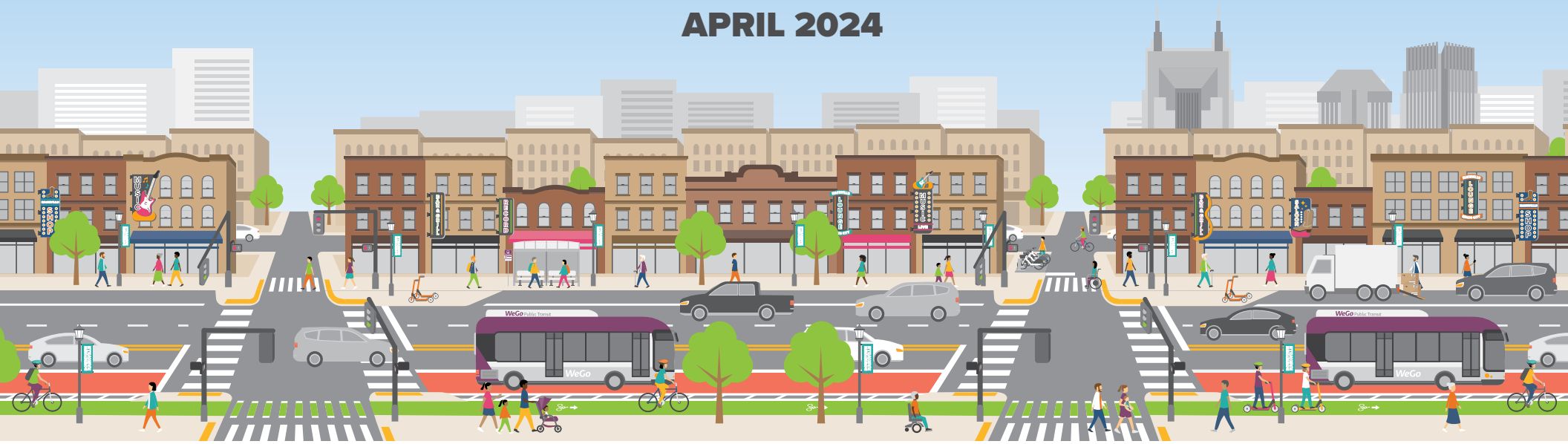
CONNECT DOWNTOWN

Action Plan Appendices

APRIL 2024



NDOT

WeGo Public Transit

TN TDOT Department of Transportation

NASHVILLE DOWNTOWN PARTNERSHIP

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CONNECT DOWNTOWN

Appendix A

State of Downtown Mobility Report

April 2024

The State of Downtown Mobility Report was published in October 2022 to describe existing conditions in Downtown Nashville. Although select statistics may be outdated, the background information and summary of opportunities and challenges are still relevant and informed the Connect Downtown Action Plan.

CONNECT DOWNTOWN

Nashville State of Downtown Mobility

October 2022

CONNECT DOWNTOWN

Project Partners:

NDOT

WeGo Public Transit

TN TDOT Department of Transportation

NASHVILLE DOWNTOWN PARTNERSHIP


THE 12/30 CLUB
PRIME STEAK
AMBULANCE
TOMKATS
OLE FRED
WHISKEY

1 Why It Matters

The Nashville Department of Transportation and Multimodal Infrastructure (NDOT)—in partnership with WeGo Public Transit, the Tennessee Department of Transportation (TDOT), and the Nashville Downtown Partnership—has embarked on a critical project to improve mobility and address traffic congestion in the downtown core.

Downtown Nashville has a rich transportation and mobility history, and the heart of our city continues to grow and evolve. Connect Downtown is a critical step in reshaping our transportation networks. It will support our current and future residents, workers, and visitors, building on our strengths and focusing on the new realities and trends that will shape Downtown in the coming years.

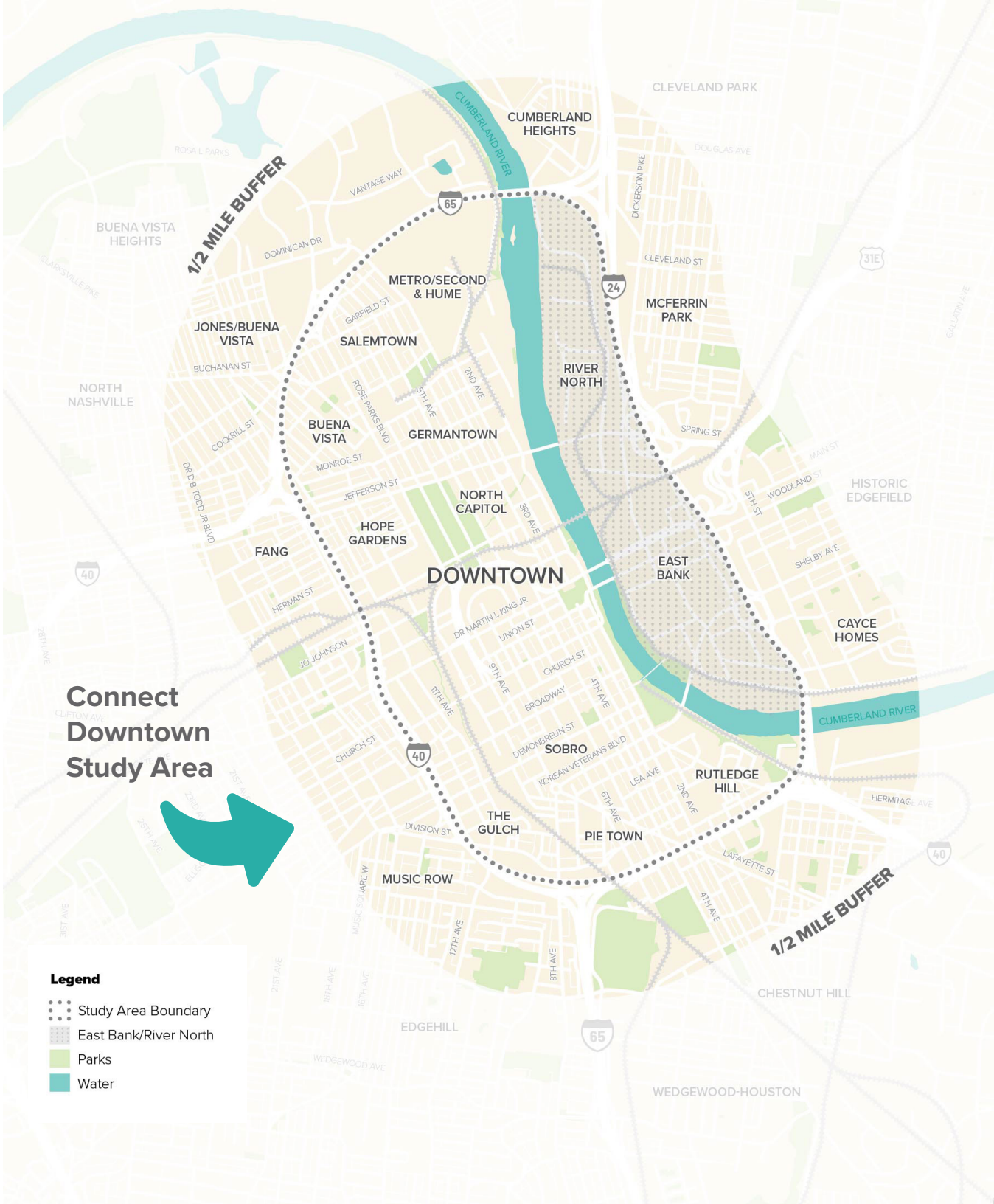
This chapter introduces Connect Downtown. It sets the context for this planning process, looking at Downtown Nashville's past, present, and future; exploring who lives, works, and plays downtown; and identifying the vision and goals that will guide this effort.

Introducing Connect Downtown

What is Connect Downtown?

Connect Downtown will shape Downtown Nashville's mobility system with an eye toward resiliency, sustainability, equity, and flexibility. Now, more than ever, our community needs innovative mobility options that support social, economic, and environmental goals.

Through Connect Downtown, we will examine all the needs that Downtown's street network must serve and figure out the best way to fit the many pieces together. Our work will analyze options to address how Downtown's increasing congestion can be better managed through improvements in traffic operations, curbside access, transit connectivity, and pedestrian and bicyclist safety while also supporting the needs of our businesses and residents.



Why is Connect Downtown needed?

Our efforts are set to unfold during a time unlike any we have faced in recent history. We are emerging from a global pandemic, and Nashville is growing very rapidly, bringing more residents and workers Downtown and even more visitors. The total population in the downtown area increased by 57% between 2013 and 2019—Downtown is now home to nearly 14,000 people.

We must be bold and take this opportunity to reshape Downtown Nashville's mobility networks. This means thinking about different transportation modes, policies, infrastructure, and behaviors as an integrated system. Doing so provides benefits to residents, workers, and visitors alike—from affordability, resilience, choice, and access to opportunity, to physical activity, safety, and reduced carbon emissions.

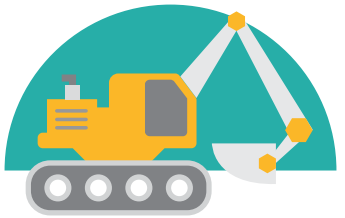
What will Connect Downtown do?

Connect Downtown will develop an ambitious yet realistic plan to fund and implement projects and programs that serve all of Downtown's—and our city's and region's—mobility needs. It will bring all our transportation modes and functions into a cohesive system, including new and emerging technology.

With analysis and your input, we'll create a new vision for how people move to, through, and around Downtown Nashville. We'll consider every mode of transportation and the diverse uses of our streets and sidewalks. We will improve transportation safety, increase mobility options, create a more sustainable and resilient network, and enhance the overall experience of getting around—whether you call Downtown Nashville home, commute to a job, or are here for a visit.

IN 2022, THERE WERE:

14,000
Downtown residents



1.5M
sq ft of office space under construction

5M+
people at Downtown events

DATA COLLECTION AND COVID-19

COVID-19 has forced us to rethink how we live, work, and play. The pandemic changed the ways people travel, and we don't yet know what the "new normal" will look like. COVID also disrupted data collection for the 2020 Census and the 2020 American Community Survey, which are two of the nation's most comprehensive sources of population and housing data. The pandemic's impact on travel patterns also affected traffic counts, transit ridership, and other forms of transportation data.

Because of the rapid and unanticipated changes brought about by the pandemic, Connect Downtown relies heavily on 2019 data. Although it might feel like 2019 was a long time ago, the data from 2019 is the most comprehensive we have available. It also provides a good picture of Downtown Nashville, especially related to transportation. We have used more current data—including data gathered by the Connect Downtown project team in early 2022—whenever possible to complement what we know about Downtown before the pandemic.

How are we building on past work?

The needs and uses in Downtown are as diverse as the opinions about which are most important, and current demands on the right-of-way will only continue to increase. The Metro Nashville Transportation Plan, completed in 2020, introduces initiatives that create a foundation for expanding transportation options in Downtown Nashville:

- A dramatic increase in frequency and span of service for the **bus system**, with most of those services operating to, from, and through downtown
- New **bus rapid transit (BRT) and Rapid Bus** lines that will operate to and from downtown
- Expanded **WeGo Star** service
- A SoBro **transit hub** that will connect services from the south and west and accommodate new downtown transit circulation options
- At least one **transit priority corridor** through Downtown Nashville between WeGo Central and the new SoBro hub, with the opportunity for additional corridors and potential future light rail service
- Better **curb space management**, smart parking, and transit priority
- **Better sidewalks and crosswalks**, a Traffic Operations Center and **signal synchronization**, and **bikeways and safety fixes** to aggressively reduce traffic injuries and fatalities

This is not the first time these improvements have been proposed—in many cases they were envisioned in major initiatives undertaken in the last 10 years. These included Nashville Next, nMotion, Let's Move Nashville, and WalknBike. As the Metro Nashville Transportation Plan points out, Nashville has "a spotty history when it comes to implementation of infrastructure efforts and to supporting expanded public transportation." The city is good at identifying priorities but has been challenged to advance bold solutions.

One key difference between Connect Downtown and most previous efforts is that this project is much more targeted in scope. A second is that this effort is designed to balance the needs of different modes and uses while each of the previous major studies and initiatives had a very clear modal focus.

> ***Connect Downtown's integrated approach will help to weigh tradeoffs and prepare NDOT, WeGo, TDOT, and the Nashville Downtown Partnership for implementation.***

Nashville Yesterday, Today, and Tomorrow

Downtown Nashville is ready for an integrated, safe, and better connected transportation system, shaped by our shared vision and goals. To move toward this vision, we must be grounded in our past, think clearly about our present, and be ready to adapt to future changes.

Source: Bygonely

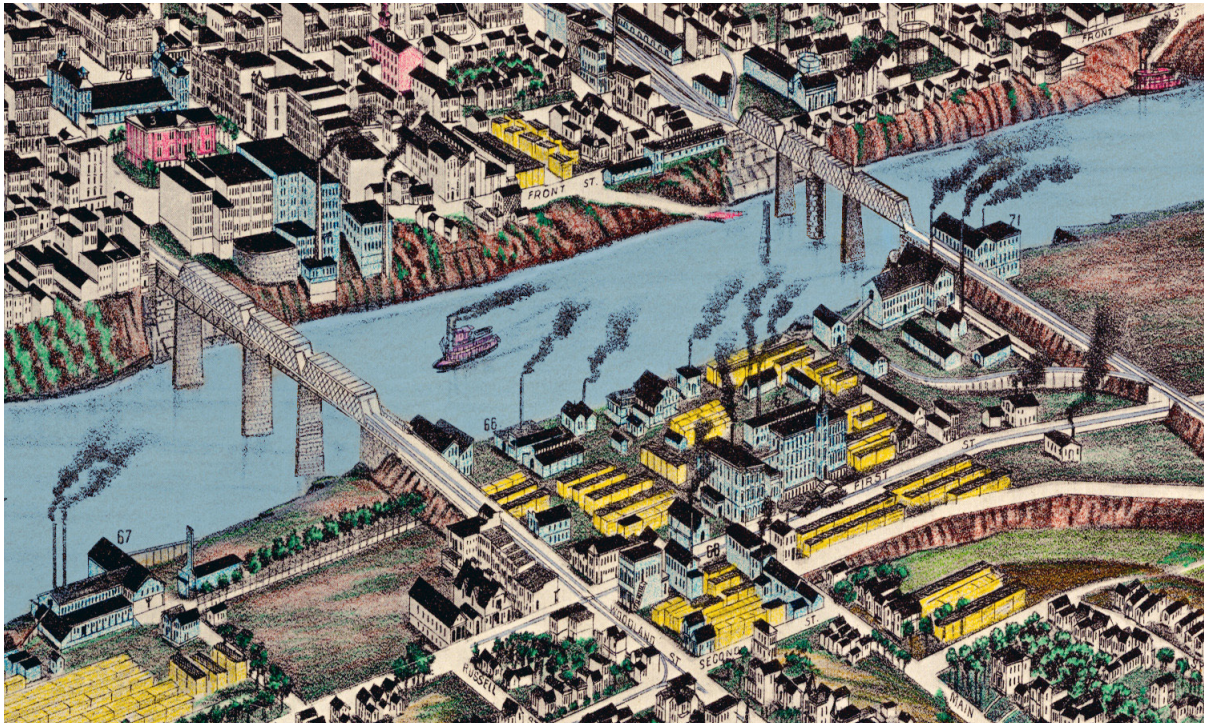
Nashville Yesterday

Although so much of Nashville is new, Downtown Nashville has a much longer history. In the 1600s, French traders established a trading post in an abandoned Shawnee village along the western bank of the Cumberland River. The area now known as Nashville was settled by James Robertson, John Donelson, and a party of Wataugans in 1779, and was originally called Fort Nashborough, after the American Revolutionary War General Francis Nash.

Nashville grew quickly because of its prime location, accessibility as a river port, and its later status as a major railroad center. In 1806, Nashville was incorporated as a city and became the county seat of Davidson County. In 1843, the city was named the Tennessee state capital.

Primarily developed as a river trade depot and manufacturing site, most travel in Nashville was by horse-drawn means. From its beginnings, Nashville grew rapidly, and by the end of the 1800s, our downtown and its street network were well established. By the early 1900s, transportation had shifted to electric trolleys and automobiles. But as dramatic as those changes were, they were just the beginning. It's probably safe to assume that in 1900 no one foresaw a future that included pedal taverns, people flocking from around the United States to live here, or planes bringing loads of tourists to party on Lower Broadway.

It was the advent of the Grand Ole Opry in 1925, combined with an already thriving publishing industry, that positioned Nashville to become "Music City USA." In 1963, Nashville became the first major city in the United States to form a metropolitan government when it consolidated its government with Davidson County. Since the 1970s, the city has experienced continued growth and made urban development a priority via the construction or renovation of landmarks including the Country Music Hall of Fame, the Nashville Public Library, Bridgestone Arena, and Nissan Stadium.



Source: Knowol.com

Nashville Today

Nashville's growth has brought tremendous change to the city.

Over the past 10 years, Nashville's population has grown by more than 10%. Many of those new residents are moving into Downtown, creating a booming neighborhood with nearly 14,000 residents. Vacant lots are being developed, older buildings are being replaced by newer towers, and the skyline keeps growing taller.

New corporate headquarters are bringing an influx of workers, some of whom will sit in the nearly 1.5 million square feet of office space currently under construction in Downtown Nashville. In 2019, over five million people attended downtown events each year, rivaling the crowds in many of the nation's biggest tourist districts. The one constant in Downtown Nashville has been our street network.

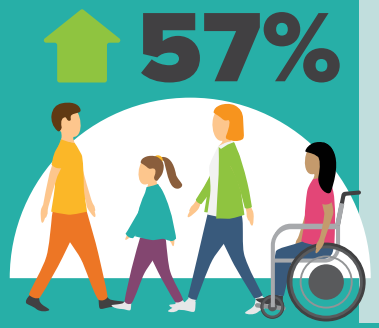
Today, the city's 19th-century street system must move people and goods via private vehicle, truck, transit, taxi and rideshare, walking and rolling, bike, and scooter—and even a few horses. It needs to serve downtown businesses and residents by providing space for pick-ups and drop-offs, deliveries, valet parking, and on-street parking. Many streets and sidewalks are also being used for outdoor dining and other commercial activities.

In narrow rights-of-way constrained by the Cumberland River, the Interstate Loop, and historic neighborhoods, downtown streets also accommodate the city's tourism and events sector. From everyday attractions such as Lower Broadway and pedal taverns to major events like the Music City Grand Prix and Titans games, there are more than 200 street closures each year in downtown. These disruptions to bus routes and ever-increasing numbers of auto detours create a transportation system that is unreliable and frustrating to many Nashvillians.

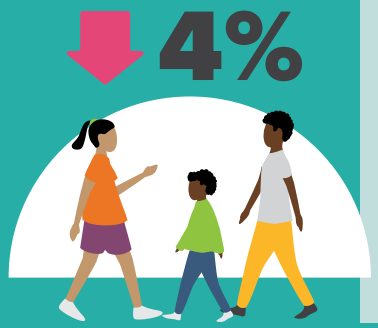
> ***While the transportation network has stayed largely the same, the demands on Nashville's streets and sidewalks have both grown and expanded.***

LIVING IN DOWNTOWN NASHVILLE

Mobility is about people. Understanding who lives downtown is essential to building an integrated transportation system that best fits our shared priorities. So, who calls Downtown Nashville home?

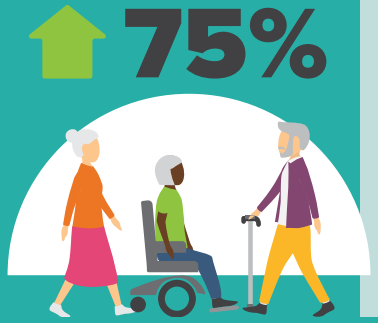


The **total population in the downtown area was 14,373** as of 2019, a 57% increase from 2013.

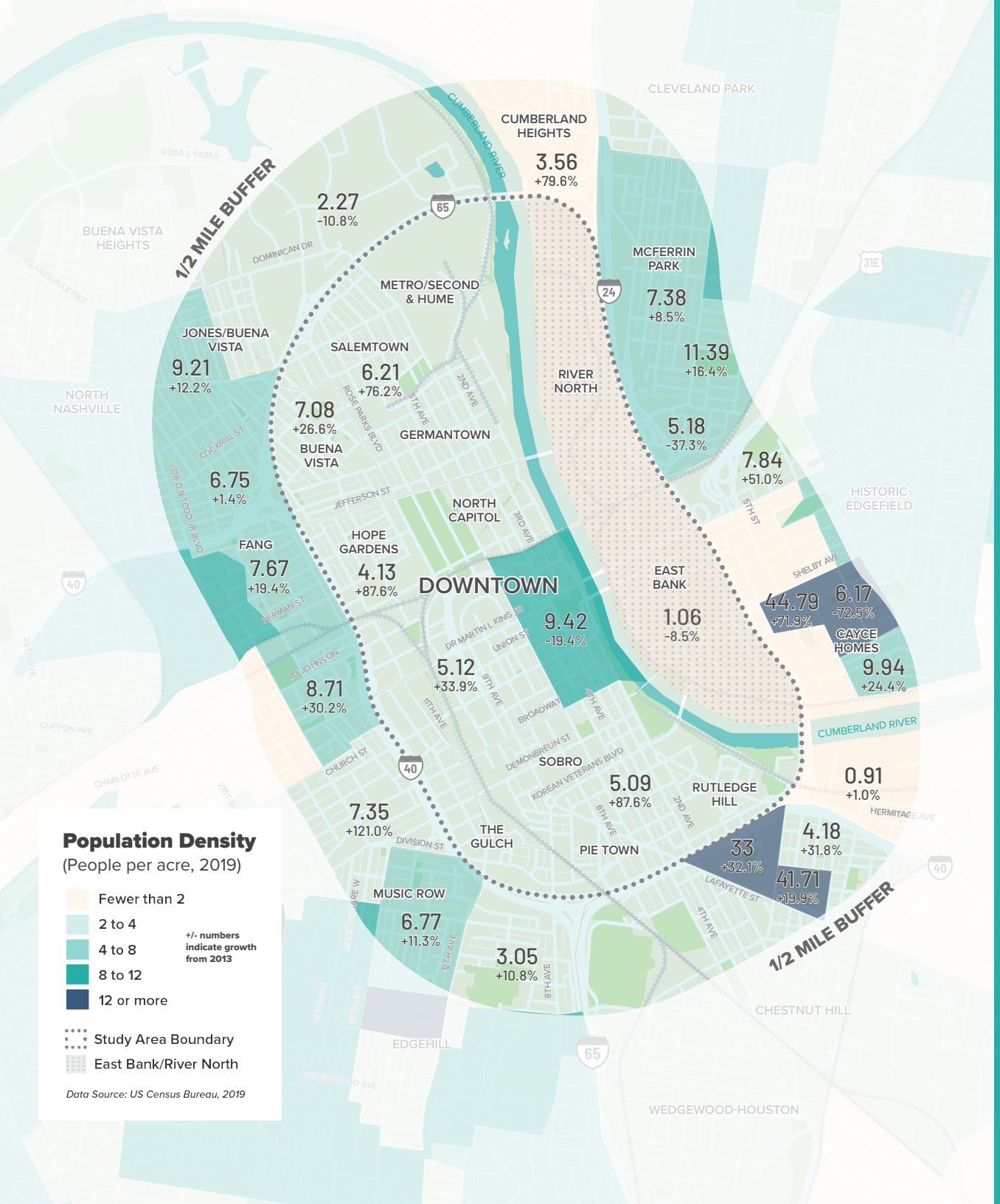


The population of **people of color** in Downtown decreased by 4% between 2013 and 2019.

The number of **30-somethings** in the downtown area nearly doubled (90% increase) between 2013 and 2019, compared to a 17% increase in Davidson County.



The number of residents aged **65 and over** Downtown grew by 75% between 2013 and 2019, compared to a 22% increase in Davidson County.



POPULATION PATTERNS

The areas with the highest population density in the study area (or the most people per acre) are the Downtown Core and Buena Vista.

MORE PEOPLE MEANS MORE SERVICES

Areas with more people can support a greater diversity of services within walking and biking distance, as well as transit that comes more often.

AFFORDABILITY

The average median household income for Downtown residents is approximately $72,000, and the average monthly rent for a 2-bedroom unit Downtown is $2,500.

HOUSING AND TRANSPORTATION COSTS

As a whole, Downtown Nashville residents spend an average of 18.3% of their income on transportation and 23.4% on housing. This is lower than Nashville as a whole (22.3% on transportation and 26.1% on housing).

WORKING IN DOWNTOWN NASHVILLE

Downtown is the economic center of Nashville and Davidson County with 85,100 jobs, which is a 106% increase from 2013. More than half (55%) of those jobs are filled by people who live outside of Downtown. Making connections to jobs seamless and reliable is critical as Downtown Nashville continues to grow.

Six industries make up more than two-thirds of the jobs in Downtown Nashville:

Educational services, healthcare, and social assistance 22.4%

Professional, scientific, and management and administrative services 11.8%

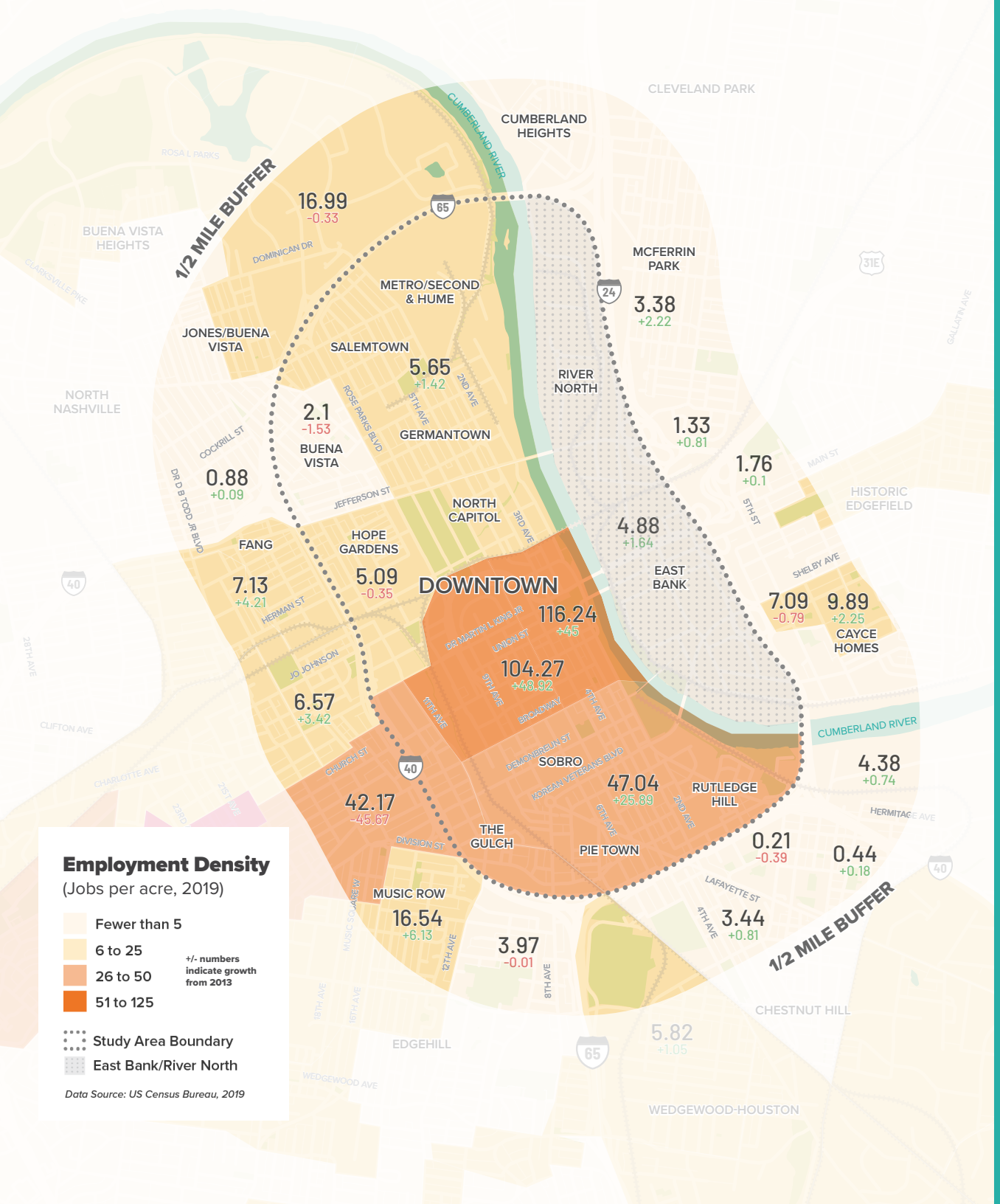
Retail trade 11.3%

Arts, entertainment, recreation and accommodation, and food service 10.6%

Manufacturing 10.1%

Public administration 3.9%

Source: Mix Fox



EMPLOYMENT PATTERNS

The neighborhoods with the highest employment density (or the most jobs per acre) are the Downtown Core and SoBro.

GROWTH

Employment growth (106%) has outpaced population growth (57%) in Downtown Nashville since 2013.

COUNTY VS DOWNTOWN EMPLOYMENT

Employment growth in Davidson County (24%) has lagged behind Downtown growth (106%) since 2013.

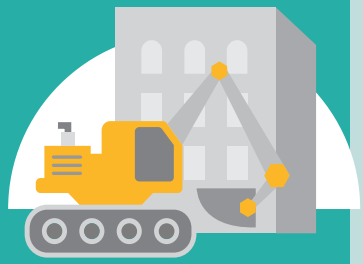
MAJOR EMPLOYERS

Downtown Nashville is home to some of the region's largest employers, including Amazon, Asurion, and the State of Tennessee, with more large corporate campuses on the way, including Oracle on the East Bank.

VISITING DOWNTOWN NASHVILLE

In 2019, over 16 million people visited Nashville, a 33% increase since 2013. And nearly 5 million of those visitors attended events in Downtown Nashville! This is both a challenge and an opportunity for mobility in Downtown. To harness the benefits of tourism, we need to provide clear and comfortable multimodal connections between key destinations.

Tourism generated **$7.36 billion** in economic activity in 2021.



Downtown has over **1,400 hotel rooms in development** and 3,175 more rooms planned.

Visitor Profile:

Average party size:
2.5 people

Average length of stay:
3.6 nights

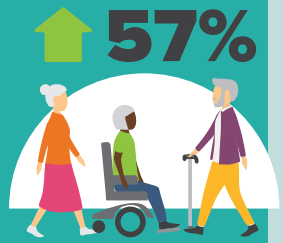
Average spending per person per day:
$286

91%
are likely to return to Nashville

Source: Halle Parks

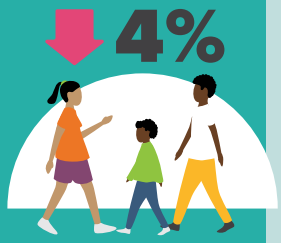
EQUITY IN DOWNTOWN NASHVILLE

Downtown Nashville continues to grow and change, and with that comes new opportunities and challenges for the people that live and work here and the ways they get around. All residents should have access to affordable transportation choices that connect them to home, school, work, and the other places they need to go.



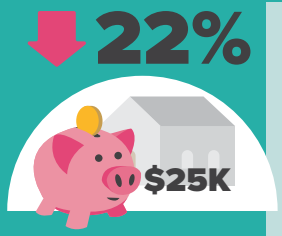
From 2013 to 2019, the percentage of Downtown residents **over 65 years of age** increased by over 75%.

Over that same time period, the percentage of Downtown residents **under the age of 19** decreased by over 12%.

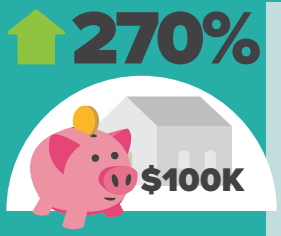


Since 2013 the population of residents who identify as **Black, Indigenous, or People of Color (BIPOC)** has decreased by 4%.

The population of **foreign-born residents** living Downtown increased by 124% between 2013 and 2019.

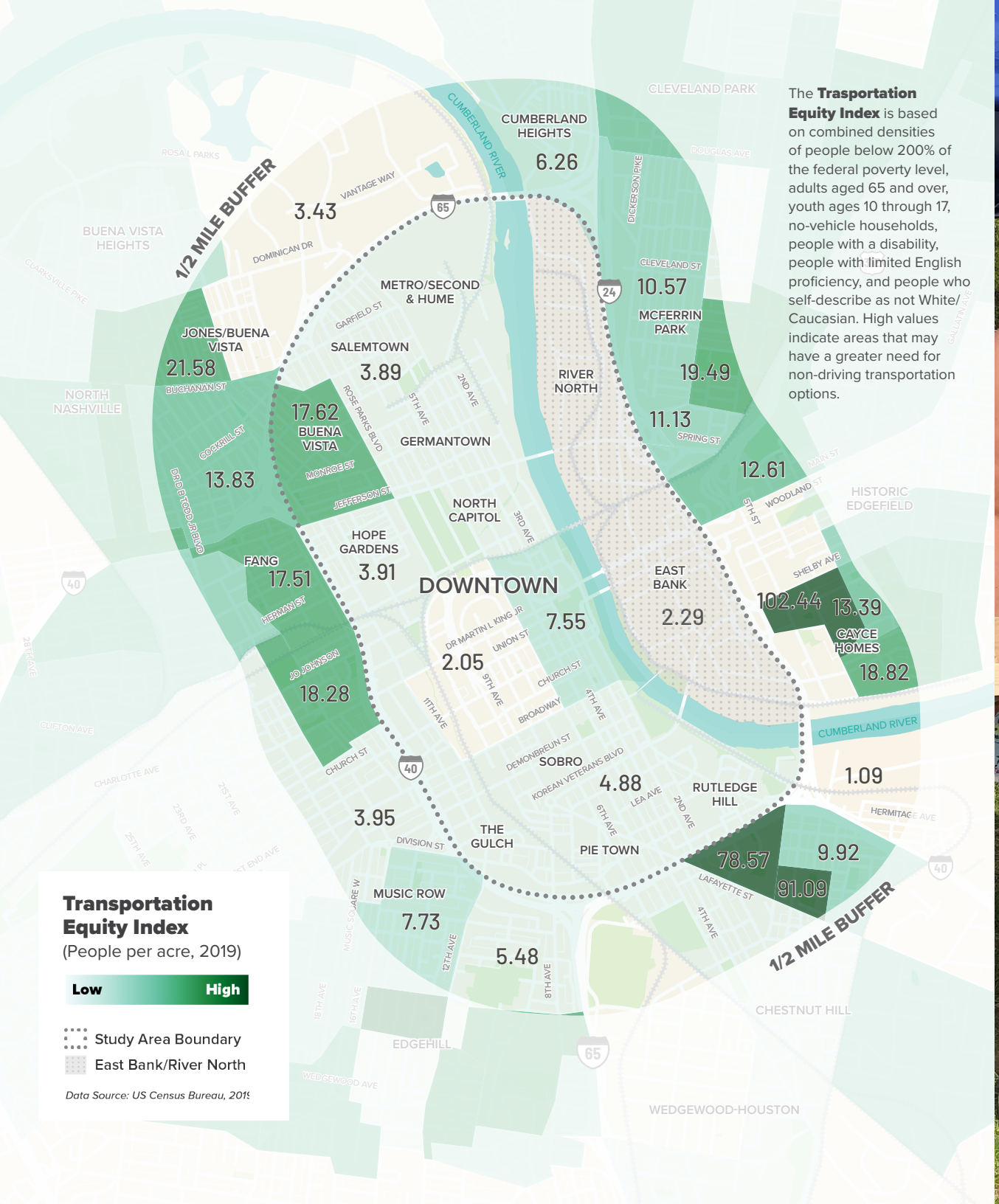


Since 2013 the number of Downtown households with an **annual income of less than $25,000** has decreased by 22%.



Since 2013 the number of Downtown households with an **annual income of more than $100,000** has increased by 270%.

The decline in the number of low-income households is consistent with patterns across Nashville and Davidson County. However, growth in higher-income households outside of Downtown has been slower, with increases of approximately 70% (compared to 270% Downtown). These trends suggest growing income inequality and potential displacement of lower-income Downtown residents.



The **Trasportation Equity Index** is based on combined densities of people below 200% of the federal poverty level, adults aged 65 and over, youth ages 10 through 17, no-vehicle households, people with a disability, people with limited English proficiency, and people who self-describe as not White/ Caucasian. High values indicate areas that may have a greater need for non-driving transportation options.

Nashville Tomorrow

We are at a pivotal moment in time—resurgence from a global pandemic, new and expanding technologies, and the growing influence of the private sector in our public realm are shaping Downtown daily.

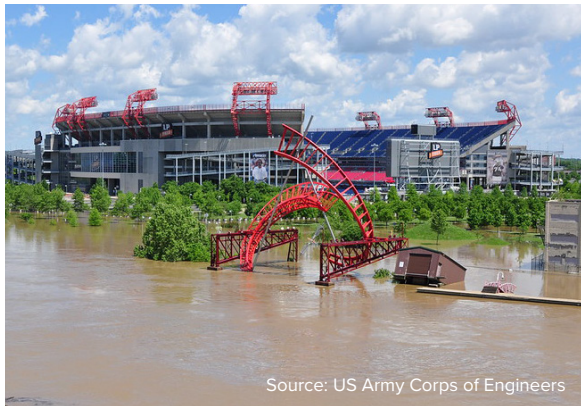
This is a period of unprecedented change in mobility, presenting incredible opportunities and potential challenges for Downtown and our residents, workers, and visitors. The ways we move and the ways mobility is provided will be different tomorrow than they are today.

These changes have the potential to increase accessibility, but also to increase inequities.

Our transportation system is shaped by our land uses. We must continue to tie land use and transportation to create complete communities and to ensure that people can make sustainable choices for most trips. We must concentrate on moving people and our responsibility to manage the continued growth in Downtown and beyond.

And most importantly, we must act quickly and decisively to achieve our goals, building on the strong foundation of yesterday and today. While we have dedicated significant resources to planning our future, there are technological, environmental, and market forces outside of Metro Nashville's control that will have a hand in further defining how we live, work, and move.

Source: New South Wales Future Transport 2056


Source: US Army Corps of Engineers

Resiliency

In the face of climate change and aging assets, Downtown's future must be a resilient one. Metro Nashville is committed to an 80% reduction in greenhouse gas emissions (GHG) by 2050 and a shift to 30% renewable energy by 2030. Our mobility system plays a significant role in meeting these goals, but we need to protect our infrastructure to provide sustainable travel options.

The impacts of climate change and an increase in extreme weather events will mean greater disruptions to the transportation systems on which we rely. Data from both the *Washington Post* and *Risk Factor* show that Nashville faces major heat risks, both now and in the future. A "hot day" is one with temperatures that feel hotter than 106° F. Nashville is expected to experience seven hot days in 2023 and is predicted to experience 20 hot days in 30 years.

Private Sector Role

The private sector is increasingly shaping and reshaping our built environment and mobility options, and this is unlikely to change in the coming years. Private developments are creating new housing, new office space, and new commercial and retail opportunities. They are also reshaping our streets and sidewalks, adding new facilities but placing increasing demands on curb space. Metro must build partnerships, but we must also use our regulatory tools to ensure that these private developments are contributing to the Downtown Nashville transportation system our growing city most needs.

Technology and Disruptors

Mobility is changing daily. Smartphones and open data platforms have reshaped the way we understand our transportation options and how we request services. Shared bikes (including e-bikes), scooters, cars, and rides make it increasingly possible to live a car-free or car-lite lifestyle, and these options will continue to grow, with more devices appearing every day.

Connect Downtown Vision and Goals

As we consider the current state of mobility in Downtown Nashville, we must also begin to think about what we hope that state will be when Connect Downtown is complete and the recommendations have been implemented. This section outlines the vision, goals, and desired outcomes that are guiding our work.

We developed the vision, goals, and desired outcomes for Connect Downtown based on these sources:

Review of past and current Metro Nashville plans and policies

including the recently completed Metro Nashville Transportation Plan

Workshops

with the Connect Downtown Stakeholder Task Force and Technical Advisory Committee in May 2022

Community feedback

on transportation priorities via an online survey and pop-up activities between April and June 2022

CONNECT DOWNTOWN

- **Vision**
- **Goals**
- **Desired Outcomes**

Vision Statement

A vision statement is future-based and is meant to inspire and give direction. It describes the anticipated long-term results of Connect Downtown and conveys the purpose of this planning effort.

The vision statement for Connect Downtown is:

> ***Connect Downtown will establish a transportation system that improves safety and accessibility for everyone, balances the needs of all travelers and modes, and reduces congestion. With a focus on moving more people via complete and connected networks that enhance Downtown's character and support the region's growth, Connect Downtown will articulate a pathway to implementation.***

Goals and Desired Outcomes

Goals articulate what Downtown Nashville wants to achieve. Goals are lofty and ambitious and may take years to reach. Desired outcomes are statements that make goals more concrete. They describe the specific changes we hope to see in service of achieving the goals.

The goals and desired outcomes for Connect Downtown include the following:

SAFE AND COMFORTABLE

Create transportation networks that enhance the quality of life for all Nashvillians, especially the city's most vulnerable travelers.

- Eliminate traffic-related fatalities and serious injuries
- Improve safety and comfort for people walking and biking
- Improve the experience of taking transit
- Enhance people's sense of personal safety downtown

CONNECTED AND CONVENIENT

Develop an integrated mobility system that seamlessly and efficiently connects Downtown Nashville with easy-to-use and reliable travel options.

- Expand access to all modes of travel
- Eliminate gaps in the street, trail/ greenway, and sidewalk networks
- Improve access to high-quality and high-frequency transit service
- Organize and prioritize curb space for efficient pick-up and drop-off, loading and unloading, and service activities
- Address barriers to key destinations and to neighborhoods adjacent to downtown

EQUITABLE AND ACCESSIBLE

Ensure equal access to mobility options that meet the needs of everyone traveling to, through, and around Downtown Nashville.

- Contribute to equitable opportunities and outcomes for all people
- Increase affordability of transportation options in Downtown Nashville
- Increase the percentage of the transportation network that is fully accessible
- Engage with vulnerable populations and invest in areas that have been adversely impacted by transportation decisions

SUSTAINABLE AND RESILIENT

Address the climate crisis to create a more resilient Downtown Nashville.

- Improve climate resilience and adaptability of transportation infrastructure
- Reduce transportation-related greenhouse gas emissions
- Reduce drive-alone trips
- Increase the number of trips, especially those less than 3 miles, made by sustainable modes

VIBRANT AND INVITING

Create and maintain a more prosperous Downtown Nashville by providing a transportation system that makes it easier to do business and encourages people to spend time downtown.

- Improve access to homes, businesses, and commercial areas
- Enhance community gathering places with high-quality transportation infrastructure and amenities
- Improve access to Downtown jobs for Nashvillians and residents of Davidson County and adjacent counties
- Provide better travel options and more space for families and people of all ages
- Increase the number of Nashville residents frequenting downtown businesses

BALANCED AND RELIABLE

Expand and enhance mobility choices to manage traffic and curb congestion and create a more predictable transportation system in Downtown Nashville.

- Balance the mobility and street use needs of residents, employees, and visitors
- Improve travel-time reliability and reduce delays
- Improve system resilience to an incident or event
- Integrate cost-effective, implementable projects with high-impact projects


719

2 Mobility Today

In this section, we take stock of Downtown Nashville's existing transportation systems and set the stage for emerging opportunities.

Systems include relationships between networks, such as transit routes and hubs, and patterns, such as the decision to take the bus to work. Individual elements of these systems help to form complete streets, or streets that provide safe mobility, access, and connections no matter how a person is traveling.

Nashville's policies and practices can have an impact on each element of the Downtown mobility network. In this chapter, we explore Downtown's transportation systems within the following areas:

- Walking and rolling
- Biking
- Scooters
- Transit
- Transpotainment
- Driving and ridesharing
- Transportation safety
- Freight and goods delivery
- Parking and curb management
- Connecting modes

Before diving into the individual systems, let's start with some context: who is responsible for what, how transportation modes and networks are connected, and big-picture trends in Downtown Nashville travel patterns.

Managing Mobility

Metro Nashville, through the Nashville Department of Transportation and Multimodal Infrastructure (NDOT), plays a lead role in managing our mobility network. However, there are many other agencies and entities who have a hand in how we get around. These include the Tennessee Department of Transportation (TDOT), WeGo Public Transit (WeGo), our neighboring municipalities, and a host of private actors.

To keep Downtown Nashville moving today and in the future will require coordination and collaboration. Transportation networks and the connections people need to make don't end at Downtown's edges. We must think beyond Downtown's borders to continue managing the infrastructure we have today and planning for a more connected future.

The Metro Nashville Transportation Plan, completed in 2020, serves as a guiding document for managing mobility within Nashville and Davidson County. The plan prioritizes mobility investments that were included in NashvilleNext and provides a framework of policies and planned investments. Public listening sessions helped to prioritize among the scores of new investments recommended in adopted studies and plans and set the stage for Connect Downtown.

Roles and Responsibilities

This table describes the different roles and responsibilities associated with Downtown Nashville's mobility systems and illustrates why collaboration is critical.

	NDOT	WeGo Public Transit	TN TDOT Department of Transportation	Nashville Planning Department	Metro Parks Nashville
Street Network	✓		✓	✓	
Pedestrian Network	✓	✓	✓	✓	✓
Bicycle Network	✓		✓	✓	✓
Transit Network	✓	✓	✓	✓	
Goods & Services Delivery	✓		✓		
On-Demand & Shared Mobility Services	✓	✓	✓		
Parking & Curb Management	✓	✓	✓	✓	
Land Use	✓			✓	

✓ Primary Role ✓ Supporting Role

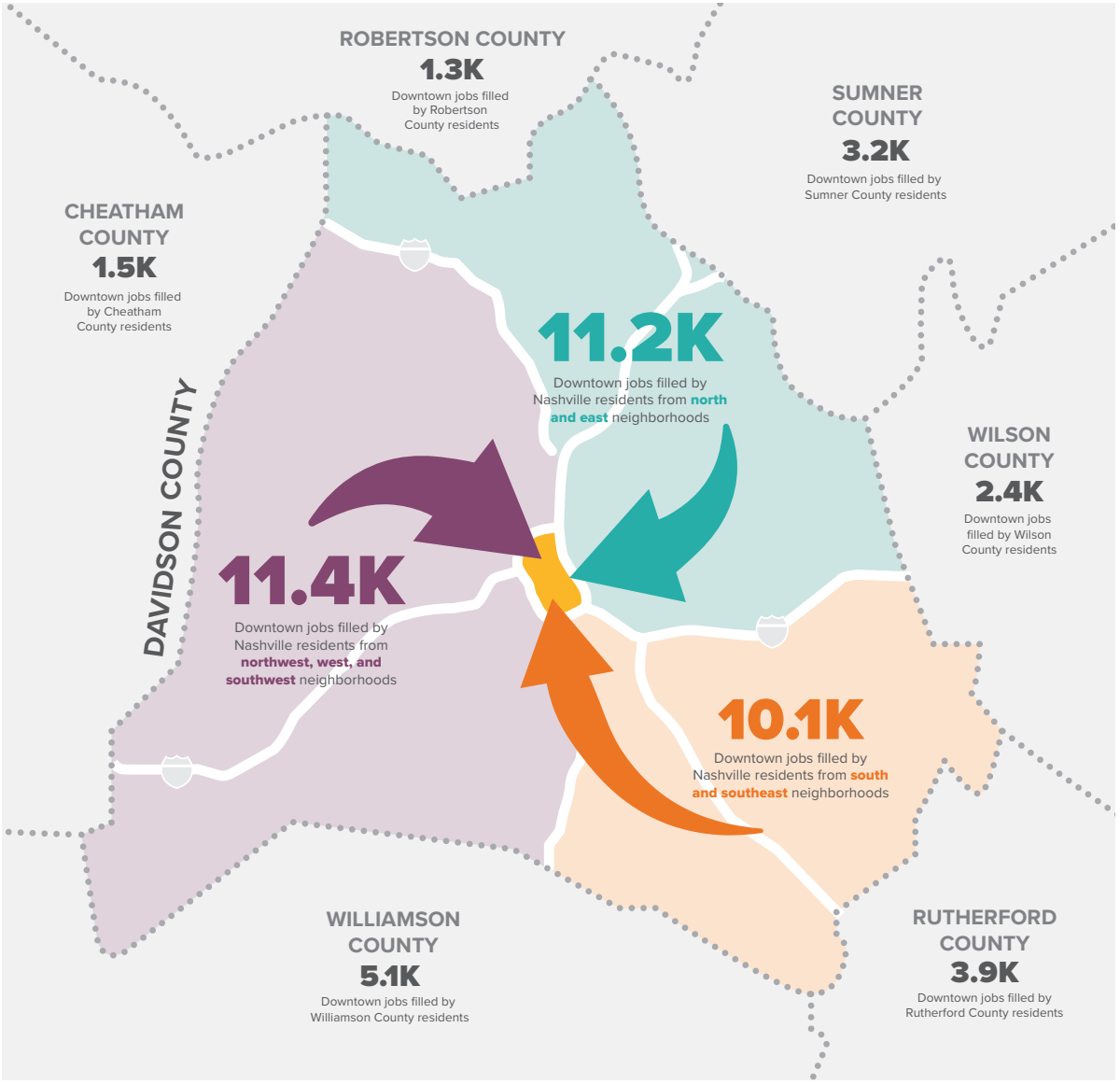
Where and How We Move Today

Connect Downtown will improve mobility for people traveling into, around, and out of Downtown Nashville. People come downtown for many reasons: to work, to play, to attend a show, to shop, to eat, to see friends, to go to school, and more. And some people simply pass through Downtown Nashville on their way to another part of the city. This is especially true for people who take the bus, as most routes connect through WeGo Central.

By looking at commute patterns and mode share, we can understand how people are traveling to, from, and around Downtown Nashville today. We can also begin to highlight opportunities to improve our current mobility systems and to change the ways people travel in the future.

Commutes Into and Out of Downtown

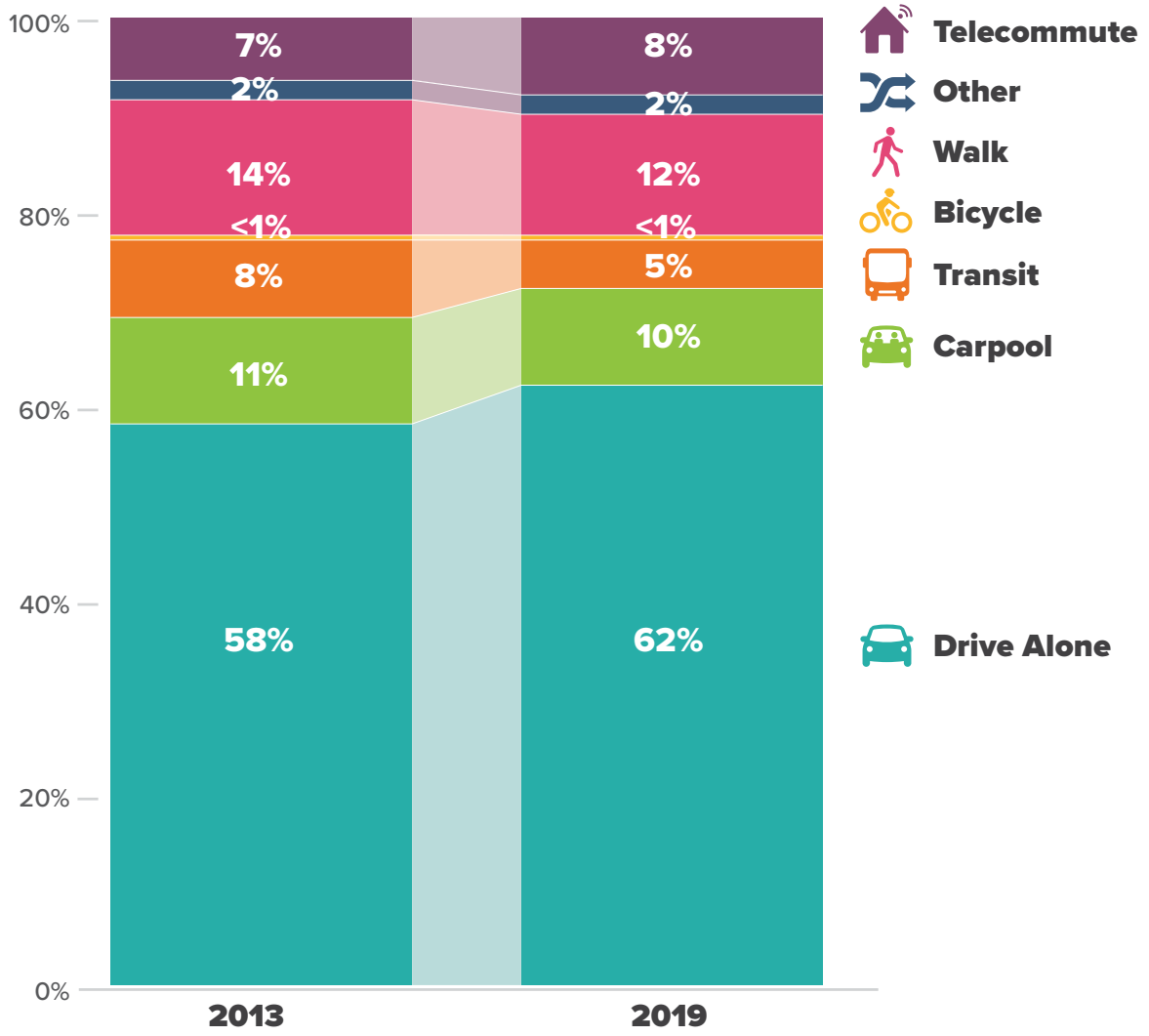
Downtown is the heart of Nashville and welcomes 63,000 commuting workers every day. Most commuters come from within Davidson County, but Downtown Nashville is an employment draw for all of Middle Tennessee. Beyond those who commute into downtown, approximately 6,700 Downtown residents commute to work outside of Downtown each day.



Mode Share

The way we travel has changed over time. Between 2013 and 2019, Downtown travelers have made small shifts in their modes of transportation. Walking, bicycling, and transit have decreased to about 17% of all trips (from 23% in 2013). Conversely, people commuting into Downtown are making more trips by car: driving alone and carpooling accounted for 72% of trips in 2019, compared to 69% of trips in 2013.

The following sections explore each of these travel modes and their mobility networks in detail, highlighting challenges and opportunities for Connect Downtown to consider.



Walking and Rolling in Downtown Nashville

Each day, people walk, roll, or use mobility devices like wheelchairs to move around Downtown Nashville. Whether getting to the bus stop, to their parked car, or moving between Downtown's neighborhoods, people should feel safe and comfortable. When we think about walking or using a mobility device, it's important to consider both moving along a roadway and getting across a roadway.

Good pedestrian environments have a combination of sidewalks and multi-use trails, safe road crossings, and destinations within a 5- to 10-minute walk. Much of Downtown Nashville fits this bill, and walking is one of the easiest and fastest ways to move around Downtown. In fact, 13% of Downtown Nashville residents walk to work, which is a much higher percentage than in Nashville as a whole or in other neighborhoods.

SIDEWALKS TODAY

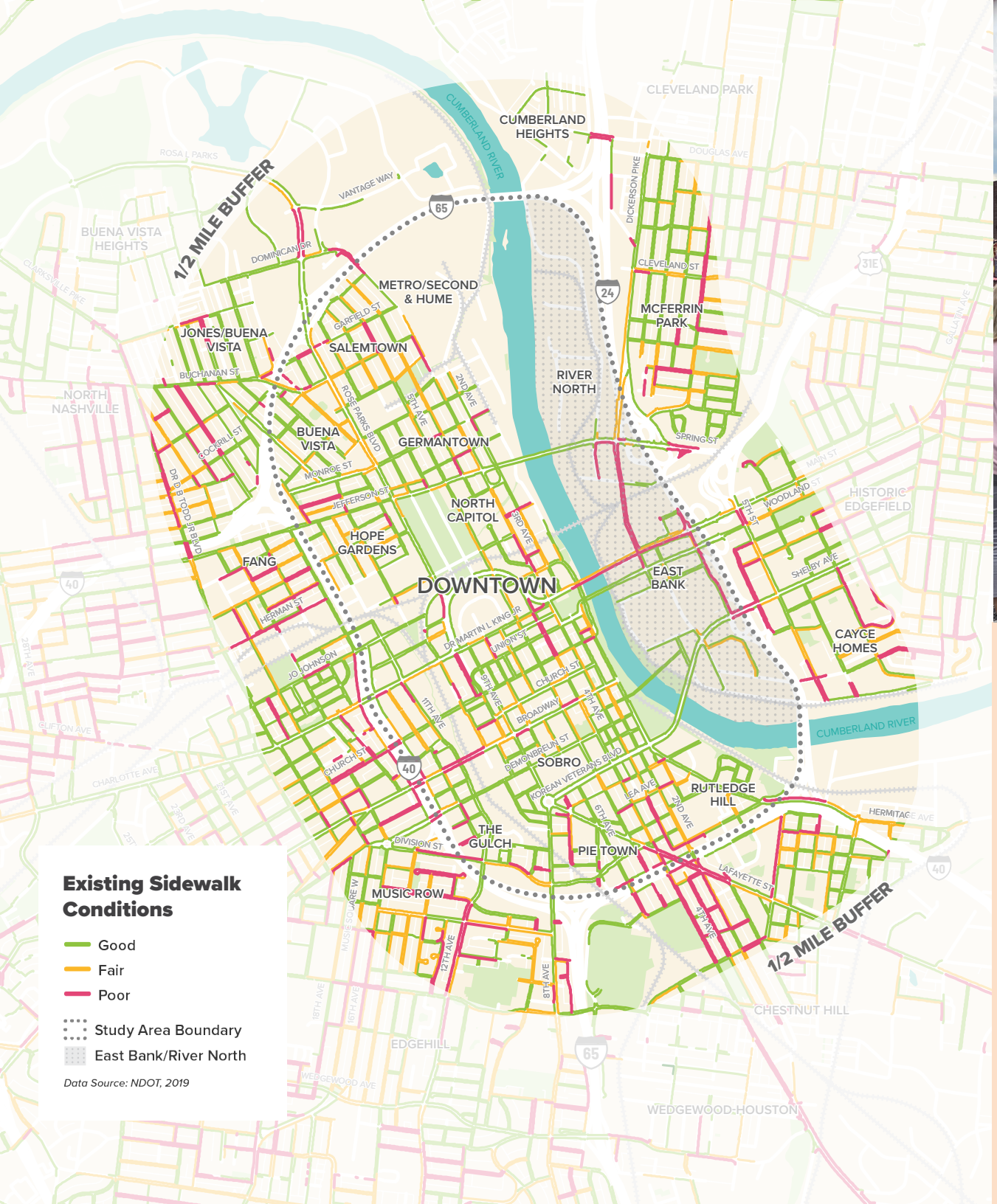
- There are **94 miles of sidewalk** in the Connect Downtown study area.
- There are **10 miles of streets** Downtown that **lack sidewalks** on one or both sides.
- NDOT has **four sidewalk projects** in the current Capital Improvement Program, including two new sidewalks.

SIDEWALK MAINTENANCE

- Having a complete network of sidewalks is important, but those sidewalks also have to be maintained and in good condition. For people who use a mobility device or push kids in a stroller, the **condition of a sidewalk or path** is as important as whether one exists.
- Today, **10 miles of Downtown's sidewalks** are in **"poor" condition**.

PEDESTRIAN CROSSINGS

- Safe crossings are a critical piece of the pedestrian environment. **High-visibility crosswalks**, along with traffic signs and signals, help to connect people to their destinations.
- Most Downtown intersections have **traffic signals and pedestrian crossing signs** and markings.
- Intersections on Lower Broadway between Rep. John Lewis Way and 2nd Avenue use **all-way crossings**, which are helpful for moving large volumes of pedestrians at one time.



Planning Context

These plans are guiding NDOT's investments in Downtown Nashville's walking and rolling network:

- **Metro Nashville Transportation Plan (2020)**
- **Vision Zero Action Plan (2021)**
- **Vision Zero Implementation Plan (2022)**
- **WalknBike (2022)**

Biking in Downtown Nashville

Since 2003, Metro Nashville has worked to expand bike facilities and infrastructure through policies, programs, and capital projects. NDOT's Bikeway Program builds four types of bikeways: protected bike lanes, buffered bike lanes, bike lanes, and signed shared routes. Most facilities in Downtown Nashville are unprotected bike lanes, although there is a two-way pilot protected bike lane (PBL) on Commerce Street, and there are one-way PBLs on Martin Luther King Jr Way between George L Davis and Rosa L Parks Boulevards. PBLs are also coming to Demonbreun between the Musica roundabout/ Buddy Killen Circle and 14th Avenue South in 2023, and a quick-build protected bike lane is a possibility for 3rd Avenue in the future.

The 2022 WalknBike Plan serves as a blueprint for making Nashville more bikeable (and walkable) over the next three years. The plan focuses on connecting facilities and creating an all-ages-and-abilities network that is safe and inviting. These priorities are particularly important for Downtown Nashville, as there is currently very little connectivity between existing facilities and many lack separation from motor vehicle traffic.

BIKEWAYS TODAY

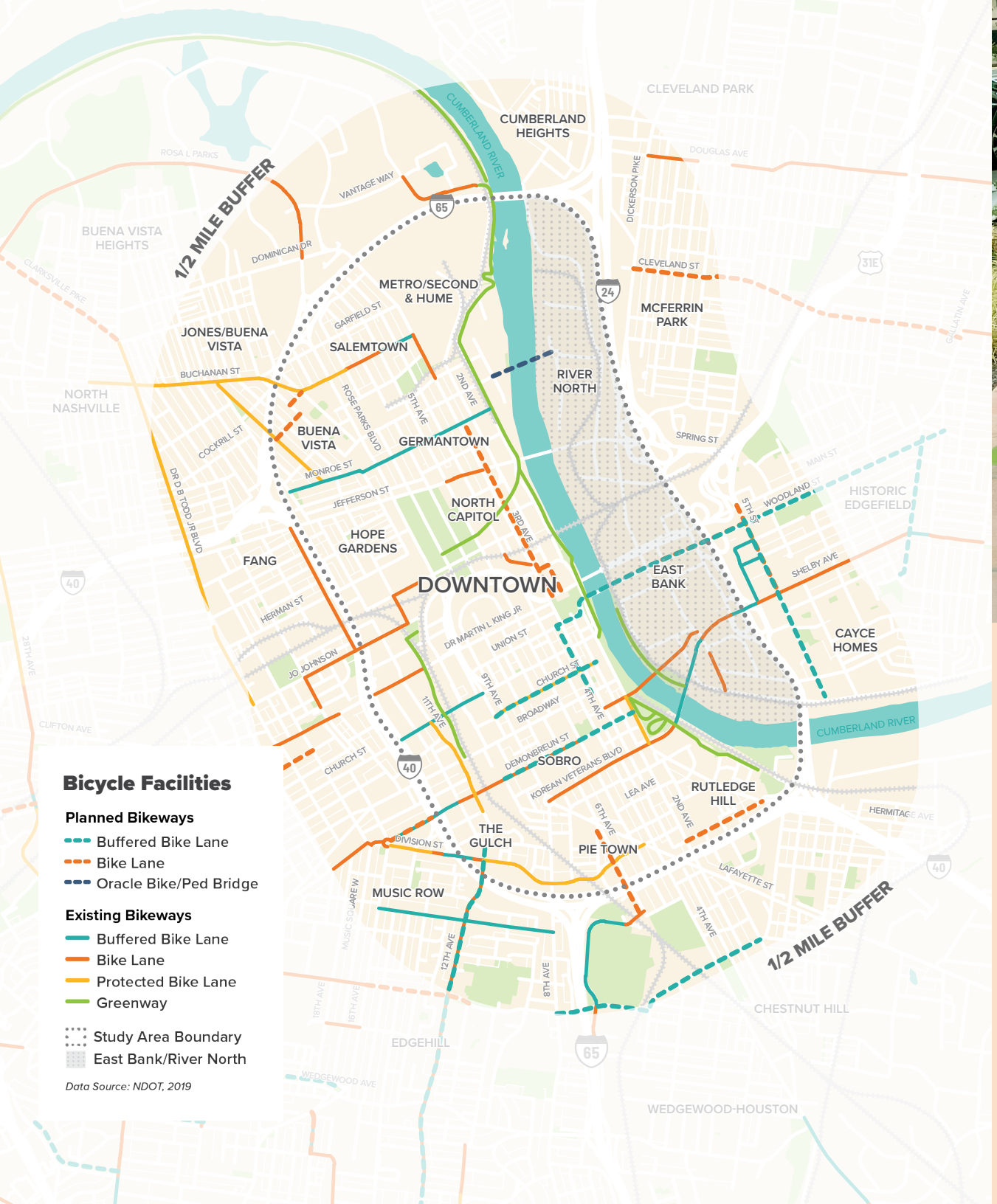
- There are **13 miles of bikeways** in the Connect Downtown study area.
- Downtown has **2.9 miles of newly constructed bikeways**.
- The WalknBike 2022-2024 Work Plan for Bikeways includes **27 projects** in Downtown Nashville.

BIKESHARE IN NASHVILLE

- Nashville BCycle has **34 stations and 300 shared e-bikes** around Metro Nashville, giving residents, employees, and visitors the ability to check out a bike and return it to any station.
- In 2019, BCycle riders made approximately **50,000 trips, riding more than 290,000 miles**. Over 20,000 rides covering almost 125,000 miles began in the Connect Downtown study area.

GREENWAYS

- Greenways are **linear parks** that provide safe and accessible recreational opportunities and important transportation connections.
- There are **three greenways** in Downtown Nashville: the Cumberland River Greenway, the Gulch Greenway, and the Rolling Mill Hill Greenway.
- They are all part of the planned **23-mile City Central Greenway System** that will circle Nashville's core and connect transit stops, bikeways, neighborhoods, business districts, schools, and parks.



Planning Context

These plans are guiding NDOT's investments in Downtown Nashville's biking network:

- **Metro Nashville Transportation Plan (2020)**
- **Vision Zero Action Plan (2021)**
- **Vision Zero Implementation Plan (2022)**
- **WalknBike (2022)**

Scooters in Downtown Nashville

Shared scooters are a form of "micromobility," which is a collective term for fleets of small, low-speed, battery-powered vehicles for personal transportation. These are most often used for short trips, including as a first/last mile option that is faster than walking. Mayor Cooper's Sustainability Advisory Committee Report includes a strategy to expand access to shared urban mobility devices, recognizing the important role that micromobility plays in a sustainable transportation network.

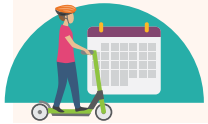
The leading micromobility companies in Nashville are Bird, Lime, and Spin. These three permitted companies have approximately 1,700 scooters, most of which are located in the Connect Downtown study area.

While scooters are very popular—especially with visitors to Downtown Nashville—NDOT receives numerous parking-related scooter complaints each month. Nashville's scooters are dockless, and riders often park them in ways that block or clutter sidewalks. NDOT has installed scooter parking corrals to provide designated parking areas and has used geofences in designated "no park/no ride" areas.

2.8M

Between August 2019 and August 2022, people took **2.8 million scooter rides** in Nashville.

145K



In August 2022, scooter riders took **145,000 trips**, which is more than **5,000 trips a day**.

10%

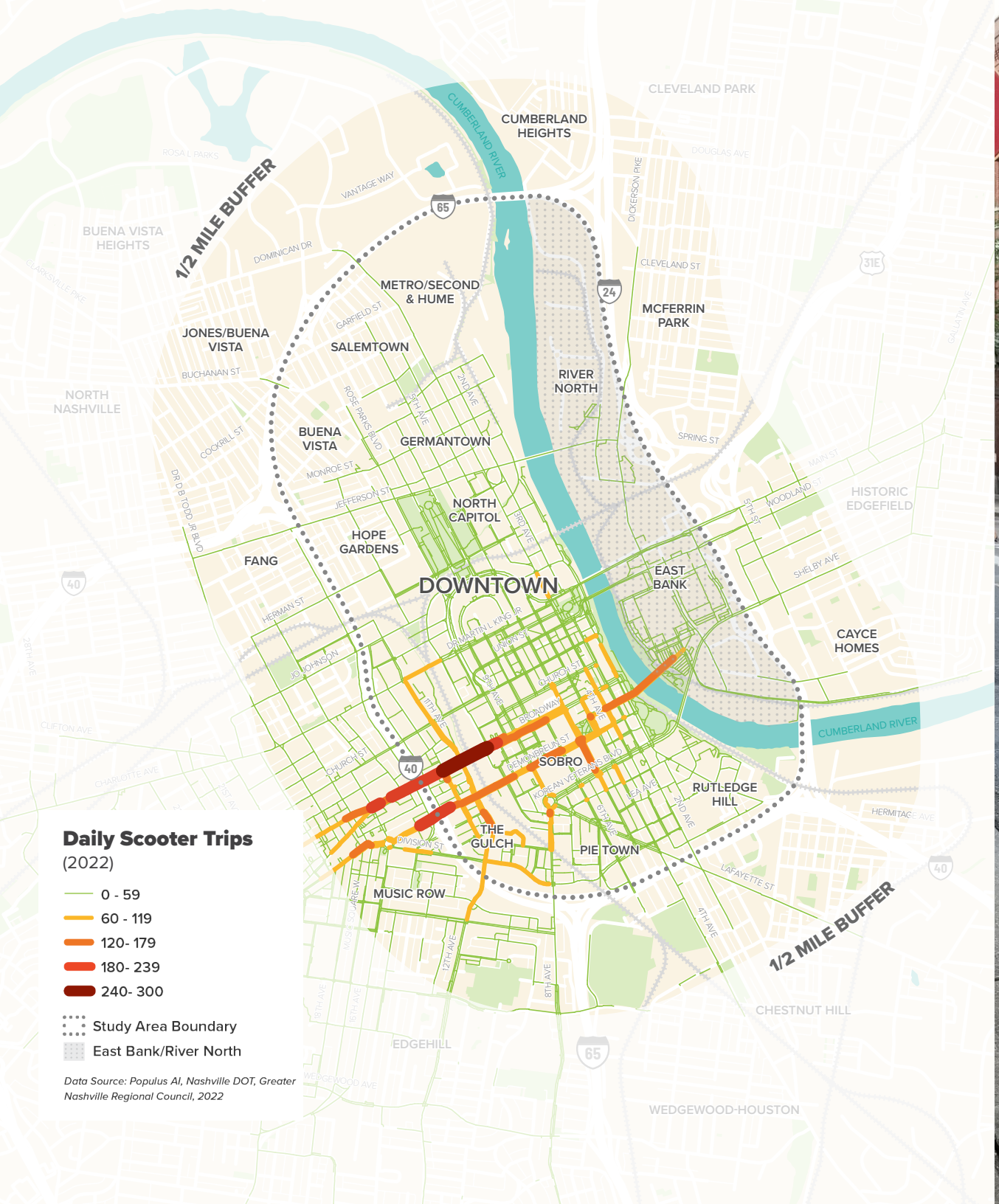
Micromobility daily trip patterns **peak during the late afternoon**, and close to 10% of daily trips are made during the **3:00 p.m.** hour.

1 mile

Average trips are a **little over 1 mile** and last **less than 15 minutes**.

300 trips

Lower Broad sees the most trips per day, with approximately **300 trips**. Demonbreun Street has approximately 200 trips per day and has the second highest daily trip totals.


CUMBERLAND HEIGHTS
CLEVELAND PARK
1/2 MILE BUFFER
BUENA VISTA HEIGHTS
METRO/SECOND & HUME
MCFERRIN PARK
JONES/BUENA VISTA
SALEMTOWN
RIVER NORTH
NORTH NASHVILLE
BUENA VISTA
GERMANTOWN
NORTH CAPITOL
HISTORIC EDGEFIELD
HOPE GARDENS
FANG
DOWNTOWN
EAST BANK
CAYCE HOMES
SOBRO
RUTLEDGE HILL
THE GULCH
PIE TOWN
MUSIC ROW
1/2 MILE BUFFER
CHESTNUT HILL
EDGEHILL
WEDGEWOOD-HOUSTON
CUMBERLAND RIVER
Daily Scooter Trips
(2022)
0 - 59
60 - 119
120- 179
180- 239
240- 300
Study Area Boundary
East Bank/River North
Data Source: Populus AI, Nashville DOT, Greater Nashville Regional Council, 2022


ALLEY

EVALUATING NASHVILLE'S CURRENT MICROMOBILITY PROGRAMS

Nashville currently has both bikeshare and scootershare options, including the BCycle partnership, Nashville's e-scooter program, and WeGo and Bird's equity partnership.

BIKESHARE

Provided by BCycle LLC in partnership with Metro and the Nashville Downtown Partnership, Nashville's e-bikes are a popular micromobility option. BCycle is a successful program, but its smaller system provides limited functionality compared to larger bikeshare programs. For example, most stations and bikes are used for recreation, and few riders use BCycle to commute into Downtown. NDOT is launching a free-floating bikeshare pilot program on November 14, 2022, with a requirement that bikes be docked at identified bike corrals or racks. The geography for the pilot excludes the Connect Downtown study area for the time being.

Nashville's current contract with BCycle expires in 2022, and the department will issue a Request for Proposals for a system operator in fall or winter. Moving forward, Nashville hopes to expand bikeshare to provide people with more non-driving options and reduce drive-alone rates. Doing so will require a more robust bikeshare system and more high-quality bike infrastructure, which people cite as a limiting factor in their desire to bike or use bikeshare, especially Downtown.

SCOOTERSHARE

Nashville has a successful e-scooter program, but it lacks strong regulations around parking and riding on sidewalks or greenways. When scooters arrived in Nashville, there were nine operators and 4,500 scooters. The city's e-scooter permit program responded to that context—through a procurement process, NDOT selected Spin, Bird, and Lime as operators permitted to have 500 scooters each in the Downtown/Midtown area. Ridership is extremely high, with 145,000 trips in August 2022 alone. Nashville residents have raised concerns about scooter parking and adequate space for scooter riders to operate, especially on crowded Downtown sidewalks. NDOT began designating scooter parking corrals in 2019, but they are not mapped or effectively regulated. Nashville currently has no penalties for non-compliance with scooter regulations, which makes it challenging to ensure that scooter riders are operating the devices safely. Moving forward, NDOT should update scootershare permit regulations and advance infrastructure to provide an on-street network for scooter riders.

WEGO EQUITY PARTNERSHIP

NDOT and WeGo have launched a pilot program that allows operators to deploy an additional 125 scooters as a first/last mile option at WeGo stops outside of Downtown. Spin and Lime have typically deployed 25-50 additional scooters, and Bird has consistently deployed the additional 125 allowed. Although this program is described as an equity pilot, it lacks features of similar pilots in other cities, including reduced fares and a focus in high-need areas. Cities such as Arlington, VA; Providence, RI; Seattle, WA; and Washington, DC have required scooter operators to identify equity areas and deploy scooters, often with pricing to support low-income riders. Nashville's equity partnership would benefit from an updated program design that focuses explicitly on vulnerable populations.

Transit in Downtown Nashville

WeGo Public Transit provides bus and commuter rail services throughout Davidson County and the Middle Tennessee region. Downtown Nashville is the center of the network, as nearly all routes travel to and from WeGo Central. Transit is one of the most efficient and effective ways to move large numbers of people, and growing cities like Nashville need high-quality public transit networks.

