KNOXVILLE REGIONAL TRANSIT CORRIDOR STUDY

KNOXVILLE, TENNESSEE

TOD Toolkit

MARCH 2013

kat KNOXVILLE AREA TRANSIT | TPO TRANSPORTATION PLANNING ORGANIZATION | STV | SASAKI

TOD Toolkit

1. **Executive Summary**
2. **Summary of Previous / Current Studies**
3. **Basis of a Toolkit**
   What , Why & How
4. **Project Case Studies**
   Euclid Avenue, Cleveland, OH; Lynx Blue Line, Charlotte, NC
5. **Funding Case Studies**
   A-Train, Denton County, TX
   RTD FasTracks, Denver, CO
   Portland Streetcar, Portland, OR
   UTA TRAX FrontLines, Salt Lake City, UT
6. **Tier I Toolkit Analysis**
   GIS and Street character analysis of selected corridors
7. **Tier II Toolkit Analysis**
   Potential station area development scenarios
   Cumberland Avenue / Kingston Pike Corridor
   Magnolia Avenue
8. **Toolkit Recommendations / Next Steps**

EXECUTIVE SUMMARY

TOD Toolkit

- The purpose of the toolkit is to educate and inform local citizens and policymakers on the importance of expanding transit opportunities in their communities.

- It covers best practices nationwide, highlighting those most applicable to the specific attributes of Knoxville, to provide a context for public discussions going forward.

- Looking ahead, the toolkit will support development of transit supportive land use policies and tools to support transit oriented development and corridor development in Knoxville.

TOD Toolkit

- The Toolkit describes the prevalent modes of transit in use across the United States, as well as the characteristics and metrics of station locations in urban core and urban periphery contexts.

- Two types of Transit Oriented Developments result from these characteristics to form either nodal or linear types of development.

- The Toolkit clearly defines Transit Oriented Development and illuminates the added value to communities and cities that potentially result from successful implementation.

- Key points regarding station area development are addressed in the Toolkit, including public /private partnerships models of development and the flexibility of the TOD model in avoiding a one-size-fits all solution.

TOD Toolkit

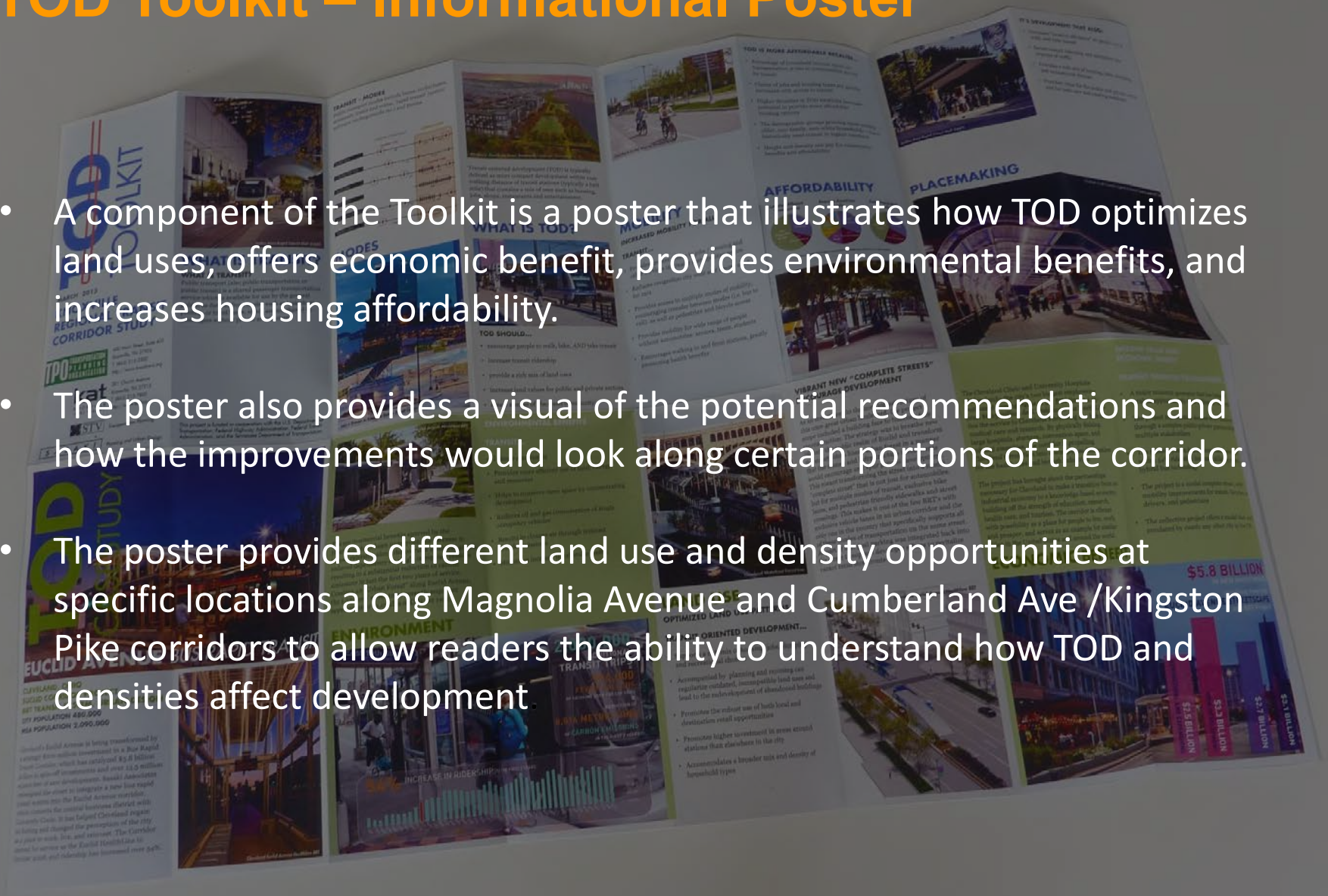
- The Toolkit goes on to describe the main reasons why cities and communities would adopt TOD though the use of case studies across the United States and data from many sources.

- The reasons supporting TOD include increased mobility, positive land use outcomes, environmental benefits, value creation and economic development, the possibility of good placemaking and design.

- The Toolkit briefly describes strategies for implementation drawn from best practices in the Unites States and identifies prevalent funding models for transit from recent examples.

TOD Toolkit – Informational Poster

TOD Toolkit – Informational Poster



- A component of the Toolkit is a poster that illustrates how TOD optimizes land uses, offers economic benefit, provides environmental benefits, and increases housing affordability.
- The poster also provides a visual of the potential recommendations and how the improvements would look along certain portions of the corridor.
- The poster provides different land use and density opportunities at specific locations along Magnolia Avenue and Cumberland Ave /Kingston Pike corridors to allow readers the ability to understand how TOD and densities affect development.

Summary of Previous/Current Studies

Knoxville Area Transit: Transit Development Plan
Chapter 10 High Capacity Corridor Study
October 2009

Broadway Corridor in Fountain City
Complete Streets Study
July 2009

A History of Connection:
Cumberland Avenue Corridor Plan
April 2007

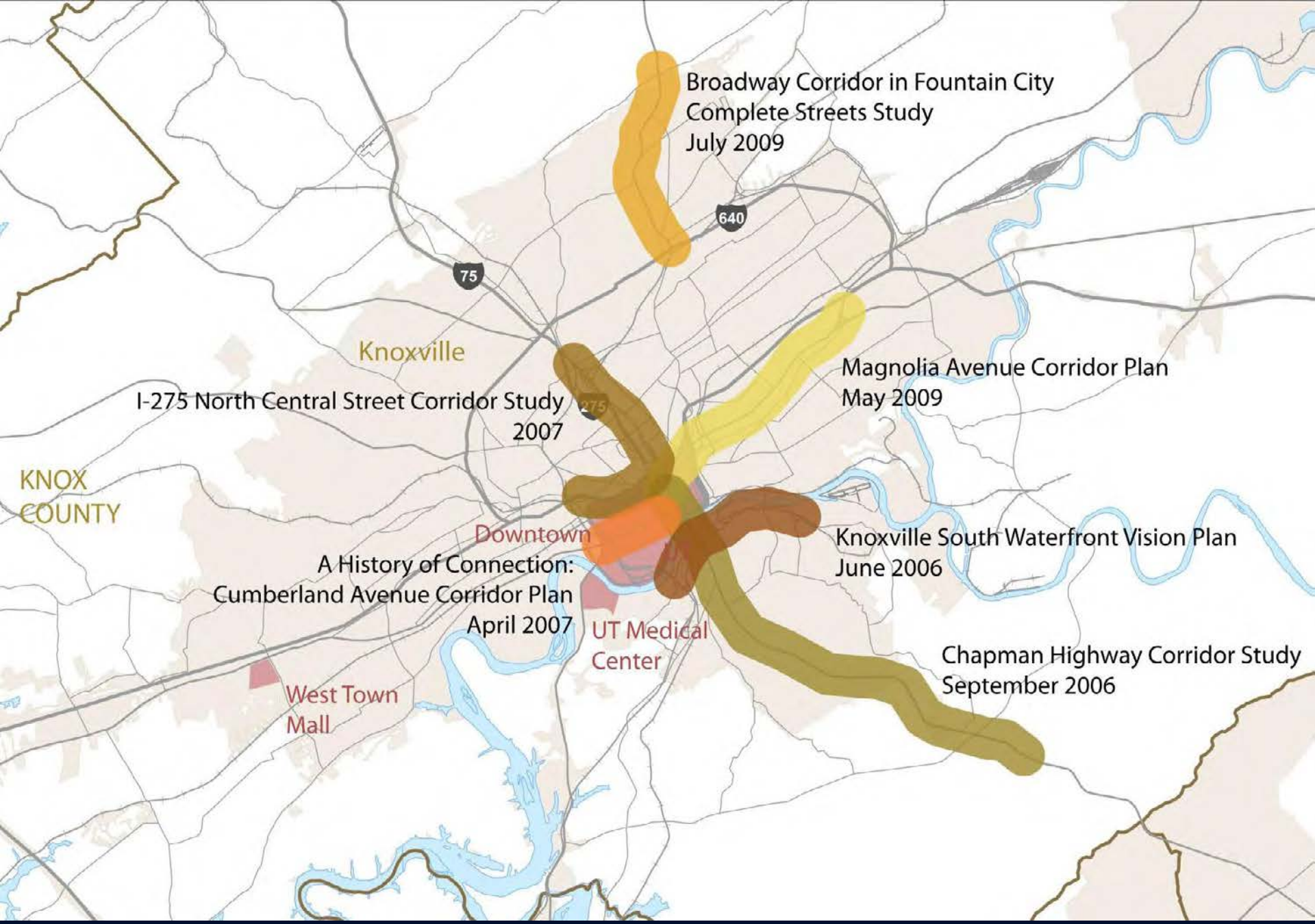
Magnolia Avenue Corridor Plan
May 2009

Chapman Highway Corridor Study
September 2006

I-275 North Central Street Corridor Study
2007

Knoxville South Waterfront Vision Plan
June 2006

To better understand the context in which the transit study would take place, a number of previous and current planning studies were reviewed. The studies addressed different aspects of planning for each corridor, some focused on transit opportunities, others on vision and neighborhood development. These planning efforts should help to guide more detailed work going forward.



Previous / Current Studies Location Plan

kat TPO TRANSPORTATION PLANNING ORGANIZATION STV SASAKI

Knoxville Area Transit: Transit Development Plan
Chapter 10 High Capacity Corridor Study
October 2009

- *"This study focuses on providing this short-term guidance to KAT as well as maintaining a perspective of a longer term vision."*

- *Goal is to "identify corridors most suitable for fixed-guideway, high capacity (rail or bus rapid transit) service and for TOD to support higher capacity transit service."*

- *These corridors include:*

    - *Cumberland Avenue*
    - *Norfolk Southern Railroad West Corridor*
    - *Western Avenue*
    - *North Broadways Street*
    - *Magnolia Avenue*
    - *MLK Avenue*
    - *Chapman Highway – JW Parkway*
    - *Alcoa-Knoxville Rail Corridor*

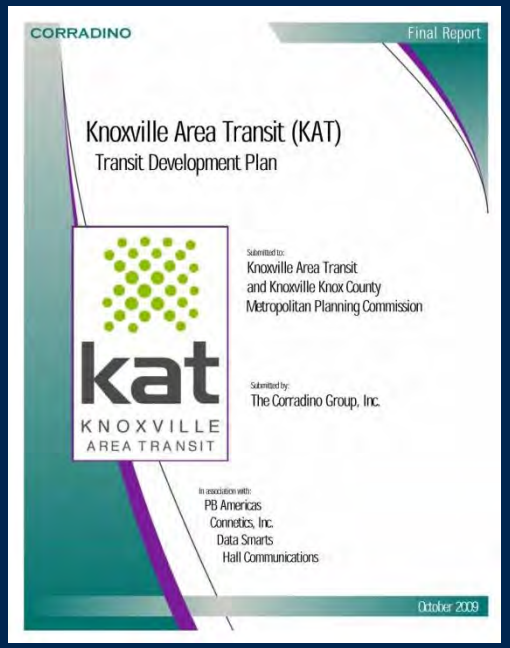
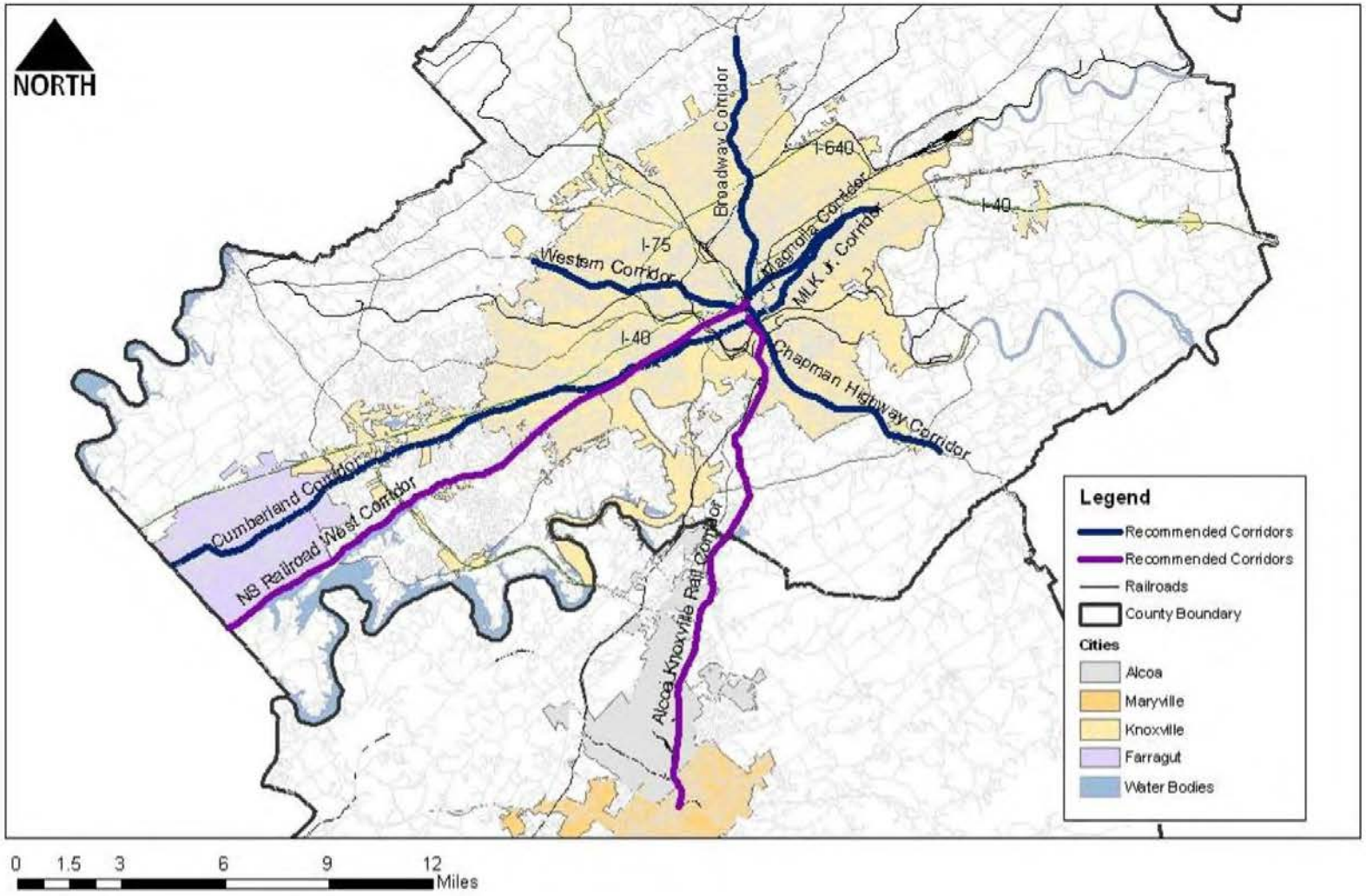


Figure 10-1
Corridors with Greatest Potential for High Capacity Transit



Report graphic of recommended corridors

Broadway Corridor in Fountain City
Complete Streets Study
July 2009

- *"The Vision includes a raised median, bicycle lanes, sidewalks, a planting strip with street trees and reorientation of buildings to make them more pedestrian friendly."*

- *"Rather than try to implement the vision at once, the study recommends a toolkit of strategies, that will show immediate results and incrementally achieve the vision over time."*

- *Policy changes to implement design could include:*
  - *Sidewalk ordinance*
  - *Adequate public facility ordinance*
  - *Urban design overlay*
  - *Form-based code or*
  - *Private-sector incentives*

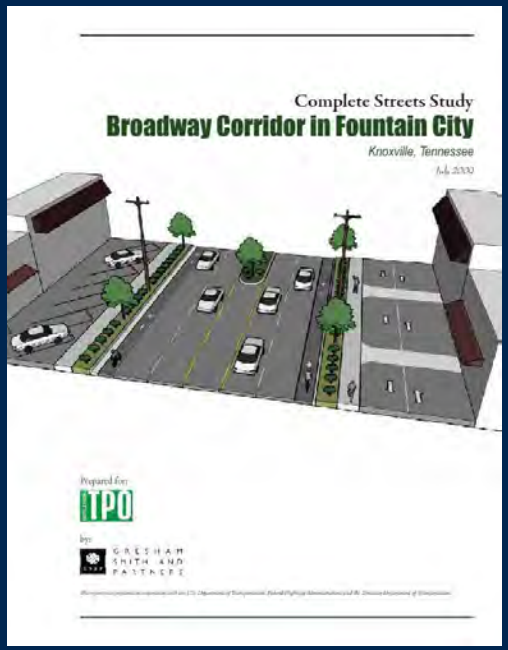
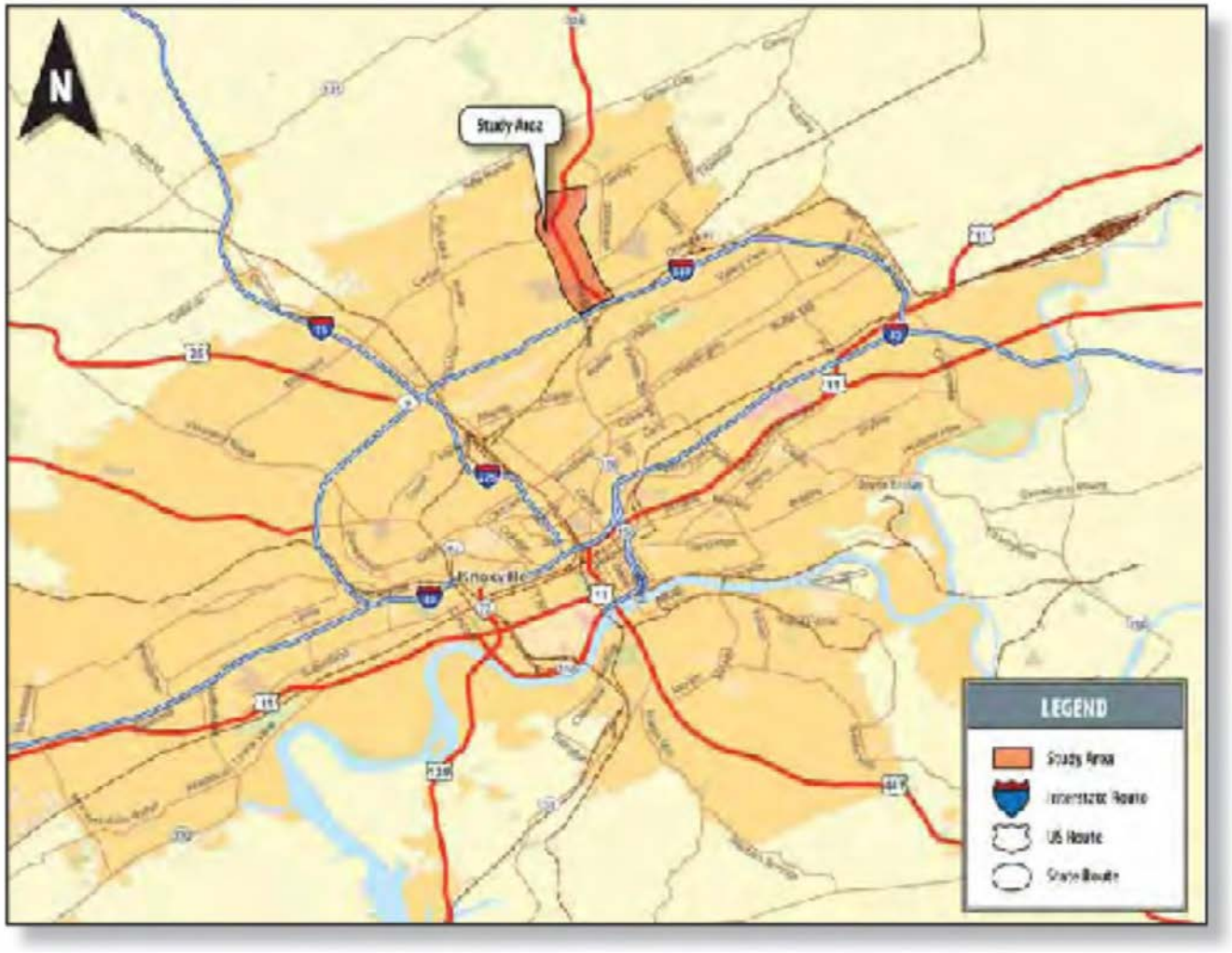


Figure 1.1 Study Area — Regional



Study area location map

Complete streets are intentionally designed . . .

. . . around all potential users.

(Photos courtesy of the Complete the Streets Coalition)

Average Speed and Levels of Service

Heavy traffic volumes and relatively close signal spacing both contribute to slower travel speeds on Broadway. The posted speed within the study area is 40 miles per hour (mph), yet the average speed during peak travel periods is less than 25 mph, and the average speed during midday is approximately 30 mph. The difference between the posted speed and the actual speed is attributed to delay at traffic signals.

Table 2.1 Average Motor Vehicle Speed on Broadway (miles per hour)

Time of Day	Northbound	Southbound
AM Peak*	n/a	15.3 mph
PM Peak*	23.0 mph	n/a
Midday**	30.7mph	18.0 mph

*City of Knoxville Traffic Signal Study (2007)
**Field measurement (2008)

In some locations along the corridor, signals are clustered close together, leaving large gaps, sometimes as long as a quarter of a mile. The net effect is that motor vehicles obtain high speeds at long signal gaps and then stop abruptly at intersections. This creates safety and operational issues for motor vehicles as well as bicycles and pedestrians.

Vehicles increase speed at mid-block locations along the corridor . . .

. . . only to stop abruptly at the next intersection.

Some signals are clustered close together, while others are more than a quarter-mile apart. (Pictured: Cars line up at the signalized intersection at Hotel Road and Broadway, which is spaced more than 1,300 feet from the next signal at Colonial Circle.)

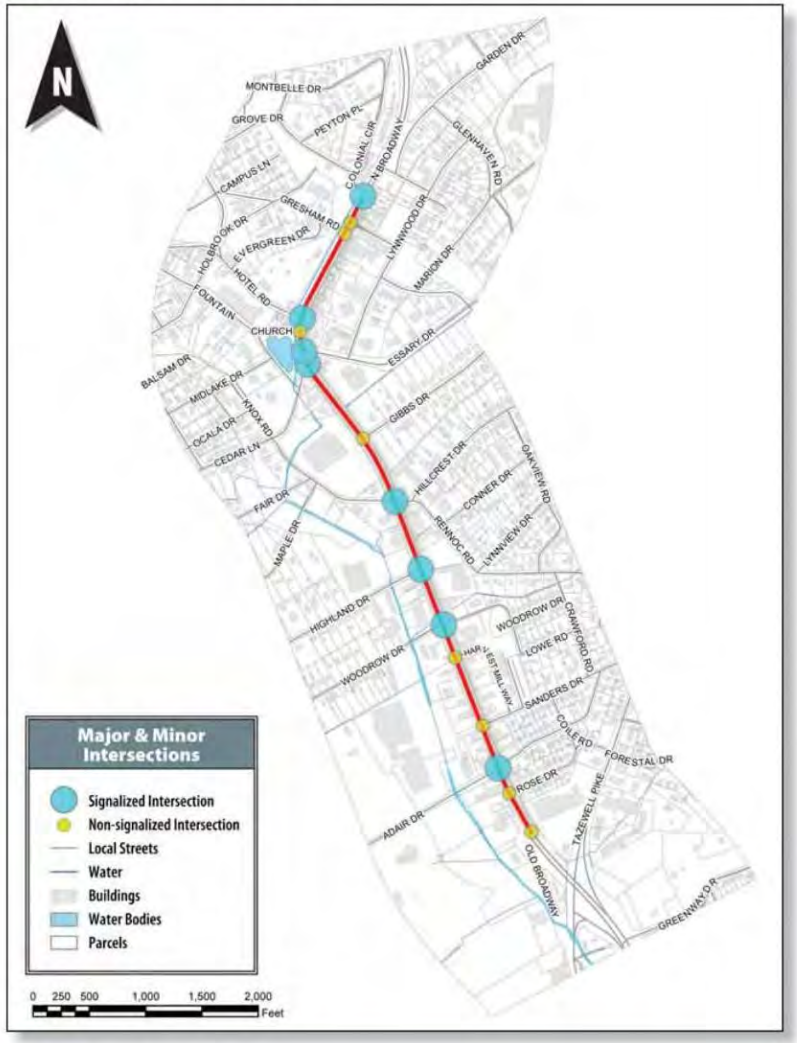
Complete streets explained, initial corridor characteristics analysis

Figure 4.1 Elements of a Complete Street

(source: Livablestreets.com)

Figure 4.6 Mid-block Island

Figure 2.2 Major & Minor Intersections



Design elements of a complete street, intersection location map

A History of Connection:
Cumberland Avenue Corridor Plan
April 2007

"Charts the course for a more attractive, economically successful, vibrant and safe Cumberland Avenue."

Recommendations include:

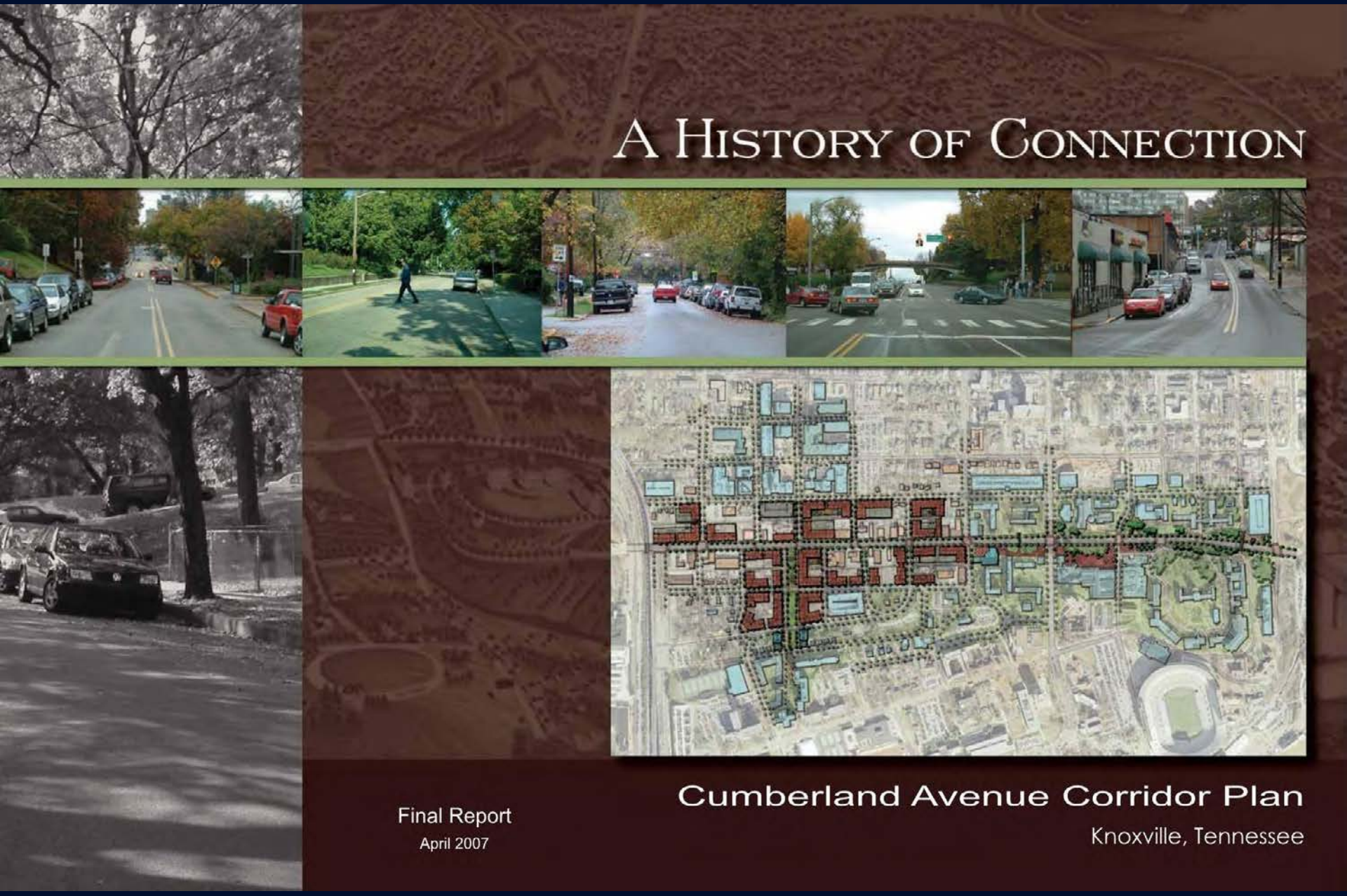
- *Implement three-lane reconfiguration to create wider sidewalks, street trees, bicycle lanes, accommodate transit and delivery trucks, make more development supportive*

- *Urban design plan to include 1,400 new housing units and 130,000 sf ground floor commercial*

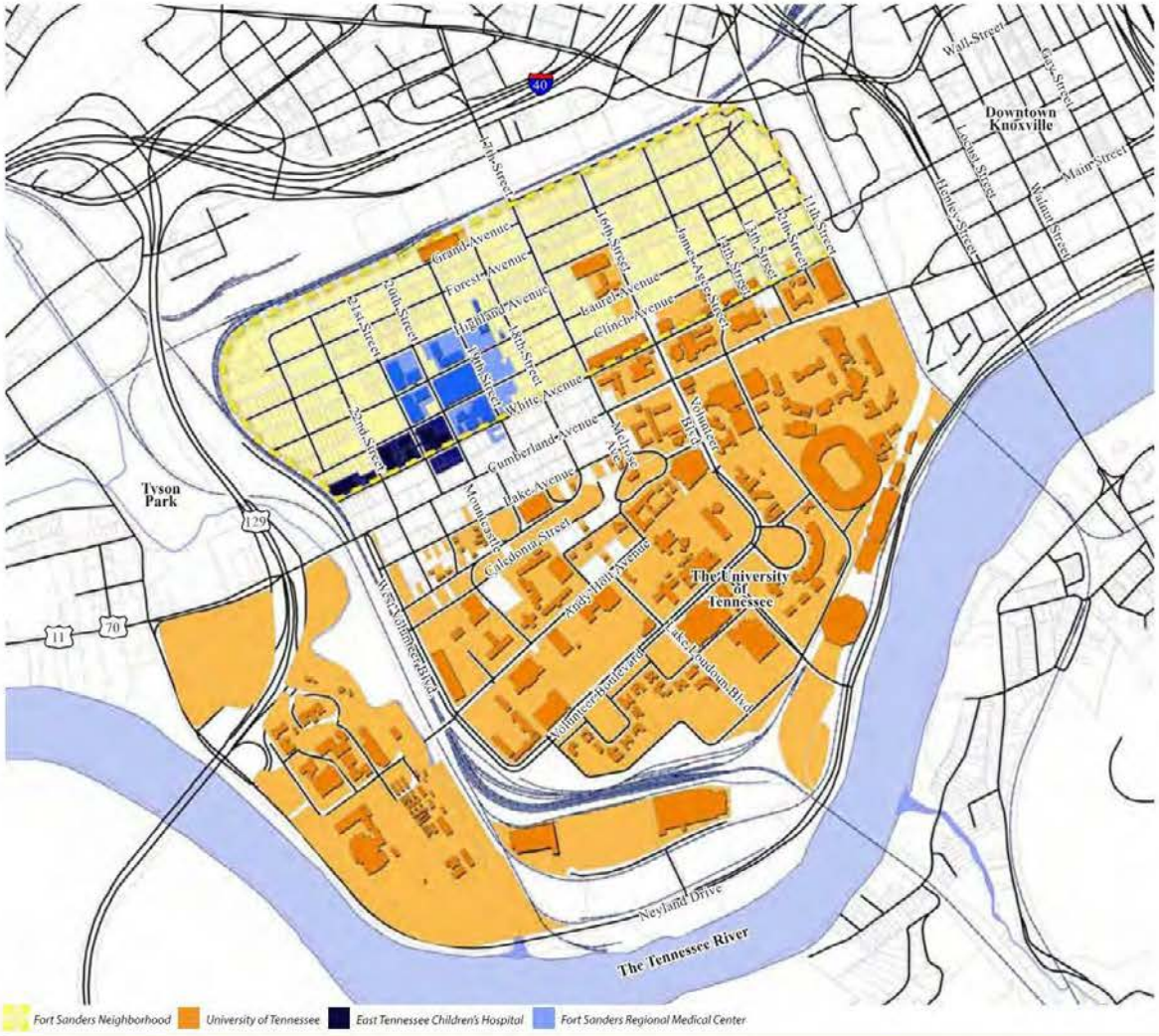
- *Rewrite C-7 design district regulations*

- *Reconfigure Mountcastle Park*

- *Support public parking resources*



Report cover



Major Stakeholders

Cumberland Avenue is surrounded and influenced by a set of major area stakeholders.

