

2045 MTP

Draft Performance Measures and Targets (10/24/17)

This document recommends an approach to presenting the Performance Measures (PMs) and Targets for the DCHC MPO's 2045 MTP.

Performance Measures – **Pages 2 to 5**

This table shows the alignment of the draft Goals, Objectives and PMs, and provides staff comments on:

- The suitability of each PM for use as a Target. Eight PMs are selected to be Targets.
- Whether a measure can be forecasted to 2045 and whether the data will be available for the 2045 MTP.

Performance Measures Presentation – **Page 6**

This table is a recommendation for presenting the Performance Measures that shows the desired trend and actual trend (or forecasted trend). The table is an example that uses mock data for the actual Objectives and PMS for the first two Goals.

Targets Table – **Page 7**

This table is from the 2040 MTP report. It shows how the Targets can be simply presented.

Targets (Full Version) – **Pages 8 to 10**

This is an example of a full Target presentation that has been used in previous MTP. It uses two of the actual recommended Targets but has mock data.

DRAFT 2045 MTP Goals, Objectives, and Performance Measures (Targets)

Performance Measures in **black font**: measure can be forecasted, i.e., forecast 2045 value

Performance Measure in **blue font**: measure cannot be forecasted, i.e., only current value is available

Performance Measure in **red font**: most can be forecasted; recommended for target

Performance Measure in *italics*: this value cannot be calculated for inclusion in 2045 MTP; staff recommend that the MPO continue to collect the data to eventually produce the value.

Goals	Objectives	Performance Measures
I. Protect Environment and Minimize Climate Change	A. Reduce mobile source emissions, GHG, and energy consumption B. Reduce the negative impacts on the natural and cultural environment	A— 1. Transportation GHG, ozone, CO, and particulate matter emissions per capita 2. Mobile energy consumption per capita B— 1. Planned investment in existing highways vs. new highways
II. Connect People	A. Connect people to jobs, education and other important destinations using all modes B. Ensure transportation needs are met for all populations (especially the aging and youth, economically disadvantaged, mobility impaired, and minorities)	A— 1. Percentage of work and non-work trips by auto less than 30 minutes 2. Percentage of work and non-work trips by transit less than 45 minutes 3. Percentage of urbanized area within ¼ mile of pedestrian facilities 4. Percentage of jobs within 1/4 mile of high-end bus transit service or 1/2 mile of fixed guideway transit service B— 1. <i>Percentage of Environmental Justice (EJ) population and total population within ½ mile of bus transit service, 1 mile of rail transit service, ½ mile of bike facilities, or ¼ mile of sidewalk.</i>

Comment [AjH1]: Select for targets. Easy for public to understand and very direct measure of a hazard.

Comment [AjH2]: Easy for public to understand but less direct measure of pollution hazard.

Comment [AjH3]: Not very direct measure of environmental hazard and hard to know what a desirable ratio might be. Easy to calculate.

Comment [AjH4]: Select for targets. Easy to calculate and forecast. Direct measure of trip time seems like important measure.

Comment [AjH5]: Use #4 below to provide transit measure. Easy to calculate and forecast.

Comment [AjH6]: Difficult to calculate and forecast.

Comment [AjH7]: Select for targets. Good measure of transit service. Fairly easy to calculate but requires thoughtful effort to identify high end transit in TRM for final MTP.

Comment [AjH8]: A4 above is a broader measure of the same concept.

