

The background of the entire page is a scenic landscape photograph. It shows a calm body of water, likely a lake or a wide river, with rolling hills and mountains in the distance under a soft, overcast sky. The foreground is filled with the dark, out-of-focus silhouettes of trees and bushes. A white rectangular frame is superimposed over the center of the image, and a dark blue horizontal bar is positioned across the middle of this frame.

# hardin valley

## MOBILITY PLAN





# acknowledgments

## STEERING COMMITTEE

Knox County: Engineering and Public Works | Mayor's Office | Human Resources  
Knoxville - Knox County Planning  
Knoxville Regional Transportation Planning Organization  
Tennessee Department of Transportation  
West Knox Utility District

## STAKEHOLDERS

Hardin Valley Planning Advocates  
Hardin Valley Business Group  
Pellissippi State Community College  
Town of Farragut  
Rural Metro Fire  
Knox County Development Corporation  
Ball Homes  
Goodall Homes  
Knox County Schools  
Faith Promise Church  
Vulcan Materials  
Safe Harbor Development  
King University  
United Parcel Service  
Greystone Apartments  
Knox County Parks and Recreation  
Southwest Bank



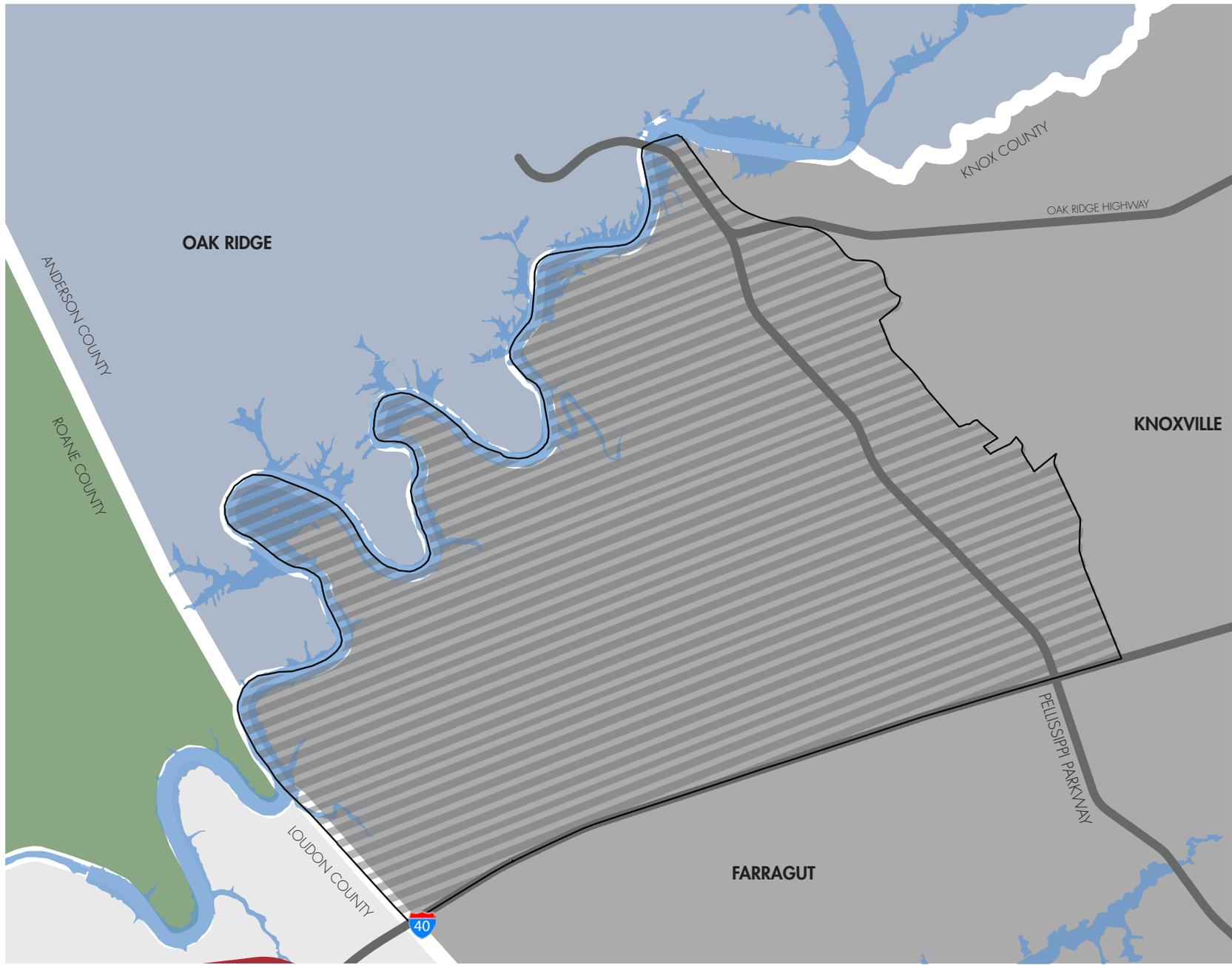


# project overview

Bounded by Pellissippi Parkway on the east, the county boundary on the west, I-40/I-75 to the south, and Melton Hill Lake to the north, the Hardin Valley study area is one whose landscape possesses the rural charm and character that many seek out, complemented by proximity to professional jobs near Oak Ridge as well as all the urban activities that Knoxville has to offer. The desirability of this area has led to rapid growth in recent years, with a host of new residential developments that have led to at-capacity schools and increased levels of traffic congestion.

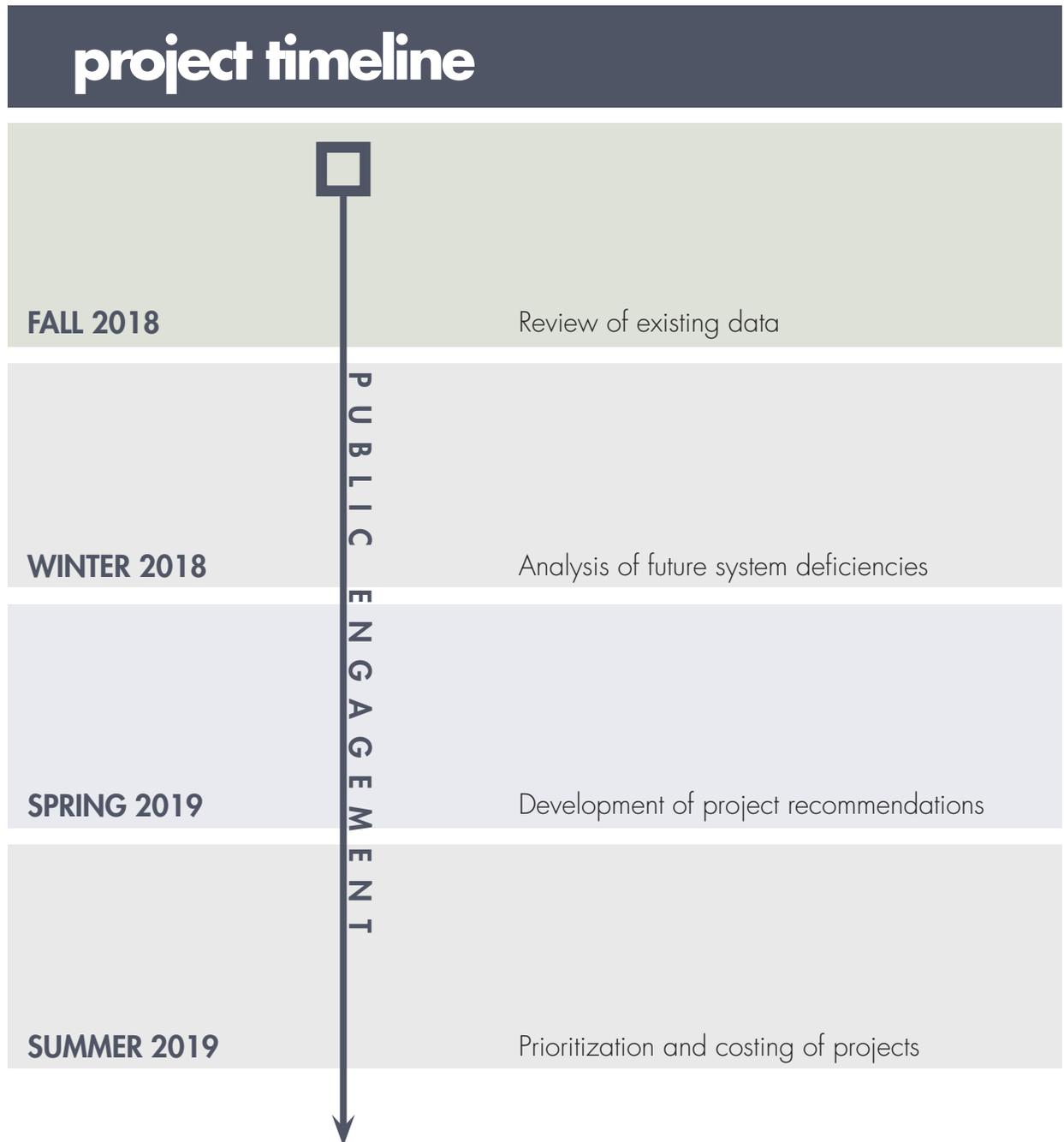
This Hardin Valley Mobility Plan serves as an articulation of the community's vision for the future development of and improvements to one of Knox County's fastest growing areas. This study was not completed in isolation as numerous planning efforts having been accomplished and projects designed leading up to this point. These planning efforts, conducted by the Knoxville-Knox County Planning, TDOT, and other entities, have resulted in both plans and projects for the Hardin Valley study area shown on the following page.





 Study Area

Following on the heels of the most recent planning effort, the 2016 Northwest County Sector Plan, the Hardin Valley Mobility Plan was undertaken in order to take a closer look at the transportation implications of land use decisions in the area. This plan is a result of a 12-month process that included an analysis of historic development patterns, projection of future growth in population as well as employment. This analysis helped determine existing transportation deficiencies, projection of future needs, and identify investments and projected costs needed to address those needs. All of these elements were driven by an extensive stakeholder and public involvement process.



