DEPARTMENT OF TRANSPORTATION

Minnesota Greenhouse Gas Reduction Legislation Target Setting

Anna Pierce | Carbon Reduction Program Coordinator

Purpose

- Share details about recent updates to state law related to greenhouse gas emissions in Minnesota
- Share MnDOT's current approach to meeting state statute requirements
  - 2 approaches with 3 regional scenarios each
- Document your questions and input
- Share next steps and process

Background: Greenhouse Gas Emissions

Legislation Context

Timeline of Minnesota's Climate Actions

2007 **Next Generation Energy Act** created goal to reduce Minnesota GHG emissions 80% by 2050

2008 Minnesota **Climate Change Advisory group** publishes final report recommending a comprehensive set of state-level climate polocies

2016 **Climate Solutions and Economic Opportunity report** identifies near-term emission reduction opportunities

2019 MnDOT publishes **Pathways to Decarbonizing Transportation in Minnesota**, outlining potential transportation actions to meet GHG goals

2020 **Sustainable Transportation Advisory Committee** established

2021 **Clean Cars Minnesota** rule adopted

2022 Minnesota's **Climate Action Framework** set goal to reduce GHG emissions by 50% by 2030 and achieve net-zero by 2050

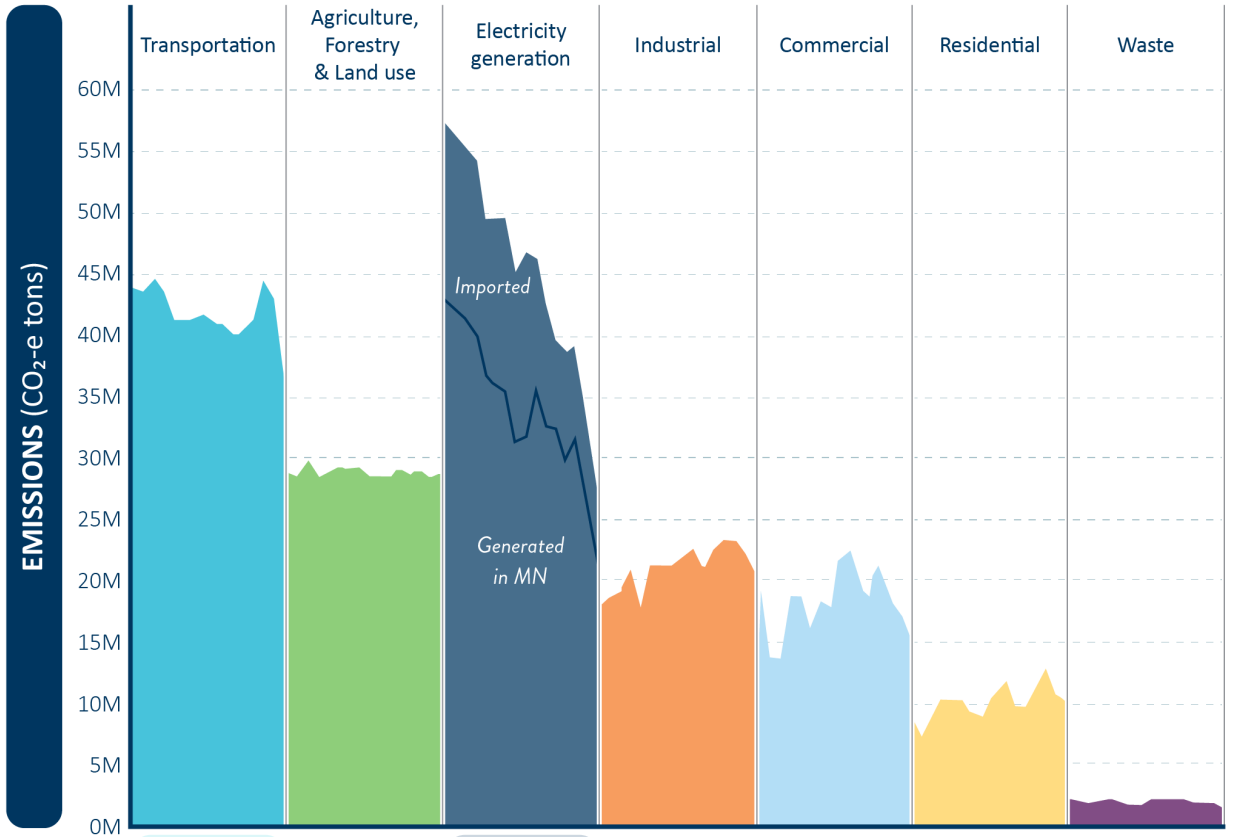
Minnesota **Statewide Multimodal Transportation Plan** establishes transportation GHG reduction targets consistent with the Framework (80% reduction by 2040)

2023 **HF 2887** law creates new transportation funding sources for sustainable transportation, rebates and work groups

Next Generation Energy Act adopts goal to reduce GHG emissions by 30% by 2025, 50% by 2030 and net-zero emissions by 2050

Clean Transportation Fuel Standard Working Group and **GHG Emissions Impact Mitigation Working Group** are established and begin work

Carbon Emissions in Minnesota by Sector

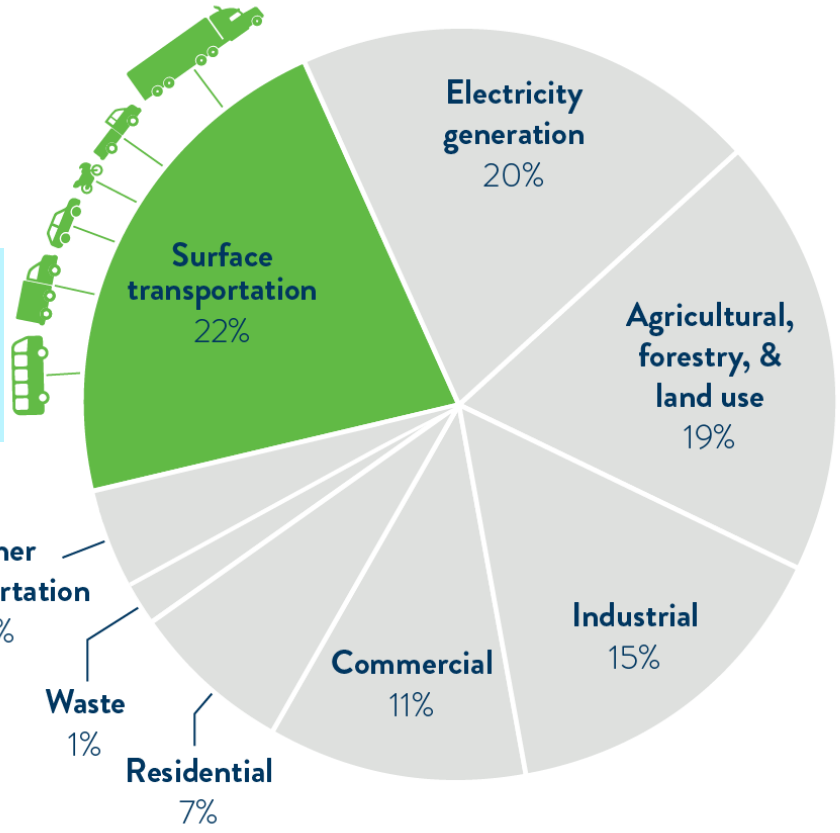


	Transportation	Agriculture, Forestry & Land use	Electricity generation	Industrial	Commercial	Residential	Waste
2019	-1%	-2%	-45%	25%	-10%	22%	-15%
2020	-18%	0%	-54%	14%	-22%	14%	-40%

