

CHAPMAN HIGHWAY IMPLEMENTATION PLAN

FINAL REPORT

AUGUST 2019



ACKNOWLEDGMENTS

STEERING COMMITTEE

City of Knoxville
Knoxville-Knox County Planning
Knoxville Regional Transportation Planning Organization
Tennessee Department of Transportation
Knoxville Area Transit
Knox County
Knoxville Urban Wilderness

STAKEHOLDERS

Neighborhood Associations and
Community Groups from South Knoxville
South Knoxville Neighborhood & Business Coalition
South Knoxville Alliance
The Aslan Foundation

CONSULTANT TEAM

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TABLE OF CONTENTS

INTRODUCTION.....	1
Project Purpose and Need.....	1
Timeline.....	2
Key Stakeholders/Public Involvement.....	4
INVENTORY AND DISCOVERY.....	6
Data Collection and Existing Conditions	6
Public Outreach	14
EXPLORING CONCEPTS	19
Mobility Needs Assessment	19
Proposed Typical Section	19
List of Projects	22
Prioritization Criteria	25
Public Outreach	26
PROJECT PRIORITIZATION.....	30
Prioritization Process	30
Identification of Program/Strategies	31
CONCLUSION.....	39



Throughout the report, look for this icon to point you to additional information that has been included in the appendix.

INTRODUCTION

PROJECT PURPOSE AND NEED

Chapman Highway is a major arterial on the National Highway System (US Route 441/State Route 33/State Route 71) that is maintained by the Tennessee Department of Transportation (TDOT) and provides regional connectivity between Knox and Sevier Counties and directly connects the City of Knoxville with the Seymour community and the City of Sevierville. The City of Knoxville is taking an active role in managing, studying, and improving the road in conjunction with TDOT. In doing so, a need to improve safety and operational issues has been recognized along the corridor for all modes of transportation. Led by Knoxville-Knox County Planning and the City of Knoxville, the Chapman Highway Implementation Plan aims to identify and prioritize improvements along approximately six miles of Chapman Highway within the

limits of the City of Knoxville, between Blount Avenue and Mountain Grove Drive (just south of Governor John Sevier Highway).

This final report summarizes the development of the implementation plan that included data analysis, needs evaluation, collaboration with several government agencies, and recurring dialogue with stakeholders and the community. Several studies have been previously performed along Chapman Highway. This final report is not “just another study,” but instead its purpose is to function as an implementation plan that provides a prioritized list of implementable projects to transform and improve Chapman Highway.

Through the IMPROVE Act, TDOT has designated \$45 million for improvements along approximately 10 miles of Chapman Highway between Blount Avenue and Seymour. While TDOT will perform an evaluation of Chapman Highway for this IMPROVE Act project, one objective of this implementation plan is to inform TDOT and help guide how the \$45 million is spent along Chapman Highway. Knoxville-Knox County Planning and the City of Knoxville commissioned the implementation plan, with the intent of partnering with TDOT to identify capital projects that should be prioritized along Chapman Highway. However, the identified capital projects can also be implemented using other funding sources in addition to the \$45 million IMPROVE Act project.



TIMELINE

Preparing the implementation plan for Chapman Highway was a multistep, iterative process that involved three major phases:

1. Inventory and Discovery
2. Exploring Concepts
3. Project Prioritization

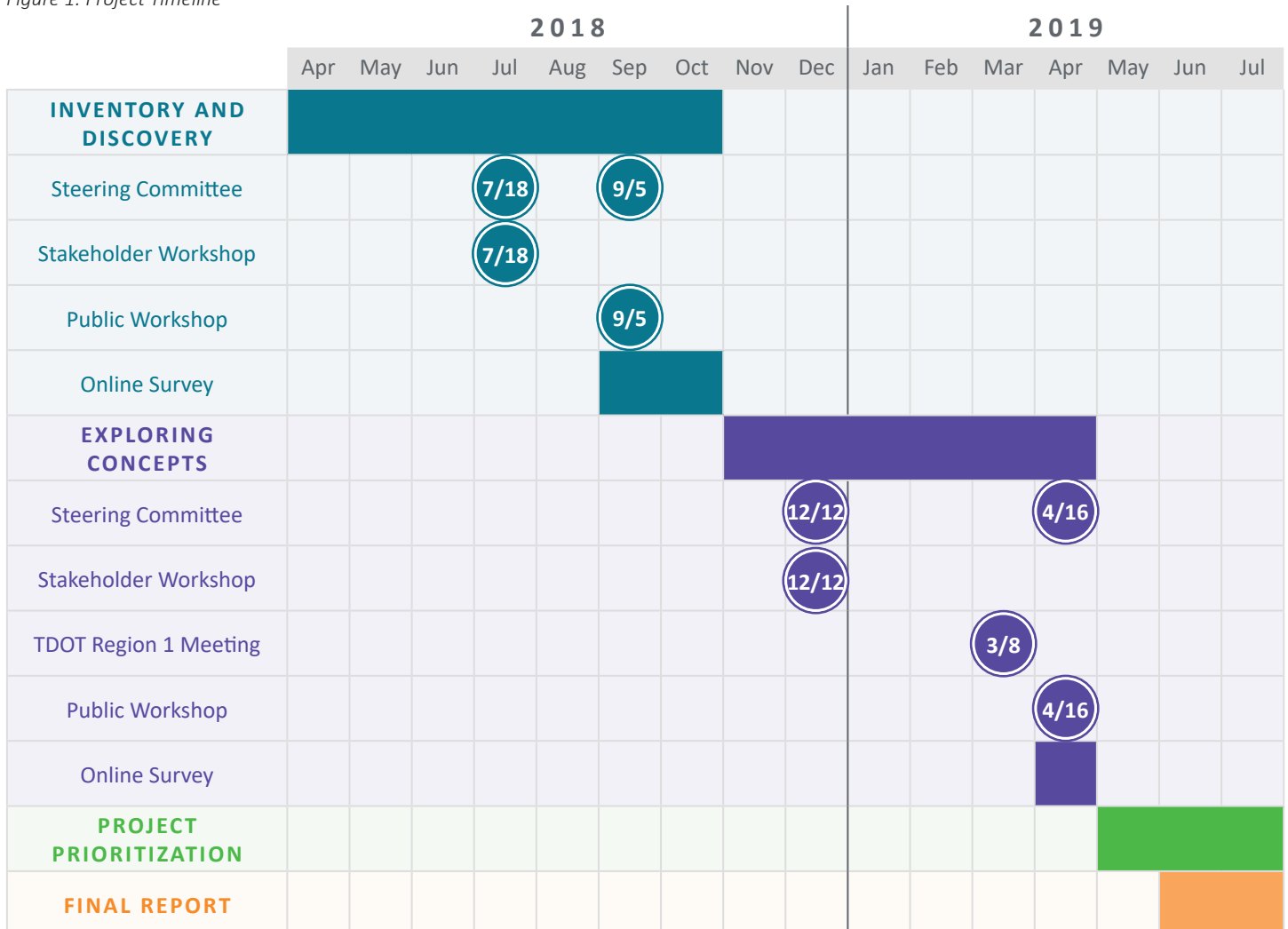
The *Inventory and Discovery* phase began by collecting data from previously-performed studies, existing roadway and intersection geometry, traffic data, and crash data. Additionally, the steering committee, key stakeholders, and the community were surveyed to determine priorities, potential areas of improvement, and preferences along the corridor.

The second phase was *Exploring Concepts*. To address the needs and wants identified in the previous phase, potential improvements were developed, including a mobility needs assessment, proposed typical sections, prioritization criteria, and a list of projects. This material was again brought to the steering committee, key stakeholders, and the community for comment and feedback.

Upon finalizing the proposed typical sections and list of projects, the *Project Prioritization* phase prioritized the projects along Chapman Highway based on need. To promote future implementation, cost estimates and potential funding opportunities were identified for each prioritized project.

The project timeline is shown in Figure 1.

Figure 1: Project Timeline



During the *Inventory and Discovery* phase, Chapman Highway was divided into five segments based on existing roadway geometry and land use. The five segments are as follows and shown in Figure 2. Additionally, the number of traffic signals and the number of access locations in each segment are shown in Figure 3.

- ▶ **Segment 1:** Blount Avenue to Fronda Lane/Overbrook Drive
- ▶ **Segment 2:** Fronda Lane/Overbrook Drive to Lakeview Drive
- ▶ **Segment 3:** Lakeview Drive to Chapman Ford Crossing (between Meridian Road and Ellis Road)
- ▶ **Segment 4:** Chapman Ford Crossing to Nixon Road
- ▶ **Segment 5:** Nixon Road to Mountain Grove Drive

Figure 2: Chapman Highway Segment Map

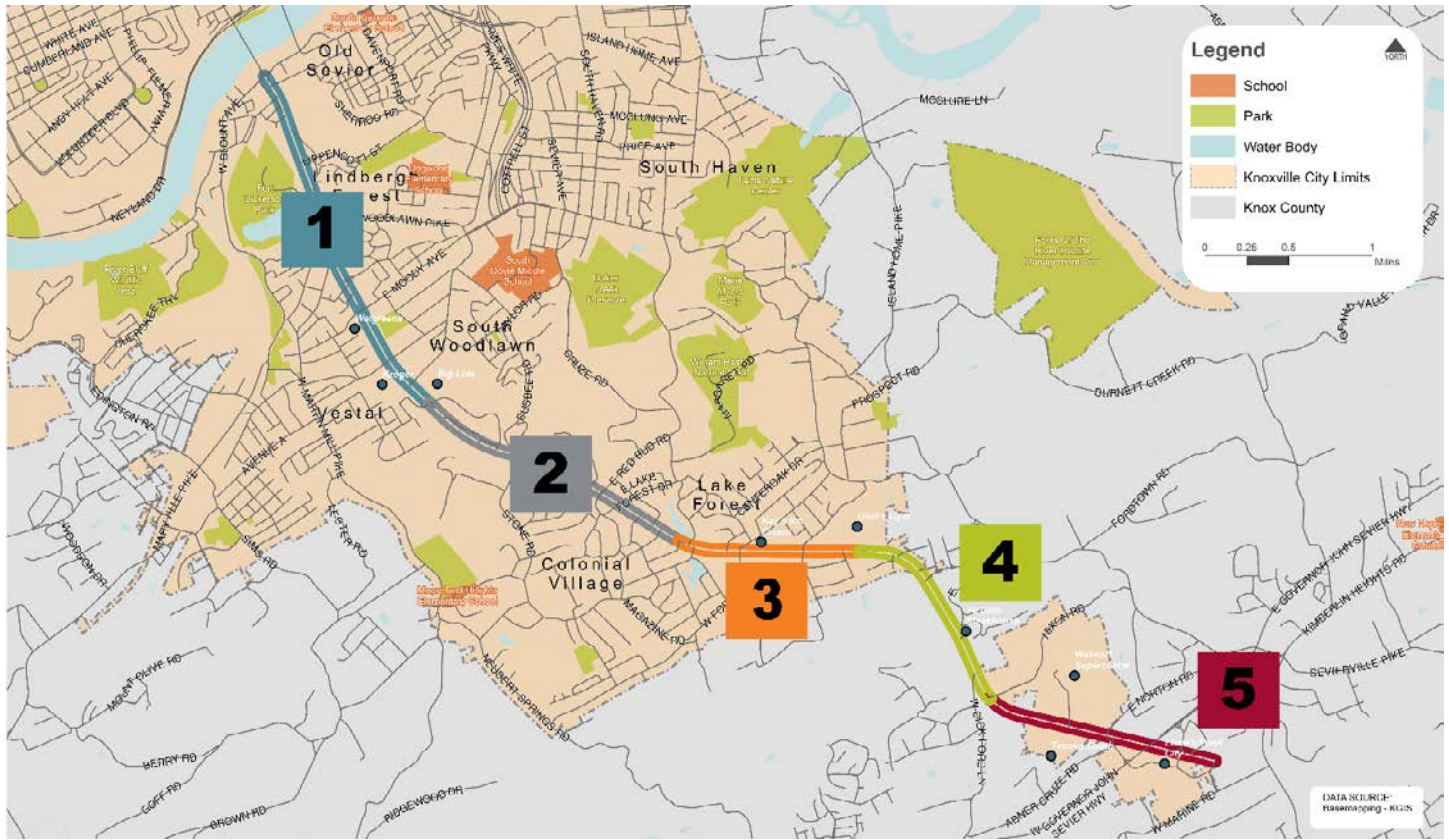
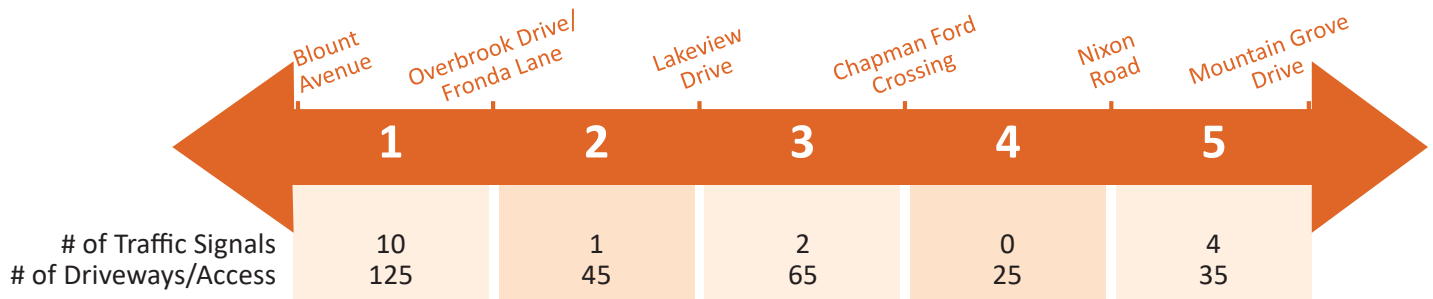


Figure 3: Traffic Signals and Access Locations by Segment



KEY STAKEHOLDERS/PUBLIC INVOLVEMENT

The process of developing the Chapman Highway Implementation Plan was collaborative and iterative. The Implementation Plan sought to satisfy the needs of critical user groups while also adhering to City and TDOT design requirements. The preparation of this implementation plan included recurring participation from government agencies, community groups, and the general public within the surrounding community.

Steering Committee

A Steering Committee was created to guide and direct the process, while assuring the goals of individual entities were maintained. Members included Knoxville-Knox County Planning, City of Knoxville, TDOT, Knox County, and Knoxville Area Transit. The Steering Committee met on four separate occasions—July 2018, September 2018, December 2018, and April 2019.

Stakeholders

Several representatives from neighborhoods and business organizations within the South Knoxville area were identified and selected for inclusion in a stakeholder group. Two stakeholder workshops were held in July 2018 and December 2018. Groups invited:

- ▶ Colonial Village Neighborhood Association
- ▶ Island Home Park Neighborhood Association
- ▶ Lake Forest Neighborhood Association
- ▶ Lake Glen Lane Community Neighborhood Watch
- ▶ Lindbergh Forest Neighborhood Association
- ▶ Montgomery Village Resident Association
- ▶ Old Sevier Community Group
- ▶ South Haven Neighborhood Association
- ▶ South Knoxville Neighborhood & Business Coalition
- ▶ South Woodlawn Neighborhood Association
- ▶ Southside Waterfront Neighborhood
- ▶ Vestal Community Organization
- ▶ View Park Neighborhood Watch
- ▶ South Knoxville Alliance
- ▶ City of Knoxville Parks & Recreation/Urban Wilderness
- ▶ The Aslan Foundation

Community Workshops

To gather a broad range of perspectives, feedback was requested from the public during two separate community workshops. Feedback was obtained from a diverse user group of Chapman Highway, including residents, commuters, and workers who utilize the corridor via private motor vehicles, bicycles, pedestrian facilities, and transit. The two community workshops were held in September 2018 and April 2019.

Online Surveys

Similar to the two community workshops, online surveys were launched and facilitated to obtain feedback from users. The MetroQuest public involvement software was used for two online surveys that launched at each of the community workshops.

Steering Committee Meetings
4



2 Stakeholder Workshops



2 Community Workshops



Over 280 attendees



2 Rounds of Online Surveys

Over 500 written comments

INVENTORY AND DISCOVERY

DATA COLLECTION AND EXISTING CONDITIONS

Origin-Destination Data

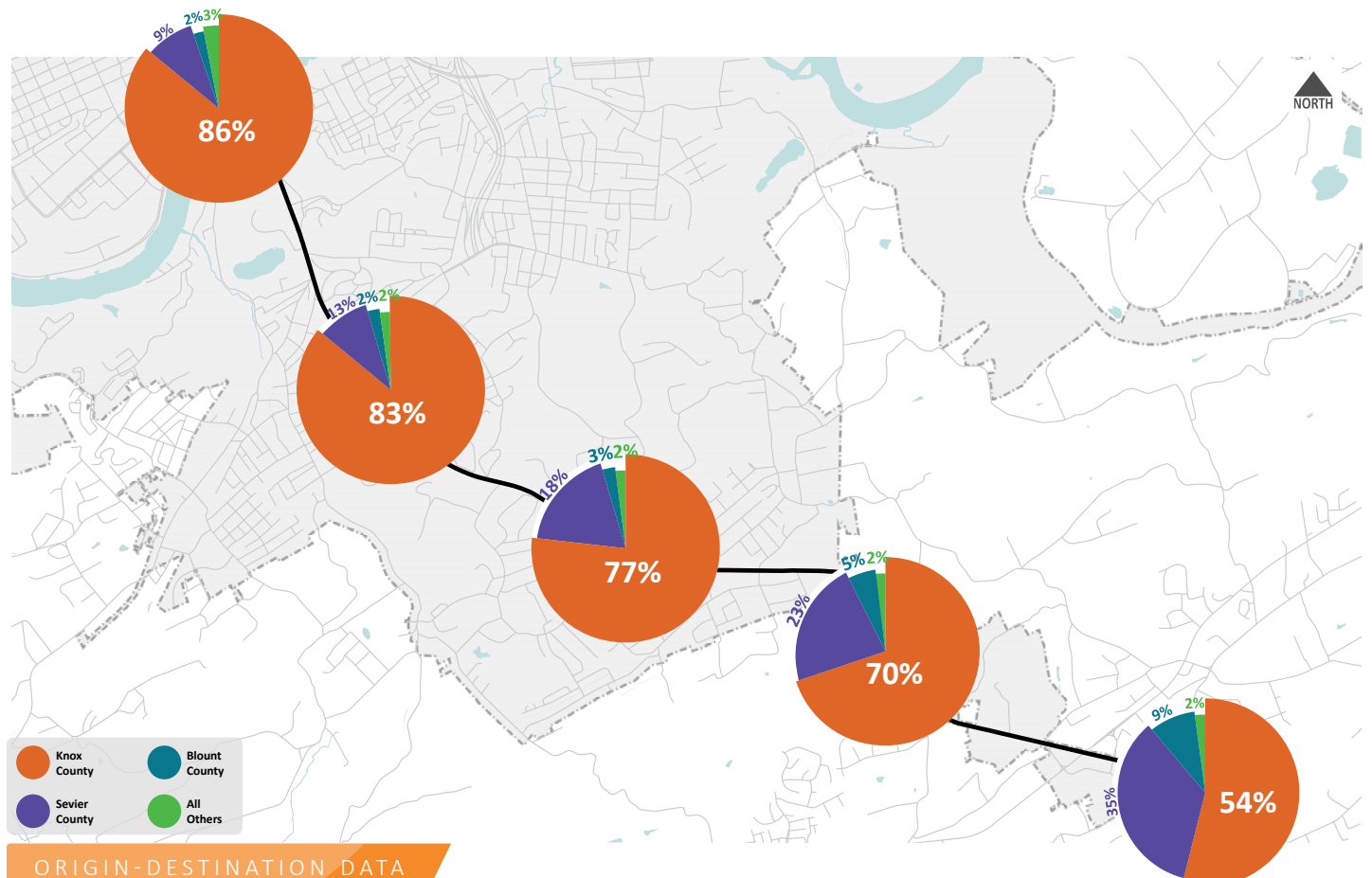


Origin-destination data was obtained using *Streetlight Insight*. *Streetlight Insight* uses anonymous location data from mobile devices to analyze and track vehicular movement. Specifically, *Streetlight Insight* was used to conduct an origin-destination analysis by tracking vehicular movement between “zones.” A “zone” is a geographically defined area.

