DESTINATION 2055

Metropolitan Transportation Plan for the Triangle Region

Pre-MTP Scenario Testing Results

Purpose of the Pre-MTP Scenario Testing

The typical process for developing a Metropolitan Transportation Plan (MTP) includes the identification of plan goals, forecasting of future conditions, evaluation of multiple transportation investment alternatives, selection of a preferred solution, and creation of a final plan. Due to time and resource constraints and other practical limitations, we often do not have an opportunity during the official MTP process to test and answer all the "what if..." questions that may be of interest to answer. This pre-MTP scenario testing exercise was created to allow the Triangle Region to answer some of those "what if..." questions, and to hopefully use the knowledge learned through the exercise to inform the alternatives that get analyzed as part of the official 2055 MTP process.

The Tested Scenarios

Baseline Scenario (2050 MTP)

This scenario represents the existing adopted 2050 MTP and serves as a baseline of comparison against which the other scenarios can be tested (i.e. do the other scenarios perform better or worse than the existing plan?).

Transit-focused Scenario

The concept of this scenario is to maximize the use of transit by concentrating development in areas with high-quality/high-frequency transit service and improving service frequencies/doubling the amount of service provided.

Equity-focused Scenario

This scenario looks at a variety of methods for improving transportation outcomes for low-income and zero-car households such as locating more jobs near low-income neighborhoods or more affordable housing near jobs.

VMT Reduction Scenario

The focus of this scenario is on identifying different factors that would reduce the growth of vehicle miles traveled (VMT) compared to the 2050 MTP baseline (note: due to population growth, VMT will still grow from 2020 to 2050).

Flexible Funding Scenario

This scenario examines the possibilities for funding different portfolios of transportation projects based on three different assumptions regarding funding constraints/restrictions and funding amounts.

Highway-focused Scenario

In this scenario we are testing the potential positive and negative impacts of making large investments in freeway/expressway widening projects and lower-density, highway-oriented development patterns.

How to Understand and Use this Document

- The next several pages provide more detailed information about the individual scenario results and key findings.
- All numbers are forecasts for the year 2050, including numbers in the baseline scenario.
- Performance indicators showing a scenario performs **better** than the baseline are typically shown in green text, while those performing **worse** than the baseline are typically shown in orange text.
- The analyzed scenarios were intentionally created to be "extreme" and not necessarily realistic. The intent is not to use these extreme scenarios in the 2055 MTP, but rather to learn lessons from these about how these various decision making levers might be used more practically in the upcoming 2055 MTP alternatives analysis phase.

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2050 MTP Baseline

For Comparison Purposes

Comparison of 2050 Baseline Data with 2020 Existing Data (Regionwide)

In order to compare scenarios, it is necessary to establish a **"baseline"** case against which to measure. For this exercise, our baseline scenario is based on the **2050 Metropolitan Transportation Plan** forecast measures for the year 2050. The table below shows the forecasted values for various measures in the 2050 baseline, as well as a comparison to the 2020 "existing" data. ***Please note that all scenarios in the remainder of this document are referring to the 2050 forecast from the adopted MTP when referring to the "baseline," NOT the 2020 existing year data. All comparisons in later scenarios are based on forecast data for the year 2050.***

Measures	2020	2050	
Population	2.0 million	3.3 million	62% ↑
Jobs	1.1 million	1.9 million	80% ↑
Highway Lane Miles	13,000	16,000	19% ↑
Daily Vehicle Miles Traveled (VMT)	55 million	89 million	61% ↑
Daily VMT Per Capita	27.2	27.0	0.7% ↓
Daily Transit Ridership	127,000	398,000	213% ↑
Daily Transit Passenger Service Miles	415,000	1.9 million	361% ↑
Daily Transit Service Miles	46,000	149,000	228% ↑
Single-occupant Vehicle Share of Auto Trips	76.7%	75.6%	1.4% ↓
Daily Congested VMT	5 million	21 million	307% ↑
Average Congested Travel Time (minutes)	33.9	34.8	2.7% ↑
Average Congested Travel Distance (miles)	4.6	5.1	11% ↑
Daily Hours of Delay	59,000	236,000	301% ↑
Daily Hours of Delay for Low-income Zones	500	1,500	231% ↑
Daily Hours of Delay for Zero-car Zones	500	1,300	143% ↑

Measures	2020	2050	
Average Transit Congested Time (minutes)	106	104	2.1% ↓
Transit Congested Time, Low-inc. Zones	26.6	25.1	6% ↓
Transit Congested Time, Zero-car Zones	36.6	36.4	0.5% ↓
Auto Congested Time, Low-income Zones	7.7	8.5	9% ↑
Avg # Jobs in 30 min by Transit, Zero-car	14,000	42,000	207% ↑
Avg # Jobs in 30 min by Walking, Zero-car	16,000	32,000	108% ↑
Avg # Jobs in 30 min by Transit, Low-income	9,000	23,000	167% ↑
Avg # Jobs in 30 min by Auto, Low-income	563,000	900,000	60% ↑
Avg # Jobs in 30 min by Walk, Low-income	10,000	18,000	88% ↑
Household Population in Travel Choice Nbrhd	490,000	904,000	84% ↑
Jobs in Travel Choice Neighborhoods	581,000	1.2 million	101% ↑
Daily Greenhouse Gas Emissions (tons)	25,900	25,700	0.7% ↓
Daily Fuel Consumption (gallons)	2.4 million	2.7 million	12% ↑

The green arrows above show the measures where the current 2050 MTP would improve conditions compared to existing (2020) conditions.

