

To: Transportation Committee
Cost Review and Schedule Subcommittee

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Subject: Performance Measures and Target Setting – Freight Performance

This memorandum presents and reviews the current freight performance measure on the Interstate Highway system in CRCOG and associated CTDOT Performance Measure Targets, and offers potential CRCOG recommendations for review and discussion at the September Subcommittee and Transportation Committee meetings. CRCOG has until November 16, 2018 to either adopt CTDOT's targets or set our own.

Freight Performance Measure

The freight performance measure is:

- Truck Travel Time Reliability (TTTR) Index

To understand this measure, it is important to have the following background:

- The freight performance measure focuses on Interstate highways. Interstate Highways and other major roadways within the Capitol Region are illustrated in Figure 1.
- The freight performance measure strives to assess the reliability of travel time for trucks on the Interstate system. This is an emerging practice that compares days with extremely high delay to days with average delay. To determine the reliability of a segment, a Truck Travel Time Reliability (TTTR) measure is calculated as the ratio of the longer travel times (95th percentile) to a "normal" travel time (50th percentile). The TTTR's of interstate segments are then used to create the TTTR Index for the entire Interstate system using a weighted aggregate calculation for the worst performing times of each segment.
- Predicting future freight performance in this manner is new, and therefore CTDOT has a low level of confidence in the accuracy of these predictions and targets. CTDOT has obtained newly provided data and software to determine current conditions, however software and/or systems that can predict future performance based on projects or investments are not readily available. CTDOT arrived at the 2-year and 4-year targets by extrapolating future reliability based the limited historical data.
- Penalties may be assessed if reliability targets are not met, however unlike some of the other performance measures, there are no penalties associated with not achieving a specific level of reliability.

Freight Performance on the Interstate System

CTDOT's freight performance targets for the State of Connecticut are illustrated to the right. Of note is that both the 2-year and 4-year targets represent an expected slight decline in travel time reliability on the Interstate System. These are predicted based on linear extrapolations of limited historical data in various formats, and therefore CTDOT has a low confidence level in their predictive capability.

Source: CTDOT		Current Condition	2-year targets (2020)	4-year targets (2022)
Freight Movement Measure		System (unit of measure)	TTR	TTR
<ul style="list-style-type: none"> Truck Travel Time Reliability (TTR) index 				
TTR index = 95th / 50th perc. The higher the ratio, the worse the reliability				
		Interstate (Truck Travel Time Reliability Index)	1.75	1.79 1.83 <i>Reliability gets worse</i>
MATURITY	TOP RISK(S)	CONFIDENCE		
Aspirational/ Extrapolation 1.5	1. Measure is very abstract and may not reflect individual experience 2. Outcomes subject to external factors 3. Declining reliability has to be explained and communicated	Low		

Mapping of Truck Travel Time Reliability (TTR)

A map depicting reliable and unreliable (defined here by the 1.5 threshold) TTR scores for each roadway segment on the Interstates in CRCOG can be found in Figure 2. As shown, the region's Interstate TTR of 1.83 is slightly higher than the state average. CRCOG Interstate segments with higher truck travel times are mostly contained within the following areas:

- I-84 from New Britain town line to Vernon town line
- I-91 from southern CRCOG border in Rocky Hill to Windsor Locks
- Most of I-291 in Windsor and South Windsor
- A small portion of I-384 in Manchester

It should be noted that independent of these measures, the *Connecticut Statewide Freight Plan* identified two truck freight "bottlenecks" within CRCOG, which include the I-84 Viaduct in Hartford and I-91 from CT 3 to Charter Oak Bridge.

Staff Recommendations

There is no feasible way for CRCOG to address bottlenecks on the Interstates independently of CTDOT, and therefore setting our own targets *and* assuming responsibility for meeting them is not currently within our organizational and financial capacity. Given that travel time reliability is an emerging practice, as well as the lack of tools currently available for predicting targets, CRCOG staff concurs with CTDOT's extrapolation method of targets setting and feels it is premature to employ a separate method on a regional basis. Understanding this, CRCOG staff recommends supporting CTDOT's 2 and 4-year targets for truck travel time reliability.

