VISION 2050
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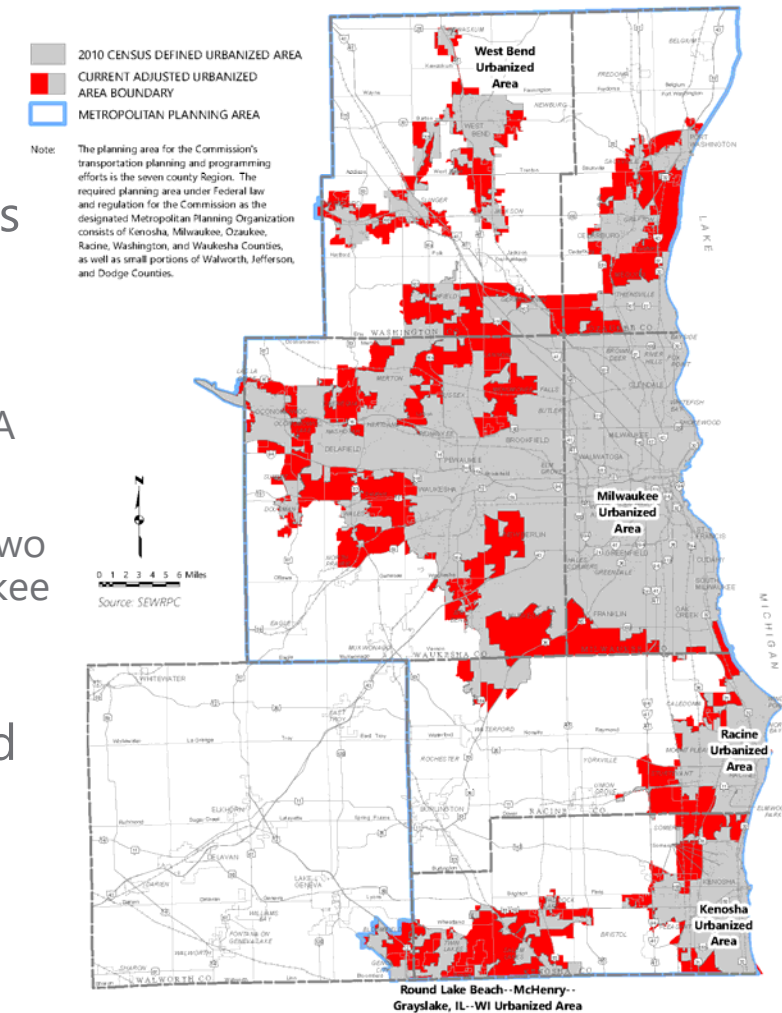**FEDERAL PERFORMANCE MEASURE TARGETS**
MARCH 28, 2019

Status of Initial Target Setting

❑ June 2018 – VISION 2050 Amendment (Completed)

   ▪ FHWA Highway Safety

❑ June 2019 – VISION 2050 Amendment (Current Effort)

   ▪ FTA Transit Asset Management (TAM)

   ▪ FHWA NHS Pavement/Bridge Condition and Performance

   ▪ FHWA Interstate Freight Performance

   ▪ FHWA Congestion Mitigation and Air Quality Improvement (CMAQ)

❑ Early 2021:

   ▪ FTA Transit Safety

TAM, NHS, Freight, and CMAQ PM Target Setting

❑ FTA TAM Targets (1-Year)

- MCTS established targets in December 2016

- Commission established initial targets in Jan 2017 for Metropolitan Planning Area (MPA)

❑ FHWA NHS, Freight, and CMAQ Targets (2- to 4-years)

- WisDOT established targets in May 2018

- Commission established initial targets for MPA in November 2018

- WisDOT and Commission jointly established two congestion-related CMAQ targets for Milwaukee urbanized area

❑ Commission can initially set targets and subsequently revise

Map 1
The Southeastern Wisconsin Region and Census Defined and Adjusted Urbanized Area Boundaries: 2010

2010 CENSUS DEFINED URBANIZED AREA
CURRENT ADJUSTED URBANIZED AREA BOUNDARY
METROPOLITAN PLANNING AREA

Note: The planning area for the Commission's transportation planning and programming efforts is the seven county Region. The required planning area under Federal law and regulation for the Commission as the designated Metropolitan Planning Organization consists of Kenosha, Milwaukee, Ozaukee, Racine, Washington, and Waukesha Counties, as well as small portions of Walworth, Jefferson, and Dodge Counties.

