



# TRANSPORTATION

## **GOAL**

Provide a safe, connected multi-modal transportation system for people and goods that prioritizes less impactful modes, supports community health and improves air quality, works in concert with desired land uses, and equitably serves community needs.

## **Sustainability Goal**

Foster a transportation network that expands options for traditionally underserved populations, reduces car dependency, results in mode shift away from single occupancy vehicle trips that are the primary driver of traffic congestion, accelerates the transition to electric and other low emission vehicles, and reduces greenhouse gas emissions and air pollution.

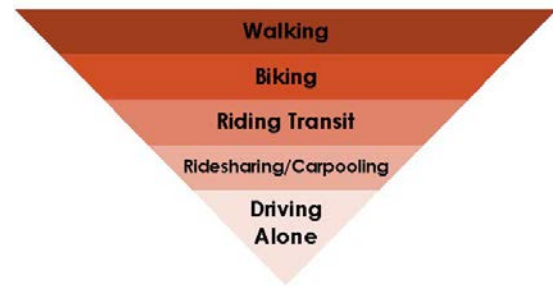
## **Community Engagement**

Meaningful community engagement is key to the Town's ethic of governance. To foster an inclusive planning process, the Town should ensure that all community members feel welcome and empowered to participate. This can be achieved by providing a wide range of convenient opportunities, providing transparent and responsive communication, and applying innovative engagement methods. In addition, there are a number of standing committees and working groups that advise staff and Town Council on transportation topics such as the Corridor Committee, the Planning Commission, and the Traffic Committee. Community members are also encouraged to attend and share their priorities and concerns at Planning Commission and Town Council public hearings when transportation topics are being discussed.

## **OVERVIEW**

Transportation in Blacksburg has been influenced by historical growth patterns and by the mode of transportation dominant during the different periods of the Town's development. Early transportation was by foot or by horse and the local network was built as a grid with narrow streets to serve these principal modes. By 1913, the railroad served Blacksburg and terminated at the Huckleberry Station on Main Street. By the 1960s, this rail service had ceased, individual car ownership had increased, and cars became the preferred mode of travel. Over the next two decades, streets were widened to accommodate more automobiles, as families went from one car to two or more to meet daily needs. By 1979, Prices Fork Road was four lanes and crossed the U.S. 460 Bypass. Transit service began in Town in 1983 in order to address daily traffic congestion to and from the university campus. The postwar dominance of the car allowed for and promoted the clear separation of land uses in less compact forms and resulted in the devaluation of other modes of travel.

Some modes are more sustainable, better for public health, and less costly - most notably walking and bicycling. This graphic displays a **SUSTAINABLE TRANSPORTATION HIERARCHY** that arranges transportation modes for moving people according to the most space efficient, lowest infrastructure cost, and least environmental impact. This arrangement shows that driving alone is the least efficient and most impactful form of travel.



*Sustainable Transportation Hierarchy*

The Town should prioritize and promote a shift to modes that reduce congestion, improve air quality and public health, reduce greenhouse gas emissions, alleviate parking challenges, and are less expensive both for households and for infrastructure maintenance. Consideration of the transportation system should give weight to all modes of travel as opposed to one mode overshadowing all others. In particular, transportation by single-occupancy vehicle should not be considered the “standard” with all other modes considered as “alternative” modes.

The Town should support and adapt to advances in transportation technology and proactively provide transportation mode choices for its residents. Relatively recent technology advancements in transportation have led to the rise of ridesharing, telecommuting, micromobility, unmanned aerial vehicle (drone) delivery services, and autonomous vehicles as well as increases in the share of zero-car households in Blacksburg (Census ACS 2010 & 2019).

The Town seeks to balance competing elements of the transportation system to provide safe, convenient, and accessible options for all users in Town while also connecting the Town to the New River Valley and beyond. Creating an integrated transportation system in Blacksburg requires regional coordination with other entities, particularly with Virginia Tech to ensure seamless transitions between campus and Town networks.

The Blacksburg transportation network includes a variety of different transportation elements including trails, sidewalks, bicycle infrastructure, transit service, roads, alleys, parking, rail, and air transportation. The chapter begins with a review of the **Transportation Network**, followed by a discussion of **Vehicular Parking**. Review of **Transit and Transportation Partners, Planning, and Funding** including the Town’s **Transportation Project Priorities** is next. Lastly are sections covering **Regional Access, Rail Transportation, Air Transportation, and Emerging and Continuing Transportation Trends**.