Planning Context

These plans are guiding NDOT's and WeGo's investments in Downtown Nashville's transit network:

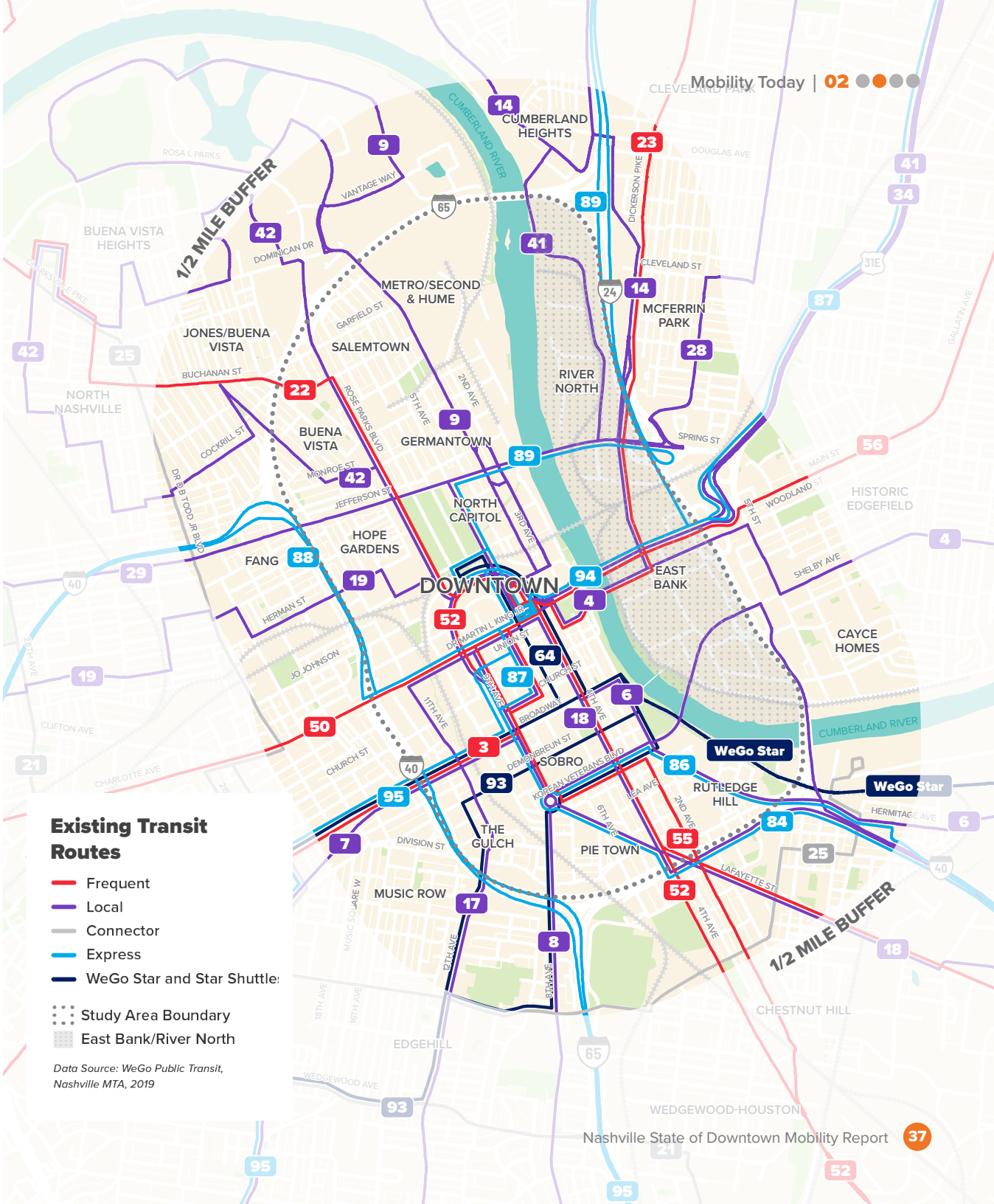
- **Metro Nashville Transportation Plan (2020)**
- **WeGo Better Bus Plan (2020)**
- **nMotion Transit Plan (2016)**
- **Vision Zero Action Plan (2021)**
- **Vision Zero Implementation Plan (2022)**

Source: Nashville Convention and Visitors Corp

Current Transit Network

WeGo operates a network of local bus, express bus, commuter rail, microtransit, and complementary paratransit service in Davidson County and surrounding counties. Its network is heavily focused on Downtown Nashville, and 24 of its 28 local bus routes operate to, from, through, or within Downtown. The WeGo Star, Nashville's commuter rail line, operates to and from Downtown, and all of WeGo's express routes operate to and from Downtown.

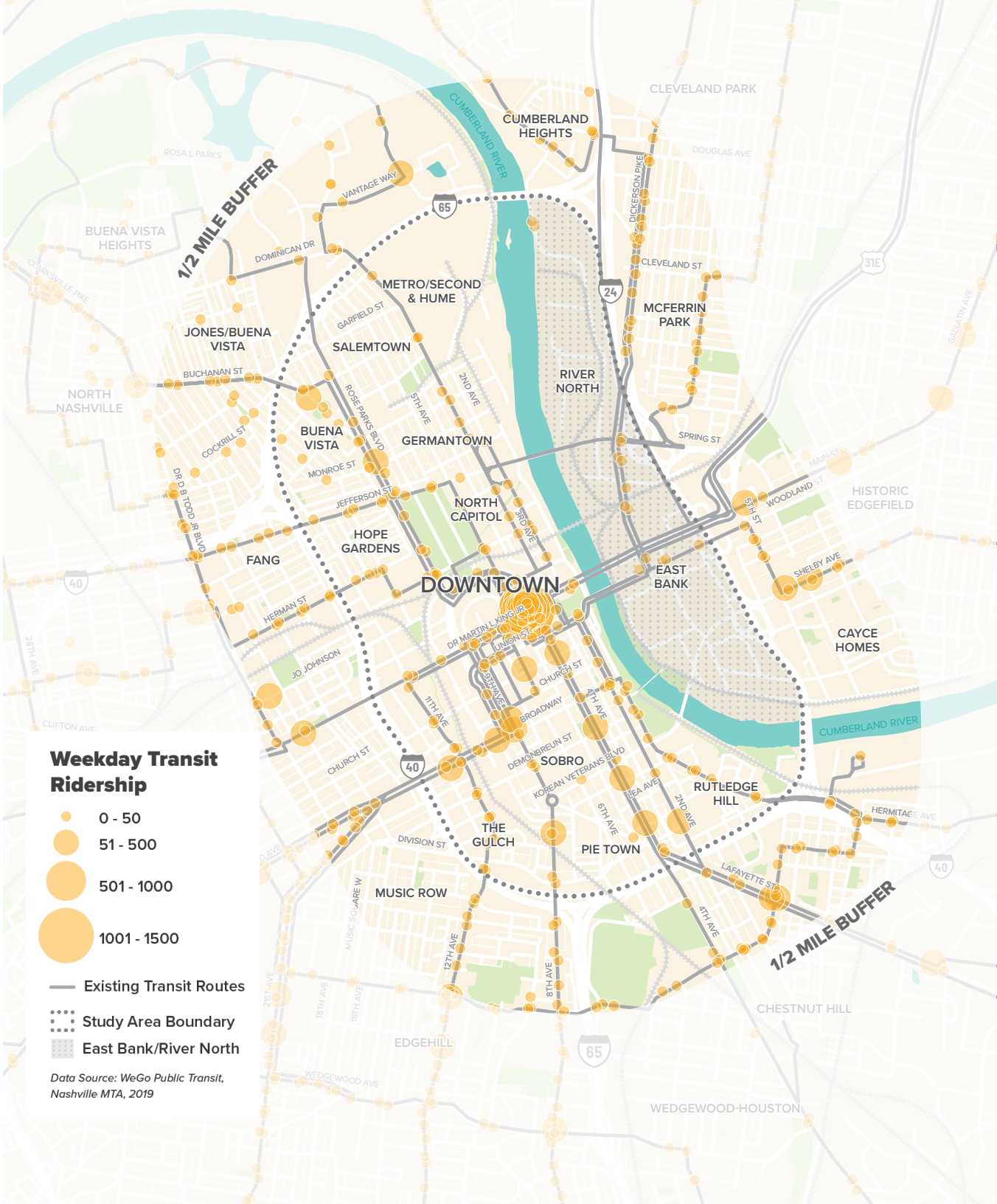
- **Frequent bus routes** operate every 10 to 15 minutes during peak periods, every 10 to 30 minutes during the midday, and every 15 to 60 minutes in the evening. The first trips begin at 4:24 AM and the last trips go out of service at 12:37 AM.
- **Local bus routes** operate every 15 to 60 minutes during peak periods, every 20 to 60 minutes during the midday, and every 30 to 60 minutes in the evening. However, not all local routes provide midday and evening service. Routes begin operating between 4:38 AM and 7:00 AM and go out of service between 5:17 PM and 12:58 AM.



Current Transit Ridership Downtown

In 2019, WeGo's ridership by stop was highest in the southern and western parts of Downtown. The highest ridership location was WeGo Central, with approximately 11,500 boardings and alightings per weekday, followed by Convention Center Station with 280 boardings and 70 alightings per weekday and 4th Avenue at Church Street with 140 boardings and 25 alightings per weekday.

- In 2019, WeGo transported **8.8 million passengers to, from, and within Downtown**.
- Total WeGo **ridership declined by 45% during the depths of the pandemic** but has **since increased to 79%** of pre-pandemic levels.
- **Murfreesboro (Route 55)** is now exceeding pre-pandemic ridership levels.
- WeGo has **194 bus stops** in the Downtown Connect study area.




11
7 HILLSBORO
Bus Only
lime

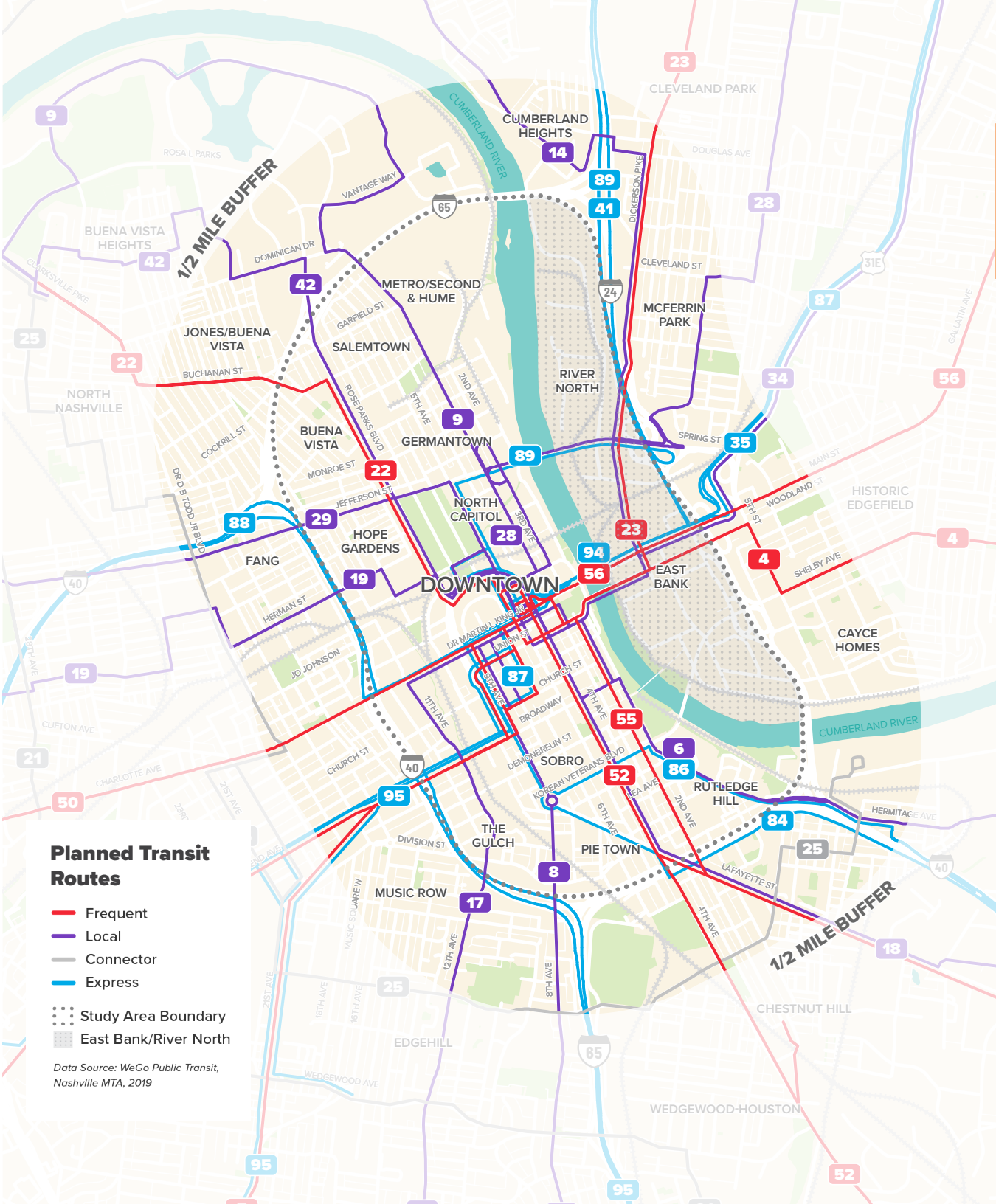

422
WeGo

Planned Transit Improvements

WeGo's Better Bus Project is the agency's plan for improving its services throughout Davidson County. The plan focuses on:

- **Longer hours of service**
- **More frequent service**
- **New connections**
- **New transit centers and upgraded bus stops**
- **Access improvements**

Additionally, the East Bank Vision identifies a possible East Bank transit center and the development of a Transit Priority Corridor on a new East Bank Boulevard. These improvements and many others included in the Better Bus Project provide the opportunity to make transit service significantly better in Downtown Nashville.



REDESIGNING DOWNTOWN TRANSIT

Most of Downtown's new growth is occurring away from WeGo's Central transit hub. Two types of improvements can help extend transit to these newly developing areas: new transit centers and Transit Priority Corridors.

A **transit center** is often a terminal location for bus routes and is a place where many routes come together, making it easy for riders to transfer between services. Transit centers also provide high-quality passenger amenities and may offer seamless connections to other transportation services. WeGo and Metro are discussing the development of a SoBro Transit Center near the intersection of 4th Avenue and Lafayette Street. A second potential location is on the East Bank. With either or both of these transit centers, existing routes could be extended beyond WeGo Central.

Transit Priority Corridors, which would incorporate transit priority treatments and service and infrastructure improvements into one or more Downtown streets, would make transit faster and more reliable. Potential Transit Priority Corridors include 8th Avenue, 4th Avenue and 3rd Avenue, and James Robertson Parkway.

Transpotainment in Downtown Nashville

Entertainment Transportation Vehicles, or “transpotainment” vehicles, began operating in Downtown Nashville in late 2013 with a few vehicles carrying revelers. The industry has quickly expanded, both in number and in the types of vehicles on Downtown Nashville’s streets and waterways. As of summer 2022, NDOT staff estimate there are nearly 200 vehicles operating downtown.

Nashville is exploring a new approach to managing transpotainment vehicles and has adopted an ordinance that limits the routes and times at which they can operate. The Transportation and Licensing Commission closed permit applications on April 15, 2022, and was evaluating vendors in June 2022. Approximately 30 companies with 150 vehicles have applied for permits to operate Downtown.

Transpotainment vehicles in Nashville include:

- Horse Carriage
- Party Bike
- Party Boat
- Party Bus
- Party Trailer
- Party Truck
- Pub Crawl

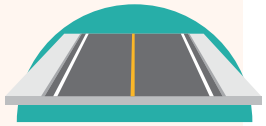
Driving and Ridesharing in Downtown Nashville

Each day, Downtown Nashville's streets carry thousands of vehicles, with Korean Veteran's Boulevard, James Robertson Parkway, Rosa Parks Boulevard, Broadway, and Lafayette Street leading the way. Downtown Nashville has a traditional street grid system, which provides good connectivity. However, the interstate loop, the Cumberland River, and railroad crossings on the south and north sides of Downtown create access challenges.

Most streets in Downtown are relatively narrow, especially compared to other sunbelt cities. Many blocks are long and others—especially leading to the State Capitol—are quite steep. These features are an important part of Downtown's character, but the tight geometry and topography present challenges when right-of-way priorities compete.

In addition to private vehicles, Downtown Nashville has seen an influx of ridesharing and on-demand service vehicles in the past five years. Both taxis and transportation network companies (such as Uber and Lyft) operate Downtown, with a significant amount of activity near Lower Broad, Music City Center, and Bridgestone Arena.

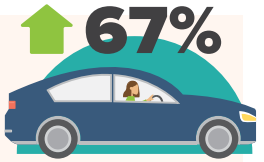
Downtown Nashville has **6,328 streets and alleys that cover 405 miles**. The majority of these streets are classified as Major Roads or Minor Roads.

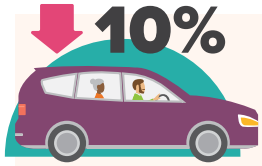


Interstates 40, 65, and 24 encircle Downtown Nashville and provide regional and local access. The **672 ramps** across the Nashville region are also congestion generators.

Drivers change lanes and weave to get around the **routine ramp back-ups** in the afternoon peak. The back-ups and the resulting behavior create unsafe conditions and impact other Downtown streets and modes of travel.

The **drive-alone** mode share for people who live Downtown and commute to work in Downtown has increased from 63% to 67% since 2013.





The **carpool** mode share for people who live Downtown and commute to a Downtown job has decreased slightly, falling from 11% in 2013 to 10% in 2019.

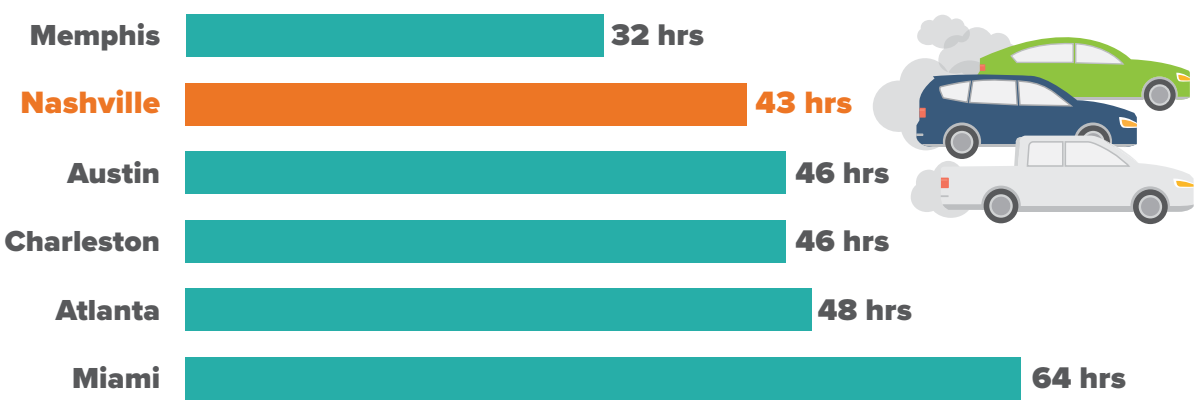
Besides rideshare companies Uber and Lyft, **eco-friendly Earth Rides and Drover Rideshare** both operate in Downtown Nashville. Nashville has **nine licensed taxi companies** with approximately 300 vehicles (down from 1,200 in 2003).

Congestion and Commute Times in Downtown Nashville

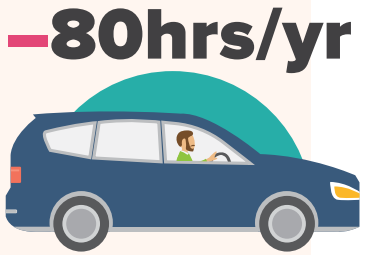
Driving continues to be the way most Nashville residents get around, and it is the most common way people travel into Downtown. While driving is often the fastest way to travel long distances in Nashville and Davidson County, it is not necessarily the fastest way to move around Downtown.

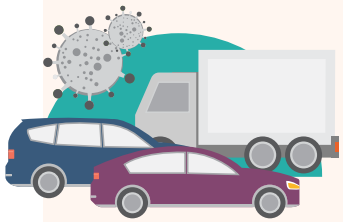
The many destinations in Downtown Nashville—coupled with more residents, workers, and visitors and an ever-increasing number of event and construction detours—has worsened congestion, slowed travel times, and made driving in Downtown unpredictable at best. All of this means that shorter trips within Downtown are often better made by walking, rolling, biking, or taking the bus.

In 2021, Nashvillians spent an average of 43 hours per year in congestion.



In 2021, drivers in the Nashville region **lost 7 minutes per 30-minute trip** during the AM rush hour and **12 minutes per 30-minute trip** during the PM rush hour. That's about 80 lost hours a year for someone driving during both the morning and afternoon rush.



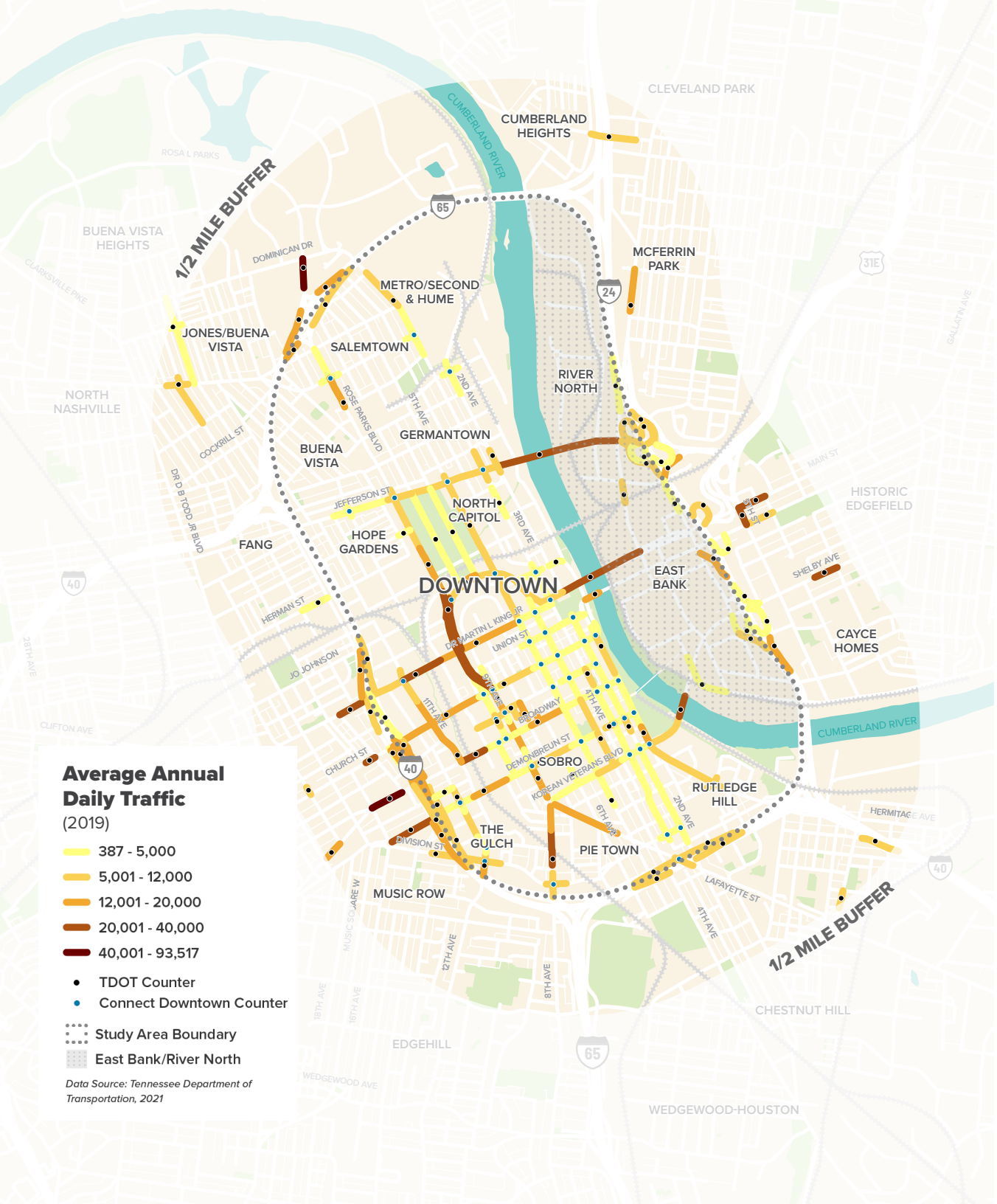


Before the pandemic and a shift to more hybrid work schedules, the time lost was even higher at **14 minutes per 30-minute** AM peak trip and **19 minutes per 30-minute** PM peak trip.

Planning Context

These plans are guiding NDOT's and TDOT's investments in Downtown Nashville's roadway network:

- **Metro Nashville Transportation Plan (2020)**
- **Middle Tennessee Connected Regional Transportation Plan (2021)**
- **Vision Zero Action Plan (2021)**
- **Vision Zero Implementation Plan (2022)**
- **Nashville Inner Loop Study (2022)**



HIGH-VOLUME ROADS

The roads in Downtown Nashville that carry the most cars per day include:

- **8th Ave / Rosa Parks Blvd**
- **Martin Luther King Jr Blvd**
- **Jefferson St**
- **Broadway**
- **Demonbreun St**
- **Korean Veterans Blvd**

ROADWAY RECOMMENDATIONS

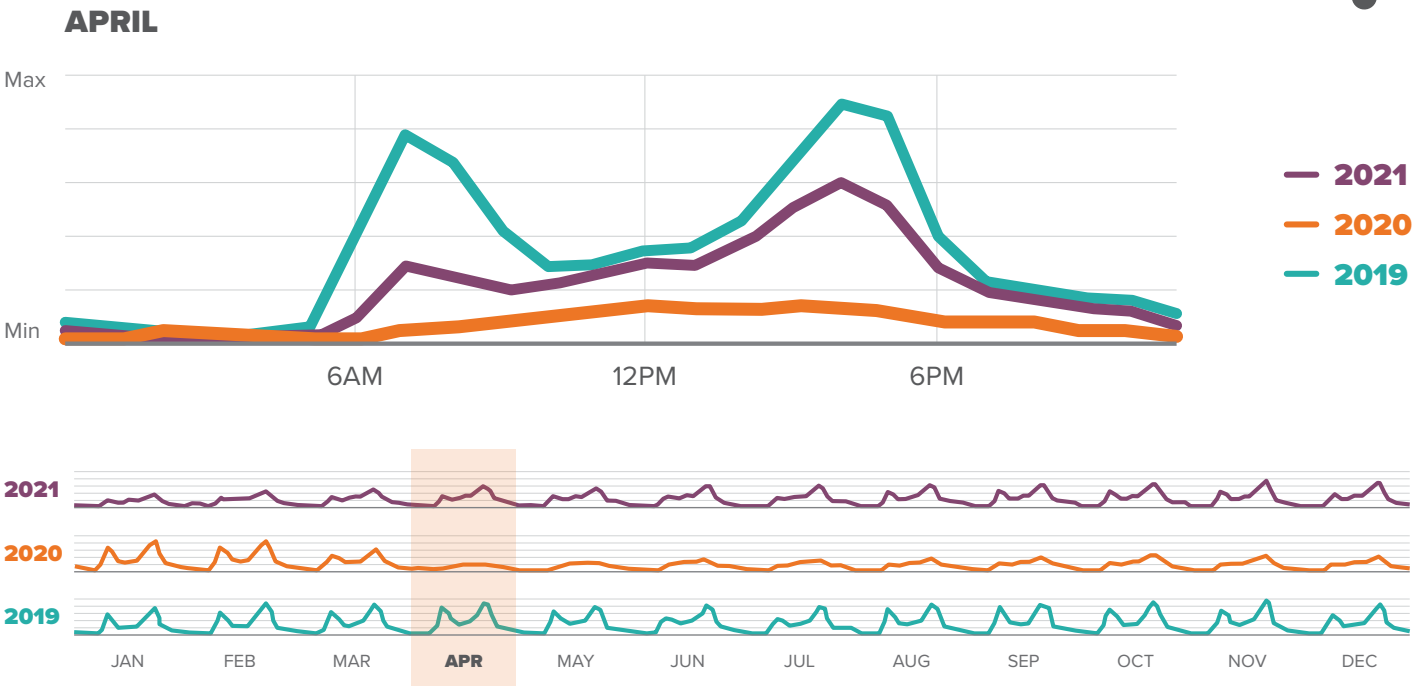
- **The Metro Nashville Transportation Plan** recommends conducting a thorough and comprehensive needs assessment, including a full inventory, to identify roadway deficiencies and deferred maintenance priorities.
- **The Nashville Vision Zero Action Plan** includes strategies to reduce pedestrian fatalities from car collisions, including improving intersections and roadways that have high numbers of crashes.
- **The Nashville Vision Zero Implementation Plan** includes engineering actions, programmatic actions, Metro roles and responsibilities, and a funding overview for Vision Zero implementation from 2023 to 2027.
- **TDOT's Inner Loop Study** identifies options to address the recurrent and non-recurrent congestion within the Inner Loop and on the interstates leading to and from the Inner Loop.

PANDEMIC EFFECTS ON COMMUTE PATTERNS

In April 2019, the average monthly congestion level in Nashville was 29% (meaning that, on average, travel times were 29% longer than during non-congested conditions). In 2020, the average monthly congestion in April was 6%, and in April 2021 it had risen to 20%.

What did the traffic on an average working day look like each month across the years?

WORKING DAY TRAVEL PATTERNS IN 2019-2021



Source: TomTom

Source: Michal Anderson

Transportation Safety in Downtown Nashville

Since 2014, 468 people have lost their lives to fatal traffic collisions on state and local roads in Nashville; 27 of those were in Downtown. The principle of Vision Zero—with a goal of eliminating serious and fatal crashes by 2050—is guiding Nashville's traffic safety efforts.

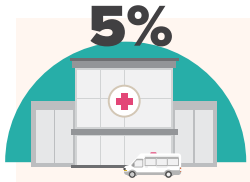
Evaluating where crashes are occurring, why they are happening, and who is most impacted sets the stage for Nashville to take a proactive approach to safety, effectively preventing crashes rather than responding after they've happened. Metro is prioritizing infrastructure and behavior change that will reduce crashes and fatalities, starting with Nashville's most dangerous places for walking, bicycling, and driving.

Planning Context

These plans are guiding NDOT's actions to improve traffic safety in Downtown Nashville:

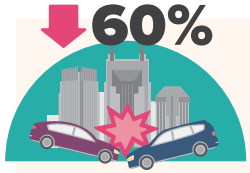
- **Metro Nashville Transportation Plan (2020)**
- **Vision Zero Action Plan (2021)**
- **Vision Zero Implementation Plan (2022)**
- **WalknBike (2022)**

Nationally, Nashville ranks **24th in traffic fatalities** per 100,000 people.



In 2021, 5% of collisions in Downtown—that's 200 collisions—were **severe injuries or fatalities**.

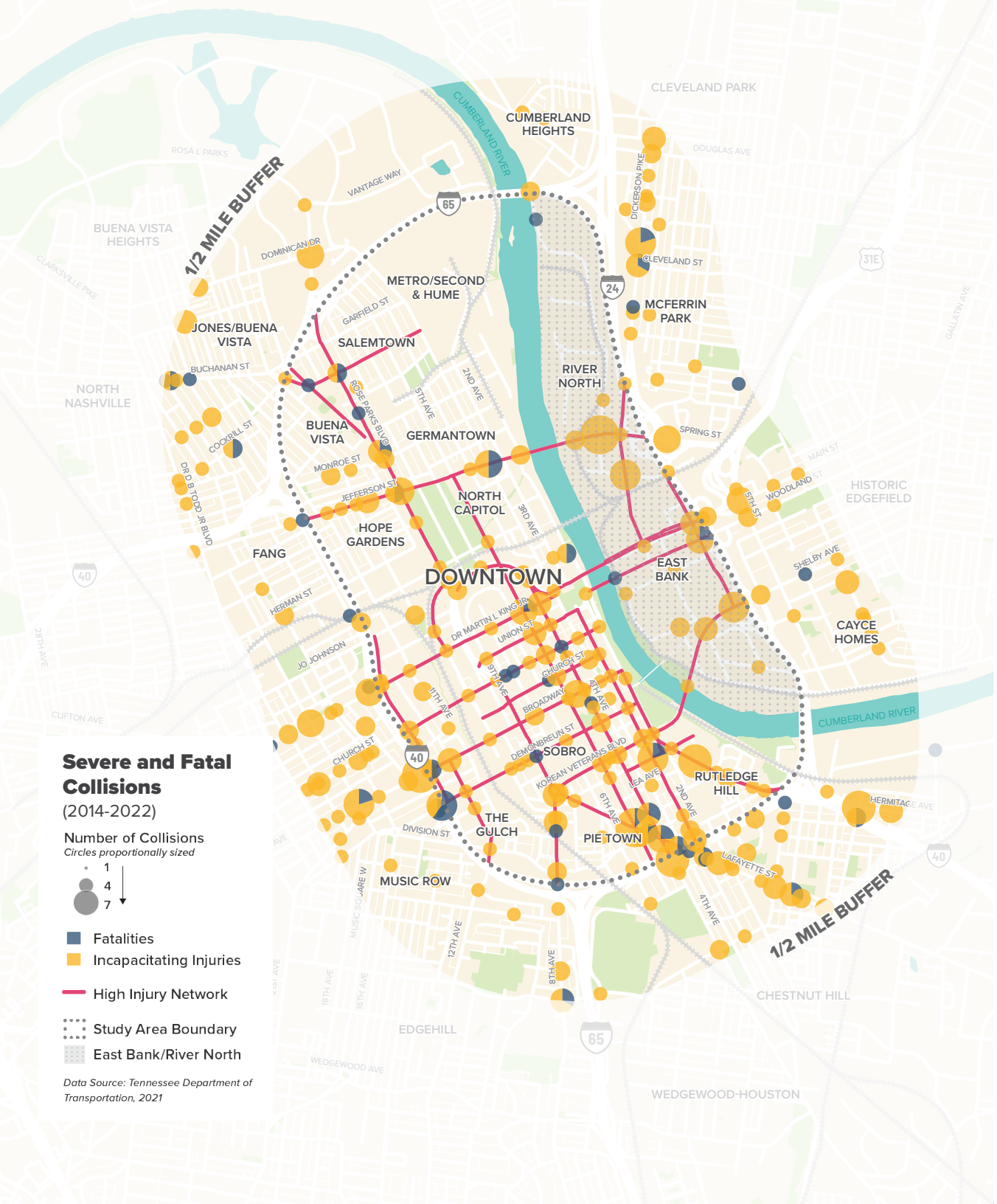
Only 1% of Downtown Nashville residents commute to work on bikes, but **bicyclists make up 2% of serious and fatal injuries** in Nashville.



The total number of collisions in Downtown **decreased nearly 60%** between 2019 (580 collisions) and 2021 (233 collisions). That **number is on the rise in 2022**.

TDOT'S PEDESTRIAN ROAD SAFETY INITIATIVE

TDOT's Pedestrian Roadway Safety Initiative is part of Tennessee's Strategic Highway Safety Plan. The goal of the initiative is to create safer roadways for pedestrians. TDOT has 12 active projects, with two in Downtown Nashville.



HIGH INJURY NETWORK

- Across the city, **6% of streets account for 59% of fatal and serious injuries for all modes**. These streets form Nashville's High Injury Network.
- There are **47 High Injury Network corridors** that are at least partially within the Connect Downtown study area.

DOWNTOWN HOT SPOTS

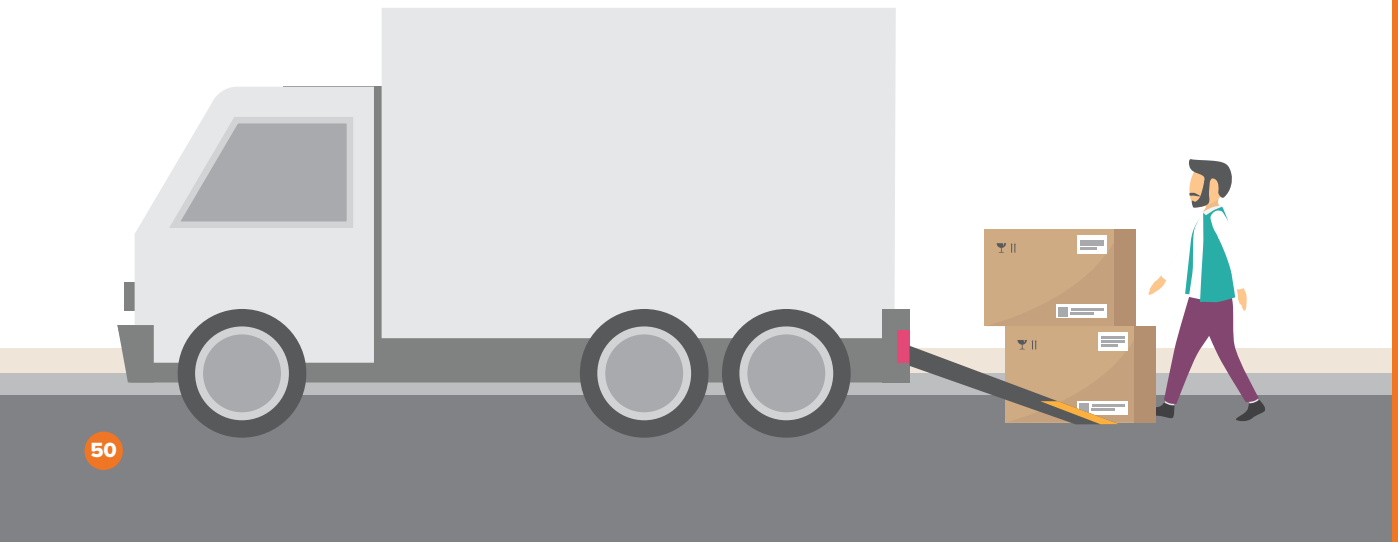
- Nine Downtown corridors had more than 10 fatal or serious-injury collisions between 2014 and 2021:
  - **Lafayette Street (27)**
  - **Broadway (16)**
  - **Charlotte Avenue (14)**
  - **Church Street (13)**
  - **8th Avenue S (13)**
  - **2nd Avenue S (12)**
  - **Rosa Parks Boulevard (12)**
  - **Shelby Avenue (11)**
  - **Rep John Lewis Way (11)**
- Since 2014, there have been **22 crashes** involving **people walking or biking on Broadway** between 3rd Avenue and 6th Avenue.
- **Lafayette Street and Rep John Lewis Way** is one of the most dangerous intersections in Nashville for pedestrians.

Freight and Goods Delivery in Downtown Nashville

Managing how goods move around Downtown Nashville is essential to the overall mobility network and to the livability of Downtown. This includes the truck network for freight, commercial loading zones for package, food, and other deliveries, space for service vehicles, and the management of construction equipment and activity.

Downtown Nashville has a very high demand for goods and services to support its residents, businesses, and vibrant music and events scene. From FedEx and UPS deliveries to personal and commercial food and beer deliveries to musicians and bands loading and unloading equipment to heating and air conditioning repair vehicles, the demands on Downtown Nashville's roadway network and curbspaces are significant.

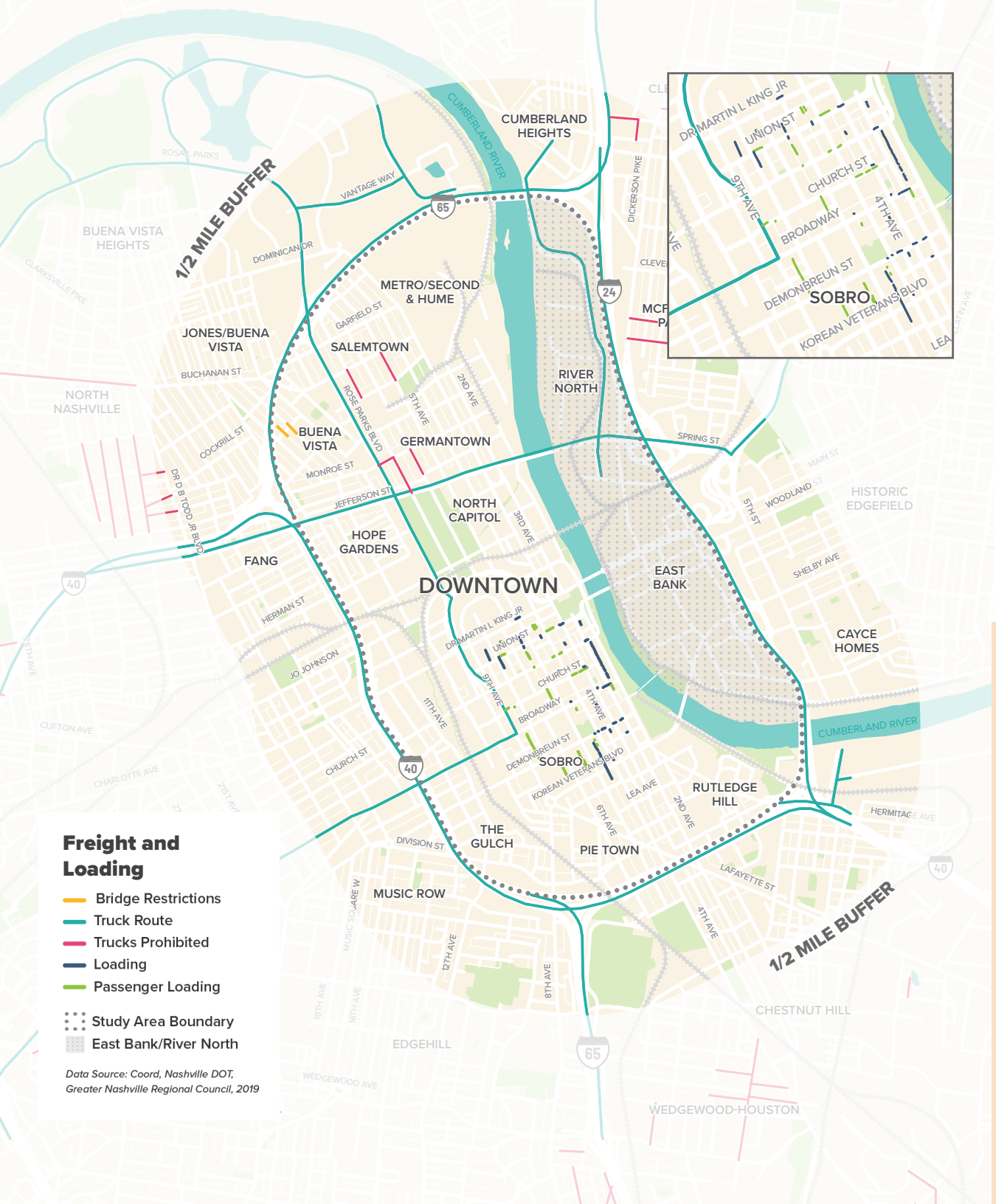
And unlike a more traditional residential neighborhood or business district, the loading and unloading needs of Downtown span most of the day, beginning with goods deliveries in the early morning and ending with late-night equipment loading. The freight network into Downtown Nashville is critical, but the ways smaller delivery vehicles circulate and use the curb has the greatest impact on traffic congestion and our local businesses in Downtown Nashville.



COORD CURB USE PILOT PROJECT

The Coord app and Smart Zones pilot provided dedicated loading zones between 1st Avenue and 4th Avenue and Broadway and Union Street. The pilot allowed delivery drivers to see the availability of spaces in real time and book a delivery window in advance. The data gathered through the pilot has helped NDOT better understand how Downtown curbspace is used.

Source: News Channel 5 Nashville



FREIGHT MOVEMENT DOWNTOWN

- Truck routes in Downtown Nashville are limited and include portions of Broadway, 9th Avenue, Jefferson Street, Spring Street, and Interstates 40, 65, and 24.
- Trucks over 5,000 lbs are prohibited on routes in the Buena Vista, Salemtown, Germantown, and North Nashville neighborhoods.
- Five bridges in Downtown Nashville have truck restrictions.

Planning Context

These plans are guiding NDOT's and TDOT's actions to improve freight and goods delivery in Downtown Nashville:

- **Metro Nashville Transportation Plan (2020)**
- **Middle Tennessee Regional Freight and Goods Movement Study (2016)**
- **Tennessee Statewide Multimodal Freight Plan (2022)**
- **Vision Zero Action Plan (2021)**
- **Vision Zero Implementation Plan (2022)**

Parking and Curb Management in Downtown Nashville

The ways people and goods move in cities, including in Downtown Nashville, have changed, resulting in increased competition for limited curb space. Traditionally, curb space has been used for on-street parking and vehicle travel lanes. However, cities are increasingly choosing to prioritize space for walking, biking, and transit over single-occupancy vehicles.

At the same time, the growth of ridesharing and the increase in freight, e-commerce, and on-demand deliveries have led to an unprecedented demand for curb space. While having access to the curb is important for loading and unloading, vehicle storage (including medium- or long-term parking) may be better supported by off-street spaces.

Parking and curb management are key pieces of Downtown Nashville's mobility system. Our curb space is a public amenity that must move people, goods, and services and support other public space uses. The activity from land uses along a street—whether retail, restaurants, transit stops, office space, or green space—places demands on the curb that require effective curb management strategies.

PARKING AND LOADING DOWNTOWN

- Downtown has approximately **45,000 off-street parking spaces** in 138 surface lots and 50 garages.
- The average **monthly cost of Downtown parking was $175** in 2018. Rates have been increasing an average of 5% per year.
- There are **2,000 on-street parking meters in Downtown Nashville**, which are concentrated between James Robertson Parkway and Peabody Street.
- **Loading zones** are concentrated between Union Street and Korean Veterans Boulevard.

MANAGING THE CURB

- **NDOT** manages on-street parking and the curb in Downtown Nashville.
- Management includes **setting regulations for the types of uses allowed** (such as loading, short-term parking, or no standing), time limits and restrictions (including length of use and no-parking hours), and prices.
- NDOT is currently negotiating with a vendor, LAZ Parking, who will **install new types of parking management infrastructure** and take responsibility for curb and on-street parking management.
- LAZ Parking's proposed contract would replace Nashville's current coin-based, on-street parking meters with **digital parking meters**, **smartphone payment apps**, and **credit card payment** options.

TRANSPORTATION DEMAND MANAGEMENT (TDM)

The availability and cost of parking has a dramatic impact on our transportation choices and behaviors. WalknBike recommended establishing a more robust TDM program, building on Nashville Connector, to reduce single-occupancy vehicle trips. The Greater Nashville Regional Council and Metro Nashville have implemented that recommendation, launching Nashville Connector in 2018. The program is funded through Congestion Mitigation and Air Quality (CMAQ) funds from TDOT.

Nashville Connector helps reduce mobile source emissions and improve air quality through strategic partnerships and employer services and education, as well as a complete trips campaign. The program encourages Nashvillians, Davidson County residents, and people throughout the Middle Tennessee region to understand and use a range of existing travel options and reduce their drive-alone trips.

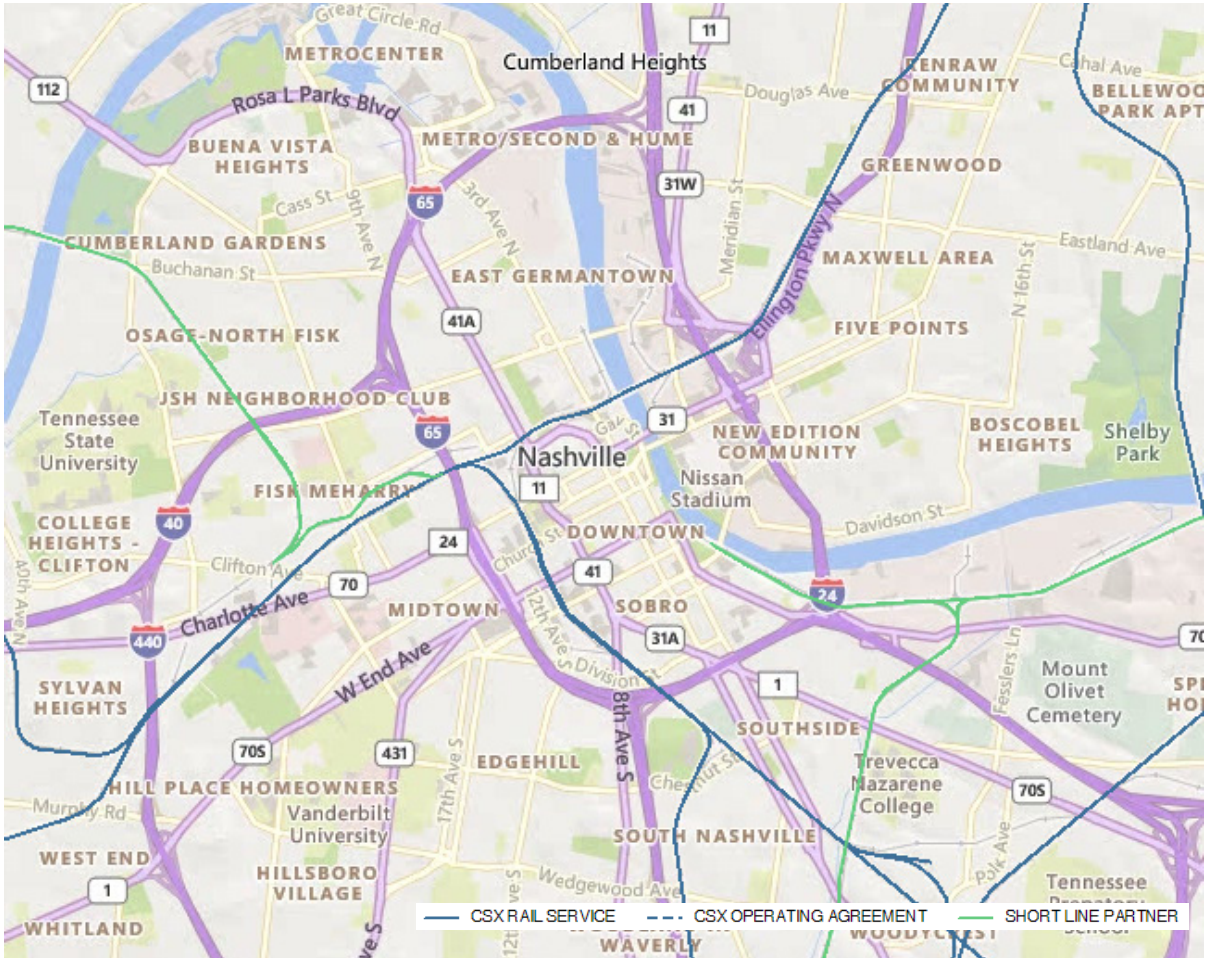
Connecting Modes

Nashville has always been a place of connections, and it remains an important hub for rail and water transportation. Although railroads and rivers can create connectivity barriers, they also shape networks that are especially important for the movement of goods and freight into and out of Nashville and Middle Tennessee.

Rail Transportation

Rail transportation has a long history in Nashville, beginning in 1859, when the Louisville and Nashville Railroad expanded to Nashville. Today, two private companies operate freight rail in Nashville, and WeGo operates passenger rail.

The R.J. Corman Railroad Group operates two short-line freight railroads that end in Nashville: the Nashville and Eastern Line and the Nashville and Western Line. The Nashville and Eastern Line has 145 miles of track and serves destinations between Nashville and Lebanon. The Nashville and Western Line has 20 miles of track from Nashville to Ashland City. It terminates at 12th Avenue North, just outside of Downtown. CSX also operates in Downtown Nashville, with a major rail yard, an intermodal terminal, a TRANSFLO terminal, a distribution center, and its division headquarters in Nashville.



Source: CSX Corporation

Source: Jim Wrinn

WeGo operates the WeGo Star, a commuter rail service that runs from Lebanon to Riverfront Station in Downtown, where passengers can transfer to WeGo buses. The Star runs during weekday peak periods only and for special events, such as Titans games. It is currently the only passenger rail system in Nashville, although Amtrak has proposed a Nashville-Chattanooga-Atlanta route.

The rail lines that connect into and through Downtown Nashville are important for the movement of both people and goods. However, the rail tracks present challenges for other modes of transportation. People heading south out of Downtown often find themselves waiting at an at-grade crossing for a train to pass. These delays are particularly impactful to WeGo buses and require additional time in the schedule for some routes.

Source: WeGo Public Transit

Water and River Transportation

The Cumberland River has played an important role in shaping Downtown's transportation systems, both as a connector for freight and goods and as a barrier between the core of Downtown Nashville and the East Bank. In 1832, Congress allocated funding to improve navigability of the Cumberland River, enabling year-round barge traffic along the Nashville riverfront. Today, barges travel up and down the Cumberland River, moving freight across the region via 22 commercial river terminals.

Water transportation in Nashville is limited to goods movement, as there are currently no passenger ferries or water taxis that connect Downtown and the East Bank. However, as Downtown Nashville has grown, demand for recreational activities like kayak tours, boat cruises, and paddleboarding has increased. River-centered events—such as the annual Dragon Boat Race, the Music City Head Race, and Music City Triathlon—draw hundreds of people each year.

Today, there are five bridges that cross the Cumberland River into Downtown Nashville, including the Seigenthaler Pedestrian Bridge. The East Bank Vision Plan includes a new River North Bike-Ped Bridge from the Oracle campus to Downtown, which will be funded by Oracle. The plan also contemplates a new multimodal river crossing south of Downtown further in the future.

Source: Randy Wetmore

Source: The Tennessean


ROOFTOP PATIO
THE STAGE
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THE SECOND FIDDLE
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Second Fiddle
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Robert's
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BAR-B-QUE


Tennessee State Library & Archives


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CONNECT DOWNTOWN
What is the study area?
INPUT!
MAISIS TRANSIT

3 Key Findings and Opportunities

Downtown Nashville's transportation network is robust, and the demands on our mobility systems are increasing daily. To meet the needs of a growing and vibrant city, Downtown's streets and sidewalks must do double and triple duty to move as many people as possible in limited space.

Our initial research and analysis for Connect Downtown points to opportunities we will explore throughout the planning process. However, this is only our first step. We need to continue to hear from you to grow our understanding about what is working well and what can be improved. We're curious to explore what's most important to you and work together to translate those priorities into projects, programs, and policies that support the needs of all Nashvillians.

This chapter summarizes information you shared with us through our first public survey and early pop-up events. It also outlines our key findings and introduces some ideas we'll use to shape recommendations for Connect Downtown.

CONNECT DOWNTOWN SURVEY

The first Connect Downtown public survey gathered Nashvillians' thoughts and opinions regarding Downtown transportation and mobility. The survey was open from April 22 to June 30, 2022, and 2,128 people responded. The Connect Downtown engagement team distributed the survey through social media, the networks of the Stakeholder Task Force and Technical Advisory Committee members, community events and festivals, the project website, and flyers posted throughout Downtown. More information about who responded to the survey and the full results are available at: **ConnectDowntown.Nashville.gov**

Public Outreach Findings

Our first Connect Downtown public survey gathered input about Downtown transportation from more than 2,000 Nashvillians. You told us about your mobility challenges, priorities, and opinions, helping to focus our efforts on the greatest needs you see.

Transportation Challenges

We heard a lot about the challenges of driving in and around Downtown, as well as the needs of people walking, rolling, and biking. Survey respondents marked 4,700 challenging spots on our interactive map; the numbers in the map to the right show how many markers are in each cluster, and the colors reflect the density of markers (from pink at the high end to blue at the low end).

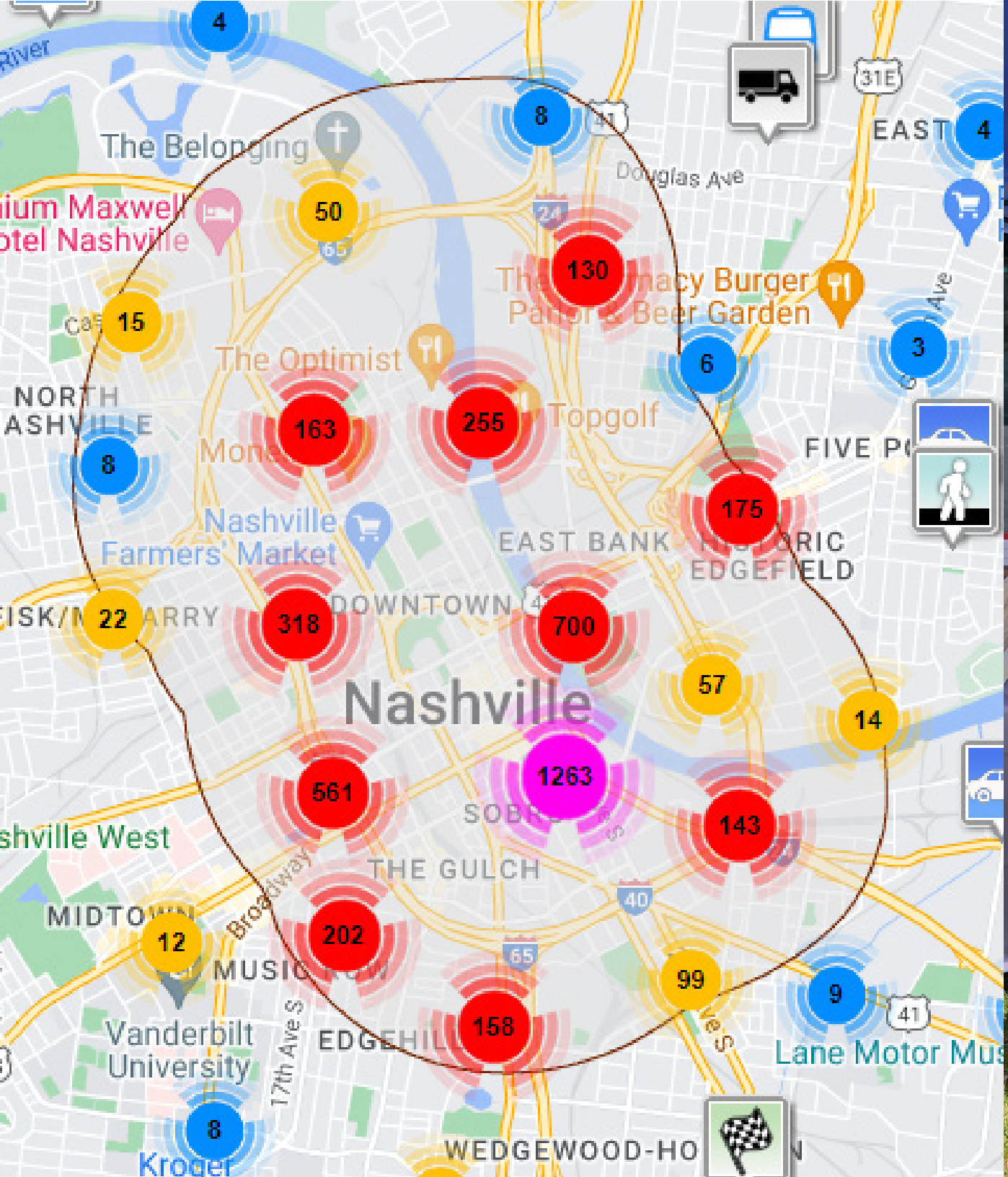
Drivers identified traffic congestion as their biggest challenge, followed by dealing with transpotainment vehicles, delivery trucks, and passenger loading and unloading.

People **delivering goods and picking up and dropping off passengers** face similar challenges, including finding a loading and unloading space and moving around other vehicles that block travel lanes or parking areas.

People who **walk or use a mobility device** shared concerns about the awareness of people driving. They also identified a lack of separation from traffic and missing sidewalks as big challenges for walking and rolling Downtown.

Bicyclists noted that a lack of infrastructure is their biggest challenge Downtown, calling out streets without bike lanes and bike lanes that are not separated from traffic as their top concerns.

People who **ride the bus** were less concerned with infrastructure and more focused on the challenges with long waits for the bus and slow trips once they're on board. Confusion about routes and schedules is also a challenge for bus riders.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Transportation Opinions

We asked you to tell us how much you agree or disagree with a series of statements about transportation in Downtown Nashville. The statements reflected what we found in the initial data analysis, and your feedback helped us shape the focus areas described in the next section.

Here's what we learned:

Survey respondents generally agreed that it is **easier to get into and out of Downtown** than to move around Downtown.

The majority of respondents **would rather not drive** if they had another option for getting around Downtown.

Almost 2/3 of survey respondents said they **strongly disagree with this statement: "I feel safe biking Downtown."**

Nearly half of the respondents noted an opportunity to **improve the reliability and frequency of bus service** in Downtown.

Most respondents said they would go Downtown more often **if traffic wasn't so bad**.

People feel that **Downtown lacks space for delivery vehicles**, with the majority of respondents noting this as a commonly held opinion.

People feel that there are **adequate sidewalks** Downtown, but they noted an opportunity to **better time pedestrian crossing signals**.

The majority of survey respondents expressed a desire for **more regulation of electric scooters** Downtown.

Transportation Priorities

We asked you to rank eight priorities for improving transportation and mobility in Downtown Nashville. Safety topped the charts for our survey respondents!

The average ranking of each priority was:

1. Safety
2. Time
3. Connectivity
4. Convenience
5. Reliability
6. Accessibility
7. Affordability
8. Comfort

Key Areas of Focus

Based on our analysis and exploration of Downtown Nashville's transportation systems, the information you've shared, and other work done to date, we see eight areas of focus for Connect Downtown:

1. **Establish a Modal Hierarchy**
2. **Expand the Active Mobility Networks**
3. **Prioritize Transit**
4. **Integrate Micromobility**
5. **Manage the Curb**
6. **Incentivize Mode Shift**
7. **Coordinate Construction Closures**
8. **Enhance Visitor and Event Management**

Each of these is described in more detail on the pages that follow, including our understanding of the challenge at hand and the specific opportunities we'll be exploring. These areas of focus will guide our development of projects, programs, and policies that will help to advance the vision for Connect Downtown.

1 Establish a Modal Hierarchy

In 2016 Metro Government reaffirmed and expanded its complete streets strategy to extend Nashville's commitment to a safe, reliable, efficient, and connected transportation system that balances the needs of all modes. The distribution, concentration, and mix of land uses in Downtown Nashville sets a foundation for prioritizing space for transit, walking, and biking within our limited rights-of-way.

CHALLENGE

While Nashville has had some success advancing complete streets improvements and increasing multimodal safety and access in Downtown, the competing needs of residents, business owners, and visitors have made implementation challenging. Downtown's rights-of-way are quite narrow, especially compared to other sunbelt cities. The interstate loop, the Cumberland River, railroad crossings, and bridges all put pressure on our transportation networks. Reallocating street space to provide dedicated facilities for people walking, rolling, biking, and taking the bus is critical to create a more balanced, affordable, and reliable transportation system in Downtown Nashville.

OPPORTUNITY

To create a Downtown transportation system that works for everyone, individual streets within the network must prioritize different modes. Decisions about which mode should have priority on which street depend on the context and purpose of adjacent land uses and the role of the street in the broader network. Conventionally, right-of-way has been allocated from the inside out, starting with the needs of motor vehicles, then dividing the remaining space among all other modes. A modal hierarchy for Downtown can take a more holistic approach to design that balances the needs of all uses and activities and allocates space accordingly.

BEST PRACTICE: MINNEAPOLIS

Like many cities, Minneapolis' 20th-century transportation investments leaned toward providing more space for vehicles than for other modes. To change the public conversation about roadway space, the City established a modal priority framework that prioritizes people as they walk, roll, bicycle, and take transit over trips made by driving, delivery activities, and parking. The City's modal hierarchy also includes special accommodations for emergency service providers in street design and an understanding of the movement of commercial goods and services.

Source: City of Minneapolis

2 Expand the Active Mobility Networks

Walking, rolling, and biking are the most sustainable, accessible, and affordable transportation options available today and play an important role in creating a healthy and welcoming Downtown. Downtown Nashville's scale and land use patterns—with increasing numbers of residents—make walking, rolling, and biking real options for many trips.

CHALLENGE

Despite past investments and Nashville's commitment to safety, traffic crashes Downtown continue to increase. People walking and biking—particularly younger and older people—are our most vulnerable travelers. Downtown Nashville's active transportation network has gaps that must be filled and infrastructure that requires an upgrade, whether that is adding curb ramps and widening sidewalks or moving from a painted bike lane to an all-ages-and-abilities cycle track or greenway. In many cases, this will require using our rights-of-way differently and de-prioritizing vehicle travel to make our streets safer for all.

OPPORTUNITY

The 2022 WalknBike Plan provides a guide to make Nashville more walkable and bikeable. The plan highlights expedited delivery of projects that are both needed and constructible over the next three years. Importantly, the plan also identifies sidewalks and bikeways that could be implemented through the development review process. By quickly advancing a safe and connected active transportation network that supports people of all ages and abilities, NDOT can move toward its Vision Zero goal of eliminating deaths and serious injuries due to traffic crashes. There is also an opportunity to review and revise the Recommended Bikeway Network as part of Connect Downtown.

BEST PRACTICE: ATLANTA'S LITE INDIVIDUAL TRANSPORTATION (LIT) LANES

Due to an increase in collisions involving people riding scooters, Atlanta committed to connecting and protecting lanes for people on bikes and scooters. The City investigated different ways of identifying and allocating space for scooters and ultimately settled on a simple rebranding of bicycle lanes. Now called Lite Individual Transportation (LIT) lanes, Atlanta's bike lanes are also open to scooters. As new LIT lanes are designed and built, Atlanta is focused on creating safe corridors that work for multiple modes of sustainable transportation.

Source: Midtown Alliance

3 Prioritize Transit

Buses and trains have the ability to move more people more quickly and in less space than any other motorized form of transportation. To advance Connect Downtown's goals, WeGo and NDOT must develop a coordinated approach to quickly implement Transit Priority Corridors.

CHALLENGE

WeGo operates a network of services that are heavily focused on Downtown Nashville—24 of its 28 local bus routes operate to, from, through, or within Downtown. Due to traffic congestion and a lack of transit-priority infrastructure, transit service in downtown Nashville is currently very slow and unreliable. This impacts ridership and makes it difficult for people to use transit for many trips.

OPPORTUNITY

Transit Priority Corridors emphasize improved service, reliability, and passenger comfort. Combining a variety of strategies—including infrastructure such as bus lanes and high-quality bus stops, as well as service improvements like more frequent service—Transit Priority Corridors make bus service faster, more reliable, and more convenient. There are at least three opportunities for Transit Priority Corridors in Downtown Nashville:

- 3rd Avenue and 4th Avenue between WeGo Central and a new SoBro transit center
- 8th Avenue/Rosa Parks Boulevard between WeGo Central and a new SoBro transit center
- A north-south option along East Bank Boulevard (new!) between a new East Bank transit center and WeGo Central

BEST PRACTICE: PROVIDENCE'S DOWNTOWN TRANSIT CONNECTOR

The Rhode Island Public Transit Authority recently opened its "Downtown Transit Connector" Transit Priority Corridor. It runs 1.4 miles between downtown Providence and Rhode Island Hospital and includes curbside bus lanes, transit signal priority, high quality stations, pedestrian improvements, and a unique look and branding. Providence implemented the Downtown Transit Connector in an area where space is constrained and there are competing demands on the right-of-way.

Source: RIPTA

4 Integrate Micromobility

As cities encourage more sustainable modes of transportation, shared and micromobility options are becoming increasingly important. These services provide people with options other than driving or taking public transit for short trips (typically less than two miles), reducing reliance on personal cars or ride-hailing vehicles that contribute to congestion. Short shared micromobility trips can also complement transit services, enhancing first/last mile connections and expanding the number of people who can easily reach a transit stop or station.

CHALLENGE

Nashville is currently home to both shared mobility and micromobility services. The Nashville BCycle bike share program has 34 stations and more than 300 bikes around Metro Nashville. Nashville is also home to Bird, Lime, and Spin scooters, and people are taking approximately 145,000 scooter trips per month. Most complaints NDOT staff receive about scooters are related to parking—Nashville's scooters are dockless, and riders often park them in ways that block or clutter sidewalks.

OPPORTUNITY

There is more that could be done to improve the deployment and expand the use of shared mobility in Downtown. Opportunities include improved permitting regulations, expanded micromobility parking infrastructure and geofencing technology, exploration of an equity-focused pilot program, and stronger partnerships with providers to better connect micromobility services to the WeGo system and to neighborhoods outside of Downtown. Nashville also has the opportunity to expand protected bikeways and shared-use paths for bikes and scooters.

BEST PRACTICE: AUSTIN'S SHARED MOBILITY SERVICES PROGRAM

The City of Austin was an early adopter of shared mobility, aiming to harness its potential to address congestion and move people more efficiently through a busy city. Today, Austin has an extensive Shared Mobility Services program, with four micromobility providers and two shared mobility providers. These providers partner with the City to respond to major events and to offer alternative transportation options for tourists. For example, during the 2022 South by Southwest festival, providers deployed over 11,000 scooters and bikes and City officials encouraged both residents and tourists to use micromobility during the festival.

Source: Nick Statt / The Verge

5 Manage the Curb

The curb is not just a delineator between the sidewalk and the roadway. It is also an important interface between vehicle traffic, pedestrian space on the sidewalk, and the businesses and buildings that line a street. How a curb is regulated, how a curb lane is used, and what gets placed adjacent to a curb all impact how an area functions. The activity from land uses along a street—whether retail, restaurants, transit stops, office space, or green space—places demands on the curb that require effective curb management strategies.

CHALLENGE

Downtown Nashville is an entertainment and nightlife hub, as well as a thriving and growing business and residential center. The intense amount of activity puts unique around-the-clock demands on the curb. Everyone needs the curb: from pick-up and drop-off space, to short- and longer-term parking, to WeGo stops and BCycle or scooter parking, to business deliveries, to space for outdoor dining, and to safe spaces to walk, bike, and roll, curb space is at the heart of Downtown activity.

OPPORTUNITY

NDOT is already taking a more active role in managing parking, is carefully considering locations for valet and loading zones, and has piloted smart zones on select blocks. But there is much more to do. To balance the many demands on the curb—and provide time and space for everyone—Nashville must implement active curb management strategies.

Curbside management provides an opportunity to generate revenue through improved parking and loading policies, creates a more efficient right-of-way, and prioritizes non-driving modes. For a busy city center like Downtown Nashville, prioritizing non-driving modes is important for residents, workers, and visitors alike. Curbside management can encourage mode shift, support sustainability, increase safety, and advance a more equitable transportation system.

BEST PRACTICE: SAN FRANCISCO'S CURB MANAGEMENT STRATEGY

The San Francisco Municipal Transportation Agency (SFMTA) manages the city's transportation network and much of its curb space. SFMTA's Curb Management Strategy is a roadmap for how the agency will allocate and manage curb space to both respond to current demands and anticipate future curb access needs. The roadmap defines five curb functions—access for people, access for goods, public space and service, storage for vehicles, and movement—and prioritizes those functions based on the land uses surrounding the curb. Based on those priorities, SFMTA recommends tools, policies, legislative changes, design standards, and process improvements to improve curb access and use throughout the city.

Source: SFMTA

6 Incentivize Mode Shift

Nashville's growth has led to considerable, and unsustainable, traffic congestion in Downtown Nashville. Managing this demand on our streets will require a broad paradigm shift, with a focused and sustained effort to meet new travel demand through modes other than driving alone. This includes shifting vehicle travel to more space-efficient modes such as transit, bicycling, and walking; shifting vehicle trips to non-peak hours of the day; or eliminating some vehicle trips all together.

CHALLENGE

Today, 80% of Nashville-area commuters drive alone. Single-occupancy vehicles use more roadway space per person than transit, walking, and biking; contribute more significantly to traffic congestion; and often emit more greenhouse gas emissions than other modes of transportation.

After a significant decline in 2020, congestion in Downtown Nashville is again approaching pre-pandemic levels. The PM peak continues to be more concentrated and more congested than the AM peak, which may be due, in part, to the number of evening events that bring people Downtown as the typical workday ends. To meet Connect Downtown's goals, Nashville must take action to incentivize people to use non-drive-alone modes for more trips.

OPPORTUNITY

The Nashville Connector program implements transportation demand management (TDM) strategies to reduce the number of trips made by people driving alone. TDM strategies have traditionally focused on tackling traffic congestion, particularly trying to reduce driving at peak commuting hours. However, TDM is most effective when looked at holistically. For Downtown Nashville, TDM strategies should:

- Support new development
- Manage current congestion
- Reduce transportation costs
- Improve public health

BEST PRACTICE: SANTA MONICA'S TDM PROGRAM

Santa Monica's Transportation Demand Management (TDM) Program proactively manages congestion, reduces automobile dependence, and enhances transportation choices for all types of trips. Developments larger than 7,500 sq. ft. must incorporate physical and programmatic TDM elements, including an on-site TDM coordinator, commuter benefits, transit information screens, and financial incentives for non-driving trips. Employers with more than 50 employees must have a TDM plan. Developers and employers pay TDM program fees for an initial and annual plan review, and these fees support TDM staff positions.

Source: City of Santa Monica

7 Coordinate Construction Closures

Nashville is one of the fastest growing big cities in America, and there are 25 construction projects currently underway in Downtown. These construction activities, while permitted, disrupt mobility by closing sidewalks, travel lanes, and bus stops. NDOT currently reviews permit applications one-by-one, considering individual closures rather than impacts at a Downtown or district level.

CHALLENGE

While growth and new construction bring housing and businesses, improved infrastructure, and amenities, construction projects can have a negative impact on the right-of-way, including forcing detours and creating access barriers for people traveling by all modes of transportation. Construction affects people and organizations differently, and areas with significant numbers of projects in close proximity can have:

- More conflicts between people using the right-of-way and construction activities
- More traffic in certain areas due to closures and detours
- Less flexibility in scheduling for contractors
- Less patience for residents, business owners, and travelers

OPPORTUNITY

Downtown Nashville could benefit from a comprehensive construction management strategy, with requirements for enhanced coordination, high-quality multimodal access, and increased fees for use of the right-of-way. Coordinated management of construction impacts—including detours and temporary facilities to support people driving, taking the bus, and walking and rolling—can help to create a safer and more accessible downtown.

BEST PRACTICE: ACCESS SEATTLE CONSTRUCTION HUBS

Seattle's Department of Transportation (SDOT) developed the Access Seattle program to address pedestrian mobility around construction work zones. Through the program, SDOT designated areas of dense construction activity as "Construction Hubs," and established special requirements and resources to ensure mobility and access through these zones. Contractors planning to work in Construction Hubs must discuss their desired use of the right-of-way with SDOT construction coordinators and ensure that at least one sidewalk per block in a Construction Hub remains open.

Source: SDOT

8 Enhance Visitor and Event Management

Nashville is a hub of music, sports, entertainment, and culture, with over 16 million visitors in 2019, including almost 5 million at Downtown events. Recently, the World Travel and Tourism Council named Nashville one of two "safe travels" destinations in the U.S., and in June 2022, National Geographic called Nashville the best destination to travel. This publicity is likely to attract even more visitors to Music City.

CHALLENGE

While Nashville's tourist appeal and cultural attractions generate tremendous economic benefit for the city and the region, the regular and special events that attract large numbers of visitors routinely disrupt Downtown Nashville's transportation systems. Transit routes in Nashville must operate on detours almost as often as they operate on their regular streets, and people walking, biking, and driving must continuously adapt to localized street and sidewalk closures, as well as large volumes of people in concentrated areas.

OPPORTUNITY

To manage special events and large numbers of visitors, cities are increasingly developing comprehensive visitor management strategies focused on maintaining traffic flows, orienting pedestrians, and providing reliable transit service. Both Nashville residents and visitors should be able to reach their destinations efficiently, and detours must be clear and intuitive, supporting easy navigation. Special events can be less disruptive when managed holistically with a focus on providing transportation options and encouraging people to travel via transit, walking, or biking.

BEST PRACTICE: LOS ANGELES' TOURISM MASTER PLAN

Los Angeles' 2020 Tourism Master Plan strives to ensure that the tourism industry delivers strong benefits to the community. The Master Plan includes a goal to reframe LA as a destination that visitors can explore without a car. Associated mobility management strategies focus on education, communication, and innovative programming to shift visitors away from the region's already-burdened freeway infrastructure.

Source: City of Los Angeles


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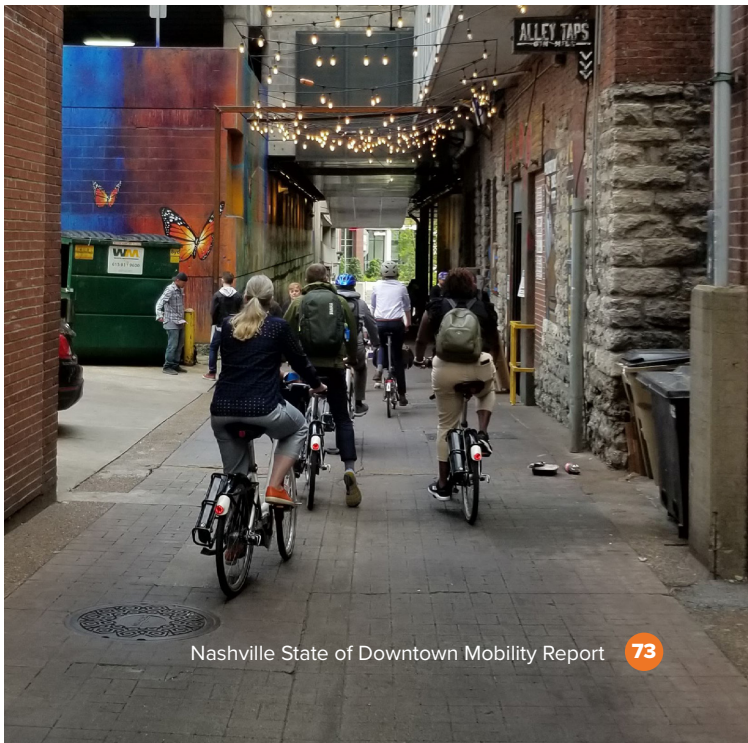
Get your QuickTicket. Get half off.