Source: SEWRPC

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Incorporating Targets into VISION 2050

❑ Initial targets were reviewed and potentially revised

❑ Looked to extend targets to year 2050 and expand to cover Region

  ▪ Set short-term targets for MPA based on long-range targets

❑ Developed preliminary targets for review by Advisory Committees

  ▪ Reviewed WisDOT target methodologies

  ▪ Reviewed historical trends

  ▪ Reviewed VISION 2050 and other plans

❑ Preliminary targets to be reviewed and commented on by public (April 2019)

❑ Amend final targets into VISION 2050 (May/June 2019)

❑ Following amendment, review targets every 4 years as part of interim plan update and every 10 years as part of major plan update

National Performance Measures Included in Amendment

- ❑ FTA TAM

- ❑ NHS Pavement/Bridges

- ❑ NHS/Freight Reliability

- ❑ CMAQ

TAM Measures

- ❑ Percent of Revenue Vehicles that are either at or beyond their useful life benchmarks (ULB)

- ❑ Percent of (non-revenue) vehicles and equipment that are at or beyond their ULB

- ❑ Percent of facilities exceeding their Transit Economic Requirements Model (TERM) scale

- ❑ Percent of segments that have performance restrictions

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Development of TAM Targets

❑ Year 2017 inventory data is currently available for revenue vehicles through NTD.

  ▪ Data for other performance measures available starting with year 2018

❑ Historical revenue vehicle data shows a slight improvement of existing condition

❑ Basing regional targets on MCTS would result in a slight worsening of conditions by the year 2050

❑ VISION 2050:

  ▪ Recommends significant improvement to transit systems, including keeping transit assets in a state of good repair

  ▪ Recognizes that, without additional Federal and State funding, transit service will decline

❑ For preliminary targets, Commission staff proposes:

  ▪ Year 2050 target based on MCTS short-term target

  ▪ TAM targets for years 2018 and beyond be based on year 2050 targets

Figure 2
Revenue Vehicle Weighted Average Age – Transit Operators in Southeastern Wisconsin
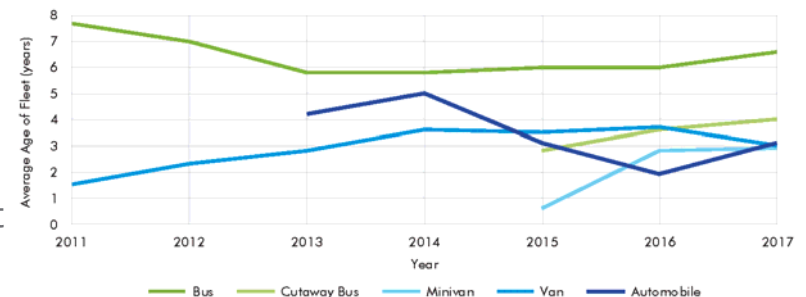
Source: National Transit Database and SEWRPC

Preliminary TAM Targets

Asset Class	Asset Examples	Performance Measure	Proposed Year 2050 Target
Rolling Stock			
Buses, Other Passenger Vehicles, and Railcars	Bus, Cutaway, Van, Minivan, and Streetcars	Percent of revenue vehicles that have either met or exceeded their useful life benchmark	< 30
Equipment			
Non-revenue service vehicles and equipment over $50,000	Route Supervisor Vehicles, Maintenance Trucks, Pool Vehicles, DPF Cleaning System, Bus Wash Systems, Fare Collection systems, Vehicle Lifts	Percent of vehicles and equipment that have either met or exceeded their useful life benchmark	< 30
Facilities			
Support	Maintenance and Administrative Facilities	Percent of facilities within an asset class, rated below 3 on condition reporting system	< 15
Passenger	Rail Terminals, Bus Transfer Stations	Percent of facilities within an asset class, rated below 3 on condition reporting system	0
Parking	Park-and-Ride Lots with Direct Capital Responsibility	Percent of facilities within an asset class, rated below 3 on condition reporting system	0
Infrastructure			
Fixed Guideway	Track Segments, Exclusive Bus Rights-of-Way, Catenary Segments, and Bridges	Percent of segments that have performance restrictions	0

