Congestion Management Process Draft CMP Congestion Analysis Handbook

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10/13/2022 – TPP Technical Working Group – Dave Burns and Tim Burkhardt





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Title

Purpose and Goals

Process and Contents

CMP Strategies

Sample Pages

Next Steps and Discussion

Slide
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11
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Handbook Purpose and Design

- Help stakeholder agencies and the Metropolitan Council collaboratively identify congestion problems and potential solutions within the context of the regional Congestion Management Process (CMP)
- Designed to simplify the process of assessing and managing congestion while promoting regional collaboration and consistency with the CMP
- Links regional congestion management policy and guidance to community context and transportation needs

Handbook Goals

Provide Guidance

Provide guidance to stakeholder agencies to help implement the CMP, specifically with respect to assessing congestion problems and needs.

Ensure Regional Consistency

Provide a standardized process for assessing corridor congestion in the region.

Anticipate Multimodal Strategies

Use a methodology that prepares users to develop and prioritize multimodal strategies consistent with the CMP and the TPP.

Emphasize People

Understand transportation needs of people who live in the corridor. Include traditionally underrepresented populations and those with limited access to cars.

Link to Funding

Prepare users to apply for Regional Solicitation and other competitive sources of funds by aligning with the priorities of those funding sources and programs.

Approach

Keep it Simple

- Selected data only, GIS/map-based
- Transportation Travel Index (TTI)

Integrate Lived Experience

• Interpret, don't just report

Screen for Possible Strategies

Incorporation of Strategy Review Matrix

Validate with Sample Corridors

Range of geography and uses

Living Document

• Update as policy and resources change

Development Process

Consultant Team

• Alliant Engineering + Community Design Group

Project Management Team

- Met Council, MnDOT, FHWA
- 10 meetings

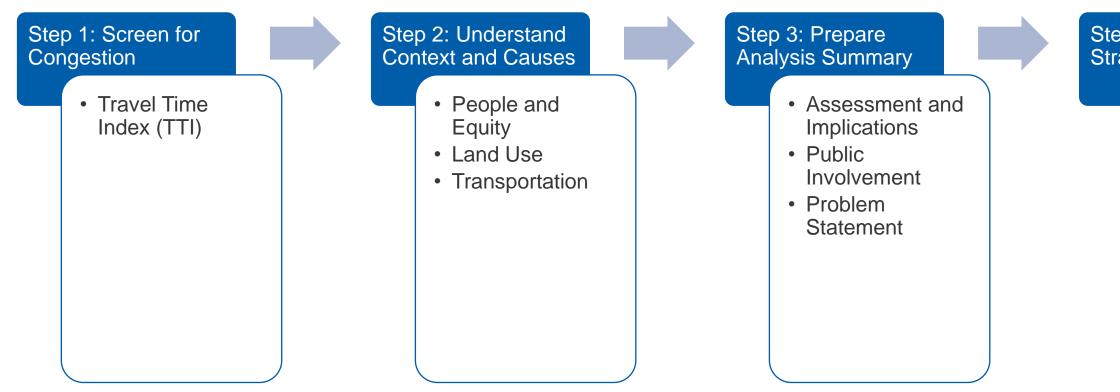
CMP Advisory Committee

- City and County staff representatives
- 5 meetings

Schedule

• 18 months

CMP Handbook: 4 Steps

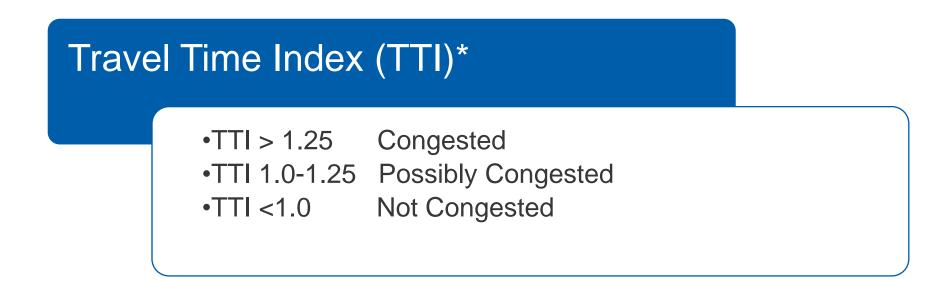


Step 4: Review Strategies

Travel Demand Management (TDM)
Traffic Management Technologies
Spot Mobility
E-ZPASS
Strategic Capacity Enhancements

