

Traceability and Transparency in Transportation Planning with GIS

Caitlyn Meyer – GeoDecisions

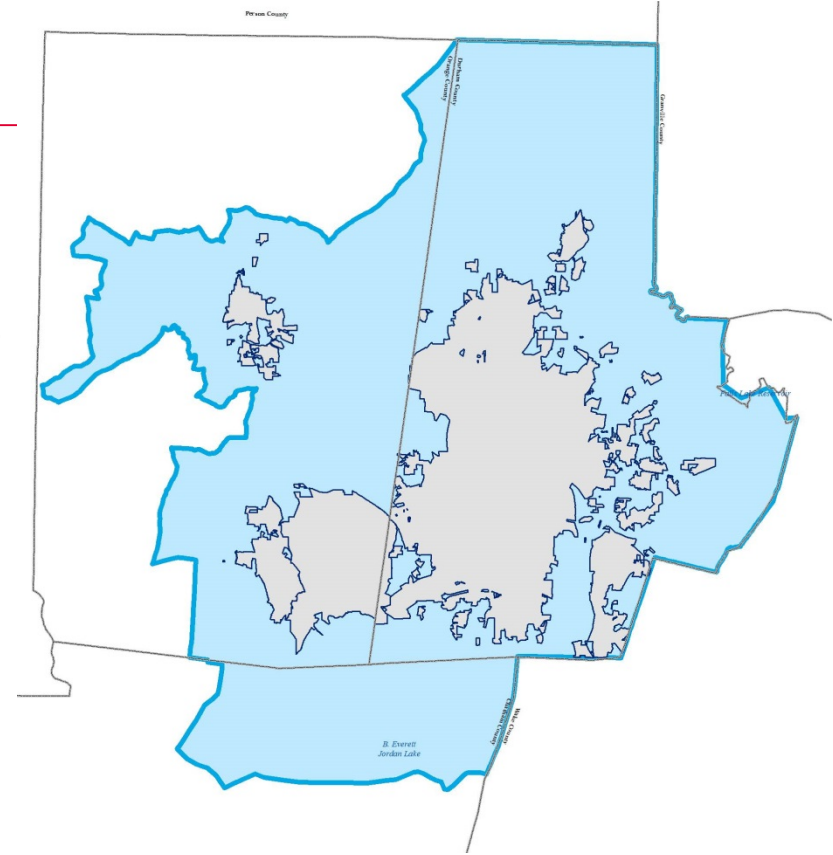
Aaron Cain – Durham Chapel Hill Carrboro MPO

Thursday, April 25, 2019



DCHC MPO

- The DCHC urbanized area includes:
 - Durham County (entire county)
 - a portion of Orange County including the Towns of Chapel Hill, Carrboro, and Hillsborough
 - Northeast Chatham County
- With rapid growth came a need to more efficiently manage and provide public information about our TIP



DCHC Project Goals

1. Provide transparency into the transportation planning process and funding
2. Be able to track a project across the transportation planning lifecycle



Original Site - Wins

- Established public facing site for information sharing
- Incorporated a UI for Admin users to update project records in the TIP database

DCHC
Metropolitan Planning Organization
FUNDING DATABASE

DURHAM - CHAPEL HILL - CARRBORO

OVERVIEW PROJECTS REPORTS ACCOUNT - MAP

Search:

Welcome to the DCHC MPO's Interactive Project Website

This application is a web-based database that tracks transportation-related activities for the DCHC MPO. All activities and projects included in the MPO's Metropolitan Transportation Plan (MTP), Transportation Improvement Program (TIP), and Unified Planning Work Program (UPWP) are included. Please start by using the general Search to look for a project or activity that you are interested in learning more about. For more comprehensive querying, please use the Reports page or the Advanced Search.

Interactive Regional Transportation Project Map

Project Quick Facts

There are currently **291** projects being tracked in the database.

Instructions

Using the Reports

The Reports navigation button, located in the menu bar, can be used to access a series of pre-defined searches that have been created based on the most popular requests for project information.

Using the General and Advanced Search

To search for a specific project by TIP project # or TIP project name, enter the project # or name into the text box located in the top right corner of the page and then click the magnifying glass to execute the search.

An Advanced Search is available by clicking on the down arrow button that is located to the right of the simple search, and selecting "Advanced Search" from the drop-down menu. The Advanced Search allows users to define their own search criteria and query all projects in the database based on the criteria selected from each drop-down list.

Contact
© Copyright 2019 - DCHC MPO
101 City Hall Plaza, Durham, NC 27701
919.560.4366
[Site Map](#)

If you have any trouble or want to give feedback on the application, the contact information for the DCHC MPO can be found at [the DCHC MPO website](#).

DURHAM - CHAPEL HILL - CARRBORO
DCHC
Metropolitan Planning Organization
FUNDING DATABASE

Original Site - Limits

- Only included TIP Projects – No MTP or CTP
- Limited map interface
- General slowness of app
- Behind the scenes – Disjointed business processes for maintaining non-TIP program data
- Behind the scenes – Ongoing investment with low return

DURHAM - CHAPEL HILL - CARRBORO

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FUNDING DATABASE

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TIP Redesign – Phase 1

- Initial evaluation of the current system
- Phase 1 began August 2018
- Scope:
 - Code review and refactoring
 - New data integration
 - Updated UI to expose new data
 - New mapping interface