Using *Streetlight Insight* Location-Based Services (LBS), analysis was performed to understand the trips between unique zones to a standard geography – 2010 Census Traffic Analysis Zone (TAZs). The intent of this analysis was to understand trip origins and trip destinations along Chapman Highway between several counties including Knox County, Sevier County, and Blount County. This information provided insight on the proportion of vehicles from each county that travel along Chapman Highway, and how the proportion fluctuates at different locations along the corridor.

As shown in the figure below, five locations along Chapman Highway were analyzed. At each of these locations, the distributions of vehicles traveling to or from the specified county are shown. The origin-destination data indicates the southern portion of Chapman Highway is utilized by multiple neighboring counties, while the northern portion is predominately used by Knox County, as shown in Figure 4.

Figure 4: Origin-Destination Data



Existing Conditions Report

A baseline review of Chapman Highway was performed to obtain information regarding previous efforts along the corridor as well as existing conditions. This baseline included a review of the following information.

Ongoing Initiatives

Current projects or initiatives along Chapman Highway such as Recode Knoxville, the Chapman Highway Advanced Traffic Management System (ATMS), the Blount Avenue Streetscape, and the Kern's Bakery redevelopment were considered to help understand the current conditions of the area.

Previous Planning Documents

The studies and plans listed here were reviewed for their relevance to Chapman Highway. Since this corridor has been studied through many previous planning documents, the Chapman Highway Implementation Plan had a strong basis from which to develop recommendations and priorities.

Chapman Highway Corridor Study

Knoxville-Knox County Planning – September 2006

KAT Transit Development Plan Corridor Analysis

Knoxville-Knox County Planning – October 2009

2011 South City Sector Plan

Knoxville-Knox County Planning – August 2011

Knoxville Regional Transit Corridor Study

Knoxville-Knox County Planning – March 2013

Mobility Plan 2040

Knoxville-Knox County Planning – April 2017

South Waterfront Vision Plan

City of Knoxville – June 2006

South Waterfront Action Plan

City of Knoxville – June 2006

South Waterfront Traffic Study

City of Knoxville – January 2007

2015 Bicycle Facilities Plan

City of Knoxville – February 2015

Bicycle Facilities Presentation

City of Knoxville – 2016

Knoxville Bike Design Report

City of Knoxville – 2016

Blount Avenue Streetscape Improvements

City of Knoxville – October 2016

Chapman Highway Corridor Improvement Study

TDOT – November 2007

SR 71 Re-Evaluation Candidate Project Report

TDOT – 2012

Plan East Tennessee Playbook

PlanET, a regional partnership of East Tennessee communities – June 2014

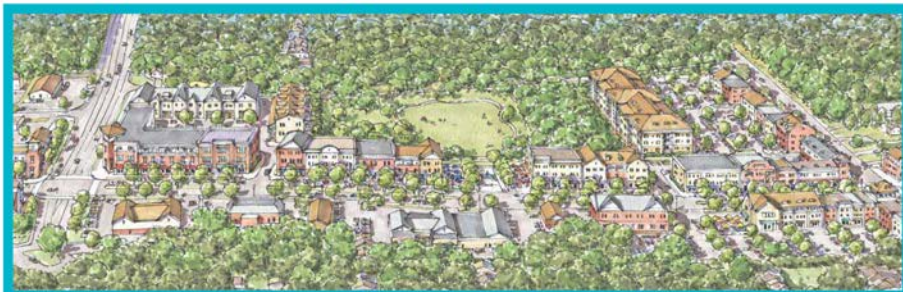
Riverwalk Traffic Impact Study

Private Development – December 2015

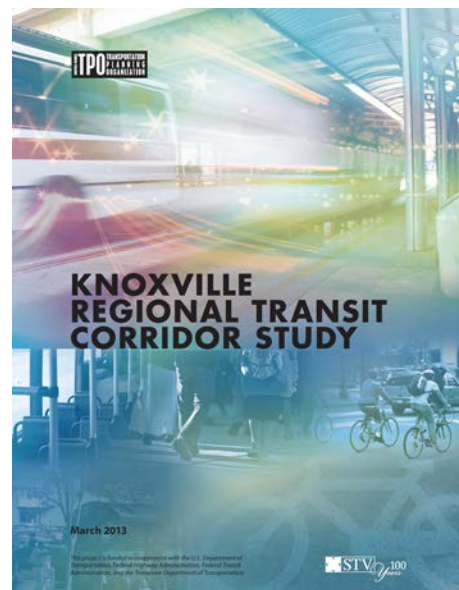
Southside Flats Traffic Impact Analysis Report

Private Development – September 2017

Chapman Highway Corridor Study



PREPARED BY THE KNOXVILLE • KNOX COUNTY METROPOLITAN PLANNING COMMISSION



Existing Facilities: Vehicular, Pedestrian, and Bicycle

Chapman Highway changes in character (such as sidewalks, turn lanes, land use, etc.) several times over the extents of the study area. In order to begin developing recommendations, it was important to break up the entire length of the corridor into five separate segments. This allowed a better understanding of the facilities available for automobiles, pedestrians, bicyclists, and transit users in each.

Segment 1 – Blount Avenue to Fronda Lane/Overbrook Drive

- ▶ Five-lane roadway with a center left-turn lane
 - Between Young High Pike and Fronda Lane/Overbrook Drive, the roadway is seven lanes wide due to auxiliary lanes and right-turn lanes.
- ▶ Continuous sidewalk along the inbound direction between Blount Avenue and Young High Pike
 - Some sidewalk is present on the outbound direction between Young High Pike and Fronda Lane/Overbrook Drive.

Segment 2 – Fronda Lane/Overbrook Drive to Lakeview Drive

- ▶ Four-lane undivided roadway
- ▶ No sidewalk

Segment 3 – Lakeview Drive to Chapman Ford Crossing (between Meridian Road and Ellis Road)

- ▶ Four-lane undivided roadway
 - Dedicated left-turn lanes are present at Colonial Drive, Lindy Drive, Meridian Road, and Chapman Ford Crossing.
- ▶ No sidewalk

Segment 4 – Chapman Ford Crossing to Nixon Road

- ▶ Four-lane undivided roadway
 - Dedicated left-turn lanes are present at Anderson Drive and West Dick Ford Lane.
- ▶ No sidewalk

Segment 5 – Nixon Road to Mountain Grove Drive

- ▶ Five-lane roadway with a center left-turn lane
- ▶ No sidewalk

Bicycle Facilities

There are no existing bicycle facilities along Chapman Highway; however, some roadways that intersect with Chapman Highway do have facilities present:

- ▶ Henley Street Bridge – bicycle lanes
- ▶ East Blount Avenue – buffered bicycle lanes (under construction)
- ▶ Sevier Avenue – buffered bicycle lanes
- ▶ East Moody Avenue – buffered bicycle lanes
- ▶ West Blount Avenue – sharrows

Existing Right-of-Way

The width of the roadway along Chapman Highway varies between 50 to 85 feet. Beyond the roadway itself, the right-of-way (ROW) along Chapman Highway varies between 65 and 290 feet. It is important to note that the ROW measurements were taken from Knoxville Knox County KUB Geographic Information System (KGIS) website and have not been field verified by a surveyor. Actual ROW along the corridor may differ from what is depicted by KGIS.

Transit

Knoxville Area Transit (KAT) currently provides four bus routes along Chapman Highway and throughout South Knoxville. They are Routes 40, 41, 44, and 45.

- ▶ Route 40 (South Knoxville) – Provides transit connection between Knoxville Station/Downtown, Island Home, Tennessee School for the Deaf, and Chapman Square.
- ▶ Route 41 (Chapman Highway) – Runs along Chapman Highway and provides a transit connection between Knoxville Station/Downtown, Chapman Square, South Knoxville Branch Library, Chapman Commons, Chapman Plaza, Tennova South, South Grove Shopping Center, and Walmart.
- ▶ Route 44 (University Park Apartments/303 Flats) – Provides a transit connection between the University of Tennessee, University Park, and 303 Flats.
- ▶ Route 45 (Vestal) – Provides a transit connection between Knoxville Station/Downtown, Montgomery Village, Mary Vestal Park, South Knoxville Library, and Chapman Square.

Posted Speed

The posted speed limit varies along Chapman Highway:

- ▶ 35 miles per hour (MPH) – north of Hawthorne Avenue
- ▶ 45 MPH – between Hawthorne Avenue and to the City limits near Majestic Grove Boulevard

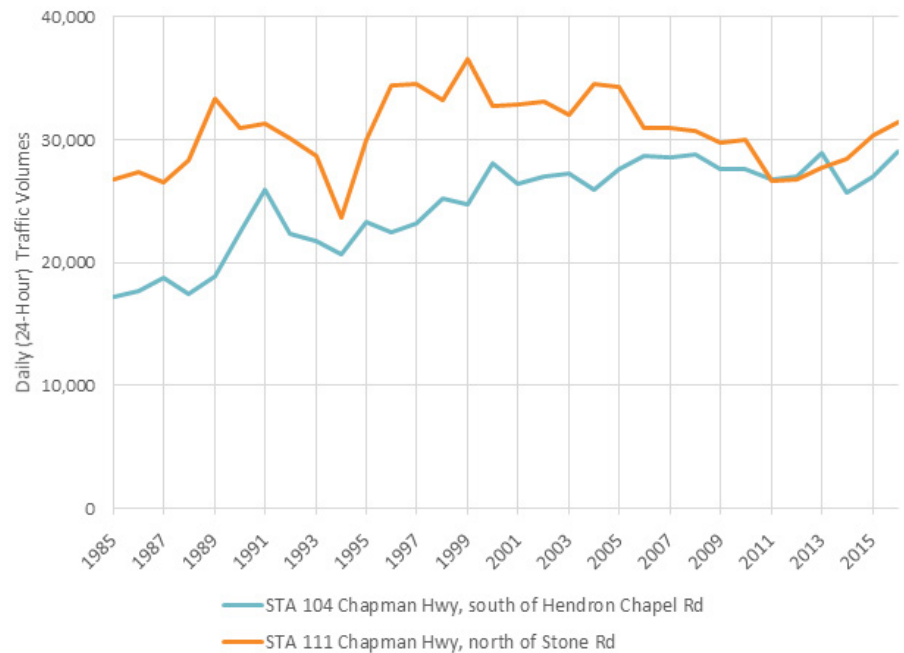
On May 20, 2019, the City of Knoxville implemented a speed reduction from 50 MPH to 45 MPH between Ellis Road and the city limits near Majestic Grove Boulevard. This encompasses Segment 4 and Segment 5 as identified in the Chapman Highway Implementation Plan.

Traffic Data

The following traffic data along Chapman Highway was obtained and evaluated to understand the traffic patterns along the corridor.

- ▶ Average Daily Traffic (ADT) volumes
 - 48-hour traffic counts collected in October 2018
- ▶ Intersection turning movement counts during morning (AM) and afternoon (PM) peak hours
 - Signalized intersections collected in August 2016
 - Unsignalized intersections collected in October 2018
 - Includes vehicles, bicycles, and pedestrian volumes
- ▶ Historical Average Annual Daily Traffic (AADT) volumes were obtained from TDOT for the past 30 years.
 - Obtained from TDOT for 1985 to 2016
 - Historical AADT is displayed in Figure 5

Figure 5: Historical AADT

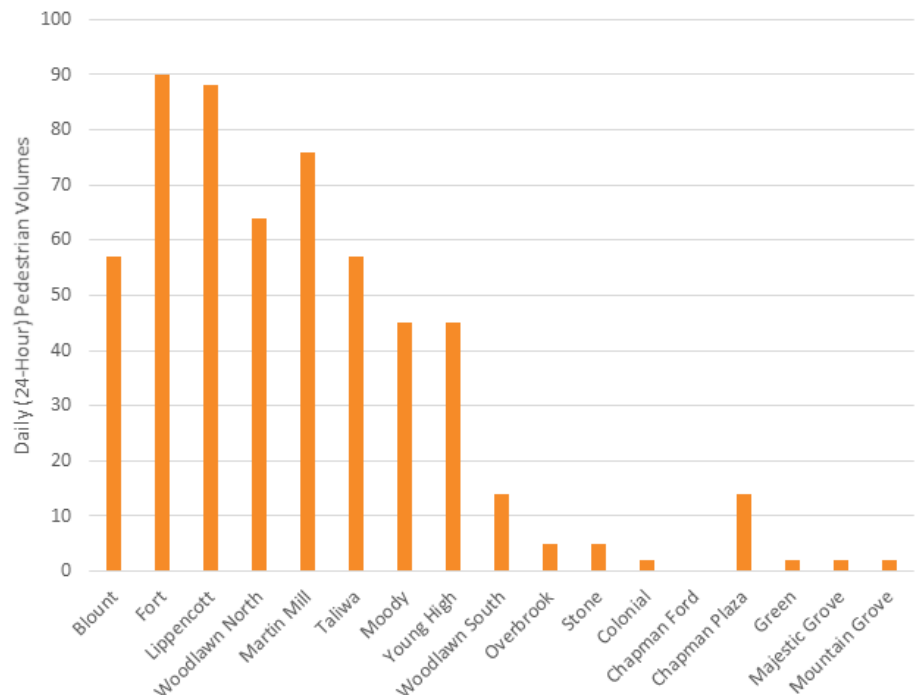


It is important to understand the historical traffic volumes along Chapman Highway, as the annual trends can be an indicator of future congestion issues. When viewed over a 30-year timeframe, the volumes along Chapman Highway do appear to grow. However, despite the continued growth and development along the corridor, traffic volumes have remained relatively stable over the past 10 years.

Pedestrian volumes along Chapman Highway significantly decrease south of Young High Pike, as illustrated in Figure 6. This trend is reflective of the pedestrian infrastructure currently present:

- Sidewalk facilities run along Chapman Highway from Blount Avenue to Young High Pike.
- Four bus routes (Route 40, 41, 44, and 45) run along or adjacent to Chapman Highway north of Young High Pike, while only one route runs to the south (Route 41).

Figure 6: Pedestrian Volumes along Chapman Highway



Capacity Analysis

A capacity analysis was performed for the 17 signalized intersections and six unsignalized intersections to understand traffic congestion during the morning and afternoon peak hours. These intersections were analyzed with 2018 traffic volumes and forecasted traffic volumes in 20 years. This capacity analysis identified traffic congestion for these intersections based on existing vehicle demand, as well as the anticipated future vehicle demand with 20 years of traffic growth. This analysis also identified any need to mitigate congestion issues at these intersections.

Through this analysis, it was identified that the signalized intersections of Blount Avenue, Fort Dickerson Road/Woodlawn Pike (north), and Majestic Grove Boulevard incurred the highest delay under existing year 2018 AM conditions. Under existing year 2018 PM conditions the signalized intersections of Blount Avenue, Moody Avenue, and Young High Pike incurred the highest delay. The unsignalized intersection of Red Bud Road incurred the highest side street delay in both the 2018 AM and PM peak hours.

Current and anticipated congestion issues were utilized to identify potential projects that could mitigate these issues.

The figures on the following page display the vehicle delay at the 17 signalized intersections. Figure 7 illustrates the Existing 2018, Forecasted 2020, and Forecasted 2040 levels of delay during the AM peak hour. Figure 8 illustrates the levels of delay during the PM peak hour. The anticipated delay shown correlates to the anticipated Level of Service (LOS). An intersection with a low level of delay would be expected to operate at a higher LOS, such as LOS A, B, or C. An intersection with a high level of delay would be expected to operate at a LOS D or LOS F.