Step 1: Screen for Congestion

Guides users to the Met Council Congestion Dashboard to look up **TTI values**

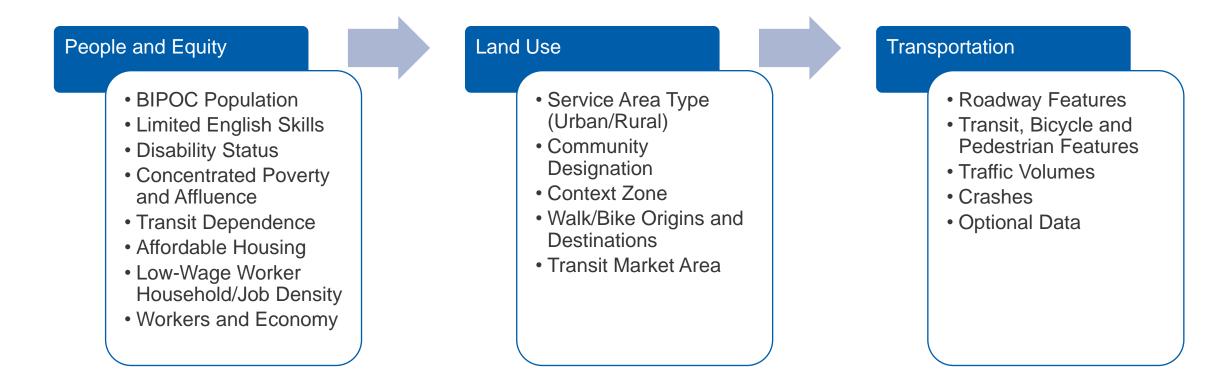


*TTI: The ratio of actual travel time to free-flow travel time on a given roadway segment.



Step 2: Understand Context and Causes

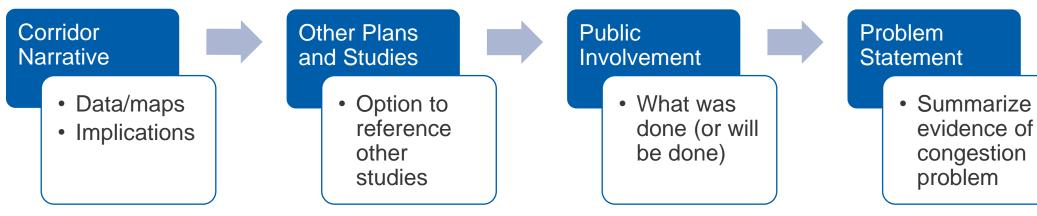
Collect, analyze, and document data to support multimodal strategies





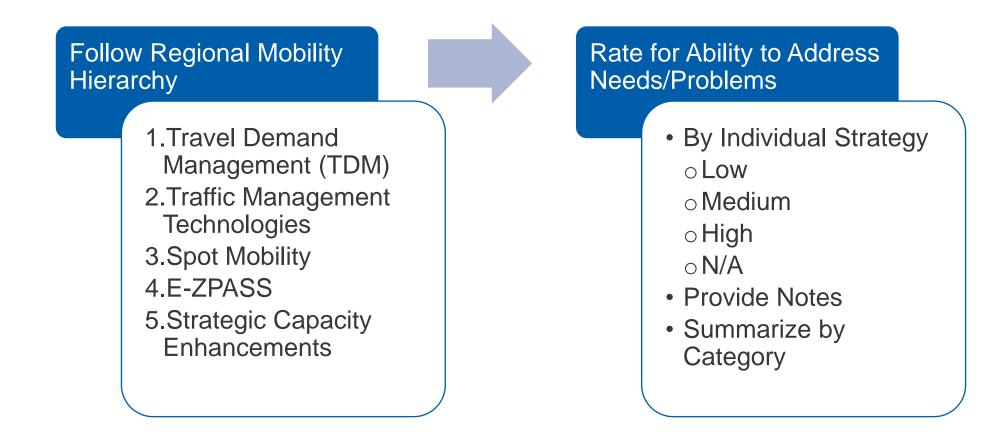
Step 3: Prepare Analysis Summary

Summarize data and implications and prepare problem statement



Step 4: Consider Strategies

Review and rate potential strategies to address congestion (Excel tool)





