

Triangle Strategic Tolling Study Update

NCAMPO Annual Conference

April 24, 2019



ABOUT THE STUDY

Study Background

- ▶ The Triangle Region is growing rapidly and to stay competitive with other regions, a study is being conducted to:

Evaluate the regional transportation network

Determine if express toll lanes are applicable to the Triangle Region

Use study findings in project development process for MTP updates

Study Overview

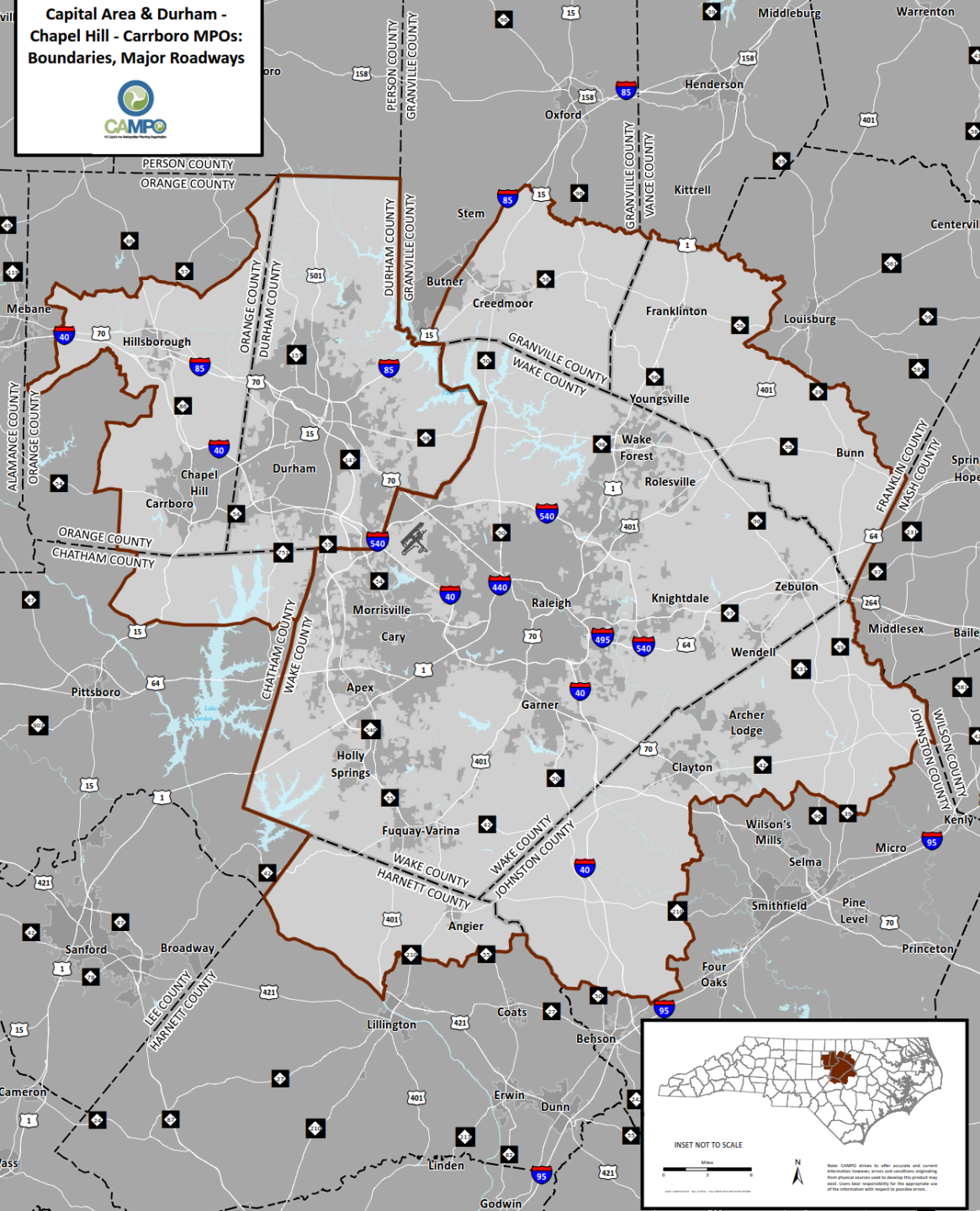
- ▶ The study began in June 2017
- ▶ Stakeholder engagement has included:

Core Technical
Team Meetings

Stakeholder
Interviews

Stakeholder
Oversight Team
Meetings

- ▶ Public engagement would occur in subsequent studies



Study Sponsors

► This study was a collaborative effort of:

Capital Area
MPO

Durham-
Chapel Hill-
Carrboro MPO

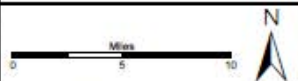
NCDOT

TRIANGLE STRATEGIC
TOLLING STUDY

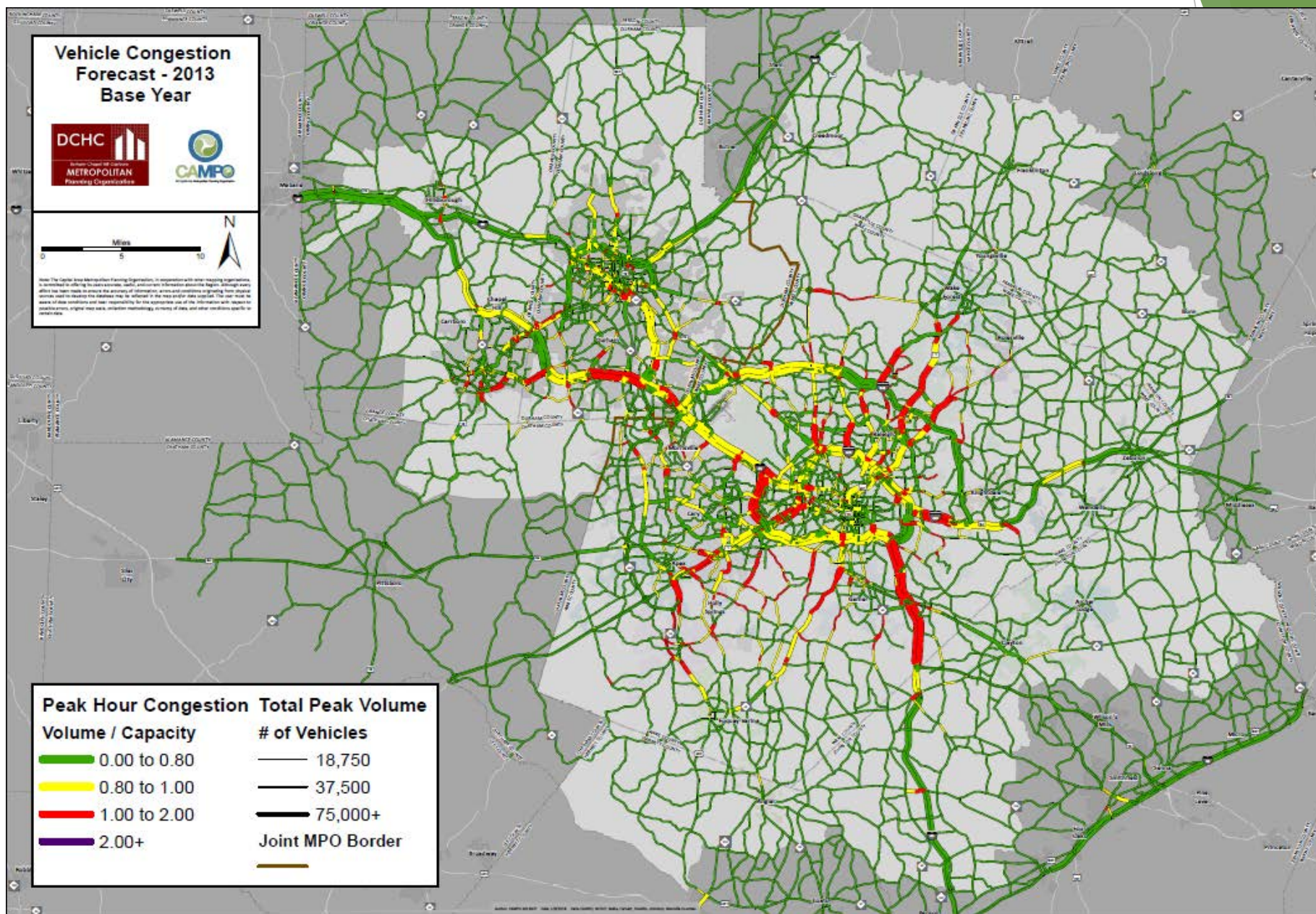
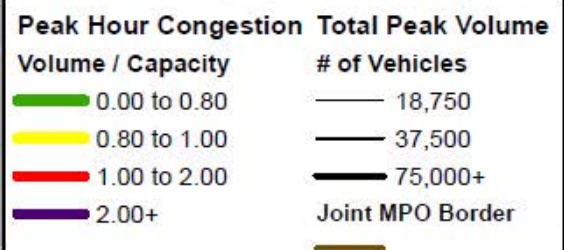
TRIANGLE REGION CONDITIONS & TRENDS

