



Highway Expansion Impact Assessment

Met Council TAC

1. Context, timeline and what we have learned
2. Assessment process with example
3. Discussion

How can you reduce emissions in the transportation sector?

Fuels



$$\text{Fuel Type} + \text{Fuel Efficiency (MPG)} = \text{Vehicle Fuels}$$

Miles



$$\text{Transportation Options (modes of travel)} + \text{Land Use Choices} = \text{Vehicle Miles Traveled (Measured per capita)}$$

Key Dates

2023 Session: Legislature requires emissions impact assessment of highway capacity expansion and creates work group to address

2024 Session: Work group submits report with recommendations to effectively implement legislation. Legislature adopts recommendations and establishes Technical Advisory Committee

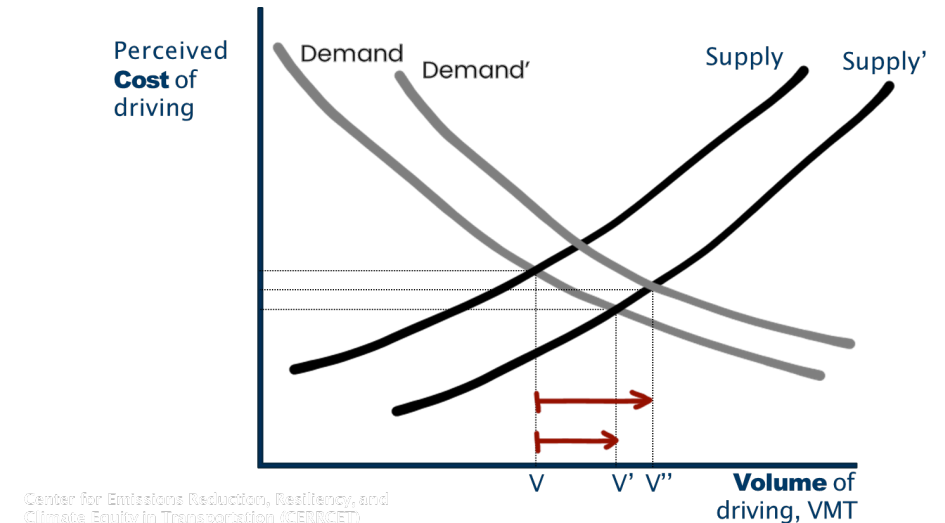
2025: New capacity expansion projects need to assess impacts and offset

Future: Mature multimodal emissions analysis and assess regional program outcomes



What we have learned

1. Research has shown that capacity expansion induces additional vehicle travel over a 20-year project design period ^{1, 2, 3, 4}. When the highway system is expanded, the perceived “cost” of driving goes down and the volume of vehicles miles traveled goes up. The net change in vehicle travel is well documented in the US and internationally.
2. Minnesota’s own travel demand models - that are already used for decision making - show a net increase in driving on the overall system from capacity expansion
3. Less research on individual interchange conversions has been done, research that is available, shows induced travel effects



¹ Duranton, G., and M. A. Turner. The Fundamental Law of Road Congestion: Evidence from US Cities. American Economic Review, Vol. 101, No. 6, 2011

² Hymel, Kent. If you build it, they will drive: Measuring induced demand for vehicle travel in urban areas. Science Direct, Vol. 76, April 2019

³ Manville, Michael. [Induced Travel Estimation Revisited](#). UCLA July 1, 2024

⁴ USDOT [Improving Travel Demand Modeling](#) (Dec. 2024)

How capacity expansion projects will be Assessed

Summary

Step 1: Determine if a project adds lanes for more than a half mile or creates a new interchange on the highway system, would be a capacity expansion project (typically 3-6 projects a year)

Step 2: That project will then be assessed for new impacts (increased emissions and VMT) from building the project over a 20-year analysis period

Step 3: Projects will need to offset any increases in emissions and VMT that will result from the project using any of the nine categories identified by the legislature