❑ Year 2017 regional baseline data for rolling stock is 21.6 percent

NHS Pavement/Bridges Measures

Pavement Performance Measures

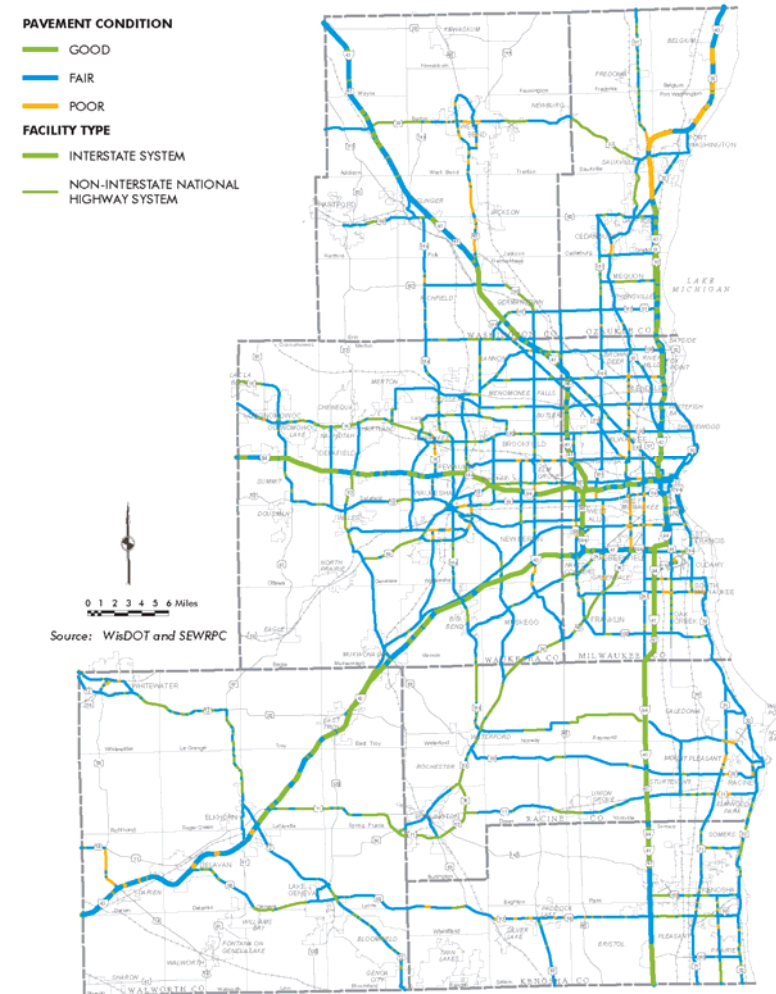| Interstate Highways	% of lane-miles of pavement in "good" condition
	% of lane-miles of pavement in "poor" condition
Non-Interstate NHS Highways	% of lane-miles of pavement in "good" condition
	% of lane-miles of pavement in "poor" condition

Bridge Performance Measures

All NHS Highways	% of total bridge deck area in "good" condition
	% of total bridge deck area in "poor" condition

NHS Pavement Measure

- Thresholds for Good, Fair, and Poor established for the following criteria:

  - International Roughness Index (all pavement types)
  - Percent Cracking (all pavement types)
  - Rutting (asphalt only)
  - Faulting (jointed concrete only)

- Condition performance for each segment determined by:

  - Asphalt/Jointed Concrete (IRI, cracking, rutting/faulting):
    - Good: All three criteria Good
    - Poor: Two or more criteria Poor
  - Continuous Concrete (IRI and cracking)
    - Good: Both criteria Good
   - Poor: Both criteria Poor

Map 2
Pavement Condition of the National Highway System in Southeastern Wisconsin: 2017

PAVEMENT CONDITION
— GOOD
— FAIR
— POOR
FACILITY TYPE
— INTERSTATE SYSTEM
— NON-INTERSTATE NATIONAL HIGHWAY SYSTEM

0 1 2 3 4 5 6 Miles

Source: WisDOT and SEWRPC

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NHS Bridge Measure

❑ Condition is based on the rating for the following items in the National Bridge Inventory:

- ▪ Deck
- ▪ Superstructure
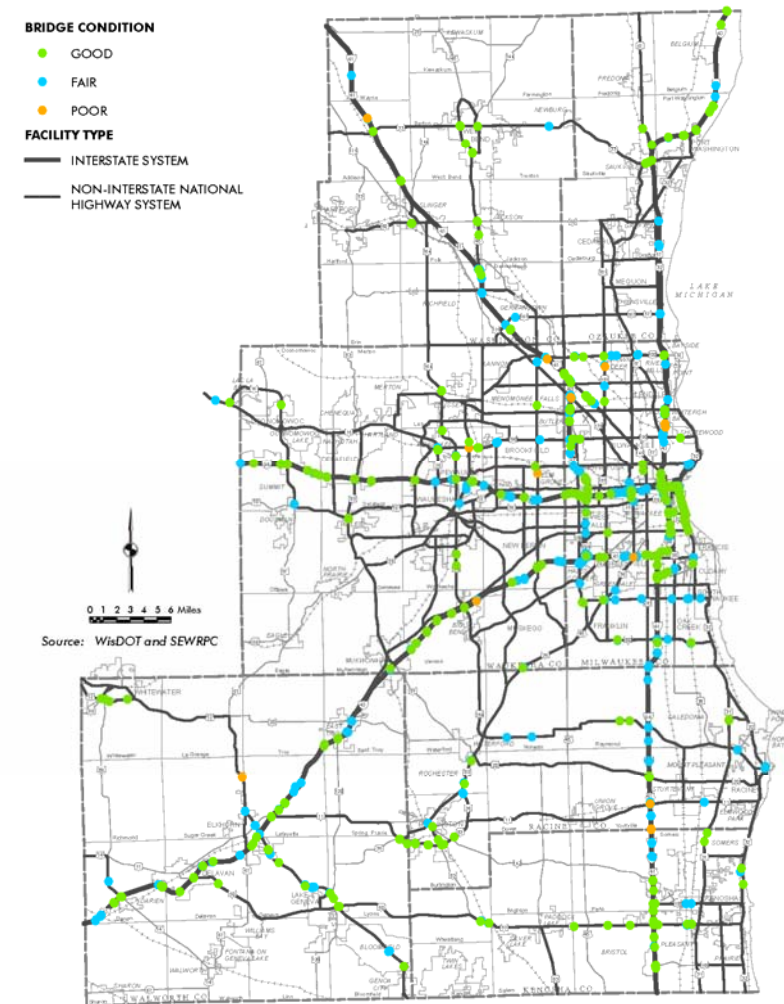- ▪ Substructure
- ▪ Culvert
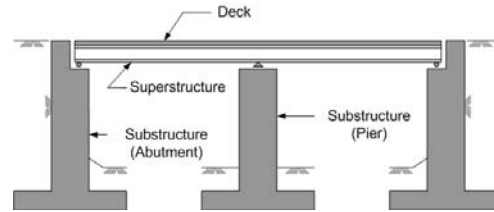
❑ Thresholds established for each of the above criteria:

- ▪ Good (≥7)
- ▪ Fair (5 or 6)
- ▪ Poor (≤4)

❑ Overall rating of bridge is the lowest of the four ratings for the above items.


Map 3
Bridge Condition of the National Highways System in Southeastern Wisconsin: 2017

BRIDGE CONDITION
- ● GOOD
- ● FAIR
- ● POOR

FACILITY TYPE
— INTERSTATE SYSTEM
— NON-INTERSTATE NATIONAL HIGHWAY SYSTEM

0 1 2 3 4 5 6 Miles

Source: WisDOT and SEWRPC

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Development of NHS Condition Targets

- ❑ Historical pavement and bridge data shows a maintaining of existing conditions (pavement) or an improvement (bridges).

- ❑ Basing regional targets on the State's methodology would result in a worsening of conditions by the year 2050.

- ❑ VISION 2050 recommends pavement/bridge conditions be maintained or improved.

- ❑ For preliminary targets, Commission staff propose a 10 percent improvement by the year 2050 for all performance measures

Figure 4
Condition of State Trunk Highway Based on International Roughness Index: 2006-2016
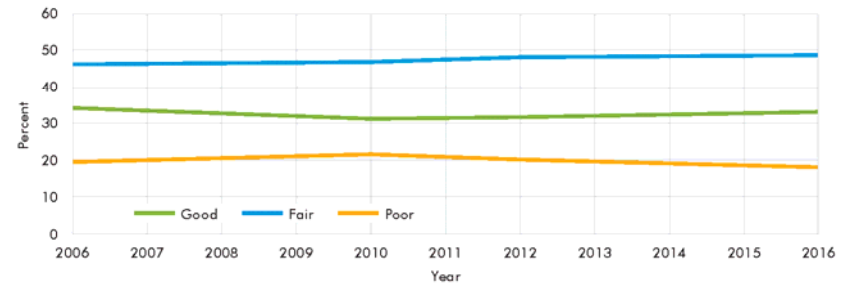
Source: WisDOT and SEWRPC

