Congestion Management Process Plan

METROPOLITAN COUNCIL

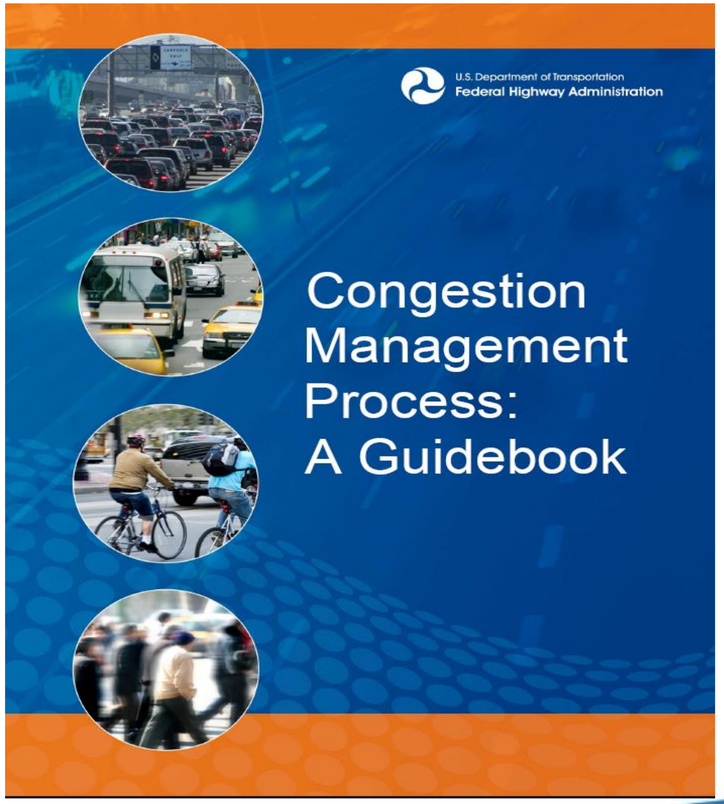
Congestion Management Process

- Advisory Committee
  - Counties
  - Cities
  - FHWA
  - MnDOT
  - Metropolitan Council

Congestion Management Process

Following 8 steps defined by FHWA:

1. Develop Regional Objectives
2. Define CMP Network
3. Develop Multimodal Performance Measures
4. Collect Data/Monitor System Performance
5. Analyze Congestion Problems and Needs
6. Identify and Assess Strategies
7. Program and Implement Strategies
8. Evaluate Strategy Effectiveness



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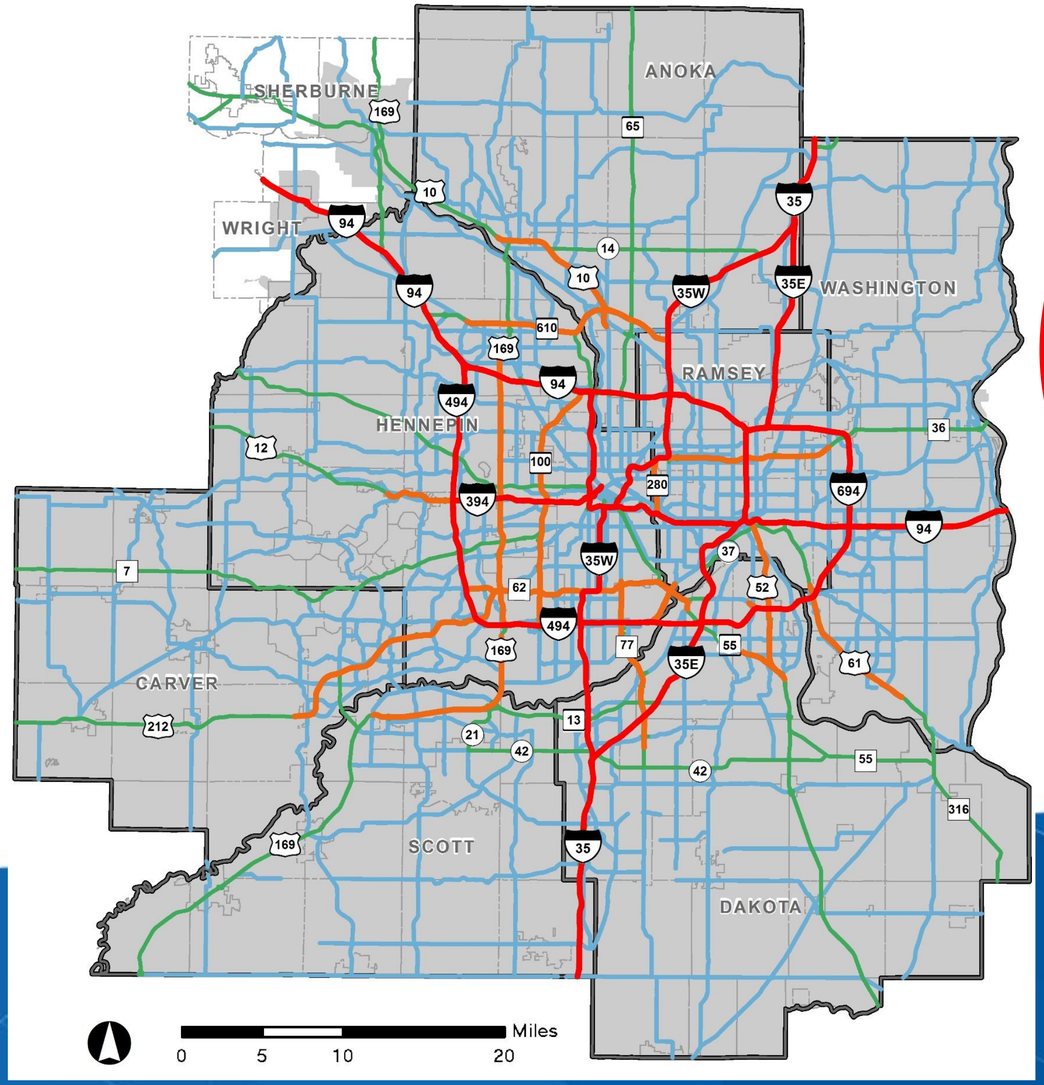
Congestion Management Process Regional Goals

