WILMAPCO Council
Action Item Summary Sheet
Meeting Date: July 17, 2025

Action Item #14: To Endorse the Draft Kirkwood Highway Land Use & Transportation Plan

Description/Summary of Item:
The Kirkwood Highway Land Use & Transportation Plan is a comprehensive study to establish recommendations for transportation improvements and land use strategies to guide the future of the Kirkwood Highway/SR2 corridor. The development of the plan used a collaborative process that considered safety, environmental, community, and economic impacts of proposed improvements early in the planning process, consistent with the Federal Highway Administrations Planning and Environmental Linkages (PEL) approach.

Summary of Action Taken by PAC:
The PAC did not take action on this item. Four presentations were given to the PAC during the development of the plan update in December 2023, April 2024, June 2024 and April 2025.

Summary of Action Taken by TAC:
The TAC was given four presentations during the development of the plan: December 2023, April 2024, June 2024 and March 2025. The TAC recommended to Endorse the Draft Kirkwood Highway Land Use & Transportation Plan on June 12, 2025.

Summary of Action Taken by Subcommittee/Task Force *(if applicable)*:
N/A

WILMAPCO Staff Recommendations:
The WILMAPCO staff recommends that Council Endorse the Draft Kirkwood Highway Land Use & Transportation Plan.

Wilmington Area Planning Council

The Tower at STAR Campus
100 Discovery Blvd, Suite 800
Newark DE 19713
302-737-6205
Website: www.wilmapco.org

DRAFT RESOLUTION

BY THE WILMINGTON AREA PLANNING COUNCIL (WILMAPCO) TO ENDORSE THE KIRKWOOD HIGHWAY LAND USE & TRANSPORTATION PLAN

WHEREAS, the Wilmington Area Planning Council (WILMAPCO) has been designated the Metropolitan Planning Organization (MPO) for Cecil County, Maryland and New Castle County, Delaware by the Governors of Maryland and Delaware, respectively; and

WHEREAS, the WILMAPCO Council recognizes that comprehensive planning for future land use, transportation, sustainable economic development, environmental protection and enhancement, and community health and livability are necessary actions to implement the goals and objectives in the 2050 Regional Transportation Plan (RTP); and

WHEREAS, the New Castle County Department of Land Use and DelDOT requested that WILMAPCO coordinate with them to develop a land use and transportation master plan for the Kirkwood Highway/SR 2 Corridor; and

WHEREAS, the Kirkwood Highway Land Use & Transportation Plan assessed existing demographic, land use, environmental, traffic, and market conditions; and

WHEREAS, the Kirkwood Highway Land Use & Transportation Plan employed continuous and rigorous public engagement throughout the planning process; and

WHEREAS, the Kirkwood Highway Land Use & Transportation Plan puts forth recommendations which will spur economic development, mitigate community safety concerns, improve the multimodal transportation network, preserve community character, and, generally, spur mixed-use and mixed income reinvestment and redevelopment opportunities;

NOW, THEREFORE, BE IT RESOLVED that the Wilmington Area Planning Council does hereby endorse the final report and recommendations of the Kirkwood Highway Land Use & Transportation Plan.

Date: _____

John Sisson, Chairperson
Wilmington Area Planning Council

KIRKWOOD HIGHWAY

LAND USE AND TRANSPORTATION PLAN

JULY 2025

DRAFT

WILMAPCO

DelDOT

DART Moving Forward

DEPARTMENT OF LAND USE

WILMAPCO RESOLUTION

EXECUTIVE SUMMARY

Planning Process

The Wilmington Area Planning Council (WILMAPCO), in partnership with the New Castle County Department of Land Use (NCCDLU), Delaware Department of Transportation (DelDOT), and the Delaware Transit Corporation (DTC), initiated the development of the Kirkwood Highway Land Use and Transportation Plan in the Fall of 2023.

The purpose of the Kirkwood Highway Land Use and Transportation Plan is to create an attractive and cohesive plan for the Delaware SR 2, Kirkwood Highway corridor that includes both short- and long-term recommendations and is informed by community input to achieve a shared vision of the corridor.

A Master Plan of Land Use and Transportation for the Kirkwood Highway Corridor is needed to address these issues, both now and looking into the future, so that Kirkwood Highway can become a multimodal spine connecting neighborhoods, retail, and new mixed-use centers with a safe, comfortable environment for all users and all modes of travel, while supporting planned and sustainable economic growth.

WILMAPCO serves as the Metropolitan Planning Organization (MPO) for the region and manages the regional Unified Planning Work Program (UPWP). The UPWP is a program funded partially by the FHWA and FTA, as well as state and local partners, to advance planning for priority projects. The planning of the Kirkwood Highway Land Use and Transportation Plan has been funded through the UPWP.

WILMAPCO, DelDOT, the NCCDLU, and DTC served as the Management Committee for the Kirkwood Highway Land Use and Transportation Plan. In addition to the Management Committee, an Advisory Committee comprised of county and state elected officials, municipalities, community groups, businesses, special interest groups, and concerned citizens was assembled to provide input on issues, a vision for the corridor, draft alternatives and implementation strategies.

The Kirkwood Highway Land Use and Transportation Plan utilized consistent coordination with the Management Committee and input from the Advisory Committee at key decision points during the development of the recommendations for the Plan The project team proactively incorporated feedback and prepared study-related materials throughout the process and Advisory Committee meetings were scheduled to allow stakeholders the opportunity to engage with the project team, review information, and provide meaningful feedback. The Study began in the Fall of 2023 with a listening tour with 31 stakeholders hosted by the project team. Stakeholders were invited to meet with the project team to build relationships and share information about opportunities, issues, and concerns at the outset of the study.

The Management Committee met roughly every month with the project team between September 2023 and March 2025. Four Advisory Committees were held, between January 2024 and February 2025, with five Public Workshops hosted between December 2023 and February 2025. All public workshops were advertised on WILMAPCO's Facebook page, the project website, and in newsletters and direct communications to the project email list. Recognizing the diversity of stakeholders in the corridor, all workshop communications were also developed in Spanish, and all public workshops included Spanish translators. The Plan process connected with over 340 people, with 110+ surveys filled out.

Existing Conditions

DE SR 2 is the main principal arterial traveling east-west that defines the spine of the Kirkwood Highway Corridor. Existing traffic ranges from approximately 24,000 annual average daily traffic (AADT) on the west end of the Corridor, to 40,000 AADT in the center of the corridor between State Route (SR) 7 and SR 141, and 27,000 AADT at the east end. SR 141 is a principal arterial travelling north-south and intersects Kirkwood Highway at the only interchange in the SR 2 corridor. SR 7 and SR 41 are principal arterials also traveling north-south.

Average weekday peak-hour speeds along the corridor are mostly 26 to 35 MPH in the middle of the corridor, with congestion at the Newark end of the corridor and through Elsmere. As defined by WILMAPCO, two intersections along Kirkwood Highway are ranked in the worst 20 intersections statewide (based on number, severity, and cost of crashes): Kirkwood Highway and Limestone Road (#2), and Kirkwood Highway and Red Mill Road (#19).

Sidewalks, crosswalks, footpaths, and multi-use paths are non-motorized facilities found throughout the corridor but are disjointed and not always connected to larger networks. The sidewalk network along Kirkwood Highway has gaps in places, notably towards the western edge of the corridor. There are few multi-use paths and off-road footpaths outside of parks in the study area and no dedicated bicycle infrastructure. Also, the nature of the suburban development patterns and transportation network has created disconnected "islands" of low-stress streets that are separated by barriers that only more experienced riders would be comfortable crossing. Crosswalks are found at most major intersections in the study area.

DART First State operates public bus transit routes throughout the Kirkwood Highway corridor. Of note is the Route 6, which operates along the entire length of Kirkwood Highway from Newark to Wilmington. The Route 6 also has one of DART's highest ridership in the entire State of Delaware.

The Kirkwood Highway Corridor is home to a variety of community-oriented institutional, commercial, educational, and natural/recreational uses, many of which have evolved slowly over time. It is designated as a Type 1 Commercial Corridor Development area (Type 1 Corridor) in the New Castle County Future Land Use Map. In a Type 1 Corridor, commercial development is typically oriented toward serving adjacent residential communities, where bolstering neighborhood stability is paramount. Commerce along the corridor is not expected to grow. Forecasts indicate 3 percent of jobs and 9 percent of residents and businesses will leave over the next 30 years. From 2000 to 2020, the Kirkwood Highway Corridor has continued to grow older and more racially diverse. At the same time, the total number of houses, apartments, and other residences have experienced minimal growth.

Over the years, Kirkwood Highway has evolved into a "Stroad" (Figure 12). This term describes a thoroughfare that simultaneously strives to achieve the advantages of both streets and roads. However, in most cases, "Stroads" become inefficient, leading to safety challenges and operational difficulties for all users. A planning principle that could be implemented by the Kirkwood Highway Land Use and Transportation Plan is to redefine sections of the "Stroad" to either function more like a "Street" or a "Road." A "Street" prioritizes mobility, captures the value of surrounding land uses, encourages slower automobile travel with a focus on multi-modal safety, and provides a facility for all users. Conversely, a "Road" provides an efficient connection to places, focuses on vehicular travel with higher speeds than a "Street," and generally restricts access with fewer driveways and minor side streets.

During the development of the Kirkwood Highway Land Use and Transportation project, the project team recognized the need to identify recommendations for land use design approaches and transportation improvements to, over time, transform sections of the Kirkwood Highway "Stroad" to either a "Street" or "Road" to support the Vision for the Corridor.

Project Vision

A Vision Statement was developed through feedback from the Advisory Committee and public workshops and was used to evaluate future transportation and land use proposals and initiatives:

- Kirkwood Highway should become a **multimodal** corridor that serves a variety of **compact community** and **business centers** between Newark and Wilmington.
- Transportation facilities design elements, reflective of the context of the different areas along the corridor, should **discourage high traffic speeds** and **promote safe access for all ages and abilities** to destinations by **walking, bicycling, rolling, and transit** while managing congestion levels.
- Economic development efforts should focus on facilitating a **transition from auto-oriented design to more bikeable and walkable places** that mix affordable **community-serving retail and services with housing opportunities** that serve the corridor's **diverse clientele**.
- Both public and private properties should integrate **landscaping and open space**.
- Connected networks serving all modes should link Kirkwood Highway's community and business centers to **adjacent neighborhoods** and resources such as **schools and parks**.

Scenario Planning & Transportation Alternative Screening Analysis

Scenario planning is a useful approach to considering the degree to which substantial policy or investment decisions would likely affect key outcome metrics. The objective of scenario planning is to examine broad trends, not to define a specific alternative. Scenarios provide an opportunity to consider land use and transportation synergies that aren't typically evaluated in conventional corridor studies in which land use assumptions are held constant.

The scenario planning and transportation alternatives screening analysis included a market analysis and sensitivity analyses conducted to consider land use and transportation synergies.

The market analysis suggests that when considering the overall residential market, there could be demand for 1,060 additional units within a quarter mile of Kirkwood Highway in the next several years.

Scenario analyses were informed through

- An overview of screening considerations for defining scenarios;
- The initial scenario concepts: a Transit Boulevard and a Multimodal Corridor; and
- The affordability of different levels of transit investment.

The initial stakeholder outreach on a Vision Statement for Kirkwood Highway yielded several areas of stakeholder interest relevant to the definition of scenarios. At the Scenario Planning Workshop attendees were provided guidance on what scenario planning would achieve and prompted for topics of interest. The intent of scenario planning was to stress test very different, yet practical, alternatives as different ways to achieve the Corridor Vision. In considering scenarios (as contrasted with project "alternatives"), the objectives include:

- Feasibility – stretch, but be pragmatic
- Theme – establish scenarios that can be recognized as very different philosophical approaches to achieving goals/objectives
- Differentiation – define scenarios that will have meaningful changes in evaluation metrics

Building on the concerns regarding the concept of the Stroad and stakeholder feedback, the project team proposed two basic scenarios for Kirkwood Highway: a transit boulevard and a multimodal corridor. With a Transit Boulevard scenario, the focus of development policies would be to use policy incentives to help direct development toward new transit stations. A substantial investment in transformative fixed-guideway transit can also catalyze private sector investment as the public sector investment signals a commitment to a series of permanent station locations. In contrast, a Multimodal Corridor approach would focus on access to development along the entire corridor (wherein bus stops might be moved and therefore don't provide the same type of community anchor as a BRT or LRT station).

The concept of a transit boulevard could include several different levels of transit investment: Transformative BRT, Basic BRT, and Enhanced Transit. Analysis has shown that transformative BRT is not cost-effective given the corridor context. A more basic BRT or enhanced-transit would likely be more cost-competitive.

While the scenario planning determined that Transformative BRT was not likely practical as a key element of the corridor land use and transportation plan, more nodal pattern of development as contrasted with the linear pattern of development appeared to have more promise. Even without the anchor of a fixed-guideway transit station, there are several advantages to a nodal pattern of development. The New Castle County Comprehensive Development Plan anticipated nodal pattern of development with a new future land use designation, Community Development Areas (CDA). The review of candidate sites for CDA implementation considered commercial area magnitude and compactness, along with guidance on both community compatibility for land use and community amenities. Two CDAs are proposed: Prices Corner and Midway Shopping Center.

Recommendations

Based upon the Scenario Planning and Transportation Alternative Screening Analysis, a Plan has been developed to create both short- and long-term recommendations in the Kirkwood Highway Corridor to achieve the Vision for the corridor, which includes:

- Discouraging high traffic speeds
  - Narrower travel lanes, less pavement, and adjacent pedestrian/bicycle facilities will discourage higher traffic speeds, especially in the “Street” areas.
  - Improvements to other key roads in the study area will also be designed to discourage high speeds and cut-through traffic.
- Creating Safe Access: all ages and abilities
  - Extensive sidewalk and a shared use path network will provide more comfortable and safer access throughout the study area.
- Enhancing walking, bicycling, rolling, and transit
  - The Plan will add 45 miles of non-motorized connections.
  - The Plan will increase the low-stress mileage by 15 percent.
- Managing Congestion Levels
  - Recommended improvements will maintain similar travel times compared to no-build conditions through 2045, while providing improved pedestrian and bicycling facilities, address opportunities for modest redevelopment, and more consistent travel speeds.
- Encouraging bikeable and walkable places

    - Community Development Areas will encourage land use designs that support bikeable and walkable places.
- Community-serving retail and housing
    - Community Development Areas will support mixed use redevelopment.
- Landscaping and open space
    - Transportation Improvements will be designed with aesthetics in mind for both “Street” and “Road” areas and enhance “sense of place”.
    - Community Development Areas will include opportunities for landscaping and open space as part of mixed use.
- Connecting neighborhoods, schools, and parks
    - Pedestrian and bicycle improvements will connect 49 isolated low-stress bicycle islands.
    - Plan improvements will increase the size of the average low-stress bicycle island by 39 percent.

Recommendations for the Kirkwood Highway Land Use and Transportation Plan have been categorized into eight (8) main categories: Land Use & Economic Development; Road and Street Sections; Major Intersections; Other Key Kirkwood Highway Intersections; Accommodating Churchman’s Road Extended; Transit; Other Key Roads in the Study Area; and Pedestrian/Bicycle Network Connections. The recommendations are detailed in Appendix E – Proposed Phased Implementation Approach.

Next Steps

The Kirkwood Highway Land Use and Transportation Plan has been developed to guide transportation and land use in the area over the next twenty years. The study includes multiple transportation project recommendations and land use strategies, guided by the Vision.

Project implementation can take a variety of forms. The study recommends that WILMAPCO include all projects identified in the Plan in the next update to the Regional Transportation Plan (RFP) as required. Based on the cost, complexity, and size of the project, different agencies may implement projects on different timelines. Larger investments will need to go through their own planning process, including a NEPA study to determine if the proposed improvements will have significant environmental effects and to identify mitigation strategies. Smaller projects may be pursued through DelDOT's CTP, WILMAPCO's Transportation Improvement Program, regular operating budgets, or other grants and funding programs. Stakeholders and community members are encouraged to voice their support for both individual projects, and the collection of projects as a whole, to their local elected leaders to help ensure that the recommendations receive necessary funding to advance through the project development process and ultimately be implemented. Continued implementation of DART Reimagined should also be a part of the study implementation.