III. Promote Multimodal and Affordable Travel Choices	A. Enhance transit services, amenities and facilities B. Improve bicycle and pedestrian facilities C. Increase utilization of affordable non-auto travel modes	A— 1. Per capita transit service hours 2. Total transit boardings per capita 3. Proportion of bus stops that meet their defined facility threshold (to be determined). B— 1. 5-year average of expenditures on bike/ped facilities 2. Proportion of jurisdictions that have an ordinance requiring developers to build or pay in lieu for sidewalks. C— 1. Percentage of transit, bicycle and pedestrian mode shares (overall) 2. Percentage of transit, bicycle and pedestrian mode shares in transit corridors 3. Percentage of transit, bicycle, and pedestrian mode shares in activity centers/TAZs	Comment [AjH9]: These are very good measures, especially 1 and 2. Can't be forecasted. Comment [AjH10]: Good measures but can't be forecasted and are not as broad as those in C below. Comment [AjH11]: Select for targets. Good basic measure. Modify to "transit and non-motorized." It can be forecasted. Problem: there is little variation in mode share from TRM at a regional level. Comment [AjH12]: Good basic measure but not as broad as C1. Use C2 if C1 varies too little between scenarios. This can be forecasted. Comment [AjH13]: Too narrow to be key target.
IV. Manage Congestion & System Reliability	A. Allow people and goods to move with minimal congestion and time delay, and greater predictability. B. Promote Travel Demand Management (TDM, such as carpool, vanpool and park-and-ride) C. Enhance Intelligent Transportation Systems (ITS, such as ramp metering, dynamic signal phasing and vehicle detection systems)	A— 1. Average clearance time for crashes on principal roadways 2. Annual hours of delay per trip (capita?) 3. (Placeholder for measure from Regional Freight Plan) B— 1. Percentage of peak-hour travelers driving alone 2. Percentage of employees included in TDM plans out of all employees in TDM hotspots 3. Vehicle Miles Traveled (VMT) per capita C— 1. ITS investments	Comment [AjH14]: Too narrow and can't forecast. Comment [AjH15]: Select for targets. Per capita value helps to normalize the congestion totals. Comment [AjH16]: TRM provides little variation between scenarios. Comment [AjH17]: Good measure. A little narrow, and can't be forecasted. Comment [AjH18]: Varies little between scenarios. And, E+C is lower than Alternatives.

V. Improve Infra- structure Condition	A. Increase proportion of highways and highway assets in 'Good' condition B. Maintain transit vehicles, facilities and amenities in the best operating condition. C. Improve the condition of bicycle and pedestrian facilities and amenities D. Improve response time to infrastructure repairs	A— - Percent lane miles with unacceptable pavement condition ratings by NCDOT - Percent of structurally deficient bridges B— - Percentage of fleet beyond service life by mode (bus, light rail, commuter rail) C— - Proportion of bicycle facilities (bike lanes, shared use paths) ranked in good condition D— - Percent pothole complaints repaired within two days by NCDOT Division.	Comment [AjH19]: Only have NCDOT and Durham data. Can't forecast this measure. Comment [AjH20]: Too narrow. Can't forecast. Comment [AjH21]: A bit narrow since only bus transit for the time being. Can't forecast. Comment [AjH22]: Too difficult to gather and calculate. Comment [AjH23]: The efficacy of the pothole maintenance is too narrow.
VI. Ensure Equity and Partici- pation	A. Ensure that transportation investments do not create a disproportionate burden for any community B. Enhance public participation among all communities	A— - Does the 2045 MTP meet Environmental Justice requirements? B— - Number of participants in public participation process by type (in-person, email, surveys, social media).	Comment [AjH24]: The MPO is required to comply, so this will always be "yes." Comment [AjH25]: This is weak and ill-defined.
VII. Promote Safety and Health	A. Increase safety of travelers and residents B. Promote public health through transportation choices	A— - Number of vehicle crashes per million vehicle miles traveled - Pedestrian and bicycle crashes per capita B— - Percentage of adults who are physically inactive.	Comment [AjH26]: Although this can't be forecast, it might work well as safety measure for the targets. Comment [AjH27]: Although this can't be forecast, it might work well as safety measure for the targets. Comment [AjH28]: Very important measure but hard to establish relationship between MPO long-range plan projects and physical activity.

VIII. Stimulate Economic Vitality	A. Improve freight movement B. Link land use and transportation C. Target funding to the most cost-effective solutions D. Improve project delivery for all modes	A— 1. <i>Truck hours of delay per CVM</i> 2. <i>Freight plan, buffer time index</i> B— Refer to Goal II: Connect People C— 1. <i>Average payback period of investments by mode.</i> D— 1. <i>Percentage of TIP projects completed on-time (let to construction) by mode (or, NCDOT project delivery measure)</i> 2. <i>Percentage of projects in the MTP being built in the time period in which they first appeared.</i> 3. <i>Percentage of projects in the TIP being built in the time period in which they first appeared.</i>
---	---	---

Comment [AjH29]: Select as key target. Seems that we need a freight measure. This should be: truck minutes of delay per commercial vehicle mile travelled.