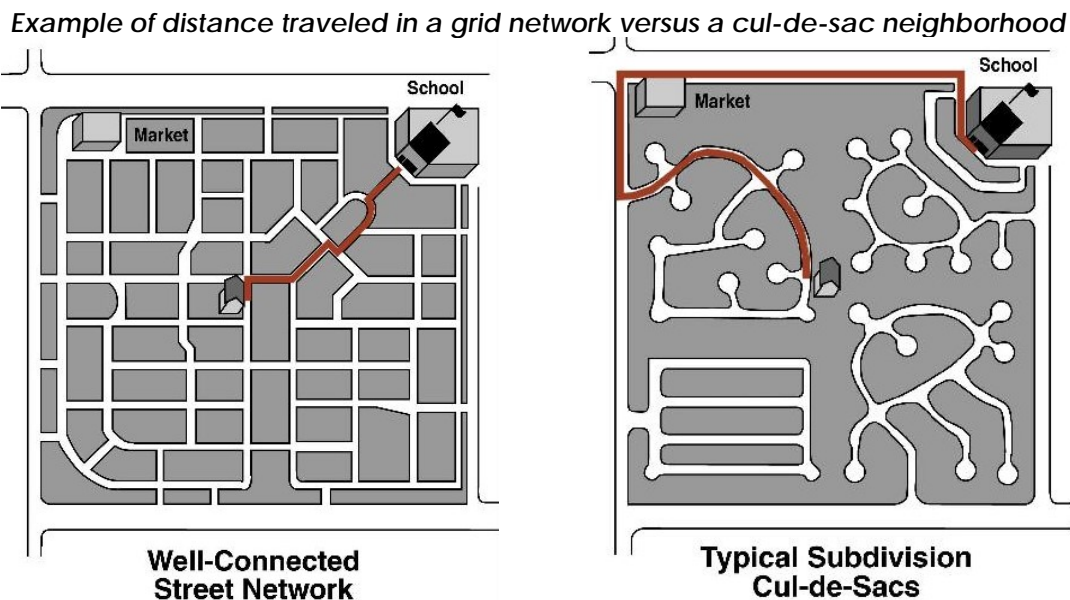
## **TRANSPORTATION NETWORK**

To improve mobility, access, and safety, the Town values maintaining and expanding a grid network for transportation. Much of that grid system occurs in roadways which primarily serve the automobile but with thoughtful design can also serve pedestrians and bicyclists.

## The Blacksburg Grid

Early development in Blacksburg was laid out in a five by five grid, serving the primary modes of the time period such as travel by foot and by horse. Other older areas of Town, such as the Miller-Southside and Bennett-Hill Progress neighborhoods, were also developed with a grid street system. Following World War II, growing in popularity in the 1960s, and still constructed today, new suburban developments prioritized street designs with cul-de-sac layouts to limit traffic from outside the neighborhood. Most development over this time period in Blacksburg followed this trend with numerous neighborhoods in Town lacking a connected street grid.

This type of development and others that lack connectivity have lasting effects on the transportation network/livability such as increasing vehicular traffic and vehicle miles traveled leading to higher greenhouse gas emissions, greater neighborhood isolation, public health impacts due to less walking and bicycling, and longer emergency service response times. Once developed, the transportation network is difficult to retrofit. The Town values transportation connectivity, evaluates this connectivity in the development review process, and should continually seek to enhance the **STREET GRID**.



Source: Neighborhood Streets Project Stakeholders. "Neighborhood Street Design Guidelines: An Oregon Guide for Reducing Street Widths." November 2000.

At present, Main Street serves as the only north/south route and Prices Fork Road serves as the only major east/west connector. To expand the grid network and provide alternative north/south and east/west corridors, a number of transportation projects have been considered over the years. Several streets have been widened to provide for additional capacity and other streets were extended to improve efficiency and create better connections. South Main Street widening, the Progress Street extension, and the Givens Lane/Chickahominy Drive connection are examples. However, providing additional vehicular capacity is not a sustainable solution to achieve the Town's Transportation Goal. While historically there have been limited opportunities to widen streets and increase vehicular capacity, the Town has worked to reduce vehicular congestion through adjustments to signal timing.

Other opportunities have been whittled away with intervening growth and development or have been discarded by neighborhood objections as too detrimental to the areas in which they were located. This was to the benefit of specific neighborhoods but not to the benefit of the whole community. For example, the following routes were previously planned but not constructed: the Patrick Henry Extension to Clay Street and the Hubbard Street Extension to Southgate Drive. The Town should actively pursue expanding the street grid by identifying and planning for future connections so that opportunities for connectivity are not missed.

## Multimodal Transportation Metrics

Measuring the effectiveness of the transportation network should consider all modes of travel. Information on common transportation metrics and policies is detailed below.

**Bicycle Level of Traffic Stress** is a rating given to a road segment or intersection indicating a comfort rating for bicyclists using the facility. Common factors include speed, facility type and width, and traffic volumes.

**Vision Zero** is a transportation safety policy that seeks to eliminate all traffic related fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all.

**Walkability Measurements** such as **Walk Friendly Community Designation** and **Walkscore** seek to measure the safety and convenience of walking in the community.

## Measuring the Effectiveness of the Transportation Network

The Highway Capacity Manual (HCM) has historically used Level of Service (LOS) as the measurement to analyze the efficiency, through vehicular delay, of transportation systems. The system uses letters A through F to measure road segment or intersection functioning. This measurement is one component used in identifying potential improvement projects related to traffic operations. However, this measure does not evaluate the safety of the roadway (i.e., lane width or site distance) or consider other modes of transportation. For example, a roadway with Level of Service A (free flowing traffic) may not support bicyclist and pedestrian mobility. In recognition of the narrow scope of vehicular level of service analysis, the newest edition of the HCM (2016) includes methods to measure performance for pedestrian, bicycle, and transit facilities, as well as interactions with vehicles. Additional metrics to evaluate the overall transportation system include Bicycle Level of Traffic Stress, Pedestrian Level of Service, accessibility metrics, and safety indicators. The Town should use these metrics to evaluate the multi-modal transportation network and to prioritize moving people rather than vehicles.

