Active Transportation (Bicycle / Pedestrian) Planning in North Texas

Dallas - Fort Worth Region

Kevin Kokes, AICP

North Texas Public Works Roundup

July 16, 2015

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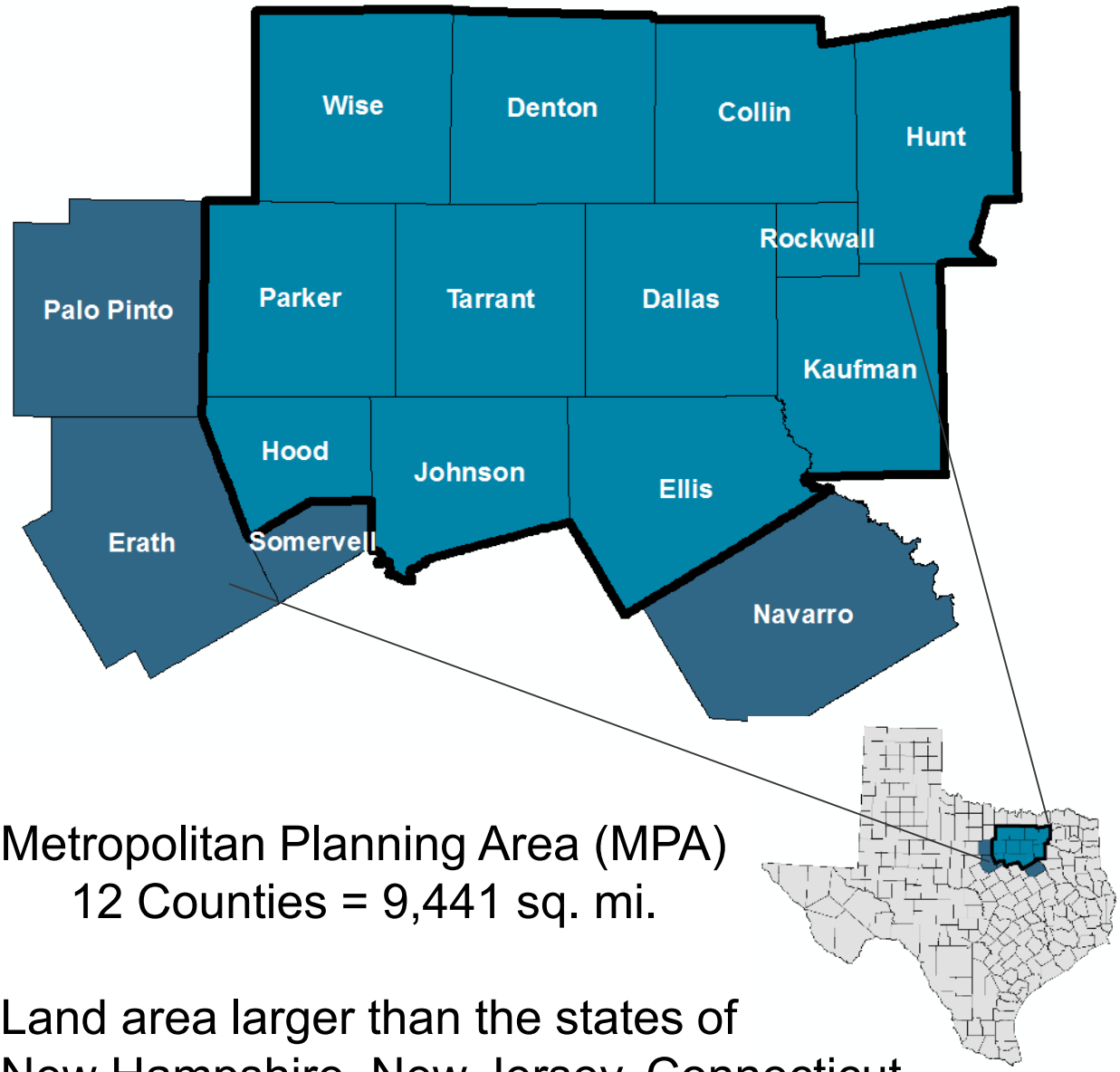
MPO for the Dallas-Fort Worth Region



Metropolitan Planning Area (MPA)
12 Counties = 9,441 sq. mi.

Land area larger than the states of New Hampshire, New Jersey, Connecticut, Delaware, and Rhode Island.

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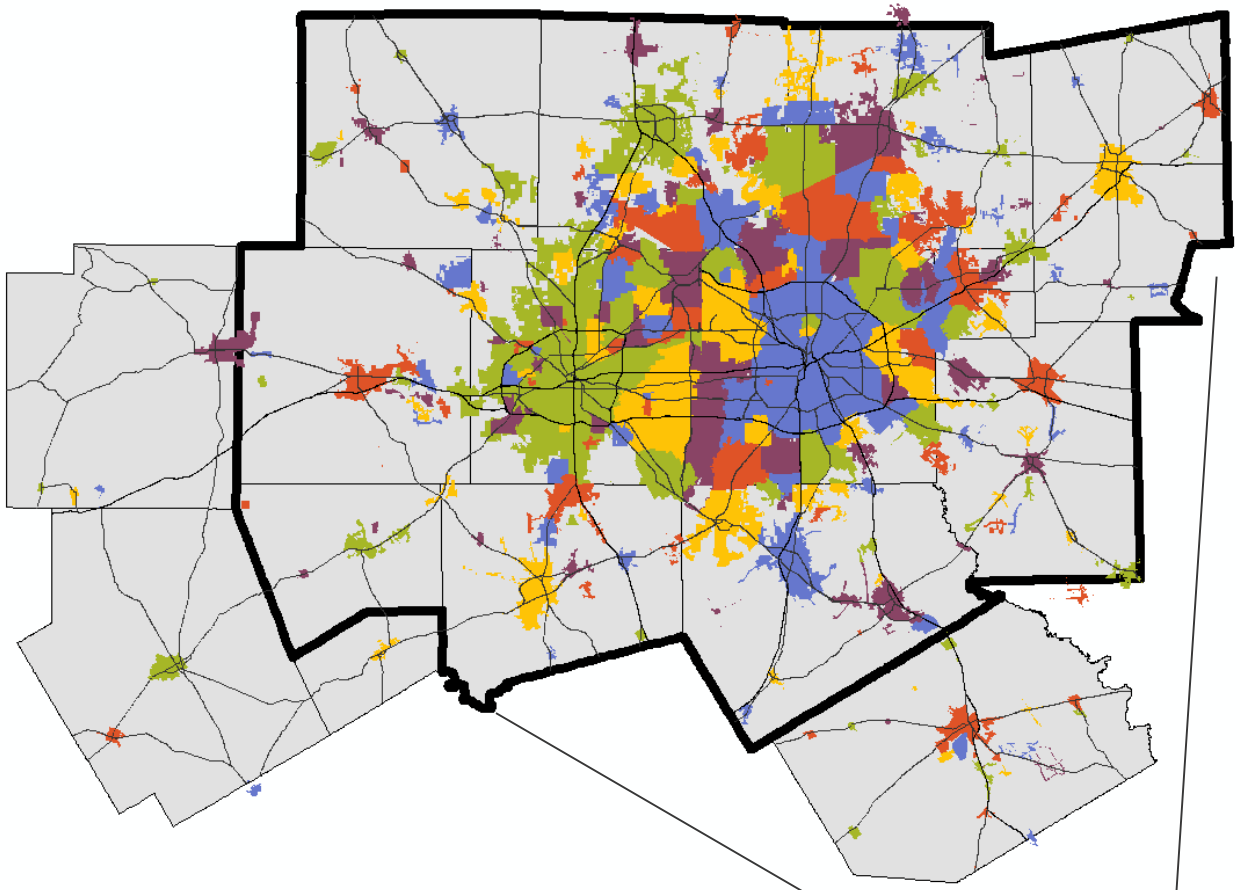
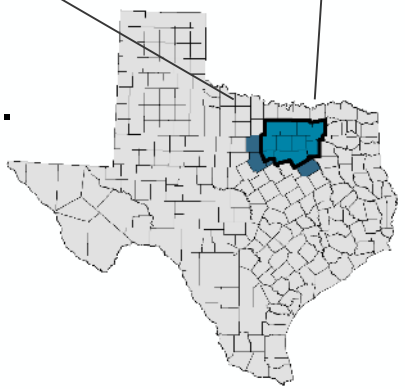
MPO for the Dallas-Fort Worth Region





Metropolitan Planning Area (MPA)

209 cities

13 cities larger than 100,000 pop.

MPA Population

2015 Estimate = 7 million

2040 Forecast = 10.7 million

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Planning for All Ages and Abilities

USDOT policy emphasizes the provision of active transportation accommodations to be considered as the same priority as other transportation modes.

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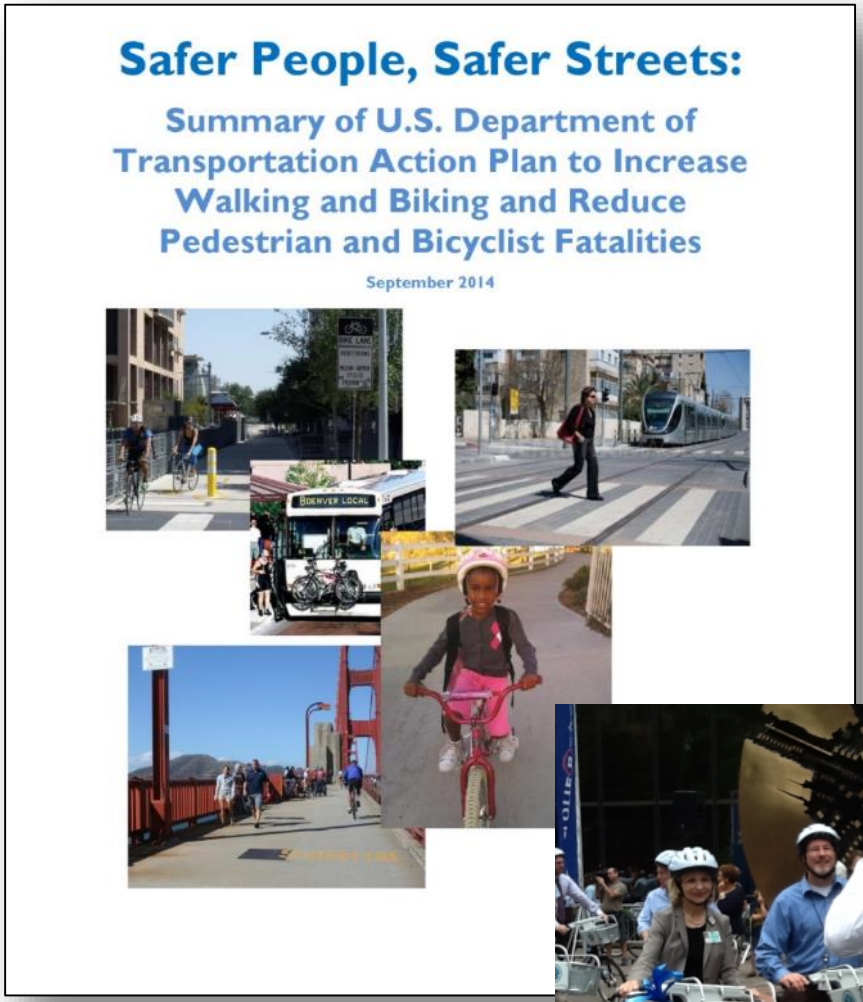
US DOT Support for Safer Streets

18-month campaign to reduce the growing number of pedestrian and bicyclist injuries and fatalities.