Comment [AjH30]: Need methodology and data.

Comment [AjH31]: Appears that we don't have the data.

Sample: Actual Goals, Objectives & Performance Measures using mock data

DRAFT 2045 MTP Goals, Objectives, and Performance Measures

Goals	Objectives	Performance Measures	Data	Desired	Actual	Trend
I. Protect Environment and Minimize Climate Change	A. Reduce mobile source emissions, GHG, and energy consumption	1. Transportation GHG, ozone, CO, and particulate matter emissions per capita	2016 GHG: xxx 2045 GHG: xxx 2016 Ozone: xxx 2045 Ozone: xxx 2016 CO: xxx 2045 CO: xxx 2016 PM: xxx 2045 PM: xxx			+X%
		1. Mobile energy consumption per capita	2016: xxx 2045: xxx			+X%
	B. Reduce the negative impacts on the natural and cultural environment	1. Planned investment in existing highways vs. new highways	New: 19% Existing: 81%			(How to compare or trend?)
II. Connect People	A. Connect people to jobs, education and other important destinations using all modes	1. Percentage of work and non-work trips by auto less than 30 minutes	2016 Work: xxx 2045 Work: xxx 2016 NonWork: xxx 2045 NonWork: xxx			-X% Work -X% Nonwork
		2. Percentage of work and non-work trips by transit less than 45 minutes	2016 Work: xxx 2045 Work: xxx 2016 NonWork: xxx 2045 NonWork: xxx			-X% Work -X% Nonwork
		3. Percentage of urbanized area within ¼ mile of pedestrian facilities	2016: xxx			(Compare in future)
		4. Percentage of jobs within 1/4 mile of high-end bus transit service or 1/2 mile of fixed guideway transit service	2016: xxx 2045: xxx			+X%
	B. Ensure transportation needs are met for all populations (especially the aging and youth, economically disadvantaged, mobility impaired, and minorities)	1. Percentage of Environmental Justice (EJ) population and total population within ½ mile of bus transit service, 1 mile of rail transit service, ½ mile of bike facilities, or ¼ mile of sidewalk	2016 EJ: xxx 2045 EJ: xxx 2016 Pop: xxx 2045 Pop: xxx			+X%

Sample: Actual Goals, Objectives & Performance Measures using mock data

Sample – Not Actual Data

Performance Targets

As part of the same process for creating the Goals and Objectives, the DCHC MPO develops a set of performance targets to provide a set of broadly based quantitative measures that evaluate the transportation plan from several different perspectives. The targets mostly use measurements from the Triangle Regional Model (the region's travel demand model), such as the miles traveled, trips taken, congestion levels, and mode split (between automobiles, transit, bicycling and walking). The targets that the MPO seeks to achieve with its transportation investments are shown in the table below.

The values in the tables are used as follows:

Comparison Data – this information provides contextual values for comparing the 2040 LRTP and Target values:

- 2010 – This is the current condition. It is the 2010 population and employment using the 2010 transportation network (e.g., highways and transit service).
- 2040 E+C – This is the no-build condition, or “Existing plus Committed” (E+C). It is the 2040 SE Data using the existing transportation network.
- 2035 LRTP and 2040 – This is the 2040 SE Data using the 2035 LRTP network. It is the 2035 SE Data adjusted with a five-year growth cycle to reflect the 2040 horizon year.

Targets – There are three Target values, Good, Better and Best. The use of more than one Target value helps to set a range of values that can be used for comparison.