ALLEY TAPS


CAUTION
EXTREME
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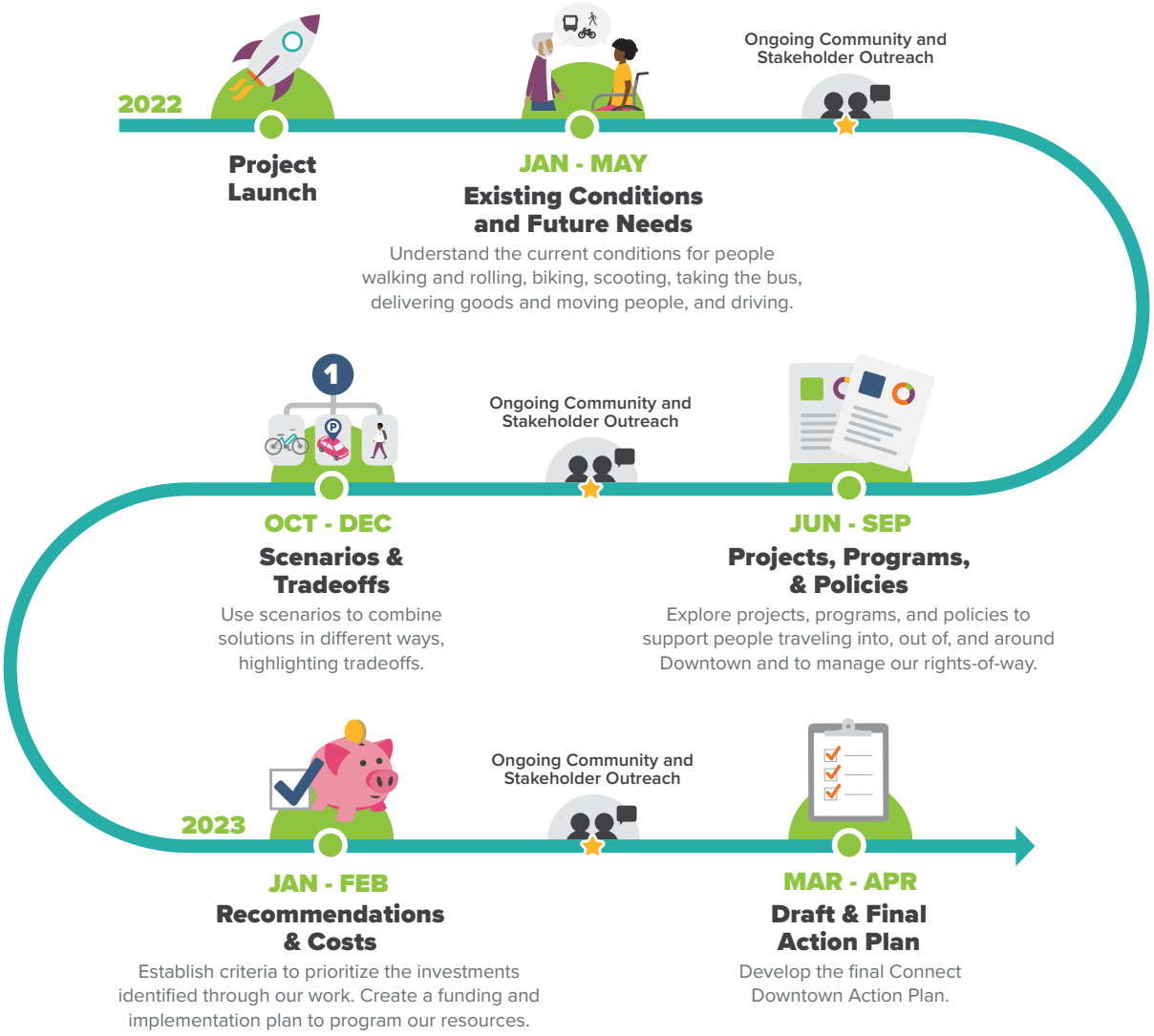
4 Next Steps

The analysis, survey results, and focus areas included in the State of Downtown Mobility are just the beginning.

This document reflects what we've learned so far and what you've told us is important. To plan and fund the transportation system Downtown Nashville needs—both today and in the years ahead—requires commitment and action. We'll use your priorities and the Connect Downtown goals to identify projects and programs, and we'll work together to determine what needs to be done first.

Over the coming months, we'll invite you to share your ideas, to talk with our team, and to help shape the Connect Downtown recommendations. We will partner with Nashville residents and Downtown stakeholders to take our next steps.



CHECK OUT THE PROJECT WEBSITE OR FOLLOW US ON SOCIAL MEDIA TO STAY UP TO DATE ON OUR PROGRESS AND TO SHARE YOUR FEEDBACK.

ConnectDowntown.Nashville.gov


CONNECT DOWNTOWN


¡Aprenda más y responda a nuestra encuesta!
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Appendix B

Engagement Summary

April 2024

ENGAGING THE COMMUNITY

This appendix provides an overview of the extensive community and stakeholder engagement that shaped the Connect Downtown Action Plan. From community meetings to online surveys to pop-up events to curbside meetings with delivery drivers, the project team has listened to and experienced the diverse perspectives of people who live and work in, visit, and travel to and through Downtown Nashville.

Since early 2022, the project team has engaged community members and stakeholders through four discrete rounds of engagement, as well as via ongoing meetings and regular updates. All Nashvillians—including Downtown residents, business owners, visitors, and employees—had opportunities to review project information and provide input through the project website, online surveys, interactive open houses, social media, virtual and in-person focus groups, one-on-one interviews, site visits, and traditional media sources.

The project team gathered public and stakeholder input on Downtown mobility challenges and opportunities, project and funding priorities, proposed recommendations, and the draft action plan. This appendix summarizes each major phase of engagement and key takeaways that informed the final plan. A full list of Connect Downtown stakeholder and organizational meetings is available in Attachment 1.

Phase One (April to July 2022)

The initial round of engagement launched shortly after the project's first Stakeholder Task Force and Technical Advisory Committee meeting in March 2022. The purpose of this phase of engagement was to introduce the project and collect people's thoughts and opinions about transportation and mobility in Downtown Nashville. The project team published a website, developed a project overview and information cards, shared social media content, conducted stakeholder interviews and focus groups, participated in local festivals and community events, created person-on-the-street videos, and launched an online survey and mapping activity.

More than 2,100 people responded to the online survey, sharing a range of transportation challenges, priorities, and opinions about Downtown Nashville. Many respondents noted that they currently drive to Downtown destinations but would prefer to travel by other modes in the future. A majority of people identified improving transportation safety as their top priority for Connect Downtown. The input received in the first phase of engagement guided the project's vision statement, goals, and desired outcomes.

Figure 1 | Community Engagement at Earth Day Festival (April 2022)

Figure 2 | Downtown Locations with Big Transportation Challenges (Survey #1)

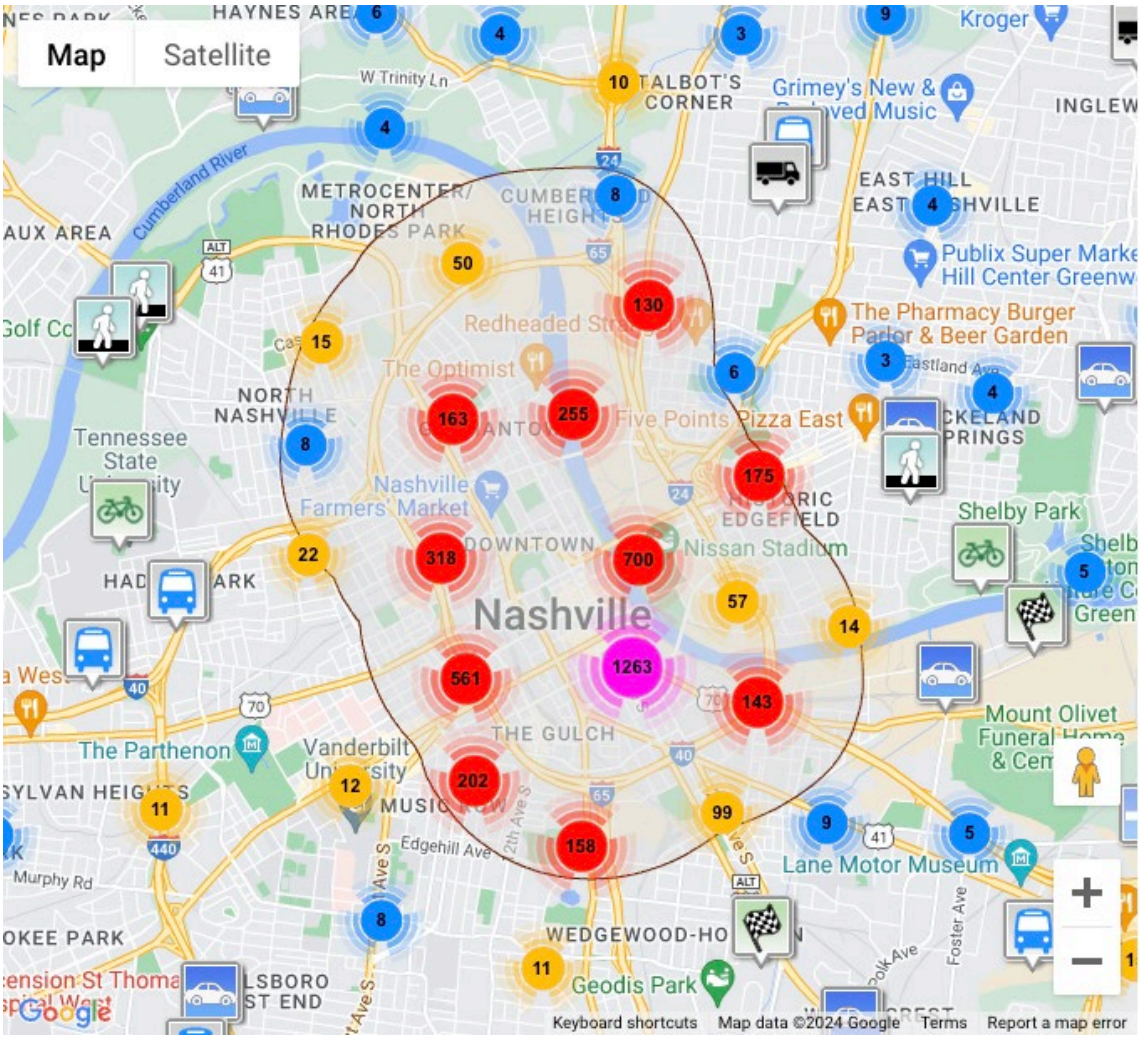
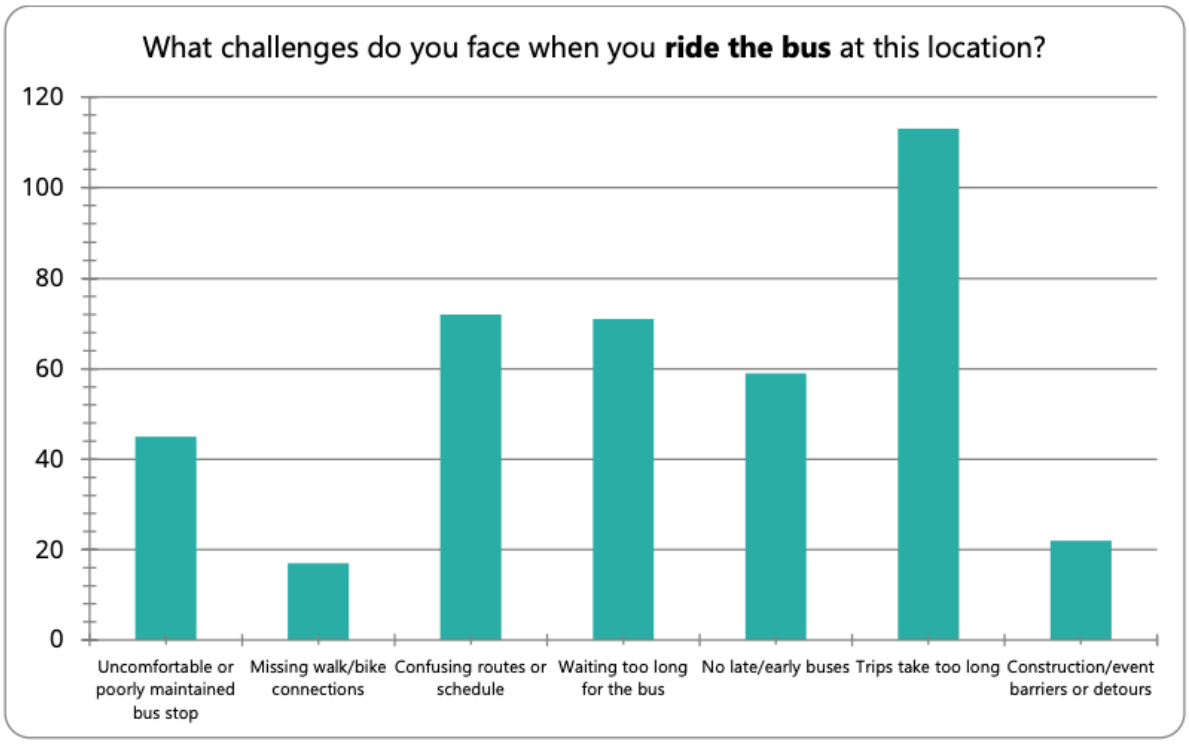


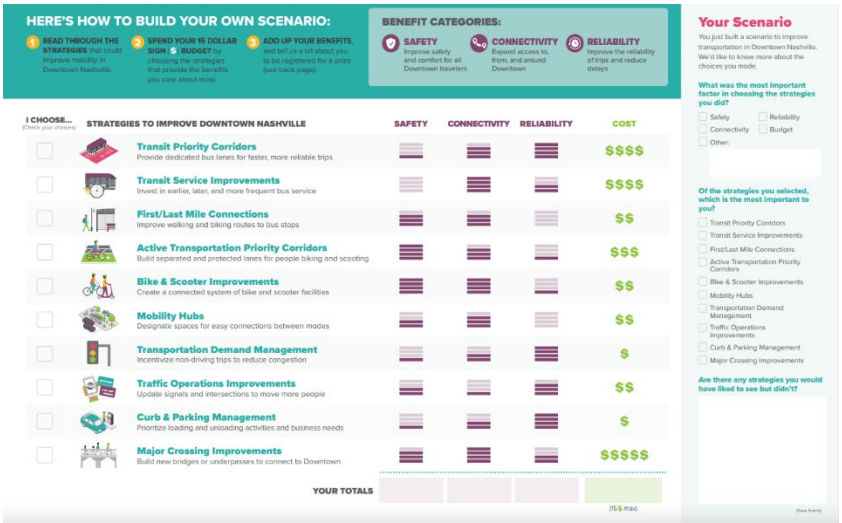
Figure 3 | Online Survey Respondents' Transit Challenges (Survey #1)



Phase Two (October 2022 to January 2023)

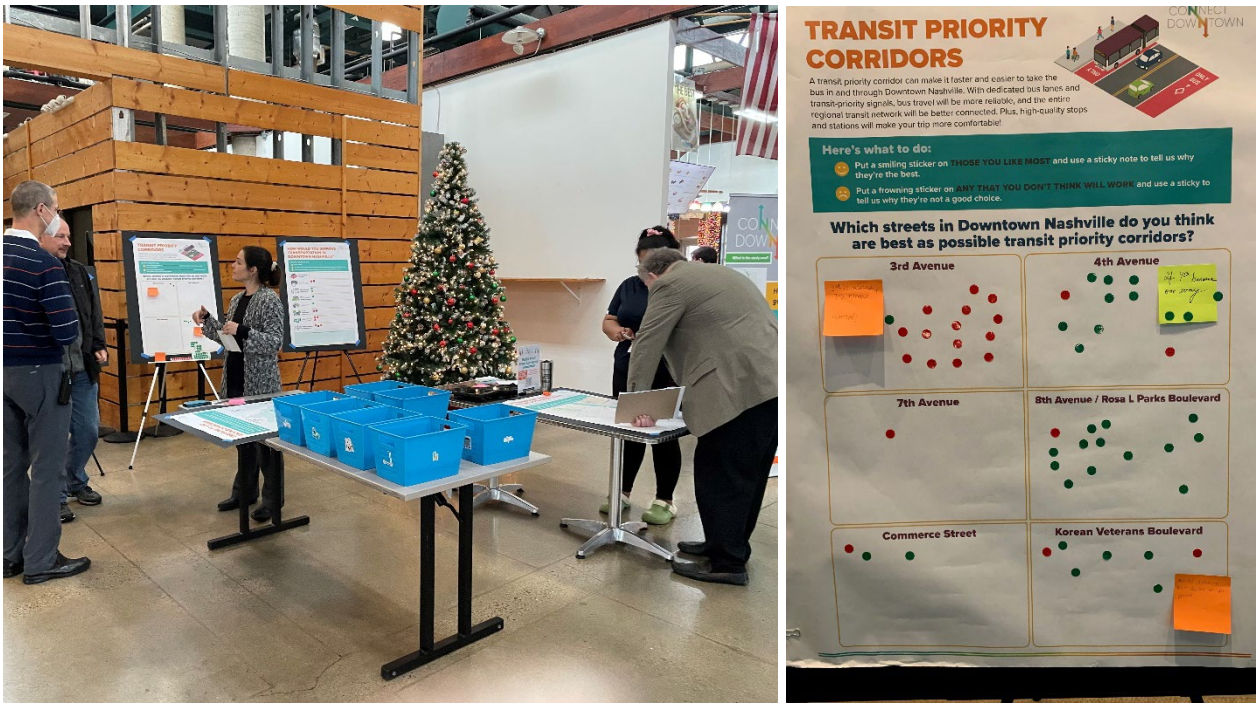
The second round of engagement focused on identifying priorities and making tradeoffs. Activities in this phase presented key areas of focus for Connect Downtown and introduced possible solutions and scenarios to improve mobility. The project team offered multiple opportunities for feedback, including listening sessions, an online "Build Your Own Scenario" survey, community events and festivals, small group meetings, and social media content.

Figure 4 | NDOT's Instagram Promoted the "Build Your Own Scenario" Survey and Listening Sessions (November 2022)



The "Build Your Own Scenario" survey gave respondents a budget to spend on the transportation improvements they felt were most important for better Downtown mobility. Each improvement was assigned a safety, connectivity, and reliability rating, as well as an estimated cost. The survey required respondents to make tradeoffs, identifying priorities that maximized the benefits on a limited budget. The project team used similar activities at in-person listening sessions to collect feedback. More than 1,200 responded to the online survey, and hundreds more provided input during in-person events.

Figure 5 | Nashville Farmers' Market Listening Session and Public Feedback (December 2022)

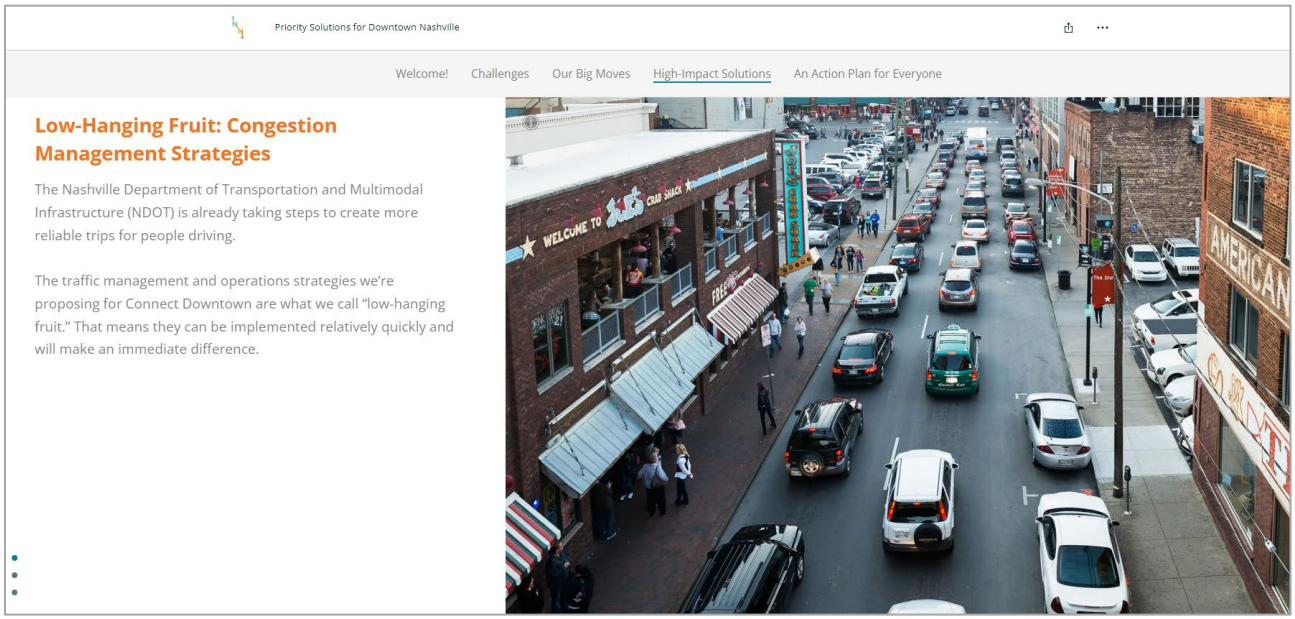


The project team used input from this round of engagement to develop priority solutions and scenarios for Downtown, which were evaluated to ensure initial recommendations would meet the project's goals and community's needs.

Phase Three (March to May 2023)

The third round of engagement focused on assessing whether the priority solutions met the needs of the community and would positively impact Downtown mobility. The purpose was to present proposed strategies, gather general reactions, identify any dealbreakers, and get a feel for which improvements would have the biggest impact. The project team used a similar mix of engagement methods, including an online StoryMap, open houses, project website updates and promotion, social media content, newsletters, and community events. This phase of outreach reached an estimated 50,000 people.

Figure 6 | Priority Solutions StoryMap (March 2023)



More than 1,700 people provided feedback through the StoryMap, which walked viewers through the project's background, the problems to solve, potential priority solutions, and an overview of scenarios and outcomes. The project team also hosted public open houses and held focused meetings with the Nashville Chamber of Commerce, the Urban League of Middle Tennessee, Downtown residents, the Urban Land Institute, the Greater Nashville Hospitality Association, the Broadway Merchants Association, and more.

Figure 7 | Focused Meeting with Downtown Residents at 505 Nashville (April 2023)

Key themes from this phase of outreach were support for traffic management strategies, interest in benefits and impacts to the greater Middle Tennessee region, and a strong focus

on pedestrian safety. The input received during this round of engagement helped the project team refine specific recommendations for transit priority corridors, mobility lanes, priority loading areas, and other safety improvements.

Figure 8 | Feedback on Open House Activity Boards (March 2023)

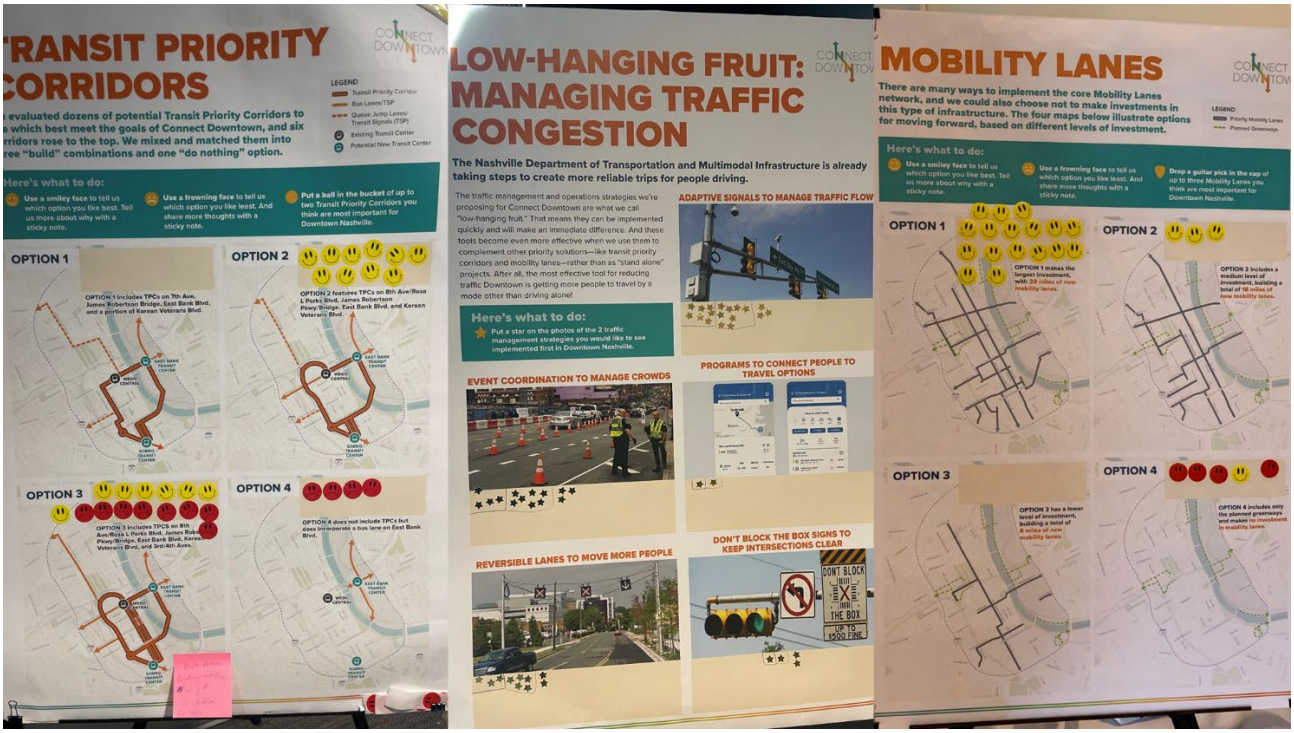
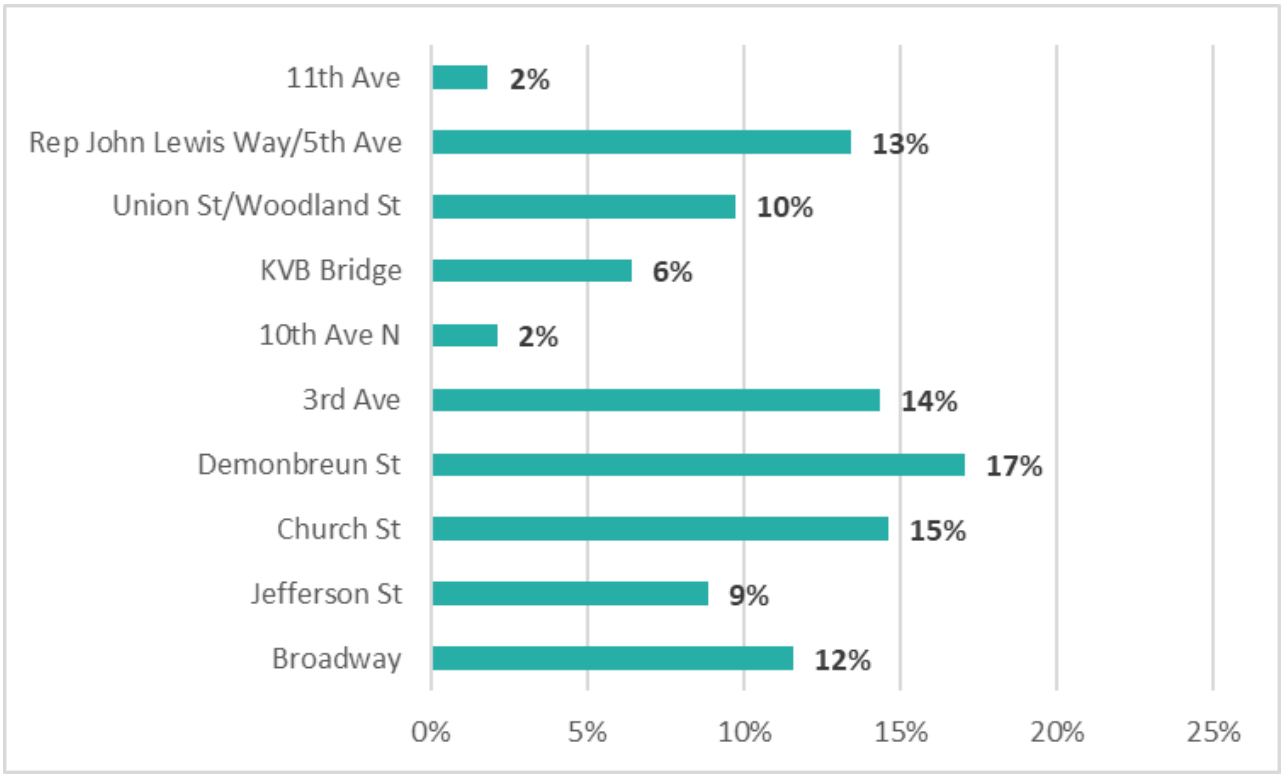


Figure 9 | Community Input on Priority Mobility Lanes (May 2023)



Phase Four (November to December 2023)

The final round of engagement gathered feedback on the Draft Action Plan, which presented initial Connect Downtown recommendations for public review. The draft plan incorporated community input, technical analysis, and guidance from local agencies to summarize recommendations in five "Big Moves." The plan and a short survey were available for review on the Connect Downtown website, which had nearly 4,000 visits during this phase.

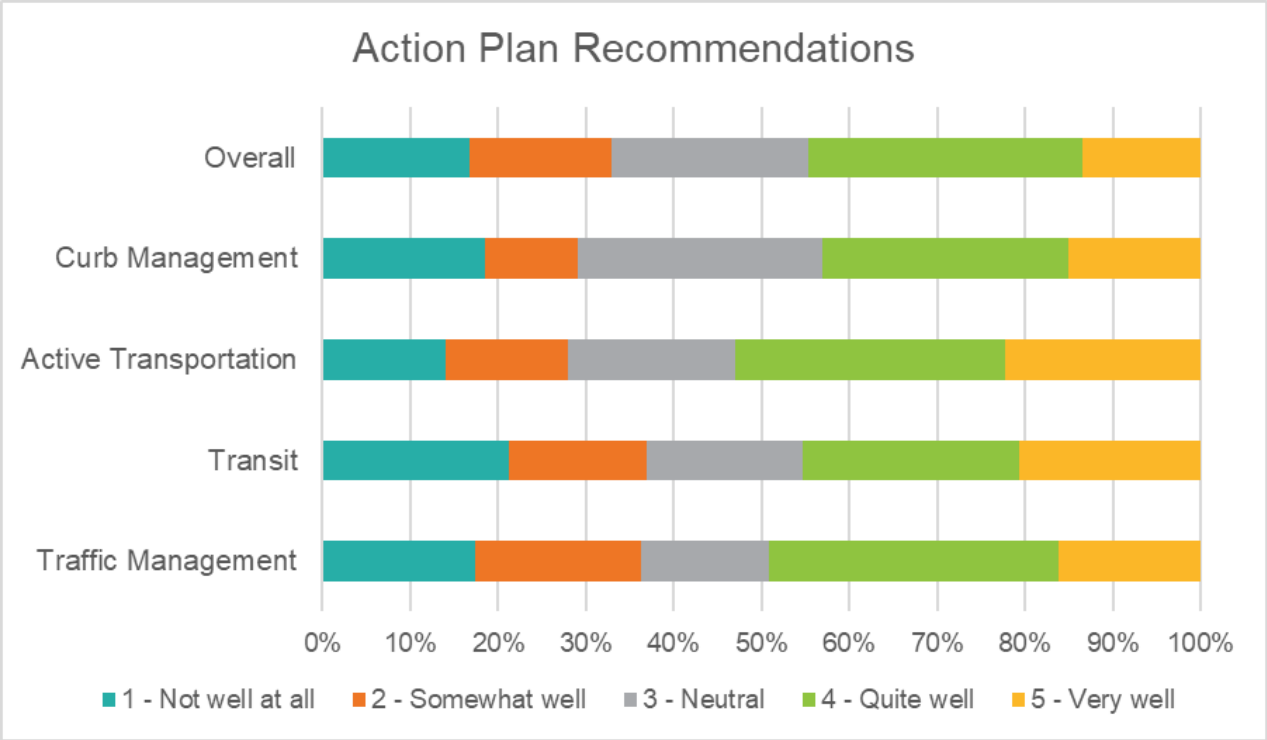
The project team hosted community open houses, led briefings for Metro committees and stakeholders, visited Downtown businesses, and shared multiple email blasts and social media posts. More than 100 people attended the community open houses, and nearly 200 people responded to the online survey. Stakeholder meetings and social media posts reached thousands of Nashvillians, with more than 95,000 social media impressions.

Figure 10 | Community Open House at Downtown Presbyterian Church (November 2023)

The project team asked those who reviewed the plan or attended a meeting to rate how well each category of Connect Downtown recommendations—traffic management, transit, active transportation, and curb management—met their needs. Figure 11 summarizes the input, with most people responding that the recommendations served them quite well or very well.

Participants in this phase of outreach expressed an eagerness for quick implementation, a desire for more transit priority, and the need to provide connected sidewalks and mobility lanes, safe streets and sidewalks, and carefully managed uses of the curb. The project team used this feedback to adjust the draft recommendations and finalize the Action Plan.

Figure 11 | Summary of Feedback on Draft Recommendations (December 2023)



KEY TAKEAWAYS

Community members expressed a consistent theme throughout the four rounds of Connect Downtown engagement: "Doing nothing isn't an option." Nashville residents, business owners, visitors, and employees shared their frustrations with and ideas to address traffic congestion, a lack of travel options, limited space for loading and deliveries, an unreliable transit system, and safe ways to move through Downtown.

A consistent concern was the impact that special events have on Downtown traffic and mobility. Targeted stakeholder meetings with the Tennessee Titans, Schermerhorn Symphony, operators of entertainment transportation vehicles, Fifth and Broadway, Broadway merchants, Gray Line, and others helped the project team ensure that Connect Downtown is responsive to the unique perspectives and experiences of those who serve Nashville's booming visitor industry.

Overall, the many Connect Downtown engagement activities gave Nashvillians the opportunity to help shape the future of Downtown transportation with a focus on providing a safe, connected, accessible, and vibrant experience for all.

Attachment 1 | Connect Downtown Stakeholder and Organizational Meetings

Organization	Individual/Partner	Date
Giarratana Development	Tony Giarratana, Jenny McClain	3/28/2022
Nashville Central Labor Council	Vonda McDaniel	3/29/2022
TomKats Hospitality	Tom Morales	3/30/2022
2nd Ave Recovery Team	Michelle Scopel, Nora Yo	3/30/2022
Imagine East Bank Tour	Ben York	3/31/2022
Transportation Licensing Commission	N/A	4/19/2022
Pie Town Study Team	Kimley Horn	4/21/2022
Downtown Street Vendors	N/A	4/29/2022
Council District 19	Councilmember Freddie O'Connell	5/2/2022
Mayor's Office	Kendra Abkowitz	5/4/2022
Brookfield Properties	Tom Miller	5/5/2022
Colliers	Janet Miller	5/5/2022
Beer Delivery Providers	Barrett Hobbs	5/23/2022
Music City Center	Charles Starks, Elisa Putman	5/23/2022
Metro Planning	Lucy Kempf	5/23/2022
Imagine East Bank	Ben York, Anna Grider	5/23/2022
Sugar Creek Carriages	Gary Blackburn	5/25/2022
Metro Planning Design Studio	N/A	5/25/2022
Transportation Licensing Commission	N/A	5/26/2022
Alliance Bernstein	Patrick McAnally	6/29/2022
Nashville Sounds	Adam English	7/13/2022
Amazon	Michelle Brown, Courtney Ross	8/5/2022
Metro Nashville Police Department	Clint Gilleland	8/11/2022
Metro Nashville Police Department	Christopher Bryant	8/19/2022
APAC	N/A	9/28/2022
Neighbor to Neighbor	Jim Hawk	10/10/2022
Nashville Symphony	Alan Valentine	10/31/2022
Nashville Downtown Partnership Happy Hour	Kacy Stern	11/3/2022
Greater Nashville Regional Council Technical Coordinating Committee	N/A	11/14/2022

Organization	Individual/Partner	Date
MTA Board	N/A	11/15/2022
Special Events and Hospitality	Alan Valentine, Leesa LeClaire	11/28/2022
Vanderbilt University Transportation and Mobility Office	Lindsey Ganson, Michael Briggs	11/29/2022
Hastings / Highwoods	N/A	2/15/2023
Shared Use Mobility Providers	N/A	2/17/2023
Walk Bike Nashville	Meredith Montgomery, Wesley Smith	2/17/2023
Rideshare Companies / Service Providers / Delivery Drivers / Entertainment Transportation Vehicles	Barrett Hobbs	3/7/2023
Nashville Chamber	Brian Kelly, Victoria Payne	3/8/2023
Traffic and Parking Commission	N/A	3/13/2023
Transportation Licensing Commission	N/A	3/23/2023
Giarratana Residents	Tony Giarratana, Jenny McClain	3/28/2023
Music City Center	Charles Starks, Elisa Putman	3/28/2023
Nashville Convention & Visitors Corp Group 1	vendors, distributors, services, corporate members	3/29/2023
Nashville Convention & Visitors Corp Group 2	bars and restaurants	3/29/2023
Nashville Convention & Visitors Corp Group 3	attractions, transportation companies, tours	3/29/2023
Broadway Merchants Association	Kelly Kaplan	3/30/2023
ULI Nashville	Jennifer Carlat	3/31/2023
Liquor Distributor Stakeholders	Joe Starnes	4/13/2023
Urban League / JUMP	Kenya McGruder	4/18/2023
Titans	David Haywood, Ashlee Stokely	4/18/2023
Greater Nashville Hospitality Association	Leesa LeClaire	4/20/2023
NAIOP Commercial Real Estate Development Association	N/A	4/25/2023
Downtown Neighborhood Association	Kacy Stern	4/26/2023
3rd Ave Stakeholders	Johnny Cash Bar	5/5/2023
Assembly Food Hall	Lea Anne Lancaster, Tommy Goff	5/9/2023
Downtown Night Mayor	Benton McDonough	5/9/2023

Organization	Individual/Partner	Date
Reyes Holdings (Broadway Deliveries)	Ryan Haynes	5/11/2023
Alliance Bernstein	N/A	5/16/2023
Uber	N/A	5/22/2023
MTA Board	N/A	5/25/2023
Parks & Recreation / Greenways Commission	Cindy Harrison	6/2/2023
Uber	N/A	6/6/2023
Traffic and Parking Commission	N/A	6/12/2023
Uber and Lyft	N/A	7/6/2023
Transit Alliance of Middle Tennessee Board	Jessica Dauphin	7/13/2023
Uber and Lyft	N/A	8/7/2023
Councilmember-Elect Jacob Kupin	Jacob Kupin	9/5/2023
Hume Fogg High School	Rick Stanley	9/27/2023
Transportation Licensing Commission	N/A	9/28/2023
Transportation & Infrastructure Committee Chair	Councilmember Sean Parker	10/13/2023
Mayor Freddie O'Connell	Mayor Freddie O'Connell	10/17/2023
WeGo Operators	Felix Castrodad	10/23/2023
Nashville Fire and Rescue (NFD)	Chief Swann	10/23/2023
Councilmember Jacob Kupin	Matt Purvis	10/24/2023
Parks & Rec/Greenways Commission	Cindy Harris	10/27/2023
Tennessee APA / Tennessee ITE Conference	N/A	10/27/2023
Council District 17	Councilmember Terry Vo	10/30/2023
Transportation & Infrastructure Committee Chair	Councilmember Sean Parker	11/7/2023
Traffic and Parking Commission	N/A	11/13/2023
Hastings / Highwoods / Hensler / Congress Group / CB Ragland	N/A	11/14/2023
Vice Mayor Angie Henderson	Vice Mayor Angie Henderson	11/14/2023
Urban League	Kenya McGruder, Aron Thompson	11/15/2023
Nashville Downtown Partnership Board	N/A	11/15/2023

Organization	Individual/Partner	Date
RTA Board	N/A	11/15/2023
3rd Ave Stakeholders	Michael Hayes	11/16/2023
Transportation Licensing Commission	N/A	11/16/2023
MTA Board	N/A	11/16/2023
Councilmember Sean Parker	Matt Purvis	
Grayline & Old Town Trolley	Steve Burress, Chuck Abbott	11/29/2023
Civic Design Center	Eric Hoke	11/29/2023
Vision Zero Advisory Committee	N/A	11/30/2023
Greater Nashville Hospitality Association	Leesa LeClaire	12/4/2023
Greater Nashville Hospitality Association	Leesa LeClaire	12/4/2023
Tennessee SMART Mobility Expo	N/A	12/5/2023
Hilton Nashville Downtown	Will Freeman	12/6/2023
Downtown Code Design Review Committee	N/A	12/7/2023
Public Library	Kyle Barber	12/8/2023
Motorcoach Operators	N/A	12/18/2023
Symphony / Highwoods / CB Ragland / Hastings / Hines	N/A	12/21/2023
ULI Nashville Building Healthy Places Member Lunch	Jennifer Carlat	2/6/2024
Hume Fogg High School / Downtown Public Library	Rick Stanley	2/16/2024
East Bank Project Team	Ben York	2/21/2024
Music City Center	Charles Starks	2/23/2024
2nd Ave Stakeholders	Michelle Scopel	2/27/2024
Nashville Connector	Meghan Mathson	3/4/2024
3rd Ave Stakeholders	Michael Hayes	3/7/2024
Traffic and Parking Commission	N/A	3/11/2024
Transportation Licensing Commission	N/A	3/21/2024
MTA Board	N/A	3/28/2024
Metro Planning Commission	N/A	3/28/2024

CONNECT DOWNTOWN

Appendix C

Traffic Analysis Report

April 2024

Table of Contents

This report is supplemented by a technical appendix that is available upon request from NDOT.

Table of Figures

Page

Executive Summary

Connect Downtown includes recommendations for the mobility network bounded by the Cumberland River to the east and the inner loop to the north, west, and south that will enhance transit and non-vehicular travel by providing exclusive transit and mobility lanes and by expanding sidewalk connectivity over the next 10 years.

To accommodate these recommendations, the vehicular capacity and operations of some roadways within Downtown Nashville must change to provide better flow and connectivity for all travelers. To evaluate the effects of these recommendations on the roadway network, traffic modeling of both existing and future traffic conditions within Downtown Nashville was conducted to help identify infrastructure and operational improvements that can accommodate the projected growth. Specifically, four traffic scenarios were modeled and evaluated:

- Existing Year 2022,
- Future Year 2032 No Build,
- Future Year 2032 Build + 50% Alternative Mode Growth, and
- Future Year 2032 Build + 100% Alternative Mode Growth.

This report presents the results of the traffic analyses that were conducted to evaluate the Connect Downtown recommendations. The analyses indicate that with the anticipated growth in Downtown Nashville, making no improvements to the network is the worst-case scenario, and overall, the Connect Downtown recommendations positively impact the network. The Connect Downtown recommendations help facilitate a mode shift from the single occupancy vehicles to alternative modes such as transit, biking, or walking. With the shift to alternative modes, there is an opportunity to increase the overall network capacity within the existing right-of-way.

Introduction

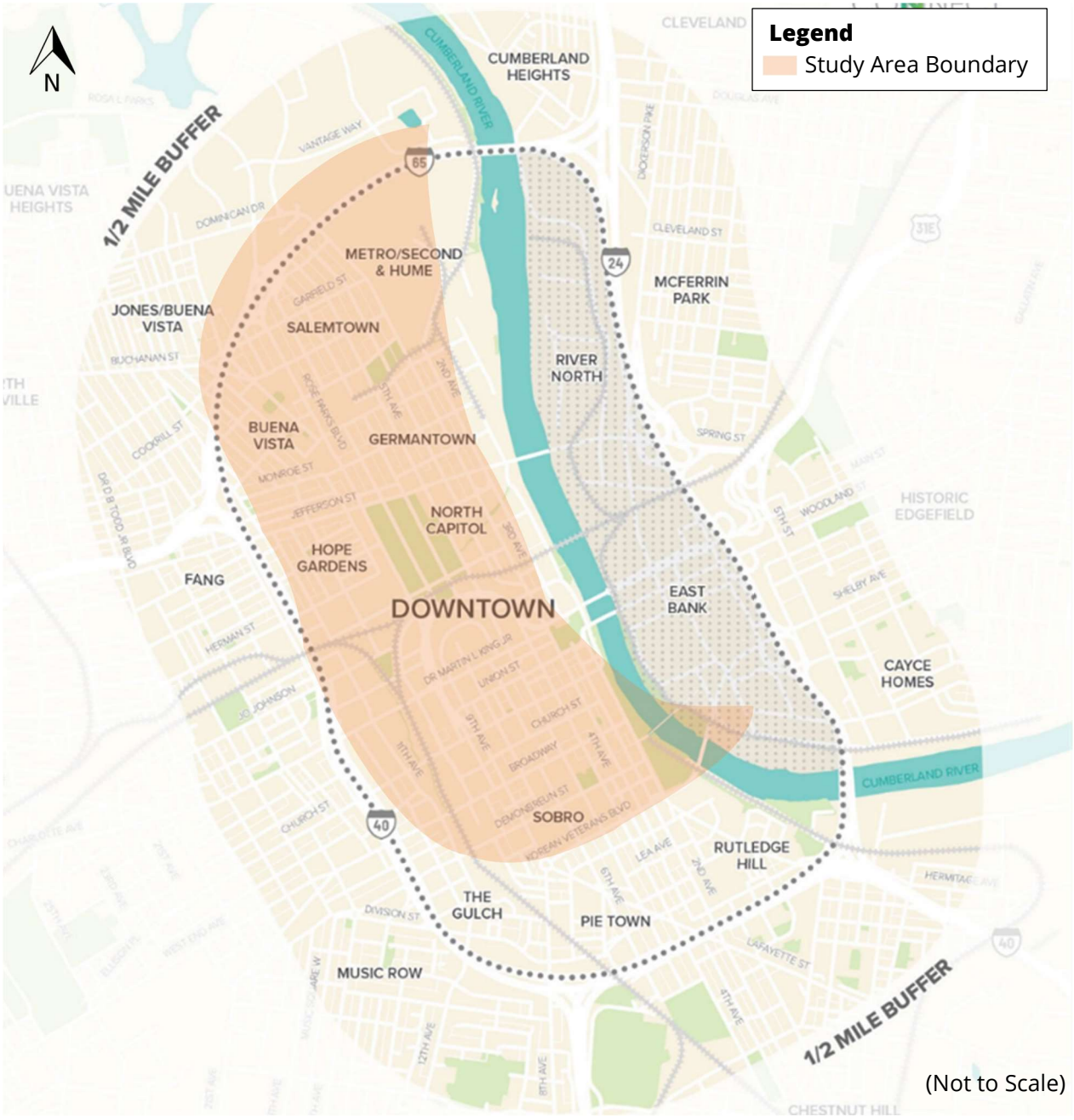
Project Description

Connect Downtown provides recommends for transit and non-vehicular improvements within Downtown Nashville that will facilitate a modal shift from single-occupancy vehicles (SOVs) to non-SOVs. The Connect Downtown recommendations will increase transit infrastructure and services and create a more connected mobility network for bikes, scooters, and pedestrians. As such, it is anticipated that trip growth within the network would occur for non-SOVs modes instead of SOVs. This report presents the results of the traffic analyses that were conducted to evaluate the Connect Downtown recommendations.

Study Area

As shown in Figure 1, the Connect Downtown study area includes the area bounded by the Cumberland River to the east and the inner loop to the north, west, and south. The following neighborhoods are included within the study area: Metro/Second & Hume, Salemtown, Germantown, Buena Vista, Hope Gardens, North Capitol, Downtown, SoBro, The Gulch, Pie Town, and Rutledge Hill.

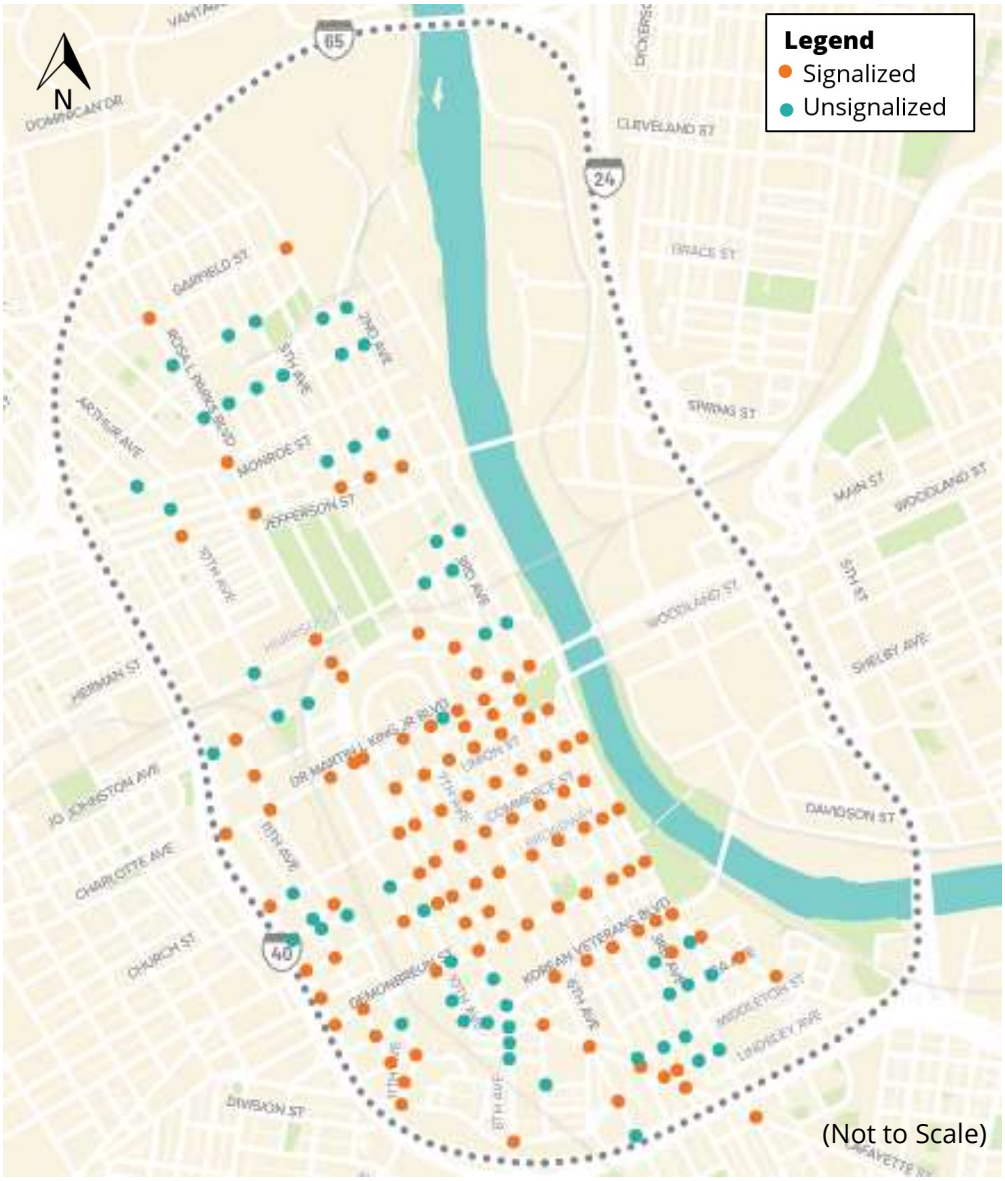
Figure 1 | Connect Downtown Study Area



Study Intersections

There over 300 intersections within the study area. To evaluate the Connect Downtown recommendations, the project team selected 106 signalized intersections and 58 unsignalized intersections to include in the traffic analyses. These intersections are along routes that currently or are anticipated to support transit, mobility, and/or curb uses. The East Bank development that is proposed east of the Cumberland River was not included in the analyses because it was outside the study area and under separate study. The study intersections are identified in Figure 2, and a list of the study intersections is included in the technical appendix.

Figure 2 | Traffic Analysis Study Intersections



Transit Priority Corridors

Currently, public transit in Nashville uses the same travel lanes as SOVs. This can frustrate riders and discourage ridership since buses are sitting in the same congestion as SOVs. Connect Downtown recommends transit priority corridors (TPC) that provide priority to buses and more frequent service. Depending on the corridor, transit priority could include exclusive transit lanes, transit signal priority, or queue jumps.

The project team analyzed, multiple corridors within Downtown Nashville to evaluate the difference between SOV-focused operations and transit-focused operations. Results of the TPC analyses indicate that the corridors listed below and shown in Figure 3 are well suited for use as TPCs. Connect Downtown recommends that the following roadway segments have exclusive transit lanes:

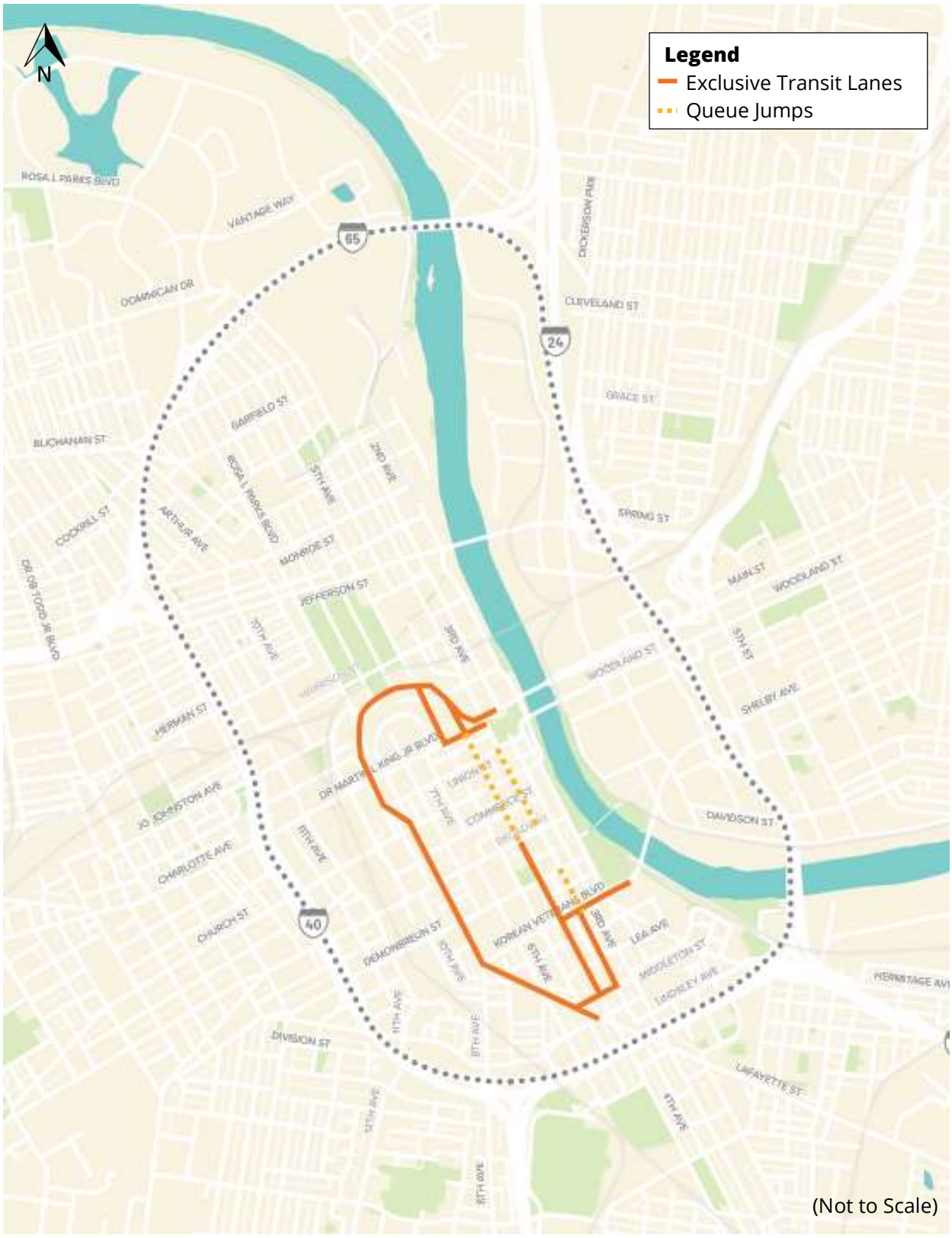
- James Robertson Parkway between 3rd Avenue N and Rosa L Parks Boulevard
- Rosa L Parks Boulevard between James Robertson Parkway and Korean Veterans Boulevard
- Lafayette Street between Korean Veterans Boulevard and Division Street/Ash Street
- Korean Veterans Boulevard between 4th Avenue S and 1st Avenue S/Hermitage Avenue
- Rep John Lewis Way between James Robertson Parkway and Charlotte Avenue

The following roadway segments will have a combination of exclusive transit lanes and queue jumps:

- 3rd Avenue between Union Street and Broadway
- 3rd Avenue between Demonbreun Street and Ash Street
- 4th Avenue between Charlotte Avenue and Ash Street

As shown in Figure 3, the TPC study area includes 45 intersections, 34 signalized intersections, and 11 unsignalized intersections.

Figure 3 | TPC Study Area



Traffic Modeling

PTV Vistro

PTV Vistro performs capacity analysis for individual intersections following the methods outlined in the *Highway Capacity Manual* (HCM) where capacity describes the maximum number of vehicles that can utilize an intersection under a given set of conditions. Capacity is typically expressed as number of vehicles per unit of time.

Vehicle Level of Service (LOS) is a measurement used to identify how well a roadway segment or intersection is able to accommodate traffic volumes given the roadway's capacity. This measurement is generally expressed as a function of vehicular delay, or how much time a driver spends at that location. Based on the amount of delay experienced, LOS is assigned a grade between LOS A and LOS F. LOS A is the highest condition rating with vehicles experiencing minimal delay, while LOS F is considered the worst with vehicles experiencing excessive delay. Table 1 presents the descriptions of LOS for signalized and unsignalized intersections.

Table 1 | Descriptions of Level of Service

Level of Service	Description	Unsignalized Control Delay (sec/veh)	Signalized Control Delay (sec/veh)
A	Little or no delay	≤ 10.0	≤ 10.0
B	Short traffic delay	>10 and ≤ 15	>10 and ≤ 20
C	Average traffic	>15 and ≤ 25	>20 and ≤ 35
D	Long traffic delay	>25 and ≤ 35	>35 and ≤ 55
E	Very long traffic	>35 and ≤ 50	>55 and ≤ 80
F	Extreme traffic	> 50.0	> 80.0

In an urban area, LOS E and LOS F are common due to the high levels of vehicular traffic congestion during the peak hours. Therefore, unique to this project, an additional LOS, LOS F+, was added to indicate intersections with a delay per vehicle greater than 100 seconds.

In addition to LOS and delay, volume-to-capacity ratio (v/c ratio) is often used to indicate how an intersection is operating in terms of capacity. According to the HCM, an intersection with a v/c ratio less than 0.85 is operating under capacity, an intersection with a v/c ratio between 0.85 and 1.0 is operating at capacity, and an intersection with a v/c ratio greater than 1.0 is operating over capacity.

PTV Vissim

PTV Vissim is a microsimulation modeling software that utilizes random number generation and probabilities to anticipate driver decisions throughout an entire network. PTV Vissim was used to simulate the interaction between SOVs and public transit along the TPCs. For the TPC analyses the following measures were collected from the Vissim analysis:

- *Travel time* is the measurement of total time it takes to travel along the major corridor segments.
- *Average segment delay* is the measurement of additional travel time experienced during congested periods compared to free flow conditions. In other words, the difference between the ideal travel time versus the actual travel time.
- *Average segment speed* is the measurement of how fast the car or bus is moving throughout the corridors.

Scenarios

Connect Downtown is a 10-year action plan, with implementation anticipated in three phases: Phase 1 represents projects that will occur between 2024 and 2026, Phase 2 represents projects that will occur between 2027 and 2029, and Phase 3 represents the completion of all of the recommended improvements and will occur after 2030.

To evaluate the impacts of the expected growth within the study area in conjunction with the planned Connect Downtown improvements, two analysis years were evaluated, Existing Year 2022, which focused on existing roadway conditions, and Future Year 2032, which focused on anticipated roadway conditions.

As previously mentioned, the recommendations presented in Downtown Connect are anticipated to facilitate a modal shift from SOVs to non-SOVs. This alternative mode growth (AMG) represents additional growth that is using non-SOVs rather than SOVs. Therefore, under Future Year 2032 conditions, the project team analyzed scenarios that contemplated varying degrees of investment into alternative modes of transportation and the impact that those investments would have on the mode shift from SOVs to non-SOVs. The following sections describe the scenarios.

Existing Year 2022

Existing Year 2022 includes the current lane configurations, signal timings, and vehicle volumes for each of the 164 study intersections indicated in Figure 2.

Future Year 2032 No Build (Future No Build)

Future Year 2032 No Build represents the "do nothing scenario." This is the current lane configurations and signal timings as under the Existing Year 2022 scenario with the addition of 10 years of growth assumed to be all new SOV trips.

Future Year 2032 Build + 50% AMG (Future 50% AMG)

Future Year 2032 Build + 50% AMG scenario includes the proposed TPC network, operational conversions, and mobility lane modifications. This scenario assumes 50% of the new growth being SOVs and the other 50% being non-SOVs, whether that be transit, biking, scooting, or walking. For this scenario, the vehicle volumes were grown for 5 years with all new trips assumed to be vehicular and another 5 years with all new trips assumed to be multimodal trips such as transit, biking, scooting, or walking. Based on this approach, with 50% non-SOV growth, the new mode split would be 76% SOVs and 24% non-SOVs.

Future Year 2032 Build + 100% AMG (Future 100% AMG)

Future Year 2032 Build + 100% AMG scenario includes the same proposed TPC network, operational conversions, and mobility lane modifications as the Build + 50% AMG scenario. This scenario, however, assumes 100% of new growth being non-SOVs. For this scenario, the vehicular volumes remain the same as the 2022 volumes, and all new trips were assumed to be multimodal. Based on this approach, with 100% non-SOV growth, the new mode split is 67% SOVs and 33% non-SOVs.

Existing Year 2022 Conditions

Roadway Network

To evaluate the effects of the Connect Downtown recommendations on the roadway network, the following existing infrastructure was inventoried for each of the study intersections utilizing Google Earth, Google Street View, and field visits:

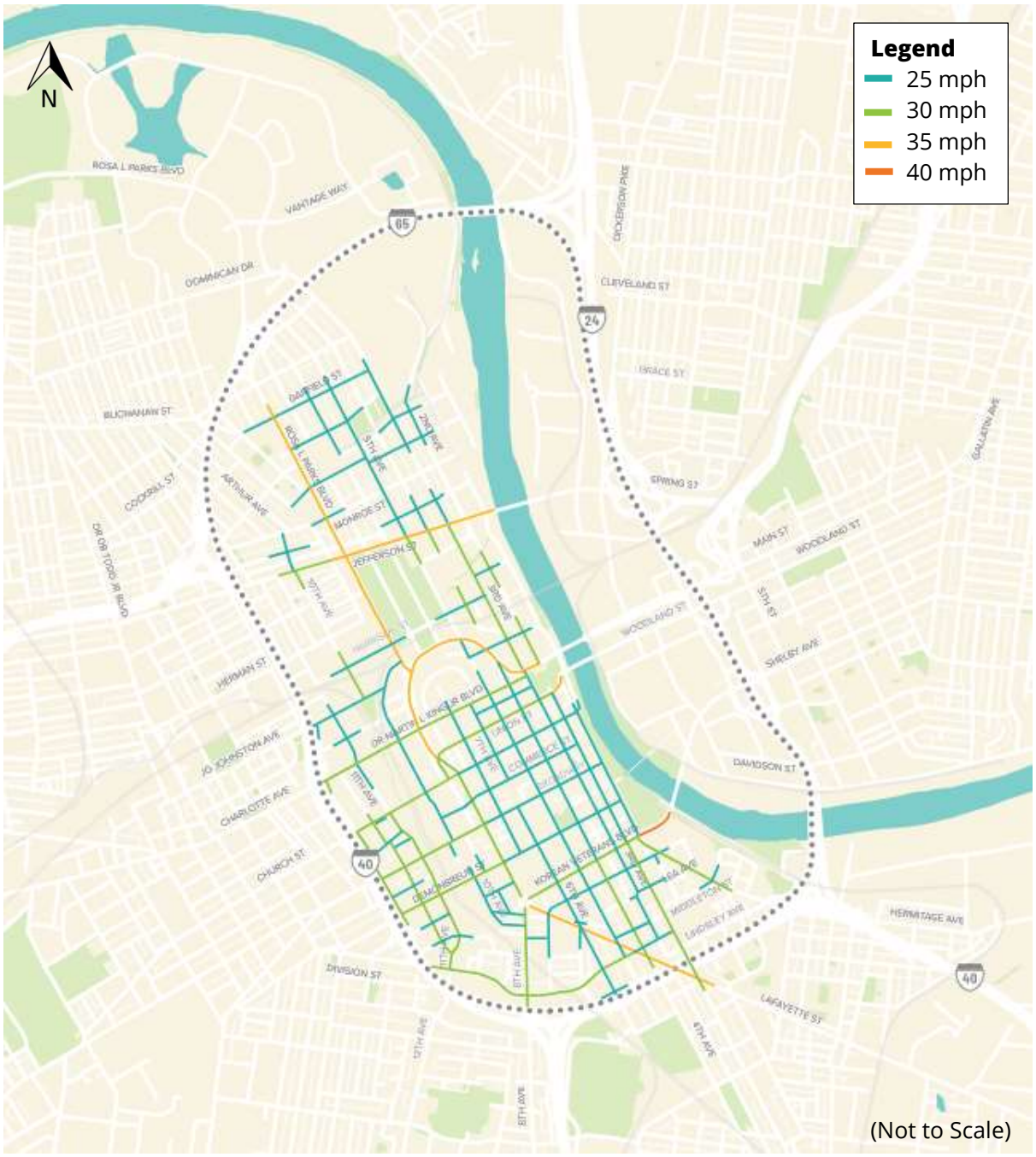
- Speed limits
- Geometry and lane configurations
- Storage/taper lengths
- Turn lane treatments
- Pertinent signing/markings
- Signal heads and phasing
- Vehicle detection
- Pedestrian treatments

It should be noted that where speed limits area not posted, Nashville's current *Code of Ordinances* limits the maximum speed limit for a road to 25 mph. Figure 4 presents the speed limits within the study area.

Existing signal timing plans were obtained from NDOT and are included in the technical appendix. These plans typically include the following information:

- Minimum green, yellow, and red time
- Pedestrian timings
- Time of day plans
- Coordination information

Figure 4 | Study Area Speed Limits

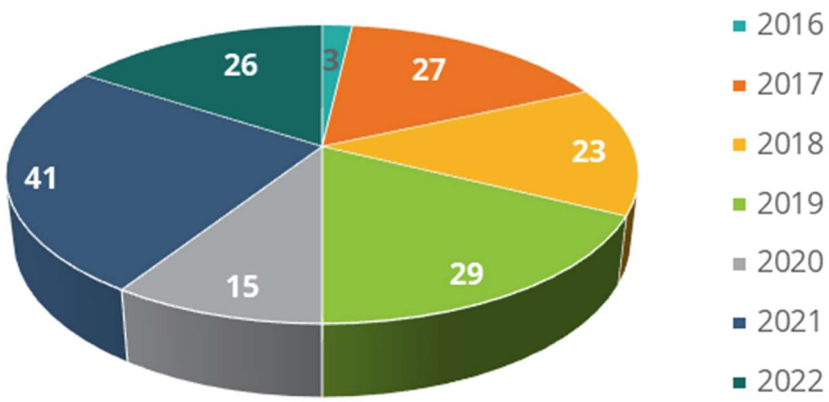


Turning Movement Counts

Manual vehicle, bicycle, and pedestrian turning movement counts were collected by KCI Technologies, Inc or Marr Traffic Data Collection for each of the 164 study intersections indicated in Figure 2. Counts were collected from 7:00 – 9:00 AM and 4:00 – 6:00 PM on a typical weekday while schools were in session.

Due to the size of the study area and the impact of Covid-19 on the collection of traffic counts during the initial stages of this project, historic turning movement counts were utilized where possible. All historic counts were collected after 2016 and any count collected before 2022 was grown to the year 2022 using the same growth rate utilized to project future traffic (see Future Volume Determination). Detailed peak hour turning movements counts can be found in the technical appendix, and Figure 5 shows a summary of the turning movement counts by year.

Figure 5 | Turning Movement Counts by Year Summary



Capacity Analysis

Utilizing the collected intersection inventories and turning movement counts, the project team used PTV Vistro to build a model of the existing roadway network and conduct a capacity analysis for each study intersection.

The results of the capacity analysis are summarized in Table 2. For unsignalized intersections, the reported LOS is based on the worst movement. Additionally, the volume-to-capacity is reported for all intersections except the Rosa L Parks Boulevard/8th Avenue S/Korean Veterans Boulevard roundabout. Figures 6 and 7 show the existing levels of service for the peak hours.

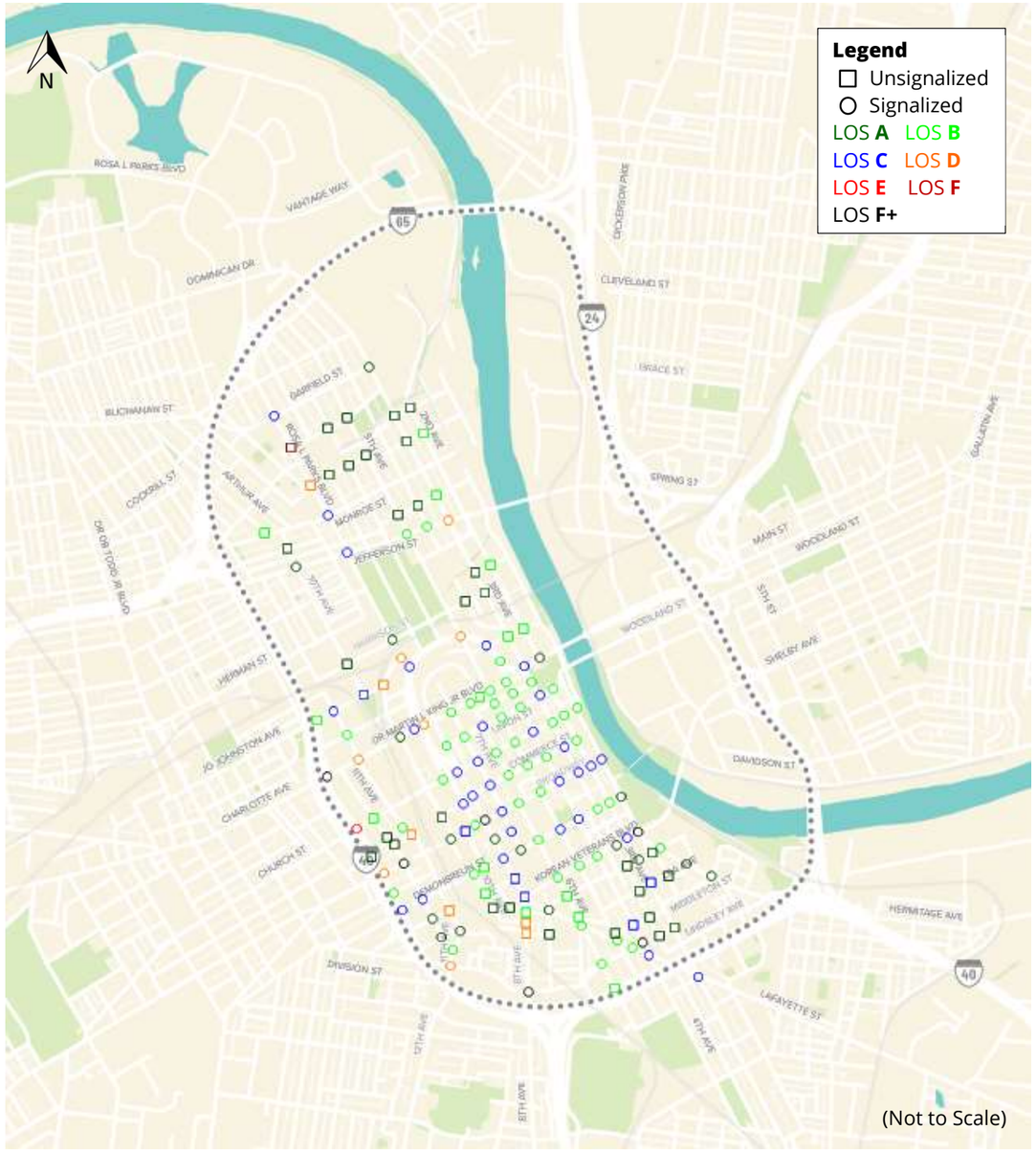
Detailed intersection results are presented in Table 3. For stop-controlled intersections, LOS is reported by each critical turning movement, and for signalized intersections, LOS is reported as an overall intersection. The detailed capacity analysis results are included in the technical appendix.