The potential phased implementation approach has been developed based upon cost and complexity of potential implementation and is grouped in three phases:

- Short-Term: 1-6 Years
- Mid-Term: 7-14 Years
- Long-Term: 15+ Years

The proposed phased implementation approach is found in Appendix E.

Environmental Review, Mitigation Strategies, and a Monitoring Committee and Program are recommended to be considered and included as part of the next steps. Public involvement, and particularly engagement with minority or underrepresented groups, will continue to be critical as the Plan is adopted and projects are implemented. Individual projects will have varying impacts and may attract interest from different stakeholder groups.

One overarching concern expressed by some members of the Advisory Committee and reiterated at each public workshop was the possible timing of transportation improvements and development. As projects are implemented, consideration will need to be given to ensure that needed transportation infrastructure is in place as development occurs to support the project goals of enhancing quality of life and providing transportation choices.

TABLE OF CONTENTS

APPENDICIES

FIGURES

TABLES

1. PROJECT INTRODUCTION

The Wilmington Area Planning Council (WILMAPCO), in partnership with the New Castle County Department of Land Use (NCCDLU), Delaware Department of Transportation (DelDOT), and the Delaware Transit Corporation (DTC), initiated the development of the Kirkwood Highway Land Use and Transportation Plan in the Fall of 2023.

The purpose of the Kirkwood Highway Land Use and Transportation Plan is to develop an attractive and cohesive plan for the Delaware Route 2, Kirkwood Highway corridor. This plan includes both short-term and long-term recommendations informed by community input to achieve a shared vision of the corridor.

A. Project Background

Study Partners

WILMAPCO is responsible for administering the Kirkwood Highway Transportation and Land Use Plan in collaboration with DelDOT, NCCDLU, and DTC. These four agencies collectively served as the project's Management Committee, supported by a consultant team led by RK&K, along with Renaissance Planning, Kramer & Associates, and Qua Marketing.

Study Area

Kirkwood Highway is an eight-mile-long, east-west principal arterial that connects the City of Newark to the City of Wilmington and passes through the Town of Elsmere and unincorporated suburban areas of New Castle County, including Marshallton and Prices Corner. Within the project limits, Kirkwood Highway, also called Capital Trail in certain sections, is generally a four- to six-lane divided highway. The overall corridor is roughly bounded by the City of Newark to the west; the City of Wilmington to the east; the Pike Creek Area and along Faulkland Road to the north; and, generally, the CSX railroad line to the south (**Figure 1**).

Since Kirkwood Highway was paved in 1924, became a state highway in 1927, and received the Delaware State Route 2 (DE SR 2) designation in 1936, it has grown to become a major suburban road that serves as both a commuting route alternative to I-95 and a shopping and recreational destination. This suburban "main street" is challenged in its dual function: how to maintain mobility for vehicles that are traveling between Newark and Wilmington and points in between, while providing safe and convenient access for numerous communities that rely on the commercial corridor for shopping, recreation, and local employment. While there are some concentrations of commercial activity, like Prices Corner and Elsmere, most of the commercial areas are spread out along the Corridor, which helps support the suburban "main street" moniker.

As Kirkwood Highway and its surrounding area have experienced significant growth, particularly during the initial suburban development phase following World War II, it has acquired characteristics that pose challenges to facilitating safe and convenient access for all transportation modes. This can be largely attributed to the land use patterns that encourage, and a transportation infrastructure that is generally designed with, automotive access in mind. Transportation and crash data underscore these challenges: substantial traffic volumes, congestion at major intersections, difficulties in optimizing traffic signal timings to promote efficient traffic flow while simultaneously accommodating the needs of bicycle and pedestrian users, an increase in ridership on DART's bus route 6, and a rise in pedestrian and bicycle crashes.

In the New Castle County Comprehensive Development Plan, the County has recognized the importance of the Kirkwood Highway Corridor and enacted substantial legislation, such as Ordinance 24-057, to promote and encourage the redevelopment and continued viability of commercial corridors. Several aging retail centers along the corridor have commenced redevelopment, including the Prices Corner Area.

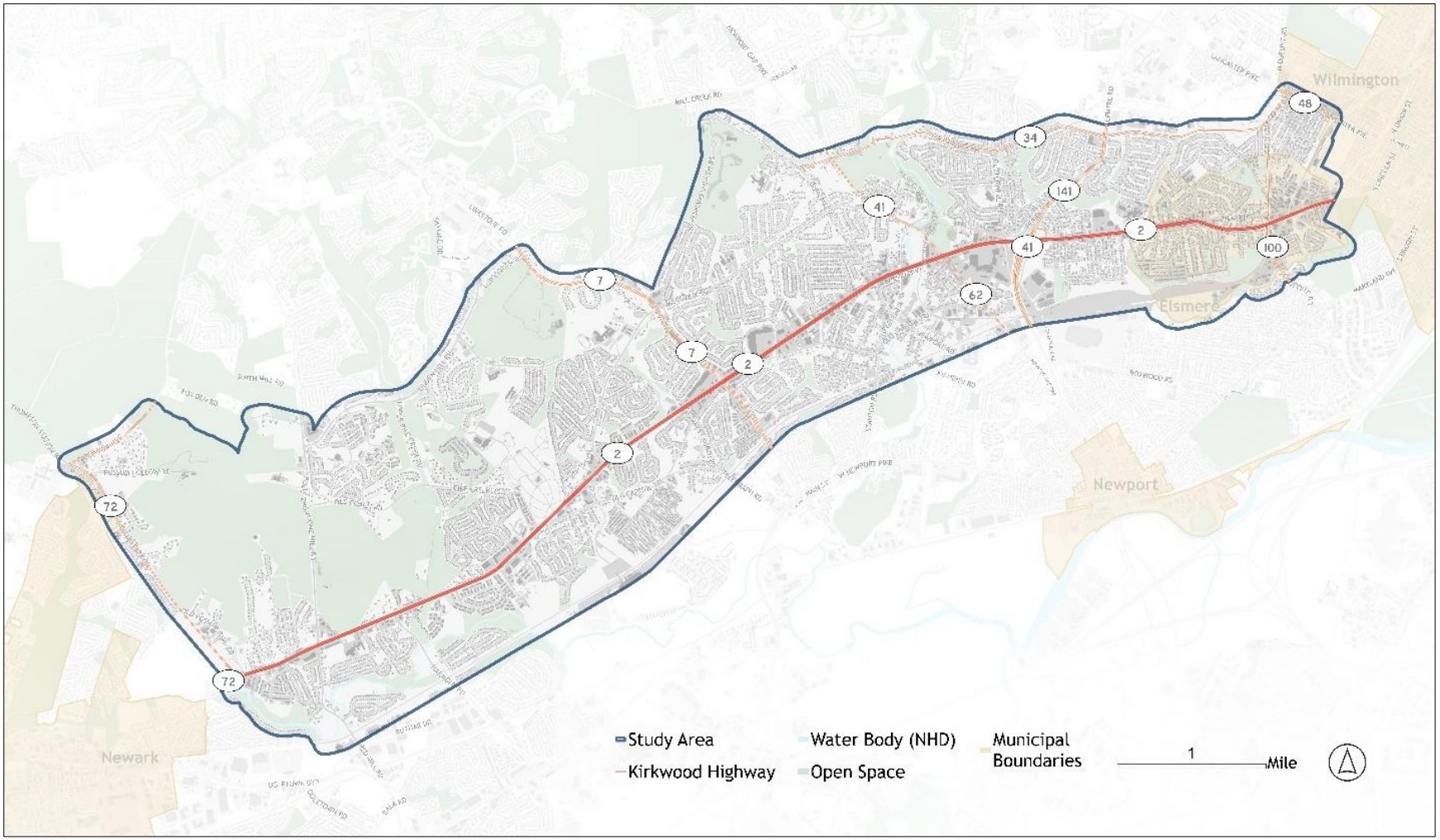


Figure 1. Kirkwood Highway Corridor

These centers can be guided by the principles of the Comprehensive Plan and the provisions of the Unified Development Code (UDC), with a comprehensive and multimodal Kirkwood Highway Corridor Land Use and Transportation Plan in place.

DTC also completed a reassessment of its services and operations through its DART Reimagined initiative, focused on improving transportation services across the State, including along Kirkwood Highway. DART Reimagined reviewed how riders currently use the transit system, where they currently access services, and where they want to go in the future.

A Master Plan of Land Use and Transportation for the Kirkwood Highway Corridor is needed to address these issues, both now and looking into the future, so that Kirkwood Highway can become a multimodal spine connecting neighborhoods, retail, and new mixed-use centers with a safe, comfortable environment for all users and all modes of travel, while supporting planned and sustainable economic growth.

The Kirkwood Highway Land Use and Transportation Plan has also been developed using the guidance and principals of a Planning and Environmental Linkages (PEL) study. A PEL study is part of a streamlined project development process in accordance with the Federal Highway Administration's (FHWA) guidelines. PEL is a "collaborative and integrated approach to transportation decision-making that considers benefits and impacts of proposed transportation system improvements to the environment, community, and economy during the transportation planning process"[1] (FHWA, accessed 2021). This study will inform the environmental review phase of the recommended transportation projects in accordance with the National Environmental Policy Act of 1969 (NEPA) as well as preliminary engineering. In collaboration with the project planning partners and the public, this study identifies the following:

- Project vision.
- Range of transportation alternatives.
- Preferred concept plan for transportation improvements.
- Preliminary analysis of potential environmental impacts from proposed transportation improvements.
- Preliminary transportation improvement cost estimates, and
- Implementation considerations.

This Plan serves as a response to the PEL Questionnaire, and a checklist is provided in **Appendix A**. Per the results of the Questionnaire, Study transportation recommendations will be considered for implementation in DelDOT's Capital Transportation Program (CTP).

[1] Federal Highway Administration, *Environmental Review Toolkit: FHWA Initiatives to Accelerate Project Delivery – Planning and Environmental Linkages*, https://www.environment.fhwa.dot.gov/env_initiatives/PEL.aspx (accessed July 16, 2021).

B. Existing Transportation Network

Roadway Network

DE SR 2 is the main principal arterial traveling east-west that defines the spine of the Kirkwood Highway Corridor. Existing traffic ranges from approximately 24,000 annual average daily traffic (AADT) on the west end of the Corridor, to 40,000 AADT in the center of the corridor between State Route (SR) 7 and SR 141, and 27,000 AADT at the east end. SR 141 is a principal arterial travelling north-south and intersects Kirkwood Highway at the only interchange in the SR 2 corridor. SR 7 and SR 41 are principal arterials also traveling north-south.

Minor arterials include Polly Drummond Road, Mill Creek Road between SR 2 and SR 7, and SR 100. Major Collectors include Possum Park Road, Harmony Road, Upper Pike Creek Road, Pike Creek Road, Old Capitol Trail, Saint James Church Road, Milltown Road between SR 7 and SR 41, Greenbank Road, and Centerville Road.

Non-Motorized Facilities

Sidewalks, crosswalks, footpaths, and multi-use paths are non-motorized facilities found throughout the corridor but are disjointed and not always connected to larger networks. The sidewalk network along Kirkwood Highway has gaps in places, notably towards the western edge of the corridor. There are few multi-use paths and off-road footpaths outside of parks in the study area and no dedicated bicycle infrastructure (**Figure 2**). Also, the nature of the suburban development patterns and transportation network has created disconnected “islands” of low-stress streets that are separated by barriers that only more experienced riders would be comfortable crossing. Crosswalks are found at most major intersections in the study area.

Transit

DART First State operates public bus transit routes throughout the Kirkwood Highway corridor. Of note is Route 6, which operates along the entire length of Kirkwood Highway from Newark to Wilmington (**Figure 3**). Route 6 also has one of DART’s highest ridership in the entire State of Delaware. Stops with the highest ridership are located at Prices Corner, Westside Plaza, Midway Shopping Center, Shops at Red Mill, Prospect Road, and Sanders Road. The Prices Corner Park and Ride is a major transfer station between multiple bus routes, such as Routes 4, 6, 9, and 18.

