

Mitigation Strategies

Congestion Management Process (CMP) and Mobility Report Card (MRC)

CMP Workshop

February 5, 2024

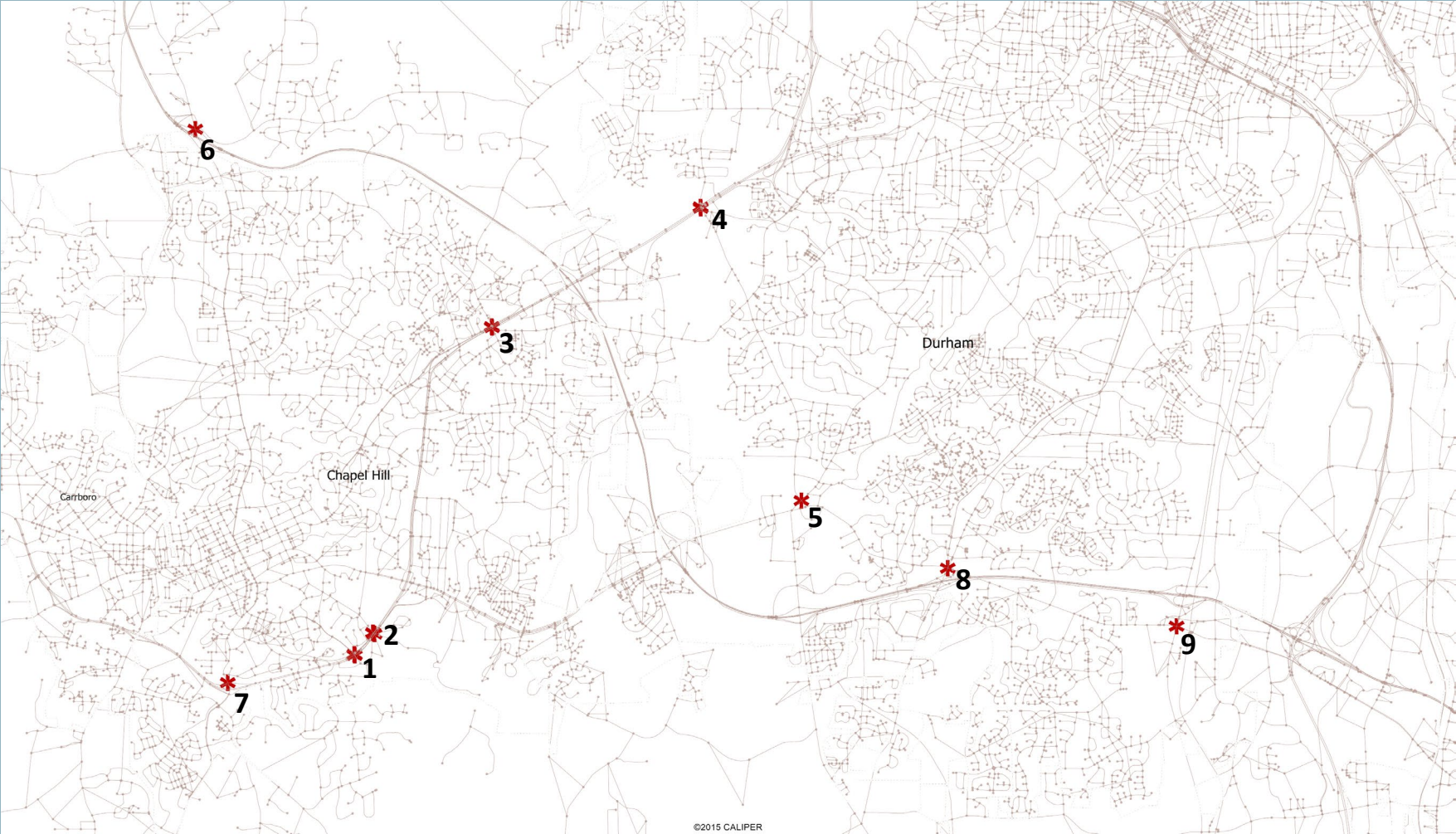
Durham-Chapel Hill-Carrboro MPO



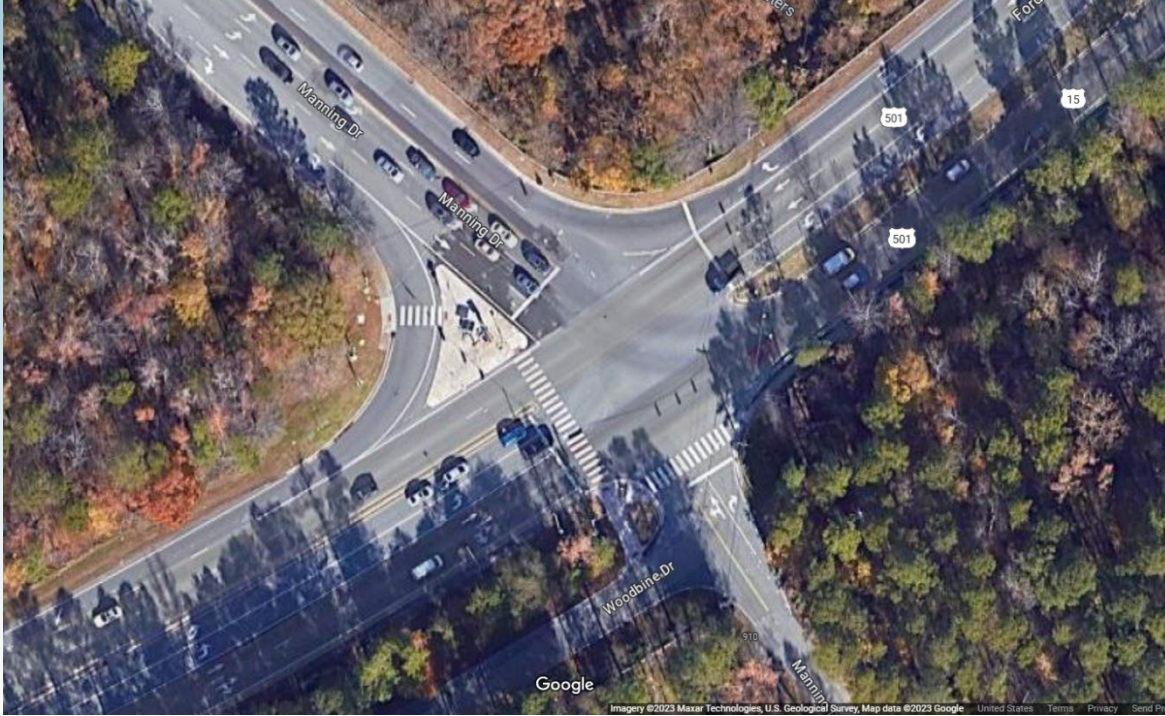
- Congestion Mitigation and Multimodal Improvement Strategies
 - Intersections and Interchange ramps
 - AM or PM Peak Hour LOS D or worse (Existing and Projected)
 - Located along MPO's priority corridors showing unreliable travel times
 - LOTTR ≥ 1.5

Intersection Mitigation Location Map

- 1. US 15-501 at Manning Dr
- 2. US 15-501 at Old Mason Farm Rd
- 3. US 15-501 at Sage Rd
- 4. US 15-501 at Garrett Rd
- 5. NC 751 at Garrett Rd
- 6. I-40 at NC 86
- 7. NC 54 at NC 86
- 8. NC 54 at Fayetteville Rd
- 9. NC 54 at NC 55



US 15-501/NC 54 at Manning Dr



- Reallocate time to southbound signal phase
 - changes PM peak hour LOS from F to E
- Change northbound signal phasing to permissive only instead of split
 - changes PM Peak hour LOS from F to D
- Reconfigure to modified Reduced Conflict Intersection (RCI) but still allow southbound dual left turn movement on Manning Dr
 - changes PM peak hour LOS from F to C/D
- Multimodal improvements
 - Provide/confirm minimum pedestrian crossing times
 - Reduce cycle length from 180 sec. to 140 sec.
 - Alternative C (RCUT) will also reduce cycle length and crossing distances