Pedestrian and bicyclist safety a top priority for the DOT.

A Road Diet Guide is a 2015 FHWA Initiative

Credit: http://plancharlotte.org/story/charlotte-bike-share-launches

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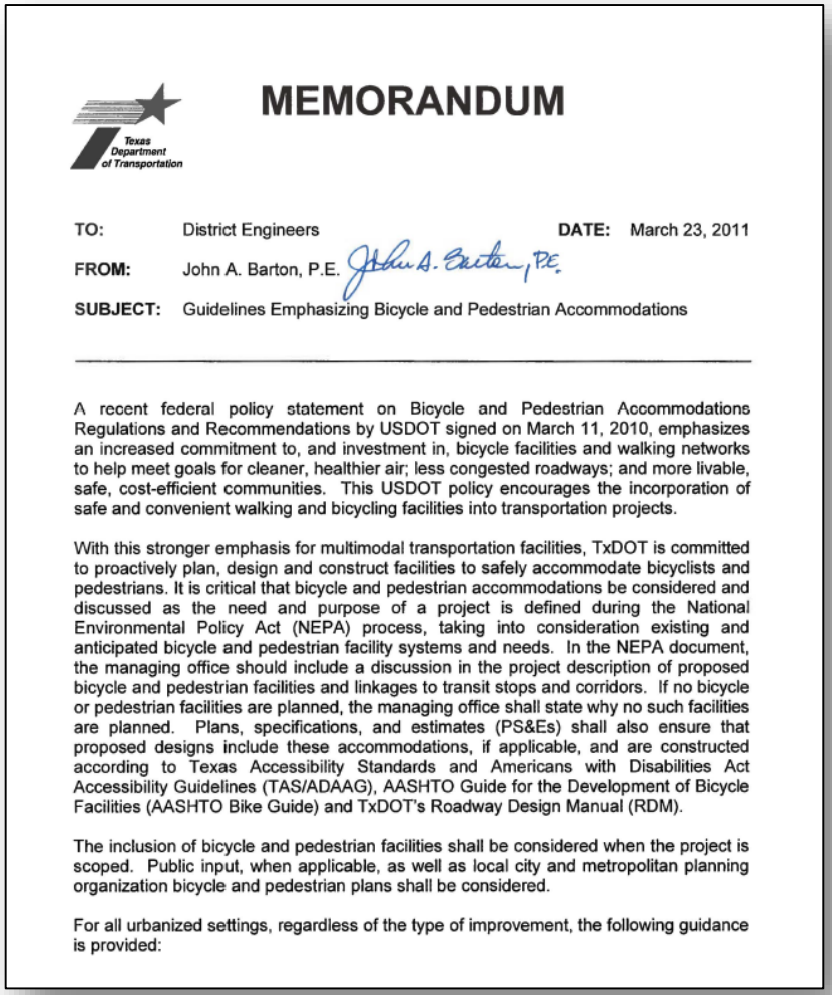
TxDOT Policy
Implementing US DOT Policy

"It is critical that bicycle and pedestrian accommodations be considered and discussed as the need and purpose of a project is defined."

John Barton
March 23, 2011 Memorandum



MEMORANDUM

Texas Department of Transportation

TO: District Engineers **DATE:** March 23, 2011

FROM: John A. Barton, P.E. John A. Barton, P.E.

SUBJECT: Guidelines Emphasizing Bicycle and Pedestrian Accommodations

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A recent federal policy statement on Bicycle and Pedestrian Accommodations Regulations and Recommendations by USDOT signed on March 11, 2010, emphasizes an increased commitment to, and investment in, bicycle facilities and walking networks to help meet goals for cleaner, healthier air; less congested roadways; and more livable, safe, cost-efficient communities. This USDOT policy encourages the incorporation of safe and convenient walking and bicycling facilities into transportation projects.

With this stronger emphasis for multimodal transportation facilities, TxDOT is committed to proactively plan, design and construct facilities to safely accommodate bicyclists and pedestrians. It is critical that bicycle and pedestrian accommodations be considered and discussed as the need and purpose of a project is defined during the National Environmental Policy Act (NEPA) process, taking into consideration existing and anticipated bicycle and pedestrian facility systems and needs. In the NEPA document, the managing office should include a discussion in the project description of proposed bicycle and pedestrian facilities and linkages to transit stops and corridors. If no bicycle or pedestrian facilities are planned, the managing office shall state why no such facilities are planned. Plans, specifications, and estimates (PS&Es) shall also ensure that proposed designs include these accommodations, if applicable, and are constructed according to Texas Accessibility Standards and Americans with Disabilities Act Accessibility Guidelines (TAS/ADAAG), AASHTO Guide for the Development of Bicycle Facilities (AASHTO Bike Guide) and TxDOT's Roadway Design Manual (RDM).

The inclusion of bicycle and pedestrian facilities shall be considered when the project is scoped. Public input, when applicable, as well as local city and metropolitan planning organization bicycle and pedestrian plans shall be considered.

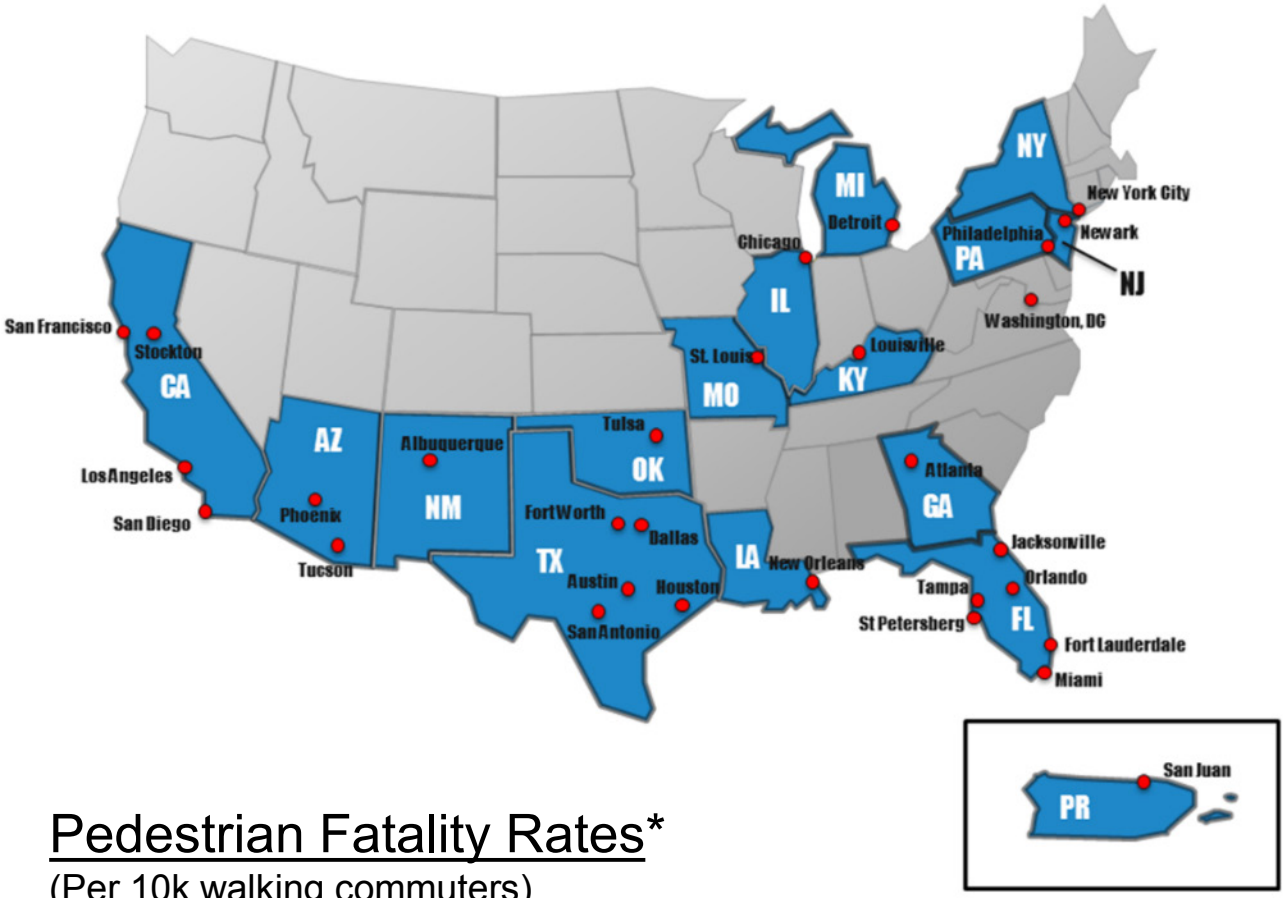
For all urbanized settings, regardless of the type of improvement, the following guidance is provided:

FHWA Pedestrian Safety Focus States and Cities

States and cities with the highest number of pedestrian fatalities

OR

fatality rates (per 100,000 population) greater than the national average.



Pedestrian Fatality Rates*

(Per 10k walking commuters)

#41: Texas

Top 50 Cities*

#47: Dallas

#50: Fort Worth

*Source: Bicycling and Walking in the United States: 2014 Benchmarking Report

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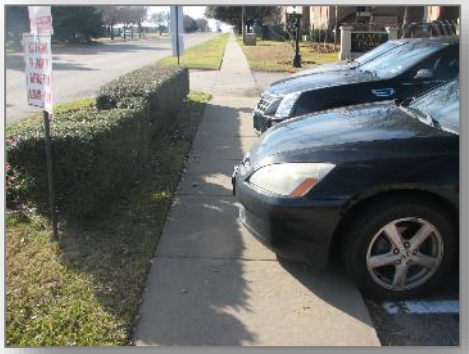
Safety Challenges

Pedestrian Safety

The pedestrian experience along many major roadways is challenging.

Gaps in the Sidewalk Network
Wide Intersections/Crossings
Distance between Crossings
High Traffic Speeds
Vehicle Turning Movements
ADA
Maintenance
Barriers



Pedestrian Fatalities and Crashes

A large number of pedestrian fatalities are "on-system" (interstate and state highways).