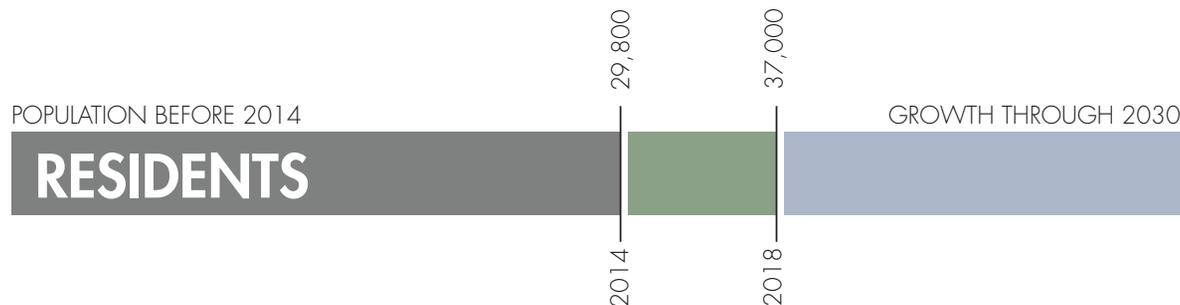
# analysis

## DEMOGRAPHIC CHARACTERISTICS

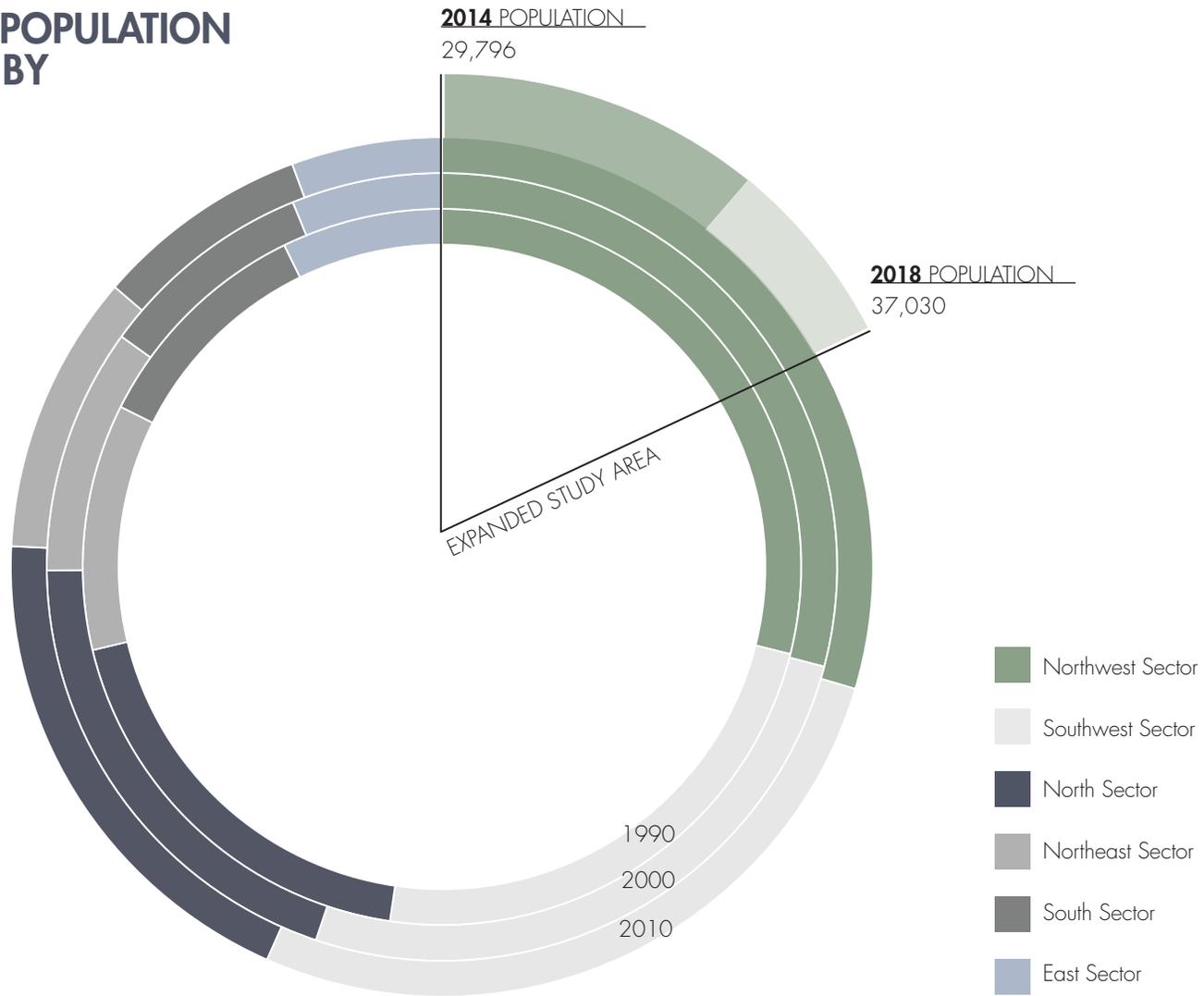
The Hardin Valley study area is very much appealing, and the availability of undeveloped/underutilized land, particularly west of Pellissippi Parkway, has led to a significant surge in development. This recent intensity in residential development has resulted in a corresponding increase in population.

Since 2014, the study area has seen approximately 1,800 new people in the community per year for a total population growth of 7,200 residents. That puts the 2018 population at just over 37,000 people, and based on historic trends as well as anticipated development constraints, it's forecasted

that an additional 19,500 residents will call the Hardin Valley study area home by 2030. According to data distributed by the U.S. Census Bureau, the household and population characteristics in the study area are relatively homogenous. The distribution of resident age reflects an increased presence of families that have school-aged children, are highly educated, and have a median household income of approximately \$80,000, which is well above the county average (~\$55,000).



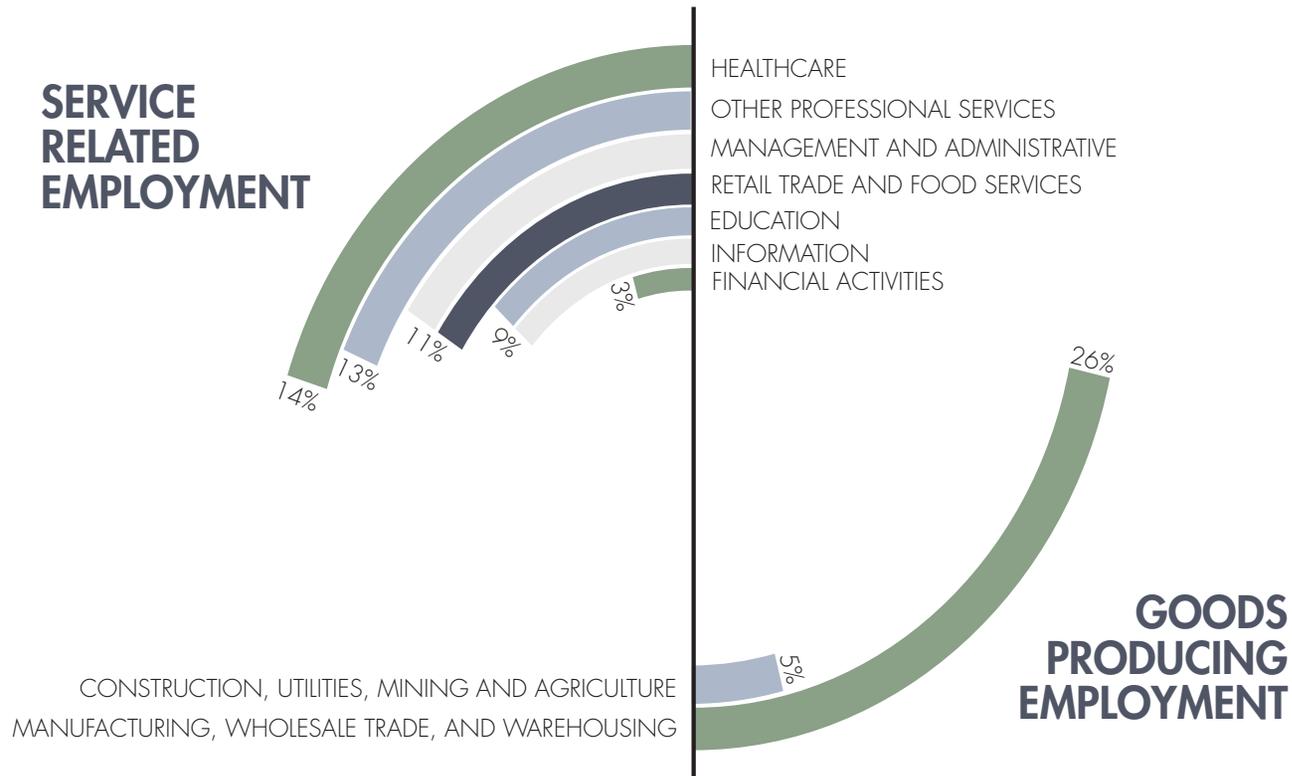
# HISTORIC POPULATION GROWTH BY COUNTY SECTOR



### MARKET CHARACTERISTICS

Nestled between Oak Ridge National Laboratory to the north and the Turkey Creek commercial area to the south, the Hardin Valley study area residents have prime access to a variety of established employment centers. While this is likely a contributing factor for the residential growth in the study area, the Hardin Valley study area is not lacking for employment opportunities of its own. In 2018, there were approximately 28,000 jobs in the study area. Two-thirds of

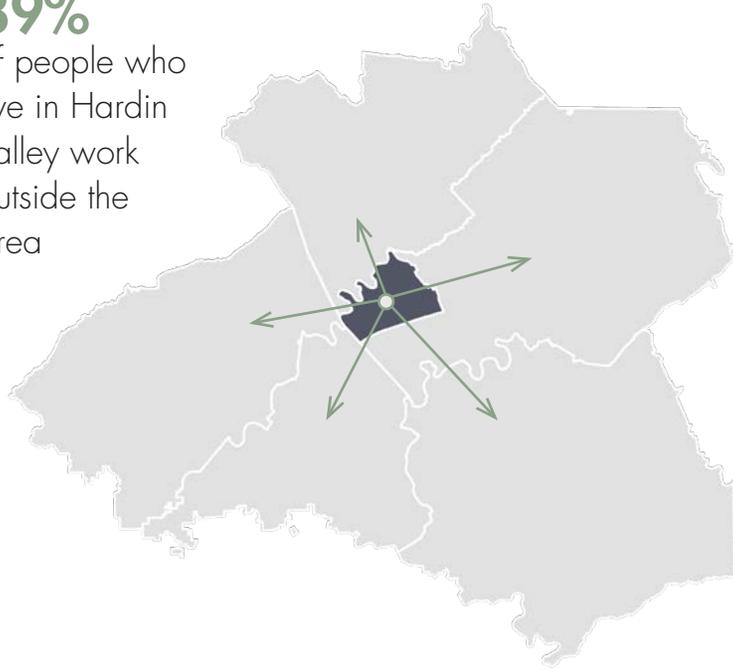
this employment is based in the service sector, which includes those working in industries related to education, healthcare, finance, information technology, entertainment, and government. In addition, industrial and retail employment sectors each comprise approximately 14% of the overall employment in the area. The remaining jobs are categorized as basic employment, which includes construction, utilities, mining, and forestry jobs.