US 15-501/NC 54 at Carmichael St/Old Mason Farm Rd



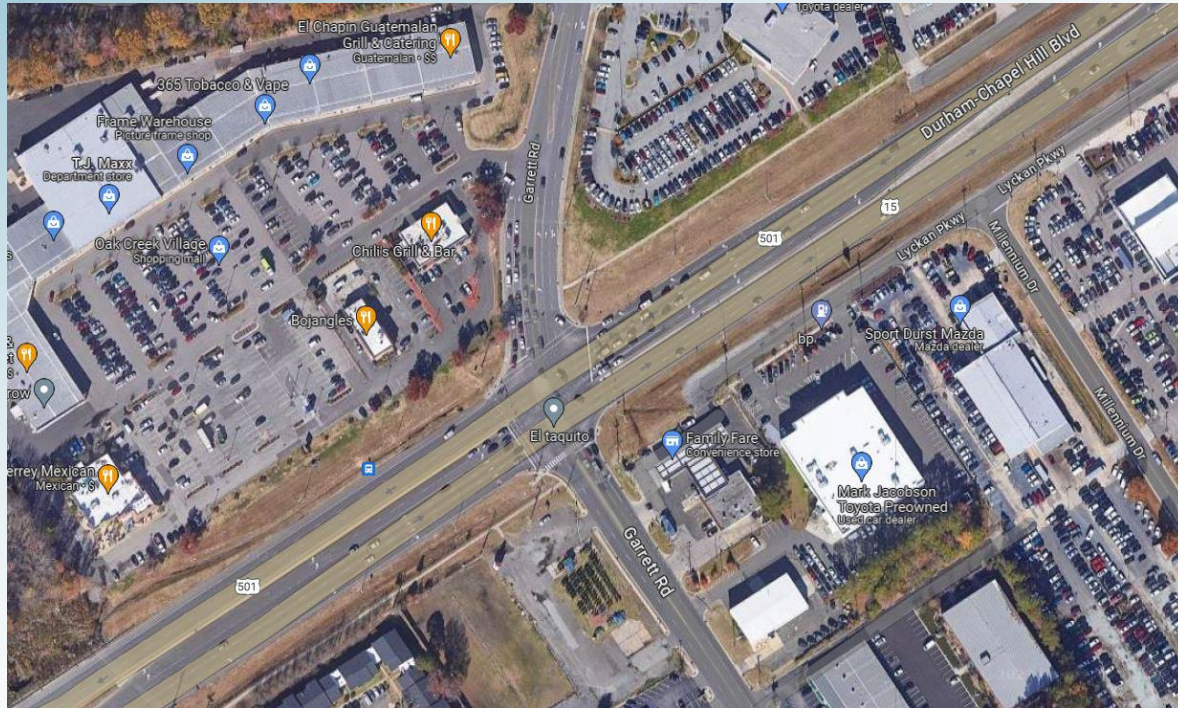
- Change Old Mason Farm Road eastbound/westbound approaches to single phase (permissive left turns) and change lane configuration to left + shared through/right on eastbound/westbound approaches.
 - Changes results to LOS D in the AM peak and LOS C in the PM peak
- In addition to above strategy, relocate Fern Ln approach and remove from intersection
 - no additional affect on LOS
- Multimodal improvements
 - Extend medians on US 15/501/NC 54 approaches to provide pedestrian refuges/two-stage crossings
 - In combination with Alternatives A or B (RCUT), reduce cycle length from 180 sec. to 150 sec.