## Signalized and Other Intersections

Another way to increase efficiency is through maximizing the utility of the existing infrastructure. As of 2021, excluding the Virginia Tech campus, there are 33 traffic signals in Town, 29 of which contain pedestrian crossing phases, and 4 roundabouts. Signalization or de-signalization of intersections should occur as warranted, based upon traffic counts and surrounding development patterns. As an alternative to traffic signals, there are a number of intersection designs that can be employed, including roundabouts which should be considered where appropriate. The Virginia Department of Transportation (VDOT) provides guidance for innovative intersection and interchange design through

the VDOT Junction Screening Tool (VJuST). As transportation patterns change, signal timing should be reviewed to consider safety and convenience for all users. With signalization, there are several opportunities for prioritizing pedestrians and bicyclists such as leading pedestrian intervals, dedicated bicycle signals, and adjusting signal timing to lower travel speeds. The Town has made a concerted effort in the last decade to replace old signals with new signals with technology that allows for integrated signal timing. This has improved efficiency within existing capacity on roadways such as Main Street and Prices Fork Road.

## Complete Streets

As transportation has evolved over time, new policies have been established to address challenges and opportunities in transportation planning. In response to auto-oriented transportation design, the idea of accommodating other modes in everyday transportation planning resurfaced – eventually coined “Complete Streets.” Complete Streets now encompasses the concept of a safe, accessible, and convenient street for all users regardless of transportation mode, age, or physical ability. Complete Streets benefit the community through increased safety with attention to vulnerable users, improved public health through active modes such as walking and bicycling, and reduced car dependency.

### Complete Streets Policies

“Pedestrians, bicyclists, motorists and transit riders of all ages and abilities must be able to safely move **along and across** a complete street.”

“A good complete streets policy:

- Includes a vision for how and why the community wants to complete its streets.
- Specifies that “all users” includes pedestrians, bicyclists, and transit passengers of all ages and abilities, as well as automobile drivers and transit-vehicle operators.
- Encourages street connectivity and aims to create a comprehensive, integrated, connected network for all modes.
- Is adoptable by all relevant agencies to cover all roads.
- Applies to both new and retrofit projects, including design, planning, maintenance, and operations, for the entire right-of-way.
- Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions.
- Directs the use of the latest and best design standards while recognizing the need for flexibility in balancing user needs.
- Directs that complete streets solutions will complement the context of the community.
- Establishes performance standards with measurable outcomes.
- Includes specific next steps for implementing the policy.”

Source: McCann, Barbara and Suzanne Rynne, editors. *Complete Streets: Best Policy and Implementation Practices*. American Planning Association Planning Advisory Service Report Number 559, 2010.

Working to create Complete Streets within an existing transportation network presents specific challenges that require flexibility in policy implementation. In its guidance for accommodating bicycle and pedestrian travel, the Federal Highway Administration (FHWA) recognizes these challenges and defines three exceptions commonly used in Complete Street policies:

1. Corridors where non-motorized use is prohibited, such as a freeway.
2. Where cost is excessively disproportionate to the need or probable use.
3. Where sparsity of population or other factors indicate an absence of need.

The Town is committed to providing Complete Streets for new transportation projects and pursuing this concept for the existing transportation network. The biggest implementation challenge for this is the limitations of existing right-of-way for adequately accommodating all modes of transportation. As new development and redevelopment occur, the community must evaluate the existing right-of-way and acquire additional right-of-way, if necessary, to reach community goals.

The Town currently reviews opportunities to employ the Complete Streets concept in Town-initiated transportation projects such as streetscape improvements and street rebuilding. For example, the redesign of Givens Lane considered improvements to the vehicular travel lanes, transit access, bicycle lanes, trail, and sidewalks for improved safety and convenience. Likewise, the Town utilizes opportunities with repaving existing roadways to incorporate improved facilities for all users.

## **Pedestrian Network**

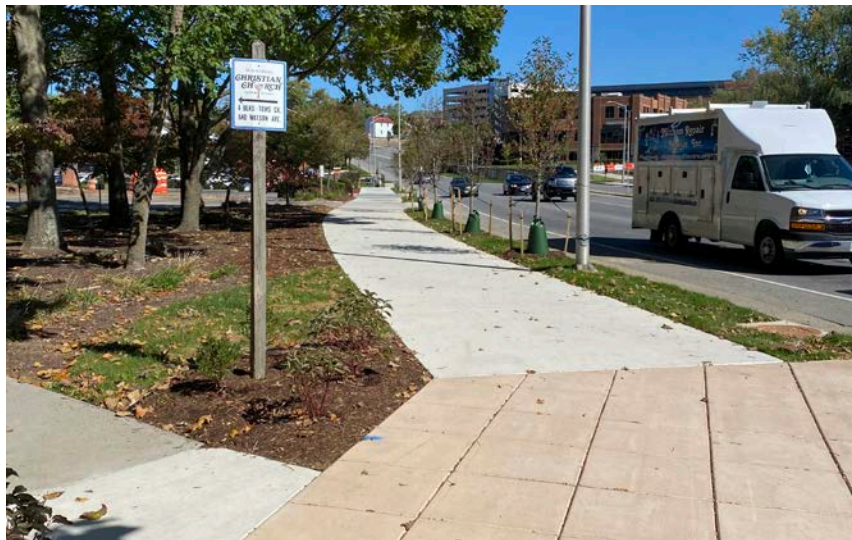
As of 2021, there are approximately 64 miles of sidewalks and 46 miles of trails in Blacksburg, excluding the Virginia Tech campus. Pedestrian infrastructure is a vital component of the transportation network providing a safe, accessible, and convenient location for pedestrians to travel. The vast majority of trips in Town begin and end with connections to sidewalks, whether public or private. The pedestrian network provides connections to and from transit stops, vehicular and bicycle parking areas, residences, schools, recreational areas, and businesses throughout Town. Conflicts between drivers and pedestrians occur where adequate facilities for pedestrians are not provided. Completing and maintaining a contiguous system of walkways, instead of a fragmented system, is critical to avoiding such conflicts, which put pedestrians at risk.