- Goal 1: Increase Access to Destinations
- Goal 2: Support a Competitive Economy
- Goal 3: Promote Safety and Security

- Area Covered
  - Seven Counties
  - Urbanized Area of Sherburne and Wright Counties

- Network
  - Interstate Freeways
  - Non-Interstate Freeways
  - Non-Freeway Principal Arterials
  - A-Minor Arterials and Sherburne/Wright Minor Arterials
  - Corridors of Concern

Congestion Management Process Network



Congestion Management Process Performance Measures

- Performance Measures
  - Defined Targets
  - Example: Annual Number of Fatalities
- Key Performance Indicators
  - Example: Rate of Fatalities

Congestion Management Process Performance Measures

	Summary	Objectives	Performance Measures *Other Key Performance Indicators*	Performance Target	CMP Goals		
					Increase Access to Destinations	Support a Competitive Economy	Promote Safety and Security
Safety	Reduce Annual Number of Fatalities	Reduce annual number of fatalities to 65 by 2030	Annual number of fatalities	65 fatalities or fewer by 2030			✓
	Reduce Annual Number of Serious Injuries	Reduce annual number of serious injuries to 450 by 2030	Annual number of serious injuries	450 serious injuries or fewer by 2030			✓
			Rate of Fatalities per 100 million Vehicle Miles Traveled (VMT)				✓
			Rate of Serious Injuries per 100 million VMT				✓
			Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries				✓
Travel Time Reliability	Increase Travel Time Reliability	Increase the percentage of reliable person-miles traveled on the NHS system greater than 65 percent by 2030	Percent of reliable person-miles traveled on the NHS system	65 percent reliable person-miles or more by 2030	✓		

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Congestion Management Process Performance Measures (Continued)

	Summary	Objectives	Performance Measures *Other Key Performance Indicators*	Performance Target	CMP Goals		
					Increase Access to Destinations	Support a Competitive Economy	Promote Safety and Security
Travel Time Reliability Cont.	Limit Annual Hours of Excessive Delay	Limit the annual hours of excessive delay per capita to less than 9.5 by 2030	Annual hours of excessive delay per capita	9.5 hours per capita or fewer by 2030	✓		
	Reduce Delay Associated with Traffic Incidents	Reduce person-hours of total delay associated with traffic incidents by X percent by 2030	Person-hours of total delay associated with traffic incidents	X percent reduction or more by 2030			✓
	Reduce Peak Period Congestion	Reduce the percentage of facility miles on the instrumented system (highways and minor arterials) experiencing recurring congestion during the peak period to less than 25 percent by 2030	Percentage of facility miles on the instrumented system (highways and minor arterials) experiencing recurring congestion during the peak period	25 percent of facility miles or fewer by 2030	✓		
	Reduce Recurring Congestion	Reduce the daily hours of recurring congestion on the principal arterial freeway system X percent (or from X to Y) by 2030	Daily hours of recurring congestion on the principal arterial freeway system	X percent reduction or more by 2030	✓		