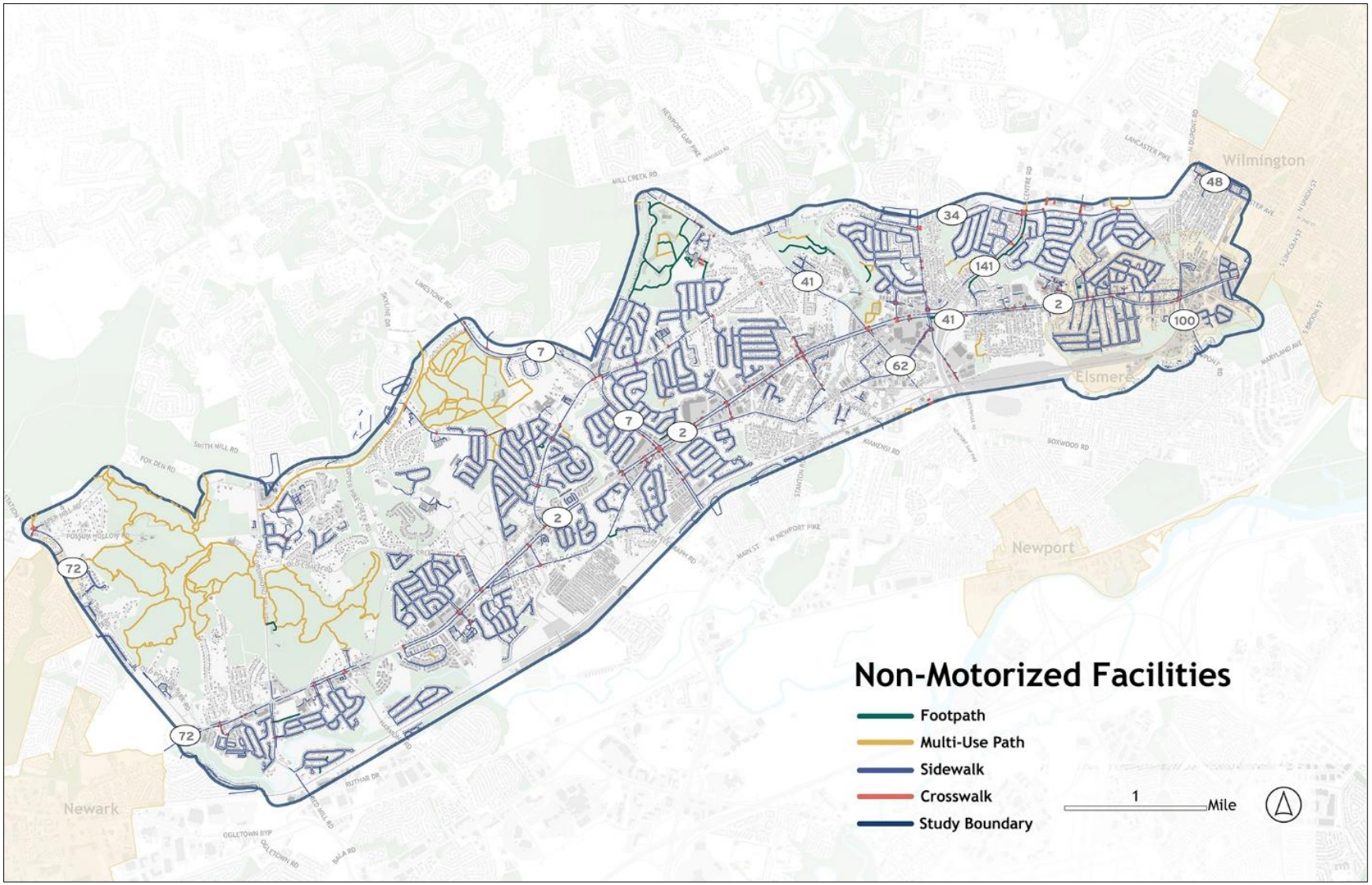


Figure 2. Non-Motorized Facilities

Source: WILMAPCO Non-Motorized Facilities and DNREC Trail Facilities, 2023

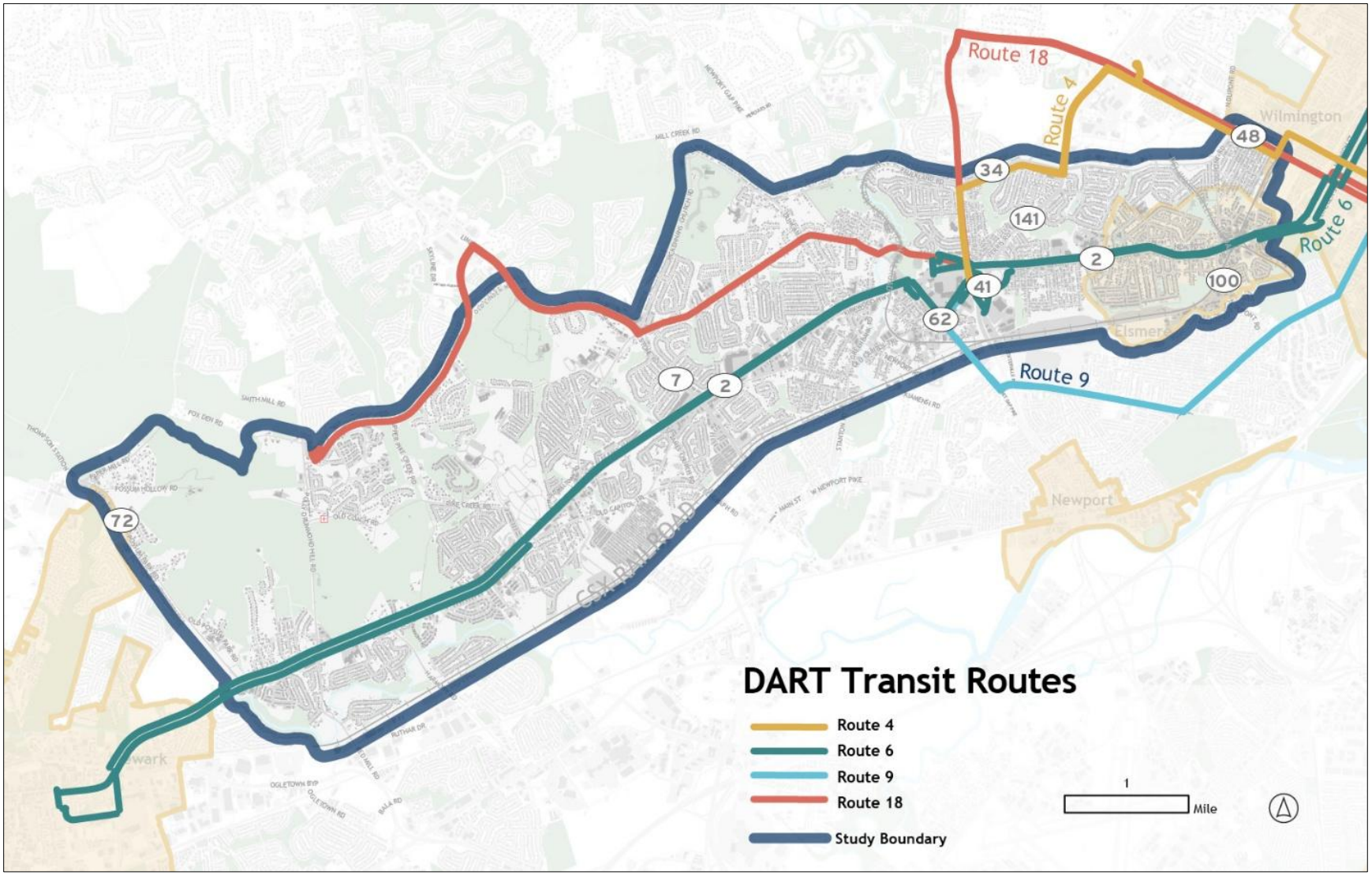


Figure 3. DART Transit Routes

Source: DTC, 2023

C. Existing Traffic Operations

Figure 4 shows the average weekday peak-hour speeds along key roadways in the Kirkwood Highway corridor. Average speeds shown in Figure 5 are from an average weekday day at 4:00PM and are categorized from 25 miles per hour (MPH) or below (green), to over 45 MPH (red). Average weekday peak-hour speeds are mostly 26 to 35 MPH in the middle of the corridor, with congestion at the Newark end of the corridor and through Elsmere.

Figure 5 shows overnight speeds along roads in the Kirkwood Highway study area. Similar to the average weekday peak-hour speeds (**Figure 4**), speeds are grouped by a range of speeds. **Figure 5** shows increased speeds during very low congestion times (in this case, overnight) as compared to peak-hour speeds (**Figure 4**), especially on the western edge of the corridor towards Newark.

D. Existing Crash Data

Figure 6 graphically shows the intersection crash rankings over a three-year period (2020 to 2022) for roads in the Kirkwood Highway study area, as compared to all intersections throughout the State of Delaware (2016 to 2022). Each year WILMAPCO uses the preceding three-years of crash data to perform statewide intersection crash analysis to rank intersections based on crash frequency, severity, and manner of impact. The severity and manner of impact affect the societal costs of each crash. The crash analysis methodology is based on the 2015 master's thesis titled "Development and Analysis of an Intersection Safety Prioritization Model for the State of Delaware" by Anna Duryea. The methodology uses each intersection's "sphere of influence" which varies from location to location based on factors such as intersection width and acceleration lanes. This "sphere of influence" provides a more accurate definition of each intersection area than a standard radial buffer, which may include crashes inside parking lots and that are more appropriately attributable to other adjacent intersections. Note, DelDOT uses different segment-based crash analysis and project prioritization procedures for ongoing safety programs, including the Highway Safety Improvement Program (HSIP) and Hazard Elimination Program (HEP). Although the crash analysis methodologies may result in slightly different final rankings for a given location, generally those areas with higher numbers of crashes and/or more severe crashes are ranked higher than areas with fewer or less severe crashes, regardless of the analysis methodology used.

As defined by WILMAPCO, based upon this analysis, two intersections along Kirkwood Highway are ranked in the worst 20 intersections statewide (based on number, severity, and cost of crashes): Kirkwood Highway and Limestone Road (#2), and Kirkwood Highway and Red Mill Road (#19).

E. Other Planning Studies

DelDOT continues to assess high crash locations throughout the State. Some of the high crash locations are found in the Kirkwood Highway Corridor as noted by the existing crash data. DelDOT also has studies focused on traffic calming on roads in the study area, including Milltown Road, which is a major collector in the existing transportation network.

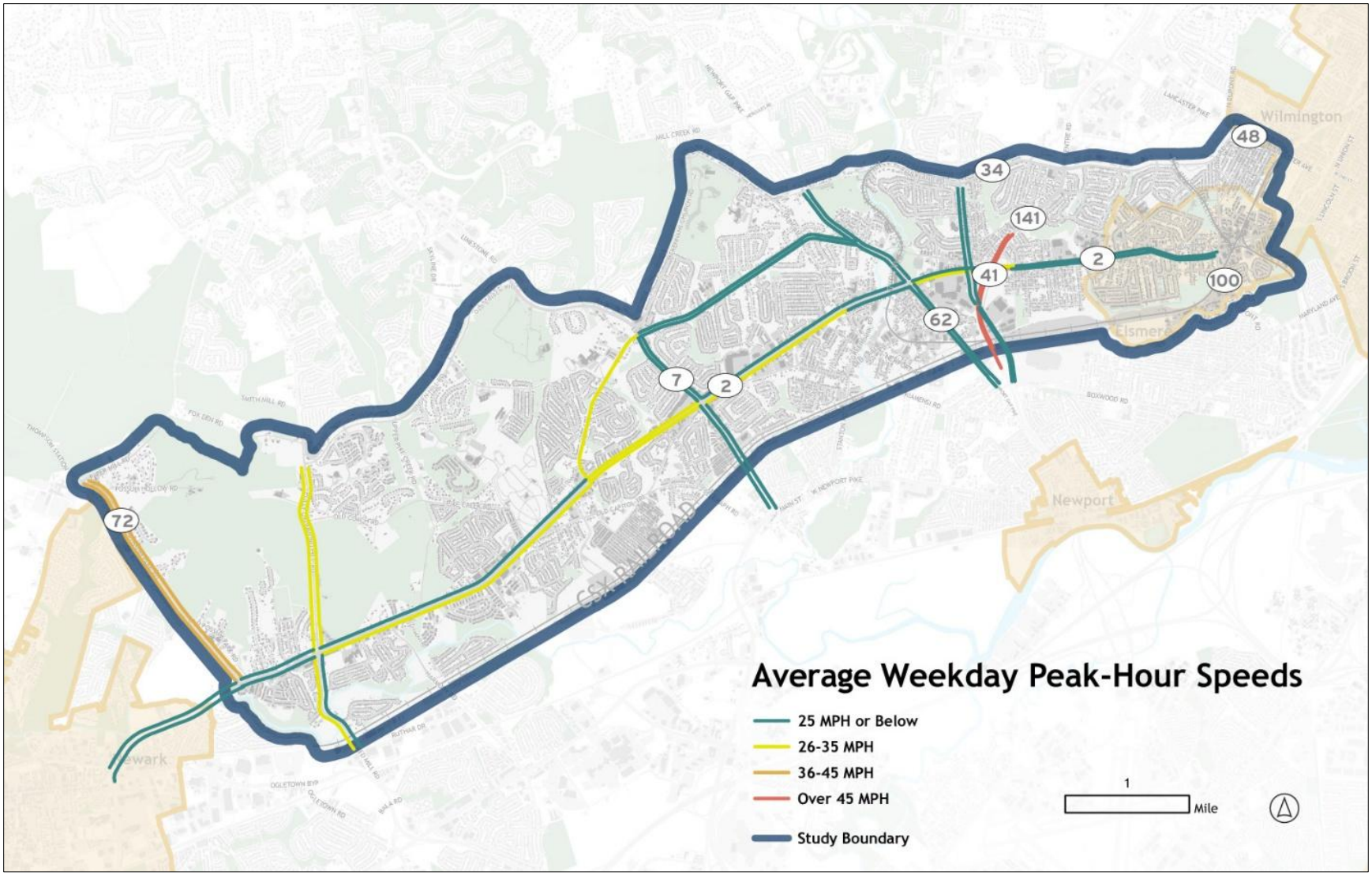


Figure 4. Average Weekday Peak-Hour Speeds

Source: National Performance Management Research Data Set, 2023

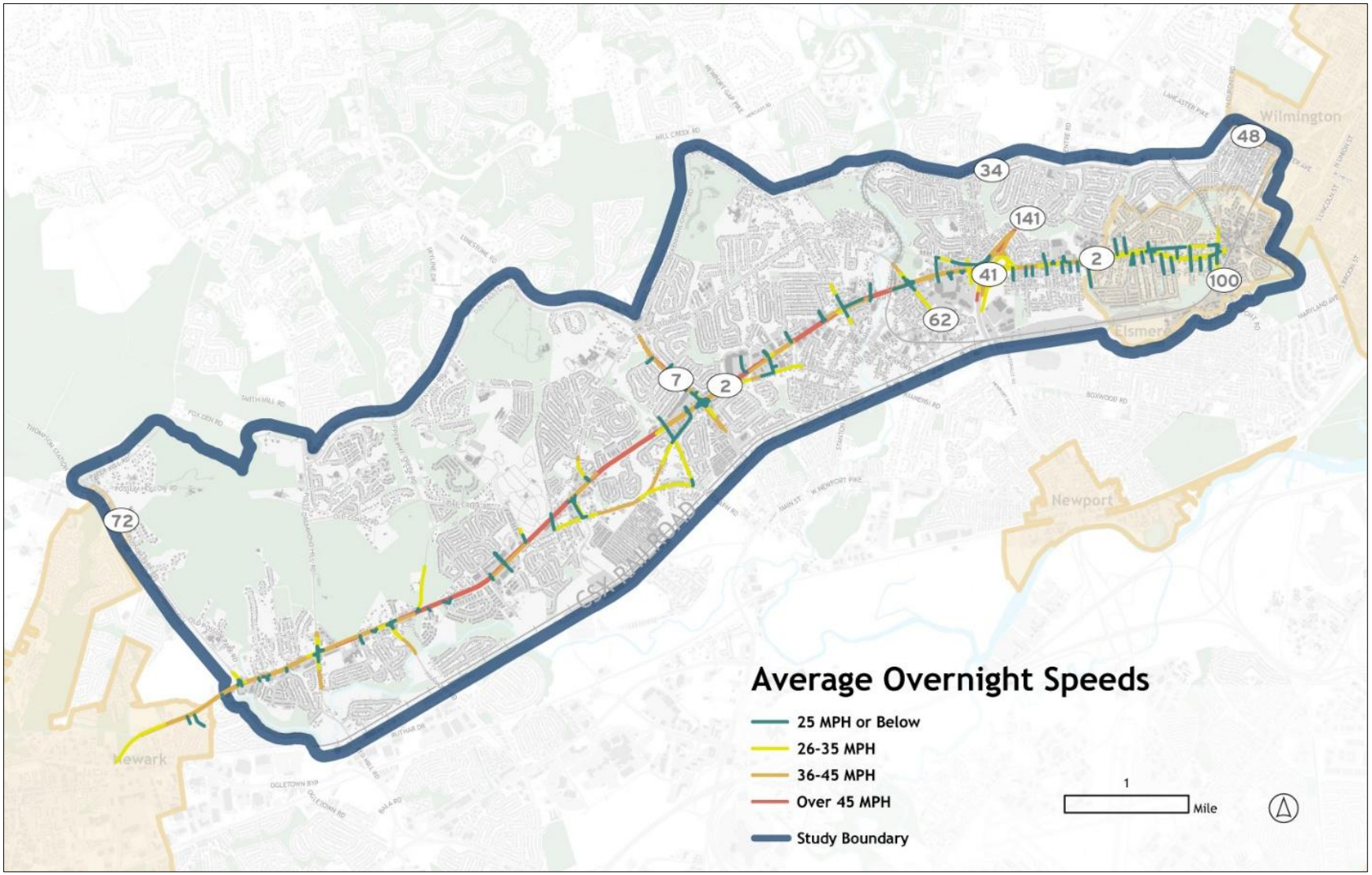


Figure 5. Average Overnight Speeds

Source: National Performance Management Research Data Set, 2023

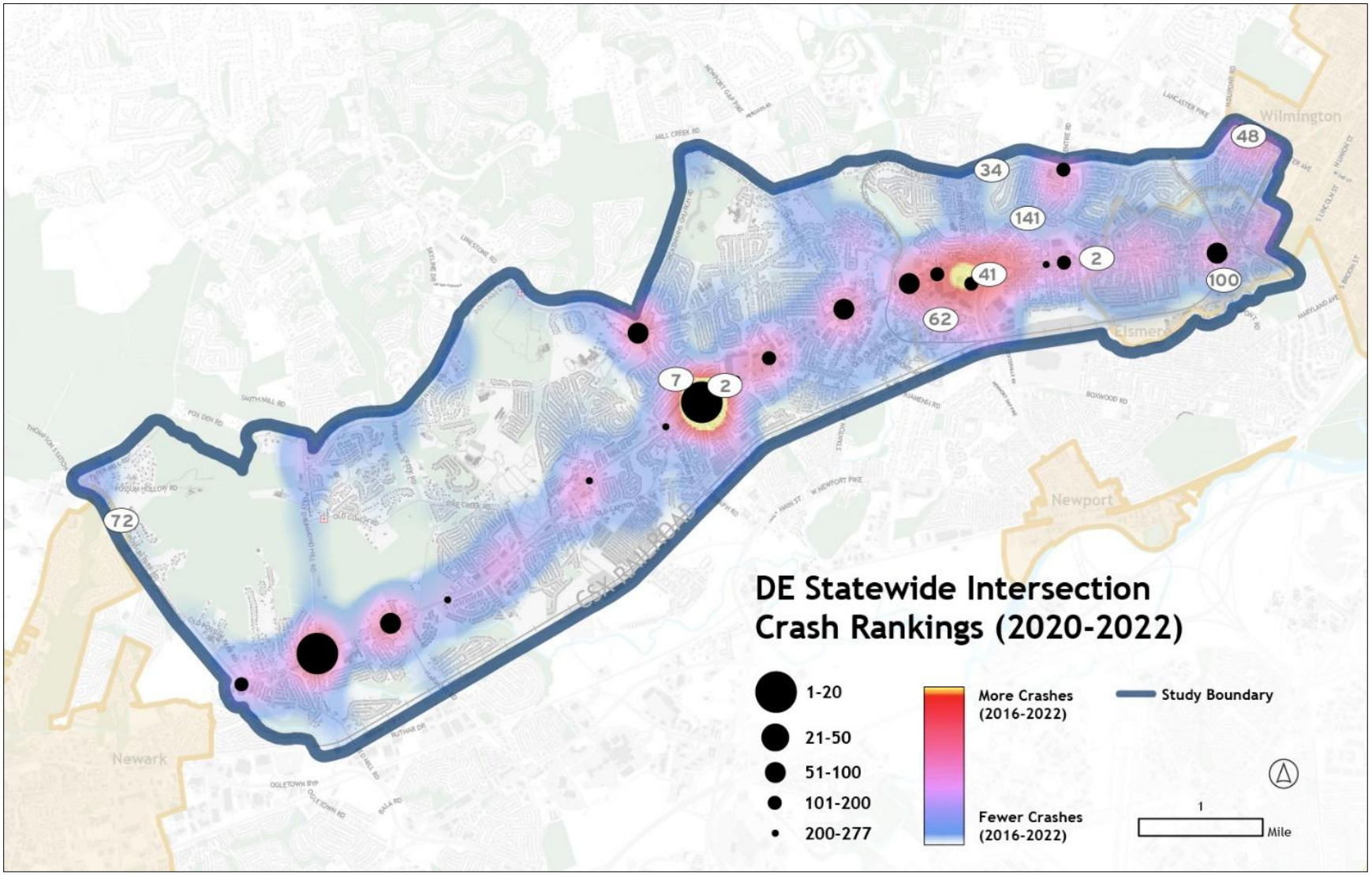


Figure 6. Intersection Crash Rankings (2020-2022)

Source: WILMAPCO Statewide Intersection Crash Rankings, 2023

2. PLANNING PROCESS

WILMAPCO serves as the Metropolitan Planning Organization (MPO) for the region and manages the regional Unified Planning Work Program (UPWP). The UPWP is a program funded partially by the FHWA and FTA, as well as state and local partners, to advance planning for priority projects. The Kirkwood Highway Land Use and Transportation Plan has been funded through the UPWP.

