



Transportation Performance Measures

November 14, 2018

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Today's Objective

- ▶ Status of Transportation Performance Measures (TPM)
- ▶ Review four sets of TPMs for DCHC MPO
- ▶ Adopt four TPMs using three resolutions

TPMs

	TPM	MPO first adoption	Next due date (b)	Expected adoption
1	Transit Asset Management	June 2017	10/01/18	11/14/18
2	Bridge and Pavement	--	11/14/18	11/14/18
	System Performance	--	11/14/18	11/14/18
3	Safety	February 2018	02/27/19	11/14/18
	Peak Hour (a) Excessive Delay	--	--	--

(a) MPO not required to do PHED. Must be over 1 million population and AQ non-attainment. But, goes to over 200,000 in 2022.

(b) Original due date is always 180 days after NCDOT reports original measures to U.S. DOT.

TPMs

- ▶ Required by FAST ACT (federal transportation legislation)
- ▶ Process:
 - U.S. DOT final rule becomes effective
 - NCDOT set targets within one year of each federal measure
 - MPOs have 180 days to support NCDOT's TPM, or adopt MPO customized TPM
- ▶ Must be integrated into the MTP (adoptions and amendments)
- ▶ MTP and TIP must describe how MTP and TIP will contribute to achieving Targets
- ▶ At this point, no known consequences for MPO if Targets not achieved.

Transit Asset Management (TAM) and State of Good Repair (SGR)

MPO Plan

- ▶ GoDurham
- ▶ GoTriangle
- ▶ Chapel Hill Transit (CHT)

Group Plan (NCDOT/PTD)

- ▶ Orange Public Transportation (OPT)
- ▶ Durham Access
- ▶ Chatham Transit Network

Transit Asset Management -- TAM

- ▶ Tier II agencies are those without rail transit, and having 100 or fewer vehicles in service
- ▶ If in MPO Plan, must provide Transit Asset Management plan and State of Good Repair (SGR) measures/targets to the MPO
- ▶ TAM plan – updated every 4 years, horizon period of at least 4 years
- ▶ SGR Targets updated annually:
 - Transit provider – Yes
 - MPO -- No

* Note that transit systems have already submitted TAM Plan to FTA

What is a TAM Plan?

- A plan that includes an inventory of capital assets, a condition assessment of these assets, and a decision support tool that leads to the prioritization of transit capital investments,
- A policy that documents the transit provider's commitment to achieving and maintaining a state of good repair (SGR) for all of its capital assets, and
- A strategy for carrying out this policy that includes SGR objectives and performance targets.
- A group plan must have a sponsor. NCDOT-PTD will sponsor group TAM plans for their sub recipients: Durham County Access, Chatham Transit Network and Orange Public Transportation

TAM Definitions

- ▶ State of Good Repair (SGR) means the condition in which a capital asset is able to operate at a full level of performance.
- ▶ Useful Life Benchmark (ULB) means the expected life cycle or the acceptable period of use in service for a capital asset, as determined by a transit provider, or the default benchmark provided by FTA.
- ▶ Performance measure means an expression based on a quantifiable indicator of performance or condition that is used to establish targets and to assess progress toward meeting the established targets.
- ▶ Performance target means a quantifiable level of performance or condition, expressed as a value for the measure, to be achieved within a time period required by FTA.

Examples: Asset Categories & Classes

Category

Class

Equipment	<ul style="list-style-type: none"> ▪ Construction ▪ Service Vehicles 	<ul style="list-style-type: none"> ▪ Maintenance
Rolling Stock	<ul style="list-style-type: none"> ▪ Railcars ▪ Buses ▪ Other Passenger Vehicles 	<ul style="list-style-type: none"> ▪ Ferries
Infrastructure	<ul style="list-style-type: none"> ▪ Fixed Guideway ▪ Signal Systems ▪ Structures 	<ul style="list-style-type: none"> ▪ Power
Facilities	<ul style="list-style-type: none"> ▪ Support Facilities ▪ Passenger Facilities 	<ul style="list-style-type: none"> ▪ Parking Facilities

DCHC MPO does not have to have infrastructure in the plans because there is no passenger rail.