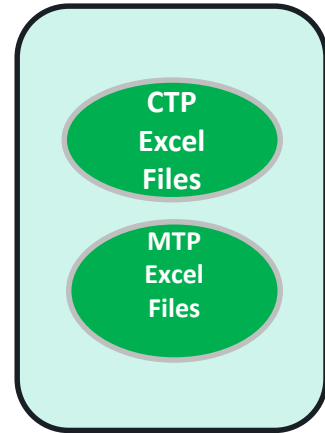
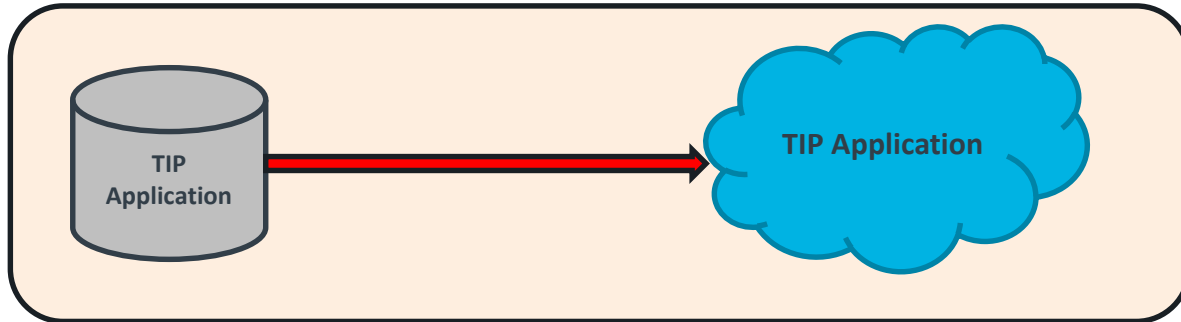
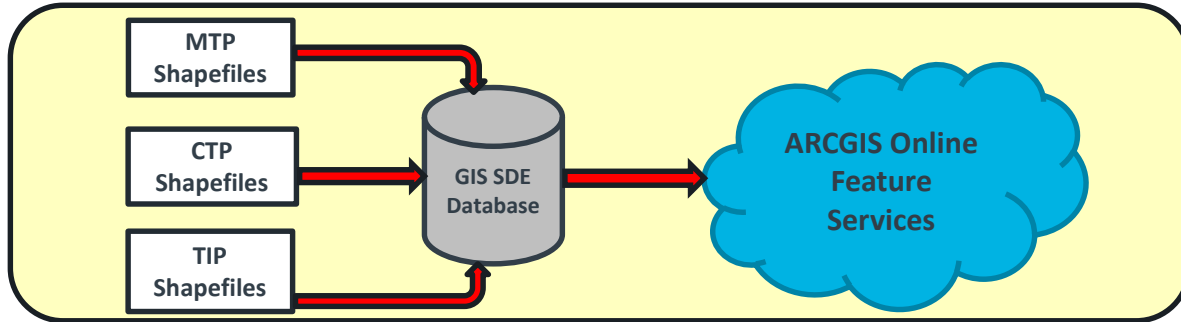
Task 1 – Code Review and Refactoring

- Issues:
 1. Pages not loading or loading very slowly
 2. Existing reports load slowly given the scale of the data
 3. Users experience excessive logouts that disrupt their workflow
- Implemented fix into production in October 2018

Lesson Learned

Make sure you are working
on the latest code copy!

Review of Current Setup



Limitations with the Current Setup

1. Data silos managed separately
2. No CTP or MTP data available in application
3. Shapefiles are updated and then must be imported to DB by another party
4. Excel and shapefiles hold much of the same data but different fields, values not always consistent
5. No unique ID's on some data
6. No interaction of feature services and application

Database Redesign

Goal = Be able to track a project across lifecycle

1. Incorporation of CTP/MTP
2. Establishment of unique/primary keys
3. Create relationships between CTP/MTP/TIP
4. Data conversion from old formats into new formats
5. Data integrity checks/foreign keys
6. Reduction of redundant data editing

Application Redesign

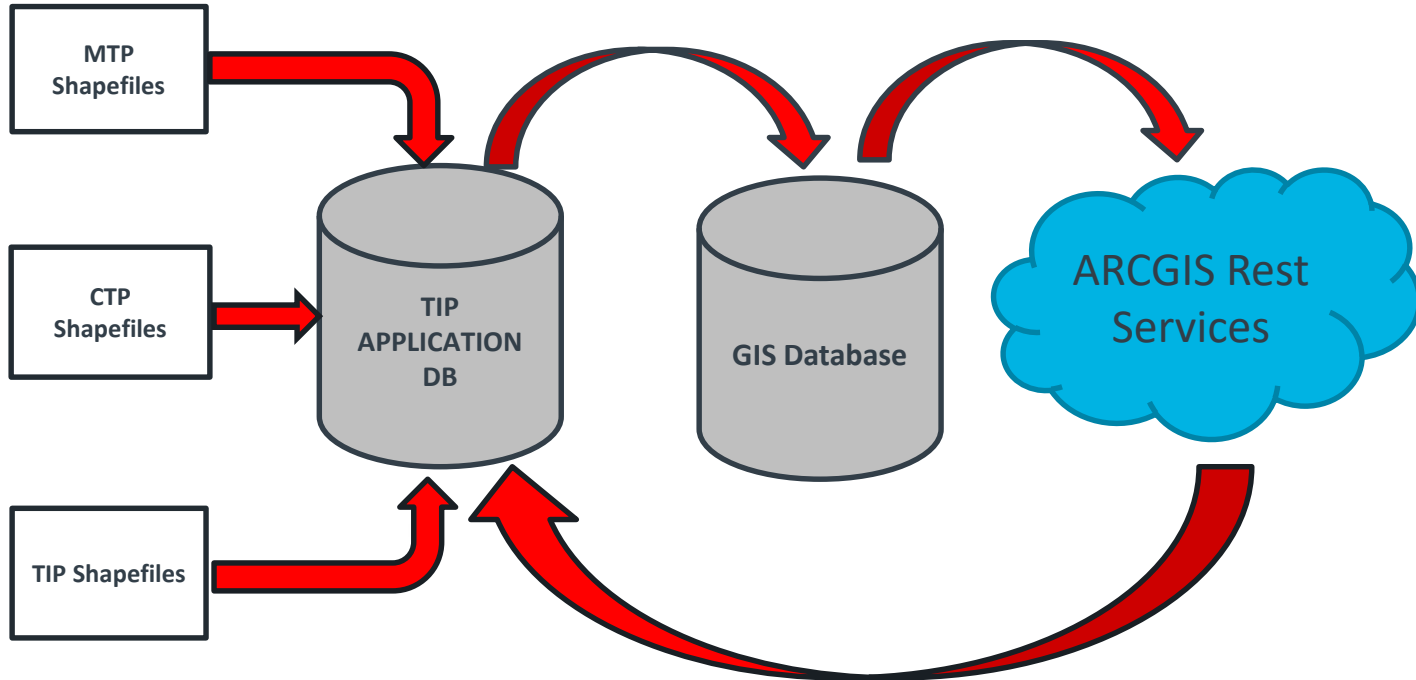
Goal = Increase public transparency

1. Create in TIP Environment
 - No need to recreate the wheel
2. Enhance mapping interface (prominence and functionality)
3. Allow projects (of all types) to be managed in UI
4. Expose higher quality/quantity of data