TRIANGLE STRATEGIC
TOLLING STUDY

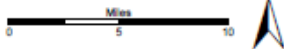
Vehicle Congestion Forecast - 2013 Base Year



Note: The Capital Area Metropolitan Planning Organization, in cooperation with other mapping organizations, is committed to offering the most accurate, useful, and current information about the region. Although every effort has been made to ensure the accuracy of information, errors and omissions originating from original sources and/or the mapping process may be reflected in the map and/or data reported. The user must be aware of these conditions and bear responsibility for the information use of the information with respect to specific areas, project, map data, and/or other conditions specific to certain data.

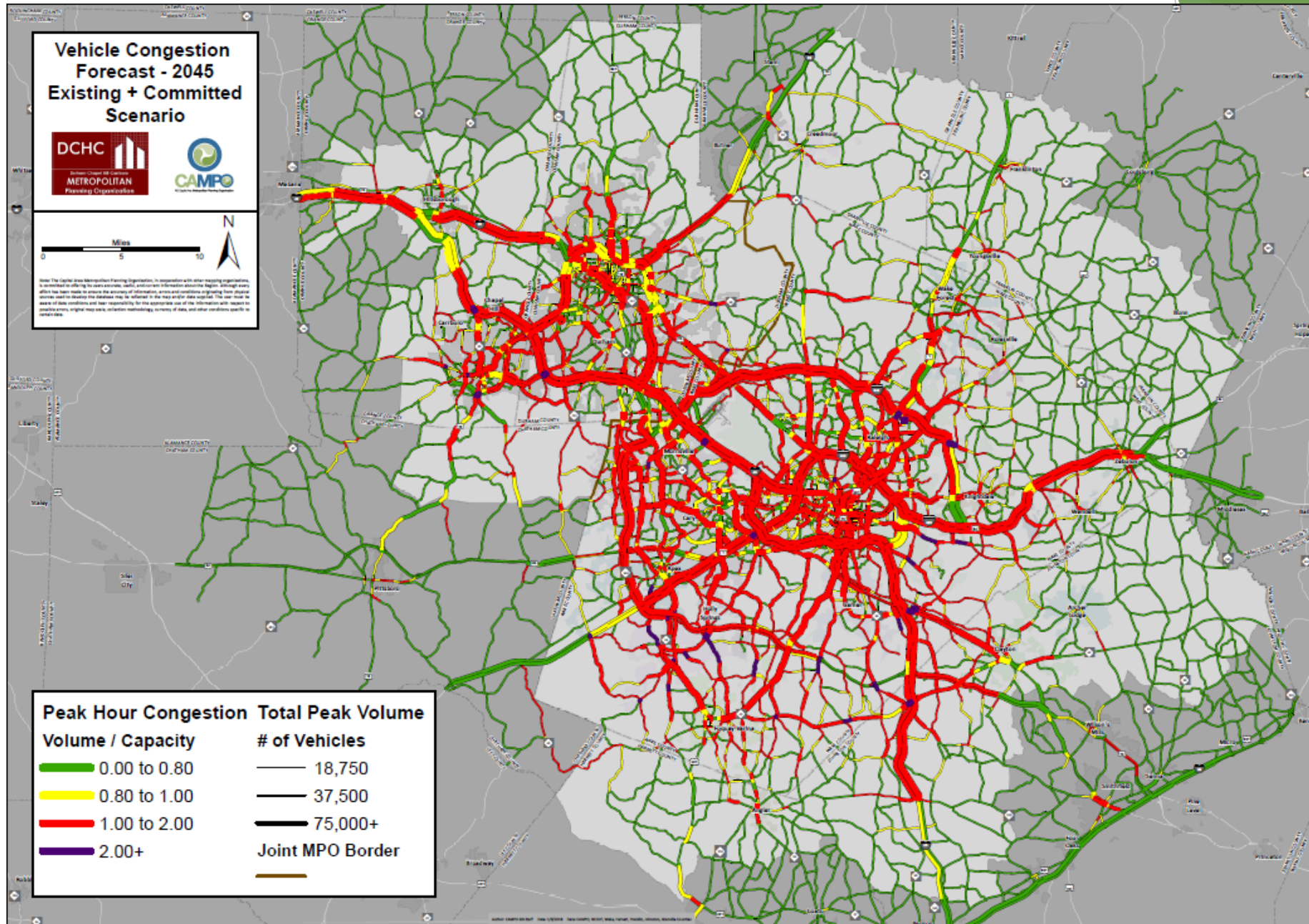


Vehicle Congestion Forecast - 2045 Existing + Committed Scenario



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Peak Hour Congestion Volume / Capacity	Total Peak Volume # of Vehicles
0.00 to 0.80	18,750
0.80 to 1.00	37,500
1.00 to 2.00	75,000+
2.00+	Joint MPO Border