Table 2 | Existing Intersection Summary Results/Number of Intersections

LOS	Number of Intersections	
	AM	PM
A	47	28
B	59	53
C	36	46
D	14	15
E	1	8
F	1	4
F+	6	10

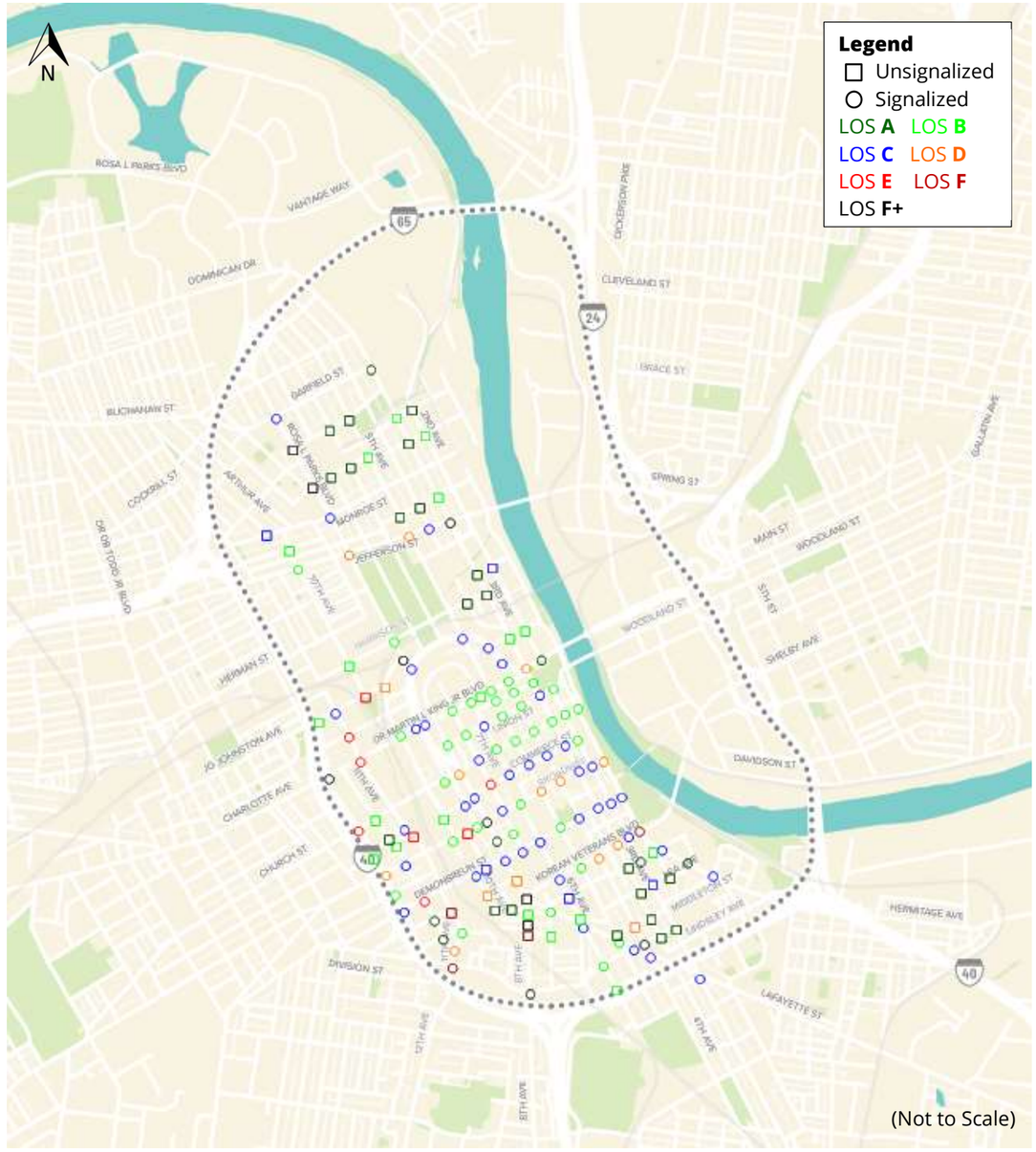
V/C	Number of Intersections	
	AM	PM
<0.5	136	110
0.5≤X<0.85	24	47
0.85≤X<1.0	2	4
1.0≤	1	2
n/a	1	1

Figure 6 | Level of Service – AM Peak



(Not to Scale)

Figure 7 | Level of Service – PM Peak



(Not to Scale)

Table 3 | Vistro Existing Intersection Results

Intersection	Turning Movement	AM Peak		PM Peak	
		LOS	V/C	LOS	V/C
1st Avenue N & Gay Street	Overall Intersection	B (11.6)	0.214	B (14.5)	0.326
1st Avenue & Broadway	Overall Intersection	C (29.1)	0.181	D (38.9)	0.334
1st Avenue S & Demonbreun Street	Overall Intersection	A (8.9)	0.178	C (25.4)	0.352
1st Avenue S/Hermitage Avenue & Korean Veterans Boulevard	Overall Intersection	F (207.6)	0.519	F (82.7)	0.771
Rutledge Street & Peabody Street	Northbound Approach	A (9.3)	0.031	A (9.8)	0.031
	Westbound Left-Turn	A (7.4)		A (7.6)	
Hermitage Avenue & Peabody Street	Overall Intersection	B (11.7)	0.540	C (25.8)	0.850
Rutledge Street & Lea Avenue	Northbound Left-Turn	A (0.0)	0.012	A (7.3)	0.017
	Southbound Left-Turn	A (7.2)		A (7.2)	
	Eastbound Approach	A (8.8)		A (9.2)	
	Westbound Approach	A (9.0)		A (9.4)	
Hermitage Avenue & Lea Avenue	Overall Intersection	A (2.6)	0.486	A (4.3)	0.520
Hermitage Avenue & Middleton Street	Overall Intersection	A (9.8)	0.534	C (20.0)	0.628
2nd Avenue N & Van Buren Street	Northbound Approach	A (8.1)	0.153	A (8.4)	0.158
	Southbound Approach	A (7.7)		A (8.1)	
	Eastbound Approach	A (7.8)		A (8.0)	
	Westbound Approach	A (8.0)		A (8.3)	
2nd Avenue N & Taylor Street	Northbound Left-Turn	A (7.4)	0.026	A (0.7)	0.036
	Southbound Left-Turn	A (7.4)		A (0.2)	
	Eastbound Approach	B (10.1)		B (10.7)	
	Westbound Approach	A (9.8)		B (10.9)	
2nd Avenue N & Stockyard Street	Northbound Left-Turn	A (7.5)	0.035	A (7.7)	0.028
	Southbound Left-Turn	A (7.6)		A (7.7)	
	Eastbound Approach	B (11.7)		B (13.4)	
	Westbound Approach	B (10.4)		B (11.7)	
2nd Avenue N & Gay Street	Northbound Approach	B (12.6)	0.446	A (8.9)	0.349
	Southbound Approach	B (10.8)		B (10.9)	
	Eastbound Approach	B (11.7)		B (10.4)	
	Westbound Approach	B (11.5)		A (9.9)	

Table 3 | Vistro Existing Intersection Results

Intersection	Turning Movement	AM Peak		PM Peak	
		LOS	V/C	LOS	V/C
2nd Avenue N & James Robertson Parkway	Overall Intersection	A (1.9)	0.443	A (2.3)	0.494
2nd Avenue N & Union Street	Overall Intersection	B (14.9)	0.173	B (18.9)	0.298
2nd Avenue N & Church Street	Overall Intersection	B (15.2)	0.256	B (18.2)	0.496
2nd Avenue N & Commerce Street	Overall Intersection	B (13.1)	0.295	B (18.6)	0.442
2nd Avenue & Broadway	Overall Intersection	C (23.3)	0.156	C (22.1)	0.265
2nd Avenue S & Demonbreun Street	Overall Intersection	B (18.7)	0.199	C (21.5)	0.219
2nd Avenue S & Korean Veterans Boulevard	Overall Intersection	C (25.7)	0.494	C (30.8)	0.596
2nd Avenue S & Peabody Street	Overall Intersection	A (7.0)	0.178	A (6.0)	0.178
2nd Avenue S & Lea Avenue	Eastbound Approach	B (14.5)	0.069	B (13.0)	0.076
	Westbound Approach	C (17.2)		C (15.6)	
2nd Avenue S & Ash Street	Eastbound Approach	A (0.0)	0.146	A (0.0)	0.017
2nd Avenue S & Lafayette Street	Overall Intersection	C (25.0)	0.432	C (30.8)	0.663
3rd Avenue N & Garfield Street	Overall Intersection	A (5.3)	0.351	A (5.1)	0.368
3rd Avenue N & Van Buren Street	Northbound Approach	B (10.0)	0.355	B (10.3)	0.558
	Southbound Approach	B (10.1)		B (13.9)	
	Eastbound Approach	A (8.6)		A (9.20	
	Westbound Approach	A (8.5)		A (9.9)	
3rd Avenue N & Taylor Street	Northbound Approach	A (9.1)	0.315	A (9.0)	0.357
	Southbound Approach	A (8.4)		A (9.6)	
	Eastbound Approach	A (7.8)		A (8.0)	
	Westbound Approach	A (7.6)		A (8.1)	
3rd Avenue N & Madison Street	Northbound Approach	B (12.6)	0.572	B (11.5)	0.608
	Southbound Approach	B (11.0)		C (16.1)	
	Eastbound Approach	A (9.9)		B (10.4)	
	Westbound Approach	A (9.8)		B (10.2)	
3rd Avenue N & Jefferson Street	Overall Intersection	D (37.7)	0.778	F (155.5)	0.981
3rd Avenue N & Stockyard Street	Southbound Left-Turn	A (7.4)	0.011	A (7.5)	0.019
	Westbound Approach	A (8.9)		A (9.2)	
3rd Avenue N & Harrison Street	Northbound Left-Turn	A (7.4)	0.015	A (7.3)	0.061
	Eastbound Left-Turn	A (8.9)		A (9.3)	

Table 3 | Vistro Existing Intersection Results

Intersection	Turning Movement	AM Peak		PM Peak	
		LOS	V/C	LOS	V/C
3rd Avenue N & Gay Street	Northbound Approach	B (10.7)	0.473	A (9.9)	0.544
	Southbound Approach	B (11.3)		B (14.6)	
	Eastbound Approach	B (11.5)		B (10.1)	
	Westbound Approach	B (13.0)		B (11.1)	
3rd Avenue N & James Robertson Parkway	Overall Intersection	D (44.0)	0.762	D (46.6)	0.746
3rd Avenue N & Deaderick Street	Overall Intersection	B (15.9)	0.216	B (17.4)	0.341
3rd Avenue N & Union Street	Overall Intersection	C (27.7)	0.423	C (29.0)	0.540
3rd Avenue N & Church Street	Overall Intersection	B (15.0)	0.298	B (16.3)	0.489
3rd Avenue N & Commerce Street	Overall Intersection	C (28.2)	0.464	C (25.6)	0.471
3rd Avenue & Broadway	Overall Intersection	C (20.5)	0.224	C (24.7)	0.260
3rd Avenue S & Demonbreun Street	Overall Intersection	B (19.5)	0.207	C (24.3)	0.343
3rd Avenue S & Korean Veterans Boulevard	Overall Intersection	A (9.9)	0.442	D (43.2)	0.712
3rd Avenue S & Peabody Street	Northbound Approach	A (7.3)	0.082	A (7.5)	0.085
	Southbound Approach	A (7.2)		A (7.4)	
	Eastbound Approach	A (7.2)		A (7.5)	
	Westbound Approach	A (7.4)		A (7.6)	
3rd Avenue S & Lea Avenue	Northbound Approach	A (7.2)	0.093	A (7.5)	0.085
	Southbound Approach	A (7.2)		A (7.4)	
	Eastbound Approach	A (7.2)		A (7.5)	
	Westbound Approach	A (7.4)		A (7.6)	
3rd Avenue S & Elm Street	Northbound Approach	A (7.5)	0.198	A (8.0)	0.186
	Southbound Approach	A (7.4)		A (8.1)	
	Eastbound Approach	A (7.4)		A (7.8)	
	Westbound Approach	A (7.9)		A (8.0)	
3rd Avenue S & Ash Street	Northbound Approach	A (9.0)	0.240	A (9.5)	0.259
	Southbound Approach	A (7.7)		A (8.3)	
	Eastbound Approach	A (8.0)		A (9.0)	
	Westbound Approach	A (8.1)		A (8.4)	

Table 3 | Vistro Existing Intersection Results

Intersection	Turning Movement	AM Peak		PM Peak	
		LOS	V/C	LOS	V/C
4th Avenue N & Madison Street	Northbound Approach	A (7.4)	0.078	A (7.7)	0.201
	Southbound Approach	A (7.5)		A (8.3)	
	Eastbound Approach	A (7.4)		A (7.6)	
	Westbound Approach	A (7.4)		A (8.0)	
4th Avenue N & Jefferson Street	Overall Intersection	B (12.5)	0.67	C (20.9)	0.702
4th Avenue N & Harrison Street	Northbound Approach	A (7.5)	0.076	A (7.3)	0.114
	Southbound Approach	A (7.2)		A (7.2)	
	Eastbound Approach	A (7.4)		A (7.7)	
	Westbound Approach	A (7.6)		A (7.6)	
James Robertson Parkway & Gay Street	Overall Intersection	B (12.1)	0.411	C (32.7)	0.504
4TH Avenue N & James Robertson Parkway	Overall Intersection	C (32.7)	0.504	B (13.2)	0.552
4th Avenue N & Charlotte Avenue	Overall Intersection	B (14.7)	0.207	B (15.2)	0.316
4th Avenue N & Deaderick Street	Overall Intersection	B (15.0)	0.186	B (16.5)	0.229
4th Avenue N & Union Street	Overall Intersection	B (15.7)	0.319	B (16.5)	0.263
4th Avenue N & Church Street	Overall Intersection	C (21.0)	0.258	B (17.4)	0.269
4th Avenue N & Commerce Street	Overall Intersection	B (18.7)	0.313	C (21.2)	0.469
4th Avenue & Broadway	Overall Intersection	C (31.3)	0.149	D (42.1)	0.322
4th Avenue S & Demonbreun Street	Overall Intersection	C (22.6)	0.145	C (28.7)	0.34
4th Avenue S & Korean Veterans Boulevard	Overall Intersection	B (15.3)	0.319	D (35.2)	0.586
4th Avenue S & Elm Street	Eastbound Approach	B (12.3)	0.216	C (22.6)	0.352
	Westbound Approach	C (16.3)		D (30.8)	
4th Avenue S & Ash Street	Overall Intersection	F (154.0)	0.704	F (163.5)	1.747
4th Avenue S & Lafayette Street	Overall Intersection	C (23.0)	0.380	C (32.4)	0.643
5th Avenue N & Hume Street	Northbound Approach	A (7.3)	0.066	A (7.5)	0.085
	Southbound Approach	A (7.3)		A (7.5)	
	Eastbound Approach	A (7.1)		A (7.2)	
	Westbound Approach	A (7.4)		A (7.5)	
5th Avenue N & Taylor Street	Northbound Left-Turn	A (7.5)	0.013	A (7.5)	0.050
	Eastbound Approach	A (9.3)		A (9.9)	

Table 3 | Vistro Existing Intersection Results

Intersection	Turning Movement	AM Peak		PM Peak	
		LOS	V/C	LOS	V/C
5th Avenue N & Madison Street	Northbound Approach	A (7.6)	0.108	A (8.2)	0.179
	Southbound Approach	A (7.7)		A (8.1)	
	Eastbound Approach	A (7.3)		A (7.9)	
	Westbound Approach	A (7.7)		A (7.8)	
5th Avenue N & Jefferson Street	Overall Intersection	B (14.8)	0.564	D (38.8)	0.754
5th Avenue N & James Robertson Parkway	Overall Intersection	D (48.3)	0.723	C (27.4)	0.717
5th Avenue N & Charlotte Avenue	Overall Intersection	B (19.2)	0.388	B (19.4)	0.415
5th Avenue N & Deaderick Street	Overall Intersection	B (16.1)	0.172	B (16.1)	0.202
5th Avenue N & Union Street	Overall Intersection	B (18.2)	0.346	B (16.4)	0.332
5th Avenue N & Church Street	Overall Intersection	B (15.1)	0.338	B (16.7)	0.445
5th Avenue N & Commerce Street	Overall Intersection	B (18.3)	0.344	C (20.8)	0.483
5th Avenue & Broadway	Overall Intersection	B (15.4)	0.299	D (45.7)	0.429
5th Avenue S & Demonbreun Street	Overall Intersection	C (20.1)	0.308	B (18.7)	0.279
5th Avenue S & Korean Veterans Boulevard	Overall Intersection	B (15.8)	0.362	B (16.2)	0.407
5th Avenue S & Elm Street	Southbound Left-Turn	A (0.0)	0.075	A (7.4)	0.076
	Westbound Approach	A (9.5)		A (9.7)	
5th Avenue S & Lafayette Street	Overall Intersection	B (11.7)	0.259	B (18.8)	0.39
6th Avenue N & Hume Street	Northbound Approach	A (9.4)	0.004	A (9.1)	0.004
	Southbound Approach	A (8.9)		A (9.3)	
	Eastbound Left-Turn	A (7.3)		A (7.3)	
	Westbound Left-Turn	A (7.3)		A (7.4)	
6th Avenue N & Taylor Street	Northbound Approach	A (8.6)	0.002	A (9.1)	0.003
	Southbound Approach	A (9.2)		A (9.3)	
	Eastbound Left-Turn	A (0.0)		A (7.3)	
	Westbound Left-Turn	A (7.3)		A (7.4)	
6th Avenue N & Charlotte Avenue	Southbound Approach	B (10.3)	0.002	B (10.5)	0.016
6th Avenue N & Charlotte Avenue	Overall Intersection	B (14.3)	0.287	B (17.3)	0.316
6th Avenue N & Union Street	Overall Intersection	C (26.0)	0.238	C (25.1)	0.272
6th Avenue N & Church Street	Overall Intersection	B (12.9)	0.283	B (15.5)	0.304
6th Avenue N & Commerce Street	Overall Intersection	B (13.1)	0.308	C (20.1)	0.685

Table 3 | Vistro Existing Intersection Results

Intersection	Turning Movement	AM Peak		PM Peak	
		LOS	V/C	LOS	V/C
6th Avenue & Broadway	Overall Intersection	B (16.3)	0.154	B (19.5)	0.262
6th Avenue S & Demonbreun Street	Overall Intersection	B (18.7)	0.283	C (24.8)	0.619
6th Avenue S & Korean Veterans Boulevard	Overall Intersection	B (17.4)	0.476	C (30.0)	0.540
6th Avenue S & Peabody Street	Northbound Left-Turn	A (7.4)	0.018	A (0.0)	0.073
	Southbound Left-Turn	A (7.5)		A (8.0)	
	Eastbound Approach	A (9.9)		C (16.2)	
	Westbound Approach	B (10.3)		B (13.3)	
6th Avenue S & Lea Avenue	Northbound Left-Turn	A (7.4)	0.021	A (7.6)	0.017
	Southbound Left-Turn	A (7.5)		A (7.7)	
	Eastbound Approach	B (10.4)		B (12.9)	
	Westbound Approach	A (9.9)		B (11.6)	
6th Avenue S/Ewing Street & Lafayette Street	Overall Intersection	B (13.5)	0.191	C (26.1)	0.424
6th Avenue S & Division Street	Overall Intersection	B (13.9)	0.119	B (13.2)	0.181
6th Avenue S & Mulberry Street	Northbound Left-Turn	A (7.3)	0.004	A (7.4)	0.005
	Southbound Left-Turn	A (7.4)		A (7.4)	
	Eastbound Approach	A (9.1)		A (9.7)	
	Westbound Approach	A (9.1)		A (9.9)	
7th Avenue N & Taylor Street	Northbound Approach	A (8.7)	0.003	A (9.2)	0.017
	Westbound Left-Turn	A (7.3)		A (7.4)	
7th Avenue N & Charlotte Avenue	Overall Intersection	B (19.0)	0.460	B (17.9)	0.441
7th Avenue N & Union Street	Overall Intersection	B (16.3)	0.255	B (16.3)	0.287
7th Avenue N & Church Street	Overall Intersection	C (24.2)	0.608	C (27.6)	0.642
7th Avenue N & Commerce Street	Overall Intersection	C (27.9)	0.417	E (59.1)	0.98
7th Avenue & Broadway	Overall Intersection	C (32.2)	0.368	C (29.8)	0.223
7th Avenue S & McGavock Street	Overall Intersection	C (34.6)	0.042	B (13.7)	0.068
7th Avenue S & Demonbreun Street	Overall Intersection	A (7.7)	0.220	C (25.1)	0.326
7th Avenue S & Lafayette Street	Overall Intersection	A (7.0)	0.261	B (12.7)	0.353

Table 3. Vistro Existing Intersection Results

Intersection	Turning Movement	AM Peak		PM Peak	
		LOS	V/C	LOS	V/C
7th Avenue S & Drexel Street	Northbound Left-Turn	A (7.4)	0.021	A (7.4)	0.227
	Eastbound Approach	A (9.0)		B (10.9)	
Rosa L Parks Boulevard & Garfield Street	Overall Intersection	C (25.1)	0.380	C (32.4)	0.604
Rosa L Parks Boulevard & Hume Street	Northbound Left-Turn	A (9.6)	0.019	B (10.4)	0.037
	Southbound Left-Turn	A (9.1)		B (12.7)	
	Eastbound Approach	D (28.7)		E (37.4)	
	Westbound Approach	D (29.1)		F (92.2)	
Rosa L Parks Boulevard & Taylor Street	Northbound Left-Turn	A (0.0)	0.105	B (10.4)	0.209
	Southbound Left-Turn	A (9.1)		B (12.7)	
	Eastbound Approach	A (0.0)		B (119.2)	
	Westbound Approach	C (20.4)		F (90.0)	
Rosa L Parks Boulevard & Monroe Street	Overall Intersection	C (25.7)	0.524	C (31.7)	0.610
Rosa L Parks Boulevard & Jefferson Street	Overall Intersection	C (32.3)	0.641	D (42.1)	0.787
Rosa L Parks Boulevard & Harrison Street	Overall Intersection	A (8.8)	0.248	B (16.7)	0.386
Rosa L Parks Boulevard & 10th Circle N	Overall Intersection	D (45.0)	0.270	F (114.1)	0.389
Rosa L Parks Boulevard & James Robertson Parkway	Overall Intersection	C (26.6)	0.518	C (26.4)	0.596
YMCA Way & Charlotte Avenue	Overall Intersection	C (24.3)	0.321	C (23.8)	0.375
Rosa L Parks Boulevard & Charlotte Avenue	Overall Intersection	D (38.5)	0.318	C (29.9)	0.546
Rosa L Parks Boulevard & Union Street	Overall Intersection	B (17.1)	0.167	B (13.6)	0.218
Rosa L Parks Boulevard & Church Street	Overall Intersection	C (34.7)	0.690	D (50.9)	0.657
Rosa L Parks Boulevard & Commerce Street	Overall Intersection	C (29.2)	0.486	C (32.9)	0.552
Rosa L Parks Boulevard & Broadway	Overall Intersection	F (181.5)	0.687	F (180.7)	0.792

Table 3 | Vistro Existing Intersection Results

Intersection	Turning Movement	AM Peak		PM Peak	
		LOS	V/C	LOS	V/C
Rosa L Parks Boulevard & McGavock Street	Overall Intersection	A (3.4)	0.276	A (7.0)	0.333
Rosa L Parks Boulevard & Demonbreun Street	Overall Intersection	C (22.9)	0.406	C (34.6)	0.600
Rosa L Parks Boulevard & Clark Place	Northbound Left-Turn	A (9.0)	0.024	B (10.0)	0.022
	Westbound Left-Turn	C (22.3)		D (31.7)	
	Westbound Right-Turn	B (10.6)		B (13.5)	
Rosa L Parks Boulevard/Lafayette Street & Korean Veterans Boulevard/8th Avenue S	Northbound Approach	C (23.6)	n/a	B (13.5)	n/a
	Southbound Approach	A (8.3)		F (221.1)	
	Eastbound Approach	B (10.8)		F (253.1)	
	Westbound Approach	E (39.5)		B (12.3)	
8th Avenue S & Lea Avenue	Northbound Left-Turn	A (9.5)	0.038	B (10.6)	0.279
	Eastbound Right-Turn	B (11.2)		B (14.9)	
8th Avenue S & Plamer Place	Northbound Left-Turn	A (9.3)	0.060	B (11.3)	0.602
	Eastbound Approach	C (17.1)		F (89.1)	
8th Avenue S & Drexel Street	Southbound Left-Turn	A (9.7)	0.127	B (10.8)	0.372
	Westbound Approach	C (20.5)		F (51.5)	
8th Avenue S & Division Street	Overall Intersection	F (>300.0)	0.972	F (>300.0)	1.332
9th Avenue N & Church Street	Overall Intersection	B (15.3)	0.415	B (15.7)	0.416
9th Avenue & Commerce Street	Overall Intersection	C (21.6)	0.134	C (23.6)	0.218
9th Avenue N & Broadway	Overall Intersection	C (12.6)	0.243	B (11.6)	0.300
9th Avenue S & Broadway	Northbound Approach	B (14.9)	0.021	D (27.8)	0.120
	Westbound Left-Turn	B (13.2)		C (21.2)	
9th Avenue S & Demonbreun Street	Eastbound Approach	B (14.3)	0.014	C (16.1)	0.021
	Westbound Approach	A (7.5)		A (7.5)	
9th Avenue S & Lea Avenue	Southbound Approach	A (9.1)	0.020	A (9.4)	0.034
	Eastbound Left-Turn	A (7.4)		A (7.3)	
10th Avenue N & Scovel Street	Northbound Approach	A (9.4)	0.077	B (11.1)	0.008
	Southbound Approach	A (9.4)		A (9.8)	
	Eastbound Left-Turn	A (7.2)		A (7.3)	
	Westbound Left-Turn	A (7.2)		A (7.3)	
10th Avenue N & Jefferson Street	Overall Intersection	A (9.6)	0.518	B (19.0)	0.501

Table 3 | Vistro Existing Intersection Results

Intersection	Turning Movement	AM Peak		PM Peak	
		LOS	V/C	LOS	V/C
10th Avenue N & Harrison Street	Northbound Approach	A (7.9)	0.239	B (14.5)	0.626
	Southbound Approach	A (8.9)		B (10.6)	
	Eastbound Approach	A (7.8)		A (9.0)	
	Westbound Approach	A (8.6)		B (10.1)	
10th Avenue N & Jo Johnston Avenue	Southbound Approach	B (12.3)	0.074	D (25.6)	0.348
	Eastbound Left-Turn	A (8.0)		A (9.0)	
10th Circle N & Jo Johnston Avenue	Northbound Left-Turn	A (8.1)	0.060	A (7.9)	0.536
	Southbound Left-Turn	A (7.8)		A (0.0)	
	Eastbound Approach	C (22.0)		D (30.0)	
	Westbound Approach	A (9.0)		B (14.9)	
10th Avenue N/10th Circle N & Charlotte Avenue	Overall Intersection	A (6.3)	0.244	B (12.0)	0.442
10th Avenue N & Commerce Street	Southbound Left-Turn	A (7.4)	0.060	A (7.5)	0.131
	Westbound Approach	A (9.5)		B (10.4)	
10th Avenue & Broadway	Overall Intersection	A (6.6)	0.225	B (12.3)	0.387
10th Avenue S & Demonbreun Street	Overall Intersection	B (11.8)	0.318	C (22.9)	0.478
10th Avenue S & Clark Place	Southbound Left-Turn	A (7.5)	0.016	A (7.5)	0.021
	Westbound Approach	A (9.4)		A (9.5)	
10th Avenue S & Lea Avenue	Northbound Approach	A (7.4)	0.120	A (7.5)	0.269
	Southbound Approach	A (7.7)		A (8.7)	
	Eastbound Approach	A (7.3)		A (7.4)	
	Westbound Approach	A (7.0)		A (7.4)	
Lafayette Street & Division Street/Ash Street	Overall Intersection	B (17.5)	0.383	C (32.7)	0.565
Arthur Street & Monroe Street	Northbound Approach	A (7.6)	0.296	C (23.7)	0.503
	Westbound Left-Turn	B (11.8)		A (8.3)	
11th Avenue N & Jo Johnston Avenue	Overall Intersection	C (25.4)	0.326	C (31.5)	0.510
11th Avenue N & Nelson Merry Street	Overall Intersection	B (10.1)	0.164	E (77.5)	0.504
11th Avenue N & Charlotte Avenue	Overall Intersection	D (51.4)	0.741	E (59.7)	0.846
11th Avenue N & Grundy Street	Overall Intersection	B (14.8)	0.529	C (26.0)	0.728

Table 3 | Vistro Existing Intersection Results

Intersection	Turning Movement	AM Peak		PM Peak	
		LOS	V/C	LOS	V/C
11th Avenue N & Porter Street	Northbound Left-Turn	A (8.9)	0.040	A (9.4)	0.048
	Eastbound Approach	C (21.7)		D (29.7)	
11th Avenue S & Laurel Street	Northbound Left-Turn	A (8.4)	0.193	B (10.7)	0.413
	Eastbound Approach	C (22.6)		F (63.0)	
11th Avenue S & Pine Street	Overall Intersection	A (8.2)	0.429	B (11.6)	0.611
11th Avenue S & 12th Avenue S	Overall Intersection	B (13.3)	0.559	D (48.7)	0.772
12th Avenue S & Grundy Street	Northbound Approach	A (7.8)	0.175	A (8.6)	0.296
	Southbound Approach	A (8.3)		A (9.5)	
	Eastbound Approach	A (8.0)		A (8.5)	
	Westbound Approach	A (7.8)		A (8.8)	
12th Avenue S & Porter Street	Northbound Approach	A (9.3)	0.119	A (9.8)	0.006
	Southbound Approach	A (9.7)		B (10.6)	
12th Avenue & Broadway	Overall Intersection	F (210.1)	0.381	C (27.8)	0.530
12th Avenue S & Demonbreun Street	Overall Intersection	C (31.4)	0.547	E (68.5)	0.802
12th Avenue S & Lower Church Street	Southbound Left-Turn	A (7.5)	0.020	A (7.5)	0.037
	Westbound Approach	A (9.6)		B (10.3)	
12th Avenue S & Laurel Street	Overall Intersection	A (6.1)	0.249	A (7.5)	0.398
12th Avenue S & Pine Street	Overall Intersection	A (7.6)	0.251	A (8.5)	0.386
12th Avenue S & Division Street	Overall Intersection	D (41.6)	0.663	F (96.3)	0.932
13th Avenue N & Jo Johnston Avenue	Northbound Left-Turn	B (10.0)	0.259	B (10.8)	0.302
	Northbound Right-Turn	A (8.5)		A (0.0)	
	Westbound Left-Turn	A (7.4)		A (0.0)	
13th Avenue N & Charlotte Avenue	Overall Intersection	F (163.4)	1.029	F (131.3)	0.530
13th Avenue N & Church Street	Overall Intersection	E (61.7)	0.895	E (67.7)	0.403
13th Avenue N & Grundy Street	Westbound Right-Turn	A (9.7)	0.032	B (10.8)	0.095
13th Avenue & Broadway	Overall Intersection	D (40.9)	0.630	D (53.2)	0.779
13th Avenue S & McGavock Street	Overall Intersection	B (11.1)	0.387	B (17.8)	0.292
13th Avenue S & Demonbreun Street	Overall Intersection	C (33.2)	0.497	C (27.6)	0.400

Future Year 2032 Conditions

Travel Demand Forecasting

Traffic Volumes

To determine traffic volumes for the Future Year 2032 conditions, a growth rate was applied to the existing traffic volumes that consider multiple data sources. These sources include TDOT historic growth trends as well as the traffic anticipated to be generated by proposed developments within the area.

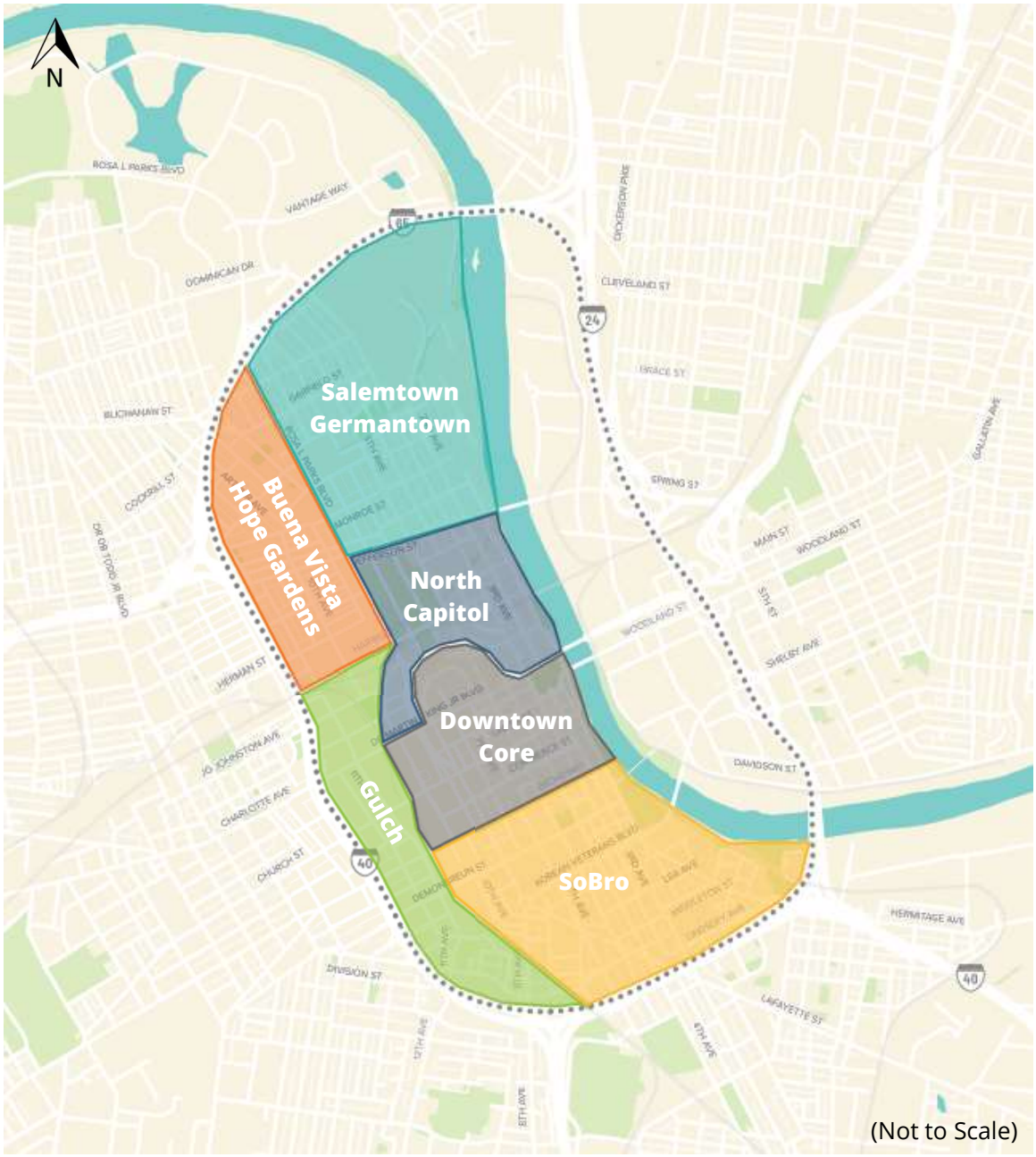
TDOT collects information on Annual Average Daily Traffic (AADT) for roadways across the state. There are 45 TDOT AADT count stations within the study area. The growth across these stations is not uniform as different neighborhoods grow and develop on different timelines. Therefore, the AADTs were grouped by neighborhood into six growth rate zones as shown in Figure 8. The AADTs at individual count stations may change rapidly year-over-year and not reflect the true growth rate in the neighborhood. These variances in AADT were accounted for by averaging the growth rate prior to Covid in 2020.

The average growth was calculated looking back five years (2015), 10 years (2010), and 20 years (2000). These growth rates were presented to NDOT and modified based on known development occurring in each growth rate zone. Table 4 summarizes the different growth rates over time as well as the selected Connect Downtown growth rate that was used for the Future Year 2032 scenarios. A detailed summary of the TDOT counts station data is included in the technical appendix. Based on the selected growth rates, the existing vehicle turning movement counts were grown and a detailed summary of the traffic volumes are included in the technical appendix.

Table 4 | Growth Zones

Neighborhood	# of Count Stations	Growth Rate			
		2015	2010	2000	Selected
Buena Vista / Hope Gardens	3	0.14%	-4.50%	-2.80%	1.00%
Downtown Core	11	6.10%	3.16%	0.32%	3.50%
Germantown / Salemtown	1	2.76%	2.43%	0.77%	2.50%
Gulch	8	6.55%	3.80%	1.10%	4.00%
North Capitol	8	3.33%	3.45%	0.56%	3.00%
SoBro	11	4.46%	2.95%	1.01%	4.00%

Figure 8 | Growth Zones



Transit Volumes

WeGo Public Transit provided data related to expanded transit services, increased service frequency, and anticipated ridership. The project team used this data to determine future routes, route frequency, and ridership projections for the Future Year 2032 TPC Vissim models. As such, the models reflect the three phases of recommendations for transit infrastructure, routes, and frequency.

Future Roadway Network

Connect Downtown recommends TPCs, mobility lanes, and curb loading within the current right-of-way. To accommodate these changes, certain roadways were considered for a reduction in vehicular capacity. Connect Downtown recommends the following operational changes, which were incorporated into the Future Year 2032 models:

- 2nd Avenue was converted from one-way operations to two-way operations from Union Street to Korean Veterans Boulevard
- 3rd Avenue was converted from two-way operations to one-way northbound operations for most segments from Union Street to Ash Street
- 4th Avenue was converted to one-way southbound only operations from Charlotte Avenue to Ash Street (While the majority of 4th Avenue currently operates as one-way southbound only, there are some segments that operate as two-way. These two-way sections will be removed.)
- 7th Avenue was converted from two-way operations to one-way northbound operations for most segments from Charlotte Avenue to Demonbreun Street

The 2nd Avenue conversion has an additional segment that will extend south to the I-40 interstate ramps. This conversion would require reconstruction of the interstate ramps. Due to the complexity involved and the associated timeline being well beyond the anticipated Connect Downtown implementation schedule, this recommendation was not included in the model.

Associated with each of these operational changes listed above, signal timings and lane configurations for each of the impacted study intersections were modified and volumes were shifted to incorporate the new traffic patterns along the road network. A detailed inventory of the roadway changes is included in the technical appendix.

Intersection Capacity Analysis

Utilizing the Future Year 2032 traffic volumes, capacity analyses were performed for each of the Future Year 2032 scenarios to determine the impact of the Connect Downtown recommendations on the study intersections. The signal timings at each study intersection were optimized for all scenarios.

Future No Build

The Future No Build scenario was run to determine the impact of continued growth with no improvements. Table 5A summarizes the number of intersections in each LOS and v/c category. Tables 6A and 7A present the level of service and Tables 6B and 7B present the v/c ratio for each intersection under all Future Year 2032 scenarios.

In the AM peak hour, 131 intersections are expected to operate at LOS D or better and 33 intersections are expected to operate at LOS E or worse. In the PM peak hour, 115 intersections are expected to operate at LOS D or better and 49 intersections are expected to operate at LOS E or worse. Figures 9 and Figure 10 show the Future No Build peak hour levels of service. The detailed capacity analysis results are included in the technical appendix.

Table 5A | Future Scenario Intersection Summary Results (Future No Build)

LOS	Number of Intersections	
	AM	PM
A	35	20
B	50	44
C	35	30
D	13	21
E	9	12
F	8	2
F+	14	35

V/C	Number of Intersections	
	AM	PM
<0.5	111	74
0.5≤X<0.85	36	49
0.85≤X<1.0	9	11
1.0≤	7	29
n/a	1	1

Future 50% AMG

Future 50% AMG represents 50% of the new growth being SOVs and the other 50% being non-SOVs such as transit, biking, scooting, or walking. Table 5B summarizes the number of intersections in each LOS and v/c category. Tables 6A and 7A present the level of service and Tables 6B and 7B present the v/c ratio for each intersection under all Future Year 2032 scenarios.

In the AM peak period, 139 intersections are expected to operate at LOS D or better and 25 intersections are expected to operate at LOS E or worse. In the PM peak hour, 123 intersections are expected to operate at LOS D or better and 41 intersections are expected to operate at LOS E or worse. Figures 11 and 12 show the Future 50% AMG peak hour levels of service. The detailed capacity analysis results are included in the technical appendix.

Table 5B | Future Scenario Intersection Summary Results (Future 50% AMG)

LOS	Number of Intersections	
	AM	PM
A	45	25
B	52	47
C	35	37
D	10	15
E	9	10
F	2	9
F+	11	21

V/C	Number of Intersections	
	AM	PM
<0.5	122	92
0.5≤X<0.85	30	44
0.85≤X<1.0	6	10
1.0≤	5	17
n/a	1	1

Future 100% AMG

Future 100% AMG represents 100% of the new growth being non-SOVs such as transit, biking, scooting, or walking. Table 5C summarizes the number of intersections in each LOS and v/c category. Tables 6A and 7A present the level of service and Tables 6B and 7B present the v/c ratio for each intersection under all Future Year 2032 scenarios.

In the AM peak period, 153 intersections are expected to operate at LOS D or better and 11 intersections are expected to operate at LOS E or worse. In the PM peak hour, 138 intersections are expected to operate at LOS D or better and 26 intersections are expected to operate at LOS E. Figures 13 and 14 show the Future 100% AMG peak hour levels of service. The detailed capacity analysis results are included in the technical appendix.

Table 5C | Future Scenario Intersection Summary Results (Future 100% AMG)

LOS	Number of Intersections	
	AM	PM
A	48	29
B	56	51
C	36	47
D	14	13
E	3	9
F	1	3
F+	6	12

V/C	Number of Intersections	
	AM	PM
<0.5	132	107
0.5≤X<0.85	24	43
0.85≤X<1.0	4	6
1.0≤	3	7
n/a	1	1

Table 6A | AM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
1st Avenue N & Gay Street	Overall Intersection	B (12.3)	B (10.5)	B (10.2)
1st Avenue & Broadway	Overall Intersection	C (31.3)	C (29.2)	C (28.2)
1st Avenue S & Demonbreun Street	Overall Intersection	A (9.5)	A (9.5)	A (9.4)
1st Avenue S/Hermitage Avenue & Korean Veterans Boulevard	Overall Intersection	F (>300.0)	F (244.0)	F (123.6)
Rutledge Street & Peabody Street	Northbound Approach	A (9.8)	A (9.5)	A (9.2)
	Westbound Left-Turn	A (7.6)	A (7.5)	A (7.4)
Hermitage Avenue & Peabody Street	Overall Intersection	D (40.9)	B (15.8)	B (11.7)
Rutledge Street & Lea Avenue	Northbound Left-Turn	A (0.0)	A (0.0)	A (0.0)
	Southbound Left-Turn	A (7.3)	A (7.3)	A (7.2)
	Eastbound Approach	A (8.9)	A (8.8)	A (8.8)
	Westbound Approach	A (9.2)	A (9.1)	A (9.0)
Hermitage Avenue & Lea Avenue	Overall Intersection	A (6.1)	A (3.6)	A (2.6)
Hermitage Avenue & Middleton Street	Overall Intersection	D (36.9)	B (12.3)	A (9.8)
2nd Avenue N & Van Buren Street	Northbound Approach	A (8.5)	A (8.3)	A (8.1)
	Southbound Approach	A (8.0)	A (7.8)	A (7.7)
	Eastbound Approach	A (8.3)	A (8.1)	A (7.8)
	Westbound Approach	A (8.4)	A (8.2)	A (8.0)
2nd Avenue N & Taylor Street	Northbound Left-Turn	A (7.5)	A (7.5)	A (7.4)
	Southbound Left-Turn	A (7.5)	A (7.4)	A (7.4)
	Eastbound Approach	B (10.6)	B (10.3)	B (10.1)
	Westbound Approach	B (10.2)	B (10.0)	A (9.8)
2nd Avenue N & Stockyard Street	Northbound Left-Turn	A (7.6)	A (7.6)	A (7.5)
	Southbound Left-Turn	A (7.8)	A (7.7)	A (7.6)
	Eastbound Approach	B (13.9)	B (12.6)	B (11.7)
	Westbound Approach	B (11.6)	B (10.9)	B (10.4)
2nd Avenue N & Gay Street	Northbound Approach	D (25.7)	C (16.1)	B (12.6)
	Southbound Approach	C (16.4)	B (12.6)	B (10.8)
	Eastbound Approach	C (19.0)	B (14.0)	B (11.7)
	Westbound Approach	C (19.6)	B (13.9)	B (11.5)

Table 6A | AM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
2nd Avenue N & James Robertson Parkway	Overall Intersection	A (2.7)	A (3.8)	A (2.7)
2nd Avenue N & Union Street	Overall Intersection	B (15.6)	E (55.8)	D (38.1)
2nd Avenue N & Church Street	Overall Intersection	B (16.6)	B (15.9)	B (15.3)
2nd Avenue N & Commerce Street	Overall Intersection	B (15.1)	C (20.7)	B (16.3)
2nd Avenue & Broadway	Overall Intersection	C (24.7)	C (23.3)	C (22.7)
2nd Avenue S & Demonbreun Street	Overall Intersection	B (19.8)	B (18.5)	B (17.8)
2nd Avenue S & Korean Veterans Boulevard	Overall Intersection	D (36.3)	C (31.9)	C (27.7)
2nd Avenue S & Peabody Street	Overall Intersection	A (7.5)	A (7.4)	A (7.2)
2nd Avenue S & Lea Avenue	Eastbound Approach	C (20.9)	C (16.9)	B (14.5)
	Westbound Approach	D (28.0)	C (21.1)	C (17.2)
2nd Avenue S & Ash Street	Eastbound Approach	--	A (0.00)	A (0.00)
	Northbound Left-Turn	--	A (0.00)	A (0.00)
2nd Avenue S & Lafayette Street	Overall Intersection	C (28.7)	C (26.1)	C (25.0)
3rd Avenue N & Garfield Street	Overall Intersection	A (5.7)	A (5.5)	A (5.3)
3rd Avenue N & Van Buren Street	Northbound Approach	B (12.3)	B (10.9)	B (10.0)
	Southbound Approach	B (12.2)	B (10.9)	B (10.1)
	Eastbound Approach	A (9.2)	A (8.8)	A (8.6)
	Westbound Approach	A (9.5)	A (8.9)	A (8.5)
3rd Avenue N & Taylor Street	Northbound Approach	B (10.2)	A (9.5)	A (9.1)
	Southbound Approach	A (9.1)	A (8.7)	A (8.4)
	Eastbound Approach	A (8.2)	A (8.0)	A (7.8)
	Westbound Approach	A (8.0)	A (7.7)	A (7.6)
3rd Avenue N & Madison Street	Northbound Approach	C (19.1)	B (14.9)	B (12.6)
	Southbound Approach	B (13.3)	B (12.0)	B (11.0)
	Eastbound Approach	B (10.7)	B (10.3)	A (9.9)
	Westbound Approach	B (10.6)	B (10.1)	A (9.8)
3rd Avenue N & Jefferson Street	Overall Intersection	F (145.5)	E (78.9)	D (37.7)
3rd Avenue N & Stockyard Street	Southbound Left-Turn	A (7.4)	A (7.4)	A (7.4)
	Westbound Approach	A (9.1)	A (8.9)	A (8.9)
3rd Avenue N & Harrison Street	Northbound Left-Turn	A (7.4)	A (7.4)	A (7.4)
	Eastbound Left-Turn	A (9.1)	A (9.0)	A (8.9)

Table 6A | AM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
3rd Avenue N & Gay Street	Northbound Approach	B (14.9)	B (12.2)	B (10.7)
	Southbound Approach	C (15.7)	B (12.9)	B (11.3)
	Eastbound Approach	C (18.8)	B (13.8)	B (11.5)
	Westbound Approach	D (26.1)	C (16.7)	B (13.0)
3rd Avenue N & James Robertson Parkway	Overall Intersection	F (298.8)	C (32.8)	C (20.0)
3rd Avenue N & Deaderick Street	Overall Intersection	B (16.9)	B (14.3)	B (13.4)
3rd Avenue N & Union Street	Overall Intersection	D (47.1)	D (43.7)	D (42.9)
3rd Avenue N & Church Street	Overall Intersection	B (16.4)	C (23.3)	C (32.0)
3rd Avenue N & Commerce Street	Overall Intersection	F (98.3)	C (28.2)	C (27.7)
3rd Avenue & Broadway	Overall Intersection	C (21.9)	C (23.3)	C (22.6)
3rd Avenue S & Demonbreun Street	Overall Intersection	C (20.7)	C (23.3)	C (22.6)
3rd Avenue S & Korean Veterans Boulevard	Overall Intersection	B (14.2)	A (5.8)	A (5.0)
3rd Avenue S & Peabody Street	Northbound Approach	A (7.5)	A (7.7)	A (7.6)
	Southbound Approach	A (7.4)	--	--
	Eastbound Approach	A (7.3)	A (7.1)	A (7.1)
	Westbound Approach	A (7.6)	A (7.3)	A (7.2)
3rd Avenue S & Lea Avenue	Northbound Approach	A (7.3)	A (7.5)	A (7.5)
	Southbound Approach	A (7.4)	--	--
	Eastbound Approach	A (7.4)	A (7.3)	A (7.2)
	Westbound Approach	A (7.7)	A (7.4)	A (7.3)
3rd Avenue S & Elm Street	Northbound Approach	A (7.9)	A (7.5)	A (7.4)
	Southbound Approach	A (7.9)	--	--
	Eastbound Approach	A (7.6)	--	--
	Westbound Approach	A (8.8)	A (8.0)	A (7.7)
3rd Avenue S & Ash Street	Northbound Approach	B (10.8)	A (9.7)	A (9.0)
	Southbound Approach	A (8.3)	A (7.9)	A (7.7)
	Eastbound Approach	A (8.9)	A (8.4)	A (8.0)
	Westbound Approach	A (8.9)	A (8.4)	A (8.0)

Table 6A | AM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
4th Avenue N & Madison Street	Northbound Approach	A (7.6)	A (7.5)	A (7.4)
	Southbound Approach	A (7.7)	A (7.6)	A (7.5)
	Eastbound Approach	A (7.5)	A (7.4)	A (7.4)
	Westbound Approach	A (7.6)	A (7.5)	A (7.4)
4th Avenue N & Jefferson Street	Overall Intersection	C (24.2)	B (15.7)	B (12.5)
4th Avenue N & Harrison Street	Northbound Approach	A (7.6)	A (7.6)	A (7.5)
	Southbound Approach	A (7.3)	A (7.3)	A (7.2)
	Eastbound Approach	A (7.5)	A (7.4)	A (7.4)
	Westbound Approach	A (7.8)	A (7.7)	A (7.6)
James Robertson Parkway & Gay Street	Overall Intersection	D (38.8)	F (81.4)	D (38.2)
4th Avenue N & James Robertson Parkway	Overall Intersection	B (13.2)	B (12.6)	B (12.1)
4th Avenue N & Charlotte Avenue	Overall Intersection	B (15.4)	B (17.3)	B (16.6)
4th Avenue N & Deaderick Street	Overall Intersection	B (15.8)	C (23.4)	C (22.7)
4th Avenue N & Union Street	Overall Intersection	B (17.4)	C (31.7)	C (28.6)
4th Avenue N & Church Street	Overall Intersection	C (22.4)	C (28.9)	C (28.1)
4th Avenue N & Commerce Street	Overall Intersection	C (20.5)	C (27.2)	C (26.9)
4th Avenue & Broadway	Overall Intersection	C (33.2)	C (24.7)	C (24.2)
4th Avenue S & Demonbreun Street	Overall Intersection	C (23.4)	C (20.2)	B (19.6)
4th Avenue S & Korean Veterans Boulevard	Overall Intersection	B (18.7)	B (13.2)	B (13.0)
4th Avenue S & Elm Street	Eastbound Approach	C (15.3)	--	--
	Westbound Approach	E (44.3)	C (23.0)	C (16.5)
4th Avenue S & Ash Street	Overall Intersection	F (>300.0)	F (217.4)	F (143.0)
4th Avenue S & Lafayette Street	Overall Intersection	C (28.6)	C (25.0)	C (23.0)
5th Avenue N & Hume Street	Northbound Approach	A (7.4)	A (7.3)	A (7.3)
	Southbound Approach	A (7.4)	A (7.4)	A (7.3)
	Eastbound Approach	A (7.3)	A (7.2)	A (7.1)
	Westbound Approach	A (7.5)	A (7.5)	A (7.4)
5th Avenue N & Taylor Street	Northbound Left-Turn	A (7.6)	A (7.5)	A (7.5)
	Eastbound Approach	A (9.6)	A (9.4)	A (9.3)

Table 6A | AM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
5th Avenue N & Madison Street	Northbound Approach	A (7.8)	A (7.7)	A (7.6)
	Southbound Approach	A (8.0)	A (7.8)	A (7.7)
	Eastbound Approach	A (7.5)	A (7.4)	A (7.3)
	Westbound Approach	A (8.0)	A (7.8)	A (7.7)
5th Avenue N & Jefferson Street	Overall Intersection	C (22.3)	B (19.7)	B (16.2)
5th Avenue N & James Robertson Parkway	Overall Intersection	F (139.8)	F (136.8)	E (71.7)
5th Avenue N & Charlotte Avenue	Overall Intersection	C (20.9)	B (15.4)	B (15.0)
5th Avenue N & Deaderick Street	Overall Intersection	B (16.8)	B (12.0)	B (11.7)
5th Avenue N & Union Street	Overall Intersection	C (20.1)	B (16.5)	B (15.9)
5th Avenue N & Church Street	Overall Intersection	B (16.3)	B (15.2)	B (14.7)
5th Avenue N & Commerce Street	Overall Intersection	C (20.8)	B (17.6)	B (16.8)
5th Avenue & Broadway	Overall Intersection	B (16.4)	C (20.2)	B (19.9)
5th Avenue S & Demonbreun Street	Overall Intersection	C (21.8)	C (22.9)	C (22.0)
5th Avenue S & Korean Veterans Boulevard	Overall Intersection	C (20.8)	B (18.0)	B (16.0)
5th Avenue S & Elm Street	Southbound Left-Turn	A (0.0)	A (0.0)	A (0.0)
	Westbound Approach	B (10.1)	A (9.8)	A (9.5)
5th Avenue S & Lafayette Street	Overall Intersection	B (13.8)	B (11.3)	B (10.5)
6th Avenue N & Hume Street	Northbound Approach	A (9.7)	A (9.6)	A (9.4)
	Southbound Approach	A (9.1)	A (9.0)	A (8.9)
	Eastbound Left-Turn	A (7.3)	A (7.3)	A (7.3)
	Westbound Left-Turn	A (7.4)	A (7.3)	A (7.3)
6th Avenue N & Taylor Street	Northbound Approach	A (8.6)	A (8.6)	A (8.6)
	Southbound Approach	A (9.4)	A (9.3)	A (9.2)
	Eastbound Left-Turn	A (0.0)	A (0.0)	A (0.0)
	Westbound Left-Turn	A (7.3)	A (7.3)	A (7.3)
6th Avenue N & Charlotte Avenue	Southbound Approach	B (11.0)	B (10.7)	B (10.3)
6th Avenue N & Charlotte Avenue	Overall Intersection	B (16.0)	B (11.6)	B (11.0)
6th Avenue N & Union Street	Overall Intersection	C (27.1)	C (27.6)	C (27.0)
6th Avenue N & Church Street	Overall Intersection	B (14.2)	B (13.3)	B (13.2)
6th Avenue N & Commerce Street	Overall Intersection	B (14.3)	B (12.8)	B (12.5)
6th Avenue & Broadway	Overall Intersection	B (17.0)	B (16.7)	B (16.3)

Table 6A | AM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
6th Avenue S & Demonbreun Street	Overall Intersection	C (20.6)	C (20.8)	C (20.1)
6th Avenue S & Korean Veterans Boulevard	Overall Intersection	D (38.8)	C (21.8)	B (17.2)
6th Avenue S & Peabody Street	Northbound Left-Turn	A (7.5)	A (7.4)	A (7.4)
	Southbound Left-Turn	A (7.7)	A (7.6)	A (7.5)
	Eastbound Approach	B (10.8)	B (10.2)	A (9.9)
	Westbound Approach	B (11.4)	B (10.6)	B (10.3)
6th Avenue S & Lea Avenue	Northbound Left-Turn	A (7.5)	A (7.4)	A (7.4)
	Southbound Left-Turn	A (7.6)	A (7.5)	A (7.5)
	Eastbound Approach	B (11.5)	B (10.8)	B (10.4)
	Westbound Approach	B (10.8)	B (10.2)	A (9.9)
6th Avenue S/Ewing Street & Lafayette Street	Overall Intersection	B (15.9)	B (14.0)	B (13.2)
6th Avenue S & Division Street	Overall Intersection	B (14.3)	B (13.9)	B (13.8)
6th Avenue S & Mulberry Street	Northbound Left-Turn	A (7.3)	A (7.3)	A (7.3)
	Southbound Left-Turn	A (7.5)	A (7.5)	A (7.4)
	Eastbound Approach	A (9.4)	A (9.2)	A (9.1)
	Westbound Approach	A (9.5)	A (9.4)	A (9.1)
7th Avenue N & Taylor Street	Northbound Approach	A (8.8)	A (8.7)	A (8.7)
	Westbound Left-Turn	A (7.4)	A (7.3)	A (7.3)
7th Avenue N & Charlotte Avenue	Overall Intersection	C (22.3)	B (12.4)	B (11.8)
7th Avenue N & Union Street	Overall Intersection	B (17.5)	B (13.6)	B (13.3)
7th Avenue N & Church Street	Overall Intersection	E (55.6)	C (22.3)	B (14.8)
7th Avenue N & Commerce Street	Overall Intersection	C (33.4)	C (32.5)	C (29.8)
7th Avenue & Broadway	Overall Intersection	D (50.7)	C (24.9)	C (24.3)
7th Avenue S & McGavock Street	Overall Intersection	C (34.7)	A (3.4)	A (3.4)
7th Avenue S & Demonbreun Street	Overall Intersection	A (8.6)	A (1.7)	A (1.6)
7th Avenue S & Lafayette Street	Overall Intersection	A (8.2)	A (6.3)	A (6.9)
7th Avenue S & Drexel Street	Northbound Left-Turn	A (7.4)	A (7.4)	A (7.4)
	Eastbound Approach	A (9.3)	A (9.1)	A (9.0)
Rosa L Parks Boulevard & Garfield Street	Overall Intersection	C (28.8)	C (26.5)	C (25.1)

Table 6A | AM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
Rosa L Parks Boulevard & Hume Street	Overall Intersection	B (10.5)	B (11.5)	B (10.9)
Rosa L Parks Boulevard & Taylor Street	Northbound Left-Turn	A (0.0)	A (0.0)	A (0.0)
	Southbound Left-Turn	A (10.0)	A (9.5)	A (9.1)
	Eastbound Approach	--	--	--
	Westbound Approach	E (36.2)	D (25.9)	C (20.4)
Rosa L Parks Boulevard & Monroe Street	Overall Intersection	C (30.0)	C (27.5)	C (25.7)
Rosa L Parks Boulevard & Jefferson Street	Overall Intersection	D (47.8)	D (36.8)	C (32.3)
Rosa L Parks Boulevard & Harrison Street	Overall Intersection	A (9.9)	A (9.4)	A (8.8)
Rosa L Parks Boulevard & 10th Circle N	Overall Intersection	E (75.2)	E (61.3)	D (45.0)
Rosa L Parks Boulevard & James Robertson Parkway	Overall Intersection	D (36.5)	F (140.1)	F (85.7)
YMCA Way & Charlotte Avenue	Overall Intersection	C (27.8)	C (25.2)	C (24.3)
Rosa L Parks Boulevard & Charlotte Avenue	Overall Intersection	E (76.7)	D (43.5)	D (38.5)
Rosa L Parks Boulevard & Union Street	Overall Intersection	B (17.8)	B (13.1)	B (12.8)
Rosa L Parks Boulevard & Church Street	Overall Intersection	F (99.2)	C (34.3)	C (31.1)
Rosa L Parks Boulevard & Commerce Street	Overall Intersection	E (59.0)	D (39.3)	C (28.3)
Rosa L Parks Boulevard & Broadway	Overall Intersection	F (>300.0)	F (230.1)	F (168.5)
Rosa L Parks Boulevard & McGavock Street	Overall Intersection	A (4.2)	A (6.4)	A (4.8)
Rosa L Parks Boulevard & Demonbreun Street	Overall Intersection	C (31.4)	D (36.9)	C (26.2)
Rosa L Parks Boulevard & Clark Place	Northbound Left-Turn	B (10.5)	A (0.0)	A (0.0)
	Westbound Left-Turn	E (46.1)	--	--
	Westbound Right-Turn	B (12.3)	B (11.3)	B (10.6)

Table 6A | AM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
Rosa L Parks Boulevard/Lafayette Street & Korean Veterans Boulevard/8th Avenue S	Northbound Approach	F (>300.0)	F (91.4)	D (25.5)
	Southbound Approach	C (18.1)	B (11.7)	A (8.6)
	Eastbound Approach	F (54.1)	C (18.1)	B (10.8)
	Westbound Approach	F (>300.0)	F (187.2)	E (43.0)
8th Avenue S & Lea Avenue	Northbound Left-Turn	B (11.5)	B (10.3)	A (9.5)
	Eastbound Right-Turn	B (13.5)	B (12.1)	B (11.2)
8th Avenue S & Plamer Place	Northbound Left-Turn	B (11.2)	B (10.1)	A (9.3)
	Eastbound Approach	E (40.9)	C (23.8)	C (17.1)
8th Avenue S & Drexel Street	Southbound Left-Turn	B (12.1)	B (10.7)	A (9.7)
	Westbound Approach	F (66.5)	D (30.4)	C (20.5)
8th Avenue S & Division Street	Overall Intersection	F (>300.0)	F (>300.0)	F (>300.0)
9th Avenue N & Church Street	Overall Intersection	B (17.3)	B (15.4)	B (14.6)
9th Avenue & Commerce Street	Overall Intersection	C (22.8)	C (22.2)	C (21.6)
9th Avenue N & Broadway	Overall Intersection	B (13.9)	B (13.1)	B (12.6)
9th Avenue S & Broadway	Northbound Approach	C (21.8)	C (17.8)	B (14.9)
	Westbound Left-Turn	C (17.8)	C (15.1)	B (13.2)
9th Avenue S & Demonbreun Street	Eastbound Approach	D (26.3)	C (17.6)	B (14.3)
	Westbound Approach	A (7.9)	A (7.7)	A (7.5)
9th Avenue S & Lea Avenue	Southbound Approach	A (9.5)	A (9.3)	A (9.1)
	Eastbound Left-Turn	A (7.6)	A (7.5)	A (7.4)
10th Avenue N & Scovel Street	Northbound Approach	A (9.5)	A (9.5)	A (9.4)
	Southbound Approach	A (9.4)	A (9.4)	A (9.4)
	Eastbound Left-Turn	A (7.2)	A (7.2)	A (7.2)
	Westbound Left-Turn	A (7.2)	A (7.2)	A (7.2)
10th Avenue N & Jefferson Street	Overall Intersection	B (10.2)	A (9.9)	A (9.6)
10th Avenue N & Harrison Street	Northbound Approach	A (8.8)	A (8.3)	A (7.9)
	Southbound Approach	B (10.7)	A (9.6)	A (8.9)
	Eastbound Approach	A (8.4)	A (8.1)	A (7.8)
	Westbound Approach	A (9.9)	A (9.1)	A (8.6)
10th Avenue N & Jo Johnston Avenue	Southbound Approach	C (19.1)	B (14.4)	B (12.3)
	Eastbound Left-Turn	A (8.5)	A (8.2)	A (8.0)

Table 6A | AM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
10th Circle N & Jo Johnston Avenue	Northbound Left-Turn	A (8.5)	A (8.3)	A (8.1)
	Southbound Left-Turn	A (8.0)	A (7.9)	A (7.8)
	Eastbound Approach	F (71.5)	D (32.8)	C (22.0)
	Westbound Approach	A (9.3)	A (9.1)	A (9.0)
10th Avenue N/10th Circle N & Charlotte Avenue	Overall Intersection	A (7.3)	A (6.7)	A (6.3)
10th Avenue N & Commerce Street	Southbound Left-Turn	A (7.5)	A (7.4)	A (7.4)
	Westbound Approach	A (9.9)	A (9.7)	A (9.5)
10th Avenue & Broadway	Overall Intersection	A (7.7)	A (7.1)	A (6.6)
10th Avenue S & Demonbreun Street	Overall Intersection	B (14.5)	B (12.9)	B (11.8)
10th Avenue S & Clark Place	Southbound Left-Turn	A (7.6)	A (7.6)	A (7.5)
	Westbound Approach	B (10.1)	A (9.7)	A (9.4)
10th Avenue S & Lea Avenue	Northbound Approach	A (7.7)	A (7.6)	A (7.4)
	Southbound Approach	A (8.3)	A (8.0)	A (7.7)
	Eastbound Approach	A (7.5)	A (7.4)	A (7.3)
	Westbound Approach	A (7.5)	A (7.2)	A (7.0)
Lafayette Street & Division Street/Ash Street	Overall Intersection	C (22.6)	B (17.4)	B (17.4)
Arthur Street & Monroe Street	Northbound Approach	A (7.6)	A (7.6)	A (7.6)
	Westbound Left-Turn	B (12.5)	B (12.1)	B (11.8)
11th Avenue N & Jo Johnston Avenue	Overall Intersection	C (28.9)	C (26.9)	C (25.4)
11th Avenue N & Nelson Merry Street	Overall Intersection	B (10.9)	B (10.4)	B (10.1)
11th Avenue N & Charlotte Avenue	Overall Intersection	F (186.7)	F (111.8)	D (51.4)
11th Avenue N & Grundy Street	Overall Intersection	D (44.5)	C (20.4)	B (14.8)
11th Avenue N & Porter Street	Northbound Left-Turn	B (10.2)	A (9.5)	A (8.9)
	Eastbound Approach	E (46.1)	D (29.4)	C (21.7)
11th Avenue S & Laurel Street	Northbound Left-Turn	A (9.2)	A (8.7)	A (8.4)
	Eastbound Approach	F (94.7)	E (35.6)	C (22.6)
11th Avenue S & Pine Street	Overall Intersection	B (10.9)	A (9.2)	A (8.3)
11th Avenue S & 12th Avenue S	Overall Intersection	D (35.7)	B (15.1)	B (12.6)

Table 6A | AM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
12th Avenue S & Grundy Street	Northbound Approach	A (8.4)	A (8.0)	A (7.8)
	Southbound Approach	A (9.3)	A (8.7)	A (8.3)
	Eastbound Approach	A (8.8)	A (8.3)	A (8.0)
	Westbound Approach	A (8.4)	A (8.1)	A (7.8)
12th Avenue S & Porter Street	Northbound Approach	A (9.5)	A (9.4)	A (9.3)
	Southbound Approach	B (10.1)	A (9.8)	A (9.7)
12th Avenue & Broadway	Overall Intersection	F (>300.0)	F (>300.0)	F (210.1)
12th Avenue S & Demonbreun Street	Overall Intersection	E (68.7)	D (44.1)	C (31.4)
12th Avenue S & Lower Church Street	Southbound Left-Turn	A (7.7)	A (7.6)	A (7.5)
	Westbound Approach	B (10.4)	A (10.0)	A (9.6)
12th Avenue S & Laurel Street	Overall Intersection	A (7.6)	A (6.8)	A (6.1)
12th Avenue S & Pine Street	Overall Intersection	A (8.5)	A (7.9)	A (7.6)
12th Avenue S & Division Street	Overall Intersection	F (>300.0)	F (153.1)	E (59.8)
13th Avenue N & Jo Johnston Avenue	Northbound Left-Turn	B (11.3)	B (10.5)	B (10.0)
	Northbound Right-Turn	A (8.6)	A (8.5)	A (8.5)
	Westbound Left-Turn	A (7.4)	A (7.4)	A (7.4)
13th Avenue N & Charlotte Avenue	Overall Intersection	F (>300.0)	F (255.5)	F (163.4)
13th Avenue N & Church Street	Overall Intersection	F (200.6)	F (116.4)	E (61.7)
13th Avenue N & Grundy Street	Westbound Right-Turn	B (10.2)	A (9.9)	A (9.70
13th Avenue & Broadway	Overall Intersection	F (93.4)	D (54.1)	D (40.9)
13th Avenue S & McGavock Street	Overall Intersection	B (16.6)	B (12.9)	B (11.1)
13th Avenue S & Demonbreun Street	Overall Intersection	E (58.8)	D (37.2)	C (33.2)

Table 6B | AM Peak Volume-to-Capacity All Future Scenarios

Intersection	No Build	AMG	
		50%	100%
1st Avenue N & Gay Street	0.301	0.253	0.214
1st Avenue & Broadway	0.257	0.199	0.164
1st Avenue S & Demonbreun Street	0.264	0.220	0.181
1st Avenue S/Hermitage Avenue & Korean Veterans Boulevard	0.801	0.896	0.694
Rutledge Street & Peabody Street	0.051	0.040	0.031
Hermitage Avenue & Peabody Street	0.856	0.667	0.540
Rutledge Street & Lea Avenue	0.017	0.014	0.012
Hermitage Avenue & Lea Avenue	0.723	0.593	0.486
Hermitage Avenue & Middleton Street	0.954	0.656	0.534
2nd Avenue N & Van Buren Street	0.204	0.178	0.153
2nd Avenue N & Taylor Street	0.036	0.031	0.026
2nd Avenue N & Stockyard Street	0.064	0.045	0.035
2nd Avenue N & Gay Street	0.736	0.563	0.446
2nd Avenue N & James Robertson Parkway	0.596	0.744	0.642
2nd Avenue N & Union Street	0.245	0.453	0.361
2nd Avenue N & Church Street	0.360	0.412	0.335
2nd Avenue N & Commerce Street	0.415	0.583	0.458
2nd Avenue & Broadway	0.221	0.226	0.185
2nd Avenue S & Demonbreun Street	0.293	0.400	0.329
2nd Avenue S & Korean Veterans Boulevard	0.758	0.606	0.499
2nd Avenue S & Peabody Street	0.261	0.223	0.184
2nd Avenue S & Lea Avenue	0.167	0.104	0.069
2nd Avenue S & Ash Street	0.216	0.019	0.016
2nd Avenue S & Lafayette Street	0.640	0.526	0.432
3rd Avenue N & Garfield Street	0.447	0.397	0.351
3rd Avenue N & Van Buren Street	0.483	0.414	0.355
3rd Avenue N & Taylor Street	0.411	0.358	0.315
3rd Avenue N & Madison Street	0.771	0.664	0.572
3rd Avenue N & Jefferson Street	1.041	0.900	0.778
3rd Avenue N & Stockyard Street	0.015	0.012	0.011
3rd Avenue N & Harrison Street	0.020	0.017	0.015
3rd Avenue N & Gay Street	0.754	0.592	0.473
3rd Avenue N & James Robertson Parkway	1.082	0.941	0.760

Table 6B | AM Peak Volume-to-Capacity Future Scenarios

Intersection	No Build	AMG	
		50%	100%
3rd Avenue N & Deaderick Street	0.303	0.361	0.305
3rd Avenue N & Union Street	0.596	0.404	0.332
3rd Avenue N & Church Street	0.422	0.255	0.237
3rd Avenue N & Commerce Street	0.701	0.285	0.249
3rd Avenue & Broadway	0.315	0.334	0.291
3rd Avenue S & Demonbreun Street	0.305	0.286	0.241
3rd Avenue S & Korean Veterans Boulevard	0.646	0.526	0.429
3rd Avenue S & Peabody Street	0.123	0.097	0.081
3rd Avenue S & Lea Avenue	0.140	0.109	0.089
3rd Avenue S & Elm Street	0.300	0.242	0.197
3rd Avenue S & Ash Street	0.377	0.300	0.240
4th Avenue N & Madison Street	0.101	0.088	0.078
4th Avenue N & Jefferson Street	0.902	0.777	0.670
4th Avenue N & Harrison Street	0.101	0.088	0.076
James Robertson Parkway & Gay Street	0.733	4.474	1.457
4th Avenue N & James Robertson Parkway	0.552	0.476	0.411
4th Avenue N & Charlotte Avenue	0.292	0.427	0.360
4th Avenue N & Deaderick Street	0.261	0.326	0.292
4th Avenue N & Union Street	0.450	0.401	0.345
4th Avenue N & Church Street	0.365	0.389	0.340
4th Avenue N & Commerce Street	0.442	0.362	0.331
4th Avenue & Broadway	0.209	0.259	0.232
4th Avenue S & Demonbreun Street	0.215	0.202	0.178
4th Avenue S & Korean Veterans Boulevard	0.475	0.355	0.295
4th Avenue S & Elm Street	0.445	0.292	0.207
4th Avenue S & Ash Street	1.561	0.991	0.665
4th Avenue S & Lafayette Street	0.585	0.467	0.380
5th Avenue N & Hume Street	0.085	0.075	0.066
5th Avenue N & Taylor Street	0.018	0.015	0.013
5th Avenue N & Madison Street	0.140	0.122	0.108
5th Avenue N & Jefferson Street	0.757	0.715	0.616
5th Avenue N & James Robertson Parkway	0.981	0.848	0.705
5th Avenue N & Charlotte Avenue	0.550	0.405	0.340
5th Avenue N & Deaderick Street	0.243	0.259	0.227

Table 6B | AM Peak Volume-to-Capacity Future Scenarios

Intersection	No Build	AMG	
		50%	100%
5th Avenue N & Union Street	0.498	0.418	0.350
5th Avenue N & Church Street	0.481	0.404	0.339
5th Avenue N & Commerce Street	0.488	0.397	0.334
5th Avenue & Broadway	0.412	0.419	0.350
5th Avenue S & Demonbreun Street	0.454	0.407	0.340
5th Avenue S & Korean Veterans Boulevard	0.542	0.466	0.385
5th Avenue S & Elm Street	0.121	0.095	0.075
5th Avenue S & Lafayette Street	0.401	0.351	0.288
6th Avenue N & Hume Street	0.005	0.004	0.004
6th Avenue N & Taylor Street	0.004	0.002	0.002
6th Avenue N & Charlotte Avenue	0.003	0.002	0.002
6th Avenue N & Charlotte Avenue	0.402	0.395	0.344
6th Avenue N & Union Street	0.336	0.426	0.361
6th Avenue N & Church Street	0.399	0.355	0.301
6th Avenue N & Commerce Street	0.434	0.365	0.308
6th Avenue & Broadway	0.217	0.183	0.154
6th Avenue S & Demonbreun Street	0.418	0.356	0.285
6th Avenue S & Korean Veterans Boulevard	0.736	0.590	0.479
6th Avenue S & Peabody Street	0.037	0.022	0.018
6th Avenue S & Lea Avenue	0.037	0.027	0.021
6th Avenue S/Ewing Street & Lafayette Street	0.281	0.313	0.254
6th Avenue S & Division Street	0.175	0.170	0.141
6th Avenue S & Mulberry Street	0.006	0.006	0.004
7th Avenue N & Taylor Street	0.004	0.003	0.003
7th Avenue N & Charlotte Avenue	0.647	0.437	0.387
7th Avenue N & Union Street	0.37	0.237	0.200
7th Avenue N & Church Street	0.862	0.634	0.570
7th Avenue N & Commerce Street	0.556	0.497	0.417
7th Avenue & Broadway	0.519	0.189	0.159
7th Avenue S & McGavock Street	0.062	0.024	0.020
7th Avenue S & Demonbreun Street	0.325	0.310	0.252
7th Avenue S & Lafayette Street	0.387	0.321	0.265
7th Avenue S & Drexel Street	0.034	0.028	0.021
Rosa L Parks Boulevard & Garfield Street	0.489	0.431	0.380

Table 6B | AM Peak Volume-to-Capacity Future Scenarios

Intersection	No Build	AMG	
		50%	100%
Rosa L Parks Boulevard & Hume Street	0.418	0.368	0.326
Rosa L Parks Boulevard & Taylor Street	0.248	0.158	0.108
Rosa L Parks Boulevard & Monroe Street	0.673	0.595	0.524
Rosa L Parks Boulevard & Jefferson Street	0.863	0.745	0.641
Rosa L Parks Boulevard & Harrison Street	0.335	0.289	0.248
Rosa L Parks Boulevard & 10th Circle N	0.390	0.313	0.270
Rosa L Parks Boulevard & James Robertson Parkway	0.697	1.032	0.89
YMCA Way & Charlotte Avenue	0.432	0.373	0.321
Rosa L Parks Boulevard & Charlotte Avenue	0.427	0.368	0.318
Rosa L Parks Boulevard & Union Street	0.235	0.309	0.261
Rosa L Parks Boulevard & Church Street	0.924	0.804	0.679
Rosa L Parks Boulevard & Commerce Street	0.697	0.711	0.608
Rosa L Parks Boulevard & Broadway	0.968	1.126	0.963
Rosa L Parks Boulevard & McGavock Street	0.409	0.642	0.528
Rosa L Parks Boulevard & Demonbreun Street	0.607	0.736	0.604
Rosa L Parks Boulevard & Clark Place	0.084	0.034	0.024
Rosa L Parks Boulevard/Lafayette Street & Korean Veterans Boulevard/8th Avenue S	n/a	n/a	n/a
8th Avenue S & Lea Avenue	0.074	0.052	0.038
8th Avenue S & Plamer Place	0.250	0.117	0.06
8th Avenue S & Drexel Street	0.477	0.232	0.127
8th Avenue S & Division Street	1.421	0.972	0.972
9th Avenue N & Church Street	0.585	0.515	0.434
9th Avenue & Commerce Street	0.197	0.162	0.134
9th Avenue N & Broadway	0.343	0.288	0.243
9th Avenue S & Broadway	0.063	0.039	0.021
9th Avenue S & Demonbreun Street	0.025	0.019	0.014
9th Avenue S & Lea Avenue	0.033	0.025	0.02
10th Avenue N & Scovel Street	0.086	0.082	0.077
10th Avenue N & Jefferson Street	0.573	0.546	0.518
10th Avenue N & Harrison Street	0.379	0.299	0.239
10th Avenue N & Jo Johnston Avenue	0.167	0.108	0.074
10th Circle N & Jo Johnston Avenue	0.139	0.085	0.060

Table 6B | AM Peak Volume-to-Capacity Future Scenarios

Intersection	No Build	AMG	
		50%	100%
10th Avenue N/10th Circle N & Charlotte Avenue	0.327	0.282	0.244
10th Avenue N & Commerce Street	0.081	0.071	0.060
10th Avenue & Broadway	0.316	0.266	0.225
10th Avenue S & Demonbreun Street	0.469	0.387	0.318
10th Avenue S & Clark Place	0.028	0.021	0.016
10th Avenue S & Lea Avenue	0.185	0.150	0.121
Lafayette Street & Division Street/Ash Street	0.584	0.383	0.383
Arthur Street & Monroe Street	0.338	0.317	0.296
11th Avenue N & Jo Johnston Avenue	0.485	0.398	0.326
11th Avenue N & Nelson Merry Street	0.248	0.201	0.164
11th Avenue N & Charlotte Avenue	1.107	0.910	0.741
11th Avenue N & Grundy Street	0.747	0.640	0.529
11th Avenue N & Porter Street	0.139	0.068	0.040
11th Avenue S & Laurel Street	0.679	0.358	0.199
11th Avenue S & Pine Street	0.636	0.522	0.430
11th Avenue S & 12th Avenue S	0.828	0.681	0.559
12th Avenue S & Grundy Street	0.273	0.216	0.175
12th Avenue S & Porter Street	0.004	0.146	0.119
12th Avenue & Broadway	0.601	0.452	0.381
12th Avenue S & Demonbreun Street	0.810	0.664	0.547
12th Avenue S & Lower Church Street	0.035	0.026	0.020
12th Avenue S & Laurel Street	0.368	0.303	0.249
12th Avenue S & Pine Street	0.373	0.307	0.251
12th Avenue S & Division Street	1.618	1.284	1.639
13th Avenue N & Jo Johnston Avenue	0.393	0.318	0.259
13th Avenue N & Charlotte Avenue	0.743	0.650	1.029
13th Avenue N & Church Street	1.321	1.084	0.895
13th Avenue N & Grundy Street	0.051	0.039	0.032
13th Avenue & Broadway	0.958	0.778	0.630
13th Avenue S & McGavock Street	0.454	0.437	0.387
13th Avenue S & Demonbreun Street	0.741	0.612	0.497