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Congestion Management Process Performance Measures (Continued)

	Summary	Objectives	Performance Measures *Other Key Performance Indicators*	Performance Target	CMP Goals		
					Increase Access to Destinations	Support a Competitive Economy	Promote Safety and Security
Travel Time Reliability Cont.	Maintain a Signal Retiming Program	Maintain a program of evaluating X signals for retiming every 5 years on congested segments of Tiers 3 and 4	Number of signals evaluated for retiming every 5 years	X signals evaluated every 5 years	✓		
			Modal share: The Percent of Non-Single Occupancy Vehicle Travel			✓	
			Percent of Congested Roadway Centerline Miles with MnPASS			✓	
Goods Movement	Increase Truck Travel Time Reliability	Limit growth of truck travel time reliability index on the interstate system to 2.5 by 2030	Truck travel time reliability index	2.5 or less by 2030		✓	
	Reduce Over-Capacity Roadway Miles on Truck Routes	Reduce over-capacity roadway miles on major truck routes by X percent by 2030	Over-capacity roadway miles on major truck routes	X percent reduction or more by 2030		✓	

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Congestion Management Process Performance Measures (Continued)

	Summary	Objectives	Performance Measures *Other Key Performance Indicators*	Performance Target	CMP Goals		
					Increase Access to Destinations	Support a Competitive Economy	Promote Safety and Security
Goods Movement Cont.	Reduce Freight Bottlenecks	Reduce freight bottlenecks by X percent by 2030	Number of freight bottlenecks	X percent reduction by 2030		✓	
Roadway Capacity	Limit Congested Roadway Miles	Limit miles of the instrumented system experiencing more than 2 hours of congestion per day to 150 in 2030	Miles of the instrumented system experiencing more than 2 hours of congestion per day	150 miles or fewer in 2030	✓		
	Increase Access to Jobs	50% of the region's jobs shall be accessible within 30 minutes by auto and 1.5% of the region's jobs by transit in 2030	Percent of regional jobs accessible by auto and transit	50% of jobs accessible by auto and 1.5% of jobs by transit within 30 minutes in 2030	✓		
			Average Daily Number of People in MnPASS Lanes		✓		
			Number of Registered Carpools of Vanpools		✓		

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Congestion Management Process Performance Measures (Continued)

	Summary	Objectives	Performance Measures *Other Key Performance Indicators*	Performance Target	CMP Goals		
					Increase Access to Destinations	Support a Competitive Economy	Promote Safety and Security
Public Transit	**Increase Route-Miles of BRT**	**Increase route-miles of BRT X percent by 2030**	**Route-miles of BRT**	**X percent increase by 2030**	✓		
			Passengers per In-Service Hour		✓		
			Transit On-Time Performance		✓		
			Transit Ridership		✓		
Transportation Demand Management			*Total Emissions Reductions*			✓	
			Total Emissions			✓	

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Congestion Management Process Data and Needs Analysis

- Volume/Capacity Analysis
  - Volume - MnDOT AADT data
  - Capacity - Regional Travel Demand Model
- Screening Thresholds
  - V/C of 0.91 to 1.00 shows corridor approaching congestion
  - V/C of 1.01 to 1.15 shows potentially congested corridor
  - V/C > 1.15 shows potentially heavily congested corridor