Regional Summary of Scenario Outcomes

Comparison of 2050 Baseline Data with Each Tested 2050 Scenario (Regionwide)

Performance Measures	2050 MTP Baseline	Transit-focused	Equity-focused A	Equity-focused B	Equity-focused C	VMT Reduction	Flexible Funding A	Flexible Funding B	Flexible Funding C	Highway-focused
Regional Population	3.3 million	—	—	—	—	—	—	—	—	—
Regional Jobs	1.9 million	—	—	—	—	—	—	—	—	—
Highway Lane Miles	16,000	—	—	—	—	—	↓	↓	↓	↑
Daily Vehicle Miles Traveled (VMT)	89 million	↓	—	—	↓	↓	—	↓	—	↑
Daily VMT Per Capita	27.0	↓	—	—	↓	↓	—	↓	—	↑
Daily Transit Ridership	398,000	↑↑	↑	↑	↑↑	↑↑	↓	↓	↓↓	↓
Daily Transit Passenger Service Miles	1.9 million	↑↑	↑	↑	↑↑	↑↑↑	—	↓	↓	↓
Daily Transit Service Miles	149,000	↑↑	—	↑↑	↑↑	↑↑	↓↓	↓↓	↓↓	—
Single-occupancy Vehicle (SOV) Share of Auto Trips	75.6%	—	—	—	—	↓	—	—	—	—
Daily Congested Vehicle Miles Traveled	21 million	—	↑	—	↓	↓↓	↑	↑↑	↑	↓↓↓
Average SOV Auto Congested Travel Time (AM, min)	34.8	—	—	—	—	↓	↑	↑	↑	↓
Average SOV Auto Congested Travel Distance (AM, mi)	5.1	↓	—	—	↓	↓	↑	↑↑	↑	↓↓↓
Daily Hours of Delay (all trips)	236,000	↑	↑	—	—	↓	↑	↑↑	↑	↓↓↓
Daily Hours of Delay for Poverty Households	1,500	↑	↑	↓↓	↑↑	↓↓	↑	↑↑	↑	↓↓↓
Daily Hours of Delay for Zero-car Households	1,300	↑↑	↑	↓	↑↑	↓	—	↑	↑	↓↓↓
Average Transit Congested Travel Time (AM, minutes)	104	↓	—	↓	↓	↓	↓	—	↑	↓
Transit Congested Travel Time for Poverty Zones	25.1	↓	—	↑	↑	↓	—	—	↑	↓
Transit Congested Travel Time for Zero-car Zones	36.4	↓	↑	—	↓	↓	—	—	—	↓
Auto Congested Travel Time for Poverty Zones	8.5	↓	—	↓	↓	↓	—	↑	—	↓
Average Jobs within 30 mins by Transit, Zero-car zones	42,000	↑↑	↑↑	↑↑	↑↑	↑↑	—	—	↓	↓
Average Jobs within 30 mins by Walk, Zero-car zones	32,000	↑	↑↑	↑	↑↑	↑	—	—	—	↓
Average Jobs within 30 mins by Transit, Poverty zones	23,000	↑↑	↑	↑↑	↑↑↑	↑↑	—	—	↓	↓
Average Jobs within 30 mins by Auto, Poverty zones	900,000	—	↓	↑	↑	↑	—	↓	↓	↑
Average Jobs within 30 mins by Walk, Poverty zones	18,000	↑	↑	↑	↑↑	↑	—	—	—	↓
% Poverty Households in Travel Choice Neighborhoods	40%	↑↑	—	↓	↑↑	↑↑	—	—	—	↓
Household Population in Travel Choice Neighborhoods	904,000	↑↑↑	—	—	↑↑↑	↑↑↑	—	—	—	↓
Jobs in Travel Choice Neighborhoods	1.2 million	↑↑	↑	—	↑↑	↑↑	—	—	—	↓
Daily Greenhouse Gas Emissions (tons)	25,700	↓	—	—	↓	↓	—	—	—	—
Daily Fuel Consumption (gallons)	2.7 million	↓	—	—	↓	↓	—	↓	—	—
Acres of Land Developed 2020-2050	162,000	↓↓↓	—	↓	↓↓↓	↓↓↓	—	—	—	↑↑

- ↑ or ↓ indicates whether a scenario has a higher (↑) or lower (↓) performance result compared to the baseline. ↑ or ↓ indicates that a result is "better" than the baseline, while ↑ or ↓ indicates that a result is "worse" than the baseline.
- Amounts of change: "—" indicates no change or very small change (less than +/-1%); ↑ indicates a change between +/-1% and +/-10%; ↑↑ is a change between +/-10% and +/-50%; and ↑↑↑ shows a change of greater than +/-50%.

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Transit-Focused Scenario Results

Transit-focused Scenario Purpose

The goal of this scenario is to test the outcomes of a future in which large investments are made in transit services and infrastructure, resulting in a doubling of service frequencies, and all future growth is funneled into areas with access to Bus Rapid Transit (BRT), Commuter Rail, and/or high-frequency bus transit routes. It provides a picture of the impacts that these types of changes could have on the regional transportation system.

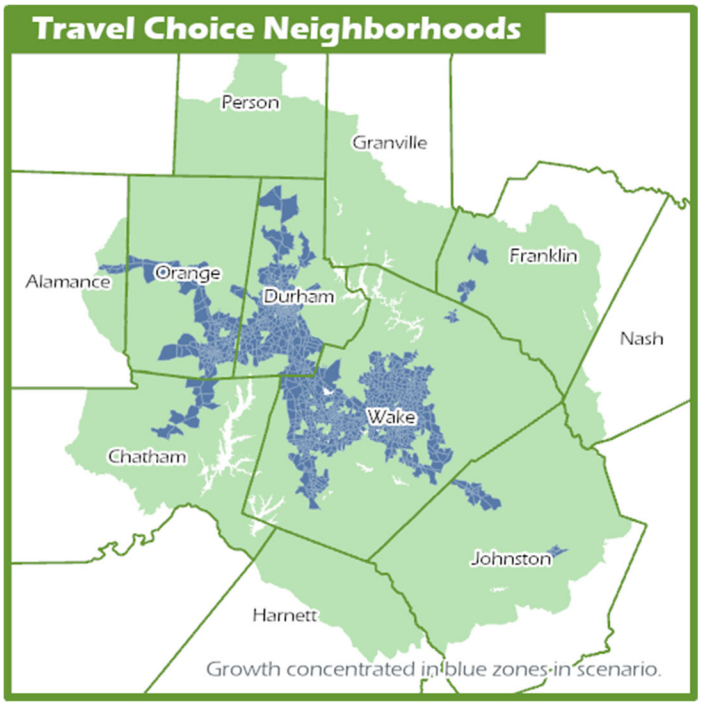
How was the Transit-focused Scenario defined?