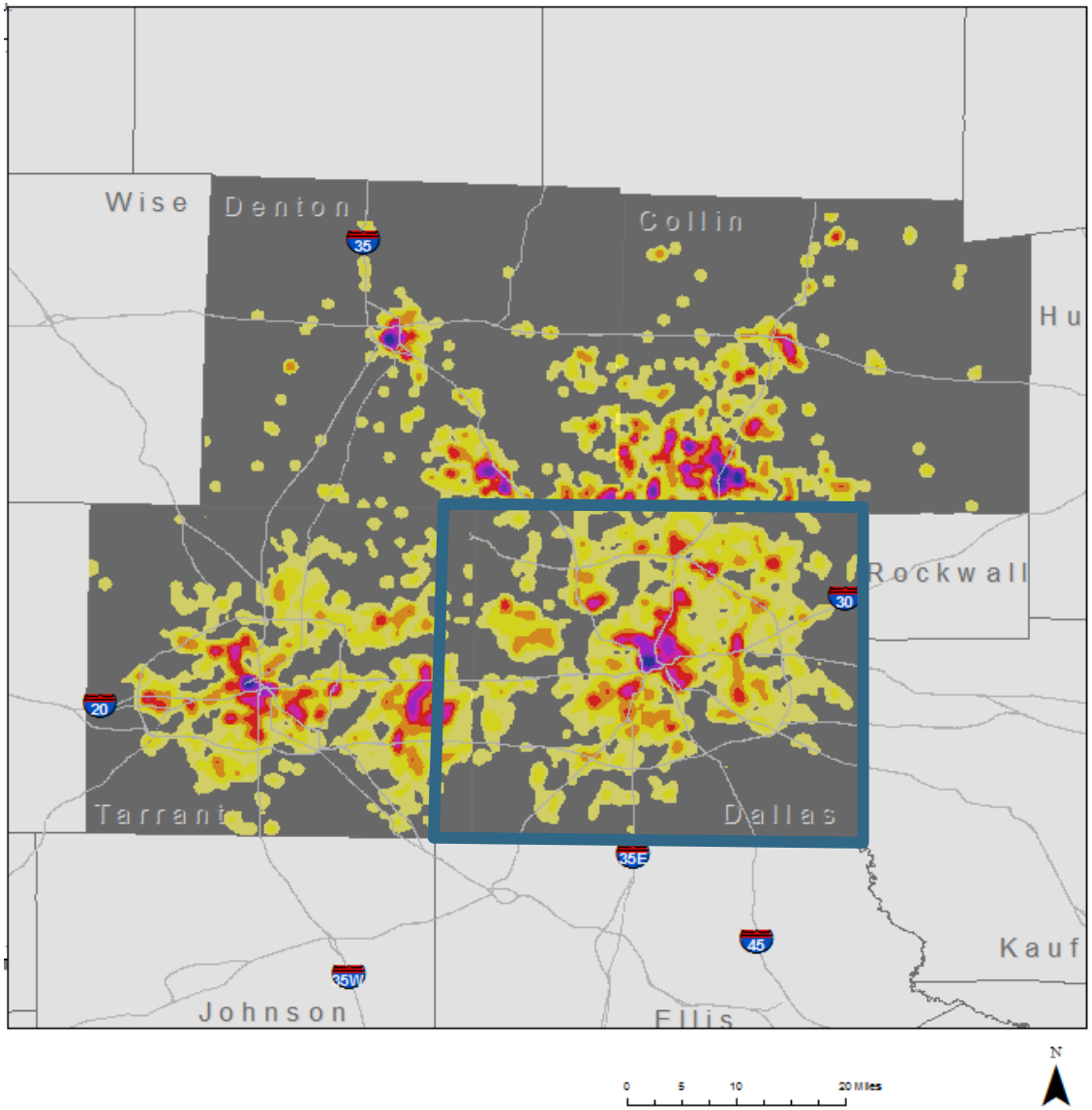
The location of pedestrian crashes are more evenly dispersed.

Pedestrian Fatalities (2009-2013)						
County	2009	2010	2011	2012	2013	2009-2013
	Pedestrian Fatalities	Pedestrian Fatalities	Pedestrian Fatalities	Pedestrian Fatalities	Pedestrian Fatalities	Total
Collin	6	1	5	2	6	**20**
Dallas	29	32	44	43	43	**191**
Denton	7	1	4	5	1	**18**
Tarrant	19	19	29	29	21	**117**
Total	**61**	**53**	**82**	**79**	**71**	**346**

Pedestrian Crash Contributing Factor Analysis 12-County MPA (2009 - 2013)	
Contributing Factors (Top 3)	% of All Occurrences
Pedestrian Failed to Yield ROW to Vehicle	57%
Vehicle Failed to Yield ROW to Pedestrian	28%
Driver Inattention	11%

Regional Bicycle/ Pedestrian Crash Data

Bicycle and Pedestrian Crash Density (2009-2013)



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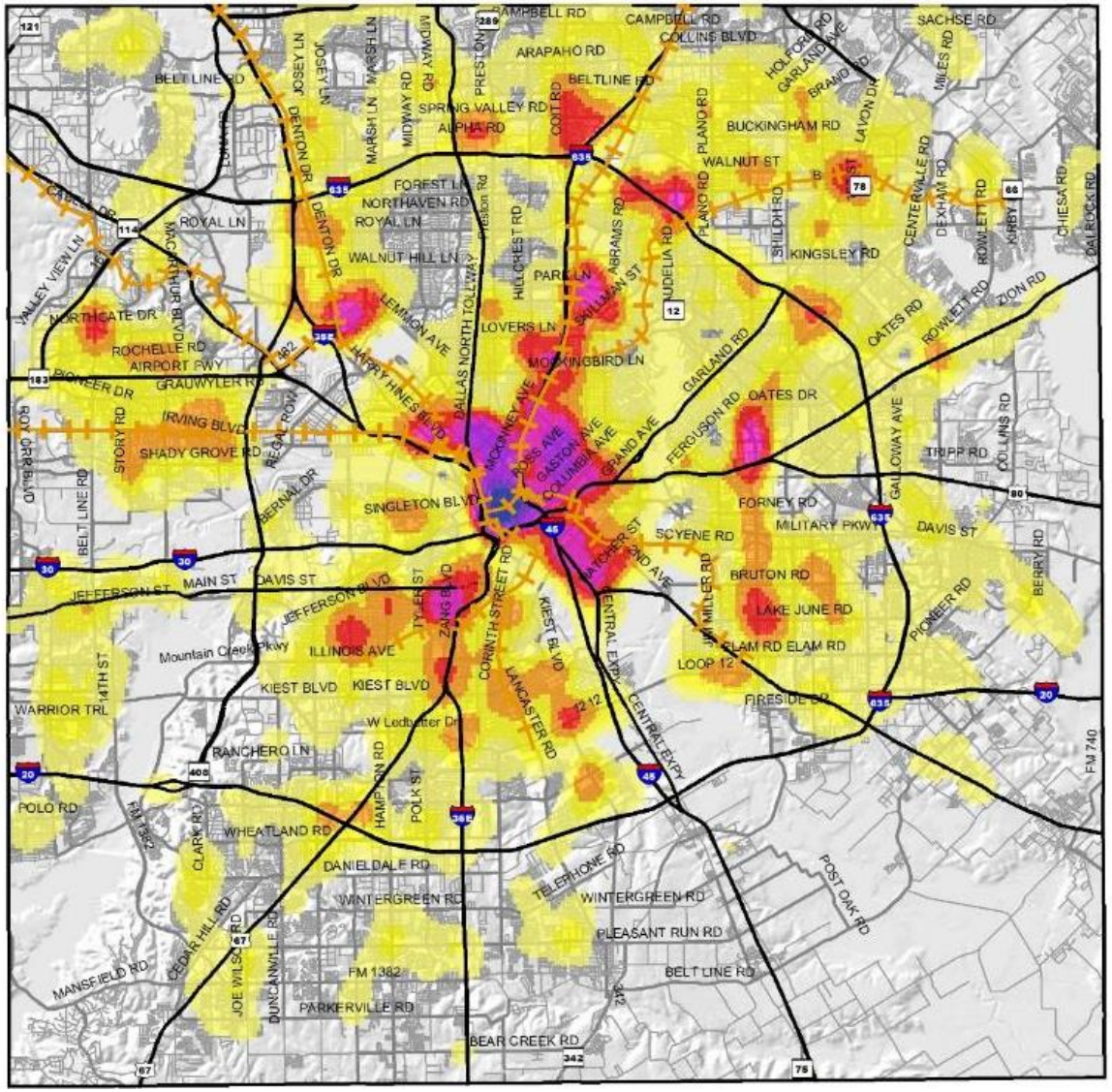
Regional Bicycle/ Pedestrian Crash Data

Dallas County Bicycle and Pedestrian Crash Density (2009-2013)



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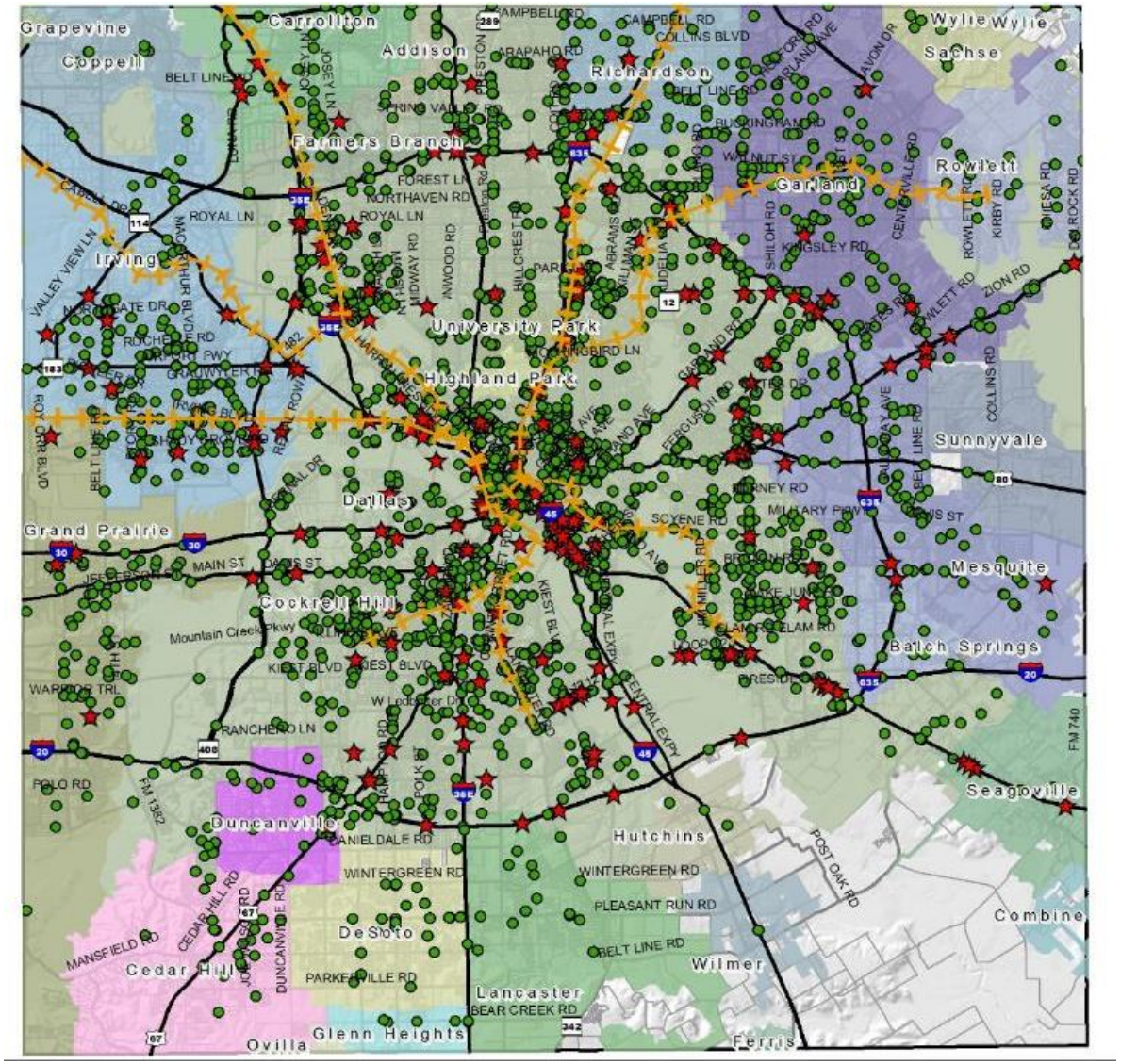
Regional Pedestrian Crash Data

