additional driving it would induce.³⁴ In addition to reducing emissions, these changes will address key sources of economic and racial discrimination in the city and region.³⁵

26 MnDOT. (2016, August). *Statewide Bicycle System Plan*. <https://www.dot.state.mn.us/bike/statewide-bicycle-system-plan.html>

27 See: <https://www.minnesotawalks.org/overview/>

28 MnDOT. (2016, December). *Minnesota Walks*. <https://www.dot.state.mn.us/peds/documents/planning-research/minnesota-walks-2017-final.pdf>

29 *Minnesota Toward Zero Deaths*. <http://www.minnesotatzd.org/>

30 MnDOT Safe Routes to School program: <http://www.dot.state.mn.us/saferoutes/>

31 MnDOT Complete Streets program: <https://www.dot.state.mn.us/planning/completestreets/>

32 City of Minneapolis. (2020, February). *Draft Minneapolis Transportation Action Plan*. Appendix E: Engagement summaries, 16. http://go.minneapolismn.gov/application/files/8715/8355/0509/TAP_Draft_Plan_Full_Appendix_web.pdf

33 Britschgi, C. (2020, March). *Minnesota is latest state to consider ban on single-family zoning*. Reason. <https://reason.com/2020/03/11/minnesota-is-latest-state-to-consider-ban-on-single-family-zoning/>

34 For an explanation of how housing policy impacts climate, see: <https://www.nytimes.com/2019/03/25/opinion/california-home-prices-climate.html>

35 For a discussion of how exclusionary zoning continues racial segregation, see: <https://tcf.org/content/commentary/exclusionary-zoning-continues-racial-segregations-ugly-work/>



Photo by Sam Rockwell, Move MN

The Twin Cities have also seen increased access to—and attractiveness of—transit options. These include investments in two light rail lines and two bus rapid transit lines, facilitated in part by a dedicated county-level sales tax. And while transit ridership overall has fallen, these lines have done well: the Green Line LRT has seen ridership increases every year it has operated, and routes improved with BRT service experienced 30 percent ridership increases almost instantaneously.³⁶

Metro Transit, the region’s primary transit agency, also rolled out a Better Bus Stops program, which prioritizes replacing shelters and providing new shelters in underserved communities.³⁷

Finally, Minneapolis and St. Paul collaborated in early 2020 to reduce citywide residential speed limits to 20 MPH and commercial corridor speed limits to 25 MPH. This change delivers on Vision Zero commitments made by both cities, showcases critical interjurisdictional cooperation, will make biking and walking safer, and will increase the attractiveness of taking transit in the region.

Moving forward

Minnesota has a strong framework for delivering climate progress through VMT reduction: the state and its largest cities have established emissions reduction targets, and state and city residents are eager for improved biking, walking, and transit.

Yet the state still has a legacy of prioritizing highway infrastructure that will continue to have lasting impacts. MnDOT’s *Pathways to Decarbonizing Transportation* places significant emphasis on strategies like transitioning to electric vehicles and biofuels and deprioritizes the other strategies outlined in this report that reduce VMT, despite the strong public support for them. This approach will need to shift for Minnesota to achieve necessary reduction in emissions from the transportation sector.



Opening day on the Green Line in the Twin Cities.

Flickr photo by Michael Hicks.

<https://www.flickr.com/photos/mulad/14238058898/>

36 Kerr, D. (2020, March). Ridership growing in corridors with fast, frequent service. Metro Transit. <https://www.metrotransit.org/ridership-growing-in-corridors-with-fast-frequent-service>

37 Metro Transit Better Bus Stops program: <https://www.metrotransit.org/better-bus-stops>

To deliver adequate emissions reductions, Minnesota should:

- Update climate targets to reflect current realities and set firm and bold targets for VMT reduction that overshoot overall climate goals;
- Stop expanding highway capacity and invest in fast, reliable transit that actually provides a viable alternative to driving;
- In conjunction with the Metropolitan Council, incentivize development in center cities rather than exurbs; and
- Continue to invest in walkable, bikeable downtowns across the state.

Reducing VMT is doable. Thriving, growing cities around the world, from Paris to London to San Francisco and New York, show that it is possible to serve residents and workers with non-automobile transportation. In the Twin Cities, between March 1 and April 24 of this year, due to COVID-19, VMT fell 75-90 percent; VMT in the Duluth metro area, on Lake Superior, fell 70-75 percent.³⁸ While this is not how or why anyone hopes to reduce VMT, it shows that it is possible to act quickly.

It makes no sense to leave any emissions reduction strategy untouched in an emergency. Minnesota has had success lowering VMT in the past. It should do more of what it knows works and provide it to more than just its biggest cities.

38 Tomer, A. & Fishbane, L. (2020, May). *Coronavirus has shown us a world without traffic. Can we sustain it?* Brookings. <https://www.brookings.edu/research/coronavirus-has-shown-us-a-world-without-traffic-can-we-sustain-it/>