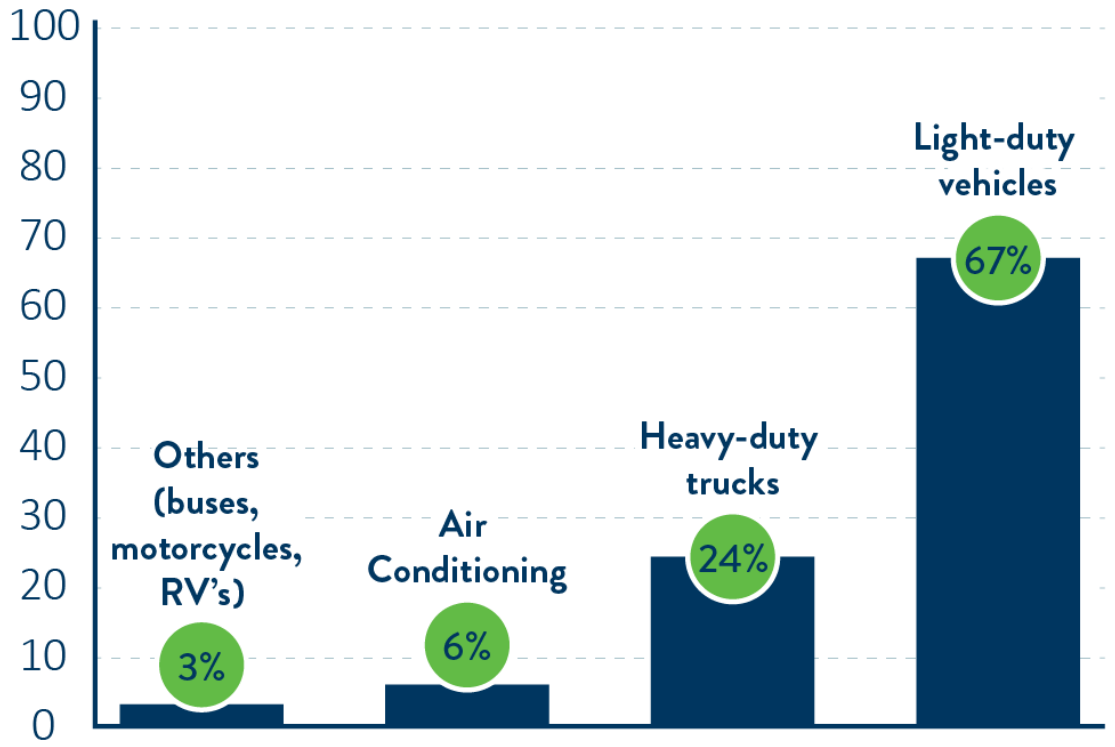
Transportation Emissions

ALL SECTOR BREAKDOWN (%)

27% of all GHG emissions

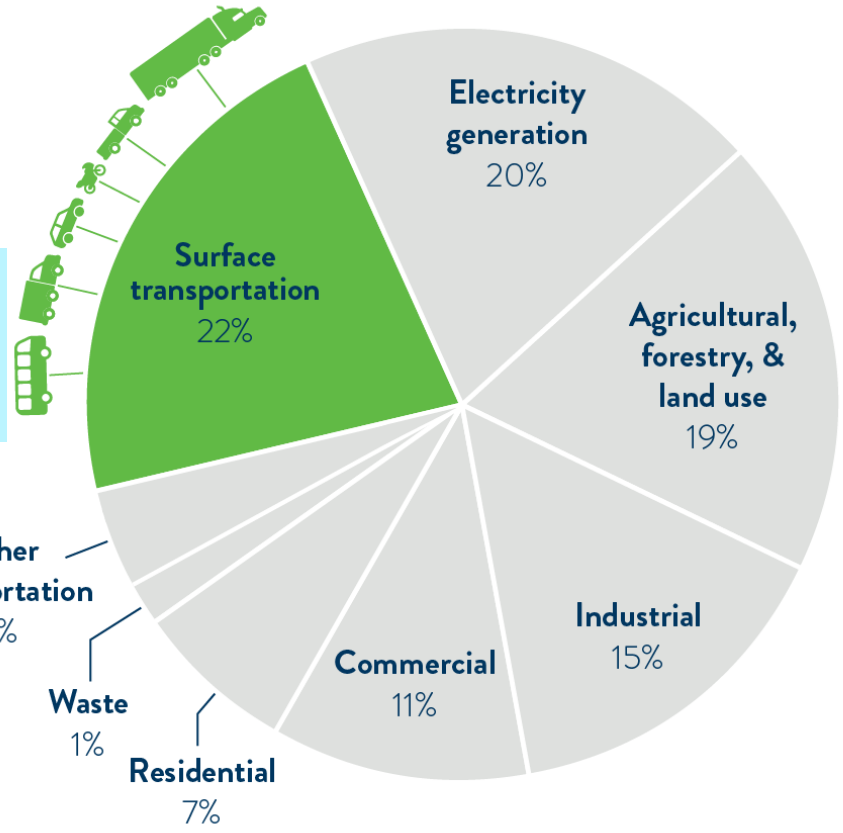


SURFACE TRANSPORTATION BREAKDOWN (%)



Transportation Emissions

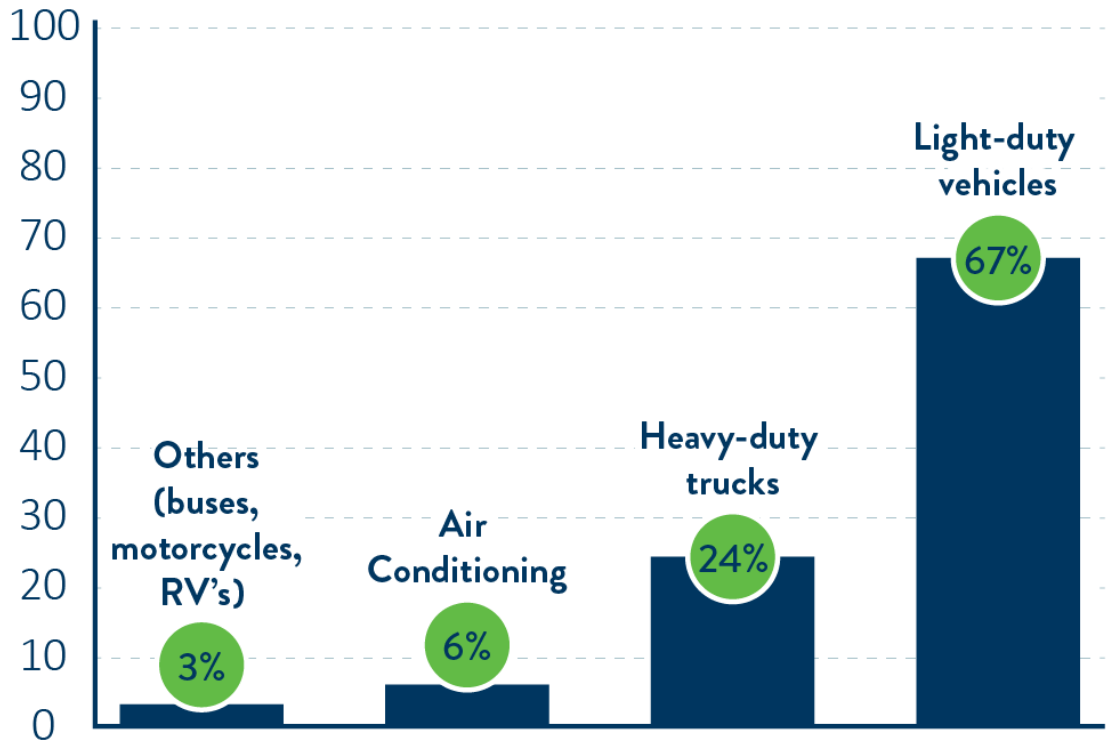
ALL SECTOR BREAKDOWN (%)



27% of all GHG emissions

carbon | methane | nitrous oxide | fluorinated gases

SURFACE TRANSPORTATION BREAKDOWN (%)



Transportation emissions | Negative impacts

- Poor air quality
- Increased climate change
- Negative impacts on wildlife, habitats and crop cycles
- Negative health impacts

Transportation emissions | Reductions improving peoples’

- Health
- Safety
- Access
- Equity
- Environment

Legislative Background | What is MnDOT being asked to do?

- Set targets that bridge the gap
- Transportation greenhouse gas emissions impact assessment
- Establish a Technical Advisory Committee (TAC) for the Transportation Impact Assessment

Legislative background

- Set targets that bridge the gap
- Transportation greenhouse gas emissions impact assessment
- Establish a Technical Advisory Committee (TAC) for the Transportation Impact Assessment

Legislative background

Greenhouse gas emissions targets:

- Chapter 216 (2023): Set greenhouse gas emissions goal for Minnesota across all sectors
- Chapter 174 (2023): requires the commissioner of transportation to establish greenhouse gas emission reduction targets for the transportation sector

Transportation project assessment and mitigation:

- Chapter 161 (2023): Requires MnDOT to assess and mitigate greenhouse gas emissions for highway expansion projects
- Chapter 127 (2024): Amends 161.178 to add a requirement of "assessing a portfolio or program of projects instead of on a project-by-project basis" by 2027

Legislative background

2023 Minnesota Statutes

216H.02 GREENHOUSE GAS EMISSIONS CONTROL.

Subdivision 1. **Greenhouse gas emissions-reduction goal.** (a) It is the goal of the state to reduce statewide greenhouse gas emissions across all sectors producing greenhouse gas emissions by at least the following amounts, compared with the level of emissions in 2005:

(1) 15 percent by 2015;

(2) 30 percent by 2025;

(3) 50 percent by 2030; and

(4) to net zero by 2050.

(b) To the maximum extent practicable, actions taken to achieve these goals must avoid causing disproportionate adverse impacts to residents of communities that are or have been incommensurately exposed to pollution affecting human health and environmental quality.