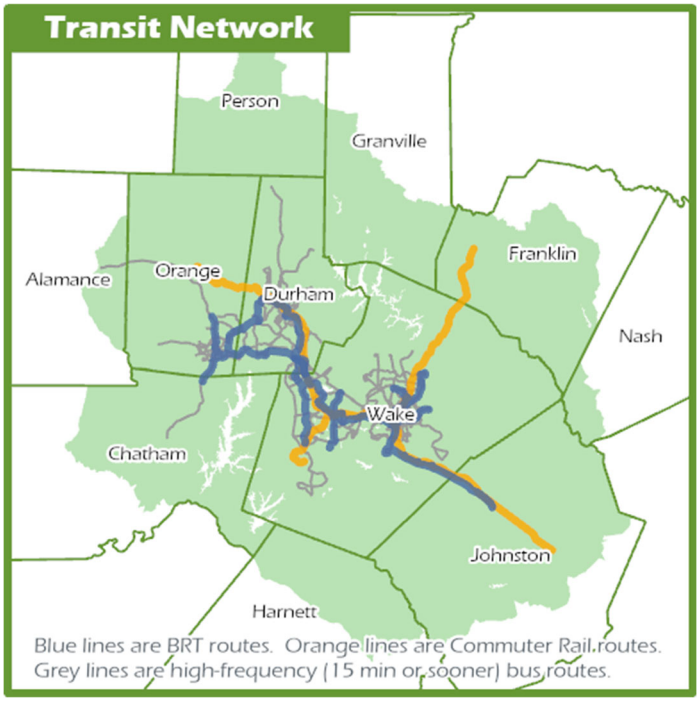
Land Use/Development Assumptions

In this scenario, we assumed that all future development between 2020 and 2050 would occur within "travel choice neighborhoods", which are neighborhoods located near planned BRT and commuter rail stations, or along bus routes with service every 15 minutes (or less), within walking distance.

Transportation Network Assumptions

For this scenario, all planned BRT and commuter rail facilities from the 2050 MTP were assumed to be in place, and frequencies of service on all transit lines were assumed to be doubled (e.g. a bus line with 2 buses per hour (30-minute service) in the MTP would have 4 buses per hour (15-minute service) in this scenario.





Is this scenario's development pattern feasible?

We know that market forces will result in some portion of future development occurring outside the transportation choice neighborhoods, but for the purposes of this exercise we should test whether it is possible to locate all future development in these areas based on existing land use plans. There is significant capacity available for future development in these zones, but not enough to accommodate all of the types of anticipated growth in all locations. In order to fit the planned growth in these areas, the densities of future housing growth in some locations would need to be as much as **8.5 times higher** and employment density in some locations as much as **2 times higher** than currently planned.

Transit-Focused Scenario Outcomes

Roadway Travel Time and Congestion

The transit-focused scenario shows **mixed, but mostly neutral or positive, results** with regard to roadway travel time and congestion performance measures; this is at least partly due to the scenario including all the same highway improvements as the 2050 MTP baseline and simply adding additional transit services on top of that.

Reduces vehicle miles traveled (VMT), both total and per capita, by about **5%** compared to the baseline, or **5 million** fewer per day.

Reduces the amount of VMT occurring in congested conditions by **0.6%** and the peak period congested travel distance by **3.5%**.

Increases total systemwide hours of delay by about **2%** from 236,000 hours to 240,000 hours when compared to the baseline.

Negligible impact on average congested travel time by automobile (increases by less than 0.1%).

Accessibility & Alternate Modes

As might be expected, this scenario performs well on measures related to accessibility and non-auto travel modes as compared to the 2050 MTP baseline. Of particular note, it **more than doubles** the number of households in the region that would be located near high-quality transit services (about 2 million) as compared to the baseline (about 900,000).

Increases transit ridership by **34%** as compared to the baseline scenario (adding **135,000** daily trips).

Reduces congested travel times on transit by **4%** overall, with a **4.4%** reduction for low-income households compared to baseline.

Increases the number of jobs within 30 minutes of low-income households by **26%** by transit, **4%** by walking, and **1%** by auto.

Increases the number of jobs in areas near high-quality transit services by **36%** and the number of households near transit by **120%**.

Environment, Health & Quality of Life

The transit-focused scenario generally had **positive impacts** on environment, health, and quality of life metrics.

Reduces the amount of land consumed by future development by **63%** compared to the baseline, or **>100,000** fewer acres developed.

Reduces estimated Greenhouse Gas (GHG) emissions by **5%** compared to the baseline, for over **1,200** fewer tons of emissions daily.

Reduces estimated vehicle fuel consumption by **5%** compared to the baseline, for approximately **133,000** fewer gallons used per day.

What did we learn from the Transit-Focused Scenario?

While it is unreasonable to assume all future growth would occur in transit-accessible areas of the region, it is clear that there are real **transportation system benefits** to allowing and encouraging some amount of additional development to occur in these areas, and to invest in improvements that expand the reach of the high-quality/high-frequency transit network in the region. Potential **positive benefits** include reductions in vehicle miles traveled, improved job accessibility by transit and walking, reduced fuel consumption and greenhouse gas emissions, and reduced transit travel times. While the changes in development patterns would result in a small increase in hours of delay, most of the other roadway metrics studied would be **neutral or slightly improved** in this scenario.

