

# Sustainability Updates

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PMG

March 11, 2020



# Key Updates

- Office of Sustainability and Public Health Overview
- Pathways
- Sustainable Transportation Advisory Council
- Agency Sustainability Report
- Resilience Report and Research

# MnDOT Sustainability and Public Health



1

## Reduce Transportation Sector GHG

*Work with partners to reduce GHG emissions from all modes of transportation*

2

## Promote Agency Sustainability

*Internal focus, engage staff, and lead by example*

3

## Improve Resilience of Transportation System

*Help the agency prepare for climate change*

4

## Promote Public Health

*Support public health and healthy communities*

# MN Statute 174.01

## **174.01 CREATION; POLICY.**

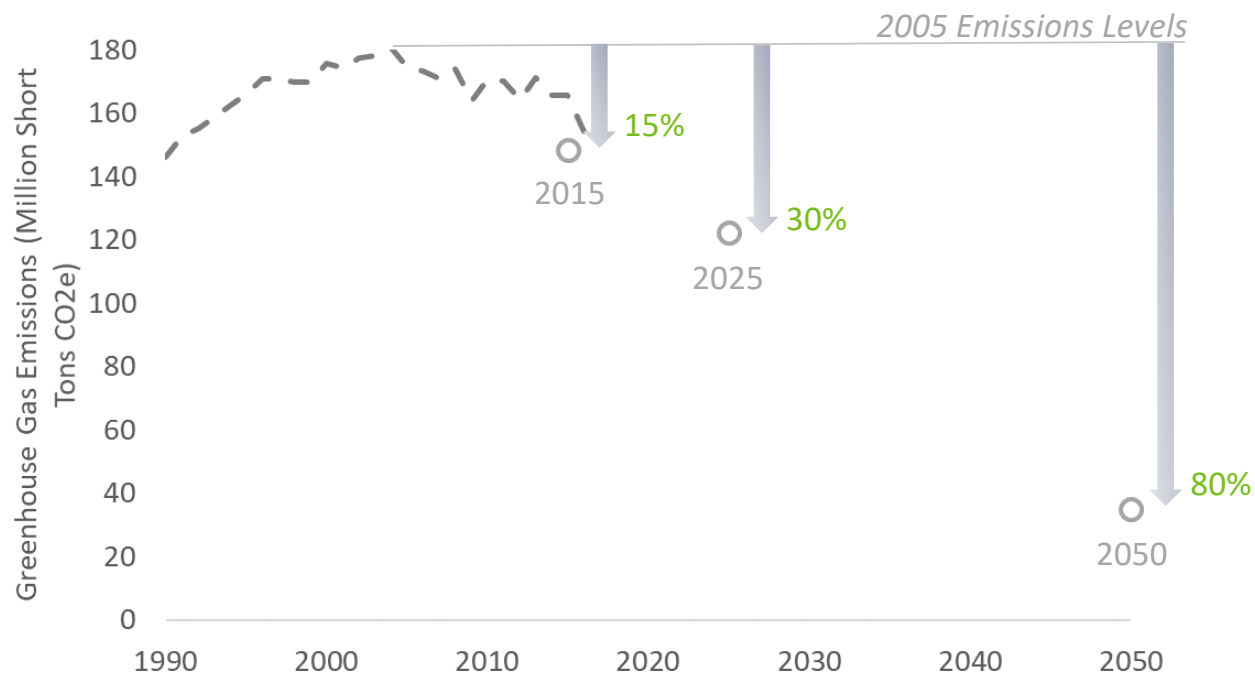
In order to provide an integrated transportation system of aeronautics, highways, motor carriers, ports, public transit, railroads, and pipelines, and including facilities for walking and bicycling, a Department of Transportation is created...

### **Subd. 2. Transportation goals.**

- 10) ensure the planning and implementation of all modes of transportation are consistent with the environmental and energy goals of the state
- 11) promote and increase the use of high-occupancy vehicles and low-emission vehicles
- 13) increase use of transit as a percentage of all trips statewide by giving highest priority to the transportation modes with the greatest people-moving capacity and lowest long-term economic and environmental cost
- 15) reduce greenhouse gas emissions from the state's transportation sector
- 16) accomplish these goals with minimal impact on the environment