Figure 6
Condition of Bridges Based on Sufficiency Rating on the State Trunk Highway Network: 2006-2017
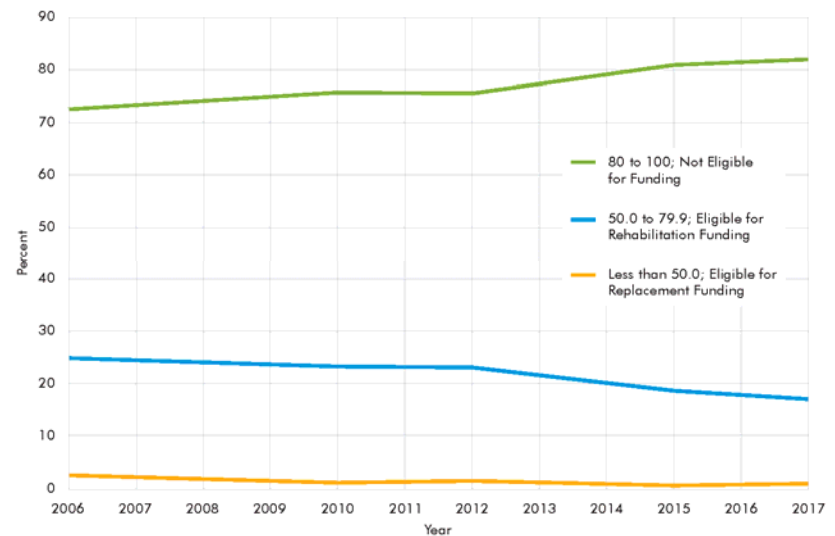
Source: WisDOT and SEWRPC

Preliminary NHS Condition Targets

Preliminary Year 2050 Targets

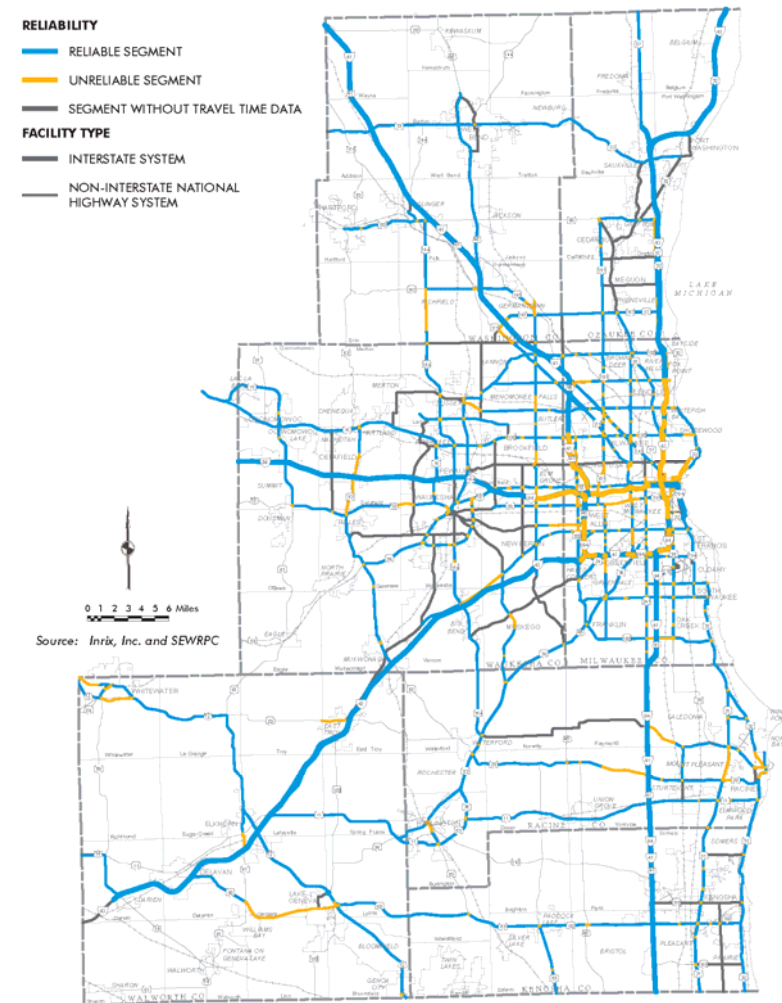| Performance Measure Areas	Performance Measures	2017 Baseline Data	Preliminary Year 2050 Target
Condition of Interstate Pavement	Percentage in Good Condition	59.0	≥64.9
	Percentage in Poor Condition	4.6	≤4.1
Condition of Non-Interstate NHS	Percentage in Good Condition	18.9	≥20.8
	Percentage in Poor condition	6.6	≤5.9
Condition of NHS Bridges (including interstate bridges)	Percentage in Good Condition	58.0	≥63.8
	Percentage in Poor Condition	1.3	≤1.2