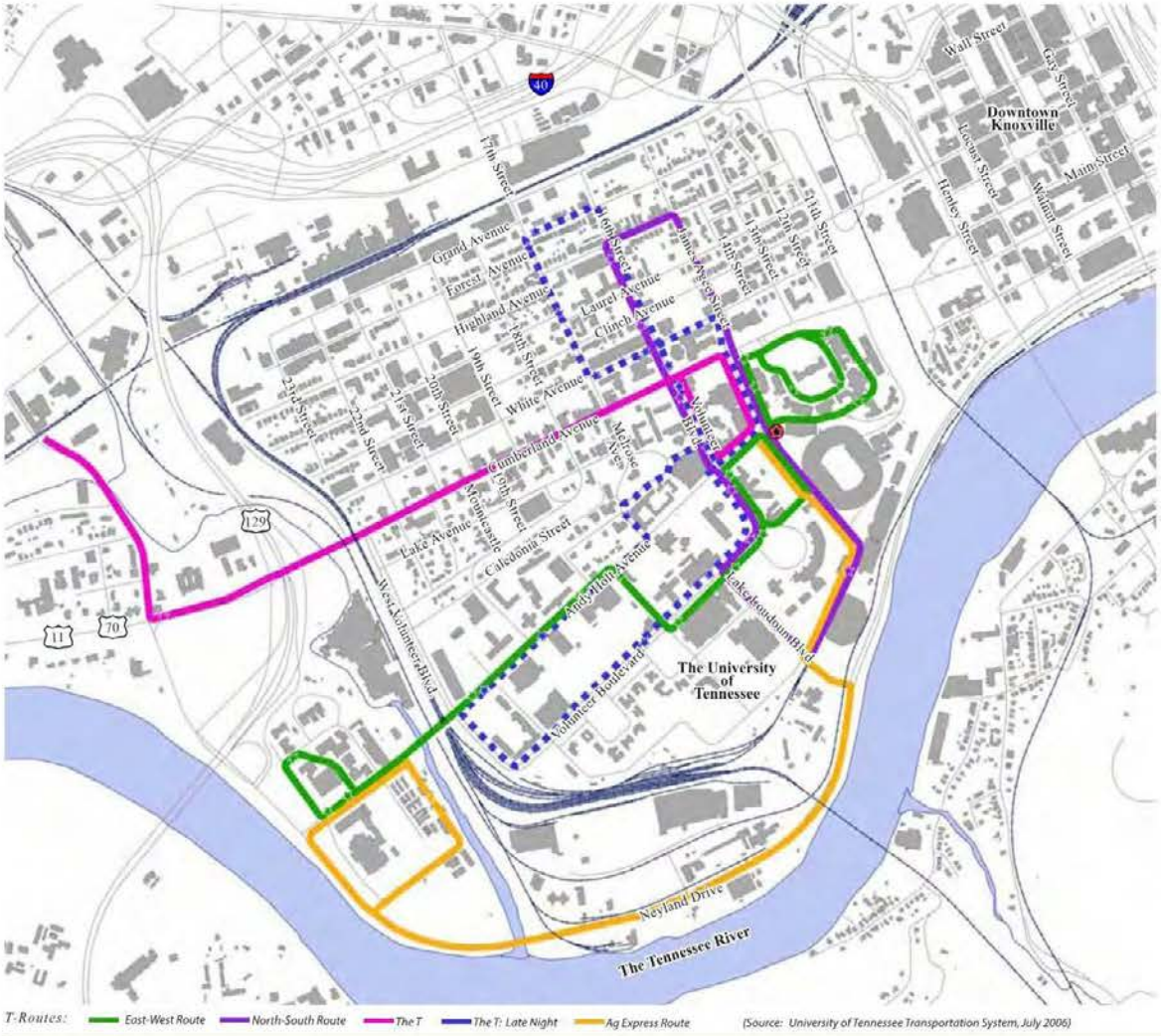
The University of Tennessee – The University's beginnings in the area date back to the 1820s with its first building built on "the hill". The University has experienced significant expansion since the 1950s and is currently planning on accommodating an additional 8,000 students in the coming years.

The Fort Sanders Regional Medical Center – This hospital has been in this location since 1919 and is a major institution and employer in the area. Its growth and expansion continue to serve as an important economic engine for the Cumberland Avenue.

The East Tennessee Children's Hospital – This hospital has been in this location since 1937 and is continuing to grow and expand.

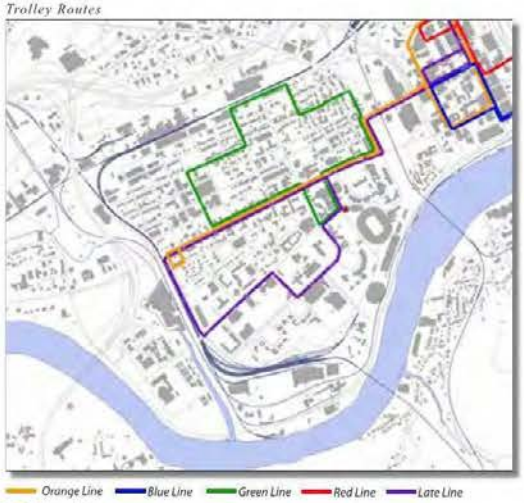
The Historic Fort Sanders Neighborhood – This neighborhood dates back to the area's original urban expansion from downtown after the Civil War with many historic homes dating to the 1890s. It faces the challenge of continued growth of student housing, parking demands and protection of historic resources.

Context analysis: major stakeholders

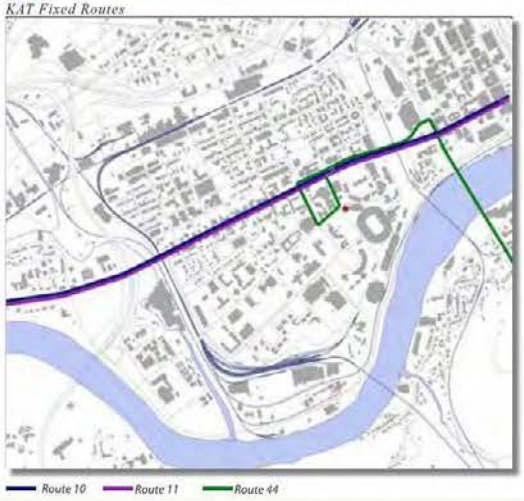


Transit Routes

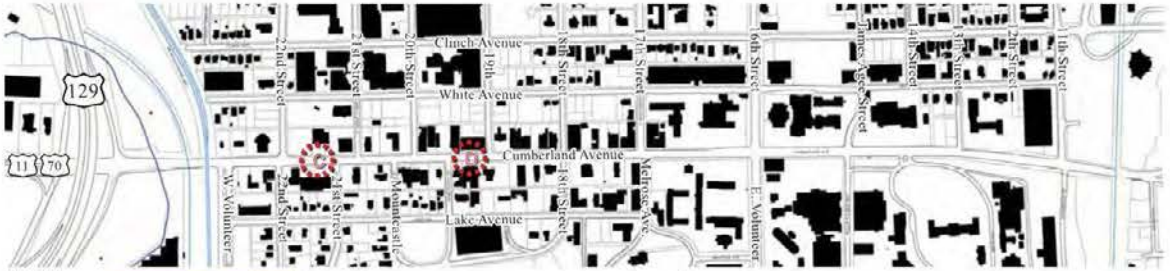
Trolley Routes



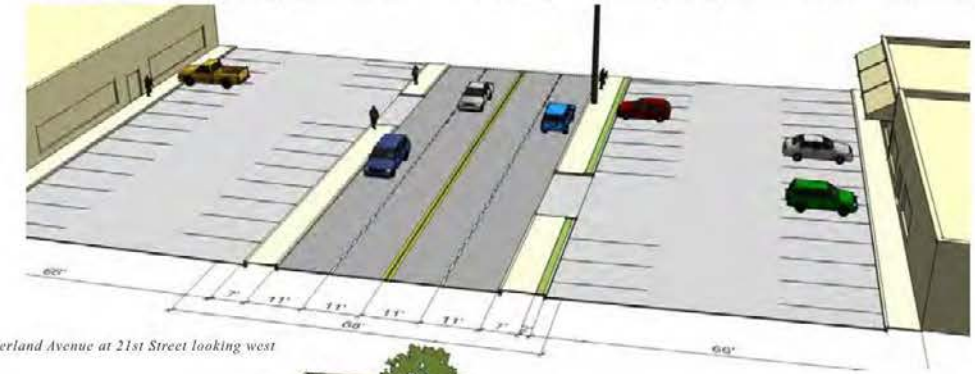
KAT Fixed Routes



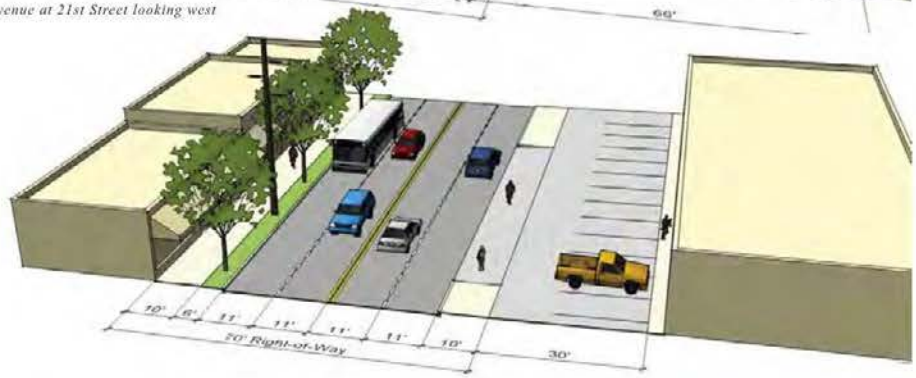
Context analysis: Transit routes – T, Trolley, and bus routes



Key Map



Cumberland Avenue at 21st Street looking west



Cumberland Avenue at 19th Street looking to the east

Existing Street Sections: Cumberland Avenue-22nd Street to 17th Street

60'-0" setbacks along Cumberland Avenue at 21st Street looking west

Sidewalk condition along Cumberland Avenue looking east

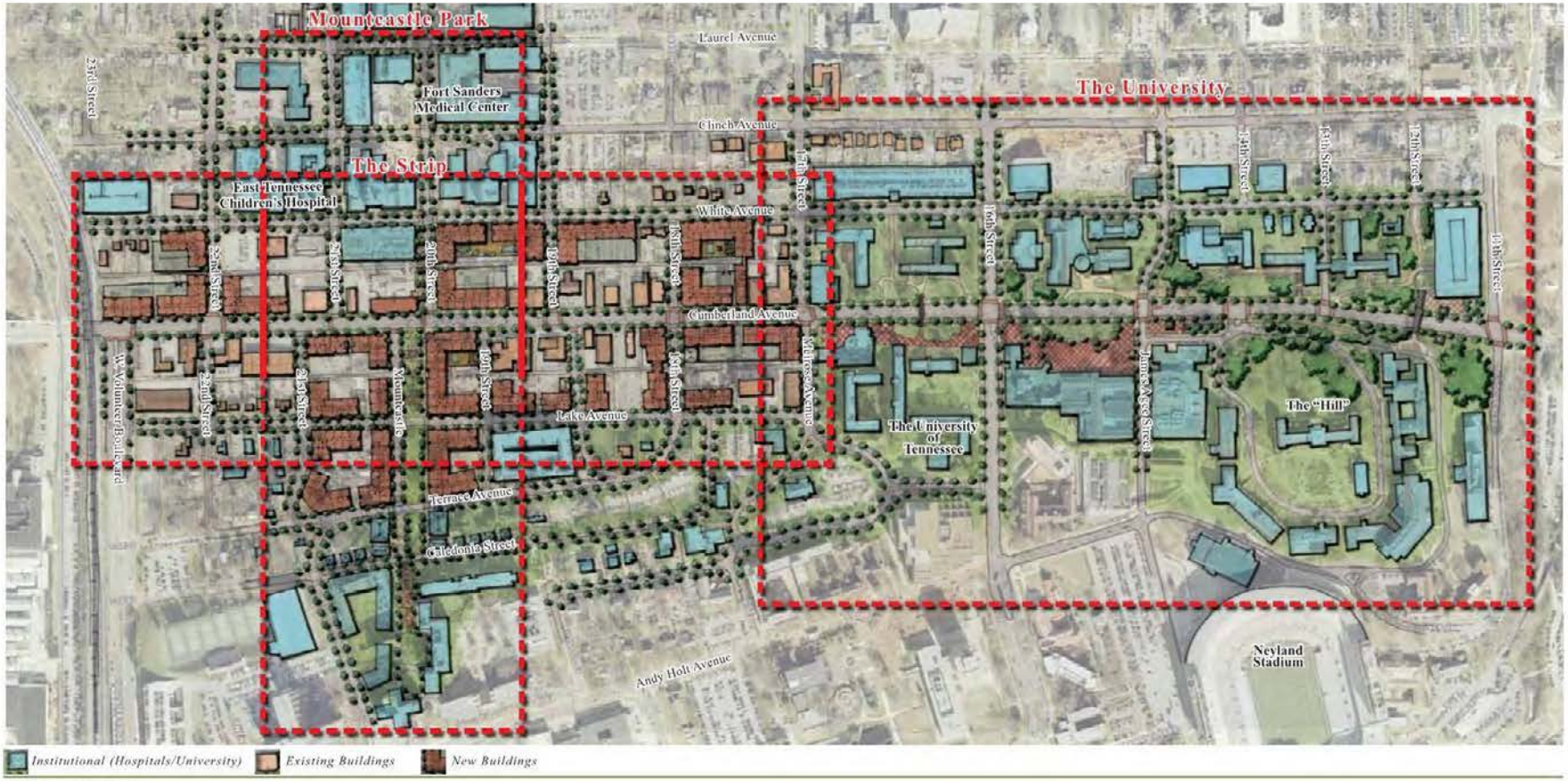
Context Analysis: Existing streets

The Urban Design Plan

The urban design plan proposed for Cumberland Avenue is organized into three areas: The University, Mountcastle Park, and The Strip. The urban design plan examines how redevelopment could occur in each of these areas based on the vision statement and current parcel configuration and utilization.

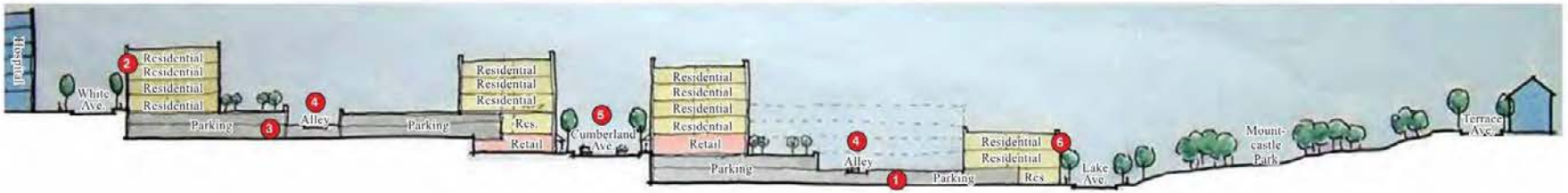
While site specific, the redevelopment scenarios illustrated are just one example of how and where redevelopment will occur and are intended mainly to inform the development of detailed design code that will guide long-term private redevelopment in the corridor. While a market analysis has not been conducted for this study to determine its development potential, the urban design plan illustrates the potential for approximately 130,000 square feet of commercial use (ground floor of mixed-use buildings) and more than 1,400 new residential units.

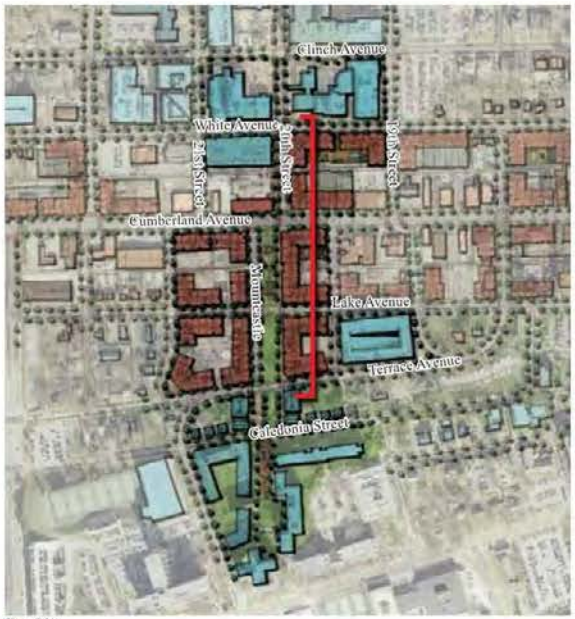
For the purposes of calculating this redevelopment potential, all necessary parking was estimated conservatively at 4 spaces per 1,000 square feet for commercial uses and 1.5 spaces per unit for residential uses, and all parking was accommodated on-site for each development. This focus on parking illustrates how redevelopment can occur without further impacting the limited public parking in the corridor and does not eliminate the need to determine a comprehensive public parking strategy.



A History of Connection
CUMBERLAND AVENUE CORRIDOR PLAN
Knoxville, Tennessee

Urban Design Plan: Mountcastle Park, The Strip & The University sub-areas





Key Map

Institutional (Hospitals/University) *Existing Buildings* *New Buildings*

Cumberland Avenue: Site Section

The site section reflects how development could occur along the Cumberland Avenue corridor. Development should take advantage of the natural topography, such as tucking the parking under new development, and respond to the adjacent land uses.

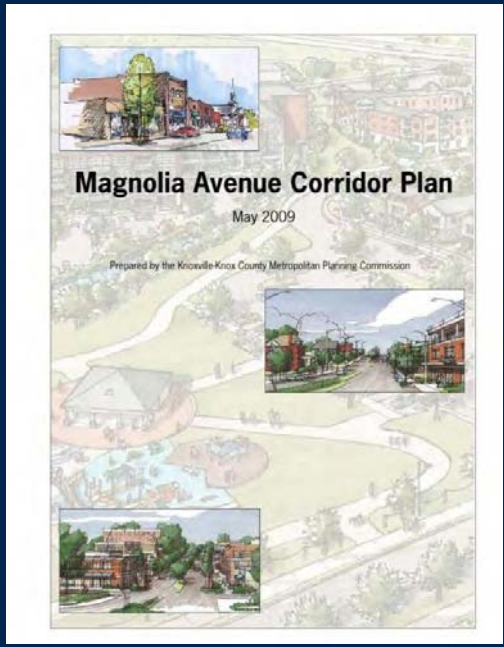
Key Concepts:

1. Potential exists to take advantage of existing topography throughout the Cumberland area by tucking parking into the hill and beneath buildings.
2. Development along White Avenue should reflect the adjacent land uses of either the University or Fort Sanders neighborhood.
3. Take advantage of topography to tuck parking under new development.
4. Keep alleys a viable part of the street network by allowing access to parking structures along with vehicular through movement.
5. Development along Cumberland Avenue should have active ground floor uses with office or residential above.
6. Residential development along Lake Avenue should reflect the surrounding neighborhood in scale and design, and should front the existing Mountcastle Park.

Magnolia Avenue Corridor Plan
May 2009

- *"The purpose of this plan is to create opportunities to enhance development along the Magnolia Avenue corridor, including the north end of downtown, the Hall of Fame-Caswell Park area, Burlington and the areas in between."*

- *The plan is focused on the physical environment and outlines:*
  - *Opportunities for more intense, mixed-use development, including a vertical mix of retail, housing and office uses*
  - *Conservation, restoration and reuse of historic resources*
  - *Improvements to the sidewalk, bicycle and street systems, including standards for on-and off-street parking*
  - *Improvements to parks and open spaces*



Vision: Magnolia Avenue in 2020

Magnolia Avenue is a vibrant corridor with a mix of strong businesses, a variety of good housing, and well designed parks and civic spaces. Historic preservation and redevelopment have been sensitive to the adjoining neighborhood needs. It is an active corridor - accessible by bus, bike and trolley. Sidewalks are enhanced by decorative lights and attractive furnishings. Residents and visitors walk safely along the avenue's sidewalks, separated from the passing traffic and shaded under a canopy of trees.

The vacant land and underutilized buildings just north of Depot Street have been used for residential, office and commercial purposes. Downtown workers live there above shops and restaurants and walk to work. A revitalized Burlington, with new shopping and housing opportunities, add vitality to the east end of the corridor. The historic architecture of Barber and others has been preserved and is used as a model for new apartments, townhouses and public buildings.

A community newspaper promotes the area's assets, including the Knoxville Zoo, the botanical gardens, Caswell and Chilhowee Parks, churches, YMCA, senior center and other community serving institutions.

Partnerships between the University of Tennessee, Pellissippi State, Knox County Schools, the City of Knoxville and local non-profits have resulted in programs that have strengthened the neighborhoods and businesses. Police and firemen enjoy a walk down Woodbine Avenue after the annual BBQ, which serves as a reminder that better relationships are a key to realizing successful growth.

Magnolia Avenue has become an address for successful enterprise, attractive housing and some of the finest places to enjoy recreation in Knoxville.

An architect's rendering of the potential for the Magnolia Avenue-Winona Street area

Magnolia Avenue Corridor Plan: Existing Land Use Map

Land Use	Acres	Percent
Vacant Land*	25.06	6.41%
Commercial	102.48	26.20%
Industrial (Manufacturing)	16.21	4.14%
Multifamily Residential	20.18	5.16%
Office	44.32	11.33%
Private Recreation	1.72	0.44%
Public Parks	22.61	5.78%
Public/Quasi Public Land	66.06	16.89%
Right of Way/Open Space	0.00	0.00%
Single Family Residential	45.34	11.59%
Transportation/Communications/Utilities	21.06	5.38%
Under Construction/Other Uses	10.70	2.74%
Wholesale	15.40	3.94%
Total for Corridor	**391.15**	

** Vacant Lots are classified by Existing Land Use and do not represent land affected by the SmartFIX40 project.*

been viewed as opportunities to improve connectivity while providing public parking under their viaducts.

Land Use Plan: SOMAG

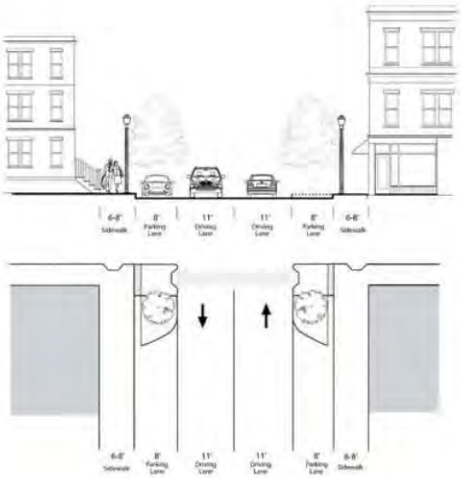
This district includes the northern edge of Downtown and the Summit Hill Drive area. (see the MU CC 3 area on the land use plan) *Note: MU CC 3 stands for a Special Mixed Use District, number 3 in the Central City; this nomenclature is used on the Knoxville-Knox County composite sector plan map so that there is a specific reference back to the information in this chapter.*

A greater mix of land use should be permitted. Office, wholesale and retail commercial, warehousing and light manufacturing, and residential development are appropriate. Rather than forcing the suburban-style setbacks of current zoning, a form code should be implemented. This code would allow continued use of storage facilities and opportunities for direct access from garage bays to most streets. The proposed code would also be compatible with historic architectural features, including many of the buildings along Jackson Avenue and Central Street.

Office, medium to high density residential and institution uses are appropriate for the Summit Hill Drive area. Vertical mixed use is possible. The recommended form code is based on limited yard space in front of and beside multi-story structures.

Basis for a Future Form Code

The following illustrations are examples of the types of forms that are proposed for most of the SOMAG area, particularly Old City and the warehouse district.



The type of street and potential building locations.

An architectural rendering of potential Jackson Avenue reuse and infill development, east of the Hall of Fame Drive viaduct.

Area detail, basis for a form-based code

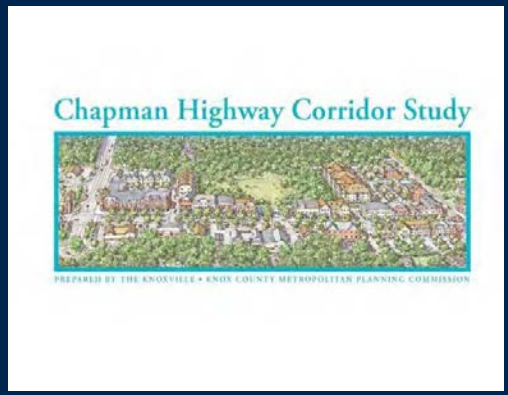
kat KNOXVILLE AREA TRANSIT · TPO TRANSPORTATION PLANNING ORGANIZATION · STV · SASAKI

Chapman Highway Corridor Study
September 2006

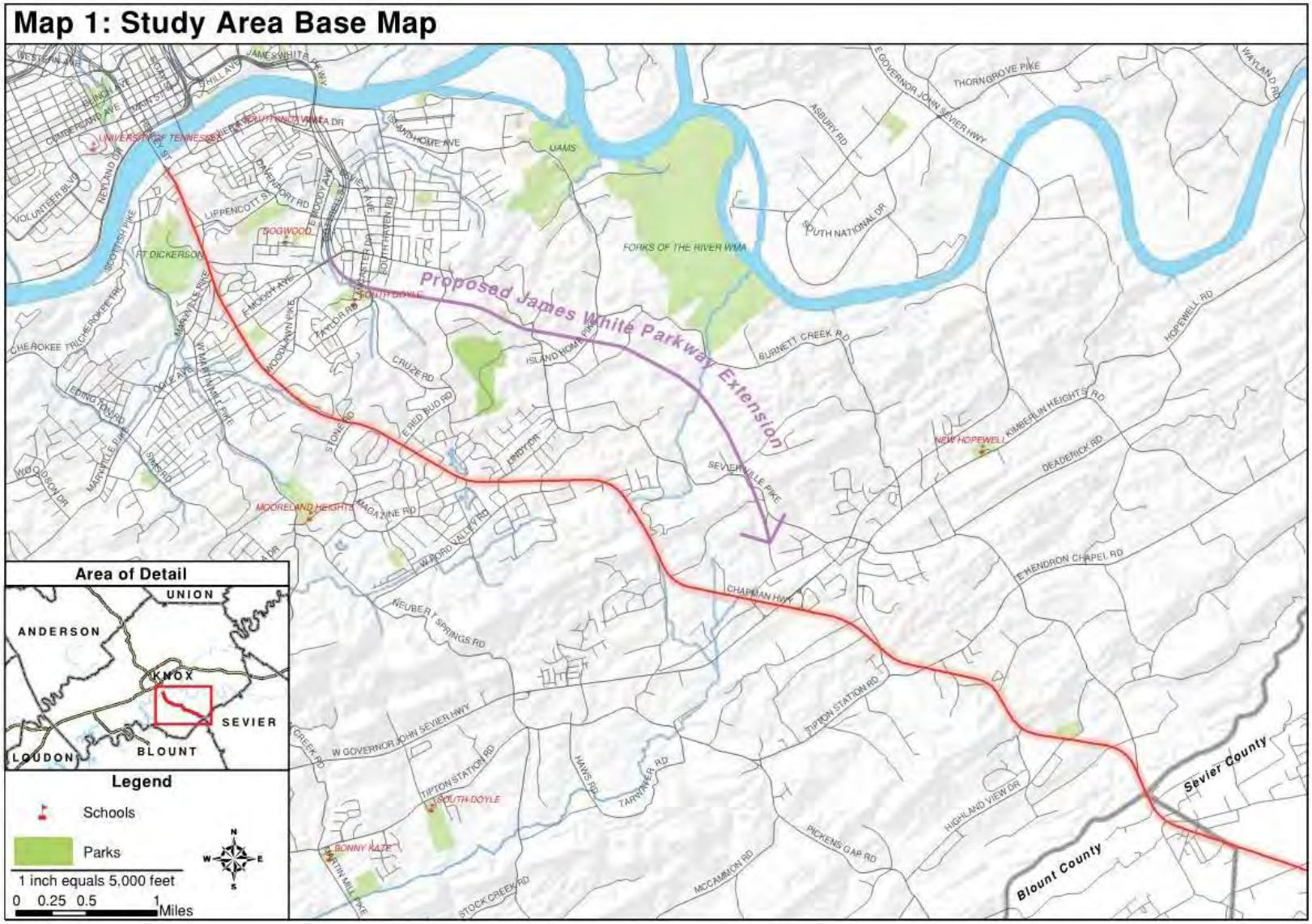
- *"This plan should be used as a guide for land use, site and building design, and thoroughfare characteristics along Chapman Highway as the corridor is renewed over the next several years."*

- *"Three main principles influenced the development of this plan: safety and operations, beautification and economic development."*

- *The Community Vision:*
  - *Pedestrian and bike-friendly community is desired, with improved transit and attractive destinations*
  - *The Tennessee River is a barrier but CAN be an asset*
  - *Chapman Highway is viewed as the hub of business and community activity*
  - *James White Parkway is a traffic mover with no commercial development*



Map 1: Study Area Base Map



Much vacant space exists along the corridor.

Residents are eager to see improvements along Chapman Highway.

Utility poles and yard signs partially obscure kudzu growing on this hillside.

Vacant land that remains in the rural areas along the corridor is likely to develop with similar uses and style unless more emphasis is placed on development quality. The success of any street type is largely dependent on the shape, scale and use of the buildings that surround the roadway, and Chapman Highway is no exception. Buildings that exhibit quality construction, beauty and permanence will reinforce Chapman Highway's role as a main street for the many neighborhoods that rely on it.

As Chapman Highway continues to evolve and develop, the neighborhoods need to reclaim the roadway as a pleasant, desirable place to be. Current landscaping is sparse, in many places limited to private street yards and occasional street trees. The invasive species, kudzu, is rampant along the undeveloped properties and steep slopes, displacing native plants that once thrived in the area.

Street lighting, when available, is scaled to motor vehicles rather than both pedestrians and vehicles. Bike facilities, pedestrian amenities and transit shelters are virtually non-existent. Vast areas of asphalt are visually unattractive and detrimental to air and water quality. Frequent curb cuts increase opportunities for crashes and conflicts, since drivers have a hard time predicting when cars ahead of them will turn or come to a stop. This also creates unsafe conditions for bicyclists and pedestrians.

For commuters in South Knox County, Seymour and portions of Blount County bordering Knox and Sevier, there are very few alternatives to using Chapman Highway. Crash rates are higher than average in many places along the corridor and when crashes do occur, commuters encounter lengthy delays.

Chapman Highway is not pedestrian-friendly.

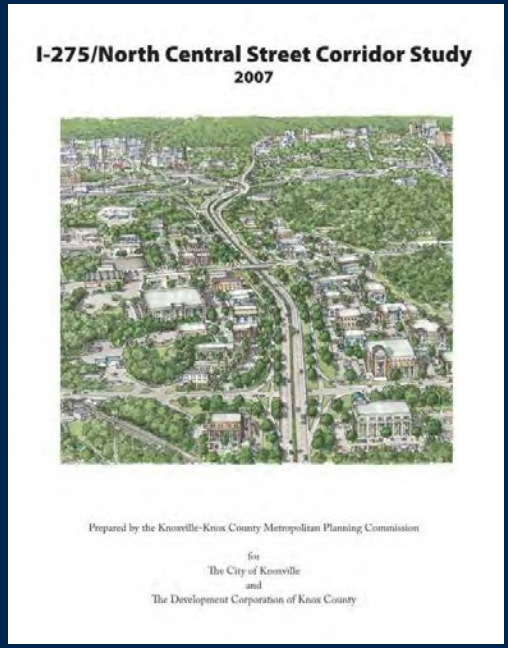
Large parking areas with no landscaping are visually unattractive.

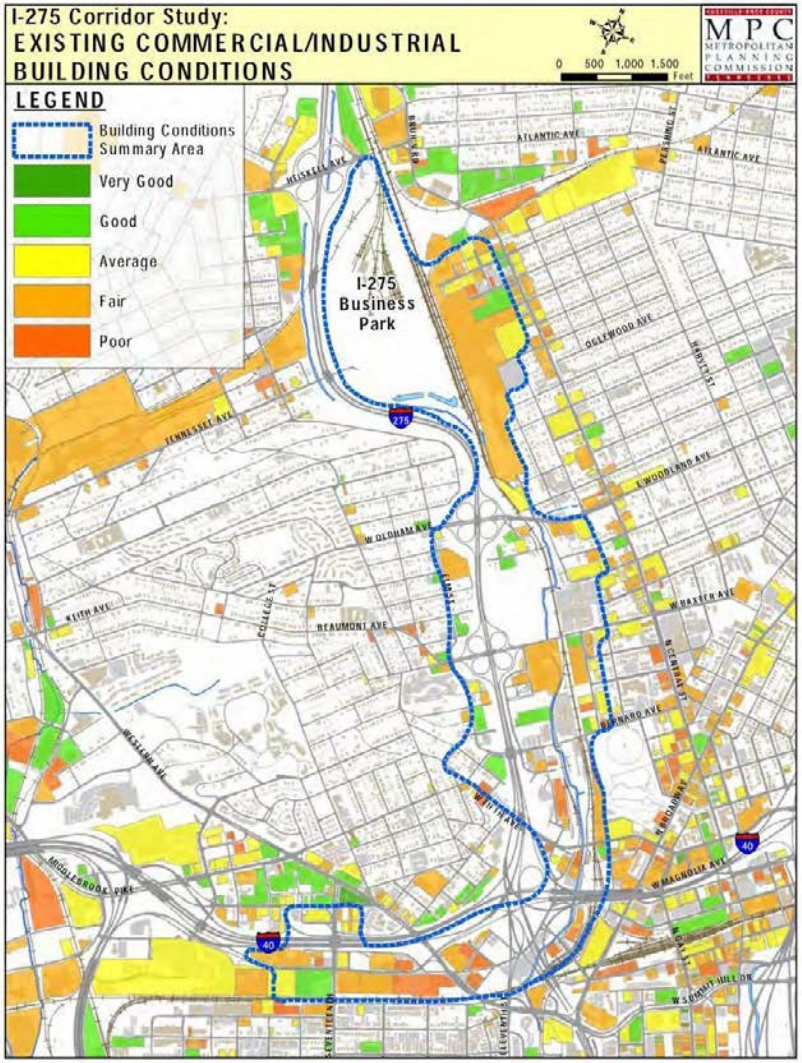
Frequent curb cuts are a safety issue.