US 15-501/NC 54 at Old Durham Rd/Sage Rd



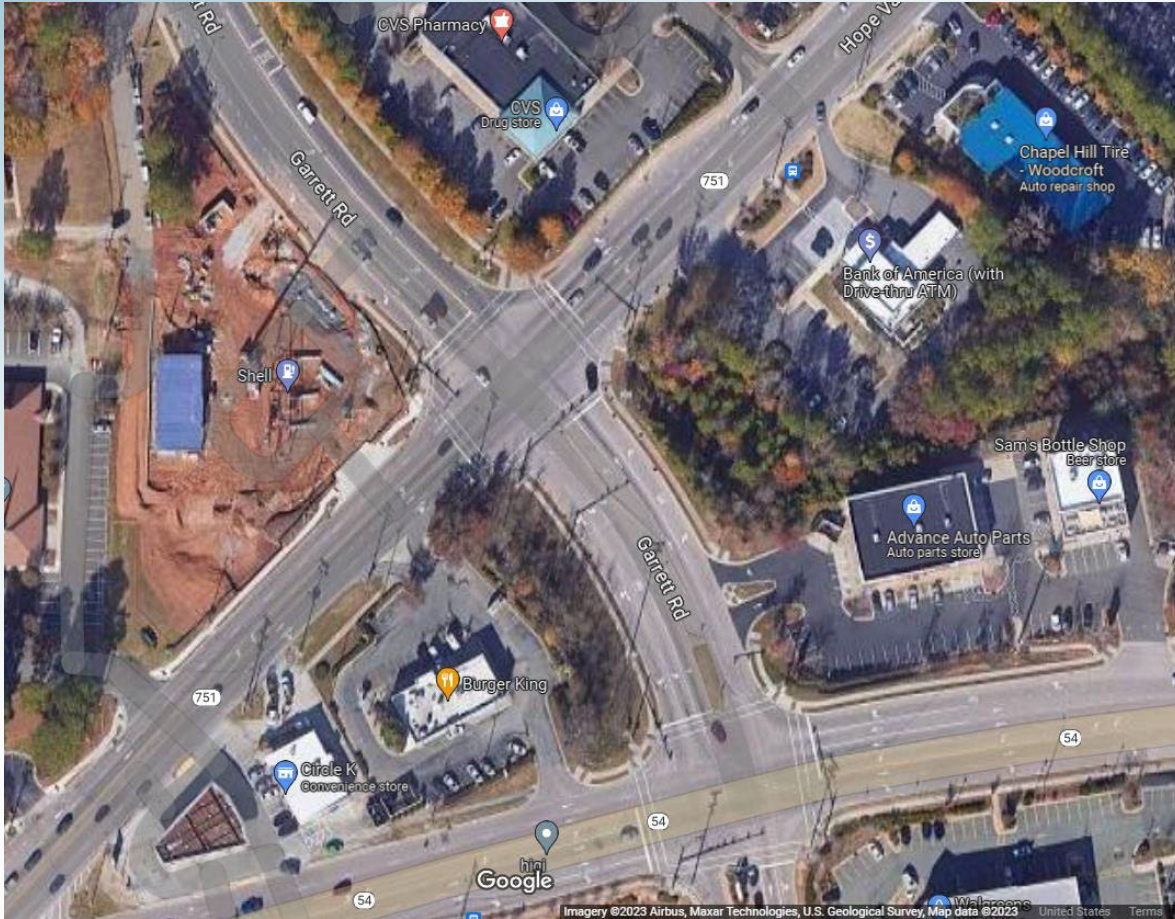
- Add one through lane in either direction of US 15/501
 - AM/PM peak hour LOS D
- Convert to RCI
 - AM peak hour LOS D, PM peak hour LOS C
- Multimodal improvements
 - Provide crosswalks on all approaches and connect to sidewalk network on Old Durham Rd
 - Extend medians on US 15/501 approaches to provide pedestrian refuges/two-stage crossings
 - Provide pedestrian signal heads and incorporate minimum crossing times into signal plan

US 15-501/NC 54 at Garrett Rd



- Increase cycle length
 - PM peak hour LOS D
- Convert to RCI
 - PM peak hour LOS C
- Multimodal improvements
 - Provide crosswalk/pedestrian signal head on east leg
 - Update minimum pedestrian crossing times
- Note the intersection is slated to be upgraded to an interchange (U-5717)

Hope Valley Rd/NC 751 at Garrett Rd



- Change left turn phasing on northbound Garrett Rd to protected movement
 - changes PM LOS from F to E
- Prohibit left turns on northbound Garrett Rd
 - changes PM LOS from F to D
- Multimodal improvements
 - Provide minimum pedestrian crossing times
 - Provide curb extensions on northwest and southeast quadrants to reduce turning speeds
 - Alternatives A and B (RCUT) will both reduce conflicts between turning vehicles and pedestrians