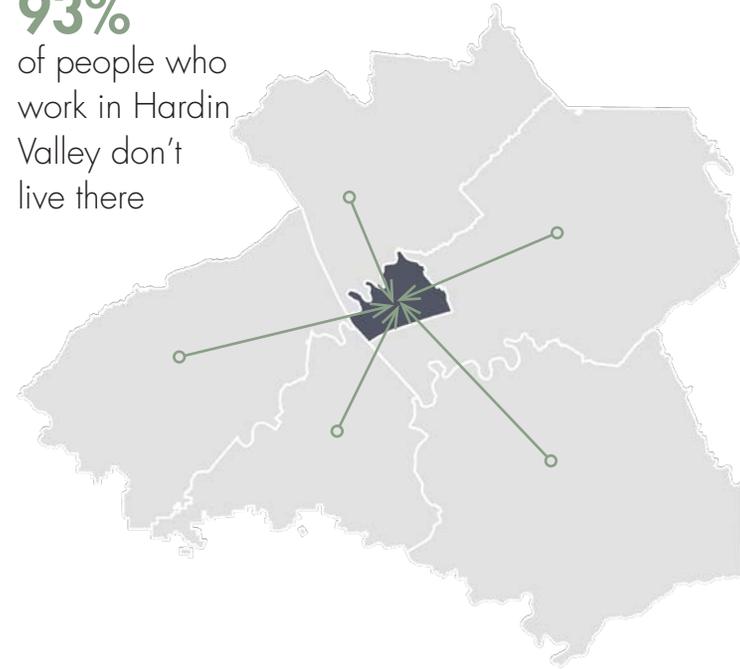
The proximity to employment opportunities external to the study area as well as employment within contributes to a significant amount of commuting traffic in, near, and through the Hardin Valley study area. According to the U.S. Census Bureau, residents who live in the study area and commute externally, which represents nearly 90% of workers, are

primarily traveling east to downtown Knoxville and north to Oak Ridge. Notably, only 7% of the employees who work in the Hardin Valley study area also live there with the remaining 93% traveling into the study area from all areas of Knox County, as well as from surrounding areas in Blount, Loudon and Anderson Counties.

**89%**  
of people who live in Hardin Valley work outside the area



**93%**  
of people who work in Hardin Valley don't live there



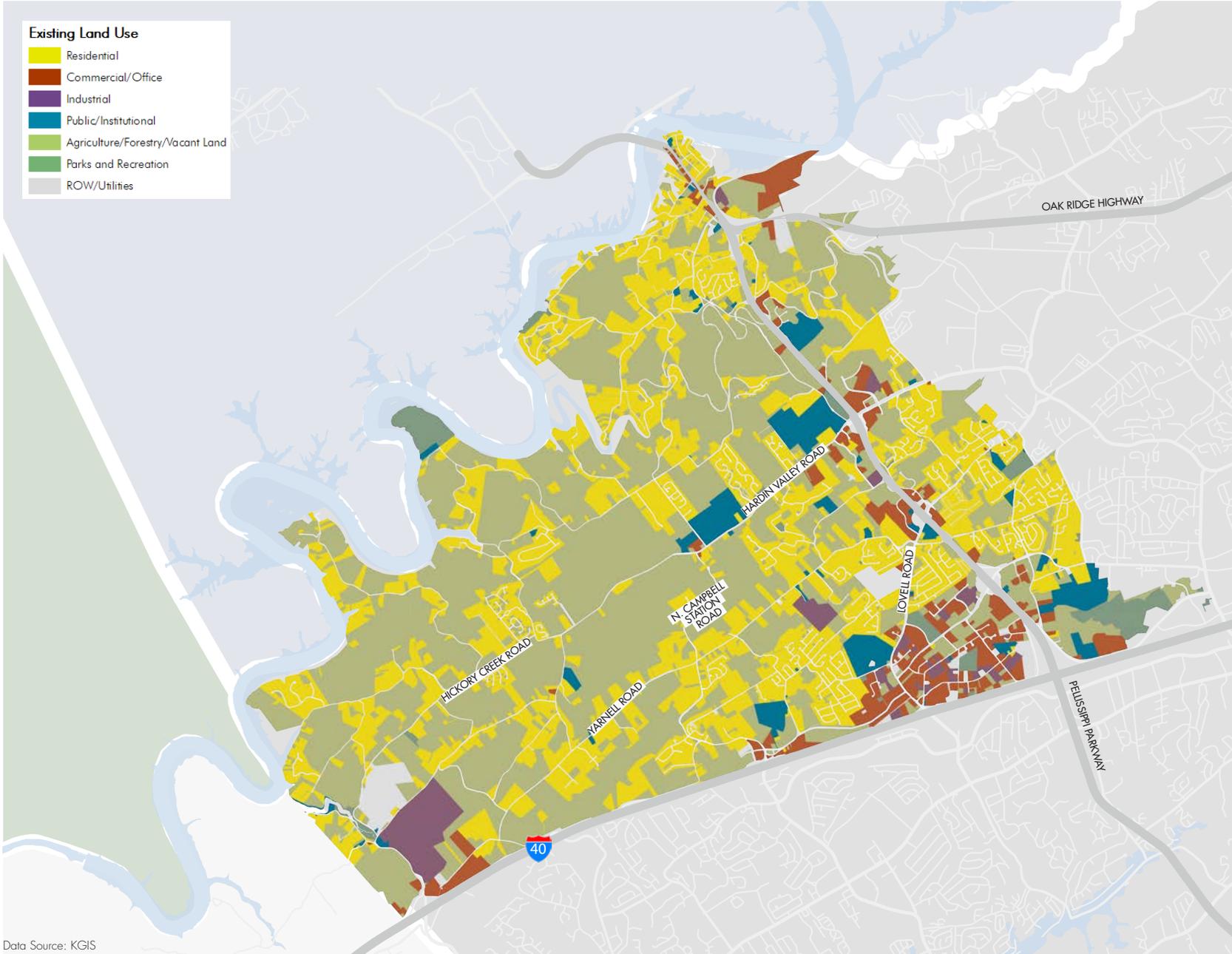
The employment growth in the Hardin Valley study area is expected to mirror the population growth slated for the community over the next 12 years, with nearly 10,000 additional jobs being added to the study area by 2030. Similar to current trends in employment type, it's expected that the majority of this growth will come in the service sector.



### DEVELOPMENT CHARACTERISTICS

Land use and development patterns are crucial to understanding travel habits and the overall needs for different users of the transportation system. Existing land uses within the Hardin Valley study area are dominated primarily by those lands classified as Agricultural, with nearly half of all acreage in the study area classified as such. As a percentage of total

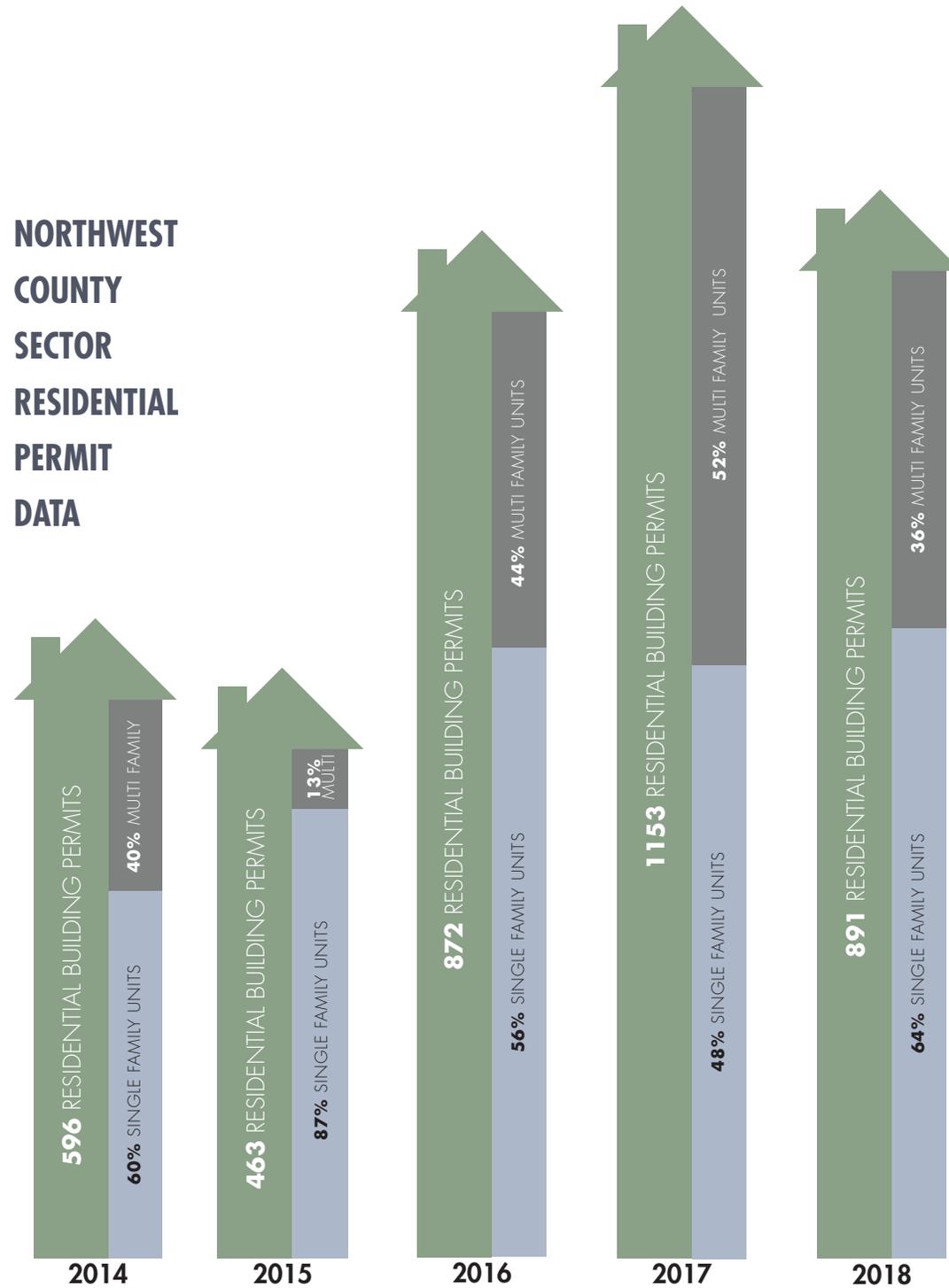
acreage, Public Right-of-Way, Rural Residential, and Single-Family Residential are the other dominant uses in the Hardin Valley study area. Most non-residential land uses are clustered around the I-40/I-75 and Pellissippi Parkway interchanges, as shown in the figures above and on the following page, which provide a high degree of accessibility for the movement of both people and goods.