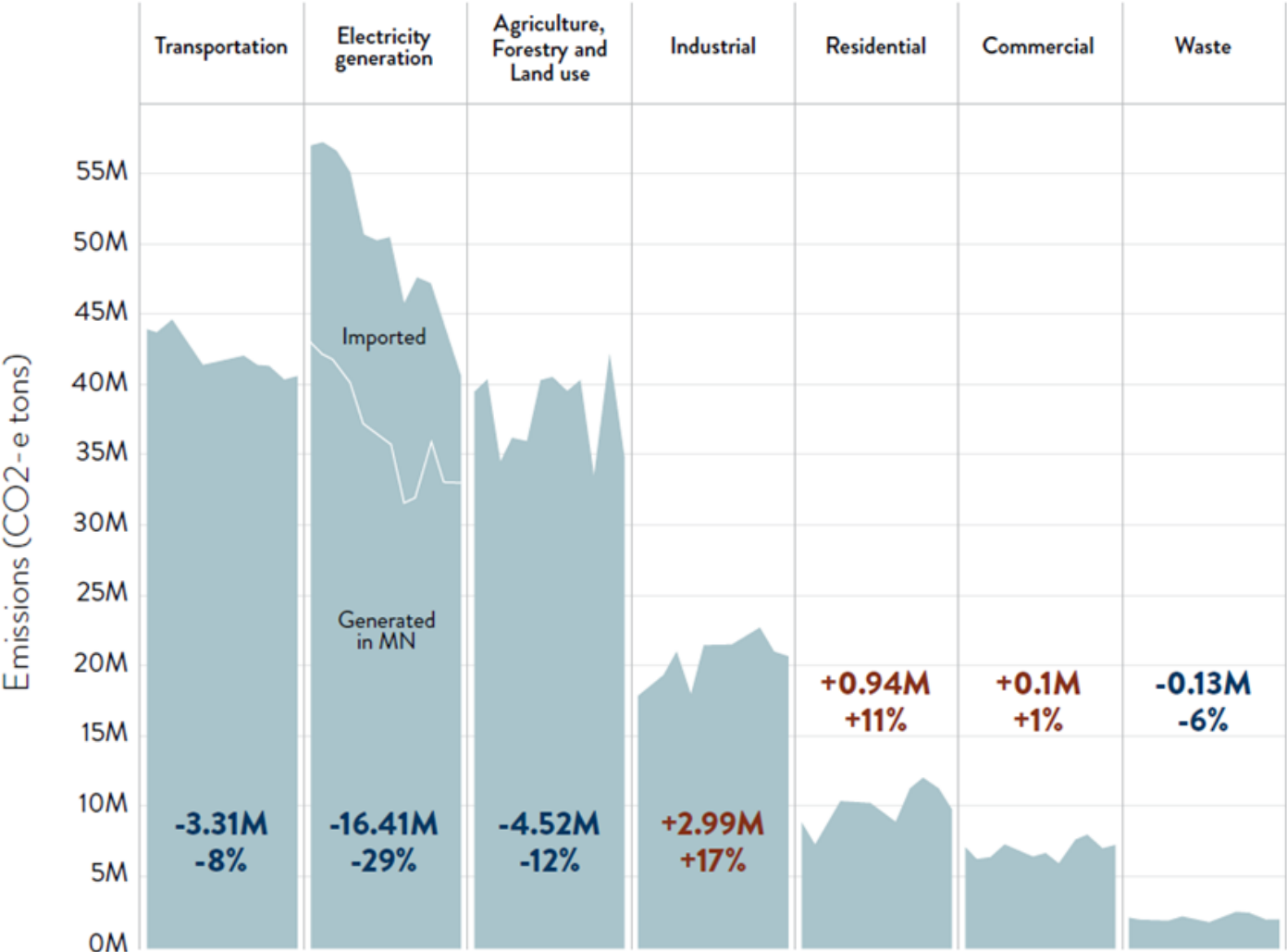
# Next Generation Energy Act

NGEA requires the state to reduce GHG emissions from 2005 levels, 15% by 2015, 30% by 2025, and 80% by 2050.



*We missed the 2015 target and are not on track for 2025.*

Minnesota Emissions by Sector 2005-2016<sup>9</sup>



# Pathways Overview

## Technical Stakeholder Engagement



Work with technical experts from the public, private, and nonprofits sectors to inform modeling assumptions and strategies that should be considered.

**April – June 2019**

## Modeling



Model different pathways for decarbonizing transportation.