Table 7A | PM Peak Level of Service All Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
1st Avenue N & Gay Street	Overall Intersection	B (15.9)	B (13.4)	B (13.0)
1st Avenue & Broadway	Overall Intersection	D (51.0)	D (36.6)	C (34.7)
1st Avenue S & Demonbreun Street	Overall Intersection	C (33.6)	C (25.6)	C (25.3)
1st Avenue S/Hermitage Avenue & Korean Veterans Boulevard	Overall Intersection	F (234.4)	F (249.6)	F (160.7)
Rutledge Street & Peabody Street	Northbound Approach	B (10.7)	B (10.2)	A (9.7)
	Westbound Left-Turn	A (7.80	A (7.7)	A (7.6)
Hermitage Avenue & Peabody Street	Overall Intersection	F (>300.0)	F (131.5)	C (25.8)
Rutledge Street & Lea Avenue	Northbound Left-Turn	A (7.3)	A (7.3)	A (7.3)
	Southbound Left-Turn	A (7.3)	A (7.3)	A (7.2)
	Eastbound Approach	A (9.6)	A (9.4)	A (9.2)
	Westbound Approach	A (9.6)	A (9.5)	A (9.3)
Hermitage Avenue & Lea Avenue	Overall Intersection	A (9.6)	A (5.7)	A (4.3)
Hermitage Avenue & Middleton Street	Overall Intersection	F (>300.0)	E (80.4)	F (96.3)
2nd Avenue N & Van Buren Street	Northbound Approach	A (9.0)	A (8.7)	A (8.4)
	Southbound Approach	A (8.7)	A (8.3)	A (8.1)
	Eastbound Approach	A (8.6)	A (8.3)	A (8.0)
	Westbound Approach	A (8.9)	A (8.6)	A (8.3)
2nd Avenue N & Taylor Street	Northbound Left-Turn	A (7.8)	A (7.7)	A (7.7)
	Southbound Left-Turn	A (7.5)	A (7.5)	A (7.5)
	Eastbound Approach	B (11.4)	B (11.0)	B (10.7)
	Westbound Approach	B (11.9)	B (11.3)	B (10.9)
2nd Avenue N & Stockyard Street	Northbound Left-Turn	A (7.8)	A (7.7)	A (7.7)
	Southbound Left-Turn	A (7.9)	A (7.8)	A (7.7)
	Eastbound Approach	C (17.2)	B (14.6)	B (13.4)
	Westbound Approach	B (14.5)	B (12.7)	B (11.7)

Table 7A | PM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
2nd Avenue N & Gay Street	Northbound Approach	B (10.5)	A (9.5)	A (8.9)
	Southbound Approach	C (15.2)	B (12.4)	B (10.9)
	Eastbound Approach	B (13.7)	B (11.6)	B (10.4)
	Westbound Approach	B (13.0)	B (11.1)	A (9.9)
2nd Avenue N & James Robertson Parkway	Overall Intersection	A (3.3)	A (5.0)	A (3.4)
2nd Avenue N & Union Street	Overall Intersection	B (20.0)	F (102.3)	D (49.0)
2nd Avenue N & Church Street	Overall Intersection	C (22.2)	B (19.3)	B (16.9)
2nd Avenue N & Commerce Street	Overall Intersection	C (28.2)	C (22.2)	C (20.2)
2nd Avenue & Broadway	Overall Intersection	C (24.4)	C (24.5)	C (23.0)
2nd Avenue S & Demonbreun Street	Overall Intersection	C (22.8)	C (22.2)	C (21.1)
2nd Avenue S & Korean Veterans Boulevard	Overall Intersection	D (47.4)	E (75.3)	D (41.1)
2nd Avenue S & Peabody Street	Overall Intersection	A (6.7)	A (6.6)	A (6.0)
2nd Avenue S & Lea Avenue	Northbound Left-Turn	--	A (0.0)	A (0.0)
	Eastbound Approach	C (17.2)	B (14.5)	B (13.0)
	Westbound Approach	C (23.9)	C (18.5)	C (15.6)
2nd Avenue S & Ash Street	Northbound Left-Turn	--	A (0.0)	A (0.0)
	Eastbound Approach	A (0.0)	A (0.0)	A (0.0)
2nd Avenue S & Lafayette Street	Overall Intersection	E (64.9)	D (38.8)	C (30.8)
3rd Avenue N & Garfield Street	Overall Intersection	A (5.6)	A (5.3)	A (5.1)
3rd Avenue N & Van Buren Street	Northbound Approach	B (12.9)	B (11.4)	B (10.3)
	Southbound Approach	C (24.1)	C (17.3)	B (13.9)
	Eastbound Approach	B (10.3)	A (9.7)	A (9.2)
	Westbound Approach	B (12.2)	B (10.9)	A (9.9)
3rd Avenue N & Taylor Street	Northbound Approach	B (10.1)	A (9.4)	A (9.0)
	Southbound Approach	B (11.2)	B (10.3)	A (9.6)
	Eastbound Approach	A (8.4)	A (8.2)	A (8.0)
	Westbound Approach	A (8.5)	A (8.3)	A (8.1)
3rd Avenue N & Madison Street	Northbound Approach	B (15.0)	B (12.8)	B (11.5)
	Southbound Approach	D (31.2)	C (20.7)	C (16.1)
	Eastbound Approach	B (11.8)	B (11.0)	B (10.4)
	Westbound Approach	B (11.4)	B (10.7)	B (10.2)

Table 7A | PM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
3rd Avenue N & Jefferson Street	Overall Intersection	F (243.4)	F (192.3)	F (155.5)
3rd Avenue N & Stockyard Street	Southbound Left-Turn	A (7.6)	A (7.5)	A (7.5)
	Westbound Approach	A (9.5)	A (9.3)	A (9.2)
3rd Avenue N & Harrison Street	Northbound Left-Turn	A (7.4)	A (7.3)	A (7.3)
	Eastbound Left-Turn	A (9.6)	A (9.4)	A (9.3)
3rd Avenue N & Gay Street	Northbound Approach	B (12.7)	B (10.9)	A (9.9)
	Southbound Approach	D (30.1)	C (18.8)	B (14.6)
	Eastbound Approach	B (13.0)	B (11.2)	B (10.1)
	Westbound Approach	C (15.6)	B (12.7)	B (11.1)
3rd Avenue N & James Robertson Parkway	Overall Intersection	F (120.7)	E (56.6)	D (39.3)
3rd Avenue N & Deaderick Street	Overall Intersection	C (26.4)	B (18.7)	B (17.9)
3rd Avenue N & Union Street	Overall Intersection	D (52.6)	D (44.1)	D (39.3)
3rd Avenue N & Church Street	Overall Intersection	B (19.0)	D (42.3)	C (28.6)
3rd Avenue N & Commerce Street	Overall Intersection	F (129.7)	E (62.8)	D (41.5)
3rd Avenue & Broadway	Overall Intersection	C (27.7)	C (25.0)	C (23.9)
3rd Avenue S & Demonbreun Street	Overall Intersection	C (26.3)	C (31.6)	C (24.9)
3rd Avenue S & Korean Veterans Boulevard	Overall Intersection	F (161.2)	B (17.3)	B (15.0)
3rd Avenue S & Peabody Street	Northbound Approach	A (7.9)	A (7.8)	A (7.8)
	Southbound Approach	A (7.8)	--	--
	Eastbound Approach	A (7.8)	A (7.3)	A (7.2)
	Westbound Approach	A (8.1)	A (7.3)	A (7.3)
3rd Avenue S & Lea Avenue	Northbound Approach	A (7.6)	A (7.9)	A (7.8)
	Southbound Approach	A (7.5)	--	--
	Eastbound Approach	A (7.5)	A (7.4)	A (7.3)
	Westbound Approach	A (7.8)	A (7.3)	A (7.3)
3rd Avenue S & Elm Street	Northbound Approach	A (8.6)	A (7.7)	A (7.6)
	Southbound Approach	A (9.2)	--	--
	Eastbound Approach	A (8.4)	--	--
	Westbound Approach	A (8.8)	A (7.6)	A (7.5)

Table 7A | PM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
3rd Avenue S & Ash Street	Northbound Approach	B (12.1)	B (10.4)	A (9.5)
	Southbound Approach	A (9.7)	A (8.9)	A (8.3)
	Eastbound Approach	B (11.7)	A (10.0)	A (9.0)
	Westbound Approach	A (9.6)	A (8.8)	A (8.4)
4th Avenue N & Madison Street	Northbound Approach	A (8.1)	A (7.9)	A (7.7)
	Southbound Approach	A (8.9)	A (8.6)	A (8.3)
	Eastbound Approach	A (8.0)	A (7.8)	A (7.6)
	Westbound Approach	A (8.3)	A (8.1)	A (8.0)
4th Avenue N & Jefferson Street	Overall Intersection	D (35.7)	C (25.6)	C (20.9)
4th Avenue N & Harrison Street	Northbound Approach	A (7.5)	A (7.4)	A (7.3)
	Southbound Approach	A (7.4)	A (7.4)	A (7.2)
	Eastbound Approach	A (8.0)	A (7.8)	A (7.7)
	Westbound Approach	A (7.8)	A (7.7)	A (7.6)
James Robertson Parkway & Gay Street	Overall Intersection	C (28.4)	F (86.5)	D (48.2)
4th Avenue N & James Robertson Parkway	Overall Intersection	F (123.2)	E (71.7)	C (32.7)
4th Avenue N & Charlotte Avenue	Overall Intersection	B (16.4)	B (19.3)	B (17.9)
4th Avenue N & Deaderick Street	Overall Intersection	B (17.6)	C (24.8)	C (24.0)
4th Avenue N & Union Street	Overall Intersection	B (17.7)	C (26.0)	C (25.2)
4th Avenue N & Church Street	Overall Intersection	B (18.8)	C (27.0)	C (26.1)
4th Avenue N & Commerce Street	Overall Intersection	C (26.6)	D (46.0)	C (32.6)
4th Avenue & Broadway	Overall Intersection	E (64.1)	C (33.4)	C (31.1)
4th Avenue S & Demonbreun Street	Overall Intersection	D (35.5)	C (27.4)	C (25.7)
4th Avenue S & Korean Veterans Boulevard	Overall Intersection	F (101.2)	D (42.8)	C (34.1)
4th Avenue S & Elm Street	Eastbound Approach	F (62.3)	--	--
	Westbound Approach	F (277.9)	F (86.1)	E (37.3)
4th Avenue S & Ash Street	Overall Intersection	F (216.9)	F (166.6)	F (149.7)
4th Avenue S & Lafayette Street	Overall Intersection	E (66.9)	D (42.4)	C (32.4)

Table 7A | PM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
5th Avenue N & Hume Street	Northbound Approach	A (7.8)	A (7.6)	A (7.5)
	Southbound Approach	A (7.7)	A (7.5)	A (7.5)
	Eastbound Approach	A (7.4)	A (7.3)	A (7.2)
	Westbound Approach	A (7.7)	A (7.6)	A (7.5)
5th Avenue N & Taylor Street	Northbound Left-Turn	A (7.6)	A (7.5)	A (7.5)
	Eastbound Approach	B (10.4)	B (10.1)	A (9.9)
5th Avenue N & Madison Street	Northbound Approach	A (8.8)	A (8.5)	A (8.2)
	Southbound Approach	A (8.6)	A (8.3)	A (8.1)
	Eastbound Approach	A (8.3)	A (8.1)	A (7.9)
	Westbound Approach	A (8.1)	A (7.9)	A (7.8)
5th Avenue N & Jefferson Street	Overall Intersection	E (72.0)	E (69.2)	D (46.0)
5th Avenue N & James Robertson Parkway	Overall Intersection	E (74.9)	F (247.6)	F (187.5)
5th Avenue N & Charlotte Avenue	Overall Intersection	C (21.3)	B (15.6)	B (15.1)
5th Avenue N & Deaderick Street	Overall Intersection	B (16.9)	B (13.4)	B (12.9)
5th Avenue N & Union Street	Overall Intersection	B (17.8)	B (16.9)	B (16.4)
5th Avenue N & Church Street	Overall Intersection	B (19.5)	B (17.6)	B (16.7)
5th Avenue N & Commerce Street	Overall Intersection	C (26.2)	C (31.0)	C (24.8)
5th Avenue & Broadway	Overall Intersection	F (141.0)	C (28.7)	C (27.6)
5th Avenue S & Demonbreun Street	Overall Intersection	C (20.4)	C (21.0)	C (20.1)
5th Avenue S & Korean Veterans Boulevard	Overall Intersection	C (24.4)	B (18.6)	B (16.2)
5th Avenue S & Elm Street	Southbound Left-Turn	A (7.6)	--	--
	Westbound Approach	B (10.6)	A (9.8)	A (9.5)
5th Avenue S & Lafayette Street	Overall Intersection	C (29.0)	B (15.2)	B (13.0)
6th Avenue N & Hume Street	Northbound Approach	A (9.3)	A (9.2)	A (9.1)
	Southbound Approach	A (9.5)	A (9.4)	A (9.3)
	Eastbound Left-Turn	A (7.4)	A (7.3)	A (7.3)
	Westbound Left-Turn	A (7.5)	A (7.4)	A (7.4)

Table 7A | PM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
6th Avenue N & Taylor Street	Northbound Approach	A (9.4)	A (9.2)	A (9.1)
	Southbound Approach	A (9.6)	A (9.3)	A (9.3)
	Eastbound Left-Turn	A (7.3)	A (7.3)	A (7.3)
	Westbound Left-Turn	A (7.4)	A (7.4)	A (7.4)
6th Avenue N & Charlotte Avenue	Southbound Approach	B (11.7)	B (10.9)	B (10.5)
6th Avenue N & Charlotte Avenue	Overall Intersection	B (19.3)	B (12.5)	B (11.9)
6th Avenue N & Union Street	Overall Intersection	C (26.3)	C (28.4)	C (27.4)
6th Avenue N & Church Street	Overall Intersection	B (16.6)	B (17.4)	B (16.8)
6th Avenue N & Commerce Street	Overall Intersection	E (71.6)	B (19.4)	B (18.0)
6th Avenue & Broadway	Overall Intersection	C (21.9)	C (20.5)	B (19.5)
6th Avenue S & Demonbreun Street	Overall Intersection	E (72.2)	D (54.0)	F (82.8)
6th Avenue S & Korean Veterans Boulevard	Overall Intersection	E (66.3)	D (35.2)	C (28.5)
6th Avenue S & Peabody Street	Northbound Left-Turn	A (0.0)	A (0.0)	A (0.0)
	Southbound Left-Turn	A (8.5)	A (8.1)	A (8.0)
	Eastbound Approach	D (29.0)	C (19.5)	C (16.2)
	Westbound Approach	C (19.2)	B (14.8)	B (13.3)
6th Avenue S & Lea Avenue	Northbound Left-Turn	A (7.8)	A (7.7)	A (7.6)
	Southbound Left-Turn	A (8.0)	A (7.9)	A (7.7)
	Eastbound Approach	C (16.7)	B (14.4)	B (12.9)
	Westbound Approach	B (14.3)	B (12.6)	B (11.6)
6th Avenue S/Ewing Street & Lafayette Street	Overall Intersection	D (39.5)	C (30.4)	C (25.1)
6th Avenue S & Division Street	Overall Intersection	B (13.8)	B (13.3)	B (13.0)
6th Avenue S & Mulberry Street	Northbound Left-Turn	A (7.5)	A (7.5)	A (7.4)
	Southbound Left-Turn	A (7.6)	A (7.5)	A (7.4)
	Eastbound Approach	B (10.7)	B (10.1)	A (9.7)
	Westbound Approach	B (11.0)	B (10.4)	A (9.9)
7th Avenue N & Taylor Street	Northbound Approach	A (9.4)	A (9.3)	A (9.2)
	Westbound Left-Turn	A (7.5)	A (7.4)	A (7.4)

Table 7A | PM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
7th Avenue N & Charlotte Avenue	Overall Intersection	B (19.8)	B (16.0)	B (15.1)
7th Avenue N & Union Street	Overall Intersection	B (17.5)	B (15.1)	B (14.6)
7th Avenue N & Church Street	Overall Intersection	F (129.5)	C (20.5)	B (18.6)
7th Avenue N & Commerce Street	Overall Intersection	F (158.2)	E (60.1)	D (40.1)
7th Avenue & Broadway	Overall Intersection	D (45)	C (25.9)	C (24.8)
7th Avenue S & McGavock Street	Overall Intersection	B (13.6)	C (29.6)	C (29.8)
7th Avenue S & Demonbreun Street	Overall Intersection	D (41.9)	B (10.3)	B (10.0)
7th Avenue S & Lafayette Street	Overall Intersection	B (15.6)	B (12.7)	B (11.9)
7th Avenue S & Drexel Street	Northbound Left-Turn	A (7.4)	A (7.4)	A (7.4)
	Eastbound Approach	B (13.6)	B (11.8)	B (10.9)
Rosa L Parks Boulevard & Garfield Street	Overall Intersection	D (44.7)	D (37.0)	C (32.4)
Rosa L Parks Boulevard & Hume Street	Northbound Left-Turn	B (11.9)	B (11.0)	B (10.4)
	Southbound Left-Turn	C (16.9)	B (14.4)	B (12.7)
	Eastbound Approach	F (133.7)	F (64.7)	E (37.4)
	Westbound Approach	F (>300.0)	F (287.6)	F (92.2)
Rosa L Parks Boulevard & Taylor Street	Northbound Left-Turn	B (12.0)	B (11.1)	B (10.4)
	Southbound Left-Turn	C (16.9)	B (14.4)	B (12.7)
	Eastbound Approach	F (>300.0)	F (>300.0)	F (119.2)
	Westbound Approach	F (>300.0)	F (>300.0)	F (90.0)
Rosa L Parks Boulevard & Monroe Street	Overall Intersection	D (45.2)	D (36.5)	C (31.7)
Rosa L Parks Boulevard & Jefferson Street	Overall Intersection	E (77.3)	D (52.1)	D (42.1)
Rosa L Parks Boulevard & Harrison Street	Overall Intersection	C (27.4)	B (18.6)	B (16.7)
Rosa L Parks Boulevard & 10th Circle N	Overall Intersection	D (51.5)	E (64.9)	F (114.1)
Rosa L Parks Boulevard & James Robertson Parkway	Overall Intersection	D (35.1)	F (88.2)	D (37.4)
YMCA Way & Charlotte Avenue	Overall Intersection	C (26.0)	C (24.7)	C (23.8)
Rosa L Parks Boulevard & Charlotte Avenue	Overall Intersection	D (35.6)	C (31.8)	C (29.9)

Table 7A | PM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
Rosa L Parks Boulevard & Union Street	Overall Intersection	B (14.8)	B (13.3)	B (12.5)
Rosa L Parks Boulevard & Church Street	Overall Intersection	F (127.2)	E (72.0)	C (34.8)
Rosa L Parks Boulevard & Commerce Street	Overall Intersection	D (48.2)	E (69.7)	D (43.2)
Rosa L Parks Boulevard & Broadway	Overall Intersection	F (>300.0)	F (245.6)	F (164.9)
Rosa L Parks Boulevard & McGavock Street	Overall Intersection	A (9.6)	B (15.2)	A (9.8)
Rosa L Parks Boulevard & Demonbreun Street	Overall Intersection	F (82.2)	F (116.3)	E (62.1)
Rosa L Parks Boulevard & Clark Place	Northbound Left-Turn	B (12.7)	--	--
	Westbound Left-Turn	F (84.2)	--	--
	Westbound Right-Turn	C (22.2)	C (16.3)	B (13.5)
Rosa L Parks Boulevard/Lafayette Street & Korean Veterans Boulevard/8th Avenue S	Northbound Approach	F (82.0)	D (25.9)	B (14.1)
	Southbound Approach	F (>300.0)	F (>300.0)	F (227.9)
	Eastbound Approach	F (>300.0)	F (>300.0)	F (253.6)
	Westbound Approach	F (82.9)	C (23.9)	B (12.6)
8th Avenue S & Lea Avenue	Northbound Left-Turn	B (14.1)	B (12.0)	B (10.6)
	Eastbound Right-Turn	D (30.3)	C (19.2)	B (14.9)
8th Avenue S & Plamer Place	Northbound Left-Turn	C (16.0)	B (13.0)	B (11.3)
	Eastbound Approach	F (>300.0)	F (>300.0)	F (89.1)
8th Avenue S & Drexel Street	Southbound Left-Turn	C (15.6)	B (12.5)	B (10.8)
	Westbound Approach	F (>300.0)	F (218.6)	F (51.5)
8th Avenue S & Division Street	Overall Intersection	F (>300.0)	F (>300.0)	F (>300.0)
9th Avenue N & Church Street	Overall Intersection	B (17.7)	B (18.0)	B (16.8)
9th Avenue & Commerce Street	Overall Intersection	C (25.6)	C (24.4)	C (23.6)
9th Avenue N & Broadway	Overall Intersection	B (13.7)	B (12.5)	B (11.6)
9th Avenue S & Broadway	Northbound Approach	F (130.9)	E (44.9)	D (27.8)
	Westbound Left-Turn	E (46.3)	D (28.8)	C (21.2)
9th Avenue S & Demonbreun Street	Eastbound Approach	E (43.2)	C (22.0)	C (16.1)
	Westbound Approach	A (7.9)	A (7.7)	A (7.5)

Table 7A | PM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
9th Avenue S & Lea Avenue	Southbound Approach	A (10.0)	A (9.7)	A (9.4)
	Eastbound Left-Turn	A (7.4)	A (7.4)	A (7.3)
10th Avenue N & Scovel Street	Northbound Approach	B (11.4)	B (11.2)	B (11.1)
	Southbound Approach	A (10.0)	A (9.9)	A (9.8)
	Eastbound Left-Turn	A (7.3)	A (7.3)	A (7.3)
	Westbound Left-Turn	A (7.3)	A (7.3)	A (7.3)
10th Avenue N & Jefferson Street	Overall Intersection	C (20.0)	B (19.4)	B (19.0)
10th Avenue N & Harrison Street	Northbound Approach	F (74.1)	C (24.5)	B (14.5)
	Southbound Approach	C (15.8)	B (12.5)	B (10.6)
	Eastbound Approach	B (10.6)	A (9.8)	A (9.0)
	Westbound Approach	B (13.7)	B (11.6)	B (10.1)
10th Avenue N & Jo Johnston Avenue	Southbound Approach	F (>300.0)	F (93.2)	D (25.6)
	Eastbound Left-Turn	B (11.2)	A (9.7)	A (9.0)
10th Circle N & Jo Johnston Avenue	Northbound Left-Turn	A (8.3)	A (8.1)	A (7.9)
	Southbound Left-Turn	A (0.0)	A (0.0)	A (0.0)
	Eastbound Approach	F (212.4)	F (60.8)	D (30.0)
	Westbound Approach	C (22.1)	C (17.4)	B (14.9)
10th Avenue N/10th Circle N & Charlotte Avenue	Overall Intersection	B (17.3)	B (14.0)	B (12.0)
10th Avenue N & Commerce Street	Southbound Left-Turn	A (7.6)	A (7.5)	A (7.5)
	Westbound Approach	B (11.4)	B (10.8)	B (10.4)
10th Avenue & Broadway	Overall Intersection	B (17.1)	B (14.3)	B (12.3)
10th Avenue S & Demonbreun Street	Overall Intersection	C (34.8)	C (26.3)	C (22.9)
10th Avenue S & Clark Place	Southbound Left-Turn	A (7.6)	A (7.6)	A (7.5)
	Westbound Approach	B (10.4)	A (9.9)	A (9.5)
10th Avenue S & Lea Avenue	Northbound Approach	A (7.9)	A (7.7)	A (7.5)
	Southbound Approach	B (10.2)	A (9.3)	A (8.7)
	Eastbound Approach	A (7.8)	A (7.6)	A (7.4)
	Westbound Approach	A (7.8)	A (7.6)	A (7.4)
Lafayette Street & Division Street/Ash Street	Overall Intersection	E (69.9)	C (24.8)	C (24.8)
Arthur Street & Monroe Street	Northbound Approach	D (32.2)	D (27.0)	C (23.7)
	Westbound Left-Turn	A (8.5)	A (8.4)	A (9.3)

Table 7A | PM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
11th Avenue N & Jo Johnston Avenue	Overall Intersection	D (52.3)	D (36.2)	C (31.5)
11th Avenue N & Nelson Merry Street	Overall Intersection	F (196.0)	F (128.8)	E (77.5)
11th Avenue N & Charlotte Avenue	Overall Intersection	F (187.9)	F (110.6)	E (59.7)
11th Avenue N & Grundy Street	Overall Intersection	F (171.7)	E (68.2)	C (26.0)
11th Avenue N & Porter Street	Northbound Left-Turn	B (11.3)	B (10.2)	A (9.4)
	Eastbound Approach	F (99.4)	E (50.0)	D (29.7)
11th Avenue S & Laurel Street	Northbound Left-Turn	B (14.6)	B (12.1)	B (10.7)
	Eastbound Approach	F (>300.0)	F (244.4)	F (63.0)
11th Avenue S & Pine Street	Overall Intersection	D (35.1)	D (39.6)	B (12.8)
11th Avenue S & 12th Avenue S	Overall Intersection	F (239.9)	F (135.3)	C (29.4)
12th Avenue S & Grundy Street	Northbound Approach	B (10.2)	A (9.2)	A (8.6)
	Southbound Approach	B (12.7)	B (10.6)	A (9.5)
	Eastbound Approach	B (10.0)	A (9.1)	A (8.5)
	Westbound Approach	B (10.5)	A (9.4)	A (8.8)
12th Avenue S & Porter Street	Northbound Approach	B (10.4)	B (10.0)	A (9.8)
	Southbound Approach	B (11.9)	B (11.1)	B (10.6)
12th Avenue & Broadway	Overall Intersection	D (44.3)	C (32.5)	C (27.8)
12th Avenue S & Demonbreun Street	Overall Intersection	F (176.2)	F (107.2)	E (68.5)
12th Avenue S & Lower Church Street	Southbound Left-Turn	A (7.6)	A (7.6)	A (7.5)
	Westbound Approach	B (11.7)	B (10.9)	B (10.3)
12th Avenue S & Laurel Street	Overall Intersection	B (12.5)	A (9.2)	A (7.5)
12th Avenue S & Pine Street	Overall Intersection	B (11.2)	A (9.5)	A (8.5)
12th Avenue S & Division Street	Overall Intersection	F (>300.0)	F (>300.0)	F (231.9)
13th Avenue N & Jo Johnston Avenue	Northbound Left-Turn	B (13.4)	B (11.8)	B (10.8)
	Northbound Right-Turn	A (0.0)	A (0.0)	A (0.0)
	Westbound Left-Turn	A (0.0)	A (0.0)	A (0.0)
13th Avenue N & Charlotte Avenue	Overall Intersection	F (>300.0)	F (244.1)	F (131.3)
13th Avenue N & Church Street	Overall Intersection	F (220.3)	F (124.3)	E (67.7)
13th Avenue N & Grundy Street	Westbound Right-Turn	B (12.3)	B (11.4)	B (10.8)
13th Avenue & Broadway	Overall Intersection	F (137.1)	F (87.2)	D (53.2)
13th Avenue S & McGavock Street	Overall Intersection	C (25.7)	B (19.9)	B (17.8)

Table 7A | PM Peak Level of Service Future Scenarios

Intersection	Turning Movement	No Build	AMG	
			50%	100%
13th Avenue S & Demonbreun Street	Overall Intersection	D (45.0)	C (31.1)	C (27.6)

Table 7B | PM Peak Volume-to-Capacity All Future Scenarios

Intersection	No Build	AMG	
		50%	100%
1st Avenue N & Gay Street	0.461	0.386	0.325
1st Avenue & Broadway	0.470	0.342	0.279
1st Avenue S & Demonbreun Street	0.526	0.401	0.320
1st Avenue S/Hermitage Avenue & Korean Veterans Boulevard	1.043	1.098	1.185
Rutledge Street & Peabody Street	0.054	0.041	0.031
Hermitage Avenue & Peabody Street	4.66	1.399	0.850
Rutledge Street & Lea Avenue	0.026	0.021	0.017
Hermitage Avenue & Lea Avenue	0.789	0.641	0.520
Hermitage Avenue & Middleton Street	2.181	1.400	2.046
2nd Avenue N & Van Buren Street	0.212	0.184	0.158
2nd Avenue N & Taylor Street	0.053	0.043	0.036
2nd Avenue N & Stockyard Street	0.055	0.037	0.028
2nd Avenue N & Gay Street	0.530	0.427	0.349
2nd Avenue N & James Robertson Parkway	0.664	0.810	0.699
2nd Avenue N & Union Street	0.421	0.839	0.650
2nd Avenue N & Church Street	0.738	0.753	0.603
2nd Avenue N & Commerce Street	0.625	0.651	0.531
2nd Avenue & Broadway	0.373	0.403	0.335
2nd Avenue S & Demonbreun Street	0.324	0.497	0.412
2nd Avenue S & Korean Veterans Boulevard	0.884	0.871	0.714
2nd Avenue S & Peabody Street	0.263	0.221	0.178
2nd Avenue S & Lea Avenue	0.179	0.114	0.076
2nd Avenue S & Ash Street	0.025	0.020	0.017
2nd Avenue S & Lafayette Street	0.981	0.806	0.663
3rd Avenue N & Garfield Street	0.475	0.418	0.368
3rd Avenue N & Van Buren Street	0.773	0.656	0.558

Table 7B | PM Peak Volume-to-Capacity Future Scenarios

Intersection	No Build	AMG	
		50%	100%
3rd Avenue N & Taylor Street	0.469	0.408	0.357
3rd Avenue N & Madison Street	0.846	0.714	0.608
3rd Avenue N & Jefferson Street	1.265	1.112	0.981
3rd Avenue N & Stockyard Street	0.029	0.023	0.019
3rd Avenue N & Harrison Street	0.087	0.073	0.061
3rd Avenue N & Gay Street	0.820	0.661	0.544
3rd Avenue N & James Robertson Parkway	1.007	0.986	0.852
3rd Avenue N & Deaderick Street	0.480	0.434	0.365
3rd Avenue N & Union Street	0.764	0.515	0.426
3rd Avenue N & Church Street	0.710	0.736	0.442
3rd Avenue N & Commerce Street	0.965	0.296	0.259
3rd Avenue & Broadway	0.365	0.345	0.309
3rd Avenue S & Demonbreun Street	0.510	0.383	0.302
3rd Avenue S & Korean Veterans Boulevard	1.774	0.708	0.585
3rd Avenue S & Peabody Street	0.131	0.100	0.080
3rd Avenue S & Lea Avenue	0.116	0.094	0.089
3rd Avenue S & Elm Street	0.292	0.221	0.179
3rd Avenue S & Ash Street	0.429	0.331	0.259
4th Avenue N & Madison Street	0.263	0.230	0.207
4th Avenue N & Jefferson Street	0.943	0.815	0.702
4th Avenue N & Harrison Street	0.155	0.133	0.114
James Robertson Parkway & Gay Street	0.719	0.842	0.710
4th Avenue N & James Robertson Parkway	0.677	0.584	0.504
4th Avenue N & Charlotte Avenue	0.446	0.494	0.416
4th Avenue N & Deaderick Street	0.323	0.361	0.318
4th Avenue N & Union Street	0.371	0.299	0.258
4th Avenue N & Church Street	0.379	0.347	0.299
4th Avenue N & Commerce Street	0.664	0.513	0.441
4th Avenue & Broadway	0.455	0.449	0.385
4th Avenue S & Demonbreun Street	0.504	0.596	0.423
4th Avenue S & Korean Veterans Boulevard	0.911	0.747	0.573
4th Avenue S & Elm Street	1.114	0.682	0.329
4th Avenue S & Ash Street	2.483	1.742	1.520
4th Avenue S & Lafayette Street	9.516	1.009	0.643

Table 7B | PM Peak Volume-to-Capacity Future Scenarios

Intersection	No Build	AMG	
		50%	100%
5th Avenue N & Hume Street	0.112	0.096	0.085
5th Avenue N & Taylor Street	0.072	0.059	0.050
5th Avenue N & Madison Street	0.235	0.205	0.179
5th Avenue N & Jefferson Street	1.017	1.050	0.896
5th Avenue N & James Robertson Parkway	0.967	1.284	1.108
5th Avenue N & Charlotte Avenue	0.589	0.456	0.384
5th Avenue N & Deaderick Street	0.285	0.316	0.277
5th Avenue N & Union Street	0.488	0.402	0.332
5th Avenue N & Church Street	0.691	0.544	0.442
5th Avenue N & Commerce Street	0.682	0.715	0.656
5th Avenue & Broadway	0.748	0.567	0.488
5th Avenue S & Demonbreun Street	0.413	0.543	0.449
5th Avenue S & Korean Veterans Boulevard	0.603	0.489	0.401
5th Avenue S & Elm Street	0.126	0.091	0.072
5th Avenue S & Lafayette Street	0.582	0.477	0.390
6th Avenue N & Hume Street	0.006	0.004	0.004
6th Avenue N & Taylor Street	0.004	0.003	0.003
6th Avenue N & Charlotte Avenue	0.028	0.020	0.016
6th Avenue N & Charlotte Avenue	0.445	0.404	0.347
6th Avenue N & Union Street	0.383	0.468	0.397
6th Avenue N & Church Street	0.428	0.405	0.348
6th Avenue N & Commerce Street	0.967	0.621	0.492
6th Avenue & Broadway	0.371	0.313	0.260
6th Avenue S & Demonbreun Street	1.022	0.945	0.855
6th Avenue S & Korean Veterans Boulevard	0.910	0.708	0.559
6th Avenue S & Peabody Street	0.174	0.105	0.073
6th Avenue S & Lea Avenue	0.036	0.026	0.017
6th Avenue S/Ewing Street & Lafayette Street	0.635	0.581	0.473
6th Avenue S & Division Street	0.268	0.221	0.181
6th Avenue S & Mulberry Street	0.008	0.007	0.005
7th Avenue N & Taylor Street	0.022	0.019	0.017
7th Avenue N & Charlotte Avenue	0.621	0.456	0.401
7th Avenue N & Union Street	0.414	0.342	0.288
7th Avenue N & Church Street	1.230	0.520	0.466

Table 7B | PM Peak Volume-to-Capacity Future Scenarios

Intersection	No Build	AMG	
		50%	100%
7th Avenue N & Commerce Street	1.072	0.816	0.687
7th Avenue & Broadway	0.457	0.295	0.248
7th Avenue S & McGavock Street	0.100	0.033	0.027
7th Avenue S & Demonbreun Street	0.489	0.323	0.265
7th Avenue S & Lafayette Street	0.523	0.438	0.610
7th Avenue S & Drexel Street	0.372	0.288	0.227
Rosa L Parks Boulevard & Garfield Street	0.788	0.687	0.604
Rosa L Parks Boulevard & Hume Street	0.537	0.473	0.418
Rosa L Parks Boulevard & Taylor Street	0.170	1.277	0.209
Rosa L Parks Boulevard & Monroe Street	0.782	0.690	0.610
Rosa L Parks Boulevard & Jefferson Street	1.065	0.916	0.787
Rosa L Parks Boulevard & Harrison Street	0.522	0.448	0.386
Rosa L Parks Boulevard & 10th Circle N	0.524	0.451	0.389
Rosa L Parks Boulevard & James Robertson Parkway	0.803	0.469	0.856
YMCA Way & Charlotte Avenue	0.505	0.436	0.375
Rosa L Parks Boulevard & Charlotte Avenue	0.397	0.301	0.547
Rosa L Parks Boulevard & Union Street	0.341	0.375	0.315
Rosa L Parks Boulevard & Church Street	0.857	0.853	0.721
Rosa L Parks Boulevard & Commerce Street	0.781	0.916	0.771
Rosa L Parks Boulevard & Broadway	1.118	1.306	1.104
Rosa L Parks Boulevard & McGavock Street	0.493	0.748	0.615
Rosa L Parks Boulevard & Demonbreun Street	0.894	1.035	0.850
Rosa L Parks Boulevard & Clark Place	0.081	0.323	0.229
Rosa L Parks Boulevard/Lafayette Street & Korean Veterans Boulevard/8th Avenue S	n/a	n/a	n/a
8th Avenue S & Lea Avenue	0.605	0.404	0.279
8th Avenue S & Plamer Place	3.474	1.331	0.602
8th Avenue S & Drexel Street	3.231	0.942	0.372
8th Avenue S & Division Street	1.960	1.618	1.332
9th Avenue N & Church Street	0.608	0.508	0.422
9th Avenue & Commerce Street	0.371	0.282	0.218
9th Avenue N & Broadway	0.118	0.118	0.300
9th Avenue S & Broadway	0.558	0.229	0.120

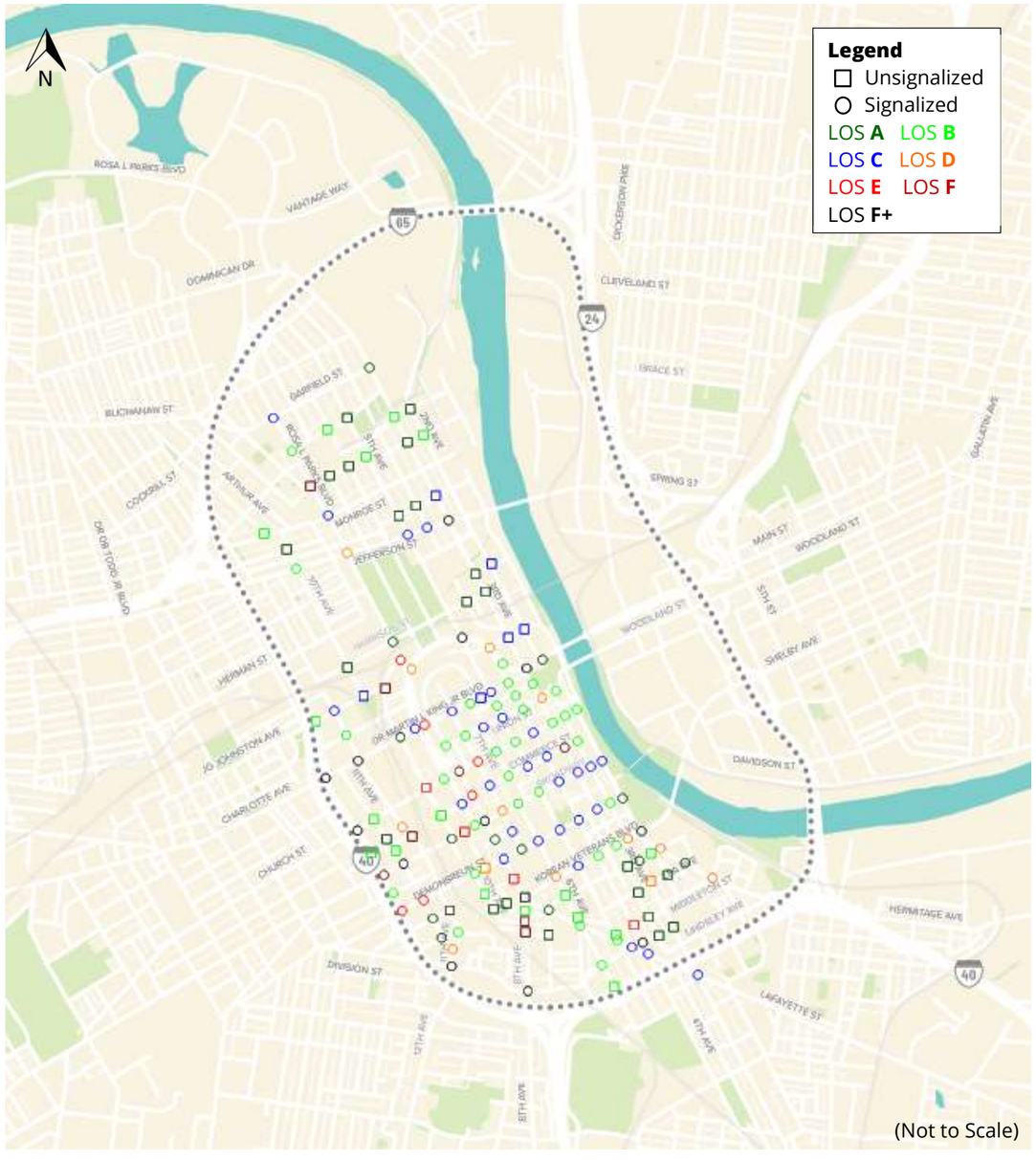
Table 7B | PM Peak Volume-to-Capacity Future Scenarios

Intersection	No Build	AMG	
		50%	100%
9th Avenue S & Demonbreun Street	0.039	0.028	0.021
9th Avenue S & Lea Avenue	0.056	0.045	0.034
10th Avenue N & Scovel Street	0.013	0.009	0.008
10th Avenue N & Jefferson Street	0.555	0.527	0.501
10th Avenue N & Harrison Street	1.065	0.810	0.626
10th Avenue N & Jo Johnston Avenue	2.011	0.744	0.348
10th Circle N & Jo Johnston Avenue	1.203	0.765	0.536
10th Avenue N/10th Circle N & Charlotte Avenue	0.538	0.470	0.442
10th Avenue N & Commerce Street	0.192	0.156	0.131
10th Avenue & Broadway	0.550	0.461	0.387
10th Avenue S & Demonbreun Street	0.726	0.581	0.478
10th Avenue S & Clark Place	0.039	0.027	0.021
10th Avenue S & Lea Avenue	0.406	0.331	0.269
Lafayette Street & Division Street/Ash Street	1.154	0.569	0.569
Arthur Street & Monroe Street	0.622	0.557	0.403
11th Avenue N & Jo Johnston Avenue	0.759	0.622	0.510
11th Avenue N & Nelson Merry Street	0.746	0.613	0.504
11th Avenue N & Charlotte Avenue	1.229	1.027	0.846
11th Avenue N & Grundy Street	1.008	0.845	0.728
11th Avenue N & Porter Street	0.256	0.114	0.048
11th Avenue S & Laurel Street	2.570	1.006	0.432
11th Avenue S & Pine Street	0.916	1.039	0.750
11th Avenue S & 12th Avenue S	1.143	0.939	0.772
12th Avenue S & Grundy Street	0.483	0.374	0.296
12th Avenue S & Porter Street	0.013	0.008	0.006
12th Avenue & Broadway	0.790	0.646	0.530
12th Avenue S & Demonbreun Street	1.191	0.978	0.802
12th Avenue S & Lower Church Street	0.069	0.050	0.037
12th Avenue S & Laurel Street	0.591	0.485	0.398
12th Avenue S & Pine Street	0.575	0.470	0.386
12th Avenue S & Division Street	2.731	2.120	1.710
13th Avenue N & Jo Johnston Avenue	0.482	0.379	0.302
13th Avenue N & Charlotte Avenue	0.845	0.644	0.530
13th Avenue N & Church Street	0.607	0.494	0.403

Table 7B | PM Peak Volume-to-Capacity Future Scenarios

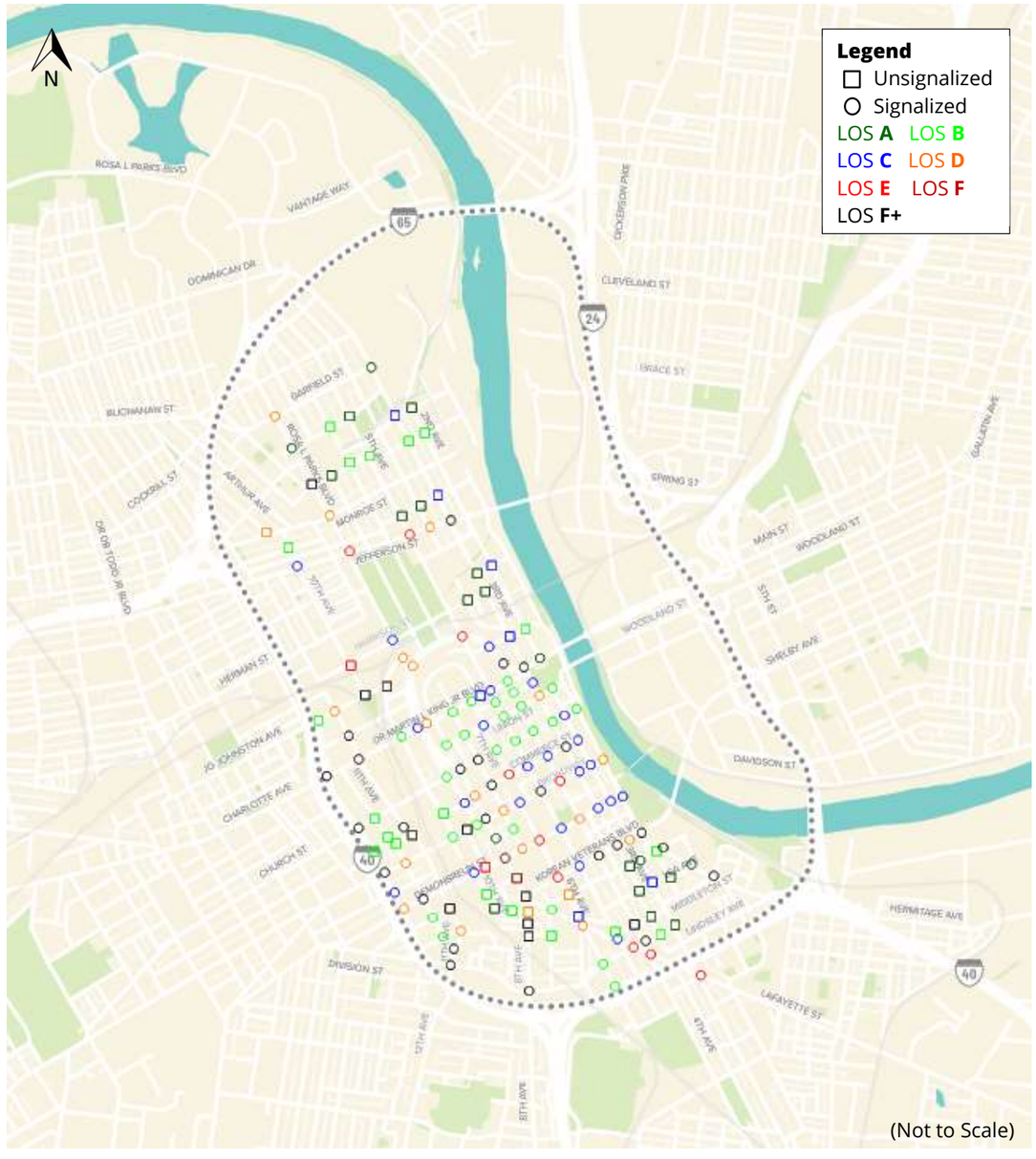
Intersection	No Build	AMG	
		50%	100%
13th Avenue N & Grundy Street	0.164	0.123	0.095
13th Avenue & Broadway	1.149	0.947	0.779
13th Avenue S & McGavock Street	0.413	0.349	0.292
13th Avenue S & Demonbreun Street	0.602	0.492	0.400

Figure 9 | Future Year 2032 No Build – AM Peak Hour



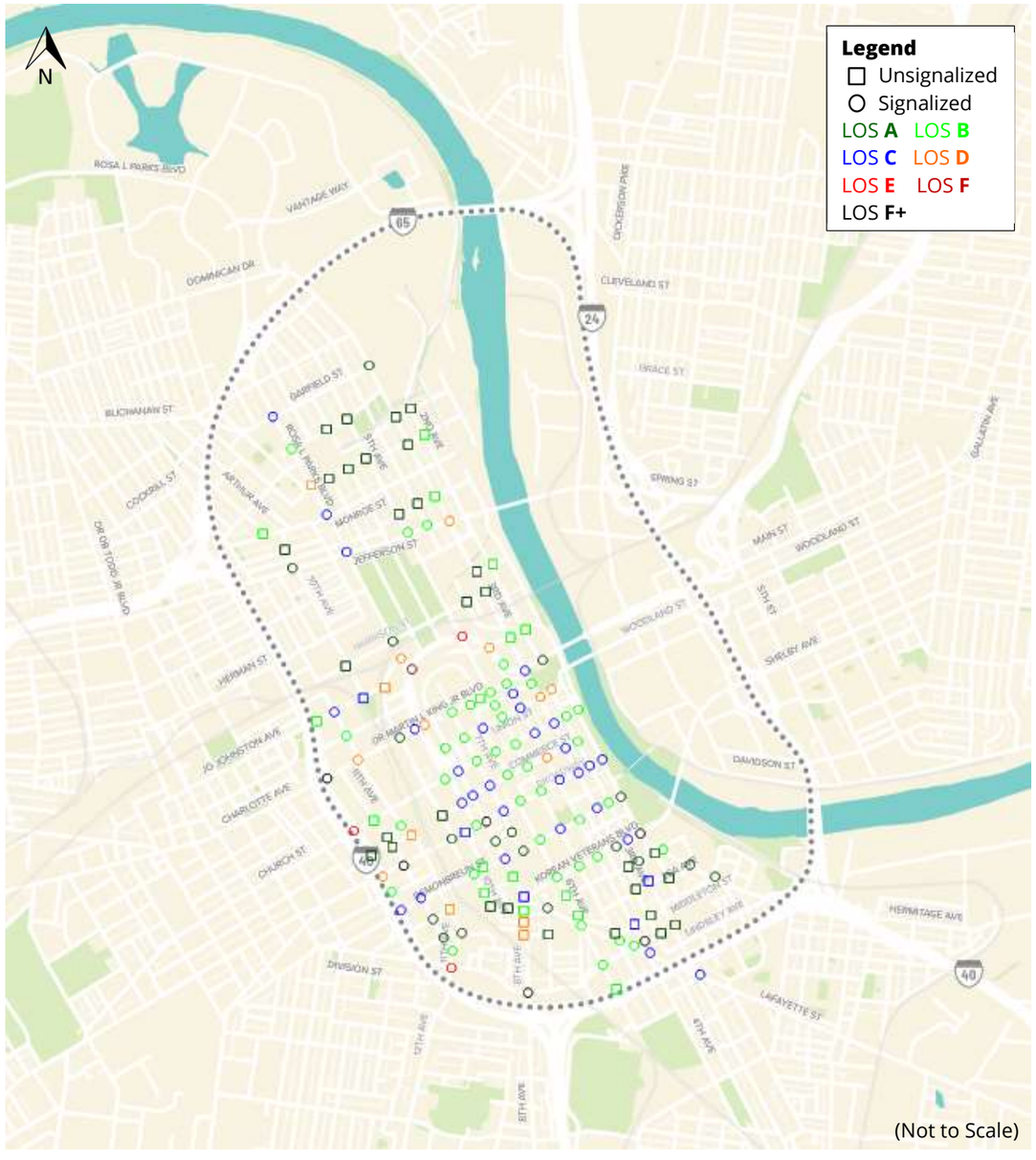
(Not to Scale)

Figure 10 | Future Year 2032 No Build – PM Peak Hour



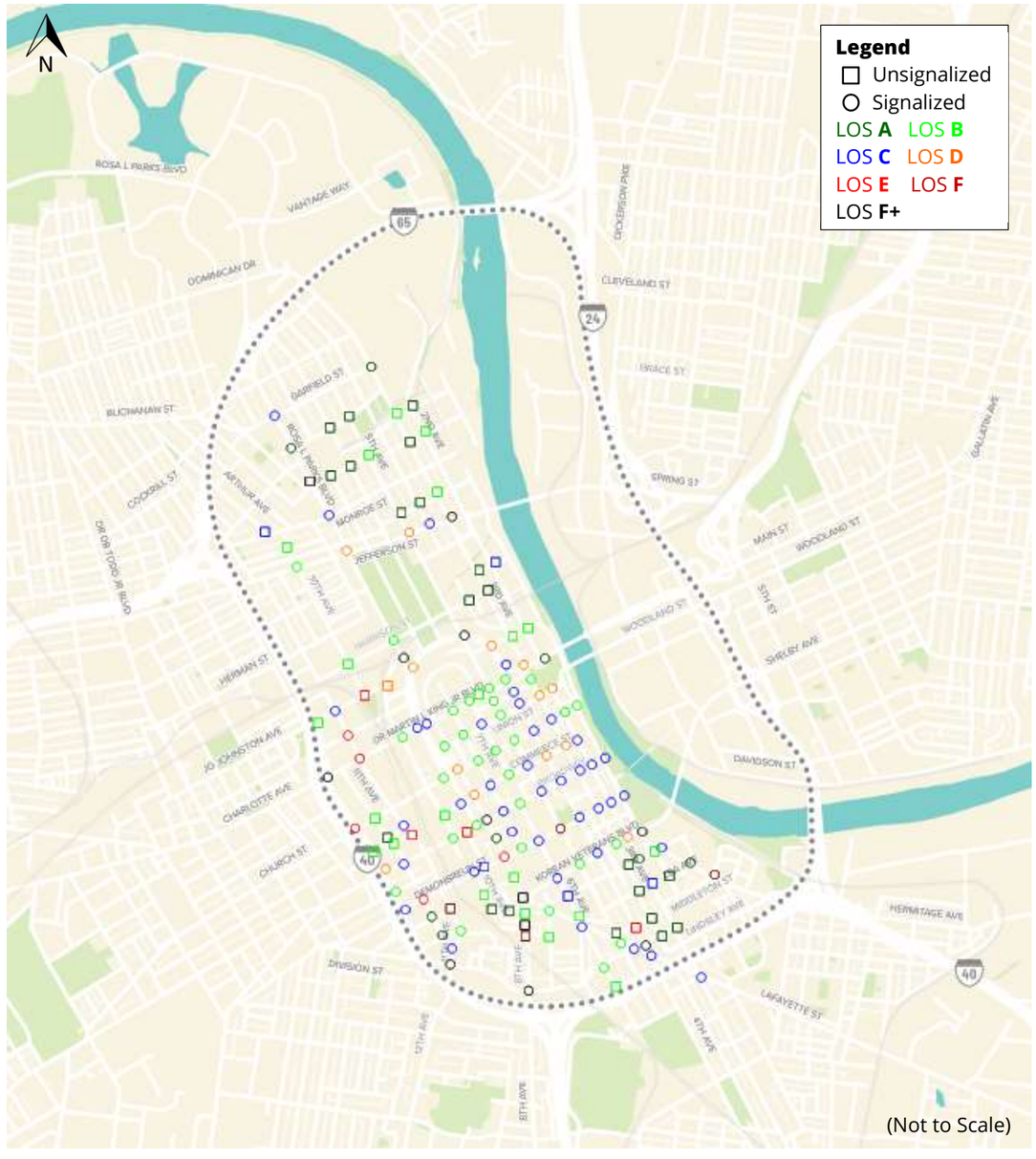
(Not to Scale)

Figure 11 | Future Year 2032 Build + 100% AMG Scenario – AM Peak Hour



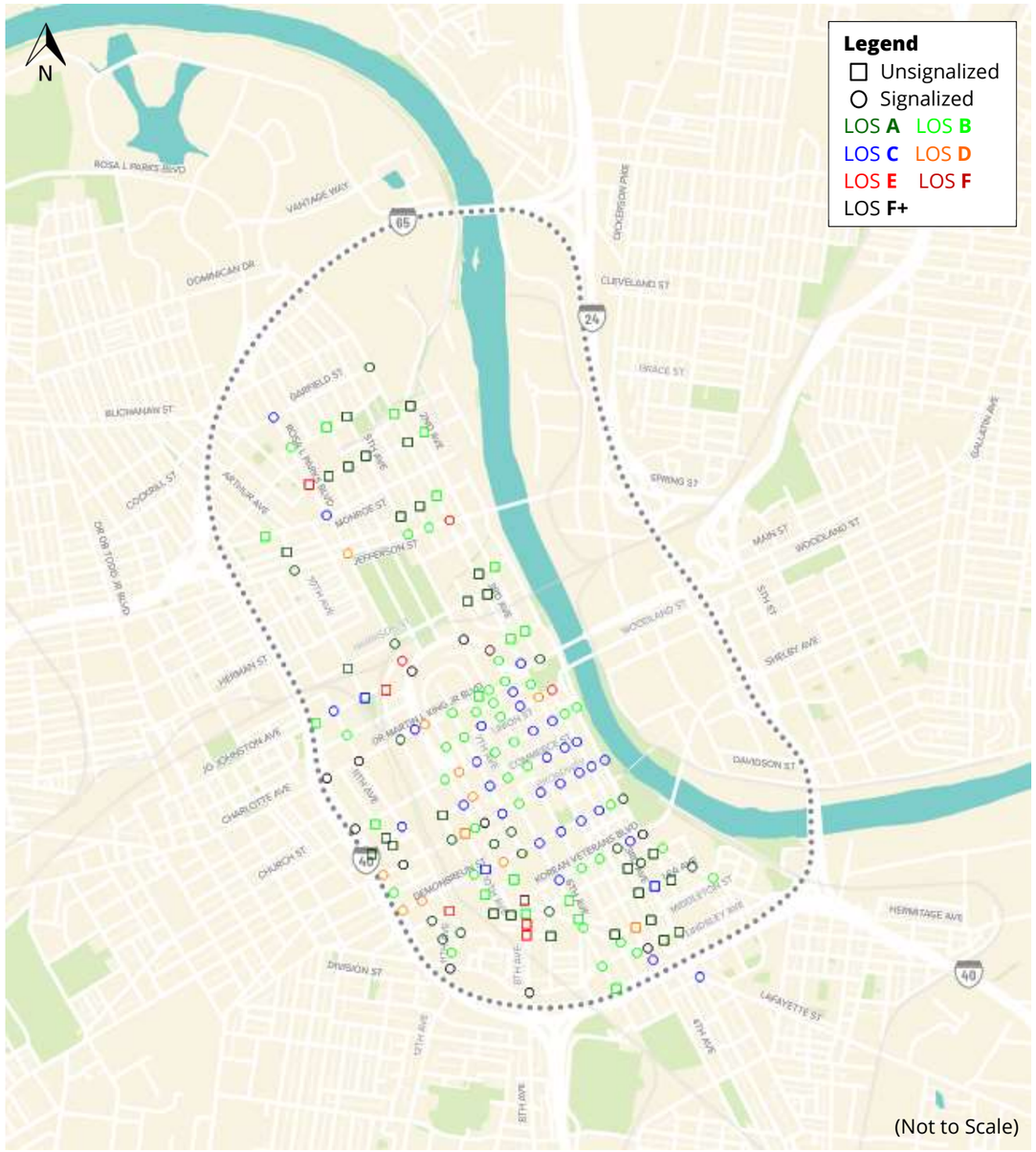
(Not to Scale)

Figure 12 | Future Year 2032 Build + 100% AMG Scenario – PM Peak Hour



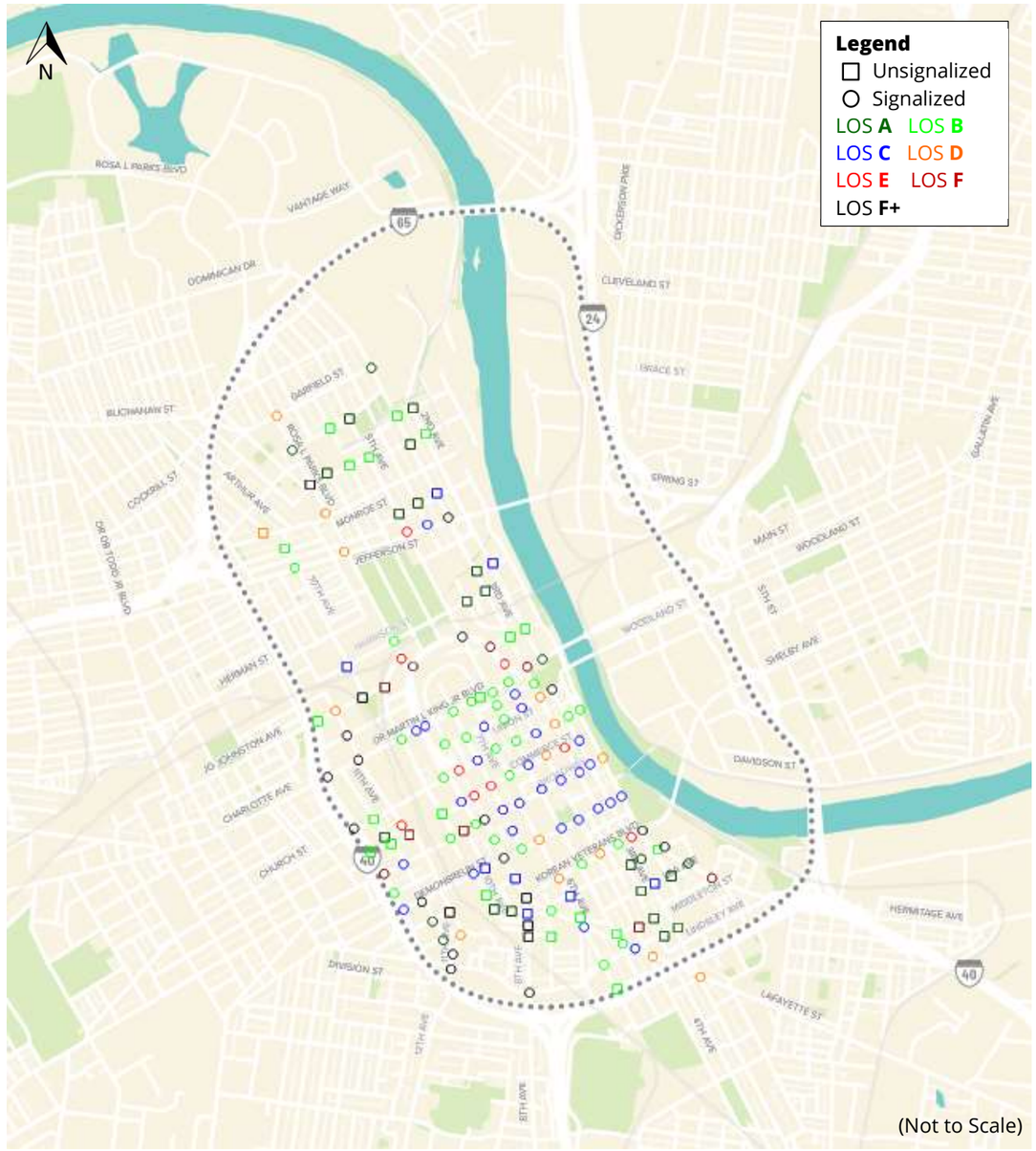
(Not to Scale)

Figure 13 | Future Year 2032 Build + 50% AMG Scenario – AM Peak Hour



(Not to Scale)

Figure 14 | Future Year 2032 Build + 50% AMG Scenario – PM Peak Hour



(Not to Scale)

Transit Priority Corridor Analysis

PTV Vissim microsimulation was utilized to evaluate the proposed TPCs. Table 8 details the roadway segments that were evaluated.

Table 8 | Transit Priority Corridors

Roadway	Cross Streets	Direction of Travel
Rosa L Parks Boulevard	8th Avenue N to Church Street	Southbound
Rosa L Parks Boulevard	8th Avenue N to Church Street	Northbound
Rosa L Parks Boulevard	Church Street to Korean Veterans Boulevard/Lafayette Street/8th Avenue S	Southbound
Rosa L Parks Boulevard	Church Street to Korean Veterans Boulevard/Lafayette Street/8th Avenue S	Northbound
Lafayette Street	Korean Veterans Boulevard/Lafayette Street/8th Avenue S to Division Street	Eastbound
Lafayette Street	Korean Veterans Boulevard/Lafayette Street/8th Avenue S to Division Street	Westbound
4th Avenue S	Korean Veterans Boulevard to Rep John Lewis Way S	Southbound
3rd Avenue S	Korean Veterans Boulevard to Rep John Lewis Way S	Northbound
4th Avenue S	Broadway to Korean Veterans Boulevard	Southbound
3rd Avenue S	Broadway to Korean Veterans Boulevard	Northbound
4th Avenue S	Charlotte Avenue to Broadway	Southbound
3rd Avenue S	Charlotte Avenue to Broadway	Northbound
James Robertson Parkway	8th Avenue N to 3rd Avenue N	Eastbound
James Robertson Parkway	8th Avenue N to 3rd Avenue N	Westbound

The models included optimized and coordinated signal timing for the intersections along the TPCs, signalized transit queue gap jumps where applicable, and transit priority at high conflict areas. Vehicle routes were adjusted to ensure bus lane compliance and appropriate drivers' behaviors.

The Future Year 2032 Build + 50% AMG and the Future Year 2032 Build + 100% AMG scenarios were analyzed. The existing and future no build scenarios were not

analyzed for the TPC study area because without transit priority the bus delay is anticipated to match the SOV delay.

The Vissim models included five additional intersections that were outside of the intersections analyzed for other parts of the work. Those intersections are as follows:

- James Robertson Parkway and 6th Avenue N
- James Robertson Parkway and 7th Avenue N
- Rep John Lewis Way and Gay Street
- 4th Avenue S and Peabody Street
- 4th Avenue S and Lea Avenue

Those intersections were added because Vissim modeling encompasses entire networks rather than individual intersections, and these intersections were needed to make sure the network was completely connected. Turning movement counts for these intersections were obtained from other projects or TDOT AADT count station volumes were utilized where turning movement counts were not available.

Future Year 2032 Build + 50% AMG

Tables 9A and 9B summarize the AM and PM peak period results for the Future Year 2032 Build + 50% AMG scenario, respectively. Under the Future Year 2032 Build + 50% AMG scenario, buses are expected to have less average delay than cars along 10 segments in the AM peak period and nine segments in the PM peak period. Buses are also expected to have less travel time than cars along eight segments in the AM peak period and eight segments in the PM peak period. Lastly, buses are expected to have a higher average speed than cars along eight segments in the AM peak period and eight segments in the PM peak period. Buses operated slower on some TPCs due to starting up and slowing down for bus stops along the route.

Table 9A | Segment Results - Future Year 2032 Build + 50% AMG – AM

Sections	Average Delay (sec)		Travel Time (Sec)		Average Speed (MPH)	
Vehicle Class (N = Non-Buses B = Buses)	N	B	N	B	N	B
Rosa L Parks Blvd - 8th Ave N to Church St SB	227	29	262	92	5	14
Rosa L Parks Blvd - 8th Ave N to Church St NB	2	22	36	98	36	14
Rosa L Parks Blvd - Church St to Korean Veterans Blvd/Lafayette St/ 8th Ave S SB	198	135	258	290	7	6
Rosa L Parks Blvd - Church St to Korean Veterans Blvd/Lafayette St/ 8th Ave S NB	298	92	>300	277	5	6
Lafayette St - Korean Veterans Blvd/Lafayette St/ 8th Ave S t to Division St EB	>300	>300	>300	>300	4	4
Lafayette St - Korean Veterans Blvd/Lafayette St/ 8th Ave S to Division St WB	>300	>300	>300	>300	2	3
4th Ave S - Korean Veterans Blvd to Rep John Lewis Way SB	6	34	36	111	27	9
3rd Ave S - Korean Veterans Blvd to Rep John Lewis Way NB	>300	78	>300	161	1	6
4th Ave S - Broadway to Korean Veterans Blvd SB	94	63	131	99	7	10
3rd Ave S - Broadway to Korean Veterans Blvd NB	250	>300	281	>300	3	3
4th Ave S - Charlotte Avenue to Broadway SB	258	283	>300	>300	5	4
3rd Ave S - Charlotte Ave to Broadway NB	>300	270	>300	>300	4	4
James Robertson Pkwy - 8th Ave N to 3rd Ave N EB	136	67	172	146	8	9
James Robertson Pkwy - 8th Ave N to 3rd Ave N WB	101	18	119	65	6	10

Table 9B | Segment Results - Future Year 2032 Build + 50% AMG – PM

Sections	Average Delay (sec)		Travel Time (Sec)		Average Speed (MPH)	
Vehicle Class (N = Non-Buses B = Buses)	N	B	N	B	N	B
Rosa L Parks Blvd - 8th Ave N to Church St SB	>300	24	>300	86	2	15
Rosa L Parks Blvd - 8th Ave N to Church St NB	2	18	36	88	36	15
Rosa L Parks Blvd - Church St to Korean Veterans Blvd/Lafayette St/ 8th Ave S SB	>300	151	>300	>300	4	5
Rosa L Parks Blvd - Church St to Korean Veterans Blvd/Lafayette St/ 8th Ave S NB	>300	86	>300	224	3	8
Lafayette St - Korean Veterans Blvd/Lafayette St/ 8th Ave S t to Division St EB	283	>300	>300	>300	5	4
Lafayette St - Korean Veterans Blvd/Lafayette St/ 8th Ave S to Division St WB	>300	>300	>300	>300	4	4
4th Ave S - Korean Veterans Blvd to Rep John Lewis Way SB	74	34	111	113	9	9
3rd Ave S - Korean Veterans Blvd to Rep John Lewis Way NB	>300	87	>300	168	1	6
4th Ave S - Broadway to Korean Veterans Blvd SB	>300	29	>300	66	2	15
3rd Ave S - Broadway to Korean Veterans Blvd NB	>300	>300	>300	>300	2	1
4th Ave S - Charlotte Avenue to Broadway SB	>300	>300	>300	>300	3	2
3rd Ave S - Charlotte Ave to Broadway NB	>300	260	>300	>300	4	4
James Robertson Pkwy - 8th Ave N to 3rd Ave N EB	119	67	157	135	8	10
James Robertson Pkwy - 8th Ave N to 3rd Ave N WB	233	21	238	67	3	10

Future Year 2032 Build + 100% AMG

Tables 10A and 10B summarize the AM and PM peak period results for the Future Year 2032 Build + 100% AMG scenario, respectively. Under the Future Year 2032 Build + 100% AMG scenario, buses are expected to have less average delay than cars along seven segments in the AM peak period and 10 segments in the PM peak period. Buses are also expected to have less travel time than cars along three segments in the AM peak period and eight segments in the PM peak period. Lastly, buses are expected to have a higher average speed than cars along three segments in the AM peak period and eight segments in the PM peak period.

Table 10A | Segment Results - Future Year 2032 Build + 100% AMG –AM

Sections	Average Delay (sec)		Travel Time (Sec)		Average Speed (MPH)	
Vehicle Class (N = Non-Buses B = Buses)	N	B	N	B	N	B
Rosa L Parks Blvd - 8th Ave N to Church St SB	8	31	42	115	32	12
Rosa L Parks Blvd - 8th Ave N to Church St NB	3	42	37	132	35	10
Rosa L Parks Blvd - Church St to Korean Veterans Blvd/Lafayette St/ 8th Ave S SB	85	105	136	>300	12	5
Rosa L Parks Blvd - Church St to Korean Veterans Blvd/Lafayette St/ 8th Ave S NB	194	139	247	>300	7	5
Lafayette St - Korean Veterans Blvd/Lafayette St/ 8th Ave S t to Division St EB	62	128	104	232	15	7
Lafayette St - Korean Veterans Blvd/Lafayette St/ 8th Ave S to Division St WB	>300	206	>300	299	4	5
4th Ave S - Korean Veterans Blvd to Rep John Lewis Way SB	3	47	34	154	29	6
3rd Ave S - Korean Veterans Blvd to Rep John Lewis Way NB	>300	71	>300	183	2	5
4th Ave S - Broadway to Korean Veterans Blvd SB	63	14	100	51	10	19
3rd Ave S - Broadway to Korean Veterans Blvd NB	239	242	277	279	4	3
4th Ave S - Charlotte Avenue to Broadway SB	142	139	197	226	7	6
3rd Ave S - Charlotte Ave to Broadway NB	140	174	196	>300	7	5
James Robertson Pkwy - 8th Ave N to 3rd Ave N EB	114	85	148	176	9	8
James Robertson Pkwy - 8th Ave N to 3rd Ave N WB	68	18	85	87	8	8

Table 10B | Segment Results - Future Year 2032 Build + 100% AMG – PM

Sections	Average Delay (sec)		Travel Time (Sec)		Average Speed (MPH)	
Vehicle Class (N = Non-Buses B = Buses)	N	B	N	B	N	B
Rosa L Parks Blvd - 8th Ave N to Church St SB	>300	24	>300	108	3	12
Rosa L Parks Blvd - 8th Ave N to Church St NB	22	45	57	137	23	10
Rosa L Parks Blvd - Church St to Korean Veterans Blvd/Lafayette St/ 8th Ave S SB	294	149	>300	>300	5	5
Rosa L Parks Blvd - Church St to Korean Veterans Blvd/Lafayette St/ 8th Ave S NB	>300	142	>300	>300	5	5
Lafayette St - Korean Veterans Blvd/Lafayette St/ 8th Ave S t to Division St EB	261	274	>300	>300	5	4
Lafayette St - Korean Veterans Blvd/Lafayette St/ 8th Ave S to Division St WB	>300	198	>300	293	3	6
4th Ave S - Korean Veterans Blvd to Rep John Lewis Way SB	1	40	31	157	32	6
3rd Ave S - Korean Veterans Blvd to Rep John Lewis Way NB	>300	110	>300	216	2	4
4th Ave S - Broadway to Korean Veterans Blvd SB	225	16	272	53	4	18
3rd Ave S - Broadway to Korean Veterans Blvd NB	272	286	>300	>300	3	3
4th Ave S - Charlotte Avenue to Broadway SB	>300	>300	>300	>300	3	3
3rd Ave S - Charlotte Ave to Broadway NB	204	199	260	>300	6	4
James Robertson Pkwy - 8th Ave N to 3rd Ave N EB	199	125	227	214	6	6
James Robertson Pkwy - 8th Ave N to 3rd Ave N WB	158	18	176	86	4	8

Comparison of Alternatives

Table 11 compares the system-wide capacity analysis results for each Future Year 2032 scenario to the Existing Year 2022 scenario.

Table 11 | System-Level Results

Scenario	AM	PM
No Build	288% increase in the number of intersections at LOS E or F	123% increase in the number of intersections at LOS E or F
	600% increase in intersections at or over capacity	1350% increase in intersections at or over capacity
Build + 50% AMG Scenario	175% increase in the number of intersections at LOS E or F	82% increase in the number of intersections at LOS E or F
	400% increase in intersections at or over capacity	750% increase in intersections at or over capacity
Build + 100% AMG Scenario	25% increase in the number of intersections at LOS E or F	9% increase in the number of intersections at LOS E or F
	200% increase in intersections at or over capacity	250% increase in intersections at or over capacity

Figures 15 through 18 compare the failing intersections under the Future Build + 50% AMG scenario and Future Build + 100% AMG scenarios to the failing intersections under the Future No Build scenario. There are intersections failing in the build scenarios that did not have Connect Downtown recommendations, these intersections are existing areas of concern and pinch points into the city near the interstate.