As mentioned earlier, WILMAPCO, DelDOT, the NCCDLU, and DTC served as the Management Committee for the Kirkwood Highway Land Use and Transportation Plan.

In addition to the Management Committee, an Advisory Committee comprised of county and state elected officials, municipalities, community groups, businesses, special interest groups, and concerned citizens was assembled to provide input on issues, a vision for the corridor, draft alternatives, opportunities and constraints, and implementation strategies. The following organizations were invited to participate in the Advisory Committee, along with State and County Elected Officials:

- NCC Chamber of Commerce
- Town of Elsmere
- Western YMCA
- Office of State Planning Coordination
- City of Newark
- Delaware State University
- Civic League for New Castle County
- Del Park Manor
- Hyde Park Civic Association
- Mill Creek Fire Company
- United Way
- Delaware Black Chamber
- Committee of 100
- Latin American Community Center
- Freedom Center

A. Project Scope and Schedule

The Kirkwood Highway Land Use and Transportation Plan began in the Fall of 2023 with a listening tour hosted by the project team. Stakeholders were invited to meet with the project team to build relationships and share information about opportunities, issues, and concerns at the outset of the study. The project team presented findings from the listening tour, as well as a summary of existing conditions and trends, at the Visioning Workshop, held December 11, 2023. Materials from the Visioning workshop, including themes from the listening tour and the summary of existing conditions and trends, as well as all other public workshops, are included in **Appendix E**.

Following the first workshop, the project team met with the Advisory Committee on January 29, 2024, to share the feedback from the Visioning Workshop and develop a draft Vision Statement. The project team also began discussions with both the Management and Advisory Committees on scenario planning that would be used in future meetings to develop transportation and land-use alternatives for analysis. A refined Vision Statement and scenario planning concepts were presented to the public at the Scenario Planning public workshop on February 21, 2024.

Feedback from the Advisory Committee and the Scenario Planning public workshop was used to develop land use and transportation alternatives, which were refined based upon feedback at the Advisory Committee meeting on May 22, 2024. The alternatives were presented at the Draft Alternatives Public Workshop on June 10, 2024.

Between June 2024 and September 2024, the project team analyzed potential alternatives and how well they addressed the Vision Statement, which had been established earlier in the planning process. The initial draft of recommendations was discussed with the Advisory Committee at its October 7, 2024, meeting and refined for public input via a presentation at the Draft Recommendations Public Workshop on November 14, 2024.

Based upon the feedback at the Draft Alternatives Public Workshop, the project team developed more detail, order of magnitude cost estimates, and potential implementation time frames. These final recommendations were shared with the Advisory Committee at its final meeting on February 6, 2025, and presented to the public at the Final Recommendations Public Workshop on February 24, 2025.

B. Stakeholder Coordination and Public Engagement

The Kirkwood Highway Land Use and Transportation Plan utilized consistent coordination with the Management Committee and input from the Advisory Committee at key decision points during the development of the recommendations for the Plan The project team proactively incorporated feedback and prepared study-related materials throughout the process and Advisory Committee meetings were scheduled to allow stakeholders the opportunity to engage with the project team, review information, and provide meaningful feedback. **Table 1** provides a summary of public engagement and the key topics discussed.

Applicable meeting documents, along with written comments that were received, can be found in **Appendix E**. Meeting recordings, along with a video created for the first public workshop. are available on the WILMAPCO website: Kirkwood | WILMAPCO.

All public workshops were advertised on WILMAPCO's Facebook page, the project website, and in newsletters and direct communications to the project email list. Recognizing the diversity of stakeholders in the corridor, all workshop communications were also developed in Spanish, and all public workshops included Spanish translators. The project team also set up a table in the lobby of the Holy Angels Church on Possum Park Road during two of its Spanish-only services the morning of Sunday September 22, 2024 to distribute information on the study, get feedback on potential transportation alternatives, and/or add stakeholders to the contact list.

Table 1. Summary of Stakeholder and Public Engagement

Management Committee Meetings	
September 2023 – March 2025	• Recurring calls to discuss project schedule, technical analysis, and public involvement efforts
Listening Tours	
September 2023 – October 2023	• Meetings with various stakeholders
Advisory Committee Meetings	
January 29, 2024	• Kirkwood Highway corridor overview • Vision Statement • Introduction to transportation and land use scenario planning • Criteria for evaluation • Potential Kirkwood Highway scenarios
May 22, 2024	• Land Use and market analysis • Transit • Roundabouts • Appropriate number of lanes • Major intersections • Accessible pedestrian and bike connections
October 7, 2024	• Draft Recommendations
February 6, 2025	• Final Recommendations
Public Workshops	
December 11, 2023	• Overview of transportation and land use planning • Existing conditions and trends • Vision statement development • Introduction Video
February 21, 2024	• Overview of transportation and land use planning • Vision statement • Potential scenarios • Scenario planning evaluation criteria
June 10, 2024	• Alternatives development • Road vs. Street alternatives along corridor
November 14, 2024	• Draft Recommendations
February 24, 2025	• Final Recommendations
Other Public Meetings	
March 27, 2024	• Delaware State Chamber of Commerce
September 22, 2024	• Holy Angels Church Services

3. PROJECT VISION

The vision for the Kirkwood Highway Land Use and Transportation Plan is guided by five goals:

- Strengthen alternative travel modes like walking, biking, and transit;
- Enhance existing neighborhood vitality;
- Position existing businesses to remain competitive;
- Accommodate future economic growth; and
- Promote more sustainable patterns of development.

At the first workshop on December 11, 2023, residents were asked to help develop a vision statement for the corridor. They were presented with vision statement examples from various locations and were asked to write down key words and phrases they would like incorporated into the statement. The Vision Statement was then refined through additional feedback from the Advisory Committee. The following visioning statement was developed from this feedback and used to evaluate future transportation and land use proposals and initiatives:

Kirkwood Highway should become a **multimodal** corridor that serves a variety of **compact community** and **business centers** between Newark and Wilmington.

Transportation facilities design elements, reflective of the context of the different areas along the corridor, should **discourage high traffic speeds** and **promote safe access for all ages and abilities** to destinations by **walking, bicycling, rolling, and transit** while managing congestion levels.

Economic development efforts should focus on facilitating a **transition from auto-oriented design to more bikeable and walkable places** that mix affordable **community-serving retail and services with housing opportunities** that serve the corridor's **diverse clientele**.

Both public and private properties should integrate **landscaping and open space**.

Connected networks serving all modes should link Kirkwood Highway's community and business centers to **adjacent neighborhoods** and resources such as **schools and parks**.

4. EXISTING CONDITIONS

A. Land Use

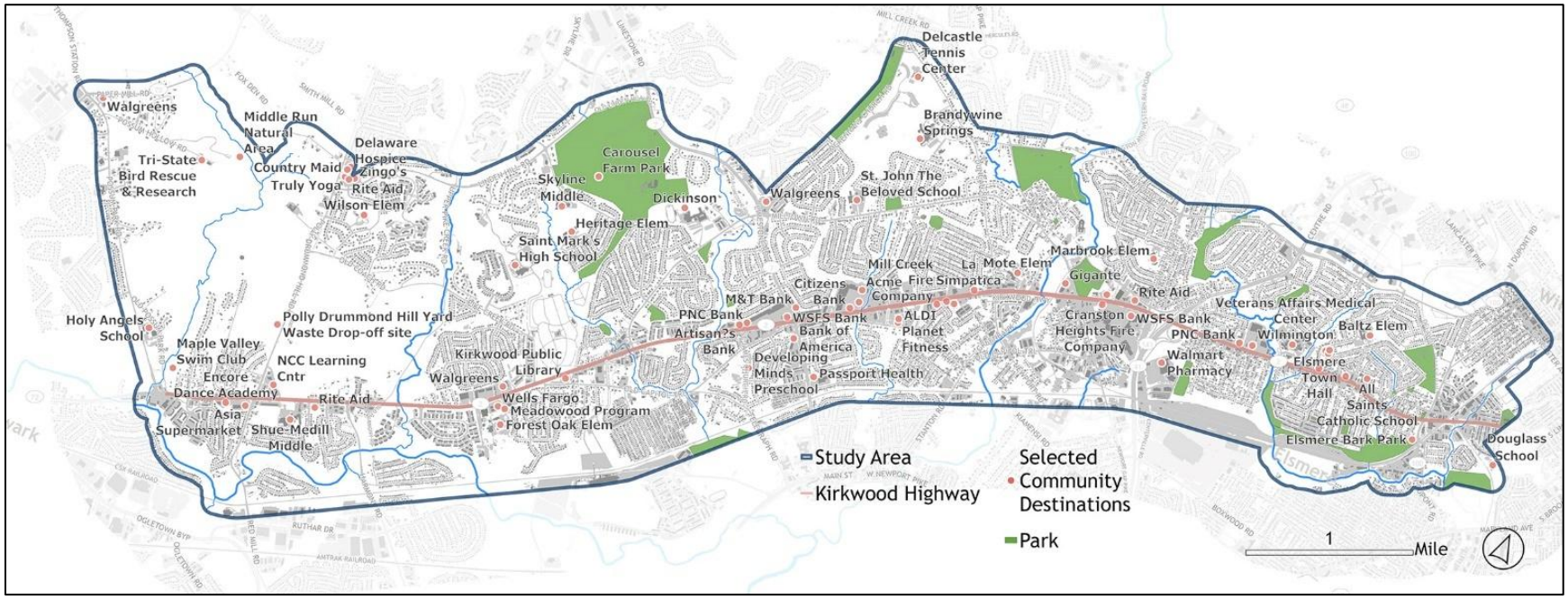


Figure 7. Corridor Context

Source: DataAxle and OpenStreetMap

The Kirkwood Highway Corridor is home to a variety of community-oriented institutional, commercial, educational, and natural/recreational uses, many of which have evolved slowly over time.

Depicted on **Figure 7** are selected destinations, including medical facilities, community centers, parks, recreation facilities, libraries, and banks.

Development intensity (residents plus jobs) within a quarter mile reflects historic crossroads on ridgelines between stream valleys. This perspective helps identify where centers reside along the corridor and where transportation demand may be highest (**Figure 8**).

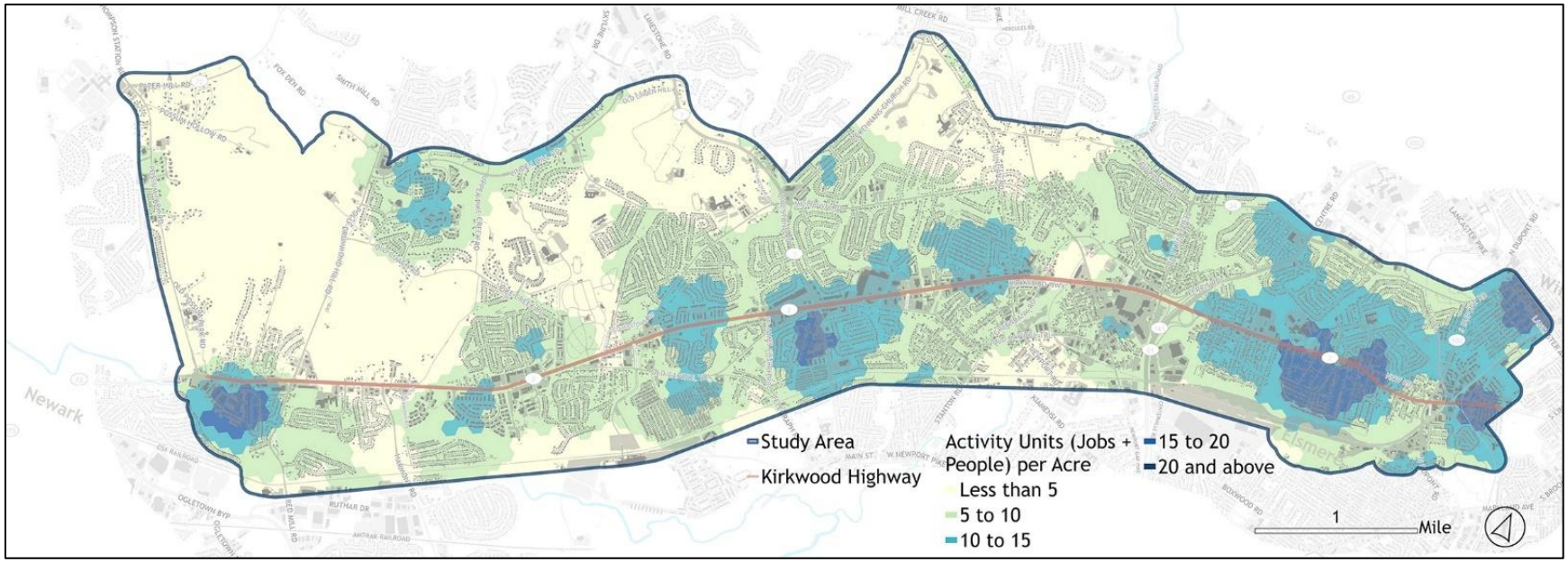


Figure 8. Development Densities

Source: Census Decennial and Census LEHD

Kirkwood Highway is designated as a Type 1 Commercial Corridor Development area (Type 1 Corridor) in the New Castle County Future Land Use Map. In a Type 1 Corridor, commercial development is typically oriented toward serving adjacent residential communities, where bolstering neighborhood stability is paramount. Commerce along the corridor is not expected to grow **(Figure 9**). Forecasts indicate 3 percent of jobs and 9 percent of residents and businesses will leave over the next 30 years.