**April – May 2019**

## Public Engagement

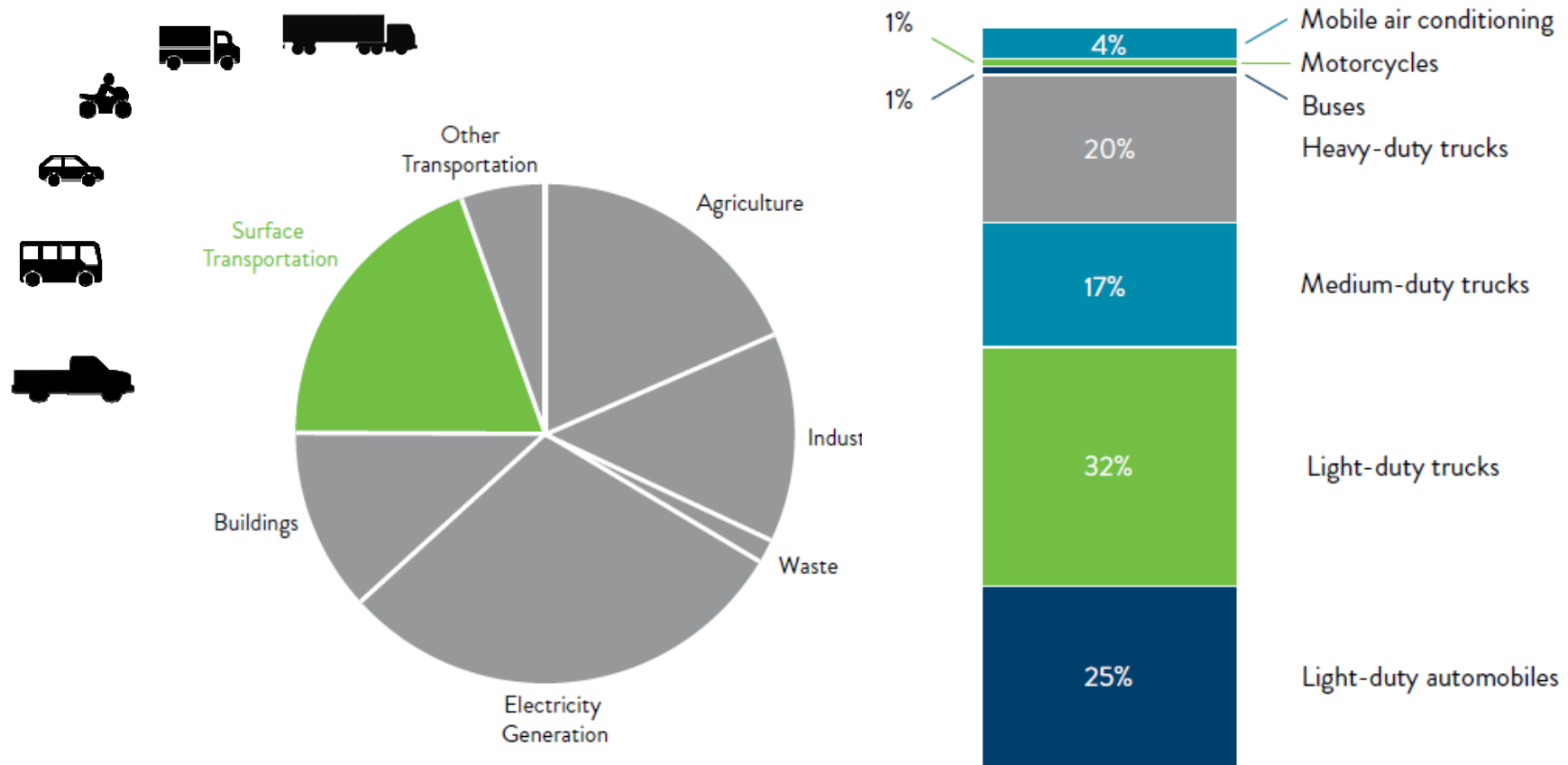


Meet with the public at locations around the state to hear their feedback and thoughts on strategies.

**May – June 2019**

# Surface Transportation

Minnesota Emissions Profile





# Technical Stakeholder Meetings

Organization	Meeting 1	Meeting 2	Meeting 3	Total Unique Attendees
Attendance	45	41	34	106

- Input on GHG reduction strategies, data, and assumptions for modeling
- 74 organizations invited, >50 attended one or more meeting
- State and local agencies, industry associations, tech companies, auto manufacturers, environmental advocacy groups, nonprofits, others...