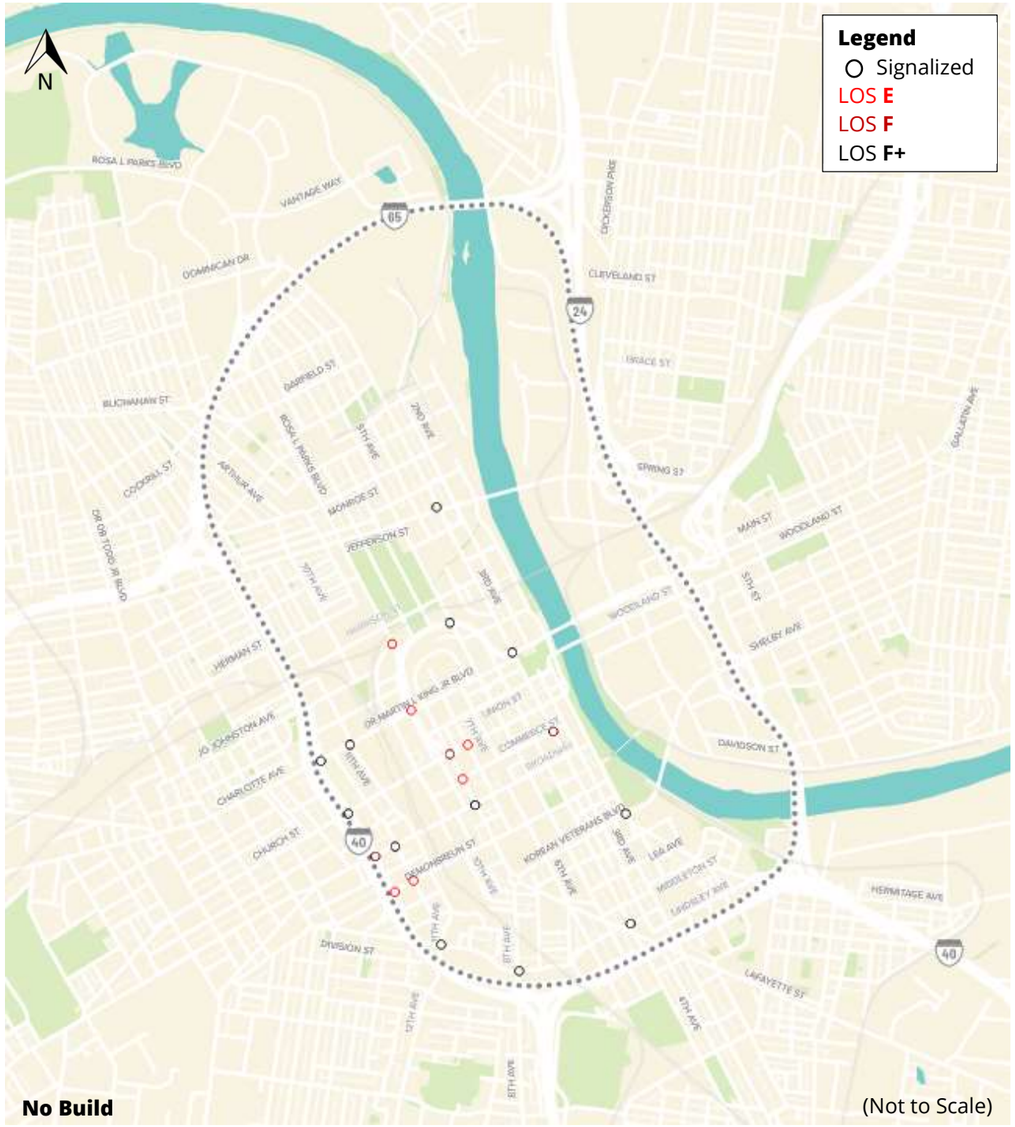
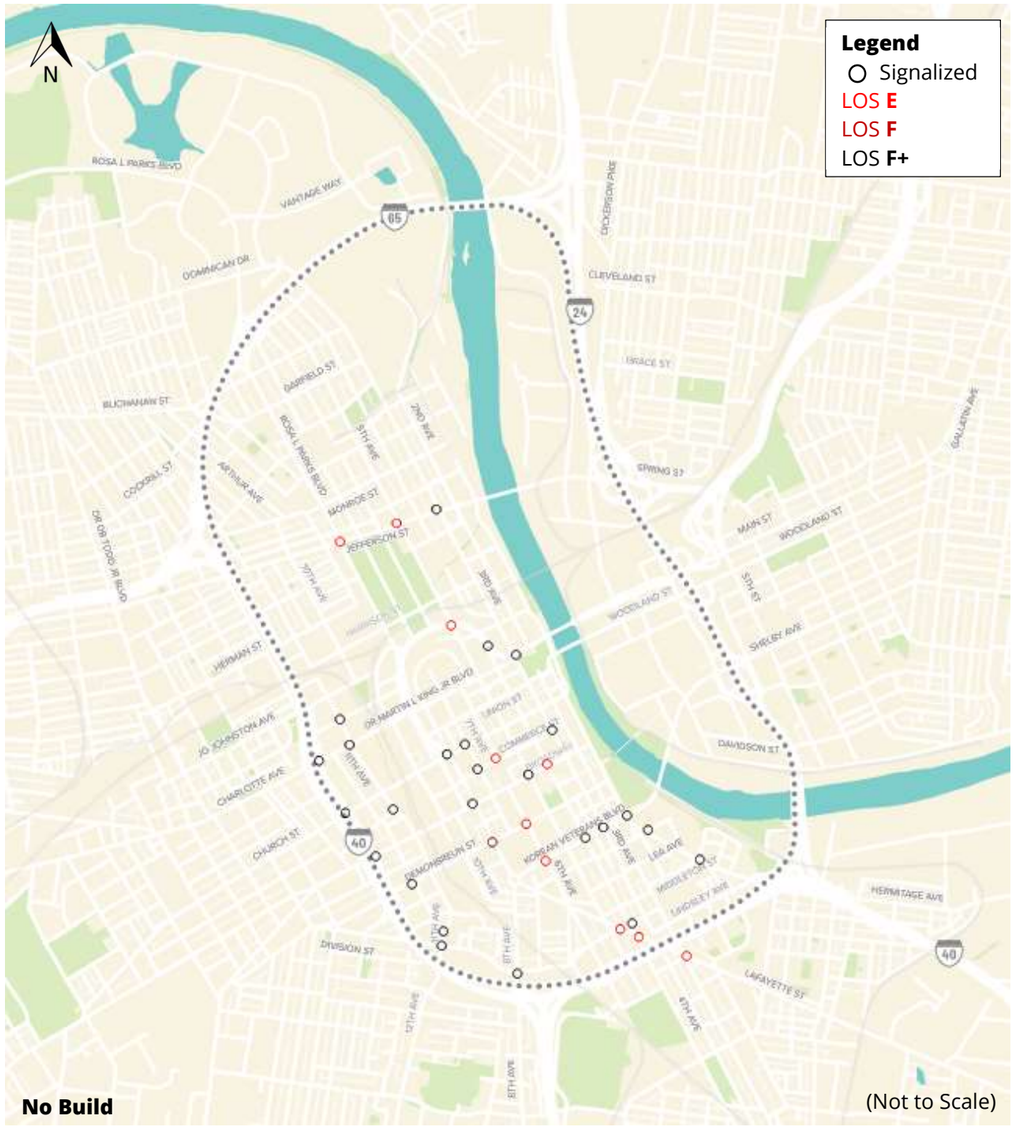
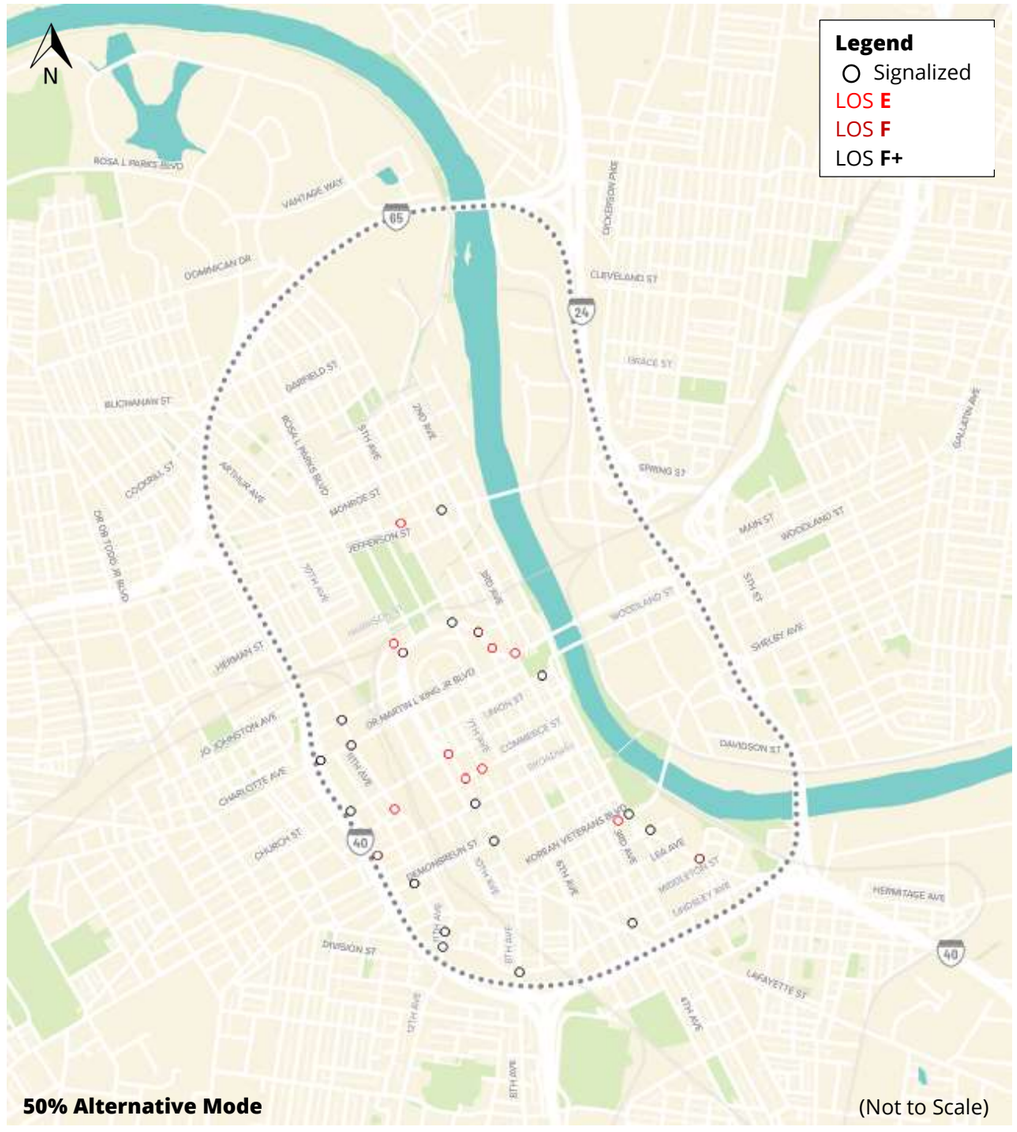


Figure 15 | Signalized Intersections LOS E or Worse - No Build Versus 50% AMG - AM Peak



No Build (Not to Scale)



50% Alternative Mode (Not to Scale)

Figure 16 | Signalized Intersections LOS E or Worse - No Build Versus 50% AMG - PM Peak

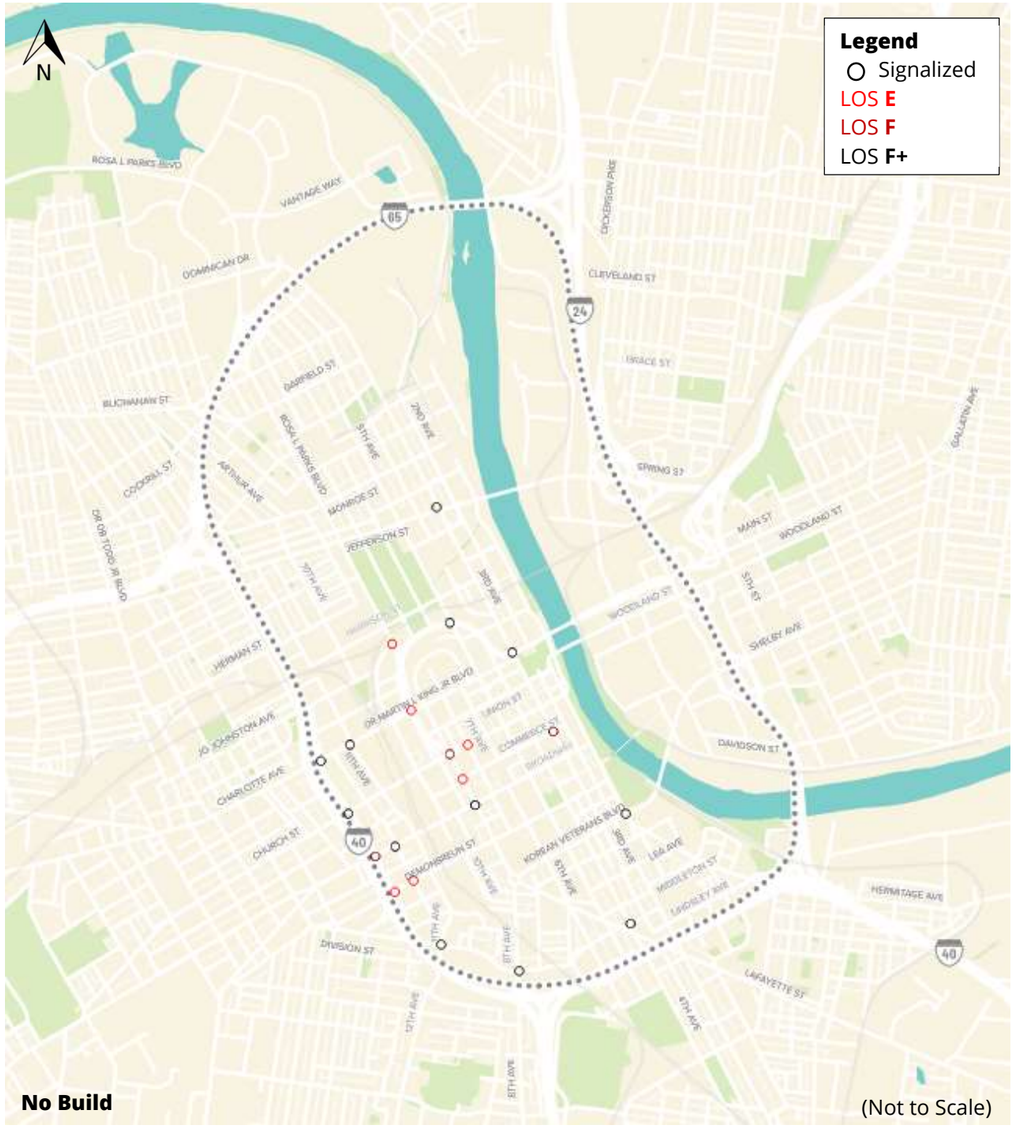
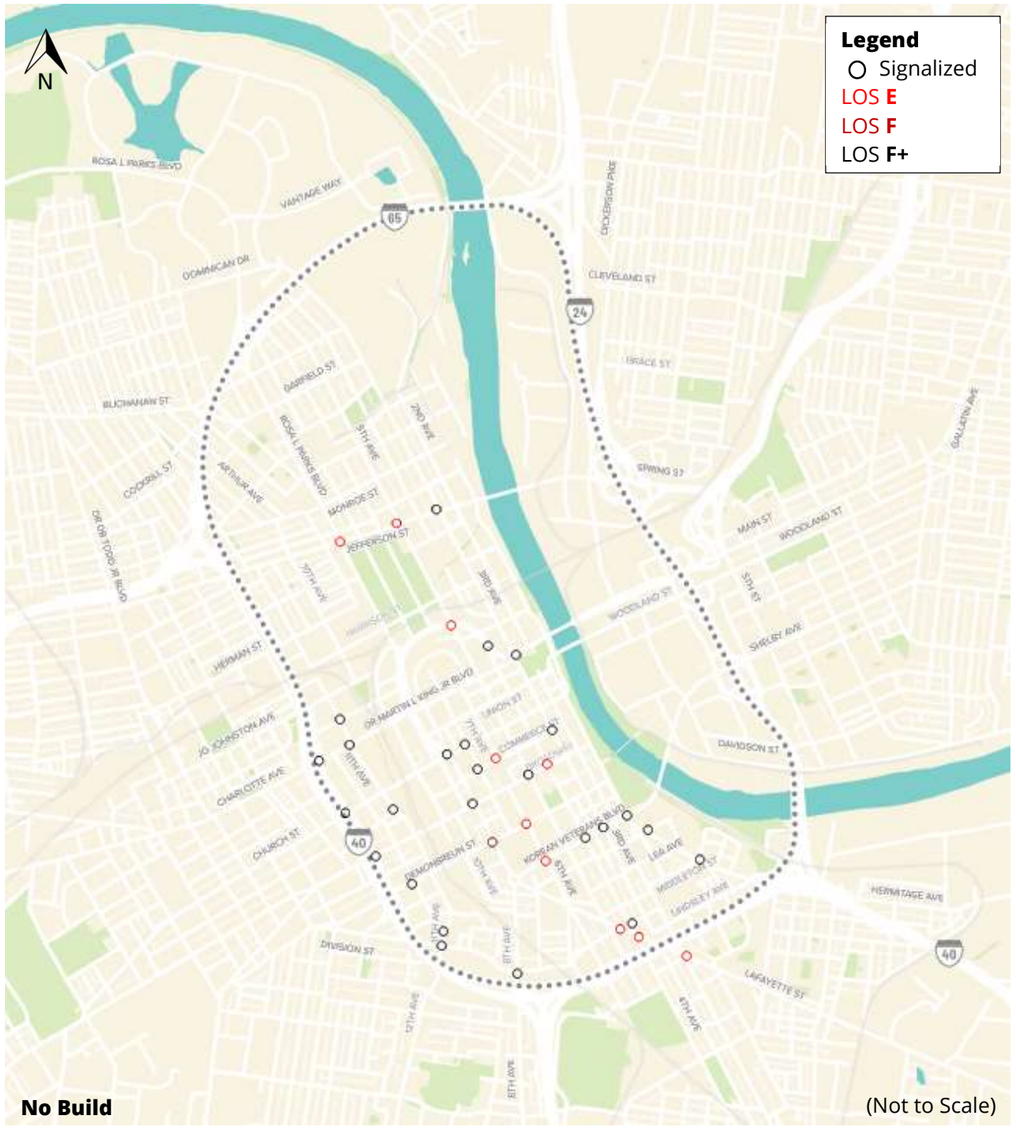
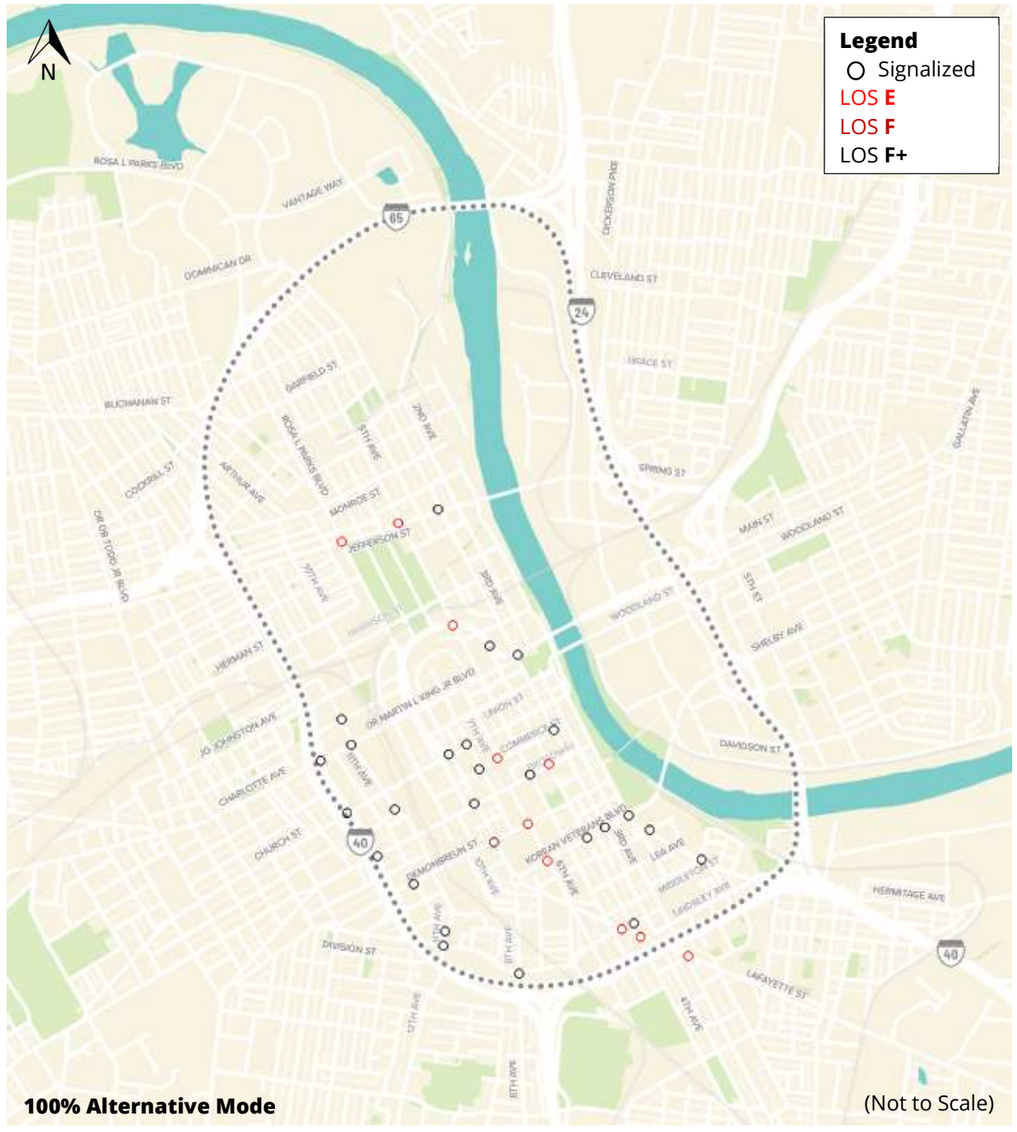


Figure 17 | Signalized Intersections LOS E or Worse - No Build Versus 100% AMG - AM Peak



No Build (Not to Scale)



100% Alternative Mode (Not to Scale)

Figure 18 | Signalized Intersections LOS E or Worse - No Build Versus 100% AMG - PM Peak

50% AMG versus 100% AMG (Vissim)

The comparison between the Future Year 2032 Build + 50% AMG scenario and the Future Year 2032 Build + 100% AMG scenario indicates that the higher the mode shift from SOVs to non-SOVs, the better the conditions for both cars and buses.

Under the Future Year 2032 Build + 50% AMG scenario, across the majority of the analyzed segments, buses are expected to operate more favorably with lower average delay, lower average travel time, and higher average speed as compared to cars during both the AM and PM peak periods. Under the Future Year 2032 Build + 100% AMG scenario, buses operate more favorably during the PM peak only.

Under the AM peak period of the Future Year 2032 Build + 100% AMG scenario, along the majority of the analyzed segments, cars are expected to operate more favorably with lower average delay, lower average travel time, and higher average speed as compared to buses, demonstrating that the higher mode shift could also improve SOV performance. The AM peak period of the Future Year 2032 Build + 100% AMG scenario has the lowest peak hour volume across the scenarios. Therefore, as volumes continue to increase in the other scenarios, SOVs become a less favorable mode of transportation.

Conclusion

Based on the traffic analysis presented in this report, the Connect Downtown recommendations are expected to support the anticipated growth in Downtown Nashville. The Future No Build scenario, or "do nothing" scenario, is the worst-case scenario; therefore, **doing nothing is not an option**. The Connect Downtown recommendations are anticipated to contribute to a mode shift to non-SOVs that will relieve congestion and support more people utilizing the network. As Connect Downtown recommendations are implemented, alternative modes will be more attractive and will help facilitate the desired mode shift, increasing the overall network capacity.

This report is supplemented by a technical appendix that is available upon request from NDOT.

CONNECT DOWNTOWN

Appendix D

Transportation Demand Management Strategies

April 2024

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1 INTRODUCTION

To address the challenges of growth and increased traffic congestion, cities across the country are recognizing the need to move more people in the same amount of space. For most downtowns—including Downtown Nashville—widening roadways is not possible. And, more importantly, adding vehicle capacity is a short-term fix that induces additional demand and leads to increased levels of congestion.

Instead, cities are increasingly providing enhanced multimodal options and using Transportation Demand Management (TDM) strategies to reduce the share of trips made by single-occupant vehicles (SOVs). TDM strategies help to shift trips to off-peak travel times and encourage people to try non-driving modes, easing congestion and reducing peak demand on roadways. More recently, TDM has expanded to apply more broadly to policies and programs designed to support and incentivize healthier, more environmentally sustainable transportation behaviors.

This document outlines the need for municipal investment in a robust TDM program and describes policies and programs that support and incentivize non-drive-alone travel options. It also provides an overview of TDM strategies used nationally and in Nashville, best practices for TDM plans and implementation, and potential action steps for expanding TDM in Downtown Nashville.

Nashville's TDM Objectives

Over the past 10 years, Nashville's population has grown more than 10%, and Downtown's population has grown by 57%; that's nearly 14,000 new Downtown residents. New corporate headquarters are bringing an influx of workers, some of whom will sit in the 1.5 million square feet of office space currently under construction. Downtown is now home to more than 85,000 jobs, which is a 106% increase from 2013. More than half of those jobs are filled by people who live outside of Downtown. The one constant Downtown has been the transportation system.

TDM strategies have traditionally been used to help manage traffic congestion, particularly by reducing driving at peak travel hours. However, TDM is most effective implemented holistically. For Downtown Nashville, TDM strategies should:

- **Support New Development:** Implementing TDM through new construction requires working with the development community to enact TDM guidelines and requirements based on context and scale.
- **Manage Current Congestion:** TDM strategies that reduce the vehicle trips and parking demand generated by new development can also be used to manage the impact of existing development.
- **Reduce Transportation Costs:** TDM reduces household transportation costs by making it easier to access key destinations without an automobile. By limiting the need for on-site parking, TDM can also reduce costs for employers and businesses, reduce rent for those paying for bundled parking, and increase the feasibility of developing more affordable housing units.
- **Advance Equity:** Improving mobility choices directly expands access to jobs, education, recreation, community, and other opportunities. TDM policies and programs can be designed to ensure equitable benefits—and, ideally, benefits targeted to those who most need them. Equitable and inclusive TDM can improve people's lives, not just reduce congestion or parking demand.
- **Improve Health and Wellness:** TDM programs lead to more active travel and improved physical and mental health. The life-extending benefits of emissions reductions benefit the entire region, and especially those living in and around travel-intensive areas like Downtown Nashville.
- **Foster Economic Growth and Resiliency:** Increasing access to and availability of more affordable and sustainable travel modes will keep Downtown an appealing place to live and visit. TDM allows regional economies to grow, making it easier to attract and retain talent while also helping to enhance the visitor experience.

2 TDM OVERVIEW

Effective TDM programs use a variety of strategies to reduce drive-alone trips, tailored to the unique characteristics of each development or district. The most successful examples of demand management employ multiple strategies simultaneously, recognizing that a broad set of travel purposes requires many non-driving options to meet people's needs. This section provides a brief overview of conventional TDM strategies in the following categories:

- Facilitating transit access
- Supporting active travel
- Increasing awareness and participation
- Parking management
- Curbside management
- Regulatory actions
- Managing tourism and special events

Facilitating Transit Access

TDM can increase transit ridership by making it easier for people to ride transit or reducing barriers to accessing transit, such as information and cost.

Improve Transit Rider Experience

Transit stations and bus stops are often not immediately adjacent to a rider's home or job. In contrast, parking spaces and parking facilities usually are. Making transit an effective demand-management strategy requires closing "first/last-mile" gaps in convenience or accessibility so that transit is a logical and attractive option. Additionally, station and stop enhancements—such as shelters, seating, information signs, lighting, and other amenities—increase passenger comfort while waiting for the bus or train. It is critical to provide reliable and accurate route and schedule information at and wayfinding to transit stops. Locating secure bicycle parking and

micromobility zones near transit stops and stations can help to expand the reach of transit service areas.

Subsidize Transit Ridership

Making it easier to pay for or less costly to ride transit are important strategies to increase ridership. Some cities and agencies offer subsidies for bulk-ride transit fares, such as weekly or monthly passes, for employers or riders with lower incomes. Current tax law allows pre-tax payroll deductions to pay for transit, and many employers have access to reduced-fare programs that lower the cost of transit for their employees.

Free or subsidized transit passes can also be provided to students or older adults. Some cities also provide free transit downtown reduce demand for parking and encourage visitor use. Some cities and regions have moved to regional fare programs where riders can use one fare card for all public transit systems in the region.

Supporting Active Travel

In denser areas with a mix of land uses, walking and bicycling can replace many vehicle trips. To encourage active travel, the bicycle and pedestrian network should be safe, convenient, and connected, supporting travelers of all ages and abilities and providing high-quality end-of-trip facilities.

REDUCE TRANSPORTATION COSTS

Traditional commute subsidy programs tend to favor drivers over people who travel by other modes, which can undermine affordability and equity goals. One of the most enduring and effective TDM strategies, therefore, is to ensure that driver-related benefits—such as the free or cost-subsidized parking expected at the end of most trips—are paired with benefits of equal or greater value to those who do not or cannot drive. Offering transit-cost subsidies, giving cash reimbursements to those who do not make use of the parking benefit, or simply charging for parking and using the resulting revenue to reduce housing or commercial-lease costs are the most common TDM measures that help lower costs for all travelers.

Secure Bicycle Parking and Repair Facilities

Adequate bicycle parking gives people riding bikes the same reliability and security that drivers expect of a parking garage. Secure, indoor bicycle parking, such as a bike

room or bike lockers, adds an additional level of security for riders who want long-term parking and weather protection.

Secure bike storage areas should be clearly signed and easily accessible from main entrances. To attract more use, building developers and designers should avoid treating bicycle parking as "leftover space." Some cities have made secure bicycle storage mandatory for new developments above a certain size. In addition to long-term parking, outdoor racks for visitors encourage patrons to bike, particularly to mixed-use developments with ground floor retail.

Bicycle maintenance and repair facilities are inexpensive but help to manage occasional repair needs. Do-it-yourself bicycle repair stands provide essential support and can easily fit in a parking garage, bike room, or on a building's ground floor.

Shower and Changing Facilities

For office buildings, end-of-trip facilities make travel to work by active modes like walking and biking a more attractive option. Arriving at work sweaty is a common reason for not wanting to bike. Shower, changing, and locker facilities remove this barrier and provide a secure place to store clothing and other necessities. Some cities have made these facilities mandatory in new developments above a certain size.

Bike Share and Scooter Share

Bike share programs provide a convenient and affordable option for short-term bicycle use through a shared fleet of docked or free-floating bikes distributed across a city or district. Scooter share programs function similarly to bike share programs, by providing access to free-floating e-scooters. Bike and scooter share programs generally cluster their stations or vehicles in districts and feature pricing that caters to shorter distances and promotes connections to/from transit.

Residential developments or employers can contribute financially to a new bike station, allocate space on site for a station, and/or provide tenants with a subscription to the local bike share program or scooter share program.

Pedestrian and Bicycle Network Enhancements

A walkable and bikeable environment gives people more transportation choices and improves their quality of life. A well-designed network of streets, bike lanes and trails, and sidewalks improves safety for people of all ages and abilities and helps people make connections between transportation modes and neighborhoods. Investments in the pedestrian and bicycle environment have positive impacts on economic vibrancy, physical activity, and quality of the built environment.

Connectivity

Large developments should establish a street grid or preserve the existing street grid as much as possible. Site design should encourage pedestrian, bicycle, transit, and vehicular connectivity links to neighborhood networks. Developers should design any private rights-of-way or driveways that will be handed over to public ownership consistent with the city's standard street designs.

Increasing Awareness and Participation

Travelers must understand their travel choices before they can consider changing travel modes. This requires providing basic information on fliers and websites, as well as dynamic systems that offer real-time information on conditions and services.

Distributing information

Real-time travel and transportation information is increasingly available to the public as a decision-making resource. Real-time information has long been common on highways and through phone and web-based resources. Today, transit systems and mobility services (like micromobility or ridehailing) can provide travelers with up-to-the-minute information on arrival times, delays, and special conditions.

ADVANCE EQUITY

TDM policies and mobility programs are most often written by planners and implemented by commute coordinators, property managers, and developers. Typically, program participants—residents and employees—are not included in planning, branding, or implementation. Mobility programs are most effective when participants understand their benefits. An equity-centered approach involves listening and co-creating programs that elevate and represent the local community. Ensuring equitable outcomes also requires redefining metrics of success beyond quantitative metrics like vehicle miles traveled (VMT) and mode share. While a reduced cost transit trip or more comfortable multimodal connection may equate to fewer SOV trips, it is also a ticket to upward mobility: to a job, school, housing, and essential services.

As more technology-driven travel options become available, real-time information is becoming more comprehensive, covering travel conditions and options for multiple transportation modes at once. Smartphone applications, websites, stations, and stops can often provide the following types of information:

- Arrival times for buses, trains, and shuttles
- Vehicle location (live mapping)
- Service disruption/delays
- Bike share, car share, and scooter share availability
- Other information, such as current time and weather

These resources are not provided exclusively through public infrastructure. Developers, property managers, and individual employers can provide real-time information via interactive displays in their private spaces. Displays are generally large televisions in a waiting area or walkway, providing information that helps people make decisions about their travel in a matter of seconds. These displays also provide people without smart phones easy access to travel information.

The travel and tourism industry can also promote transit, walking, biking, and other sustainable modes for visitors. Visitor-focused maps, transit and bikeshare passes, and information on how to reach popular destinations by sustainable modes can be provided by an airport, hotels, and tourism websites.

Rideshare Matching

One of the first major demand management strategies in the U.S. was ridesharing, a general term encompassing private carpools and organized vanpools. Ridesharing continues to be an important demand management strategy, though in large metropolitan areas such as Nashville, the number of travel origins and destinations makes it difficult to organize rideshare programs. Individual employers have also found rideshare programs difficult to manage, especially when providing shared vans to support rider pools and meeting emergency needs. For this reason, rideshare programs are best managed on a larger scale and with a large base of riders to make matching travelers with origins and destinations in the same general district easier.

Wayfinding

Wayfinding signage can make an area easier to navigate and encourage people to travel by walking, rolling, or biking. Wayfinding signs can include maps and directional information or simply indicate the distance to nearby attractions. Developers can install signage on their site as part of a larger wayfinding system or work with the city to develop a wayfinding system for a larger area.

Parking Management

Parking has historically been considered a necessity for successful development. Conventional practice has emphasized providing parking for each individual land use and assuming there are few alternative travel options to driving. In cities and urban areas with a greater variety of land uses and travel options, there is often less actual need for parking. Reducing the amount of parking that developments provide will lower development costs, allow land to be used for other purposes, and help to reduce demand for driving to those locations.

Parking Requirements Reform

Most zoning codes require developers to include off-street parking with their projects—whether the projects are newly built land uses or the reuse of existing buildings. The requirements typically define a minimum amount of parking to be provided on site based on the type and scale of land uses proposed. This obscures the potential negative consequences of minimum parking requirements, resulting in a tendency to require significantly more parking than necessary. Over time, these requirements have contributed to the affordable housing crisis in cities across the country. Code reforms have been enacted to address this problem by:

- Removing or reducing minimum parking requirements
- Implementing parking maximums
- Requiring the "unbundling" of parking costs
- Offering fee programs for developers to fund district improvements in-lieu of constructing required on-site parking

Shared Parking

Building individual parking for each parcel or development often leaves underutilized parking facilities throughout the day, as different uses may require parking at different times. For instance, office workers park during the day, while residents tend to park at night. Where feasible, sharing parking and using off-site parking to meet parking needs can both reduce the number of parking spaces provided and make more efficient use of supply. Allowing or requiring unassigned parking between building uses takes advantage of varying parking demand throughout the day while reducing the need to build more parking.

Unbundling Parking Costs

Parking is usually included in the sale, lease, or rental price of housing and commercial space. The cost of parking is thus hidden from the owner or renter. "Unbundling" the cost of parking by charging separately for parking can reduce housing costs while providing an additional incentive to take advantage of travel modes other than driving.

Parking Pricing

Parking pricing strategies manage parking through different fees. Higher prices can be used to decrease demand for parking. When parking costs are higher, more drivers choose to take transit or another form of transportation. Dynamic parking pricing adjusts parking costs based on demand and occupancy for parking. Cities can set a target occupancy rate and adjust parking pricing accordingly until demand meets the city's occupancy goal.

The benefits offered by these strategies can be further optimized through intuitive, straightforward, and easily accessible regulations and signage as well as comprehensive technology solutions, such as digital signs and sensors that communicate current operating restrictions and pricing and facilitate real-time, dynamic management.

Multi-Use and Adaptable Parking Structures

The demand for parking may decrease in the future with the rise of car sharing and introduction of autonomous vehicles. This makes the functional lifetime of parking facilities, especially structures, a critical consideration. Multi-use parking structures are designed to provide a mix of different parking types for projects and districts. This allows developers or the city to adapt parking to meet various needs at different times. Adaptable parking structures can be repurposed into uses other than parking. Adaptable parking structures may include taller floor heights, flat floor plates, and building widths to allow for repurposing to occupiable space.

Curbside Management

Curb management typically relies on physical delineations of curb space through static signs and paint. Traditionally, curb space has been used for on-street parking and vehicle travel lanes. However, cities are increasingly choosing to prioritize space for walking, biking, and transit over single-occupancy vehicle lanes.

At the same time, the growth of transportation network companies like Uber and Lyft and the increase in freight, e-commerce, and on-demand deliveries have led to an unprecedented demand for curb space. The sidewalk side of the curb has also seen growing pressure for space from shared micromobility services. Limited curb space is becoming increasingly valuable, and conflicts between modes are increasing.

Reprioritize Curb Uses

Over the last decade, increased understanding of transportation's impact on the economy, built environment, health, and quality of life has inspired notable shifts in transportation policy. Three key trends have had noteworthy repercussions on the management of the curb:

1. The shift from a focus on optimizing ease and efficiency of private car movement to a focus on optimizing ease and efficiency of person movement. This has led many cities to deprioritize on-street parking to increase curbside access to transit and bicycles.
2. The emergence of technology-aided mobility services—ridehailing services like Uber and Lyft, car share, bike share, and scooter share—requires curb space for pick-up and drop-off activities.
3. Online ordering and food delivery boomed during the pandemic. This, combined with freight operations, has led to huge demand for curb space for loading and unloading.

Digital Tools

Implementing advanced digital tools to collect usage data in real time can allow cities to create a digital interface for curb space that can be modified to respond to unique demand. As cities shift away from prioritizing automobile space at the curb, digital tools will be needed to collect data to understand who else is using the curb. This data can then be used to shape TDM strategies.

Performance Monitoring and Evaluation

Curb management policies need ongoing performance monitoring and evaluation (M&E) systems. These assess what is working, what is not, and what changes might be necessary. An M&E system can also accommodate a more experimental and proactive approach to curb management, allowing cities to pilot new ideas to achieve desired outcomes.

Regulatory Actions

Cities can establish ordinances and regulations that require developers, property owners, and/or employers to implement TDM plans or programs as part of development approvals or property and employment regulations.

Zoning Ordinances

A growing number of cities have adopted changes to their development or zoning codes to require some or all development proposals to include TDM measures—or an approved TDM Plan—as a condition of approval. This may be based on a list of requirements, tiered measures based on project size and context, or a menu of TDM options for developers and property managers to employ based on their land use.

Traffic Impact Analysis and Mitigation

Most cities require that proposed new developments undergo some level of traffic impact analysis (TIA). If the number of anticipated trips is above acceptable levels, mitigation measures may be required (e.g., adding features such as turn lanes, traffic signals, or on-site queueing space). In jurisdictions prioritizing TDM, an expanded TIA approach includes travel by all modes and recognizes that TDM approaches can help mitigate or reduce the impacts of private vehicle travel.

Commuter Benefits Ordinance

A municipal, county, or state ordinance can apply TDM requirements to existing properties and/or employers. These laws can be applied broadly or within specific areas, typically where there is rapid growth and traffic congestion. A Commuter Benefits Ordinance (CBO) establishes TDM requirements for existing employers and may use a Transportation Management Association (TMA), like Nashville Connector, to support implementation and compliance.

Congestion Pricing

Congestion pricing is a form of demand management in which vehicles that enter a defined area are assessed a fee during peak travel hours. Pricing can shift discretionary peak vehicle traffic to other modes or to off-peak periods. Notable examples of successful congestion pricing programs include London and Stockholm. Both cities have seen decreased levels of congestion, fewer traffic incidents due to congestion, and improvements in air quality, street connectivity, and access.

Managing Tourism and Special Events

Downtown Nashville is a tourism and entertainment hub. Mitigating the intensity of traffic and parking demands that event venues, arenas, and stadiums generate can optimize their economic, social, and civic benefits.

Venue-Supportive TDM

TDM programs for entertainment venues and arenas tend to focus in three areas: 1) shifting travel modes to ease overall traffic and parking demand; 2) minimizing traffic created by drivers searching for parking; and 3) easing the intensity of overall traffic impacts by staggering arrival and departure times. Venue-based TDM programs can reduce the need for purpose-built parking facilities, which helps to maintain the urban fabric and walkability of a venue, and support transit and other mobility services. Effective TDM programs can ease tensions between a venue and its neighbors by mitigating impacts of the trips they generate.

Event-Specific TDM

Event organizers have distinct TDM resources that can make efforts to reduce or manage parking and travel demand more effective. Most attendees secure a ticket in advance of an event, providing organizers ample time to provide customized information on travel options. This can include bundling a ticket with non-drive-alone options, such as advance purchase of carpool priority parking, and communicating travel options.

In some jurisdictions, local sports teams and concert venues have partnered with transit agencies to accept event tickets as fares. Promoting pre- and post-event activities, particularly in partnership with local business and community organizations, can reduce the intensity of arrival and departure peaks by attracting eventgoers to come early or stay late.

3 CURRENT TDM PROGRAMS IN DOWNTOWN NASHVILLE

TDM programs that serve Downtown Nashville are led by many agencies and organizations, including the Nashville Department of Transportation (NDOT), NDOT's Nashville Connector, the Metropolitan Nashville Planning Department (Metro Planning), and the Tennessee Department of Transportation (TDOT).

Launched in 2018, Nashville Connector seeks to reduce emissions and improve air quality through employer commute support and education services, promoting commute options, and activities like the Commuter Challenge. While Metro does not manage formal TDM programs beyond Nashville Connector, various departments provide services that fit within the larger family of TDM strategies (see Table 1).

Table 1 Existing TDM Programs in Nashville

Agency	Program	Geography
Nashville Connector	Technical assistance for employers; rideshare matching	Citywide
NDOT	Bikeshare Program; curb management activities (on-street parking, pilot programs)	Downtown
Metro Planning	Development review; code revisions	Citywide
WeGo	Regional transit service; Emergency Ride Home Program	Regional
Private Employer Programs	Transit pass subsidy	Regional
Vanstar	Vanpool services	Regional
Vanderbilt University	Transit subsidy (Commodore Card)	Regional
Belmont University	Free transit pass; Relax and Ride System	Regional
Walk Bike Nashville	Advocacy; events; educational programs	Citywide
TDOT	Statewide TDM Plan; distribution of CMAQ funding	Statewide
State of Tennessee	Swipe and Ride; Carpool Preferential Parking	Nashville and Memphis

The leading applications of TDM in the U.S. have been in communities governed by strong state-level regulations for environmental review, vehicle trip reduction requirements, or carbon emission reduction mandates. Nashville and Tennessee do not have the same level of regulations, although the State developed its first Statewide TDM Plan in 2016.

The Statewide TDM Plan positions TDOT as the leader for coordination efforts, with regional partners responsible for program implementation within the five urban areas. The plan strives to create efficiencies that allow for greater emphasis on mode shift, measurement, and accountability, while supplementing core TDM services with new and existing technologies.

Although conventional TDM efforts have not been broadly applied throughout Nashville, citywide development regulations and other public policies do influence travel behavior. Nashville's development regulations—set through its zoning ordinance—establish how much private, off-street parking developments must provide. Additionally, Metro requires facilities that support bicycle and transit use, such as bicycle parking, bicycle racks, storage facilities, and showers. Requirements are described in the Downtown Code (DTC).

Zoning, especially in the DTC district, is the largest TDM effort in Nashville today thanks to a focus on removing parking requirements. Since development of the Downtown Plan in 2007 and approval of the DTC in 2010, there have been several amendments to both the Plan and the Code. Through the DTC, Metro has removed the requirement for new development to provide parking within the boundary of the DTC. This is currently the sole zoning mechanism to enable and encourage TDM-based trip reduction from new development.

4 BEST PRACTICES FOR NASHVILLE

This section provides an overview of actions cities are taking to implement effective TDM strategies that are especially relevant for Nashville. The city's current and expected future levels of development activity, limited abilities to expand street and road infrastructure, and ongoing focus on improving regional air quality all point to a need for strategies to reduce driving demand.

Parking Requirements Reform

For decades, cities have used their zoning codes to require developers to include off-street parking with their projects, whether the projects were new or existing buildings. The requirements typically define a minimum amount of required on-site parking based on the type and scale of land uses. These requirements were designed to prevent a building's parking activity from creating traffic and parking impacts on local streets. This concern obscures the negative consequences of minimum parking requirements:

- Many cities base minimum parking requirements off a small set of peak-use examples that do not account for transit use, multimodal connections, or sharing between uses with alternating times of demand.
- Drivers expect readily available parking at each end of a car trip and may not be willing to pay for it directly. Conversely, charging for parking can lead to spillover parking in surrounding neighborhoods where parking is free.
- Minimum parking requirements increase the cost of development while potentially limiting the number of units that can be constructed.
- Developers pass this cost onto renters, home buyers, and commercial tenants—a particularly inequitable outcome for households and tenants with

below-average parking needs. Over time, this has contributed directly to the housing affordability crisis affecting cities across the country.

- As code requirements have resulted in the construction of ample parking at or adjacent to most destinations, the built environment and streetscape have been diminished by driveways and vehicle ingress/egress needs.

These negative impacts have accrued subtly over time, but their cumulative impact on public health, safety, and quality of life is hard to overstate. Three code reform initiatives can directly counter this legacy of minimum parking requirements.

Remove Minimum Requirements

Removing minimum parking requirements is the most direct approach to addressing problems created by the Nashville Downtown Code (DTC). Key benefits of this direct approach to reform include:

- Providing developers with greater flexibility in designing their projects.
- Increasing the potential density and affordability of new developments.
- Increasing development investment by removing the direct cost of providing required parking, as well as increasing the buildout potential of a project.
- Facilitating development that optimizes tax-generating land-use densities.

Eliminating or reducing parking minimums gives developers the flexibility to "right-size" parking for a specific project based on market demand. It promotes cost savings and allows developers to redirect parking funds to provide other amenities that are more aligned with attracting tenants seeking a low-automobile-use lifestyle.

Eliminating Minimum Parking Requirements in St. Paul (MN)

In 2021, the St. Paul City Council approved an update to its zoning ordinance that eliminated minimum parking requirements citywide. "Removing barriers to our city's growth is critical," said Council President Amy Brendmoen. "St. Paul will be able to reduce the costs of development and welcome more businesses and families in our city."

Implement Parking Maximums

Parking maximums set a limit on the number of parking spaces that developers can provide as part of a proposed project. This practice reverses the practice of minimum requirements by defining limits on off-street parking based on proposed land uses. Parking maximums can be implemented in addition to, or instead of, minimum parking requirements, and minimums can also be converted directly into maximums.

Maximums ensure that parking is not oversupplied and incentivize developers to plan and design for other mobility choices. One option is to establish fixed maximums, which limit on-site parking supplies with minimal or no exceptions. Another option is to provide a "soft" or "flexible" maximum that is paired with one or more options that allow more parking, such as the following:

- The provision of publicly shared parking, with these spaces not counted toward the project's maximum
- The payment of a fee for each space provided beyond the maximum
- The provision of mobility improvements and/or TDM measures

Whether using a fixed or flexible approach, establishing maximum parking limits can achieve benefits including, but not limited to, the following:

- Facilitating and encouraging higher development densities
- Incentivizing investments in non-drive-alone travel options
- Preventing oversupply of parking
- Reducing traffic congestion and VMT by reducing parking activity
- Reducing housing costs by reducing the cost of constructing parking and increasing the potential number of units that can be developed
- Emphasizing the expectation of reduced parking needs

Flexible Parking Maximums in San Jose (CA)

In 2021, the City of San Jose established a flexible maximum approach at a district level. Based on an established SOV mode share target of 35%, staff calculated how much parking could be built within San Jose's growth districts. The calculated supply of 12,000 spaces was applied to the expected number of dwelling units and scale of non-residential development, resulting in target ratios of 1 space per dwelling unit and 1.5 spaces per 1,000 square feet of non-residential development. New developments that include parking in excess of these ratios are encouraged to make the excess publicly available. That supply is leveraged to encourage future developments to provide parking below the target ratios, so the districts can avoid exceeding the maximum supply target.

Unbundle Parking Costs

Historically, the cost of constructing and maintaining parking at new developments is rarely paid for directly by its end users: tenants. The development cost of parking is typically "bundled" into the cost of renting, leasing, or purchasing dwelling units and commercial spaces. This cost therefore remains hidden when parking is offered as a "free" amenity to tenants. When bundled, all residents pay for parking, regardless of whether they need or use it. For commercial tenants, bundled parking can increase operating costs and limit the wages they can pay or increase the prices they must charge to stay in business.

Making parking an optional, fee-based amenity, often referred to as unbundling parking, ensures that the cost of parking is paid for by those who use it, based on how much of it they use. Parking can be unbundled from housing by offering residents the option to lease or purchase units and parking spaces separately. Parking that is unbundled from commercial leases allows businesses to purchase only the number of parking spaces needed for employees and customers.

Unbundled Parking in Seattle (WA)

In 2018, the City Council approved legislation with changes to parking rules in the land use code. As a result, the code now requires unbundling parking space costs from multifamily dwelling unit rental agreements, except for rent/income-restricted housing, accessory dwelling units, and any dwellings where garages are integrated into the unit (like townhouses). It also requires unbundling parking costs from commercial lease agreements for spaces 4,000 square feet or greater.

Curb Management

For decades curb management and operational policies focused primarily on ensuring easy parking access for private cars, balanced by the need to support truck

loading and deliveries in urban centers. Parking often was provided for free—or at rates below market value—further perpetuating a culture of subsidizing driving at the expense of broader mobility, equity, safety, economic, and sustainability goals.

Over the last decade, increased understanding of transportation's impact on the economy, built environment, health, and quality of life has inspired shifts in transportation policies. As a result, the curb has become a more prominent place for intervention and policy setting in urban mobility and freight delivery. The curb increasingly serves new travel modes and services with old infrastructure.

Innovative best practice curb management includes adopting a TDM-based approach to prioritizing permitted uses and functions; using curb allocation to elevate the mobility options best aligned with community goals; and incentivizing or discouraging certain types of trips, modes, and behaviors in service of broader mobility goals.

In response to this challenge, cities across the country are working together to develop new mobility data sharing standards. These standards not only benefit providers by ensuring a consistent set of requirements; they also allow cities to develop open-source tools for data sharing and processing. The following are the most common approaches:

- **The Mobility Data Specification (MDS):** Through MDS, cities can require private operators of shared mobility devices to provide real-time information about their vehicles, including their availability and location. This information enables cities to communicate in real time with service providers and customers. Monitoring this data can also help ensure that micromobility devices are deployed in an equitable manner and positioned to address first/last-mile gaps with transit service.
- **"Coding the Curb":** This involves recreating elements of the public right-of-way, including curbs, signs, and other physical assets, in digital form. Coding the curb aims to create a comprehensive system for describing the dimensions, locations, allowed uses, and regulations of the curb that can actively managed by cities, providers, and developers.
- **Dynamic Curb Management:** Many cities have already implemented dynamically priced parking in high demand areas. This could evolve to incentivize different mode choices and uses throughout the day or in response to fluctuating traffic and shifting demands for curb access and priorities.

The benefits of these approaches can be further optimized through intuitive, straightforward, and easily accessible regulations and signs as well as technology

solutions, such as digital signs and sensors that communicate current operating restrictions and pricing and facilitate real-time, dynamic management.

Los Angeles's Code the Curb Initiative

As the transportation ecosystem continues to evolve, the Los Angeles Department of Transportation (LADOT) is building digital infrastructure to support dynamic coordination and active management of the public realm. This includes establishing agency-wide policies, procedures, and an enterprise asset management system to coordinate competing uses of the curb. This will support efforts outlined in LADOT's Technology Action Plan and identify pilot opportunities to test curb management uses and policies.

LADOT's Smart Loading Zone Pilot, in partnership with Automotus and Urban Movement Labs, is a pilot for the Code the Curb Initiative, with five smart loading zone locations across Los Angeles. This pilot will help the city understand how new technologies can digitally manage street operations today and in an autonomous future.

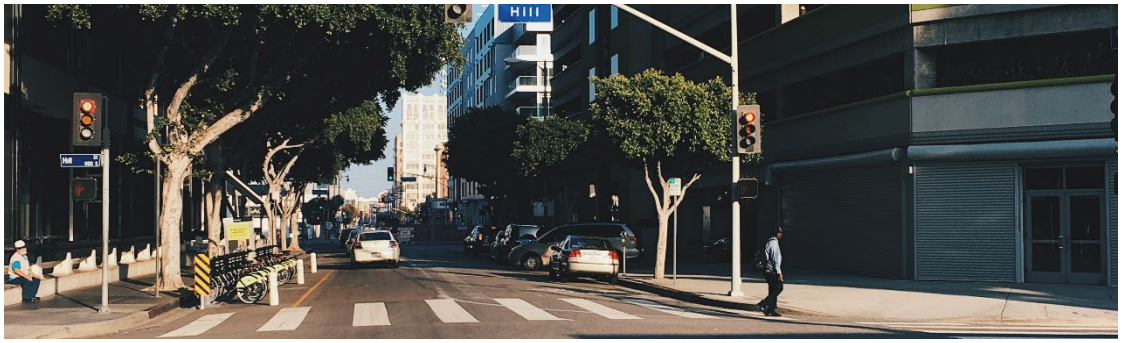


Photo by Max Kukurudziak on Unsplash.

Congestion Pricing

Congestion pricing programs are designed to reduce demand on congested roadways by establishing fees for driving into or within specific areas during certain times of day. These programs have been implemented throughout the world, and multiple cities in the United States are exploring congestion pricing. Road pricing in cities can be implemented in several ways:

- **Fleet/Vehicle Pricing:** Charge specific vehicle types for crossing a boundary into a zone, such as ridehailing or commercial personal autos.
- **Cordon Pricing:** Charge single-occupant vehicles for crossing a boundary into a pricing zone.
- **Area Pricing:** Charge personal autos for both crossing a boundary and driving within a designated zone.

- **Road Usage Charge (RUC):** Charge personal autos a per-mile charge for driving within a zone, potentially by time of day and/or location.

Congestion pricing strategies have the potential to benefit all residents of a city or region. The success of a congestion pricing program depends on how and when people are charged and how revenue from congestion pricing strategies is used. Potential benefits of successfully implementing congestion pricing include safer streets, healthier communities, better mobility options, and behavior change.

Congestion Pricing in London

The region of Greater London instituted cordon pricing in 2003 in response to congestion within the core that limited economic productivity and mobility. Within two years of implementation, the program resulted in a 30% drop in vehicle trips during the peak travel periods. This translated into a 30% reduction in delays, with proportional savings to those traveling by bus and improvements to business sales within the pricing zone. Congestion charging also yielded $230 million in net annual revenue that could be reinvested in mobility improvements. Over the first 15 years of implementation, a significant amount of traffic shifted out of the peak periods.

5 TDM PROGRAM IMPLEMENTATION

This section recommends three actions Nashville should take to implement a more comprehensive Transportation Demand Management Program: 1) Update the development code; 2) Implement stronger traffic impact analysis and mitigation requirements; and 3) Establish a commuter benefits ordinance.

Development Code Updates

Enhanced guidance and requirements to enact TDM measures with new development can be achieved through an update of Nashville's zoning ordinances (or DTC) based on the following elements.

Determine Applicability

TDM requirements should be based on specific criteria such as proposed land uses, development scale, location, trip-generation estimates, and proposed parking supply. These criteria often exempt smaller projects, such as residential developments with less than 10 units or non-residential projects with less than 10,000 occupied square feet. Projects at these smaller scales may lack adequate space to accommodate required physical TDM elements and may have limited resources to implement programmatic measures and monitor efficacy of TDM measures.

Common Thresholds for TDM Requirements

Square Feet of Construction or Renovation Examples:

- ≥ 5,000 square feet of new construction (Buffalo, NY)
- ≥ 10,000 square feet of new construction (San Francisco, CA)
- ≥ 50,000 square feet of renovation and a change in land use (Buffalo, NY)
- ≥ 50,000 square feet of non-residential development in a mixed-use development (Pasadena, CA)

Vehicle Trips During Peak Hour Examples:

- ≥ 100 vehicle trips for a commercial development (Boulder, CO)
- ≥ 20 vehicle trips for a residential development (Boulder, CO)

Dwelling Units Examples:

- ≥ 10 new or altered dwelling units in a commercial/mixed-use zone (Portland, OR)
- ≥ 100 units of a multifamily development (Pasadena, CA)

Change of Land Use Examples:

- ≥ 25,000 square feet of occupied floor area in a development with a change of land use (San Francisco, CA)
- ≥ 50,000 square feet of renovation and a change in land use (Buffalo, NY)

Proximity to Transit as Basis of TDM Plan Requirement Example:

- Any development for which more than 50% of its parcel is within 1/4-mile of a light rail line, a bus rapid transit line, or a streetcar line must include a TDM plan as part of the site plan review application (Saint Paul, MN, pending authorization)

Define Options for Assembling a TDM Plan

A range of TDM strategies can be approved for use in required TDM plans. Recent trends have favored offering a wide "menu of options," providing developers with flexibility to select measures they find most feasible while limiting options to strategies known to reduce vehicle trips or improve multimodal conditions. The following sections highlight how TDM measures can be incorporated into project/site level plans.

Required Measures

Many programs identify a small set of proven TDM strategies that are established as core requirements applied to all developments. Requirements typically include pricing-related strategies such as unbundling parking, transit benefits/subsidies, and carpool incentives, in addition to employee surveys and reporting.

Available Measures

A basic menu of options can guide developers in crafting a TDM plan. In this approach, the project's TDM plan is evaluated for its effectiveness—either by a professional third-party consultant or by staff from the development review, traffic engineering, planning, or other relevant department—in meeting the project's TDM requirements.

Points-Based Menu of Options

A points-based menu of options allows developers to craft a TDM plan based on points for TDM strategies, which are weighted based on a strategy's relative effectiveness in reducing demand. Development proposals are assigned a minimum number of points to achieve based on their likely impact on travel/parking demand. The points associated with the selected set of TDM commitments must equal or surpass this number. This offers flexibility while limiting options to those that promise meaningful impacts on parking and travel demand.

Set Targets

If implementing a point-based system, create an accompanying table of minimum points targets to ensure applicants know what is required of their specific project. For a TDM plan to receive approval, the points associated with the selected set of TDM commitments must equal or surpass the target applicable to a specific development. Factors to consider when setting target ranges include:

- Zoning district or special overlay zones
- Amount of proposed on-site parking
- Amount of parking unbundled from residential or commercial leases
- Proximity to high-quality transit

Points Requirement and Trip Generation in Austin (TX)

Points requirement that scales with trip generation projections (pending authorization):

- When trip-generation is projected at between 1,000 and 2,000 trips, the TDM plan must include measures worth 20 points.
- When trip-generation is projected to be more than 2,000 trips, the TDM plan must include measures worth 30 points.

Implementation Guide

Metro should provide a guide to give clear instructions for implementing each measure before occupancy and maintaining it after occupancy. For requirements that are points based, additional "bonus" points can be defined for implementing measures at a higher level of intensity (e.g., providing shuttle service at a higher frequency than minimum prescribed headways), providing developers with an incentive to commit to highly effective forms and levels of TDM implementation. Providing technical guidance can also help to avoid cumbersome detail disputes upon review and allow for as-needed updates of the program.

Define Ongoing Compliance Requirements

Zoning-based TDM plan ordinances typically include active monitoring and reporting requirements to ensure compliance. Over the life of a development, a combination of self-reporting and city staff monitoring ensures that approved commitments are maintained and that zoning requirements can be updated based on data. Key monitoring and reporting steps are described below.

Pre-Occupancy

Prior to issuing a Certificate of Occupancy, the monitoring agency or partner should perform a site inspection to confirm all physical measures of the project's TDM plan have been implemented. Additionally, a representative from the development project, such as a TDM coordinator, should provide documentation of all programmatic TDM measures that have been or will be implemented at the site.

Ongoing

The property owner is required to provide monitoring and reporting documentation on a defined schedule, but not more frequently than annually. The first monitoring report is typically triggered by a pre-determined occupancy rate. The update must verify that all measures outlined in the TDM plan have been implemented. Enforcement measures can be taken, if needed, to certify compliance.

Plan Update

After approval of a development project's building permit, the city can allow the property owner to propose updates to an approved TDM plan.

Plan Reporting in Atlanta (GA)

By June 1 of each year, properties must complete the Transportation Management Plan Reporting Form and submit it via the city's website. As an alternative, the property owner can participate in a transportation management association (TMA), where available. On behalf of the property, the TMA will report to the City of Atlanta Office of Zoning and Development on TMP implementation and compliance.

Traffic Impact Analysis and Related Mitigation

A Traffic Impact Analysis (TIA) compares existing transportation network conditions with conditions projected from a proposed development. The applicant must provide transportation improvements to mitigate their development's negative impacts on the transportation system. The primary focus of a conventional TIA is on vehicle delay

assessed by "intersection delay," which represents how long it takes to get through an intersection, and "Level of Service" (LOS), which is a quantification of traffic flow through a particular segment or intersection.

In a typical TIA, an LOS analysis indicating unacceptable delay for drivers will result in a requirement that the proposed development include mitigations to reduce that delay. These mitigations are exclusively roadway or intersection investments that expand vehicle capacity, speed up increased or altered traffic flows, or otherwise optimize motor vehicle operations. The combination of LOS and required vehicle-focused mitigations perpetuates driving-dependent development patterns.

TIA guidelines can, however, provide a platform for leveraging TDM solutions to mitigate the same projections. By emphasizing multimodal evaluation metrics and crediting TDM measures as mitigation options, a TIA process can expand the mitigation toolbox to better align with sustainable growth goals. TIA guidelines that forward the objectives of TDM will:

- Shift focus away from vehicle speeds and delay
- Consider all "person trips" not just vehicle trips
- Consider impacts on all modes (e.g., Multimodal Level of Service, which considers levels of service for auto, bus, bicycle, and pedestrian travel)
- Base desired outcomes on VMT, destination accessibility, and mode shift

NDOT and Metro Planning have a project underway to update Nashville's TIA guidelines in ways that support TDM. New guidelines should require that proposed developments evaluate potential impacts on the surrounding transportation network and services for all modes of transportation. Level and quality of service should be considered for each mode, not just personal autos.

TIA guidelines can require TDM strategies and/or transportation improvement strategies based on the triggers described below or if a significant project impact is identified. The strategies should support adopted Complete Streets policies and goals, with a focus on supporting a shift in transportation modes.

TIA-TDM Linkages

Examples of jurisdictions with adopted linkages between TIA requirements and TDM as a mitigation approach include:

- **Arlington County, VA:** Requires some TDM measures as part of "base mitigation" and others as potential "enhanced mitigation," with ongoing monitoring paid for by the property owner.

- **Washington, DC:** Focuses "Multimodal Transportation Analysis" (MMTA) approach to TIS explicitly on access by and incentives for walking, biking, and transit.
- **Mountain View, CA:** Establishes requirement for property owners to reduce driving trips via a suite of incentives and services, using ongoing monitoring of mode shares and driveway counts by site to track effectiveness of the strategies implemented.

Commuter Benefits Ordinance

A commuter benefits ordinance (CBO) establishes TDM requirements for existing employers. Critical to the success of a CBO is an implementation partner like a Transportation Management Agency (TMA) to help employers enact and maintain commuter programs. Nashville Connector is the current TMA for Downtown Nashville, supporting workplaces through customized multimodal trip planning, education visits and training, and organized competitions. Core elements of enacting a CBO program are described below.

Roles and Responsibilities

Identifying the roles and responsibilities for a city and its key partners is critical to the success of a CBO program. City staff typically lead strategic planning and policy development but may establish partnerships with organizations like TMAs and MPOs to assist with reporting and advising employers on implementation of TDM measures. Program staffing may come from multiple city departments, such as transportation, economic development, or planning. Many cities can administer a CBO program with one full-time equivalent distributed among several staff members embedded into existing roles, reducing the need to establish a new position.

NASVHILLE CONNECTOR

Nashville Connector is a free Metro resource to connect commuters and employers to sustainable commute options. As Davidson County's first transportation demand management program, Nashville Connector provides information for residents, employees, and visitors about mobility options in the area.

Employer Participation Parameters

To ensure small employers are not overburdened by requirements, job sites can be tiered into categories based on factors such as the number of employees, share of employees whose work hours require on-peak commuting, and location. Typically,

employers below a certain size (e.g., 25 day-shift employees) are excluded, although not precluded, from participating.

Employer Obligations

The TDM measures enacted by participating employers can vary by employer size and location, particularly if a tiered requirement structure is used. The most common measures include the following:

- Pre-tax benefits for transit
- Direct commuter subsides (e.g., reimbursements for transit passes or vanpool costs)
- Parking cash-out
- Daily priced parking
- Employee vanpool program
- First/last-mile shuttles to transit
- Remote work plan and flexible schedules

Participants are often required to designate an employee transportation coordinator (ETC) who serves as a primary point-of-contact to the city and/or program monitoring partners. An ETC can also serve as a resource for employees seeking information about commuter benefit options and can actively promote those options internally. In some cases, it may make sense for a TMA to administer these tasks.

Compliance and Enforcement

Participant requirements, options, and compliance resources should be communicated in a guide that is publicly accessible and easy for employers to navigate. The guide should be linked to the city's website and to those of its implementation partners.

Many ordinance-based programs identify performance targets at the site level and include some level of independent monitoring to track program compliance. While a TMA or city staff may lead the monitoring efforts, participating employers are typically required to submit annual reports about their efforts and compliance status.

While most cities do not assess penalties for missed targets, an employer's level of required TDM commitment may increase to ensure the goals are met. Many cities levy financial penalties against employers who consistently fail to demonstrate a "good faith" effort to comply with requirements.

Costs and Funding

Costs for a CBO program include strategy and policy development, program administration and reporting activities, and program coordination and support. The cost will vary depending on the structure, aims, and administration of the program. To fund a CBO program, a city could use CMAQ funds, parking taxes, emissions fees, business license fees, and participant fees.

Implemented Trip Reduction Ordinances

Washington State Commute Trip Reduction Law:

- Targeted at major employers, with 100 employees or more at a single worksite scheduled to begin work between 6 AM and 9 AM
- Washington State provides formula funding to each jurisdiction to support employers

Montgomery County (MD)

Montgomery County mandates the following trip-reduction actions for employers of 25 or more full- or part-time employees within one of the County's transportation management districts:

- Designate a transportation benefits coordinator to serve the company's employees
- Implement a traffic mitigation plan developed in consultation with TDM staff
- Submit an annual report of activities
- Pay an annual fee of $0.10/square foot, within transportation management districts
- Participate in the County's annual commuter survey

Pima Association of Governments (AZ) Travel Reduction Ordinance:

- Employers with 100 employees or more must participate in a travel reduction program

Bay Area (CA)

Bay Area Air Quality Management District adopted an employer trip reduction program, in response to a California State law:

- Requires employers with 50 or more employees to offer 1) pre-tax transit or vanpool benefits, 2) a transit or vanpool subsidy, 3) a dedicated transit/shuttle/ vanpool service, or 4) an approved alternate benefit/program

Action Steps

To effectively implement these recommendations within the next five years, Metro should take the following steps:

Early Actions (1 year)

- Establish internal management approach for citywide TDM programming.
- Coordinate with Nashville Connector and develop comprehensive citywide TDM branding and communications standards.
- Identify support to develop TDM Plan Guidelines, complete the Multimodal Transportation Analysis Guidelines (MMTA), and draft a Commuter Benefits Ordinance.

Midterm Actions (2-3 years)

- Secure funding and internal resources for increased compliance and monitoring.
- Establish commute mode split standards and reporting guidelines for employers with 100 or more people at a single work site.
- Adopt a Commuter Benefits Ordinance and lead by example by implementing an enhanced municipal program for Metro employees.
- Launch developer TDM work group to solicit feedback on TDM Plan Guidelines with associated changes to the MMTA.
- Determine applicability standards for updated TDM and MMTA requirements.
- Develop TDM Plan Guidelines, calibrating metrics and point values with comprehensive local data collection and estimated trip reduction potential.
- Update MMTA framework based on mode split standards and TDM Plan Guidelines to enable active transportation, transit, and TDM improvements to mitigate assessed project impacts for all modes.

Longer Term Actions (4-5 years)

- Adopt new TDM Plan Guidelines and MMTA ordinances.
- Consolidate the TDM program under the umbrella of Nashville Connector.
- Begin compliance and enforcement of adopted regulations.
- Evaluate expansion of Nashville Connector to support resident and visitor TDM initiatives Downtown.

CONNECT DOWNTOWN

Appendix E

Best Practices for Event & Construction Management

April 2024

The best practices included in this appendix were developed in fall 2022 to inform potential strategies for Connect Downtown. Although select statistics may be outdated, the recommendations included in this document are still relevant for Downtown Nashville.

BEST PRACTICES: SPECIAL EVENTS & VISITOR MANAGEMENT

Nashville is a hub of music, sports, and entertainment, with over 16 million visitors in 2019, including almost 5 million at Downtown events. Recently, the World Travel and Tourism Council named Nashville one of two "safe travels" destinations in the U.S., and in June 2022, National Geographic called Nashville the best destination to travel. This publicity is likely to attract even more visitors to the Music City.

While Nashville's tourist appeal and cultural attractions generate tremendous economic benefit for the city and the region, the regular and special events that attract large numbers of visitors routinely disrupt Downtown Nashville's transportation systems. Transit routes in Nashville are forced to operate on detours almost as often as they operate on their regular streets, and people walking, biking, and driving must continuously adapt to localized street and sidewalk closures, as well as large volumes of people in concentrated areas.

To manage special events and large numbers of visitors, municipalities can use a number of tools, including developing a comprehensive visitor management strategy focused on maintaining traffic flows, orienting pedestrians, and providing reliable transit service. Both Nashville residents and visitors should be able to reach their destinations efficiently, and detours must be clear and intuitive, supporting easy navigation. Special events can be less disruptive when managed holistically with a focus on providing transportation options.

Visitor & Event Management Strategies

Special Events Permits

Most cities, including Nashville, require event organizers to submit an application to close streets for a special event. Permit conditions typically require placing barricades around entry points, alerting the community of closures and detours, and managing traffic during the event. However, permitting processes and enforcement vary across

cities. Some municipalities require only that applicants submit a traffic control plan to ensure the consistent flow of traffic. Others are active event-management partners, adjusting traffic signals to support street closures.

Detours and Alternate Routes

A common tool to manage special event street closures is implementing detours or alternate routes. When cities have a clear understanding of an event's requirements, staff can work with the organizers to plan temporary routes and even build temporary infrastructure, such as bike lanes or pedestrian paths, to mitigate the impacts of the closures. Temporary bike lanes should prioritize legibility and safety over complex infrastructure, ensuring that critical connections remain accessible for both event-goers and day-to-day travelers.

Street closures have a significant impact on transit routes, and rerouting buses requires extensive coordination between transit agencies and departments of transportation, as well as onsite coordination with traffic officers to ensure safe movement through a detour. Additional signs are needed to alert people of new stop locations and routes, and these should provide as much information as possible. Special event organizers sometimes fund the service changes.

For any street closure, it is important to identify the most vulnerable travelers who would be affected and consider their interests as a top priority. This may include setting constraints on closures to ensure that people who aren't attending an event—the "regular" travelers—are not overly inconvenienced by a detour or alternate route. These constraints could be based around priority corridors and key connection points, ensuring that transportation networks maintain a baseline level of functionality for those who depend on transit routes and active transportation infrastructure to reach their destinations.

Parking Management and Pricing

In addition to congested roadways, visitor reliance on vehicles can impact parking supply. Particularly in key destinations where parking is free or highly subsidized, visitors are encouraged to drive, leading to parking in informal overflow lots, spillover onto adjacent streets, and conflicts with people walking, rolling, and biking at access points (lot entrances, on-street parking stalls).

A holistic approach to parking management—as described in the Parking Management Best Practices paper—can help match supply with demand. One of the most effective ways to shift visitor travel behavior is to "right price" parking by charging for parking in

key destinations and setting the price based on desired utilization targets. Charging for parking can encourage visitors to use more sustainable modes of transportation.

Wayfinding & Accessible Information

Wayfinding refers to the system of signs, road markings, and guideposts that orient people and provide navigation information. Good wayfinding systems help people reach their destination successfully, even without knowing the exact location of the destination. Wayfinding first positions a traveler in relation to their environment, then identifies nearby destinations of interest, and finally points to the most efficient route to the desired destination. While a developed wayfinding network benefits everyone, it is particularly useful for visitors.

Beyond wayfinding signs and kiosks on city streets, cities or business districts can also provide information about destinations and travel options through a visible and accessible website. Providing transportation resources and trip-planning services can help encourage visitors to explore alternatives to driving and try new ways to get around Downtown Nashville.

Visitor-Focused Transportation Options

Alternatives to automobile travel must be affordable, accessible, and easy to use to encourage a shift to more sustainable modes. The recent proliferation and widespread adoption of ride share, shared micromobility services, and car share illustrates increasing demand for the convenience and flexibility of on-demand transportation. On-demand transportation can help to promote broader mobility and sustainability goals while also meeting the travel needs of target populations, such as tourists.

Visitor-focused transportation options often operate like on-demand services, mirroring ride-share options and operating within a specific district. They can also blend the flexibility of on-demand services with the consistency of fixed-route services. Circulators, one example of this type of service, typically have special branding and are most appropriate in high-density areas where visitor travel behavior is well understood. In areas with established visitor travel patterns, circulators can provide fixed-schedule, fixed-route, high-frequency service, typically every 10 minutes. Pricing for circulators and on-demand services should be structured in ways that are competitive with private ride-sharing options.

Nashville's Visitor Management Needs

As a center for music and sporting activities and a home for tourist attractions like concerts, festivals, and other large-scale events, Downtown Nashville can benefit from management strategies that address both special events and visitors. Record numbers of tourists coupled with Nashville's significant population growth places a heavy burden on Downtown's roads, sidewalks, and transit routes.

A proactive approach to accommodating the impact of visitors will preserve Nashville's reputation as a premier tourist destination without sacrificing transportation efficiency, safety, or accessibility. An effective visitor management strategy sets high expectations, accounts for competing interests, and ensures that people can get to where they need to go, whether they are attending an event or going to work. Other American cities with large numbers of events and high visitor volumes provide examples of forward-thinking and successful visitor management techniques for Nashville to consider.

Case Studies

NYC's Open Streets Program (New York, NY)

New York City's Department of Transportation (NYCDOT) launched its Open Streets Program in April 2020 to offer space for safe, socially distanced activity. In 2021, the City Council made it a permanent program, offering opportunities to close streets around

the city to create public spaces. This program was used to double temporary protected bike lanes in June of 2020 in response to increased cycling during the pandemic. NYCDOT is now using the Open Streets Program to respond to special events, providing safe and accessible temporary facilities for people walking, biking, or rolling in areas impacted by event closures.

Lessons Learned

- **Special event management means being responsive and adaptive.** A week before a special event street closure, NYCDOT issued a press release announcing a temporary bike lane installation. This communication strategy notified both current cyclists and also encouraged motorists to consider alternative strategies, especially during periods of congestion related to the special event. NYCDOT's awareness campaign was complemented with ample on-street signs along the temporary route.
- **A program to easily implement temporary bike lanes can keep cyclists safe.** NYCDOT's temporary bike lanes ensured that cycling infrastructure was keeping up with demand caused by the pandemic. Having a program like Open Streets to facilitate efficient implementation can address needs associated with special events as well.

Source: https://nyc.streetsblog.org/2020/06/24/breaking-city-doubles-temporary-protected-bike-lanes-in-response-to-covid/

Applicability to Nashville

Nashville's current greenways and bike lanes are heavily concentrated downtown, meaning they are regularly impacted by events and closures. Nashville can follow NYCDOT's example of implementing a coordinated strategy to provide safe and temporary facilities for cyclists and pedestrians and prioritize active transportation during street closures and special events.

Los Angeles Tourism Master Plan

The City of Los Angeles' Department of Convention & Tourism Development published its Tourism Master Plan in 2020 to ensure the tourism industry delivers strong benefits to the community. The Master Plan includes a chapter devoted to tourism mobility, with a strategy to reframe Los Angeles as a destination that visitors can explore without a car, despite its reputation as a sprawling, car-centric city.

The tourism mobility management strategies focus on education, communication, and innovative programming to shift the movement of visitors away from the region's already-burdened freeway infrastructure. One suggested action in the tourism mobility chapter is to develop an integrated attractions and transportation pass that provides discounts for citywide venues, experiences, and a full range of public transportation options. Other suggested actions include investment in micromobility and a visitor communications program that advocates for auto-free visits to Los Angeles.