However, to further understand and develop this performance measure and associated future target setting, CRCOG staff also recommends that we work on the following initiatives:

- Update CRCOG's Congestion Management Process methodologies to align with travel time reliability performance measure methodologies, and include relevant performance target setting information
- Work towards reviewing and assuring adequate ITS infrastructure is provided on Interstates with truck travel times categorized as unreliable
- Work collaboratively with CTDOT and FHWA to research and implement truck travel time reliability methodologies and predictive capabilities
- Incorporate the Travel Time Reliability data and maps into CRCOG's Long Range Transportation Plan
- Monitor Travel Time Reliability best practices in other states and Regional Planning Organizations

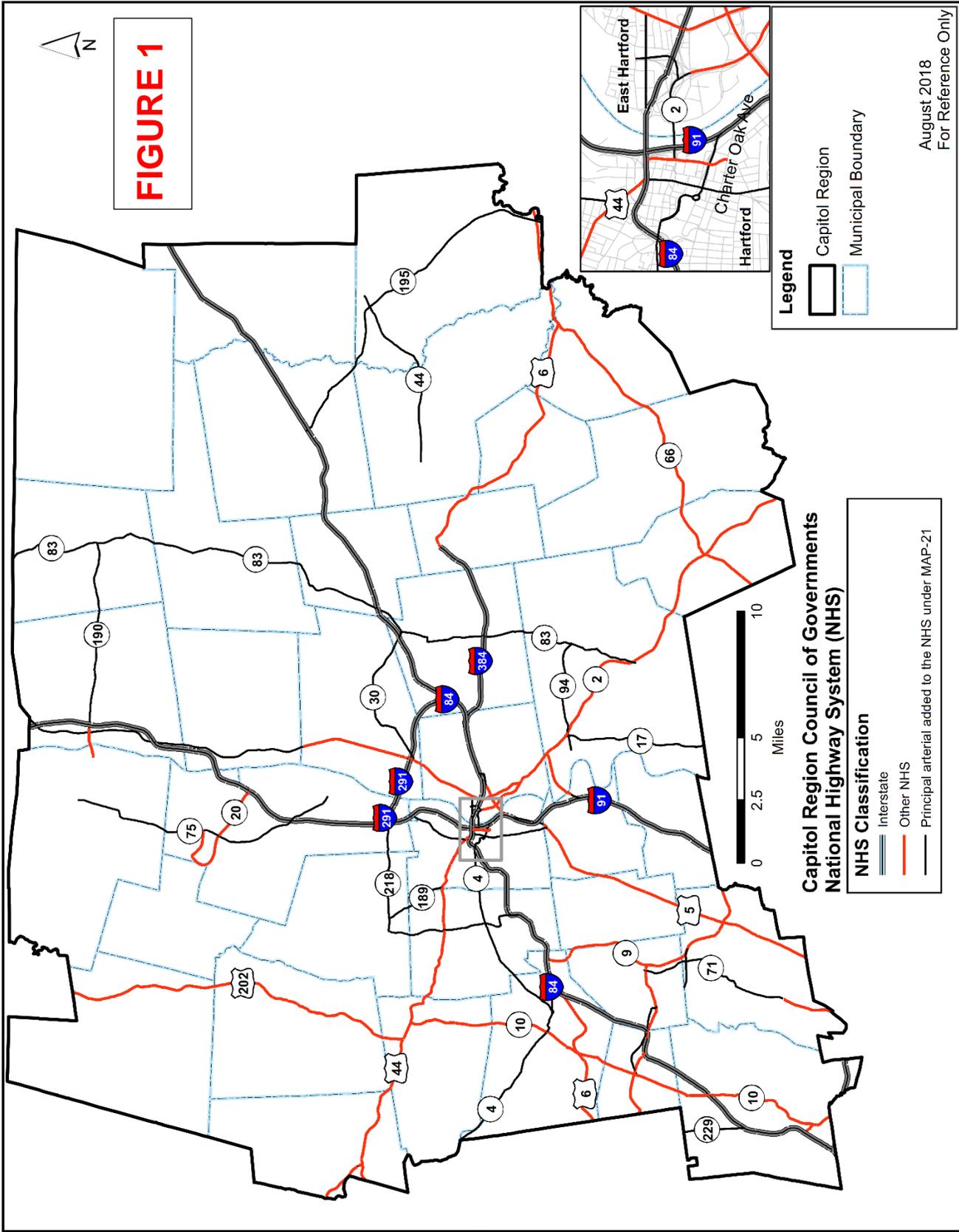
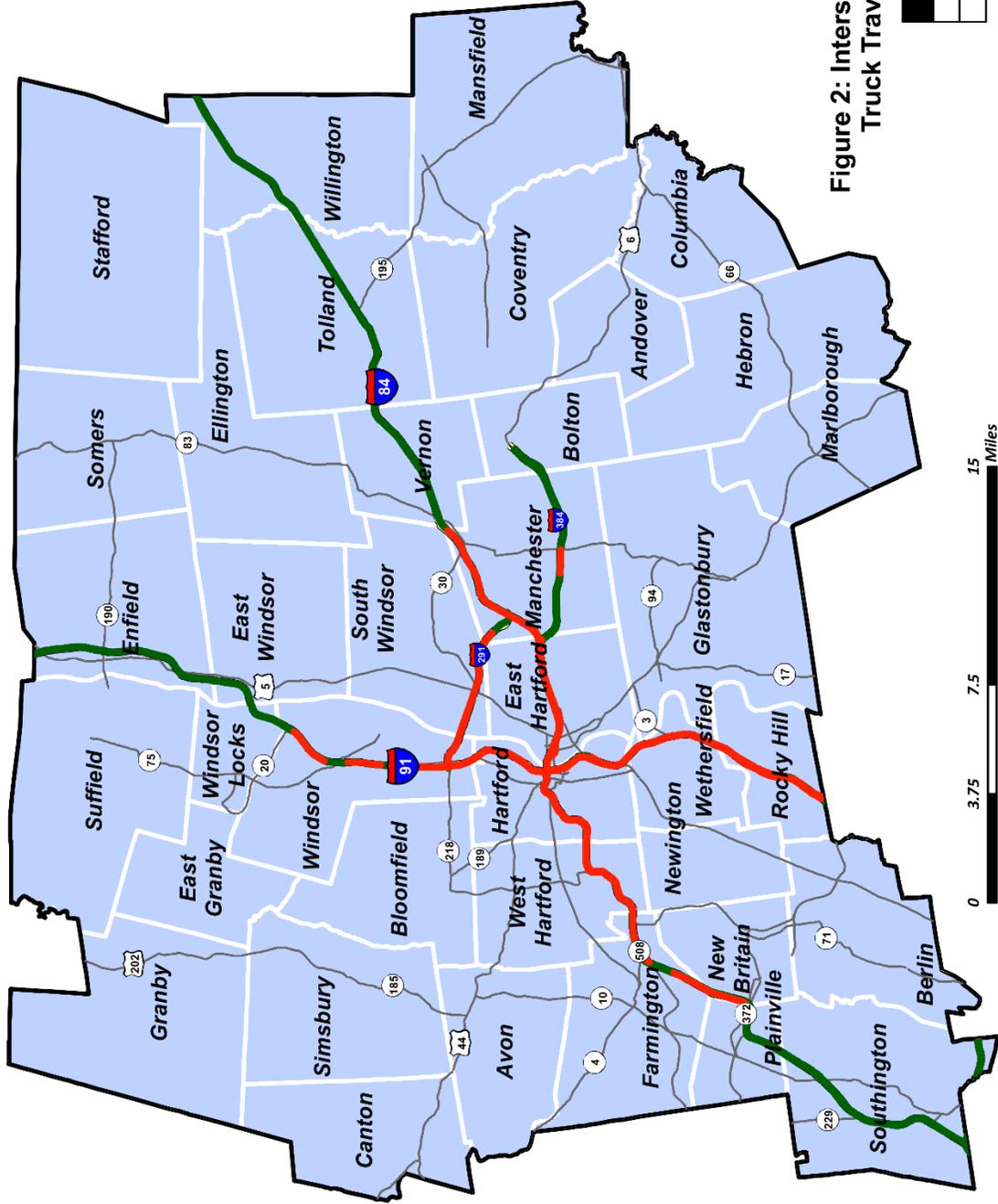


FIGURE 2



TTTR Index	
CRCOG	1.83
State	1.75

Figure 2: Interstate National Highway System (NHS) Truck Travel Time Reliability (TTTR)* Index

Legend
 — NHS Non-Interstate Highways
 Level of Truck Travel Time Reliability (TTTR) Index Threshold
 1.5 and Below
 Over 1.5

*Map does not identify directional travel time reliability.

TTTR results are based on internal CRCOG analysis on National Performance Management Research Data Set (NPMRDS) Freight Travel Time Data and results may vary from similar analyses from other sources.

NPMRDS data is provided by INRIX and subject to frequent updates. Gaps in the INRIX data exist and results may change as updates and refinements are made.

Date: August 2018
 Datasource: 2017 NPMRDS Travel Time Data
 For Reference Purposes Only.