Data Source: KGIS

Availability of land in the Northwest County sector as well as its desirability has driven a fast pace of development in recent years. From 2014 to 2018, there were nearly 4,000 new residential permits issued in the sector with 60% and 40% issued for single-family units and multifamily units, respectively. Of these, approximately 1,500 of the new residential permits were issued in the Hardin Valley study area. While only 7% of permits were allocated for new multifamily housing developments, those permits represent nearly 50% of all new dwelling units in the study area.

## NORTHWEST COUNTY SECTOR RESIDENTIAL PERMIT DATA



The Northwest County Sector Plan that was completed in 2016 set forth a land use vision that includes policies to guide future physical and economic development for a larger area of the county that incorporates the Hardin Valley study area. Although the acreage of agricultural and rural lands is intended to stay relatively the same, there have been a number of rezonings across the study area that are placing higher density uses in predominantly rural, isolated areas. To capture the transportation implications of these continued development patterns, three development scenarios were

created, all of which assigned future population and employment growth spatially to different areas within the Hardin Valley community based on the implementation of different land use policies. Performance metrics listed below related to transportation and development were used to discern the relative impacts of carrying out more conservative or aggressive development patterns based on these allocations. The results of this analysis helped to inform the project list development process.

-  1. INCREASE ROADWAY SAFETY
-  2. PRESERVATION OF RURAL AREAS, OPEN SPACE, & HILLTOPS
-  3. INCREASED OPPORTUNITIES TO WALK AND BIKE
-  4. GREATER CONNECTIVITY TO INTERSTATE & MISSISSIPPI PKWY
-  5. DEVELOPMENT OPTIONS THAT REQUIRE LESS DRIVING
-  6. HOMES ON LARGE LOTS
-  7. ACCESS TO JOBS, SHOPPING, AND SCHOOLS
-  8. DIVERSE HOUSING OPTIONS
-  9. GROW IN UNDEVELOPED AREAS
-  10. REDUCE GREENHOUSE GAS EMISSIONS



## ENVIRONMENTAL CHARACTERISTICS

The rural landscape is one of the most attractive features of the Hardin Valley study area, but some elements of this landscape prove to be inhibitors for development. Similar to landscapes across East Tennessee, it is characterized by ridges and valleys that contribute to its appeal. These geological features create steep slopes, which can lead to instability in the soil and can oftentimes limit the provision of utilities such as water and sewer in these areas. Beaver Ridge is one of the most notable ridges in the study area; this feature runs east-west and remains predominantly undeveloped because of its steep slopes. To protect these natural areas, the Knoxville-Knox County Hillside and Ridgetop Protection Plan was developed. The policies in this plan are used to minimize negative impacts of construction

on steep hillsides, including excessive deforestation, soil erosion, water quality degradation, landslides and loss of natural beauty. In Hardin Valley, approximately 13,800 acres of land, representing nearly 46% of all land in the study area, are within the Hillside and Ridgetop Protection Area (HRPA), meaning that development in these areas, which are primarily located along Beaver Ridge and near Melton Hill Lake, is limited to densities specified in the Northwest County Sector Plan. As the main legislative bodies, the Knoxville City Council and Knox County Commission are responsible for applying the plan's principles, policies, and recommendations during various development stages, such as requests for changes to land use classifications or the zoning map or during the approval of a subdivision development or concept plan.



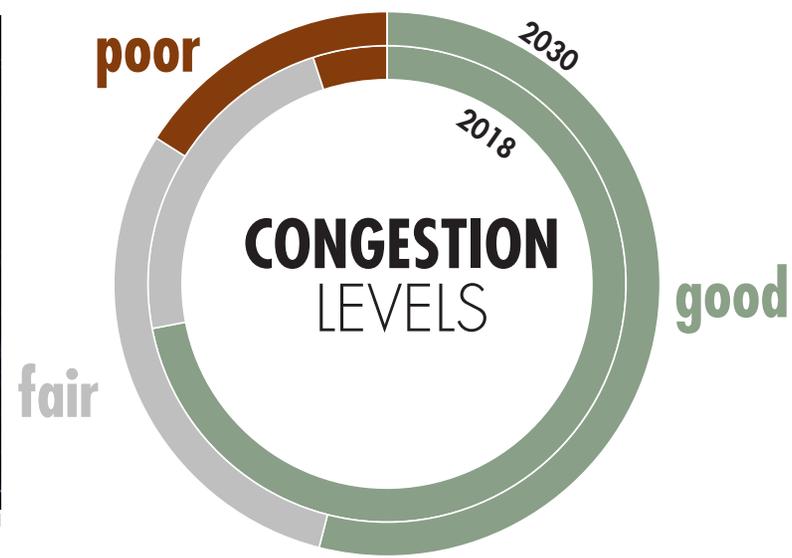
## TRANSPORTATION SYSTEM CHARACTERISTICS

The transportation system and how well it operates is vital to the success of any area. As part of this plan, the multimodal transportation network was analyzed to determine its strengths, weaknesses, and opportunities for improvement. The Hardin Valley study area is served with a network of arterial and collector roadways that work together to move residents and workers throughout the community. Most of the major roadways run in an east-west direction as topographical constraints have historically limited the ability to construct north-south connections. This places a significant burden on the existing facilities as they carry the majority of the area's traffic volumes. Analysis of peak hour traffic conditions shows that residents can spend a significant amount of time waiting to travel through some of the major

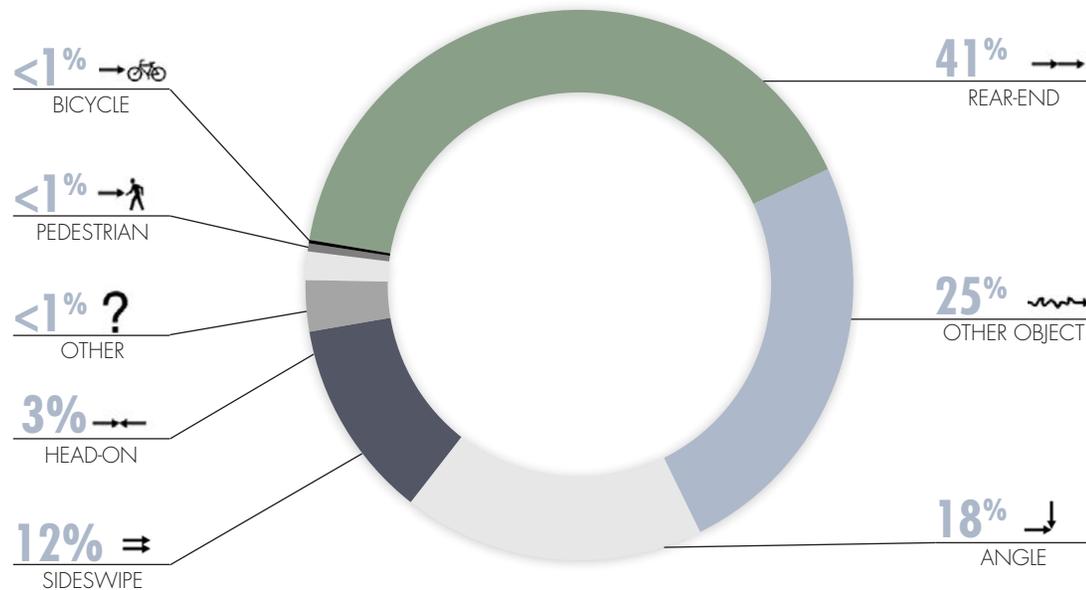


Photo: Calvin Mattheis/News Sentinel

intersections in the area, especially if they are trying to turn onto major roadway facilities from subdivision accesses. This congestion also makes it difficult for pedestrians to cross many of the major roadway facilities. However, these issues are primarily present during peak hours and during school arrival and dismissal periods. Over time, it is anticipated that the area's major roadways will likely become more congested and local roadways could begin to see more traffic if alternative routes are not constructed. As such, the forecasted population and employment growth slated for the Hardin Valley study area was modeled to examine the likely implications for the roadway system. It's anticipated that as future development occurs, additional roadway connections will need to be put in place to serve the additional residents and relieve stress from the existing system.

