



# Annual Report

# 2023

## State of Freight

Minnesota Freight Advisory Committee



[dot.state.mn.us/ofrw/mfac](https://dot.state.mn.us/ofrw/mfac)



## About MFAC

Established in 1998 as the first state-level freight advisory committee in the country, the Minnesota Freight Advisory Committee (MFAC) continues to serve as a model for other states.

A partnership between government and business, MFAC meets quarterly to exchange ideas, advise the Minnesota Department of Transportation (MnDOT) on the current and future condition of the state's multimodal freight transportation system, and recommend freight-related policy and actions. MFAC provides a focal point for freight transportation expertise in Minnesota.

MFAC also plays a critical role in the continued development and implementation of the Minnesota State Freight Plan and its Freight Action Agenda. MnDOT produced the plan in partnership with public- and private-sector freight stakeholders throughout the state.

MFAC's membership roster (*see inside back cover*) includes broad representation from the public and private sectors. The committee also serves as a conduit for other freight industry and business contacts.

In 2020, MFAC updated its strategic plan, reinforcing its mission and refining its strategies and tactics.

### MFAC Strategic Plan

#### Mission

To advise MnDOT and other public agencies and officials on the current and future condition of Minnesota's multimodal freight transportation system and to recommend freight policies, programs, and investments that support the state's economic competitiveness and enhance safety.

#### Goals

- Provide active industry leadership in the development and implementation of the State Freight Plan
- Engage agency leaders and elected and appointed officials to affect decision-making on freight issues
- Bring value to members and reflect the diversity of stakeholders that have an interest in the movement of freight into, out of, and within Minnesota



# Advancing freight movement in Minnesota



At an MFAC meeting in September 2022, members worked in groups to help identify key freight issues for the state. Their responses included familiar MFAC topics such as truck parking and congestion, but, most important, the exercise reflected an important collaboration with MnDOT to update the Minnesota State Freight Plan.

Since then, at meetings and in other ways, MFAC members have continued to contribute to the development of the plan, which helps the state secure additional funding for freight projects and focuses efforts on priority freight improvements. MFAC will remain fully engaged in the process as the plan's heart — its action agenda — takes shape during 2024.

MFAC also continues to be successful as a voice for freight, particularly in transportation planning. For example, MFAC encouraged MnDOT to increase its focus on freight as part of the Rethinking I-94 corridor study, communicating its ideas in a letter to MnDOT Commissioner Nancy Daubenberger. MFAC also sent a letter to the U.S. Department of Transportation supporting MnDOT applications for funding to replace the Blatnik Bridge. The Blatnik Bridge project offers the potential to improve the flow of goods into and out of the Port of Duluth-Superior, with benefits to freight and the Minnesota economy, thanks to potential increases in freight traffic.

Similarly, plans for 14 miles of the I-35 corridor that runs through Duluth offer potential benefits for freight and the state economy. MFAC learned more about this corridor study and the Rethinking I-94 corridor study — both long-range planning efforts — at its 2023 meetings. The ability to consider freight needs so early in the process makes it much easier to incorporate ideas that help freight flow. As the only group with representation of all freight modes, MFAC can play a vital role in helping shape solutions to advance freight for these corridors and to address freight needs.

This year, our MFAC meetings covered a range of important topics, including the boost in transportation funding that resulted from this year's legislative session, a report on the Minneapolis Region Supply Chain Competitiveness Study, and a trucking update. A white paper also explored the potential of hydrogen fuel cells as a cleaner alternative energy source for freight.

A busy and productive year, indeed — one that wouldn't have been possible without the support of many. On behalf of the membership, my thanks to both Andrew Andrusko from MnDOT and Gina Baas from the Center for Transportation Studies for their amazing efforts in support of MFAC. Their many contributions to MFAC are invaluable and much appreciated. Of course, we also value and thank Commissioner Daubenberger for her willingness to listen to MFAC freight concerns.