Front End Stack

- Esri ArcGIS JS Api 4.9
- JavaScript
- JQuery
- HTML
- CSS
- C#
- ASP.NET Razor
- Entity Framework 6.0

New Environment



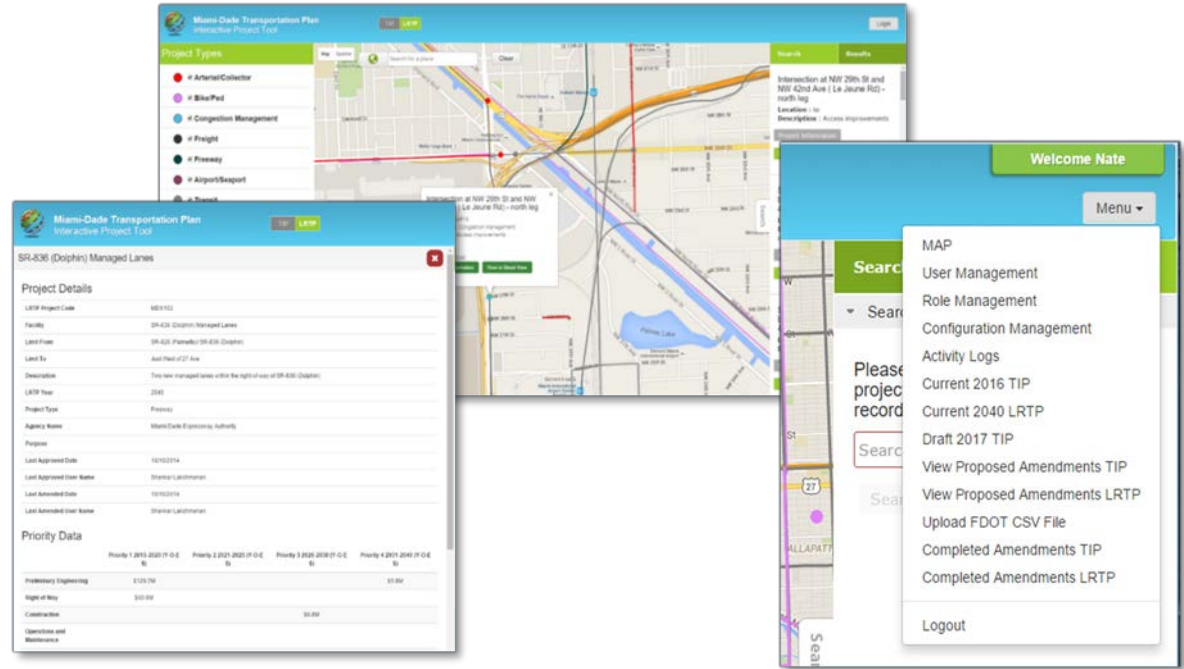


Demo

PHASE II and PHASE III

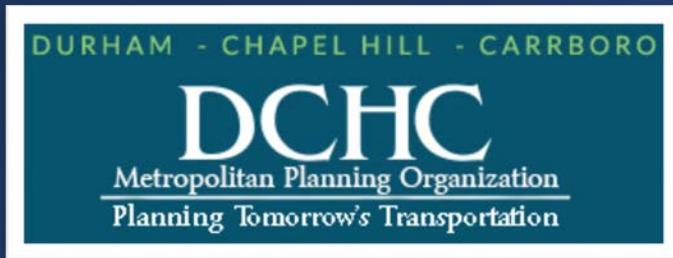
Scheduled to start in May 2019

- DCHC Scoring Tool
- Local Planning Partner Workflows
- Dynamic Querying
- Increased Reporting
- Routine maintenance and minor enhancements



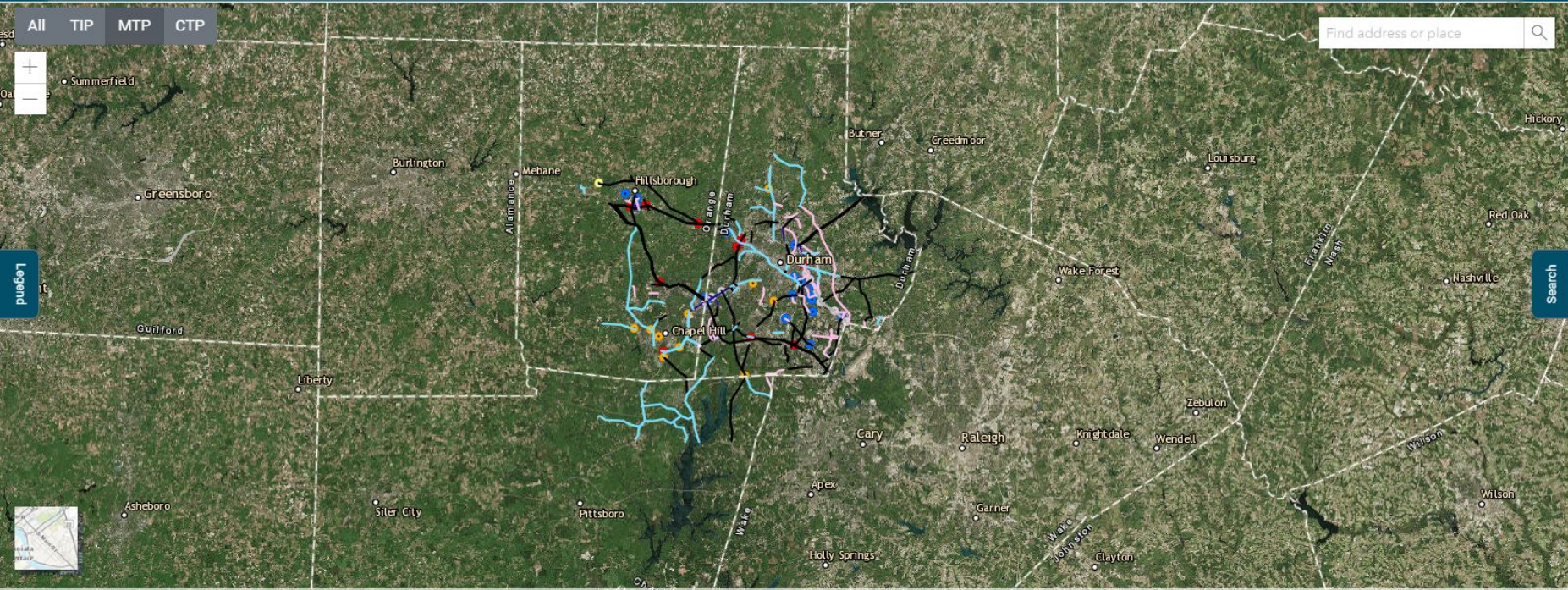
Caitlyn Meyer
GeoDecisions
Project Manager
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Aaron Cain
DCHC MPO
Senior Transportation Planner
aaron.cain@durhamnc.gov