Summary Checklist – Data and Exhibits

TWIN CITIES CONGESTION ANALYSIS HANDBOOK

Location and Congestion Screen Exhibits & Data Checklist METROPOLITAN

EXHIBIT	DATA ELEMENTS NEEDED
Exhibit 1: Project Location	Roadway ownership
	Functional classification
	CMP network group
	Corridor length
Exhibit 2: Traffic Operations and Mobility	Roadway capacity
	Existing AM + PM travel time indices (TTI)
	 Duration of congestion (hours per day TTI>1.25)
	Average AM + PM vehicle delay

People Exhibits & Data Elements Checklist

EXHIBIT	DATA ELEMENTS NEEDED
Exhibit 3: Percent BIPOC Population	Percent non-white/BIPOC population
Exhibit 4: Percent of Residents with Limited English Skills	Percent of residents with limited English proficiency
Exhibit 5: Concentrated Poverty and Affluence	Concentrated poverty
	Concentrated affluence (optional)
	Regional environmental justice Areas
Exhibit 6: Transit Dependence	American Community Survey 5-Year summary file
Exhibit 7: Affordable Housing	Number of subsidized housing units
Exhibit 8: Low-Wage Workers	Low-wage worker household density
	Low-wage worker job density
Exhibit 9: Workers and the Regional Economy	Population and employment totals
	Postsecondary education centers

Land Use Exhibits & Data Elements Checklist

EXHIBIT	DATA ELEMENTS NEEDED
Exhibit 10: Service Area Type	Service area type
Exhibit 11: Community Designation	Community designation
Exhibit 12: Context Zone	 Aerial photography MnDOT land use context: types, identification, and use
Exhibit 13: Walk/Bike Origins and Destinations	Regional bicycle transportation network destinations
Exhibit 14: Transit Market Area	Transit market areas

TWIN CITIES CONGESTION ANALYSIS HANDBOOK

Transportation Exhibits & Data Elements Checklist

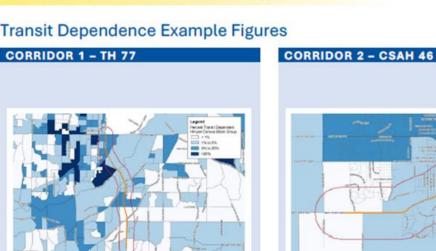
EXHIBIT	DATA ELEMENTS NEEDED
Exhibit 15: Roadway Features	 Interchange locations and types Intersection access locations and Rail crossings Typical section Posted speed Access spacing Frontage roads (if applicable)
Exhibit 16: Transit, Bicycle and Features	 Existing and planned pedestrian f Existing and planned bicycle featu Transit characteristics (type, rout Transit frequency/volumes
Exhibit 17: Traffic Volumes	AADT Historical trends
Exhibit 18: Crashes	Number/location of crashes Crash types Crash severity
Optional	Pedestrian volumes Bicycle volumes Transit ridership Person throughput Daily traffic volume profile Vehicle turning movements/ramp Truck percentages Forecast volumes Forecast capacity Trip types, speeds, origins & lengt



Instruction Sheets and Figures

ransit Depender	ICE METROPOLITAN	
SUMMARY		
Prepare a map showing	thouseholds who lack regular access to a motor vehicle - also known as "transit- " for meeting their travel needs (please note these households may also rely on air travel).	
DATA ELEMENTS		
American Community Survey 5-Year Summary File	 Agency Providing: Metropolitan Council Location: Latest ACS 5 Year Summary File (currently the 2016 to 2020 file) available from the Minnesota Geospatial Commons (https://gisdata.mn.gov/dataset/us-mn-state-metc-society-census-acs) Data Interface: Shapefile 	
PROCESSING AND A	NALYSIS	
Transit-Dependent Households Per Census Block Group	 Step 1: <u>Number</u> of Transit-Dependent Households Per Block Group Use the variables included in the shapefile to develop this information layer "HH_NOVEH" (households with no vehicles) 	
	Step 2: Percent of Transit-Dependent Households Per Block Group • Use the variables included in the shapefile to develop this information layer • "HH_NOVEH" (households with no vehicles) and • "HHTOTAL (total number of households) • The equation is "HH_NOVEH" / "HHTOTAL"	

accompanying text, in Appendix A.