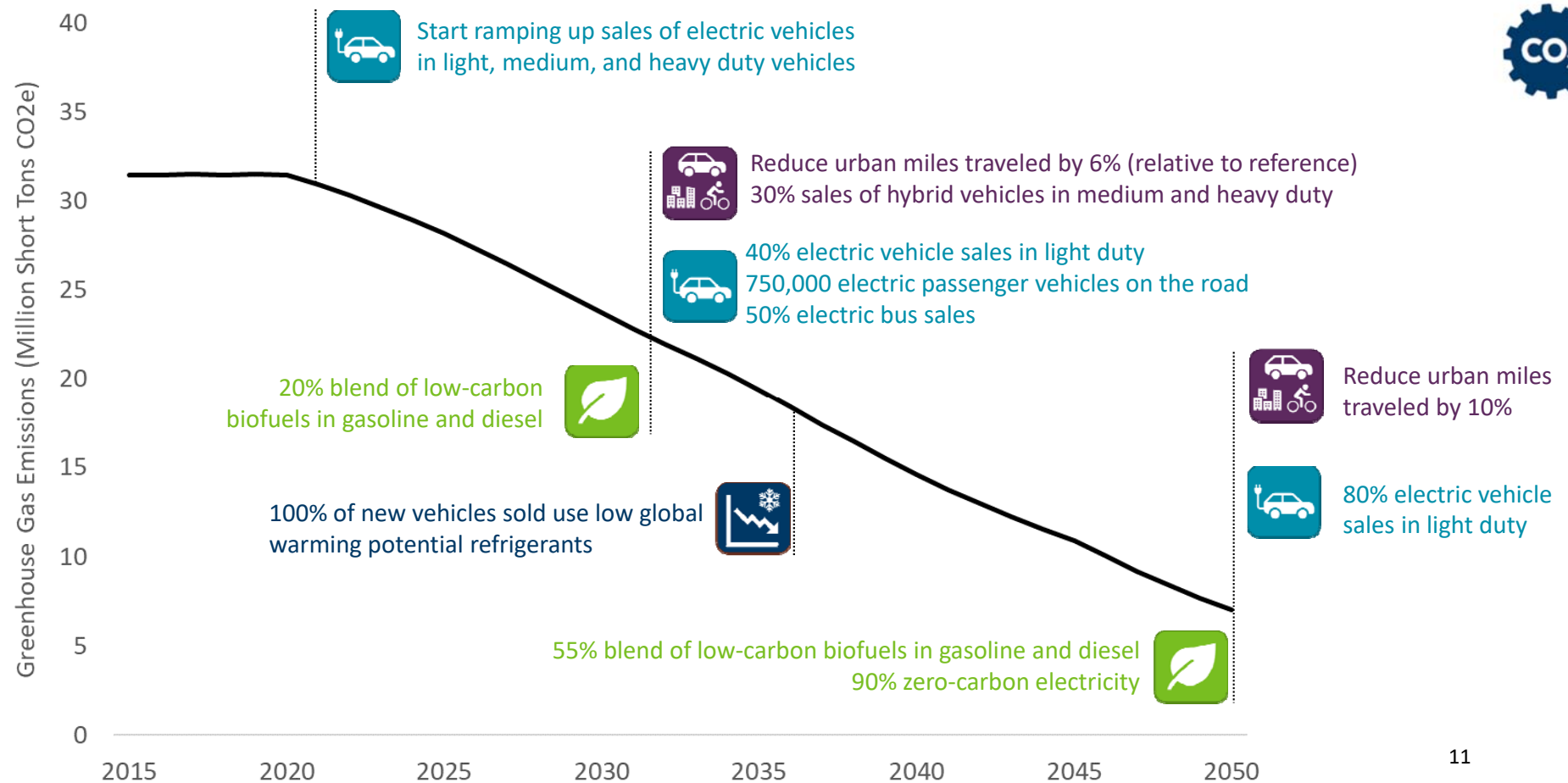
*Technical stakeholder meeting #1*

# Actions to reduce emissions in transportation

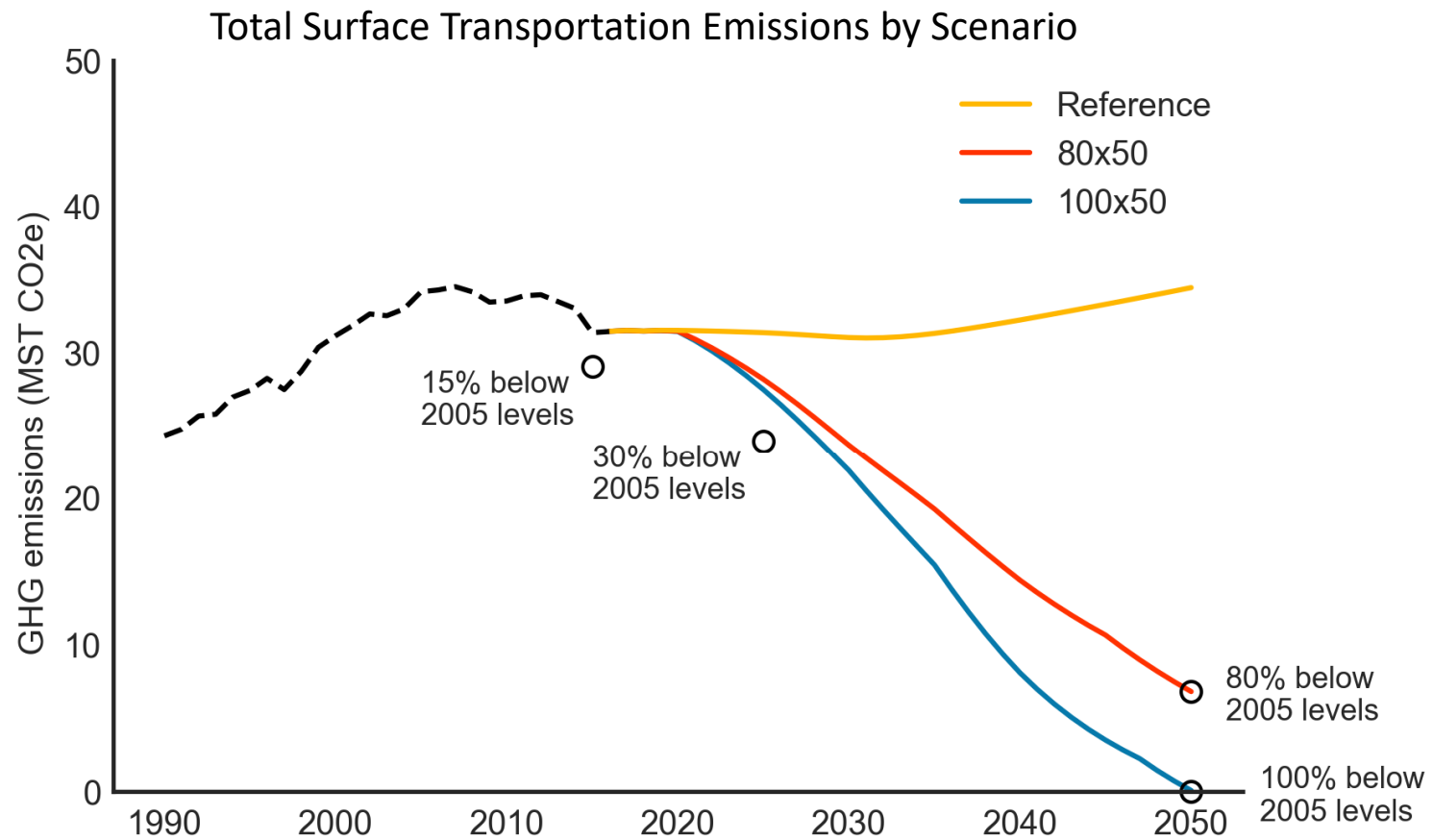


Model strategy	Example tactics to reduce transportation carbon pollution
Improve fuel economy	<ul style="list-style-type: none"> <li>• Federal or state vehicle efficiency standards</li> </ul>
Reduce driving and VMT	<ul style="list-style-type: none"> <li>• Smart, dense city design</li> <li>• Neighborhoods built for biking, walking, and rolling</li> <li>• Carpooling incentives</li> <li>• Improved public transit</li> </ul>
Increase electric vehicle sales	<ul style="list-style-type: none"> <li>• Consumer rebates</li> <li>• State vehicle targets</li> <li>• Public and workplace charging stations</li> </ul>
Reduce the carbon intensity of biofuels	<ul style="list-style-type: none"> <li>• Regenerative agricultural and soil practices</li> <li>• Process efficiency</li> <li>• Low-carbon fuel standard</li> </ul>
Increase lower-carbon electricity generation	<ul style="list-style-type: none"> <li>• Clean electricity standards</li> <li>• Utility greenhouse gas reduction goals</li> <li>• Retire coal plants</li> </ul>