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Equity-focused Scenario Results

Equity-focused Scenario Purpose

The intent of this scenario is to examine different options for development patterns, housing policies, and transportation investments that could result in improved equitability in transportation outcomes between disadvantaged and non-disadvantaged communities, In combination, these can provide information about the potential impacts of different policy decision making actions on the equitability of transportation system outcomes. It should be noted that most of the assumptions in these scenarios depend heavily on decisions about land use and housing policies that are beyond the purview of a transportation plan to address, but are nonetheless critical to consider as factors on transportation results.

How was the Equity-focused Scenario Defined?

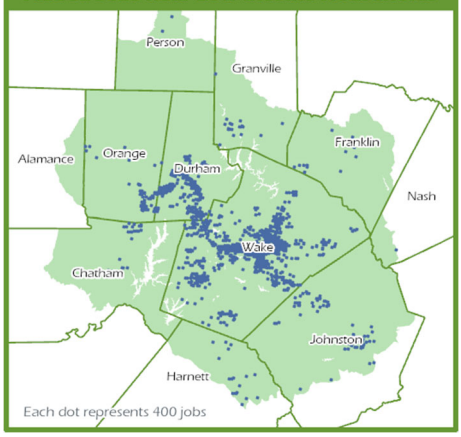
Three different options were tested for this scenario:

Option A

Moving Jobs to People

- Examined the effects of moving more future job growth to be located near areas with higher concentrations of disadvantaged residents
- In concept, by locating more future jobs in or near lower-income communities it should improve access both to jobs and to retail and services for residents of those communities
- Placed future job growth in areas in/near existing zones with more low-income and/or zero-car households

Added Jobs near Low-income Households

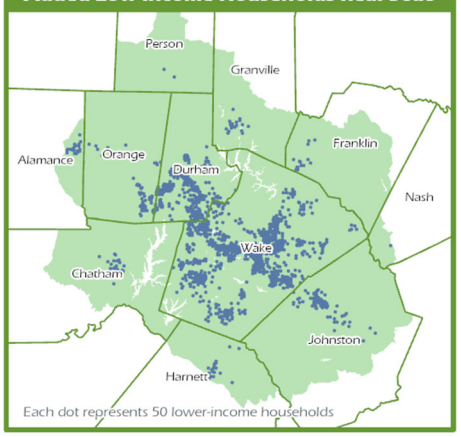


Option B

Moving People to Jobs

- Examined the effects of moving more future lower-income/ affordable housing to be located near areas with higher anticipated future job growth
- In concept, by locating more affordable housing near growing/future job centers it should allow more low-income residents an opportunity to live near their job and reduce their commuting burden
- Placed future low-income household growth in zones near future job growth

Added Low-income Households near Jobs

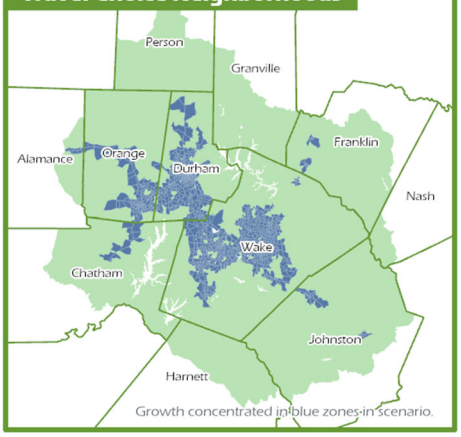


Option C

Transit + Equity

- Examined the effects of proactively focusing future affordable housing in areas near high-quality/high-frequency transit services
- In concept, by ensuring more affordable housing is built near transit corridors/services it should improve lower-income and zero-car residents' access to both jobs and retail/services
- Used same job/housing growth locations from transit-focused scenario, but with higher proportion of low-income

Travel Choice Neighborhoods



Equity-Focused Scenario Outcomes

Option A: Moving Jobs to People

This scenario option shows **mixed results**, with some key measures showing improvement over the 2050 baseline but the majority of measures showing either negligible or negative benefits. The positive benefits are related to **higher transit service and ridership, and improved job access by transit and walking**. Negative outcomes are primarily related to **higher delay and congested auto travel times and reduced job access by auto**. Most other measures are comparable to the baseline, with no major impact on outcomes.

- **Increases** transit ridership by **8%** and transit passenger miles by **9%**
- **Increases** job access for low-income areas by transit and walking by **9-10%**, and for high-zero-car areas by **11-12%**

- **Increases** congested VMT by **3%**
- **Increases** hours of delay by **5%**, and by **6%** for low-income households
- **Reduces** jobs within 30 minutes by auto from low-income areas by **2%**

Option B: Moving People to Jobs

This scenario option shows **largely positive results**, some significant, with relatively fewer negative results as compared to the baseline. The positive benefits are related to **higher transit service and ridership, fewer hours of delay for poverty and zero-car households, improved job access by all modes, and less land consumed by development**. Negative outcomes are primarily related to **longer congested travel times by transit for low-income households** and **fewer low-income households located in transit-accessible neighborhoods**.

- **Increases** transit passenger miles by **9%**
- **Reduces** hours of delay for low-income households by **27%**
- **Increases** job access for low-income areas by transit **30%**, auto **5%**, & walking **9%**

- **Increases** congested travel time by transit for low-income households by **4%**
- **Reduces** number of low-income households within "travel choice neighborhoods" by **2%**

Option C: Transit + Equity

This scenario option shows **the most significant positive results of the three equity scenarios**. Most measures show positive outcomes, but the most significant are related to **higher transit service and ridership, improved job access by all modes, and less land consumed by development**. However, the few negative outcomes are directly affecting low-income and zero-car households: **higher hours of delay for both of these population groups and longer congested travel times by transit for low-income households**.