Targets for 2040 LRTP

No.	Mobility Targets	Comparison Data			Targets		
		2010	2040 E+C	2040	Good	Better	Best
1	VMT Per Capita (daily miles)	31	31	31	30	29	28
2	Percent of population whose avg trip time is greater than 15 minutes (all trips)	27%	44%	28%	25%	22%	20%
3	Average Travel Time: all peak trips (daily minutes)	15	16	15	14	13	12
4	Transit Mode Share: all trips	2.8%	2.2%	2.6%	5%	7%	10%
5	Percent SOV Trip Share: work trips	81%	80%	79%	78%	75%	72%
6	Percent Non-motorized Trip Share: all trips	10%	11%	12%	13%	14%	16%
7	Greenhouse Gas Change: annual per capita emissions from transportation sector (in tons)	9.6	9.5		9.0	8.6	8.1
8	Cost of Congestion (daily; in million \$)	\$0.62	\$3.2	\$1.9	\$1.8	\$1.5	\$1.2
9	Low and Moderate Income Population within 1/4 mile of transit	67%	67%	78%	80%	83%	85%

Sample – Not Actual Data

Durham-Chapel Hill-Carrboro Metropolitan Planning Organization

Targets for the 2045 LRTP

What are the Targets?

The Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO) has selected eight performance measures from the MPO's Goals/Objectives/Performance Measures to demonstrate in a brief manner the extent to which the adopted 2045 Metropolitan Transportation Plan (2045 MTP) meets the MPO's Goals. The MPO has set Target values for these selected performance measures, mostly using measurements from the Triangle Regional Model (TRM - the region's travel demand model) and uses values for just the MPO, not the entire region.

The Targets were selected because they are broad measurements and the data is available and relatively reliable. This document also identifies the reasons the Target is important and what changes need to be made in land use, transportation and other policies to meet the Target.

What is the Guide Data?

The Targets have Guide Data for two scenarios to help set the Target values:

- 2015 – This is the current condition. It is the 2015 population and employment using the 2015 transportation network (e.g., highways and transit service). This is the 2010 column and value in the charts.
- 2045e+c – This is the 2045 population and employment using the existing transportation network plus any projects that are committed to being completed. This is the 2045e+c column and value in the charts.
- 2045 – This shows how a major transportation investment might affect the Target value. It is the 2045 population and employment using the 2055 transportation network, which is budgeted at over \$8 billion and includes passenger rail and managed lanes. This is the 2045 column and value in the charts.

What is the Target Range?

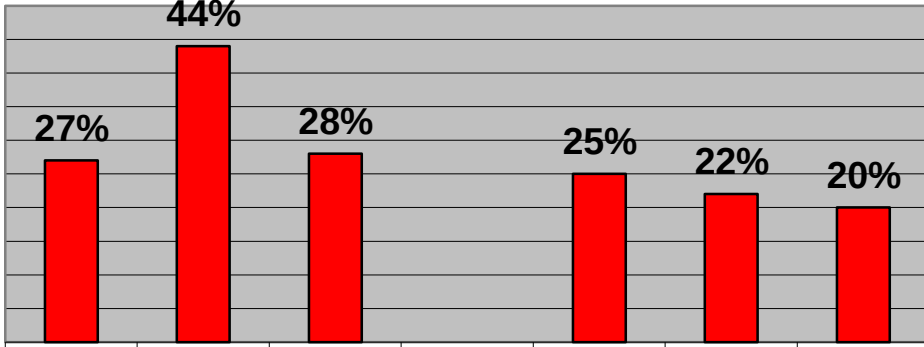
There are three Target values -- Good, Better and Best. The use of more than one Target value helps to set a range of values that can be used for comparison.

Additional Information

Additional information is available at the DCHC MPO's Web site – www.dchcmpo.org.

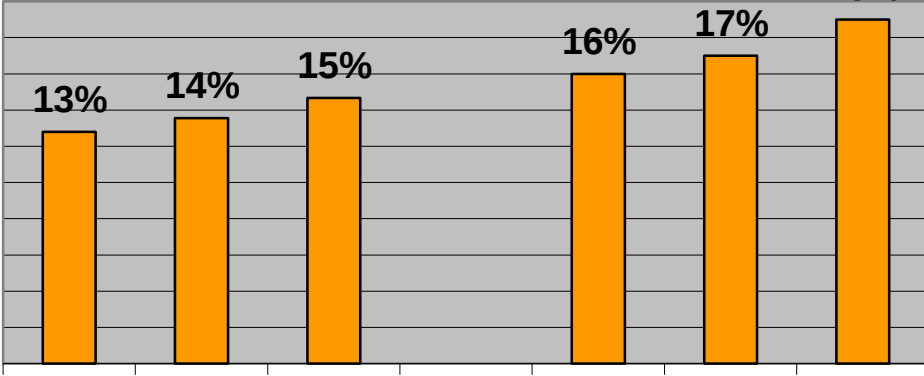
You can also contact: Andy Henry, (919) 560-4366, ext. 36419, andrew.henry@durhamnc.gov