# Minnesota GHG Emissions Reduction Measures in Transportation, 80x50 Scenario

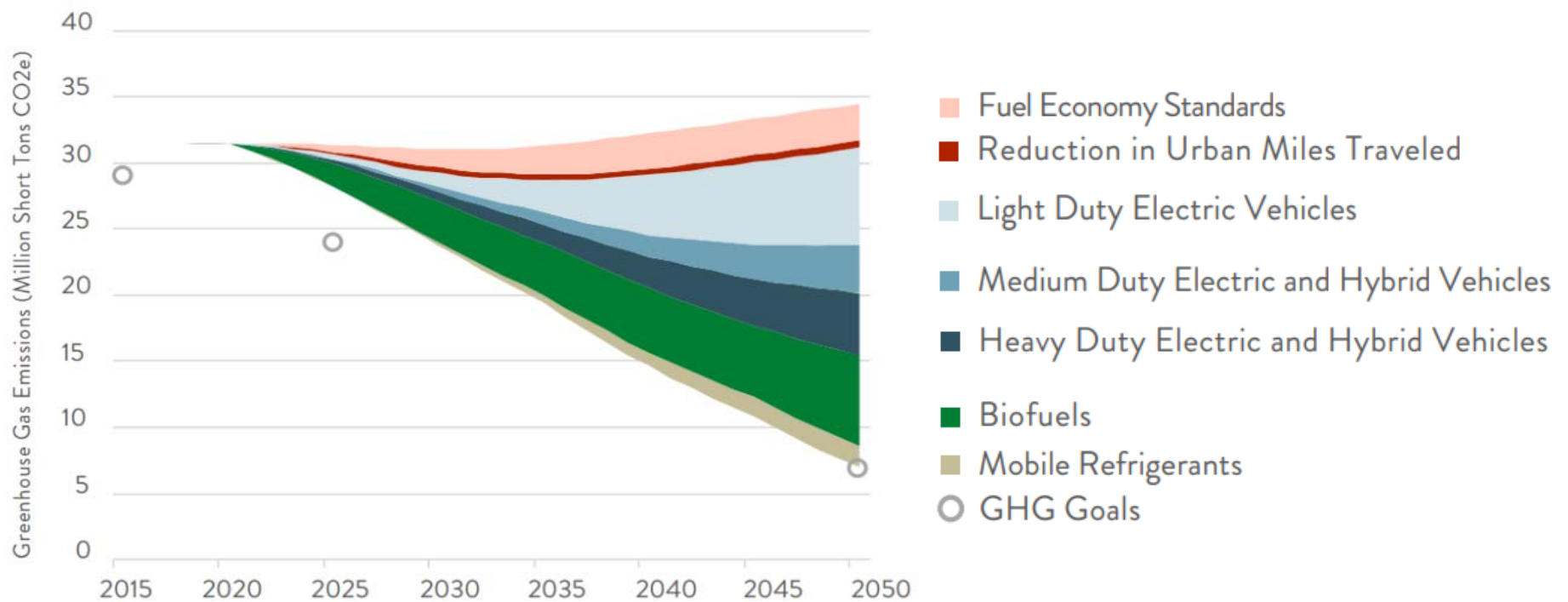


# Emissions Reduction Scenarios



# Emissions Reductions

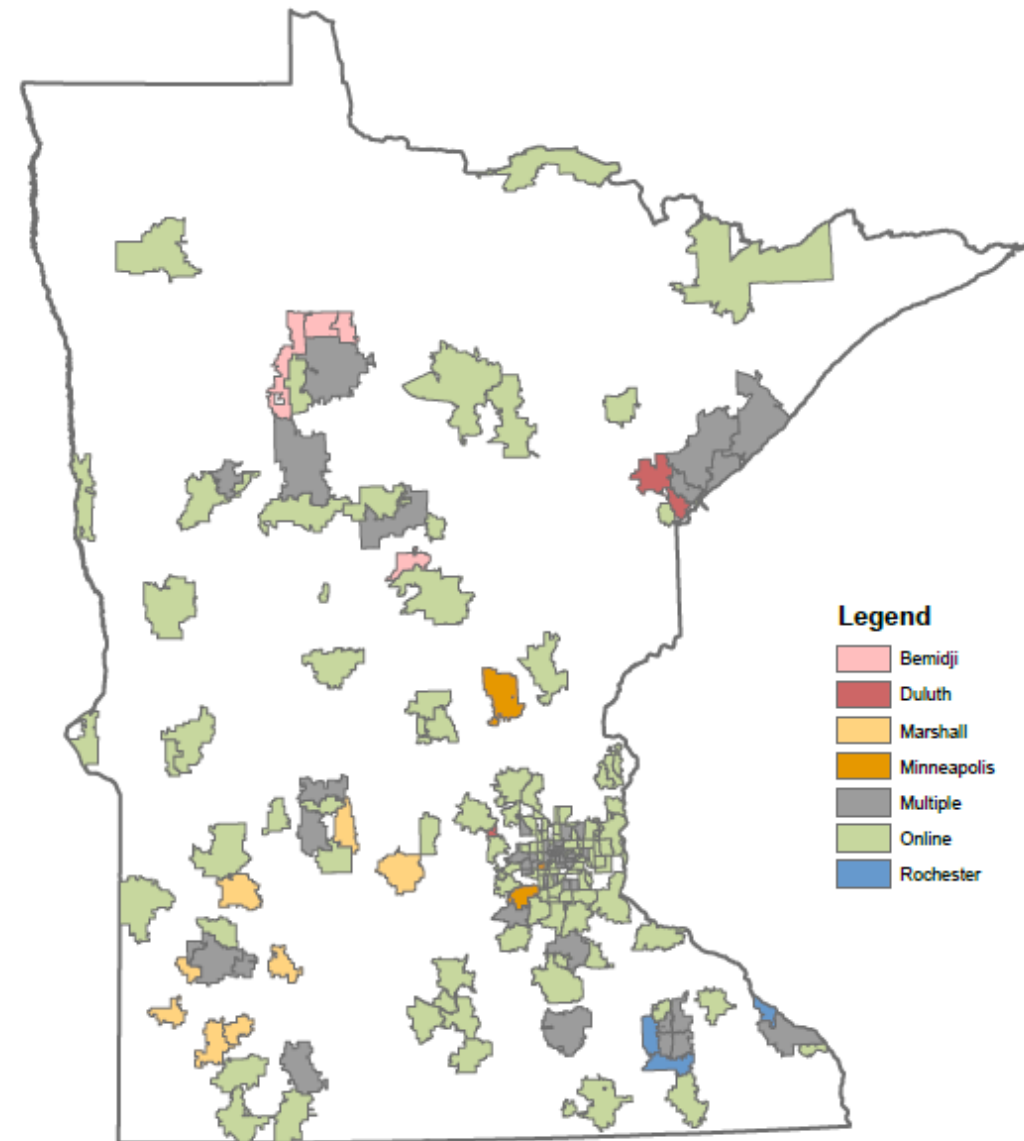
**80 x 50**



# Public Engagement

Online survey responses	Online comments
1,115	4

Webinar attendees	In-person meeting attendees
53	280



# Actions and Recommendations

## Actions

- What MnDOT can do now in response public input

## Recommendations

- Outside of MnDOT's control and suggested for consideration by other state agencies and the Governor



## Find Integrated Solutions

- Sustainable Transportation Advisory Council (STAC)
- Regional Collaboration on EV Corridors

## Fund EV Infrastructure

- Clean Transportation Funding Pilot Program



*I-94 near Albertville*



# STAC Members

## Co-chairs

- Commissioner Margaret Anderson Kelliher, MnDOT
- Chris Clark, Xcel Energy

## Members

- Katie Bell, Cummins
- Katie Frye, Minnesota Power
- Dorian Grilley, Bicycle Alliance of Minnesota
- Greg Ikka, Steele County
- Katie Jones, Center for Energy and Environment
- Ashwat Narayanan, Our Streets Minneapolis
- Michael Noble, Fresh Energy
- Rolf Nordstrom, Great Plains Institute