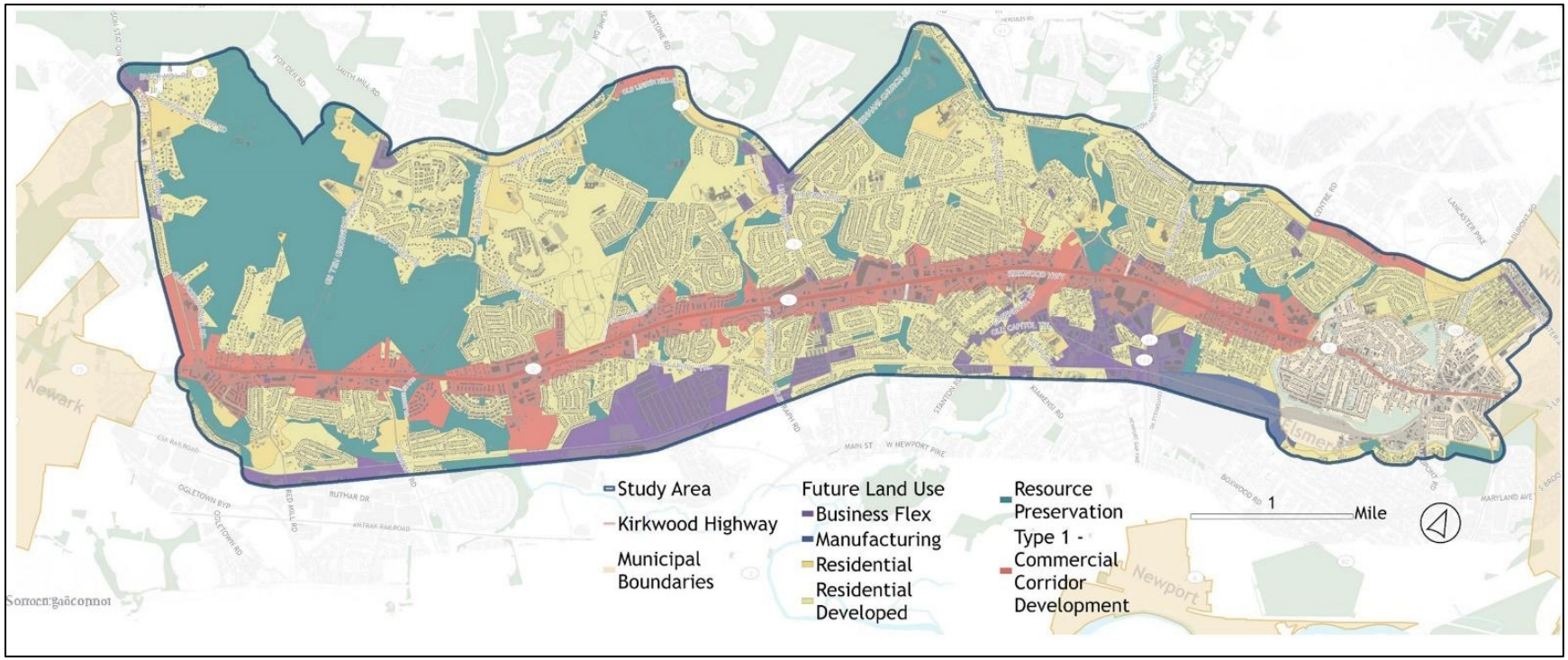
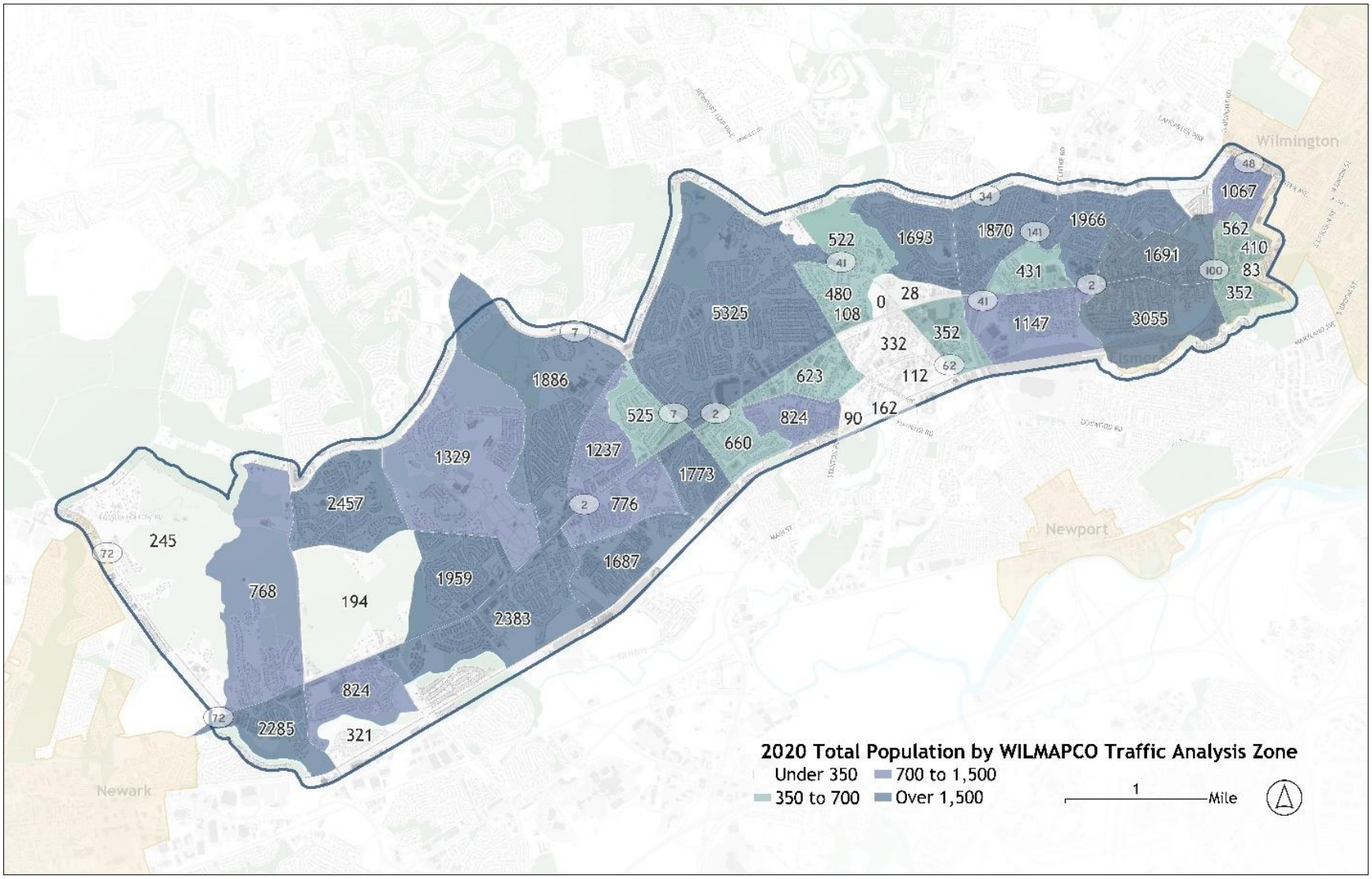


Figure 9. Future Land Use

Source: County GIS

B. Demographic Characteristics



People and Houses	Total Pop	Under 18	Over 65	White	Black	American Indian/ Alaskan Native	Asian	Native Hawaiian/ Other Pacific Islander	Other	Multi-Race	Hispanic	Total Occupied House-holds	Total Dwelling Units
2000	44,809	10,369 (23%)	6,525 (15%)	38,191 (86%)	3,017 (7%)	77 (<1%)	1,012 (2%)	18 (<1%)	1,700 (4%)	794 (2%)	4,143 (9%)	17,967	18,573
2020	45,141	9,464 (21%)	7,599 (17%)	29,305 (66%)	5,167 (12%)	315 (1%)	1,405 (3%)	17 (<1%)	4,199 (9%)	4,733 (11%)	9,116 (20%)	18,412	19,330
2000-2020 Change	332 (+0.7%)	-905 (-8.7%)	1,074 (+16.5%)	-8,886 (-23.3%)	2,150 (+71.3%)	238 (+309.1%)	393 (+38.8%)	-1 (-5.6%)	2,499 (+147.0%)	3,939 (+496.1%)	4,973 (+120.0%)	445 (+2.5%)	757 (+4.1%)

Figure 10. Total Population (2020)

Source: US Census 2000, US Census 2020

Figure 10 shows the total population in the study area by Traffic Analysis Zones, as both a graphic and a table. From 2000 to 2020, the Kirkwood Highway Corridor has continued to grow older and more racially diverse. At the same time, the total number of houses, apartments, and other residences have experienced minimal growth.

C. STROAD

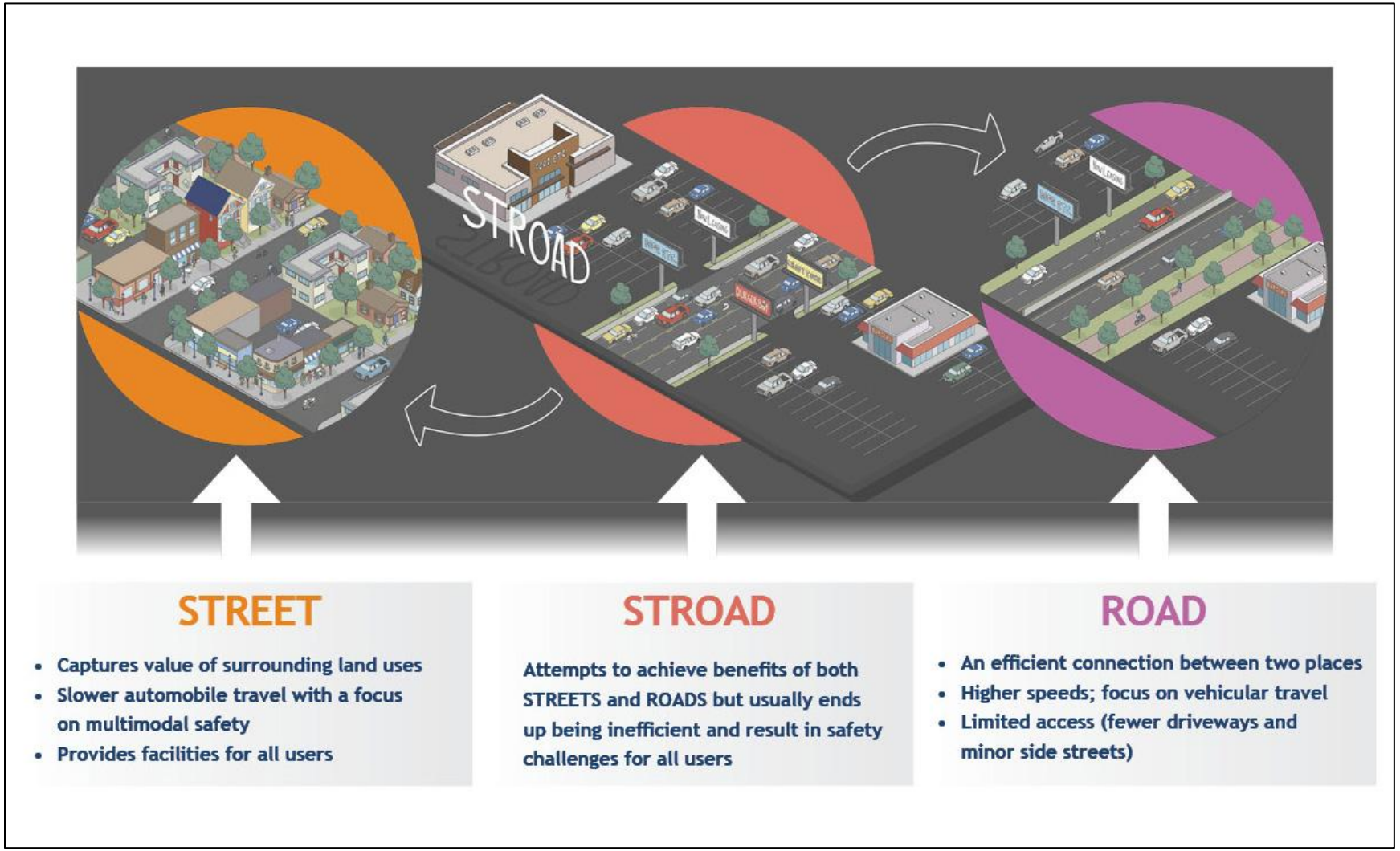


Figure 11. Street vs. Road

Over the years, Kirkwood Highway has evolved into a "Stroad" (Figure 12). This term describes a thoroughfare that simultaneously strives to achieve the advantages of both streets and roads. However, in most cases, "Stroads" become inefficient, leading to safety challenges and operational difficulties for all users. A planning principle that could be implemented by the Kirkwood Highway Land Use and Transportation Plan is to redefine sections of the "Stroad" to either function more like a "Street" or a "Road." A "Street" prioritizes mobility, captures the value of surrounding land uses, encourages slower automobile travel with a focus on multi-modal safety, and provides a facility for all users. Conversely, a "Road" provides an efficient connection to places, focuses on vehicular travel with higher speeds than a "Street," and generally restricts access with fewer driveways and minor side streets.

During the development of the Kirkwood Highway Land Use and Transportation project, the project team recognized the need to identify recommendations for land use design approaches and transportation improvements to, over time, transform sections of the Kirkwood Highway "Stroad" to either a "Street" or "Road" to support the Vision for the Corridor.

5. SCENARIO PLANNING

Scenario planning is a useful approach to considering the degree to which substantial policy or investment decisions would likely affect key outcome metrics. The objective of scenario planning is to examine broad trends, not to define a specific alternative. Scenarios provide an opportunity to consider land use and transportation synergies that aren't typically evaluated in conventional corridor studies in which land use assumptions are held constant.

The consideration of land use and transportation scenarios for the Kirkwood Highway Plan reflected stakeholder concerns regarding private sector growth and property investments in the corridor. Public and advisory committee commentary was generally supportive of property investments that would increase the quality of the built environment but concerned about types and levels of economic development that might increase demand for public services (notably in the amount of traffic congestion).

The amount and type of public sector investment in the corridor influences the attractiveness of redevelopment properties. The types of investment, along with public policies, can be used to help guide development in a manner that best aligns the design of both public and private realms. More compact and mixed-use development types, along with increased transit and non-motorized facilities, can help incent walking, biking, and transit use as well as shorten trip lengths. In essence, there is capacity for mixed-use redevelopment to occur that can increase the developmental footprint (i.e., total gross square footage) while reducing vehicular travel demand.

The provision of improved transit services can be a challenge when managing corridor growth for Kirkwood Highway. Experience nationwide has shown that exclusive transitways, such as many light rail transit (LRT) and bus rapid transit (BRT) systems, can improve transit ridership and adjacent property values, raising the potential for private property redevelopment. Yet there also needs to be sufficient development to justify the investment, creating a tension between generating the levels of transit ridership needed to justify the investment and the level of additional vehicular trip generation by that development.

The following paragraphs describe the market analysis, the sensitivity analyses conducted to consider land use and transportation synergies, and key findings.

A. Market Analysis

WILMAPCO contracted with 4Ward Planning to conduct the market analysis report contained in **Appendix B**. This market analysis describes current developmental conditions in the study area, including housing stock type and age, employment types and trends, the economic impact associated with current businesses, and current workforce characteristics. The report also provides regional comparisons for economic metrics, such as vacancy rates, gross sales receipts, and market rental rates.

The market analysis suggests that when considering the overall residential market, there could be demand for 1,060 additional units within a quarter mile of Kirkwood Highway in the next several years.

B. Sensitivity Analysis

The exploration of land use and transportation scenarios in the Kirkwood Highway corridor proceeded through a series of iterative reviews of synergies between the public and private realms encompassing the Kirkwood Highway right-of-way and adjacent properties. Scenario analyses were informed through the following processes summarized below and described in greater detail in the following pages:

- An overview of screening considerations for defining scenarios;
- The initial scenario concepts: a Transit Boulevard and a Multimodal Corridor; and
- The affordability of different levels of transit investment.

C. Screening Considerations

The initial stakeholder outreach on a Vision Statement for Kirkwood Highway yielded several areas of stakeholder interest relevant to the definition of scenarios. At the Scenario Planning Workshop attendees were provided guidance on what scenario planning would achieve and prompted for topics of interest. Scenarios provide an opportunity to think big and ask important questions:

- What is "business as usual" (BAU)?
- What if SR 2 had a very different modal emphasis?
- What different types of approaches would achieve the Corridor Vision?
- How would those different approaches change the study evaluation metrics?
- What tensions (divergent stakeholder views, funding availability, etc.) complicate achieving the Corridor Vision?