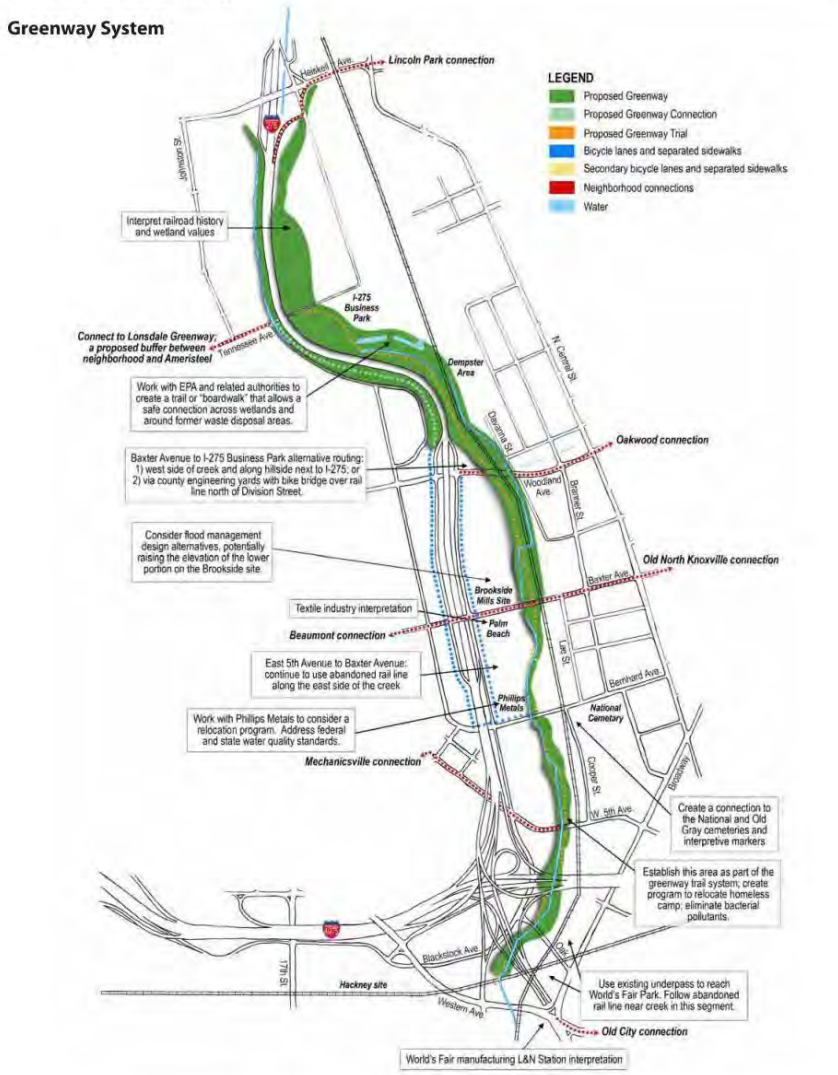
I-275 North Central Street Corridor Study
2007

- *"The purpose s of this study are to foster economic development and to reverse the environmental degradation in the I-275 corridor."*

- *General Recommendations:*
  - *Create a continuous, functional road system along selected segments of 17th Street*
  - *Combine and replat marketable parcels*
  - *Pursue environmental assessments and clean-up*
  - *Develop Phase I master plan*
  - *Establish performance standards for industrial uses in appropriate areas*
  - *Encourage a mix of uses in certain areas*
  - *Establish overall marketing strategy that coincides with infrastructure improvements*







Survey of existing industrial building conditions, proposed Greenway

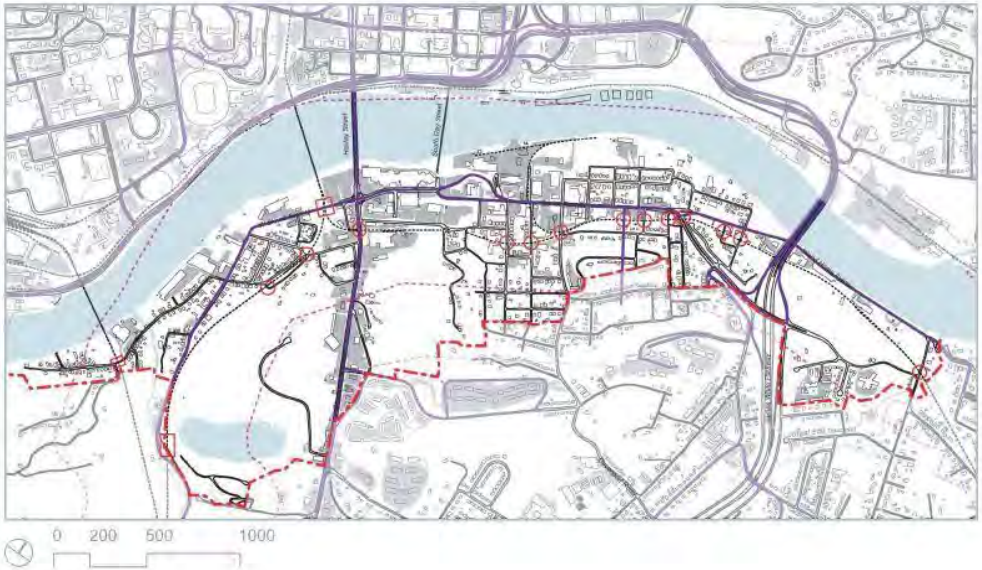
Knoxville South Waterfront Vision Plan
June 2006

- *"The South Waterfront Vision and Action Plan project is an effort to develop, through extensive public involvement, a coordinated plan and realistic series of prioritized actions to improve the waterfront area across from the downtown.*

- *"The intent of the project is to revitalize the South Waterfront to a level that it is recognized as a citywide asset, attraction, and destination, while still preserving what makes the riverfront special to the neighborhoods."*

- *Light Rail Transit in the Sevier Avenue Corridor*
  - *This LRT route gives maximum coverage of the South Shore area, permits on-street parking and a vibrant retail atmosphere on Sevier Avenue, and forms an armature for new development fronting on both Sevier Avenue and the LRT.*

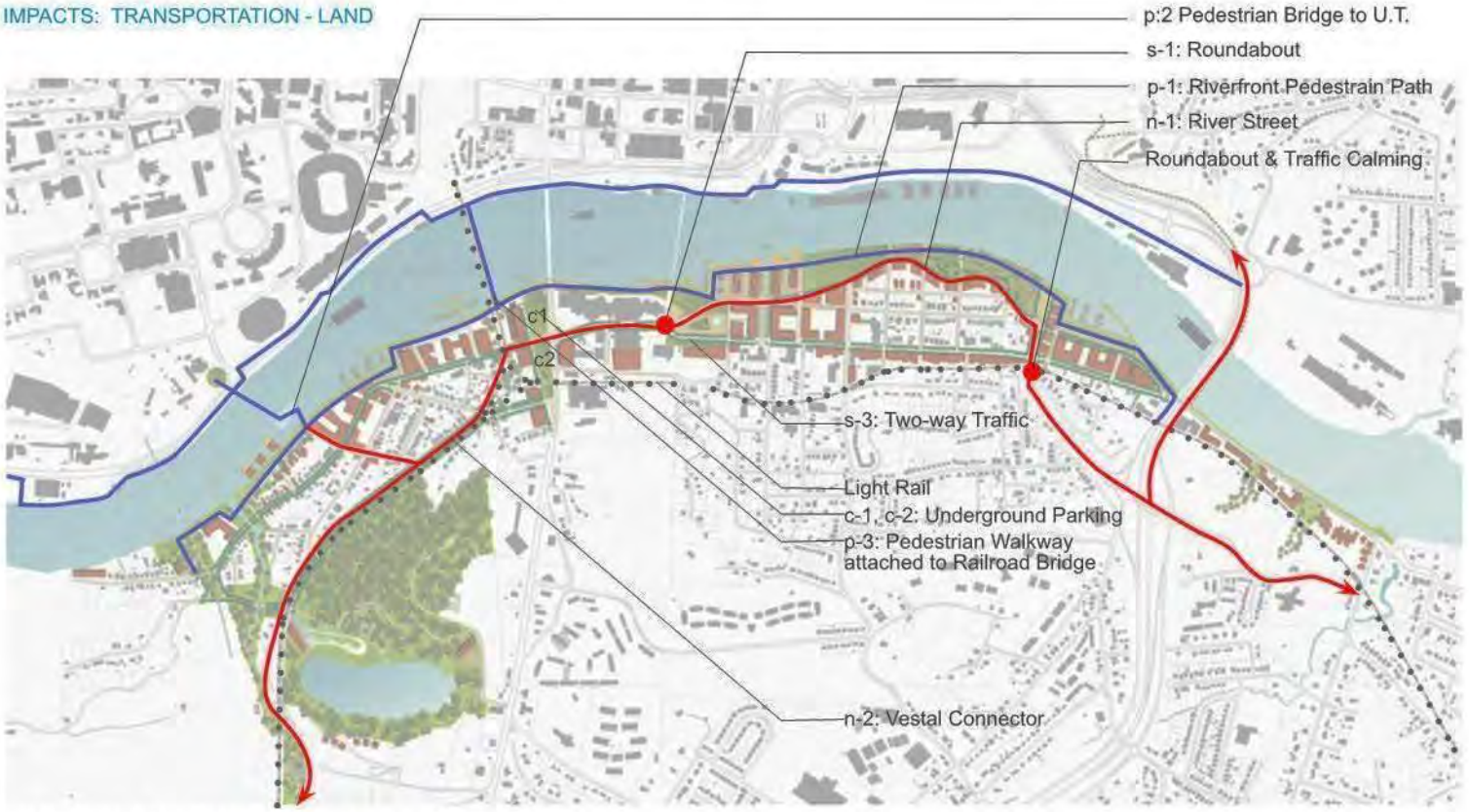
2.4 [A] TRANSPORTATION SYSTEM: LAND



Three north-south framework streets cross the river: Chapman Highway, a major regional highway; Gay Street, bringing Knoxville's historic main street to Sevier Avenue; and James White Parkway, a four-lane regional freeway with a Sevier Avenue interchange. The sole east-west spine, Blount/Sevier Avenue, continues beyond James White Parkway as a local road. Blocks formed by small local streets cover much of the flat ground in the South Waterfront, as well as much of the slope above Sevier Avenue.

Existing tight grids of small streets, once considered obsolete, are now recognized as assets, well scaled for redevelopment, amenable to a wide variety of fronting reuses, and efficient for traffic distribution. The existing street and block pattern can be easily extended into designated redevelopment areas. Sevier Avenue, once the business center, has an alignment and cross section well suited to a revival of that role.

Character, not vehicular capacity, is the street system's shortcoming. Local streets, while well spaced and sized, are frayed, often lacking sidewalks. Continuity of the Sevier/Blount spine is interrupted by a one-way segment and a single-lane railroad viaduct. The north-south arterials, while efficient traffic conduits, all lack a strong sense of place and aesthetic appeal: Chapman Highway is bordered by strip commercial; Gay Street terminates unceremoniously at what should be a focal point; and the James White Parkway is still an unhealed suburban road scar.



OPPORTUNITIES, IMPACTS & MITIGATION: STREET GRID

Two new street segments are proposed to extend the current grid of streets: (1) River Street (N-1), 1 mile of riverfront parkway that extends and caps existing north-south streets, provides an armature for new riverfront development, gives an alternate route to Sevier Avenue, encourages travel by all modes to the river, and builds awareness of South Shore redevelopment and (2) the Vestal Connector (N-2), 0.8 miles of new two-lane arterial street providing an alternate route to Blount Avenue and relieving the Blount/Chapman intersection of congestion.

SEVIER AVENUE MAIN STREET

Sevier Avenue's potential as the commercial spine of the South Waterfront is improved by three projects: (1) a roundabout at Gay Street (S-1), making this junction an inviting focal point, and connecting to the new River Street; (2) a roundabout at Island Home Avenue (S-2), forming an eastern "bookend" for the business district, calming traffic and evolving the freeway interchange traffic pattern into an urban pattern; and (3) removal of Council Place (the one-way segment of Sevier Avenue) and restoration of two-way traffic to Sevier Avenue (S-3).

Shared bike & pedestrian path
On-street bike lane
Proposed light rail & bike

Proposed transportation improvements

BASIS OF A TOOLKIT

TOD Toolkit

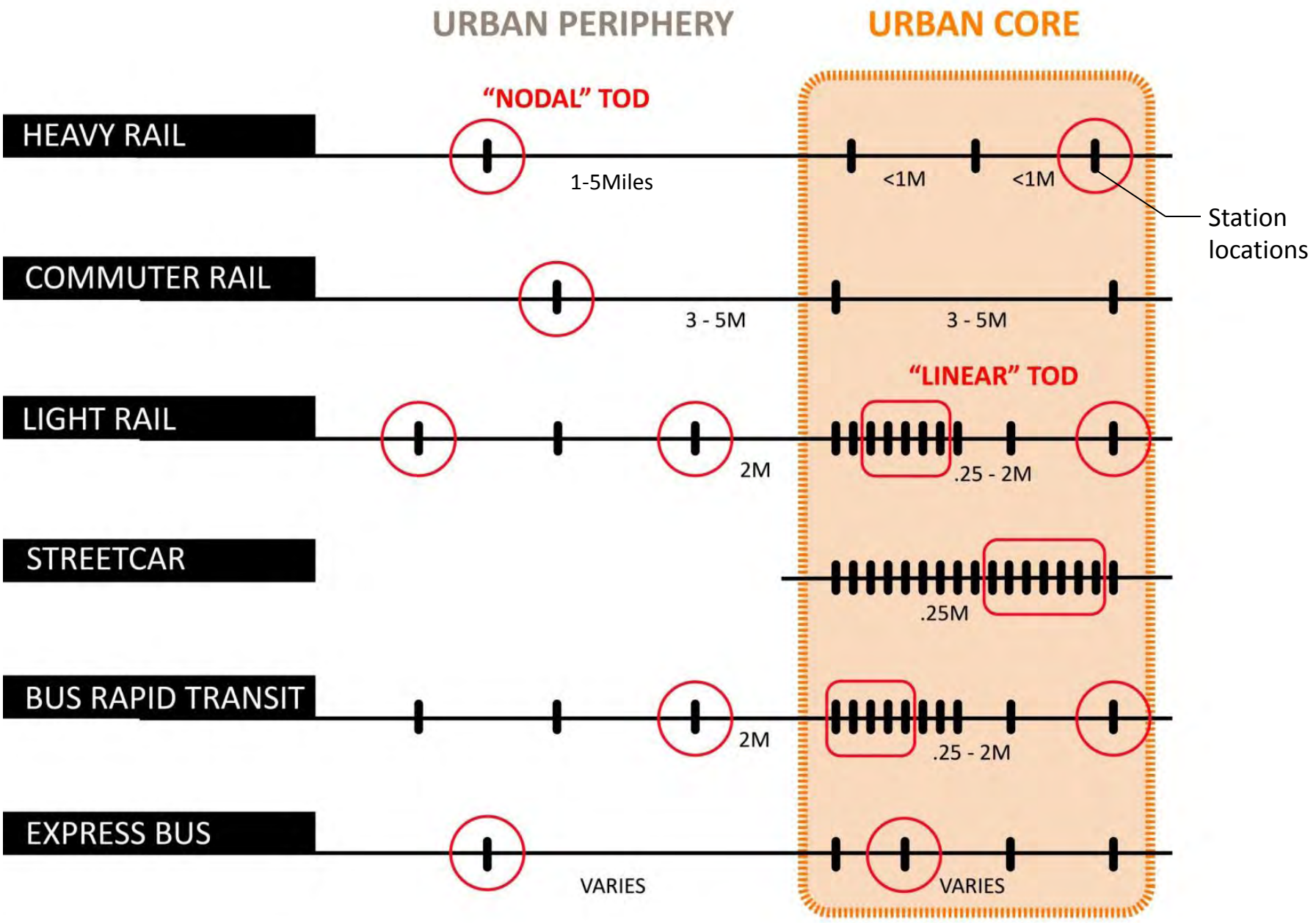
What is transit?

Public transport (also **public transportation** or **public transit**) is a shared passenger transportation service which is available for use by the general public, as distinct from modes such as taxicab, car pooling, or hired buses, which are not shared by strangers without private arrangement.

TOD Toolkit

Transit - modes

Public transport modes include buses, trolleybuses, streetcars, trams and trains, 'rapid transit' (metro/subways/undergrounds etc) and ferries. **Intercity public transport** is dominated by airlines, coaches, and intercity rail.



Station interval diagram by transit mode

TOD Toolkit

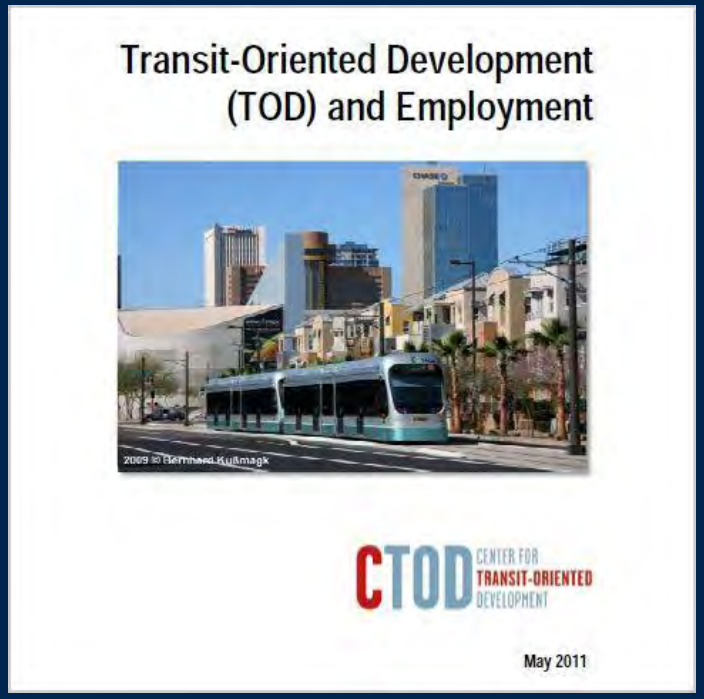
Transit oriented development (TOD) is typically defined as more compact development within easy walking distance of transit stations (typically a half mile) that contains a mix of uses such as housing, jobs, shops, restaurants and entertainment.

TOD is not just development near transit.

It's development that also:

- Increases **"location efficiency"** so people can bike, walk, and take transit
- **Boosts** transit ridership and **minimizes** the impacts of traffic
- Provides a **rich mix** of housing, jobs, shopping and recreational choices
- Provides **value for the public and private sectors**, and for both new and existing residents

and…



- ***Creates a sense of community and of place***

Jamison Square, Portland, Oregon
TOD with mix of housing types, mix of uses, high quality public space, and little car traffic

kat TPO TRANSPORTATION PLANNING ORGANIZATION STV SASAKI

Station Area Development

Three key concepts:

1. Public / Private

Joint Development is generally defined as a **partnership** between a public agency (transit, redevelopment or planning) and private developer.

2. Location and Service

Development-Oriented Transit includes **corridors** that run down a major arterial and not a freeway and have **higher frequency service**, rather than only running during commute hours.

3. Site Specific

There is no one-size-fits-all TOD, and instead, the most appropriate definition will **depend on the character** of the existing neighborhood and the **vision of the neighborhood** for the future.

kat KNOXVILLE AREA TRANSIT TPO TRANSPORTATION PLANNING ORGANIZATION STV SASAKI

Why Transit?

Increased Mobility for all

Optimized Land Use patterns

Environmental benefits

Greater value and economic benefit

Greater affordability and choices for communities

Enhanced placemaking and design character

Increased Mobility for All

Transit…

- provides greater access to jobs / housing and other services in greater metropolitan region
- reduces congestion city wide as it lowers need for cars
- provides access to multiple modes of mobility, encouraging transfer between modes (i.e. bus to rail), as well as pedestrian and bicycle access
- provides mobility for wide range of people without automobiles: seniors, teens, students
- encourages walking to and from stations, greatly promoting health benefits

kat TPO TRANSPORTATION PLANNING ORGANIZATION STV SASAKI

Optimized Land Use Patterns

Transit Oriented Development…

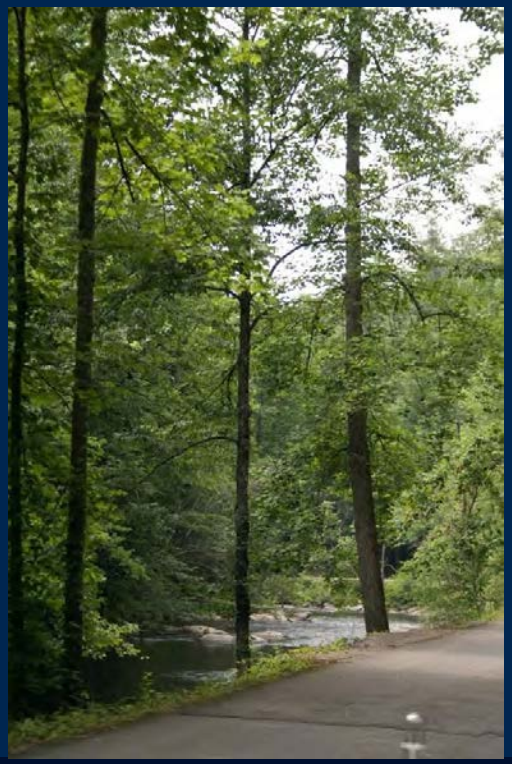
- supports a rich mix of housing, jobs, shopping and recreational choices
- accompanied by planning and rezoning can regularize outdated, incompatible land uses and lead to the redevelopment of abandoned buildings
- promotes the robust use of both local and destination retail opportunities
- promotes higher investment in areas around stations than elsewhere in the city
- accommodates a broader mix and density of household types

kat TPO TRANSPORTATION PLANNING ORGANIZATION STV SASAKI

Environmental Benefits

Transit…

- is more sustainable
- provides more efficient use of land, energy, and resources
- helps to conserve open space by concentrating development
- reduces oil and gas consumption of single occupancy vehicles
- results in cleaner air through reduced vehicle emissions
- minimizes increase in vehicular traffic




Using transit has already helped the United States save 1.5 billion gallons of fuel each year since the early 1990s, which is nearly 36 million barrels of oil.

Greater Value and Economic Benefit

Transit Oriented Development…

- produces walkable communities with mix of uses and range of housing types that are more economically viable
- increases property values, lease revenues and rent
- increase foot traffic for local businesses
- provides “global gateways with 24-hour characteristics and mass transportation that have turned into the nation’s investment property meccas.” *TOD Toolkit, 2007*.
- increases revenues, allowing cities to lower tax rates and compete with suburbs

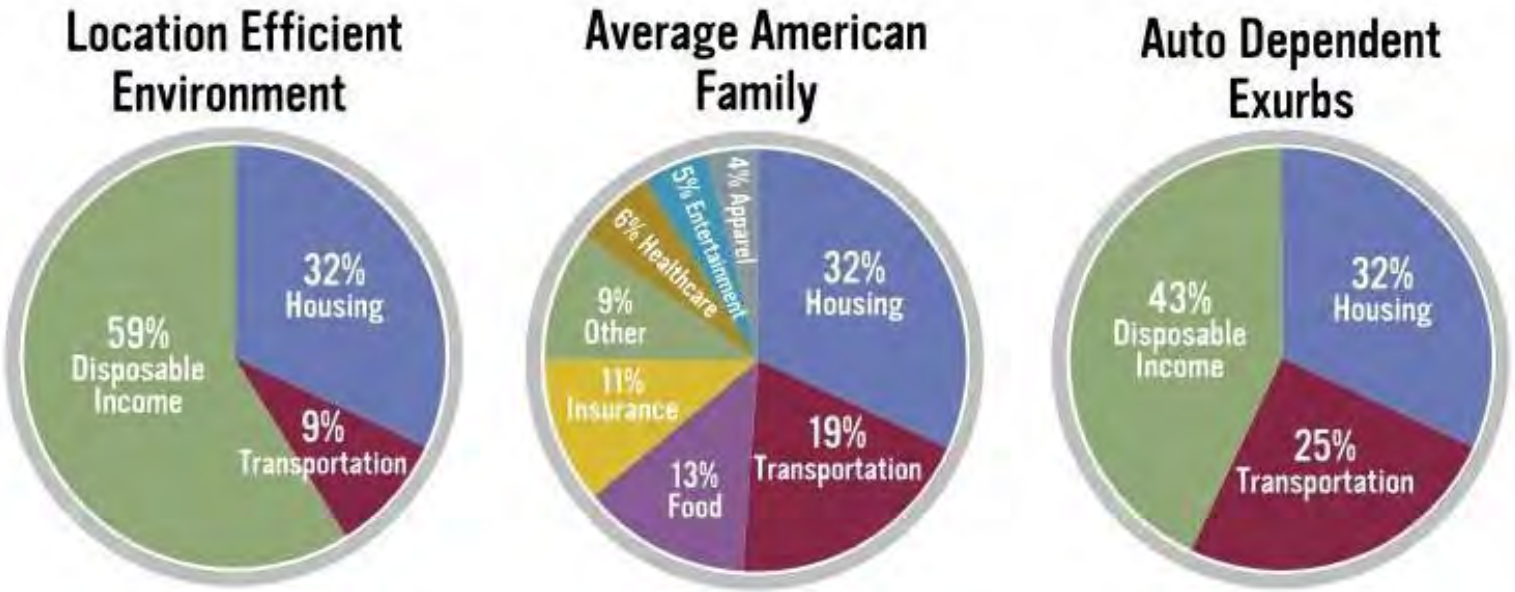
Greater Affordability and Choices for Communities

TOD is more affordable because…

- percentage of household income spend on transportation less in communities served by transit
- choice of jobs and housing types greatly increased with access to transit
- higher densities in TOD locations increase potential to provide more affordable housing options
- the demographic groups growing most quickly – older, non-family, non-white households – have historically used transit in higher numbers
- height and density can pay for community benefits and affordability

Location Matters

Transportation is a Significant Household Expense



Source: Center for TOD Housing + Transportation Affordability Index, 2004 Bureau of Labor Statistics

Enhanced Placemaking and Design Character

TOD…

- concentrates people and provide a sense of special destinations - as opposed to undifferentiated automobile dependent locations
- increases opportunities for complete streets and greater enhancements to the public realm
- stations bring a wide range of the public together on a daily basis reinforcing community and potentially increase safety
- gives communities a voice in crafting well-designed public spaces

PROJECT CASE STUDIES

Charlotte, North Carolina

LRT Transit corridor, Lynx – Blue Line

TOD, economic development

City 730,000

MSA 1,700,800

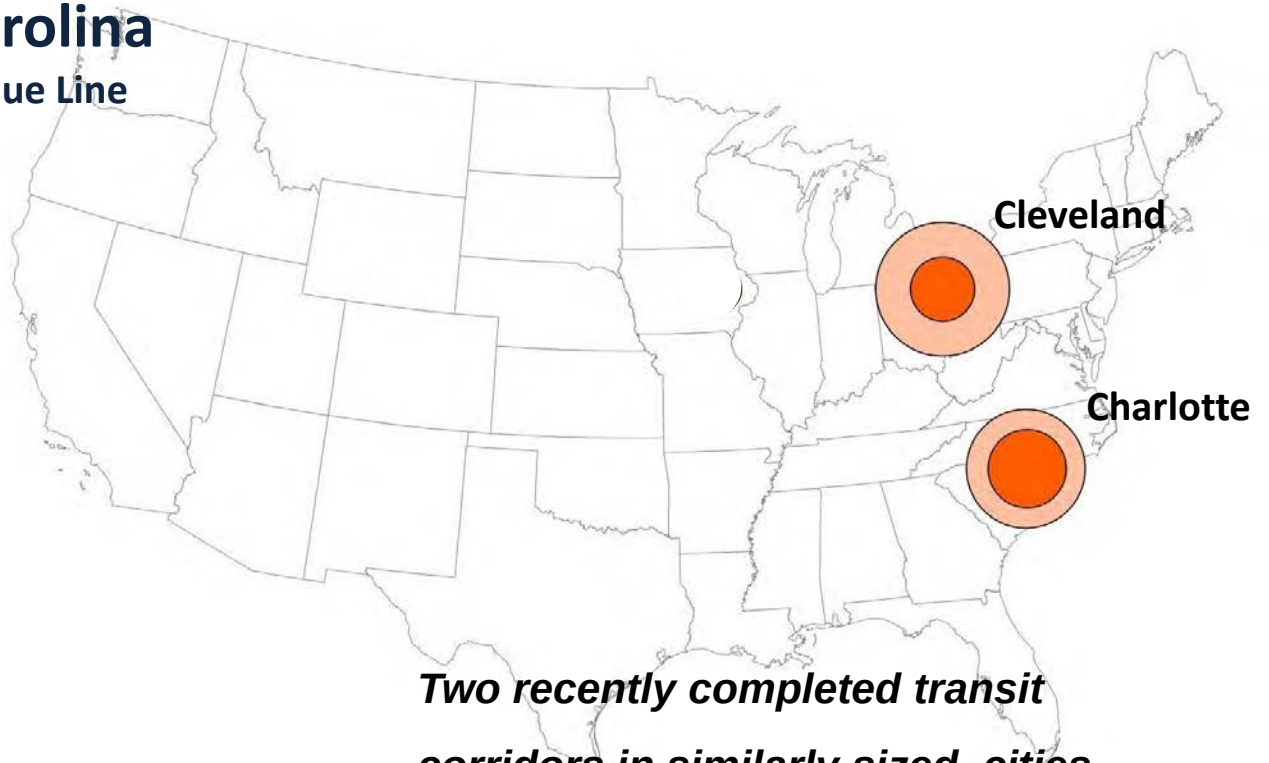
Cleveland, Ohio

Euclid Corridor Project – BRT

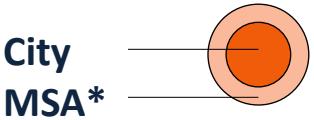
Transit system, urban design

City 480,000

MSA 2,090,000



Two recently completed transit corridors in similarly sized cities provide a useful comparison for planning, design, and implementation strategies.