Many arterial and collector roads in Blacksburg have sidewalks or trails on at least one side. Sidewalk on both sides of the street is preferred for a complete pedestrian network. While some older neighborhoods have sidewalk on both sides, a few heavily traveled existing collector roads do not have sidewalks on either side. New subdivision construction must provide sidewalks, or in some cases trail, on at least one side of streets. Retrofitting and completing the existing fragmented network requires a long-term commitment that prioritizes pedestrian infrastructure. To achieve this, the Town must address several challenges such as allocation of limited right-of-way, location of existing utility infrastructure, and funding.

Pedestrian network needs within the Town exceed current funding. To maximize construction of pedestrian infrastructure, the Town utilizes a variety of funding sources, which include VDOT Revenue Sharing programs and allocations of funds or labor through the Town's Capital Improvement Program. The Town completed several projects using the Safe Routes to School program which funds improvements to pedestrian networks surrounding schools. As part of this program the Town

developed travel plans for Gilbert Linkous Elementary, Harding Elementary, and Margaret Beeks Elementary schools. The Town intends to implement additional projects from the program when funding becomes available.

The Corridor Committee advocates for and assists with the planning and development of a well-connected pedestrian network. Sidewalk projects funded by the Town are maintained in a prioritized list by the Corridor Committee. Projects vary in scale and complexity, from short infill segments to full redesign of a street in coordination with stormwater improvements. Funding is allocated to the highest priority projects which are typically in the most heavily traveled pedestrian areas to create safe corridors to key destinations. The Corridor Committee updates the matrix periodically to reflect completed work, add new segments to the list, and review priorities.



*Sidewalk improvements along Prices Fork Road*

## **Bicycle Network**

As of 2021, there are approximately 19 miles of bicycle infrastructure and 46 miles of trails in Blacksburg, excluding the Virginia Tech campus. This infrastructure is another vital component of the transportation network providing safe, accessible, and convenient routes for bicyclists to travel. Nationally, 35% of all vehicle trips are less than 2 miles in length and 46% of vehicle trips are less than 3 miles in length which is a distance ideally suited for bicycle travel (National Household Travel Survey 2017). A robust bicycle network will allow for the community to consider bicycling as the primary option for these short trips. As with the pedestrian network, conflicts between drivers and bicyclists often occur where adequate infrastructure for bicyclists is not provided. Creating and maintaining a contiguous system of bicycle infrastructure, instead of a fragmented system, is critical to improving safety for cyclists.

Retrofitting and completing the existing fragmented network requires a long-term commitment that prioritizes bicycle infrastructure. To achieve this, the Town must address the same challenges as the pedestrian network such as allocation of limited right-of-way, location of existing utility infrastructure, and funding.



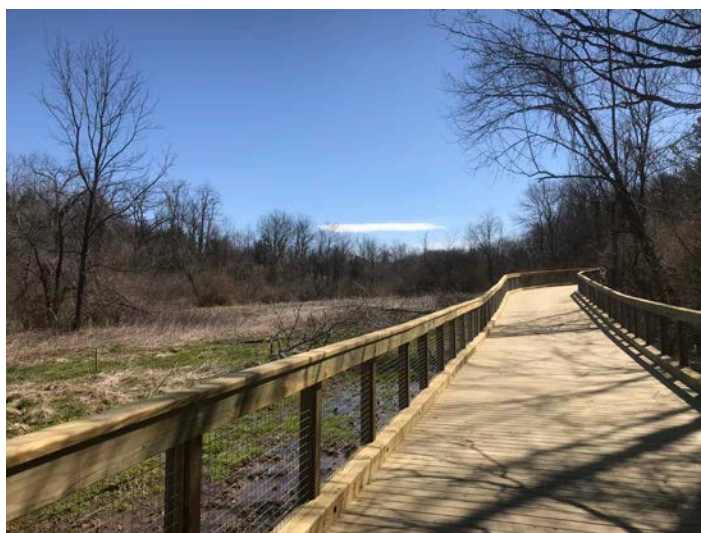
*Green bicycle lane on Prices Fork Road*

Bicycle facilities include on-street options such as protected bicycle lanes, off-street options such as trails, intersection treatments such as bike boxes, and markings/signage. While bicycle facilities can also include bicycle parking and repair stations, bicycle infrastructure primarily refers to bike lanes, trails, and intersection treatments. Further details on bicycle facilities can be found in *Bike Blacksburg*, the *Blacksburg Bicycle Master Plan* adopted in 2015. Developed through a community led effort with assistance from the Corridor Committee, Bike Blacksburg provides a detailed plan for comprehensive improvements to the on-street bicycle network. Implementation of Bike Blacksburg will result in the development of an integrated network of bicycle facilities and supporting programs, linking neighborhoods and activity centers throughout the Town. The *2019 Downtown Strategic Plan* reinforced the idea of prioritizing moving people rather than cars and included recommendations for an enhanced bicycle-pedestrian corridor using Progress Street and Draper Road.