Dallas County Pedestrian Crash and Fatality Locations (2009-2013)



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Designing for Pedestrian Safety

Education and Training

- NCTCOG hosts workshops for engineers and transportation planners
- TxDOT, City Staff, Transportation Agencies
- Case study site visit exercises

Pedestrian Routes to Rail Stations

Distance and gaps in the actual "Routes" to stations (walksheds)

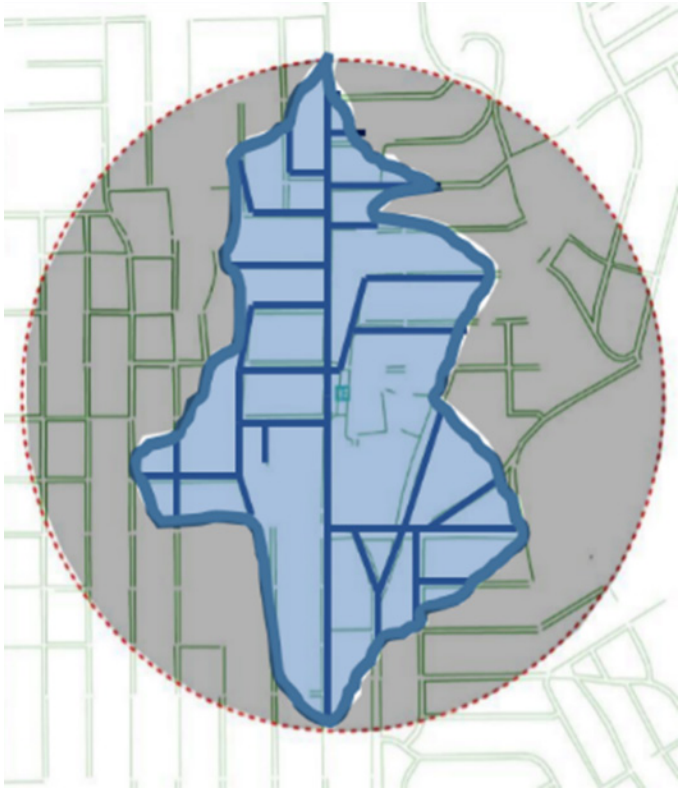
nctcog.org/RoutesToRail

Pedestrian Network Analysis

GIS network-based assessment of pedestrian routes (distance) within half-mile to/from rail stations

Impacts of barriers on the actual distance of travel

"A true walkable radius does not typically exist."



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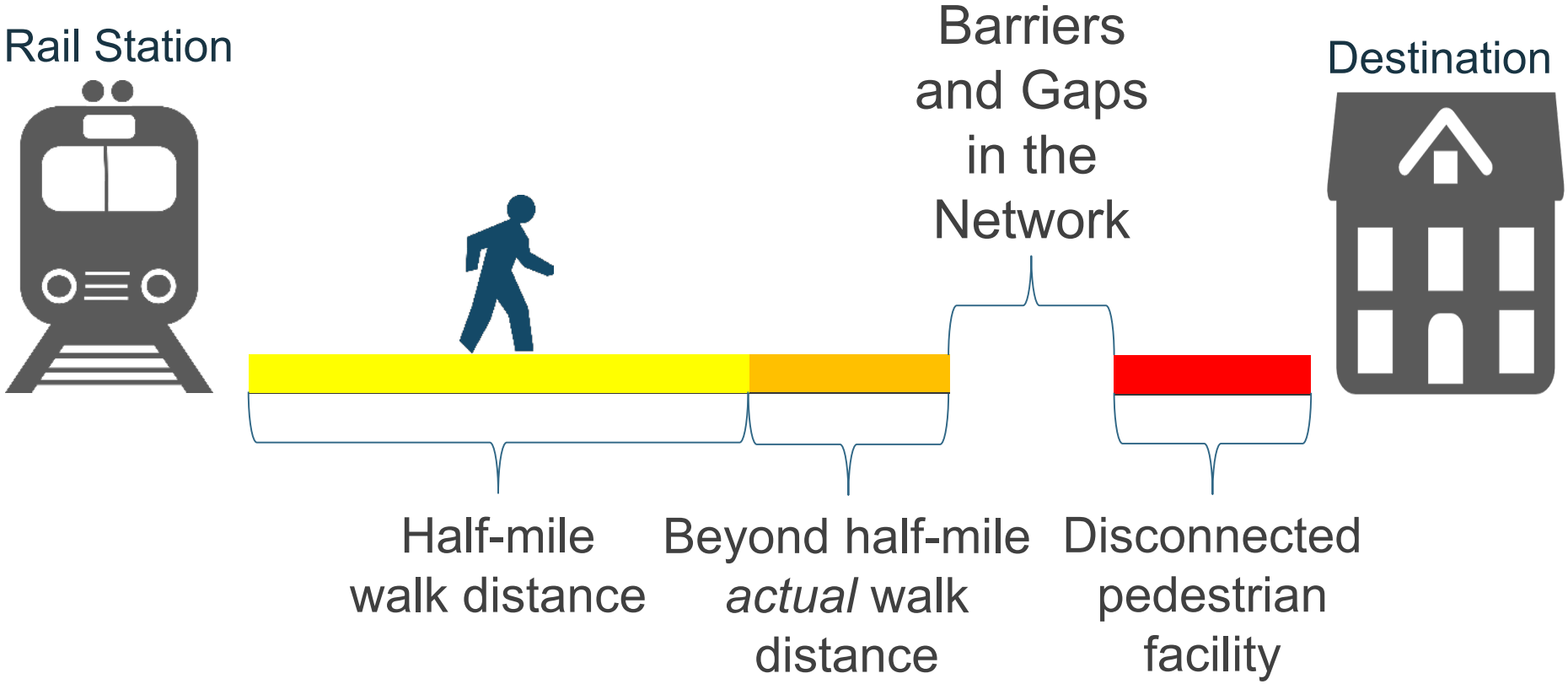
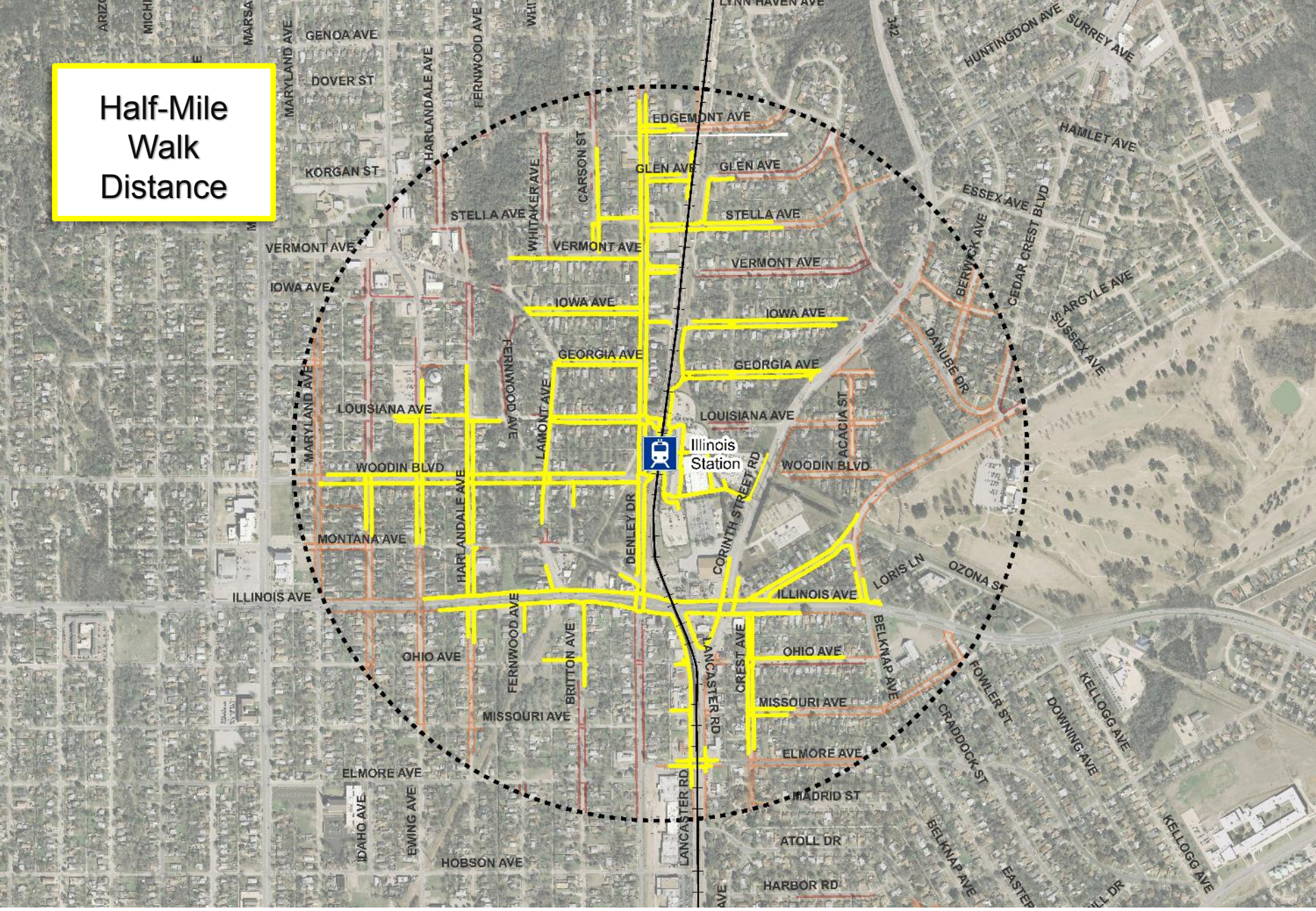
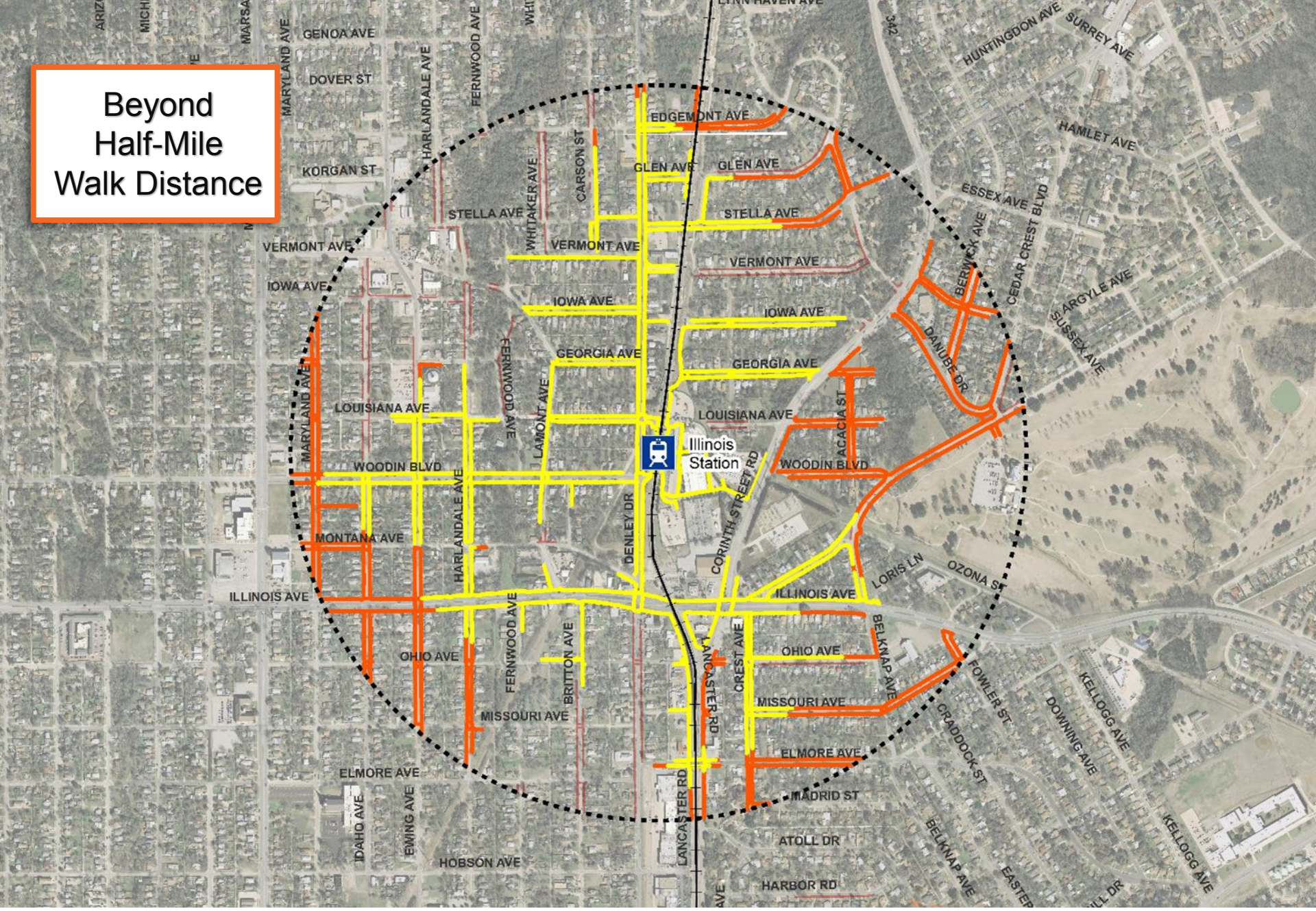
Pedestrian Routes to Rail Network Analysis