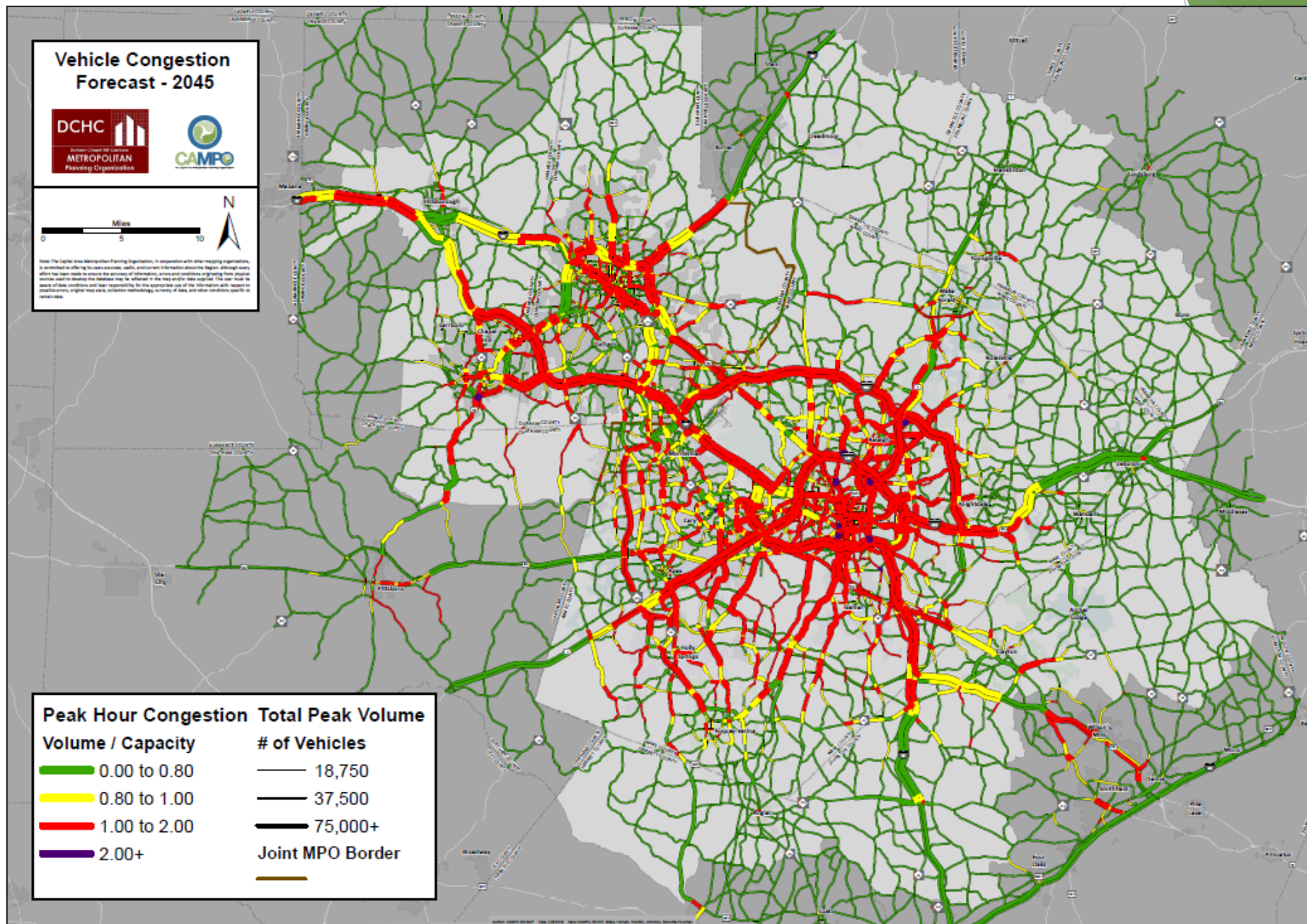


Vehicle Congestion Forecast - 2045



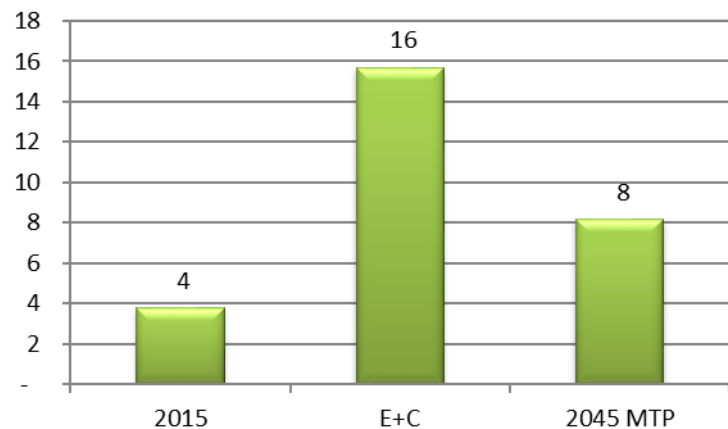
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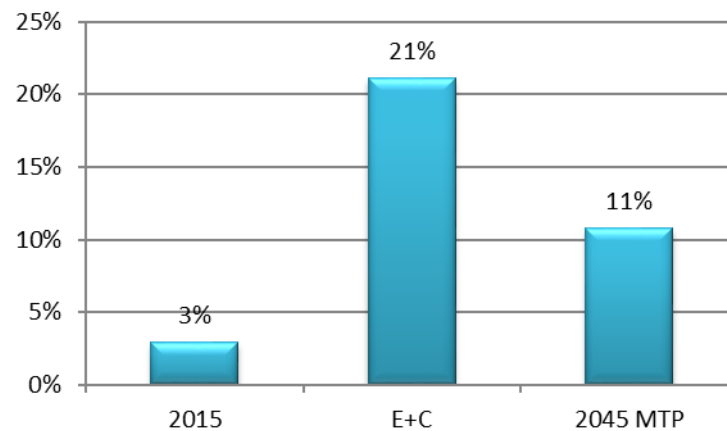


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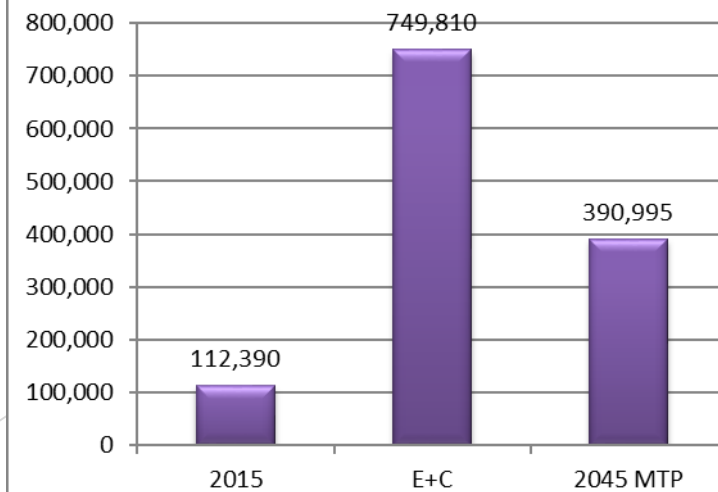
Per Capita Minutes of Delay (Daily)



Percent VMT Experiencing Congestion (at Peak)



Hours of Delay (Daily)



TOLLING & EXPRESS LANES OVERVIEW

TRIANGLE STRATEGIC
TOLLING STUDY

Toll Road vs. Express Toll Lanes



- ▶ Everyone pays a toll to use the facility
- ▶ **Route-based Choice:** option to use the Toll Road or use a different non-toll facility



- ▶ Only Express Toll Lane users pay a toll
- ▶ **Lane-based Choice:** option to use the Express Toll Lanes or use the toll-free general purpose lanes

Toll Roads



- ▶ Tolls implemented along all lanes of a roadway
- ▶ Collected using open-road tolling at highway speeds
- ▶ Historically used to build or reconstruct highway infrastructure

Toll Collection

- ▶ Pricing does not utilize toll booths or cash
- ▶ Open Road Tolling (ORT): in-vehicle transponders and/or License Plate Recognition (LPR)
- ▶ Switchable transponders allow for carpool declaration