We've been fortunate to add new MFAC members this year, including the City Engineers Association of Minnesota, FedEx Express, Canadian Pacific Railroad, UPS Corporate, and the Governor's Council on Rail. I also want to welcome Margaret Donahoe and Kathryn Sarnecki to the MFAC Executive Committee and recognize and thank committee members for lending their time and talents to guide MFAC work.

MFAC's diversity and commitment to advancing freight movement in Minnesota are only two of its greatest assets. All MFAC members and all those who make freight work for Minnesotans every day, no matter the obstacles, deserve our gratitude.

— **Deb DeLuca**, Chair (2022–2023), Minnesota Freight Advisory Committee



*"MFAC brings together a wealth of knowledge and experience from freight experts representing all modes of the freight industry to discuss and inform on current and future trends impacting freight transportation. It has proven to be an excellent forum instrumental in guiding and informing policy, and it is also proving essential in helping us better understand strategies the freight industry will consider in helping the state meet its environmental goals. I appreciate this ongoing partnership approach to understanding and addressing challenges to the freight industry, and the passion and candor the industry experts bring to the conversation."*

— **Shelly Meyer**, Director, MnDOT Office of Freight and Commercial Vehicle Operations





## Minnesota freight network depends on improvements to key transportation corridors

Interstate 35 through the city of Duluth serves as a key corridor for the transport of cargo to and from the Port of Duluth-Superior. In the Twin Cities, I-94 plays a similar role, making it possible for trucks to transport goods between cities, throughout the metro area, and beyond. Each route is a vital part of the freight network and supports the health of the Minnesota economy.

Each of these critical corridors has been in service for decades, and plans for much-needed improvements are in development. These infrastructure improvements also could provide important benefits to the state freight network, which, in turn, supports every level of our economy.

### I-35 in Duluth: Improving connections

A study of I-35 in Duluth began more than a year ago, a joint effort between the Duluth-Superior Metro Interstate Council and MnDOT District 1. The study looked at 14 miles of I-35 from Midway Township, through the city of Proctor, and all the way through Duluth.

“What does this 14-mile segment need?” asked Angie Bersaw from Bolton & Menk, the firm conducting the study, in a September presentation to MFAC members. “Over the next 20 years, there’s a lot of infrastructure in these 14 miles, so we’re looking at some of the basics like operations and safety as well as community goals.”

The study involved talking with representatives from the freight community as well as different types of businesses and neighborhood groups.

“The freight community is an important stakeholder for Minnesota’s transportation network,” said Duane Hill, district engineer for MnDOT District 1. Past conversations with the local freight community led to the current Twin Ports Interchange Project, which will help trucks with heavy loads directly access the highway system from the port.

“A port facility, especially a water port, has to have really great connections to rail and the highway system,” Hill said. “If you don’t have those, you don’t function and you’re not as competitive as you could be. Our goal is to help them with that first-mile, last-mile connection.”



As a first step in corridor overhauls, the study paves the way for determining and prioritizing infrastructure improvements, such as extending a truck climbing lane to reach just past the top of the hill on I-35. After completion of a high-level corridor plan, planning work continues with a more detailed segment-by-segment analysis, then on a project-specific basis.

The study also catalyzed a community discussion around reconnecting hillside neighborhoods and downtown to the waterfront and tourism areas. To support further planning in the downtown segment, MnDOT is working with the city on a request for funds from the federal Reconnecting Communities Program.

“We’re trying to be comprehensive, to find that balance, to make sure that this does work for all modes and the community,” Bersaw said.



## MFAC lends its support for rebuilding Blatnik Bridge

In early 2024, MnDOT and the Wisconsin Department of Transportation were awarded more than \$1 billion by the U.S. Department of Transportation to rebuild the 60-year-old Blatnik Bridge connecting Duluth, Minnesota, to Superior, Wisconsin.

Minnesota and Wisconsin DOTs submitted applications in 2023 for USDOT grants through the INFRA Nationally Significant Multimodal Freight & Highway Projects program to rebuild the bridge. In addition, Minnesota and Wisconsin each committed \$400 million to the project.