I-40/NC 86



- Increase cycle length
 - Changes projected AM LOS from E to D
- Other potential improvements as part of I-40 widening (under construction)

NC 54/NC 86



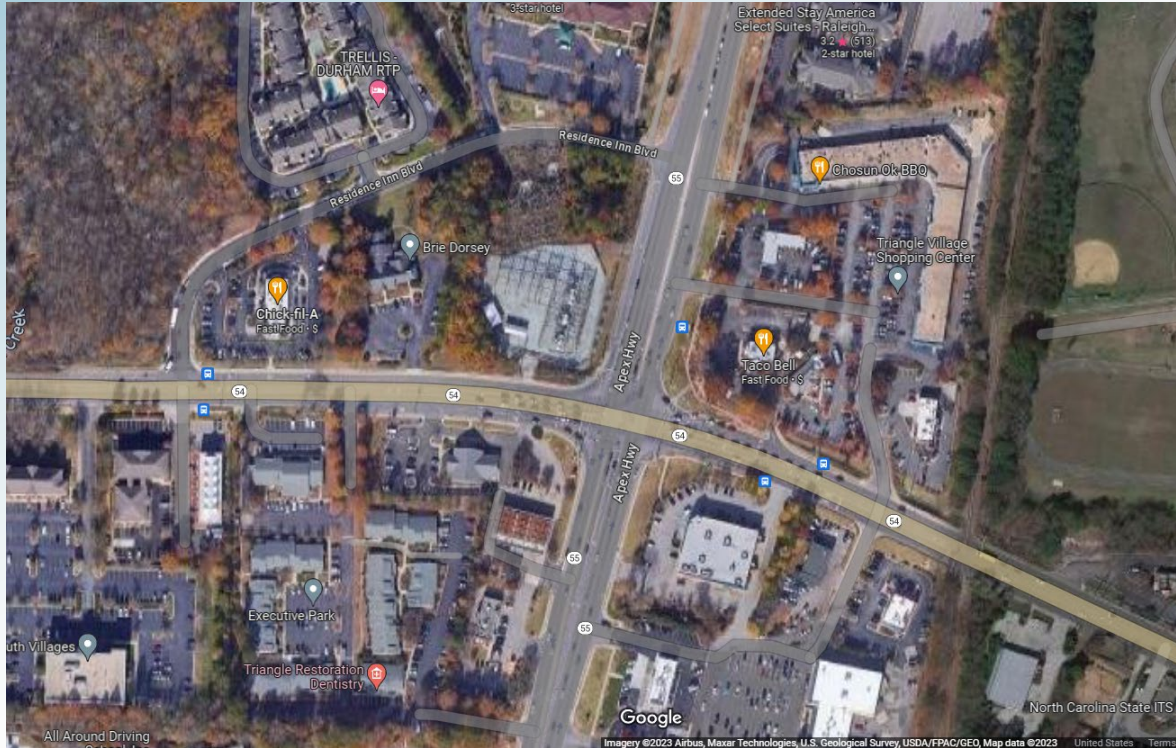
- Adjust signal timing
 - changes projected PM LOS from E to D

NC 54/Fayetteville Rd



- Add dual WB left turn lanes
 - Changes projected PM LOS from E to D
- Convert to median U-turn (prohibit left turns; U-turns on NC 54 east and west)
 - Changes projected PM LOS from E to C
- Multimodal improvements
 - Provide/confirm minimum pedestrian crossing times
 - Extend medians on north and south legs to provide pedestrian refuges/two-stage crossings

NC 54/NC 55



- Add dual eastbound lefts
 - changes AM LOS from E to D
- Quadrant road (use Residence Inn Blvd in NW quadrant, remove left turns from main intersection)
 - changes LOS from E to C in AM and D to C in PM
- Multimodal improvements
 - Reduce lane widths, extend medians, and provide pedestrian refuges/two-stage crossings on north and south legs.
 - Alternative B (quadrant) will remove left turn lanes on all legs and can therefore provide additional median refuge space and/or reduce crossing distances on all legs