All TIP MTP CTP

Find address or place



ComprehensiveTransportationPlan - Rail Projects

TypeStatus

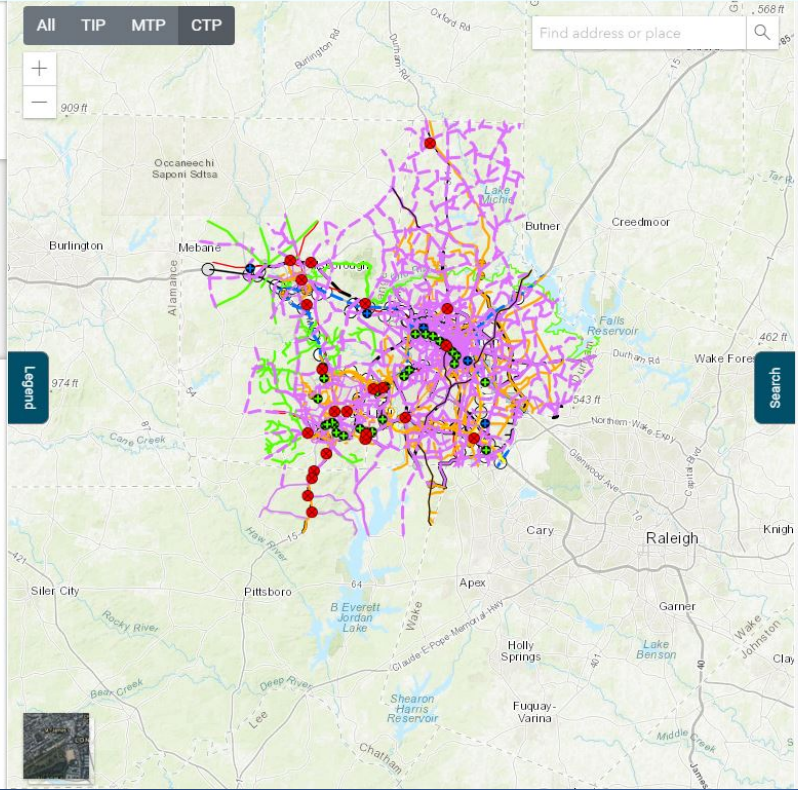
- ADQ - Recommended
- ADQ - Corridor Protection - Recommended
- Corridor Protection - Recommended
- Multi-Modal Connector(D-O LRT) - Recommended
- Other

ComprehensiveTransportationPlan - Rail Facilities

ImprovementType

- ADQ - Rail Stop (Commuter Rail)
- Multimodal Connector (D-O LRT)
- Rail Stop (Commuter Rail)
- Rail Stop (Commuter Rail)
- Rail Stop (D-O LRT)
- Rail Stop (Light Rail)
- <all other values>

ComprehensiveTransportationPlan - Bicycle Projects



All TIP MTP CTP

CTP Projects

Southwest Durham Dr
Project Type: CTP
Project ID: DURH0336-B
Mode: Bicycle
Description: I-40 to NC 54
[Zoom to project](#) [View Details](#)

Dimmock Mill Rd
Project Type: CTP
Project ID: ORAN0122-B
Mode: Bicycle
Description: I-40 to Orange Grove Rd
[Zoom to project](#) [View Details](#)

I-40 /I-85
Project Type: CTP
Project ID: ORAN9818-H
Mode: Highway
Description: Buckhorn Rd to Mt. Willing Rd
[Zoom to project](#) [View Details](#)

I-40 /I-85
Project Type: CTP
Project ID: ORAN9817-H
Mode: Highway
Description: I-85/US 70 Connector to Mt. Willing Rd
[Zoom to project](#) [View Details](#)

I-40 /I-85

DURHAM - CHAPEL HILL - CARRBORO

DCHC

Metropolitan Planning Organization

FUNDING DATABASE

[Home](#)