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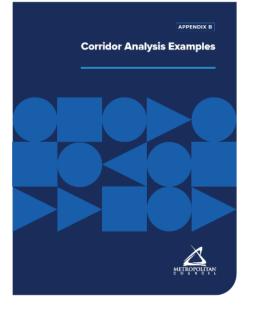
TWIN CITIES CONGESTION ANALYSIS HANDBOOK

CORRIDOR 3 - WEST BROADWAY





Sample Write-ups for the 3 Corridors



WORKING DRAFT

Metropolitan Council Congestion Analysis Handbook

B-2

Corridor Analysis Summary

HWY 77: INTERSTATE 494 TO 138TH STREET

Introduction

This document contains the results of the congestion and characteristics analysis produced following the Congestion Analysis Handbook. The results are summarized in text below in three sections: People and Equity, Land Use, and Transportation. The text is supported by maps and other graphics illustrating each primary data item collected.

LOCATION

Minnesota Trunk Highway 77 (Hwy 77) between I-494 and 138th Street is owned at maintained by the Minnesota Department of Transportation (MnDOT). The corridor is 8.2 miles long and runs through Hennepin County (Bloomington) and Dakota County (Burnsville, Apple Valley, Eagan). It is classified as a Primary Arterial and is in CMP Network Group 2. (Figure 1)

CONGESTION

Based on the volume-to-capacity (V/C) ratio, the corridor operates at LOS B, C, or D, depending on the segment. The more congested areas are between the TH 13 and Killebrew Drive, and just south of 35E. The TTI congestion screening result places the Hwy 77 corridor in the "Possibly Congested" category (TTI between 1.0 and 1.25). (Figure 2)

Assessment

PEOPLE AND EQUITY

Demographics: Race and Ethnicity

According to Metropolitan Council data, the corridor is located within a variety of Census Tracts that have low, medium, high, and very high (greater than 50%) concentrations of Black, Indigenous, or People of Color (BIPOC) populations. (Figure 3)

Implications: Successful implementation of project-related communications (including social marketing campaigns and initiatives) and community outreach / engagement efforts should include the hiring or participation of community organizers or representatives from specific BIPOC communities. Consideration of specific culturally-appropriate approaches will be important for successful development of a project along this corridor.

Demographics: Language Spoken

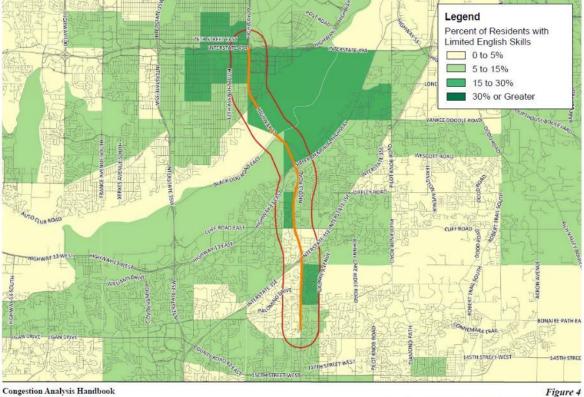
According to Metropolitan Council data, the corridor is located in an area with low, medium, and high presence of residents with limited English language skills. (Figure 4)

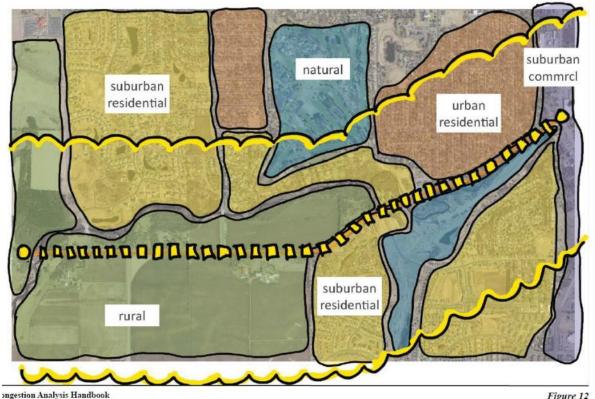
Implications: Successful implementation of project-related communications (including social marketing campaigns and initiatives) and community outreach / engagement efforts should include development of written and spoken materials in languages other than English. participation of interpreters, and other culture- and language-specific approaches.