Resulting Short-Term Targets

Performance Measure Areas	Performance Measures	Metropolitan Planning Area		Seven-County Region	
		2017 Baseline Data	Year 2021 Target	2017 Baseline Data	Year 2021 Target
Condition of Interstate Pavement	Percentage in Good Condition	61.1	≥61.8	59.0	≥59.7
	Percentage in Poor Condition	4.4	≤4.3	4.6	≤4.5
Condition of Non-Interstate NHS	Percentage in Good Condition	17.6	≥17.8	18.9	≥19.1
	Percentage in Poor condition	6.8	≤6.7	6.6	≤6.5
Condition of NHS Bridges (including interstate bridges)	Percentage in Good Condition	58.2	≥58.9	58.0	≥58.7
	Percentage in Poor Condition	1.3	≤1.3	1.3	≤1.3

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NHS Reliability Measures

❑ Two NHS reliability measures

▪ Percent of person-miles traveled on Reliable Segments of Interstate

▪ Percent of person-miles traveled on Reliable Segments of Non-Interstate NHS

❑ Calculation:

▪ Vehicle travel times for each 15-minute time period over a year

▪ 4 periods: weekday AM, Mid-day, and PM, and weekend day-time

▪ $\text{Reliability} = \dfrac{\text{80th Percentile Travel Time}}{\text{50th Percentile Travel Time}}$

▪ Segment is considered Reliable if ratio is less than 1.5 for all of the four time periods.

▪ Performance Measure is calculated by dividing the cumulative person-miles of Reliable segments by the cumulative person-miles of total segments having travel time data

Map 4
Interstate System and Non-Interstate National
Highway System Reliability in Southeastern Wisconsin: 2017

RELIABILITY
— RELIABLE SEGMENT
— UNRELIABLE SEGMENT
— SEGMENT WITHOUT TRAVEL TIME DATA

FACILITY TYPE
— INTERSTATE SYSTEM
— NON-INTERSTATE NATIONAL HIGHWAY SYSTEM

0 1 2 3 4 5 6 Miles

Source: Inrix, Inc. and SEWRPC

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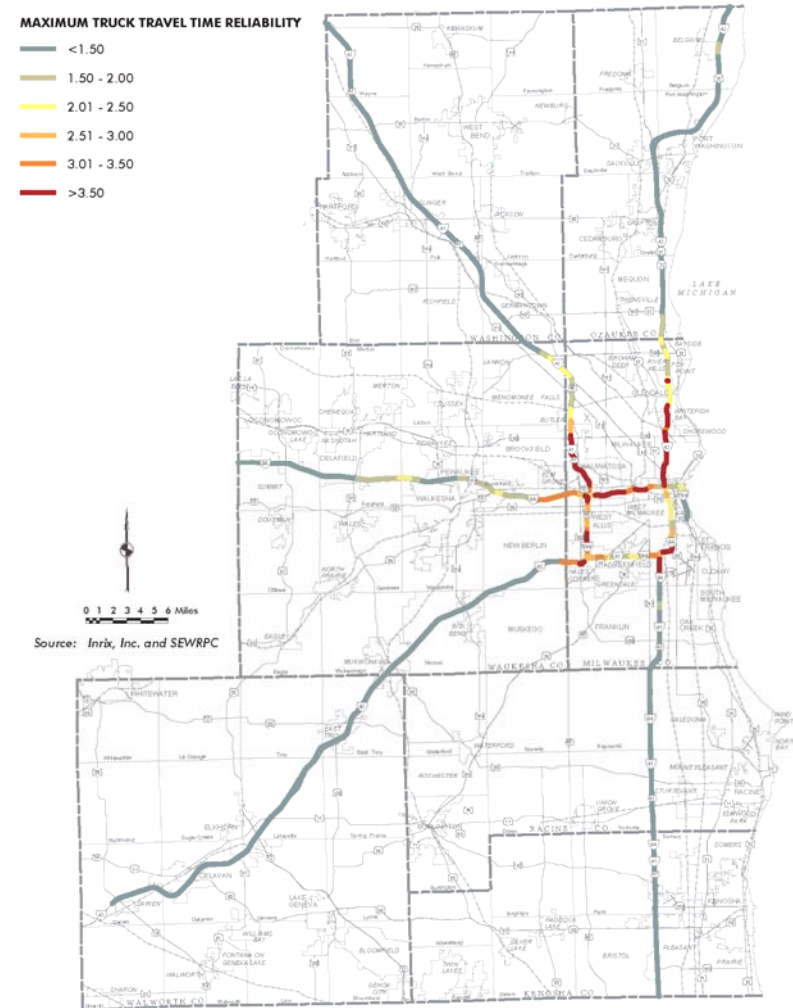
Freight Reliability Measure