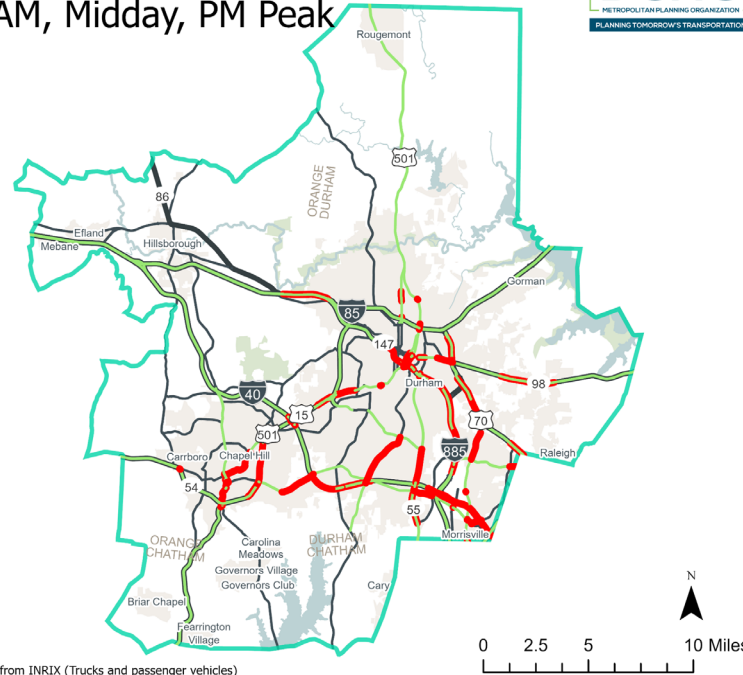
Other locations

- Several other intersection and interchange locations were evaluated but no mitigations have been recommended due to acceptable LOS

Corridor Mitigation Location Map

1. I-40: I-885 to Wake County Line
2. I-40: NC 751 to NC 54
3. I-885/NC 147: TW Alexander Dr to Briggs Ave
4. NC 147: Duke St to Swift Ave
5. US 70: Miami Blvd to Pleasant Dr
6. US 15/501 Bus: US 15/501 to NC 751
7. US 15/501: NC 54 to Estes Dr
8. NC 54: I-40 to Barbee Chapel Rd
9. NC 55: NC 54 to MLK Blvd
10. NC 86: Downtown Chapel Hill

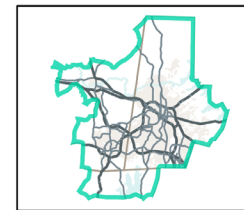
Travel Time Reliability
Across AM, Midday, PM Peak
2019



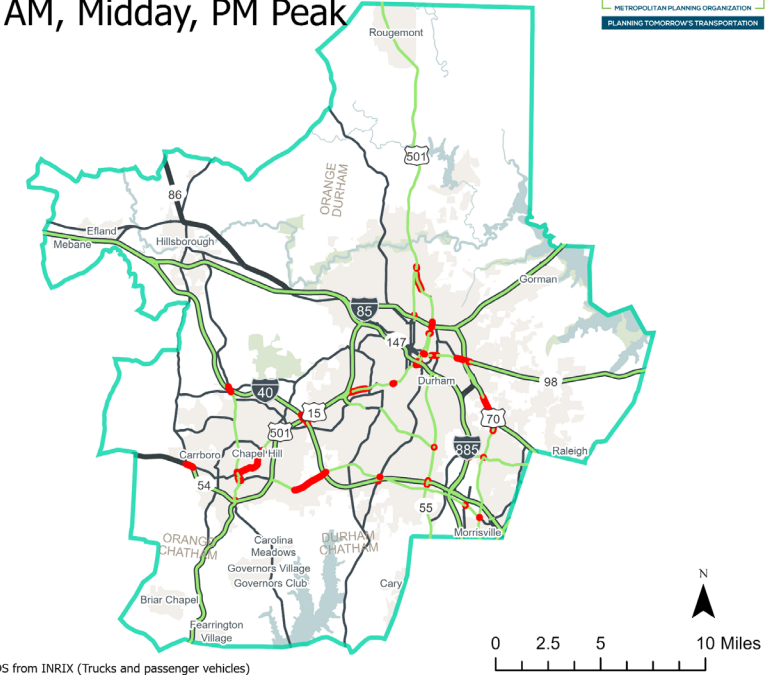
Data Source: NPMRDS from INRIX (Trucks and passenger vehicles)