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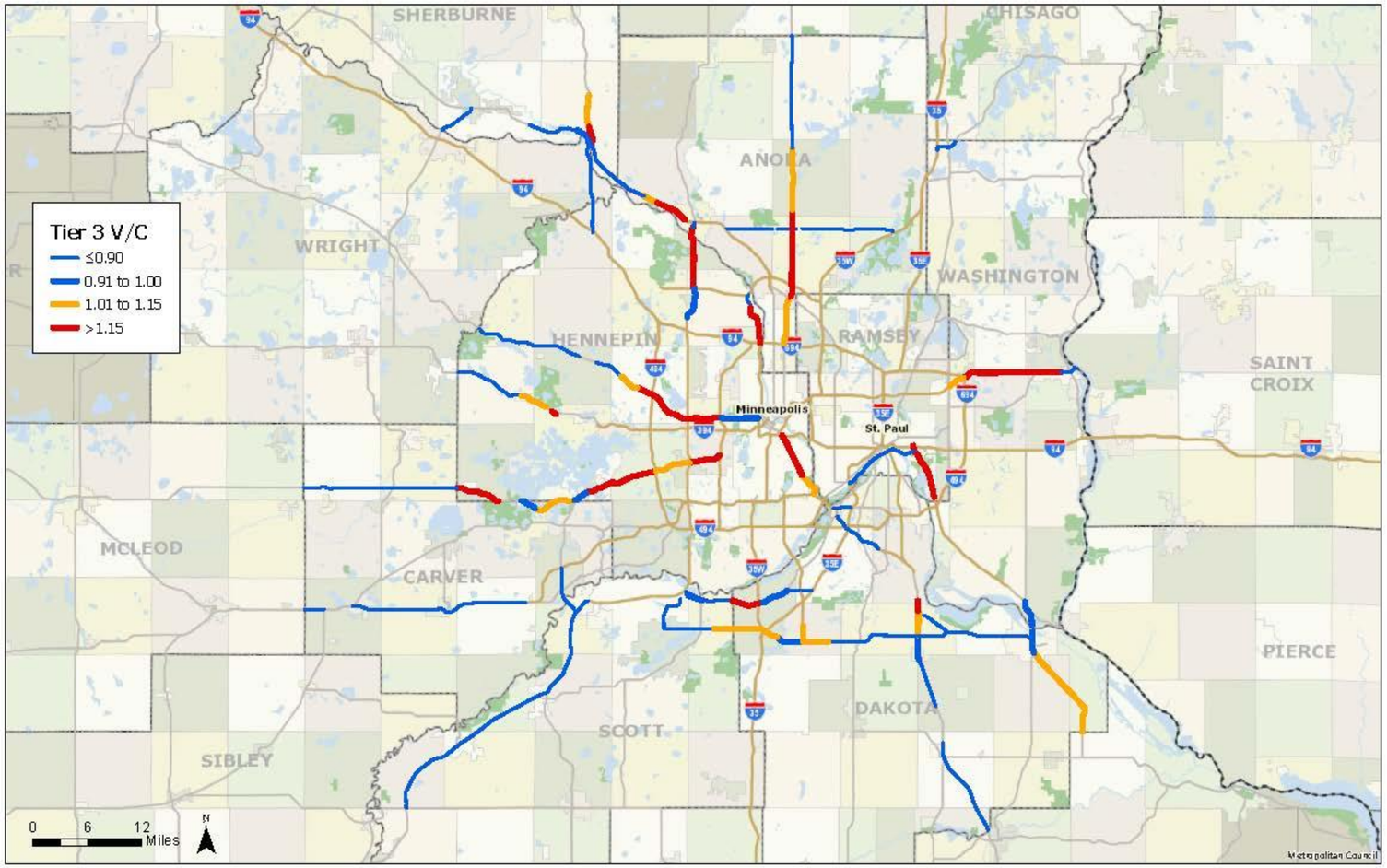
Congestion Management Process Volume/Capacity Analysis: Group 3