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Sample Maps and Graphics (1)





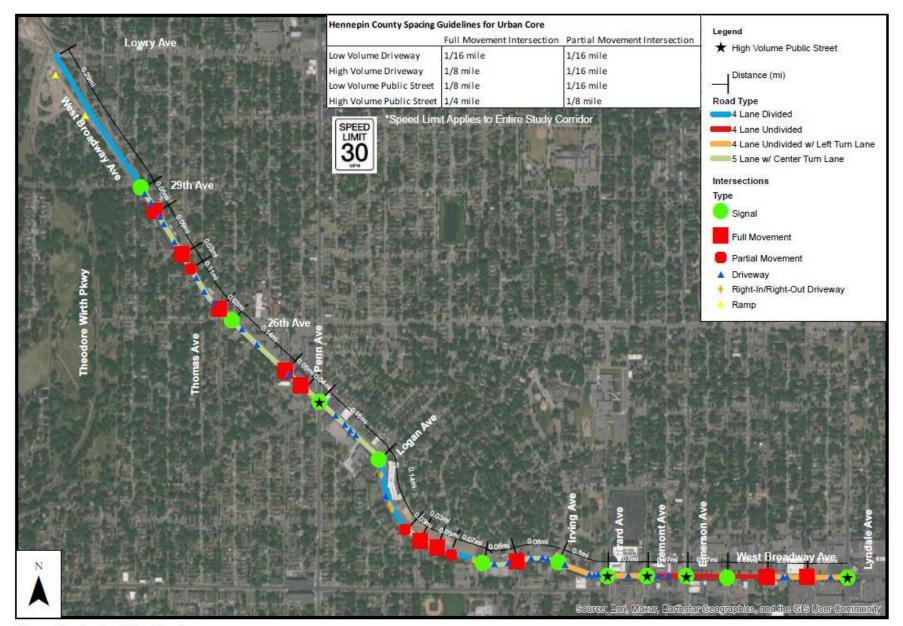
Congestion Analysis Handbook Example Corridor: TH 77

Percent of Residents with Limited English Skills

cample Corridor: CSAH 46

Figure 12 Context Zone

Sample Maps and Graphics (2)



Congestion Analysis Handbook Example Corridor: West Broadway Avenue (County Road 81) Figure 15 Roadway Features

Sample of Screening Tool (1)

OCTOBE	R 2022	Twin Cities	Congestion Analysis Har
Strat	egy Screening Tool		
ID # (1)	Strategy and Primary TPP Priority		of Strategy to lentified Problem(s)
Priority	1. Travel Demand Management	Roung	Notes
1.01	Congestion Pricing (MnPASS)		
1.02	Alternative Work Hours		
1.03	Telecommuting		
1.04	Guaranteed Ride Home Programs		
1.05	Alternative Mode Marketing and Education		
1.06	Safe Routes to School		
1.07	Preferential or Free Parking		
1.08	Event Transportation Management Plans		
1.09	Negotiated Demand Management Agreements		
1.10	Trip Reduction Ordinance		
1.11	Infill Developments		
	Transit Oriented Developments		
1.13	Design Guidelines for Pedestrian-Oriented Development		
	Mixed Use Development		
	Long-Range Comprehensive Land Use Planning		
	Transit Capacity Expansion		
	Increasing Bus Route Coverage and/or Frequencies		
	Implementing Regional Transitways		
	Providing Real-Time Information on Transit Routes		
	Reducing Transit Fares		
	Providing Transit Advantages		
	Provide Transit Signal Priority		
	Encourage Off-Board Fare Collection		
	Monitor Shifting Freight Numbers		
	New Sidewalk Connections		
	Enhanced Pedestrian Crossings		
	Designated Bicycle Facilities on Local Streets		
	Improved Bicycle Facilities at Transit Stations and		
	Other Destinations		
2.14	Improved Safety of Existing Bicycle and Pedestrian		
	Facilities		
2.15	Exclusive Non-Motorized ROW		
	Complete Streets		
	Preservation Projects with Multimodal Improvements		
	Park-and-Ride Lots		
	Ridesharing (Carpools & Vanpools)		
	Employer-Landlord Parking Agreements		
	Parking Management		
	Geometric Improvements for Transit		
	Shared Mobility		
	Parking Restrictions		