- **Reduces** overall VMT by **6%**
- **Increases** transit passenger miles by **43%**
- **Increases** job access for low-income areas by transit **54%**, auto **10%**, & walking **22%**
- **Reduces** land consumption by **63%**

- **Increases** hours of delay for low-income households by **24%**, and for zero-car households by **34%**
- **Increases** congested travel times by transit for low-income households by **7%**

What did we learn from the Equity-Focused Scenario?

The analysis suggests that in order to address concerns of equity with regard to transportation system performance and future development patterns, some combination of policies that **promote more affordable housing in areas proximate to emerging job centers** and policies that **promote more affordable housing in areas served by high-quality transit services** would likely have the biggest positive impacts. However, it should be noted that these types of housing policy decisions are greatly affected by factors outside of the transportation planning process and may require significant actions by local governments in order to implement.

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VMT Reduction Scenario Results

The purpose of the VMT Reduction scenario is to identify and analyze potential land use, transportation, and policy factors that could be combined to minimize the growth of vehicle miles traveled (VMT) in the region in the future. As the Triangle Region adds 1 million residents over the next 30 years, some amount of VMT growth is likely inevitable, but this scenario identifies multiple potential methods and tools with the greatest potential for limiting future VMT growth.

How was the VMT Reduction Scenario defined?

Based on analysis using the regional travel demand model, staff identified four primary factors that would have the most impact in terms of reducing future vehicle miles traveled:

Concentration of Development in Areas Served by High-quality/High-frequency Transit ("Travel Choice Neighborhoods")

- Enables more trips to be possible by transit and walking, reducing the need for auto trips
- For purposes of this scenario, assumes all future growth occurs in the Travel Choice Neighborhoods (similar to the Transit-focused Scenario)

Increasing Transit Frequencies/Reducing Headways between Transit Vehicles

- Increases likelihood of selecting transit as a travel mode by reducing transit vehicle wait times
- For purposes of this scenario, assumes the same transit services as shown in the 2050 MTP, but with double the frequency (similar to the Transit-focused Scenario)

Instituting a VMT Fee

- A VMT fee is a method of charging a per-mile fee for the use of a motor vehicle
- This scenario is agnostic about the specific mechanics of how a fee might be administered
- For purposes of this scenario, assumes a fee rate of 5 cents per mile on all non-tolled roadways

Increasing the Rate of Working from Home

- Reduces demand for trips, particularly during peak AM and PM commute periods
- For purposes of this scenario, assumes that approximately 20% of home-to-work commute trips are removed (focusing on office and service job types) due to increased work-from-home

To make it easier to equitably compare the results of this VMT reduction scenario with the Transit-focused scenario, both use the same assumptions about the location of development and the location/frequency of transit improvements. This allows a cleaner comparison of the impacts of the development concentration and transit frequency VMT-reduction factors (which match the Transit-focused scenario) against the impacts of the VMT fee and teleworking factors (which are only in this scenario).

The 2050 Metropolitan Transportation Plan (baseline for comparison) shows an increase in VMT from approximately **55 million** miles per day in 2020 to **89 million** miles per day in 2050, an increase of over **60%** in the next 30 years. However, this increase is attributable to the growth of the region, rather than from individuals driving more. The per-capita VMT rate remains steady around **27 miles** per day in both 2020 and 2050. So any future VMT reductions compared to baseline *in the scenarios* would be a per-capita VMT reduction from today.

VMT Reduction Scenario Outcomes

Roadway Travel Time and Congestion

The VMT reduction scenario shows **positive results** on most performance measures across the board, including the roadway and congestion measures; the focus that this scenario has on actions to minimize VMT growth and reduce VMT per capita also has the benefit of improving congestion metrics as compared to the baseline scenario.

Reduces vehicle miles traveled (VMT), both total and per capita, by about **8%** compared to the baseline, or **7 million** fewer per day.

Reduces the amount of VMT occurring in congested conditions by **12%** and the peak period congested travel distance by **8%**.

Reduces total systemwide hours of delay by about **9%** from 236,000 hours to 215,000 hours when compared to the baseline.

Reduces the share of auto trips taken by single-occupancy auto by **1.7%** and average congested travel time by **1.6%**.

Accessibility & Alternate Modes

Due to the transit improvements and denser, transit-supportive development pattern of this scenario, it **performs well** on accessibility, transit, and walking measures. Similar to the transit-focused scenario, it **more than doubles** the number of households in the region that would be located near high-quality transit services as compared to the baseline.

Increases transit ridership by **45%** as compared to the baseline scenario (adding **180,000** daily trips).

Reduces congested travel times on transit by **4.7%** total, with a **5.3%** reduction for low-income households compared to baseline.

Increases the number of jobs within 30 minutes of low-income households by **27%** by transit, **4%** by walking, and **4%** by auto.

Increases the number of jobs in areas near high-quality transit services by **36%** and the number of households near transit by **120%**.

Environment, Health & Quality of Life

The VMT Reduction scenario generally had **positive impacts** on environment, health, and quality of life metrics.

Reduces the amount of land consumed by future development by **63%** compared to the baseline, or **>100,000** fewer acres developed.

Reduces estimated Greenhouse Gas (GHG) emissions by **7.5%** compared to the baseline, for over **1,900** fewer tons of emissions daily.

Reduces estimated vehicle fuel consumption by **7.5%** compared to the baseline, for approximately **200,000** fewer gallons used per day.

What did we learn from the VMT Reduction Scenario?