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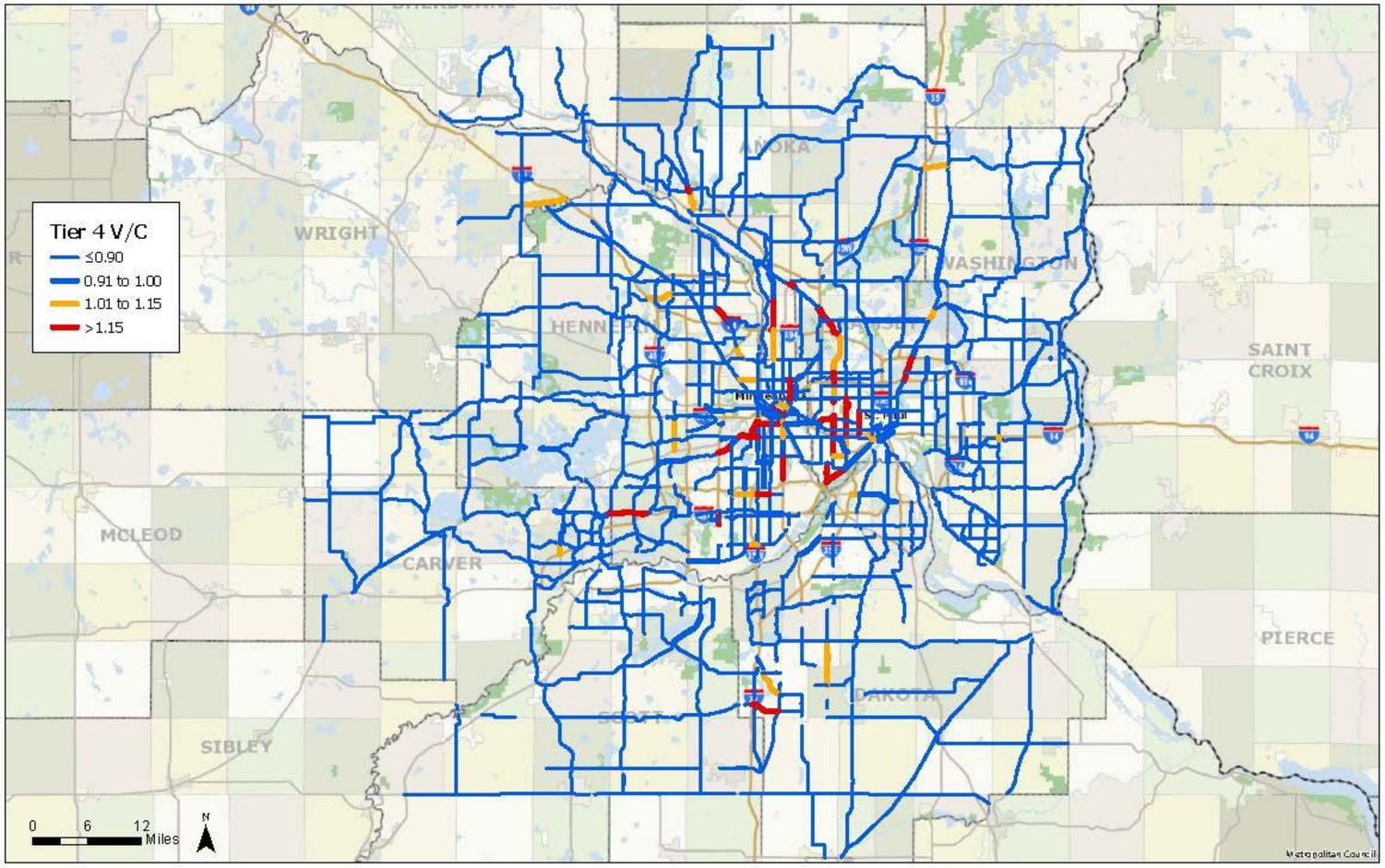
Congestion Management Process Volume/Capacity Analysis: Group 4



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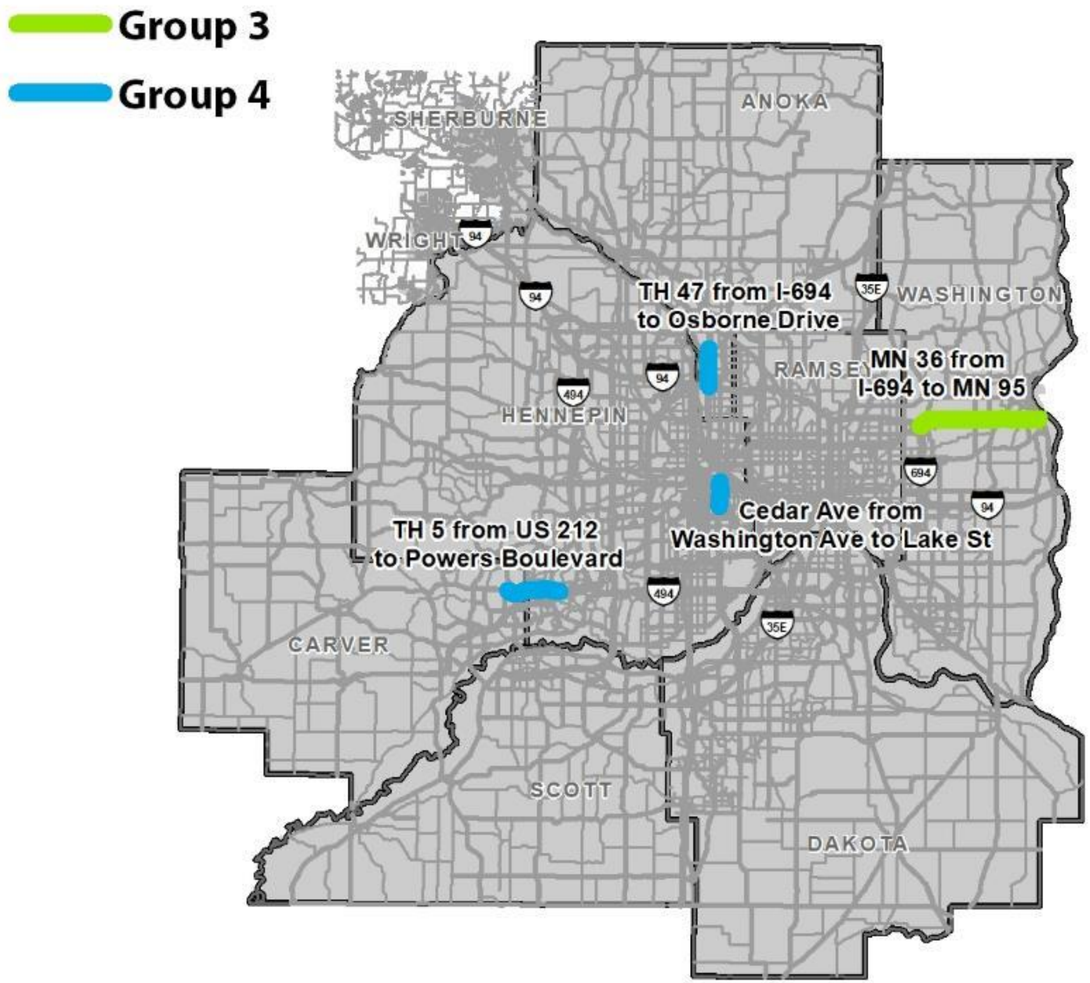
Congestion Management Process
Selected Corridors