The Corridor Committee also provides strong advocacy for planning and development of off-street bicycle routes. Addressing both on-street and off-street bicycle infrastructure ensures the development of a complete network for all cyclists regardless of type of user and level of comfort. For example, on-street bicycle lanes work well for recreational road cyclists, off-street trails work well for recreating families, and protected on-street bicycle lanes work well for people commuting to work or making household trips.

The needs of the bicycle network within the Town exceed current funding. To maximize improvements to bicycle infrastructure, the Town utilizes a variety of funding sources, which include VDOT Revenue Sharing, Transportation Alternatives, and allocations of funds or labor through the Town's Capital Improvement Program. Projects vary in scale and complexity, from adding on-street facilities during repaving to completing segments of off-street trail. In 2019, the Town completed a segment of the Huckleberry Trail connecting to the Jefferson National Forest, a rails-to-trails project that began as a one mile section in Blacksburg and now stretches 14 miles. The Town also embraces innovative bicycle infrastructure such as the cycle track, a protected two-way bicycle facility, planned for Eheart Street and bike boxes to be installed in several locations in 2021.





*Boardwalk section of the Huckleberry Trail*

### ***Bicycle Parking and Amenities***

Bicycle parking and related amenities are an essential component that support the bicycle network in Town. Bicycle parking is required for new development through the Zoning Ordinance. However, lack of existing bicycle amenities can be a significant barrier to bicycle ridership. For example, cyclists commuting to work may need secure, weather-protected bicycle parking, a bicycle repair area, and shower facilities with lockers and changing areas. Recognizing this obstacle, the Town completed the Downtown Bicycle Parking Study in 2014 to assess existing conditions and provide recommendations to enhance the safety, convenience, and capacity of bicycle parking in the Downtown. To help increase ridership, the Town recommends employers provide bicycle parking and shower facilities, particularly for larger employers. In addition, the Town has received VDOT funding for additional bicycle parking in the Downtown and at Town parks and facilities. This project is currently underway, with completion expected in 2021.

To further support an integrated transportation network, Blacksburg Transit buses are equipped to carry bicycles for passengers. Blacksburg Transit is also working to increase bicycle parking at transit stops to provide first-mile/last-mile connections.

### ***Bikeshare***

The Town is in partnership with Virginia Tech, Christiansburg, and Montgomery County for the regional Bikeshare program. Bikeshare programs offer bikes for short-term rental and allow users to pick up and drop off bikes at bikeshare stations. Bikeshare programs have risen in popularity throughout the country as a method of transportation and to support recreation. The program provides access to bicycles for community members who may not own a bicycle as well as anyone who desires a convenient mode to travel in the region. The program promotes bicycle use for commuting, recreation, and access to services – for residents and visitors alike.

### **Paths to the Future**

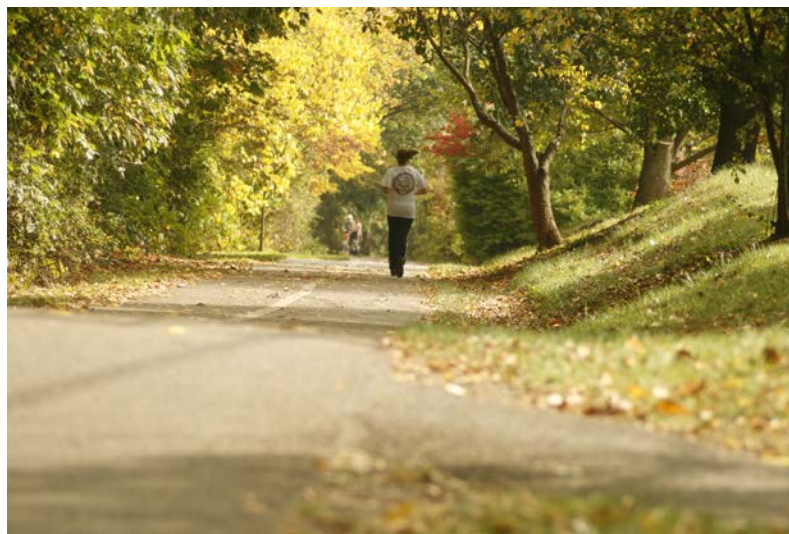
The Town of Blacksburg’s Comprehensive Plan Land Use Map Series is a series of four maps A-D, with maps A-C addressing future land use within the Town. Map D, titled Paths to the Future, illustrates existing and proposed connectivity in the Town of Blacksburg for non-motorized modes of

transportation. The map depicts the link between transportation and land use. Land use decisions impact transportation networks and, at the same time, transportation systems can influence nearby land use patterns. It is very important that these elements are coordinated to create an environment where people are able to choose any mode of travel to access goods, services, and amenities.

The map shows on-street infrastructure such as bike lanes and cycle tracks, and off-street infrastructure such as trails, that create a more walkable and bikeable community. The map focuses on providing future pedestrian and bicycle infrastructure to improve accessibility and mobility regardless of age or ability throughout Town.