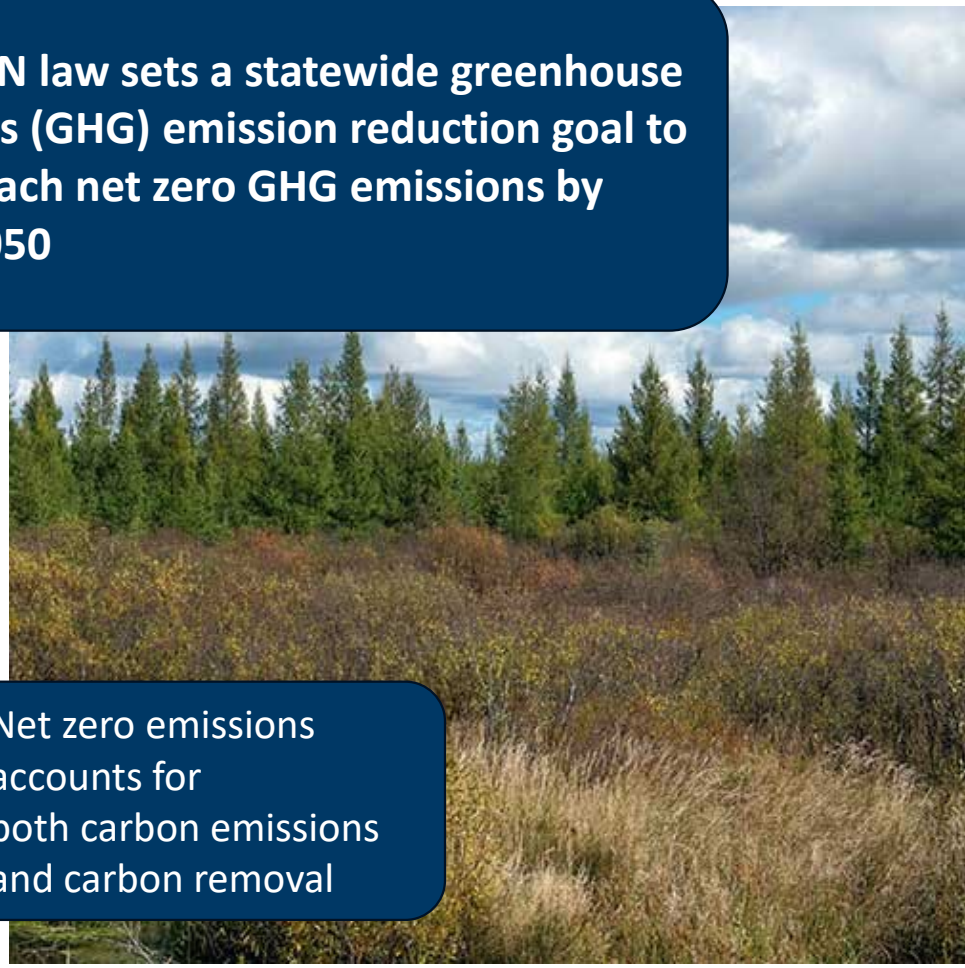
(c) The targets under paragraph (a) must be reviewed annually by the commissioner of the Pollution Control Agency, taking into account the latest scientific research on the impacts of climate change and strategies to reduce greenhouse gas emissions published by the Intergovernmental Panel on Climate Change. The commissioner must forward any recommended changes to the targets to the chairs and ranking minority members of legislative committees with primary jurisdiction over climate change and environmental policy.

(d) For the purposes of the subdivision, "net zero" means:

(1) statewide greenhouse gas emissions equal to zero; or

(2) when annual anthropogenic emissions of greenhouse gases to the atmosphere are balanced by removals over a specific period.

MN law sets a statewide greenhouse gas (GHG) emission reduction goal to reach net zero GHG emissions by 2050



Net zero emissions accounts for both carbon emissions and carbon removal

Legislative background

Subd. 3. **Greenhouse gas emissions targets.** (a) In association with the goals under subdivision 2, clauses (10) and (13) to (16), the commissioner of transportation must establish targets for the statewide greenhouse gas emissions reduction goal under section 216H.02, subdivision 1.

(b) The targets must include:

(1) establishment of proportional emissions reduction performance targets for the transportation sector;

(2) specification of the performance targets on a five-year or more frequent basis; and

(3) allocation across the transportation sector, which:

(i) must provide for an allocation to the metropolitan area, as defined in section 473.121, subdivision 2;

(ii) must account for differences in the feasibility and extent of emissions reductions across forms of land use and across regions of the state; and

(iii) may include performance targets based on Department of Transportation district, geographic region, a per capita calculation, or transportation mode, or a combination.

[See Note.]

History: *1976 c 166 s 1; 1991 c 298 art 1 s 1; 2008 c 287 art 1 s 66; 2010 c 351 s 38,39; 2023 c 68 art 4 s 64*

NOTE: Subdivision 3, as added by Laws 2023, chapter 68, article 4, section 64, is effective February 1, 2025. Laws 2023, chapter 68, article 4, section 64, the effective date.

MnDOT is tasked with establishing GHG emissions reduction targets for the transportation sector

Targets must be specified on a 5-year or more frequent basis

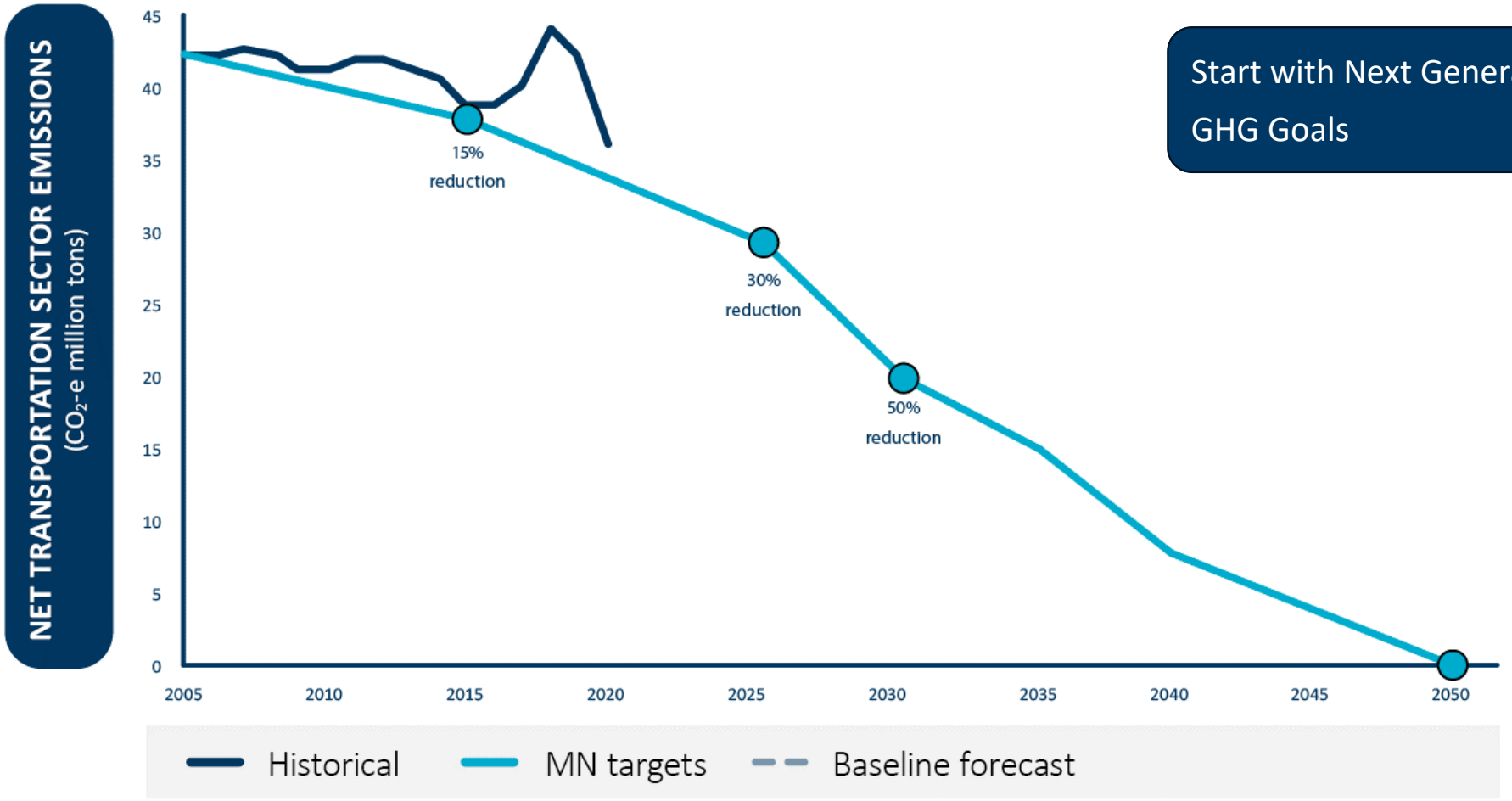
The law requires MnDOT to set a specific GHG emissions target for the Twin Cities metropolitan region