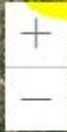
[Projects](#) ▾

All

TIP

MTP

CTP



Legend



TransportationImprovementProgram -
Transportation Improvement Projects
Lines

TransportationImprovementProgram -
Transportation Improvement Plan Points

MetropolitanTransportationPlan - MTP
Highway Projects

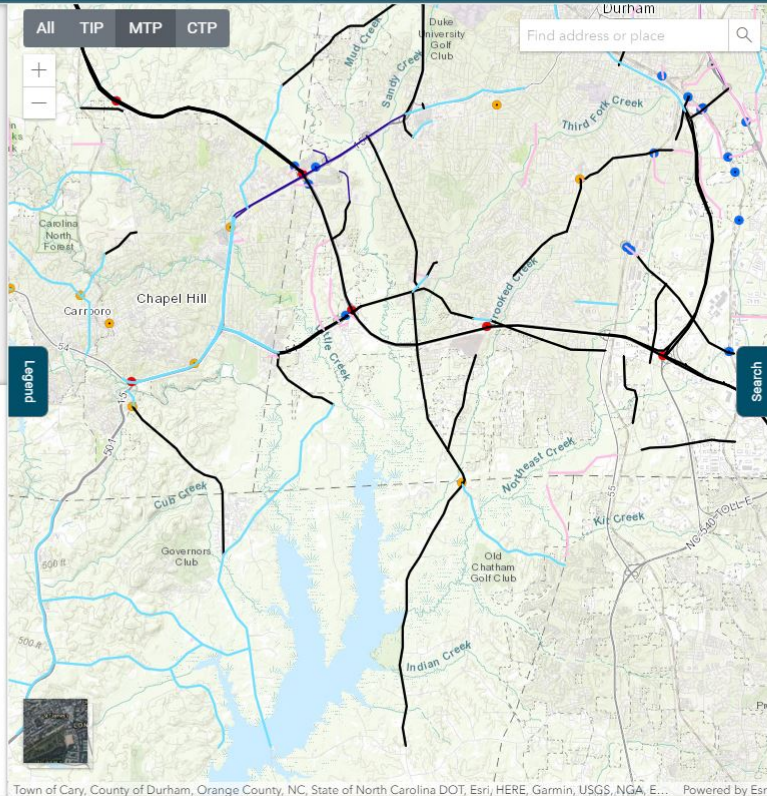
ImprovementType

- Expressway ; Expressway
- Expressway ; Expressway
- Freeway
- Freeway
- Modernization
- New Location
- Widening
- Other

MetropolitanTransportationPlan - MTP
Interchange Properties

ImprovementType

- Add Access
- Interchange Upgrade
- Intersection Upgrade
- Intersection or Interchange
- New Grade Separation
- New Interchange



Search About Results

General Search

The General Search returns TIP, MTP, and CTP project records that contain user's search criteria in the Project Name, Project Type, Project ID, and/or Description fields.



Advanced Search

The Advanced Search can be used to generate a list of TIP project records that match specific criteria. Users can add a condition by clicking the "Add Condition" button and can remove a condition by clicking the "X" button to the right of each row.

Add Condition

Submit

- Choose a category -

- No category selected-



Search

About

Results

General Search

The General Search returns TIP, MTP, and CTP project records that contain user's search criteria in the Project Name, Project Type, Project ID, and/or Description fields.

I-40



Advanced Search

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Add Condition

Submit

- Choose a category -



- No category selected-



X

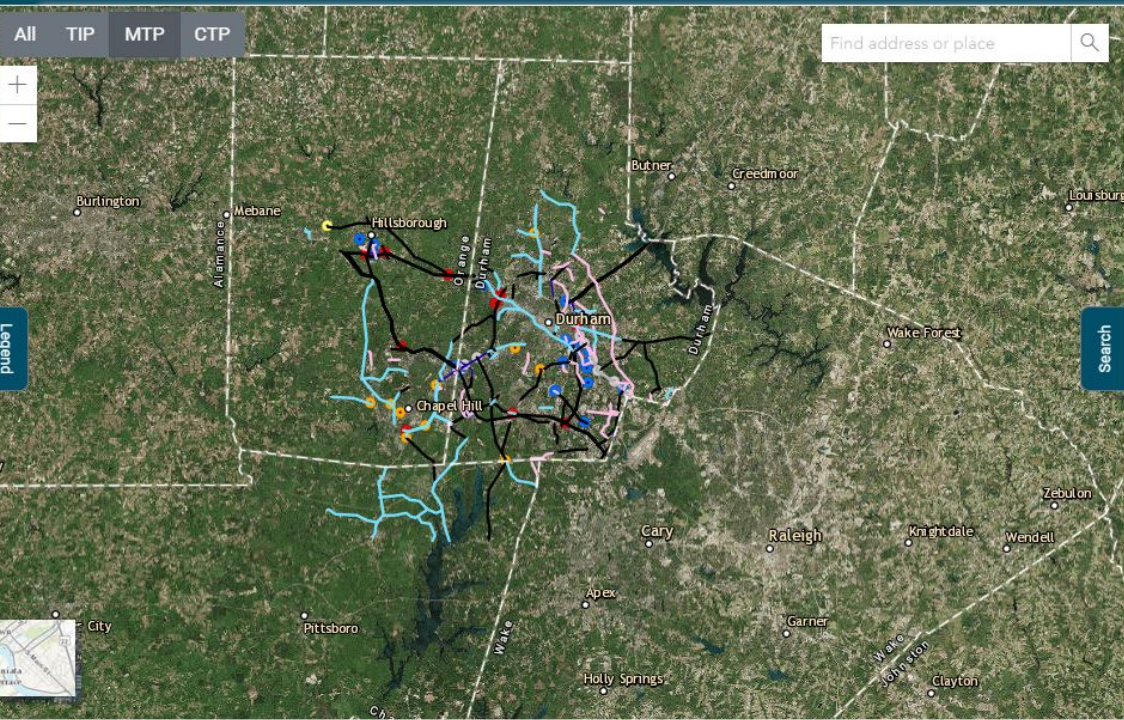
All TIP MTP CTP

Find address or place 🔍



Legend

Search



Search About Results

Search results for "I-40"

All TIP MTP CTP

TIP Projects

I-40 Auxiliary Lane

Project Type: TIP
Project ID: I-5707
Mode:

Description:

Construct westbound auxiliary lane along I-40 from NC 55 to NC 147. Planning and design for this project are in progress.

[Zoom to project](#) [View Details](#)

I-40

Project Type: TIP
Project ID: I-5822
Mode:

Description:

Pavement rehabilitation along I-40 from 1.6 miles east of NC 86 to 0.8 miles east of SR 1734 Erwin Road. Coordinate with I-3306A. Deleted by NCDOT in Amendment #6. Work to be incorporated into I-3306A.