- ❑ Freight Reliability Index

  - ▪ Truck travel times on Interstate for each 15-minute time period over a year

  - ▪ 5 periods: weekday AM, mid-day, and PM, weekend day-time, and overnight (all week)

  - ▪ Truck Travel Time Reliability $= \dfrac{\text{95th Percentile Travel Time}}{\text{50th Percentile Travel Time}}$

  - ▪ The maximum truck travel time reliability is identified amongst the 5 periods for each of the Interstate segments

  - ▪ Performance measure is the weighted average of the maximum truck travel time reliabilities

Map 5
Freight Reliability Index for the Interstate System in Southeastern Wisconsin: 2017

MAXIMUM TRUCK TRAVEL TIME RELIABILITY

- <1.50
- 1.50 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 3.50
- >3.50

0 1 2 3 4 5 6 Miles

Source: Inrix, Inc. and SEWRPC

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# Development of NHS/Freight Reliability Targets

- ❑ Historical data for NHS and freight reliability is limited (3 to 6 years)

  - ▪ Improvement in 2016 and 2017 for Interstate and freight reliability (likely due to Zoo Interchange Core construction)
  - ▪ Both returned in 2018 to pre-construction levels

- ❑ VISION 2050 includes a number of recommendations that would improve system reliability: expansion of transit and bike/ped, TDM, TSM, and arterial capacity improvement

- ❑ Basing targets on WisDOT methodology would result in a worsening in NHS/freight reliability by the year 2050

- ❑ For preliminary targets, Commission staff proposes a 5 percent improvement to the 3- or 6-year average by the year 2050

Figure 9
Percent of Lane-Miles of the Interstate System and Non-Interstate National Highway Systems (NHS) that are Reliable Within the Metropolitan Planning Area: 2013-2018
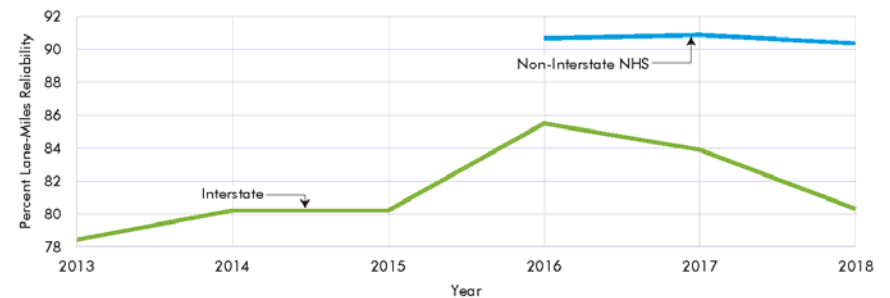
Source: Inrix, Inc. and SEWRPC

Figure 10
Freight Reliability Index for the Southeastern Wisconsin Metropolitan Planning Area: 2013-2018