Signage and Electronic Gantry Examples



TRIANGLE STRATEGIC
TOLLING STUDY

Toll Facility & Barrier Examples

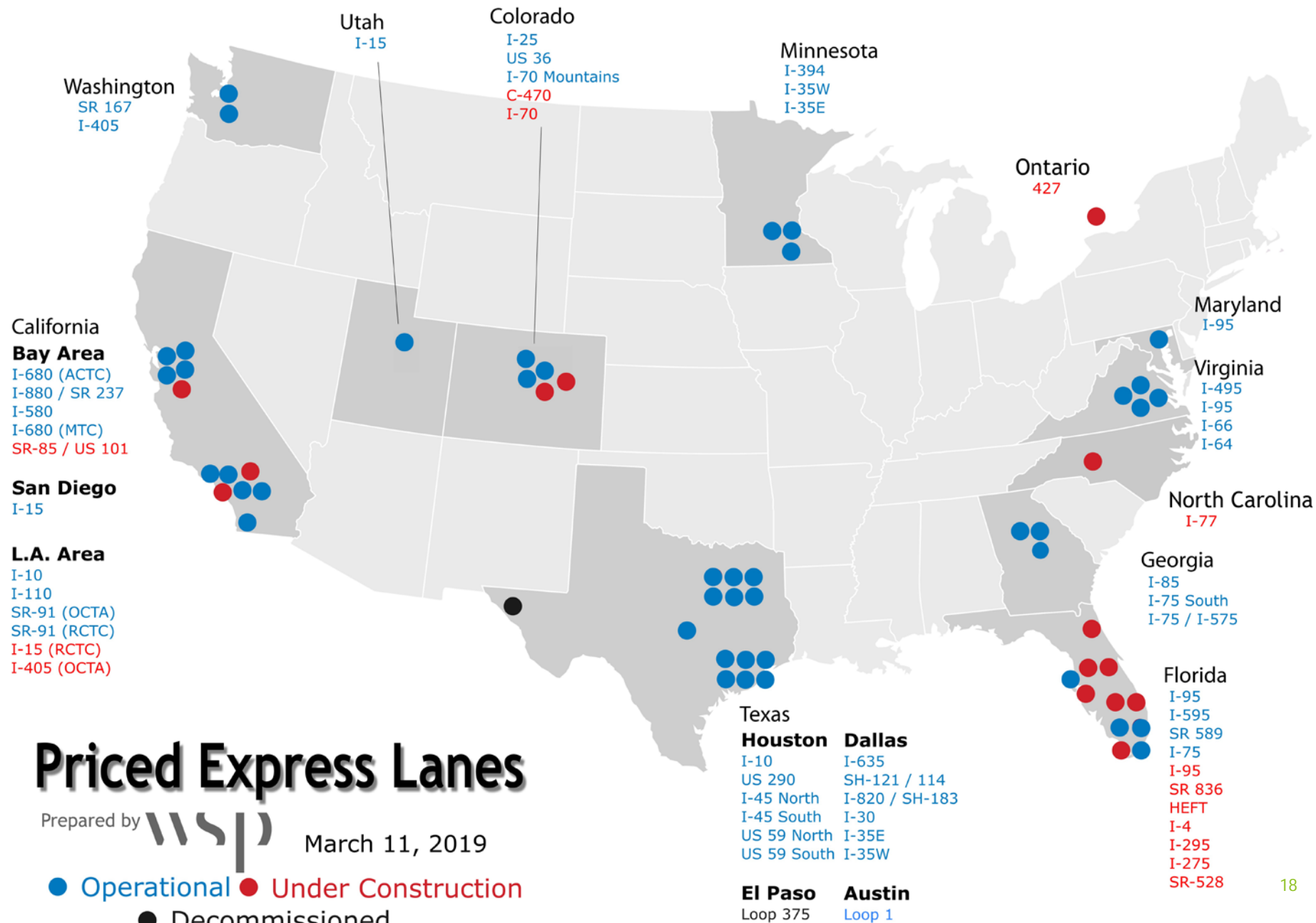


TRIANGLE STRATEGIC
TOLLING STUDY

So Why Would Anyone Pay a Toll?

Toll Roads and Express Toll Lanes provide higher travel speeds, lower and consistent travel times, and a higher quality of trip than toll-free general purpose lanes ...

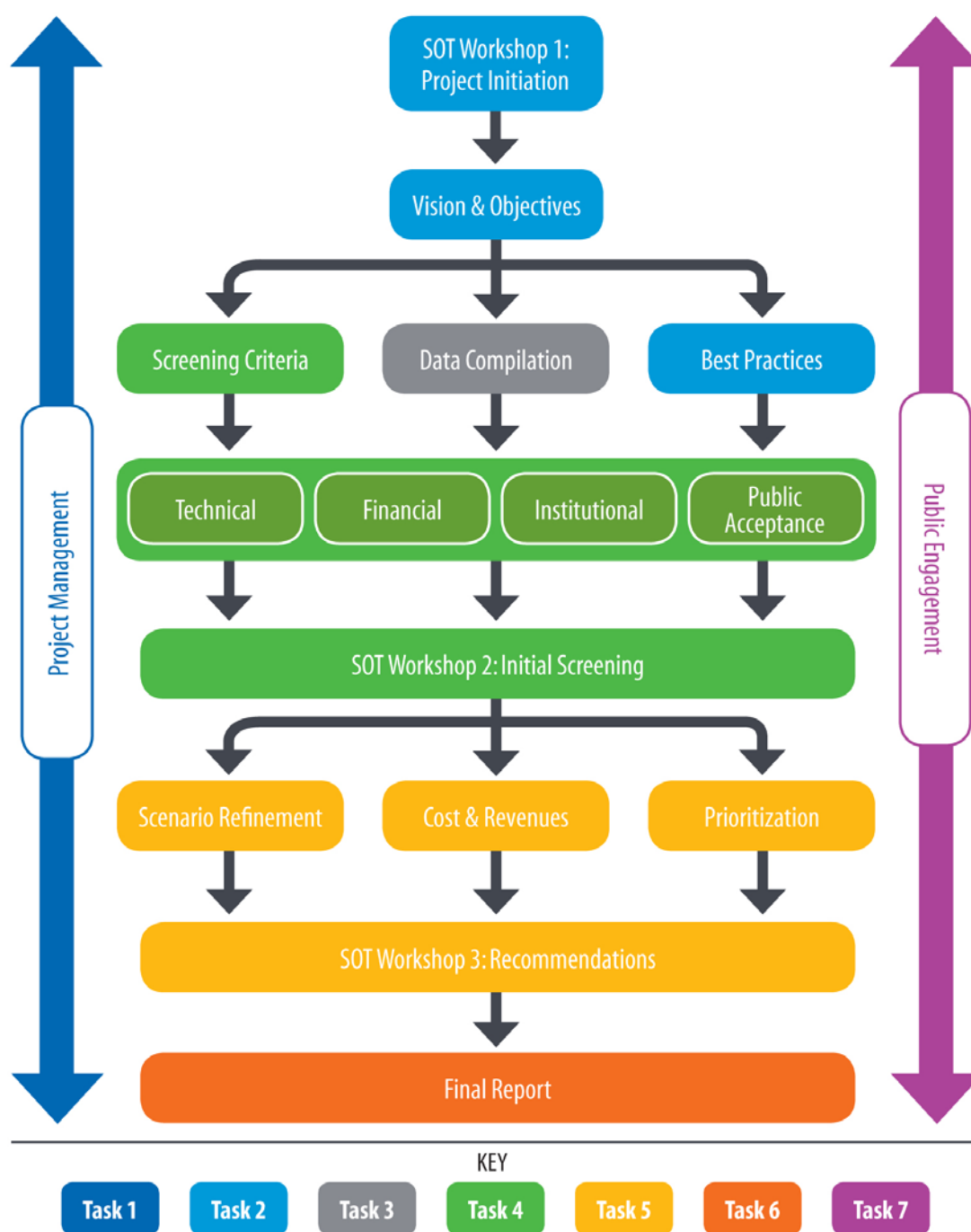
*... as proven by 43 **variably priced** facilities in operation and 13 under construction in 11 states.*



Biggest Misconceptions about Express Lanes

- ▶ Cost to use express toll lanes is high
 - ▶ National peak period toll is less than \$5
- ▶ Heavy cost burden per month
 - ▶ Less than 1% of corridor commuters use every day
 - ▶ National average cost per month is \$10-15/month
- ▶ Express toll lanes will be as congested as toll-free lanes
 - ▶ Provide congestion relief for all travelers
 - ▶ Express lanes managed for 45+ mph at all times
- ▶ Foreign ownership concerns for tolling
 - ▶ 75% of express toll lanes are wholly owned, operated, and controlled by public agencies
 - ▶ Even if P3 concessionaire, state still controls the roadway operations, costs, and revenue through formal P3 contract