Reduce Congestion (Percent of work and non-work trips by auto less than 30 minutes)

Why Reduce Congestion?	How to Reduce Congestion?	Trends and Targets														
▪ <u>Reduce Travel Costs</u> – Mobility Report concludes annual congestion cost is \$734 per peak auto commuter in Triangle. ▪ <u>Reduce Travel Time</u> – TRM data shows travel time will double and triple in most major travel corridors without additional investments. ▪ <u>Reduce Pollution</u> – Congestion reduces travel speed and increases pollution.	▪ <u>Transportation</u> – Implement Congestion Management practices such as traffic signal synchronization and spot improvements at traffic bottlenecks. ▪ <u>Transportation</u> – Increase highway, transit and other transportation mode capacity, especially along critical corridors. ▪ <u>Transportation</u> – Use managed lanes to increase corridor capacity. ▪ <u>Land Use</u> – Permit more mixed-use development.	% Auto Trips less than 30 minutes (Work & Non-work Trips) <table><thead><tr><th>Category</th><th>Percentage</th></tr></thead><tbody><tr><td>2015</td><td>27%</td></tr><tr><td>2045e+c</td><td>44%</td></tr><tr><td>2045</td><td>28%</td></tr><tr><td>Good</td><td>25%</td></tr><tr><td>Better</td><td>22%</td></tr><tr><td>Best</td><td>20%</td></tr></tbody></table>	Category	Percentage	2015	27%	2045e+c	44%	2045	28%	Good	25%	Better	22%	Best	20%
Category	Percentage															
2015	27%															
2045e+c	44%															
2045	28%															
Good	25%															
Better	22%															
Best	20%															

Method: From the Triangle Regional Model (TRM), the percent of work and non-work trips that are less than 30 minutes.

Increase Percent of Non-automobile Trip Share (All Trips)

Why Increase This Share?	How to Increase Non-Motorized Share?	Trends and Targets														
▪ <u>Reduce Pollution</u> – Automobiles are major emitters of carbon monoxide, nitrogen oxides (ozone precursor), carbon dioxide (greenhouse gas), and several other toxics that are linked to increased health ailments and climate change. ▪ <u>Reduce Congestion</u> – The percent of congested peak travel miles in the Triangle has risen steadily the last several decades. Transit, bicycle and walking trips can replace vehicle trips to help abate the growing congestion problem. ▪ <u>Support Personal Health</u> – Lack of exercise is a leading contributor to the obesity epidemic in the U.S.	▪ <u>Transportation</u> – Increase investment in transit, bicycle and pedestrian facilities and programs. ▪ <u>Transportation</u> – Require bicycle and pedestrian facilities on new and improved roadways, as appropriate. ▪ <u>Ordinance</u> – Require bicycle and pedestrian facilities and supportive design in new and renovated developments. ▪ <u>Land Use</u> – Permit more concentrated residential and employment development along key travel corridors. ▪ <u>Land Use</u> – Permit more mixed-use development. ▪ <u>Land Use</u> – Encourage shorter block lengths and greater roadway connectivity. <u>Method:</u> From Triangle Regional Model (TRM), total transit, bicycle and pedestrian trips divided by total trips for all modes.	Non-Automobile Trip Share (All Trips) <table><thead><tr><th>Scenario</th><th>Share (%)</th></tr></thead><tbody><tr><td>2015</td><td>13%</td></tr><tr><td>2045e+c</td><td>14%</td></tr><tr><td>2045</td><td>15%</td></tr><tr><td>Good</td><td>16%</td></tr><tr><td>Better</td><td>17%</td></tr><tr><td>Best</td><td>19%</td></tr></tbody></table>	Scenario	Share (%)	2015	13%	2045e+c	14%	2045	15%	Good	16%	Better	17%	Best	19%
Scenario	Share (%)															
2015	13%															
2045e+c	14%															
2045	15%															
Good	16%															
Better	17%															
Best	19%															