The intent of scenario planning is to stress test very different, yet practical, alternatives as different ways to achieve the Corridor Vision. In considering scenarios (as contrasted with project "alternatives"), the objectives include:

- Feasibility – stretch, but be pragmatic
- Theme – establish scenarios that can be recognized as very different philosophical approaches to achieving goals/objectives
- Differentiation – define scenarios that will have meaningful changes in evaluation metrics

As indicated in **Figure 12**, a key element of scenario planning is that each scenario should be considered distinct. Because scenario planning explores different priorities within a vision statement, seeking a best-of-all-worlds blend is tempting (i.e., let's start with Scenario 1 in the short term and then switch to Scenario 2 when economic conditions are right).

The term BAU is subtle. It's generally described as applicable to processes that have led to today's conditions and is termed "Old BAU" (**Figure 12**). Regardless of the status of this Kirkwood Highway corridor plan, other policies are also continually evolving, such as:

- the adoption of the update to the NCC Comprehensive Plan in 2022;
- evolving regulations from federal to local levels; and
- the introduction of DART Route 56 to connect Prices Corner to Christiana Mall described in the DART Reimagined final report.

For the Kirkwood study, these recent changes were described as the "New BAU."

Types and Levels of Desired Economic Development

The market analysis described the potential for more development than is incorporated in land use forecasts adopted by WILMAPCO and used this as the basis for assessing transportation system adequacy for the study. The initial visioning process also demonstrated a general community interest in economic investment in the private properties along Kirkwood Highway. Stakeholders also recognized that Kirkwood Highway is one of the most successful transit routes in the region as described in the DART First State planning documents. The stakeholders expressed two views that are commonly in tension in corridor studies regarding future development potential:

- Some expressed concerns regarding the ability to accommodate the additional traffic demand that greater development densities might bring.
- Others expressed interest in the possibility of investing in higher-quality transit, such as BRT or LRT, based in part on the additional transit riders that greater development densities might bring.

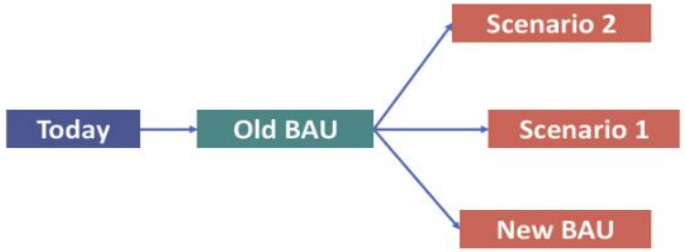


Figure 12. Scenarios Allow Exploration Beyond "Business as Usual"

Figure 13. "Urban Network" Concepts

While these two concepts are in tension, it's not unreasonable to subscribe to both concepts simultaneously. The first aspect of scenario examination was therefore the relationship between the additional development opportunities summarized in the market analysis, the level of ridership that would be expected to generate an affordable BRT or LRT project, and the locations in the corridor that might be logical stations for a fixed-guideway transit system.

Grade Separations

Throughout the Kirkwood Highway study process, one of the recognized choices to be addressed was characterized as "taming the Stroad," as much of Kirkwood Highway is trying to serve both the function of a street (more focused on access to properties), as well as a road (more focused on supporting longer distance travel). The concept of the Stroad, and where a street or a road might be a more appropriate solution, was carried throughout the study. Early investigations of "the Stroad" concept recognized the challenge associated with grade separations, both in terms of higher-speed interchanges as well as opportunities for pedestrians to cross Kirkwood Highway via a signal or an overpass.

In general, grade-separated interchanges are more associated with the mobility focus of a road rather than the land use access focus of a street. This conundrum is part of the inspiration for the "Urban Network" concept developed by Calthorpe Associates and is shown in **Figure 13**Error! Reference source not found.. In this concept, a junction between high-volume roadways in an urban area can be managed by dispersing the main flows into a short one-way street couplet. The term "short" is important because longer one-way streets, like interchanges, often contribute to higher vehicular speeds during off-peak periods when traffic is lighter. Another industry term, "quadrant roadways," can be applied to dispersing traffic within an at-grade network. Montchanin Road between SR 52 and SR 141 is an example of a quadrant roadway completing missing movements at the adjacent interchange.

The primary challenge with retrofitting the Urban Network concept is associated with phasing, as ideally the phasing process incorporates property redevelopment as much as it does maintenance of traffic. An Urban Network is generally most feasible when large properties are seeking to redevelop and can help create a synergistic relationship between phasing land use redevelopment with transportation project implementation. While the market analysis indicated some economic development potential greater than adopted regional land use forecasts, the economic attraction in the corridor is not sufficient to consider such as an approach. Even a "quadrant roadway" can be challenging depending on the context. Greenbank Road between SR 2 and SR 141 had served as an informal quadrant roadway before turn prohibitions were implemented several decades ago to reduce through traffic.

The study process reviewed prior recommendations for three separate interchanges. The SR 7 junctions, with both SR 2 and Milltown/McKennans Church Road interchanges, were studied in the Senate Resolution 10 study in 2020. Further information on the Resolution can be found at WILMAPCO.org/SR10. The existing Prices Corner interchange between SR 2 and SR 141 had been the subject of some internal DelDOT review associated with incomplete movements and at-grade rail-crossing delays on Old Centerville Road. Each of these three locations have traffic patterns such that creative at-grade solutions appear feasible to address forecast demand but may have limited practicality. As noted, Urban Network solutions along SR 2 at SR 7 and at SR 141 are impractical as the changes needed to implement the transportation project would work against, rather than with, development patterns. At the junction of SR 7 with Milltown Road and McKennans Church Road, an at-grade circulatory concept may have some

merit for further study as a lower-cost alternative to the SR 10 recommendation.

Initial Concepts

Building on the concerns regarding the concept of the Stroad and stakeholder feedback, the project team proposed two basic scenarios for Kirkwood Highway; a transit boulevard and a multimodal corridor, as summarized in **Figure 14.**

Scenarios	New BAU	Transit Boulevard	Multimodal Corridor
Serve all travel modes	Better auto Level of Service (LOS)	Better transit Quality of Service (QOS)	Better Level of Traffic Stress (LTS)
Discourage high traffic speeds	Target speed = 45 MPH*	Target speed: 35 MPH in centers, 45 MPH elsewhere*	Target speed: 30 MPH in centers, 40 MPH elsewhere*
Promote safe access to land uses along Kirkwood Highway	Focus on SR 2 driveway access	Focus on BRT station access	Focus on adjacent community access
Manage congestion levels	Seek intersection LOS D or better	Seek arterial LOS D or better	
Transition placemaking from auto-oriented to multimodal	No land use policy changes	Land use policies and incentives for compact development in centers	
Include residential uses in business centers	No land use policy changes	Higher population / job ratios in centers	
Improve landscaping and open space	Lowest open space acreage	Moderate open space acreage	Highest open space acreage
Provide connections to off-corridor destinations	Lowest # homes within 10-min walk of centers	Moderate walking access to centers	Highest # homes within 10-min walk of centers

* - Target speed in Elsmere = 25 MPH in all scenarios

Figure 14. Initial Scenario Concepts

The Transit Boulevard scenario considered a fixed guideway transitway (BRT or LRT), meaning that the transit vehicle operates in exclusive right-of-way and is therefore not slowed by traffic congestion. One aspect of fixed-guideway transit is that the distance between stations (generally about a mile apart) is greater than local bus service, both to capitalize on the ability to travel at higher than congested speeds between stops without uncomfortable acceleration or

deceleration. Such station spacing also encourages development densities at community crossroads where transportation infrastructure already exists, such as through a Community Development Area designation.

With a Transit Boulevard scenario, the focus of development policies would be to use policy incentives to help direct development toward new transit stations. A substantial investment in transformative fixed-guideway transit can also catalyze private sector investment as the public sector investment signals a commitment to a series of permanent station locations. In contrast, a Multimodal Corridor approach would focus on access to development along the entire corridor (wherein bus stops might be moved and therefore don't provide the same type of community anchor as a BRT or LRT station).

D. Transit Boulevard Opportunities

One advantage of scenario planning is the ability to apply some quick-response forecasting tools to assess feasibility with a strategic evaluation approach. In the case of the Transit Boulevard scenario, several elements were of particular interest:

- How might a transit boulevard act as a catalyst for economic development?
- How much would transit ridership (including that generated by catalyzed development) support different levels of investment in transit?
- What other elements of a transit boulevard would provide additional value to community-building? What elements might create adverse impacts?

Major transit system investments (with more than $50 million in capital cost) are eligible for federal funding using a fairly complex evaluation process managed by the Federal Transit Administration (FTA) that blends capital costs, operating costs, and ridership into a Capital Investment Grant application which, for a project the length of Kirkwood Highway would fall under the FTA's New Starts process. The formal evaluation tools are complex as they reflect an amortization of capital and operating costs and very detailed forecasting using particular software endorsed by FTA. The upshot of the formal process is “we have a proposed system; will it be deemed cost-effective in the New Starts process?" For scenario planning, however, the process details can be simplified and reverse-engineered so that they instead ask, "for a given amount of ridership, what general level of transit investment might be warranted as cost-effective?"

Reverse-engineering the process also allows one to focus on BRT rather than consider BRT and LRT concurrently. In nearly all cases, LRT is more expensive to build than BRT (the capital cost), simply due to the costs of the rail in terms of both building the running way and purchasing the vehicles. In general, the operating characteristics of LRT and BRT are similar so that for a given transit service plan (i.e., stations, speeds, headways), the forecast ridership for LRT and BRT would be essentially the same.

The advantage of LRT over BRT is that the vehicles can be much larger (i.e., more than one "car" bundled) so that more passengers can be conveyed with a single transit vehicle operator in the cab. Therefore, if ridership is high enough to utilize that capacity, the operating cost per passenger can be lower for LRT than for BRT. At the levels of transit ridership evaluated in the Kirkwood Highway corridor, however, BRT will be more cost-effective than LRT. So, while there may be other development-related advantages to the slightly greater permanence of LRT indicated by steel rails, the cost-effectiveness question can be answered using BRT, with LRT as a secondary consideration should ridership levels be high enough to warrant the extra capital cost (due to eventual operating cost savings).

The concept of a transit boulevard could include several different levels of transit investment as summarized in **Figure 15**:

- Transformative BRT would provide an exclusive lane for new express transit vehicles for the full length of Kirkwood Highway, with transit stations located roughly at one-mile intervals at major development nodes. Local bus service would continue to operate.
- Basic BRT would include all the elements of Enhanced Transit and include short portions of dedicated bus lanes such as queue-jumpers or RED (Right-turn, Emergency vehicle, and Driveway) Lanes.
- Enhanced Transit would include many technological and service features that would be phased in as part of programmatic updates as technology price-points become affordable over time.

Analysis has shown that transformative BRT is not cost-effective given the corridor context. A more basic BRT or enhanced-transit would likely be more cost-competitive. **Appendix C** Transit Boulevard Affordability Evaluation outlines this analysis.

E. Community Development Areas

The New Castle County Comprehensive Development Plan (Comprehensive Plan) classified the Kirkwood Highway portion of SR 2 as a Type 1 Commercial Corridor Development area (Type 1 Corridor) in the Future Land Use plan. The Type 1 Corridor designation is designed to foster commercial corridor development, focusing on incentivizing investment in underutilized properties such as those found throughout the Kirkwood Highway corridor.

	Transformative BRT	Basic BRT	Enhanced Transit
Continuous sidewalk/bike facilities	✓		
Consistent design/landscaping	✓		
Fully dedicated travelway for BRT vehicles	✓		
Queue jumpers / "RED" lanes	✓	✓	
Limited-stop (i.e., express) service	✓	✓	
Transit signal priority	✓	✓	✓
BRT route / vehichle branding	✓	✓	✓
High-quality BRT stations	✓	✓	✓
Connected vehicle technologies	✓	✓	✓
Off-board fare collection	✓	✓	✓

Figure 15. BRT Investment Levels

While the scenario planning determined that Transformative BRT was not likely practical as a key element of the corridor land use and transportation plan, more nodal pattern of development as contrasted with the linear pattern of development appeared to have more promise. Even without the anchor of a fixed-guideway transit station, there are several advantages to a nodal pattern of development:

- A nodal development pattern is more compact than a linear one. Compactness is the ratio of area to perimeter; a circle has greater potential to connect multiple internal sites than does a narrow rectangle, if consideration is made of all else being equal in terms of things like topography or property ownership patterns.
- Property ownership patterns in Delaware reflect the unique context of centuries of land ownership specific to each individual community. Yet as part of that evolution over time, larger and deeper parcels that facilitate site plan reorientation are generally concentrated in nodal communities. This flexibility is particularly valuable in considering a conversion from low-intensity commercial uses to mixed-use development. In such cases, reconstruction to accommodate residential customer needs often requires more than modernizing-in-place. In contrast, linear strip commercial development along Kirkwood Highway is often only one parcel deep with limited options for reconfiguration.

The New Castle County Comprehensive Development Plan anticipated these concepts with a new future land use designation, Community Development Areas (CDA). The County summarizes redevelopment incentives for CDAs and Type 1 corridors in a two-page fact sheet. The primary advantage of the CDA designation is the relaxation of certain quantitative requirements associated with existing space demolition in exchange for greater qualitative consideration of consistency with key recommendations in a Community Area Master Plan (such as for Claymont and Route 9, already adopted as part of Comprehensive Plan. The review of candidate sites for CDA implementation considered commercial area magnitude and compactness, along with guidance on both community compatibility for land use and community amenities. Two CDAs are proposed: Prices Corner and Midway Shopping Center.

6. RECOMMENDATIONS

Recommendations for the Kirkwood Highway Land Use and Transportation Plan have been categorized into eight (8) main categories: Land Use & Economic Development; Road and Street Sections; Major Intersections; Other Key Kirkwood Highway Intersections; Accommodating Churchman's Road Extended; Transit; Other Key Roads in the Study Area; and Pedestrian/Bicycle Network Connections.

A. Land Use & Economic Development

The establishment of two CDAs is recommended to address mobility, economics, and sustainability, as identified in the project Vision Statement and refined through the scenario planning process. The formalization of the Prices Corner and Midway CDAs helps implement Ordinance 24-057, recently adopted as part of the broader NCC Redevelopment Initiative. This ordinance, which enacts recommendations from the Comprehensive Plan, specifically targets infill and redevelopment projects. It provides incentives to developers in terms of streamlining approval processes and providing incentives, such as density bonuses. These CDA designations further refine the corridor from the Comprehensive Plan perspective, which broadly designates the Kirkwood highway corridor as a Type 1 Corridor. The addition of the Prices Corner and Midway CDAs helps facilitate redevelopment where investments in infrastructure and services are greatest, an outcome of the consideration of linear and nodal development patterns in the scenario planning process.

Although modest declines in study area population and employment are projected over the next three decades (approximately 1,300 fewer residents and 1,400 fewer jobs by 2045), a companion market analysis study by the County identified latent residential demand in the corridor. The market analysis considered in the scenario planning process indicated demand for approximately 1,060 additional residential units in the near to mid-term future. CDA designations encourage concentrated development which would address local workforce housing needs and leverage the market potential.

Concept plans for Prices Corner and Midway CDA emphasize community character and align with multimodal transportation network improvements. National trends highlighting positive fiscal impacts and reduced traffic generation from mixed-use redevelopment were confirmed through hypothetical redevelopment cases examined in selected CDA locations.

Prices Corner CDA Key Recommendations

Prices Corner has a wide range of potential opportunities for meaningful changes (**Figure 16**). The transit center has evolved over time so that it is no longer valued by clientele as a park-and-ride lot location. The transit center could be repurposed to improve its relationship to other Prices Corner land uses by bringing uses to the transit center (which could range from conventional redevelopment into retail/service buildings, and/or more interim activating uses such as farmers markets). Another opportunity would be to rethink the transit center as part of a broader public/private redevelopment initiative so that the transit station is more central to future redevelopment. Similarly, over time, the reconstruction of the SR 141 interchange with SR 2 is an opportunity to better connect the transit center to SR 2. Some of these changes may warrant a more focused public/private planning effort (perhaps starting with an incubator step such as an Urban Land Institute Technical Assistance Panel).