Source: US Census Bureau, 2009/2010 *Metropolitan Statistical Area

Charlotte, North Carolina

Lynx Blue Line Light Rail – South Corridor

History

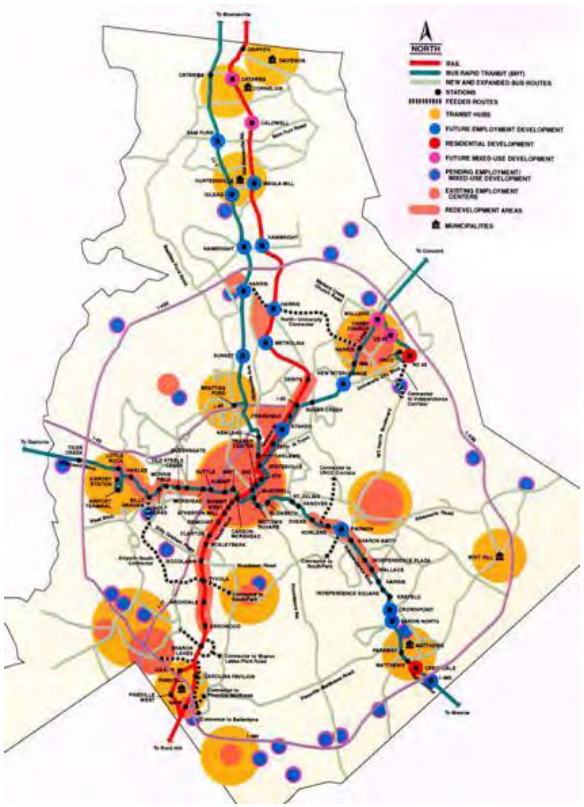
- 1994: City of Charlotte approves Centers and Corridor Vision, which guides future land use and development along transportation corridors
- 2000: Final EIS, TOD, and PE started
- 2002: Final design and construction
- 2007: South Corridor opens

Project

- South Corridor: 9.8 miles
- 13 stations
- Cost: approximately $475M
- Since 1997- 3000 housing units
- Civic buildings – i.e., Bobcat Arena, Children's Learning Center, and Johnson and Wales

Charlotte adopted the Centers and Corridors Vision…

Transit supportive design at the metro scale

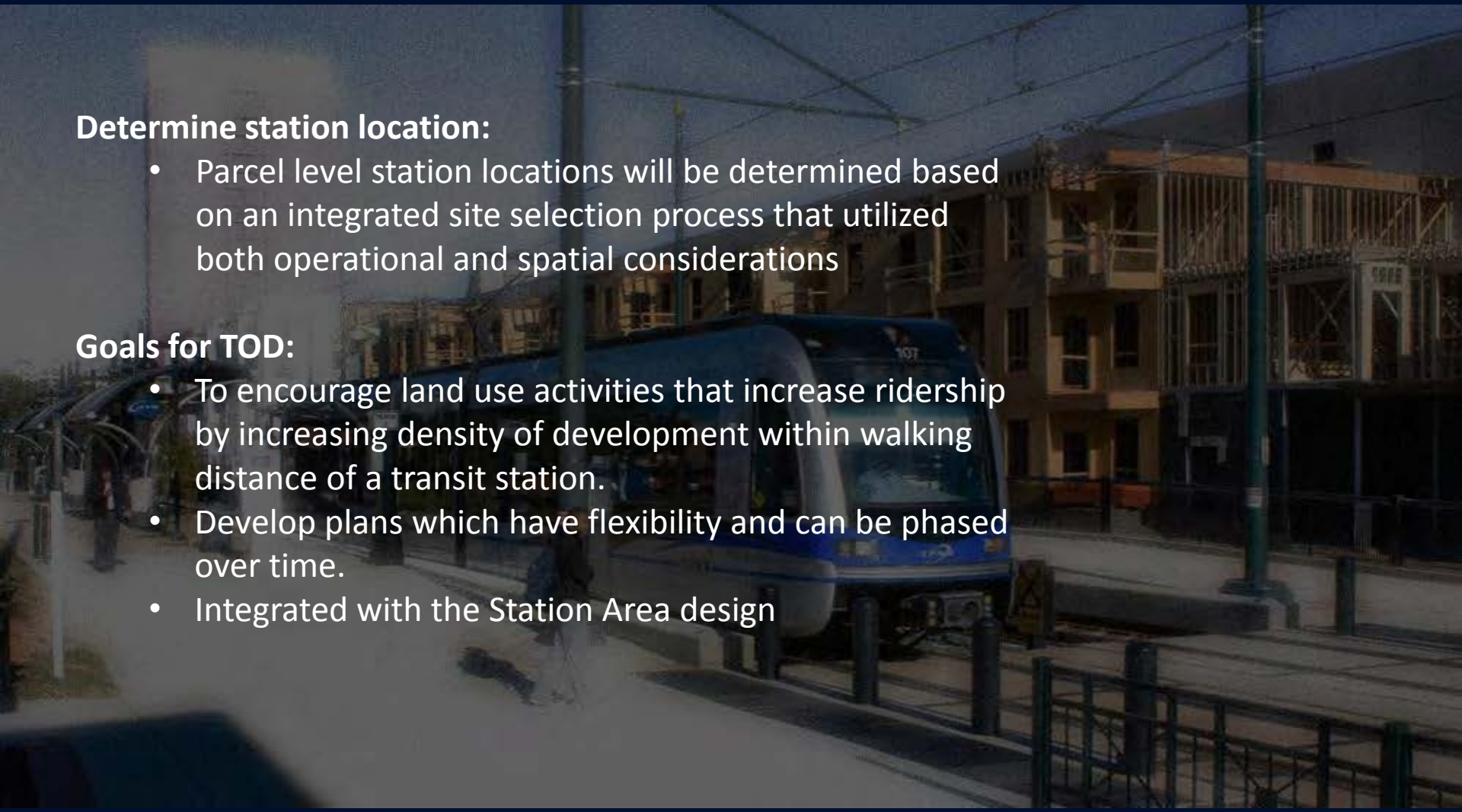


Charlotte Area regional plan, transit system, and LYNX Blue Line

Linking Transit and Development

- The first step in the process will be **evaluating each corridor's operational efficiency** in serving the corridor. There are four measures that will be utilized.
- Two of the measures, **operational spacing** and **effective service area**, will expand analysis conducted in the MIS and measure station spacing and service characteristics.
- The third measure, **TOD opportunities**, will be used to document land development initiatives and opportunities that have arisen since the completion of the MIS.
- The final measure, **other considerations**, is intended to be a "fatal flaw" discussion regarding station locations and their implications

Station Location Methodology/TOD



Determine station location:

- Parcel level station locations will be determined based on an integrated site selection process that utilized both operational and spatial considerations

Goals for TOD:

- To encourage land use activities that increase ridership by increasing density of development within walking distance of a transit station.
- Develop plans which have flexibility and can be phased over time.
- Integrated with the Station Area design

Blue Line Outcomes

Since Opening in 2007:

- Ridership is **65% over** projections
- Daily ridership is **14,000** (vs. 9,100 projected)
- $1.87B in **new investment** and developments
- $525M in additional real estate tax revenues
- CATS has received federal approval to **expand the system**

Economic Development To Date Along South Corridor

South Corridor Development 2005 - 2011

Under Construction or Built:

Acres Rezoned for TOD	Housing Units	Affordable Housing	Commercial	Investment
26	**1,175**	**100**	**219,512 sf**	**$291.2M**

Announced:

Acres Rezoned for TOD	Housing Units	Affordable Housing	Commercial	Investment
239	**6,406**	**80**	**408,200 sf**	**$1.569B**

Economic Development To Date Along South Corridor

Projected New Tax Revenue

- **$1.86B** Total Projected Investment (2005-2011)

- Tax Revenue: **$24.1M annually**
  City Tax Revenue = $8.5M annually
  County Tax Revenue = $15.6M annually

Economic Development To Date Along South Corridor

TOD examples to date:

Ashton South End
Hanover Company
Acres: 6
Projected Dev. Cost: $80M
Residential Units: 310
East/West Station

Heath Partners
East Worthington Court
Acres: 1.2
Projected Dev. Cost: $32M
Residential Units: 80
East/West Station

Hawkins St.
Morgan Group
Acres: 4.78
Projected Dev. Cost: $50M
Residential Units: 322
East/West Station

Harris Development Group
Arrowood
Acres: 50
Projected Dev. Cost: +$300M
Residential Units: 1,447
Arrowood Station

The "C"
Crescent Resources
Acres: 6
Projected Dev. Cost: $100M
Residential Units: 360
Bland St. Station

3030 South
Heath Partners
Acres: 4.2
Dev. Cost: $17M
Residential Units: 96
Commercial: 12,000 sf
New Bern Station

Cleveland, Ohio

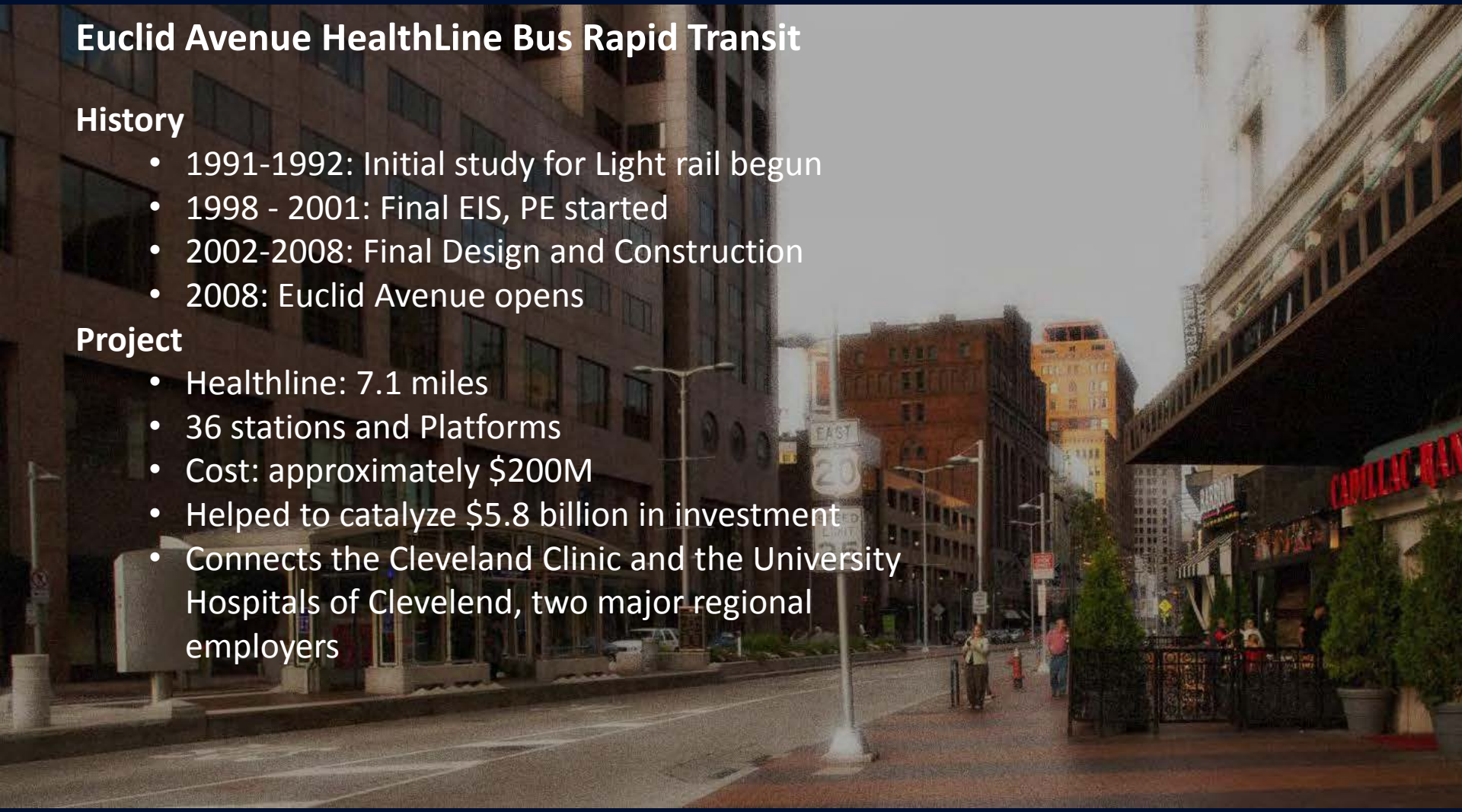
Euclid Avenue HealthLine Bus Rapid Transit

History

- 1991-1992: Initial study for Light rail begun
- 1998 - 2001: Final EIS, PE started
- 2002-2008: Final Design and Construction
- 2008: Euclid Avenue opens

Project

- Healthline: 7.1 miles
- 36 stations and Platforms
- Cost: approximately $200M
- Helped to catalyze $5.8 billion in investment
- Connects the Cleveland Clinic and the University Hospitals of Clevelend, two major regional employers



Why Euclid?

Dual-hub concept of connecting Cleveland's two commercial centers: Downtown and University Circle

Urban Core Reinvestment

Building Face to Building Face Reconstruction

- Utility Replacements and Betterments
- New Roadway, Curbs, & Sidewalks
- New Traffic Signal, Lighting, & Communication Systems
- Landscaping & Irrigation System

- 4.5 Miles of Dedicated BRT Lanes in Median
- 2.6 Miles of Mixed-Use BRT Lanes in Curb Lanes
- 36 Stations and Platforms
- Passenger Amenities
- 4 Miles of Bike Lanes
- Public Art

Typical Section

Downtown/Lower Euclid

- Median Station, Left Side Boarding

Typical Section

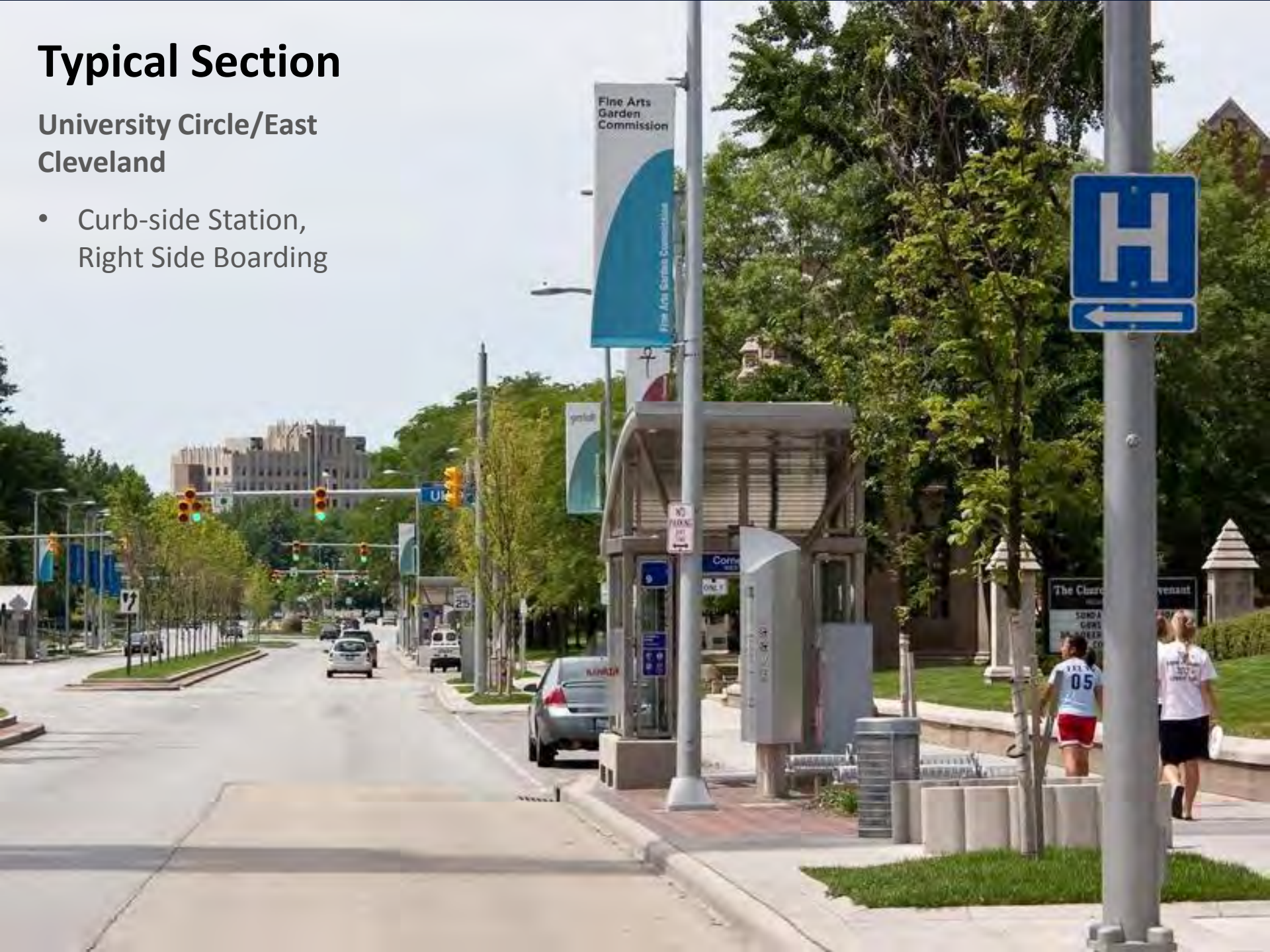
CSU/Midtown/ Clinic

- Median Station, Right Side Boarding

Typical Section

University Circle/East Cleveland

- Curb-side Station, Right Side Boarding



Partnerships for Realization

Cleveland Regional Transit Authority

Federal Transit Administration

Ohio Department of Transportation

City of Cleveland

NOACA

Downtown Cleveland Alliance, PlayhouseSquare, Midtown, University Circle

Cleveland State, Cleveland Clinic, Case Western Reserve, University Hospital

Numerous individual Property Owners

Project Budget: $200.0 million total

Project Budget: $168.4 million (FFGA)

FTA New Starts:	$82.20 m
FTA Rail Mod:	$ 0.60 m
ODOT:	$50.00 m
RTA:	$17.60 m
NOACA:	$10.00 m
City of Cleveland:	$ 8.00 m

$31.6 million Non-FFGA

Partnerships for Realization

Economic Development

Transit Oriented Development

Financial Incentives

Land Assembly/Land Banking Initiatives, City of Cleveland, Port Authority

Streetscape Improvements

GCRTA's Art in Transit Program (1%)

Tax-Increment Financing (TIFs)

Tax Abatement

Federal Empowerment Zone & City Loans/Grants

Brownfield Incentives, City of Cleveland, Cuyahoga County, & State of OH

Ohio Job Creation Tax Credit

Historic Preservation Tax Credit

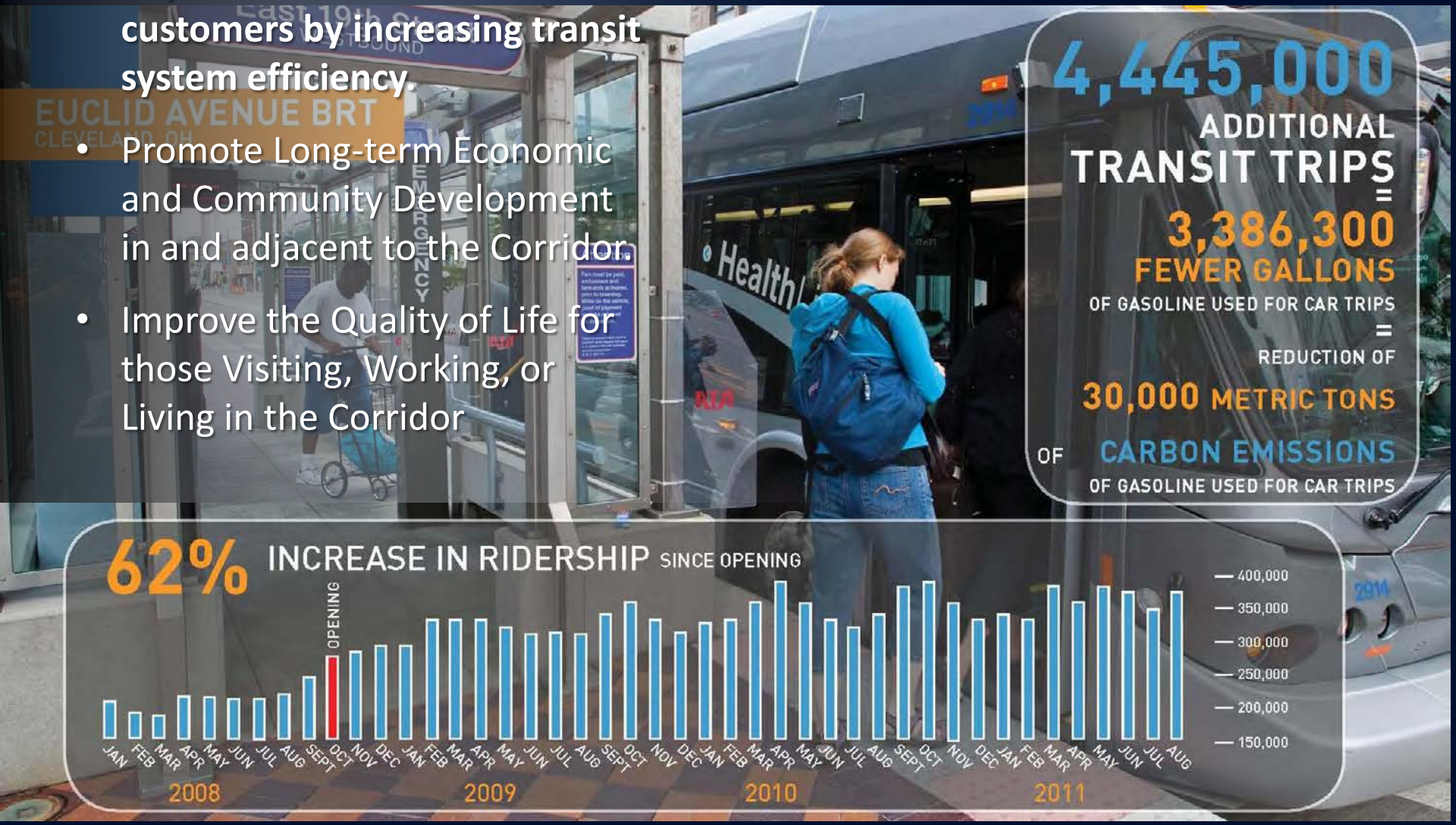
Cleveland-Cuyahoga County Port Authority Financing

City officials established the "First Five" program

"Circle Living" housing assistance program

Goals for Euclid Avenue

- **Improve Service to the RTA customers by increasing transit system efficiency.**
- Promote Long-term Economic and Community Development in and adjacent to the Corridor.
- Improve the Quality of Life for those Visiting, Working, or Living in the Corridor



Goals for Euclid Avenue

- Improve Service to the RTA customers by increasing transit system efficiency.
- **Promote Long-term Economic and Community Development in and adjacent to the Corridor.**
- Improve the Quality of Life for those Visiting, Working, or Living in the Corridor

Goals for Euclid Avenue

- Improve Service to the RTA customers by increasing transit system efficiency.
- Promote Long-term Economic and Community Development in and adjacent to the Corridor.
- **Improve the Quality of Life for those Visiting, Working, or Living in the Corridor**

Outcomes

- Euclid has proven that **Bus Rapid Transit can work** in the United States
- Euclid has **delivered improved transit at a fraction of the cost of rail** – providing a much more affordable option for medium sized cities
- Euclid has **generated the economic spin-off** that experts thought could only be achieved by rail

FUNDING CASE STUDIES

Denton County, Texas

Denton County A-Train

County 662,000

MSA 6,372,000

Denver, Colorado

RTD FasTracks "Eagle P3"

City 600,000

CSA 3,091,000

Portland, Oregon

Portland Streetcar

City 584,000

MSA 2,226,000

Salt Lake City, Utah

UTA TRAX "FrontLines 2015"

City 186,000

MSA 1,124,000

City

MSA*

Funding strategies for comparable transit projects in the U.S. have been reviewed to illustrate key sources and mechanisms applicable to the Knoxville transit study.

Source: US Census Bureau, 2009/2010

*Metropolitan Statistical Area

A-Train, Denton County Transit Authority

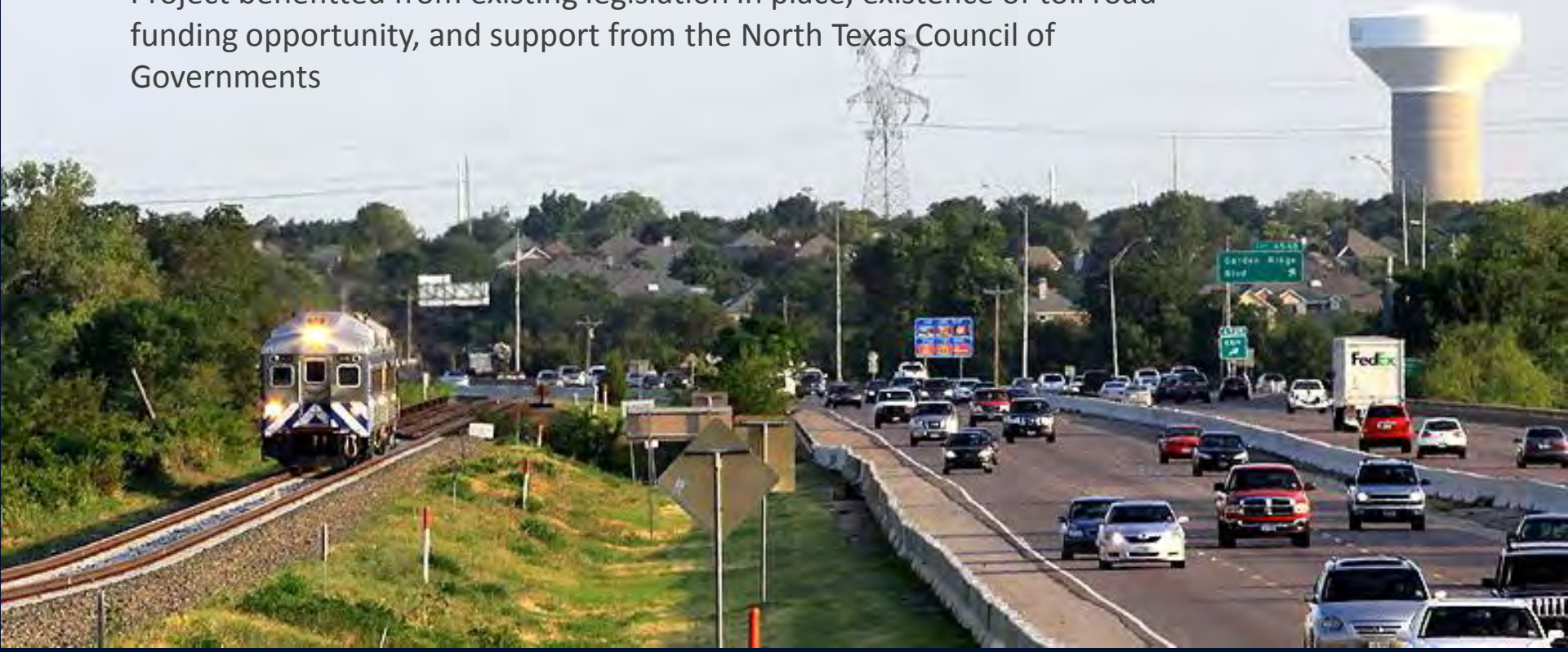
New regional commuter rail line

- 21 mile commuter rail line outside Dallas
- Connects to Dallas Area Rapid Transit (DART)
- Uses Diesel Multiple Unit (DMU) vehicles, which do not require catenary wires or a “third rail”
- Citizen Advisory Committee for accountability
- Overall cost of $320 million

A-Train, Denton County Transit Authority

Key lessons

- Technology choices can reduce project cost and technical complexity
- Innovative funding linkages can reduce overall project timeline and cost
- Project benefitted from existing legislation in place, existence of toll road funding opportunity, and support from the North Texas Council of Governments



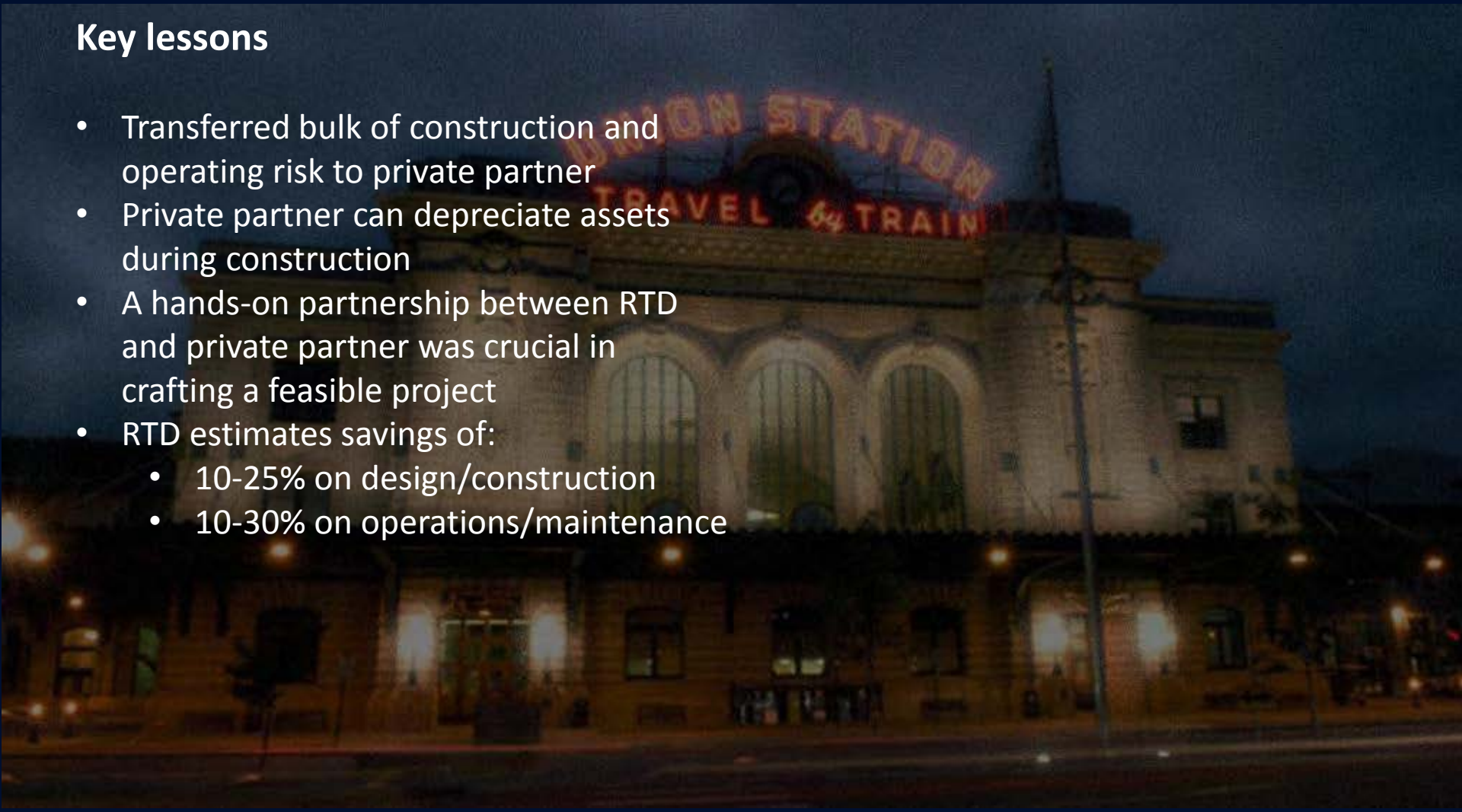
kat KNOXVILLE AREA TRANSIT TPO TRANSPORTATION PLANNING ORGANIZATION STV SASAKI

Denver FasTracks "Eagle P3", Regional Transportation District

Public-private partnership for rail

- FTA public-private partnership pilot project ("Penta-P")
- 36 miles in two rail lines & maintenance facility
- Private partner to design, build, finance, operate, and maintain (DBFOM)
- Lines to be completed in 2017, 30-year concession agreement
  - East Corridor
  - Gold Line
- Total cost is $2.1 billion
  - Private partner: $1.6b (78%)
  - FTA: approximately $1b (49%)
  - RTD: $400 million
  - RTD: payments to partner

Denver FasTracks "Eagle P3", Regional Transportation District



Key lessons

- Transferred bulk of construction and operating risk to private partner
- Private partner can depreciate assets during construction
- A hands-on partnership between RTD and private partner was crucial in crafting a feasible project
- RTD estimates savings of:
  - 10-25% on design/construction
  - 10-30% on operations/maintenance

Portland Streetcar, Portland Streetcar Inc.

First modern streetcar in the U.S.

- Four mile rail line connecting the Pearl District, Downtown, and South Waterfront
- Cost $103 million, $24 million per mile
- Original line opened in 2001
- Strong public-private partnership with major developer to add new infrastructure and redevelop underutilized parcels
- Spurred an estimated $3.5 billion in real estate investment along line within just seven years
- By 2008, nearby development included 10,000 housing units and five million square feet of commercial space

Portland Streetcar, Portland Streetcar Inc.