While most proposed infrastructure is shown in specific locations, some areas of Town show proposed infrastructure such as trails in a more general location to represent broad connectivity through a less developed area. Specific locations should be identified for these areas as part of planning studies, Town construction projects, and the development review process. The Town should prioritize implementation of this map through Town projects and private development to bolster the multimodal transportation network. *Please refer to the [Land Use chapter](#) for discussion on the use of the Paths to the Future map as part of the development review process.*

The map incorporates proposed multi-modal infrastructure from multiple Town plans and documents such as *Bike Blacksburg*, the Corridor Committee’s sidewalk list, and the *Prices Fork Road Safety and Mobility Study*. The Paths to the Future Map is updated periodically to reflect construction of new infrastructure as well as proposed multi-modal infrastructure from new and updated Town documents and plans. It is also reviewed when the Comprehensive Plan is updated.



*Huckleberry Trail near the Downtown trailhead*

## **Blacksburg Street Classification System**

As of 2022, the Town maintained street network consists of approximately 292 lane miles of local, collector, and arterial streets. This network does not include roads in the VDOT system such as the U.S. Route 460 Bypass and streets on the Virginia Tech campus. Lane mileage is determined by the linear mileage of a roadway segment multiplied by the number of vehicular travel lanes but does not include turning lanes. All streets within the Town of Blacksburg are assigned a speed limit of 25 miles per hour

unless otherwise posted. Streets are classified into one of the following functional classifications based on FHWA standards and vehicular volume data: arterial, collector, and local. The Town Street Classifications map may be updated administratively as volume data becomes available.

- **Local streets** serve primarily residential and neighborhood traffic and provide direct access to individual properties. These make up approximately 66% (or 194 lane miles) of the total street mileage, while carrying a relatively small proportion of the vehicle miles traveled. Speed limits on these streets in the Town are 25 miles per hour and may be posted as low as 15 miles per hour in areas with high pedestrian activity or hazardous terrain. Park Drive and McBryde Drive are examples of local streets.
- **Collector roads** connect the local street system to the arterial roads and, thus, carry a higher level of traffic than local streets. These roads comprise approximately 17% (or 50 lane miles) of the Town's total street mileage. Collector roads have provided direct access to individual properties; it is preferred that they primarily route traffic from neighborhoods to major employment and commercial centers. Speed limits on these roads range from 25 to 40 miles per hour. Patrick Henry Drive and Airport Road are examples of collector roads.
- **Arterial roads** include interstates, freeways, expressways, and business routes. These are major routes for traffic movement within and between urban areas, as well as linking towns and providing inter-county service. One arterial, the U.S. Route 460 Bypass, runs through Town but is not included in the Town's street network since it is regulated and maintained by VDOT. Town maintained arterials make up approximately 16% (or 48 lane miles) of the total street mileage. Speed limits on these roads range from 25 to 65 miles per hour in Town. Main Street and Prices Fork Road are Blacksburg's arterial streets. No primary north-south alternative to Main Street exists, nor is there currently an east-west alternative to Prices Fork Road.



## **Alleys**

In Town, public alleys can be found in older neighborhoods where they developed as part of the historical pattern separating service uses from residences, as well as in newer developments that intentionally mimic this traditional layout. They provide access to many of the Town's older homes, which may be "street locked" due to small lots and no driveways. They also provide secondary, and in some cases primary, access to garages and utilities in the rear of properties. Most alleys contain public utility lines, and several provide locations for refuse and recycling pick-up. In some parts of Town, alleys provide an alternate path for pedestrians and bicycles. Alleys are being rediscovered as communities seek to keep or expand this important part of the street system, particularly as an opportunity for non-vehicular modes.

Alleys must be carefully designed and constructed to ensure vehicular traffic remains low speed and low volume. Heavy commercial use of alleys in residential areas can potentially degrade the nature of the neighborhood. Policies regarding alley usage, maintenance, and encroachment should be standardized and enforced (e.g., the 15-mile per hour speed limit) to ensure safety throughout Blacksburg.

Alleys in Town are generally very narrow, ranging from 7.5 to 15 feet, and often limit two-way travel. If low speeds are enforced, alleys can function as a type of shared streets, allowing for one-directional vehicular traffic as well as two-directional non-vehicular traffic. Some alleys are paved while others remain unimproved. The Town receives no maintenance funding for alleys from the state; thus they are inevitably a lower priority and not maintained or maintained to a lesser level than streets.

## **Unbuilt Streets**

Before Blacksburg had a subdivision ordinance, a number of subdivisions were developed in which streets were platted but never built. The right-of-way for these streets was dedicated to the Town through the recordation of a plat. Most of these streets have never been constructed and appear as extensions of yards or overgrown areas. These "paper streets" vary significantly in width. Future construction of these rights-of-way may enhance the transportation grid for multiple modes of travel.

### ***Alley and Right-of-Way Vacation***

Requests to vacate right-of-way have historically served only the individual property owner's interests and have removed rights-of-way from the Town's system so that the alley can no longer be accessed by the public or used for any future project. Before any alley or unbuilt right-of-way is vacated, the future implications on mobility should be carefully evaluated. Alleys and public rights-of-way are essential to the Town's transportation network and should be retained whenever possible. The Alley and Right-of-Way Vacation Policy process can be found in the *Blacksburg Administrative Manual*.