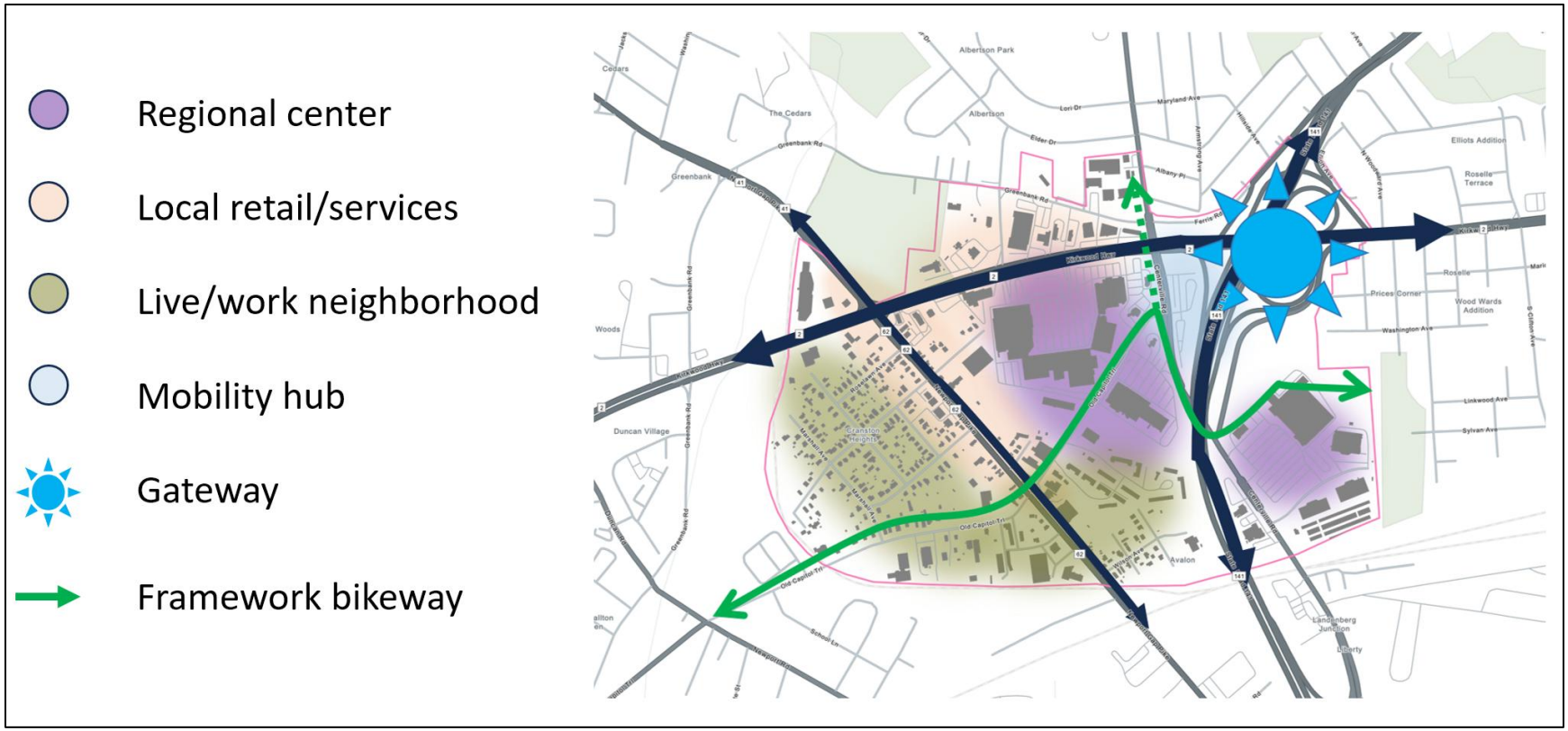


Figure 16. Price's Corner Community Development Area (CDA)

The land uses shown are not intended to be formal requirements for land use but rather suggestions for appropriate types of development. Prices Corner was found to be the one location in the Kirkwood Highway study area that has, and is appropriate to retain, a presence as a regional center, based on the excellent access provided by the SR 141 freeway connection to I-95/I-295/I-495 in particular (and by the SR 2 and SR 41/62 connections to distant points, although to a somewhat lesser extent). The large-scale retailing at these locations is generally appropriate for the nature and scale of the area, with buffering of adjacent neighborhoods outside the CDA already present with lower intensity uses (or parkland, in the case of Elsmere's Biden Park).

Parcels along SR 2/Greenbank Road and SR 41/SR 62 corridors remain suitable for highway-oriented commercial development due to established uses, shallow parcel depths, and visibility essential for retail viability.

The southern sections of Prices Corner CDA offer considerable potential for mixed-use redevelopment. Given existing structures' uses, sizes, layouts, and age, gradually evolving into a live-work community that fosters additional home-based businesses within original grid-street subdivisions. While the live-work terminology indicates potential for repurposing existing structures, it does not preclude larger, comprehensive land assembly. Future planning efforts should consider how redevelopment aligns with the SR 2 bicycle network, ensuring consistent connectivity throughout the CDA.

Midway CDA Key Recommendations

The Midway CDA proposes an integrated mix of residential, retail, and civic uses, scaled to complement existing communities and safeguard residential neighborhood character (**Figure 17**). As the second-largest concentration of commercially zoned land in the corridor, Midway is anchored by institutional uses at its eastern end, including the Delaware State University campus and the Marine Corps training facility, both contributing to an enduring civic character.

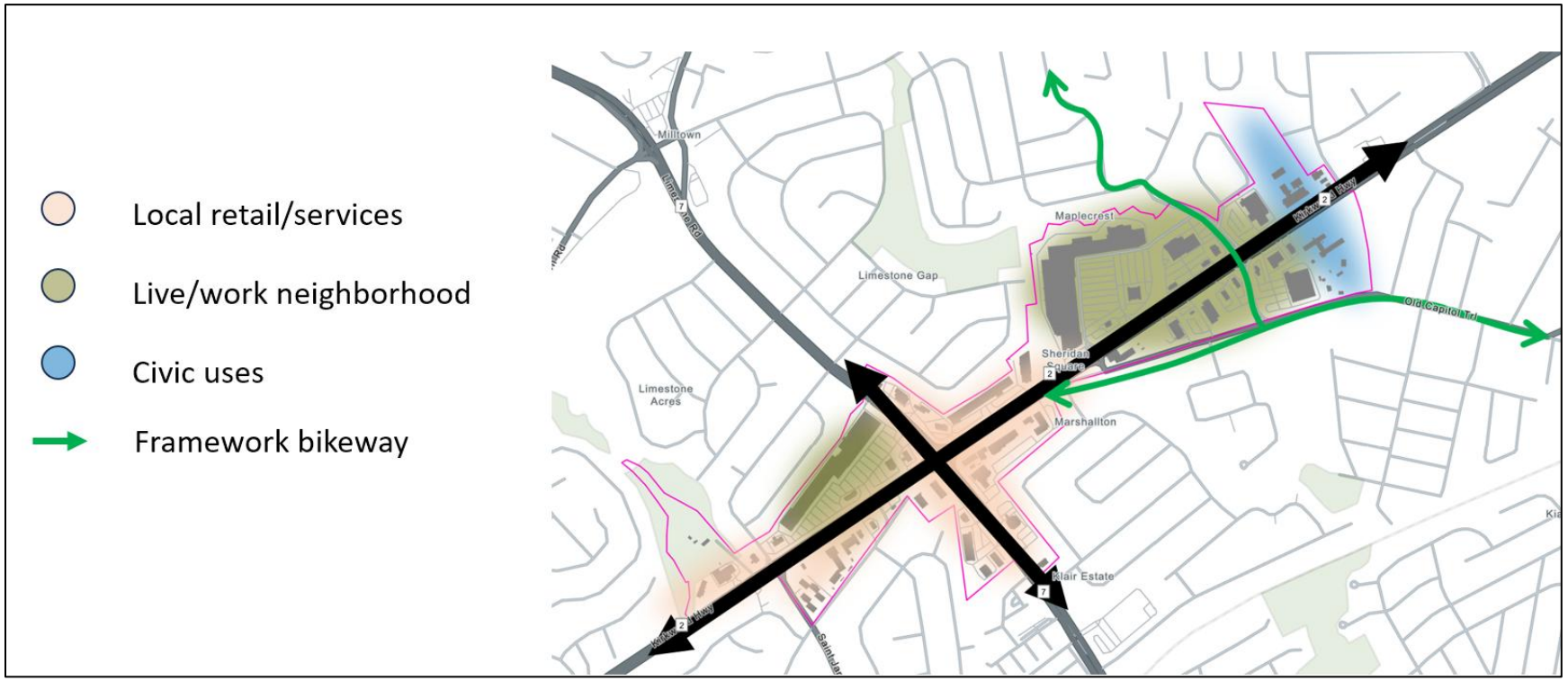


Figure 17. Midway Community Development Area (CDA)

Key redevelopment potential exists in the Midway Plaza and Kirkwood Plaza shopping centers, where parcel depth and existing conditions support mixed-use redevelopment. As in Prices Corner, parcels with shallow depth and high visibility along major routes will primarily accommodate local retail and services.

Private sector involvement could substantially enhance connectivity within the Midway CDA, particularly by implementing planned bikeway facilities and the Newport to Newark Pathway System proposed in this Plan. Ensuring these facilities integrate seamlessly with redevelopment initiatives will strengthen multimodal access and enhance community vitality.

B. Road and Street Sections

Transportation Improvements, along with associated land use designs to support road and street environments, are recommended for Kirkwood Highway for different sections as shown in **Figure 18.**

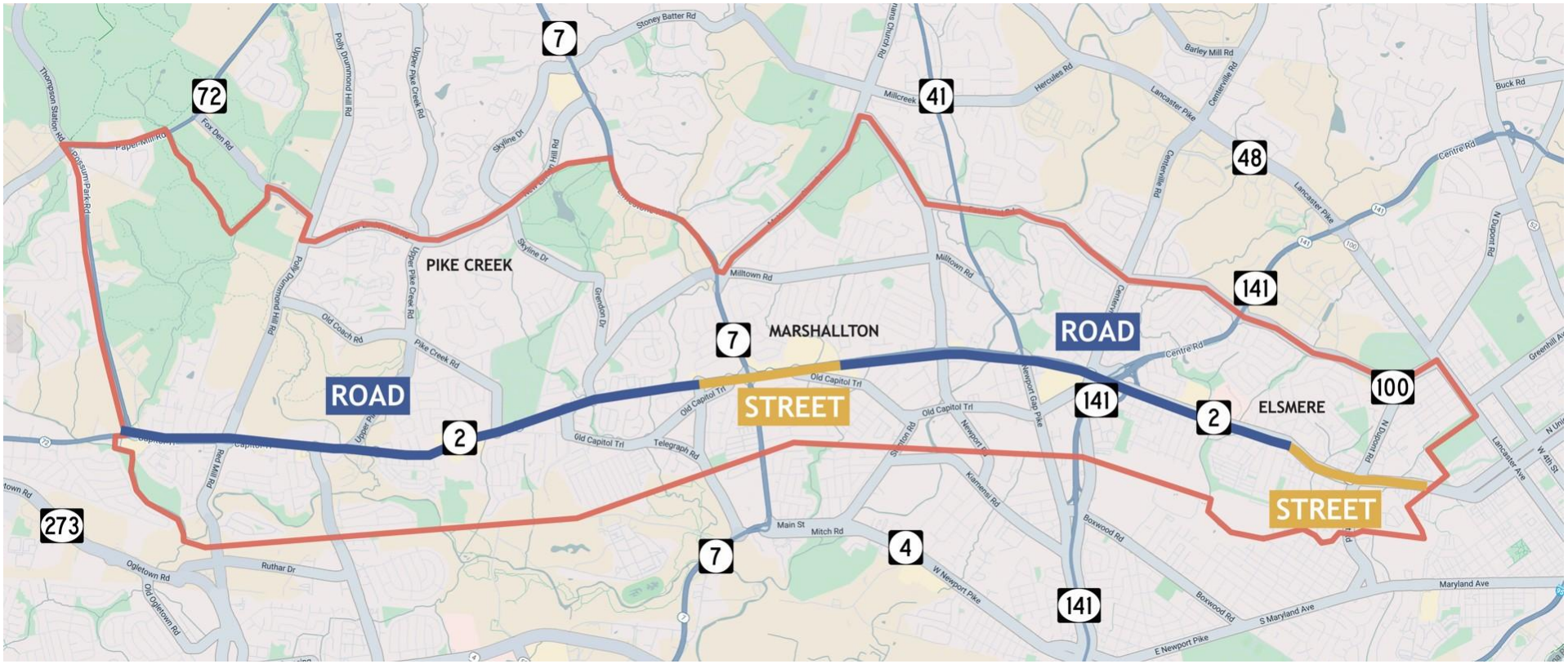


Figure 18. Study Area, Street VS. Road Sections

- Street Sections:
  - St. James Church to Farrand Drive
  - Elsmere to Wilmington

Figure 19. St, James Church to Farrand Drive

Figure 20. Elsmere to Wilmington

- Road Sections:
  - Newark to St. James Church
  - Farrand Drive to Elsmere

Figure 21. Newark to St. James Church

Figure 22. Farrand Drive to Elsmere

With either the Street or Road Sections, transportation improvements should be designed to better manage and reduce travel speeds throughout Kirkwood Highway. Median barriers and pedestrian fencing should also be included to discourage pedestrian not crossing at signalized intersections. Conflict points should also be addressed by reducing access whenever development or redevelopment occurs throughout the Corridor.

C. Major Intersections

Improvements are recommended at major intersections to address congestion and safety:

- **SR 2 /SR 7:** The most congested intersection within the study corridor with the highest number of crashes. Three initial grade-separated concepts have been developed, but further detailed study will be required. Further information on previous studies can be found on the 2020 Senate Resolution 10 website at WILMAPCO.org/SR10. Grade separation is defined as one road going over another. It provides the opportunity to improve the pedestrian and bicycle crossing of Kirkwood Highway as seen in **figure 23**. Options should also be studied to address access for the businesses located along SR 2 to the east of the grade-separated intersection, and aesthetic treatments for any potential overpass should be included to help mitigate visual impacts and further emphasize Street characteristics.

- **SR 7 / Milltown Road:** A congested intersection within the study area along SR 7. The intersection has one of the most complex traffic signal timing patterns due to closely spaced intersections. Multiple grade-separated concepts have been developed, but more detailed study will be required. Further information on previous studies can be found on the 2020 Senate Resolution 10 website at WILMAPCO.org/SR10. Any detailed study should also focus on options that discourage cut-through traffic on Milltown Road.
- **SR 2 / SR 141 Interchange:** Has a high number of crashes. Reconfigure the existing interchange to provide more efficient access between SR 2 and SR 141 and provide a "gateway" to and from Elsmere. Multiple concepts have been developed, but more detailed study will be required. Modifications to the Northbound SR 141 to Eastbound SR 2 ramp should be prioritized independent of any longer-term improvements at this intersection.

Figure 23. Intersection at SR 2 / SR 7

D. Other Key Kirkwood Highway Intersections

Intersection Control Evaluations (ICE) are recommended at six (6) intersections along Kirkwood Highway. An ICE evaluation is a detailed, data-driven, performance-based framework to screen intersection alternatives (All-Way-Stop-Control, traffic signal, restricted movements, grade separation, roundabouts, etc.) and identify optimal solutions for an intersection. The intersections in the Kirkwood Highway corridor include the following:

- Possum Park Road: potential to address crash history and pedestrian accessibility;
- Brewster Drive: potential to address history of U-Turn problems;
- Green Valley Circle: potential to address history of U-turn problems;
- Meadowood Drive: potential to address crash history and pedestrian accessibility;
- Linden Avenue/New Road/Sanders Road (Elsmere): potential to address complex intersection; and
- SR 100 (Dupont Road): potential to address crash history.