STUDY PROCESS & FINDINGS

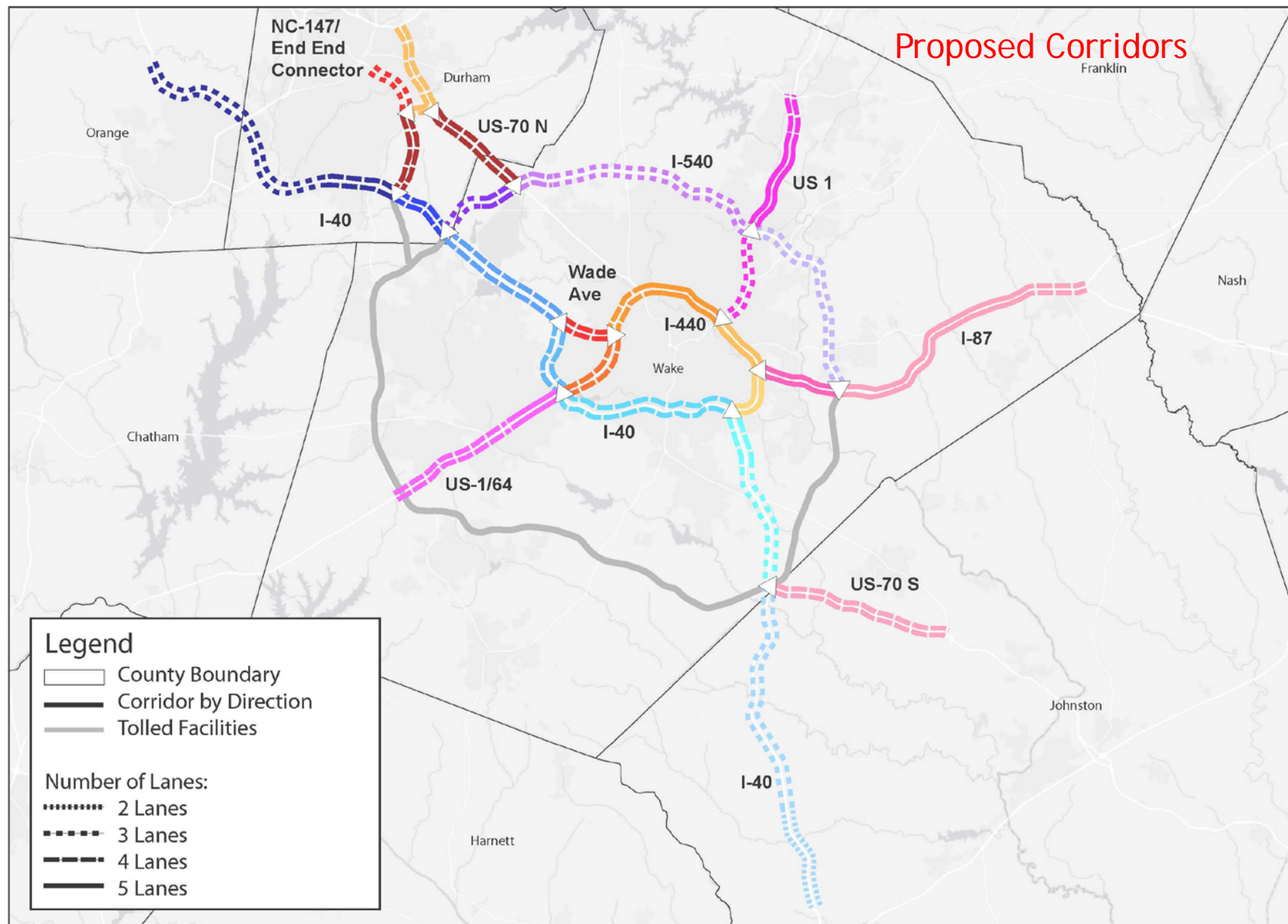


TRIANGLE STRATEGIC
TOLLING STUDY

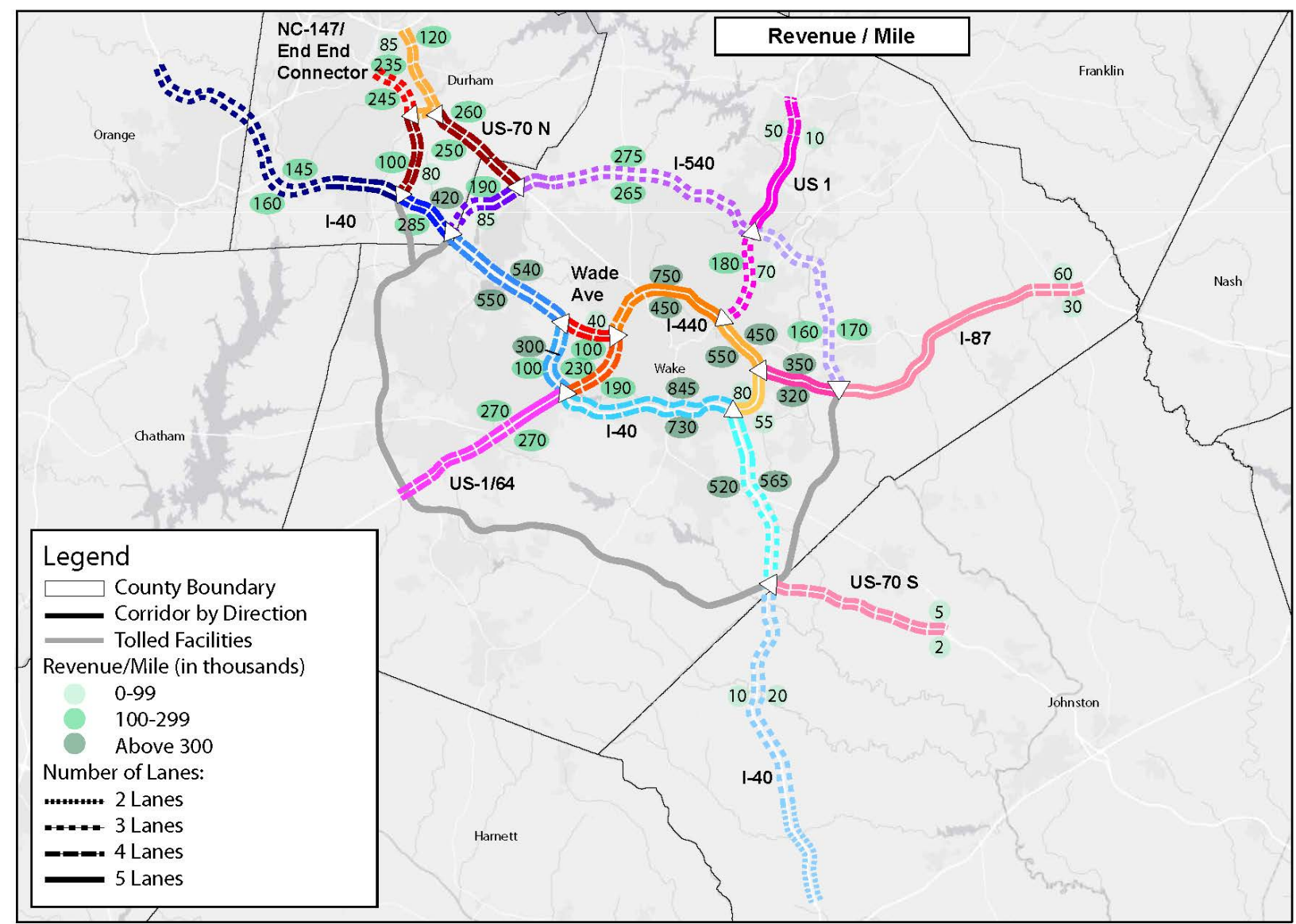
Corridor Screening

- ▶ Estimated 2045 peak-period congestion levels and speeds using Triangle Regional Model (TRM)
- ▶ Examined current PM peak hour congestion using Google
- ▶ Used TRM to generate demand volumes for projected express toll lane network (assuming 2045 MTP build-out)
- ▶ Applied ECONorthwest's Toll Optimization Model using TRM outputs to test future performance of express toll lane facilities