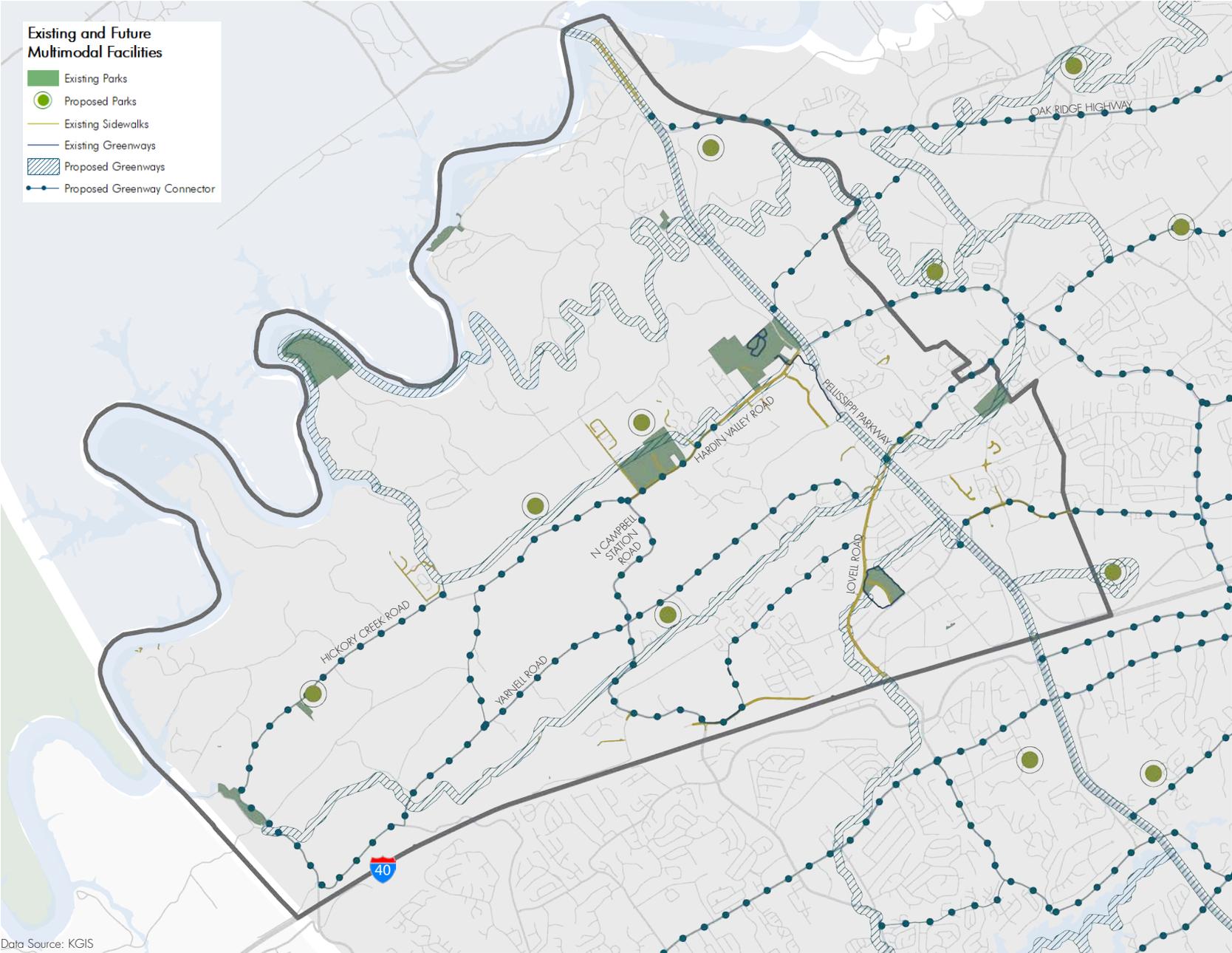


Roadway safety is also paramount to the vitality and growth of any area, including the Hardin Valley study area. Analysis of crash data over the past four years shows that the majority of vehicular crashes occurred at major intersections, particularly locations along some of the main arterials that have more rural geometrics. Crash types varied, with over 65% resulting from a rear-end collision or a collision with something other than a motor vehicle (e.g., guard rail, tree, animals, etc.). Notably, there were four pedestrian crashes and three bicycle crashes in the Hardin Valley study area over the past four years.



The availability of alternative transportation infrastructure provides community residents with opportunities to make trips via modes that promote healthier lifestyles, sustainability, and help reduce congestion. In the Hardin Valley study area, this infrastructure consists of sidewalks, bike lanes, and off-road greenway facilities. The main sidewalk network is limited in terms of connectivity across the study area with sidewalks only provided along key corridors such as Hardin Valley Road,

Steele Road, Dutchtown Road, and Lovell Road. The rural scenic landscape of the study area and low-volume nature of many roadways draw recreational cyclists, though there are no dedicated bicycle facilities in the Hardin Valley study area. The Knoxville-Knox County Park, Recreation, and Greenways Plan, completed in 2009, lays out the vision for increased greenway connectivity throughout the study area and to other parts of the county as shown on the following page.



Data Source: KGIS

# engagement

The Hardin Valley Mobility Plan had a very intentional public and stakeholder engagement process that was designed to be highly interactive and transparent, to collect meaningful information that influenced plan outcomes, and to be ongoing throughout the plan's development. To achieve these goals, strategies and tools were designed for three different audiences:

## STEERING COMMITTEE

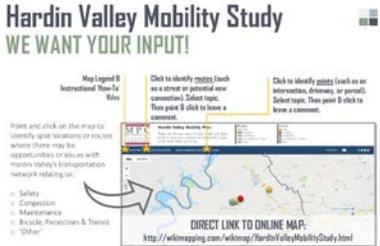
The project steering committee served as the primary technical body for the plan development with representatives from Knoxville-Knox County Planning, Knox County Engineering and Public Works, Mayor's Office, and Human Resource Departments, the Tennessee Department of Transportation, and the West Knox Utility District. This group was engaged at key project milestones at which point they provided guidance on plan development, engagement methods, and potential recommendations.

## STAKEHOLDER COMMITTEE

The stakeholder committee included a diverse group of individuals that held a wide range of interests in the Hardin Valley study area. Members included property owners, business owners, real estate professionals and developers, advocacy groups, and representatives from multiple public entities (schools, Pellissippi State, planning commission). The stakeholder group served as a sounding board to provide insight on community needs and desires. In addition, they were given opportunities to provide specific input on project deliverables, public input processes, and project recommendations.

# COMMUNITY

Residents and business owners in the Hardin Valley study area were provided multiple opportunities to participate and provide crucial input throughout the plan development process. Various engagement methods were used including online and in-person strategies to gather input on priorities for future land use decisions, preference on types of transportation investments, and project recommendations.



## COMMUNITY MEETING #1



Stakeholder and Steering Committee Meetings

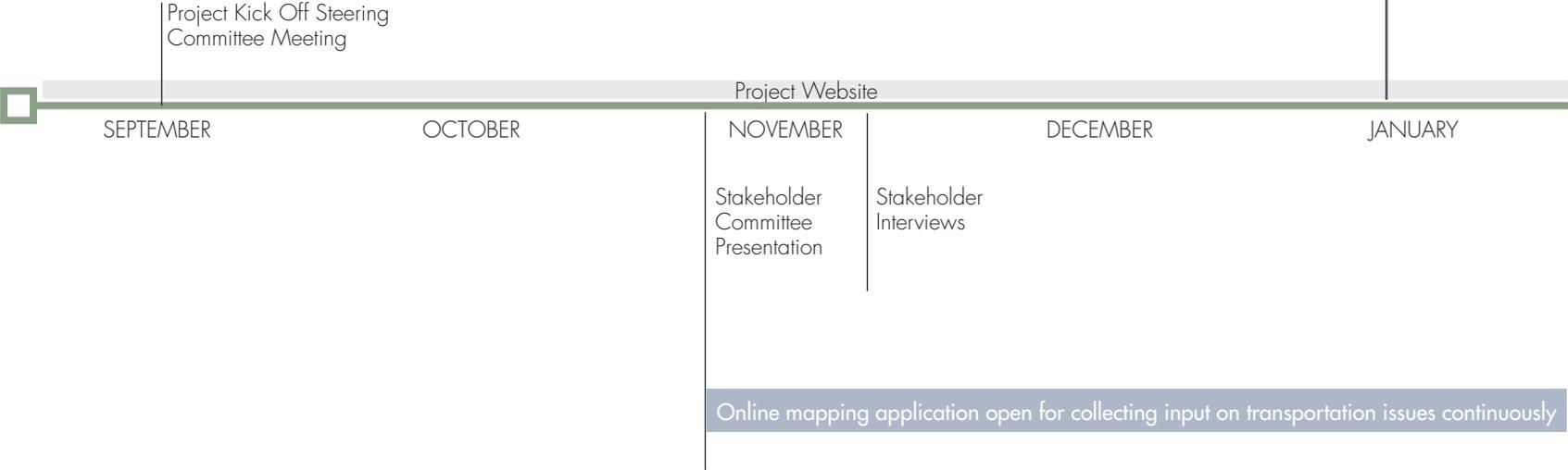




Photo: Calvin Mattheis/News Sentinel



Photo: Calvin Mattheis/News Sentinel

Online mapping application open for continuously collecting input on project recommendations



FEBRUARY

MARCH

APRIL

MAY

JUNE

JULY

Stakeholder and Steering Committee Meetings



Photo: Saul Young/News Sentinel

**Hardin Valley Mobility Study**  
**WE WANT YOUR INPUT!**

Click on the candidate projects to tell us your opinion on each project.