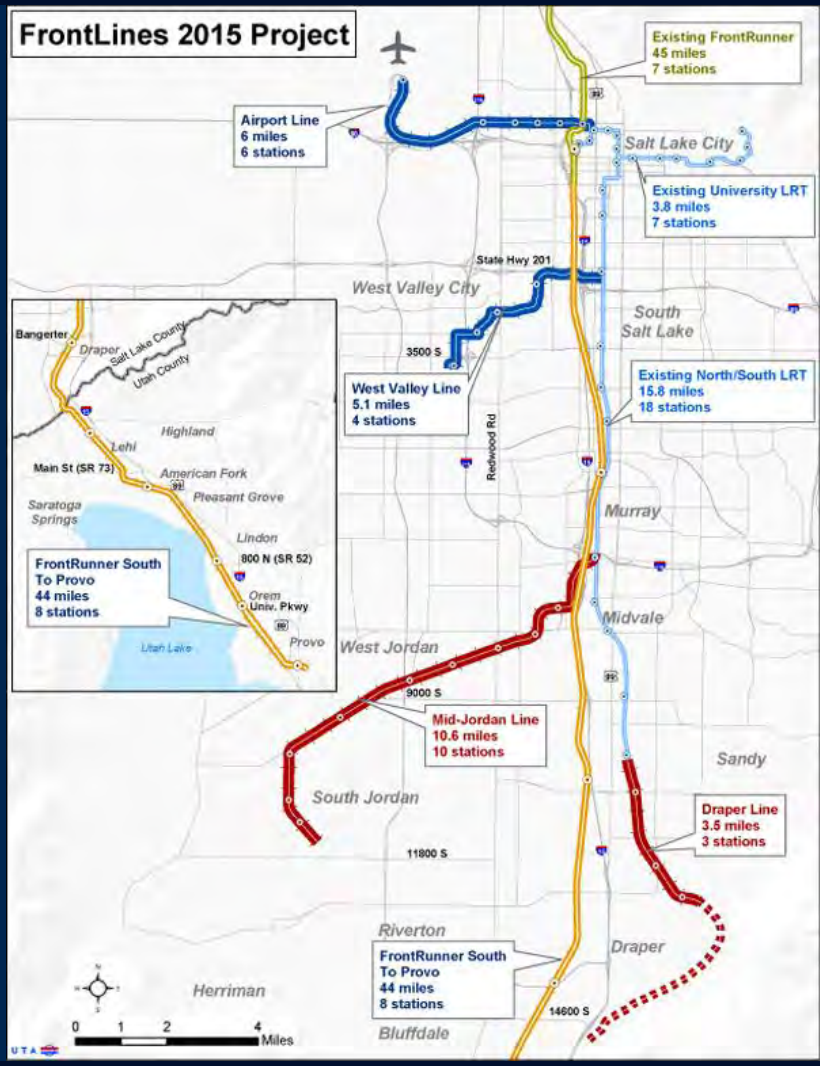
Key Lessons

- Special assessment districts (LID, TIF) allow local control and faster funding
- Corridor attracted significant new investment, as much as 55% of all new development
- Developers of nearby property built closer to maximum allowable density
- Return on investment for fixed-route transit service can be many times the original expenditure

TRAX "Front Lines 2015", Utah Transit Authority

"70 miles in 7 years"

- Ambitious program to complete five new rail transit lines in the Salt Lake City area by 2015
- New lines will complement the original line built before the 2002 Olympic Games
- Significant funding from FTA New Starts
- County sales tax levy to support new lines
- $2.4 billion total cost, $34 million per mile



TRAX "Front Lines 2015", Utah Transit Authority

Key lessons

- Bundling and streamlining transit corridor planning can lead to less cost and faster, easier implementation

Funding Summary

	Sales Tax	Tax Increment	Tax Assessment	Public/Private Partnership	Other	Why important?
	X				X	Highway Toll Revenue
	X	Federal Transit Administration	ax	X	X	DBFOM Concession
A-Train		X			X	Highway Toll Revenue
Denver FasTracks	X	X	X	X	X	DBFOM Concession
Portland Streetcar			X	X	X	City bonds on parking fee increase
TRAX FrontLines 2015		X	X			FTA to fund 80% of two lines

Tax Increment
Tax Assessment
Public/Private Partnership
Other
Why important?
Highway Toll Revenue
City bonds on parking fee increase
FTA to fund 80% of two lines
DBFOM Concession

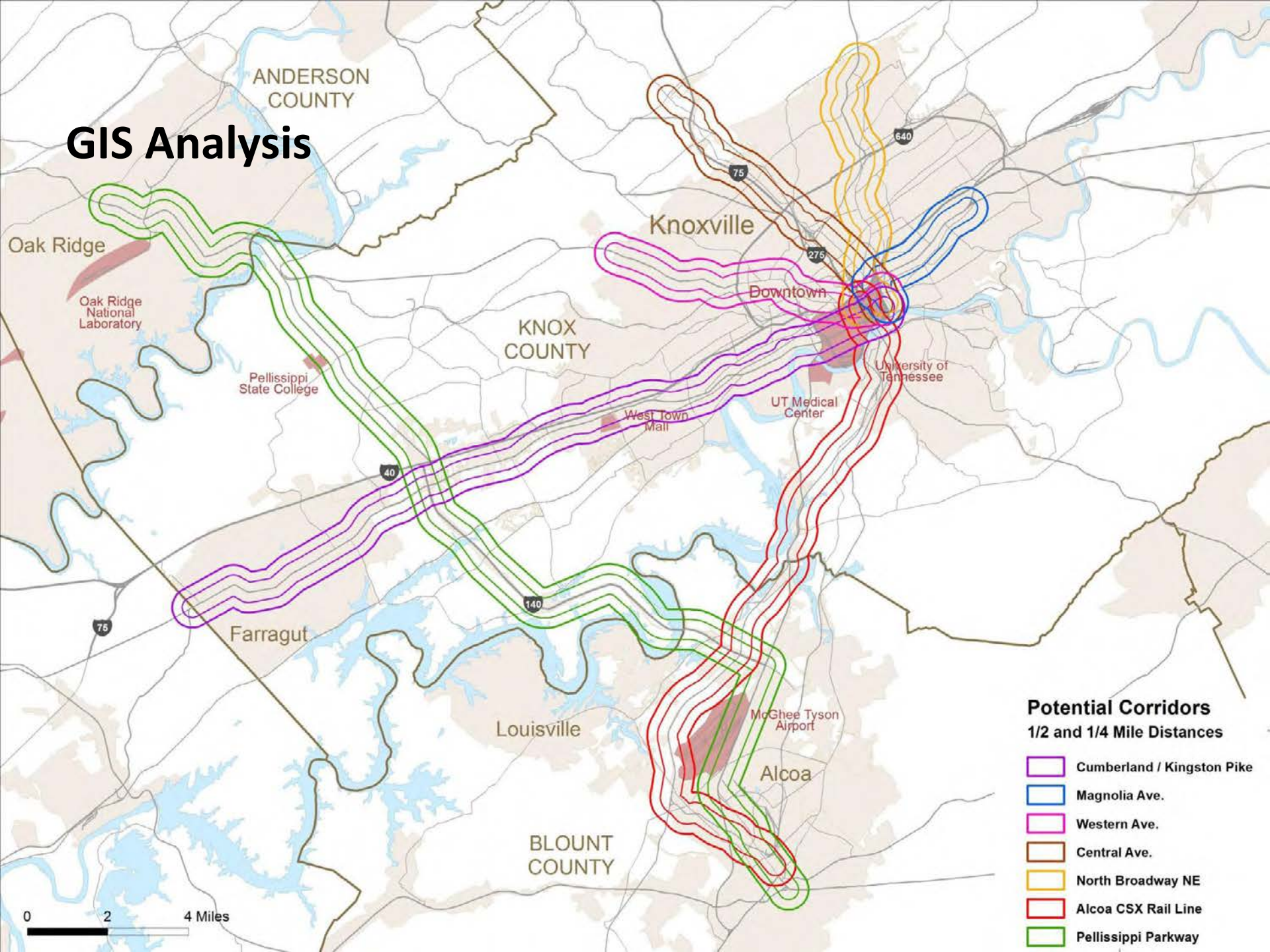
TIER 1 TOOLKIT ANALYSIS

GIS Analysis

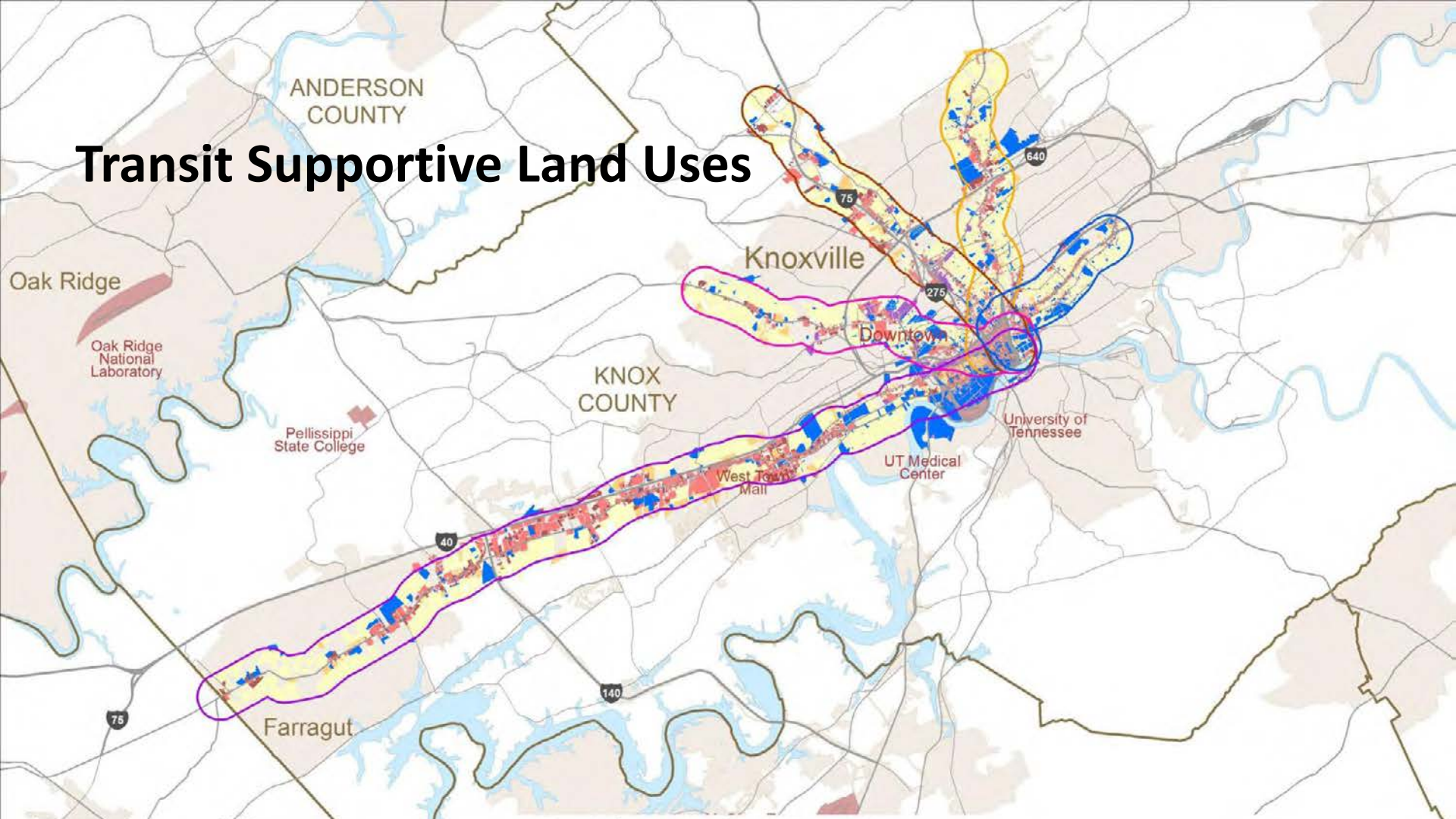
- Land Use
- Population Densities
- Employment
- Large Parcels
- Household Income
- Vehicle ownership

Spatial data was analyzed for several corridors in Knoxville to better understand their potential for transit. This information, graphically depicted, helps to guide corridor selection, station location, and service characteristics.

GIS Analysis

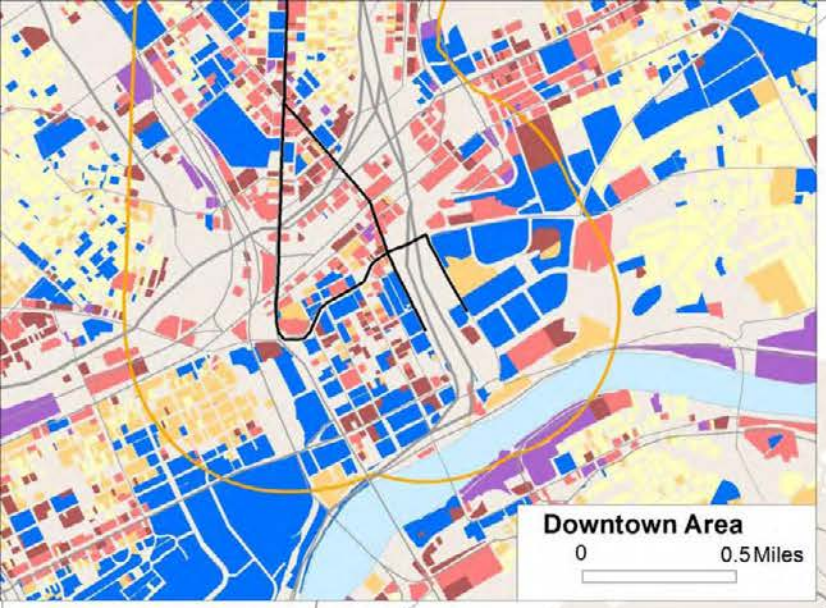


Transit Supportive Land Uses



Transit Supportive Land Uses within 1/2 Mile from Corridors (from county land use data)

	Residential Uses	Commercial/ Institutional/ Office/ Industrial Uses	Total	Corridor Areas	Transit Supportive Land Uses / Acre
Cumberland / Kingston Pike	4,548 Ac.	4,266 Ac.	8,814 Ac.	12,934 Ac.	0.68
Magnolia Ave.	739 Ac.	854 Ac.	1,593 Ac.	2,849 Ac.	0.56
Western Ave.	1,785 Ac.	1,493 Ac.	3,278 Ac.	5,300 Ac.	0.62
Central Ave.	1,702 Ac.	1,375 Ac.	3,077 Ac.	5,479 Ac.	0.56
N. Broadway NE	1,979 Ac.	1,563 Ac.	3,542 Ac.	5,086 Ac.	0.70



Knoxville

Downtown

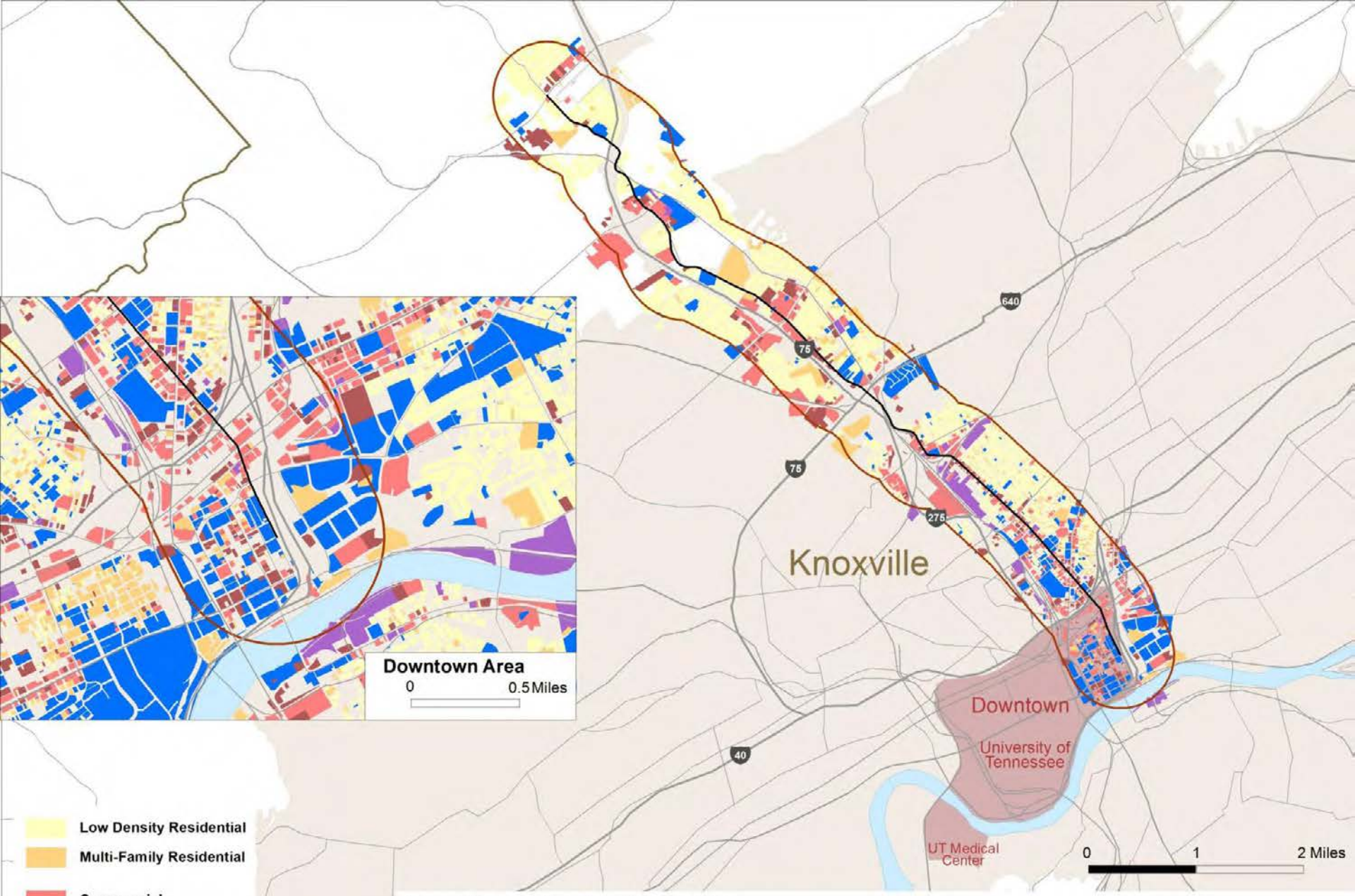
University of Tennessee

0 1 2 Miles

Low Density Residential
Multi-Family Residential
Commercial
Public / Quasi Public
Office
Industrial

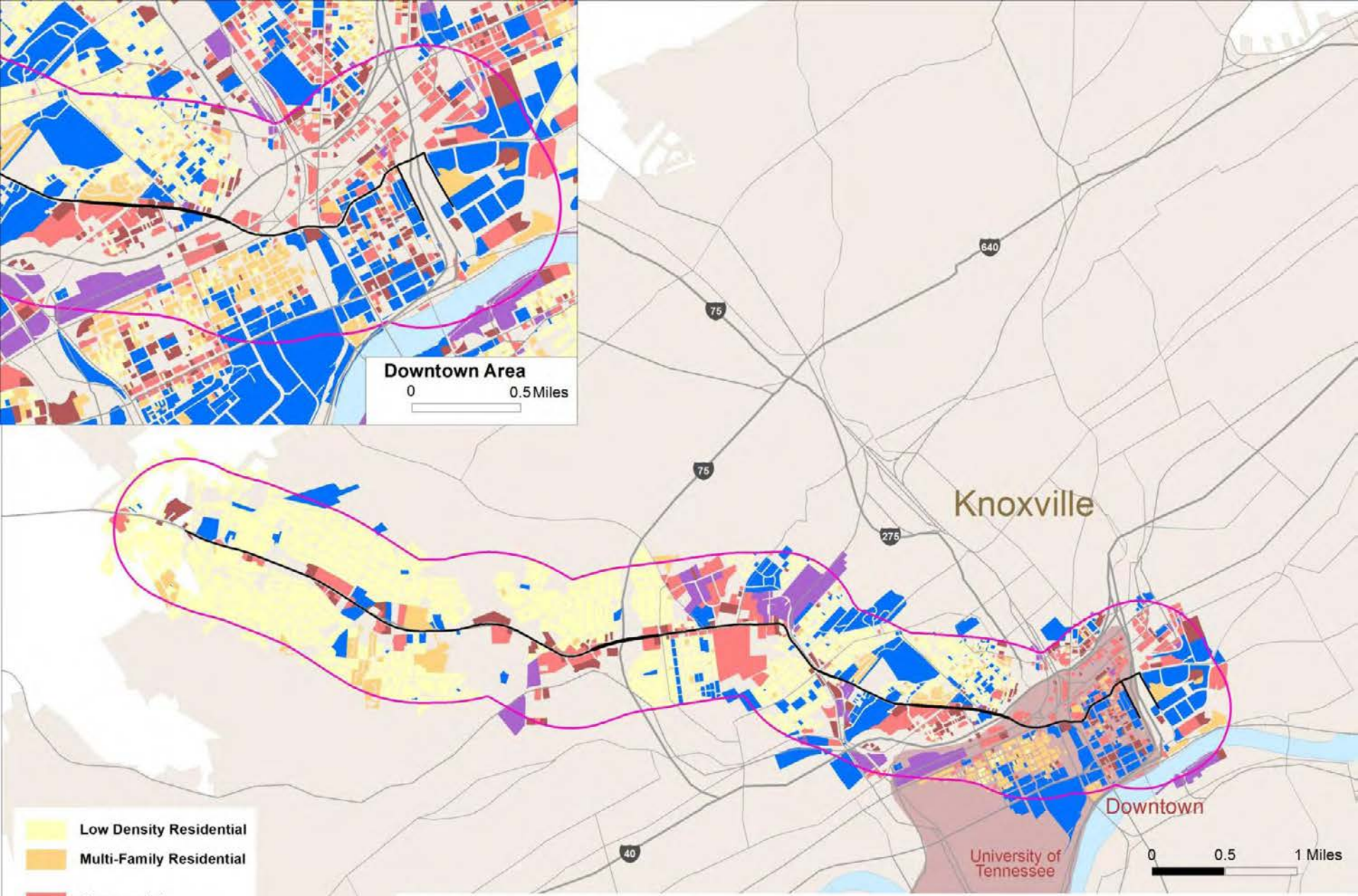
Transit Supportive Land Uses within 1/2 Mile from Corridors

	Residential Uses	Commercial/ Institutional/ Office/ Industrial Uses	Total	Corridor Areas	Transit Supportive Land Uses / Acre
N. Broadway NE	1,979 Ac.	1,563 Ac.	3,542 Ac.	5,086 Ac.	0.70



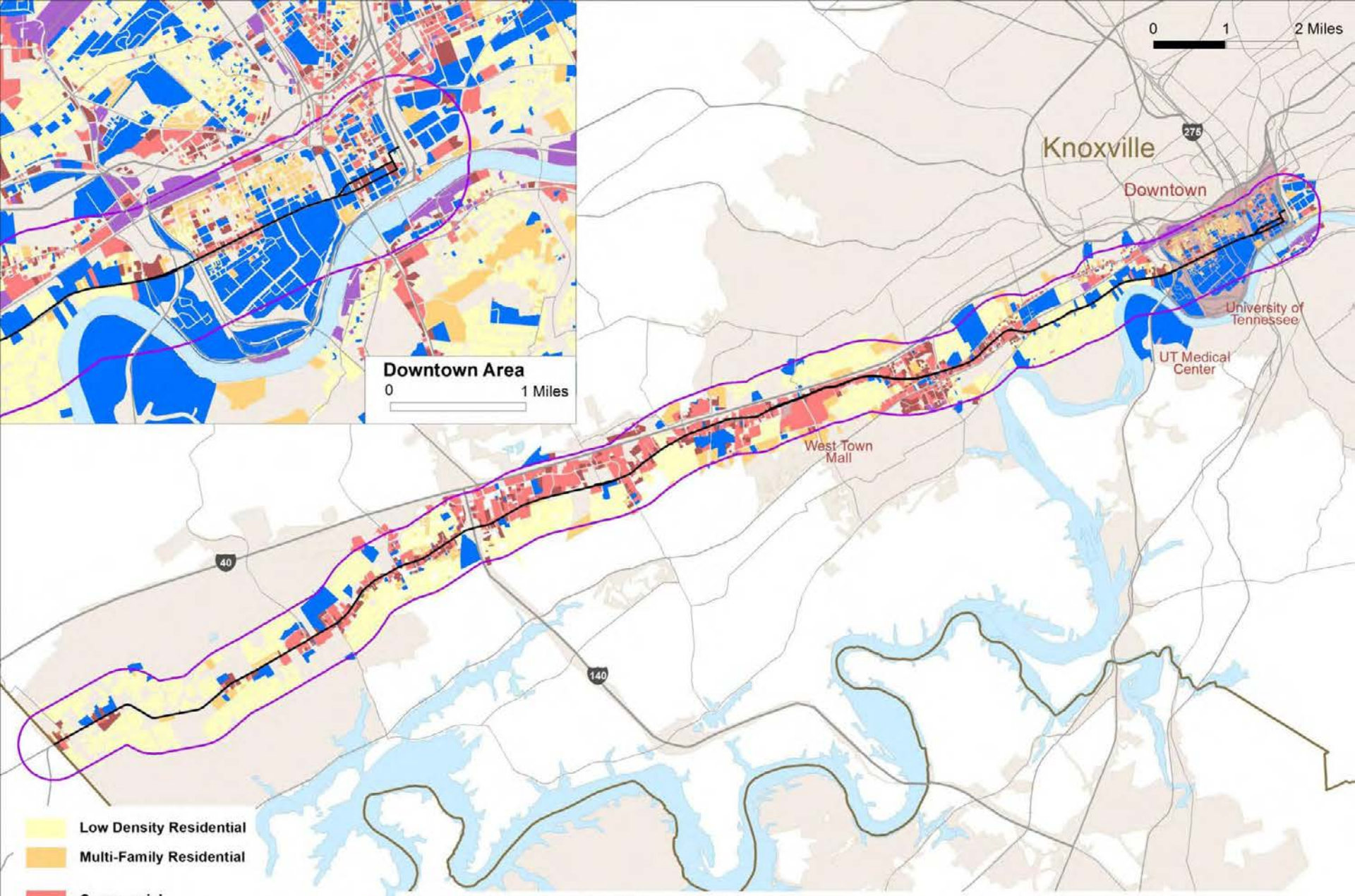
Transit Supportive Land Uses within 1/2 Mile from Corridors

	Residential Uses	Commercial/ Institutional/ Office/ Industrial Uses	Total	Corridor Areas	Transit Supportive Land Uses / Acre
Central Ave.	1,702 Ac.	1,375 Ac.	3,077 Ac.	5,479 Ac.	0.56



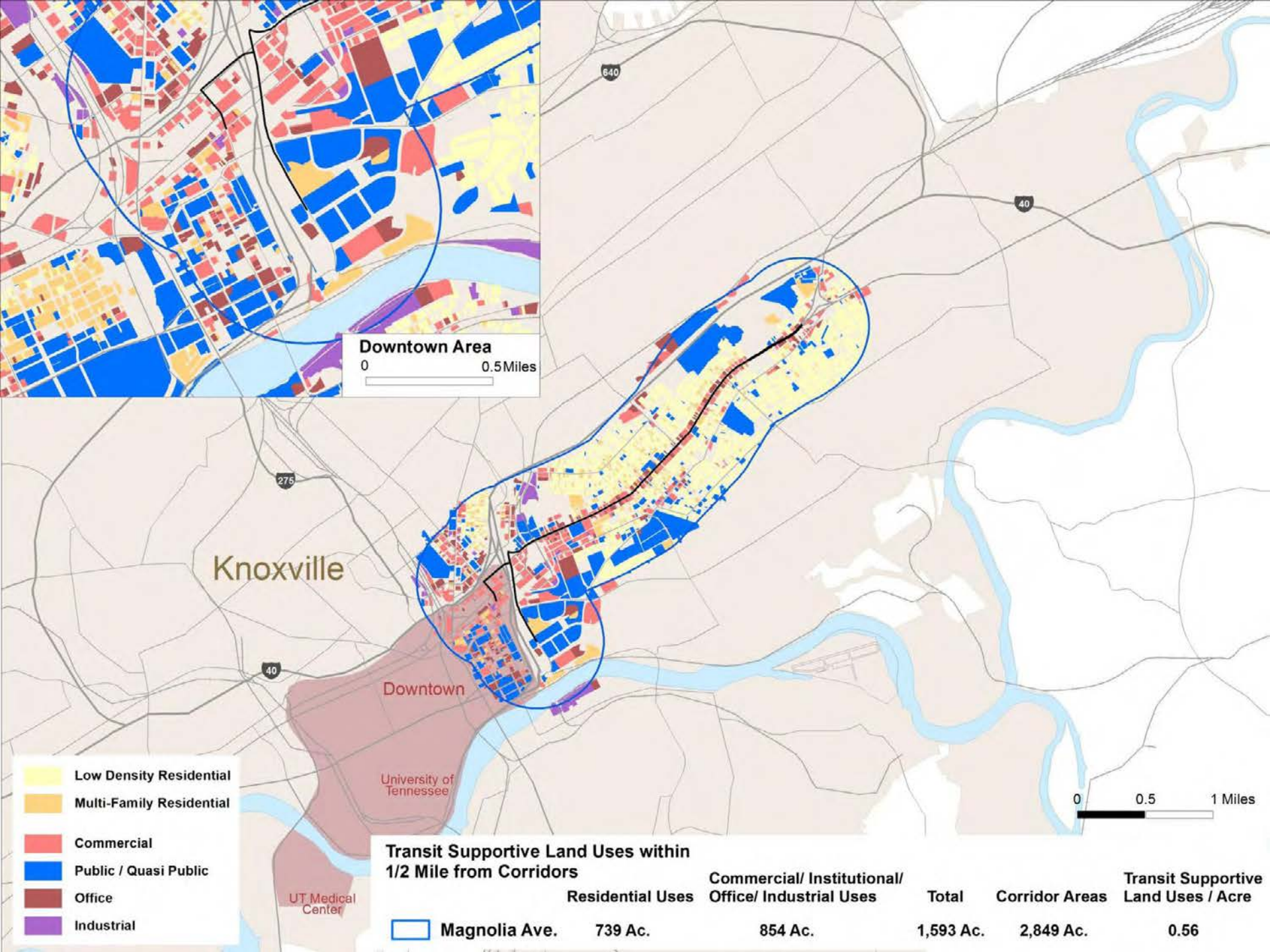
Transit Supportive Land Uses within 1/2 Mile from Corridors

	Residential Uses	Commercial/ Institutional/ Office/ Industrial Uses	Total	Corridor Areas	Transit Supportive Land Uses / Acre
Western Ave.	1,785 Ac.	1,493 Ac.	3,278 Ac.	5,300 Ac.	0.62



Transit Supportive Land Uses within 1/2 Mile from Corridors

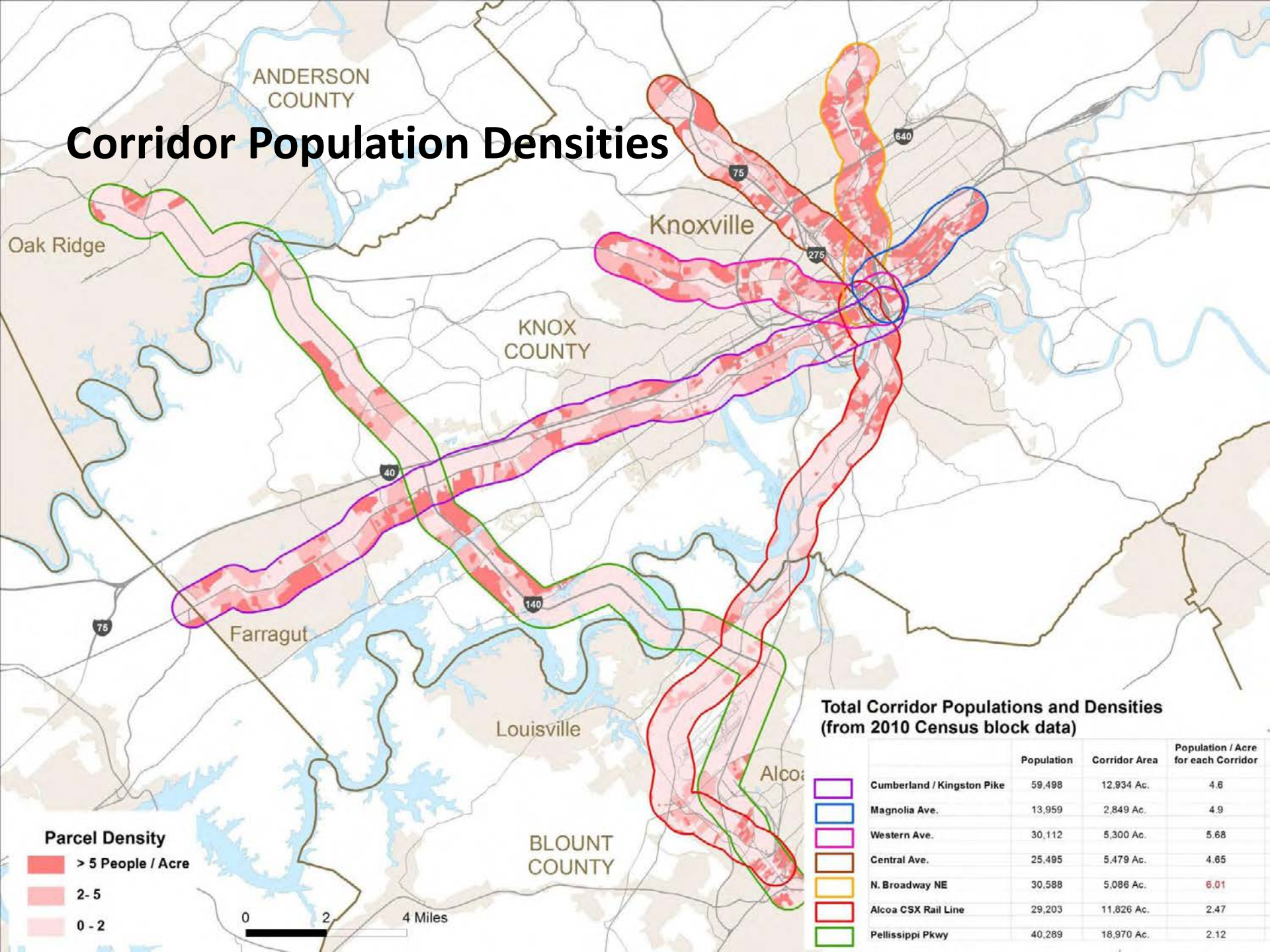
	Residential Uses	Commercial/ Institutional/ Office/ Industrial Uses	Total	Corridor Areas	Transit Supportive Land Uses / Acre
Cumberland / Kingston Pike	4,548 Ac.	4,266 Ac.	8,814 Ac.	12,934 Ac.	0.68



Transit Supportive Land Uses within 1/2 Mile from Corridors

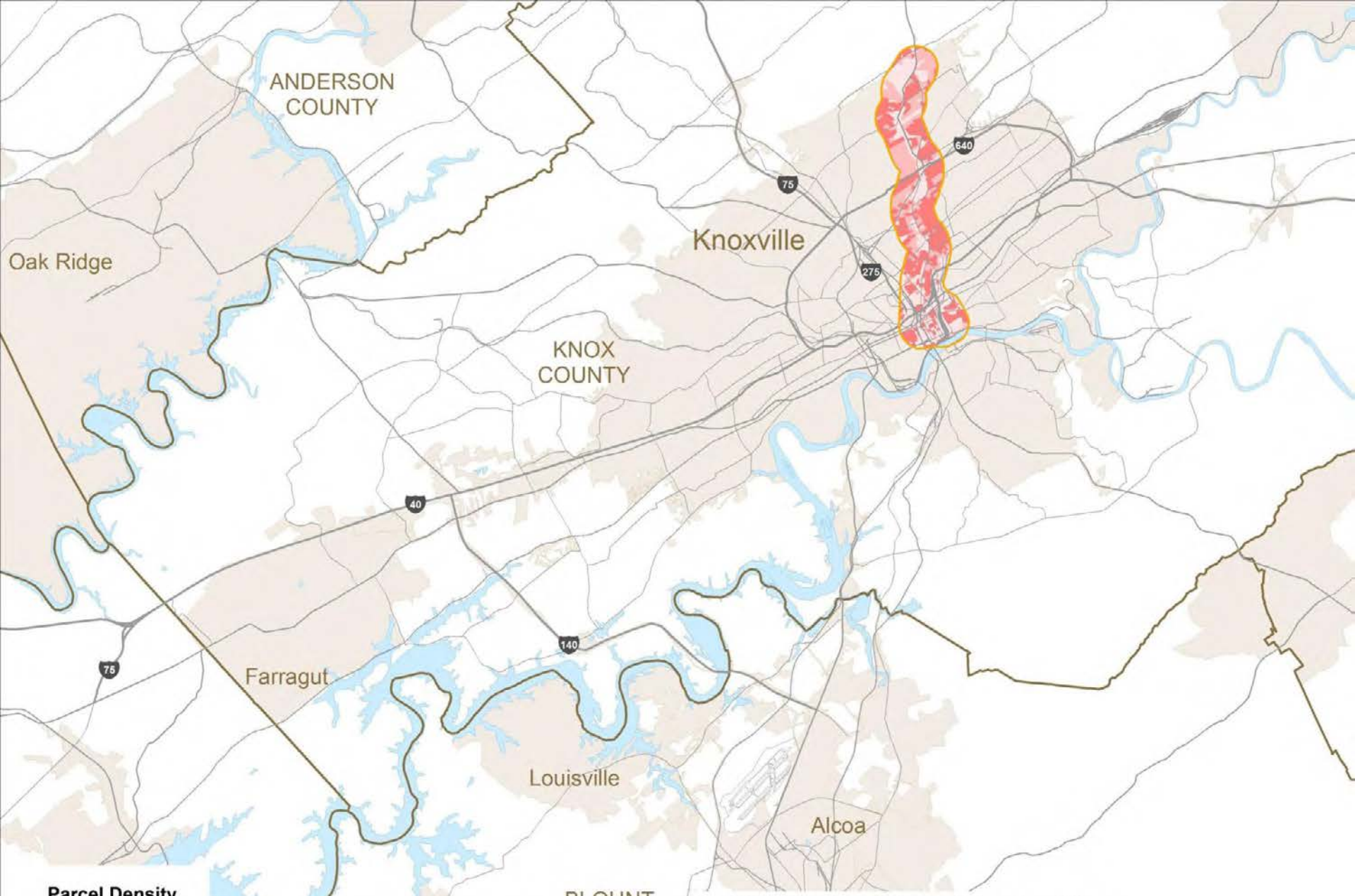
	Residential Uses	Commercial/ Institutional/ Office/ Industrial Uses	Total	Corridor Areas	Transit Supportive Land Uses / Acre
Magnolia Ave.	739 Ac.	854 Ac.	1,593 Ac.	2,849 Ac.	0.56