nctcog.org/**RoutesToRail**




Half-Mile
Walk
Distance
Illinois
Station
GENOA AVE
DOVER ST
KORGAN ST
STELLA AVE
VERMONT AVE
IOWA AVE
GEORGIA AVE
LOUISIANA AVE
WOODIN BLVD
MONTANA AVE
ILLINOIS AVE
OHIO AVE
MISSOURI AVE
ELMORE AVE
MADRID ST
ATOLL DR
HARBOR RD
HOBSON AVE
EDGEMONT AVE
GLEN AVE
HAMLET AVE
ESSEX AVE
SURREY AVE
HUNTINGDON AVE
ARGYLE AVE
SUSSEX AVE
CEDAR CREST BLVD
BERWICK AVE
DANUBE DR
ACACIA ST
CORINTH STREET RD
LORIS LN
OZONA ST
FOWLER ST
CRADDOCK ST
DOWNING AVE
KELLOGG AVE
BELKNAP AVE
EASTER
MARYLAND AVE
HARLANDALE AVE
FERNWOOD AVE
WHITAKER AVE
CARSON ST
LAMONT AVE
DENLEY DR
LANCASTER RD
CREST AVE
BRITTON AVE
EWING AVE
IDAHO AVE
LYNN HAVEN AVE
342


Beyond
Half-Mile
Walk Distance
Illinois
Station
GENOA AVE
DOVER ST
KORGAN ST
STELLA AVE
VERMONT AVE
IOWA AVE
GEORGIA AVE
LOUISIANA AVE
WOODIN BLVD
MONTANA AVE
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LANCASTER RD
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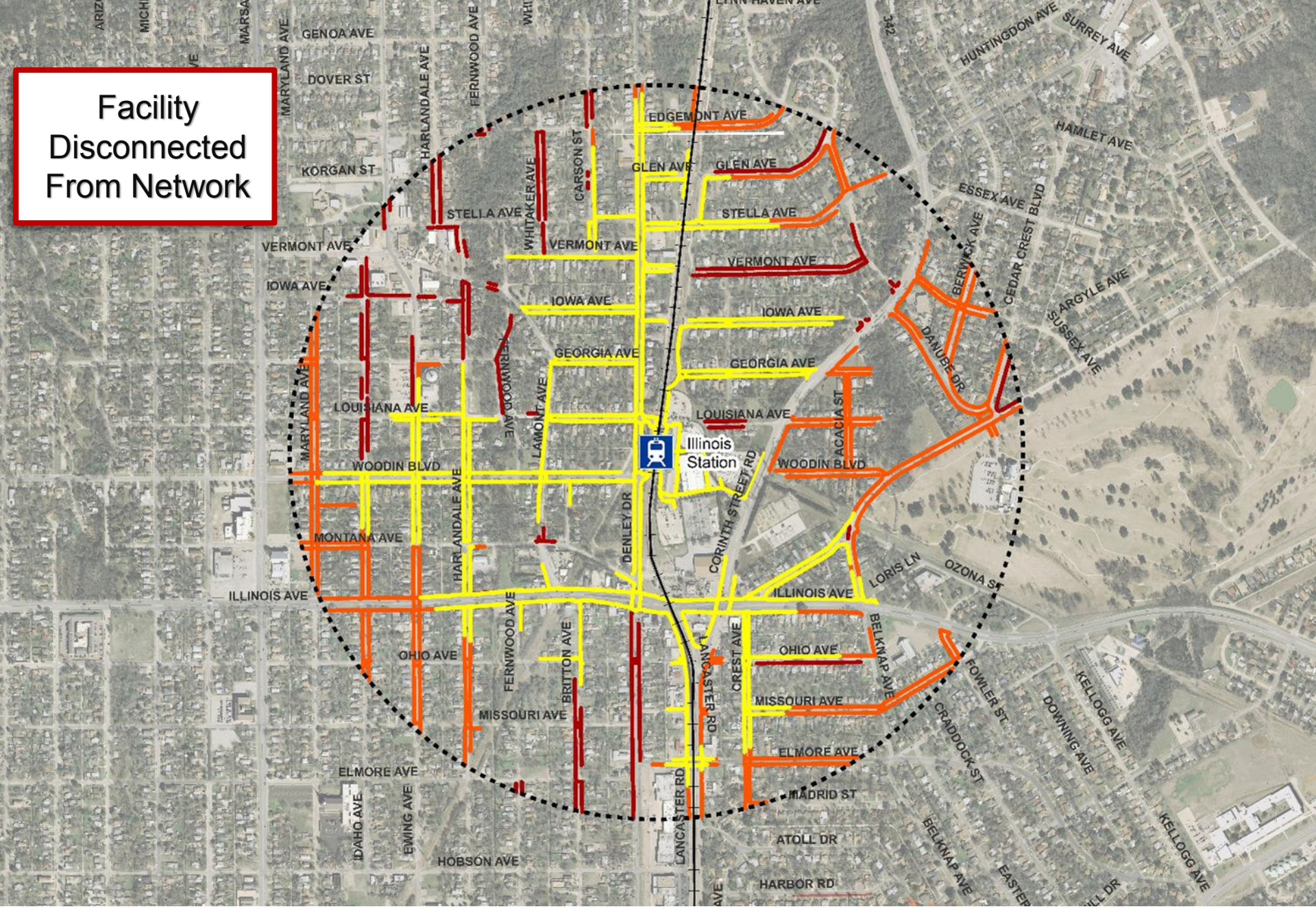
CREST AVE
ACACIA ST
BELKNAP AVE
CRADDOCK ST
FOWLER ST
DOWNING AVE
KELLOGG AVE
HUNTINGDON AVE
SURREY AVE
HAMLET AVE
ESSEX AVE
CEDAR CREST BLVD
BERWICK AVE
ARGYLE AVE
SUSSEX AVE
DANUBE DR
LORIS LN
OZONA ST
MADRID ST
ATOLL DR
HARBOR RD
342


Facility Disconnected From Network
GENOA AVE
DOVER ST
KORGAN ST
STELLA AVE
VERMONT AVE
IOWA AVE
GEORGIA AVE
LOUISIANA AVE
WOODIN BLVD
MONTANA AVE
ILLINOIS AVE
OHIO AVE
MISSOURI AVE
ELMORE AVE
HOBSON AVE
EDGEMONT AVE
GLEN AVE
MARYLAND AVE
HARLANDALE AVE
FERNWOOD AVE
WHITAKER AVE
CARSON ST
LAMONT AVE
DENLEY DR
BRITTON AVE
IDAHO AVE
EWING AVE
Illinois Station
CORINTH STREET RD
LANCASTER RD
CREST AVE
ACACIA ST
DANUBE DR
BERWICK AVE
CEDAR CREST BLVD
HUNTINGDON AVE
SURREY AVE
HAMLET AVE
ESSEX AVE
ARGYLE AVE
SUSSEX AVE
LORIS LN
OZONA ST
BELKNAP AVE
FOWLER ST
CRADDOCK ST
DOWNING AVE
KELLOGG AVE
MADRID ST
ATOLL DR
HARBOR RD