- Daniel Schellhammer, Midstate Reclamation Inc.
- Patrick Seen, Destination Medical Center
- Russ Stark, City of St. Paul

- Emma Struss, City of Bloomington
- Vishnu Laalitha Surapaneni, University of Minnesota
- Lisa Thurstin, American Lung Assoc., Twin Cities Clean Cities Coalition
- Peter Wagenius, Sierra Club North Star Chapter
- Tara Wetzel, Mathy Construction Company

## Ex officio

- Representative Frank Hornstein (DFL)
- Senator Scott Dibble (DFL)
- Senator Scott Newman (R)
- La Shella Sims, MPCA EJ Advisory Council
- Nick Thompson, Metro Transit

## Provide More Transportation Options on Projects

- Analyze GHG emissions on transportation projects

## Provide EV Incentives

- MnPass Incentive



*Example: electric transit bus*

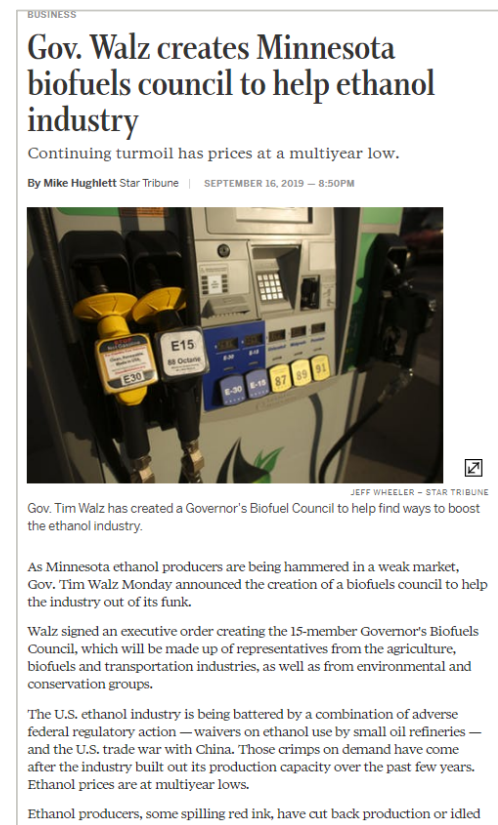
# Recommendations

## Build an EV Market and Provide More EV Options

- Adopt the Clean Car Standards
- <https://www.pca.state.mn.us/air/clean-cars-mn-about>

## Promote Biofuels to Reduce GHG Emissions and Support Rural Minnesota

- Strengthen petroleum replacement goals
- Expand biofuel infrastructure
- Higher biodiesel blends and renewable diesel
- Reduce the carbon impact of biofuels