SGR Targets

		GoDurham:		Chapel Hill Transit:		GoTriangle:	
Asset Category - Performance Measure	Asset Class	Useful Life Benchmark	2019 Target	Useful Life Benchmark	2019 Target	Useful Life Benchmark	2019 Target
REVENUE VEHICLES							
Age -- % of revenue vehicles within a particular asset class that have met or exceeded their Useful Life Benchmark (ULB)	AO - Automobile	8	N/A	8	20%	8	13%
	BU - Bus	14	18%	14	10%	14	13%
	CU - Cutaway Bus	10	55%	10	20%	10	13%
	MB - Mini-bus	10	N/A	10	20%	10	13%
	MV - Mini-van	8	0%	8	20%	8	13%
	SV - Sport Utility Vehicle	8	N/A	8	20%	8	13%
	VN - Van	8	N/A	8	20%	8	13%
	Other	N/A	N/A	8	20%	8	13%
EQUIPMENT							
Age -- % of vehicles that have met or exceeded their Useful Life Benchmark (ULB)	Non Revenue/Service Automobile	8	0%	8	20%	8	22%
	Steel Wheel Vehicles	8	N/A	8	20%	8	22%
	Trucks and other Rubber Tire Vehicles	8	0%	8	20%	8	22%
	Maintenance Equipment	N/A	N/A	N/A	N/A	TBD	22%
	Computer Software	N/A	N/A	N/A	N/A	TBD	22%
	Custom 1	N/A	N/A	N/A	N/A	TBD	22%
	FACILITIES						
Condition -- % of facilities with a condition rating below 3.0 on the FTA Transit Economic Requirements Model (TERM) Scale	Administration	(no benchmark)	0%	(no benchmark)	0%	(no benchmark)	0%
	Maintenance	(no benchmark)	0%	(no benchmark)	0%	(no benchmark)	0%
	Parking Structures	(no benchmark)	N/A	(no benchmark)	0%	(no benchmark)	0%
	Passenger Facilities	(no benchmark)	0%	(no benchmark)	N/A	(no benchmark)	0%
	Shelter	(no benchmark)	50%	(no benchmark)	0%	(no benchmark)	0%
	Storage	(no benchmark)	0%	(no benchmark)	N/A	(no benchmark)	0%
	Custom 1	(no benchmark)	N/A	(no benchmark)	N/A	(no benchmark)	0%

Notes: * Facilities do not have a Useful Life Benchmark such as "years." The TERM scale is used instead of years.

* TERM scale example: 5 = excellent, 1 = poor

* Usefule Life Benchmark values are in years.

* N/A: System does not have asset in this class that requires monitoring.



Transit Asset Management

Bridge and Pavement

System Performance

Safety

~~Peak Hour (a)
Excessive
Delay~~

Action Today:

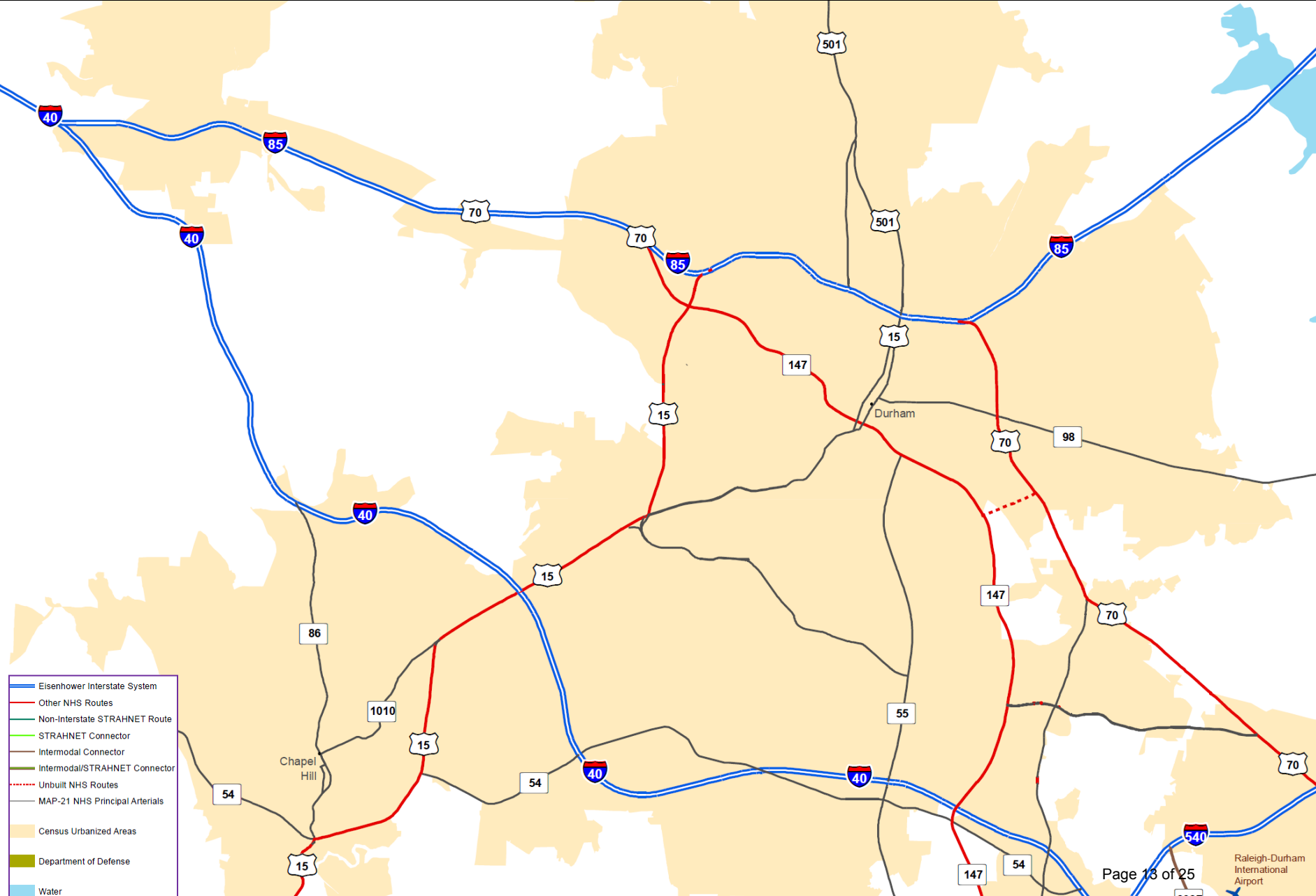
TAM

- ▶ Receive the 1) TAM plans and checklist; 2) TAM Targets, and
- ▶ Adopt the TAM resolution (which includes Targets)

Pavement and Bridge Condition and System Performance

- ▶ Two options (to be done within 180 days of NCDOT establishing targets):
 - MPO establish own measures
 - Support NCDOT measures
- ▶ MPO will adopt NCDOT measures because NCDOT has data and experience in methodology
- ▶ Includes only roadways and bridges on National Highway System (NHS)
- ▶ 2-year and 4-year Targets
- ▶ NCDOT reports and can update Targets every two years

National Highway System



- Eisenhower Interstate System
- Other NHS Routes
- Non-Interstate STRAHNET Route
- STRAHNET Connector
- Intermodal Connector
- Intermodal/STRAHNET Connector
- Unbuilt NHS Routes
- MAP-21 NHS Principal Arterials
- Census Urbanized Areas
- Department of Defense
- Water

Pavement Condition – How Targets were developed

Pavement Condition (NCDOT is responsible for Target):

- ▶ Analyzed 5-year statewide trend
- ▶ Created 3-year and 5-year future trend path – historical trends are negative, i.e., good percentage declining and poor percentage increasing
- ▶ Set targets based on target range, which were an improvement to future trends
- ▶ Targets are conservative because of uncertainty in method, analysis and investment impact
- ▶ 5% federal threshold for poor condition on interstates (if don't meet this threshold for any one year, must obligate funds to improve pavement)

Chart 3. Interstate Pavement: Percent in Good Condition

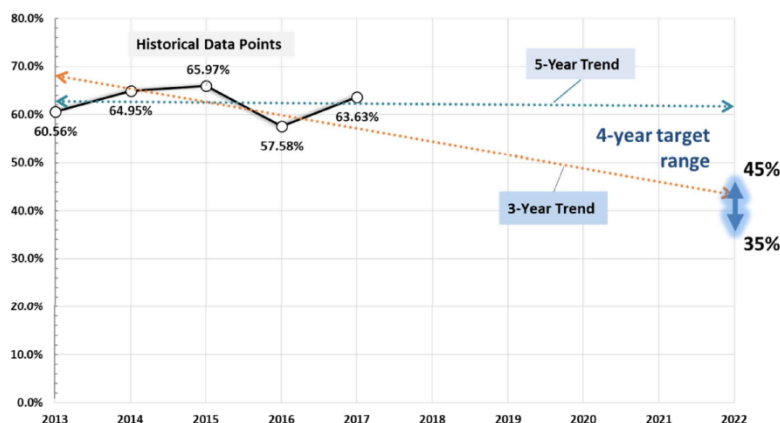


Chart 4. Interstate Pavement: Percent in Poor Condition



Bridge Condition - How Targets were developed

- Bridge Condition (NCDOT is responsible for Target):
- ▶ Analyzed 5-year statewide trend
 - ▶ Created 2-year and 4-year future trend path - historical trends are negative, i.e., good percentage declining and poor percentage increasing
 - ▶ Set targets based on target range, which were an improvement to future trends
 - ▶ Targets are conservative because of uncertainty in method, analysis and investment impacts