MnDOT may further allocate the statewide target in other ways across the state

DEPARTMENT OF TRANSPORTATION

Emissions Target Setting

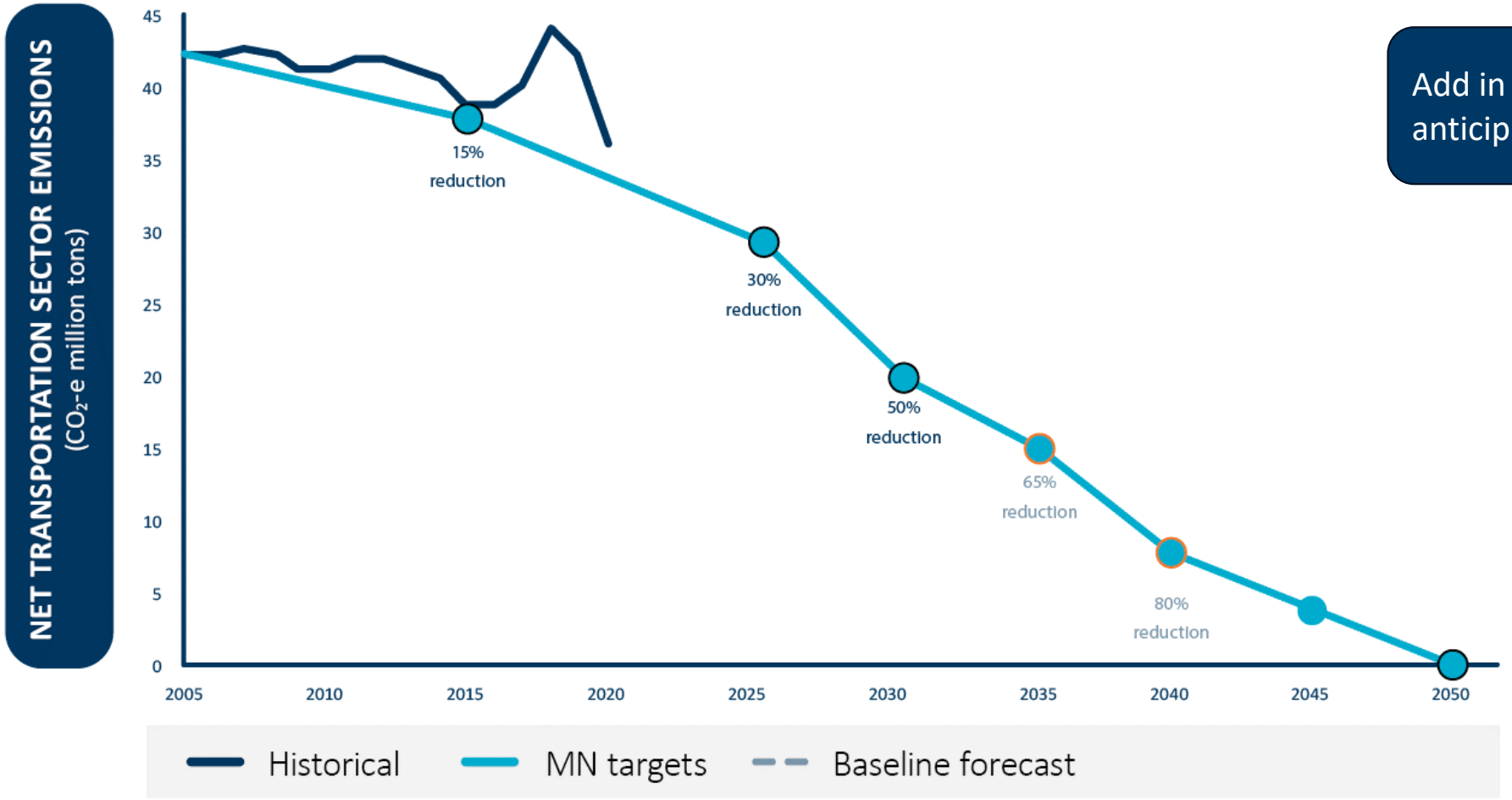
Target Setting



Start with Next Generation Energy Act's GHG Goals

NOTE: The 'zero' at the right hand side represents a net value of zero GHG emissions from the transportation sector above those that existed in 2005 (43,557,058 tons), and net of any mitigation efforts that get counted as 'offsets' to GHG emissions.

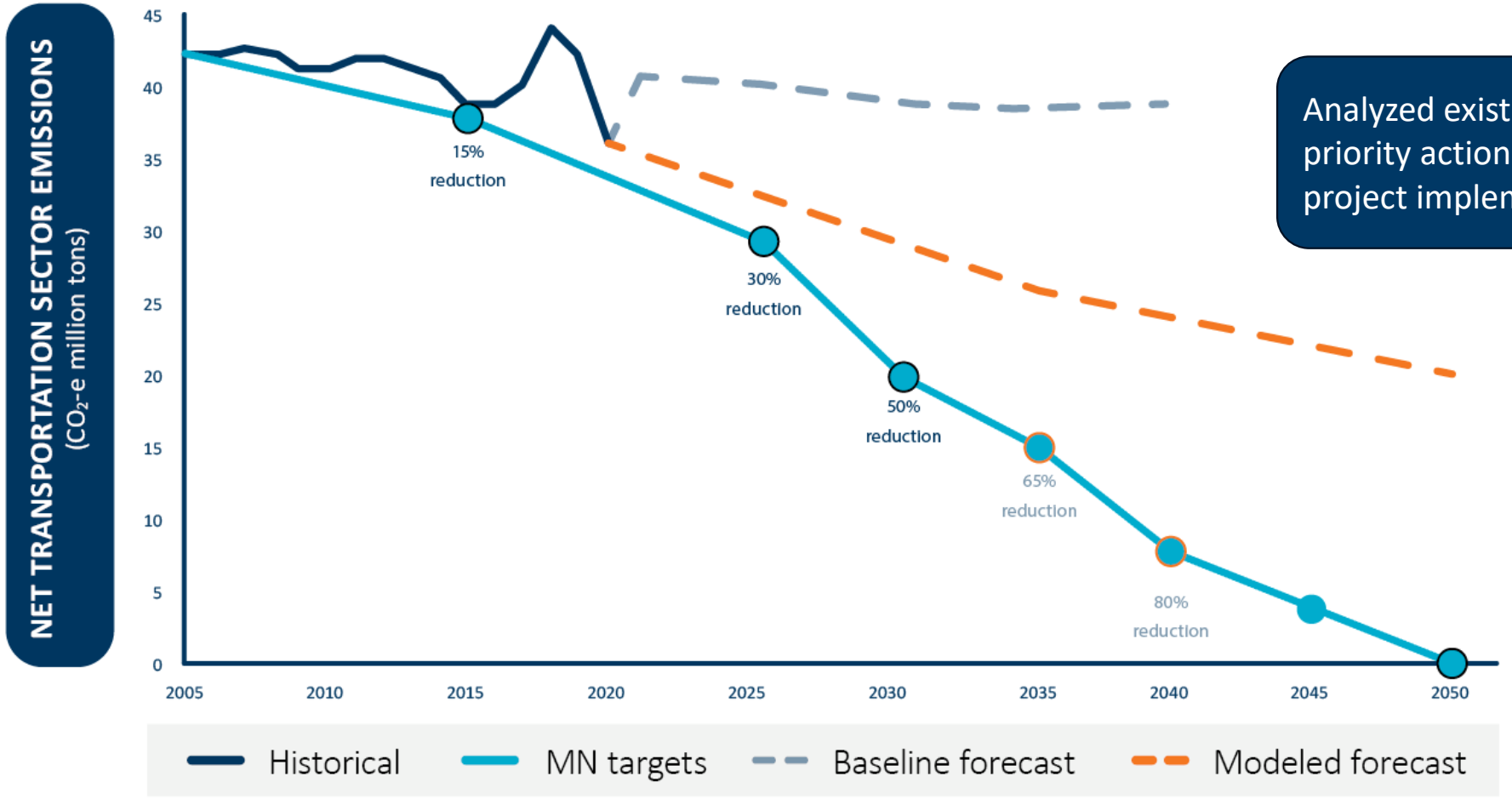
Target setting



Add in SMTP targets and anticipated 2045 target

NOTE: The 'zero' at the right hand side represents a net value of zero GHG emissions from the transportation sector above those that existed in 2005 (43,557,058 tons), and net of any mitigation efforts that get counted as 'offsets' to GHG emissions.