Pedestrian Routes to Rail - Illinois Station

Last Updated: February 2015

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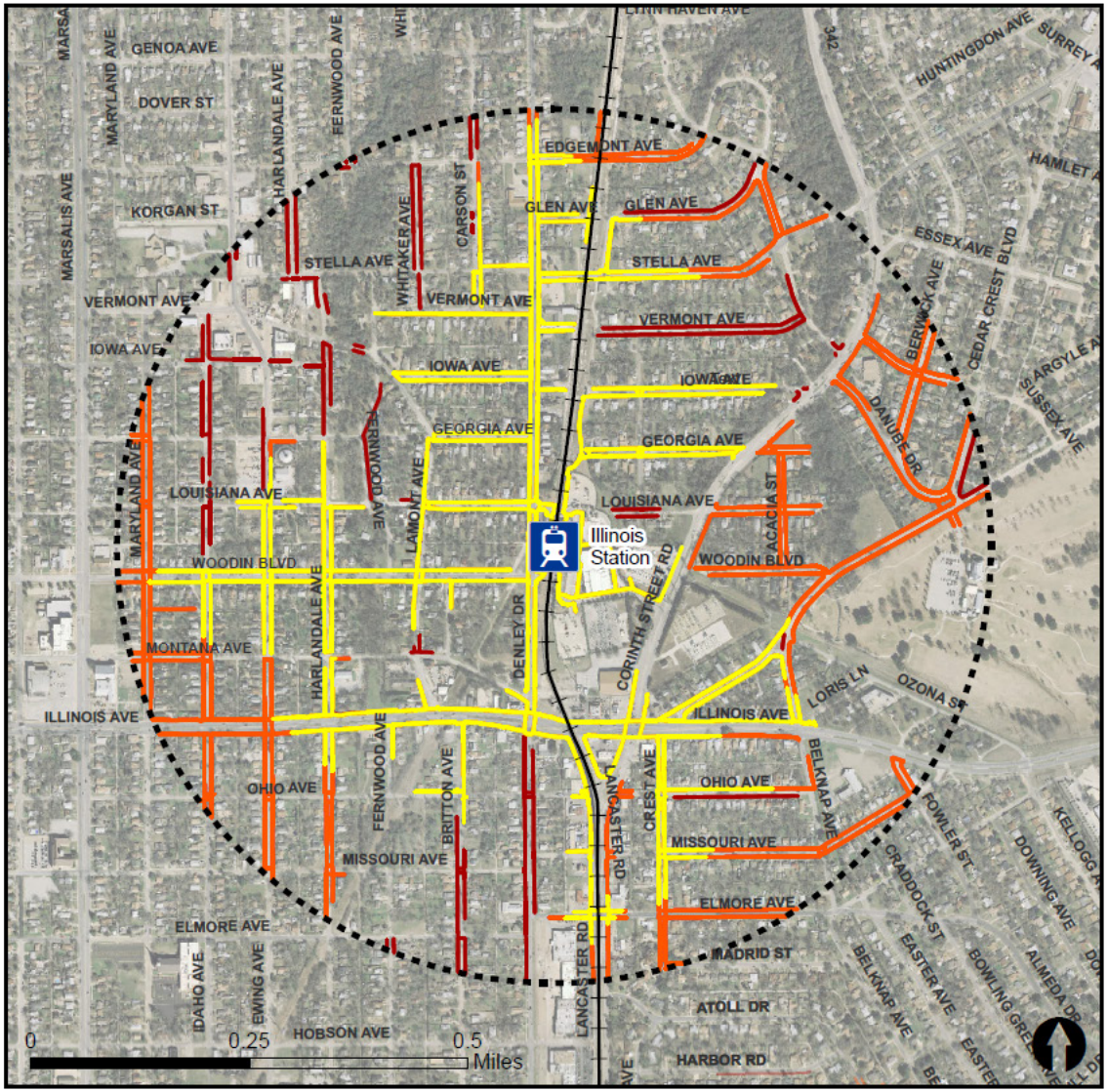


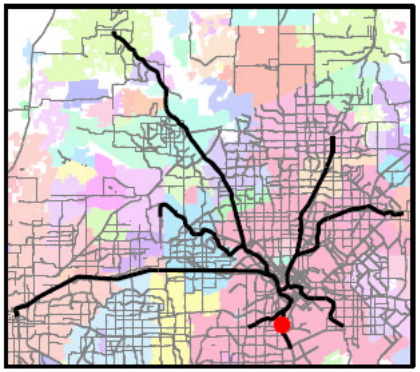
Legend

- Rail Stations
- 0.5 Mile Station Buffer
- Railroads
- Existing sidewalk facilities within a 0.5 mile walk distance
- Existing sidewalk facilities greater than a 0.5 mile walk distance
- Existing sidewalk facilites that are disconnected due to a gap in the network

Project Overview

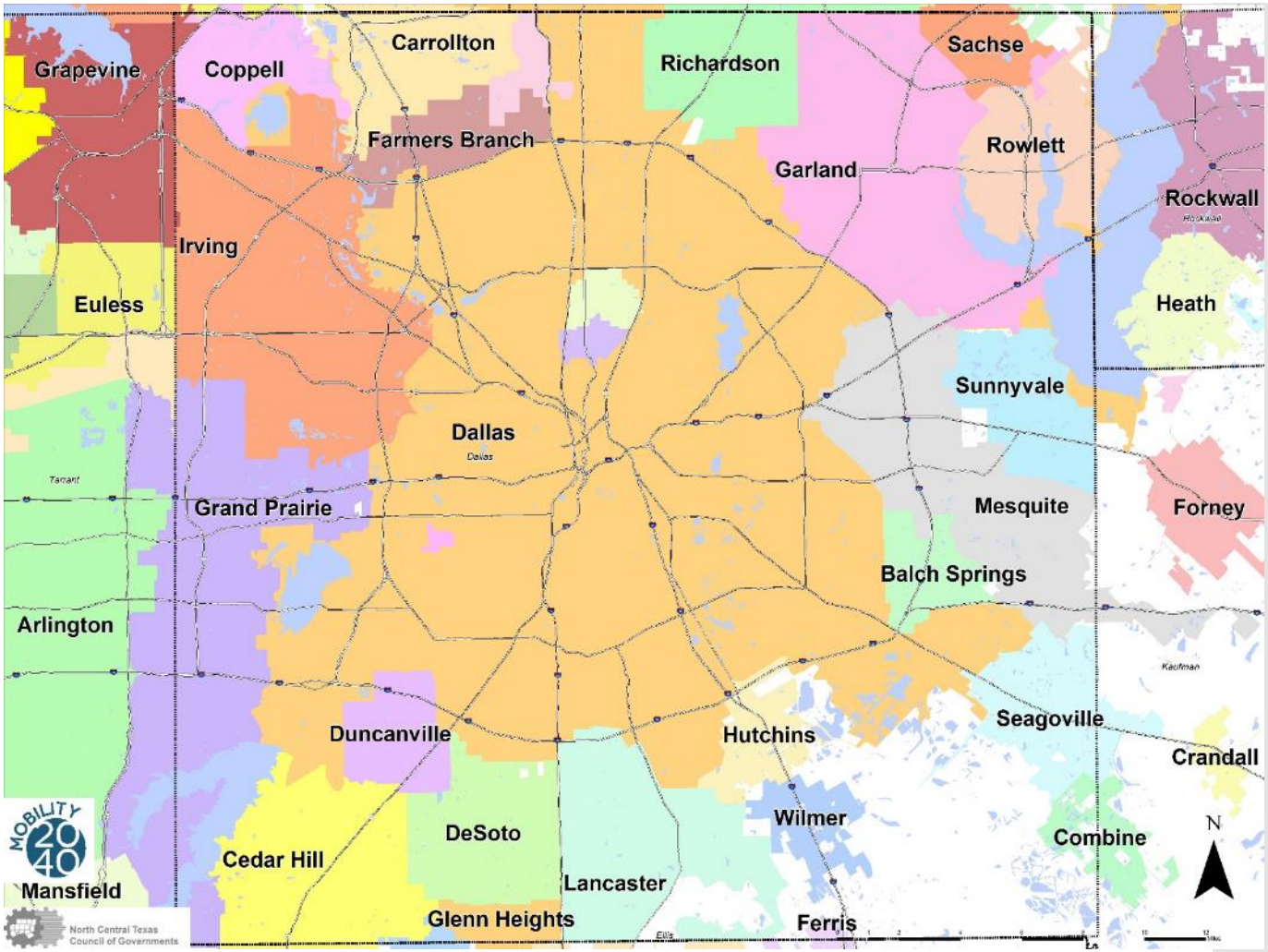
The Pedestrian Routes to Rail study identifies all existing pedestrian facilities within a half-mile radius of existing light rail and commuter rail stations in the Dallas-Fort Worth region based on 2014 data. ArcGIS Network Analyst tool was used to identify continuous facilities that are less than or greater than a half-mile actual walking distance to a station. The maps also reflect existing facilities that are disconnected due to gaps or other barriers not allowing a continuous pedestrian route to a station. The maps do not reflect the condition or ADA compliance of the existing infrastructure. More information on the Routes to Rail study and methodology can be found at:

nctcog.org/RoutesToRail



Dallas Co. Trails and Bikeways

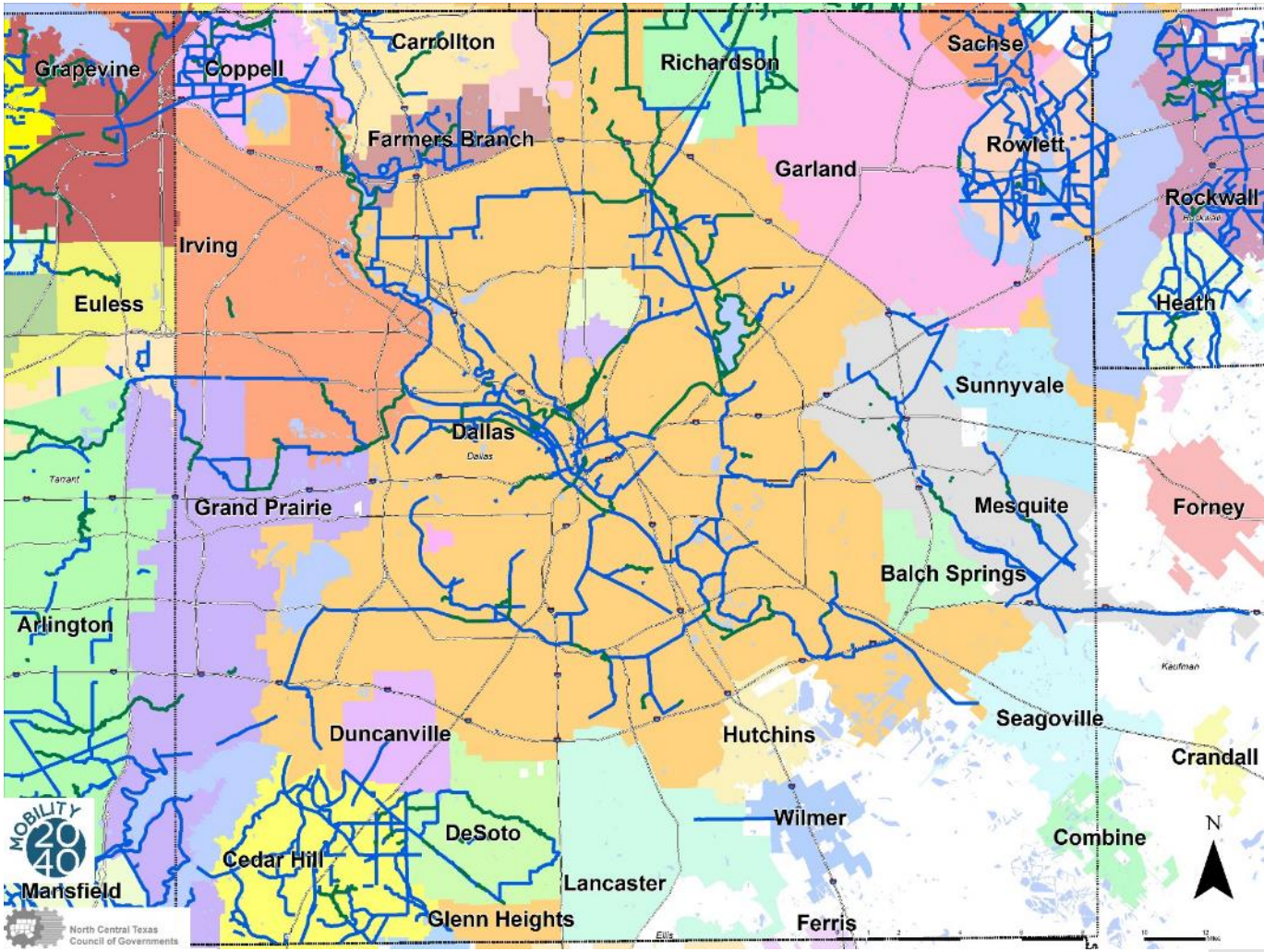
Active Transportation Network



Dallas Co. Trails and Bikeways

Active Transportation Network

Existing and Planned Trails

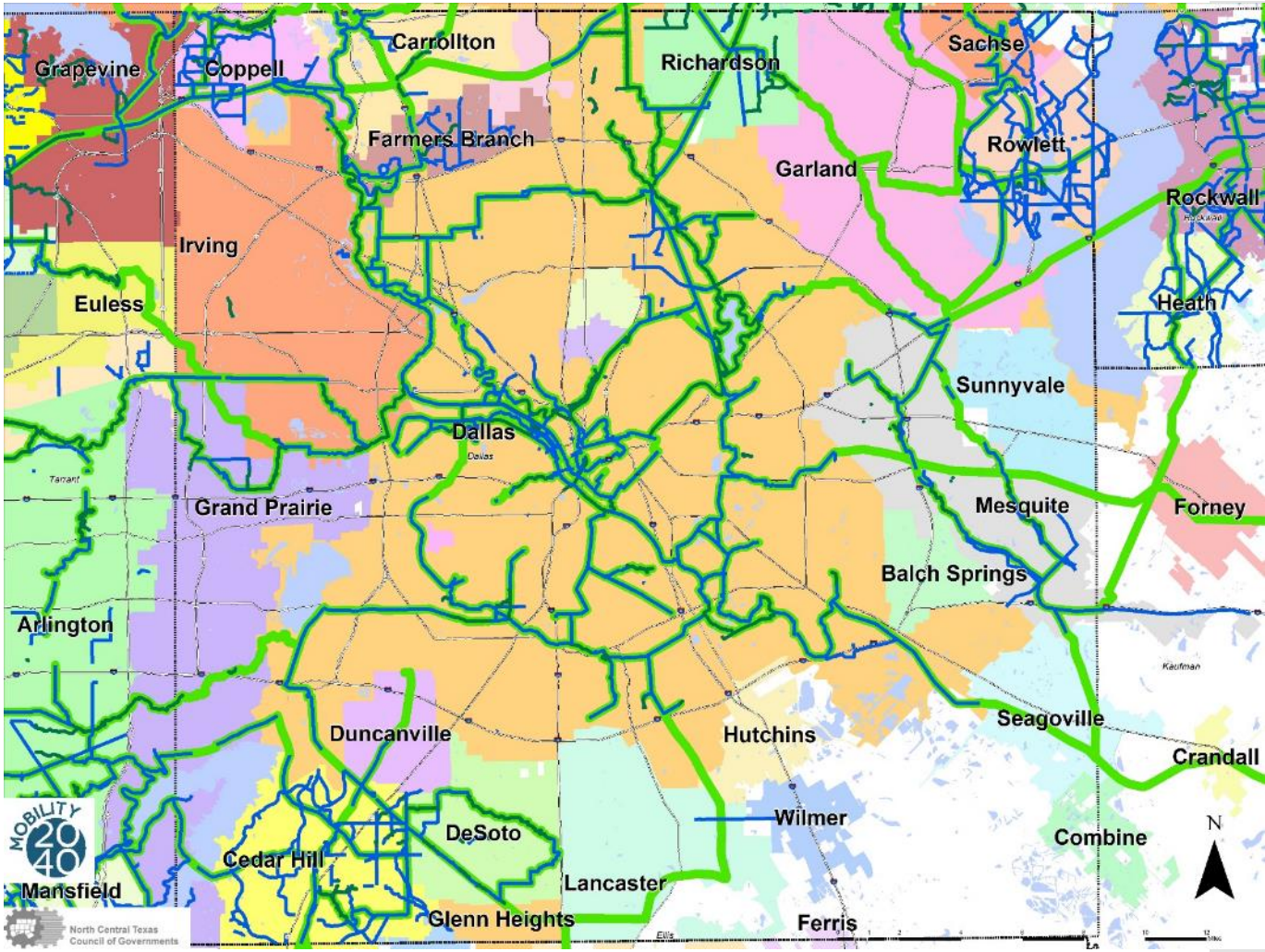


Dallas Co. Trails and Bikeways

Active Transportation Network

Existing and Planned Trails

Regional Veloweb (Prioritized Corridors)



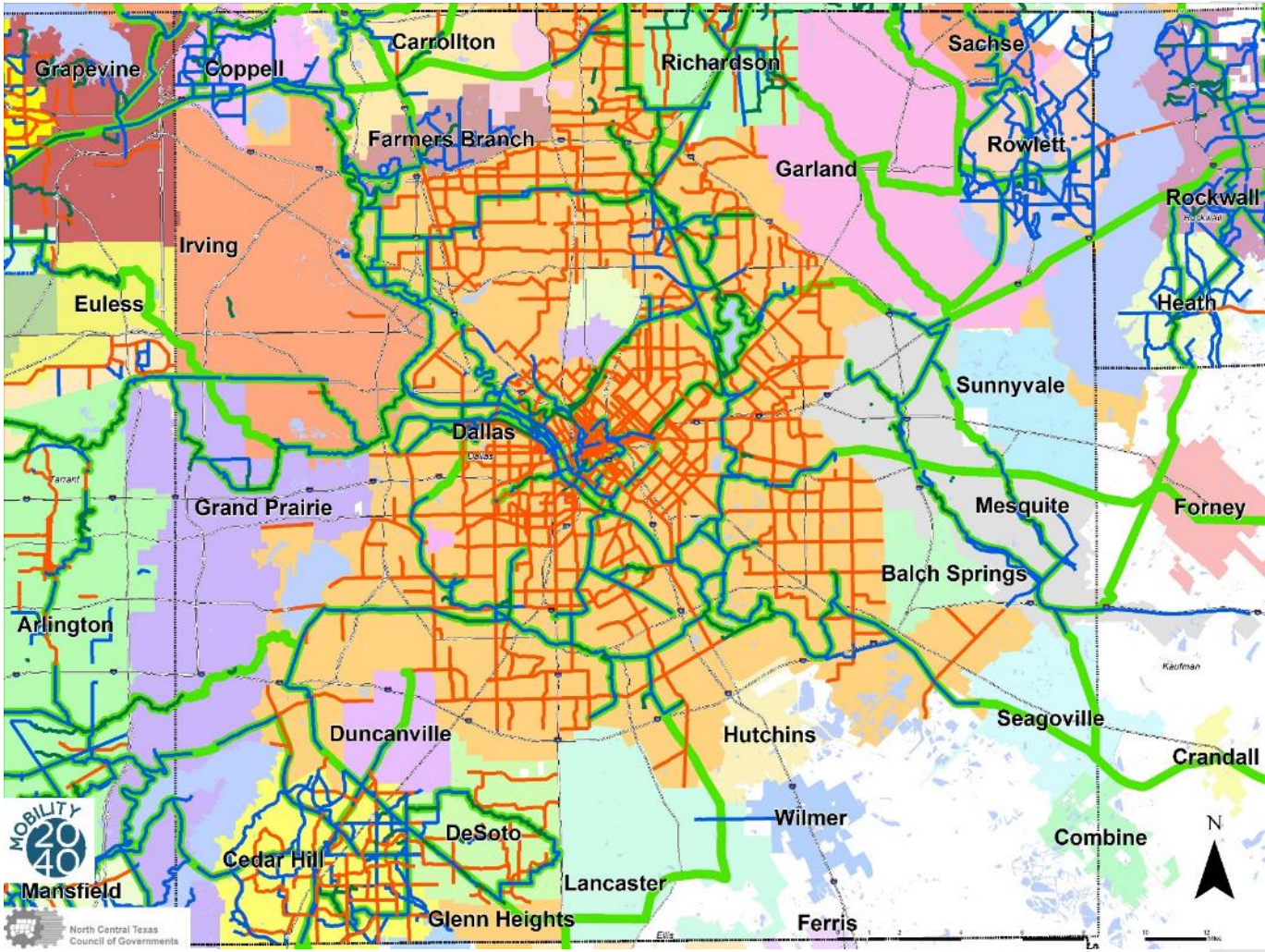
Dallas Co. Trails and Bikeways

Active Transportation Network

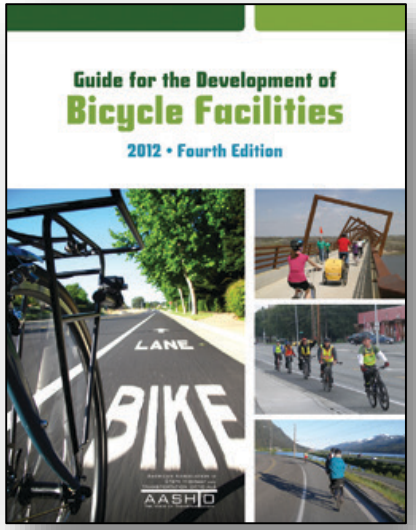
Existing and Planned Trails

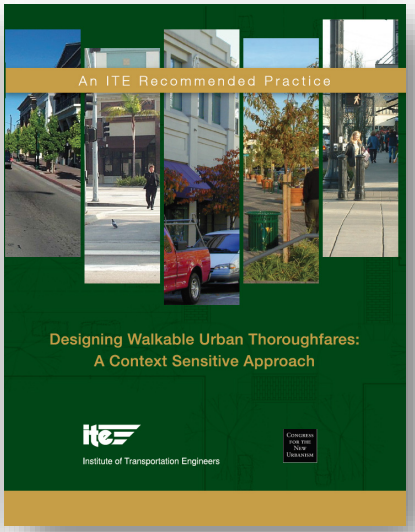
Regional Veloweb (Prioritized Corridors)

On-Street Bikeways



Facilities Design Guides





AASHTO

(American Association of State Highway and Transportation Officials)

Guide for the Development of Bicycle Facilities (2012), 4th Edition

NACTO

(National Association of City Transportation Officials)

Urban Bikeway Design Guide (2012)

ITE

(Institute of Transportation Engineers)

Designing Walkable Urban Thoroughfares: A Context Sensitive Approach (2010)

Facilities Design Guides

Outlines planning considerations and design options for separated bike lanes.