OCTOBE	2022	Twin Citie	s Congestion Analysis Handbo
			of Strategy to
ID # (1)	Strategy and Primary TPP Priority		dentified Problem(s)
		Rating	Notes
	2. Traffic Management Technologies		
	Dynamic Messaging		
	Advanced Traveler Information Systems (ATIS)		
	Integrated Corridor Management (ICM)		
	Automated and Connected Vehicles		
	Advanced Traffic Management System (ATMS)		
	Traffic Signal Coordination		
	Changeable Lane Assignment/Dynamic Lane Control		
	Vehicle Use Limitations and Restrictions		
	Improved Signage		
	Intermodal Enhancements		
	Goods Movement Management		
	Towing Improvements		
	Ramp Metering		
	Signal Timing		
	Network Management		
	Snow Removal		
	Pavement and Bridge Deicing		
	Incident Detection and Management Systems		
	Dynamic Access Changes		
	Access Management Policies		
	3. Spot Mobility Bottleneck Relief		
	Freeway Auxiliary Lanes that are Shorter than One Mile		
	Ramp Modifications		
	Interchange Removal		
	Superstreet Corridors		
	Alternative Intersection Design		
	Coordinated Preservation Projects		
	CMP Safety Mitigation		
_	Turn Lanes		
	Intersection Improvements		
	4. MnPASS (E-ZPass)		
e	High Occupancy Vehicle Lane Improvements		
	Managed Lanes		
	5. Strategic Capacity Enhancements		
	One-Way Conversions		
	Corridor Preservation		
	Reallocation of Current Right-of-Way Space		
	Interchange Configuration Modification		
	Additional General-Purpose Lanes		
	New Roadway Facilities		
5.05	nen nodernay i dendes		

(1) "Strategy ID" numbers reference the Metropolitan Council Congestion Management Process Policy and Procedures Handbook (August 2020), including Appendix D (Congestion Management Strategies Matrix)



C-3

Sample of Screening Tool (2)