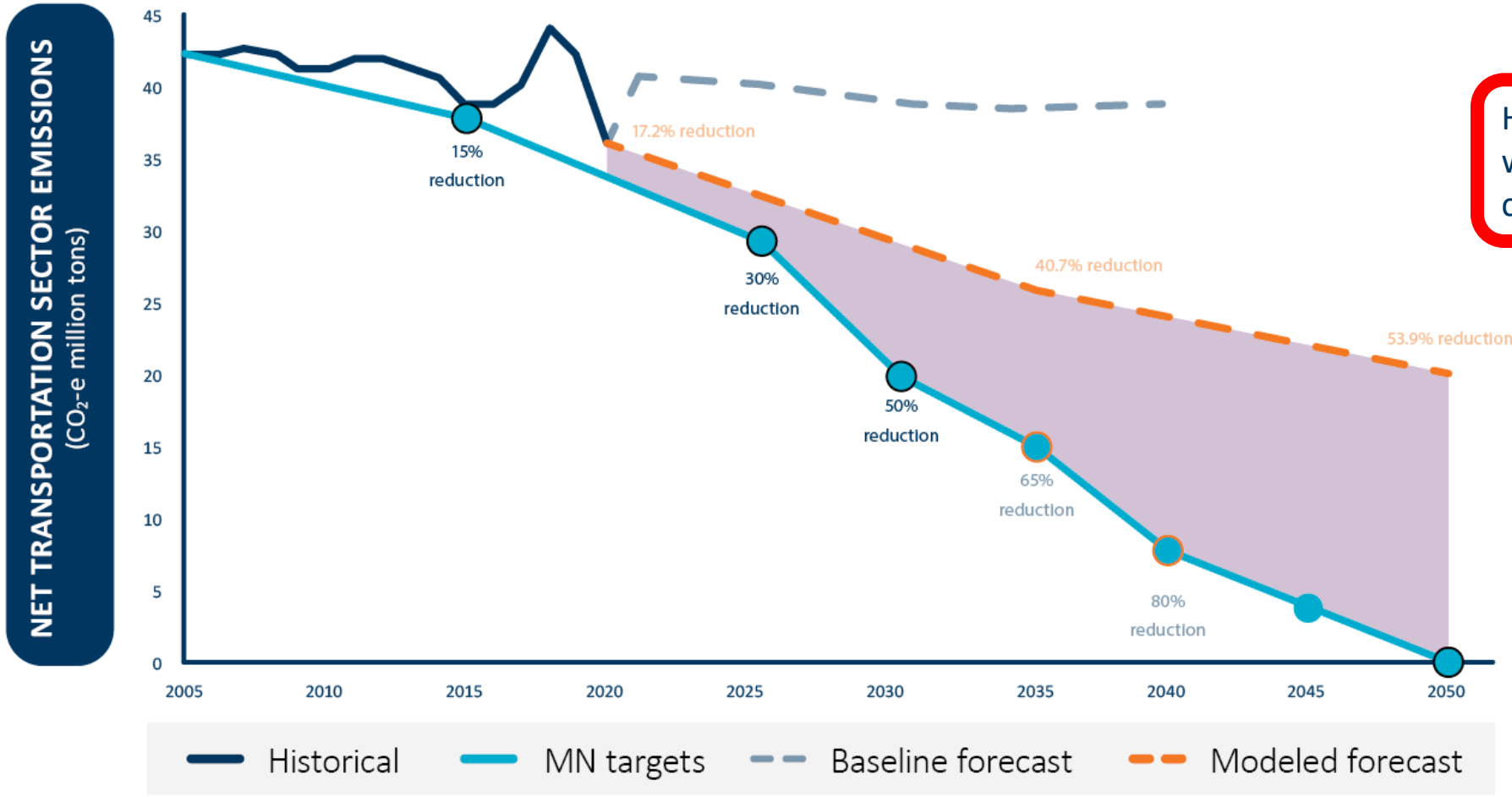
Target setting



Analyzed existing conditions and priority actions in policy and project implementation

NOTE: The 'zero' at the right hand side represents a net value of zero GHG emissions from the transportation sector above those that existed in 2005 (43,557,058 tons), and net of any mitigation efforts that get counted as 'offsets' to GHG emissions.

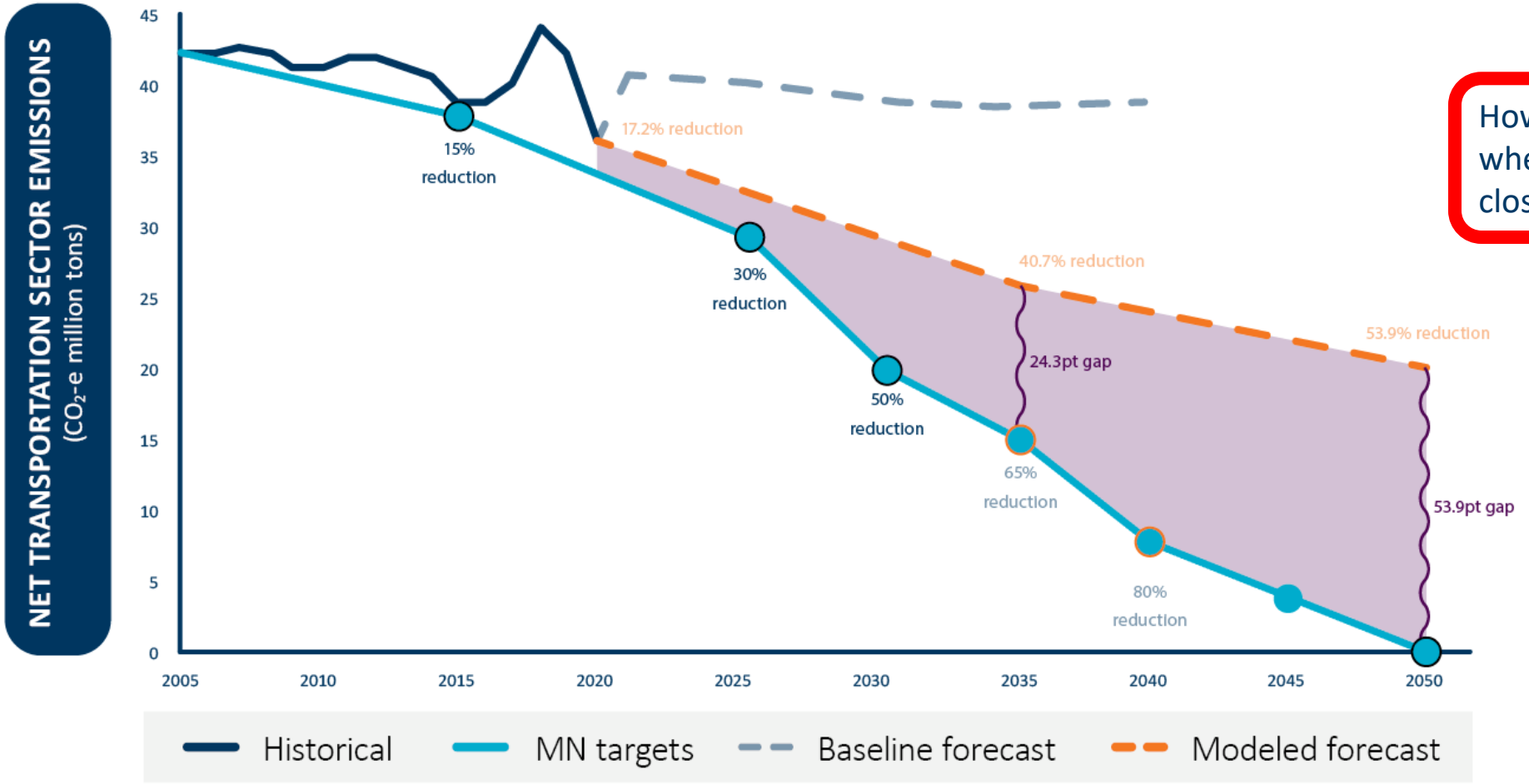
Target setting



How, where and when do we close the gap?

NOTE: The 'zero' at the right hand side represents a net value of zero GHG emissions from the transportation sector above those that existed in 2005 (43,557,058 tons), and net of any mitigation efforts that get counted as 'offsets' to GHG emissions.

Target setting



How, where and when do we close the gap?

NOTE: The 'zero' at the right hand side represents a net value of zero GHG emissions from the transportation sector above those that existed in 2005 (43,557,058 tons), and net of any mitigation efforts that get counted as 'offsets' to GHG emissions.