Figure 7: Traffic Delay at Chapman Highway Traffic Signals - AM Peak Hour

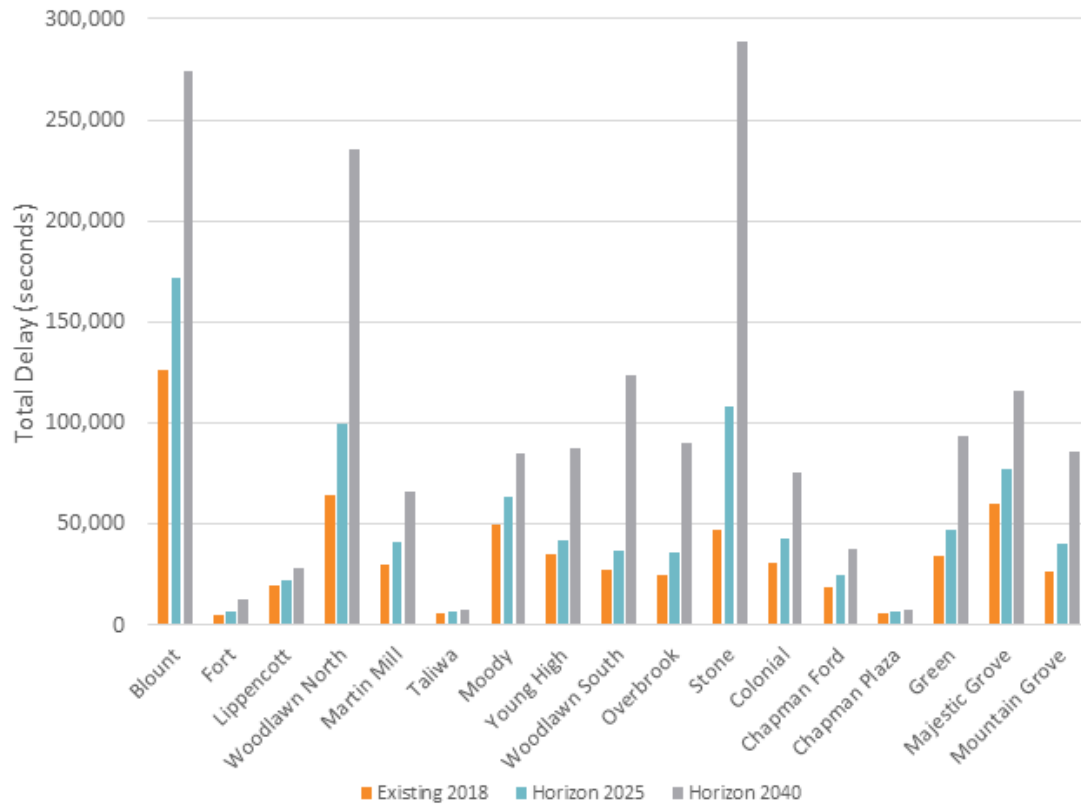
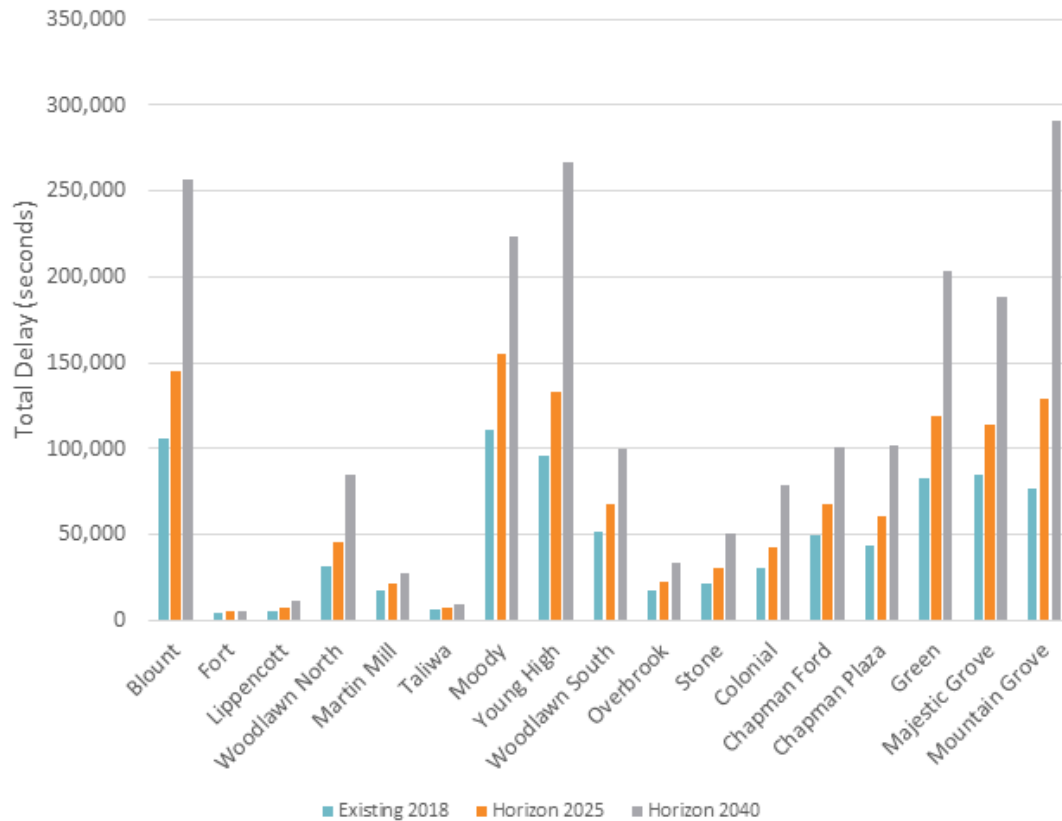


Figure 8: Traffic Delay at Chapman Highway Traffic Signals - PM Peak Hour



Crash Data



Crash data was reviewed along Chapman Highway between Blount Avenue and Mountain Grove Drive. Crash data was obtained from TDOT's ETRIMS database for a 3-year period of January 1, 2016 through December 31, 2018. Over the course of three years, 927 crashes occurred throughout the Chapman Highway corridor. Table 1 summarizes the 3-year crash total categorized by crash severity. Figure 9 summarizes the number of crashes that occurred in each segment of Chapman Highway.

In addition to obtaining the crash data along Chapman Highway from TDOT, statewide average crash rates were also obtained from TDOT to determine the average crash rate of State Routes throughout Tennessee that are similar to Chapman Highway. The crash data was used to calculate the crash rate, both at intersections and along segments of Chapman Highway. These crash rates were compared to the statewide averages of other State Routes throughout Tennessee that are similar to Chapman Highway. The statewide average crash rate is based on the typical section of the roadway. Chapman Highway changes from a five-lane roadway to a four-lane roadway near Stone Road, therefore the statewide average crash rate changes as well.

The crash rate at signalized intersections as well as the statewide average is displayed in Figure 10. The graph indicates that six intersections – Moody Avenue, Young High Pike, Woodlawn Pike South, Stone Road, Green Road, and Majestic Grove Boulevard – all have crash rates that are higher than the statewide average. This means these signalized intersections experience a higher rate of crashes compared to other signalized intersections along a State Route throughout Tennessee. In contrast, the remaining 11 signalized intersections have crash rates that are lower than the statewide average – meaning they experience a lower rate of crashes comparatively.

Table 1: Chapman Highway Crash Data

Type of Crash	Number of Crashes			
	2016	2017	2018	Total
Property Damage Only	241	206	236	683
Injury	80	74	85	239
Fatal	0	1	4	5
TOTAL	321	281	325	927

Figure 9: Crash Data by Segment

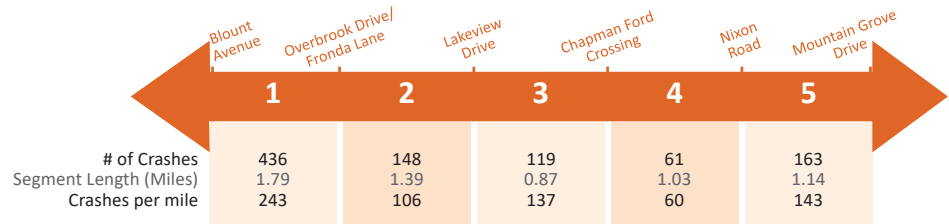
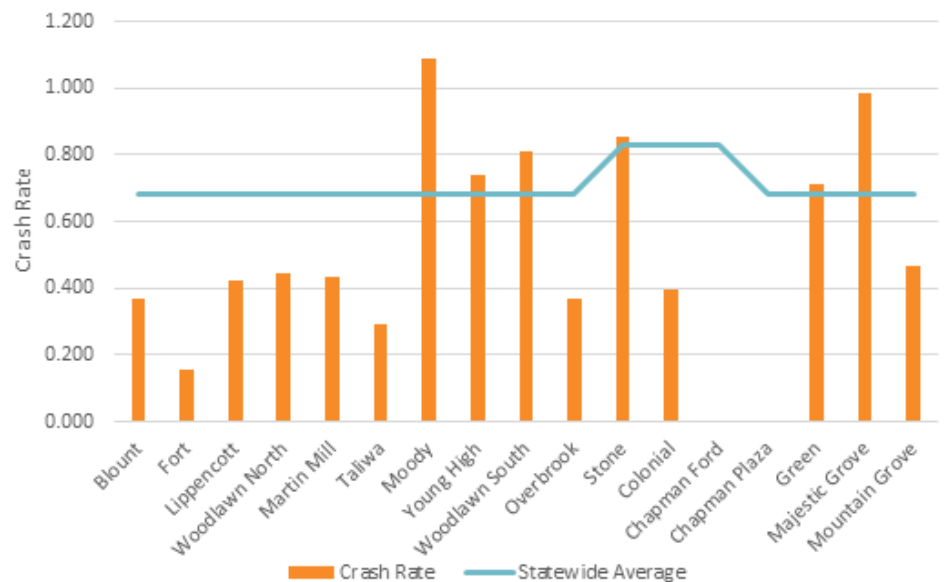


Figure 10: Crash Rate at Signalized Intersections



Crash rates are expressed in crashes per 1 million entering vehicles.

The crash rate of the segments between the signalized intersections as well as the corresponding statewide average is displayed in Figure 11. The graph indicates that five segments all have crash rates higher than the statewide average.

The crash rate at unsignalized intersections as well as the statewide average is displayed in Figure 12. The graph indicates that East Martin Mill Pike, Red Bud Road, Lake Forest Drive, and Ford Valley Road all have crash rates higher than the statewide average.

Additionally, throughout the 3-year period there were 9 crashes involving non-motorists: 1 bicyclist crash and 8 pedestrian crashes.

The evaluation of crash data and crash rates along Chapman Highway served a significant role in the determination of projects and prioritization. In addition to the number of crashes, the crash severity (considering injuries and fatalities) also served a significant role when prioritizing transportation improvements. As shown on page 25, safety and the consideration of crash history was the most important and highest contributing factor for transportation projects along Chapman Highway to be prioritized.

Figure 11: Crash Rates between Signalized Intersections

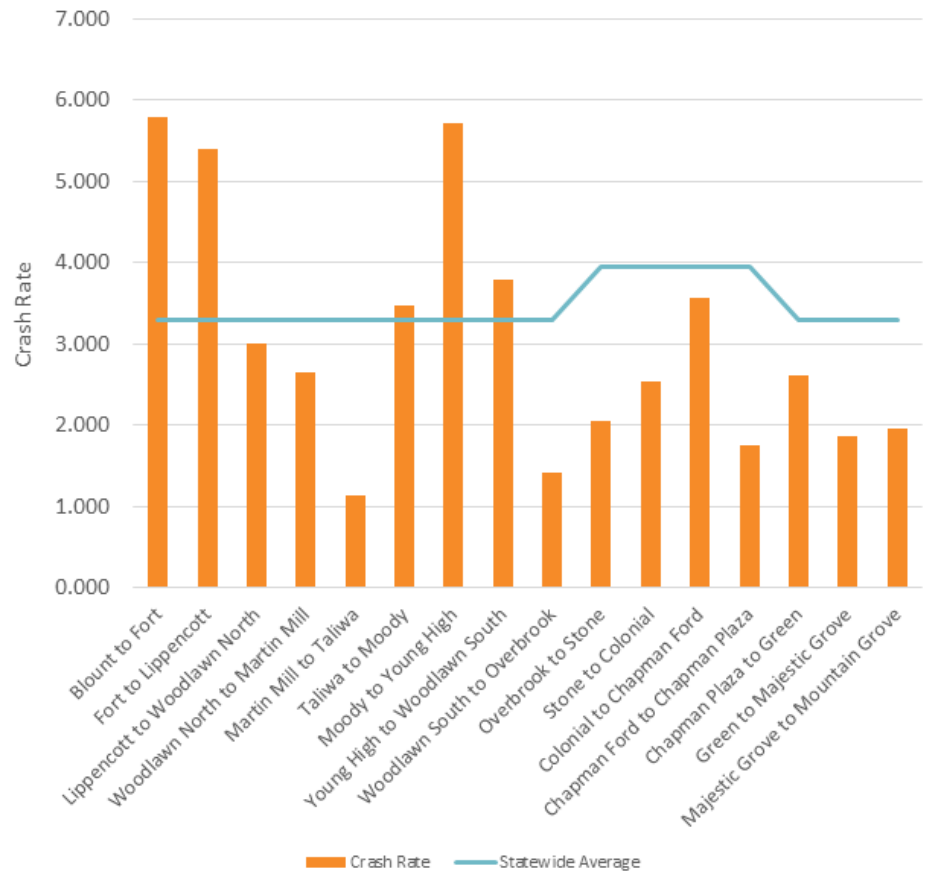
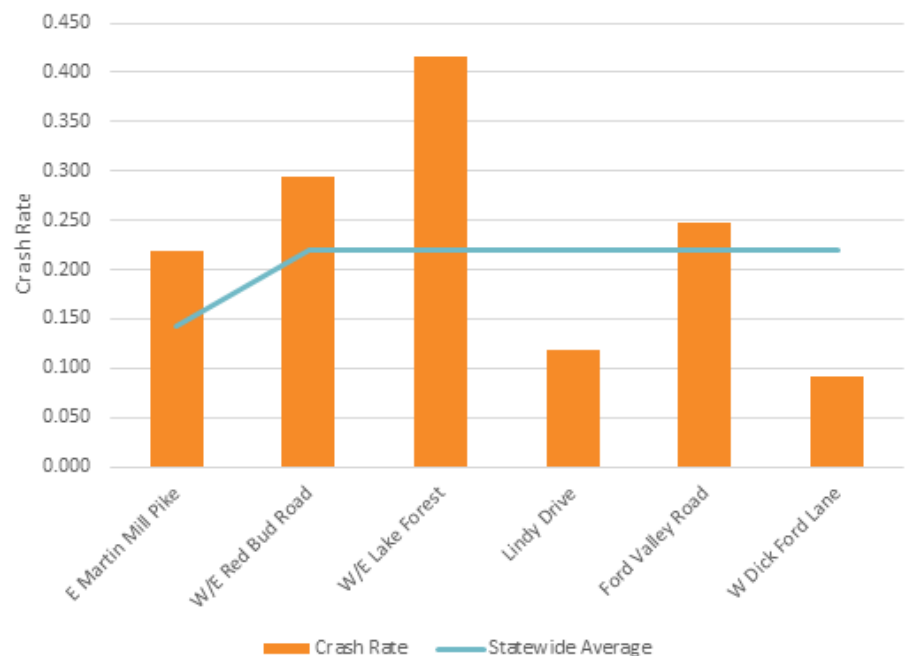


Figure 12: Crash Rate at Unsignalized Intersections



Crash rates are expressed in crashes per 1 million entering vehicles.

PUBLIC OUTREACH – INVENTORY AND DISCOVERY PHASE

Steering Committee and Stakeholder Kickoff — July 18, 2018



The first public outreach meetings during the Inventory and Discovery phase sought to provide background information on Chapman Highway and gain initial information about facility preferences. On July 18, 2018, a Steering Committee meeting and a stakeholder workshop were facilitated.

Steering Committee Meeting

Twenty-two people attended the meeting. The steering committee consisted of government agencies and regulatory groups, detailed on page 4. The meeting was started with a review of existing conditions, including traffic data, crash data, previous plans, as well as current and future TDOT efforts. For each segment, Steering Committee members were asked to identify the highest priority along Chapman Highway. For the segment priority, participants were asked to choose one of the following:

- ▶ Beautification
- ▶ Active Transportation
- ▶ Economic Vitality
- ▶ Safety
- ▶ Auto Mobility

The results are illustrated in Figure 13.

Safety was consistently selected as the highest priority along Chapman Highway, leading to two conclusions. First, safety is paramount in any potential improvement to the transportation system – which was less of a revelation and more of a reminder. Second, when asking participants to prioritize components of the transportation system, and one of those components is safety, safety will often be selected. While this is important to reiterate the importance of safety, the public's secondary and tertiary priorities can become harder to determine since they will be overshadowed by the primary priority of safety. As a result, the decision

was made to omit safety as a prioritization option on future public outreach activities, with the understanding that any potential improvement to the transportation system will consider safety the highest priority.

Stakeholder Workshop

Twenty people attended the stakeholder workshop. The stakeholder workshop included representatives from neighborhoods and business organizations, detailed on page 4. The format of the stakeholder workshop was similar to the Steering Committee meeting. The content and feedback

opportunities were the same, but with a new audience providing different perspectives. During the segment priority exercise, the stakeholder group prioritized economic vitality and safety. The results are displayed in Figure 14.

Additionally, stakeholders were asked to comment on an aerial image of Chapman Highway to give feedback on perceived opportunities and constraints along the corridor. Responses included multimodal connections to Chapman Highway, reducing the number of vehicle access locations, reducing speeds, and improving safety.

Figure 13: Steering Committee Segment Priorities

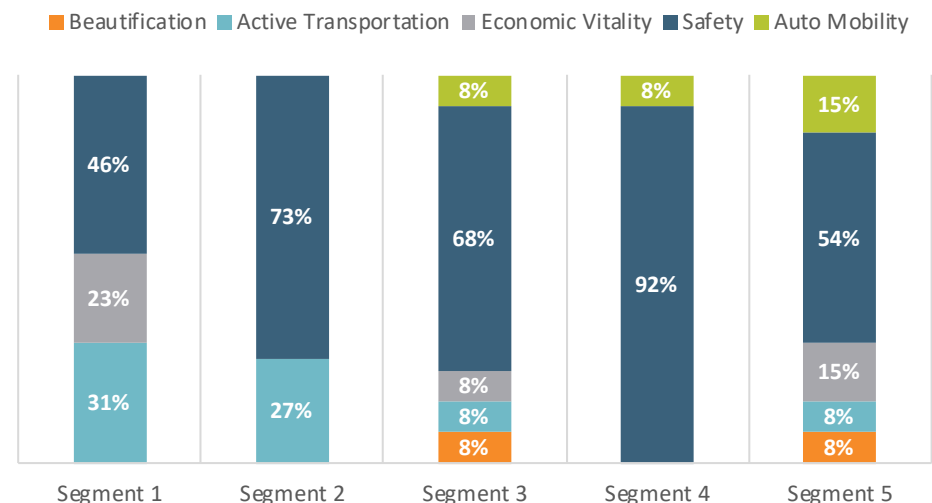
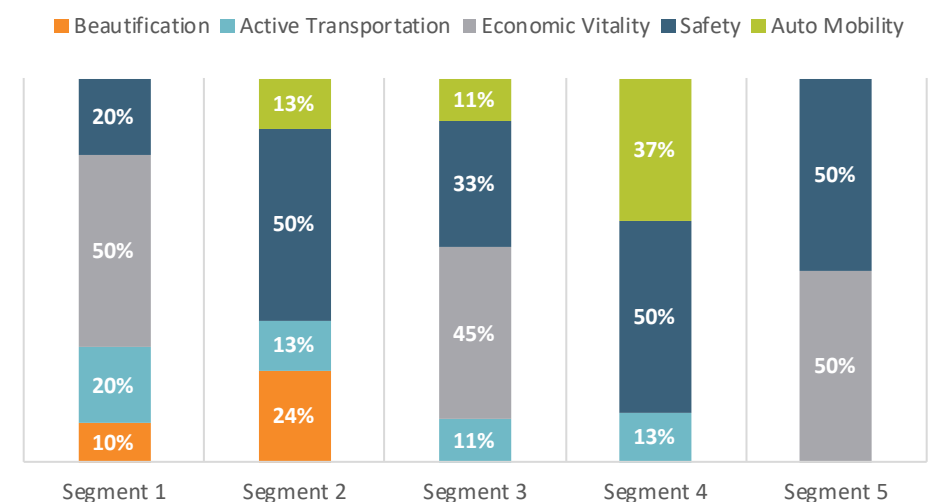


Figure 14: Stakeholder Segment Priorities





Wednesday, September 5, 2018

5:30 – 7:00 pm

South Doyle Middle School

3900 Decatur Drive | In the library

Steering Committee and Community Outreach — September 5, 2018

The second set of public outreach meetings provided an opportunity for the community to learn about the historic traffic and crash data along Chapman Highway, highlight problem areas, and provide feedback on their preferences for corridor improvements. On September 5, 2018, a Steering Committee meeting and a community workshop were held.