Pursuing actions that result in reduced growth of VMT and reduced vehicle miles traveled per capita **would have a positive impact** on many of CAMPO and DCHC MPO's goals and performance measures, typically being the most improved among all scenarios, particularly for the environment and quality of life related measures. However, the assumptions made in crafting this scenario are relatively extreme; more modest, realistic policy interventions would likely result in more modest results in turn. By pairing the telework and VMT fee assumptions of this scenario with the land use and transportation investments of the transit-focused scenario it yielded greater improvements than the transit-focused scenario was able to accomplish alone.

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Flexible Funding

Scenario Results

Unlike many of the other scenarios, the Flexible Funding Scenario is focused on the issue of transportation funding, and some of the limitations imposed on the Metropolitan Transportation Planning process as a result of funding constraints. This scenario has been created to enable the MPOs to consider the different transportation investment decisions that could be made if funding restrictions and rules were to change, and the impacts of those alternative investment choices.

How was the Flexible Funding Scenario defined?

Three transportation investment scenarios were created based on the following assumptions about funding rules and constraints:

Option A

- No change in the total amount of funding available for capital projects
- Removal of restriction that Strategic Transportation Investments (STI) funds must be spent only within the separate Statewide Mobility, Regional Impact, and Division Needs project categories
- Flexibility to spend STI funds on projects in any category

Option B

- No change in the total amount of funding available for capital projects
- Removal of all restrictions that the Strategic Transportation Investments (STI) places on funding, including the categories discussed in Option 1, as well as removal of caps or restrictions on certain transportation modes or corridors
- Flexibility to spend STI funds on any project

Option C

- A shift of more money toward maintenance and operations needs over time results in less funding available for capital projects
- Assumes that funding mix shifts from current one-third to maintenance/operations & two-thirds to capital/expansion, to a future funding split of half to maintenance/operations and half to capital/expansion

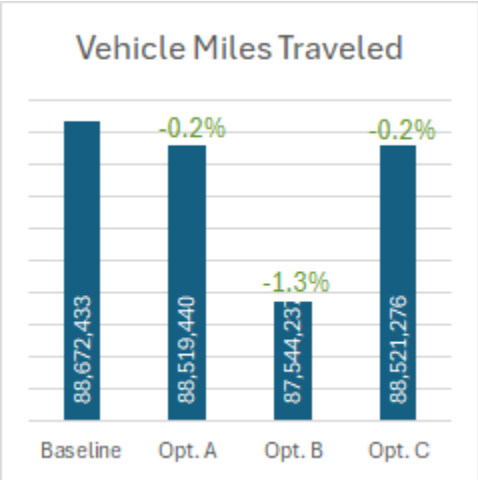
Starting from the existing 2050 MTP project list, each MPO developed a new project list for each option:

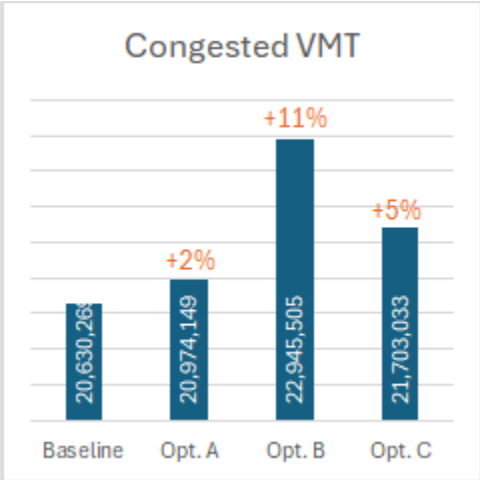
- For the CAMPO area, staff created a project list based on their standard methodology for selecting MTP projects, but without Statewide/Regional/Division category restrictions. In practice, this led to a list with many **additional projects in the Division Needs category** than under the typical STI rules.
- For the DCHC MPO area, the existing 2050 MTP project list had already assumed this type of change could happen so **no additional changes** were needed.

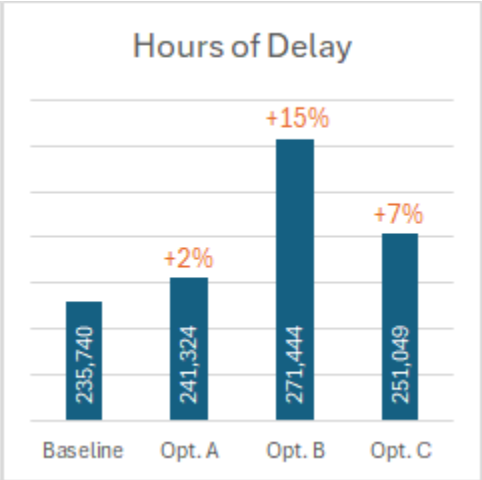
- For the CAMPO area, staff created a project list based on their standard methodology, but without any STI restrictions such as funding categories or transit/bike/ped modal funding caps. This led to a list with **additional projects in the Division Needs category and additional non-roadway projects**.
- For the DCHC MPO area, the existing 2050 MTP project list had already assumed this type of change could happen so **no additional changes** were needed.

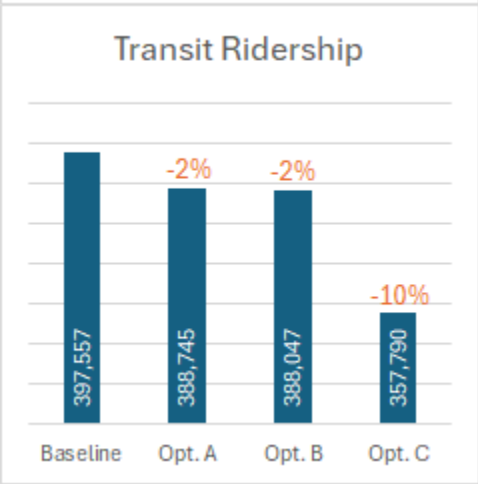
- For both the CAMPO and DCHC MPO areas, Option C results in less funding available for capital/expansion projects, requiring staff to cut back the existing 2050 MTP project list based on their typical project selection methodologies.
- This resulted in a **smaller set of future projects** being tested in the scenario. However, it also means a **larger amount of funding** for such items as road resurfacing, bridge replacement, and roadside maintenance.