[Zoom to project](#) [View Details](#)

Search results for "I-40"

[All](#)[TIP](#)[MTP](#)[CTP](#)

MTP Projects

Fordham Blvd (US 15-501)

Project Type: MTP

Project ID: 111

Mode: Highway

Description: Franklin St - I-40

[Zoom to project](#)[View Details](#)

US 15-501 (expressway conversion)

Project Type: MTP

Project ID: 113

Mode: Highway

Description: I-40 - US 15-501 Bypass

[Zoom to project](#)[View Details](#)

I-40 Managed Lanes

Project Type: MTP

Project ID: 397

Mode: Highway

Description: NC 86 - US 15-501

[Zoom to project](#)[View Details](#)

I-40

Project Type: MTP

Project ID: 44

Mode: Highway

Search results for "I-40"

All TIP MTP **CTP**

CTP Projects

Southwest Durham Dr

Project Type: CTP

Project ID: DURH0336-B

Mode: Bicycle

Description: I-40 to NC 54

[Zoom to project](#)

[View Details](#)

Dimmock Mill Rd

Project Type: CTP

Project ID: ORAN0122-B

Mode: Bicycle

Description: I-40 to Orange Grove Rd

[Zoom to project](#)

[View Details](#)

I-40 /I-85

Project Type: CTP

Project ID: ORAN9818-H

Mode: Highway

Description: Buckhorn Rd to Mt. Willing Rd

[Zoom to project](#)

[View Details](#)

I-40 /I-85

Project Type: CTP

Project ID: ORAN9817-H

Mode: Highway

- Bus station
- Park and Ride
- Park and Ride

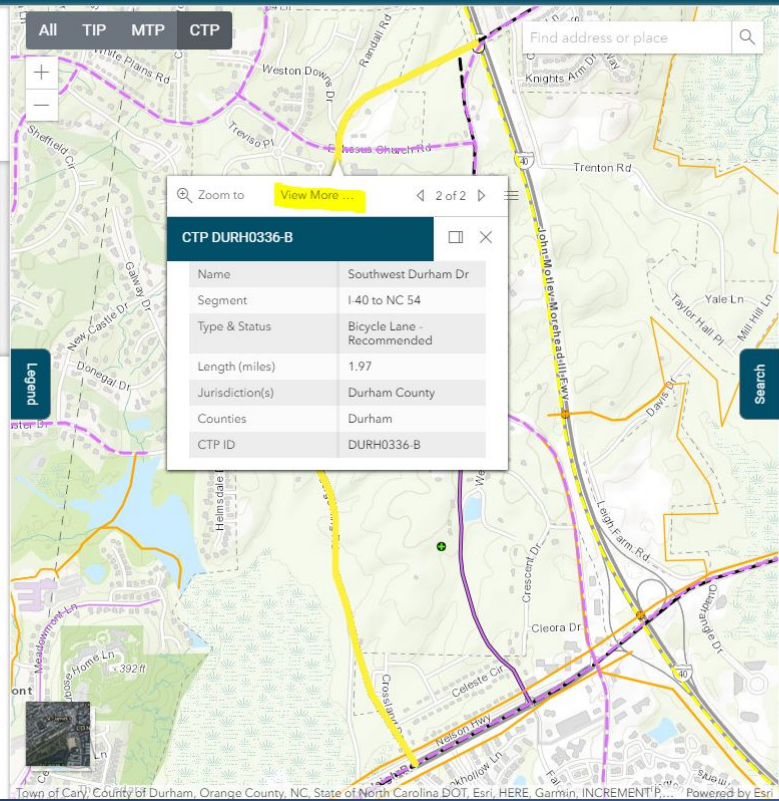
ComprehensiveTransportationPlan - Rail Projects

- Type/Status
- ADQ - Recommended
 - ADQ - Corridor Protection - Recommended
 - Corridor Protection - Recommended
 - Multi-Modal Connector(D-O LRT) - Recommended
 - Other

ComprehensiveTransportationPlan - Rail Facilities

- ImprovementType
- ADQ - Rail Stop (Commuter Rail)
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 - Rail Stop (Commuter Rail)
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ComprehensiveTransportationPlan - Bicycle Projects



- All TIP MTP CTP

CTP Projects

Southwest Durham Dr

Project Type: CTP
Project ID: DURH0336-B
Mode: Bicycle
Description: I-40 to NC 54

[Zoom to project](#) [View Details](#)

Dimmock Mill Rd

Project Type: CTP
Project ID: ORAN0122-B
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[Zoom to project](#) [View Details](#)

I-40 /I-85

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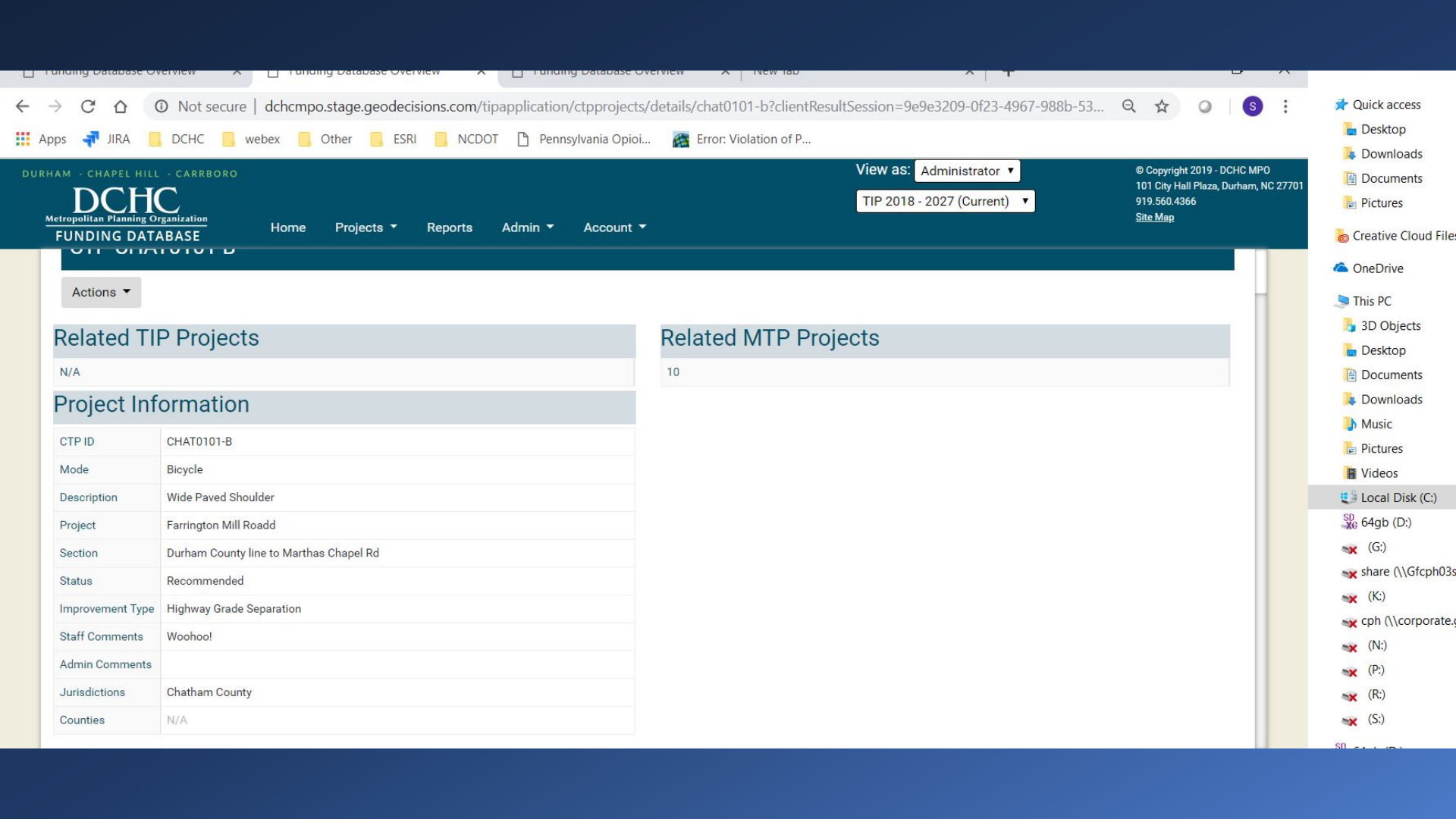
I-40 /I-85