Steering Committee

Twenty-three people attended. The steering committee consisted of government agencies and regulatory groups, detailed on page 4. The Steering Committee was presented with a summary of the existing conditions along Chapman Highway. The Steering Committee also discussed 31 potential types of improvement projects within four categories: vehicle, bicycle/pedestrian, transit, and other. As a result, 28 types of projects were deemed worthy of further consideration. Conversely, three types of projects were determined to NOT be further considered along Chapman Highway:

- ▶ Road Widening — Widen from a four-/five-lane facility to a seven-lane facility
- ▶ Road Diet — Reduce from a four-/five-lane facility to a three-lane facility
- ▶ Bicycle lanes without a buffer between motor vehicles and bicyclists

Community Workshop #1

Over 120 attendees participated in community workshop #1. Attendees were given a “passport” upon entrance to encourage participation in all stations. Attendees also were shown a summary of existing conditions along Chapman Highway, including crash data and traffic data before completing the “passport” activities.

One Word Activity

Attendees were asked to provide one word describing how they view Chapman Highway today, and one word describing their vision for the future of Chapman Highway.

Station 1 – Mapping Exercise

Participants were asked to use varying colors of dots to identify areas for improvement on aerial maps of the corridor. A separate aerial was provided for each segment.

**Station 2 – Tradeoffs Exercise**

Participants were asked to use varying colors of dots to consider trade-offs and determine their own priority for four categories—local user, streetscape, mobility choice, and access management.

Station 3 – Visual Preference Survey

Participants were shown a series of images featuring a range of treatments, mobility types, contexts, and design aesthetics. Each participant was asked to select “yes” or “no” on whether they liked each image.

How do you view Chapman Highway today?



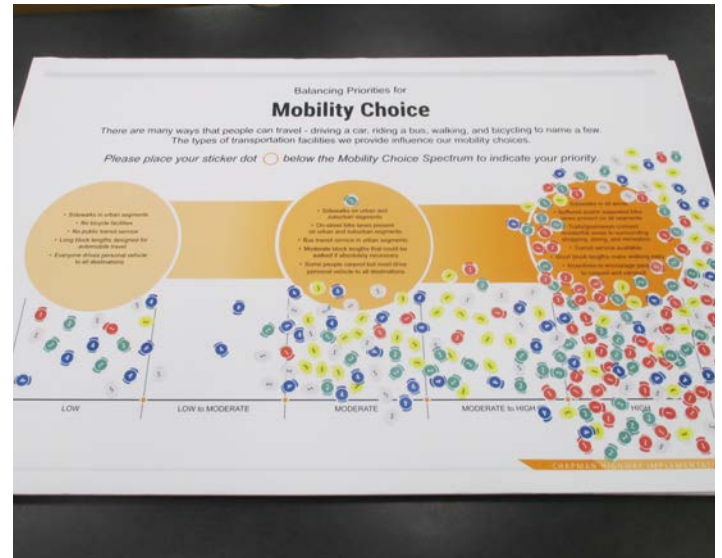
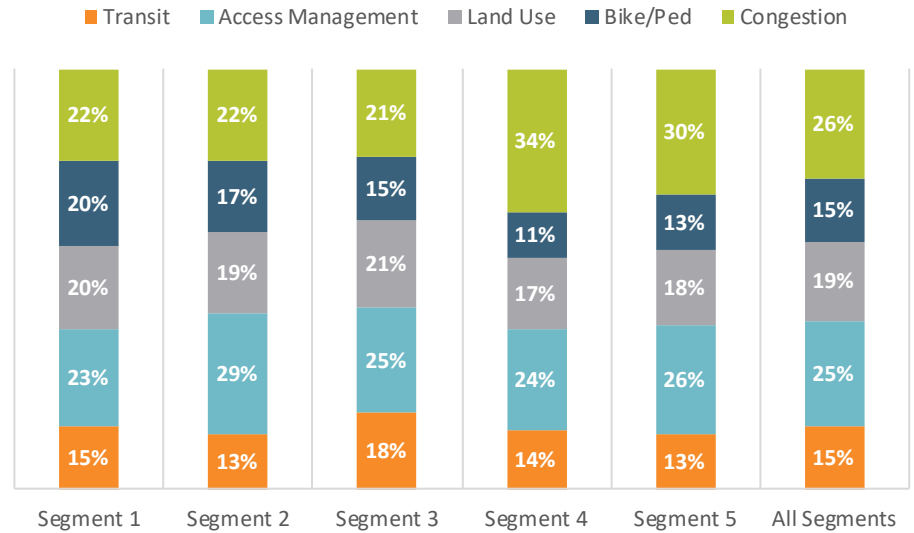
What is your vision for the future of Chapman Highway?



Station 4 – Budget Exercise

Participants were asked to allocate \$25 of pretend money—\$5 per each segment—for all five Chapman Highway segments. The five investment categories included access management, bicycle and pedestrian, congestion, land use, and transit. The results are displayed in Figure 15.

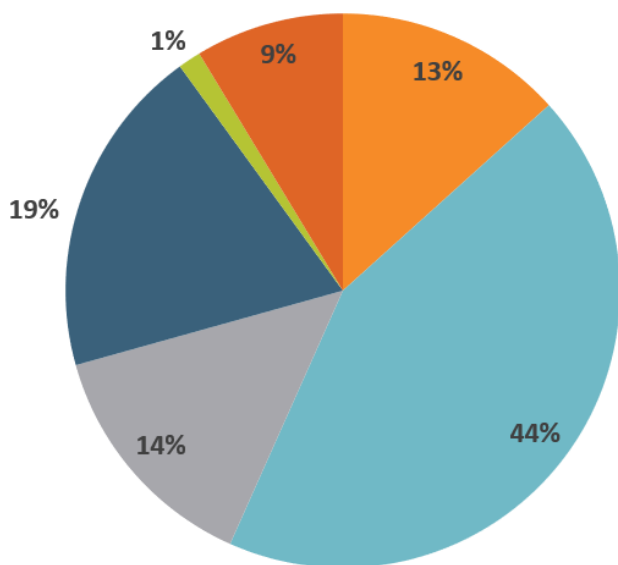
Figure 15: Budgeting Exercise



Online Survey #1

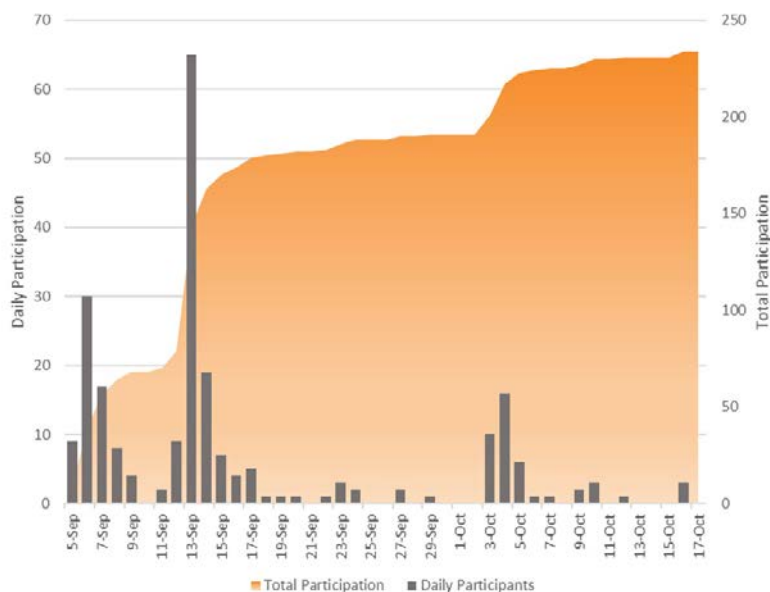


To encourage a broad range of participants and perspectives in the early phases of the Chapman Highway Implementation Plan, an online survey was designed to collect community input. The survey launched on September 5, 2018, after the community workshop, and was available online through October 19, 2018. Through this platform, the survey allowed participants to identify transportation issues, prioritize topics most important to them, and suggest projects they would like to see completed. Questions were structured to complement the topics being addressed at community workshop #1 so the overall feedback from this phase could be used together. A total of 232 users participated in the survey, resulting in over 8,000 unique data points being gathered. The participation over the duration of the survey is shown in Figure 16.



- I commute along the corridor
- I live along the corridor
- I live and work along the corridor
- I shop or dine along the corridor
- I work along the corridor
- Other

Figure 16: Survey Participation Overview



EXPLORING CONCEPTS

MOBILITY NEEDS ASSESSMENT



To identify transportation needs and barriers to equitable mobility along Chapman Highway, a mobility needs assessment was performed. The needs assessment was generated through a series of analyses and public input in the form of community workshops, steering committee input, and an online survey. A list of general needs was produced for each segment under various categories: pedestrian facility, bicycle facility, bicycle/pedestrian network connections, intersections, access management, and transit facilities.

PROPOSED TYPICAL SECTIONS

To provide a cohesive roadway that offers safety and mobility for all types of transportation, a proposed typical section was created for each segment of Chapman Highway. This typical section represents the desired final attributes that should be considered for implementation along the corridor. Emphasis was put on providing pedestrian and bicycle facilities along the entire corridor and maintaining two lanes in each direction of travel for vehicles. Each segment included two alternatives—a center left-turn lane or a landscaped median. The advantages and disadvantages of these median alternatives should be considered along Chapman Highway. The components of these median impacts are displayed in Table 2.

Table 2: Median Components

Component	Median Choice for Replacing Undivided Sections of Chapman Highway	
	Center Left-Turn Lane	Landscaped Median
Safety	Provides lateral separation of opposing traffic	Provides both a lateral and raised separation between opposing traffic Provides a refuge island for pedestrian crossings
Access Management	Allows left-turns more frequently resulting in more potential conflicts with through traffic along Chapman Highway	Allows left-turns less frequently resulting in fewer potential conflicts with through traffic along Chapman Highway
Cost/Impact	Requires financial investment and right-of-way acquisition, but less compared to a landscaped median	Requires financial investment and right-of-way acquisition, but more compared to a center left-turn lane
Beautification	Provides additional total area of asphalt pavement, which contributes less to the corridor's beautification	Provides opportunity for landscaping such as grass, plantings, and/or trees which contributes more to the corridor's beautification

Segment 1

Segment 1 will likely be the location with the greatest amount of pedestrian, bicycle, and transit activity along Chapman Highway. As a result, the selection of its final cross-section needs to be a complete street, providing facilities for all transportation modes. This would include separation between non-motorized users (bicyclists and pedestrians) and motorized vehicles. Additional right-of-way may be necessary to widen Chapman

Highway to incorporate sidewalks, shared use paths, and separated bicycle lanes - however, these costs and impacts should be strongly considered because of the higher demand for pedestrian, bicycle, and transit alternatives along Segment 1 of Chapman Highway. As this proposed typical section is implemented, additional intersection improvements will be needed to create a predictable and consistent travel environment amongst all modes of

travel. Segment 1 features the following components:

- ▶ 6-foot sidewalk (both sides)
- ▶ 6-foot bicycle lane separated by a 5-foot landscaped buffer (both sides)
- ▶ Maintain center left-turn lane or widen for landscaped median

The proposed typical sections for Segment 1 are shown in Figure 17 (turn lane) and Figure 18 (landscaped median).

Figure 17: Proposed Typical Section (Turn Lane)

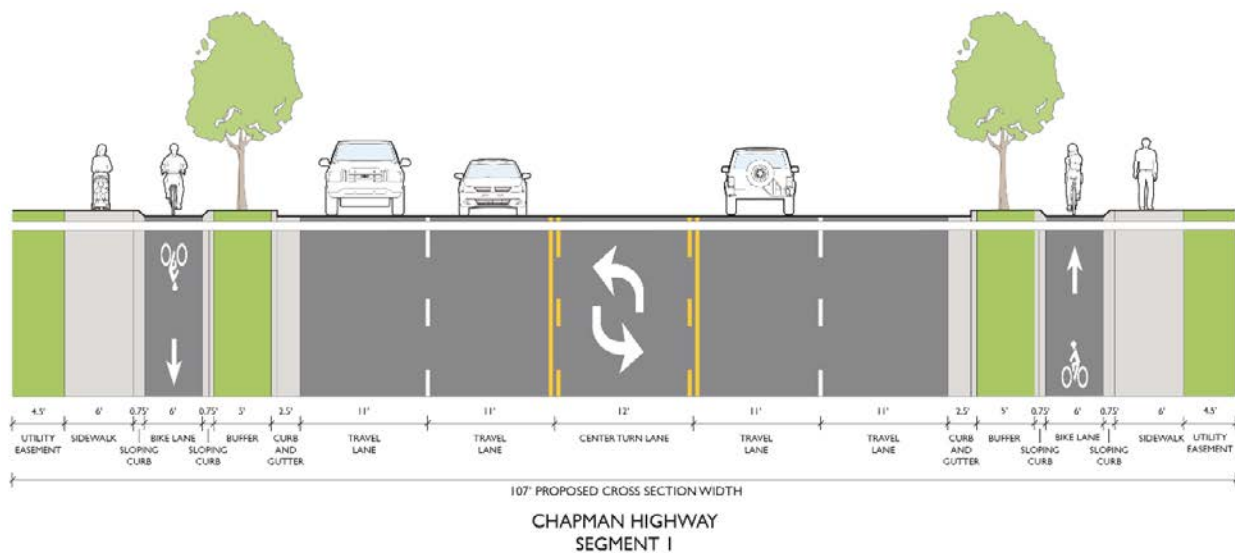
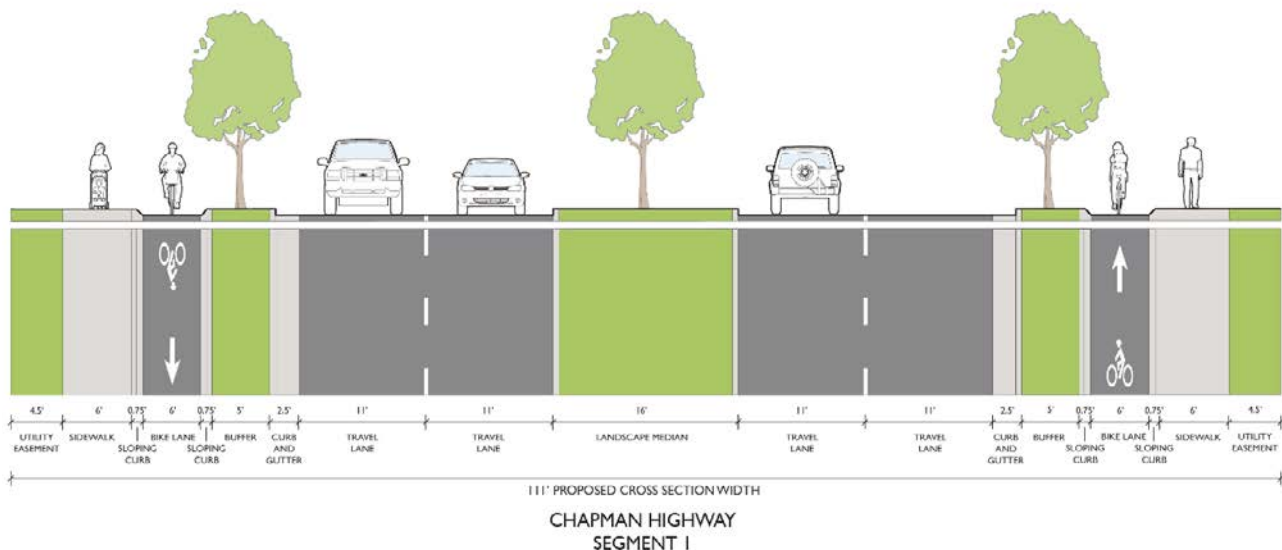


Figure 18: Proposed Typical Section (Landscaped Median)



Segments 2-5

Segments 2-5 focus on also providing a complete street by accommodating all modes of travel and emphasizing continuity along the corridor. The final cross-section still provides the opportunity for pedestrians and bicyclists to travel on a protected facility, while motorists enjoy the added safety benefits of a consistent center turn lane or landscaped median. As with Section 1, improvements will

be needed at intersections to create a predictable and consistent travel environment. Segments 2-5 feature the following components:

- ▶ 6-foot sidewalk (on one side)
- ▶ 12-foot shared-use trail (on opposite side)
- ▶ Widen for a center left-turn lane (or a landscaped median)

The proposed typical sections for Segments 2-5 are shown in Figure 19 (turn lane) and Figure 20 (landscaped median).