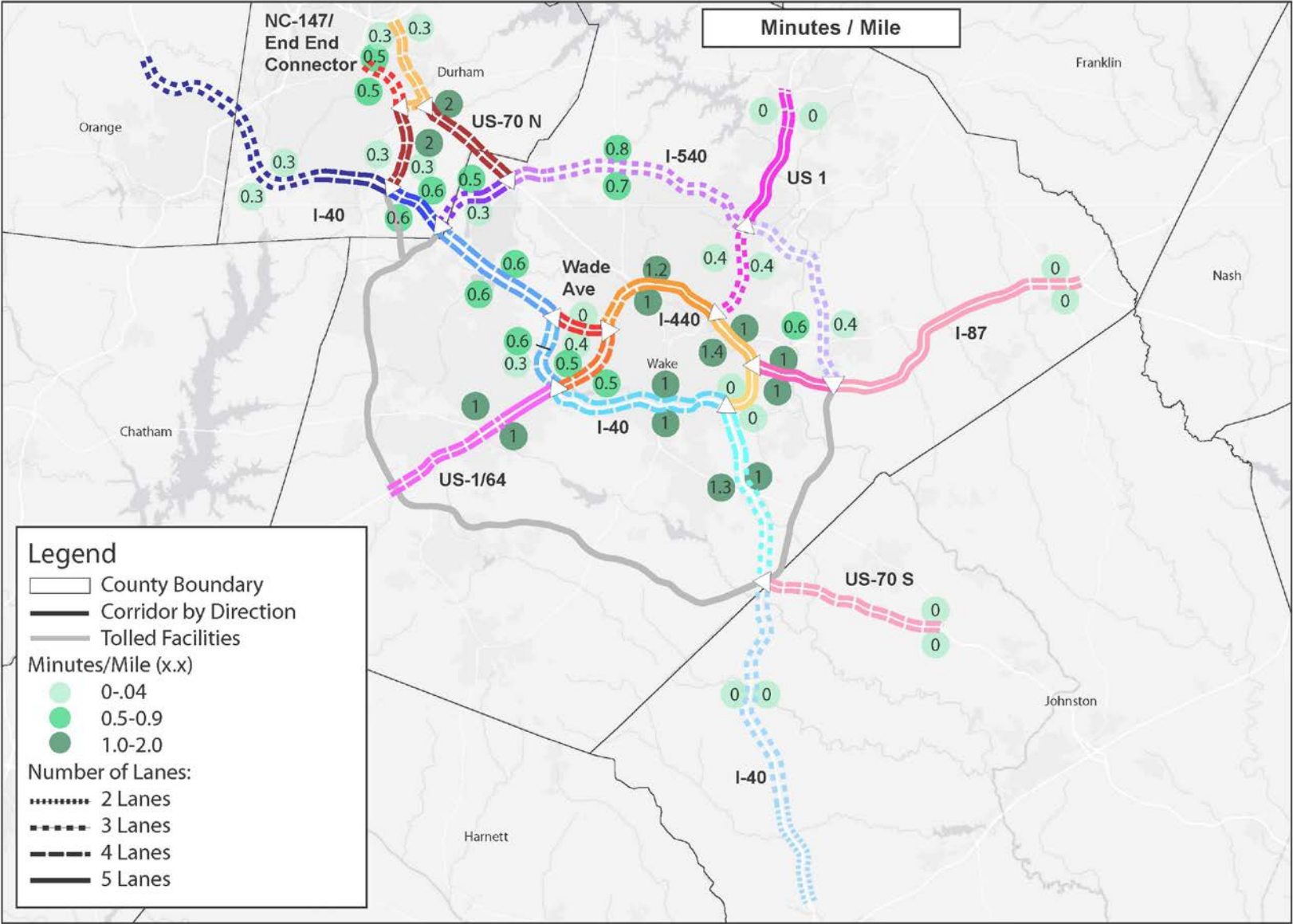
Corridor Screening



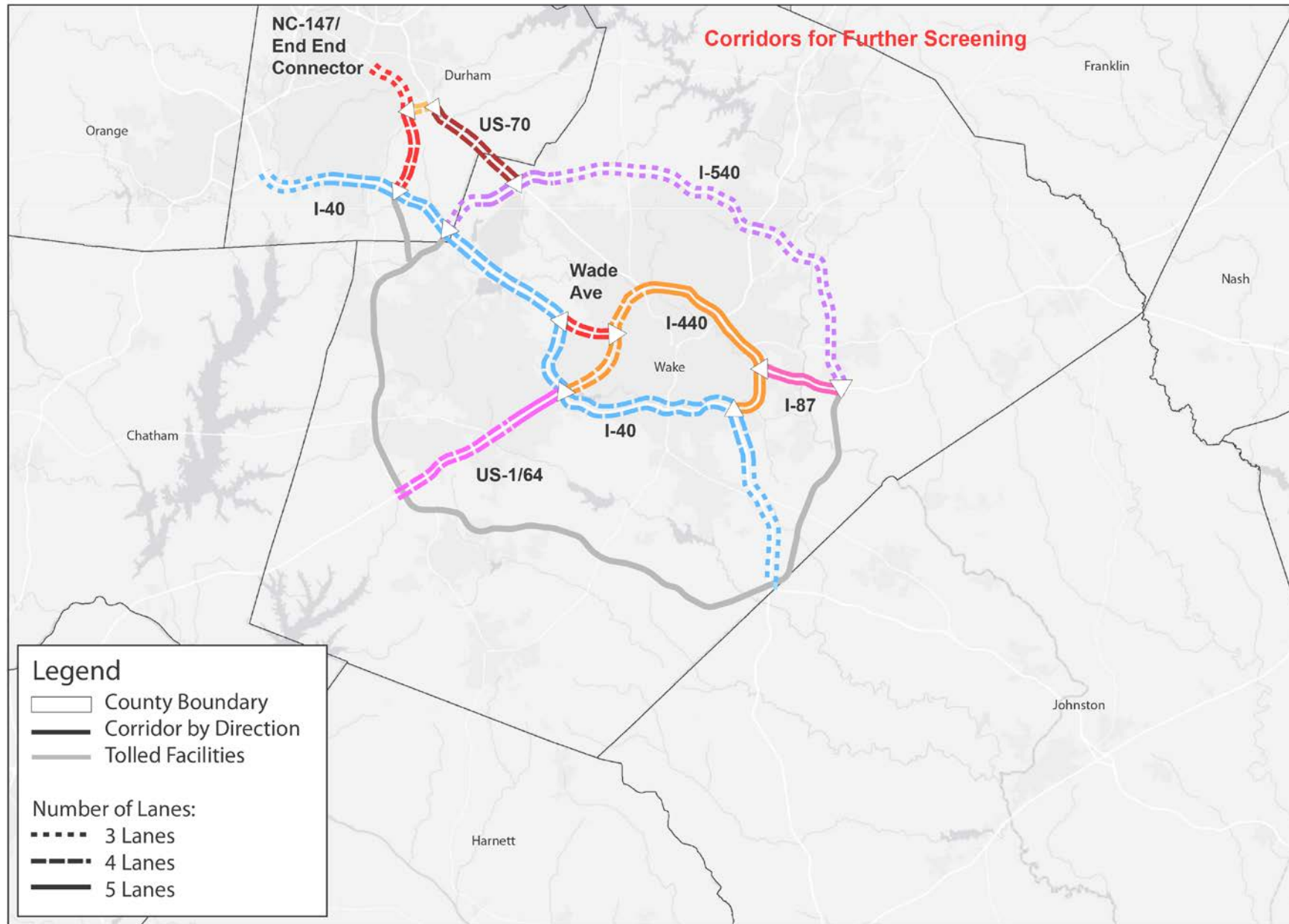
2045 Annual Weekday Gross Revenues/Mile



2045 Peak Hour Travel Time Savings



Corridors for Detailed Evaluation



Detailed Corridor Evaluation

- ▶ Evaluated seven corridors & divided I-40 into 3 segments
- ▶ Analyzed express lane performance using seven factors:
 - Toll revenue
 - Travel time savings
 - Trip dependability
 - Transit supportive
 - Impacts on low income residents
 - Access to jobs
 - Construction costs

Toll Revenue

- ▶ Forecasted by ECONorthwest's TOM
 - Has been in use for over 20 years
 - Reflect prices at various times & under different circumstances
- ▶ Supplied with TRM demand forecasts to test future performance of toll facilities
- ▶ Revenue assumptions are:
 - Future year of 2045
 - All express lane users pay
 - Buses & vanpools use the express lane for free

Travel Time Savings

- ▶ Difference between travel times in the general purpose & express lanes along the same corridor
- ▶ Estimated by TOM using TRM inputs
- ▶ Industry rule-of-thumb is projected travel time savings of half-minute per mile for express lane consideration

Trip Dependability

- ▶ Used FHWA's Buffer Time measure
- ▶ Buffer time is extra time allowed to ensure on-time arrival during times of high traffic.
 - Trip to work when being late could mean job loss
 - Trip to airport when being late means a missed flight
 - Trip to daycare when being late incurs a penalty
- ▶ Express lanes have lower buffer times than general purpose lanes (more travel time certainty)