Click on the candidate projects within the map to provide input on Hardin Valley's future transportation investments relating to:

- Safety
- Congestion
- Non-Motorized Transportation
- Connectivity

**DIRECT LINK TO ONLINE MAP:**  
<http://wikimapping.com/wikimap/HardinValleyMobilityStudy.html>

**COMMUNITY MEETING #2**

Using an online mapping application, residents were able to pinpoint specific issues in the transportation system that they experience every day. As project recommendations were developed, residents were again able to use this platform to provide their opinion on potential investments. Two separate public meetings were held at key points during the plan's development. Outcomes from the first meeting indicated that individuals would prefer development options that prioritize roadway safety, the preservation of rural

areas, and increased opportunities for walking and biking. Additionally, residents selected congestion mitigation, safety, and connectivity improvements as most important for the future of the Hardin Valley study area. During the second public meeting, residents were provided information on future land use scenarios and their transportation implications. This information, coupled with detailed project maps and descriptions allowed participants to inquire about and discuss potential investments for the community with the

## TOP TRANSPORTATION ISSUES

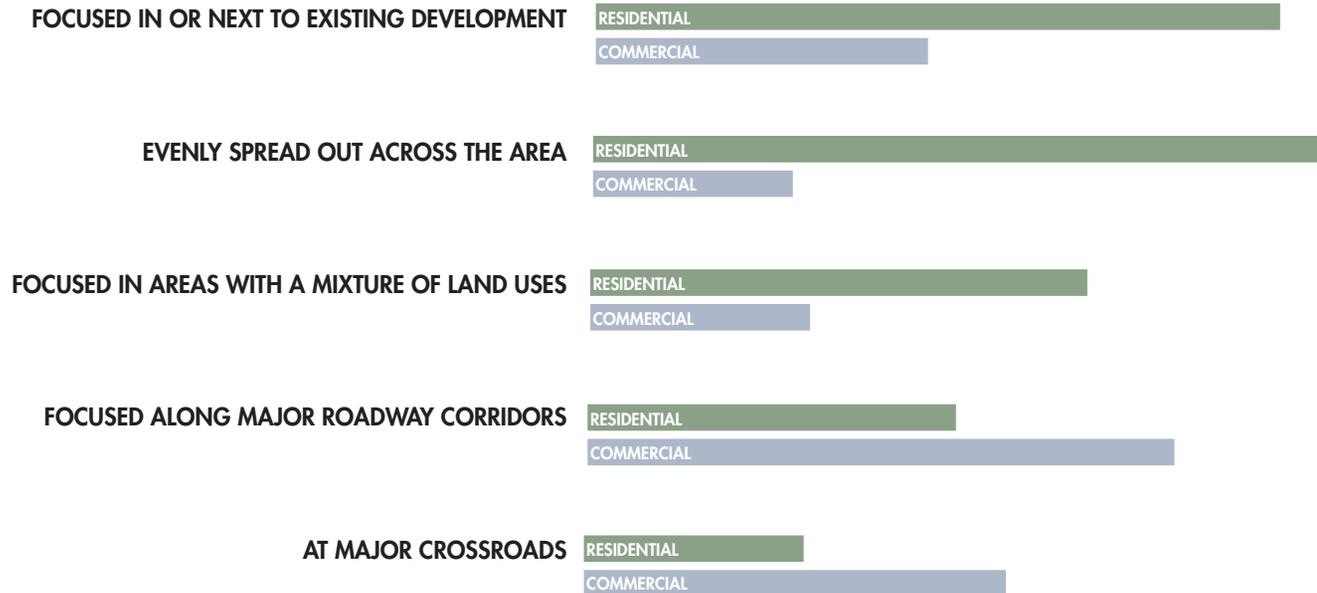
-  **VEHICLES/TRAFFIC/CARS/CONGESTION**
-  **SCHOOL TRAFFIC**
-  **TRUCK TRAFFIC**
-  **CYCLISTS**
-  **PEDESTRIANS**



project team and county representatives. In total, these community meetings had an attendance of nearly 500 residents, far exceeding initial expectations. Knoxville-Knox County Planning maintained a webpage dedicated to this effort throughout the plan development. It was used as an effective method to disseminate information about the project schedule, upcoming meetings, data analysis methods, and results of public input, all of which contributed to a transparent and highly engaging planning process.

In addition to the information provided on the project website and the input received as part of public meetings, online surveys were also administered to the public. Information on topics such as transportation, safety, and land use was made available on the project website in conjunction with a survey link that allowed participants to provide specific input on these topics. This process resulted in nearly 900 survey responses.

## COMMUNITY DESIRES FOR FUTURE GROWTH & DEVELOPMENT

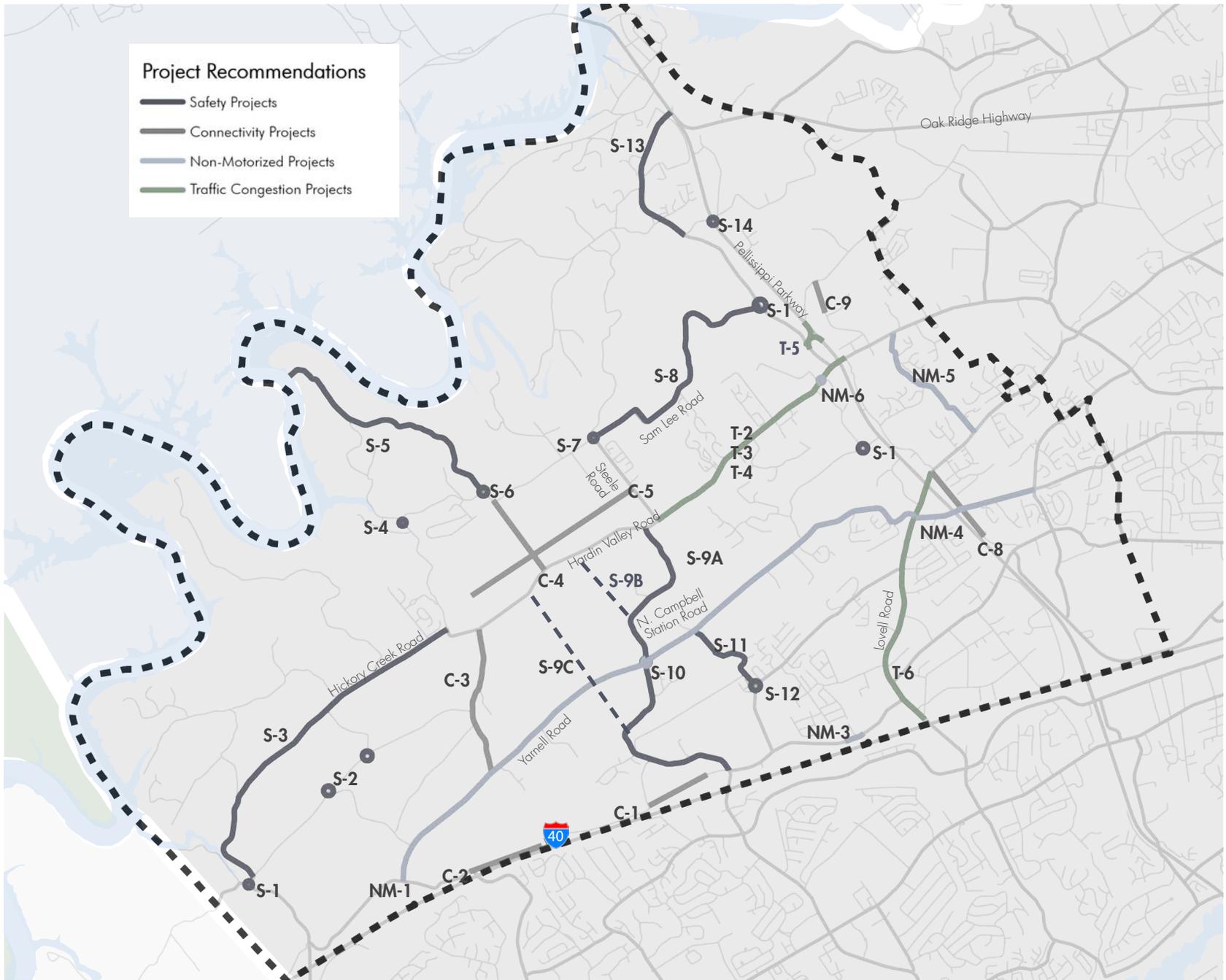


# implementation

Based on the analysis of the existing transportation system and future land use patterns, coupled with public and stakeholder input, a list of potential investments was developed. Naturally, these projects could be classified as addressing issues related to either congestion, connectivity, non-motorized, or safety, although many of them actually address multiple goals. Input from the first public meeting was utilized to prioritize each project and its associated costs. The timeline for implementation of each project is identified as follows based on cost, constructability, and priority: **short-term** (1-2 years), **medium-term** (3-5 years), and **long-term** (6-10+ years). A number of projects could be implemented

utilizing public-private partnerships in concert with future development, potentially impacting the anticipated timeframe and project cost.

Based on this process, a number of projects along key corridors are identified as catalyst projects that will move the needle for transportation safety, accessibility, and connectivity in the Hardin Valley study area. These include projects with impacts for Hardin Valley Road, N. Campbell Station Road, and Pellissippi Parkway, which are described in detail on the following pages.



## CONNECTIVITY PROJECTS

PROJECT	DESCRIPTION	COST
C-1	New roadway connection between Hatmaker Road and Snyder Road	\$5 M
C-2	New roadway connection from Hatmaker Lane to Everett Road	\$6.5 M
C-3	Improve Marietta Church Road to include additional shoulder width for all users	\$6 M
C-4	Provide additional N-S connection from Couch Mill Road to proposed E-W connector and Hardin Valley Road	\$3 M
C-5	Provide new E-W connection from Steele Road to Mission Hill Lane to provide parallel route for Hardin Valley	\$13 M
C-8	Connect Dutchtown Road and Lovell Road, east of Pellissippi Parkway; remove access to Pellissippi Parkway from residential property	\$4.5 M
C-9	Explore options for N-S connection via Cherahala Boulevard extension	\$2.5 M

## NON-MOTORIZED PROJECTS

PROJECT	DESCRIPTION	COST
NM-1	Improve the shoulders on Yarnell Road for all users	\$11 M
NM-3	Complete sidewalk gap on Outlet Drive	\$90 K
NM-4	Provide new bike facilities (either bike lane or wider shoulders) along Bob Gray Road	\$3.5 M
NM-5	Widen Thompson Road with shoulders and potential bike facility	\$4.5 M
NM-6	Option A - Near-term safety improvements for existing Greenway crosswalk to potentially include refuge islands, Rectangular Rapid Flashing Beacon (RRFB)	\$60 K
	Option B - Long-term solution being a grade-separated crossing at Hardin Valley Road	\$1.2 M