How do we close the gap? | Approaches

Assign emissions targets for each target year

Per capita

- Based on the number of people in a region

Regional priorities + per capita

- Based on regional priorities (e.g., transit, alt fuels, safety, access, health) combined with the number of people in a region

Where do we close the gap? | Regional scenarios

Scenario 1

Metropolitan Council's 7-county metro area
(statute defined)

Greater Minnesota
(everywhere outside the metro area)

Scenario 2

Metropolitan Council's 7-county metro area
(statute defined)

Greater Minnesota Metropolitan Planning Organizations
(7 urbanized areas)

Greater Minnesota rural areas
(everywhere outside the metro area and 7 MPO urbanized areas)

Scenario 3

Metropolitan Council's 7-county metro area
(statute defined)

Greater Minnesota Metropolitan Planning Organizations
(7 urbanized areas)

Greater Minnesota Area Transportation Partnerships
(8)

How do we close the gap? | Approaches

Assign emissions targets for each target year

Per capita

- Based on the number of people in a region

Regional priorities + per capita

- Based on regional priorities (e.g., transit, alt fuels, safety, access, health) combined with the number of people in a region

Per Capita | Regional scenario 1 (2035)

Minnesota – Population: 6,093,579

Target: 15,244,970 CO_2e

Forecasted emissions: 23,664,013 CO_2e

Per capita gap: 1.38 CO_2e

Gap: 8,419,043 CO_2e

Region	% of Population (forecasted)	Gap responsible for
Met Council	55.2%	4,645,820

Region	% of Population (forecasted)	Gap responsible for
Greater MN	44.8%	3,773,223

Per Capita | Regional scenario 2 (2035)

Minnesota – Population: 6,093,579

Target: 15,244,970 CO_2e

Forecasted emissions: 23,664,013 CO_2e

Per capita gap: 1.38 CO_2e

Gap: 8,419,043 CO_2e

Region	% of Population (forecasted)	Gap responsible for
Met Council	55.2%	4,645,820
APO	5.3%	443,868
MIC	4.1%	344,478
MAPO	2.0%	171,888
LAPC	0.3%	24,929
ROCOG	4.2%	351,524
GFEGF MPO	0.5%	38,477
Metro COG	1.2%	101,660

Region	% of Population (forecasted)	Gap responsible for
Rural Greater MN	27.3%	2,296,400

Per Capita | Regional scenario 3 (2035)

Minnesota – Population: 6,093,579

Target: 15,244,970 CO_2e

Forecasted emissions: 23,664,013 CO_2e

Per capita gap: 1.38 CO_2e

Gap: 8,419,043 CO_2e

Region	% of Population (forecasted)	Gap responsible for
Met Council	55.2%	4,645,820
APO	5.3%	443,868
MIC	4.1%	344,478
MAPO	2.0%	171,888
LAPC	0.3%	24,929
ROCOG	4.2%	351,524
GFEGF MPO	0.5%	38,477
Metro COG	1.2%	101,660

Region	% of Population (forecasted)	Gap responsible for
ATP1	1.7%	143,721
ATP2	2.3%	191,546
ATP3	7.8%	658,874
ATP4	3.5%	291,526
ATP - Metro	1.0%	88,213
ATP6	4.7%	394,251
ATP7	3.4%	282,542
ATP8	2.9%	245,728

Per Capita | Regional scenario (2050)

Minnesota – Population: 6,416,283

Target: 0 CO_2e

Forecasted emissions: 16,016,295 CO_2e

Per capita gap: 2.5 CO_2e

Gap: 16,016,295 CO_2e

Region	% of Population (forecasted)	Gap responsible for
Met Council	56.9%	9,105,404

Region	% of Population (forecasted)	Gap responsible for
Greater MN	43.1%	6,910,891

Per Capita | Regional scenario 2 (2050)

Minnesota – Population: 6,416,283

Target: 0 CO_2e

Forecasted emissions: 16,016,295 CO_2e

Per capita gap: 2.5 CO_2e

Gap: 16,016,295 CO_2e

Region	% of Population (forecasted)	Gap responsible for
Met Council	56.9%	9,105,404
APO	5.8%	929,955
MIC	3.8%	600,694
MAPO	2.0%	317,506
LAPC	0.3%	42,528
ROCOG	4.3%	696,613
GFEGF MPO	0.4%	71,172
Metro COG	1.3%	214,887

Region	% of Population (forecasted)	Gap responsible for
Rural Greater MN	25.2%	4,037,536

Per Capita | Regional scenario 3 (2050)

Minnesota – Population: 6,416,283

Target: 0 CO_2e

Forecasted emissions: 16,016,295 CO_2e

Per capita gap: 2.5 CO_2e

Gap: 16,016,295 CO_2e

Region	% of Population (forecasted)	Gap responsible for
Met Council	56.9%	9,105,404
APO	5.8%	929,955
MIC	3.8%	600,694
MAPO	2.0%	317,506
LAPC	0.3%	42,528
ROCOG	4.3%	696,613
GFEGF MPO	0.4%	71,172
Metro COG	1.3%	214,887

Region	% of Population (forecasted)	Gap responsible for
ATP1	1.5%	241,135
ATP2	2.2%	351,676
ATP3	7.4%	1,184,053
ATP4	3.3%	523,911
ATP - Metro	1.0%	155,481
ATP6	4.4%	701,463
ATP7	3.0%	477,622
ATP8	2.5%	402,194

How do we close the gap? | Approaches

Assign emissions targets for each target year

Per capita

- Based on the number of people in a region

Regional priorities + per capita

- Based on regional priorities (e.g., transit, alt fuels, safety, access, health) combined with the number of people in a region

Regional priorities | Geographies

- Statewide
  - Values only available at a statewide level (e.g., one value)
- MPO
  - Values available for the eight MPO's urbanized areas and Greater Minnesota (e.g., nine values total)
- County
  - Values available for each of the 87 Minnesota counties

Regional priorities | Values

- Values
  - Continuous
  - 0% to 100%
- Type of values
  - Number
  - Percentage

Regional priorities | Levers

- **Transportation Options**
  - Transit service
  - Mode shift
  - Walkable intersection density
  - Lane miles
- **Land use**
  - Parking space reductions
  - Pay parking
  - Portion of neighborhood with mixed use living spaces
  - Household size
  - Group quarters
  - Urban area
  - Rural activity
- **Fuels**
  - Transit fuels
  - Transit fuel carbon intensity
  - Power Train
    - Transit
    - Car service
    - Heavy truck
    - Commercial
  - Charging availability
  - Vehicle age
  - Household vehicle sales
- **Other strategies**
  - Fuel and power cost
  - Vehicle ownership taxes
  - Light truck proportion
  - Pay-as-you-drive (PAYD) insurance
  - Vehicle use taxes
  - Congestion charges
  - Operations deployment
  - Travel Demand Management (TDM)
  - Fuel carbon intensity

Regional priorities | Regional scenario 3 (2035)

Minnesota – Population: 6,093,579

Target: 15,244,970 CO_2e

Forecasted emissions: 23,664,013 CO_2e

Per capita gap: 1.38 CO_2e

Gap: 8,419,043 CO_2e

Region	% of Population (forecasted)	% of total gap	Gap responsible for
Met Council	55.2%		
APO	5.3%		
MIC	4.1%		
MAPO	2.0%		
LAPC	0.3%		
ROCOG	4.2%		
GFEGF MPO	0.5%		
Metro COG	1.2%		

Region	% of Population (forecasted)	% of total gap	Gap responsible for
ATP1	1.7%		
ATP2	2.3%		
ATP3	7.8%		
ATP4	3.5%		
ATP - Metro	1.0%		
ATP6	4.7%		
ATP7	3.4%		
ATP8	2.9%		