FHWA

Separated Bike Lane Planning and Design Guide (May 2015)

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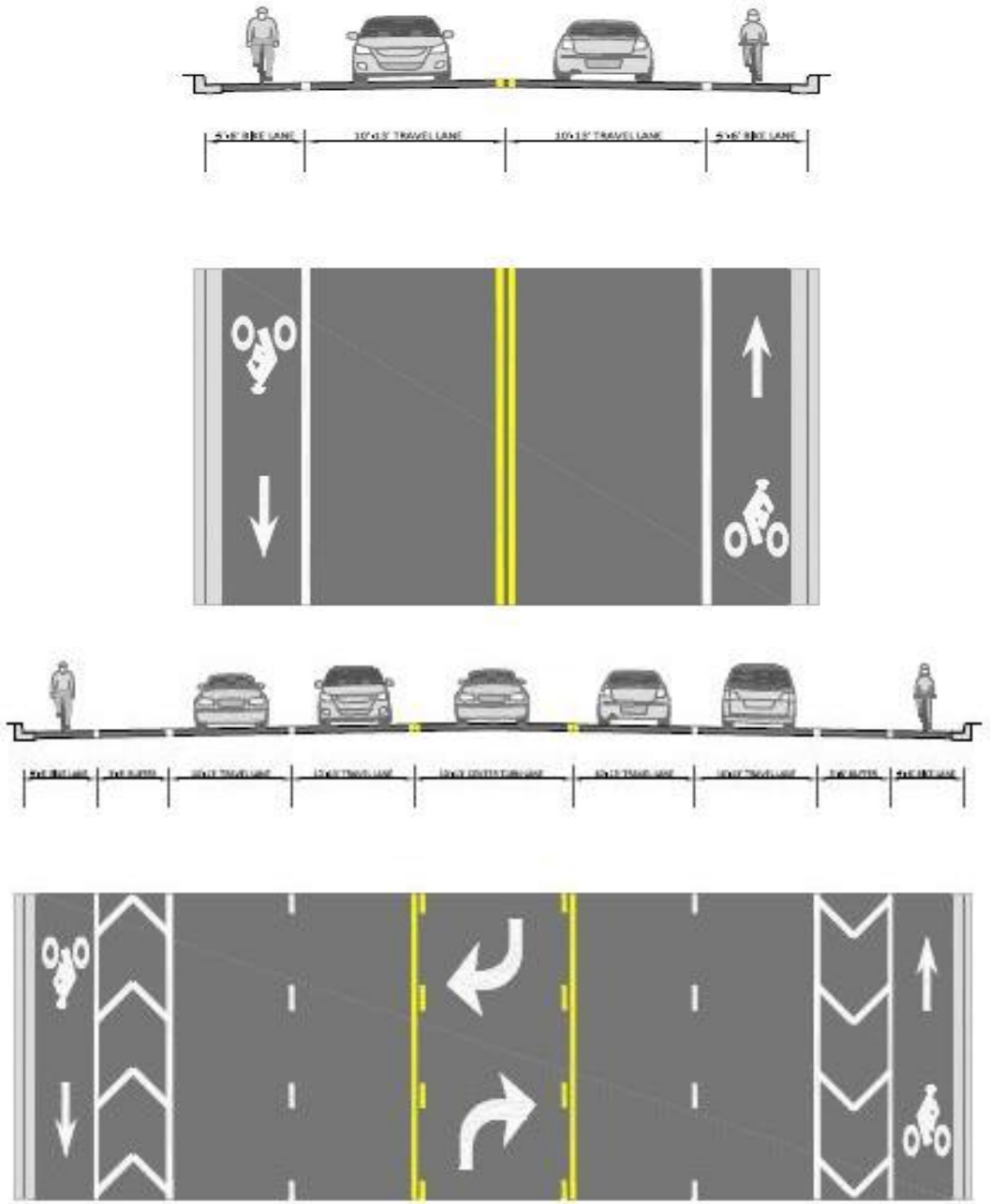
On-Street Bikeway Facilities

Protected Bike Lanes

Bike Lanes

Marked Shared Lanes



Q.2 5 Lane Buffered Bike Lanes with Center-Turn-Lane No Parking

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Buffered Bike Lanes – Travel Side Buffer

NACTO Urban Bikeway Design Guide (2012)

(National Association of City Transportation Officials)

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Buffered Bike Lanes – Merging Area

NACTO Urban Bikeway Design Guide (2012)

(National Association of City Transportation Officials)

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Raised Cycle Track with Mountable Curb

NACTO Urban Bikeway Design Guide (2012)

(National Association of City Transportation Officials)

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Raised Cycle Track with Mountable Curb

NACTO Urban Bikeway Design Guide (2012)

(National Association of City Transportation Officials)

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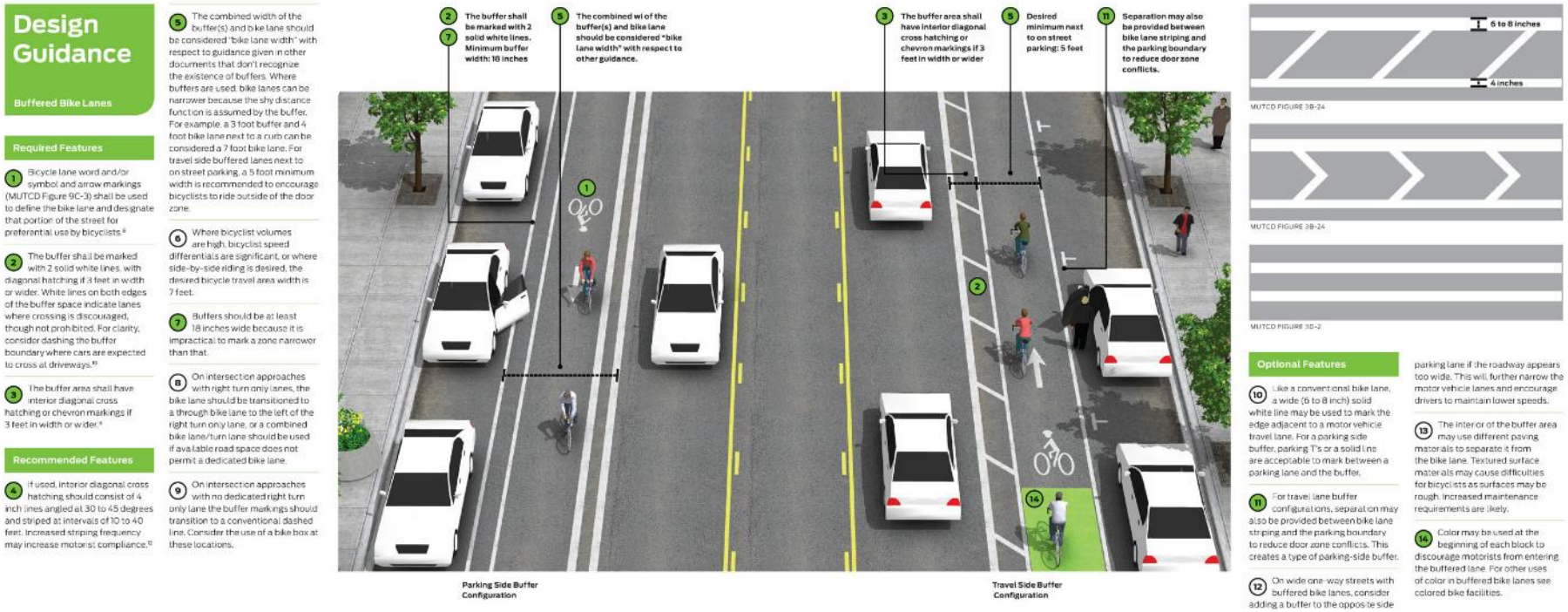
Design Guidance



Design Guidance

Buffered Bike Lanes

Required Features

1. Bicycle lane word and/or symbol and arrow markings (MUTCD Figure 9C-3) shall be used to define the bike lane and designate that portion of the street for preferential use by bicyclists.[6]

2. The buffer shall be marked with 2 solid white lines, with diagonal hatching if 3 feet in width or wider. White lines on both edges of the buffer space indicate lanes where crossing is discouraged, though not prohibited. For clarity, consider dashing the buffer boundary where cars are expected to cross at driveways.[10]

3. The buffer area shall have interior diagonal cross hatching or chevron markings if 3 feet in width or wider.[4]

Recommended Features

4. If used, interior diagonal cross hatching should consist of 4 inch lines angled at 30 to 45 degrees and striped at intervals of 10 to 40 feet. Increased striping frequency may increase motorist compliance.[11]

5. The combined width of the buffer(s) and bike lane should be considered "bike lane width" with respect to guidance given in other documents that don't recognize the existence of buffers. Where buffers are used, bike lanes can be narrower because the shy distance function is assumed by the buffer. For example, a 3 foot buffer and 4 foot bike lane next to a curb can be considered a 7 foot bike lane. For travel side buffered lanes next to on street parking, a 5 foot minimum width is recommended to encourage bicyclists to ride outside of the door zone.

6. Where bicyclist volumes are high, bicyclist speed differentials are significant, or where side-by-side riding is desired, the desired bicycle travel area width is 7 feet.

7. Buffers should be at least 18 inches wide because it is impractical to mark a zone narrower than that.

8. On intersection approaches with right turn only lanes, the bike lane should be transitioned to a through bike lane to the left of the right turn only lane, or a combined bike lane/turn lane should be used if available road space does not permit a dedicated bike lane.

9. On intersection approaches with no dedicated right turn only lane the buffer markings should transition to a conventional dashed line. Consider the use of a bike box at these locations.

2 The buffer shall be marked with 2 solid white lines. Minimum buffer width: 18 inches

7

5 The combined wi of the buffer(s) and bike lane should be considered "bike lane width" with respect to other guidance.

3 The buffer area shall have interior diagonal cross hatching or chevron markings if 3 feet in width or wider

5 Desired minimum next to on street parking: 5 feet

11 Separation may also be provided between bike lane striping and the parking boundary to reduce door zone conflicts.

Parking Side Buffer Configuration

Travel Side Buffer Configuration

6 to 8 inches

4 inches

MUTCD FIGURE 3B-24

MUTCD FIGURE 3B-24

MUTCD FIGURE 3B-2

Optional Features

10 Like a conventional bike lane, a wide (6 to 8 inch) solid white line may be used to mark the edge adjacent to a motor vehicle travel lane. For a parking side buffer, parking T's or a solid line are acceptable to mark between a parking lane and the buffer.

11 For travel lane buffer configurations, separation may also be provided between bike lane striping and the parking boundary to reduce door zone conflicts. This creates a type of parking-side buffer.

12 On wide one-way streets with buffered bike lanes, consider adding a buffer to the opposite side parking lane if the roadway appears too wide. This will further narrow the motor vehicle lanes and encourage drivers to maintain lower speeds.

13 The interior of the buffer area may use different paving materials to separate it from the bike lane. Textured surface materials may cause difficulties for bicyclists as surfaces may be rough. Increased maintenance requirements are likely.

14 Color may be used at the beginning of each block to discourage motorists from entering the buffered lane. For other uses of color in buffered bike lanes see colored bike facilities.

NACTO

Urban Bikeway Design Guide (2012)
(National Association
of City Transportation Officials)

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What are Complete Streets?

Multi-Modal Complete Streets

There is no singular design prescription for Complete Streets;

each one is unique and responds to its community context.

Graphic Source: City of Dallas

They are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities.

Complete Streets make it easy to cross the street, walk to shops, and bicycle to work.

Source: Smart Growth America

Master Thoroughfare Plan Update

Multi-Modal / Context Sensitive Thoroughfare Planning

The updated plan will encourage multi-mode transportation like streetcars, buses, trains and bicycles.

- Complete Streets Based
- Context Sensitive Street Typologies
- Designated Street Types
  - Activity Street
  - Commercial / Mixed-Use Street
  - Connector Corridors
  - Commercial Corridor
  - System Link

North Central Texas Council of Governments

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