## SAFETY PROJECTS

PROJECT	DESCRIPTION	COST
S-1	Signage for limited sight distance (Carmichael/Valley Vista, Everett/Buttermilk, Solway/Sam Lee)	\$100 K
S-2	Option A - New Roadway Alignment; New northbound Graybeal Road alignment to connect to intersection of Buttermilk Road and southbound Graybeal Road with additional signage for sight distance	\$2 M
	Option B - Intersection Approach Realignment; realign both intersections of Buttermilk Road and Graybeal Road with additional signage for sight distance	\$320 K
S-3	Widen Hickory Creek to include shoulder on either side for all users	\$7 M
S-4	Intersection improvements at Couch Mill Road/Williams Road/Gallaher Ferry Road with signage for sight distance	\$80 K
S-5	Widen existing travel lanes and shoulders on Williams Bend Road to provide better access to Melton Hill Park for all users	\$6 M
S-6	Intersection improvements at Couch Mill Road and Williams Bend Road (consider 3-way stop) with signage for sight distance	\$40 K
S-7	Option A - Intersection improvements at Sam Lee Road and Steele Road - Consider Roundabout	\$1.5 M
	Option B - Intersection improvements at Sam Lee Road and Steele Road - Consider All Way Stop	\$60 K
S-8	Widen existing travel lanes on Sam Lee Road with additional shoulder width for all users	\$7 M
S-9	Option A - Improve existing N. Campbell Station Road to address capacity and safety issues - Shoulders Only	\$13 M
	Option B - Improve N. Campbell Station Road to address capacity and safety issues - New 0.8-mile Connection with Partial Realignment	\$15.5 M
	Option C - Improve Campbell Station Road to address capacity and safety issues - New 1.5-mile Connection with Partial Realignment	\$18 M
S-10	Option A - Intersection improvements at Campbell Station and Yarnell - Consider Roundabout	\$2 M
	Option B - Intersection improvements at Campbell Station and Yarnell - Consider Traffic Signal	\$1.5 M
S-11	Improve Snyder School Road to include shoulders for all users	\$2.5 M

S-12	Option A - Intersection improvements at Snyder School Road and Snyder Road - Consider All Way Stop	\$50 K
	Option B - Intersection improvements at Snyder School Road and Snyder Road - Consider Mini Roundabout	\$2 M
S-13	Shoulders/Sidewalks on northern Solway Road	\$5.5 M
S-14	Implement access control measures for George Light Road at Pellissippi Parkway (e.g.,RIRO)	\$3.5 M

## TRAFFIC CONGESTION/OPERATIONS PROJECTS

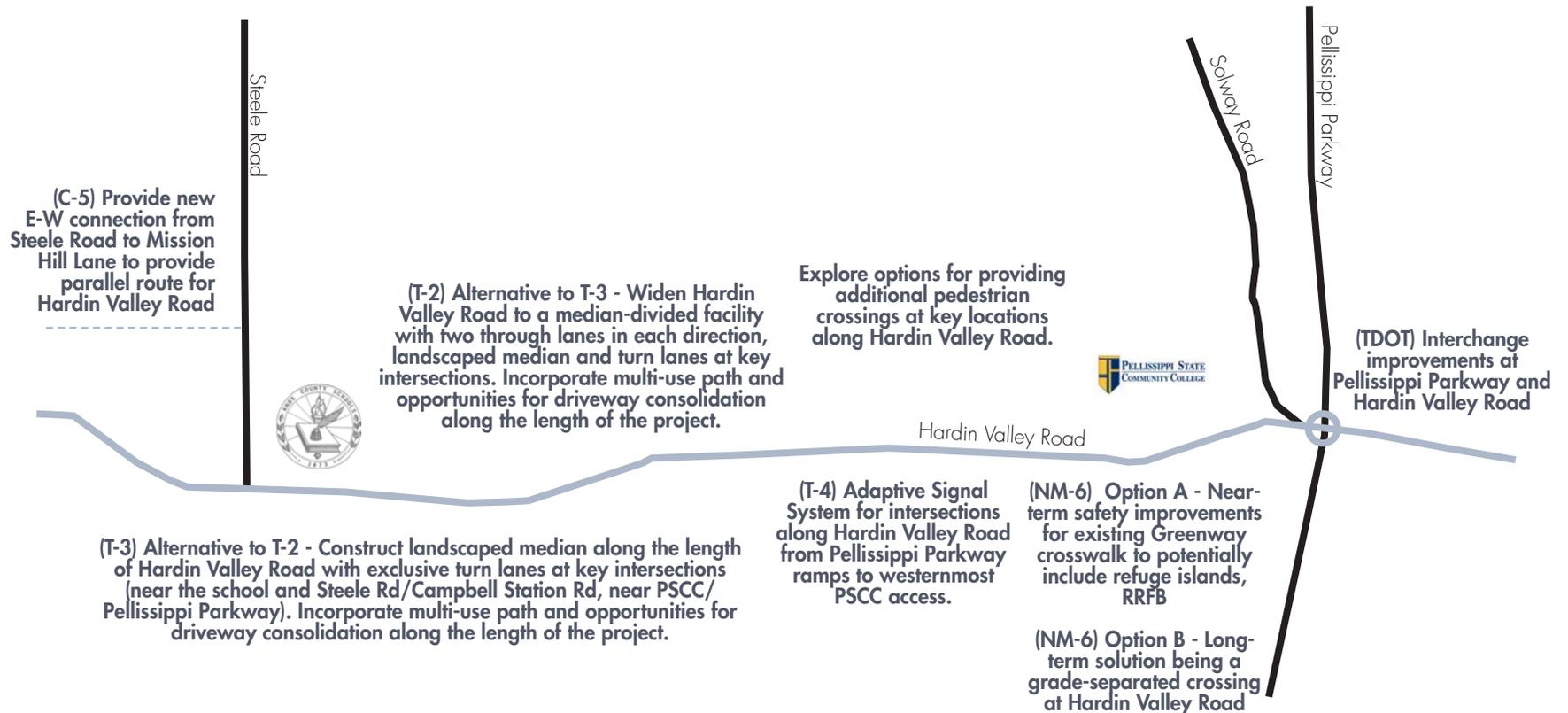
PROJECT	DESCRIPTION	COST
T-2	Widen Hardin Valley Road to a median-divided facility with two through lanes in each direction, landscaped median and turn lanes at key intersections. Incorporate multi-use path and opportunities for driveway consolidation along the length of the project.	\$18 M
T-3	Construct landscaped median along the length of Hardin Valley Road with exclusive turn lanes at key intersections (near the school and Steele Rd/Campbell Station Rd, near PSCC/Pellissippi Parkway). Incorporate multi-use path and opportunities for driveway consolidation along the length of the project.	\$10 M
T-4	Adaptive Signal System for intersections along Hardin Valley Road from Pellissippi Parkway ramps to westernmost PSCC access	\$200 K
T-5	Add additional southbound exit ramp from and southbound entry ramp to Pellissippi Parkway from Solway Road	\$5 M
T-6	Coordinate signal timing on Lovell Road	\$70 K

Through the planning process, some projects were removed from consideration, including C-6, C-7, NM-2, S-15, and T-1, based on stakeholder and public input, existing and in-progress projects, and overall construction feasibility and cost. Additionally, the Knox County Engineering and Public Works Department has already begun to move forward on the implementation of many of the short-term projects listed here.

# HARDIN VALLEY ROAD

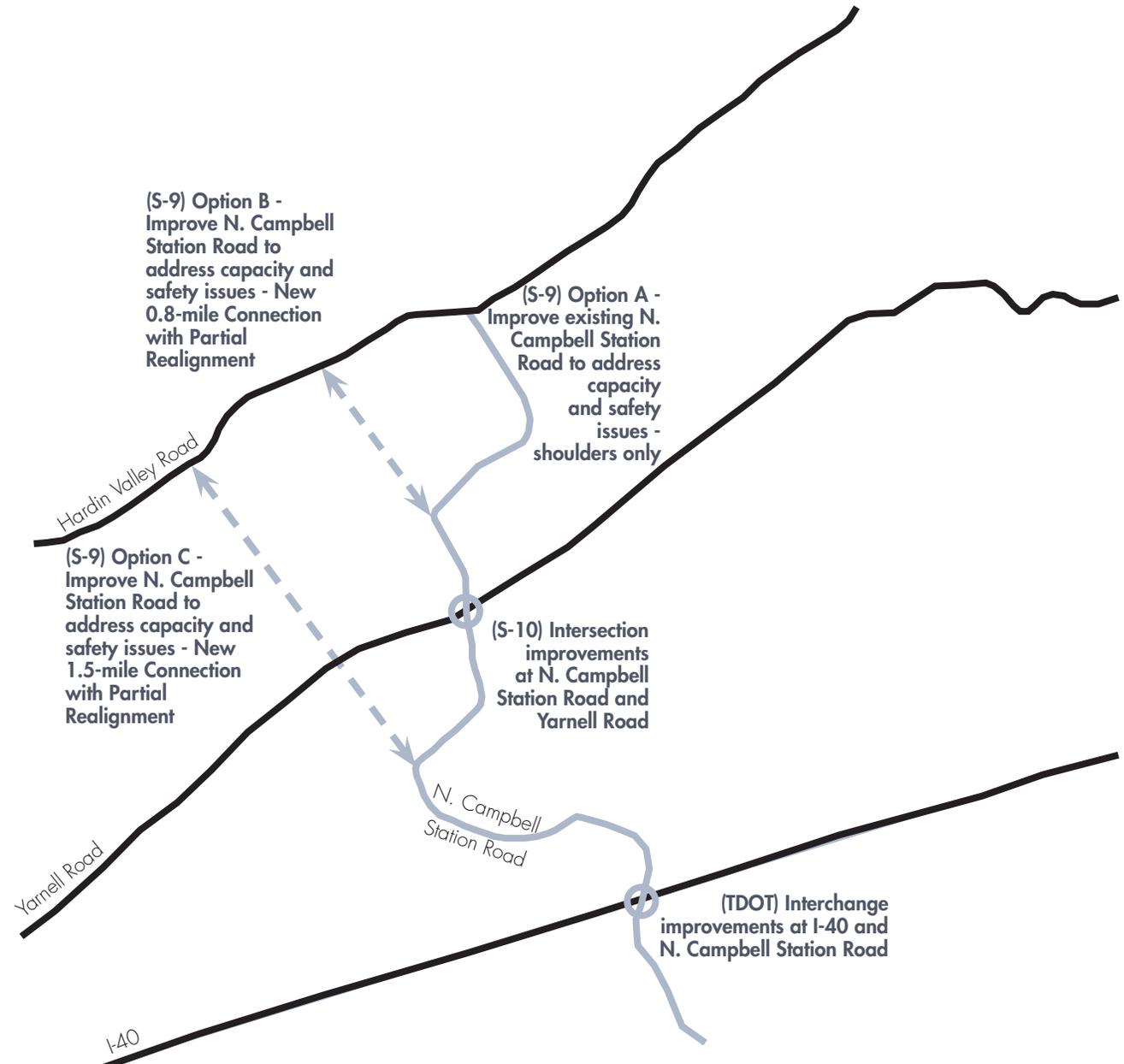
Hardin Valley Road is the primary east-west roadway facility in the study area, carrying nearly 18,000 vehicles per day and providing access to multiple residential and commercial developments, three Knox County schools, Pellissippi State Community College, and Pellissippi Parkway. Because of its notable development density relative to other areas in the

community, Hardin Valley Road users experience a higher degree of peak hour congestion, which impacts drivers as well as pedestrians and cyclists. Improvements to Hardin Valley Road are meant to improve safety and efficiency in traffic operations along the corridor as a means of accommodating future growth in the area.