CMP Strategy Screening: TH 77 Example Corridor

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4.55 Changeable Lane Assignment/Epinamic Lane Control n/s Reventible lane previously studied and rejected 4.50 Vehicle Use Limitations and Restrictions n/s Door to appear to be an losue on TW 77 4.50 Informodal Enhancements n/s Door to appear to be an losue on TW 77 4.51 Intermodal Enhancements n/s Door to appear to be an losue on TW 77 4.52 Intermodal Enhancements n/s Does not appear to be an losue on TW 77 4.53 Goods Netwenett Management n/s Does not appear to be an losue on TW 77 4.54 Togeting improvements n/s Does not appear to be an losue on TW 77 4.55 Remp Metering n/s Does net appear to be an losue on TW 77 4.56 Not applicable to thereasy confider N/s Does net appear to be an losue on TW 77 4.56 Signal Timing n/s Some almedy existing could explore but don't think this an current issue 4.58 Not applicable to thereasy confider n/s Not applicable to thereasy confider 4.58 Not applicable to thereasy confider N/s Does net appear to be an losue on TW 77 4.59 Not applicable to thereasy confider N/s Does net appear to be an losue on TW 77 4.59 Not applicable to thereasy con the 77 Does net appear to be an losue on T					
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4.30 improved Signage n/a Don't believe this is a current issue 4.32 intermodal forhancements n/a Does not appear to be an issue on TN 77 4.34 Goods Movement Management n/a Does not appear to be an issue on TN 77 4.35 Towing improvements n/a Does not appear to be an issue on TN 77 4.36 Goods Movement Management n/a Does not appear to be an issue on TN 77 4.36 Famp Metering n/a Does not appear to be an issue on TN 77 4.36 Signal Timing n/a Not applicable to freewave y confider 4.39 Signal Timing n/a Not applicable to freewave y confider 4.38 Signal Timing n/a Not applicable to freewave y confider 4.39 Signal Timing n/a Not applicable to freewave y confider 4.39 Signal Timing n/a Not applicable to freewave y confider 4.39 Signal Timing n/a Not applicable to freewave y confider 4.39 Signal Timing n/a Not applicable to freewave y confider 4.39 Signal Timing n/a Not applicable to freewave y confider 4.39 Signal Timing n/a Not applicable to freewave confider 4.39 Signal Timing n/a Not applicable to freewave confider 4.39 Indext Detection and Wanagement Systems n/a Doet not appear to be an issue 4.39					
4.12 intermodal forhancements n/ls Does not appear to be an issue on TH 77 4.13 Goods Mevement Management n/ls Does not appear to be an issue on TH 77 4.14 Towing improvements n/ls Does not appear to be an issue on TH 77 4.15 Towing improvements n/ls Does not appear to be an issue on TH 77 4.16 Towing improvements n/ls Does not appear to be an issue on TH 77 4.17 Meeting n/ls Some almost working; could explore but don't think this an current issue 4.18 Towing Meeting n/ls Not applicable to thereasy confider 4.18 Next Management n/ls Not applicable to thereasy confider 4.18 Next Management n/ls Does not appear to be an issue on TH 77 4.29 Prevenent and Bridge Desing n/ls Does not appear to be an issue on TH 77 4.29 Prevenent and Bridge Desing n/ls Doe't believe thic is a current issue 4.20 Indeet Detection and Management Systems n/ls Dor't believe incident are significant congection cause					
4.33 Goods Mavement Management n/a Does not appear to be an issue on TW 77 4.34 Towing improvements n/a Does not appear to be an issue on TW 77 4.35 Ramp Metering n/a Some already existing could explore but don't think this an current issue 4.36 Signal Tuning n/a Not curre what this means/neisy source 4.36 Since Removal n/a Not curre what this means/neisy source 4.36 Since Removal n/a Doe't believe this is a current issue 4.37 Systement and Bridge Deking n/a Don't believe this is a current issue 4.30 Indirect Detection and Management Systems n/a Don't believe incident are significant congection cause					
4.34 Towing improvements n/a Does not appear to be an issue on TW 77 4.36 Rang Metering n/a Some already existing could explore but don't think this an current issue 4.30 Signal Tuning n/a Not papicable to thereway confide 4.31 Network Management n/a Not curre what this means/heivrance 4.32 Signal Reling n/a Not curre what this means/heivrance 4.33 Network Management n/a Does not appear to be an issue on TW 77 4.39 Favement and Bridge Deking n/a Don't believe this is a current issue 4.30 Indeet Detection and Management Systems n/a Don't believe incidents are dignificant congection cause					
4.35 Ramp Metering n/a Some already working; could explore but don't think this an current issue 4.36 Signal Timing n/a Not applicable to thereary confider 4.38 Network Management n/a Not curre what this mean/velvance 4.38 Note Removal n/a Not curre what this mean/velvance 4.39 Network Management n/a Does not appear to be an issue on TH 77 4.39 Revenent and Bridge Deking n/a Don't believe this is a current issue 4.39 Incident Detection and Management Systems n/a Don't believe incident are significant congection cause					
4.30 Signal Timing n/a Not applicable to freeway confidor 4.30 Network Management n/a Not cure what this means/relevance 4.35 Snow Removal n/a Door to applicable to freeway confidor 4.35 Snow Removal n/a Door to applicable to an issue on TW 77 4.37 Preventent and Bridge Deking n/a Door't believe this is a current issue 4.38 Indident Detection and Management Systems n/a Don't believe incidents are significant congection cause			n/a		
4.28 Network Management n/s Not ours what this means/relevance 4.36 Snow Removal n/s Does not appear to be an issue on TN 77 4.29 Revenuent and Bridge Deking n/s Don't believe this is a current issue 4.30 Indext Detection and Management Systems n/s Don't believe indicent are significant congection cause			_		
4.35 Snow Removal n/s Does not appear to be an issue on Tie 77 4.32 Payement and Bridge Deking n/s Don't belave this is a surrent issue 4.38 (indext Detection and Management Systems n/s Don't belave incident are significant congection cause					
4.22 Pavement and Bridge Deking n/a Don't belave this is a current issue 4.28 indident Detection and Management Systems n/a Don't belave incidents are significant congection cause					
4.28 Indident Detection and Management Systems n/a Don't believe incidents are significant congection cause			_		
4.29 Dynamic Access Changes n/s Don't see how this would help					
	4.29	Dynamic Access Changes	n/a	Don't see how this would help	