## **Private Streets**

In Town, there are private driveways that function like streets in both residential and commercial areas. This development of private driveways has been used to avoid constructing access ways to the Town's public street standards. When private driveways are constructed as streets, sidewalks are not built, parking can be accessed directly from the driveway, and maintenance is not provided by the Town. These issues create confusing expectations for the public since the driveway functions the same

as a public street without the same level of amenities. Since this is not preferable for street construction, the Town should update related policies and regulations to prevent this practice moving forward.

## **Road Maintenance**

Roadway conditions are generally good within Town and are supported by regular maintenance and paving schedules. Maintenance of public roads, including repairing pot holes or repaving streets, is coordinated by the Blacksburg Public Works Department. However, VDOT provides funds for the maintenance of public roads utilizing a statewide formula based upon road classification and number of miles of road. The Town also puts funds toward the regular paving and maintenance program and, while robust, the program cannot meet the desired level of maintenance on a yearly basis for roadways within the Town. In addition to paving and repair, the Town Public Works Department also performs maintenance on tree and vegetation encroachments and median plantings as well as providing snow removal services on Town streets. The Town prioritizes a high level of roadway maintenance and provides a service where community members can report potholes or overgrown vegetation to the Public Works Department for action.

## **Traffic Committee**

The Town Manager appoints a Traffic Committee to consider and make recommendations to the Town Manager's office on issues relating to traffic safety and parking, such as street lighting and speed limits. The Traffic Committee promotes better compliance with the traffic laws in order to provide safer streets for pedestrians, cyclists, children, and the elderly. The committee consists of representatives from the Police, Public Works, Transit, Planning and Building, Engineering and GIS departments, Blacksburg Volunteer Fire Department, Blacksburg Volunteer Rescue Department, as well as community members. Complaints, concerns, and suggestions relating to traffic, parking, or pedestrian and cyclist safety are forwarded to this committee monthly for review. Recommendations, which can include minor road improvements or upgrades, are funded through the Town's Capital Improvement Plan.

## **VEHICULAR PARKING**

Parking facilities serve as support to the vehicular mode of Blacksburg's transportation system. Parking areas should be attractively constructed, safely accessible, and connected to the broader transportation network. Parking areas should be carefully designed and located in a manner that respects surrounding uses and sense of place. The Town strives to reduce surface parking lots as they are a non-vibrant, inefficient land use with significant environmental impacts. Most existing parking areas in Town are surface lots. However, the Town anticipates growth in the construction of structured parking, such as parking garages, in the future, particularly near high volume destinations.

## **Campus Parking**

Virginia Tech sells parking permits to students, faculty, and staff but does not guarantee availability in specific locations. The Virginia Tech Alternative Transportation Office promotes and encourages bicycling, walking, vanpooling, carpooling, car sharing, and transit use for local, regional, and out of state travel. The University completed an update to the Parking and Transportation Master Plan in 2016 which recommends strategies to enhance mobility while preserving campus character.

Recommendations from the Plan include efficient use of parking resources paired with new roadway connections, increased transit service, and improved pedestrian and bicycle routes. As existing parking resources are shifted away from the campus core, parking demand may spillover into adjacent neighborhoods within Town. The Town recently expanded the permit parking program to reduce spillover in neighborhoods adjacent to the University. The Town should continue to evaluate areas where permit parking may be appropriate to ensure access to neighborhoods for residents and guests. The Town supports strategies to encourage transit ridership, increased walkability, and enhanced bicycle routes on campus. Other measures, such as restricting students from having cars during their first year, would help address parking conflicts as well as reduce vehicle trips within Town.

## **Downtown Parking**

Adequacy of parking in Downtown is a long-standing community concern. Downtown Blacksburg is an urban area that intentionally emphasizes pedestrian activity and vibrant gathering places, making it unlikely that vehicular parking will ever be available directly in front of desired destinations. There is limited availability of parking in the downtown core and limited opportunities to provide new parking. Another issue in evaluating the adequacy of Downtown parking is the perceived convenience, typically visual distance, of available parking from the intended destination. Strategies to address this perception include improved parking signage, technology providing real-time availability, and education around convenient parking locations. For example, the Kent Square parking garage is located less than 1/10<sup>th</sup> mile from Market Square Park in the heart of Downtown.



*Downtown parking meters*

The Town continually works on parking management and has implemented multiple strategies to address community concerns including maintaining updated parking information, which can be found at [www.blacksburg.gov/parking](http://www.blacksburg.gov/parking). The Town has implemented new parking technology to minimize the historical problem of “meter-feeding” by students and Downtown business employees. To address the overall parking needs in the Downtown core, the Town acquired a surface parking lot between Main Street and Progress Street in 2012. The Town is currently planning for a future parking garage in this location. A parking garage is also planned as part of the new public safety building in the Midtown Development and construction is expected to begin in 2021.

In addition to the Kent Square parking garage serving the eastern end of Downtown, the Turner Street parking garage serves parking needs at the western end of Downtown. The Town supports the construction of a University parking garage where campus meets the Downtown, to maintain vibrancy along College Avenue and enhance the interface between the campus and Town. Parking garages constructed in the Downtown area should be designed to minimize their visual impact on the landscape and be connected to the Town’s transportation network.