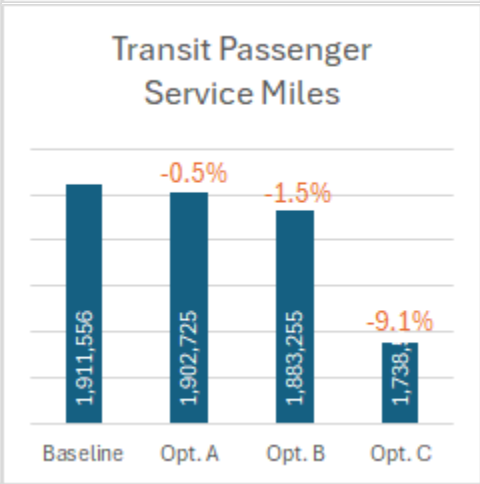
Flexible Funding Scenario Outcomes

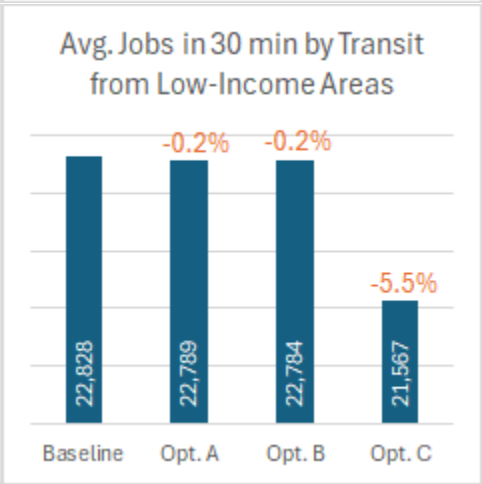


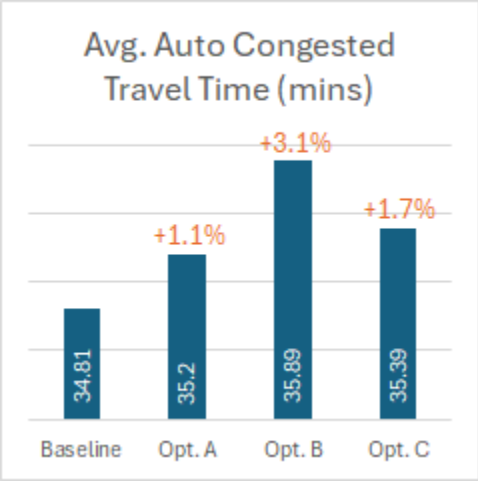


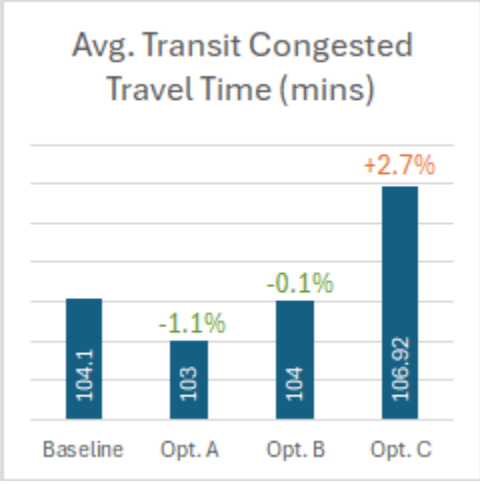


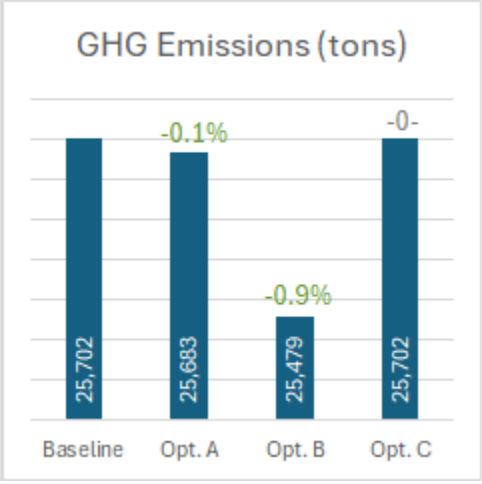












What did we learn from the Flexible Funding Scenario?

There are tradeoffs in all decision making, and the results of each of these analyses are mixed. All three options **reduced VMT and greenhouse gas emissions but also increased congestion and delay**, with Option B seeing the largest changes in this regard. **Travel times for autos are higher** than the 2050 baseline in all three options, but **transit travel times are slightly improved** in Options A and B. While all three options would result in **lower transit ridership** than the baseline, Option C is particularly hard hit by this given the lower amount of funding available for projects in that scenario.