MN 36
TH 5
TH 74
Cedar Avenue



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Congestion Management Process Additional Analysis

- Volumes
- Volume/Capacity
- Land Use
- Trails
- Freight
- Transit/Transit Operations
- Trip Distribution
- Capacity and Access
- Intersection Types
- Frontage Road Presence
- Speed Limit
- Crash Data
- Operational Conditions

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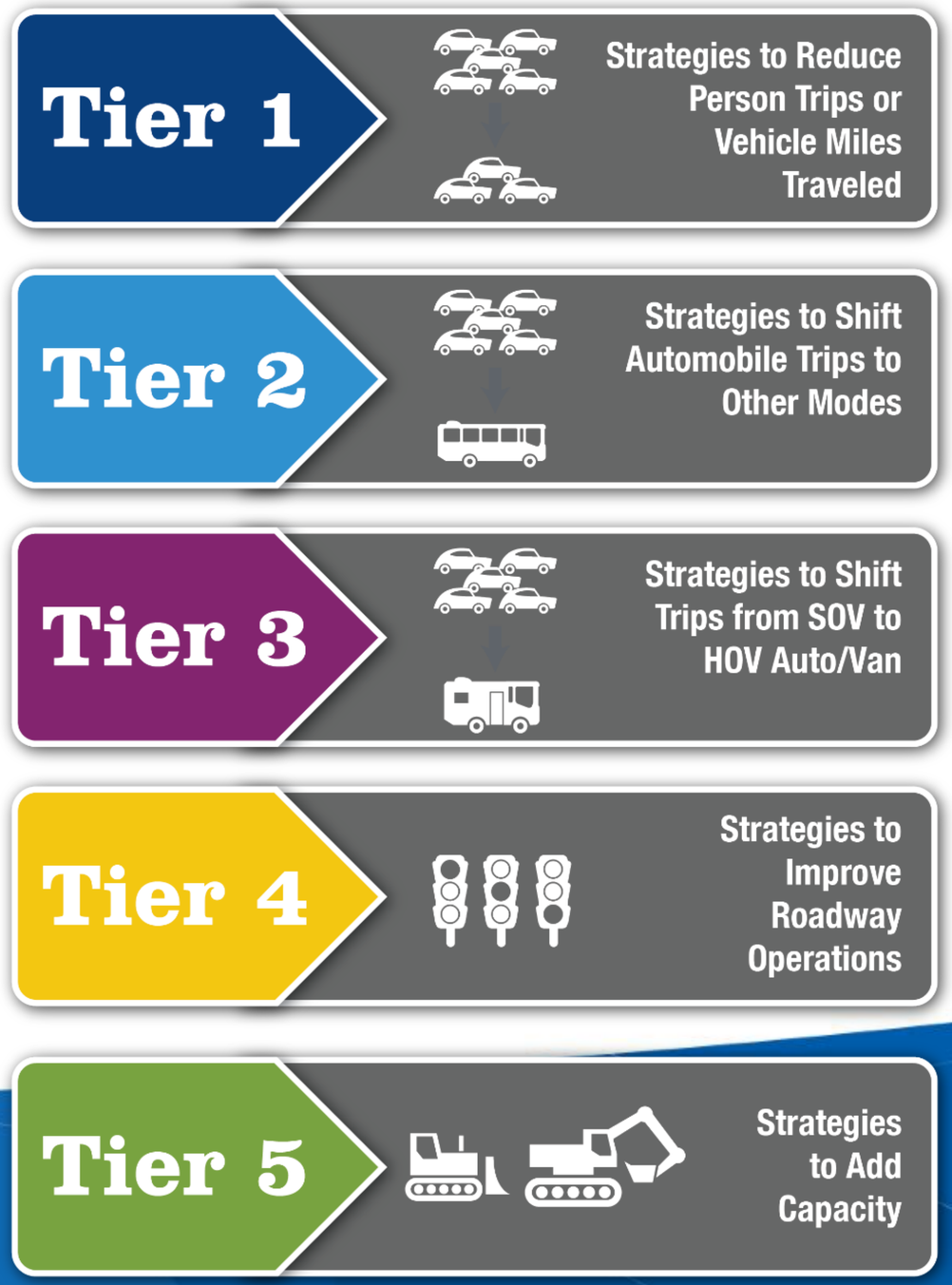
Congestion Management Process Strategies Toolbox