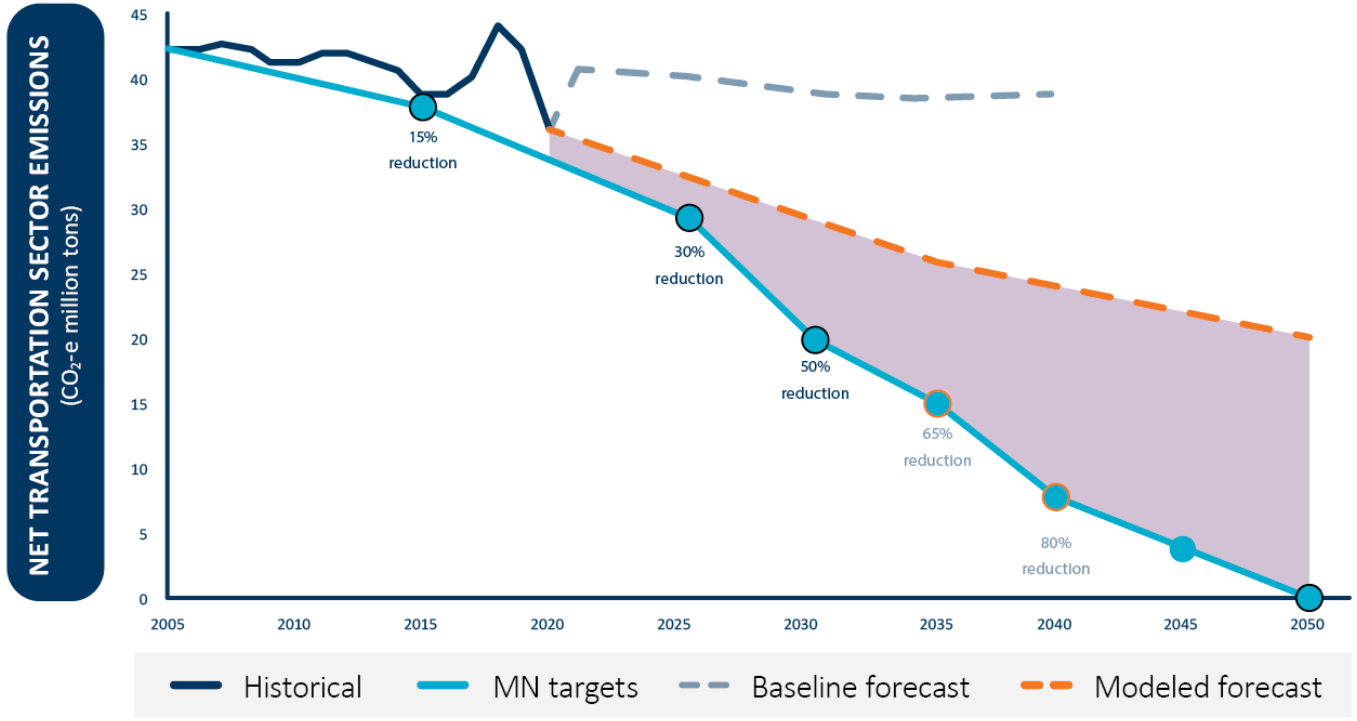
Closing the gap | Requires us to…

- **Rethink project prioritization** to reduce emissions
- Consider how we encourage and implement **greater accountability** for emissions reduction
- Incorporate emissions reduction to **enhance the work** we are already doing

Working together

- No government or agency has complete power over greenhouse gas reduction, but everyone has a role
- Together we can provide holistic approaches that bring together local priorities to create a more sustainable future

Transportation Emissions Reduction Target



NOTE: The 'zero' at the right hand side represents a net value of zero GHG emissions from the transportation sector above those that existed in 2005 (43,557,058 tons), and net of any mitigation efforts that get counted as 'offsets' to GHG emissions.

Opportunities

- Align policy-level guidance and performance measures with greenhouse gas reduction targets
- Work together to support local knowledge and action on greenhouse gas reduction strategies and co-benefits
- Encourage partners to submit projects for funding that reduce greenhouse gas emissions
- Program funding with a focus on reducing emissions

Moving forward with the HOW

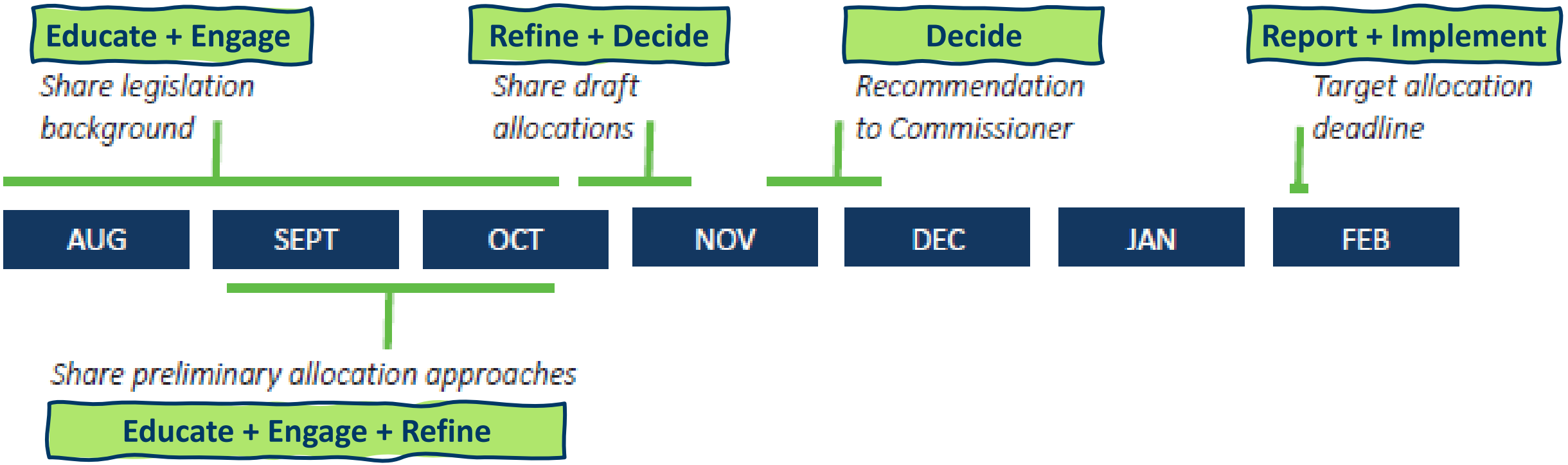
Considerations

- How does land use impact your decision on how you travel?
- How are the projects you have planned reducing emissions?
- Where may greenhouse gas emission reduction intersect with your work?
- What type of support could you use to help bridge the gap?

How would the approaches support decisions related to your work?

What alignments do you see with the regional scenarios?

Target setting | Process for engagement



Next steps | Educate, engage, refine, decide report, implement

- **Educate and engage** transportation partners and internal MnDOT staff
  - ~~MPO Workshop – August 6th~~
  - ~~RDO Quarterly meeting – August 7th~~
  - ~~Office Hours (virtual) throughout Sept.~~
  - ~~Advocacy Council for Tribal Transportation – Sept. 16 at Red Lake; Dec. TBD~~
  - ~~Metropolitan Council's Technical Advisory Committee meeting – Oct. 2~~
  - ~~Metropolitan Council's Transportation Advisory Board Exec. meeting – Oct. 16~~
  - Metropolitan Council's Active Transportation Committee – Oct. 24
  - Office Hours in Nov.
  - ~~Area Transportation Partnership meetings – ATP 6 (9/13), ATP 8 (10/4)~~
  - RDO meetings – ~~HRDC (9/18)~~, Quarterly mtg to be scheduled in Oct. or Nov.
  - ~~MnDOT SLT and ELT + Commissioner – Oct. 14 & 15~~
- **Decide** and present preferred and alternative approaches to target setting
  - MPO Workshop (10/29-31)
  - Metropolitan Council's Technical Advisory Committee meeting – Nov. 6
  - Metropolitan Council's Transportation Advisory Board Exec. meeting – Nov. 20 or Dec. 18
  - MnDOT SLT and ELT + Commissioner (Nov./Dec. 2024)
- **Report & implement** and continue to coordinate
  - ACEC Minnesota – Dec. 11
  - Advocacy Council for Tribal Transportation – Dec. TBD
  - MFAC – Mar. 2025
  - ACEC Minnesota – Mar. 27, 2025
  - MnDOT & P/T Consultants Partnership Meeting & Networking Event

State GHG Legislation Implementation

Christopher Berrens | Program Director

MnDOT Sustainability, Planning, and Program Management Division

GHG + VMT Assessment Development

DEPARTMENT OF TRANSPORTATION

Legislative background

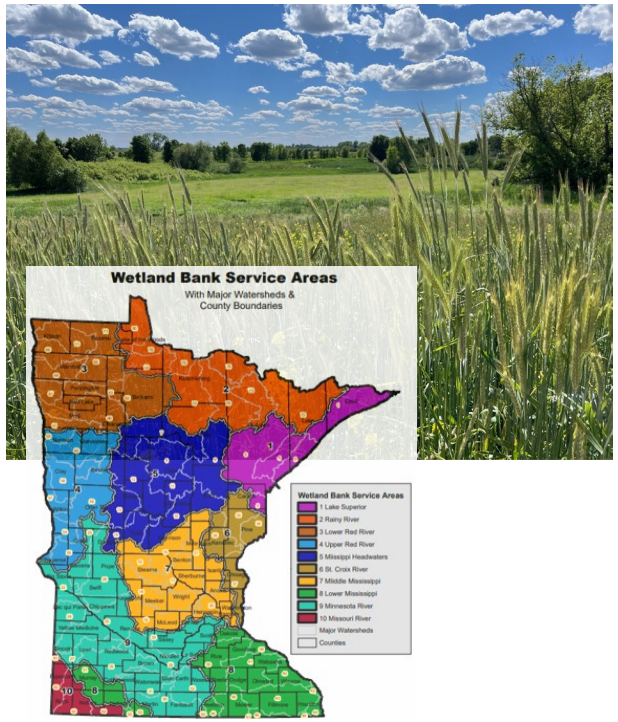
Greenhouse gas emissions targets:

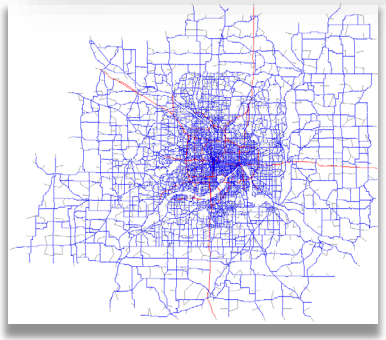
- Chapter 216 (2023): Set greenhouse gas emissions goal for Minnesota across all sectors
- Chapter 174 (2023): requires the commissioner of transportation to establish greenhouse gas emission reduction targets for the transportation sector