During the process, MFAC sent a letter to the U.S. Secretary of Transportation Pete Buttigieg in support of the project and grant applications. The following excerpt conveys the value of the bridge to the region and beyond.

“This bridge is an important freight and commercial connection between the Twin Ports and for the Upper Midwest region. The Blatnik Bridge is essential to the functioning and success of the national shipping industry, as the project serves commerce through the international multimodal Port of Duluth-Superior. The Port of Duluth-Superior is the largest U.S. port on the Great Lakes and the 17th largest port in the nation, based on tonnage, and one of the largest marine gateways for U.S. trade with Canada, the number-one trade partner of Minnesota and the nation.”



## I-94 in the Twin Cities: Investing in mobility

In the years to come, aging infrastructure throughout the 7.5-mile stretch of I-94 between downtown Minneapolis and Marion Street in St. Paul will require attention. Efforts under way now seek to better define the options for what the stretch might look like.

“We started out as a planning study looking at the corridor,” said Sheila Kauppi, deputy district engineer for the MnDOT Metro District. “We have a number of infrastructure investments that will be coming due along the corridor over the next 20 years.”

The corridor includes an intermodal yard and freight traffic, and MnDOT plans to look at freight impacts in greater detail as the Rethinking I-94 study moves forward.

“The I-94 program of projects intends to improve mobility for people and goods on, along, and across the corridor in a way that facilitates community connections for all modes,” she said.

As part of the study, MnDOT has gathered ideas and comments from the public, weaving viable road and transit approaches into high-level alternatives. MnDOT shared the following concepts with MFAC:

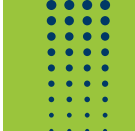
- Removing the existing freeway and replacing it with an at-grade roadway featuring dedicated bus rapid transit (BRT) lanes with three stops
- Removing the existing freeway and replacing it with an at-grade roadway featuring BRT lanes on each side of the roadway with three stops

- Separating the existing roadway into two systems, providing a separate local-traffic roadway and freeway space for through trips
- Rebuilding the existing freeway to include two general purpose lanes and one managed lane (E-ZPass lane) with BRT in each direction
- Rebuilding the existing freeway to include three general purpose lanes and one managed lane (E-ZPass lane) with BRT in each direction
- Rebuilding the existing freeway, adding one managed lane (E-ZPass lane) with BRT in each direction, and varying the number of lanes throughout the corridor
- Rebuilding the existing freeway to include the current lane configuration plus an additional general purpose lane and adding a shoulder along the entire corridor for a transit lane in each direction

*In a letter to MnDOT Commissioner Nancy Daubenberger, MFAC encouraged MnDOT to increase its focus on freight as part of the Rethinking I-94 corridor study. The letter provides ideas in support of easier and safer freight movements along the I-94 corridor through the Twin Cities. Read the MFAC letter at [z.umn.edu/MFACrethinkingI-94letter](http://z.umn.edu/MFACrethinkingI-94letter).*

*For more information and updates on Rethinking I-94, visit [talk.dot.state.mn.us/rethinking-i94](http://talk.dot.state.mn.us/rethinking-i94).*





# Minnesota Legislature addresses freight needs as part of major transportation investment

The 2023 Minnesota legislative session brought in billions of dollars for much-needed improvements to the state's transportation system, including a boost to the freight community.

"We have really good news on the funding front," said Margaret Donahoe, executive director of the Minnesota Transportation Alliance and MFAC Executive Committee member. Just how good?

- Transportation received a total of \$1 billion in one-time general fund money for the next biennium.
- The final bonding bill allocated \$2.6 billion for transportation.
- The Legislature authorized new trunk highway bonds totaling \$599 million over the next three years.
- The Legislature also approved major increases in ongoing, dedicated transportation revenue totaling \$3.8 billion over the next four years.
- Freight also benefited from \$153 million in funding for Corridors of Commerce, which focuses on improving major corridors that are key to commerce and freight movement.