Corridor Population Densities



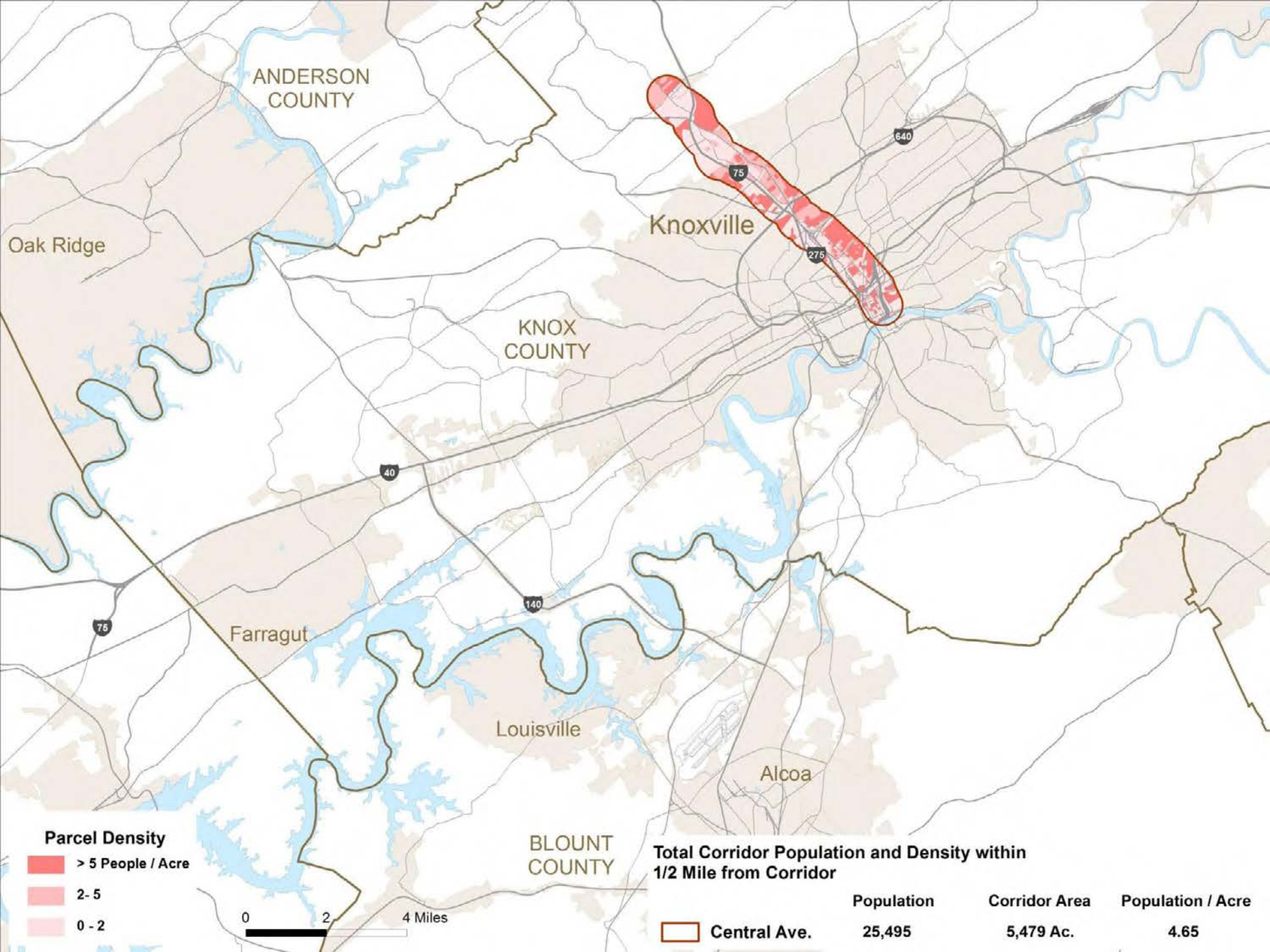
Total Corridor Populations and Densities (from 2010 Census block data)

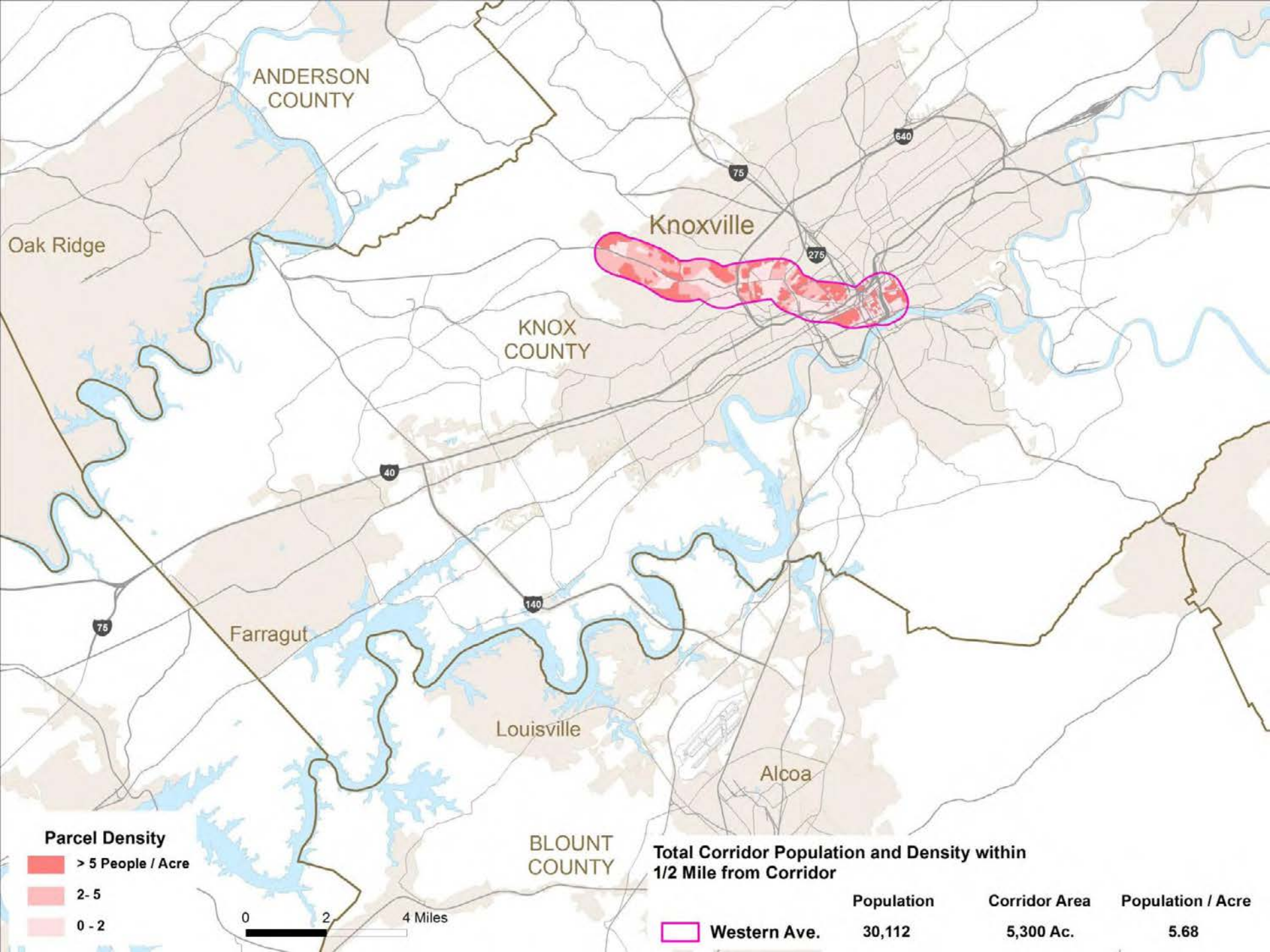
	Population	Corridor Area	Population / Acre for each Corridor
Cumberland / Kingston Pike	59,498	12,934 Ac.	4.6
Magnolia Ave.	13,959	2,849 Ac.	4.9
Western Ave.	30,112	5,300 Ac.	5.68
Central Ave.	25,495	5,479 Ac.	4.65
N. Broadway NE	30,588	5,086 Ac.	6.01
Alcoa CSX Rail Line	29,203	11,826 Ac.	2.47
Pellissippi Pkwy	40,289	18,970 Ac.	2.12



Total Corridor Population and Density within 1/2 Mile from Corridor

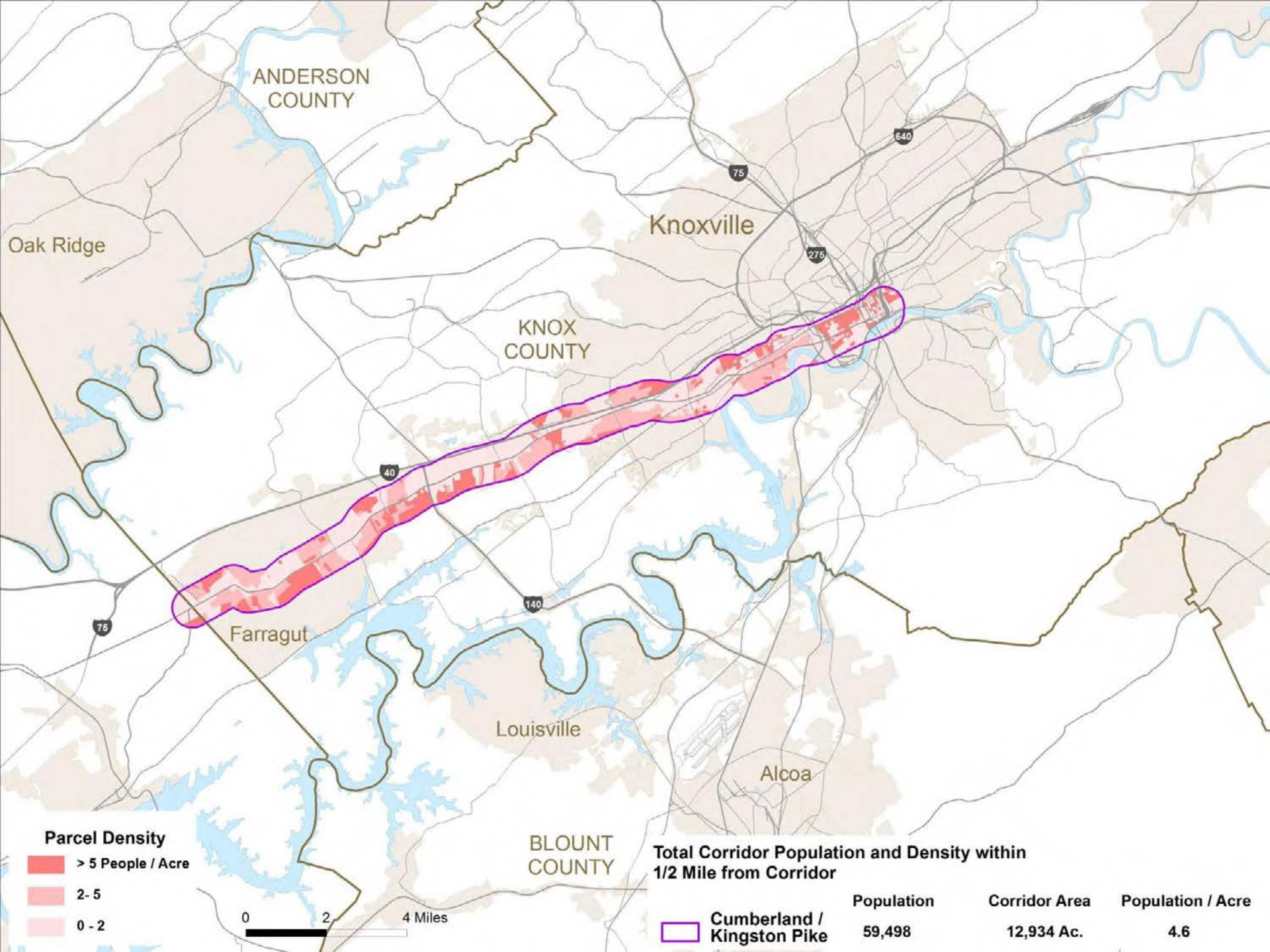
	Population	Corridor Area	Population / Acre
N. Broadway NE	30,588	5,086 Ac.	6.01

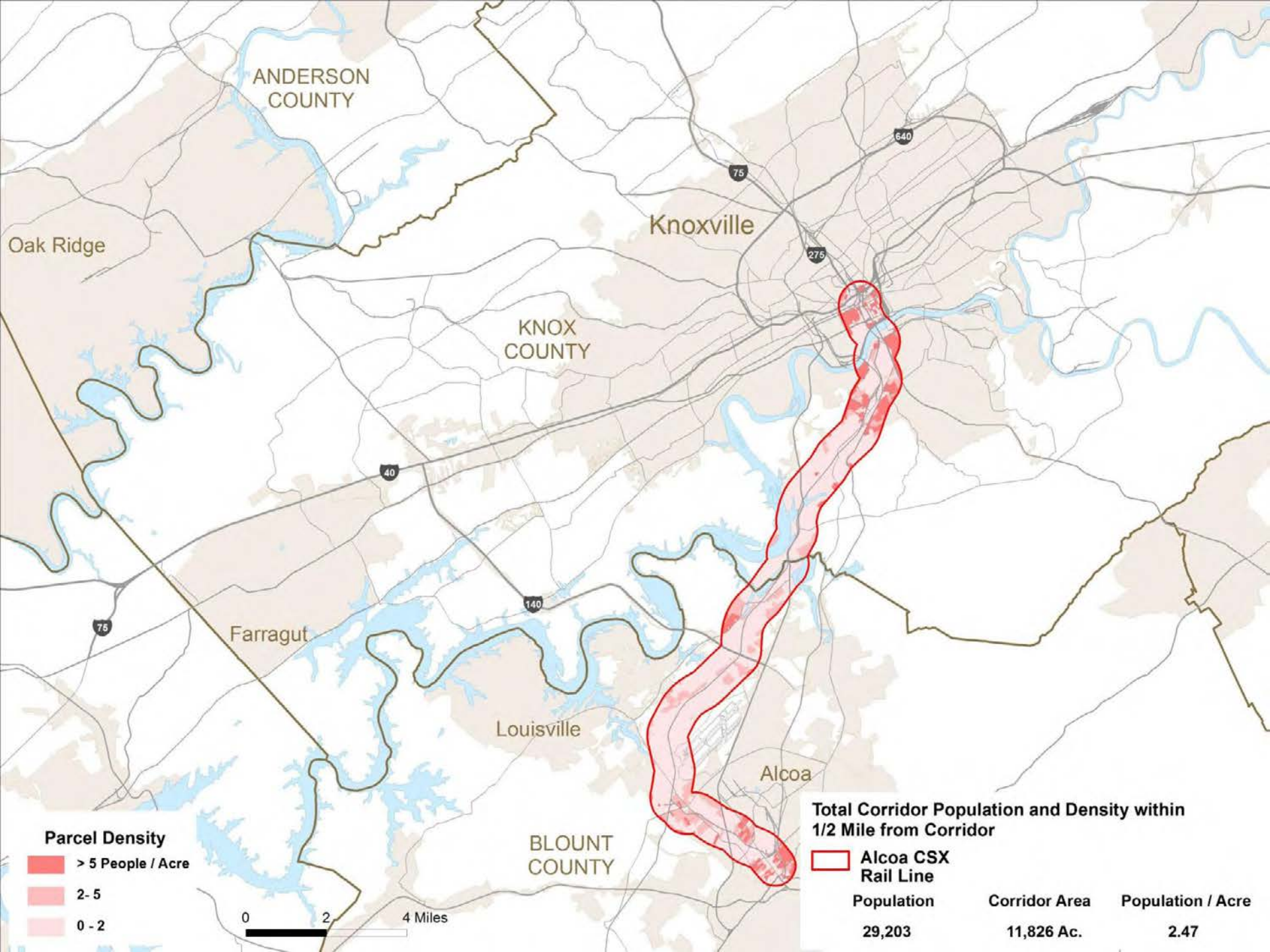

ANDERSON COUNTY
Oak Ridge
Knoxville
KNOX COUNTY
Farragut
Louisville
Alcoa
BLOUNT COUNTY
640
75
275
40
140
75
Parcel Density
> 5 People / Acre
2- 5
0 - 2
0
2
4 Miles
Total Corridor Population and Density within 1/2 Mile from Corridor
Population
Corridor Area
Population / Acre
Central Ave.
25,495
5,479 Ac.
4.65

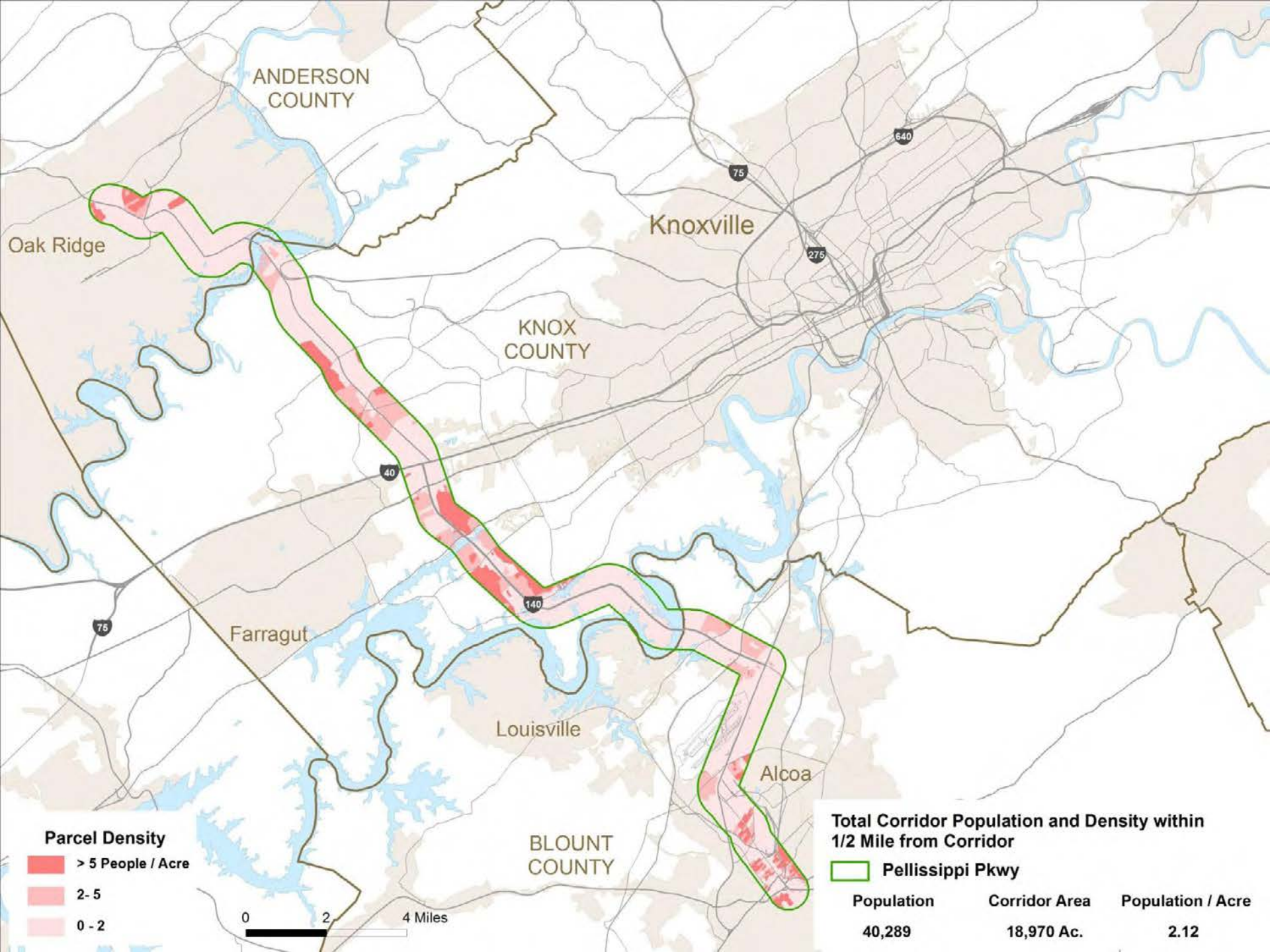


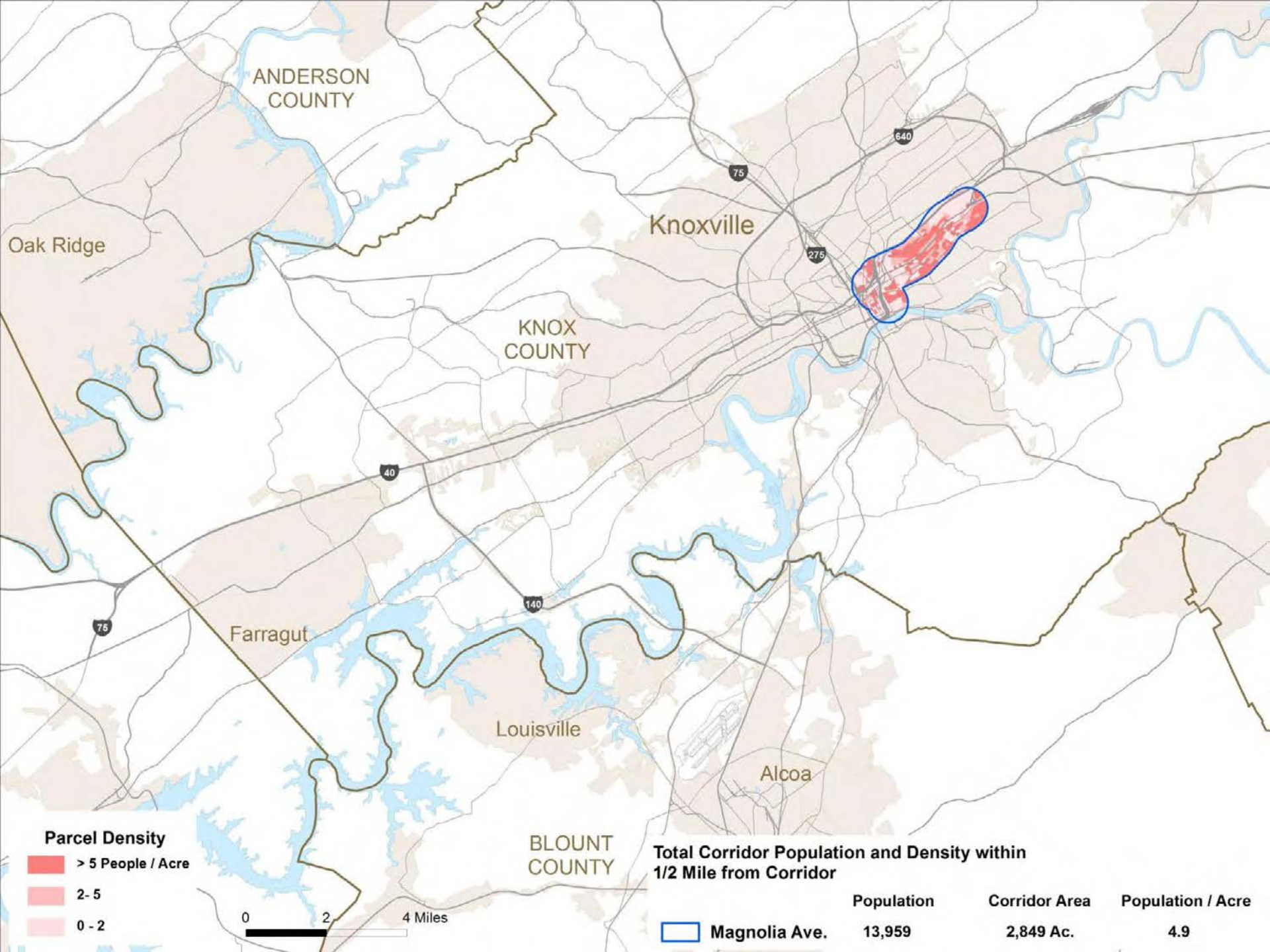
Total Corridor Population and Density within 1/2 Mile from Corridor

	Population	Corridor Area	Population / Acre
Western Ave.	30,112	5,300 Ac.	5.68

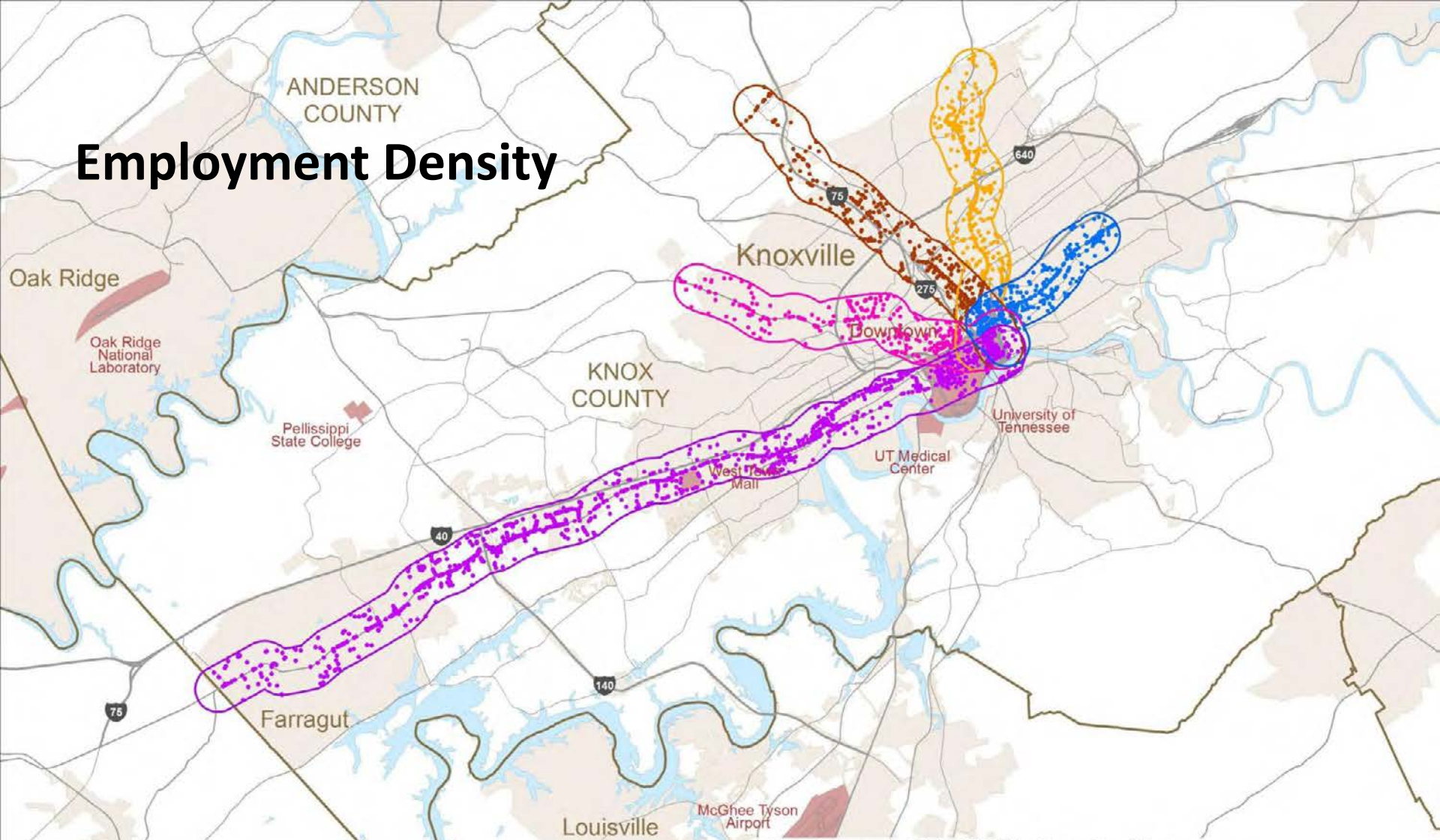

ANDERSON COUNTY
Oak Ridge
Knoxville
KNOX COUNTY
Farragut
Louisville
Alcoa
BLOUNT COUNTY
75
640
275
40
140
Parcel Density
> 5 People / Acre
2- 5
0 - 2
0
2
4 Miles
Total Corridor Population and Density within 1/2 Mile from Corridor
Population
Corridor Area
Population / Acre
Cumberland / Kingston Pike
59,498
12,934 Ac.
4.6


ANDERSON COUNTY
Oak Ridge
Knoxville
KNOX COUNTY
Farragut
Louisville
Alcoa
BLOUNT COUNTY
640
75
275
40
140
75
Parcel Density
> 5 People / Acre
2- 5
0 - 2
0
2
4 Miles
Total Corridor Population and Density within 1/2 Mile from Corridor
Alcoa CSX Rail Line
Population
Corridor Area
Population / Acre
29,203
11,826 Ac.
2.47


ANDERSON COUNTY
Oak Ridge
Knoxville
KNOX COUNTY
Farragut
Louisville
Alcoa
BLOUNT COUNTY
640
75
275
40
140
75
Parcel Density
> 5 People / Acre
2- 5
0 - 2
0
2
4 Miles
Total Corridor Population and Density within 1/2 Mile from Corridor
Pellissippi Pkwy
Population
Corridor Area
Population / Acre
40,289
18,970 Ac.
2.12


ANDERSON COUNTY
Oak Ridge
Knoxville
KNOX COUNTY
Farragut
Louisville
Alcoa
BLOUNT COUNTY
640
75
275
40
140
75
Parcel Density
> 5 People / Acre
2- 5
0 - 2
0
2
4 Miles
Total Corridor Population and Density within 1/2 Mile from Corridor
Population
Corridor Area
Population / Acre
Magnolia Ave.
13,959
2,849 Ac.
4.9

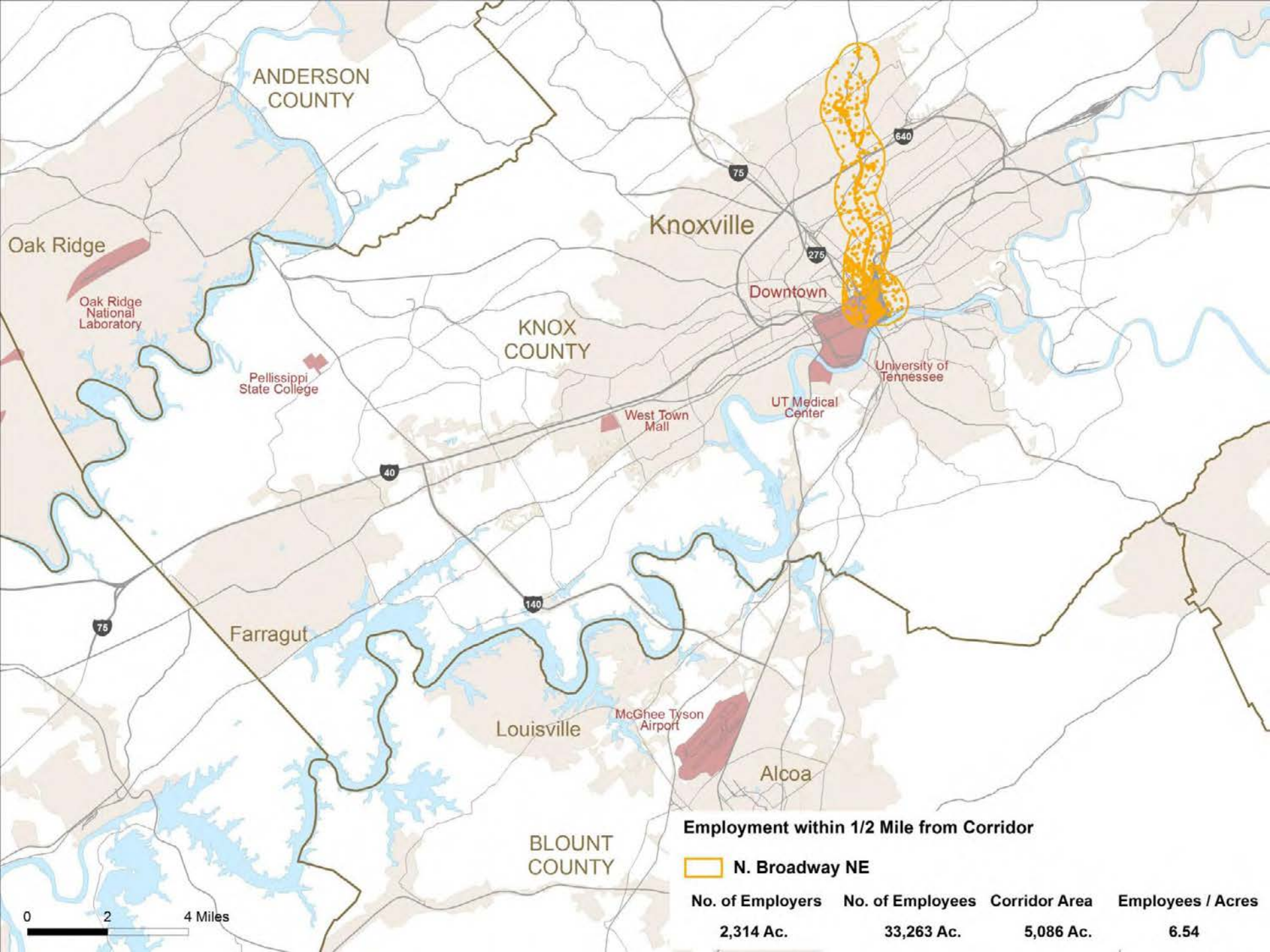
Employment Density



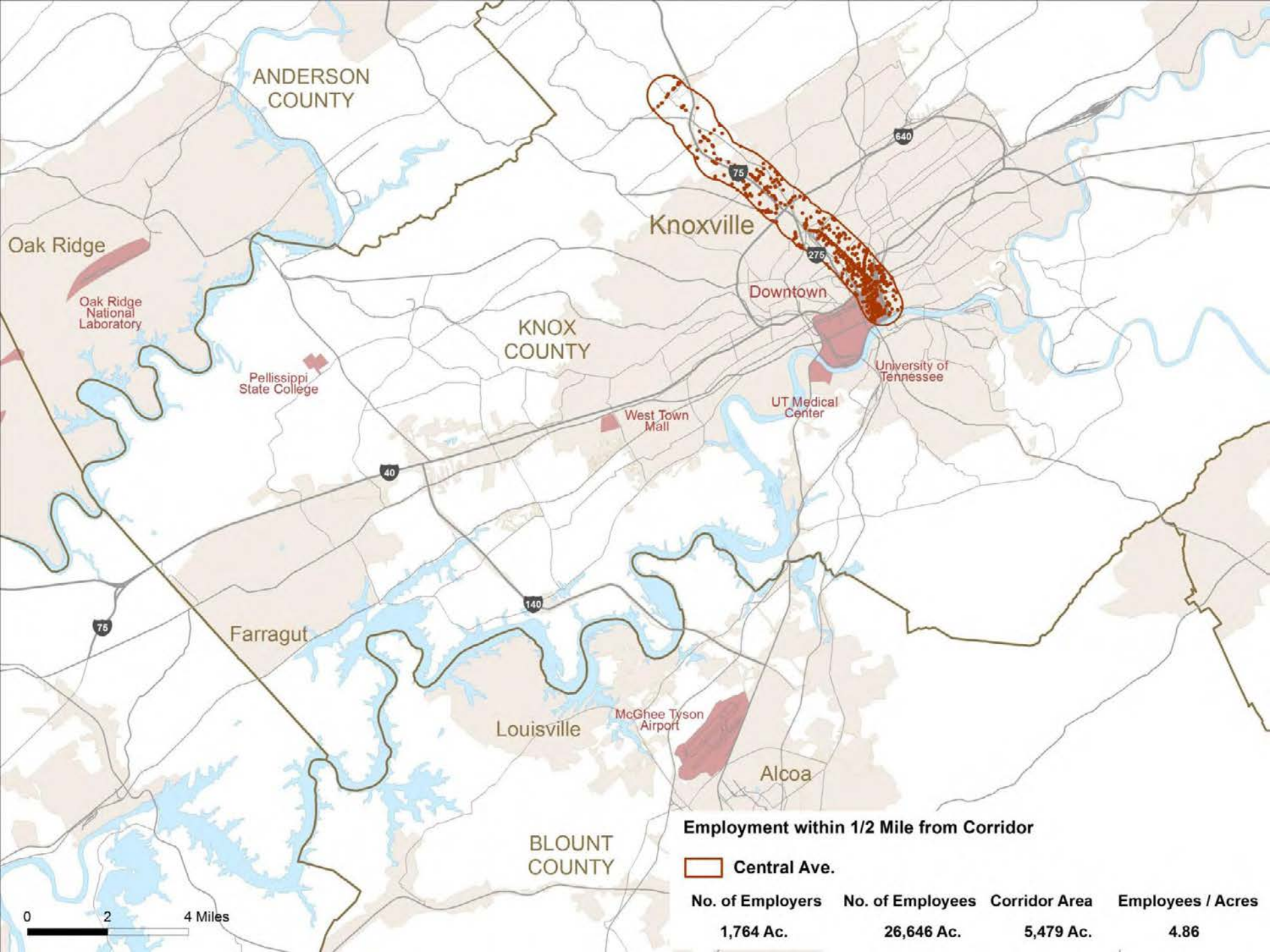
Note: Pellissippi Parkway and Alcoa CSX Line excluded due to insufficient employment data