Transportation project assessment and mitigation:

- Chapter 161 (2023): Requires MnDOT and locally led projects on the trunk highway system to assess and mitigate greenhouse gas emissions for highway expansion projects
- Chapter 127 (2024): Amends 161.178 to add a requirement of "assessing a portfolio or program of projects instead of on a project-by-project basis" by 2027

What are we being asked to do





GHG Assessment

We are trying to make transportation investments that bring emissions down, but sometimes we make decisions that push emissions up in transportation. Now the legislature is asking us to mitigate for emissions on capacity expansion projects - similar to how we mitigate for wetland impacts

Emissions assessment in context

Safety

- Intersection control evaluation
- Speed studies
- Scoping report

Economy + Delay

- Traffic forecast
- Benefit/cost analysis for users

Emissions assessment in context

Safety

- Intersection control evaluation
- Speed studies

Economy + Delay

- Traffic forecast
- Benefit/cost analysis for users

People’s environmental health

- GHG assessment
- Mobile source air toxics

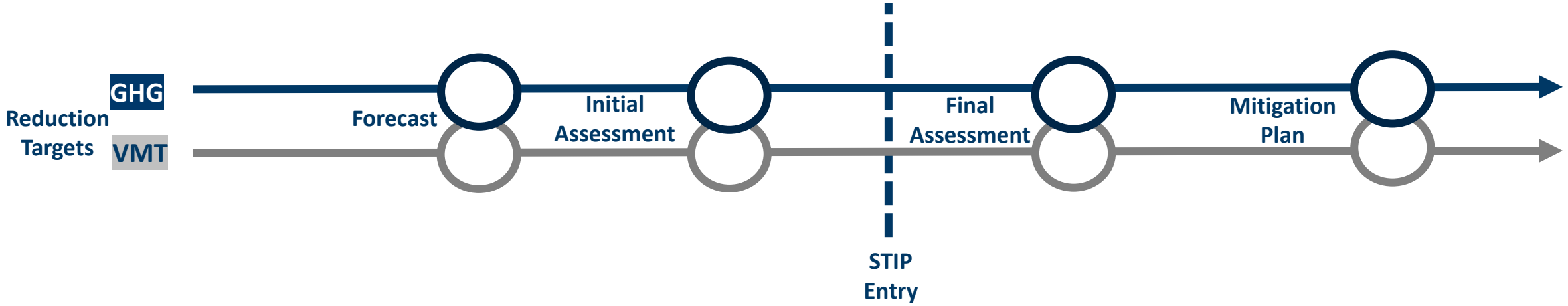
Draft GHG Assessment Summary

Capacity expansion projects that add new lanes/new interchanges

1. Initial Assessment for STIP Entry
Evaluate GHG + VMT outcomes on project applying a corridor forecast. Apply the build/no build operational impact assumptions to the Minnesota Infrastructure Carbon Estimator (MICE)

2. Final Assessment
Update initial assessment once preferred alternative is selected.

3. Mitigation Plan
Applicable entity mitigates GHG + VMT impacts preferably within the community.



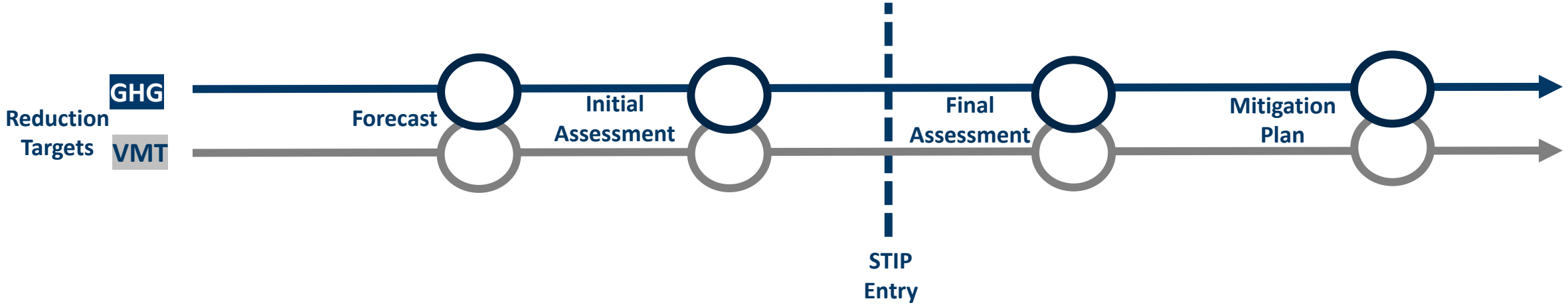
Draft GHG Assessment Summary

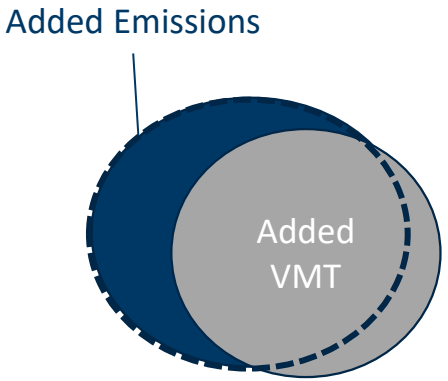
Capacity expansion projects that add new lanes/new interchanges

1. Initial Assessment for STIP Entry
Evaluate GHG + VMT outcomes on project applying a corridor forecast. Apply the build/no build operational impact assumptions to the Minnesota Infrastructure Carbon Estimator (MICE)

2. Final Assessment
Update initial assessment once preferred alternative is selected.

3. Mitigation Plan
Applicable entity mitigates GHG + VMT impacts preferably within the community.





Impacts

Mitigation

(1) Transit expansion

(2) Transit service improvements

(3) Active transportation infrastructure (biking and walking)

(4) Micromobility

(5) Transportation demand management

(6) Parking management

(7) Land use density increases,

(8) Infrastructure improvements related to traffic operations

(9) Natural systems

Technical Advisory Committee
Members

Department of Transportation - Jon Solberg

Pollution Control Agency - Kate Knuth

Metropolitan Council - Jonathan Ehrlich

U of M: Center for Transportation Studies – Eric Lind

MPO from Greater Minnesota - Stephanie Halford

County - Lyndon Robjent, Carver County

City - Marcus Culver, City of Brooklyn Park

Active transportation - Mitzi Alex, Toole Design

National expert - Robert Noland, University of Rutgers

Some questions people are asking

1. What projects will be impacted by legislation?
   Projects that add lane miles or create newly developed grade separated interchanges

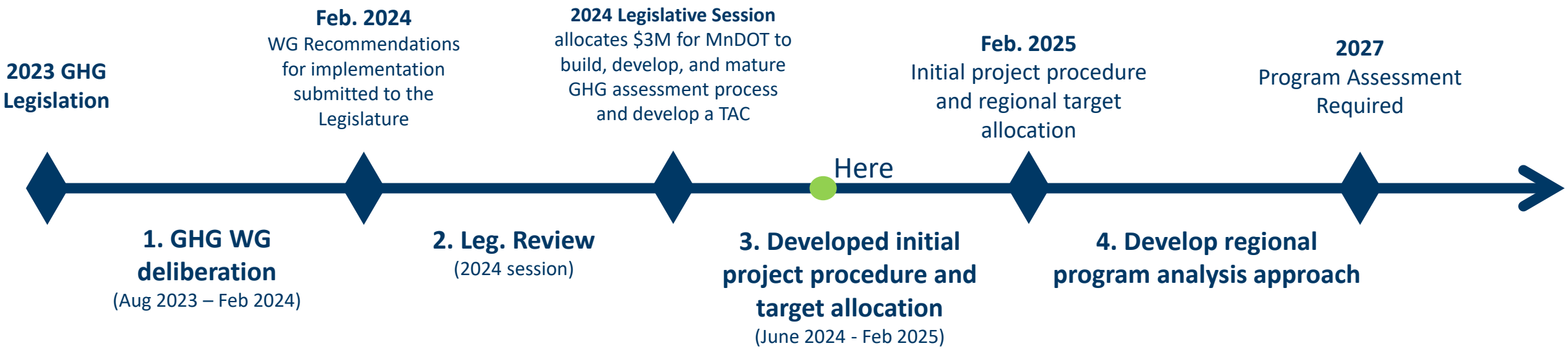
2. Can we model emissions impacts?
   Our current regional travel demand models already provide conservative estimates of emissions impacts from urban expansion projects. We know emissions impacts from expansion in rural areas are measurably less, but still exist

3. Can we account for diversion from low volume roads when we expand
   The travel demand models we currently use are sensitive to diversion from other roadways

4. Other questions you have?

State GHG Legislation Timeline

Looking back, looking forward



Questions/Thoughts

Anna Pierce

Carbon Reduction Program Coordinator

MnDOT's Office of Sustainability and Public Health

anna.m.pierce@state.mn.us

GHG Reduction Legislation
dot.state.mn.us/sustainability/ghg-legislation.html