## Historic surplus set the stage

What may seem like a sudden influx of significant funding really represents years of efforts to increase transportation

system investments, Donahoe reported to MFAC members in June.

"Sometimes when big things happen, people think that these ideas or this need came out of the blue or just happened this year," Donahoe said. "But we all know we've been talking about the need for more funding and more investments in transportation year after year."

The state started 2023 with a historic \$17.5 billion surplus in the general fund and one-party control in the House, Senate, and governor's office, which helped set the stage for significant activity. That activity also included supporting new recurring streams of revenue for transportation.

Though the one-time infusion helps the state move forward with key projects, transportation funding still faces longer term issues due to a projected decline in revenue from ongoing sources.

"If you look at budget forecasts, you could see this is not a very good trend," Donahoe said.

## Taxes and fees

As a result, the Legislature enacted some new, ongoing revenue sources for transportation, such as a new metropolitan area ¾ cent sales tax, which took effect in October 2023. The Metropolitan Council will levy the tax, receiving 83% of funds to primarily support transit



operations, maintenance, and capital projects, with the remainder of funds going to the seven metro counties.

Minnesota also will launch a new fee on retail deliveries to help offset repair costs for roads and bridges. Starting July 1, 2024, retailers will pay a delivery fee of 50 cents for each transaction that involves retail delivery in the state and that equals or exceeds the threshold amount of \$100 before application of sales tax. Retailers can either directly pay the fee or collect it from the purchaser. Examples of exemptions include food, pharmaceuticals, baby products, and small businesses with less than \$1 million in revenue.

To help with highway costs, the Legislature also agreed to index the fuel tax to the construction cost index, capped at 3% per year, and it increased the motor vehicle sales tax and license tab fees.

### Focus on environmental concerns

On the policy side, one recently passed initiative focuses on the environment. It requires a greenhouse gas emissions assessment for projects that add capacity and cost more than \$15 million in the metropolitan area and more than \$5 million in Greater Minnesota. The analysis would look at the impact of both emissions and vehicle miles traveled and the results may lead to rescoping, mitigation measures, or a halt to the project.

“Our members had concerns about this, and we were able to get a working group added to the legislation,” Donahoe said. The group will include city and county engineers and others who will look more closely at the process of applying a greenhouse gas emissions assessment and mitigation measures.

Support from Minnesota Transportation Alliance members plays a role in increasing awareness about transportation and freight concerns. The nonprofit alliance brings together a statewide coalition of public and private organizations to effectively advocate for a safe, efficient transportation system that works for everyone.

“We just really understand and appreciate the value of coalitions and people getting involved and talking to legislators about the transportation system — the issues, the challenges, the needs,” she said. “Those things really do help make a difference.”

*“Sometimes when big things happen, people think that these ideas or this need came out of the blue or just happened this year. But we all know we’ve been talking about the need for more funding and more investments in transportation year after year.”*

— Margaret Donahoe,  
Minnesota Transportation Alliance

## Omnibus transportation funding bill highlights

*\$1 billion in one-time general fund appropriations (FY 24-25)*

*\$599.2M in trunk highway bond authorization (FY24-27)*

- MnDOT facilities: \$87.4M
- Corridors of Commerce: \$153M
- State road construction: \$200M
- Named projects: \$166.15M
  - TH65 in Anoka County: \$68.7M
  - US Highway 10 Coon Rapids: \$30M
  - TH61 Two Harbors: \$11M
  - US Highway 169 Scott County: \$4.2M
  - TH3 Roundabout: \$2.2M
  - US Highway 8 Chisago County: \$42M
- Trunk highway fund — priority transportation projects
  - Highway 7 — Hennepin County: \$750,000
  - US 169 Itasca: \$6M

*\$493M in capital bonding bill, funding a variety of projects including airport and rail improvements and port assistance*

*\$3.8 billion over the next four years from a major increase in ongoing, dedicated transportation revenue*

**The Minnesota Transportation Alliance website at [transportationalliance.com](https://transportationalliance.com) features additional details about funded projects.**







*MnDOT Commissioner Nancy Daubenberger addresses MFAC members in March 2023.*

## State Freight Plan update paves the way for freight system improvements

When MnDOT completed its first State Freight Plan in 2005, Minnesota became one of the first states in the country to adopt a state freight plan — before the federal requirement to do so. Minnesota now is required to have a freight plan to receive certain federal funds for freight-related projects.