ICE studies should be prioritized at SR 100 and Green Valley Road intersections, with monitoring safety at the Possum Park Road and Meadowood Drive intersections.

E. Accommodating Churchman's Road Extended

The Churchman's Crossing Plan Update in 2022 reaffirmed the recommendation to provide a new roadway, called Churchman's Road Extended, from the intersection of Churchman's Road at SR 4, through Delaware Park, to SR 2 at Delaware Park Drive. This new roadway would improve regional circulation patterns through the Churchman's Crossing.

When completed, the Churchman's Road Extended will change traffic patterns at the closely spaced intersections of Delaware Park Drive and Milltown Road. These intersections should be reconfigured to accommodate changes in traffic that are anticipated. Further study is also recommended for the number and termini of travel lanes on Eastbound and Westbound SR 2 between Milltown Road and SR 7.

F. Transit

A variety of enhanced transit elements throughout the Kirkwood Highway corridor are recommended to support the DART Reimagined recommendations. There are several ways to enhance the quality of transit service and provide improved access to transit in a cost-effective manner, including:

- New Route 56 to connect Prices Corner with the Churchman's Crossing area: Provide new bus route.
- Micro-transit services: Provide on-demand bus service.
- Enhanced bus stops: Provide improved lighting, transit information displays, and DART-branded bus shelters.
- Improved pedestrian access to stops/shelters: Provide accessible sidewalk connections to bus stops and improved crosswalks with longer pedestrian phases to improve safety for transit users crossing Kirkwood Highway.
- Transit Signal Priority: Provide improved transit travel time by prioritizing buses at traffic signals.
- In-line bus stops and pullout bays: Provide bus boarding areas appropriate for the context of the roadway (street vs. road).

A further study of all bus stops along Kirkwood Highway for potential relocation and/or consolidation to address safety and enhance transit operations is also recommended.

G. Other Key Roads in the Study Area

While improvements to Kirkwood Highway will provide the biggest elements to address the Advisory Committee's Vision for the Corridor, improvements to other roads and intersections in the study area will complement and support this Vision.

Improvements on the other roads in the Kirkwood Highway corridor should address one or more issues, including safety, pedestrian and bicycle facilities, high traffic speeds, drainage, and resiliency from significant storm events. Improvements could include:

- Narrower Shoulders
- Narrower travel lanes
- Continuous Sidewalks
- Off-alignment trails
- Bicycle lanes
- Traffic calming elements
- Reinforcement of steep slopes

Pedestrian improvements along Possum Park Road should be prioritized, along with traffic calming design elements along Milltown Road.

There are also seven intersections on other roads that have specific challenges that warrant ICE:

- Possum Park Road at Paper Mill Road: Address crash history.
- Old Capital Trail at St. James Church Road: Address complex intersection.
- St. James Church Road at Telegraph Road: Address complex intersection.
- Old Capitol Trail at Newport Road: Roundabout currently in design (construction currently scheduled to start in 2026).
- Milltown Road at Duncan Road: Roundabout previously proposed.
- Milltown Road at Newport Gap Pike (SR 41): Address complex intersection.
- Old Capitol Trail at Stanton Road: Roundabout currently in design (construction currently scheduled to start in 2026).

An ICE study should be prioritized at the intersection of Possum Park Road at Paper Mill Road.

H. Pedestrian/Bicycle Network Connections

This Plan includes expanded and improved pedestrian and bicycle infrastructure to strengthen multimodal connectivity and address existing network gaps. Recommendations in this study focus on the following areas: supporting the regional multimodal network, addressing key sidewalk and shared use path gaps, and enhancing connections between neighborhoods.

To support multimodal travel along the Kirkwood Highway corridor, this Plan proposes dedicated mixed-use paths along Kirkwood Highway and suggests a framework system of parallel routes through lower-traffic neighborhoods that can provide an alternative for longer-distance cyclists to avoid the busiest sections of Kirkwood Highway. This framework enhances safety and comfort, aligning directly with the NCC Bicycle Plan's guidelines. Specifically, the framework bikeway plan includes improved bicycle facilities along Kirkwood Highway, west of Marshallton, and uses parallel streets between Marshallton and Wilmington. Regional connectivity is also supported by the implementation of the recommended final alignment from the Newport to Newark Pathway System, the Millcreek Area Pathways study, and the New Castle County Bicycle Plan.

In addition to these corridor-wide and regional-scale recommendations, a key component of this study is identifying opportunities to enhance pedestrian connections at the neighborhood scale with a particular focus on

connecting residential communities to retail/service opportunities along Kirkwood Highway (**Figure 24**). These neighborhood access opportunities can connect adjacent "bicycle islands" and address other barriers to accessibility identified during the scenario planning phase. Bicycle islands are contiguous areas where cyclists can comfortably and safely travel without encountering high-traffic conditions. Greater low-stress opportunities to travel between adjacent islands expands the ability for more bicyclists and pedestrians to reach nearby destinations, such as adjacent neighborhoods, shopping centers, schools, and transit stops. Proposed connections utilize remnant rights-of-way and available corridor spaces for new pedestrian paths when possible. In addition to gaps identified in this Plan, this study retains neighborhood-scale recommendations from the Marshallton Circulation Study and the Millcreek Area Pathways studies.

Neighborhood connections were evaluated based on feasibility and strategic value criteria to identify and prioritize projects. Projects were categorized considering factors such as right-of-way (ROW) availability, ownership complexity, and integration with broader planning efforts.

Neighborhood connections generally fall into one of several categories of connection types. The top three categories as described below could be ready for implementation design and/or study.

- Side street gap closures typically involve straightforward ROW conditions along existing roadways, making these projects highly feasible and suitable for immediate action within DelDOT's programming. These connections total an estimated 3,000 linear feet of improvement in four distinct locations:
    - St. James Road in the vicinity of St. James Episcopal Church
    - Wollaston Road
    - Cordele Road
    - Elsmere Dog Park connection
- New inter-parcel connections require moderate coordination but can significantly enhance neighborhood accessibility by utilizing publicly managed lands or institutional properties. These connections include seven distinct segments with an estimated total of 4,200 linear feet of improvement in eight distinct locations:
    - Truit Lane - Dombey Road
    - Sharon Drive - Chestnut Street (including bridge)
    - Dillwyn Road - Liberty Plaza (including bridge)
    - Delaware State University – Claire Place
    - Walmart – Biden Park
    - Wilmington VA Medical Center - Montgomery Road
    - Larkspur - 2701 Capitol Trail
    - Lincoln Avenue – Wilmington/Western tail tracks
- The study identified about a dozen legacy inter-parcel connections that are well-worn, "people's choice" trails. These connections might be improved and formalized to be safer and more accommodating. Yet these people's choice trails have utility themselves that would be lost if when attempting to formalize a connection, this resulted in that connection's closure. A programmatic study of these locations, including outreach to directly affected property owners, would be an appropriate next step to evaluating feasibility.

Finally, the evaluation of neighborhood access revealed some locations where connectivity is constrained by private residential ownership and would likely not be feasible unless or until a redevelopment opportunity arises. Ongoing development processes will present opportunities to further consider these multimodal connections strategically.

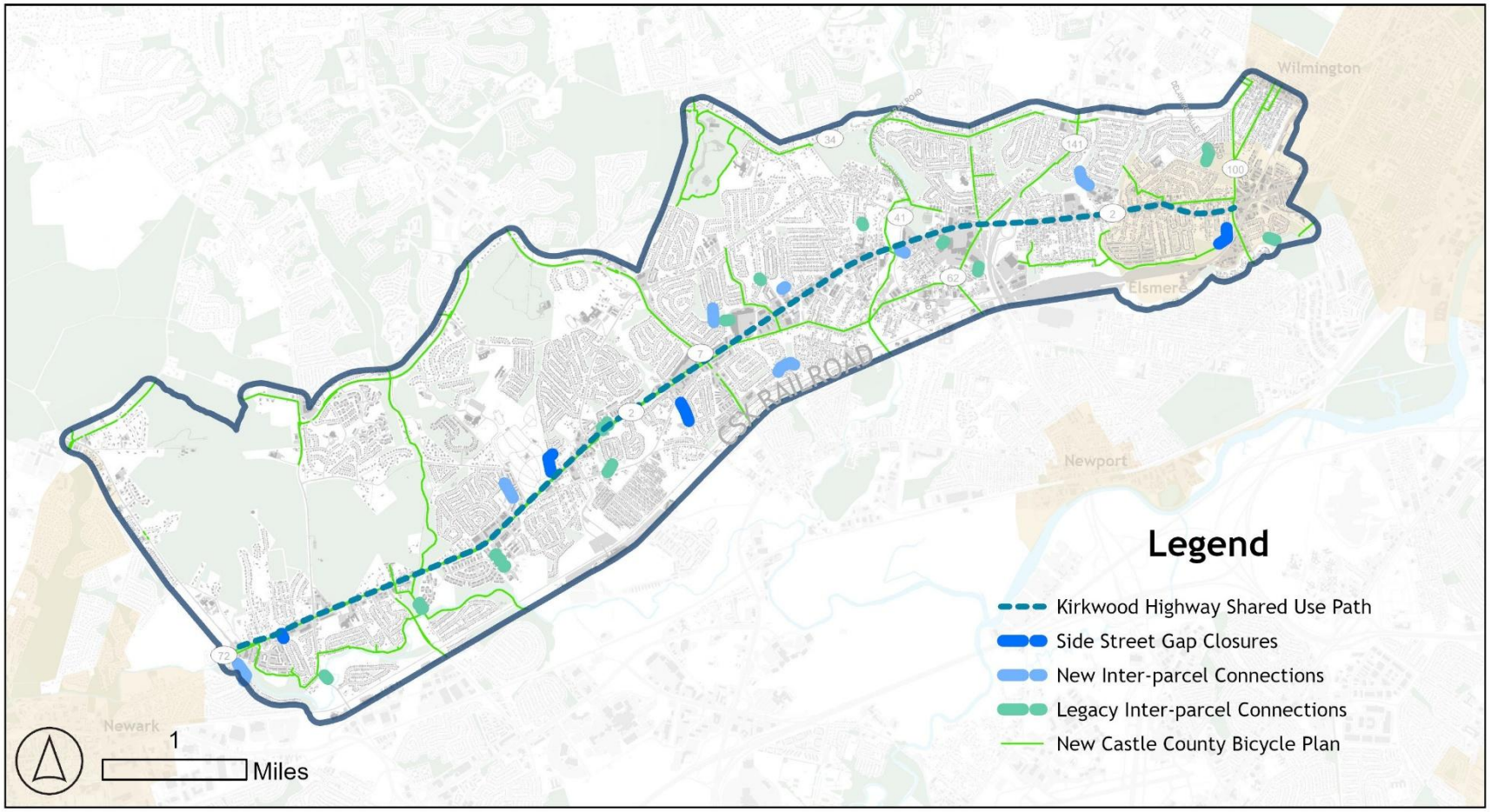


Figure 24. Proposed Bicycle and Pedestrian Connections

I. SUMMARY

The Kirkwood Highway Land Use and Transportation Plan has been developed to create both short- and long-term recommendations in the Kirkwood Highway Corridor to achieve the Vision for the corridor, which includes:

- Discouraging high traffic speeds
  - Narrower travel lanes, less pavement, and adjacent pedestrian/bicycle facilities will discourage higher traffic speeds, especially in the "Street" areas.
  - Improvements to other key roads in the study area will also be designed to discourage high speeds and cut-through traffic.
- Creating Safe Access: all ages and abilities
  - Extensive sidewalk and a shared use path network will provide more comfortable and safer access throughout the study area.
- Enhancing walking, bicycling, rolling, and transit
  - The Plan will add 45 miles of non-motorized connections.
  - The Plan will increase the low-stress mileage by 15 percent.
- Managing Congestion Levels
  - Recommended improvements will maintain similar travel times compared to no-build conditions through 2045, while providing improved pedestrian and bicycling facilities, address opportunities for modest redevelopment, and more consistent travel speeds.
- Encouraging bikeable and walkable places
  - Community Development Areas will encourage land use designs that support bikeable and walkable places.
- Community-serving retail and housing
  - Community Development Areas will support mixed use redevelopment.
- Landscaping and open space
  - Transportation Improvements will be designed with aesthetics in mind for both "Street" and "Road" areas and enhance "sense of place".
  - Community Development Areas will include opportunities for landscaping and open space as part of mixed use.
- Connecting neighborhoods, schools, and parks
  - Pedestrian and bicycle improvements will connect 49 isolated low-stress bicycle islands.
  - Plan improvements will increase the size of the average low-stress bicycle island by 39 percent.

7. NEXT STEPS

The Kirkwood Highway Land Use and Transportation Plan has been developed to guide transportation and land use in the area over the next twenty years. The study includes multiple transportation project recommendations and land use strategies, guided by the Vision.

Project implementation can take a variety of forms. The study recommends that WILMAPCO include all projects identified in the Plan in the next update to the Regional Transportation Plan (RFP) as required. Based on the cost, complexity, and size of the project, different agencies may implement projects on different timelines. Larger investments will need to go through their own planning process, including a NEPA study to determine if the proposed improvements will have significant environmental effects and to identify mitigation strategies. Smaller projects may be pursued through DelDOT's CTP, WILMAPCO's Transportation Improvement Program, regular operating budgets, or other grants and funding programs. Stakeholders and community members are encouraged to voice their support for both individual projects, and the collection of projects as a whole, to their local elected leaders to help ensure that the recommendations receive necessary funding to advance through the project development process and ultimately be implemented. Continued implementation of DART Reimagined should also be a part of the study implementation.

The proposed phased implementation approach has been developed based upon cost and complexity of potential implementation and is grouped in three phases:

- Short-Term: 1-6 Years
- Mid-Term: 7-14 Years
- Long-Term: 15+ Years

The proposed phased implementation approach is found in Appendix F.

A. Environmental Review

The scope and complexity of each project will also dictate the necessary environmental reviews. Existing environmental resources, including streams, wetlands, and floodplains, were identified using available Geographic Information System data. Impacts on each of these resources, as well as other social, cultural, and economic resources, will need to be confirmed as part of the project development process.

B. Mitigation Strategies

Mitigation strategies for individual projects will also be needed to be identified as part of the project development process. Mitigation must also be documented as part of the process for any projects that require a NEPA study.

Early in the process, the public commented on existing flooding issues and concerns about the potential for future flooding due to increases in impervious surface area. Stormwater best management practices should be considered as part of project implementation.

C. Monitoring Committee and Program

To support the implementation of Kirkwood Highway Land Use and Transportation Plan, a Monitoring Committee and Program is recommended. The Monitoring Committee should represent a cross-section of stakeholders, including implementing agencies, local and civic community leaders, other key stakeholders, and the communities they represent.

The role of the Kirkwood Highway Monitoring Committee is to:

- Facilitate regular communication between decision-makers, community stakeholders, and the traveling public on progress in plan implementation.

- Share key technical information to help the community understand the consequences/benefits of investment decisions across transportation assets or modes.
- Provide input on local transportation priorities.
- Provide input on the prioritization of Plan projects.
- Provide input on small mid-course corrections as conditions evolve over time.
- Help facilitate solutions to traffic management problems as they arise.

To support the work of the Monitoring Committee, a monitoring program and report should be implemented and prepared. Each year of monitoring should track land development, traffic, pedestrian and bicycle, transit, and safety conditions in the Kirkwood Highway Corridor. Additionally, the monitoring would track the status of the projects that came out of the Land Use and Transportation Plan and the recommendations for the Project Partners for the year ahead. The monitoring report and process are "living documents" that are intended to evolve over time, as conditions change, land development (or re-development) occurs, and transportation improvements are implemented.

D. Critical Issues to be Considered

Public involvement, and particularly engagement with minority or underrepresented groups, will continue to be critical as the Plan is adopted and projects are implemented. Individual projects will have varying impacts and may attract interest from different stakeholder groups.

One overarching concern expressed by some members of the Advisory Committee and reiterated at each public workshop was the possible timing of transportation improvements and development. As projects are implemented, consideration will need to be given to ensure that needed transportation infrastructure is in place as development occurs to support the project goals of enhancing quality of life and providing transportation choices.