Figure 19: Proposed Typical Section (Turn Lane)

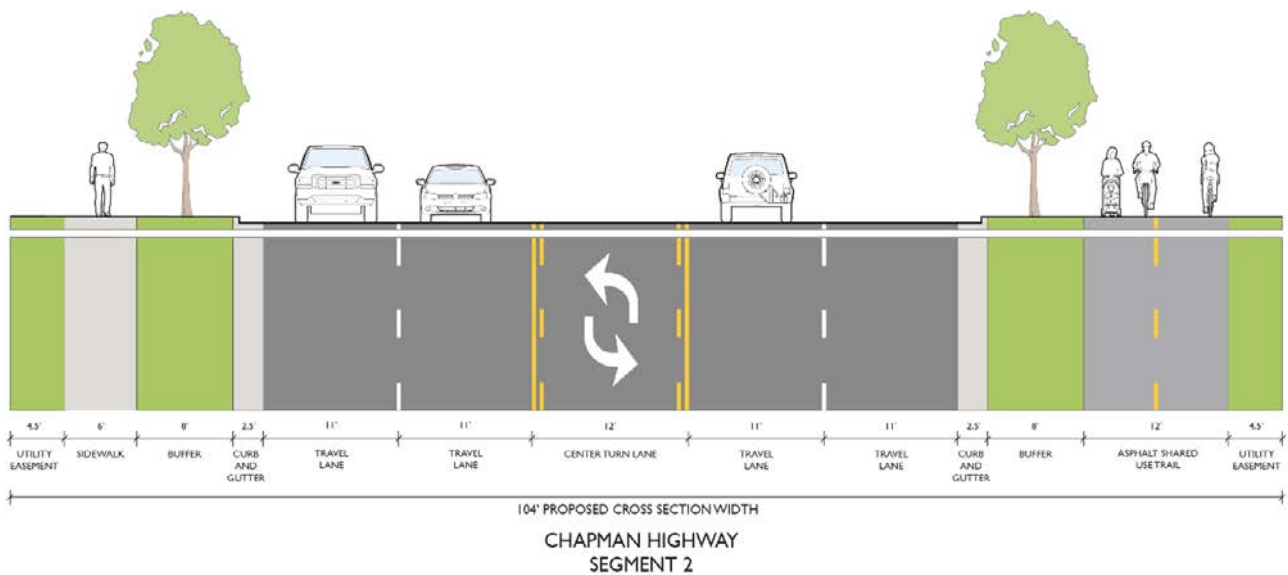
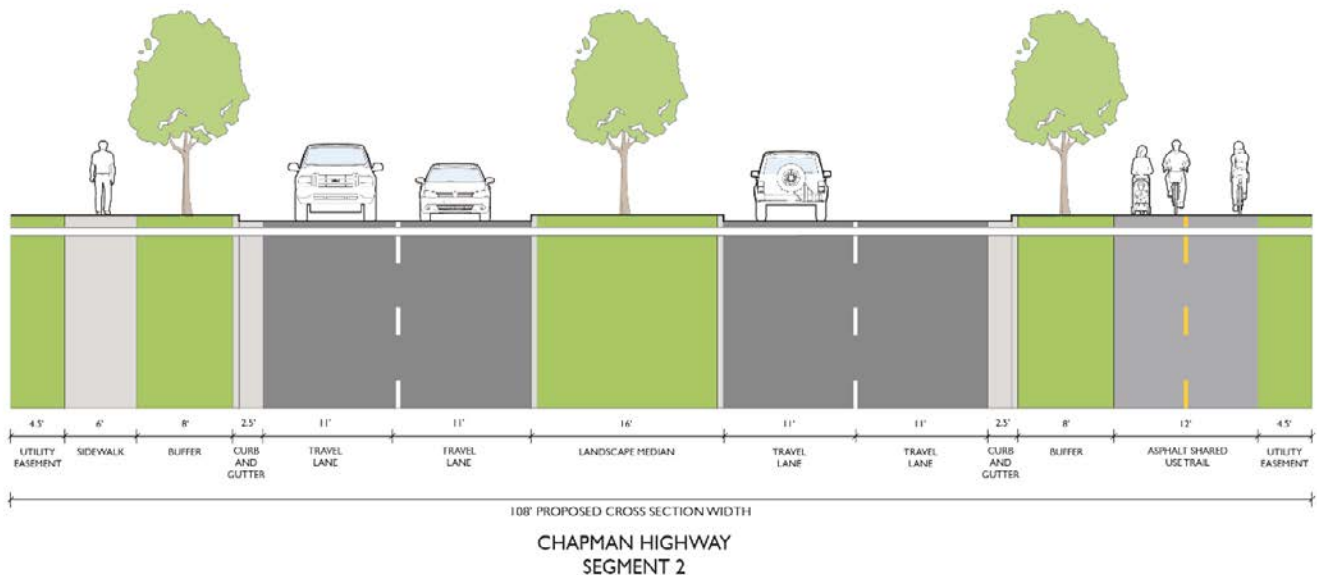


Figure 20: Proposed Typical Section (Landscaped Median)



All proposed typical sections are included in the appendix.

LIST OF PROJECTS

Based on the typical sections selected, known deficiencies, and public perceived issues, a list of projects was developed to implement along Chapman Highway. The realities of funding availability and physical constraints along the corridor can sometimes make the implementation of the typical section difficult or time consuming. As a result, project recommendations serve to address more targeted needs or make interim improvements. In total, 47 projects and three overarching recommendations were developed across all five segments. Each proposed typical section was divided into two projects per segment: median improvements (center left-turn lane or landscaped median) and bicycle/pedestrian improvements (bicycle lanes, sidewalks, shared use trails).

The list of 47 projects was categorized into six project types:

- ▶ **Access Management** – Backage road and road extensions, right-in/right-out intersections, cul-de-sacs with pedestrian access, and intersection closures
- ▶ **Bicycle/Pedestrian** – Protected intersections, separated bike lane and sidewalks, shared-used trails (greenway). An example of a protected intersection is shown below
- ▶ **Intersection** – Intersection realignments, left-turn lanes, and traffic signals
- ▶ **Median** – Center left-turn lanes and landscaped medians
- ▶ **Non-Chapman** – Projects to improve connecting routes
- ▶ **Transit** – Bus shelters, super stops

In addition to the 47 projects identified along the Chapman Highway corridor, three all-encompassing recommendations were identified:

- ▶ **Access Management** – Apply access management methods
- ▶ **Transit** – Provide bus pull-out bays at intersection closures
- ▶ **Bicycle/Pedestrian** – Provide bicycle/pedestrian connections at intersection closures

General project descriptions are shown in Table 3 on the following page and the list of 47 projects is shown in Table 4 on page 24.



Source: National Association of City Transportation Officials (NACTO), *Don't Give Up at the Intersection: Designing All Ages and Abilities, Bicycle Crossings*, May 2019

Table 3: Project Descriptions

Project Code*	Description
M-1	This project is a component of the proposed typical sections, and would convert the existing center left-turn lane along Chapman Highway to a landscaped median. At traffic signals and higher volume unsignalized intersections, median openings would be provided to allow left-turn movements.
M-24, M-30, M-39	These projects are components of the proposed typical sections, and would widen Chapman Highway to provide either a center left-turn lane or a landscaped median. Either option would provide separation between opposing traffic flows along Chapman Highway.
M-43	This project is a component of the proposed typical sections, and would widen Chapman Highway from four to five lanes underneath the Governor John Sevier Highway overpass. If the existing center left-turn lane is maintained, this project would still include modifications and improvements to comply with the proposed typical section (such as curb/gutter, underground stormwater drainage, and narrowing the width of the paved shoulder).
A-7, A-14, A-15, A-28, A-29, A-33, A-41	These projects would focus on access management applications along Chapman Highway to reduce the number of conflict points between motorists traveling along Chapman Highway and motorists entering/exiting Chapman Highway from intersections with public roads. These access management applications would consider a combination of 1) installing traffic signals, 2) restricting locations where left-turns are permitted, and 3) closing intersections with Chapman Highway.
BP-2, BP-10, BP-16	These projects are components of the proposed typical sections, and would provide bicycle and pedestrian infrastructure along both sides of Chapman Highway. These improvements would include a landscaped buffer to provide separation between motorized and non-motorized travel, separated bicycle lanes on both sides, and sidewalks on both sides of Chapman Highway.
BP-17, BP-25, BP-31, BP-40, BP-44	These projects are components of the proposed typical sections, and would provide bicycle and pedestrian infrastructure along both sides of Chapman Highway. These improvements would include a landscaped buffer to provide separation between motorized and non-motorized travel, a sidewalk on one side, and a wider shared use trail on the other side of Chapman Highway.
BP-3, BP-8, BP-9, BP-18, BP-20, BP-27, BP-35, BP-37	These projects would implement a “protected intersection”—otherwise known as a “Dutch junction” due to its origin in the Netherlands—at the specified traffic signals. Similar to the bicycle/pedestrian projects above that would provide separation between motorized and non-motorized travel, protected intersections provide the same type of separation at signalized intersections. This separation can improve safety as motorists desiring to perform a right-turn movement have better visibility to bicyclists and pedestrians.
BP-4	This project would install a pedestrian hybrid beacon (PHB), a type of midblock pedestrian crossing that is signalized and can provide a red 'stop' indication to motorists upon activation of a pedestrian push button.
BP-11	This project would restripe Chapman Highway to replace the existing pavement markings, and/or repurpose the wide paved shoulder, to provide bicycle lanes. This is intended to be an interim project prior to implementation of the proposed typical sections.
BP-47	This project would install a shared use path along West Norton Road and Mountain Grove Drive, parallel to Chapman Highway, instead of providing a shared use path along Chapman Highway itself.
I-12	This project would further evaluate two nearby intersections along Chapman Highway to determine if modifications to Maryville Pike and/or Martin Mill Pike would improve traffic flows along these roads and through the intersections with Chapman Highway.
I-26	This project would install left-turn storage lanes at a traffic signal where Chapman Highway is currently a four-lane undivided roadway without left-turn lanes.
I-32, I-34, I-36, I-42	These projects would realign existing roads to intersect Chapman Highway at different locations, and/or install a new traffic signal along Chapman Highway once traffic volumes successfully warrant the need for a traffic signal.
N-5, N-13, N-38	These projects would improve intersections that are not located along Chapman Highway. The intent of these projects would be to improve traffic operations along non-Chapman roads, to reduce motorists' reliance on Chapman Highway.
N-6, N-21, N-22, N-46	These projects would increase the road connectivity between existing roads, driveways, and land uses along the Chapman Highway corridor. The intent of these projects would be to provide alternative driving routes, to reduce motorists' reliance on Chapman Highway.
T-19	This project would implement a transit super stop for Knoxville Area Transit (KAT) that would improve headways, expedite transfers between bus routes, and strengthen the reliability of transit as an alternative to motorized transportation.
T-23, T-45	These projects would enhance existing bus stops, including the provision of bus shelters for people waiting for the bus, along existing Knoxville Area Transit (KAT) routes.

* Project codes and project descriptions are detailed in Table 4 on the following page.

It should be noted that typical section components have been separated into multiple projects to better understand phasing and cost considerations; however, construction of these components simultaneously is more logical and efficient.

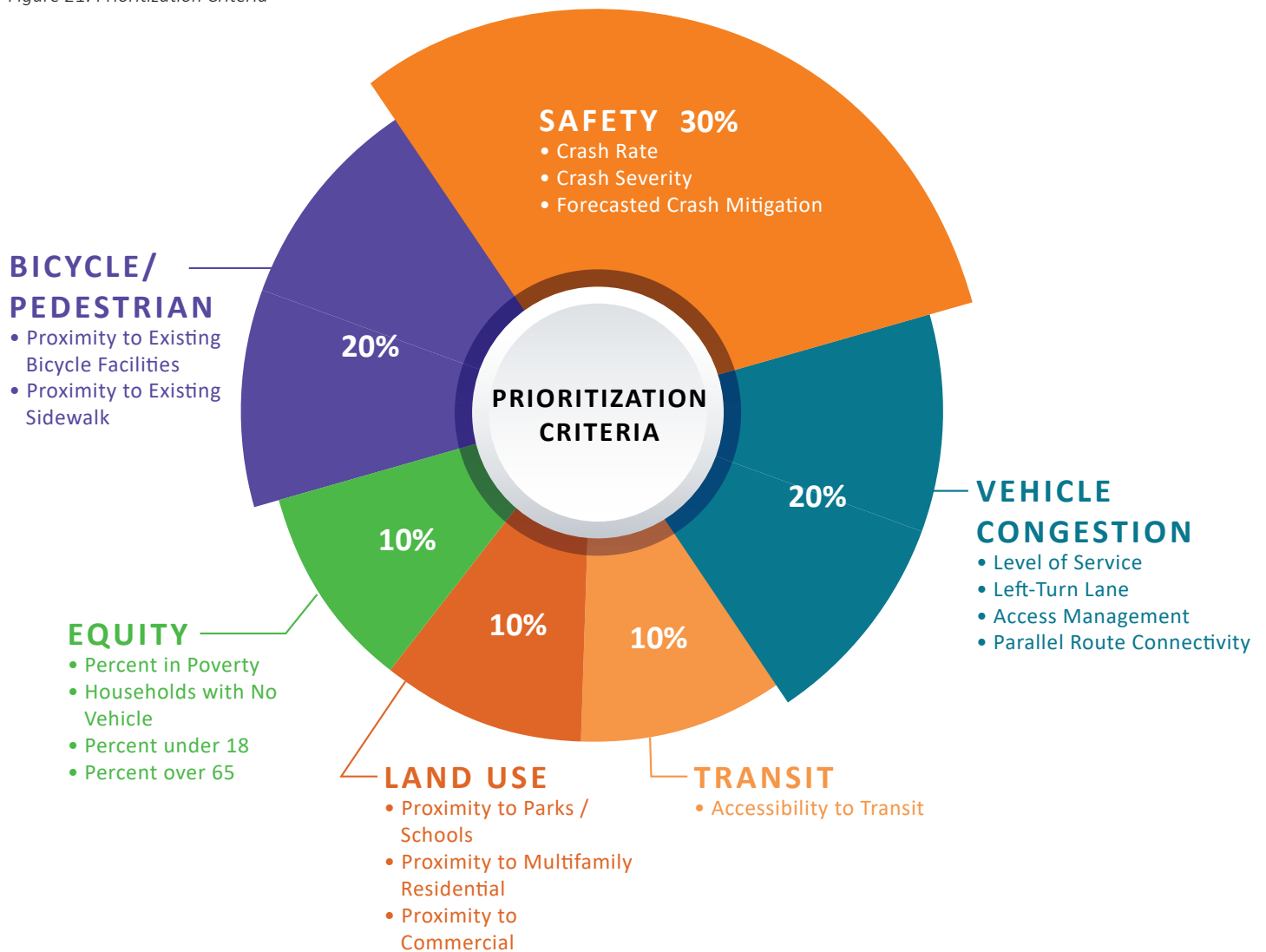
Table 4: List of Projects

	Project Code	Location	Description	Segment
Median (M)	M-1	Blount Ave to Fort Dickerson Rd	Widen for Landscaped Median	1
	M-24	Overbrook Dr to Lakeview Dr	Widen for Center Left-Turn Lane (or Landscaped Median)	2
	M-30	Lakeview Dr to Chapman Ford Crossing	Widen for Center Left-Turn Lane (or Landscaped Median)	3
	M-39	Chapman Ford Crossing to Nixon Rd	Widen for Center Left-Turn Lane (or Landscaped Median)	4
	M-43	Nixon Rd to Mountain Grove Dr	Maintain Center Left-Turn Lane (or Convert to Landscaped Median)	5
Access Management (A)	---	Blount Ave to Mountain Grove Dr	Apply Access Management; Refer to TDOT Driveway Manual	ALL
	A-7	E Martin Mill Pk	Close Two Intersections to Vehicles; Provide Bike/Ped Connection	1
	A-14	Druid Dr (east)	Close One Intersection to Vehicles; Provide Bike/Ped Connection	1
	A-15	Childress St	Convert to Right-In/Right-Out	1
	A-28	Judith Dr to Larry Dr	Evaluate Vehicle Access at Two Intersections	2
	A-29	Red Bud Rd to Lakeview Dr	Evaluate Vehicle Access at Eight Intersections	2
	A-33	Eastwood Dr	Close One Intersection to Vehicles; Provide Bike/Ped Connection	3
	A-41	Longvale Dr to Little Switzerland Rd	Close Three Intersections to Vehicles; Provide Bike/Ped Connection	4
Bicycle/Pedestrian (BP)	---	Blount Ave to Mountain Grove Dr	Provide Bike/Ped Neighborhood Connections at Intersection Closures	ALL
	BP-2	Blount Ave to Fort Dickerson Rd	Provide Landscaped Buffer, Separated Bicycle Lanes, Sidewalks	1
	BP-3	Blount Ave	Convert to Protected Intersection	1
	BP-4	KXHR Crossing-OR- Hawthorne Ave	Midblock Crossing with Pedestrian Hybrid Beacon	1
	BP-8	Lippencott St	Convert to Protected Intersection	1
	BP-9	Fort Dickerson Rd	Convert to Protected Intersection	1
	BP-10	Fort Dickerson Rd to Moody Ave	Provide Landscaped Buffer, Separated Bicycle Lanes, Sidewalks	1
	BP-11	Fort Dickerson Rd to Moody Ave	Restripe Roadway for Interim Bike Lanes (interim project)	1
	BP-16	Moody Ave to Young High Pk	Provide Landscaped Buffer, Separated Bicycle Lanes, Sidewalks	1
	BP-17	Young High Pk to Overbrook Dr	Provide Landscaped Buffer, Sidewalk, Shared Use Trail	1
	BP-18	Moody Ave	Convert to Protected Intersection	1
	BP-20	Young High Pk	Convert to Protected Intersection	1
	BP-25	Overbrook Dr to Lakeview Dr	Provide Landscaped Buffer, Sidewalk, Shared Use Trail	2
	BP-27	Stone Rd	Convert to Protected Intersection	2
	BP-31	Lakeview Dr to Chapman Ford Crossing	Provide Landscaped Buffer, Sidewalk, Shared Use Trail	3
	BP-35	Lindy Dr	Convert to Protected Intersection (in conjunction with Traffic Signal)	3
	BP-37	Ford Valley Rd	Convert to Protected Intersection (in conjunction with Traffic Signal)	3
	BP-40	Chapman Ford Crossing to Nixon Rd	Provide Landscaped Buffer, Sidewalk, Shared Use Trail	4
	BP-44	Nixon Rd to Mountain Grove Dr	Provide Landscaped Buffer, Sidewalk, Shared Use Trail	5
	BP-47	W Norton Rd/Mountain Grove Dr	Shared Use Path (alternative to Chapman Highway)	5
Intersection (I)	I-12	Maryville Pk, Martin Mill Pk	Evaluate Realignment/Consolidation of Two Intersections	1
	I-26	Stone Rd	Construct Left-Turn Lanes (interim project)	2
	I-32	E Lake Forest Dr (south)	Realign across from Colonial Drive at Existing Traffic Signal	3
	I-34	Lindy Dr	Realign Lindy Drive and Install Traffic Signal	3
	I-36	Fort Valley Rd	Install Traffic Signal	3
	I-42	W Dick Ford Ln	Install Traffic Signal	4
Non-Chapman (N)	N-5	Hawthorne Ave at Augusta Ave	Intersection Redesign / Consolidation	1
	N-6	Fort Ave	Create Backage Road to Shopping Center	1
	N-13	W Blount Ave at Maryville Pk	Single Lane Roundabout	1
	N-21	Young High Pk to Woodlawn Pk (south)	Create Backage Road to Shopping Center	1
	N-22	Overbrook Dr	Extend Overbrook Drive to Shopping Center	1
	N-38	West Ford Valley Rd at Old Valley Rd	Single Lane Roundabout	3
	N-46	Quaker Way	Extend Quaker Way to West Dick Ford Lane	5
Transit (T)	---	Blount Ave to Mountain Grove Dr	Provide Bus Pull-Out Bays at Intersection Closures	ALL
	T-19	Between Moody Ave and Young High Pk	Transit Super Stop (for Improved Headways and Transfers)	1
	T-23	Blount Ave to Young High Pk	Enhance Bus Stops and Provide Bus Shelters	1
	T-45	Nixon Rd to Mountain Grove Dr	Enhance Bus Stops and Provide Bus Shelters	5

PRIORITIZATION CRITERIA

Prioritization criteria were developed using feedback from the public, stakeholders, and the Steering Committee to score and prioritize improvements projects along Chapman Highway. The criteria were established to score each project, with the outcome resulting in a prioritization of the projects. Six criteria categories were evaluated, with a total maximum score of 100 points for each project, as shown in Figure 21.