With those funds, MnDOT established the Minnesota Highway Freight Program (MHFP) with the aim of advancing freight movement and safety. Through a competitive solicitation process and with MFAC participation, MnDOT distributed \$100 million for freight projects from 2016 to 2020, and close to \$60 million in the next round.

The 2022-2025 slate of MHFP projects includes expanding truck parking spots at the Burgen Lake Rest Area, reconstructing 117th St. in Inver Grove Heights to improve the movement of first- and last-mile deliveries, and roundabouts at key intersections to improve safety.

### Building on successes

In March MnDOT kicked off its work on a new State Freight Plan to build on the successes of the last plan and bring Minnesota in compliance with new federal laws. See the chart on page 8 for details about the plan, including successes, new requirements, and the update process.

“We continue to work with MFAC to gather input and engage them around the freight action agenda, the core of the plan that identifies what we’ll work on in the next

10 years,” said Andrew Andrusko, interim supervisor of the Freight and Railroad Planning Section with the MnDOT Office of Freight and Commercial Vehicle Operations.

Part of the updating process involves considering state and federal goals, related planning efforts, and major societal issues. “For example, MnDOT recently adopted a new edition of the Statewide Multimodal Transportation Plan,” Andrusko said. “In that plan, we have goals to improve equity, goals to improve our sustainability and reduce the environmental impacts of our transportation system. As we move forward with both the freight action agenda and the major goals and strategies within the State Freight Plan, we are looking to align those elements of the plan with these broader efforts.”



## Opportunities for public and industry input

Development of the plan involves talking to stakeholders, including community members and especially groups not traditionally included in outreach, about freight issues. Those discussions help bring focus to both priorities and needs.

“This state freight plan is an opportunity for us to renew our conversations around what is important about freight to us and our communities,” he said.

Access to basic supplies remains a concern for the public, especially after pandemic-induced shortages, he said. More than 76% of Minnesota communities rely on trucks to get their goods and services. “As we think about

reconciling that issue with the needs for sustainability and zero emissions and reducing the impacts of these movements,” Andrusko said, “we also need to ensure that communities are able to get the basic goods and supplies that they need to survive.”

With representatives from the diverse freight industry, MFAC members are helping identify issues, prioritize action items, and assist with implementing some actions. “MFAC has been vital in helping us to develop the new update to the State Freight Plan,” he said, “both providing direct advice through quarterly meetings and special meetings, as well as providing informal advice.”

*“MFAC has been vital in helping us to develop the new update to the State Freight Plan, both providing direct advice through quarterly meetings and special meetings, as well as providing informal advice.”*

— Andrew Andrusko, MnDOT Freight Office

## Past and future

# Minnesota State Freight Plans, 2016 and 2024

Successes to Date	Common Action Items	New Requirements	Current Process
Funding and competitive solicitation process for Minnesota Highway Freight Program	Role of MFAC as advisory group to MnDOT and key decision makers	Results of recent commercial vehicle parking facilities assessment	Review key freight plans, studies, and reports, as well as potential freight performance measures
MFAC website	Truck parking improvements	Recent supply chain cargo flows in the state by mode	Complete environmental justice analysis
Outreach to other state freight advisory committees and freight-related groups	System to evaluate optimal freight movements and commodity flows	Inventory of commercial ports in the state	Conduct stakeholder engagement
	Freight and land-use policies	Consideration of findings and recommendations by multistate compacts	Develop objectives and performance measures
	Investments in freight corridors	Impacts of e-commerce on freight infrastructure	Identify action agenda items
		Consideration of military freight	Complete plan by late summer 2024
		Strategies and goals to increase freight system environmental resilience and decrease impacts of freight on the environment	

## Hot topics:

# Supply chain resiliency

GREATER MSP, the Minneapolis-Saint Paul Regional Economic Development Partnership, presented MFAC with the results of research to help inform supply chain resiliency and diversity strategy for the region.