Cost Estimate Assumptions

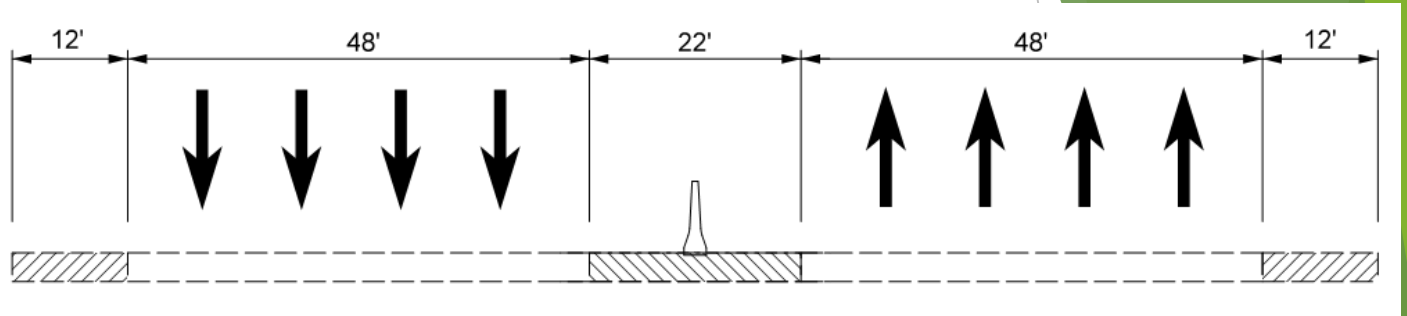
- ▶ “Constrained” Typical Section (lower cost)
 - Fit within existing typical section
 - May include Design Exceptions for lane and shoulder width and sight distance
 - Minimal buffer area
 - Shoulder use (if applicable)
- ▶ “Full Feature” Typical Section (higher cost)
 - Preferred dimensions with minimal Design Exceptions
 - Increases footprint of roadway
 - Higher likelihood of bridge and interchange reconstruction
- ▶ Estimates exclude Direct Connects



I-40 Cross-Sections

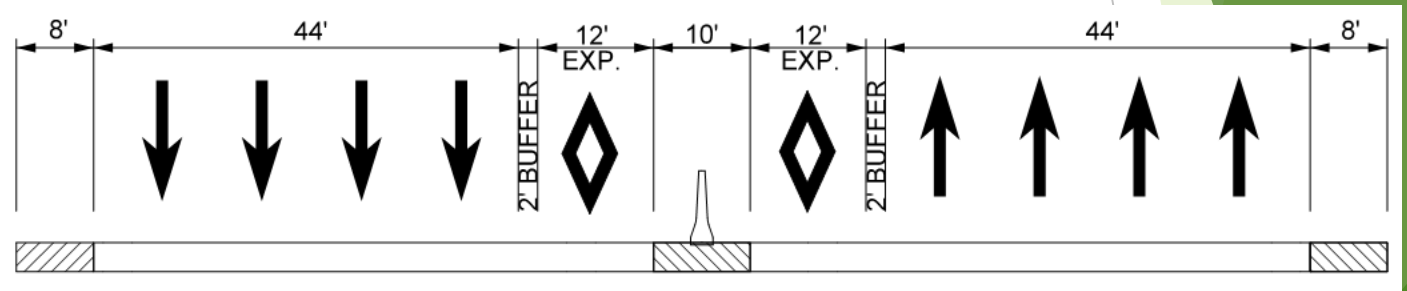
► Existing Typical Section

- 8-Lane w/ 22' median
- Accommodations with I-5111
- Includes I-5701
- 17.1 Miles



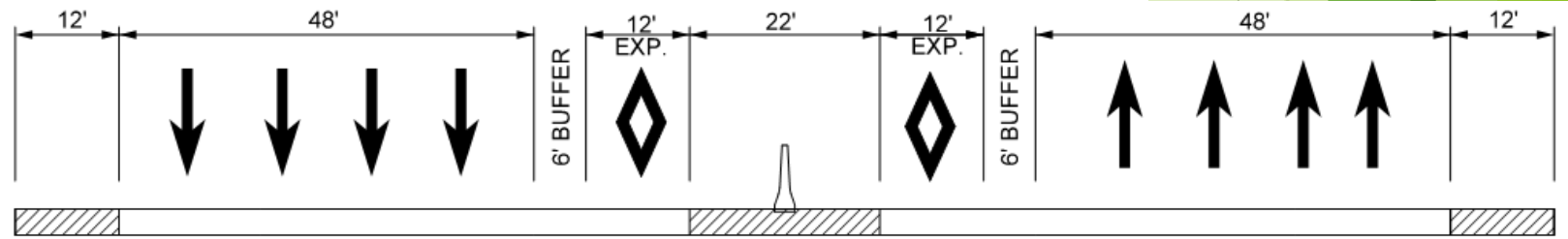
► Constrained

- 8 GP w/ 2 Managed Lanes
- Lane widths reduced to 11'
- Median reduced to 10' w/ 2' buffer
- Reduced outside shoulders



► Full Feature

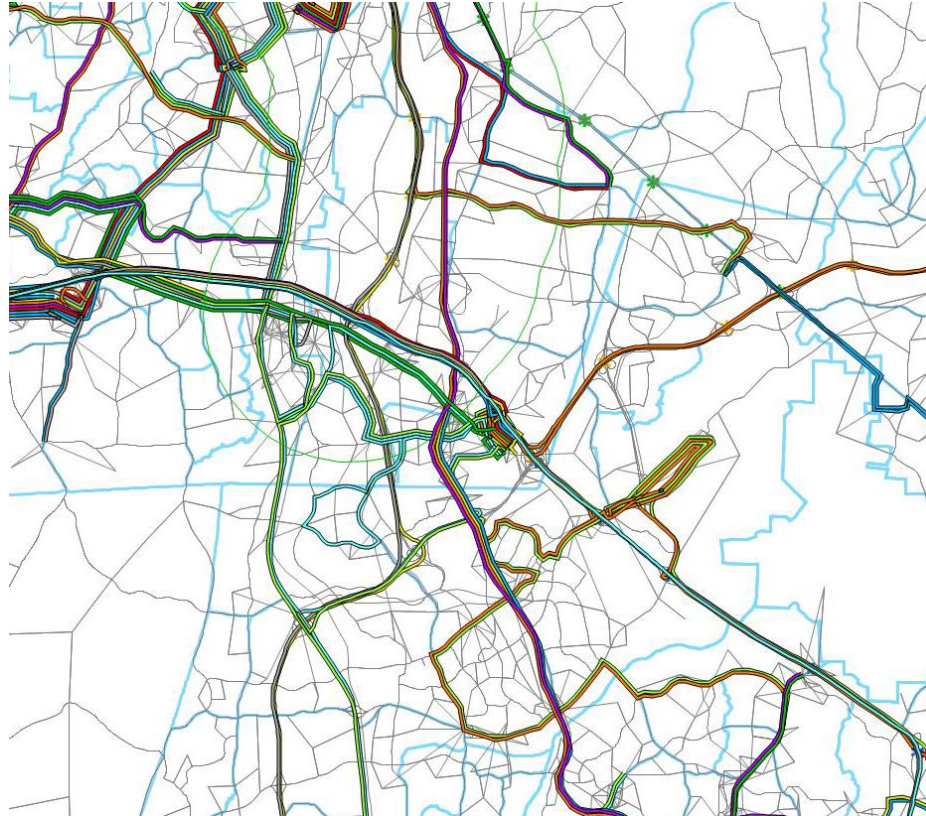
- 8 GP w/ 2 Managed Lanes and 22' median
- 4' to 6' buffer
- 12' outside shoulders