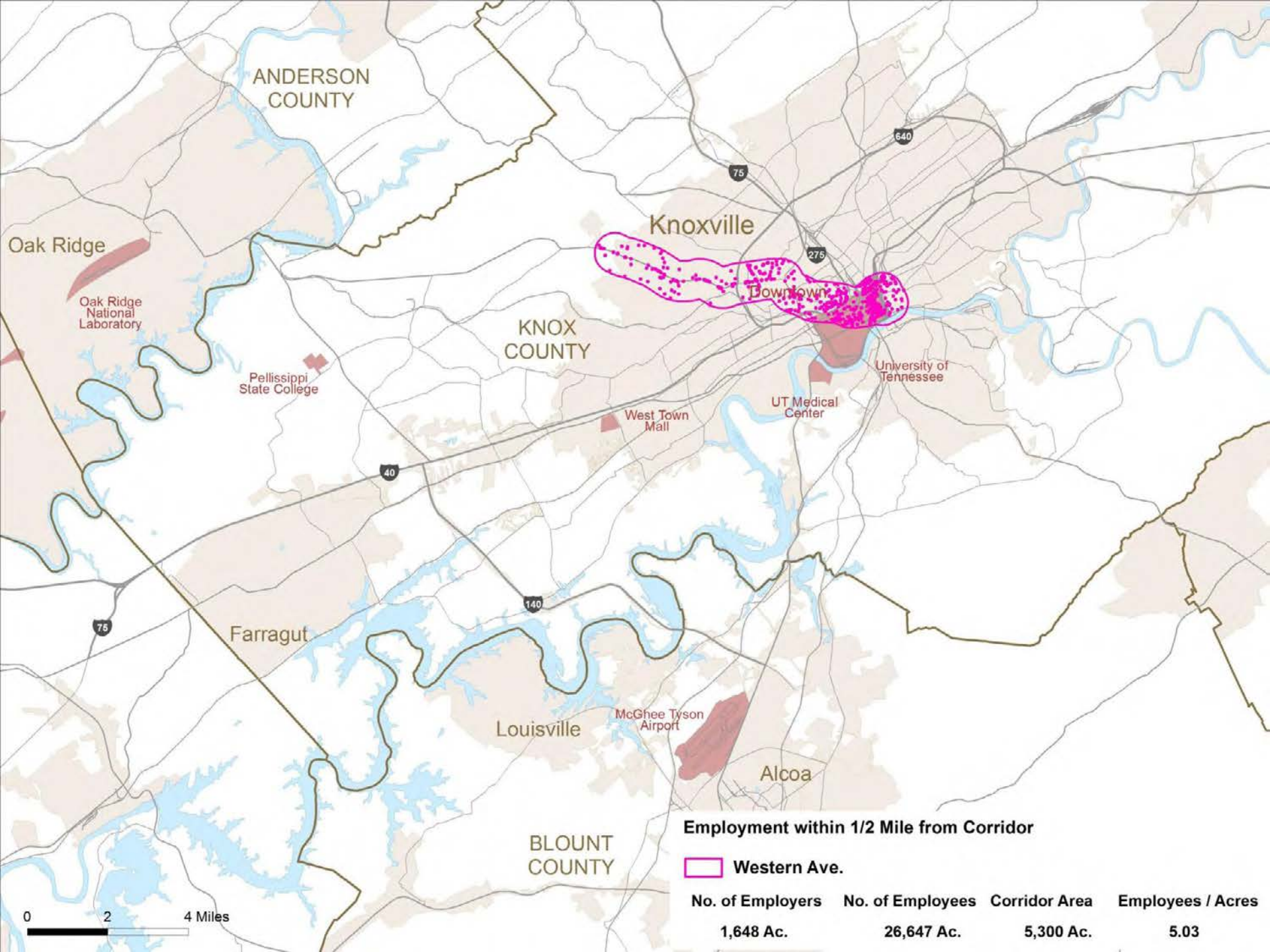
Employment within 1/2 Mile from Corridors (from county employment data)

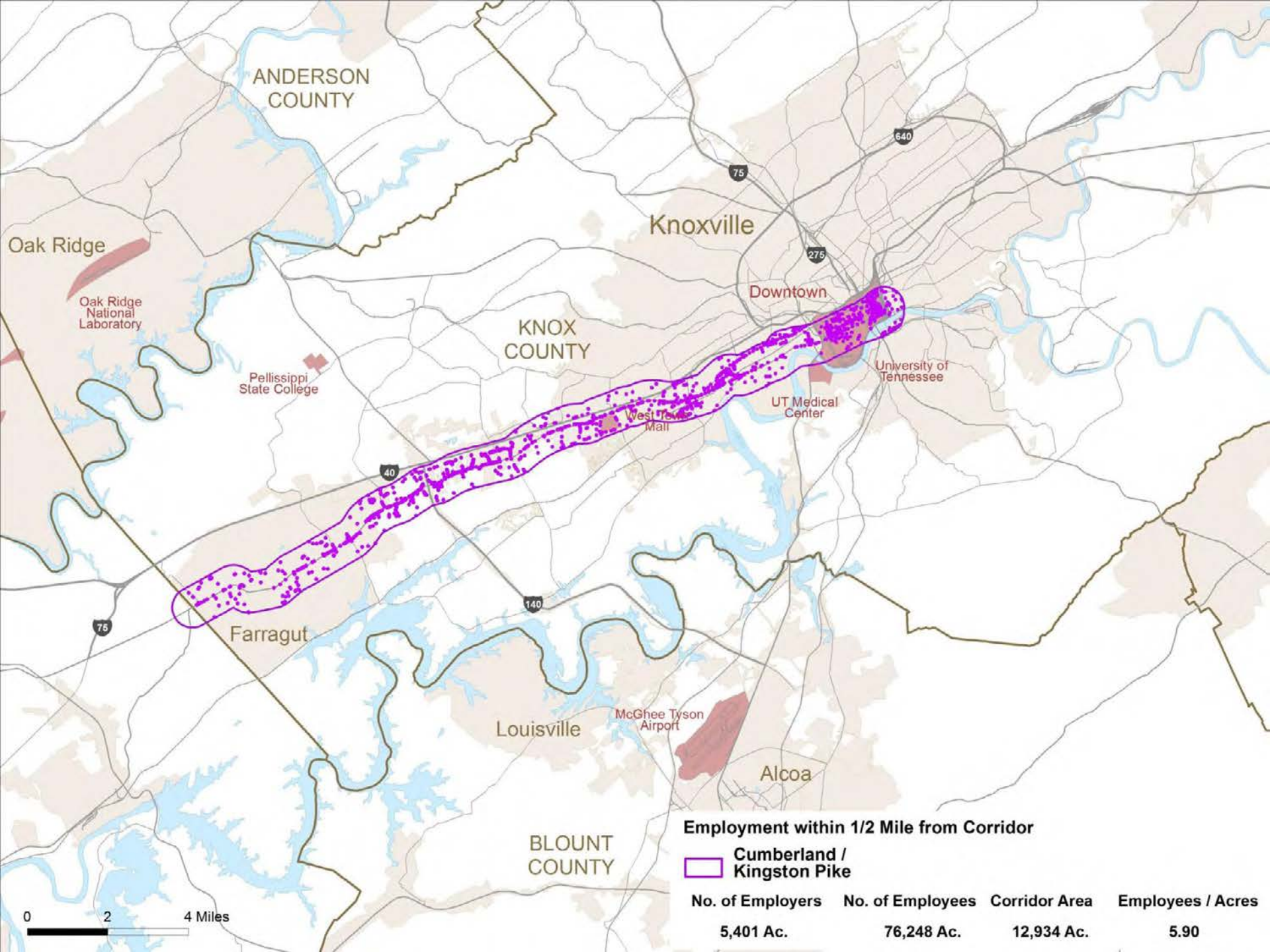
	No. of Employers	No. of Employees	Corridor Area	Employees / Acres
Cumberland / Kingston Pike	5,401	76,248	12,934 Ac.	5.90
Magnolia Ave.	1,451	21,571	2,849 Ac.	7.57
Western Ave.	1,648	26,647	5,300 Ac.	5.03
Central Ave.	1,764	26,646	5,479 Ac.	4.86
N. Broadway NE	2,314	33,263	5,086 Ac.	6.54

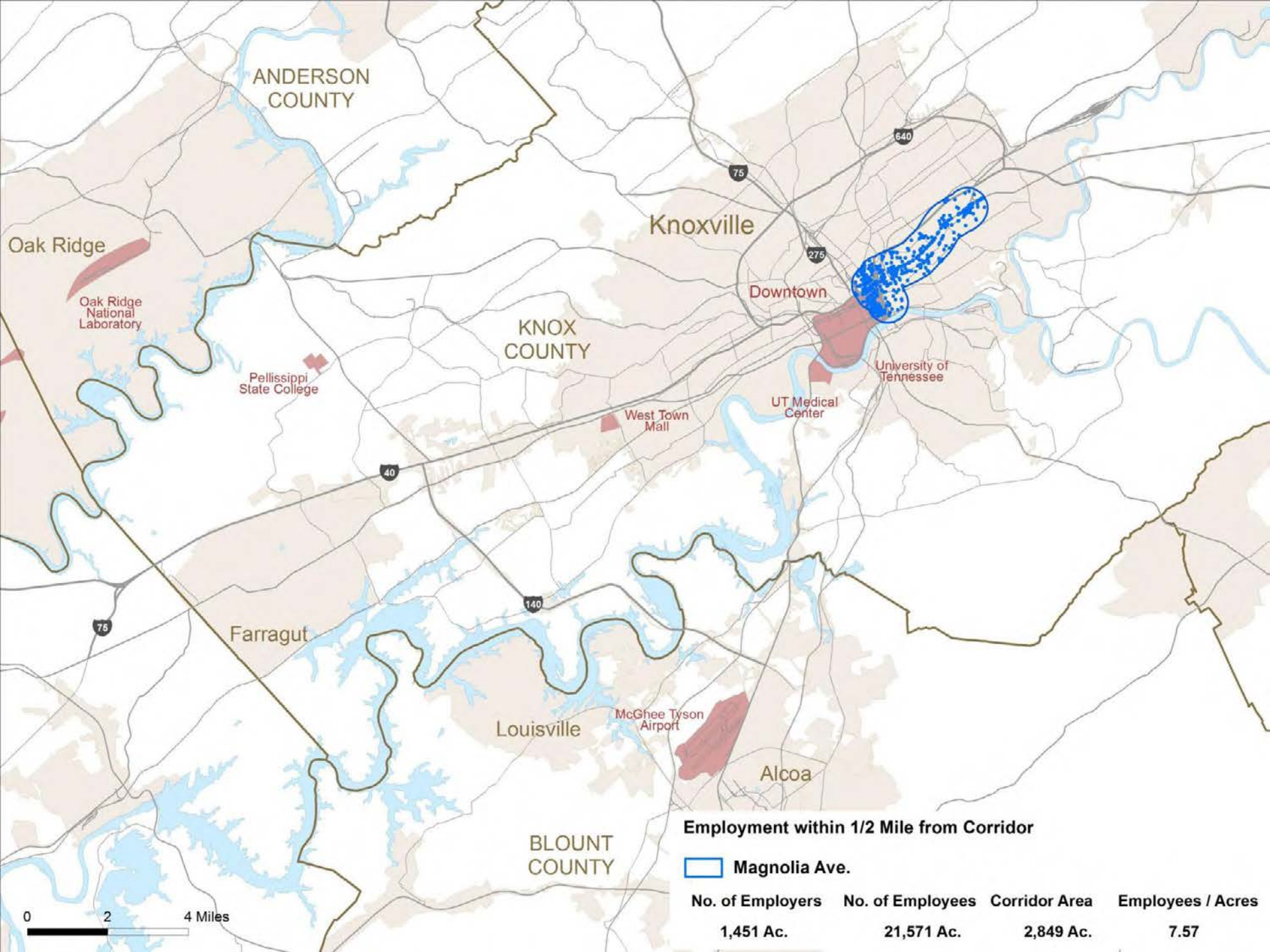


No. of Employers	No. of Employees	Corridor Area	Employees / Acres
2,314 Ac.	33,263 Ac.	5,086 Ac.	6.54

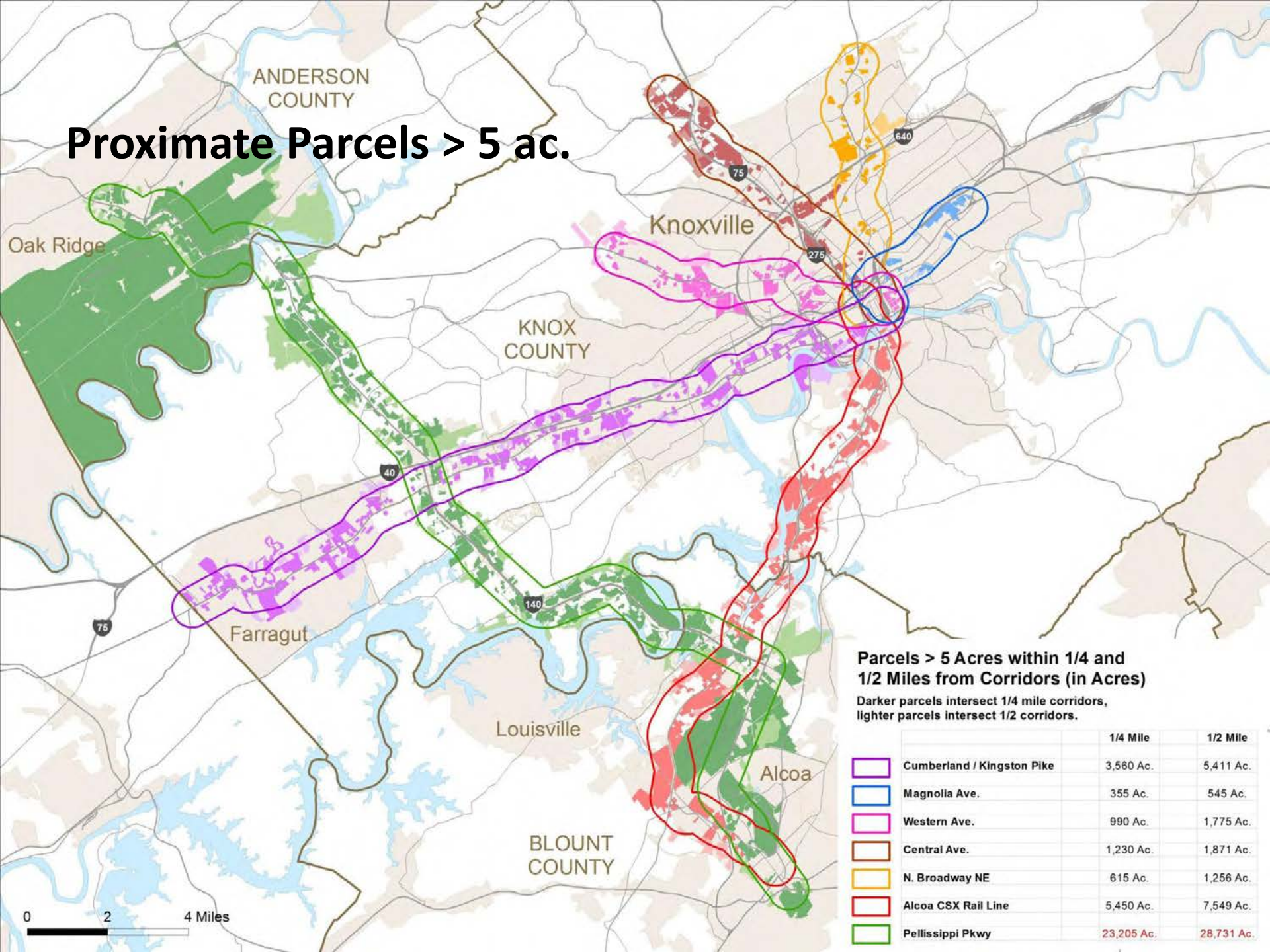

ANDERSON COUNTY
Oak Ridge
Oak Ridge National Laboratory
Knoxville
Downtown
KNOX COUNTY
Pellissippi State College
West Town Mall
UT Medical Center
University of Tennessee
Farragut
Louisville
McGhee Tyson Airport
Alcoa
BLOUNT COUNTY
75
640
275
40
140
0
2
4 Miles
Employment within 1/2 Mile from Corridor
Central Ave.
No. of Employers
No. of Employees
Corridor Area
Employees / Acres
1,764 Ac.
26,646 Ac.
5,479 Ac.
4.86


ANDERSON COUNTY
Oak Ridge
Oak Ridge National Laboratory
Knoxville
Downtown
KNOX COUNTY
Pellissippi State College
West Town Mall
UT Medical Center
University of Tennessee
Farragut
Louisville
McGhee Tyson Airport
Alcoa
BLOUNT COUNTY
640
75
275
40
140
75
0
2
4 Miles
Employment within 1/2 Mile from Corridor
Western Ave.
No. of Employers
No. of Employees
Corridor Area
Employees / Acres
1,648 Ac.
26,647 Ac.
5,300 Ac.
5.03


ANDERSON COUNTY
Oak Ridge
Oak Ridge National Laboratory
Knoxville
Downtown
KNOX COUNTY
Pellissippi State College
University of Tennessee
UT Medical Center
West Town Mall
Farragut
Louisville
McGhee Tyson Airport
Alcoa
BLOUNT COUNTY
640
75
275
40
140
75
0
2
4 Miles
Employment within 1/2 Mile from Corridor
Cumberland / Kingston Pike
No. of Employers
No. of Employees
Corridor Area
Employees / Acres
5,401 Ac.
76,248 Ac.
12,934 Ac.
5.90


ANDERSON COUNTY
Oak Ridge
Oak Ridge National Laboratory
Knoxville
Downtown
KNOX COUNTY
Pellissippi State College
West Town Mall
UT Medical Center
University of Tennessee
Farragut
Louisville
McGhee Tyson Airport
Alcoa
BLOUNT COUNTY
640
75
275
40
140
75
0
2
4 Miles
Employment within 1/2 Mile from Corridor
Magnolia Ave.
No. of Employers
No. of Employees
Corridor Area
Employees / Acres
1,451 Ac.
21,571 Ac.
2,849 Ac.
7.57

Proximate Parcels > 5 ac.

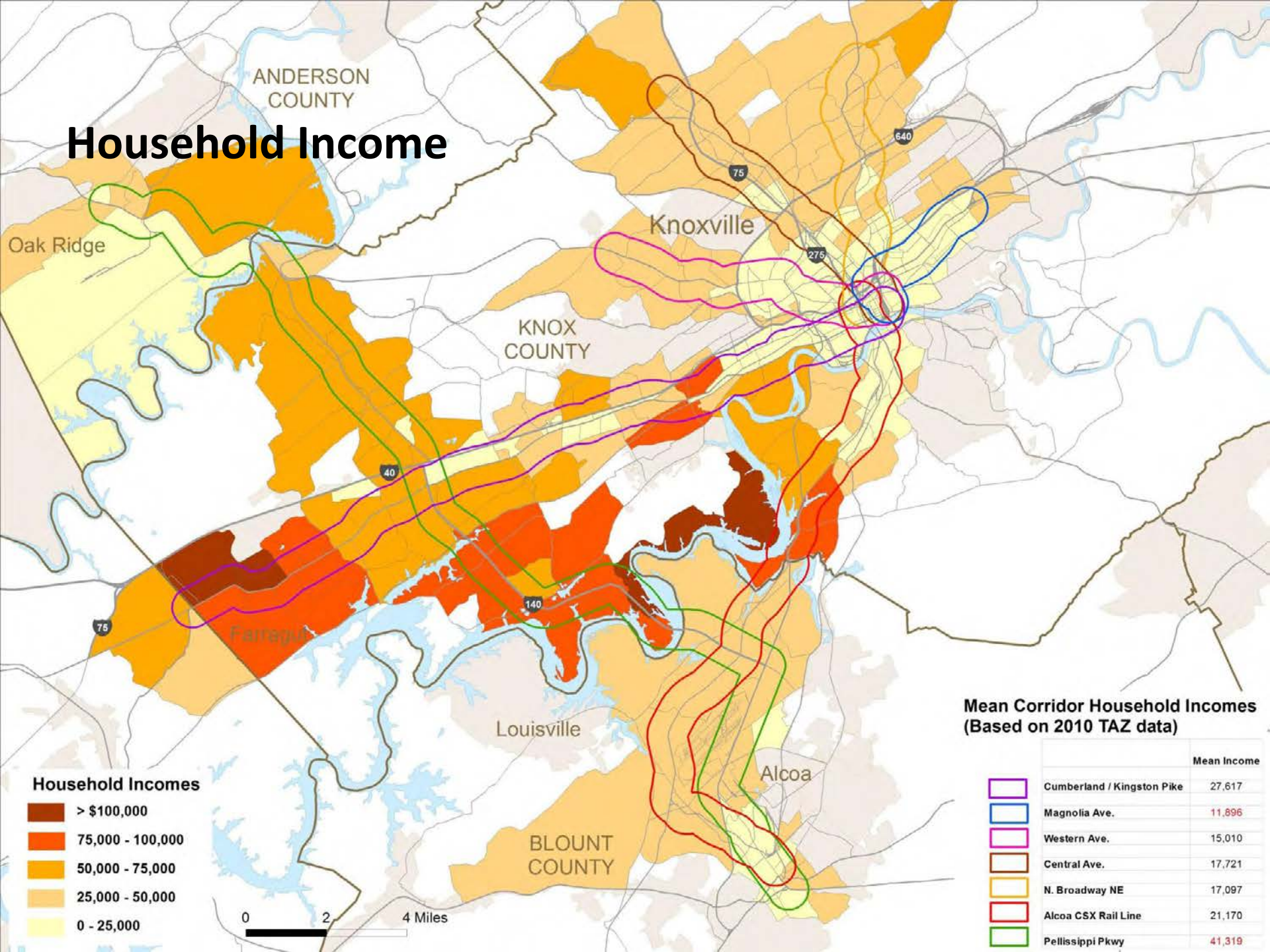


Parcels > 5 Acres within 1/4 and 1/2 Miles from Corridors (in Acres)

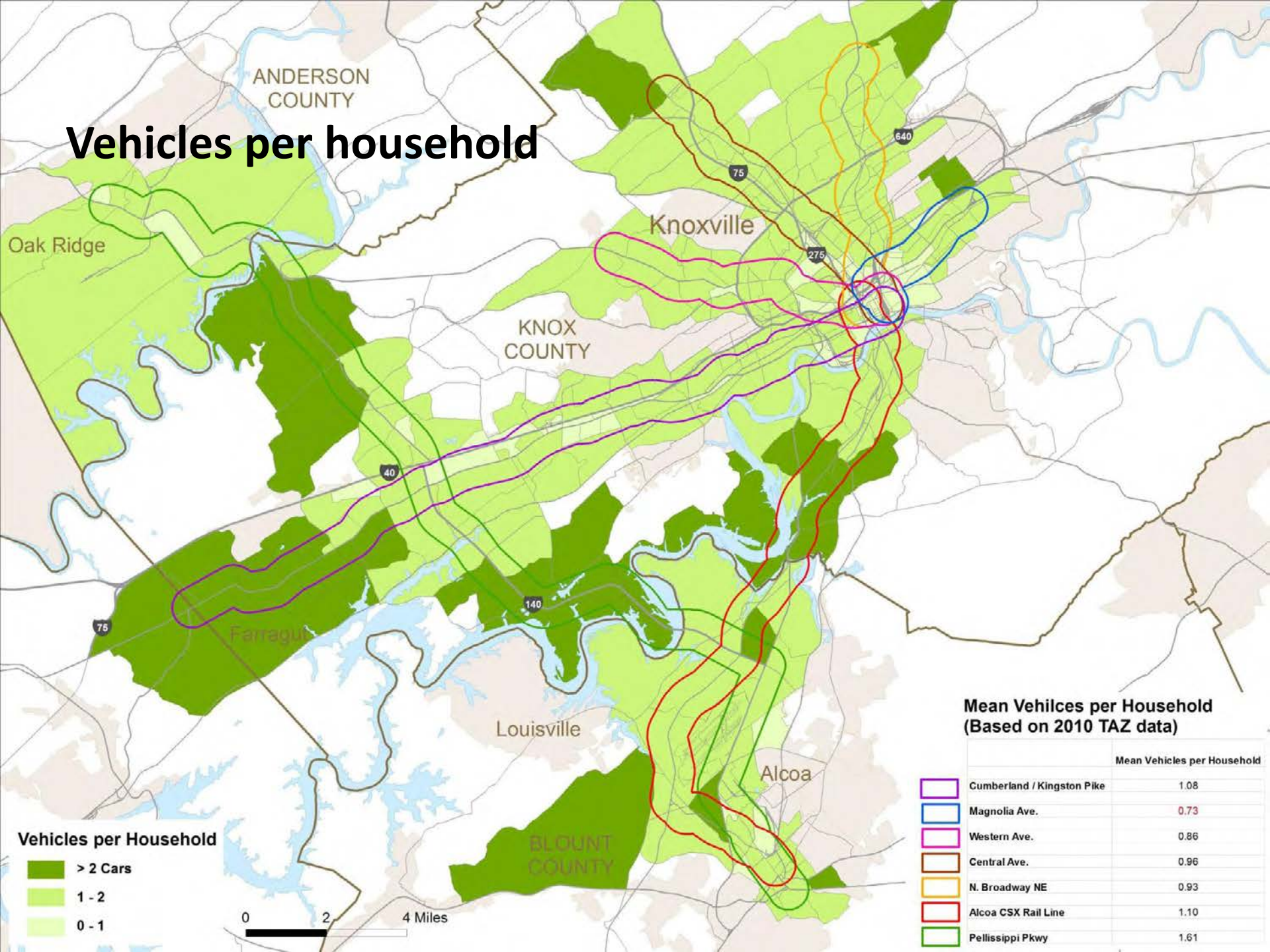
Darker parcels intersect 1/4 mile corridors, lighter parcels intersect 1/2 corridors.

	1/4 Mile	1/2 Mile
Cumberland / Kingston Pike	3,560 Ac.	5,411 Ac.
Magnolia Ave.	355 Ac.	545 Ac.
Western Ave.	990 Ac.	1,775 Ac.
Central Ave.	1,230 Ac.	1,871 Ac.
N. Broadway NE	615 Ac.	1,256 Ac.
Alcoa CSX Rail Line	5,450 Ac.	7,549 Ac.
Pellissippi Pkwy	23,205 Ac.	28,731 Ac.

Household Income



Vehicles per household



TIER I TOOLKIT ANALYSIS

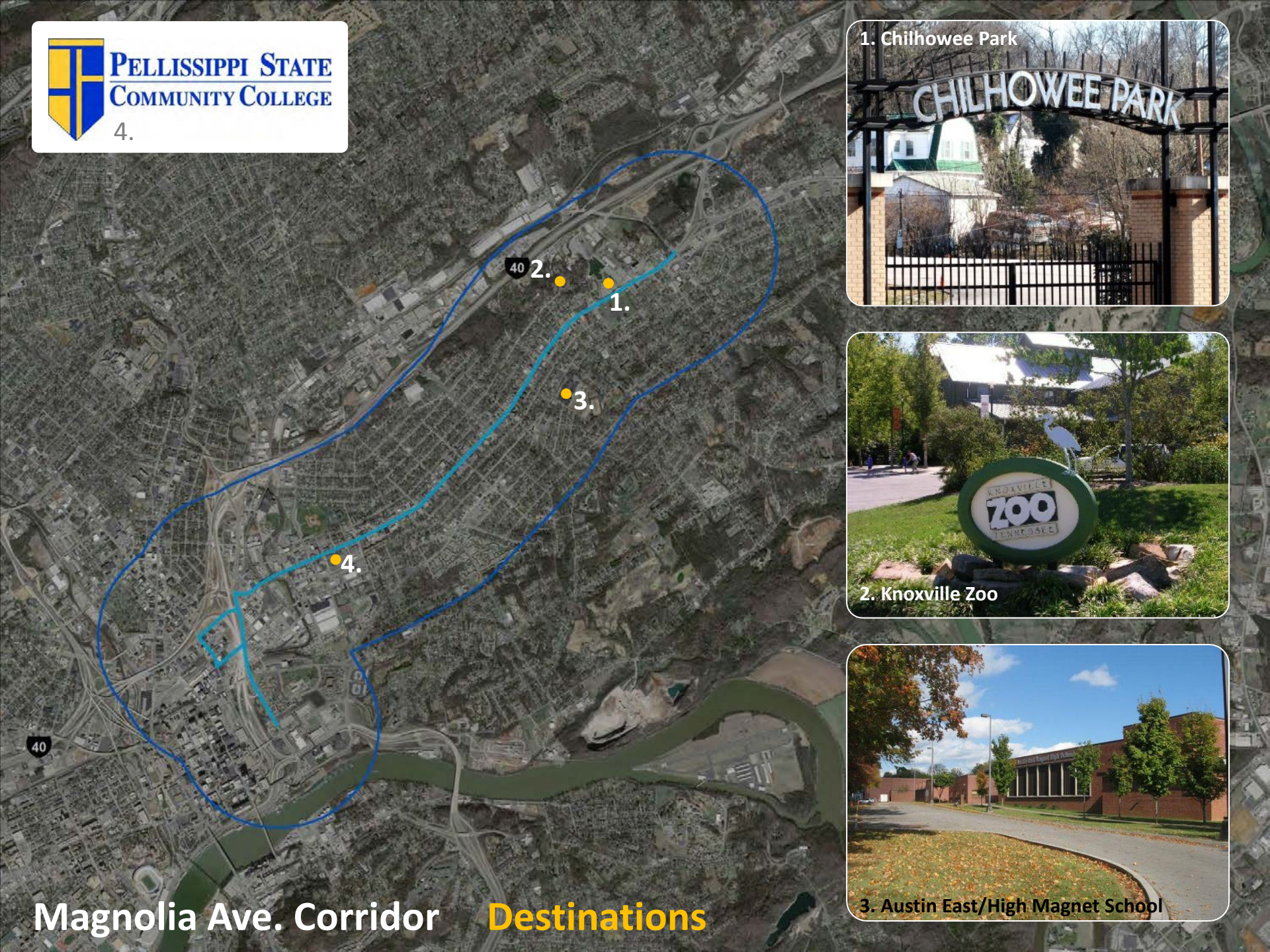
Destinations and Street Character

- Magnolia Avenue Corridor
- North Broadway Corridor
- Cumberland Ave. / Kingston Pike Corridor

The study included a visual analysis of three of the selected corridors as well as the identification of existing destinations along each. The visual character should help to inform available right of way decisions as well as appropriate transit modes. The locations of destinations should help to guide planning for stations and street alignments.

PELLISSIPPI STATE COMMUNITY COLLEGE

4.



1. Chilhowee Park

2. Knoxville Zoo

3. Austin East/High Magnet School

Magnolia Ave. Corridor Destinations

5. Caswell Park

6. Old City

7. KAT facility

8. Knoxville Civic Auditorium

40

5.

6.