## MSP Supply Chain Competitiveness Study highlights



### Global supply chains...

... are here to stay!



### Freight matters...

... road, rail, air, water — it all matters!



### Transportation infrastructure...

... remains vital!



### State strengths: Better congestion rating than five competing peer regions

#### 2020 Truck congestion costs

Dallas-Fort Worth-Arlington: \$330 million

Boston-Cambridge-Newton: \$262 million

Atlanta-Sandy Springs-Alpharetta: \$257 million

Philadelphia-Camden-Wilmington: \$253 million

MSP: \$199 million



### State strengths: The valued resource of MSP International Airport

- Delta hub and multiple other carriers
- Direct international flights, potential with complementary markets, such as Germany
- Cargo services through multiple providers
- More physical capacity for freight now
- Capacity for upgrades with a business case



### State strengths: Talent

- Talent in robotics, engineering, food science
- Higher education



### State opportunities

- Improved truck parking
- Increase in cold storage facilities
- Multiple federal and state resources for supply chain investments

## Hot topics:

# E-commerce

E-commerce has grown 200% since 2010 and currently makes up a 15% share of total retail sales, according to early results of the Urban Freight Distribution Study.

With that growth comes the opportunity to explore the impact of e-commerce on transportation, the environment, and land use. The Metropolitan Council, which commissioned the study, supports the development of its 2025 Transportation Policy Plan and land-use-related policies and actions in its 2050 Regional Development Guide.

Slated for completion by early 2024, the study seeks to:

- Gain a better understanding of the trends in retail shopping/e-commerce purchases, warehouse/fulfillment center siting and operations, and last-mile parcel deliveries
- Estimate impacts of increasing e-commerce on the region's overall vehicle miles traveled (VMT) and associated greenhouse gas emissions
- Identify potential land-use strategies to increase efficiency and reduce regional VMT
- Assess best practices in curbside management for commercial deliveries and last-mile modal technologies

"Obviously, we saw some major growth in online purchases and e-commerce activities before the COVID pandemic and that accelerated during the COVID pandemic, which is rapidly changing how we as consumers shop for, purchase, and receive our goods," said Steve Elmer, planning analyst for the Metropolitan Council, at the June MFAC meeting. "The results of this study will inform our policy plans, first and foremost."





A new Shell hydrogen refueling station in Wilmington, California

## Freight industry explores many options in journey toward decarbonization

Thanks to pilot projects in California, Amazon found a great fit for battery-electric trucks — hauling trailers to different locations in its yards — but it took some creative problem solving.

Amazon worked directly with manufacturers to help customize the vehicles for this work, and the pieces began to fall in place. “We worked to downsize the battery, which got the economics right and allowed us to scale the program further,” said Ari Silkey, director of North American Surface Transportation for Amazon.

### No silver-bullet solutions

Silkey shared Amazon’s goals and experiences with MFAC members and other participants at the 2023 Freight and Logistics Symposium, which focused on the journey toward lowering emissions and the options and challenges that freight modes face along the way.

“There’s no silver bullet to solving freight emissions, it’s true, but then you’ve got to keep digging and digging and figure out how to match the technology to the use case,” Silkey said. Amazon also has launched more than 10,000 electric delivery vans throughout the United States and continues to pursue other sustainability solutions.

José Samperio, vice president and general manager of North America On-Highway at Cummins, Inc., sees many companies in the freight industry exploring their options for decarbonization.

“They’re tired of talking about what can’t be done, and

they are starting to talk about what *can* be done,” Samperio said during his symposium presentation. “If you look hard enough, you’ll see that there are places where you can take a step ahead in this transformation and decarbonization.”