Source: Los Angeles Tourism Master Plan

Lessons Learned

- **A proactive approach to visitor management aligns objectives with broader mobility goals.** Los Angeles developed the Master Plan's section on tourism mobility with the intention of shifting the city's reputation and transportation mode split. By addressing the transportation impacts of visitors, Los Angeles can further its transportation goals.
- **Visitor management is a multi-faceted strategy.** The tourism mobility strategies do not rely on one intervention or solution. Rather, communications, marketing, creative service design, and cost considerations all play a role in providing a cheaper, safer, and more sustainable transportation experience for LA's residents and visitors.

Applicability to Nashville

Nashville can draw from the strategies and guidelines in Los Angeles' tourism plan to create its own tailored visitor management strategy. A coordinated plan for understanding and addressing the impact of visitors on the city's transportation infrastructure would allow Nashville to prepare for visitors while still pursuing its broader mobility goals.

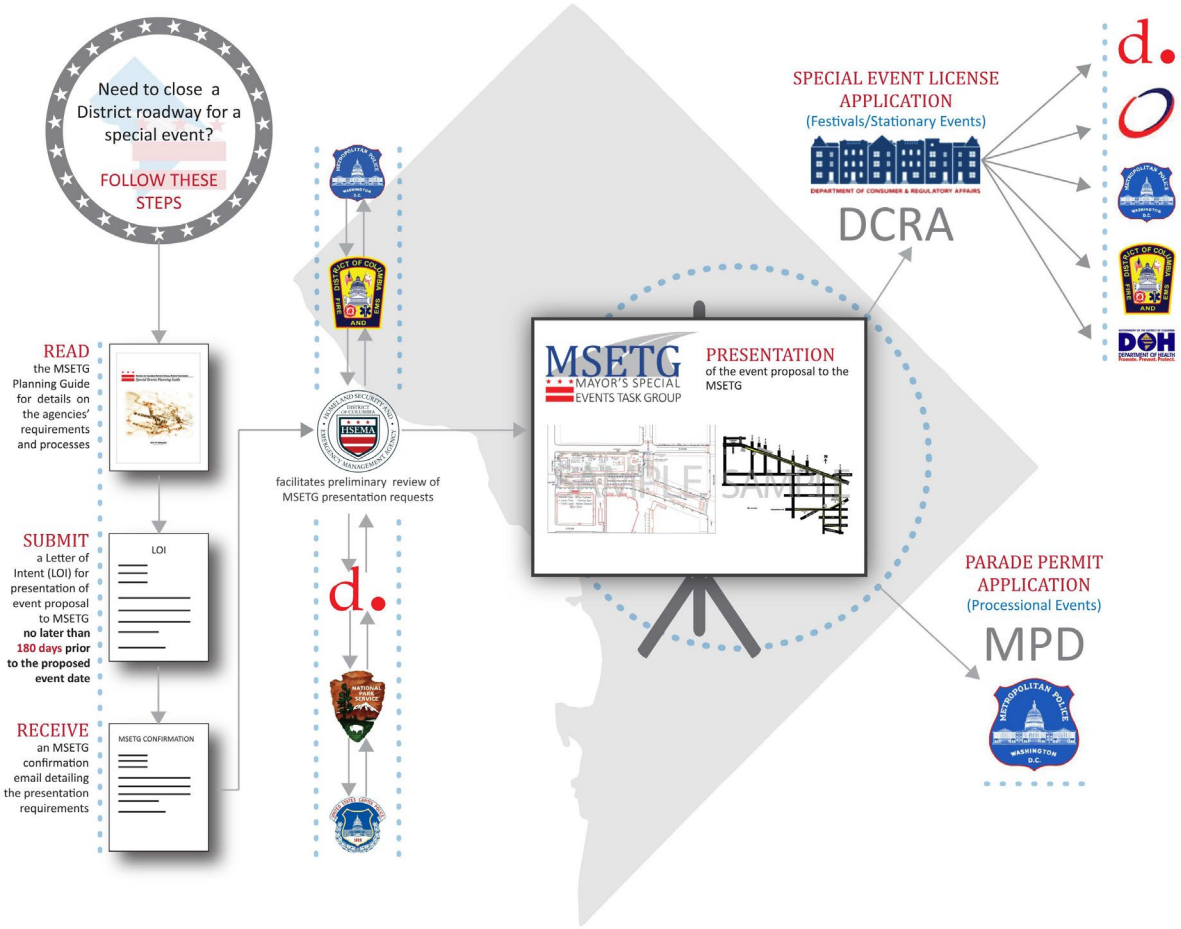
Washington, D.C.

As the nation's capital, Washington, DC hosts numerous special events each year. The Mayor's Special Events Task Group (MSETG) is responsible for coordinating public safety planning for efforts that require interagency coordination and publishes a "Special Events Planning Guide" to support applicants.

The MSETG meets to review presentations of proposed events the second and fourth Monday of each month. Organizers of proposed special events are required to present event proposals to the MSETG and receive approval prior to the issuance of permits or licenses. Applicants are required to request the opportunity to present to the MSETG no less than 180 days prior to the date of their event.

The MSETG includes the District Department of Transportation (DDOT), which requires a Traffic Control Plan (TCP) for each special event permit application that involves street closures or disruptions to the movement of vehicles, bicyclists, and pedestrians. TCPs ensure that permit applicants have considered how their event will affect transportation in D.C. and require applicants to craft a strategy for traffic management based on the Federal Highway Administration's Manual on Uniform Traffic Control Devices. Every TCP must provide information impacted public spaces, identify streets to close, and specify

bike lanes, truck, and bus restrictions created due to the event. After the TCP has been accepted, DDOT periodically inspects the special event area to ensure compliance.



Source:
https://hsema.dc.gov/sites/default/files/dc/sites/hsema/publication/attachments/2018_MSETG%20Special%20Events%20Planning%20Guide.pdf

Lessons Learned

- **TCPs focus on more than just vehicular movement.** DDOT's Traffic Control Plan places pedestrians and cyclists on equal footing with vehicles in the prioritization of safe and efficient travel options.
- **DDOT requires preparation and ensures that commitments are implemented.** The TCP must be submitted with other application materials 30 days prior to the event, providing ample time for DDOT review. DDOT is an active enforcement body and reserves the right for random inspections.

- **Expert coordination translates to excellent outcomes.** The TCP must be tailored to fit the event's specific situation. A special event permit applicant submits their Traffic Control Plan to DDOT for initial review and verification, but both the Public Space Management Administration and Traffic Services Administration also review most TCPs.

Applicability to Nashville

Nashville should consider developing a Special Events Planning Guide to direct the activities of all event organizers, especially those planning events in Downtown Nashville. While the Mayor's Office convenes regular meetings for special event permits that include Metro departments, WeGo, and key partners, the committee's approach should be adjusted to better prioritize vulnerable travelers and to serve as an implementation tool for Nashville's Vision Zero Action Plan.

Additionally, by requiring very early notice of planned events, Metro would have more time to work across departments and agencies and with organizers to develop traffic control plans that have minimal impacts on people walking, rolling, biking, and taking transit. NDOT could also explore opportunities to use its Traffic Management Center to support the development of traffic control plans through advanced signal control capabilities and sensor-based traffic monitoring technologies.

Las Vegas, NV

The City of Las Vegas's Downtown Loop is a free shuttle that serves the many attractions in downtown Las Vegas.[1] The circulator service is wheelchair accessible and operates Monday through Thursday from 11 AM to 6 PM, and Friday and Saturday from 3 PM to 10 PM. Through the GoVegas mobile application, riders can track the circulator's location in real time. The Downtown Loop operates independently of the rest of the Las Vegas transit system, underlining its mission to move visitors and residents who may be visiting local attractions. The Downtown Loop is a free service, and it uses smaller vehicles to reflect the targeted customer base and limited service area.

Lessons Learned

- **Free service removes all barriers to entry.** The Las Vegas Downtown Loop provides visitors with a free service to explore the city's attractions and provides

[1] https://www.lasvegasnevada.gov/Residents/Parking-Transportation/Downtown-Loop

an accessible option for people who want to avoid using taxis or rental cars. Visitors have little incentive to pay for private vehicle transportation when the free circulator stops at the most common destinations.

- **The visitor-focused service relieves stress on other transit routes.** Commuters are less likely than visitors to use the downtown circulator because it only services tourist attractions and cultural event spaces. The circulator plays a role in ensuring that "regular" transit service is available to serve residents' needs by ensuring that visitor travel is accommodated separately.

Source: lasvegasnevada.gov/Residents/Parking-Transportation/Downtown-Loop

Applicability to Nashville

WeGo transit previously offered a free, downtown circulator service via the Music City Circuit, which provided access to visitor-focused destinations. The circulator was eliminated in 2019 due to budget shortfalls and low ridership—it was challenged to effectively serve visitor (and resident) needs due to the proximity of many destinations and the speed of the service, which was often slower than walking.

While there are private transportation options that fill some of the visitor-focused transportation need, Nashville could explore approaches that would replace the function of the Music City Circuit and provide a fare-free option for people making visitor-focused connections in Downtown Nashville. Any future investments—whether services or infrastructure (e.g., transit priority corridors)—should consider the efficiency

of the offering compared to other modes of transportation, along with new tactics to market to and promote visitor use.

Go Tahoe North (Lake Tahoe, CA)

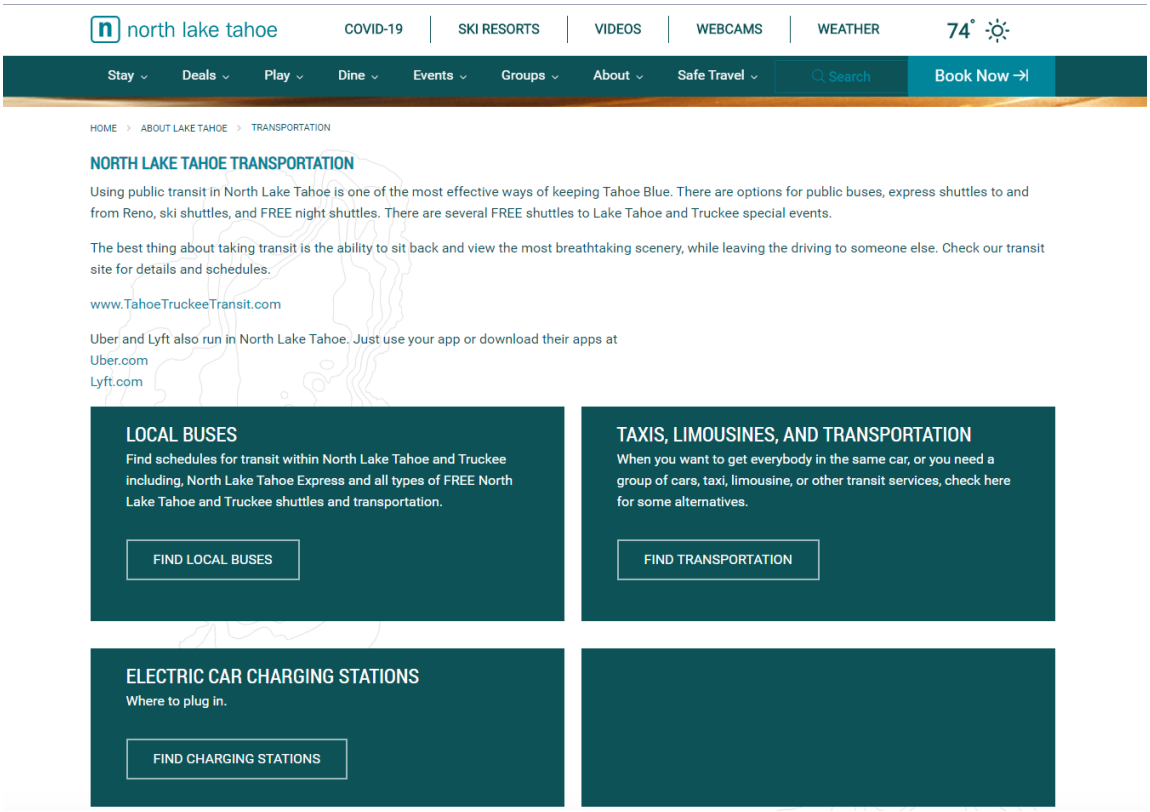
North Lake Tahoe is known for its beaches and expansive ski resorts that draw thousands of visitors each year. To help people navigate transportation to and within key resort areas, the North Lake Tahoe Convention and Visitors Bureau created Go Tahoe North. The region's main tourism website, Go Tahoe North provides a comprehensive list of mobility options with detailed descriptions about each service as well as links and contact information for providers. Visitors can also browse the website for local dining options, upcoming events, trip recommendations, and available lodging, creating a one-stop travel planning resource.

Lessons Learned

- **Providing information early can change travel behavior.** Visitors to North Lake Tahoe have the transportation-options information they need before their trip begins, making it easy for them to plan to vacation without a car.
- **Encouraging visitors to use more sustainable forms of transportation requires effective communication and education strategies.** The Convention and Visitors Bureau has aggressively marketed the Go Tahoe North website. The website includes a "Traveler Responsibility Pledge" that invites visitors to commit to six pledges that advance sustainable travel.

Applicability to Nashville

The Nashville Downtown Partnership's website is an excellent resource for Nashville visitors and residents. It includes multimodal transportation information to help people get around Downtown. Metro could help the Partnership expand this resource. Metro should also work with partners who currently provide transportation information for visitors—such as the airport—to broaden their messaging related to transportation options. For example, instead of focusing visitors on renting a car at the airport, partner websites could promote WeGo services or shuttle options to ensure that people are getting information about downtown transportation options before they leave the airport.



Source: https://www.gotahoenorth.com/

Breckenridge (CO) Town-Wide Pricing Program

Breck Forward, Breckenridge's parking and transportation task force, worked with the Town Council to create a comprehensive Parking and Transportation Program to reduce traffic downtown. As part of their efforts, the Town of Breckenridge implemented a parking pricing program that charges fees for the use of most public parking spaces, including those that were previously free, and a park-once strategy that encourages visitors to park and use transit or active transportation to move between destinations.

Rates are set to the lowest level necessary to achieve a parking availability target of approximately 15%. Prices vary by location, time of day, day of week, season, and observed demand. The Town of Breckenridge also implemented a smart parking system to improve the local, guest, and visitor experience and to improve parking enforcement. Parking revenues are used to introduce new technologies to help improve transit and parking.

Lessons Learned

- **Use strategic parking policies to prevent overcrowding.** By implementing a responsive price for parking, Breckenridge can reduce demand to manage the traffic volumes in busy areas and during peak periods.
- **Consider creative and flexible parking solutions.** The Town's approach to pricing and parking management was one of precise and adaptable interventions. Changing prices for parking depending on location, time, day, and observed demand allows parking to be managed dynamically.

Applicability to Nashville

Many garages and lots in Downtown Nashville offer free parking after normal business hours and on weekends. Nashville has an opportunity to set pricing that better meets the demand for parking and encourages people to try non-driving modes. Implementing a new parking pricing approach should be done in conjunction with improvements to non-driving modes, including expanding transit service, improving the reliability of existing service, and building more high-quality active transportation infrastructure.

Metro should also consider a sophisticated information program that shows available spaces or allows drivers to reserve parking on their phones to reduce congestion and control traffic flows.

Implementation in Nashville

Large numbers of visitors and special events can limit downtown transportation options with street closures and detours, but a comprehensive visitor management system, such as LA's Tourism Master Plan, can help to mitigate congestion, improve the transit, pedestrian, and cycling experiences of both locals and visitors, and signal to event planners that Nashville is a city that can host major events while maintaining a high-functioning transportation system.

Nashville has many tools available to enhance visitor and special events management in Downtown. Metro's new Traffic Management Center will provide NDOT with the capacity to respond to visitor and event impacts in real time, adjusting strategies based on congestion levels. Nashville can also take inspiration from New York, Washingtonm DC, and Las Vegas, three cities that are known for special events and are some of the most visited cities in the world. As in New York City, Nashville can incorporate temporary bike lanes in all street closure decisions, requiring that event organizers include these routes in their traffic control plans.

Nashville should also consider more targeted strategies to encourage visitors to travel without a car, including a privately funded circulator, enhanced public information, demand-responsive parking pricing, and targeted transportation demand management programs. For example, Metro could work with event providers to offer a free WeGo bus pass with an event ticket. Metro should expand its partnerships to advance creative strategies and ensure that visitors to Downtown Nashville understand the full breadth of transportation options available to them.

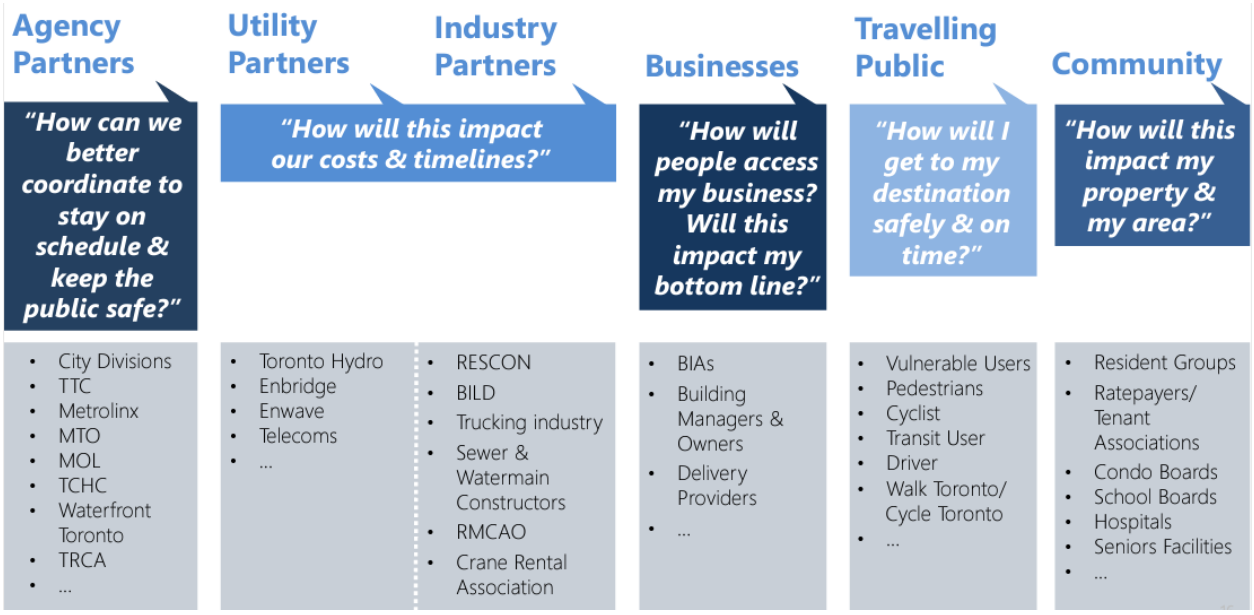
BEST PRACTICES: CONSTRUCTION MANAGEMENT & ACCESS IMPROVEMENTS

Growing cities with strong economies are often home to booming construction industries. While growth and new construction bring housing and businesses, improved infrastructure, and amenities, construction projects can have a negative impact on the right-of-way, including forcing detours, compromising safety, and creating access barriers for people traveling by all modes of transportation. Construction affects people and organizations differently, and areas with significant numbers of projects that are uncoordinated and in close proximity can have:

- More conflicts between people using the right-of-way and construction activities
- More construction vehicles
- More traffic in certain areas due to closures and detours
- More accessibility issues and liability exposure
- Less flexibility in scheduling for contractors
- Less margin of error
- Less patience for residents, business owners, and travelers

Early planning and regular coordination between developers, contractors, municipal departments, and transit agencies can help mitigate the mobility issues that arise from construction projects. In the context of transportation, construction management and access improvements refer to the processes by which cities maintain safe multimodal travel during street, sidewalk, and alley closures due to construction activities.

City of Toronto Assessment of Construction Impacts by Stakeholder



Source: https://www.toronto.ca/wp-content/uploads/2019/12/94b0-TS_Constr-Hub-Town-Hall.pdf

Construction Management Tools

Permitting

In general, municipalities require permits for all construction projects; projects that require right-of-way closures or impact accessible walking, rolling, and biking paths typically require a special "traffic management" permitting process. Examples of right-of-way impacts that may be permitted include full street closures, lane closures, construction use of a parking lane, and sidewalk and bikeway detours. A municipality's transit agency may engage in the permitting process if temporary relocations of bus stops are needed or if bus routes must be detoured.

Detours and Temporary Infrastructure

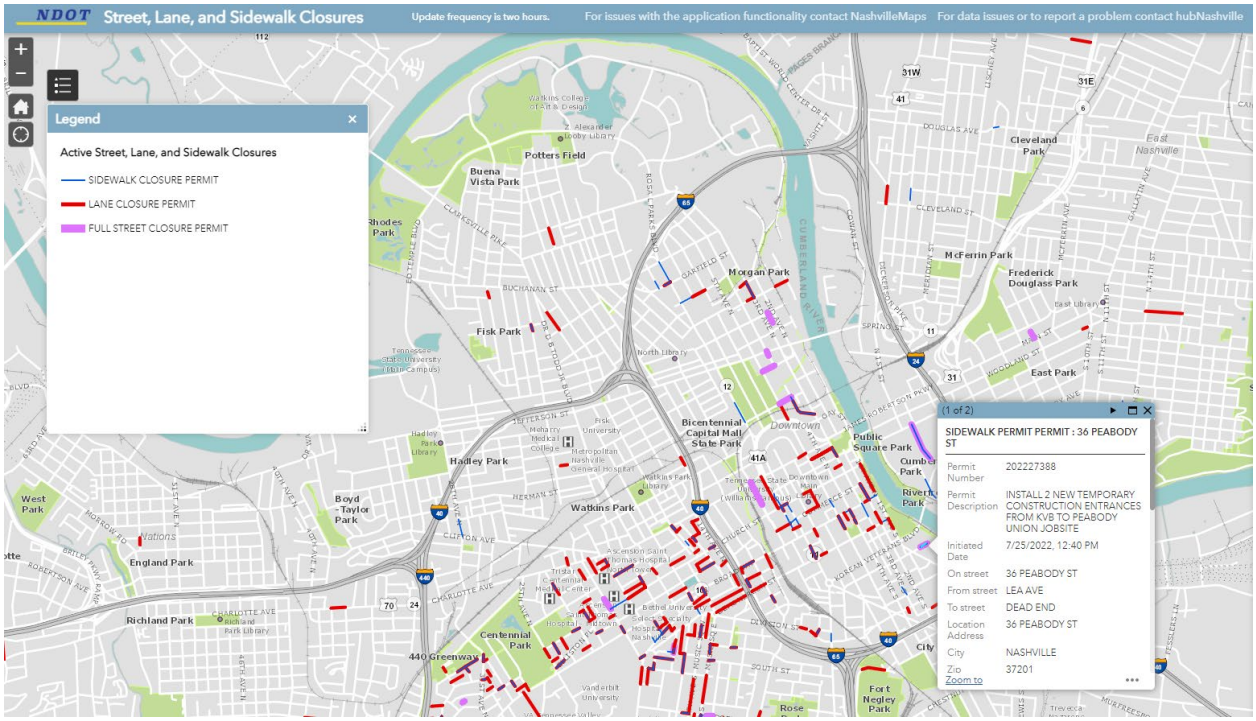
Construction projects often require staging areas in the right-of-way for equipment and deliveries, which can impact sidewalks or curb lanes. These access impacts require detours to accommodate alternative pedestrian routes and other facilities. Beyond re-routing, providing safe pedestrian access through construction zones can be accomplished with temporary structures such as a covered boardwalk that guides people from the sidewalk into a detour and then back onto the sidewalk beyond the construction site.

Channelizing Devices

Channelizing devices like cones, tubular markers, vertical panels, traffic drums, and safety barricades alert travelers to construction activity and facilitate gradual shifts in traffic flow. The design and placement of channelizing devices is directed through a traffic management or maintenance of traffic permit and should be as predictable and clear as possible.

Public Information

Providing clear and current information to the public about sidewalk and road closures, detours, and other impacts to the right-of-way can help people plan their travel in advance and reduce frustration. NDOT's Street, Lane, and Sidewalk Closures map is updated every two hours and provides details about the types of closures that are permitted, including the beginning and ending dates of the work. Ensuring that data like this is broadly available is an important component of an effective public information campaign.



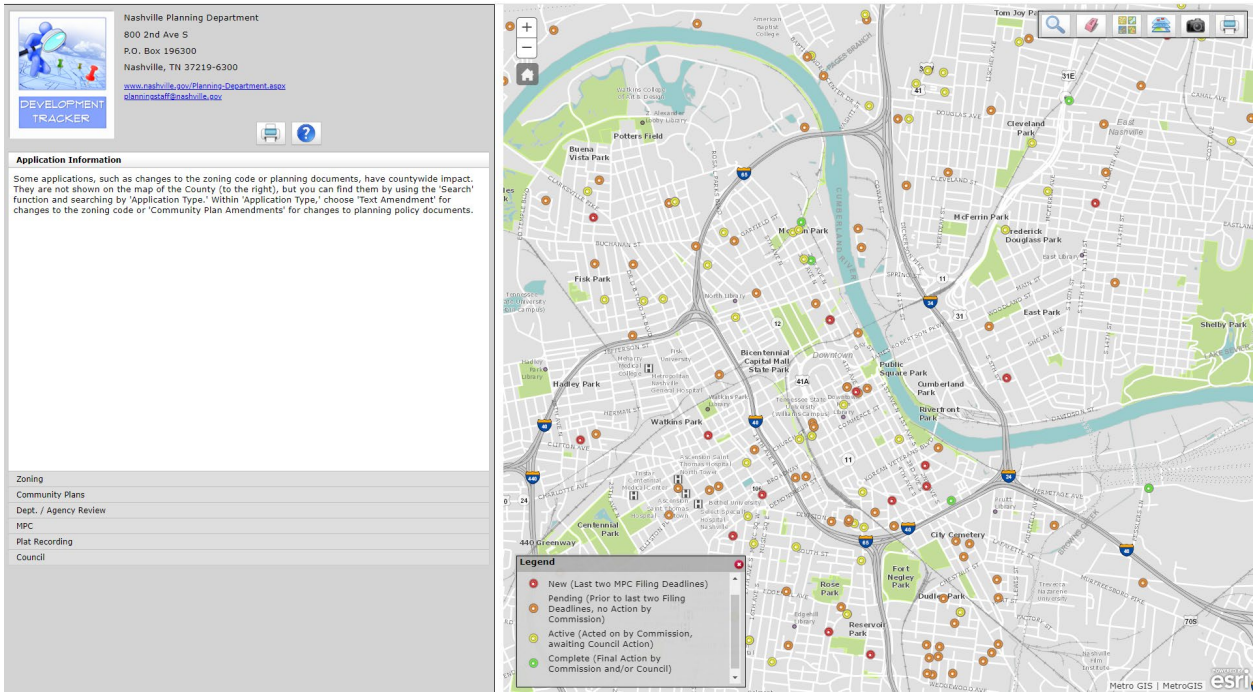
Source: https://nashville.maps.arcgis.com/apps/webappviewer/index.html?id=74cb903244e1497a8c3d9db4ee6404a5

Nashville's Construction Management Needs

Nashville is one of the fastest growing big cities in America, with 15% population growth between 2010 and 2020. From 2011 to 2021, there was 1.5 million square feet of office space under construction, and there were 25 construction projects underway in fall 2022. These projects include residential development to provide new housing, commercial development to support the city's economy, and improvements to existing infrastructure to respond to the demands of a growing city.

All of that construction translates to increases in sidewalk and bike lane closures—in fact, nearly 90% of sidewalk and bike lane closures are due to construction projects. To address this issue, Metro recently issued a revised permit policy for construction-related closures. Under the new policy, closures can be permitted for no more than seven days. After that time, the applicant must provide a solution to reopen the facility, such as using scaffolding over a sidewalk, or apply for a variance. NDOT also recently increased the number of right-of-way inspectors to better manage closures and enforce permit conditions.

Nashville's Development Tracker



The Development Tracker allows the public to follow applications filed with the Metro Planning Department as they move through the approval process.

Source: https://maps.nashville.gov/DevelopmentTracker/

These changes are significant steps towards improving safety for pedestrians and cyclists around construction sites. However, with so much construction underway, Downtown Nashville could benefit from a comprehensive construction management strategy, with requirements for enhanced coordination, high-quality multimodal access, and increased fees for use of the right-of-way. Coordinated management of construction impacts—including detours and temporary facilities to support people driving, taking the bus, and walking and rolling—can help to create a safer and more accessible downtown. Transportation management and access improvements for construction sites are critical for Nashville's continued growth and for more resilient, sustainable, and equitable transportation networks.

Case Studies

Access Seattle Construction Hubs (Seattle, WA)

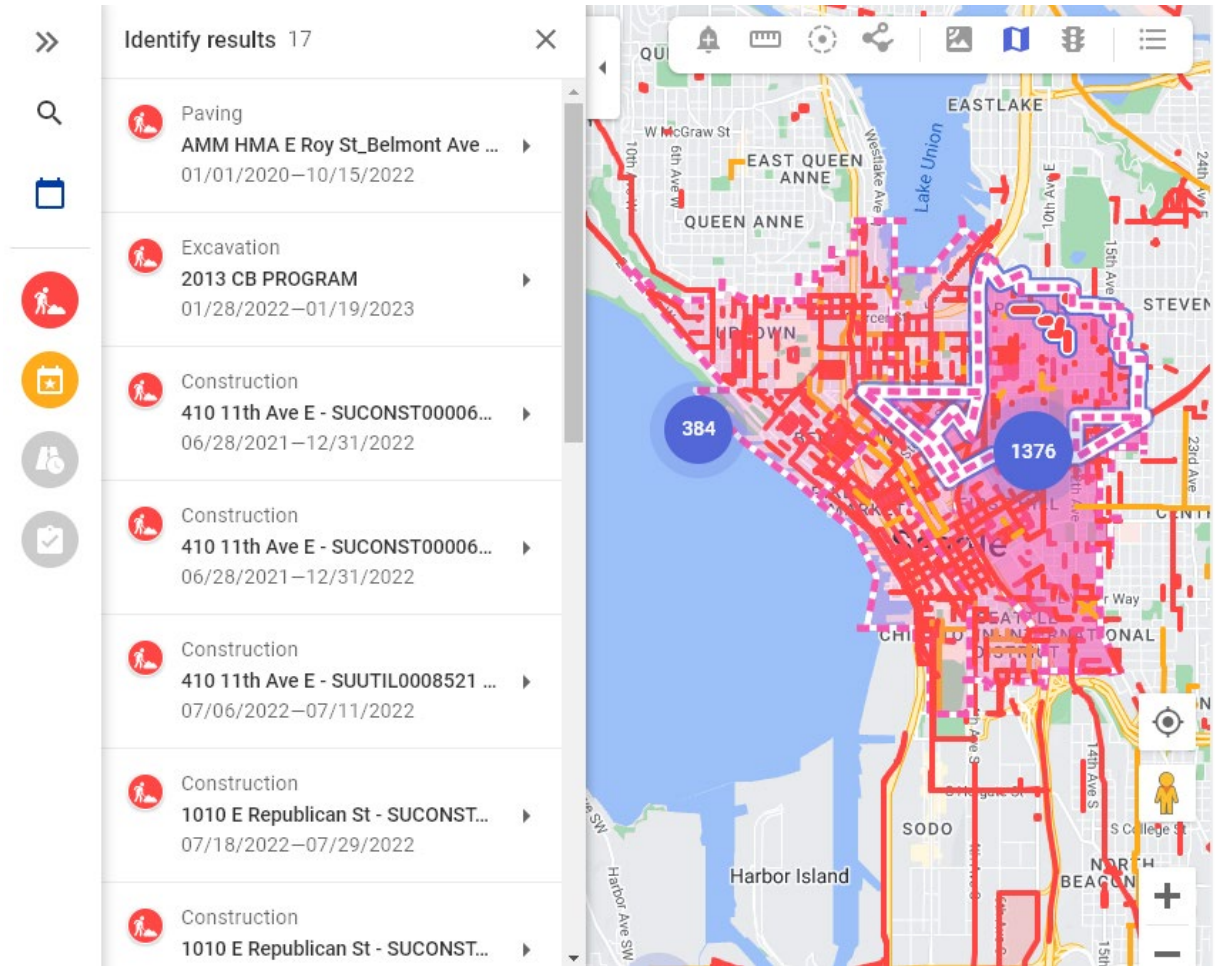
Source: Seattle Department of Transportation, "How to plan, document, and implement pedestrian mobility in and around work zones"

In response to booming growth, the Seattle Department of Transportation (SDOT) developed the Access Seattle program to address pedestrian mobility in and around construction work zones. Through the program, SDOT designated areas of dense construction activity as "Construction Hubs," and established special requirements and resources to ensure mobility and access through these zones.

Contractors planning to work in Construction Hubs must discuss their desired use of the right-of-way with SDOT construction coordinators at least 10 days before a construction permit application can be considered. To maximize pedestrian accessibility, SDOT suggests that right-of-way discussions begin long before construction starts. This early coordination allows contractors to plan and design structures on private property (instead of in the right-of-way) to maintain mobility and ensure continuous, well-drained, well-lit sidewalks that are protected from the roadway, ADA accessible, adequately signed, and at least 4 feet wide.

Construction Hub Coordinators work across construction projects and contractors to ensure that at least one sidewalk per block in a Construction Hub remains open. Hubs

and detour information are publicly available on SDOT's website, and residents can review the Project and Construction Coordination Map to learn more about active construction projects in their area.



Source: https://www.seattle.gov/transportation/projects-and-programs/programs/pedestrian-program/project-and-construction-coordination-office/project-and-construction-coordination-map

Lessons Learned

- **Planning and coordination benefit everyone.** Construction Hubs make the best use of public assets by optimizing project scheduling. Coordinating information about current and planned work helps facilitate project sequencing and avoid rework, and it allows the City to identify opportunities for improvements called for in modal master plans when restoration is scheduled.
- **Coordination saves money.** SDOT calculated savings based on points of coordination resolved, finding that the Construction Hub Program resulted in:
  - 200 days of construction saved

  - $15.5 million saved by all partners, including City departments, utilities, agencies, and private developers
  - $1.6 million saved by SDOT alone
  - 1,600 tons of CO2 reduced
- **Training makes a difference.** Early coordination requirements are also an opportunity for education. SDOT staff can work directly with local contractors to ensure they understand the requirements and are trained to address them appropriately.
- **Pedestrians are prioritized.** Construction Hub Coordinators work to avoid major street or sidewalk closures when other nearby streets are closed due to construction. The emphasis on sidewalk impacts at the onset of construction helps focus planning around people walking, rolling, and biking.

Applicability to Nashville

While Downtown Nashville has areas of concentrated construction activity, there is currently no unified (or public-facing) approach to organize and coordinate the projects or uses of the right-of-way. Nashville could develop a Construction Hub program to better manage construction impacts and organize projects in ways that support maintenance of traffic and improved access for people walking, rolling, biking, and taking the bus.

Toronto, ON Construction Hubs

Following Seattle's example, Toronto initiated a construction hub pilot program in 2019, as part of the city's larger Vision Zero Road Safety Plan to reduce traffic-related fatalities and serious injuries on Toronto's streets. Toronto's construction hubs address road safety and public right-of-way use in areas with significant construction activity, focusing on reducing the costs and impacts of construction on residents, businesses, partners, and the traveling public. Each area is assigned a coordinator, whose role includes managing right-of-way logistics, revising construction management plans, and acting as a single point of contact for stakeholders.

Toronto's first hub was the Yonge & Eglinton Construction Hub, which introduced several initiatives and interventions to improve pedestrian safety. These included creating temporary one-way streets, restricting parking, and raising awareness about heavy truck blind spots. Since 2019, the City has designated five additional construction hubs.

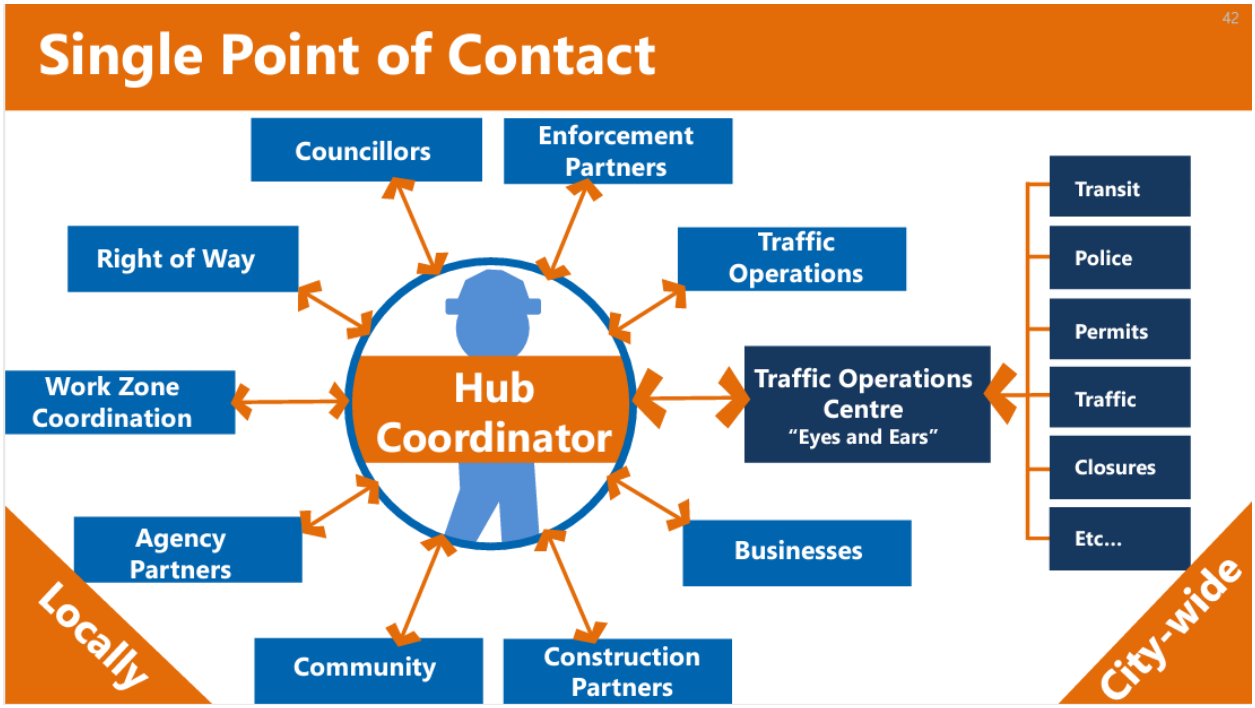
Source: https://www.toronto.ca/services-payments/streets-parking-transportation/road-safety/construction-hubs/yonge-eglinton-construction-hub-2/

Lessons Learned

- **Designating a single point of contact is critical.** A city employee is the construction hub project manager, and that person's function is to act as a liaison between contractors, residents, and local business owners, as well as coordinate with other city departments. Having a dedicated project manager means everyone knows who to contact for the answers they need.
- **Connecting construction hub approaches to Vision Zero strategies helps to set priorities.** Implementing the construction hubs program as a complement to Vision Zero allowed the City to apply creative solutions to address safety and accessibility concerns. Temporary road rule changes, re-purposing parking spaces, and improved signage are tools that improved pedestrian access and safety around Toronto's hubs.

Applicability to Nashville

Nashville's Vision Zero Action Plan can provide additional support for addressing pedestrian safety during construction activities. Following Toronto's approach, NDOT could undertake additional analysis with a focus on construction activity to link a Nashville Construction Hubs Program to Vision Zero implementation, addressing impacts and advancing Metro priorities simultaneously.



Source: https://www.toronto.ca/wp-content/uploads/2019/12/94b0-TS_Constr-Hub-Town-Hall.pdf

Portland, OR Work Zone Policy

In 2016, following a grassroots social media campaign by Street Trust, Portland adopted an official policy for the safe accommodation of pedestrians and cyclists in and around work zones. This policy prioritizes access for people walking, rolling, and biking around construction sites, giving blockages of pedestrian and biking facilities the same importance as a vehicle travel lane closure. It identifies closing a sidewalk or bicycle lane as a last resort and includes standards for alternative paths when a closure is required. Pathways must be ADA compliant, provide sufficient capacity, and be convenient to ensure that people will use them.

Lessons Learned

- **Establishing a hierarchy helps allocate space.** Construction in the right-of-way often impacts sidewalks and bikeways more significantly and for longer periods of time than vehicle travel lanes are impacted. Portland's policy establishes the priority of pedestrians and cyclists—and the requirement that contractors provide safe and accessible facilities—even when that comes at the expense of general-purpose traffic.
- **Specifying time limits can incentivize creative solutions.** Portland's policy strongly encourages contractors to limit sidewalk closures to no more than one

week, attaching escalating fees to longer closures. This approach incentivizes contractors to plan their work efficiently, avoid increased fees, and prioritize reopening as soon as possible.

Source: https://twitter.com/nickfalbo/status/733316703988252672/photo/1

Applicability to Nashville

Nashville could expand its recent sidewalk and bikeway closure policy changes to further prioritize construction zone safety and access for multimodal travelers. While Nashville now limits the duration of sidewalk and bikeway closures, it could also attach escalating fees to closures that impact pedestrian and cyclist mobility, incentivizing contractors to consolidate and expedite their activities.

Montreal, QC Construction Charter

Montreal's reputation for frequent and disruptive construction—and the many resulting detours—has earned the city the unofficial nickname "Cone-y Island." There are nearly 500 construction projects within the city limits each year, which have a negative impact on the daily lives of Montrealers trying to move about the city.

To address these disruptions, the city introduced an official charter for municipal infrastructure construction sites to promote best practices among its teams, external partners, and private developers. The charter standardized procedures regarding accessibility, safety, mobility, impact management, mitigation measures, communications, and environmental considerations. These tangible commitments help hold construction companies accountable and document the City's mobility goals. Although the charter does not include punitive measures, it is a step toward better site coordination for most urban construction work.

Source: George Rose 2015 from Getty Images

Lessons Learned

- **Standardized guidelines create a level playing field.** Montreal's charter makes construction site regulations clear to both construction companies and the public. Codifying the rules means that no company can claim ignorance and that residents understand the standards should they need to report infractions.
- **Provide advance notice of street closures.** The construction charter requires project managers to create signs that give advanced notice of road closures when work begins and requires prompt removal of signs and bollards as construction is finished.

Applicability to Nashville

Nashville could develop a construction charter to establish clear guidelines for contractors and private developers. While Montreal's charter is difficult to enforce

without consequences for failing to comply, Nashville could designate penalties for infractions that create congestion, impact safety, and reduce overall mobility downtown.

Implementation in Nashville

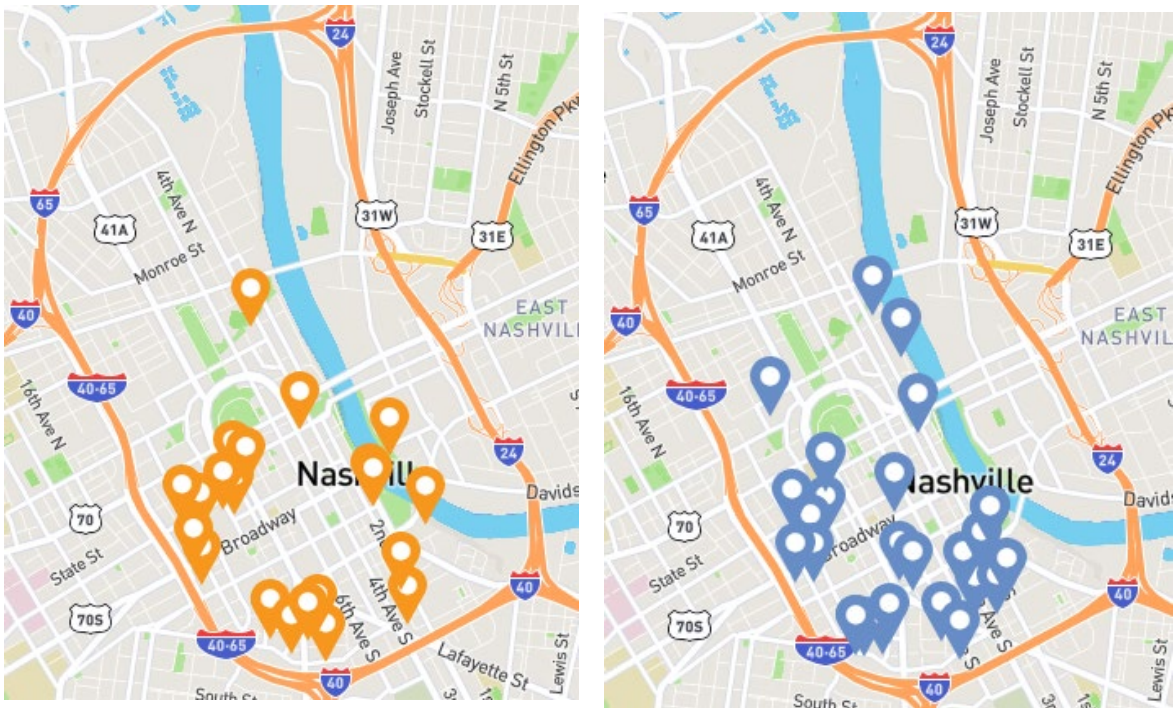
Nashville's booming economy and rapid growth are generating significant construction activity, with major residential and commercial developments underway throughout Downtown. These projects impact the transportation network through road and sidewalk closures that create congestion, require detours, and create challenging conditions for people walking, rolling, and biking.

Nashville's recent policy changes demonstrate the city's commitment to addressing safety and accessibility issues caused by sidewalk and bike lane construction closures. However, the policy is only as good as its implementation, which must be consistent across projects. Nashville's construction management response could benefit from a less subjective and more systematic approach.

Much of Downtown's recent construction activity has been concentrated in the Gulch and SoBro, and it is now expanding to Pie Town. These areas are strong candidates for construction hubs, and Nashville should consider developing a program similar to those in Seattle and Toronto. Establishing hubs would help contractors coordinate efforts and reduce duplicative work, inform the public about active projects and detours, and help the Metro ensure that priority infrastructure is implemented as part of ongoing development. Nashville could implement construction hubs as a partnership between NDOT and Metro Planning, connecting recommendations to the Vision Zero Action Plan to advance safety projects simultaneously.

While developing the construction hubs program, NDOT could establish a version of Montreal's construction charter or New York City's guide to temporary active transportation facilities during construction to provide a framework for future projects and codify a mechanism to further enforce regulations and access standards for pedestrians, cyclists, and transit riders. By including penalties for infractions, Nashville could further incentivize desired safety and mobility outcomes and better manage the right-of-way around construction sites.

Developments under construction (left) and proposed (right) in Downtown Nashville



Source: Nashville Downtown Partnership

CONNECT DOWNTOWN

Appendix F

Entertainment Transportation Vehicle Analysis

April 2024

The analysis presented in this appendix was developed by KCI Technologies for the Nashville Department of Transportation and Multimodal Infrastructure (NDOT) in late fall 2023. Although Entertainment Transportation Vehicles (ETV) were not a primary focus of Connect Downtown, the findings of the analysis informed the Action Plan recommendations for ETV permits.

ENTERTAINMENT TRANSPORTATION VEHICLES IN DOWNTOWN

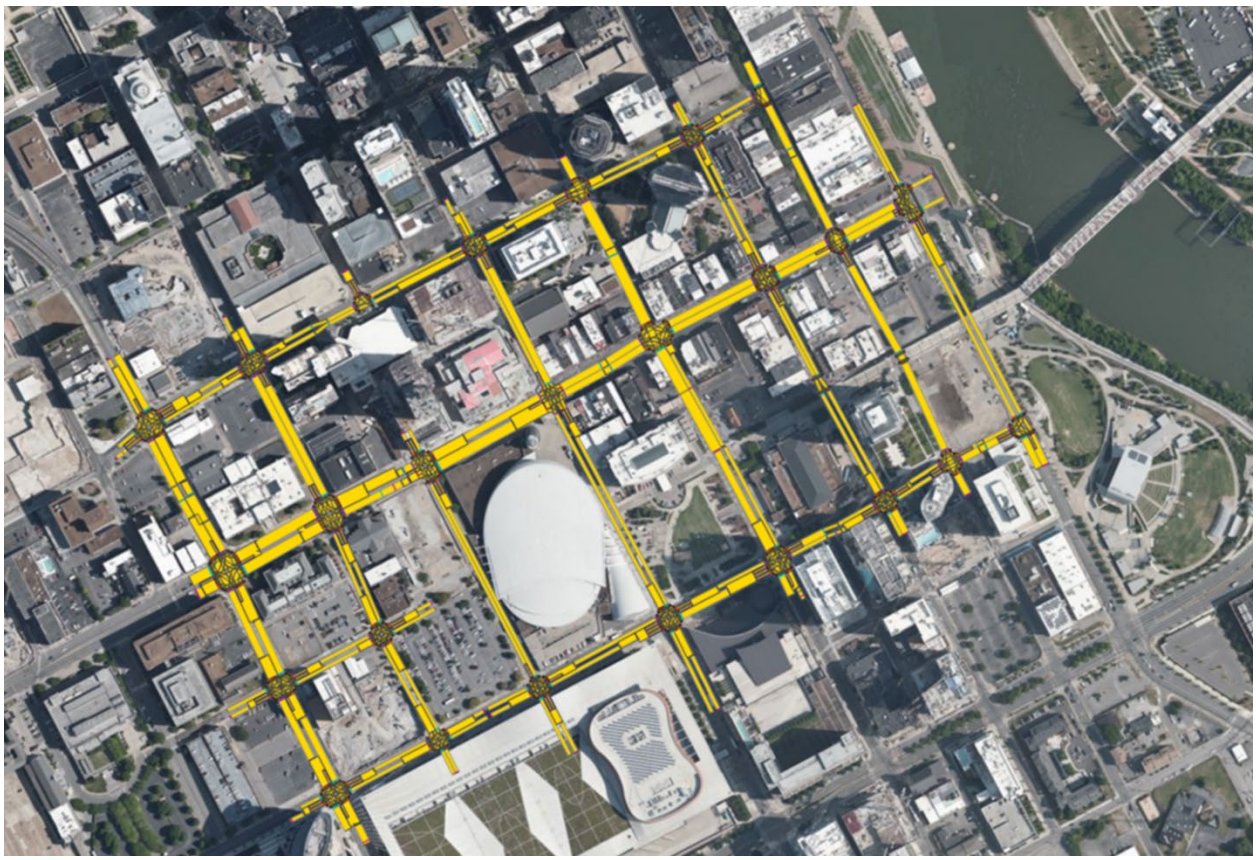
There are currently more than 80 active Entertainment Transportation Vehicle (ETV) permits for Downtown Nashville. Due to the type of business that these vehicles provide, they typically travel slower than most vehicles on the road. Additionally, these vehicles all operate independently, do not have set routes, and can make multiple passes along each roadway within one hour. These slower speeds and multiple trips through the network can increase congestion and delay for other vehicles in Downtown. Therefore, NDOT sought to determine the maximum number of ETV permits that should be allowed on the roadway network.

KCI was tasked with determining how much delay is added to the network as the number of permitted ETVs within the network increases. Preliminary analysis was conducted in March 2023 for the current roadway network. After the release of the Connect Downtown draft recommendations in November 2023, the analysis was rerun to incorporate the recommendations and determine the potential effects of the number of permitted ETVs given proposed changes to Downtown's mobility system. This appendix describes the methodology and results of the analysis that was conducted and presented to the Transportation Licensing Commission in March and November 2023.

Study Area

As previously mentioned, all ETVs operate independently, and they do not follow set routes. However, ETVs do typically pass through Downtown and major tourist attractions like Lower Broad and the Ryman. Therefore, a study area within the downtown core was chosen to best reflect the area ETVs are likely to have the most impact on other vehicles within the network. Specifically, the area from Commerce St to Demonbreun St and 1st Ave to Rosa L Parks Blvd / 8th Ave S was evaluated. The study area is shown in Figure 1.

Figure 1 | ETV Analysis Study Area



Volumes

As a part of Connect Downtown, the project team collected detailed turning movement counts for the AM and PM peak hours at each intersection within the study area. Standard turning movement counts are conducted on a Tuesday, Wednesday, or Thursday from 7:00–9:00 AM and 4:00–6:00 PM while local schools are in session to best reflect a typical weekday. Due to regulations set forth by the Transportation Licensing Commission, however, ETVs are not permitted to be on the roadway network during peak hours. Therefore, adjustment factors were applied to the turning movement counts to reflect the highest off-peak volumes within the network.

Tennessee Department of Transportation (TDOT) annual average daily traffic (AADT) count stations were used to determine the appropriate adjustment factor. These TDOT stations collect 24-hour vehicle volume data at various locations within the study area. Using this 24-hour count data, it was determined that the highest weekday off-peak hour occurs from 3:00–4:00 PM, and traffic volumes are approximately 14% lower than the PM peak hour volumes. Therefore, an adjustment factor of 0.86 was applied to the PM peak hour turning

movement counts to reflect the vehicle turning movements for the highest volume off-peak hour at each of the study intersections.

Due to the number of people that visit Nashville every weekend, NDOT determined that, in addition to typical weekday volumes, Friday volumes should also be considered. Conversations with NDOT indicated that Friday volumes are approximately 20% higher than typical weekday volumes. Therefore, an adjustment factor of 1.2 was applied to the PM peak hour turning movement counts to reflect the Friday off-peak turning movements at each of the study intersections.

Traffic Model

To determine how the number of permitted ETVs impacts traffic delay within Downtown Nashville, PTV VISSIM was used to model the study area. PTV VISSIM is a microsimulation modeling software that uses random number generation and probabilities to anticipate driver decisions such as travel speed, acceleration and deceleration rates, turning movements, and more. This allows for the evaluation of the network as a whole, rather than just individual intersections.

Based on field observations of the ETVs that currently operate within Downtown, the ETVs were modeled as buses with a maximum speed of 15 mph, lower acceleration rates, and lower deceleration rates. Additionally, it was assumed that each permitted ETV would make two passes through the study area per hour, knowing that some ETVs circle the network more than this and some less.

Two approaches were used for modeling the ETVs through the study area. For the March 2023 analysis, ETVs were allowed to self-select routes with complete statistical autonomy. This decision reflects the fact that ETVs do not have designated routes, and each ETV company moves differently. This approach, however, resulted in many ETVs staying at the edges of the study area and neglecting to enter the heart of Lower Broad, which nearly all ETVs do.

Therefore, to better reflect the actual routes ETVs take, an alternative approach was used for the November 2023 analysis. A variety of anticipated ETV routes were modeled through the study area to capture the down-and-back pathways that ETVs more typically take through Downtown. This approach pushed the ETVs through the network to reflect what was observed in the field. The March 2023 analysis was updated to include the new approach.

Scenarios

Multiple scenarios were run to determine the number of permitted ETVs that cause the biggest increase in delay for both current and proposed roadway conditions based on Weekday Off-Peak and Friday volumes. Using increments of ten, each scenario was run from zero ETVs to 80 ETVs in the network. Each scenario was modeled for a one-hour period. The runs were repeated five times, and the results were averaged.

The March 2023 analysis was conducted based on Downtown's current lane configurations and signal operations. The November 2023 analysis was conducted based on the recommendations from Connect Downtown, which include two-way 2nd Ave, 3rd Ave (northbound) and 4th Ave (southbound) as a one-way couplet, 7th Ave as one-way northbound, and Rosa Parks / 8th Ave S as a Transit Priority Corridor with a reduction in general-purpose travel lanes. Connect Downtown anticipates a significant mode shift, which is anticipated to reduce vehicular delay. Conservatively, this mode shift was not taken into consideration for the ETV analysis.

Results

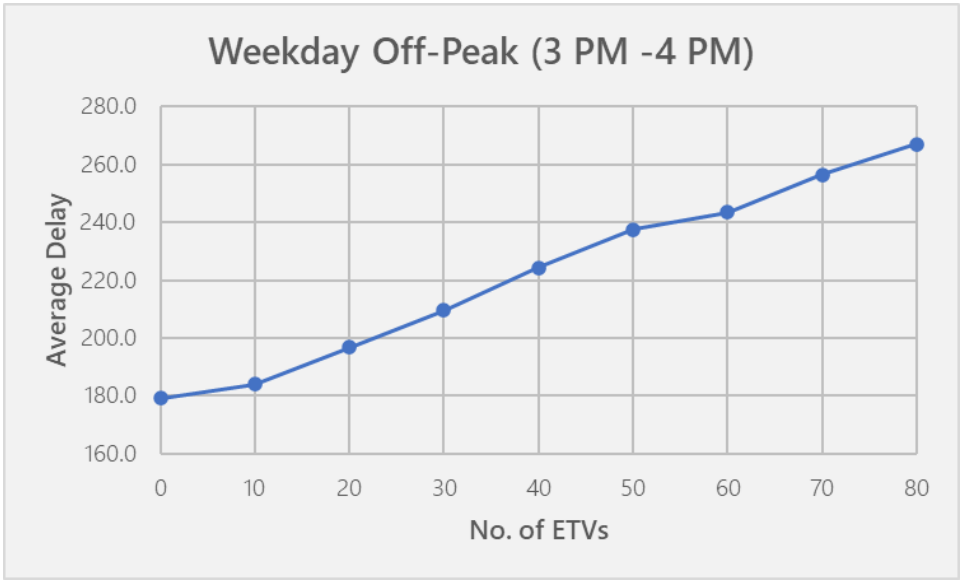
Figures 2 and 3 present the average delay results for the existing and proposed roadway conditions using the updated approach to modeling ETVs through the study area. The delay is the average delay across the whole study area, meaning some roads experience more delay and some roads experience less delay.

As shown in the figures, during a regular weekday the difference between no ETVs and 80 ETVs is an average of 80 seconds in delay per vehicle driving through the study network. Since the highest off-peak hour typically occurs between 3:00–4:00 PM, this delay compounds into the PM peak hour, which begins for most intersections at or around 4:00 PM. The largest change occurs between 30 and 50 ETVs, where each additional 10 ETVs results in about 20 seconds of additional delay per vehicle within the network.

The results are largely the same for Friday. The trend line is closer to linear with 74 seconds of increased delay when 80 ETVs are added to the network. The peak hour for Fridays typically occurs earlier than the standard weekday; therefore, ETVs might be operating during the Friday PM peak hour.

Based on the weekday and Friday analyses, the project team recommends that the Transportation Licensing Commission consider reducing the number of ETV permits for Downtown Nashville. Since the largest observed increase in delay was between 40 and 50 ETVs, a reduction to 40 permits should be considered.

Figure 2 | Existing Network Results (Weekday and Friday)



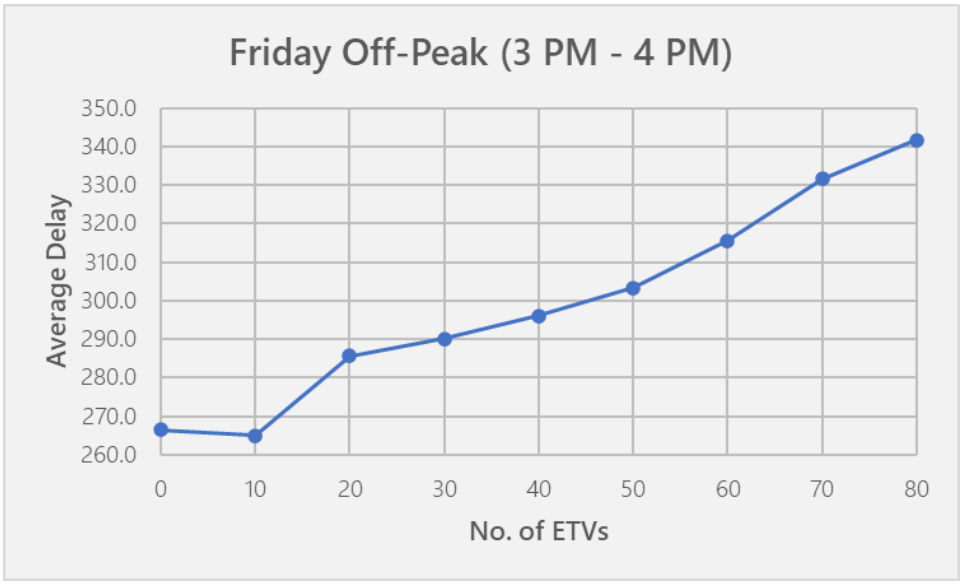
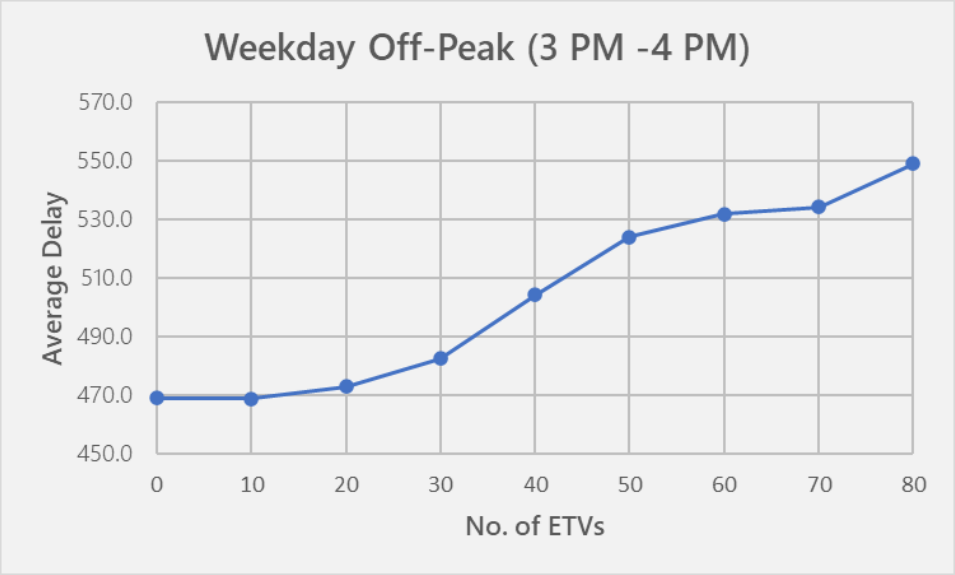
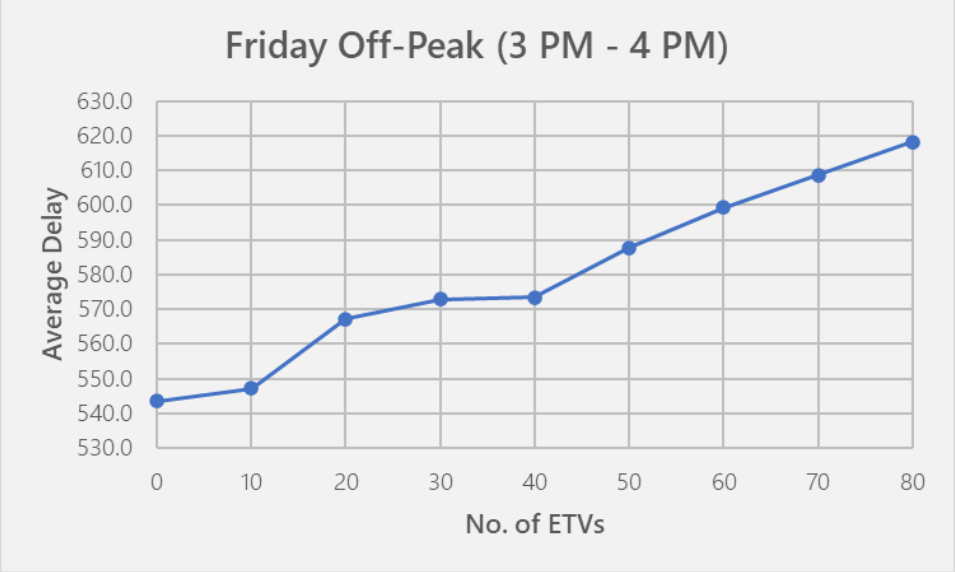


Figure 3 | Future Network Results (Weekday and Friday)





CONNECT DOWNTOWN

Appendix G

Transit Recommendations

April 2024

WHY BETTER TRANSIT IS NEEDED

As Downtown grows and expands outward, Nashville's transit system and service must do the same. WeGo's existing network is focused on the core of Nashville's historic downtown, with much less service to new development to the west (including the Gulch) and the south and to planned development in the East Bank. Nashville's growth has also created more congestion, which has made service slower and less reliable, and consequently, less attractive. Existing riders want better service. And many new Nashvillians have moved from places with robust transit systems and understand the value of convenient service.

Surveys throughout the country indicate that three things make transit attractive: **frequency**, **speed**, and **reliability**. **Comfort** is a fourth critical element. Improvements in these areas can make service much better for existing riders, attract new riders, and help reduce congestion.

Frequency

Regardless of the mode they're using, people want to travel when they want to and arrive at their destination as soon as possible. Frequent service means that a bus will come within a relatively short period of time, reducing wait times, which transit riders report as the part of their trip they like least. The reduction in wait time shortens the overall trip time and helps people get to their destinations sooner.

Speed

Faster service doesn't just save people minutes. It also means that they can reach more jobs and services in a reasonable amount of time, and fewer destinations are inaccessible. Less time spent riding the bus provides more time to do things that are more productive, more necessary, and more fun. Faster service can also make communities more equitable—people with lower incomes spend more time waiting for almost everything, and slow buses, transfers, and trips create more inequities.

Reliability

Most of us, whether we want to or not, live based on schedules: schedules for work, for doctor's appointments, to pick up kids, to meet friends, and more. Because of that, we need to be reliable and punctual—when we're not, being late can be costly,

especially in terms of lost jobs and lost opportunities. When transit is less reliable, fewer people choose to ride it. Unreliable transit requires people to build extra time into their trips that is either needed or wasted, neither of which are positive.

Comfort

Even with frequent service, passengers will spend a significant amount of their journey waiting for the bus. Building full-service mobility centers and attractive stops with amenities such as shelters, benches, and information can help make the wait safer and more comfortable.

CONNECT DOWNTOWN RECOMMENDATIONS

Today, nearly all of WeGo's transit service operates to and from WeGo Central and operates in mixed traffic to get there. As described above, increased congestion has made service slower and less reliable. Connect Downtown recommends five types of improvements to address these challenges and make transit a great travel choice:

- New mobility centers
- Transit Priority Corridors (TPCs)
- Additional transit priority
- Better service to newly developing areas
- More frequent service for longer hours

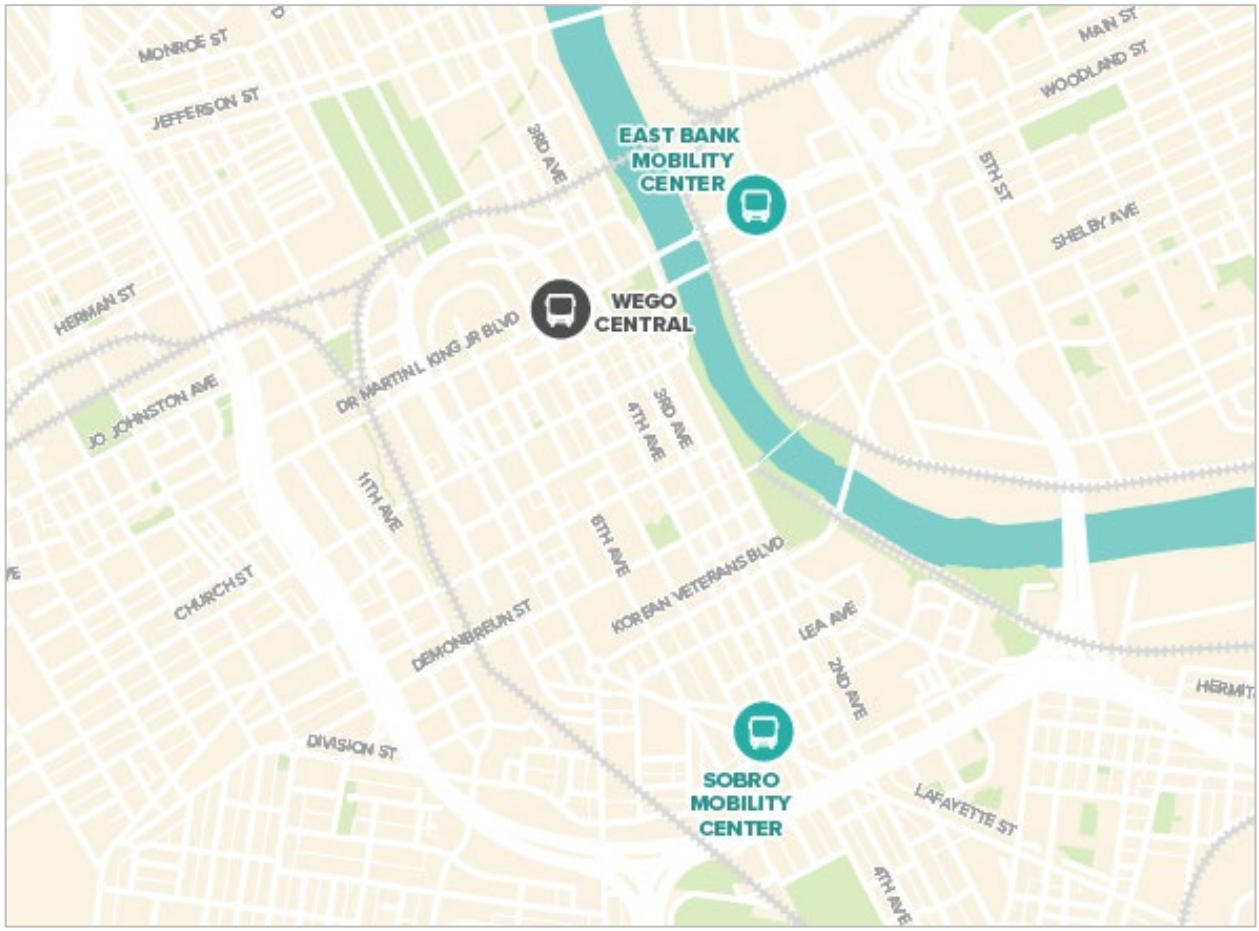
New Mobility Centers

WeGo Central is nearing capacity. It is also located relatively far from new development on the west and south sides of Downtown and planned new East Bank development. To better serve these areas, Connect Downtown recommends new mobility centers in SoBro and on the East Bank, consistent with previous plans (see Figure 2).

- **SoBro Mobility Center:** The new SoBro Mobility Center will be located at the intersection of Lafayette St and 4th Ave S. With this mobility center, routes from the north, northwest, and northeast would be extended from WeGo Central to provide direct service to the western and southern sides of Downtown.
- **East Bank Mobility Center:** The new East Bank Mobility Center will be located at the intersection of James Robertson Pkwy and the new East Bank

Blvd that will be constructed as part of East Bank development efforts. With this mobility center, service will be extended from the south and west to the East Bank.

Figure 1 | New SoBro and East Bank Mobility Centers



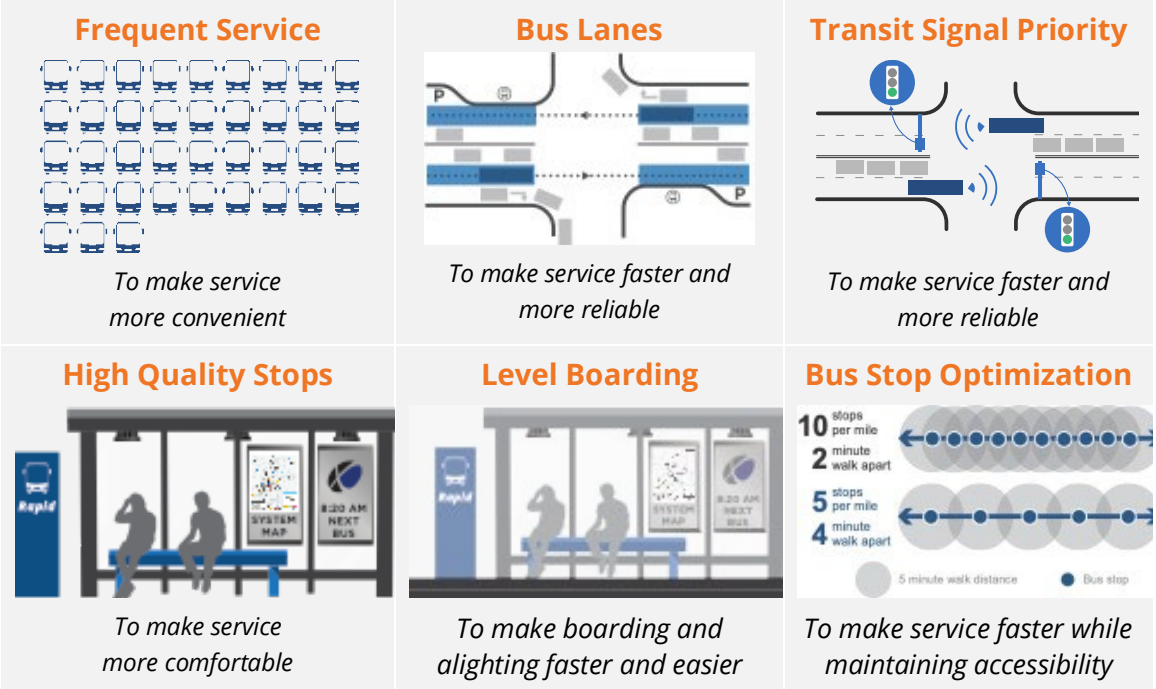
The SoBro Mobility Center, which will provide immediate benefits, should be developed first, with design beginning immediately. The East Bank Mobility Center should be developed in conjunction with other East Bank improvements and timed to open as East Bank development reaches a critical mass.

Transit Priority Corridors

Nashville is one of the few major cities in the United States that does not give transit vehicles priority in busy corridors, including in Downtown. Developing Transit Priority Corridors (TPCs) would make bus service faster, more reliable, and more convenient. TPCs include frequent service, continuous bus lanes, transit signal priority, high quality stations with level boarding, and better bus stop spacing (see

Figure 3). They are "complete" corridors that include improvements for people walking, biking, using the curb, and driving, too.

Figure 2 | Transit Priority Corridor Elements



Connect Downtown recommends three Transit Priority Corridors in the core of Downtown that will make service faster and more reliable and connect the mobility centers. As shown in Figure 4, the TPCs are:

- The **Westside Transit Priority Corridor** will run between WeGo Central and the SoBro Mobility Center via James Robertson Pkwy, Rosa L Parks Blvd, 8th Ave, and Lafayette St.
- The **James Robertson Transit Priority Corridor** will transform James Robertson Pkwy and Bridge between WeGo Central and the East Bank Mobility Center
- The **East Bank Transit Priority Corridor** will link the East Bank and SoBro Mobility Centers along the new East Bank Blvd, Korean Veterans Blvd, and 3rd and 4th Aves.

Each transit priority corridor would be served by multiple routes. Together, these routes would provide very frequent service—every three to four minutes—in each of the TPCs.

Figure 3 | Transit Priority Corridors

As with development of new mobility centers, the priority for developing transit priority corridors should focus on the west side of the Cumberland River: the Westside TPC and the James Robertson TPC. The development of the Westside TPC will require NDOT to coordinate with TDOT since Rosa Parks Boulevard and 8th Avenue are currently state routes.

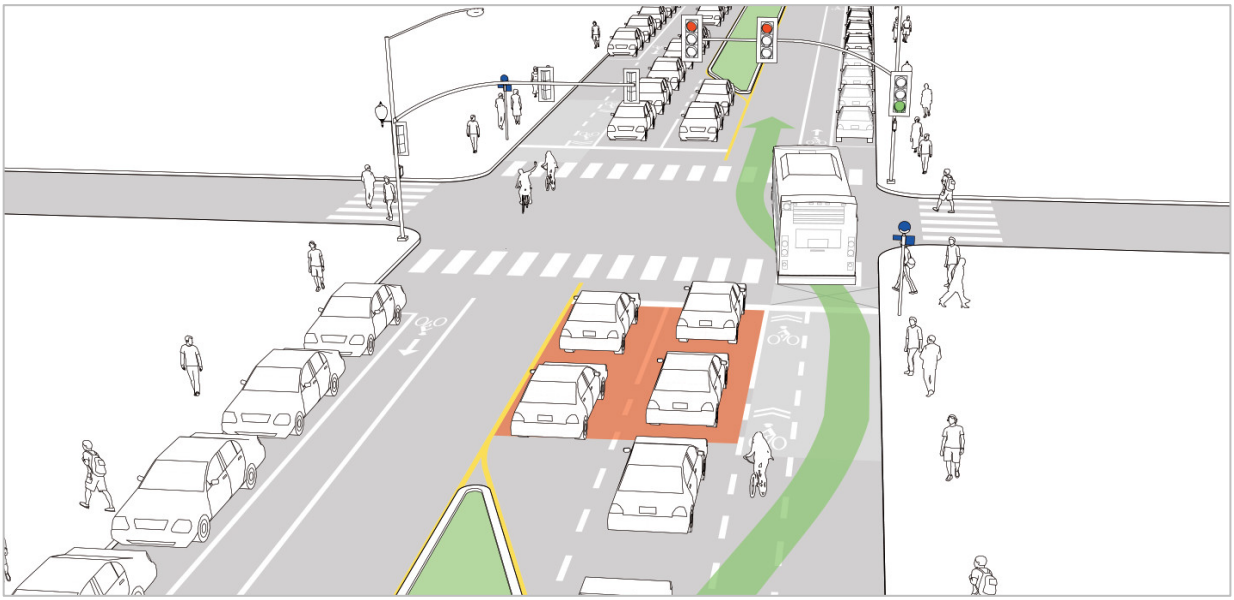
The East Bank TPC, which will serve new development on the East Bank and people traveling from the northeast and east, should be developed with the East Bank Mobility Center and East Bank Blvd.