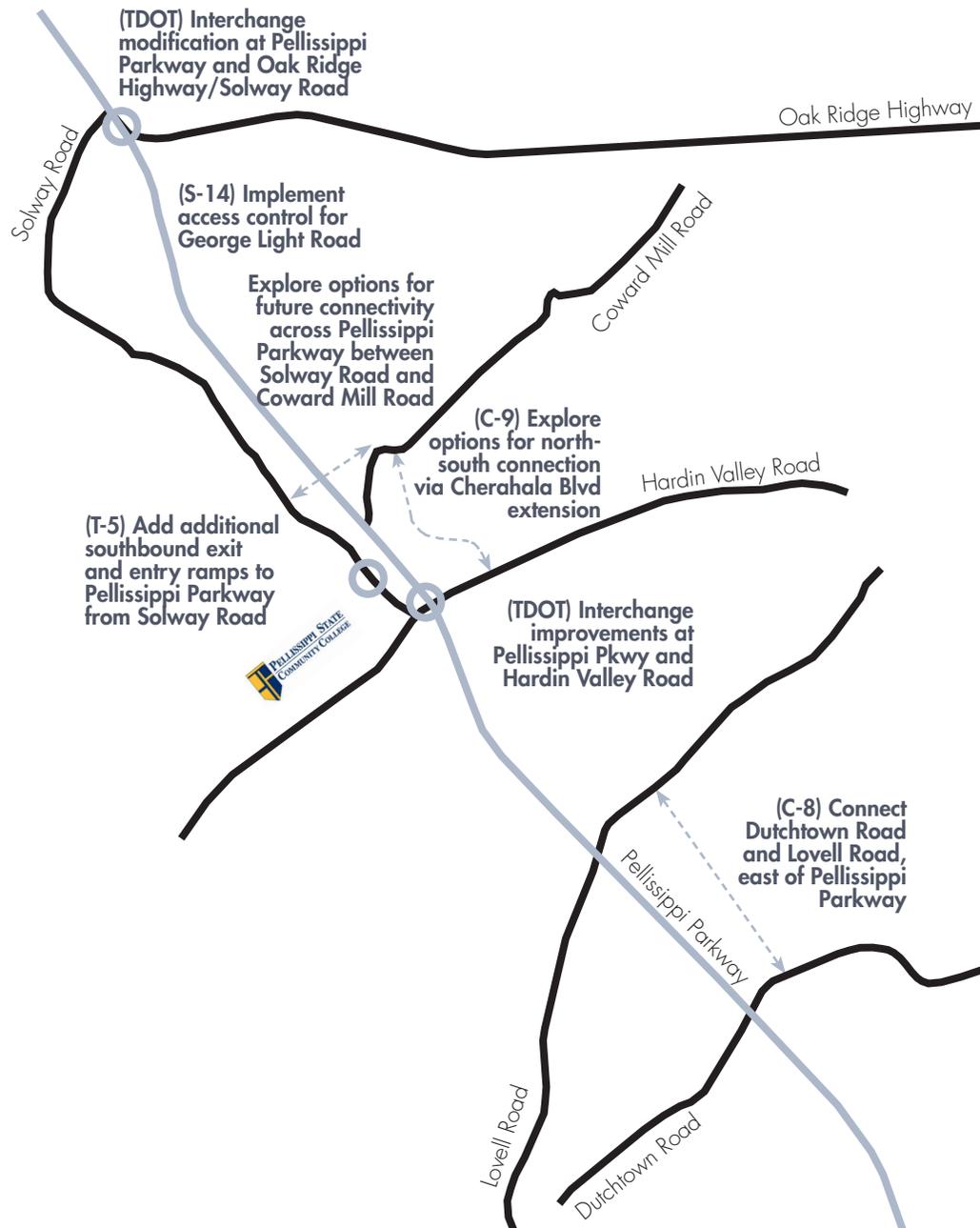


# NORTH CAMPBELL STATION ROAD

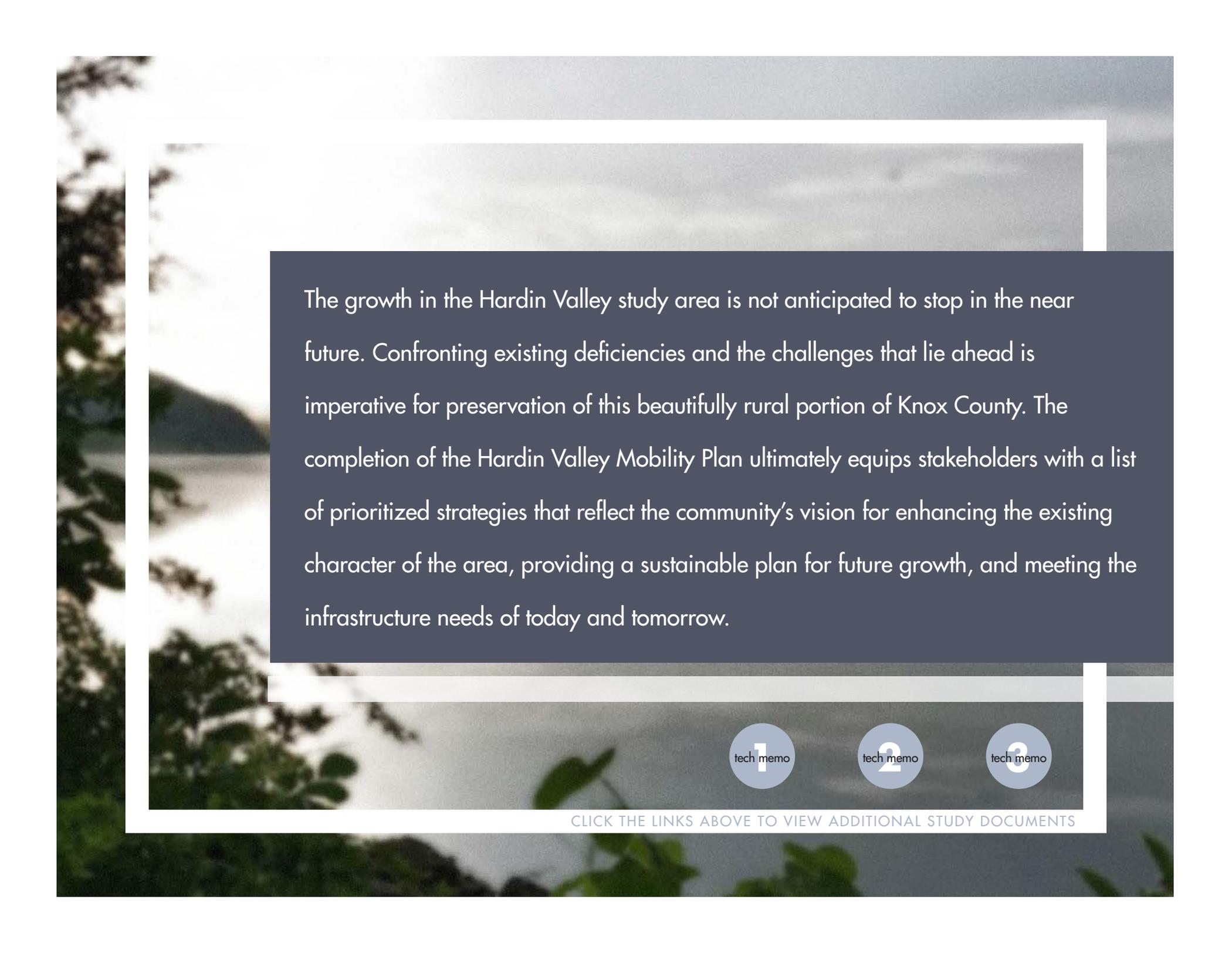
North Campbell Station Road is one of few north-south connections within the Hardin Valley community, providing access to residential areas within the study area and key commercial destinations (Turkey Creek, Northshore Town Center, etc.) south of Interstate 40. Given the terrain limitations in this area, the curvature of North Campbell Station Road creates some significant safety challenges related to all drivers, limited sight distance, and narrow lane widths. Based on significant public and stakeholder comments, improvements to North Campbell Station Road are intended to improve safety and increase connectivity of vehicles traversing this corridor. Public-private partnerships may provide opportunities to implement some of these improvements as development occurs.



# PELLISSIPPI PARKWAY



Pellissippi Parkway (SR-162) provides a significant degree of north-south connectivity through the study area, connecting major employment centers in Oak Ridge, Knoxville, Farragut, and Blount County. This limited-access facility generally carries 50,000 to 80,000 vehicles per day with higher volumes seen closer to the Interstate 40 interchange, which speaks to its regional importance. Input from both the public and stakeholders indicated that the major issues along this corridor related to safety of turning movements along the corridor, the need for greater connectivity across Pellissippi Parkway, as well as congestion at the Hardin Valley Road interchange. Recommended improvements shown are intended to address these issues in order to enhance the quality of life for residents living in the Hardin Valley study area.

The background of the slide is a blurred photograph of a lake with green trees in the foreground. A dark blue semi-transparent box is overlaid on the right side of the image, containing white text. At the bottom of the slide, there are three circular icons with numbers 1, 2, and 3, each labeled 'tech memo'.

The growth in the Hardin Valley study area is not anticipated to stop in the near future. Confronting existing deficiencies and the challenges that lie ahead is imperative for preservation of this beautifully rural portion of Knox County. The completion of the Hardin Valley Mobility Plan ultimately equips stakeholders with a list of prioritized strategies that reflect the community's vision for enhancing the existing character of the area, providing a sustainable plan for future growth, and meeting the infrastructure needs of today and tomorrow.



CLICK THE LINKS ABOVE TO VIEW ADDITIONAL STUDY DOCUMENTS