The freight industry understands the importance of finding solutions and is making investments in exploring and piloting new technologies and fuel solutions. “We all want it. We all know it’s a good thing,” he said. “We know it needs to happen.”

### An all-solution environment

To keep the trucking industry moving at affordable costs, though, it’s also vital to determine the best combination of solutions — those that both reduce the trucking industry’s carbon footprint and that ensure economic sustainability, he added. With more than 70% of all goods in America transported by trucks and small trucking fleets dominating the market, identifying those solutions becomes even more important and challenging. Where, then, to start?

Samperio recommends that freight providers ask themselves a series of questions: Who are you? How do you operate? What are your goals? What are you able to do? What are you willing to do? Next comes understanding and closely examining the options, whether that’s natural gas, battery-electric, hybrid, or the potential of hydrogen (see *related story that follows*).

“We’re living in an all-solution environment,” he said. “Any technology that helps you lower emissions today

economically is good for you. Decarbonize as fast as possible as much as possible in an economical way.”

That may mean rethinking operations: For example, it may be possible to turn a longer haul trip into a series of shorter trips, which makes battery electric economical and efficient. Beyond short-term gains, it pays to keep looking at options as new innovations hit the market. Key considerations for implementation include energy availability and viability, lead time of technology, potential public and private infrastructure investments, flexibility, and scalability potential.

## Ongoing dialogue about decarbonization

Participating in ongoing dialogues and sharing the highs and lows of the search for solutions also helps advance new ideas and possibilities. “I think it’s important for all of us in the supply chain to talk about the challenges we have,” Samperio said.

Railroads are working hard at zero emissions and looking at several potential short-term and long-term paths, said symposium presenter Allen Doyel, senior general attorney for environmental at BNSF Railroad.

For example, railroads are exploring up to 100% renewable diesel and biodiesel in existing locomotives, which could dramatically reduce carbon emissions in the near term. Future lower- and zero-emission technologies are still in research, development, and demonstration phases.

“We are orders of magnitude, decades away from where we need to be in battery technology and hydrogen technology,” Doyel said, particularly for impactful line-haul applications.

The difficulty in decarbonizing sectors such as rail, air, and marine increases the need for funding to support progress. “Leveraging renewable fuels now can achieve gains,” he added.

Other issues that influence technology choices include infrastructure decisions, such as the availability of charging stations, and the capability to service new technologies, especially given the current shortage of service technicians.

The effort to overcome these barriers requires collaborations with others in the private and public sectors, as well as public and private funding. Amazon co-founded The Climate Pledge in 2019 with the goal of reaching net-zero carbon emissions across its operations by 2040, by implementing decarbonization strategies through real business change and neutralizing remaining emissions with high-quality offsets. To date, more than 460 companies in 41 countries have signed on. And, in 2020, Amazon established The Climate Pledge Fund, with an initial \$2 billion in funding to support companies developing the latest climate tech innovations.

“It can’t be done by one company or one group,” Silkey said. “It’s definitely going to take a team effort.”

## A closer look at hydrogen’s potential

Hydrogen packs quite a punch: A flexible energy carrier, one kilogram of hydrogen delivers the equivalent amount of power as one gallon of diesel. In fact, the federal government has noted its potential as a game-changer in the quest for zero emissions.

The 2022 Inflation Reduction Act includes a Section 45V clean hydrogen production tax credit, and other federal incentives exist to promote the development of hydrogen, including regional hydrogen hubs, and various funding programs aimed at spurring zero-emission heavy duty vehicles.

MFAC commissioned a white paper in 2023 to offer a broad overview of hydrogen and its potential freight application. The paper, authored by Karen Bridges, attorney and research specialist with the Humphrey School of Public Affairs, and Elise Harrington, assistant professor in the school’s Center for Science, Technology, and Environmental Policy, outlines key issues and consideration of use by freight.