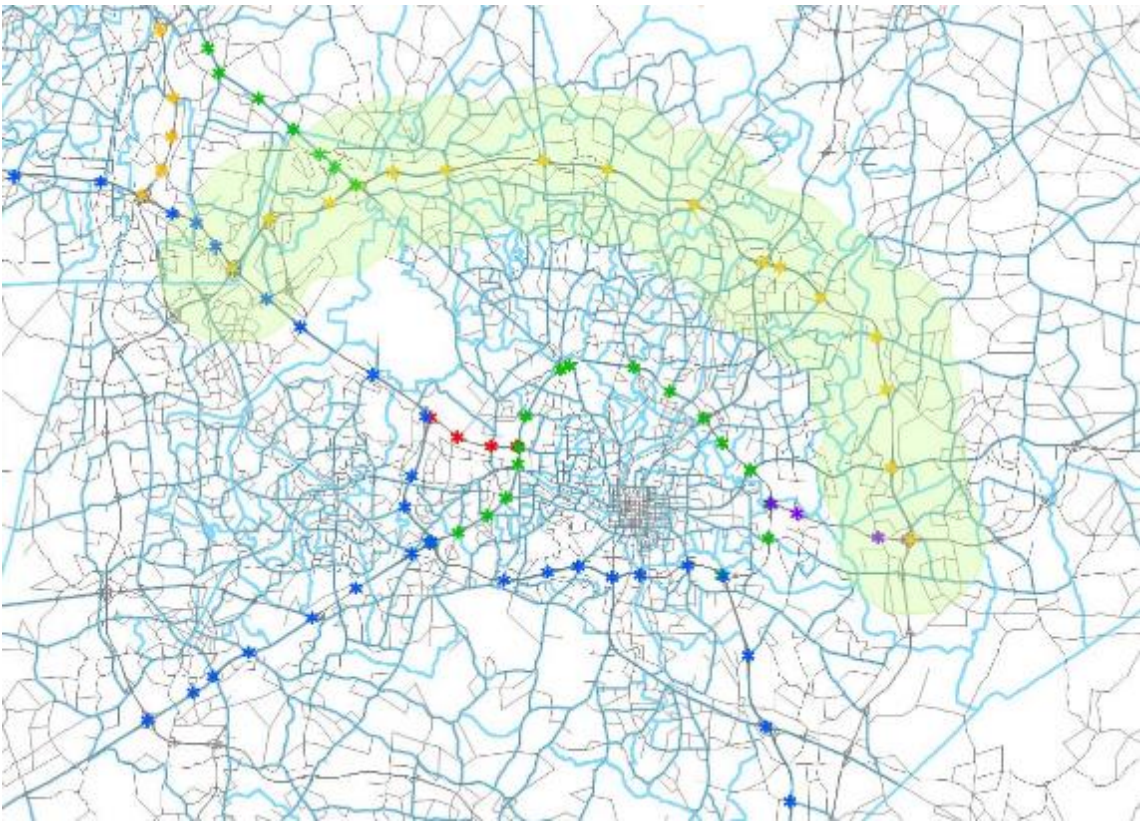
AS ACCOMMODATED WITHIN I-5111

Transit Supportive

- Used TRM 2045 transit routes
- Identified transit routes using a significant portion of the corridor
- Identified Peak and Off Peak hours of operation
- Identified Peak and Off Peak headways
- Calculated number of buses in peak, off peak, and daily



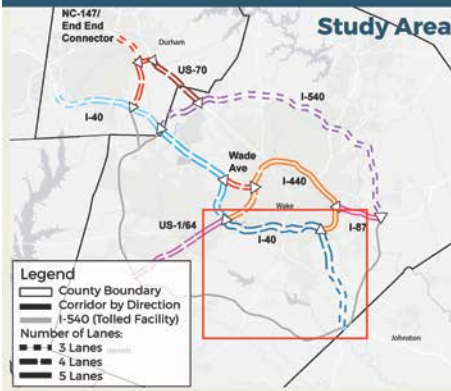
Estimating Low Income Populations and Access to Jobs



- Identified interchange locations for each corridor
- Buffered interchange locations with 2 mile buffer
- Used TRM employment data to capture “jobs” within the buffered area
- Used Census data to identify households below the poverty level
- Summarized statistics for each corridor

TRIANGLE STRATEGIC TOLLING STUDY

I-40: US 1 - US 70



2045 Peak Travel Time Savings General Purpose vs Express Lanes

	AM Peak	PM Peak
North Bound	15 Min	2 Min
South Bound	1 Min	21 Min



2045 Annual Toll Revenues

North Bound	\$695,000/mile
South Bound	\$630,000/mile



Percent of the Population Below the Poverty Level*

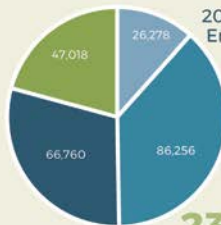
25%

2012 - 2016 ACS Data

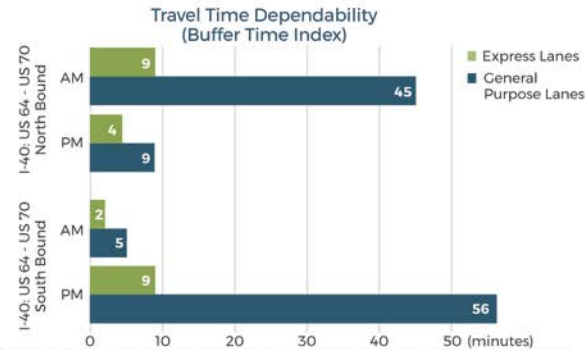


Future Year Daily Buses**

12



230,000 TOTAL EMPLOYEES



Buffer time is the extra time you must plan for when traveling during times of high traffic to make sure you arrive on time. This could be a trip to work, the airport for a flight, or picking up your child from daycare to avoid the penalty for arriving late. If a trip would take 20 minutes with no traffic, and the buffer time is 30 minutes, you should leave 50 minutes before needing to arrive. Using buffer time, you may arrive early, but it is a way of making sure bad traffic won't make you late.

Routes with high buffer times are less predictable than routes with lower buffer times. The fact that express lanes usually have less buffer time than general purpose lanes shows that express lanes have greater certainty in how it will perform from day to day. This is one of the key features of express lanes.

Estimated Construction Cost

\$10 million/mile



Notes:

* Within a 2 mile buffer from selected corridor based off the Triangle Regional Model
** Routes that are along some segment of the corridor

STUDY WRAP-UP

Updating Partners & Stakeholder Groups

- ▶ Closing the Loop on Study Outcomes (May & June)
- ▶ Presentations to:
 - MPO Boards - Joint CAMPO & DCHC MPO Meeting
 - NCDOT NCTA Staff Leadership
 - NCTA Board of Directors
 - NCDOT Board of Transportation (Local Members)
 - NCDOT Local Divisions Staff & Others
 - FHWA
 - WakeUP Wake County
 - Regional Transportation Alliance

TRIANGLE STRATEGIC TOLLING STUDY

NC CAMPO | DCHC MPO | NCDOT

ABOUT THE STUDY

FAQS

DOCUMENT LIBRARY

CONTACT US

NC CAMPO



DCHC MPO



Photo Caption?

What is the Triangle Strategic Tolling Study?

The Triangle's governmental agencies are working together to enhance freeway reliability, reduce congestion, and improve regional mobility through self-sustaining and equitable funding mechanisms.

The Capital Area Metropolitan Planning Agency (CAMPO) and the Durham Chapel Hill Carrboro Metropolitan Planning Organization (DCHC MPO) are working with the North Carolina Department of Transportation (NCDOT) to conduct a study to evaluate the regional transportation network. The North Carolina Turnpike Authority (NCTA) is serving as a resource during the study. The study's purpose is to develop a toll lane and/or managed lane strategy to address current highway congestion and in anticipation of future capacity and funding deficiencies for the Triangle region.

This study will determine the feasibility and necessity of using tolling and traffic management concepts to achieve regional objectives associated with the Metropolitan Transportation Plan (the region's transportation plan that defines projects to be implemented over the next 20 years).

Public and stakeholder outreach efforts conducted as part of this study will inform citizens about toll and/or managed lanes while gathering feedback from Triangle residents. [Learn more about the study](#)

Latest News

AUG 06 2017

A Latin professor at Hampden-Sydney College in Virginia, looked up one of the **more obscure Latin words**, consectetur, from a Lorem Ipsum passage.

AUG 06 2017

Hampden-Sydney College in Virginia, looked up one of the more obscure Latin words, consectetur, from a Lorem Ipsum passage, and going through the cites of the word in classical literature, discovered the undoubtable source.

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Downtown Durham Transportation Study RFP is released - The City of Durham is seeking a highly qualified consultant. ow.ly/ofRo50f9ZzA



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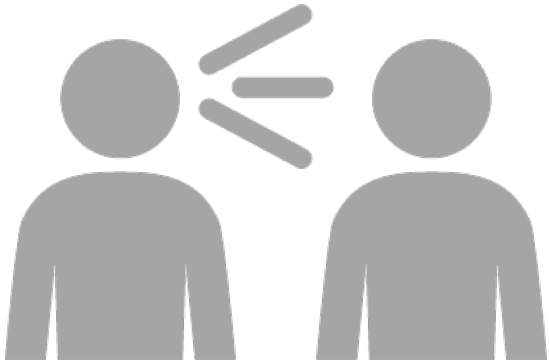
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More Information?



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