DESTINATION 2055

Metropolitan Transportation Plan for the Triangle Region

Highway-Focused Scenario Results

Highway-focused Scenario Purpose

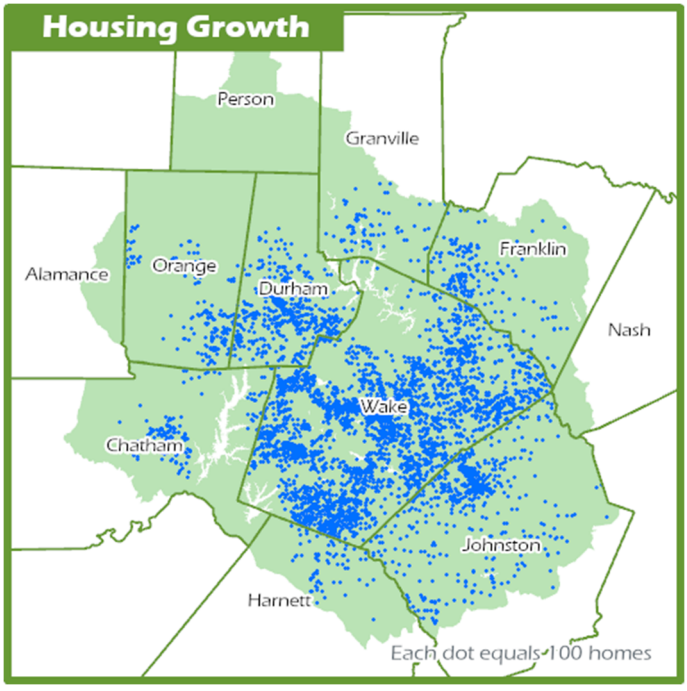
The Triangle Region is projected to add approximately 1 million new residents between 2020 and 2050. This scenario assumes land use patterns are lower-density and highway-oriented and transportation investments are directed toward major highway expansions. It answers questions about the impacts of continued low-density expansion on the transportation network and how investments in major highways compares with other investment options.

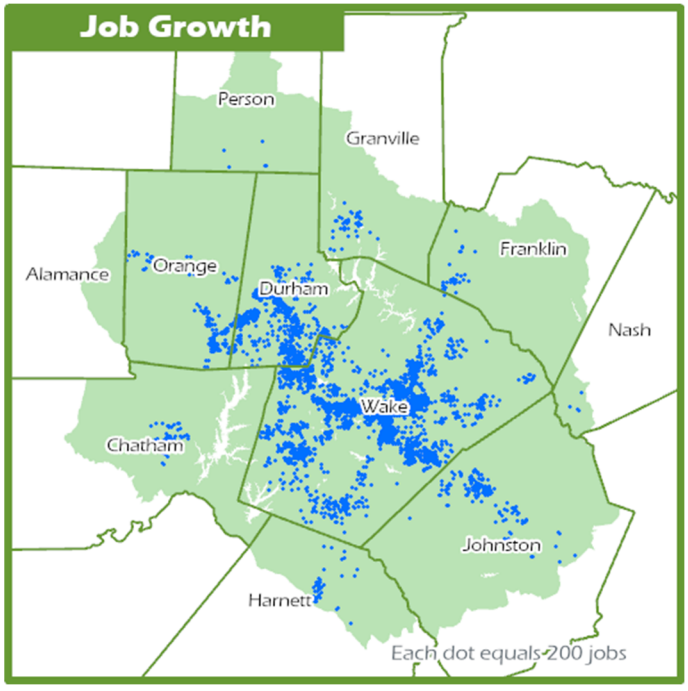
How was the Highway-focused Scenario defined?

Land Use/Development Assumptions

For the Highway Scenario we developed a future development/growth forecast that disperses development more broadly across the Triangle region at lower densities and that focuses future development primarily around access to the highway network. The overall amount of growth assumed to happen within each county did not change—only the location and density of the development within each county.

The maps below show the distribution of new housing units and new jobs added between 2020 and 2050 in the Highway Scenario. Each dot represents 100 added homes or 200 added jobs between 2020 and 2050.





Transportation Network Assumptions

The transportation network for this scenario is largely the same as the baseline scenario, but with one major difference: the number of lanes on freeways and expressways in this scenario is doubled, increasing the capacity of the region's main highways. For example, a freeway with 6 lanes in the baseline scenario has 12 lanes in the highway scenario.

Highway-Focused Scenario Outcomes

Roadway Travel Time and Congestion

As might be expected from a scenario that focuses on major investments in highway widening projects (doubling of freeway and expressway lane miles), there are **improvements in a number of the roadway congestion measures**. However, the impact of these improvements on overall regional performance measures is **tempered by the large, costly investment in major roadway widenings**.

Reduces average AM peak period commute travel times (by auto) from **35 minutes** in the baseline to **32 minutes** (**9%** reduction).

Reduces total systemwide hours of delay by **86%**, from 236,000 hours to 32,000 hours when compared to the baseline.

Increases vehicle miles traveled (VMT), both total and per capita, by about **7%** as compared to the baseline scenario.

Increases highway lane miles by **9%** compared to the baseline, by adding **2,156** miles of new freeway/expressway lanes (doubling).

Accessibility & Alternate Modes

As a scenario that focuses on improvements to the highway network and the dispersion of future growth at a lower density, this scenario results in **lower transit ridership and lower access to jobs by alternate modes of transportation** (walking, biking, transit), but does show improvements in job accessibility by automobile.

Reduces transit ridership by **8.5%** as compared to the baseline scenario (from 398,000 daily trips to 364,000 daily trips).

Increases the number of jobs within 30 minutes of low-income households by automobile by **22%**.

Reduces the number of jobs within 30 minutes of low-income households by **4%** for transit trips and by **10%** for walking trips.

Reduces the number of jobs in areas near high-frequency transit services by **10%** & the number of households near transit by **6%**.

Environment, Health & Quality of Life

The highway-focused scenario generally had the **largest negative impacts** on environment, health, and quality of life metrics out of all the tested scenarios.

Increases the amount of land consumed by future development by **22%** compared to the baseline, or **35,000** additional acres developed.

Increases estimated Greenhouse Gas (GHG) emissions by **0.5%** compared to the baseline, for over **100** additional tons of emissions daily..

Increases estimated vehicle fuel consumption by **0.5%** compared to the baseline, or about **15,000** additional gallons used per day.

What did we learn from the Highway-Focused Scenario?

Massive, costly investments in freeway widening projects **could lead to reductions** in overall regional automobile congestion and delay metrics. However, localized congestion on many non-freeway road segments, particularly those that connect with freeways, **could also get worse** as more drivers are attracted to make more (and longer) trips using the expanded freeway network. This scenario would result in less usage of alternative modes such as walking and transit, and consume more land with future development.