CMP Strategy Screening: CSAH 46 Example Corridor

CMP ppen-Strategy BLD		Potential of Strategy to Address Identified Problem(s)		
	Reling	Notes		
nority 2. Traffic Management Technol	ogies			
4.01 Dynamic Messaging		not applicable to (SAH 46		
4.02 Advanced Traveler information Systems (ATIS)	o/a	not applicable to CSAH 46		
4.0.3 Integrated Corridor Management (ICM)	o/a	not applicable to CSAH 46		
4.04 Automated and Connected Vehicles	ala	Don't see how this would help		
4.05 Advanced Traffic Management System (ATMS)	aja	not applicable to CSAH 46		
4.06 Traffic Signal Coordination	aja	currently only one signal (at TH 61)		
4.00 Changeable Lane Assignment/Dynamic Lane Contri	ol ala	not applicable to CSAH 46		
6.09 Vehicle Use Limitations and Restrictions	aja	not applicable to CSAH 46		
4.10 Improved Signage	n/a	Does not appear to be relevant to CSAH 46 koules		
4.12 Internodal Enhancements	n/a	not applicable to CAH 45		
4.13 Goods Movement Management	n/a	not applicable to CSAH 46		
4.14 Towing Improvements	aja	not applicable to CSAH 46		
4.16 Famp Metering	oja.	not applicable to CSAH 46		
4.20 Sgnai Timing	Medium	possibly, if there are losses at TH 61 signal - need more information - suplore		
4.23 Network Management	aja	not applicable to CSAH 46		
6.26 Snow Removal	aja	not applicable to CSAH 46		
6.27 Pavement and Bridge Deiking	nja	not applicable to CSAH 46		
4.25 Incident Detection and Management Systems	nja	not applicable to CSAH 46		
4.29 Dynamic Access Changes	aja	not applicable to CSAH 46		
4.30 Access Management Policies	High	Access spacing does not meet guidelines; issue for safety and congection		
nority 3. Spot Mobility				
4.07 Bottleweck Relief	n/a	Opes not appear to be relevant to CSAH 45 koues		
4.17 Freeway Auxiliary Janes that are Shorter than One	Mie o/a	not applicable to CSAH 46		
4.18 Ramp Modifications	ala	not applicable to (SAH 46		
4.19 Interchange Removal	n/a	not applicable to (SAH 46		
4.24 Superstreet Corridors	n/a	not applicable to CSAH 65/no right-of-way		
4.25 Alternative Intersection Design	High	consider roundabout(x)		
4.31 Coordinated Preservation Projects	n/a	not applicable to CSAH 46		
4.12 CMP Safety Mitigation	a/a	not applicable to CSAH 45		
5.02 Tum Lanes	High	possibly - need more information - explore		
5.04 Intersection improvements	High	intersection improvements appear to be needed and will help with traffic flow and safety		
nority 4. MnPASS (E-ZPass)				
5.05 High Occupancy Whide Lane Improvements	a/a	not applicable to CSAH 45		
5.06 Managed Lanes	oj'a	not applicable to CSAH 46		
iority 5. Strategic Capacity Enhancem	ents			
4.22 One-Way Conversions	a/a	not applicable to CSAH 45		
5.01 Contidor Preservation	ala	not sure what this means/how relevant to CAH 45		
5.03 Reallocation of Current Right-of-Way Space	o/a	g/w not needd for lanes		
5.07 Interchange Configuration Modification	n/a	not applicable to CSAH 46		
5.08 Additional General-Purpose Lanes	0/a	mainline capacity does not appear to be a constraint currently		
5.09 New Roadway Facilities	ala	Con't see how this would help		

For strategy definitions, see CMP Folicy and Procedures Handbook Appendix D:

https://wetrocondl.org/Tropportation/Plansing-Differ-Transportation-Plansing-Documents/Congestion-Management-Process/ConDocs/OMP-AccessRiv-Dasce

Next Steps

- Finalize and release Handbook/tool
- New contract to test tool within more corridor contexts (on demand)
- Gain input from stakeholders/refine as needed
- Update/refine as CMP Policies and Procedures Handbook is refined



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