Figure 21: Prioritization Criteria



PUBLIC OUTREACH — EXPLORING CONCEPTS PHASE

Steering Committee and Stakeholder Meetings —
December 12, 2018

Public outreach of the *Exploring Concepts* phase sought to gain feedback on draft documents, specifically the draft proposed typical sections, draft list of projects, and draft prioritization criteria. On December 12, 2018, a Steering Committee meeting and a stakeholder workshop were facilitated.

Steering Committee Meeting

Nineteen people attended the meeting. The steering committee consisted of government agencies and regulatory groups, detailed on page 4. The public outreach results from community workshop #1 and online survey #1 were presented and discussed. A draft version of the proposed typical section, list of projects, and prioritization criteria also were presented for discussion.

TDOT provided feedback on the proposed typical sections and identified specific components that should be revised to become more compliant with TDOT design standards. The City of Knoxville provided feedback with respect to projects that would close intersections with public roads, proper coordination should occur with operators of emergency vehicles, school buses, and garbage trucks to understand how potential intersection closures would impact their response times and service routes. The notion of including anticipated costs within the prioritization criteria was considered; however, discussion yielded that the prioritization criteria should focus on need without considering the anticipated costs.

Stakeholder Workshop

Fourteen people attended the workshop. The stakeholder workshop included representatives from neighborhoods and business organizations, detailed on page 4. The format of the stakeholder workshop was similar to the Steering Committee meeting. The content and feedback opportunities were the same, but with a new audience providing different perspectives.

The stakeholders expressed a desire to provide bicycle/pedestrian connections to the Urban Wilderness. Participants provided positive feedback on the green space provided in the typical sections but expressed concern regarding the impacts to ROW and topography. Some participants indicated a desire to maintain the existing rock formations along Chapman Highway, as they represent South Knoxville; however, other participants indicated they would prefer improved safety even if it means impacting the existing rock formations.

Feedback received at this meeting was incorporated into the proposed typical sections, list of projects, and prioritization criteria.

TDOT Coordination —
March 8, 2019*TDOT Region 1 Meeting*

Twelve people attended a meeting with TDOT Region 1 on March 8, 2019. At this meeting, a summary of previous data collected on Chapman Highway was presented, including traffic data, crash data, and origin-destination data. Next, the public outreach activities were summarized including three Steering Committee meetings, two stakeholder workshops, one community workshop, and one online survey.

TDOT communicated their desire to widen the full 10.3-mile section of Chapman Highway, as part of the IMPROVE Act, to provide lateral separation between oncoming traffic flows. This could be accomplished by incorporating either a raised landscaped median or a center two-way left-turn lane, although TDOT indicated their preference is a center two-way left-turn lane. TDOT stated their desire to avoid alternating between two median types along the same corridor, as this could create a safety concern. TDOT also provided direct feedback on the proposed typical sections, including incorporating a 4.5-foot-wide utility easement for right-of-way purposes and that center two-way left-turn lanes should be a minimum of 12 feet wide. TDOT presented a modified version of the typical sections that more closely align with their design standards.

City of Knoxville and Knoxville-Knox County Planning met with the Knoxville Police Department and Knoxville Fire Department on April 15, 2019 to discuss potential intersection closures. From this meeting, modifications were made to proposed intersection closures, including maintaining emergency vehicle access.



Join Us! We're having a **Community Workshop** for the Chapman Highway Implementation Plan



Tuesday, April 16, 2019

5:00 – 7:00 pm

South Doyle Middle School

3900 Decatur Drive | In the library

Steering Committee and Community Outreach — April 16, 2019



To continue the public outreach in the *Exploring Concepts* phase, a Steering Committee meeting and a community workshop were held on April 16, 2019.

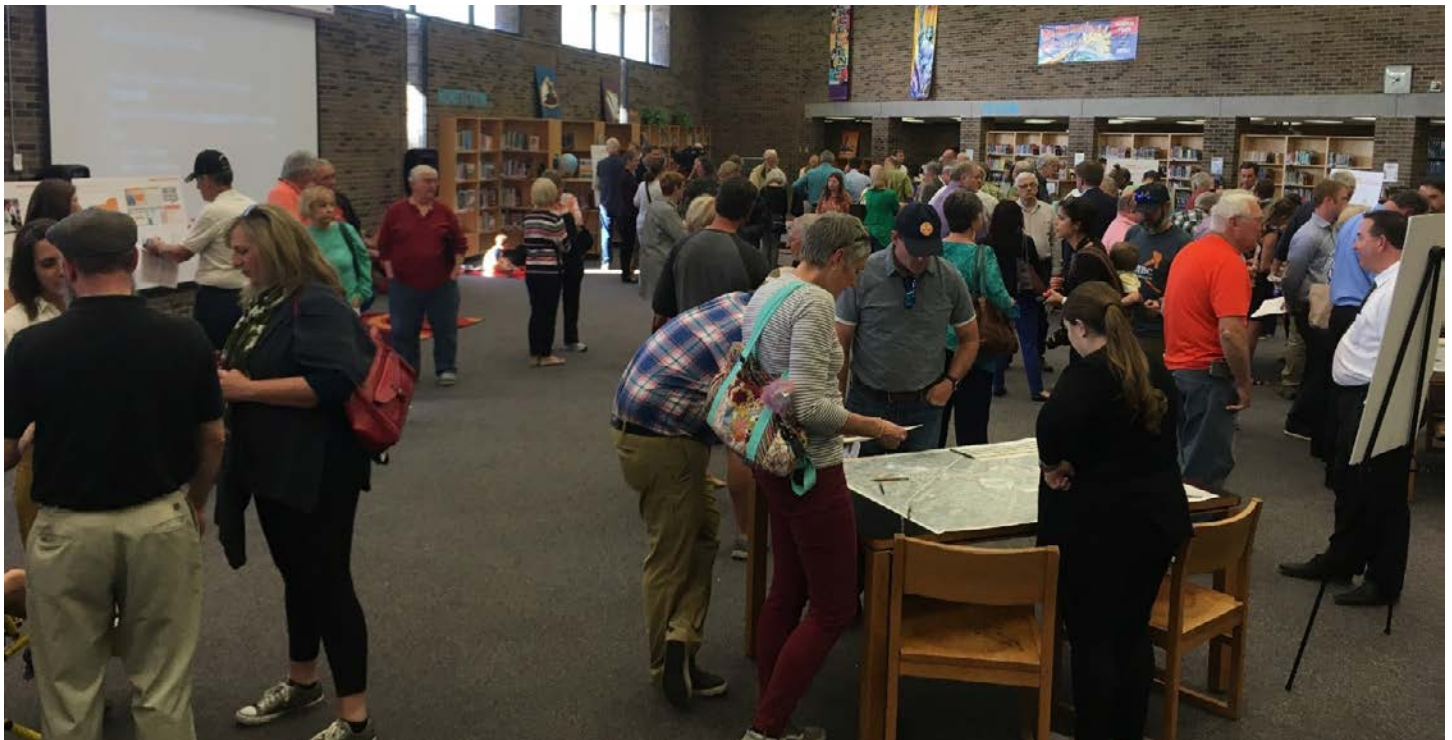
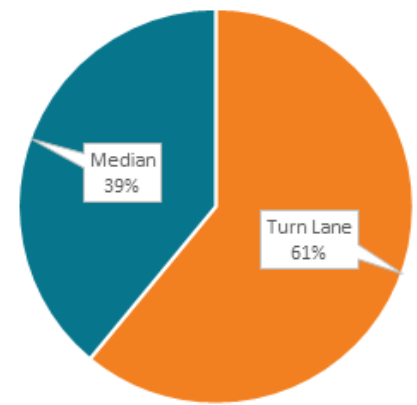
Steering Committee

Nineteen people attended. The steering committee consisted of government agencies and regulatory groups, detailed on page 4. At the Steering Committee meeting, a review of the March 8, 2019 meeting with TDOT Region 1 was given, as well as the revised changes to the proposed typical section, prioritization criteria, and list of projects since the Steering Committee meeting that occurred on December 12, 2018. Additionally, the draft prioritized list of projects was presented. Steering Committee feedback included median opening spacing and speed limits along the corridor. Additionally, TDOT shared an update of their work and progress along Chapman Highway. With the attendance of TDOT at this meeting, comments and feedback were received to assure this plan is a cohesive effort between the City and TDOT.

Community Workshop #2

Over 150 attendees participated in community workshop #2. Attendees were first guided through a “What We’ve Heard” board that highlighted past public outreach efforts, including the previous community workshop and summary of the online survey #1. Participants were given a scorecard and asked to record their preferred projects for each of the five segments. All 47 projects were available for participants to consider and were categorized into each of the five segments. Segments with a relatively larger number of projects provided more vote opportunities on that segment. Conversely, segments with a relatively smaller number of projects provided fewer vote opportunities on that segment. Facilitators assisted attendees in understanding the location and benefits of the proposed projects within each segment.

For each of the five segments, participants were asked to select a preference between a center left-turn lane or a landscaped median. Facilitators assisted participants in understanding the advantages and disadvantages of center left-turn lanes and raised medians. Based on the preferences expressed by participants for each segment, a center left-turn lane was preferred over a raised median.



Online Survey #2



261 users participated in the survey. To continue obtaining a broad range of perspectives, a second online survey was launched on April 16, 2019, after the community workshop, and was available online through May 6, 2019. Participation throughout the duration of the survey is shown in Figure 22. Within the survey platform, participants were asked to select projects along the corridor and identify whether the selected project should be a priority. Separate screens were presented for Segment 1, Segments 2/3, and Segments 4/5. For each project selected, each participant was given the opportunity to perform one of three actions:

- ▶ A project should be prioritized (positive response).
- ▶ A project should not be prioritized (negative response).
- ▶ A project was not selected (neutral response).

Due to requirements of the online survey platform and to reduce the amount of time needed for participants to complete the survey, the number of projects was consolidated from 47 to 37. Users were given the opportunity to vote for a general bicycle/pedestrian improvement project along a segment; however, users were unable to vote for specific intersection or segment projects along that segment. Since the implementation of many of the smaller bicycle/pedestrian intersection projects is dependent on whether the larger bicycle/pedestrian segment projects are implemented, the consolidated list of provides a realistic look at how projects will be implemented. During the *Project Prioritization* phase, it was determined that the smaller bicycle/pedestrian intersection projects would be removed from the prioritized list.

For the entire Chapman Highway corridor, participants were asked to select a preference between a center left-turn lane or a landscaped median. Similar to community workshop #2, online survey #2 indicated a preference for a center left-turn lane along Chapman Highway.

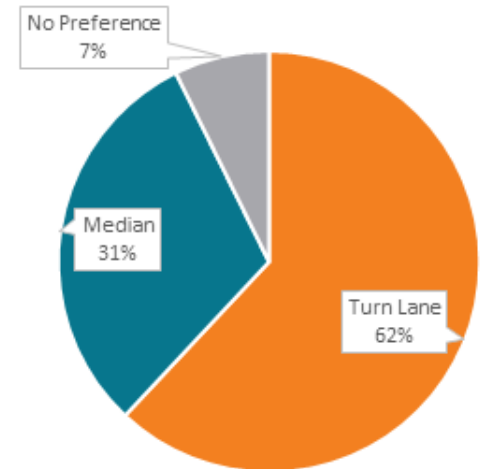
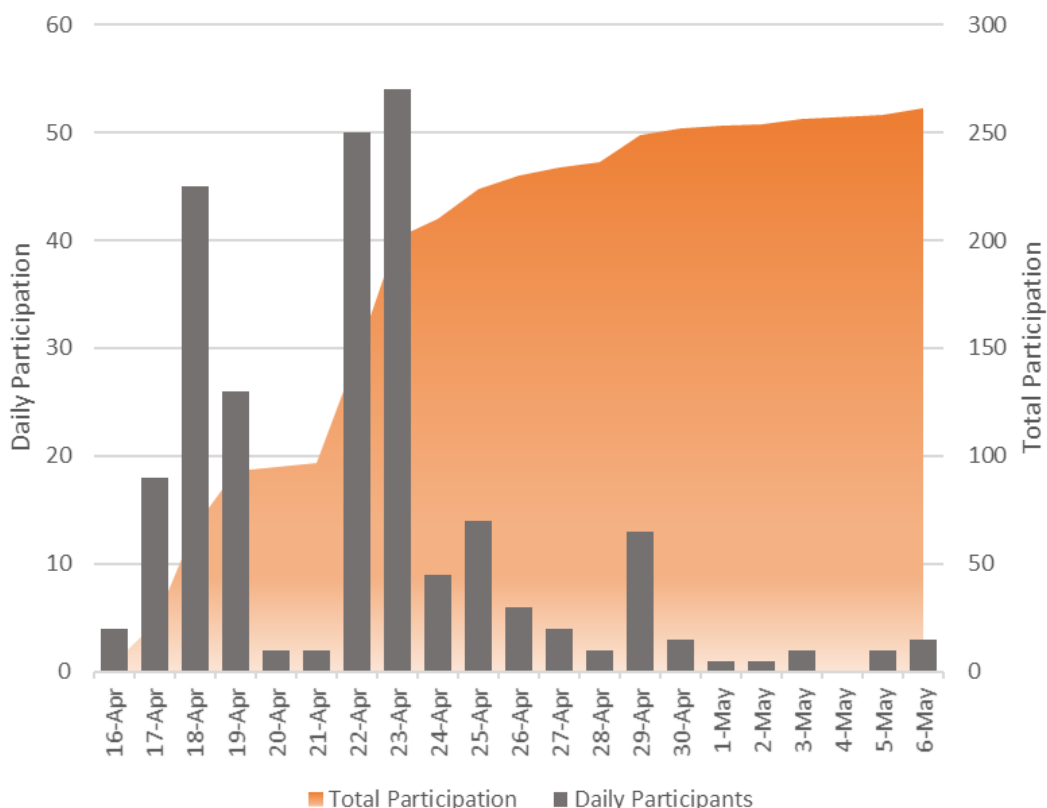


Figure 22: Survey Participation Overview



PROJECT PRIORITIZATION

PRIORITIZATION PROCESS

Having received input from the Steering Committee meetings, stakeholder workshops, community workshops, and online surveys, a final list of capital improvement projects was produced. To work toward a final implementation plan, those projects had to be prioritized. To prioritize the projects, a process was developed so that each project was plotted on an X-Y graph. The X axis represents the qualitative score, which is composed of feedback from community workshop #2 and the online survey #2. The Y axis represents the quantitative score, which is based on the technical rating determined by the prioritization criteria. Figure 23 displays this X-Y graph.

Qualitative

The qualitative component allowed for community input to be incorporated into the prioritization process by using the documented feedback received during community workshop #2 and online survey #2.

Community Workshop #2



Participants were asked to record their top projects for each of the five Chapman Highway segments. Each project marked on a participant's scorecard was awarded one point. All the points for each project were totaled. To account for the varying number of projects in each segment, and the subsequent variation between each of the five segments, an adjustment factor was applied to the project totals.

Online Survey #2



Using the online survey results, projects were scored based on the below scoring:

- ▶ If selected to prioritize, one point was added.
- ▶ If selected to not prioritize, one point was subtracted.
- ▶ If not selected, zero points were awarded.

The total project scores from the second online survey were utilized for prioritization. To account for the varying number of projects in each segment and screen, an adjustment factor was applied to the total scores.

Quantitative



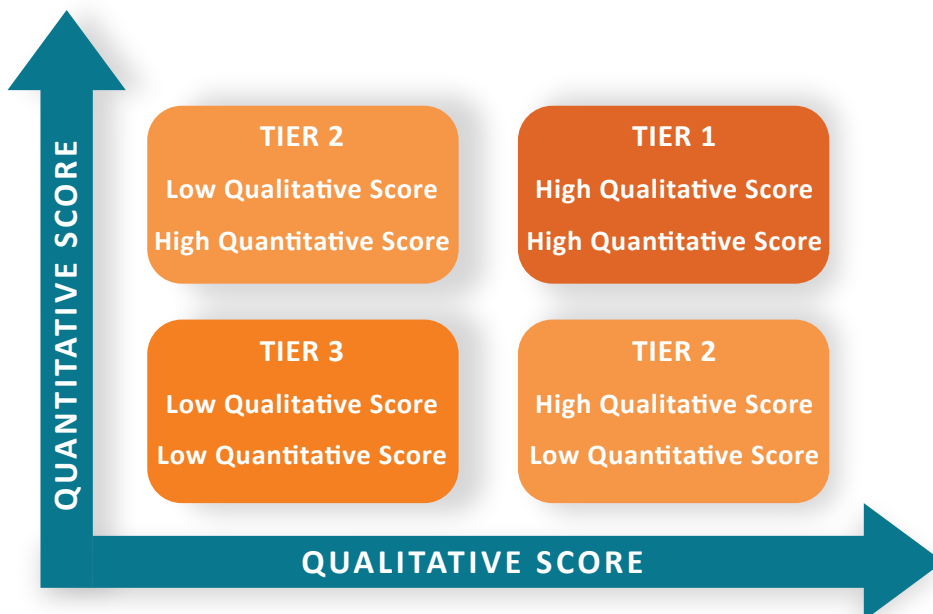
The quantitative component was derived from applying the prioritization criteria to each project. Each project was evaluated through these criteria, with a maximum score of 100 points. The highest scoring project in the quantitative analysis had 71 points, while the lowest scoring project had 27 points.

X-Y Graph

The projects were plotted on an X-Y graph. The X axis represents the qualitative component – 50% community workshop score, 50% online survey score. The Y axis represents the quantitative component. Once plotted, projects were then categorized into three tiers:

- ▶ Tier 1 – High qualitative score and high quantitative score
- ▶ Tier 2 – High qualitative score and low quantitative score OR low qualitative score and high quantitative score
- ▶ Tier 3 – Low qualitative score and low quantitative score

Figure 23: X-Y Graph



Figures 24A (on page 32) and 24B (on page 34) display these results with color distinctions between the three tiers. The prioritized projects were categorized into three tiers strategically to provide a similar number of projects within each tier.

The prioritized list of projects is shown in Table 5 (on page 33), organized by tier. Table 6 (on page 35) displays the prioritized projects, organized by category.

Cost Estimate



Planning level cost estimates were prepared for 29 of the 37 projects. For the 13 Median and Bicycle/Pedestrian projects that also are a component of the proposed typical section, planning-level costs were calculated using the Cost Estimate Tool developed by the Strategic Transportation Investments Division of TDOT. For the remaining 16 projects, planning-level costs were estimated by considering historical costs on similar projects. For the 8 projects without planning-level costs, further evaluation is needed to better-define the extent of the scope and costs for these capital projects.

All planning-level costs provided in this implementation plan are intended to represent present (year 2019) pricing and costs.