Impact Assessment Example

New Interchange Conversion

Estimated Additional VMT (per year)	<i>EPA MOVES Emissions Factors w/ MN Fleet</i> (average grams of emissions per mile)	Impact Estimate (metric tons of additional emissions over 20-years)
~2 million	2026: 435.621 gGHG/mi ↓ 2045: 201.370 gGHG/mi	~11,000 metric tons

Step 2: There are two methods currently available for assessing increased VMT in the build scenario. Project proposers can either *estimate* the increased VMT or *model* it with a travel demand model and associated corridor analysis. Estimating increased VMT can be done with a regression-derived elasticity from observed travel changes. Alternatively, or in conjunction, project proposers are also able to model increased VMT with the travel demand models available across each MPO.

Example Offsets/Mitigation



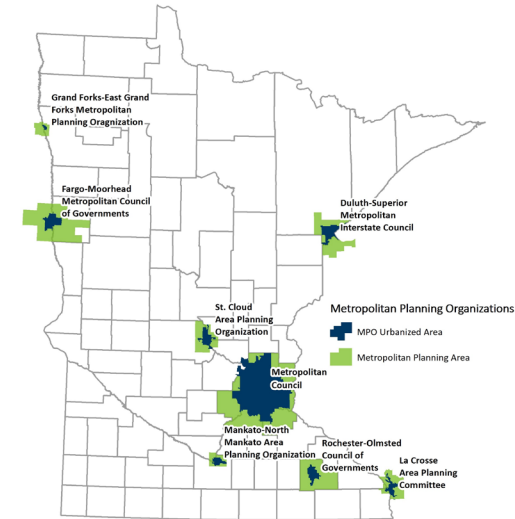
- | | | | |
|---|---|---|---|
| 1 | Transit Expansion | 6 | Parking Management |
| 2 | Transit Service Improvements | 7 | Land Use Changes (Residential, Mixed-Use, Transit-Oriented) |
| 3 | Active Transportation Infrastructure (Biking and Walking) | 8 | Infrastructure Improvements Related to Traffic Operations |
| 4 | Micromobility | 9 | Natural Systems |
| 5 | Transportation Demand Management | | |

Legislature's direction is connecting growth of the highway transportation system with multimodal investments and land use policy

	Metric Tons of CO2e Offset Per unit over the lifecycle	Total Metric Tons of CO2e Offset (20 years)
(1) Transit expansion New electric demand response service with 50,000 new riders/boardings annually	1,019	1,019
(2) Transit service improvements Bus Priority Treatment with electric buses with priority treatment on SW Transit	2,782	2,782
(3) Separated bike facility Shared use path 10 miles [per mile]	237	2,370 (10 miles)
(5) Land use density increases Rezoning for development	485	5,613
	Total	11,784

Who is Responsible?

- **Within metropolitan planning areas:** the Metropolitan Planning Organization must assess prior to including a project in their Transportation Improvement Program (TIP)
- **Outside of metropolitan areas:** MnDOT must assess prior to including a project in the State Transportation Improvement Program (STIP)
- All assessments are reviewed and validated by the Technical Advisory Committee



Technical Advisory Committee

(established by the legislature)

Department of Transportation - **Jon Solberg**
Metropolitan Council - **Jonathan Ehrlich**
County - **Lyndon Robjent**, Carver County
City - **Marcus Culver**, City of Brooklyn Park
Pollution Control Agency - **Kate Knuth**
U of M: Center for Transportation Studies – **Eric Lind**
MPO from Greater Minnesota - **Stephanie Halford**
Active transportation - **Mitzi Alex**, Toole Design
National expert - **Robert Noland**, University of Rutgers

How does this impact you?

- If doing a highway expansion project, early coordination will be needed identify a project offset plan
- The legislature wants the transportation community to address the unintended emission impacts of transportation investments and figure out how to make investments that are reducing emissions
- Connected to legislature's 2023 requirements for climate mitigation and adaptation within the Met Council Development Guide (MnStat 473.145) and Land Use Plan (MnStat 473.859)



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