Travel Time Reliability (AM or MD or PM Peak)

- Reliable (LOTTR < 1.50)
- Unreliable (LOTTR >= 1.50)



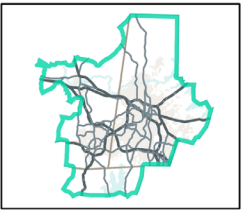
Travel Time Reliability
Across AM, Midday, PM Peak
2021



Data Source: NPMRDS from INRIX (Trucks and passenger vehicles)

Travel Time Reliability (AM or MD or PM Peak)

- Reliable (LOTTR < 1.50)
- Unreliable (LOTTR >= 1.50)



Potential Corridor Mitigation Strategies

1. I-40 from I-885 to Wake County Line:

- LOTTR > 1.5 in 2019 PM
- Potential mitigation strategies:
 - Ramp metering
 - Modernize ramps and accel/decel lanes

2. I-40 from NC 751 to NC 54:

- LOTTR > 1.5 in 2019 AM
- Potential mitigation strategies:
 - Ramp metering
 - Add auxiliary lanes
 - Modernize ramps and accel/decel lanes

Potential Corridor Mitigation Strategies

3. I-885/NC 147 from Alexander Dr to Briggs Ave:

- LOTTR > 1.5 in 2019 AM (LOTTR < 1.5 in 2021 AM and PM)
- Potential mitigation strategies:
 - Modernize ramps and accel/decel lanes
 - Reassess data post-2022 after East End Connector opening

4. NC 147 from Duke St to Swift Ave:

- LOTTR > 1.5 in 2019 PM
- Potential mitigation strategies:
 - Modernize ramps and accel/decel lanes
 - Reassess data post-2022 after East End Connector opening

Potential Corridor Mitigation Strategies

5. US 70 from Miami Blvd to Pleasant Dr:

- LOTTR > 1.5 in 2019 PM
- Potential mitigation strategies:
 - Access management/restrict left-turning movements at driveways and intersections
 - Reassess data post-2022 after East End Connector opening

6. US 15/501 Business from US 15/501 to NC 751:

- LOTTR > 1.5 in 2019 PM
- Potential mitigation strategies:
 - Add RCIs/redirect left turns
 - Add sidewalk/paths and crosswalks where missing

Potential Corridor Mitigation Strategies

7. US 15/501 from NC 54 to Estes Dr:

- LOTTR > 1.5 in 2019 PM
- Potential mitigation strategies:
 - Add RCIs/redirect left turns
 - Fill in sidewalk/path connectivity

8. NC 54 from I-40 to Barbee Chapel Rd:

- LOTTR > 1.5 in 2019 PM
- Potential mitigation strategies:
 - Expand to 6 lanes
 - Add RCIs/redirect left turns
 - Extend shared-use path

Potential Corridor Mitigation Strategies

9. NC 55 from NC 54 to MLK Blvd:

- LOTTR > 1.5 in 2019 PM
- Potential mitigation strategies:
 - Access management/restrict left-turning movements at driveways and intersections
 - Fill in sidewalk gaps and provide crosswalks where missing at intersections

10. NC 86 in Downtown Chapel Hill:

- LOTTR > 1.5 in 2019 AM
- Potential mitigation strategies:
 - Multimodal safety improvements
 - Built-out urban area--No congestion management strategies identified

Project Contacts:

Mushtaqur Rahman
m.rahman@baselinemobility.com
919-452-5188

Yanping Zhang
yanping.zhang@dchcmo.org
919-560-4603 ext. 36431