IDENTIFICATION OF PROGRAM/STRATEGIES

Funding Sources

Federal Programs

- ▶ Surface Transportation Block Grant (STBG)
 - » Funding that can be used to preserve or improve any highway, bridge and tunnel, pedestrian and bicycle infrastructure, or transit capital projects.
- ▶ National Highway Performance Program (NHPP)
 - » Funding that provides support for the condition and performance of the National Highway System (NHS).
- ▶ Spot Safety and Highway Safety Improvement Program (HSIP)
 - » Funding that is intended to improve roadways to reduce traffic fatalities and serious injuries.
- ▶ Transportation Alternatives Program (TAP)
 - » Funding that can be used for projects related to surface transportation alternatives such as off-road trail facilities for pedestrians and bicycles.
- ▶ Congestion Mitigation and Air Quality (CMAQ)
 - » Funding that can be used for projects that help meet the requirements of the Clean Air Act.
- ▶ Federal Transit Administration (FTA)
 - » Various funding opportunities.

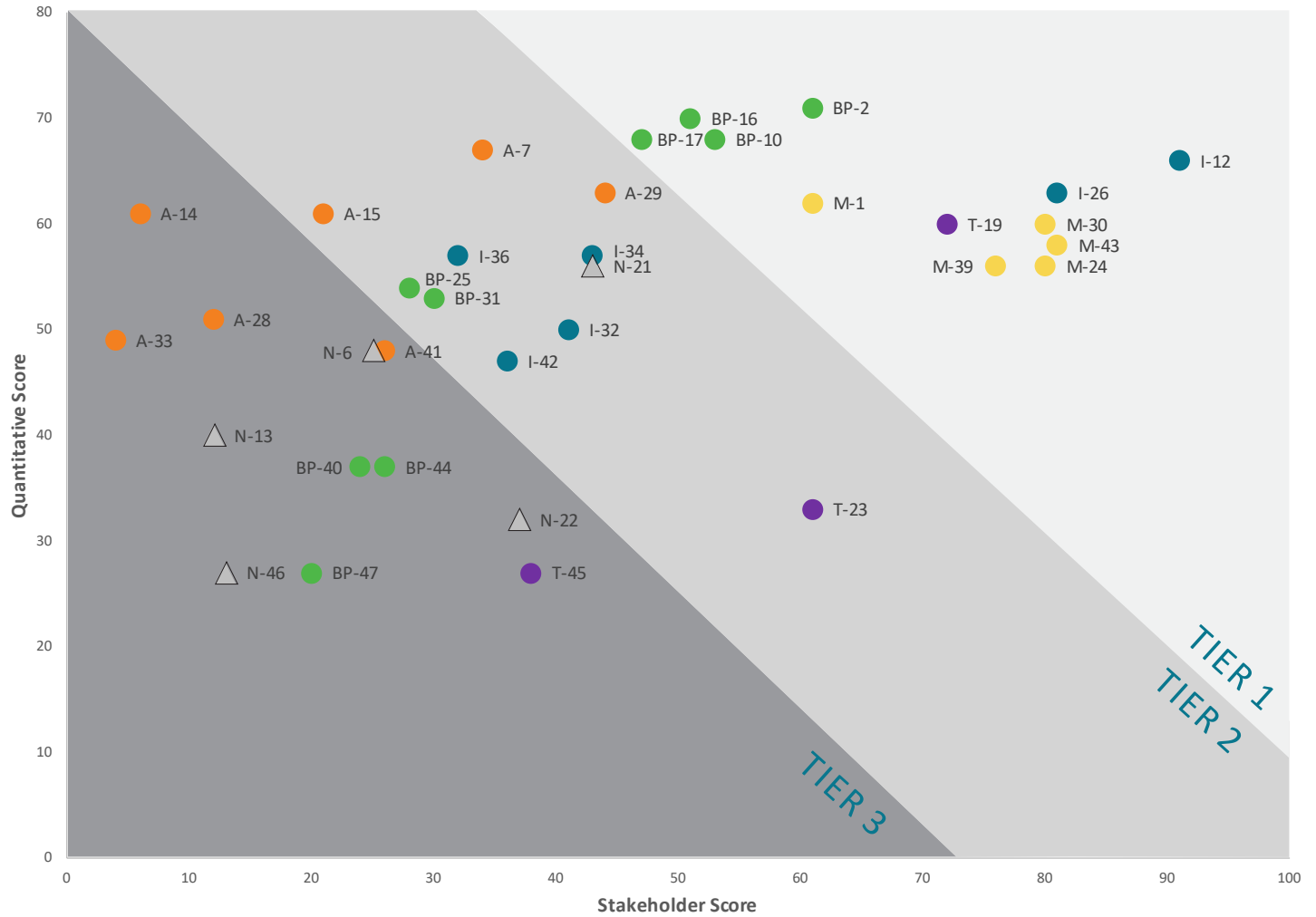
State Programs

- ▶ TDOT Multimodal Access Grant
 - » Funding intended for transportation needs of transit, pedestrians, and bicyclists along state routes.
- ▶ IMPROVE Act
 - » \$45 million in funds allocated to Chapman Highway via the gas tax.

Local Funds

- ▶ The City of Knoxville may elect to implement some projects using local funds.

Figure 24A: Prioritized Projects



Tier 1

Project Code	Stakeholder Score	Quantitative Score
I-12	91	66
I-26	81	63
M-30	80	60
M-43	81	58
M-24	80	56
M-39	76	56
BP-2	61	71
T-19	72	60
M-1	61	62
BP-10	53	68
BP-16	51	70
BP-17	47	68

Tier 2

Project Code	Stakeholder Score	Quantitative Score
A-29	44	63
A-7	34	67
I-34	43	57
N-21	43	56
T-23	61	33
I-32	41	50
I-36	32	57
BP-31	30	53
I-42	36	47
A-15	21	61
BP-25	28	54

Tier 3

Project Code	Stakeholder Score	Quantitative Score
A-41	26	48
N-6	25	48
N-22	37	32
A-14	6	61
T-45	38	27
A-28	12	51
BP-44	26	37
BP-40	24	37
A-33	4	49
N-13	12	40
BP-47	20	27
N-46	13	27

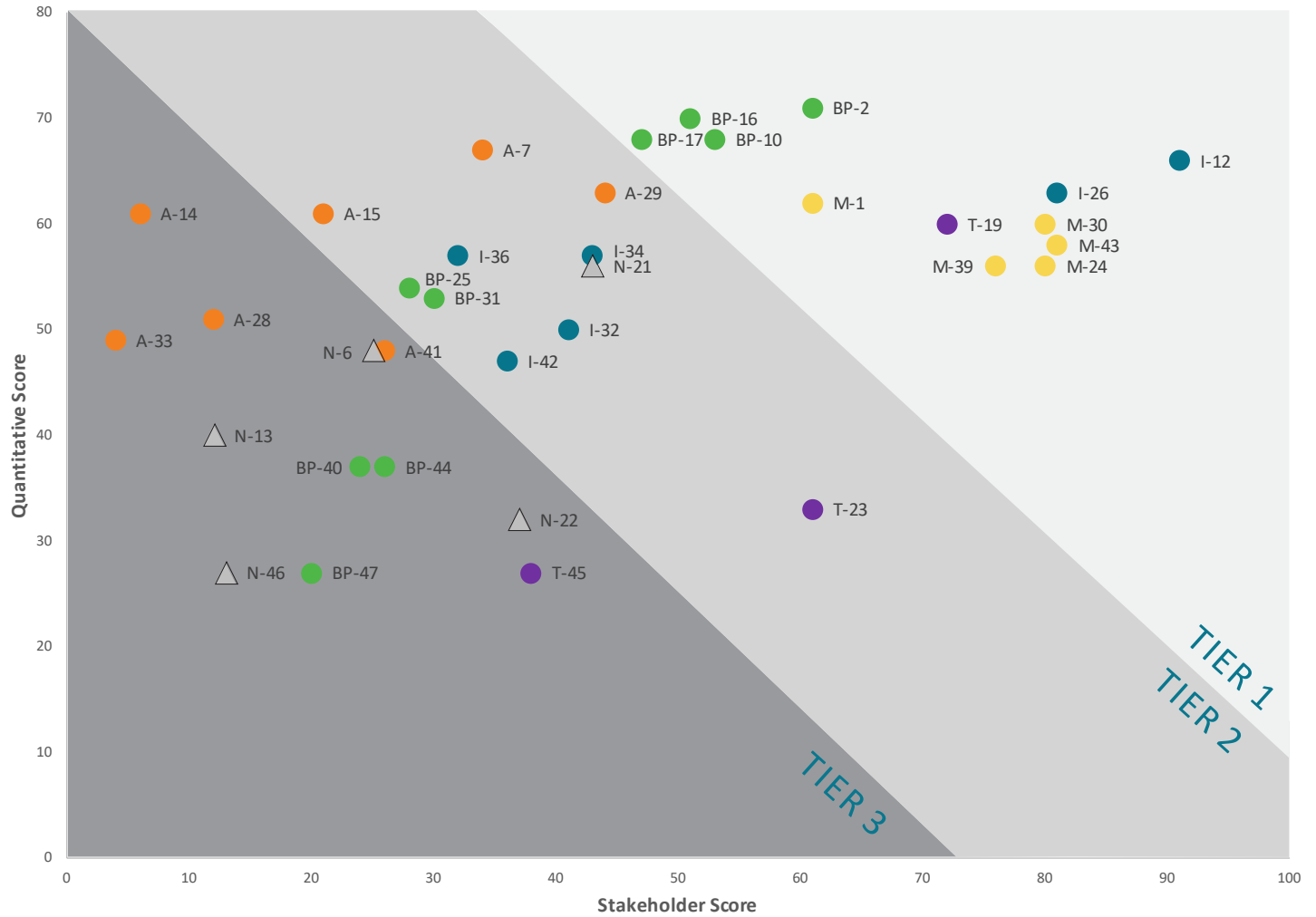
Table 5: Prioritized Projects

	Project Code	Location	Description	Segment	Total Score	Anticipated Cost
Tier 1	I-12	Maryville Pk, Martin Mill Pk	Evaluate Realignment/Consolidation of Two Intersections	1	157	N/A*
	I-26	Stone Rd	Construct Left-Turn Lanes (interim project)	2	144	\$750,000
	M-30	Lakeview Dr to Chapman Ford Crossing	Widen for Center Left-Turn Lane (or Landscaped Median)	3	140	\$7,700,000
	M-43	Nixon Rd to Mountain Grove Dr	Maintain Center Left-Turn Lane (or Convert to Landscaped Median)	5	139	\$7,800,000
	M-24	Overbrook Dr to Lakeview Dr	Widen for Center Left-Turn Lane (or Landscaped Median)	2	136	\$12,800,000
	M-39	Chapman Ford Crossing to Nixon Rd	Widen for Center Left-Turn Lane (or Landscaped Median)	4	132	\$10,500,000
	BP-2	Blount Ave to Fort Dickerson Rd	Provide Landscaped Buffer, Separated Bicycle Lanes, Sidewalks	1	132	\$8,900,000
	T-19	Between Moody Ave and Young High Pk	Transit Super Stop (for Improved Headways and Transfers)	1	132	\$100,000
	M-1	Blount Ave to Fort Dickerson Rd	Widen for Landscaped Median	1	123	\$7,800,000
	BP-10	Fort Dickerson Rd to Moody Ave	Provide Landscaped Buffer, Separated Bicycle Lanes, Sidewalks	1	121	\$6,800,000
	BP-16	Moody Ave to Young High Pk	Provide Landscaped Buffer, Separated Bicycle Lanes, Sidewalks	1	121	\$4,400,000
	BP-17	Young High Pk to Overbrook Dr	Provide Landscaped Buffer, Sidewalk, Shared Use Trail	1	115	\$3,400,000
Tier 2	A-29	Red Bud Rd to Lakeview Dr	Evaluate Vehicle Access at Eight Intersections	2	107	N/A*
	A-7	E Martin Mill Pk	Close Two Intersections to Vehicles; Provide Bike/Ped Connection	1	101	N/A*
	I-34	Lindy Dr	Realign Lindy Drive and Install Traffic Signal	3	100	\$1,500,000
	N-21	Young High Pk to Woodlawn Pk (south)	Create Backage Road to Shopping Center	1	99	\$1,500,000
	T-23	Blount Ave to Young High Pk	Enhance Bus Stops and Provide Bus Shelters	1	94	\$320,000
	I-32	E Lake Forest Dr (south)	Realign across from Colonial Drive at Existing Traffic Signal	3	91	\$1,000,000
	I-36	Fort Valley Rd	Install Traffic Signal	3	89	\$500,000
	BP-31	Lakeview Dr to Chapman Ford Crossing	Provide Landscaped Buffer, Sidewalk, Shared Use Trail	3	83	\$1,300,000
	I-42	W Dick Ford Ln	Install Traffic Signal	4	83	\$500,000
	A-15	Childress St	Convert to Right-In/Right-Out	1	82	N/A*
	BP-25	Overbrook Dr to Lakeview Dr	Provide Landscaped Buffer, Sidewalk, Shared Use Trail	2	82	\$2,000,000
Tier 3	A-41	Longvale Dr to Little Switzerland Rd	Close Three Intersections to Vehicles; Provide Bike/Ped Connection	4	74	N/A*
	N-6	Fort Ave	Create Backage Road to Shopping Center	1	73	\$750,000
	N-22	Overbrook Dr	Extend Overbrook Drive to Shopping Center	1	69	\$750,000
	A-14	Druid Dr (east)	Close One Intersection to Vehicles; Provide Bike/Ped Connection	1	67	N/A*
	T-45	Nixon Rd to Mountain Grove Dr	Enhance Bus Stops and Provide Bus Shelters	5	65	\$80,000
	A-28	Judith Dr to Larry Dr	Evaluate Vehicle Access at Two Intersections	2	63	N/A*
	BP-44	Nixon Rd to Mountain Grove Dr	Provide Landscaped Buffer, Sidewalk, Shared Use Trail	5	63	\$3,200,000
	BP-40	Chapman Ford Crossing to Nixon Rd	Provide Landscaped Buffer, Sidewalk, Shared Use Trail	4	61	\$1,400,000
	A-33	Eastwood Dr	Close One Intersection to Vehicles; Provide Bike/Ped Connection	3	53	N/A*
	N-13	W Blount Ave at Maryville Pk	Single Lane Roundabout	1	52	\$750,000
	BP-47	W Norton Rd/Mountain Grove Dr	Shared Use Path (alternative to Chapman Highway)	5	47	\$1,000,000
	N-46	Quaker Way	Extend Quaker Way to West Dick Ford Lane	5	40	\$1,500,000
	N-38	West Ford Valley Rd at Old Valley Rd	Single Lane Roundabout	3	18	\$750,000
	N-5	Hawthorne Ave at Augusta Ave	Intersection Redesign/Consolidation	1	-2	\$500,000

M Median
 A Access Management
 BP Bicycle/Pedestrian
 I Intersection
 N Non-Chapman
 T Transit

*Costs not provided; further evaluation needed to determine scope

Figure 24B: Prioritized Projects



Tier 1

Project Code	Stakeholder Score	Quantitative Score
I-12	91	66
I-26	81	63
M-30	80	60
M-43	81	58
M-24	80	56
M-39	76	56
BP-2	61	71
T-19	72	60
M-1	61	62
BP-10	53	68
BP-16	51	70
BP-17	47	68

Tier 2

Project Code	Stakeholder Score	Quantitative Score
A-29	44	63
A-7	34	67
I-34	43	57
N-21	43	56
T-23	61	33
I-32	41	50
I-36	32	57
BP-31	30	53
I-42	36	47
A-15	21	61
BP-25	28	54

Tier 3

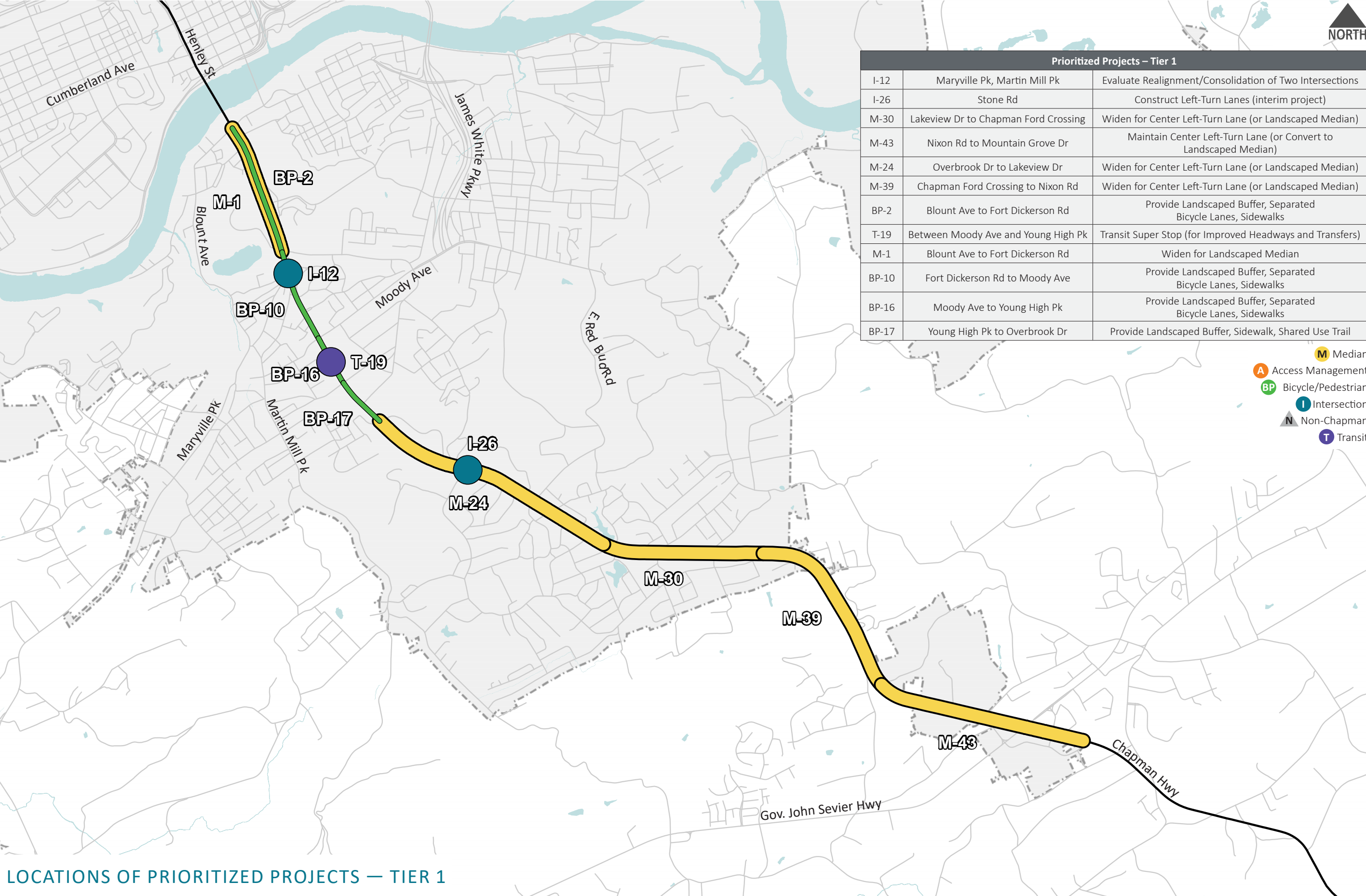
Project Code	Stakeholder Score	Quantitative Score
A-41	26	48
N-6	25	48
N-22	37	32
A-14	6	61
T-45	38	27
A-28	12	51
BP-44	26	37
BP-40	24	37
A-33	4	49
N-13	12	40
BP-47	20	27
N-46	13	27