Chart 1. NHS Bridge Deck Area: Percent in Good Condition

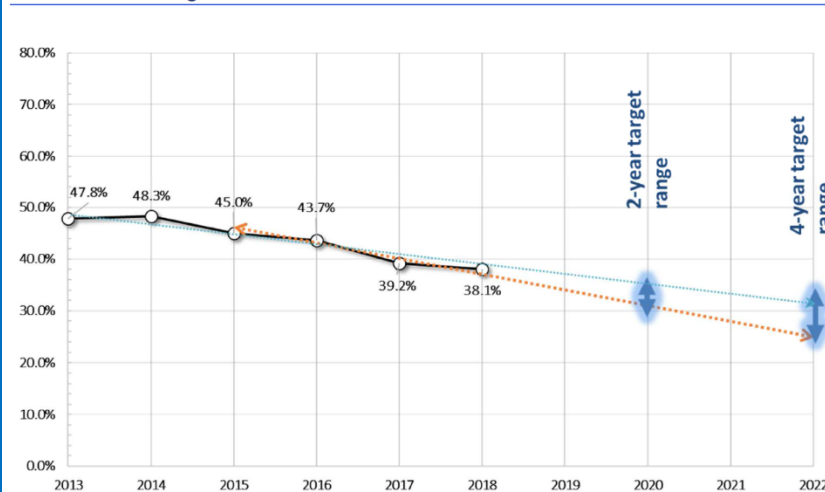


Chart 2. NHS Bridge Deck Area: Percent in Poor Condition



System Performance – How Targets were developed

System Performance (NCDOT is responsible for Target):

- ▶ Use traffic probe data from NPMRDS (National Performance Mgmt. Research Data Set)
- ▶ Analyzed 5-year statewide trend
 - Interstate LOTTR annual decrease 1–1.5%
 - Non-interstate LOTTR annual decrease 2.9–3.9%
 - TTTR annual increase 1.7%
- ▶ Large urban and rural difference
- ▶ Urban and VMT growth is primary external factor impacting LOTTR and TTTR

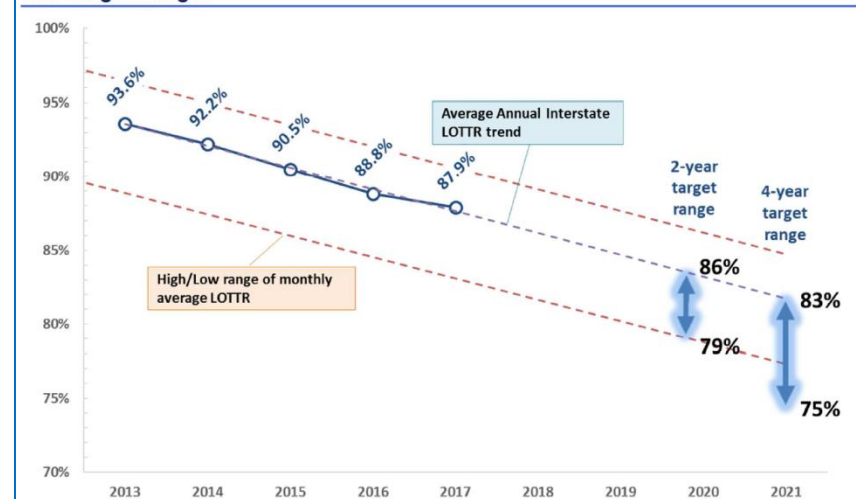
Step 1: $LOTTR = \frac{80th\ Percentile\ Travel\ Time}{50th\ Percentile\ Travel\ Time}$

Segments with LOTTR < 1.5 are considered reliable
Segments with LOTTR \geq 1.5 are considered unreliable

Step 2:

% of Person Miles Traveled on Interstate that are Reliable

Chart 7. Percent of Person Miles Travelled on the Interstate that are Reliable - Trend and Target Ranges



A segment is considered reliable if LOTTR for all four time periods is < 1.5. If LOTTR is \geq 1.5 for any of the four time periods, the segment is considered unreliable.