Source: Inrix, Inc. and SEWRPC

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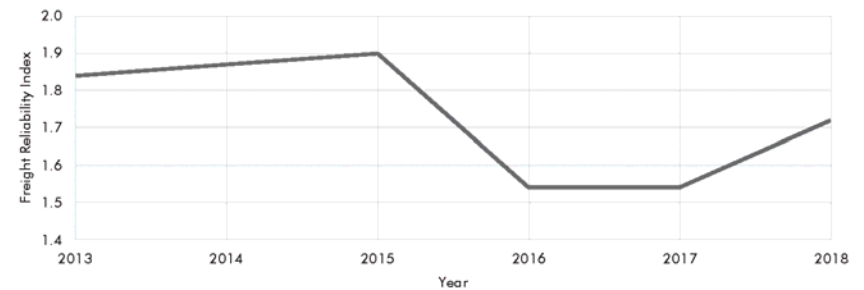
Preliminary NHS/Freight Performance Targets

Performance Measures	2017 Baseline Data	Preliminary Year 2050 Targets	Resulting Year 2021 Targets*
Percentage of Person-Miles Traveled on Reliable Interstate Segments	83.9	≥85.5	≥81.9
Percentage of the Person-Miles Traveled on Reliable Non-Interstate NHS Segments	90.9	≥95.2	≥91.2
Freight Reliability Index	1.49	≤1.64	≤1.72

* MPA and Region targets proposed to be the same.

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CMAQ Performance Measures

- Two Congestion-Related Measures (for Milwaukee urbanized area)
  - Peak Hour Excessive Delay (PHED) per Hour
  - Percentage of Non-Single Occupancy Vehicles (Non-SOV)

- Three Emission Reductions-Related Measures (for MPA)
  - Daily Reduction of Volatile Organic Compounds (VOC)
  - Daily Reduction of Nitric Oxide (NOx)
  - Daily Reduction of Particulate Matter (PM2.5)

Congestion-Related Measures

❑ Only for the Milwaukee urbanized area

❑ WisDOT and Commission have same target

❑ Peak Hour Excessive Delay per Capita

- Cumulative excessive delay on system over a year

- Data intensive (travel time data, hourly volumes, vehicle class, vehicle occupancy)

- Utilizes travel time data during weekday peak periods

❑ Percent Non-SOV Travel

- Based on U.S. Census American Community Survey (ACS) Data

Development of Congestion-Related CMAQ Targets

- ❑ WisDOT, Commission, and TOPS Lab staffs worked jointly to develop baseline data and targets.

- ❑ Commission's travel demand model was utilized to develop targets

- ❑ VISION 2050 includes recommendations that address delay and promote alternatives to SOV travel - expansion of transit and bike/ped, TDM, TSM (delay only), and arterial capacity improvement (delay only)

- ❑ In establishing year 2050 targets, it is proposed that the same methodology be utilized.

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Preliminary Congestion-Related CMAQ Targets

Performance Measures	2017 Baseline Data	Year 2019 Targets*	Year 2021 Targets*	Preliminary Year 2050 Target
Peak Hour Excessive Delay (PHED) Per Capita	8.96	N/A	≤8.60	≤7.84
Percentage of Non-Single Occupancy Vehicles	20.3	≥20.2	≥20.1	≥21.2

* WisDOT and Commission staffs jointly established the years 2019 and 2021 targets, per the regulations.

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Emission Reductions-Related Measures

❑ Performance Measure Calculation

- Expected emission reductions from implementation of approved CMAQ-funded projects.

- Targets represent cumulative reduction over 2- and 4-year periods.

❑ Target Development

- WisDOT based first 2 years on estimated emission reduction from programmed CMAQ projects and used a projection based on historical reductions for remaining 2 years

- VISION 2050 includes recommendations that reduce overall emission levels - expansion of transit and bike/ped, TDM, and TSM

- For targets setting:
  - Given the project nature of the measure, only short-term targets established
  - Base short-term targets on WisDOT target setting methodology

Preliminary Emission Reductions-Related CMAQ Targets

Performance Measures	2014-2017 Baseline Data	Years 2018-2019 Targets	Years 2018-2021 Targets
Daily Reduction of VOC (kilograms)	41.268	≥10.860	≥27.032
Daily Reduction of NO_x (kilograms)	109.545	≥83.316	≥137.350
Daily Reduction of $PM_{2.5}$ (kilograms)	3.291	≥7.797	≥12.096

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Next Steps

❑ Public review and comment (April 2019)

❑ Final Advisory Committees review and approval (May 2019)

❑ Commission review and approval (June 2019)

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QUESTIONS OR COMMENTS?