Hydrogen offers the potential to help hard-to-electrify freight sectors such as international shipping, long-haul trucking, aviation, and long-haul freight trains reduce their carbon emissions. Depending on the application, it acts as a fuel for direct combustion or for use in a hydrogen fuel cell. Or, it can be converted to an intermediate energy carrier, such as ammonia or methanol, primarily for international shipping. Fuel cell application helps counter the disadvantages of batteries that include size limitations, heavier weights, and longer charging times.

The extraction of hydrogen requires energy, itself a process that may result in emissions. Producing hydrogen with renewable energy sources, such as wind or solar, results in the cleanest classification, green hydrogen. Current challenges to freight applications include the high costs of producing low and zero-carbon hydrogen and storing, transporting, and distributing hydrogen. Challenges also include new regulatory schemes related to the safe use of hydrogen, storage, and transportation, and assessments and regulations related to environmental impacts, as well as legacy infrastructure issues and the specific demands of each sector.

*Download the white paper, Hydrogen for Freight in Minnesota: Considerations for Technology Readiness and Policy Options in Minnesota, at [dot.state.mn.us/ofrw/mfac/](https://dot.state.mn.us/ofrw/mfac/).*



## Pardon the interruption:

# Critical issues persist for trucking industry

American Transportation Research Institute senior vice president Dan Murray and Minnesota Trucking Association president John Hausladen, both MFAC members, squared off at an MFAC meeting in September about top trucking concerns. Their presentation, "Moving Freight: Pardon the Interruption," took an informative and entertaining look at the important issues continuing to challenge today's trucking industry. Here were their key points, ranked in priority order from the top down:

ISSUE	CHALLENGES FOR TRUCKING
Workforce issues and driver shortages	<ul style="list-style-type: none"><li>• Driver shortages: Number one issue for motor carriers five years in a row</li><li>• Demographic to tap — women: Only 3.7% in over-the-road trucking</li><li>• Obstacle: Younger driver testing</li><li>• Closure of driver training schools</li><li>• Diesel technician shortage</li></ul>
Zero-emission trucks	<ul style="list-style-type: none"><li>• High costs: \$400,000–\$450,000 for electric trucks</li><li>• Loss of revenue weight on every trip because of heavy batteries</li><li>• Reduction in driver pay due to longer and more stops</li><li>• 40% drop in charge with temperatures 32 degrees and below</li></ul>
Speed limiters	<ul style="list-style-type: none"><li>• Only small reduction in number of high-consequence crashes</li><li>• Non-governed fleets with fewer crashes than governed fleets below the governed speed</li><li>• Bigger issue: Driving too fast for conditions</li><li>• Better option: Active safety systems</li></ul>
Infrastructure investment	<ul style="list-style-type: none"><li>• Safety: More resulting construction, more work zones</li><li>• At least one in four work zone fatalities involves large trucks</li><li>• Huge congestion issues, huge impacts on supply chain resiliency</li><li>• Impacts of increased debt</li><li>• Big concerns over truck parking</li></ul>
Legalization of marijuana	<ul style="list-style-type: none"><li>• Remains illegal federally</li><li>• One in four truck drivers don't know that you can't consume THC or smoke pot and still operate a truck</li><li>• Exacerbates driver shortages: 110,000 truck drivers have tested positive for THC and have not started the return-to-duty process</li><li>• Potential increases in already sky-high liability suits</li></ul>
Livable communities/ smart cities	<ul style="list-style-type: none"><li>• Potential implications: Dramatic truck congestion</li><li>• Planning: Not enough attention to freight and freight needs</li></ul>
Snow and ice	<ul style="list-style-type: none"><li>• No good solution to address build-up on tops of truck trailers</li><li>• Predatory towing practices</li></ul>



# Freight expertise

## MFAC Executive Committee (as of December 2023)



**Deb DeLuca**  
(Chair)  
Executive Director, Duluth Seaway Port Authority



**Jason Craig**  
(Vice Chair)  
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