Pavement and Bridge Condition, and System Performance

Performance Measure		2-Year Target (1/1/2018 – 12/31/2019)	4-Year Target (1/1/2018 – 12/31/2021)
Balance	Interstate Pavement Condition (Good)	(no target)	37.0 %
	Interstate Pavement Condition (Poor)	(no target)	2.2 %
	Non-Interstate NHS Pavement Condition (Good)	27.0%	21.0%
	Non-Interstate NHS Pavement Condition (Poor)	4.2%	4.7%
	NHS Bridge Condition (Good)	33.0%	30.0%
	NHS Bridge Condition (Poor)	8.0%	9.0%
	Interstate Level of Travel Time Reliability	80.0%	75.0%
	Non-Interstate NHS Level of Travel Time Reliability	(no target)	70.0%
	Interstate Truck Travel Time Reliability	1.65	1.70

These are the same measures and targets in the adoption resolution.

LOTTR of 80% means that 80% of the system over four time periods (AM, mid-day, PM and off-peak) has TTR of 1.5 or better (80th/50th).

TTR of 1.65 means that the 95th percentile of truck traffic travel time divided by the 50th percentile of truck traffic travel time is 1.65 or lower.

What do if don't achieve Target?

Pavement

State – set aside and obligate certain funds if more than 5% lane miles in poor condition for three consecutive years

Bridge

State – set aside and obligate certain funds if more than 10% bridge deck in poor condition for two consecutive years

System Performance

State – document actions to take to achieve targets if can't demonstrate significant progress

MPO – At this point, no known consequences. But, continue describing how support Targets in MTP and TIP.

X	Transit Asset Management
✓	Bridge and Pavement
✓	System Performance
	Safety
X	Peak Hour (a) Excessive Delay

Action Today:

Pavement and Bridge Condition, and System Performance

- ▶ Adopt the **Pavement and Bridge and System Performance** resolution (which includes Targets)

Safety Targets

- ▶ Two options (to be done within 180 days of NCDOT establishing targets):
 - MPO establish own measures
 - Support NCDOT measures
- ▶ MPO will adopt NCDOT measures because NCDOT has data and experience in methodology
- ▶ Based on 50% reduction by 2030 (2014 NC Strategic Highway Safety Plan Goal)
- ▶ Includes all roadways
- ▶ NCDOT reports and can update Targets annually.
- ▶ If NCDOT does not make significant progress toward meeting its target, must obligate funding to safety and submit implementation plan
 - ▶ Will likely require annual updates

Safety Targets

For the 2019 Highway Safety Improvement Plan (HSIP), the goal is to reduce:

- a. total fatalities by 5.59 percent each year from 1,362.8 (2013–2017 average) to 1,214.7 (2015–2019 average) by December 31, 2019.
- b. the fatality rate by 5.02 percent each year from 1.216 (2013–2017 average) to 1.097 (2015–2019 average) by December 31, 2019.
- c. total serious injuries by 6.77 percent each year from 2,865.2 (2013–2017 average) to 2,490.6 (2015–2019 average) by December 31, 2019.
- d. the serious injury rate by 6.12 percent each year from 2.528 (2013–2017 average) to 2.228 (2015–2019 average) by December 31, 2019.
- e. the total non-motorized fatalities and serious injuries by 6.02 percent each year from 457.0 (2013–2017 average) to 403.7 (2015–2019 average) by December 31, 2019.

Note: Safety targets use a five-year rolling average.

What do if don't achieve Target?

Safety

State – If NCDOT does not make significant progress toward meeting its target, must obligate funding to safety and submit implementation plan

MPO – Need to show in certification review, self-certification and TIP planning that supporting the Targets

X	Transit Asset Management
X	Bridge and Pavement
X	System Performance
✓	Safety
X	Peak Hour (a) Excessive Delay

Action Today: Safety Targets

- ▶ Adopt the **Safety Targets** resolution (which includes the Targets)

2045 MTP

- Each TPM resolution notes the inclusion in the MPO's 2045 MTP.



NOW THEREFORE, BE IT FURTHER RESOLVED, that by approval of this resolution an amendment is hereby made to the 2045 Metropolitan Transportation Plan adopted on March 14, 2018 by the DCHC MPO.

- The performance measure section of the DCHC MPO's 2045 Metropolitan Transportation Plan (MTP) will reference the most recent adoption of each TPM.



<i>Performance Measure</i>	<i>FAST Act Target</i>
ired within two days by NCDOT	
ting or exceeding useful life benchmark	CAMPO: 30% DCHC MPO: 50%

TIP

- Discussion of the anticipated effect of the STIP or TIP toward meeting performance targets
- Must link investment priorities to performance targets