*Star Tribune, Sept 16, 2019*

# Agency Sustainability Report

Metric	Target	Results
<b>Sector Level</b> Total annual GHG emissions generated by Minnesota's transportation system	29,500,000 tons CO <sub>2</sub> e	41,842,898 tons CO <sub>2</sub> e 2018
<b>State Highway Construction</b> Total annual GHG emissions from the fuel and materials used to construct MnDOT projects	252,500 metric tons CO <sub>2</sub> e	228,245 metric tons CO <sub>2</sub> e 2017
<b>MnDOT GHG Emissions -</b>		
<b>Facilities</b> Total annual GHG emissions generated from energy used by MnDOT-owned facilities	21,800 metric tons CO <sub>2</sub> e	27,012 metric tons CO <sub>2</sub> e 2018
<b>Fleet</b> Total annual GHG emissions generated from fuel used by the MnDOT-owned fleet	26,500 metric tons CO <sub>2</sub> e	43,028 metric tons CO <sub>2</sub> e 2018



# Our Sustainability Journey

2016

Fall - Internal team researched and developed metrics

Next Generation Energy Act applied uniformly across enterprise to create emissions reductions targets

These targets positioned MnDOT as a leader among DOTs in the country on sustainability

2017

Jan - STSC Approved Sustainability Metrics

Mar – 2016 Sustainability Report published (“Establishing a Baseline”)

Spring/Summer – Subject matter experts developed strategies to meet targets

Dec - STSC reviewed all strategies

2018

Jan - Strategies and data integrated into 2017 Sustainability Report update

Mar – 2017 Sustainability Report published (“Identifying Sustainability Strategies”)

Apr –Launched temperature set point standards for facilities

2019

Mar - Fleet Managers developed Fleet Action Plan

May – 2018 Sustainability Report published (“Planning for Progress”)

Jul – Launched fleet selector tool and idle reduction standards

Fall – Purchased 5 BEVs and 16 PHEVs and 30 charging stations statewide








# 2019 Report Outline

- Introduction will include **\*new\*** content on sector greenhouse gas emissions
- Dashboards
  - Facilities
  - Fleet
  - Highway Operations
  - Roadside Management
  - Transportation Options
  - Resilience (**\*NEW\***)

# 2019 Report Timeline

- Jan - March – Data collection and analysis
- Late March – Early April – Report development/formatting
- Early April – Share draft with STSC and SMEs for review via email
- Mid-April – Complete requested edits
- April 22 (Earth Day) - Release

# Climate Change Impacts on Transportation

Climate Impacts	Likelihood	Potential Negative Implications for Transportation System
 Floods	Very High	<ul style="list-style-type: none"><li>• Slope failures and erosion</li><li>• Increased large-scale river flooding and localized flooding</li><li>• More frequent and extensive inundation of low-lying areas</li></ul>
 Warmer Winters	Very High	<ul style="list-style-type: none"><li>• Increase in overnight icing and in freeze/thaw cycles, leading to reduced pavement conditions and life cycles length</li><li>• Increase in average winter precipitation and more extreme precipitation</li></ul>
 Invasive Species	High	<ul style="list-style-type: none"><li>• Soil erosion from vegetation loss</li><li>• Increase in invasive species populations</li><li>• Wetland site failure</li></ul>
 Droughts	Medium	<ul style="list-style-type: none"><li>• Roadside vegetation stress and increases soil erosion</li><li>• Low stream and ground water flow</li></ul>
 Extreme Heat	Medium Low	<ul style="list-style-type: none"><li>• Pavement and rail buckling</li><li>• Increase in vehicles overheating and electrical system malfunctions</li><li>• Limitations on construction hours</li></ul>
 Wildfires	Low	<ul style="list-style-type: none"><li>• Immediate and significant threat to human safety</li><li>• Increased risk of future flooding and slope failure</li></ul>
 Severe Wind	Low	<ul style="list-style-type: none"><li>• Severe wind-related road closures, blown-down trees, signs</li></ul>



# MnDOT Current Resilience Practices

## Planning

- Flash Flood VA and Extreme Flood VA
- Slope Stabilization Guide and Slope VA (multi-phased)

## Design and Environmental Review

- Bridge Manual (draft language)
- MN AOP Guide
- Geomorphic Design

## Construction

- Stormwater Erosion Control
- State Flood Mitigation Program
- Sustainable Pavements

## Maintenance and Operations

- Living Snow Fences
- Salt Management
- Native and Resilient Plants
- On-site Solar Energy
- Asset Management

## Emergency Response

- State Aid Betterment
- Emergency Management & Response

## Overarching Initiatives

- Advancing Transportation Equity
- Active Transportation and Complete Streets
- EV and EV Infrastructure

## Ongoing Efforts

- Complete System-wide Climate Vulnerability Assessment – In Progress
- Protect Environmental Justice and Vulnerable Populations – In Progress
- Actions with Adaptation Co-benefits – In Progress
- Resilience Research – In Progress
- Incorporate findings into Asset Management
- Update Design Guidelines
- Downscaled Climate Data

## Active Research



Extreme Flood Vulnerability Analysis



District 2 Resilience Pilot Project

Questions?