Project Type: CTP
Project ID: ORAN9817-H
Mode: Highway
Description: I-85/US 70 Connector to Mt. Willing Rd

[Zoom to project](#) [View Details](#)

I-40 /I-85

Project Type: CTP



Actions ▾

Related TIP Projects

N/A

Project Information

CTP ID	CHAT0101-B
Mode	Bicycle
Description	Wide Paved Shoulder
Project	Farrington Mill Road
Section	Durham County line to Marthas Chapel Rd
Status	Recommended
Improvement Type	Highway Grade Separation
Staff Comments	Woohoo!
Admin Comments	
Jurisdictions	Chatham County
Counties	N/A

Related MTP Projects

10

★ Quick access

- 📁 Desktop
- 📁 Downloads
- 📁 Documents
- 📁 Pictures

📁 Creative Cloud Files

📁 OneDrive

💻 This PC

- 📁 3D Objects
- 📁 Desktop
- 📁 Documents
- 📁 Downloads
- 📁 Music
- 📁 Pictures
- 📁 Videos

📁 Local Disk (C:)

📁 64gb (D:)

📁 (G:)

📁 share (\\Gfcph03s

📁 (K:)

📁 cph (\\corporate,

📁 (N:)

📁 (P:)

📁 (R:)

📁 (S:)

CTP ID

CHAT0101-B

Mode

Bicycle

Description

Wide Paved Shoulder

Project

Farrington Mill Road

Section

Durham County line to Marthas C...

Status

Recommended

Improvement

Type

Highway Grade Separation

Staff Comments

- Creative Cl...
- OneDrive
- This PC
- 3D Object...
- Desktop
- Document
- Download
- Music
- Pictures
- Videos
- Local Disk
- 64gb (D:)
- (G:)
- share (\\G
- (K:)
- cph (\\cor
- (N:)
- (P:)
- (R:)
- (S:)

All TIP MTP CTP

TIP Projects

MTP Projects

CTP Projects

Find address or place



Search

About

Results

General Search

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I-40



Advanced Search

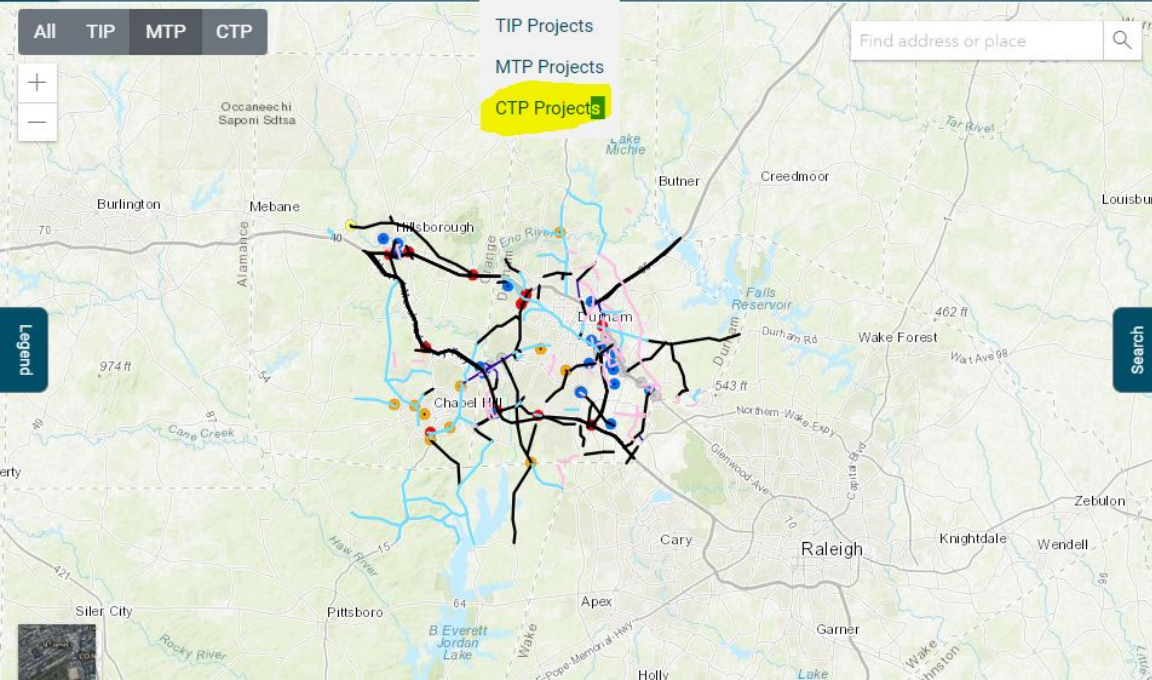
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Add Condition

Submit

Program ▾

Highway Program ▾



Overview

The CTP Projects page provides a listing of all CTP projects in the DCHC MPO area. The list can be re-sorted by clicking on the column name at the top of each column.