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Congestion Management Process
Tier 1 (Trip Reduction) Strategies

Congestion Pricing (MnPASS)	Negotiated Demand Management Agreements
Alternative Work Hours	Trip Reduction Ordinance
Telecommuting	Infill Developments
Guaranteed Ride Home Program	Transit Oriented Developments
Alternative Mode Marketing and Education	Design Guidelines for Pedestrian-Oriented Development
Safe Routes to Schools Program	Mixed-Use Development
Preferential or Free Parking for HOVs	Long-Range Comprehensive Land Use Planning
Event Transportation Management Plans	

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Congestion Management Process
Tier 2 (Mode Shift) Strategies

Transit Capacity Expansion	New Sidewalk Connections
Increasing Bus Route Coverage and/or Frequencies	Enhanced Pedestrian Crossings
Implementing Regional Transitways	Designated Bicycle Facilities on Local Streets
Providing Real-Time Information on Transit Routes	Improved Bicycle Facilities
Reducing Transit Fares	Improved Safety of Existing Bike/Ped Facilities
Provide Transit Advantages	Exclusive Non-Motorized Right-of-Way
Provide Transit Signal Priority	Complete Streets
Encourage Off-Board Fare Collection	Preservation Projects with Multimodal Improvements
Monitor Shifting Freight Numbers	Park-and-Ride Lots

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Congestion Management Process
Tier 3 (HOV Shift) Strategies

Ridesharing (Carpools and Vanpools)	Parking Management
Employer-Landlord Parking Agreements	

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Congestion Management Process
Tier 4 (Operational Improvements) Strategies

Dynamic Messaging	Vehicle Use Limitations and Restrictions
Advanced Traveler Information Systems (ATIS)	Improved Signage
Integrated Corridor Management (ICM)	Geometric Improvements for Transit
Automated and Connected Vehicles	Intermodal Enhancements
Advanced Traffic Management System (ATMS)	Goods Movement Management
Traffic Signal Coordination	Towing Improvements
Bottleneck Relief	Shared Mobility
Changeable Lane Assignment/Dynamic Lane Control	Ramp Metering

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Tier 4 Strategies (Continued)

Freeway Auxiliary Lanes (Shorter than one mile)	Alternative Intersection Design
Ramp Modifications	Snow Removal
Interchange Removal	Pavement and Bridge Deicing
Signal Timing	Incident Detection and Management Systems
Parking Restrictions	Dynamic Access Changes
One-Way Conversions	Access Management Policies
Network Management	Coordinated Preservation Projects
Superstreet Corridors	Safety Mitigation

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Congestion Management Process
Tier 5 (Capacity Expansion) Strategies