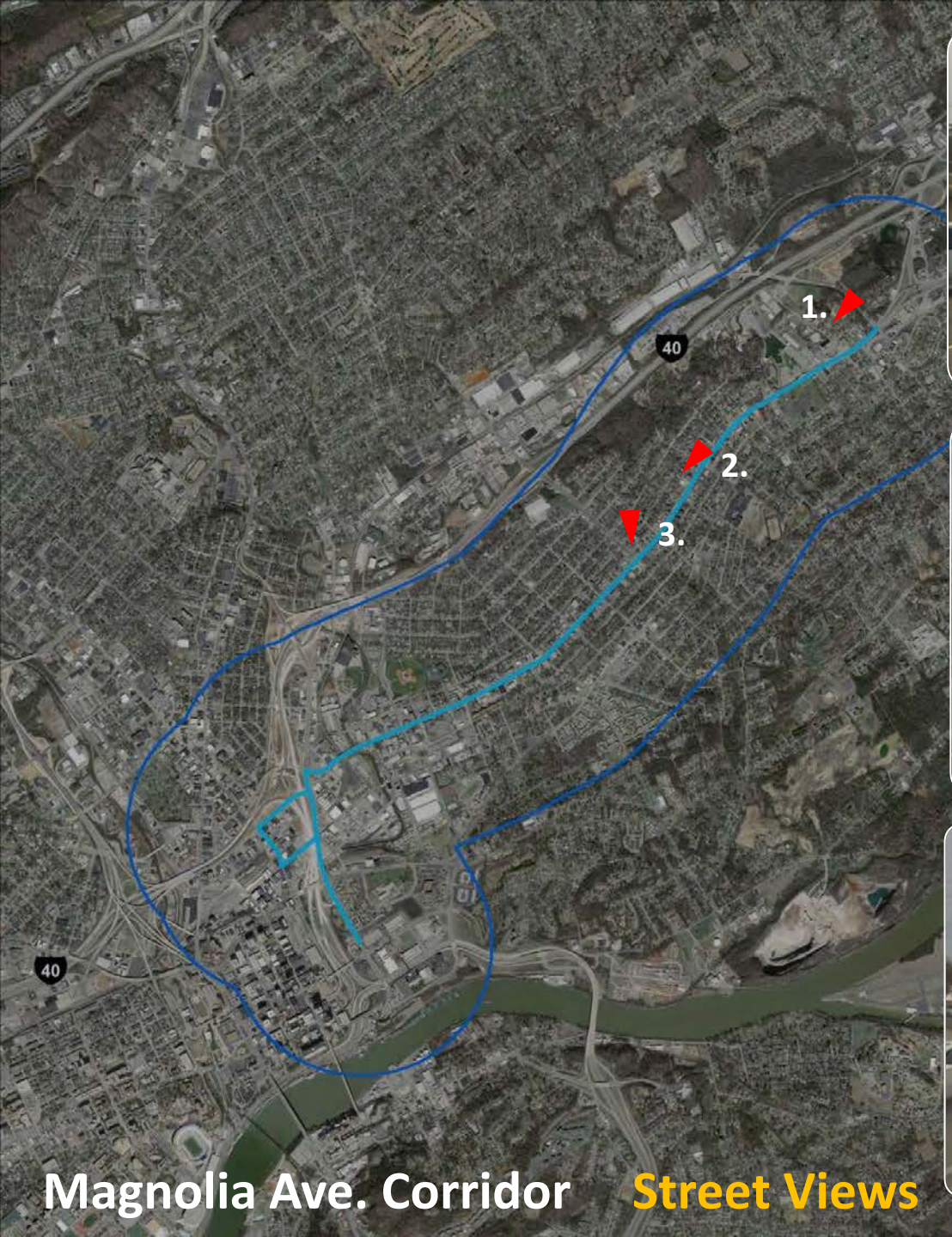
7.

8.

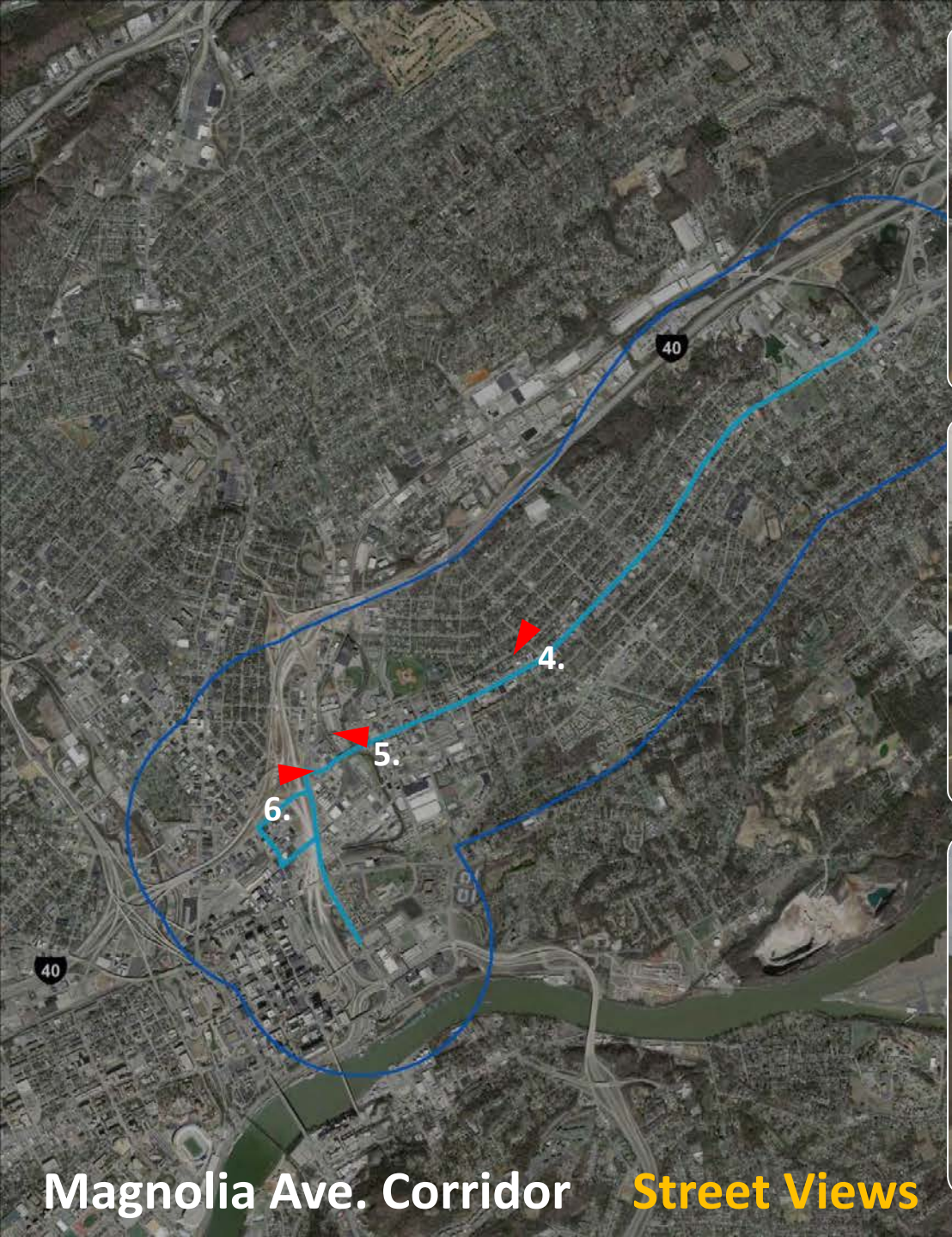
40

Magnolia Ave. Corridor Destinations

Magnolia Ave. Corridor Street Views



Magnolia Ave. Corridor Street Views



Magnolia Ave. Corridor Street Views


7. S. Central @ East Jackson Ave.


8. Hall of Fame Drive @ Willow Avenue


9. Mulvaney Street @ Knoxville Area Transit Station

North Broadway Corridor Destinations

1.
2.
3.

640
75
40
275
40

1. Fountain City Ballpark

2. Fountain City Park

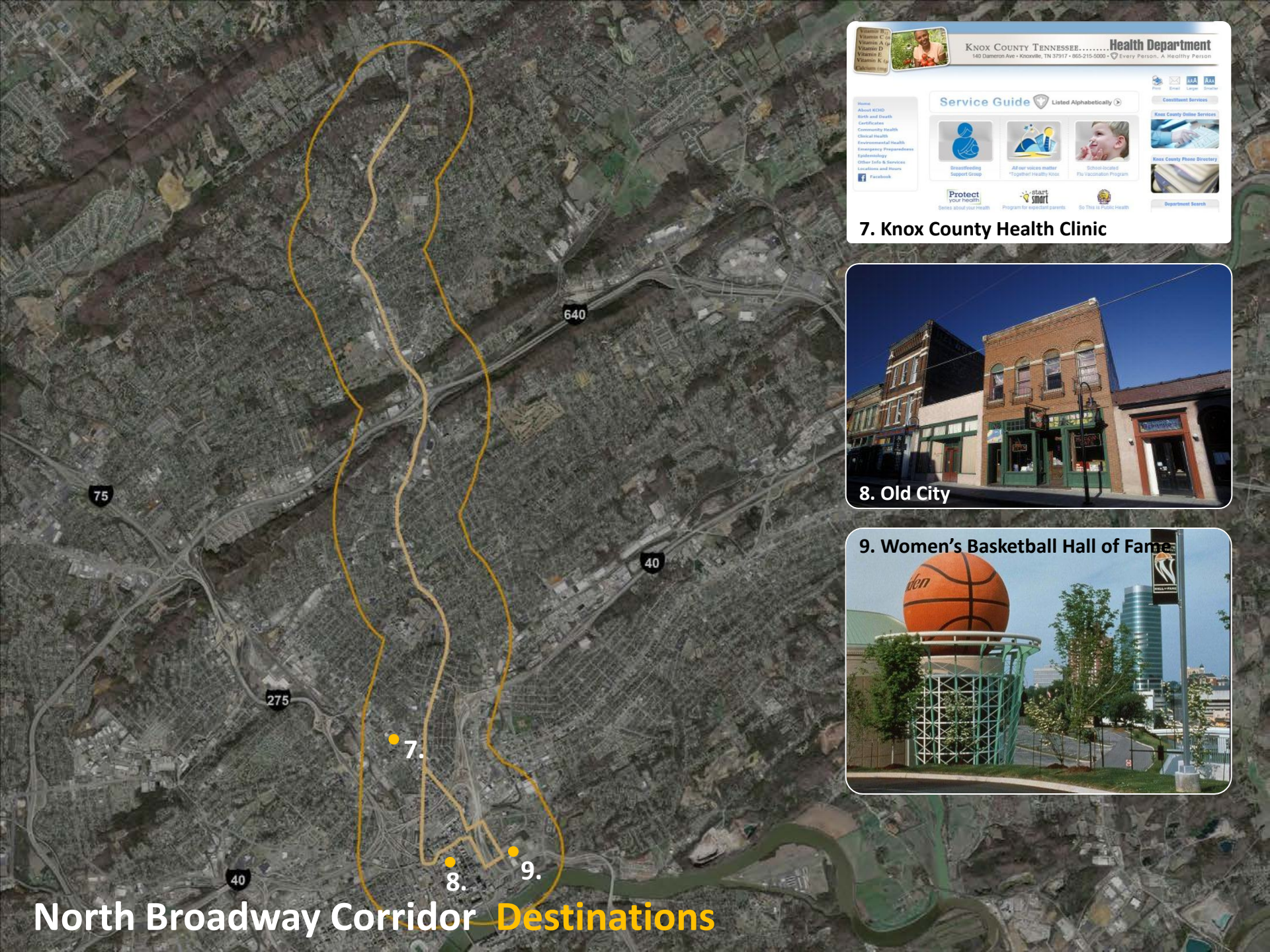
3. Retail

North Broadway Corridor Destinations

4. Northgate Plaza

5. Northhaven Health


6. Tennova Medical Center



7. Knox County Health Clinic

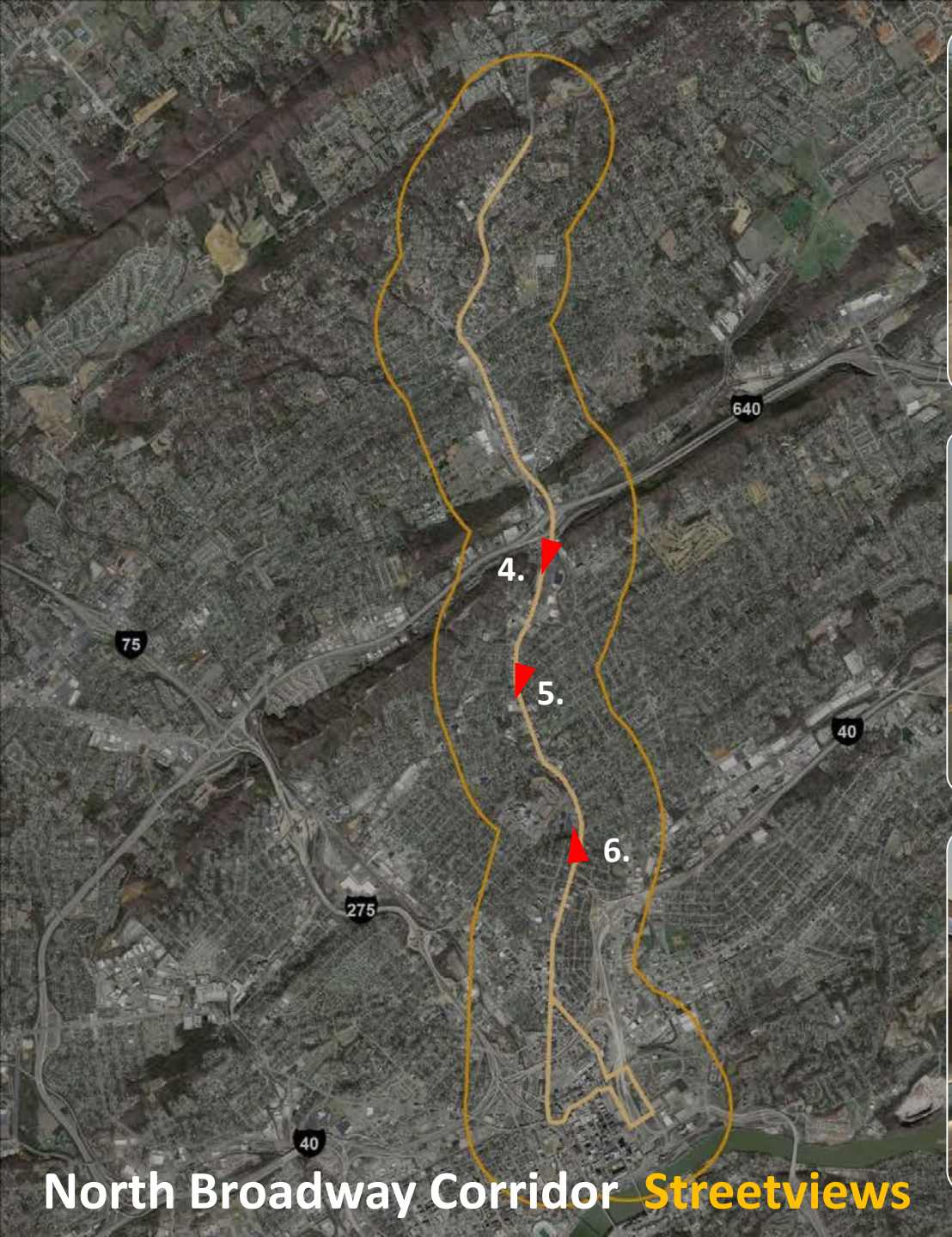
8. Old City

9. Women's Basketball Hall of Fame

North Broadway Corridor Destinations

North Broadway Corridor Street Views

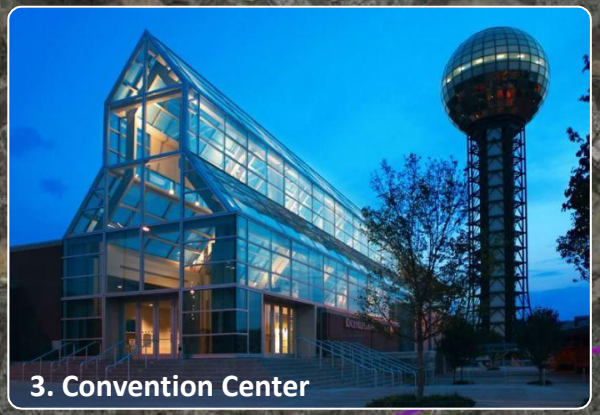
North Broadway Corridor Streetviews



North Broadway Corridor Street Views

1. Downtown Knoxville

2. Market Square



3. Convention Center

4. World's Fair Park

275

40

2.1.

3.

4.

Cumberland Avenue / Kingston Pike Corridor

Destinations

275

40

5.

6.

8.

7.

Cumberland Avenue / Kingston Pike Corridor

Destinations

9. East Tennessee Children's Hospital

10. Fort Sanders Medical Center

11. Knoxville City Greenways

13. West Town Mall

12. Cherokee Country Club & Golf Course

9.

10.

11.

12.

13.

40

Cumberland Avenue / Kingston Pike Corridor

Destinations


★ PERSONAL TRAINING AT ★
FORT SANDERS
Health & Fitness
CENTER
A FIVE STAR CLUB ★★★★★
Covenant
HEALTH
1. Fort Sanders Medical Center
PINNACLE
18
2. Turkey Creek Center
2.
3.
1.
BAPTIST HOSPITAL WEST
3. Turkey Creek Medical Center
Cumberland Avenue / Kingston Pike Corridor
Destinations

4. Farragut Middle and High schools

5. Concord Christian School

6. Willow Creek & Fox Den Golf Clubs

Cumberland Avenue / Kingston Pike Corridor

Destinations

Cumberland Avenue / Kingston Pike Corridor

Street Views

Cumberland Avenue / Kingston Pike Corridor

Street Views

Cumberland Avenue / Kingston Pike Corridor

Street Views

75

40

7.

8.

Cumberland Avenue / Kingston Pike Corridor

Street Views

1.

2.

140

Cumberland Avenue / Kingston Pike Corridor

Street Views

3. @ Land Oak Road

4. @ Campbell Station Road

Cumberland Avenue / Kingston Pike Corridor

Street Views

40

140

5.

6.

Cumberland Avenue / Kingston Pike Corridor

Street Views

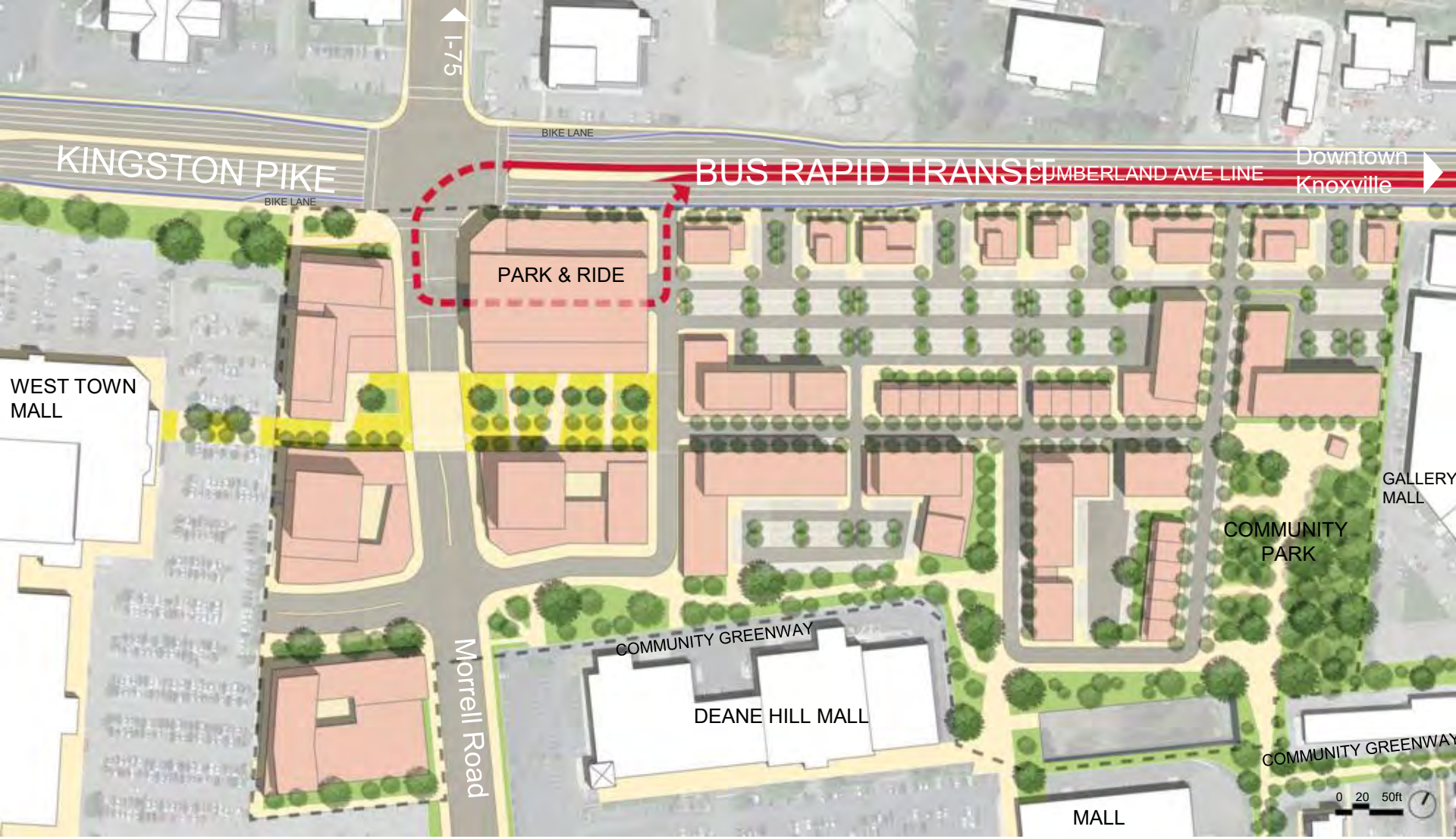
TIER II TOOLKIT ANALYSIS

Potential Station Area Development Scenarios

- Magnolia Avenue Corridor
- Cumberland Ave. / Kingston Pike Corridor
-

The study included a visual analysis of three of the selected corridors as well as the identification of existing destinations along each. The visual character should help to inform available right of way decisions as well as appropriate transit modes. The locations of destinations should help to guide planning for stations and street alignments.

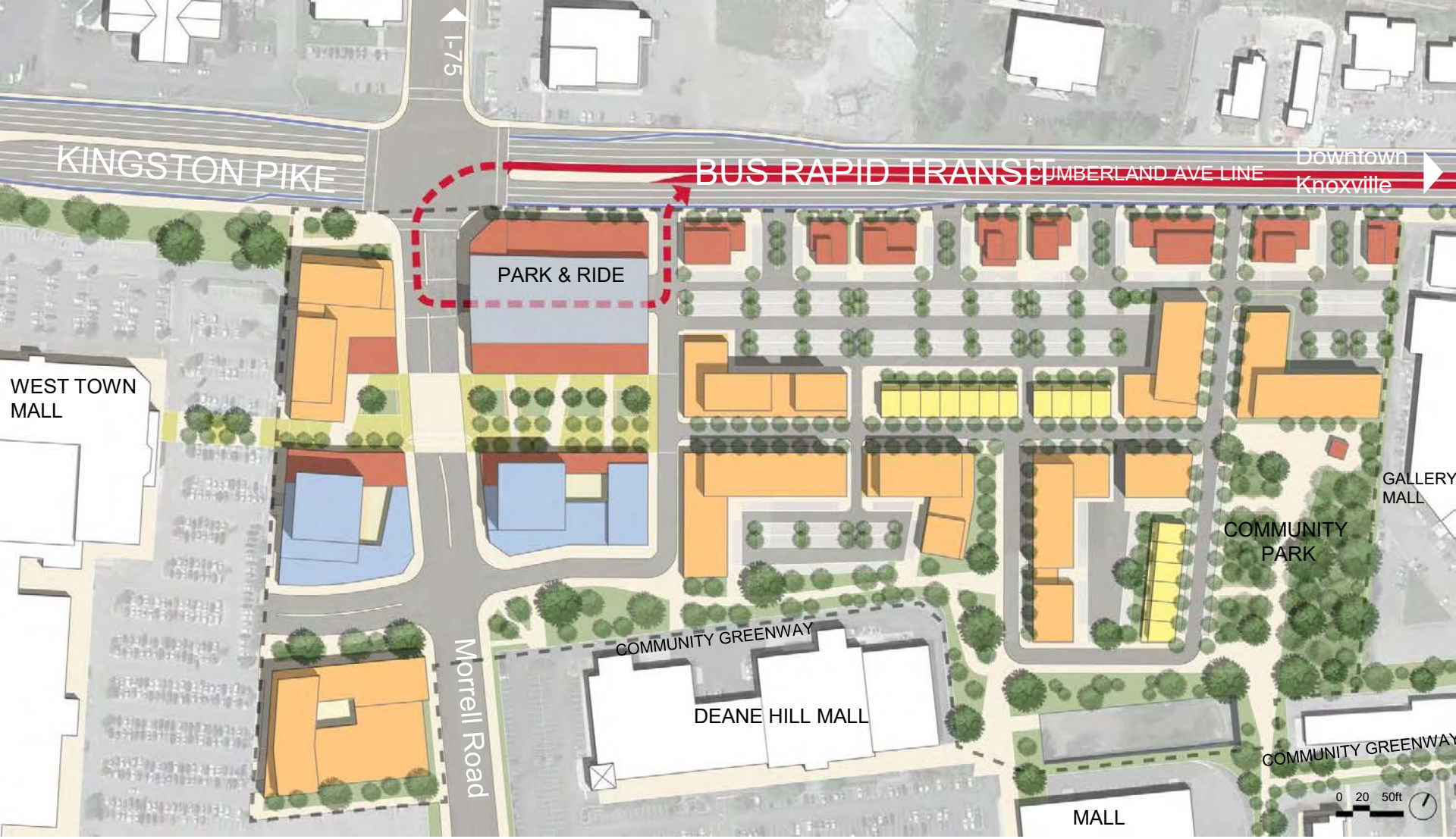
EXISTING CONDITIONS



PROPOSED INTERVENTION

Proposed Intervention

Existing Buildings



LAND USE

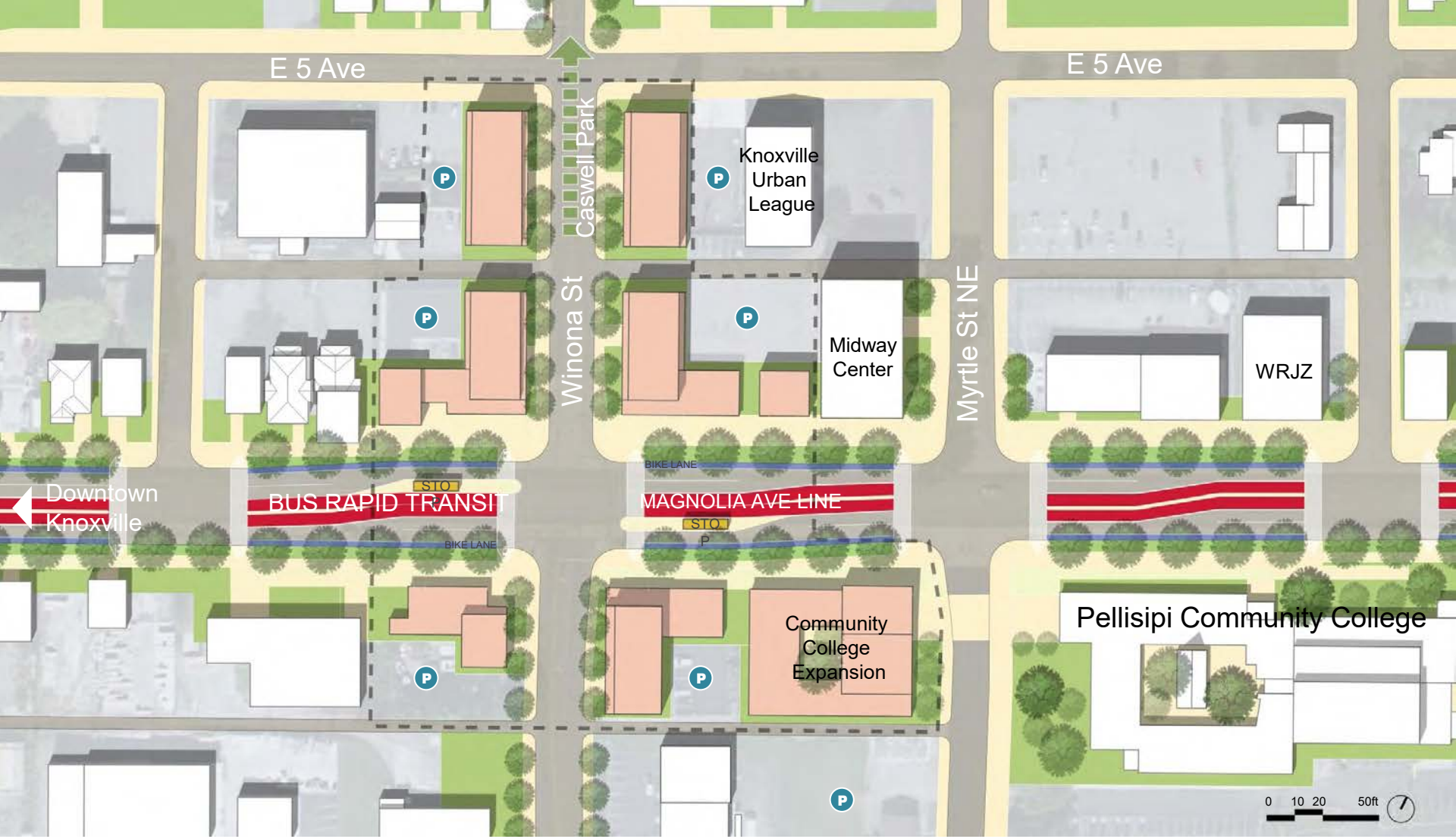
- Residential (Apts)
- Residential (Townhomes)
- Office
- Retail/Commercial
- Parking


I-75
Kingston Pike
K-Mart
Mall
Wooded Area
Mall
Morell Road
West Town Mall


I-75
BRT – CUMBERLAND AVE LINE
Mall
Community Park
Multi Family Housing
Park & Ride
Office
Community Greenway
Mall
Transit Plaza
Mixed Use
Mixed Use
Morell Road
Pedestrian Connection
West Town Mall
Legend
Residential (Apts)
Residential (Townhomes)
Office
Retail/Commercial
Parking

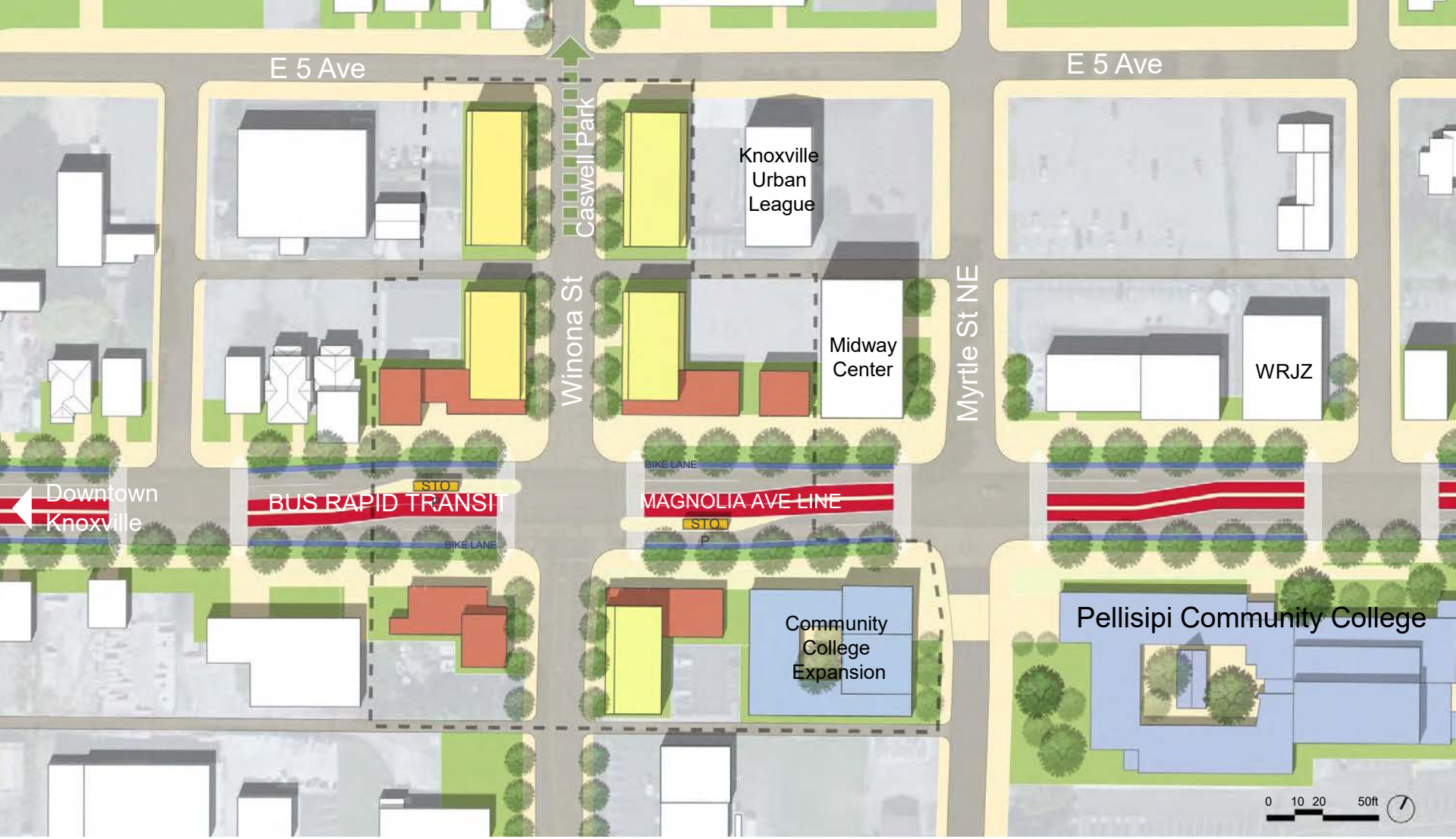
EXISTING CONDITIONS

TOD SCENARIO 2 - MAGNOLIA AVENUE & WINONA STREET



PROPOSED INTERVENTION

- Proposed Intervention
- Existing Buildings
- Parking



LAND USE

- Residential (Townhomes)
- Educational
- Retail/Commercial

EXISTING CONDITIONS

PROPOSED INTERVENTION

- Residential (Townhomes)
- Educational
- Retail/Commercial

Next Steps

Planning and design

Development and Zoning

Implementation

- Financing TOD
- Public / Private Partnerships
- Innovative Approaches