[Create](#)

Project List

CTP ID	Project	Improvement Type	Mode	Status	Section	Description	Actions
CHAT9993-B	Mt Carmel Church Rd	Wide Paved Shoulder	Bicycle	Needs Improvement	Orange County line to Old Farrington Point Rd	Wide Paved Shoulder	View Details
CHAT0103-B	O Kelly Chapel Rd	Wide Paved Shoulder	Bicycle	Needs Improvement	NC 751 to Wake County line	Wide Paved Shoulder (from 751 to the ATT)	View Details
CHAT0104-B	Poythress Rd	Wide Paved Shoulder	Bicycle	Needs Improvement	Manns Chapel Rd to Lamont Norwood Rd	Wide Paved Shoulder	View Details
ORAN9490-B	Estes Drive	Wide Outside Lane	Bicycle	Existing	Caswell to Fordham	Wide Outside Lane	View Details
ORAN0129-B	Estes Drive	Wide Outside Lane	Bicycle	Needs Improvement	NC 86 to 15-501/Fordham	Wide Outside Lane	View Details
ORAN9480-B	Franklin St	Wide Outside Lane	Bicycle	Existing	Estes Dr to Roosevelt	Wide Outside Lane	View Details
ORAN9428-B	NC 54	Wide Outside Lane	Bicycle	Existing	Reeves Rd to Jones Ferry Rd	Wide Outside Lane	View Details
ORAN9427-B	NC 54	Wide Outside Lane	Bicycle	Existing	Jones Ferry Rd to Just east of Smith Level Rd	Wide Outside Lane	View Details
ORAN9768-M	Cole Spring Br	Unpaved Trail	Multi-Use	Existing	Neighborhood to Bolin Cr Trail	Unpaved Path	View Details
					Buck Branch Trail to Turnage Ridge		

CTP CHAT0101-B

[Start new search](#)

Actions ▾

Related TIP Projects

N/A

Project Information

CTP ID	CHAT0101-B
Mode	Bicycle
Description	Wide Paved Shoulder

Related MTP Projects

10

Import CTP

Drag and drop a shapefile here...



MTP Features from Shapefile

MTP_Lines

Rows that do not have an existing project in the database display as **red** and will not be inserted.

Rows where a duplicate exists in the GIS database display as **blue** and will overwrite the existing record.

MTP_ID

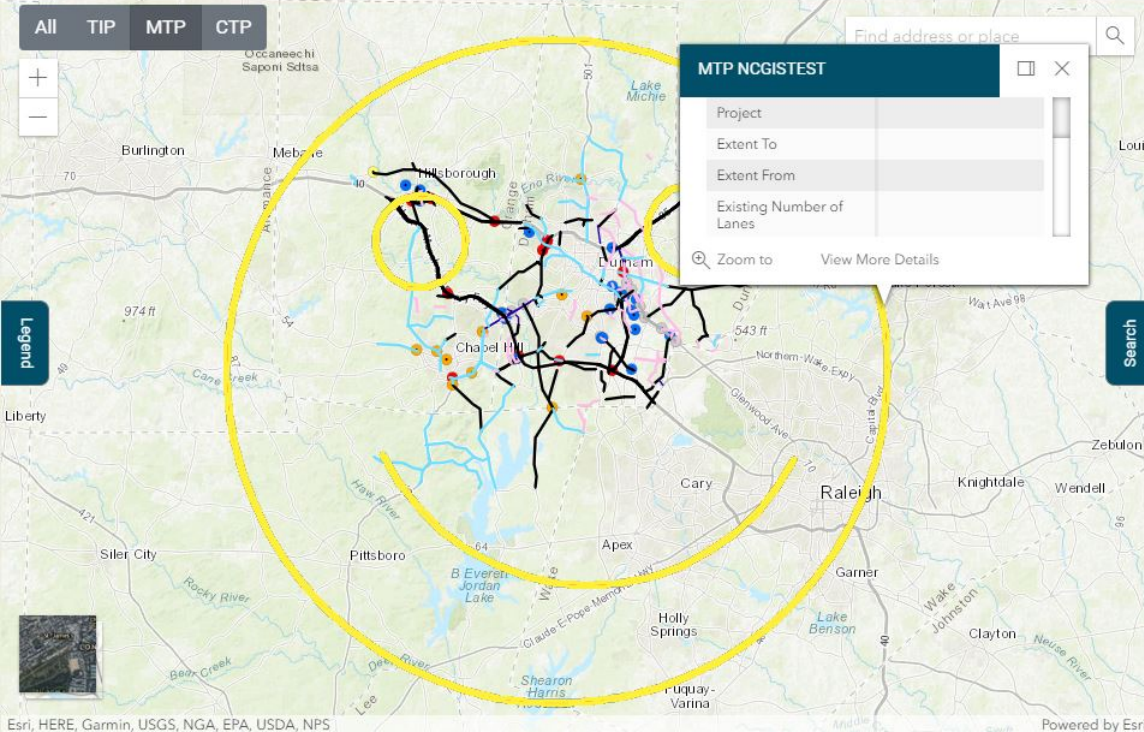
GonnaFail

18-21

NCGISTEST

Submit

All TIP MTP CTP



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Add Condition

Submit

- Choose a category -

- No category selected-



Admin Comments

Search

- 10
- 104
- 106.1
- 111
- 113
- 113.1
- 114
- 115.1
- 115.IT

None selected ▾

Save

[Back to List](#)

CTP Project

CTP ID

Mode

Description

Project

Section

Status

Improvement Type

Staff Comments

Admin Comments

Counties

Jurisdictions

RelatedTIP