Corridor Preservation	Managed Lanes
Turn Lanes	Interchange Configuration Modification
Increase the Capacity of the System Through Reallocation of Current Right-of-Way Space	Increase the Capacity of the System Through New Roadway Facilities
Intersection Improvements	Additional General Purpose Lanes
High Occupancy Vehicle Lanes	

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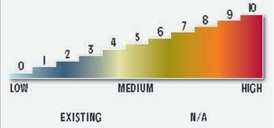
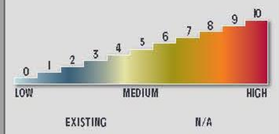
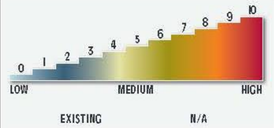
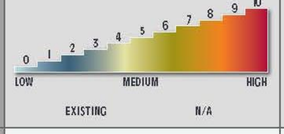
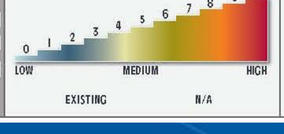
Congestion Management Process Corridor Strategy Assessment

Corridor _____ From _____ To _____ Analyst _____ Date _____

Tier	Implementation Timing	Congestion Mitigation Strategy	Distribution of Trip Types: Regional Traffic	Regional Access	Local Access	Local Circulation	Potential Effectiveness	Recommendations/ Comments
TIER 1: Strategies to Reduce Person Trips or Vehicle Miles Traveled	Long	**1.01 Congestion Pricing (MnPASS):** Congestion pricing can be implemented statically or dynamically. Static congestion pricing requires that tolls are higher during traditional peak periods. Dynamic congestion pricing allows toll rates to vary depending upon actual traffic conditions. The more congested the road, the higher the cost to travel on the road. Dynamic congestion pricing works best when coupled with real-time information on the availability of other routes.						
	Short	**1.02 Alternative Work Hours:** There are three main variations: staggered hours, flex-time, and compressed work weeks. Staggered hours require employees in different work groups to start at different times to spread out their arrival/departure times. Flex-time allows employees to arrive and leave outside of the traditional commute period. Compressed work weeks involve reducing the number of days per week worked while increasing the number of hours worked per day.						
	Short	**1.03 Telecommuting:** Telecommuting policies allow employees to work at home or a regional telecommute center instead of going into the office, all the time or only one or more days per week.						
	Short	**1.04 Guaranteed Ride Home Programs:** These programs provide a safety net to those people who carpool or use transit to work so that they can get to their destination if unexpected work demands or an emergency arises.						
	Short	**1.05 Alternative Mode Marketing and Education:** Providing education on alternative modes of transportation can be an effective way of increasing demand for alternative modes. This strategy can include mapping Websites that compute directions and travel times for multiple modes of travel.						

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Congestion Management Process Corridor Strategy Selection Results MN 36 Example

Strategy	Effectiveness	Time Frame	Responsibility
Consider transit and other ways to reduce number of vehicles making regional trips on this corridor	Low	Medium	MnDOT, Metropolitan Council/Metro Transit, Cities of Stillwater, Oak Park Heights, and Lake Elmo
Super Streets	High	Short	MnDOT
Frontage roads on western portions	Low	Medium	MnDOT
Increase capacity through parallel roadways (e.g. TH-5, Hilton	Low	Medium	MnDOT, Metropolitan Council, Cities of Stillwater, Oak Park Heights, and Lake Elmo
Increase awareness and frequency of trips at park-and-ride lots, highlight possibility of ridesharing	Low	Short	MnDOT, Metropolitan Council, Cities of Stillwater, Oak Park Heights, and Lake Elmo
Alternative intersection design	High	Long	MnDOT, Metropolitan Council, Cities of Stillwater, Oak Park Heights, and Lake Elmo
Intersection improvements	Medium	Short	MnDOT, Metropolitan Council, Cities of Stillwater, Oak Park Heights, and Lake Elmo

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Congestion Management Process
End Products

- Policies and Procedures Handbook (updated in conjunction with TPP)
  - Documents Development of Process
  - Goals and Objectives
  - Definition of Geographic Coverage
  - Definition of Network
  - Performance Measures
  - Strategies
  - Assessment Process

Congestion Management Process End Products (continued)

- Traffic Trends Report (updated annually)
  - Performance Measures Data
  - On-going Tabulation of Corridor Assessments
  - Evaluation of Effectiveness of Implementation of Strategies

Congestion Management Process

- Next Steps – Implementation
  - On-going Corridor Analysis
  - Integration into Project Development and Programming Process
    - MnDOT
    - Regional Solicitation