Additional Transit Priority

Connect Downtown recommends implementing short sections of bus lanes, queue jumps, and transit priority signals on 3rd and 4th Aves between WeGo Central and Korean Veterans Blvd. These investments will improve reliability and travel times for bus routes that will continue to serve the core of Downtown. Queue jumps are short

bus lanes on the near side of intersections that allow buses to bypass queued traffic at red lights.[1] They would be developed in curb lanes and would not require the conversion of any general-purpose lanes (see Figure 5).

Figure 4 | Queue Jump Lane



Source: NACTO

Signal priority is recommended at all intersections on 3rd and 4th Aves. Short sections of bus lanes and queue jump lanes are recommended in the following locations (see Figure 6):

- **3rd Avenue (Northbound)**
  - Queue Jump Lanes (at near side of intersection)
    - Demonbreun St
    - Commerce St
    - Church St
    - Union St
- **4th Avenue (Southbound)**
  - Queue Jump Lanes (at near side of intersection)
    - Deaderick St
    - Union St
    - Church St

[1] Right turning general traffic would also be permitted to use the queue jump lanes.

- Commerce St
- Broadway

– Bus Lanes
  - Broadway to Demonbreun St
  - Demonbreun St to Korean Veterans Blvd

Figure 5 | 3rd and 4th Avenue Transit Priority Measures between WeGo Central and Korean Veterans Boulevard

Connect Downtown envisions improving bus service in several ways, with a focus on providing more frequent service for longer hours, including frequent all-day service on 11 routes to and from Downtown Nashville. Although identifying specific transit priority measures for these corridors was outside the scope of Connect Downtown, WeGo and NDOT should advance development of transit priority features on the following routes to and from Downtown (see Figure 7):

- **3 West End/White Bridge:** Broadway west of 8th Ave
- **4 Shelby:** Shelby Ave

- **8 8th Avenue South:** 8th Ave South
- **22 Bordeaux:** Rosa L Parks Blvd
- **23 Dickerson Pike:** New East Bank Blvd and connection to Dickerson Pike
- **50 Charlotte:** Martin Luther King Jr Blvd and Charlotte Ave
- **52 Nolensville Pike:** Lafayette Street and 2nd and 4th Aves
- **55 Murfreesboro Pike:** Lafayette St
- **56 Gallatin Pike:** Main St

Additional transit priority investments should include transit priority signals at intersections and, where space permits, bus lanes and queue jumps.

Figure 6 | Additional Transit Priority to Downtown (as feasible)

Better Service to Newly Developing Areas

The two new mobility centers and the Transit Priority Corridors will allow WeGo to reconfigure service and better serve much more of Downtown, including new development to the west and south and future development on the East Bank.

Service changes should be implemented in three phases, linked to other Connect Downtown recommendations. Phase 1 changes, which would be implemented by 2026, would increase service levels consistent with the Better Bus Plan. Phase 2 changes would be implemented following the development of the Westside and James Robertson TPCs and the opening of the SoBro Mobility Center. And Phase 3 changes would be implemented following the opening of the East Bank Mobility Center and East Bank TPC.

The changes described in this section are conceptual and subject to change following more detailed service planning. However, they illustrate the benefits that the new mobility centers and TPCs will provide for bus service in Nashville.

Phase 1 Changes

Phase 1 changes, which would fully implement the Better Bus Plan, would maintain the existing service structure but improve service frequencies and extend service hours.

Phase 2 Changes

Following development of the Westside and James Robertson TPCs and the opening of the SoBro Mobility Center, downtown service should be reconfigured so that most routes serve both mobility centers (see Figure 8):

- **Service from the northeast and east** would operate to the SoBro Mobility Center via WeGo Central and the Westside TPC. Outbound service would operate in a reverse pattern.
- **Service from the south** would operate to and from WeGo Central. Four routes—6 Lebanon Pike, 18 Airport, 52 Nolensville Pike, and 55 Murfreesboro Pike—would operate to SoBro Mobility Center and then via the Westside TPC to WeGo Central. Four more routes—3 White Bridge, 7 Hillsboro Pike, 8 8th Avenue South, and 17 12th Avenue South—would operate to various points along the Westside TPC. One route, 50 Charlotte Pike, would operate directly to WeGo Central via Charlotte Ave and Martin Luther King Jr Blvd.

Figure 7 | Phase 2 Service Reconfiguration

- **Service from the northwest and west**, except Route 22 Bordeaux, would operate to the SoBro Mobility Center via WeGo Central and 3rd and 4th Aves. Routes on 3rd and 4th Aves would provide service to the core of Downtown. Route 22, which is a frequent route, would operate via the Westside TPC.

Phase 3 Changes

With the development of the East Bank TPC, the opening of the East Bank Mobility Center, and a critical mass of East Bank development, the third phase of service changes would provide high levels of service to the East Bank (see Figure 9):

- **Service from the northeast and east** would operate to the SoBro Mobility Center via the East Bank TPC. All routes except Route 4 Shelby would operate via the East Bank Mobility Center.
- **Service from the south** would be extended from WeGo Central to the East Bank Mobility Center via the James Robertson TPC.
- **Service from the northwest and west** would continue to operate to the SoBro Mobility Center as in Phase 2.

More Frequent Service for Longer Hours

To reduce Downtown traffic congestion, people need better travel options. The option that can make the most difference is transit. WeGo's Better Bus Plan outlines service improvements that WeGo implements as resources permit. The plan is based on five priorities:

- Buses more often
- Longer hours of service
- New connections
- New mobility centers and upgraded bus stops
- Access improvements

The Better Bus Plan recommends more frequent service throughout the day. In total, 9 routes will provide frequent service for most of the day (every 10 to 15 minutes) and most others will provide service every 20 to 30 minutes (see Attachment 1). However, without improvements to other transportation options, Downtown traffic levels will increase by nearly 60% by 2034. Simply keeping up with population and employment growth requires additional increases in WeGo service.

Figure 8 | Phase 3 Service Reconfiguration

There are several ways to increase service, and WeGo should create detailed service plans as new development occurs. Connect Downtown used the Better Bus Plan as the basis for future service increases, adding service to the Better Bus Plan routes. These increases included the following:

- More frequent service on all routes, with some routes operating as frequently as every 7.5 minutes
- More routes that provide frequent service every 15 minutes or better for most of the day
- Longer spans of service on most routes

The assumed service levels for Phases 2 and 3 are shown in Attachments 2 and 3.

RIDERSHIP INCREASES

The investments recommended in Connect Downtown will significantly increase transit ridership in Nashville and the Middle Tennessee region. The following sections describe the ridership increases that are anticipated following implementation of these recommendations.

Service and Total Ridership Increases

The service increases described above would increase transit ridership to a significantly higher degree than increases in the number of bus trips and revenue vehicle hours (see Table 1). The ridership increases would be due to a combination of more frequent service for longer hours, growth in Downtown's population and jobs, and faster service due to the Transit Priority Corridors and other transit priority improvements. By 2034, transit ridership would increase by 23,000 riders per weekday, or by 100%.

Transit Priority Corridor Service and Ridership

Nearly all routes would operate in at least one Transit Priority Corridor, and approximately two-thirds of all riders will ride in one or more of the TPCs. With full implementation of the transit improvements, 55 buses per hour would use the Westside TPC during peak periods, 26 would use the James Robertson TPC, and 36 would use the East Bank TPC (see Table 2).

Table 1 | Service and Ridership Increases

	Weekday Bus Trips	Weekday Revenue Vehicle Hours	Weekday Ridership
Existing Service	2,072	1,514	28,000
Phase 1 Improvements (2024-2026)			
Total	2,372	1,706	32,000
Percent Increase	14%	12%	24%
Phase 2 Improvements (2027-2029)			
Total	2,850	2,026	43,000
Percent Increase	38%	34%	67%
Phase 3 Improvements (2030+)			
Total	3,466	2,478	51,000
Percent Increase	67%	64%	100%

Table 2 | Service and Ridership by Transit Priority Corridor

	Westside TPC	James Robertson TPC	East Bank TPC
Peak Bus Trips per Hour			
Phase 1 Improvements (2024-2026)	--	--	--
Phase 2 Improvements (2027-2029)	84	36	--
Phase 3 Improvements (2030+)	55	26	36
Weekday Ridership			
Better Bus Plan/Phase 1 Improvements (2027)	--	--	--
Phase 2 Improvements (2030)	30,227	9,248	--
Phase 3 Improvements (2034)	24,692	6,922	11,763

Ridership in the TPCs will be high. After full implementation, the Westside TPC will carry approximately 25,000 riders per day, the James Robertson TPC will carry 7,000 riders per day, and the East Bank TPC will carry nearly 12,000 passengers per day.

OPERATING AND CAPITAL COSTS

In FY2024 dollars, these recommended transit service improvements will increase WeGo's annual operating costs by approximately $5.8M in Phase 1, $20.6M in Phase 2, and $40.2M in Phase 3.

Table 3 | Annual Operating Cost Increases (FY2024 dollars)

	End of Phase 1 (2026)	End of Phase 2 (2029)	Phase 3 (2030)
Transit Service Improvements	$5.8M	$19.4M	$38.4M
New Mobility Centers	--	$1.2M	$1.8M
Total	**$5.8M**	**$20.6M**	**$40.2M**

Order of magnitude capital costs, also in FY2024 dollars, would total approximately $235 million (see Table 4). These costs include the following investments:

- Nearly **$44M** to purchase additional buses to operate expanded service.
- Approximately **$60M** to construct the SoBro Mobility Center and **$30M** to construct the East Bank Mobility Center. These rough estimates assume the East Bank Mobility Center is approximately half the size of SoBro.
- The three TPCs would cost approximately **$113M**: $72M for the Westside TPC, $2M for the James Robertson TPC, and $38M for the East Bank TPC. The Westside TPC estimate is based on a cost of $28.5M per mile, which is 75%[2] of the average cost to construct Bus Rapid Transit lines. The estimate for the James Robertson TPC, which does not include reconstruction of the bridge, is based on a cost of $5.8M per mile, a typical cost for rapid bus projects. The estimated cost for the East Bank TPC is based on the same $28.5M per mile figure as the Westside TPC. The East Bank TPC would be constructed as part of the East Bank Blvd, limiting Connect Downtown's costs to infrastructure on Korean Veterans Blvd and 3rd and 4th Aves.
- The **$4.1M** for transit priority costs on 3rd and 4th Aves north of Korean Veterans Blvd was based on the $5.8M per mile cost for rapid bus projects. Costs for additional transit priority were based on the same per-mile figure and the assumption that transit priority would be developed along half the length of frequent bus routes in the study area.

[2] 75% to exclude costs for vehicle and property acquisition

Table 4 | Capital Costs (FY2024 dollars; millions)

	Phase 1 (2024-2026)	Phase 2 (2027-2029)	Phase 3 (2030+)	Total
Vehicles				
Additional Buses	$9.8	$25.2	$8.5	**$43.6**
Mobility Centers				
SoBro Mobility Center		$60.0		**$60.0**
East Bank Mobility Center			$30.0	**$30.0**
Transit Priority Corridors				
Westside TPC		$72.2		**$72.2**
James Robertson TPC		$2.3		**$2.3**
East Bank TPC			$38.0	**$38.0**
Other Transit Priority				
3rd & 4th Avenue Transit Priority	$4.1			**$4.1**
Additional Transit Priority	$1.8	$3.6	$3.6	**$9.0**
Total Capital Costs				
Total	**$15.7**	**$163.3**	**$80.2**	**$259.2**

Attachment 1 | Better Bus Plan Weekday Service

Route	Service Type	Service Start	Service End	Early AM	Peak	Midday	Evening	Night	Weekday Bus Trips
3 West End/White Bridge	Frequent	4:00 AM	1:00 AM	30	10	15	20	30	167
4 Shelby	Frequent	5:00 AM	12:00 AM	30	15	15	30	30	127
6 Lebanon Pike	Local	4:00 AM	1:00 AM	60	20	60	60	60	67
7 Hillsboro Pike	Frequent	4:00 AM	1:00 AM	20	15	15	20	20	160
8 8th Avenue South	Local	5:00 AM	11:00 PM	60	20	30	30	60	75
9 Metro Center	Local	5:00 AM	6:00 PM	30	20	20	—	—	79
14 Whites Creek	Local	5:00 AM	11:00 PM	60	30	30	30	60	65
17 12th Ave South	Local	4:00 AM	11:00 PM	30	20	30	30	30	85
18 Airport	Local	5:00 AM	11:00 PM	60	30	30	60	60	61
19 Herman	Local	4:00 AM	11:00 PM	40	20	30	40	40	79
22 Bordeaux	Frequent	4:00 AM	1:00 AM	30	15	15	20	30	147
23 Dickerson Pike	Frequent	4:00 AM	1:00 AM	15	15	15	20	20	164
28 Meridian	Local	5:00 AM	11:00 PM	30	30	60	60	30	53
29 Jefferson	Local	4:00 AM	11:00 PM	20	20	30	30	20	94
34 Opry Mills	Local	6:00 AM	11:00 PM	60	60	60	60	60	35
41 Golden Valley	Local	6:00 AM	5:00 PM	—	60	—	—	—	12
42 St. Cecilia/Cumberland	Local	5:00 AM	11:00 PM	45	30	55	60	60	49

Route	Service Type	Service Start	Service End	Early AM	Peak	Midday	Evening	Night	Weekday Bus Trips
50 Charlotte Pike	Frequent	4:00 AM	1:00 AM	30	15	15	20	30	147
52 Nolensville Pike	Frequent	4:00 AM	1:00 AM	30	10	15	20	30	167
55 Murfreesboro Pike	Frequent	4:00 AM	1:00 AM	30	10	10	20	30	195
56 Gallatin Pike	Frequent	4:00 AM	1:00 AM	30	10	10	15	30	203
64 Star Downtown Shuttle	Train Shuttle	6 trips							
75 Midtown	Connector	5:00 AM	11:00 PM	60	20	20	30	—	85
Regional Routes									55
Total									**2,372**

Attachment 2 | Phase 2 Weekday Service

Route	Service Type	Service Start	Service End	Early AM	Peak	Midday	Evening	Night	Weekday Bus Trips
3 West End/White Bridge	Frequent 10/15	4:00 AM	1:00 AM	20	10	15	20	20	174
4 Shelby	Frequent 10/15	4:00 AM	1:00 AM	20	10	15	20	20	174
6 Lebanon Pike	Local 20	4:00 AM	1:00 AM	30	20	20	30	30	108
7 Hillsboro Pike	Frequent 10/15	4:00 AM	1:00 AM	20	10	15	20	20	174
8 8th Avenue South	Frequent 15	4:00 AM	1:00 AM	30	15	15	20	30	140
9 Metro Center	Local 20	4:00 AM	1:00 AM	30	20	20	30	30	108
14 Whites Creek	Local 30	5:00 AM	11:00 PM	60	30	30	60	60	60
17 12th Ave South	Local 20	4:00 AM	1:00 AM	30	20	20	30	30	108
18 Airport	Local 20	4:00 AM	1:00 AM	30	20	20	30	30	108
19 Herman	Local 20	4:00 AM	1:00 AM	30	20	20	30	30	108
22 Bordeaux	Frequent 10/15	4:00 AM	1:00 AM	20	10	15	20	20	174
23 Dickerson Pike	Frequent 10/15	4:00 AM	1:00 AM	20	10	15	20	20	174
28 Meridian	Local 30	5:00 AM	11:00 PM	60	30	30	60	60	60
29 Jefferson	Local 20	4:00 AM	1:00 AM	30	20	20	30	30	108
34 Opry Mills	Local 30/60	5:00 AM	10:00 PM	60	30	60	60	60	46
41 Golden Valley	Local 60	5:00 AM	9:00 PM	60	60	60	60	60	32
42 St. Cecilia/Cumberland	Local 30	5:00 AM	11:00 PM	60	30	30	60	60	60

Route	Service Type	Service Start	Service End	Early AM	Peak	Midday	Evening	Night	Weekday Bus Trips
50 Charlotte Pike	Frequent 10/15	4:00 AM	1:00 AM	20	10	15	20	20	174
52 Nolensville Pike	Frequent 10/15	4:00 AM	1:00 AM	20	10	15	20	20	174
55 Murfreesboro Pike	Frequent 10	4:00 AM	1:00 AM	20	10	10	20	20	198
56 Gallatin Pike	Frequent 10	4:00 AM	1:00 AM	20	10	10	20	20	198
64 Star Downtown Shuttle	Train Shuttle	6 trips							
75 Midtown	Local 20	4:00 AM	1:00 AM	30	20	20	30	30	108
Regional Routes									76
Total									**2,850**

Attachment 3 | Phase 3 Weekday Service

Route	Service Type	Service Start	Service End	Early AM	Peak	Midday	Evening	Night	Weekday Bus Trips
3 West End/White Bridge	Frequent 10/15	3:00 AM	3:00 AM	20	10	15	15	20	200
4 Shelby	Frequent 10/15	3:00 AM	3:00 AM	20	10	15	15	20	200
6 Lebanon Pike	Local 20	4:00 AM	1:00 AM	30	20	20	20	30	116
7 Hillsboro Pike	Frequent 10/15	3:00 AM	3:00 AM	20	10	15	15	20	200
8 8th Avenue South	Frequent 15	3:00 AM	3:00 AM	20	15	15	15	20	176
9 Metro Center	Local 20	4:00 AM	1:00 AM	30	20	20	20	30	116
14 Whites Creek	Local 30	4:00 AM	12:00 AM	60	30	30	30	30	76
17 12th Ave South	Local 20/30	4:00 AM	12:00 AM	30	20	30	30	30	92
18 Airport	Local 30	4:00 AM	12:00 AM	60	30	30	30	30	76
19 Herman	Local 20	4:00 AM	1:00 AM	30	20	20	20	30	116
22 Bordeaux	Frequent 10/15	3:00 AM	3:00 AM	20	10	15	15	20	200
23 Dickerson Pike	Frequent 10	3:00 AM	3:00 AM	15	10	10	10	20	246
28 Meridian	Local 30	4:00 AM	12:00 AM	60	30	30	30	30	76
29 Jefferson	Local 20	4:00 AM	1:00 AM	30	20	20	20	30	116
34 Opry Mills	Local 30	4:00 AM	12:00 AM	60	30	30	30	30	76
41 Golden Valley	Local 30	4:00 AM	12:00 AM	60	30	30	30	30	76
42 St. Cecilia/Cumberland	Local 30	4:00 AM	12:00 AM	60	30	30	30	30	76

Route	Service Type	Service Start	Service End	Early AM	Peak	Midday	Evening	Night	Weekday Bus Trips
50 Charlotte Pike	Frequent 10/15	3:00 AM	3:00 AM	20	10	15	15	20	200
52 Nolensville Pike	Frequent 10	3:00 AM	3:00 AM	15	10	10	10	20	246
55 Murfreesboro Pike	Frequent 7.5	3:00 AM	3:00 AM	15	8	8	10	20	294
56 Gallatin Pike	Frequent 7.5	3:00 AM	3:00 AM	15	8	8	10	20	294
64 Star Downtown Shuttle	Train Shuttle	6 trips							
75 Midtown	Local 20	4:00 AM	1:00 AM	30	20	20	20	30	116
Regional Routes									76
Total									**3,466**

CONNECT DOWNTOWN

Appendix H

Curb Management Recommendations

April 2024

MANAGING THE CURB

As described by the Institute of Transportation Engineers (ITE), "curbside management seeks to inventory, optimize, allocate, and manage the curb space to maximize mobility, safety, and access for the wide variety of curb demands." The Connect Downtown recommendations aim to optimize the use of the curb in Downtown Nashville. They present a comprehensive set of strategies and actions that reflect best practices, anticipate emerging opportunities, respond to Nashville's curb challenges, and advance stakeholder-identified goals and priorities.

Enhanced curb management will help Nashville:

- Plan for Downtown's growth;
- Address the prevalence of emerging mobility services at curbsides, including private mobility service providers and operators; and
- Formalize an approach for advancing and encouraging innovative curbside strategies piloted in recent years.

This appendix serves as a reference for expanding existing programs, developing new policies, and coordinating with curb stakeholders. The recommendations provide elements for improved operational and design practices that Metro staff, developers, and other stakeholders can reference to achieve better curb outcomes.

What is the curb?

The curb is more than just the raised edge where the sidewalk meets the St. "The curb" is a shorthand planning term that describes a wide range of activities and features that are found along the edge of the public right-of-way. The curb is made up of the non-travel space in the right-of-way. Depending on a St's design, the curb can include the outermost lane of the St used for parking and loading, the furniture zone where trees, bus shelters, benches, bike racks, and other infrastructure are located, and the sidewalk.

Why manage the curb?

Streets and their curb zones are the single largest share of the public realm in any city, and Nashville is no exception. Everyone who uses the St interacts with the curb at some point during every trip, whether to park or load goods, get into or out of a vehicle, or cross as a pedestrian. Curbs serve a myriad of travelers and functions that change depending on the hour and the day.

Competition for curb space continues to increase as new patterns of consumption, travel behavior, and transportation technologies emerge. Curbs are a public good that Metro

manages to ensure efficient and effective uses that meet the needs of people and businesses. Curbs should be treated as the versatile resources that they are—places to move, but also places to work, live, and play.

How can curb management enhance mobility?

Because curbs are a public good, they should be treated as community space and managed based on needs and uses. Historically, curbs have been used for little more than private vehicle storage. This is not only an inefficient use of public assets, but an exclusionary practice that limits the curb's utility to automobile owners.

Curb management can account for and address historic inequities by ensuring curb space is flexible and can be utilized efficiently by many different people across all travel modes. Curb management policies seek to transition public space away from private vehicle storage and pivot toward dynamic uses such as:

- Providing protection and infrastructure for people walking, biking, and rolling
- Making space for and improving public transit stops and amenities
- Supporting local businesses by providing space for delivery activities and outdoor amenities like St cafes
- Enhancing pick-up/drop-offs for mobility services, micromobility parking, EV charging, car share, and more
- Improving the public realm with parklets, St trees, and sustainable landscaping and stormwater management

Improving the approach to curbside management Downtown can help Nashville achieve its mobility, sustainability, innovation, and livability goals. Sustained, deliberate curb management strategies will improve transportation safety, reduce single-occupancy vehicle trips and associated greenhouse gas emissions, improve traffic flow, and accommodate new mobility services and technologies.

CURB MANAGEMENT PRINCIPLES

Nashville's curb management policies should be based on five curb management principles:

- **Efficiency and Effectiveness:** Ensure curb space is allocated and regulated to optimize operational efficiency using data-driven metrics.
- **Equity:** Provide equitable access to curb space to support Downtown Nashville's needs.
- **User-Friendly:** Develop curb regulations that are clear, easy to follow, and supportive of travelers' and businesses' needs.

- **Adaptability and Resilience:** Preserve the curb's inherent flexibility and maintain pathways for regulatory change that promote and support changing use patterns.
- **Decision-Making Clarity:** Designate clear lines of decision-making authority for curb management and use.

CURB MANAGEMENT RECOMMENDATIONS

With increasing demand for the curb and a limited supply of space, curb management will continue to play a major role in the Downtown mobility experience. Nashville's current approach to curb access challenges is reactive and inconsistent. Implementing deliberate strategies to manage curbside access functions will result in a safer and more efficient mobility environment.

Connect Downtown recommends the following improvements to support the management of Downtown's curbs:

- Flexible Curb Regulations
- Smart Loading and Delivery Programs
- Taxi and Ridehail Pick-Up and Drop-Off Program
- Regulations and Permitting
- Curb Enforcement
- Autonomous and Electric Mobility Future-Proofing

Flexible Curb Regulations

Flexible curb regulations allow cities to maximize the use of high-demand curb space by allocating the most suitable or most needed use to a specific location at a specific time of day. Flexible curb regulations can vary throughout the day, functioning as a delivery loading zone in the morning, a passenger loading zone in the afternoon, and on-St parking overnight. Flexible curb regulations allow the curb to serve more people, rather than functioning only as parking and vehicle storage space.

Connect Downtown recommends the following strategies to provide more curb flexibility:

- Create more passenger loading zones, including for charter buses
- Expand and relocate conventional commercial loading zones
- Establish and manage formal procedures for commercial valet zones
- Enable flexible curb regulations by time of day and day of week

Nashville's curbs see a high demand for deliveries, passenger loading, and parking, including parking for private vehicles, service vehicles, and tour buses. With the general strategies above in mind, Connect Downtown recommends five types of flexible curb regulations:

- Deliveries, loading, and service activities
- Passenger loading and unloading, including charter buses
- Taxi and ridehailing pick-up and drop-off
- Metered or paid parking
- No parking

These regulations would direct curb use throughout the day in Downtown. Early morning and daytime hours (4 AM to 4 PM) would prioritize space for delivery loading and unloading activities and service vehicles as shown in Figure 1. Afternoon and overnight hours (4 PM to 4 AM) would prioritize space for passenger unloading and some private vehicle parking, with passenger pick-up and drop-off zones on streets adjacent to Broadway, as shown in Figure 2. Attachment A provides a more detailed description of the recommended curb uses for each block in the core of Downtown Nashville.

Smart Loading and Delivery Programs

Downtown Nashville has a very high number of daily deliveries, including food, beverages, packages, and other goods. When delivery trucks don't have dedicated space to unload, they can cause traffic congestion due to double parking, safety challenges by blocking sightlines, and emissions as they circle the block to find a delivery space.

Connect Downtown recommends the following strategies to manage the impacts of loading and deliveries at the curb:

- Pilot a Smart Loading Zone Program
- Implement a commercial loading zone reservations system
- Study the feasibility of a centralized delivery program

The Nashville Department of Transportation (NDOT) is launching a Smart Loading Zone Pilot Program that would expand delivery zone management, data collection, and enforcement in some of Downtown's busiest areas. NDOT can also increase the availability of commercial loading zones for delivery and service vehicles by increasing availability of commercial loading permits or regulating these spaces through reservations.

In the future, Nashville should explore a centralized delivery program that would consolidate deliveries in very dense business areas. In a centralized delivery program, carriers drop their deliveries off at a "microhub" and a single truck carries a consolidated load into the busiest areas of Downtown. Bikes or handcarts could be used as more sustainable delivery methods.

Figure 1 | Early Morning and Afternoon Curb Uses (4 AM to 4 PM)

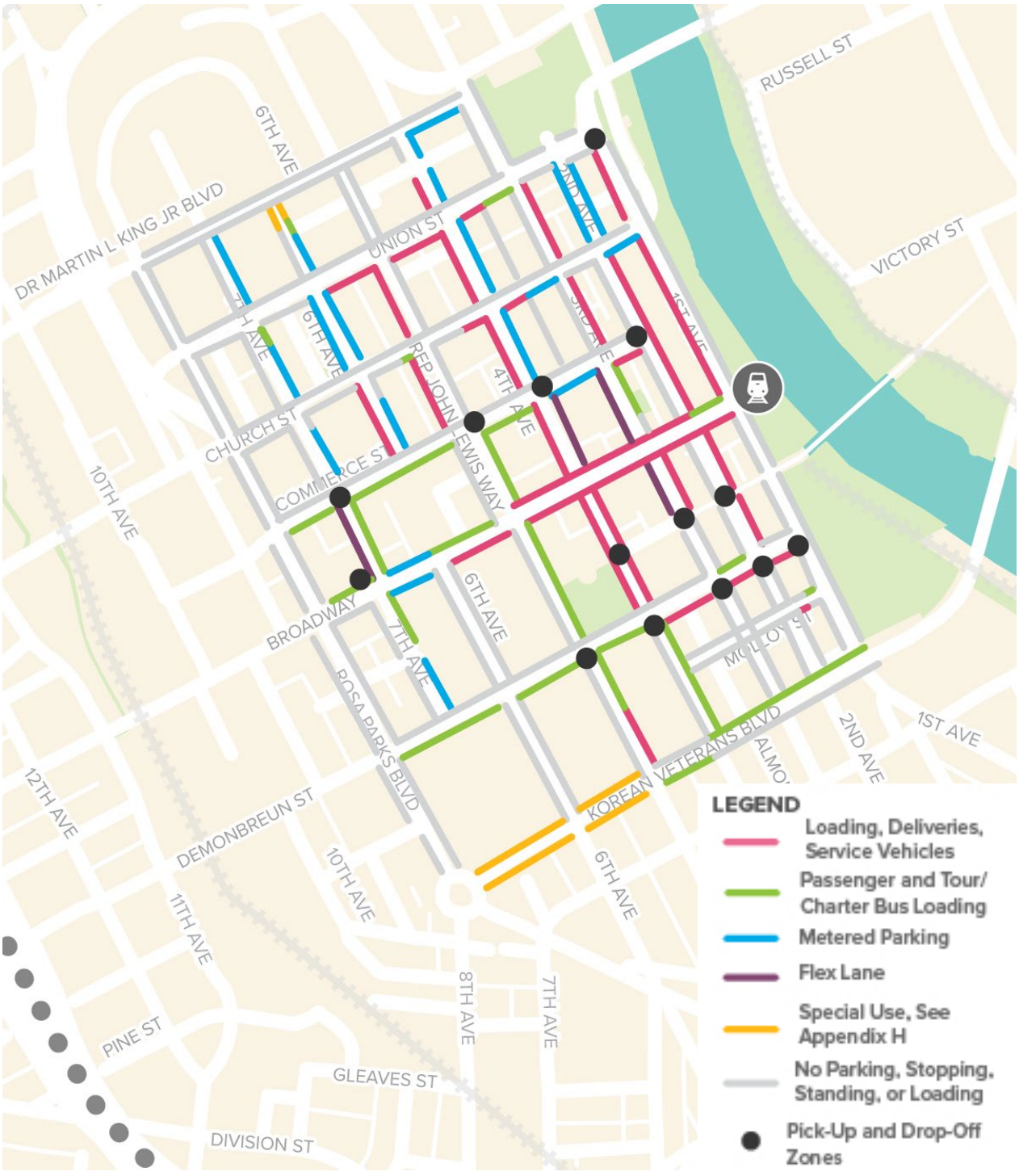
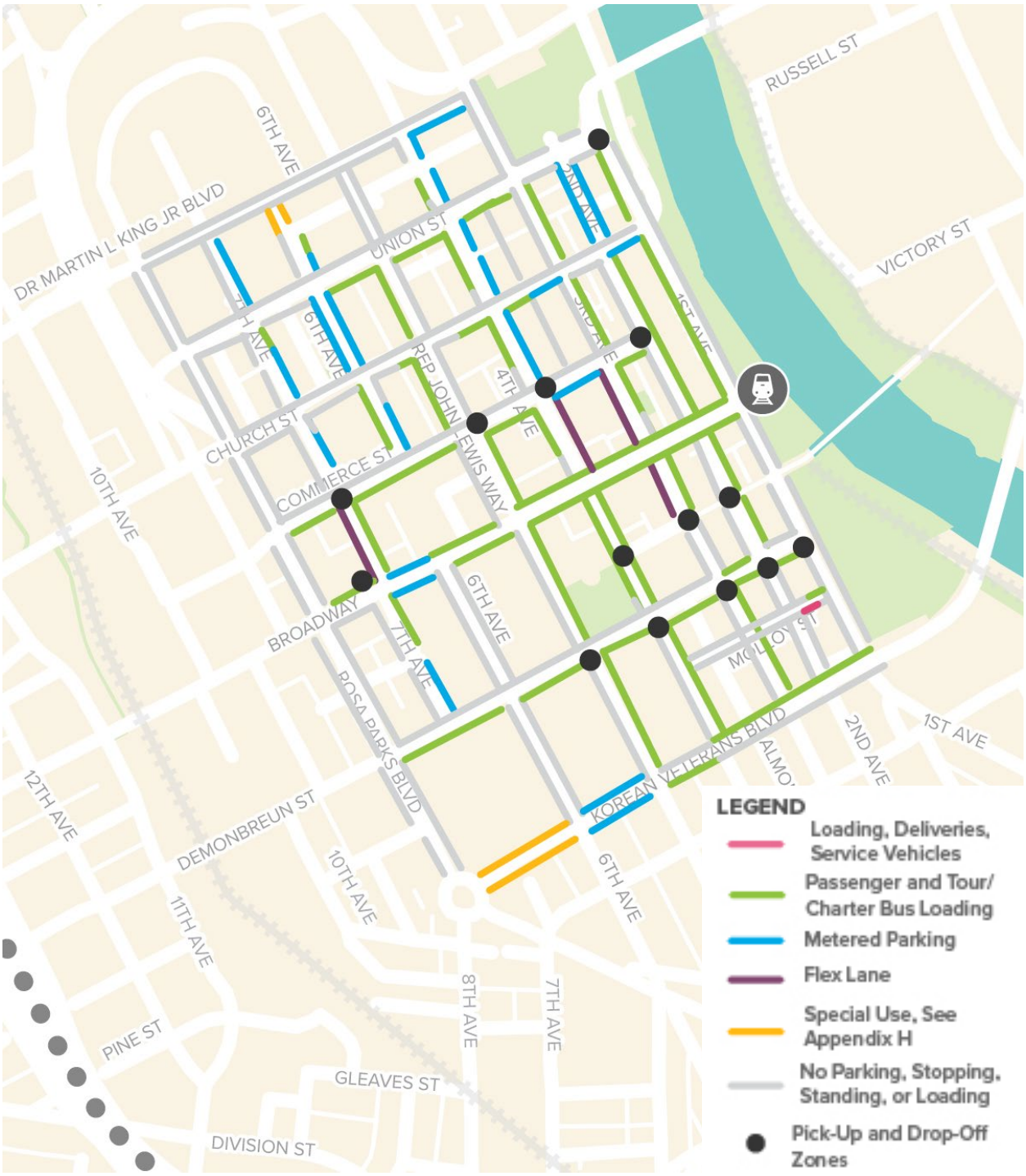


Figure 2 | Evening and Overnight Curb Uses (4 PM to 4 AM)



Taxi and Ridehail Pick-Up and Drop-Off Program

Over the past decade, ridehailing companies such as Lyft and Uber have joined taxis and other travel modes in using curb space in Downtown Nashville to conduct their business. These services operate in the most congested areas at the busiest times of day, such as after a Preds game or on a weekend evening.

Although these services expand mobility options and can be convenient for some travelers, they place significant demands on the curb and can block buses, delivery zones, and bike lanes. Connect Downtown recommends the following strategies to manage the impacts of these vehicles on the mobility system at the curb:

- Increase the curb space for passenger pick-up/drop-off activity (see Figures 1 and 2)
- Require permits for taxis and ridehail vehicles to use designated areas
- Expand use of geofencing to define where taxis and ridehail vehicles may drop-off or pick-up passengers
- Charge a fee for trips that begin or end in Downtown Nashville during peak hours

In the mid- to long-term, Nashville may consider using pricing to manage pick-up/drop-off demand more directly by adding a surcharge for all ridehail trips beginning or ending in Downtown during peak periods. Nominal fees could be tied to reserved or preferred curb access through designated and geofenced pick-up and drop-off zones.

Regulations and Permitting

Nashville, like most cities in the United States, has evolved and grown around an aging set of curb use regulations. Nashville's Downtown curb regulations and management practices must evolve to match a changing development and mobility landscape. Streamlined regulations, enhanced enforcement practices, updated code language, and modernized permitting systems will unlock opportunities for innovation and ensure better mobility outcomes.

Connect Downtown recommends the following strategies to improve how regulations and permitting are maintained at the curb:

- Streamline and digitize curbside regulations
- Collect, maintain, and share curb asset information
- Review all valet zone regulations and permits
- Advance the permitting system and procedural processes to support flexible curb uses
- Collect and analyze curb activity data to inform curb management decisions
- Update the Zoning Code to better integrate curb uses

Increasingly, cities are innovating in this realm by digitizing or "coding the curb," which entails developing and maintaining databases of curbside assets and regulations, collecting and analyzing activity data, and automating enforcement and pricing.

Curb Enforcement

Ensuring compliance with curbside regulations requires a strategic enforcement program targeted to the specific needs of Downtown Nashville. Building an Enforcement and Compliance Program to leverage the technology and data gained from other enhancements is critical to effective curbside management.

Connect Downtown recommends the following strategies to enhance enforcement of regulations at the curb:

- Increase the number of staff in the parking enforcement division
- Procure automated parking enforcement technology to provide real-time monitoring and enforcement
- Acquire and monitor data to improve the compliance program

Autonomous and Electric Mobility Future-Proofing

Downtown Nashville's curbs can help to advance Connect Downtown's mobility goals. To support a transition toward new curb uses, NDOT should advance the following strategies:

- Proactively evaluate curb policies and tools to manage automated mobility services
- Deploy public charging infrastructure to promote equitable electric mobility
- Create and maintain digital policy tools

These curbside strategies can help further the transition toward modern travel patterns, while providing a framework that accounts for future shared and automated mobility uses.

Attachment 1 | Flexible Curb Uses by Block

Block Faces	Regulation
Rosa L Parks Blvd (Dr. Martin Luther King, Jr. Blvd to Korean Veterans Blvd)	▪ Both Sides: No parking, stopping, standing, or loading
7th Ave (Dr. Martin Luther King, Jr. Blvd to Union St)	▪ West: No parking, stopping, standing, or loading ▪ East: Metered parking
7th Ave (Union St to Church St)	▪ West: No parking, stopping, standing, or loading ▪ East: Tour bus parking at corner of 7th Ave and Union St, then metered parking
7th Ave (Church St to Commerce St)	▪ West: No parking, stopping, standing, or loading ▪ East: No parking, stopping, standing, or loading at corner of 7th Ave and Church St, then metered parking
7th Ave (Commerce St to Broadway)	▪ West: Flex lane (passenger loading and school-only loading with the ability to serve general-purpose traffic after events) ▪ East: Passenger loading
7th Ave (Broadway to McGavock St)	▪ West: No parking, stopping, standing, or loading ▪ East: Passenger loading
7th Ave (McGavock St to Demonbreun St)	▪ West: No parking, stopping, standing, or loading ▪ East: Metered parking
6th Ave (Dr. Martin Luther King, Jr. Blvd to Deaderick St)	▪ West: ADA parking ▪ East: Trooper parking only
6th Ave (Deaderick St to Union St)	▪ West: No parking, stopping, standing, or loading ▪ East: Passenger loading, then off-peak metered parking
6th Ave (Union St to Church St)	▪ Both Sides: Off-peak metered parking
6th Ave (Church St to Commerce St)	▪ West: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM ▪ East: No parking, stopping, standing, or loading, then off-peak metered parking
6th Ave (Broadway to Korean Veterans Blvd)	▪ Both Sides: No parking, stopping, standing, or loading
Rep. John L Lewis Way (Dr. Martin Luther King, Jr. Blvd to Union St)	▪ Both Sides: No parking, stopping, standing, or loading
Rep. John L Lewis Way (Union St to Commerce St)	▪ West: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM ▪ East: No parking, stopping, standing, or loading
Rep. John L Lewis Way (Commerce St to Broadway)	▪ West: No parking, stopping, standing, or loading ▪ East: Passenger loading (tour bus loading)
Rep. John L Lewis Way (Broadway to Demonbreun St)	▪ West: No parking, stopping, standing, or loading ▪ East: Passenger loading (valet and taxi loading)
Rep. John L Lewis Way (Demonbreun St to Molloy St)	▪ West: No parking, stopping, standing, or loading ▪ East: Passenger loading

Block Faces	Regulation
Rep. John L Lewis Way (Molloy St to Korean Veterans Blvd)	▪ West: No parking, stopping, standing, or loading ▪ East: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM
4th Ave (Dr. Martin Luther King, Jr. Blvd to Deaderick St)	▪ West: No parking, stopping, standing, or loading ▪ East: Off-peak metered parking
4th Ave (Deaderick St to Commerce St)	▪ West: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM, then no parking, stopping, standing, or loading ▪ East: Off-peak metered parking
4th Ave (Commerce St to Broadway)	▪ West: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM, then no parking, stopping, standing, or loading ▪ East: Flex lane (loading and passenger loading with the ability to serve general-purpose traffic in peak periods)
4th Ave (Broadway to Demonbreun St)	▪ West: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM, then no parking, stopping, standing, or loading ▪ East: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM
4th Ave (Demonbreun St to Korean Veterans Blvd)	▪ West: No parking, stopping, standing, or loading ▪ East: Passenger loading
Printers Alley	▪ No parking, stopping, standing, loading
3rd Ave (Dr. Martin Luther King, Jr. Blvd to Union St)	▪ Both Sides: No parking, stopping, standing, or loading
3rd Ave (Union St to Commerce St)	▪ West: No parking, stopping, standing, or loading ▪ East: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM
3rd Ave (Commerce St to Broadway)	▪ West: Flex lane (loading and passenger loading with the ability to serve general-purpose traffic in peak periods) ▪ East: Passenger loading, then no parking, stopping, standing, or loading
3rd Ave (Broadway to Siegenthaler Pedestrian Bridge)	▪ West: Flex lane (loading and passenger loading with the ability to serve general-purpose traffic in peak periods) ▪ East: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM
3rd Ave (Siegenthaler Pedestrian Bridge to Demonbreun St)	▪ Both Sides: No parking, stopping, standing, or loading
3rd Ave (Demonbreun St to Korean Veterans Blvd)	▪ West: No parking, stopping, standing, or loading ▪ East: Passenger loading
2nd Ave (Union St to Church St)	▪ Both Sides: Metered parking
2nd Ave (Church St to Broadway)	▪ West: No parking, stopping, standing, or loading ▪ East: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM
2nd Ave (Broadway to Demonbreun St)	▪ West: No parking, stopping, standing, or loading ▪ East: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM
2nd Ave (Demonbreun St to Molloy St)	▪ Bot Sides: No parking, stopping, standing, or loading

Block Faces	Regulation
2nd Ave (Molloy St to Korean Veterans Blvd)	▪ Both Sides: No parking, stopping, standing, or loading
1st Ave (Union St to Broadway)	▪ West: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM ▪ East: No parking, stopping, standing, or loading
1st Ave (Broadway to Korean Veterans Blvd)	▪ Both Sides: No parking, stopping, standing, or loading
Dr. Martin Luther King, Jr. Blvd (Rosa L Parks Blvd to 4th Ave)	▪ Both Sides: No parking, stopping, standing, or loading
Dr. Martin Luther King, Jr. Blvd (4th Ave to 3rd Ave)	▪ North: No parking, stopping, standing, or loading ▪ South: Off-peak metered parking
Union St (Rosa L Parks Blvd to 6th Ave)	▪ Both Sides: No parking, stopping, standing, or loading
Union St (6th Ave to 4th Ave)	▪ North: No parking, stopping, standing, or loading ▪ South: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM
Union St (4th Ave to Printers Alley)	▪ North: No parking, stopping, standing, or loading ▪ South: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM
Union St (Printers Alley to 3rd Ave)	▪ North: No parking, stopping, standing, or loading ▪ South: Passenger loading
Union St (3rd Ave to 1st Ave)	▪ Both Sides: No parking, stopping, standing, or loading
Church St (Rosa L Parks Blvd to St. Cloud Alley)	▪ Both Sides: No parking, stopping, standing, or loading
Church St (St. Cloud Alley to Rep. John L Lewis Way)	▪ North: No parking, stopping, standing, or loading ▪ South: Passenger loading (valet at hotel)
Church St (Rep. John L Lewis Way to 4th Ave)	▪ North: No parking, stopping, standing, or loading ▪ South: No parking in front of church / Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM to corner of 4th Ave
Church St (4th Ave to Printers Alley)	▪ North: No parking, stopping, standing, or loading ▪ South: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM
Church St (Printers Alley to 3rd Ave)	▪ North: No parking, stopping, standing, or loading ▪ South: Metered parking
Church St (3rd Ave to 2nd Ave)	▪ Both Sides: No parking, stopping, standing, or loading
Church St (2nd Ave to 1st Ave)	▪ North: No parking, stopping, standing, or loading ▪ South: Metered parking
Commerce St (Rosa L Parks Blvd to 4th Ave)	▪ North: No parking, stopping, standing, or loading ▪ South: Passenger loading
Commerce St (4th Ave to 3rd Ave)	▪ North: No parking, stopping, standing, or loading ▪ South: Metered parking
Commerce St (3rd Ave to 2nd Ave)	▪ North: No parking, stopping, standing, or loading ▪ South: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM

Block Faces	Regulation
Broadway (Rosa L Parks Blvd to 7th Ave)	▪ North: Passenger loading ▪ South: No parking, stopping, standing, or loading
Broadway (7th Ave to 6th Ave)	▪ Both Sides: Metered parking
Broadway (6th Ave to Rep. John L Lewis Way)	▪ North: Passenger loading ▪ South: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM
Broadway (Rep. John L Lewis Way to 2nd Ave)	▪ Both Sides: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM
Broadway (2nd Ave to 1st Ave)	▪ North: Passenger loading ▪ South: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM
Demonbreun St (Rosa L Parks Blvd to 4th Ave)	▪ North: No parking, stopping, standing, or loading ▪ South: Passenger loading
Demonbreun St (4th Ave to 3rd Ave)	▪ North: No parking, stopping, standing, or loading ▪ South: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM
Demonbreun St (3rd Ave to 2nd Ave)	▪ North: Passenger loading ▪ South: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM
Demonbreun St (2nd Ave to 1st Ave)	▪ North: No parking, stopping, standing, or loading ▪ South: Loading 4 AM – 4 PM / Passenger loading 4 PM – 4 AM
Molloy St (4th Ave to 2nd Ave)	▪ Both Sides: No parking, stopping, standing, or loading
Molloy St (2nd Ave to 1st Ave)	▪ North: No parking, stopping, standing, or loading, then passenger loading ▪ South: Loading, then no parking stopping, standing, or loading
Korean Veterans Blvd (Rosa L Parks Blvd to 6th Ave)	▪ Both Sides: Police parking, with uses tailored to meet the needs of Music City Center
Korean Veterans Blvd (6th Ave to Rep. John L Lewis Way)	▪ Both Sides: Loading 4 AM – 9 AM / Metered parking 9 AM – 4 AM, with uses tailored to meet the needs of Music City Center
Korean Veterans Blvd (Rep. John L Lewis Way to 4th Ave)	▪ North: No parking, stopping, standing, or loading ▪ South: Passenger loading
Korean Veterans Blvd (4th Ave to 1st Ave)	▪ North: Passenger loading ▪ South: No parking, stopping, standing, or loading

CONNECT DOWNTOWN

Appendix I

Full Project List

April 2024

ID	Big Move	Project Name	Primary Street(s)	To	From	Project Description	Phase 1	Phase 2	Phase 3	Lead	Partners
1	Manage Congestion	**Traffic Management Center**	n/a	n/a	n/a	Open Nashville's first Traffic Management Center to support real-time monitoring and management of traffic flows, providing the ability to proactively address congestion during peak periods, special events, and emergencies	X			NDOT	
2	Manage Congestion	**Adaptive Signals**	n/a	n/a	n/a	Upgrade traffic signals throughout Downtown, providing the ability for NDOT to dynamically manage the system during peak periods, special events, and emergencies and supporting transit priority signals	X	X		NDOT	WeGo
3	Manage Congestion	**Digital Message Signs**	n/a	n/a	n/a	Install signs that work in conjunction with the Traffic Management Center to provide travelers with updates on congested corridors, detours, and travel times, supporting post-event traffic redistribution		X		NDOT	TDOT
4	Manage Congestion	**Don't Block the Box Treatments**	n/a	n/a	n/a	Install signs and markings and expand enforcement to improve safety, ensure intersections remain clear, and keep buses and vehicles moving	X	X		NDOT	TDOT
5	Manage Congestion	**Access Management Policy**	n/a	n/a	n/a	Develop an Access Management Policy to consolidate driveways and garage entrances and exits, siting them on less congested streets to improve safety and movement	X			Metro Planning	NDOT
6	Manage Congestion	**Nashville Connector Program Expansion**	n/a	n/a	n/a	Expand the Nashville Connector Program by increasing staffing, strengthening policies, and expanding travel training and incentives; develop Downtown-focused TDM branding and communications standards	X			NDOT	WeGo, TDOT
7	Manage Congestion	**TDM Plan**	n/a	n/a	n/a	Develop TDM Plan to integrate and coordinate the work of NDOT's TDM Team and their core partners, including WeGo and Walk Bike Nashville; establish a process to incorporate TDM in project development	X			NDOT	WeGo, TDOT
8	Manage Congestion	**Event & Visitor TDM Program**	n/a	n/a	n/a	Develop and implement targeted strategies to encourage event-goers and visitors to travel without a car, including a privately-funded circulator, enhanced public information, demand-responsive parking pricing, and incentives		X		NDOT	Convention & Visitors Corp, Downtown Partnership, WeGo, TDOT
9	Manage Congestion	**Resident TDM Program**	n/a	n/a	n/a	Establish a Resident TDM Program to help residents walk and roll, bike, and ride transit more frequently, using a combination of educational programs, incentives, and new travel options		X		NDOT	Downtown Partnership, WeGo, TDOT
10	Manage Congestion	**Commuter Benefits Ordinance**	n/a	n/a	n/a	Draft and adopt a Commuter Benefits Ordinance with mode split standards and reporting guidelines		X		NDOT	Metro Planning
11	Manage Congestion	**TDM Plan Guidelines & Multimodal Transportation Analysis Guidelines**	n/a	n/a	n/a	Create TDM Plan Guidelines and expand the TDM components of the new Multimodal Transportation Analysis Guidelines, working closely with downtown developers		X		NDOT	Metro Planning, WeGo
12	Manage Congestion	**Event Management Program**	n/a	n/a	n/a	Expand event management and coordination with additional staff to plan for and implement detours, manage TMC activities, and promote sustainable modes of travel to events	X			NDOT	Metro Agencies (NPD), WeGo
13	Manage Congestion	**Construction Hubs Program**	n/a	n/a	n/a	Launch a Construction Hubs Program to help contractors coordinate efforts and reduce duplicative work, provide public information, implement priority infrastructure, and better manage construction activities in the right-of-way	X	X		NDOT	Metro
14	Manage Congestion	**2nd Ave Operational Conversion: Part 1**	2nd Ave N	Broadway	Union St	Convert 2nd Ave to two-way operations with implementation of the 2nd Avenue Rebuild project, adding southbound vehicle capacity and expanding loading activities	X			NDOT	
15	Manage Congestion	**2nd Ave Operational Conversion: Part 2 (Engineering Study)**	2nd Ave S	Korean Veterans Blvd	Broadway	Study the potential conversion of 2nd Ave S to two-way to support garage ingress and egress and provide additional southbound vehicle capacity	X			NDOT	
16	Manage Congestion	**2nd Ave Operational Conversion: Part 2 (Potential Implementation)**	2nd Ave S	Korean Veterans Blvd	Broadway	Implement, if warranted, a conversion of 2nd Ave S to two-way to support garage ingress and egress and provide additional southbound vehicle capacity		X		NDOT	
17	Manage Congestion	**2nd Ave Operational Conversion: Part 3 (Engineering Study)**	2nd Ave S	I-40	Korean Veterans Blvd	Study the potential conversion of 2nd Ave S to two-way to provide additional southbound vehicle capacity in coordination with TDOT interstate ramp improvements			X	NDOT	TDOT

ID	Big Move	Project Name	Primary Street(s)	To	From	Project Description	Phase 1	Phase 2	Phase 3	Lead	Partners
18	Manage Congestion	**3rd Ave Operational Conversion (Engineering Study)**	3rd Ave N / 3rd Ave S	Union St	Elm St	Study the potential conversion of 3rd Ave to one-way northbound, except between Demonbreun St and the Siegenthaler Pedestrian Bridge, to support wider sidewalks, more dedicated curb space, and transit and mobility lane improvements	X			NDOT	WeGo
19	Manage Congestion	**3rd Ave Operational Conversion (Potential Implementation)**	3rd Ave N / 3rd Ave S	Union St	Elm St	Implement, if warranted, a conversion of 3rd Ave to one-way northbound, except between Demonbreun St and the Siegenthaler Pedestrian Bridge, along with wider sidewalks, more dedicated curb space, and transit and mobility lane improvements		X		NDOT	WeGo
20	Manage Congestion	**4th Ave Operational Conversion (Engineering Study)**	4th Ave S	Peabody St	Broadway	Study the potential conversion of 4th Ave S to one-way southbound to support dedicated transit lanes and queue jumps, additional priority loading, and better post-event egress	X			NDOT	WeGo
21		**4th Ave Operational Conversion (Potential Implementation)**	4th Ave S	Peabody St	Broadway	Implemented, if warranted, a conversion of 4th Ave to one-way southbound, along with dedicated transit lanes and queue jumps and additional priority loading		X		NDOT	WeGo
22	Manage Congestion	**7th Ave Operational Conversion**	7th Ave S / 7th Ave N	Demonbreun St	Dr. Martin Luther King, Jr. Blvd	Convert 7th Ave to one-way northbound, except between Church St and Commerce St, to support additional loading and a two-way mobility lane	X			NDOT	
23	Improve Safety	**Church St Corridor Safety Study**	Church St	Centennial Park	Rosa L Parks Blvd	Develop and implement a concept for safe and comfortable bikeways, improving safety on a high-injury corridor	X			NDOT	
24	Improve Safety	**Rosa L Parks Blvd Corridor Safety Study**	Rosa L Parks Blvd	Dr. Martin Luther King, Jr. Blvd	Clarksville Pike	Evaluate potential safety improvements for people walking and rolling, biking, riding the bus, and driving, in conjunction with potential transit priority and mobility lane improvements	X			NDOT	WeGo, TDOT
25	Improve Safety	**Intersection Safety Audits**	Rep. John L Lewis Way at Dr. Martin Luther King, Jr. Blvd & 4th Ave N at Church St	n/a	n/a	Conduct safety audits and design and implement safety improvements at two high-injury intersections in Downtown	X			NDOT	
26	Improve Safety	**Unsignalized Crossing Improvements**	Unsignalized Crossings	n/a	n/a	Evaluate all unsignalized crossings in Downtown for quick-build safety enhancements, which may include signs, lighting, striping, daylighting crosswalks, raised crossings, and other proven safety treatments	X	X		NDOT	
27	Improve Safety	**Vision Zero Capital Projects**	n/a	n/a	n/a	Advance capital projects identified in the Vision Zero Implementation Plan, focused on the High Injury Network	X	X	X	NDOT	TDOT
28	Improve Safety	**Speed Limit Reductions**	n/a	n/a	n/a	Evaluate and implement, if warranted, speed limit reductions throughout Downtown, capping speeds at 20-25 mph	X	X		NDOT	TDOT
29	Improve Safety	**Leading Pedestrian Interval Signal Timing**	n/a	n/a	n/a	Update traffic signal phasing throughout Downtown to give pedestrians a head start crossing the street	X	X		NDOT	TDOT
30	Improve Safety	**No Right on Red Policy**	n/a	n/a	n/a	Limit or eliminate right turns on red in Downtown Nashville, starting with intersections that have the highest volumes of pedestrians	X	X		NDOT	TDOT
31	Improve Safety	**Intersection Daylighting Program**	n/a	n/a	n/a	Add curb bulbs or repurpose parking spaces adjacent to intersections to provide space for pedestrians and/or bike and scooter parking corrals	X	X	X	NDOT	
32	Improve Safety	**Education Programs**	n/a	n/a	n/a	Expand the reach of the Vision Zero Action Plan by linking education programs to Downtown-focused messaging; coordinate with Nashville Connector programs	X	X	X	NDOT	Nashville Downtown Partnership, Nashville Convention & Visitors Corp, WeGo
33	Improve Safety	**Traffic Safety Enforcement**	n/a	n/a	n/a	Work with the community to develop Downtown approaches to traffic safety enforcement and reconsider restrictions on automated traffic enforcement	X	X	X	Metro Nashville Police Department	NDOT, TDOT
34	Move More People	**SoBro Mobility Center (Design)**	Lafayette St & 4th Ave S	n/a	n/a	Plan and design the SoBro transit and multimodal center, creating a southern Downtown hub for WeGo operations	X			WeGo	NDOT
35	Move More People	**SoBro Mobility Center (Construction)**	Lafayette St & 4th Ave S	n/a	n/a	Construct and open the SoBro transit and multimodal center, creating a southern Downtown hub for WeGo operations		X		WeGo	NDOT
36	Move More People	**East Bank Mobility Center (Design)**	James Robertson Pkwy & East Bank Blvd			Plan and design the East Bank transit and multimodal center in conjunction with ongoing East Bank development projects		X		WeGo	NDOT
37	Move More People	**East Bank Mobility Center (Construction)**	James Robertson Pkwy & East Bank Blvd	n/a	n/a	Construct and open the East Bank transit and multimodal center in conjunction with the opening of the East Bank Blvd			X	WeGo	NDOT

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38	Move More People	**Westside Transit Priority Corridor (Design)**	James Robertson Pkwy / Rosa L Parks Blvd / 8th Ave S / Lafayette St	WeGo Central	SoBro Mobility Center	Design a Transit Priority Corridor featuring dedicated bus lanes, transit priority signals, enhanced stations, high-quality walking, rolling, and biking connections, and passenger amenities between WeGo Central and the SoBro Mobility Center	X			NDOT	WeGo, TDOT
39	Move More People	**Westside Transit Priority Corridor (Construction)**	James Robertson Pkwy / Rosa L Parks Blvd / 8th Ave S / Lafayette St	WeGo Central	SoBro Mobility Center	Construct and open a Transit Priority Corridor featuring dedicated bus lanes, transit priority signals, enhanced stations, high-quality walking, rolling, and biking connections, and passenger amenities between WeGo Central and the SoBro Mobility Center		X		NDOT	WeGo, TDOT
40	Move More People	**James Robertson Transit Priority Corridor (Design)**	James Robertson Pkwy & Bridge	WeGo Central	East Bank Mobility Center	Design a Transit Priority Corridor featuring dedicated bus lanes and transit priority signals between WeGo Central and a temporary location near the future East Bank Mobility Center	X			NDOT	WeGo, TDOT
41	Move More People	**James Robertson Transit Priority Corridor (Construction)**	James Robertson Pkwy & Bridge	WeGo Central	East Bank Mobility Center	Construct and open a Transit Priority Corridor featuring dedicated bus lanes and transit priority signals between WeGo Central and a temporary location near the future East Bank Mobility Center		X		NDOT	WeGo, TDOT
42	Move More People	**East Bank Transit Priority Corridor (Design)**	East Bank Blvd / Korean Veterans Blvd / 3rd Ave S / 4th Ave S	East Bank Mobility Center	SoBro Mobility Center	Design a Transit Priority Corridor featuring dedicated bus lanes, transit priority signals, enhanced stations, high-quality walking, rolling, and biking connections, and passenger amenities between the East Bank Mobility Center and the SoBro Mobility Center		X		NDOT	WeGo, TDOT
43	Move More People	**East Bank Transit Priority Corridor (Construction)**	East Bank Blvd / Korean Veterans Blvd / 3rd Ave S / 4th Ave S	East Bank Mobility Center	SoBro Mobility Center	Construct and open a Transit Priority Corridor featuring dedicated bus lanes, transit priority signals, enhanced stations, high-quality walking, rolling, and biking connections, and passenger amenities between the East Bank Mobility Center and the SoBro Mobility Center			X	NDOT	WeGo, TDOT
44	Move More People	**3rd & 4th Ave Transit Priority Projects**	3rd Ave N / 3rd Ave S & 4th Ave N / 4th Ave S	WeGo Central	Korean Veterans Blvd	Implement transit signal priority, queue jump lanes, and sections of dedicated bus lanes along 3rd Ave and 4th Ave	X	X		NDOT	WeGo
45	Move More People	**Route 52 Transit Priority Features**	2nd Ave S / 4th Ave S	SoBro Mobility Center	Route terminus	Add transit priority features to Downtown approaches as feasible, including transit signal priority, queue jumps, and/or dedicated bus lanes	X	X	X	WeGo	NDOT, TDOT
46	Move More People	**Route 55 Transit Priority Features**	Lafayette St	SoBro Mobility Center	Route terminus	Add transit priority features to Downtown approaches as feasible, including transit signal priority, queue jumps, and/or dedicated bus lanes	X	X	X	WeGo	NDOT, TDOT
47	Move More People	**Route 4 Transit Priority Features**	Shelby Ave / Korean Veterans Blvd	SoBro Mobility Center	Route terminus	Add transit priority features to Downtown approaches as feasible, including transit signal priority, queue jumps, and/or dedicated bus lanes	X	X	X	WeGo	NDOT, TDOT
48	Move More People	**Route 56 Transit Priority Features**	Main St	East Bank Mobility Center	Route terminus	Add transit priority features to Downtown approaches as feasible, including transit signal priority, queue jumps, and/or dedicated bus lanes	X	X	X	WeGo	NDOT, TDOT
49	Move More People	**Route 23 Transit Priority Features**	Dickerson Pike / N 1st St	East Bank Mobility Center	Route terminus	Add transit priority features to Downtown approaches as feasible, including transit signal priority, queue jumps, and/or dedicated bus lanes	X	X	X	WeGo	NDOT, TDOT
50	Move More People	**Route 22 Transit Priority Features**	Rosa L Parks Blvd	Westside Transit Priority Corridor	Route terminus	Add transit priority features to Downtown approaches as feasible, including transit signal priority, queue jumps, and/or dedicated bus lanes	X	X	X	WeGo	NDOT, TDOT
51	Move More People	**Route 50 Transit Priority Features**	Dr. Martin Luther King, Jr. Blvd / Charlotte Ave	WeGo Central	Route terminus	Add transit priority features to Downtown approaches as feasible, including transit signal priority, queue jumps, and/or dedicated bus lanes	X	X	X	WeGo	NDOT, TDOT
52	Move More People	**Route 3 & 7 Transit Priority Features**	West End Ave / Broadway	Westside Transit Priority Corridor	Route terminus	Add transit priority features to Downtown approaches as feasible, including transit signal priority, queue jumps, and/or dedicated bus lanes	X	X	X	WeGo	NDOT, TDOT
53	Move More People	**Route 8 Transit Priority Features**	8th Ave S	Westside Transit Priority Corridor	Route terminus	Add transit priority features to Downtown approaches as feasible, including transit signal priority, queue jumps, and/or dedicated bus lanes	X	X	X	WeGo	NDOT, TDOT
54	Move More People	**Better WeGo Service to Newly Developing Areas**	n/a	n/a	n/a	Redesign WeGo service in conjunction with capital projects to provide better connections to more neighborhoods in Downtown Nashville and throughout Davidson County, including bus links to Riverfront Station	X	X	X	WeGo	Metro
55	Move More People	**Increased WeGo Trips Regionwide**	n/a	n/a	n/a	Implement the Better Bus Plan to increase the number of WeGo bus trips by 67% regionwide	X	X	X	WeGo	Metro
56	Move More People	**More Frequent WeGo Service for Longer Hours**	n/a	n/a	n/a	Increase the amount of WeGo service on routes regionwide as funding becomes available, adding more 15-minute service and providing more hours of service (up to 24 hours a day)	X	X	X	WeGo	Metro
57	Create Complete Networks	**1st Ave Mobility Lane**	1st Ave N	Woodland Street Bridge	Riverfront Station	Install two-way mobility lane or shared-use path on west side to complement waterfront greenway	X			NDOT`	Parks
58	Create Complete Networks	**2nd Ave N Mobility Lane**	2nd Ave N	Van Buren St	Gay St	Install one-way mobility lane as a pair with 3rd Ave N mobility lane		X		NDOT`	

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59	Create Complete Networks	**3rd Ave Mobility Lane**	3rd Ave N	Gay St	Commerce St	Install two-way mobility lane on west curb following potential conversion to one-way operations	X	X		NDOT`	WeGo
60	Create Complete Networks	**3rd Ave Mobility Lane**	3rd Ave S	Siegenthaler Pedestrian Bridge	Ash St	Install two-way mobility lane on west curb following potential conversion to one-way operations	X	X		NDOT`	
61	Create Complete Networks	**3rd Ave N Mobility Lane**	3rd Ave N	Van Buren St	Gay St	Install one-way mobility lane as a pair with 2nd Ave N mobility lane		X		NDOT`	
62	Create Complete Networks	**3rd Ave N Mobility Lane**	3rd Ave N	Garfield St	North Nashville	Install mobility lanes to connect to North Nashville and address the interstate crossing			X	NDOT`	TDOT
63	Create Complete Networks	**5th Ave N / Rep. John L Lewis Way Mobility Lane**	5th Ave N / Rep. John L Lewis Way	Garfield St	Union St	Implement a combination of bike boulevard treatments and mobility lanes based on traffic volumes and available space	X			NDOT`	
64	Create Complete Networks	**Rep. John L Lewis Way Mobility Lane**	Rep. John L Lewis Way	Demonbreun St	Korean Veterans Blvd	Install two-way mobility lane on east curb to connect to Walk of Fame Park	X			NDOT`	
65	Create Complete Networks	**6th Ave S Mobility Lane**	6th Ave S	Korean Veterans Blvd	Fort Negley	Install mobility lanes to connect to Melrose neighborhood	X			NDOT`	
66	Create Complete Networks	**7th Ave Mobility Lane**	7th Ave N / 7th Ave S	Dr. Martin Luther King, Jr. Blvd	Demonbreun St	Install two-way mobility lane on west curb following potential conversion to one-way operations	X			NDOT`	
67	Create Complete Networks	**11th Ave S / 12th Ave S Mobility Lane**	11th Ave S / 12th Ave S	11th Ave S at Laurel St	12th Ave S at Division St	Install mobility lanes to connect to 12 South	X			NDOT`	
68	Create Complete Networks	**Jefferson St Mobility Lane**	Jefferson St & Bridge	3rd Ave N	I-24	Install two-way mobility lane with generous buffer from vehicle traffic	X			NDOT`	TDOT
69	Create Complete Networks	**Jefferson St Mobility Lane**	Jefferson St	Rosa L Parks Blvd	5th Ave N / Rep. John L Lewis Way	Install two-way mobility lane with generous buffer from vehicle traffic		X		NDOT`	TDOT
70	Create Complete Networks	**Harrison St Mobility Lane**	Harrison St	Rosa L Parks Blvd	3rd Ave N	Implement a bike boulevard to connect existing facilities to new 3rd Ave N mobility lane	X			NDOT`	
71	Create Complete Networks	**Dr. Martin Luther King, Jr. Blvd Mobility Lane**	Dr. Martin Luther King, Jr. Blvd	Rosa L Parks Blvd	Rep. John L Lewis Way	Install mobility lanes, working closely with WeGo on connections to WeGo Central	X			NDOT`	WeGo
72	Create Complete Networks	**Church St / Union St / Woodland St Mobility Lane**	Church St / Union St / Woodland St & Bridge	I-40 (and beyond)	I-24 (and beyond)	Implement bike boulevard treatments on Church St with mobility lanes on Union St / Woodland St Bridge, connecting to East Nashville Spokes Project	X			NDOT`	
73	Create Complete Networks	**Walk of Fame Park / Symphony Pl Connection**	Walk of Fame Park / Symphony Pl	Siegenthaler Pedestrian Bridge	Rep. John L Lewis Way	Implement crossing improvements on 3rd Ave N and path upgrades and wayfinding through Walk of Fame Park	X			NDOT`	
74	Create Complete Networks	**Commerce St Mobility Lane**	Commerce St	10th Ave N	2nd Ave N	Upgrade existing bike facilities to mobility lane standards	X			NDOT`	
75	Create Complete Networks	**Demonbreun St Mobility Lane**	Demonbreun St	I-40	Rep. John L Lewis Way	Upgrade existing bike facilities to mobility lane standards	X			NDOT`	
76	Create Complete Networks	**Rosa L Parks Blvd Mobility Lane**	Rosa L Parks Blvd	Monroe St	James Robertson Pkwy	Install mobility lanes or shared-use paths, working closely with WeGo on transit priority features and stops		X		NDOT`	TDOT, WeGo
77	Create Complete Networks	**Rosa L Parks Blvd Mobility Lane**	Rosa L Parks Blvd	Garfield St	Monroe St	Install mobility lanes or shared-use paths, working closely with WeGo on transit priority features and stops			X	NDOT`	TDOT, WeGo
78	Create Complete Networks	**8th Ave S Mobility Lane**	8th Ave S	Korean Veterans Blvd	Edgehill neighborhood	Install mobility lanes to connect to Edgehill neighborhood and existing protected bike lanes, working closely with WeGo on transit priority needs		X		NDOT`	WeGo
79	Create Complete Networks	**10th Ave N Mobility Lane**	10th Ave N	Monroe St	Herman St	Implement a bike boulevard connection to the future greenway		X		NDOT`	Parks
80	Create Complete Networks	**10th Circle N / 10th Ave Mobility Lane**	10th Circle N / 10th Ave N	James Robertson Pkwy	Commerce St	Install mobility lanes to connect to existing and future greenways		X		NDOT`	Parks
81	Create Complete Networks	**10th Ave S Mobility Lane**	10th Ave S	Demonbreun St	8th Ave S	Implement a bike boulevard on lower-volume sections with mobility lanes where space allows			X	NDOT`	
82	Create Complete Networks	**Van Buren St Mobility Lane**	Van Buren St	3rd Ave N	Cumberland River Greenway	Install mobility lanes to connect 2nd Ave N / 3rd Ave N couplet with existing and future greenways		X		NDOT`	Parks
83	Create Complete Networks	**Gay St Mobility Lane**	Gay St	3rd Ave N	1st Ave N	Install mobility lanes to connect 1st Ave N facility to 2nd Ave N / 3rd Ave N couplet		X		NDOT`	
84	Create Complete Networks	**Division St / Ash St / Middleton St Mobility Lane**	Division St / Ash St / Middleton St	4th Ave S	Cumberland River Greenway & Downtown-Rolling Mill Hill Greenway	Install combination of bike boulevard treatments, shared-use paths, and mobility lanes to connect to greenways		X		NDOT`	Parks
85	Create Complete Networks	**Lindsley Ave Mobility Lane**	Lindsley Ave	2nd Ave S	Wharf Park / Downtown-Rolling Mill Hill Greenway	Install mobility lanes to connect existing facilities to greenway			X	NDOT`	Parks
86	Create Complete Networks	**Korean Veterans Blvd Mobility Lane**	Korean Veterans Blvd / Shelby Ave	8th Ave S	S 5th St	Upgrade existing bike facilities to mobility lane standards in conjunction with development of the East Bank Transit Priority Corridor			X	NDOT`	TDOT, WeGo

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87	Create Complete Networks	**City Central Greenway System Plan**	n/a	n/a	n/a	Implement the City Central Greenway System Plan, a network of paved, off-street, shared-use trails and sidewalk-adjacent facilities	X	X	X	Parks	NDOT, WeGo, TDOT
88	Create Complete Networks	**Pedestrian Linkages**	Gulch, Waterfront Connections	n/a	n/a	Work with private property owners and developers to increase the number of elevators, stairways, ramps, and "cut-throughs" in Downtown, prioritizing the Gulch and 2nd Ave N / 1st Ave N connectivity to the waterfront	X	X	X	NDOT`	Metro Planning, TDOT, WeGo
89	Create Complete Networks	**Major Barrier Crossings**	n/a	n/a	n/a	Improve freeway underpasses, overpasses, railroad crossings, and existing bridges with better railings, safer crossings, enhanced lighting, and art	X	X	X	NDOT	TDOT, Railroads
90	Create Complete Networks	**Enhanced Pedestrian Space**	Entertainment District	n/a	n/a	Widen sidewalks, expand curb bulbs at intersections, and use flex lane space to provide more room for pedestrians in high-volume areas, including near venues	X	X	X	NDOT`	Downtown Partnership
91	Create Complete Networks	**Micromobility Parking Corrals**	Entertainment District	n/a	n/a	Install dedicated on-street parking corrals for micromobility devices to improve safety on sidewalks, daylight intersections, and ensure better organization of the right-of-way	X	X		NDOT`	Downtown Partnership
92	Create Complete Networks	**ADA Facilities**	n/a	n/a	n/a	Improve access for people with disabilities throughout Downtown by installing curb ramps, integrating audible and tactile signals into planned upgrades, and repairing sidewalks; prioritize improvements near WeGo bus stops and mobility centers	X	X	X	NDOT`	WeGo, TDOT
93	Maximize the Curb	**Flexible Curb Regulations**	Downtown Core	Dr. Martin Luther King, Jr. Blvd & Rosa L Parks Blvd / 8th Ave S	Korean Veterans Blvd & 1st Ave N / 1st Ave S	Implement five types of flexible curb regulations to expand space for loading, deliveries, and service vehicles; support passenger pick-up and drop-off activities; and provide additional right-of-way for peak-hour demands	X			NDOT	WeGo, Metro Planning, TDOT
94	Maximize the Curb	**Commercial Loading & Service Vehicle Reservation Program**	Downtown Core	Dr. Martin Luther King, Jr. Blvd & Rosa L Parks Blvd / 8th Ave S	Korean Veterans Blvd & 1st Ave N / 1st Ave S	Develop an expanded permit and reservation program to increase the availability of commercial loading zones for delivery and service vehicles and musicians	X			NDOT	
95	Maximize the Curb	**Smart Loading Zone Program**	Downtown Core	Dr. Martin Luther King, Jr. Blvd & Rosa L Parks Blvd / 8th Ave S	Korean Veterans Blvd & 1st Ave N / 1st Ave S	Pilot a Smart Loading Zone Program to expand delivery zone management, data collection, and enforcement activities	X			NDOT	
96	Maximize the Curb	**Centralized Delivery Program**	Downtown Core	Dr. Martin Luther King, Jr. Blvd & Rosa L Parks Blvd / 8th Ave S	Korean Veterans Blvd & 1st Ave N / 1st Ave S	Complete a feasibility study of a centralized delivery program that would consolidate package deliveries and use microhubs to manage distribution		X		NDOT	
97	Maximize the Curb	**Taxi & Ridehail Management Program**	Entertainment District	n/a	n/a	Develop an integrated approach to taxi and ridehail vehicle management, exploring strategies such as permits for operation in high-traffic areas, expanded geofencing for pick-up and drop-off zones, and additional fees for transits that begin or end Downtown during peak hours		X		NDOT	
98	Maximize the Curb	**Valet Zone Permit Review**	n/a	n/a	n/a	Review all valet zone regulations and permits, establishing appropriate time limits for permits, consolidating valet zones, and ensuring effective management and enforcement	X			NDOT	
99	Maximize the Curb	**Zoning Code Update**	n/a	n/a	n/a	Review and update the Zoning Code to better integrate curb use guidelines with land use guidelines, especially in fast-growing areas		X		Metro Planning	NDOT
100	Maximize the Curb	**Curb Data Collection & Management Program**	n/a	n/a	n/a	Streamline and digitize curbside regulations; regularly collect, maintain, and share curb asset data; advance the permitting system and procedural processes to support more flexible curb uses; and collect and analyze curb activity data to inform decisions	X			NDOT	
101	Maximize the Curb	**Curb Enforcement & Compliance Program**	n/a	n/a	n/a	Establish an Enforcement and Compliance Program to leverage data and enhance enforcement of curb regulations, including increasing the number of staff in the parking enforcement division, procuring automated parking enforcement technology, and monitoring data	X			NDOT	Metro Nashville Police Department
102	Maximize the Curb	**Electric Mobility Program**	n/a	n/a	n/a	Deploy public charging infrastructure throughout Downtown, both in the right-of-way and in garages, to promote equitable electric mobility		X		NDOT	Metro Planning
103	Maximize the Curb	**Autonomous Mobility Program**	n/a	n/a	n/a	Evaluate curb policies and tools to prepare for automated mobility services, develop strategy for autonomous taxi and delivery services, and create and maintain digital policy tools		X		NDOT	

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