Table 6: Prioritized Projects by Category

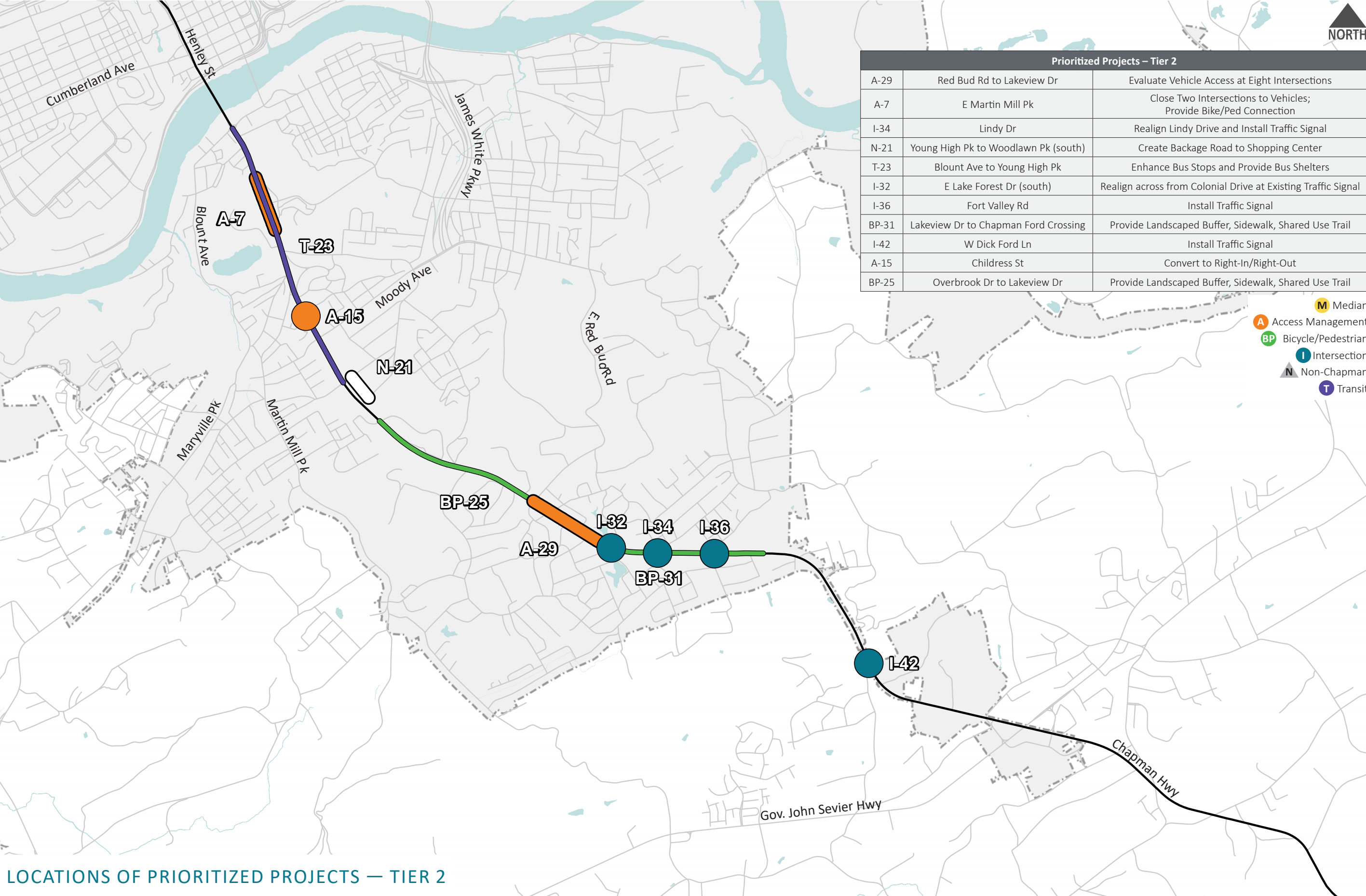
	Project Code	Location	Description	Segment	Total Score	Anticipated Cost
Median (M)	M-30	Lakeview Dr to Chapman Ford Crossing	Widen for Center Left-Turn Lane (or Landscaped Median)	3	140	\$7,700,000
	M-43	Nixon Rd to Mountain Grove Dr	Maintain Center Left-Turn Lane (or Convert to Landscaped Median)	5	139	\$7,800,000
	M-24	Overbrook Dr to Lakeview Dr	Widen for Center Left-Turn Lane (or Landscaped Median)	2	136	\$12,800,000
	M-39	Chapman Ford Crossing to Nixon Rd	Widen for Center Left-Turn Lane (or Landscaped Median)	4	132	\$10,500,000
	M-1	Blount Ave to Fort Dickerson Rd	Widen for Landscaped Median	1	123	\$7,800,000
Access Management (A)	A-29	Red Bud Rd to Lakeview Dr	Evaluate Vehicle Access at Eight (8) Intersections	2	107	N/A*
	A-7	E Martin Mill Pk	Close Two (2) Intersections to Vehicles; Provide Bike/Ped Connection	1	101	N/A*
	A-15	Childress St	Convert to Right-In / Right-Out	1	82	N/A*
	A-41	Longvale Dr to Little Switzerland Rd	Close Three (3) Intersections to Vehicles; Provide Bike/Ped Connection	4	74	N/A*
	A-14	Druid Dr (east)	Close One (1) Intersection to Vehicles; Provide Bike/Ped Connection	1	67	N/A*
	A-28	Judith Dr to Larry Dr	Evaluate Vehicle Access at Two (2) Intersections	2	63	N/A*
	A-33	Eastwood Dr	Close One (1) Intersection to Vehicles; Provide Bike/Ped Connection	3	53	N/A*
Bicycle/Pedestrian (BP)	BP-2	Blount Ave to Fort Dickerson Rd	Provide Landscaped Buffer, Separated Bicycle Lanes, Sidewalks	1	132	\$8,900,000
	BP-10	Fort Dickerson Rd to Moody Ave	Provide Landscaped Buffer, Separated Bicycle Lanes, Sidewalks	1	121	\$6,800,000
	BP-16	Moody Ave to Young High Pk	Provide Landscaped Buffer, Separated Bicycle Lanes, Sidewalks	1	121	\$4,400,000
	BP-17	Young High Pk to Overbrook Dr	Provide Landscaped Buffer, Sidewalk, Shared Use Trail	1	115	\$3,400,000
	BP-31	Lakeview Dr to Chapman Ford Crossing	Provide Landscaped Buffer, Sidewalk, Shared Use Trail	3	83	\$1,300,000
	BP-25	Overbrook Dr to Lakeview Dr	Provide Landscaped Buffer, Sidewalk, Shared Use Trail	2	82	\$2,000,000
	BP-44	Nixon Rd to Mountain Grove Dr	Provide Landscaped Buffer, Sidewalk, Shared Use Trail	5	63	\$3,200,000
	BP-40	Chapman Ford Crossing to Nixon Rd	Provide Landscaped Buffer, Sidewalk, Shared Use Trail	4	61	\$1,400,000
	BP-47	W Norton Rd/Mountain Grove Dr	Shared Use Path (alternative to Chapman Highway)	5	47	\$1,000,000
Intersection (I)	I-12	Maryville Pk, Martin Mill Pk	Evaluate Realignment / Consolidation of Two (2) Intersections	1	157	N/A*
	I-26	Stone Rd	Construct Left-Turn Lanes (interim project)	2	144	\$750,000
	I-34	Lindy Dr	Realign Lindy Drive and Install Traffic Signal	3	100	\$1,500,000
	I-32	E Lake Forest Dr (south)	Realign across from Colonial Drive at Existing Traffic Signal	3	91	\$1,000,000
	I-36	Fort Valley Rd	Install Traffic Signal	3	89	\$500,000
	I-42	W Dick Ford Ln	Install Traffic Signal	4	83	\$500,000
Non-Chapman (N)	N-21	Young High Pk to Woodlawn Pk (south)	Create Backage Road to Shopping Center	1	99	\$1,500,000
	N-6	Fort Ave	Create Backage Road to Shopping Center	1	73	\$750,000
	N-22	Overbrook Dr	Extend Overbrook Drive to Shopping Center	1	69	\$750,000
	N-13	W Blount Ave at Maryville Pk	Single Lane Roundabout	1	52	\$750,000
	N-46	Quaker Way	Extend Quaker Way to West Dick Ford Lane	5	40	\$1,500,000
	N-38	West Ford Valley Rd at Old Valley Rd	Single Lane Roundabout	3	18	\$750,000
	N-5	Hawthorne Ave at Augusta Ave	Intersection Redesign / Consolidation	1	-2	\$500,000
Transit (T)	T-19	Between Moody Ave and Young High Pk	Transit Super Stop (for Improved Headways and Transfers)	1	132	\$100,000
	T-23	Blount Ave to Young High Pk	Enhance Bus Stops and Provide Bus Shelters	1	94	\$320,000
	T-45	Nixon Rd to Mountain Grove Dr	Enhance Bus Stops and Provide Bus Shelters	5	65	\$80,000

M Median
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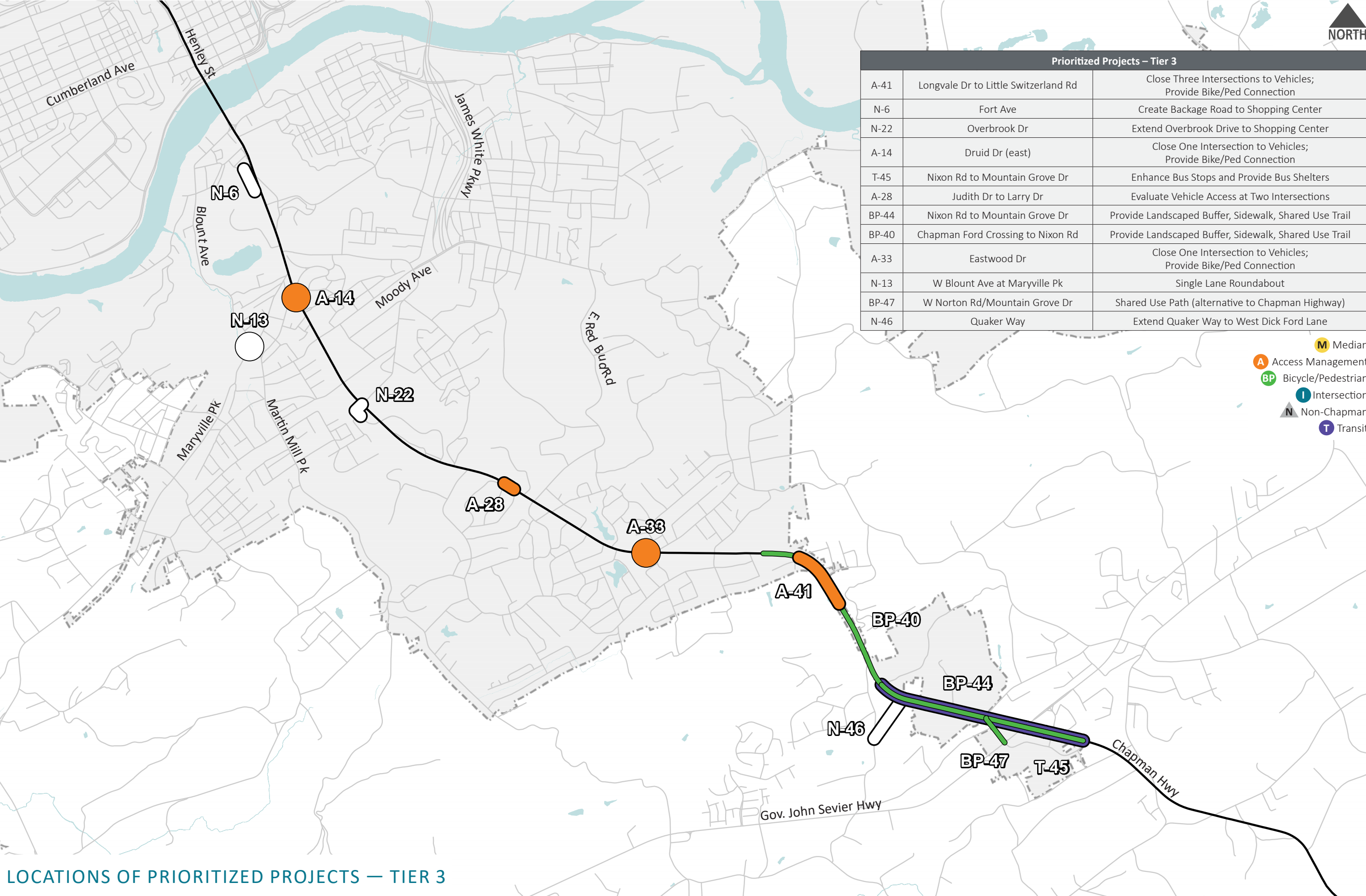
*Costs not provided; further evaluation needed to determine scope



LOCATIONS OF PRIORITIZED PROJECTS — TIER 1



LOCATIONS OF PRIORITIZED PROJECTS — TIER 2



LOCATIONS OF PRIORITIZED PROJECTS — TIER 3

CONCLUSION

The Chapman Highway Implementation Plan builds upon a long history of planning work within the region and along the corridor. As one of the primary corridors facilitating regional connectivity as well as local access in South Knoxville, Chapman Highway is a high priority for many citizens and stakeholders.

The projects, priorities, and strategies identified in the Chapman Highway Implementation Plan consider the existing and future needs of people living, working, and traveling within the corridor. These implementation steps will help guide the future of this corridor in years to come. As the City, TDOT, and other agencies begin considering the next steps, the Chapman Highway Implementation Plan will serve as a guidepost for decisions that guide this corridor successfully into the future.

INVITING SUCCESS

The primary objective of an implementation plan is to identify actionable projects that can start seeing near-term improvements. The Chapman Highway corridor is already starting to see the benefits of the work done within this plan. The following areas highlight opportunities for “quick wins”—lower cost, more easily implementable solutions that can be considered right away—as well as strategies for advancing projects in a cost-effective manner.

SPEED LIMIT REDUCTIONS

During the public outreach process, participants identified speeds along Chapman Highway as one of the corridor’s primary safety concerns. Prior to the completion of this final report, the City of Knoxville lowered the speed limit between Ellis Road and Mountain Grove Drive (within Segments 4 and 5) from 50 to 45 miles per hour. Considering a speed limit reduction from 45 to 35 miles per hour between Hawthorne Avenue and Overbook Drive/Frona Lane (within Segment 1) would further underscore the City’s commitment to safer travel speeds along the corridor. These speed limit reductions can be paired with enhanced notification or monitoring signage to educate the public about the change and encourage compliance.

ACCESS MANAGEMENT STRATEGIES

The access management recommendations identified in this plan represent tactical opportunities to improve safety and predictability along the corridor through modifications such as backage road and road extensions, right-in/right-out intersections, cul-de-sacs with pedestrian access, and intersection closures. These strategies, paired with the enforcement of driveway closures and shared driveways for development or redevelopment areas, represent opportunities to improve specific areas with lower cost and lower impact solutions.

INTERSECTIONS

Intersection improvements recommended along the corridor can help improve safety, mobility, and multimodal travel. Although these improvements are smaller in scale, they often result in a significant benefit for the corridor. Even if the funding is not available to complete a full intersection project, individual intersection leg improvements can allay specific concerns. These incremental improvements should be implemented in a manner that is coordinated with the final vision for the intersection, thereby avoiding rework and additional costs in the future.

OPPORTUNISTIC PROJECT SELECTION

The City of Knoxville received funding through a State Multimodal Access Grant to design and construct pedestrian, bicycle, and transit improvements between Woodlawn Pike and Stone Road (within portions of Segments 1 and 2). This project combines several different types of improvements in a manner that maximizes available funding while also creating a logical overall result. The City of Knoxville and other funding partners should continue to be opportunistic in identifying combinations of recommendations that can be built in a manner consistent with the ultimate proposed cross-section for the corridor. The independent projects shown within this plan can be combined where possible, often resulting in an overall cost savings when compared with their independent completion.

NEXT STEPS

Coordination with TDOT

Use the public feedback, analysis, findings and documentation from the Chapman Highway Implementation Plan to aid communication with TDOT on the development of IMPROVE Act projects. TDOT has served as a partner agency during the preparation of this Plan. While the IMPROVE Act projects that will ultimately be developed and implemented will be led by TDOT, this plan and other efforts can serve as helpful data points providing more information on current conditions, public sentiment, and planning recommendations. The City will continue to communicate with TDOT about how best to consider the findings of this plan within their implementation strategies, as well as implementation timelines and coordination with ongoing or new local initiatives.

Coordination with the Development Community

The Chapman Highway Implementation Plan provides a series of recommendations for the corridor intended to enhance the user experience for all modes of travel. The recommendations in this plan should be considered as development or redevelopment opportunities are identified within the study area. Recommendations in this plan will serve as a starting point for discussions with interested developers in the area, thereby facilitating continuity between the use of public and private funds. Additionally, the principles outlined in this plan related to access management, bicycle and pedestrian accommodations, or other enhancements should be applied as appropriate.

Addressing Constraints

Many of the major project recommendations identified in the Chapman Highway Implementation Plan will have to overcome constraints or challenges if they are to be successfully completed. Along this corridor, significant topographic features such as rock outcroppings are envisioned to pose a particular challenge. While major improvements often take a long time to be fully implemented, initial study can be conducted in areas where challenges are anticipated to better understand the potential solutions, impacts, and costs. Areas identified for major projects also should be studied to help identify near-term strategies that can improve the areas within the longer time period needed for major project completion.

The image features a modern, abstract geometric design. In the top-left corner, there are overlapping shapes in teal, orange, and a dark grey with fine horizontal lines. The rest of the page is a solid light grey. The word 'APPENDIX' is centered in the upper right area in a white, bold, sans-serif font.

APPENDIX