## **TRANSIT**

Local and regional public transit options are an important component of the transportation network. Blacksburg Transit provides local transit service and is essential to Blacksburg’s network. Through connections to regional public transportation systems, Blacksburg residents can also travel in the New River Valley, to Roanoke and beyond.

### **Blacksburg Transit**

Blacksburg Transit (BT), a department of the Town of Blacksburg, operates public transportation services in the Town and on the Virginia Tech campus as well as in Christiansburg and portions of Montgomery County. From 2018 to 2019, ridership reached an all-time high of 4.6 million total passenger trips. While use of the transit system is open to the general public, riders are predominantly students at 90% with the other 10% being comprised of University faculty and staff and the general public.

BT operates 19 fixed routes, where buses follow a standard route servicing specific stops on a regular schedule, and two demand response services, where passengers call to schedule trips. BT serves over 300 bus stops that are spread across 28 square miles. Blacksburg Transit’s fully-accessible fleet is comprised of 71 vehicles; this includes 53 fixed-route buses, 13 of which are 60-foot articulated buses as well as 18 vans. In 2020, BT purchased 5 battery electric buses as part of an initial step towards an all-electric, sustainable fleet.



*Blacksburg Transit electric bus charging*



BT has 58 bus shelters with bench seating and interior lighting at bus stops including 34 in Blacksburg, 16 on the Virginia Tech campus, and 8 in Christiansburg. Eighteen have solar-powered interior lighting. Of the total, 20 shelters are maintained by the apartment complexes that installed them. BT generally places shelters at bus stops with high average daily boardings, where wait times may be longer on less frequent routes, or in conjunction with private developers who want to offer a shelter as an additional amenity for their residents. Like other public infrastructure such as storm drains and utility boxes, bus shelters may be an opportunity for creative design and public art in certain locations. Other amenities, such as concrete standing pads, benches, bike racks, and trash cans are provided at many BT-maintained sheltered stops and at other selected stops.

Between 2016 and 2019, ridership grew by 33% while most public transportation systems experienced significant decreases in ridership. BT actively planned for this growth by adding large articulated buses to the fleet, offering more frequent service on heavily used routes, adding Sunday service, and expanding off-peak service.

The Town offers a bus pass program that allows employees to ride fare-free as a way to reduce car-dependency. The Town supports other employers providing this incentive for their employees.

### **Awards**

In 2019, BT was awarded the American Public Transportation Association's (APTA) Outstanding Transit System award for North America. Blacksburg Transit earned the award in the small urban system category. The award recognized BT as the "best of the best" for excelling in overall performance as an organization and the benefit to the community. BT was also recognized with two APTA Adwheel Grand Awards for advertising campaigns and numerous Virginia Transit Association awards.



*Blacksburg Transit buses wrapped with new logos*

### **BT ACCESS**

BT ACCESS is a paratransit demand response service that bolsters fixed route bus service in Blacksburg. The service is available for people who are unable to independently access or use the fixed route system either all of the time, temporarily, or under certain circumstances. Certified passengers can make reservations for door-to-door service within town limits during the same days and hours that

fixed route buses are in service. BT ACCESS provides over 15,000 passenger trips annually.

### ***Regional Public Transportation Services***

BT also provides public transportation in neighboring Christiansburg with demand response service, a commuter route that connects the towns, and two deviated-fixed routes that follow a specific route but may deviate from it upon passenger request. Regional connections to other parts of the New River Valley, Roanoke, and locations elsewhere in the state are offered by several service providers including Radford Transit, Pulaski Area Transit, New River Valley Senior Services, Community Transit, the SmartWay, the Virginia Breeze, Virginia Tech, and private bus companies. Blacksburg Transit is actively involved with these regional transportation providers to share stops, streamline connections, and expand transportation options for residents.

### ***Blacksburg Transit's Future***

Blacksburg Transit is guided by a Transit Development Plan that provides a vision and recommendations to meet demand over the next ten years. Additionally, BT is supported by other planning efforts facilitated by the New River Valley Metropolitan Planning Organization (NRV MPO) and Virginia Tech, such as the NRV MPO's Long Range Transportation Plan.

Decisions about service and infrastructure improvements are informed by a robust data collection and analysis program, stakeholder input, public comments, and funding availability. Major initiatives are described below.

### ***Service Enhancements***

The demand for service continues to increase, including requests to expand BT's service area, as well as requests to increase capacity with larger vehicles. BT has launched two new routes serving non-traditional ridership areas, Givens Lane and Airport Acres, and is exploring demand response service for other lower density neighborhoods that are beyond walking distance to fixed routes. BT also plans to increase capacity to service apartment complexes that are being redeveloped at higher densities.

### ***Multi-Modal Transit Facility***

A Multi-Modal Transit Facility is being constructed by the Town in the vicinity of Perry Street on the campus of Virginia Tech. The facility will include 17 bus bays on two loops (east and west) along with a 13,500 square foot building with a passenger waiting area, space for transit support services and the Hokie Bike Hub for bicycle maintenance and education. The site will also incorporate other site amenities to enhance pedestrian and bicycle movements. This major transit center will improve the safety and efficiency of transit operations as



***Conceptual Plan for Multi-Modal Transit Facility***

well as will serve the transportation needs of the Blacksburg community and regional public transportation providers. The project is designed for LEED Silver certification (see [Public Safety & Community Facilities](#) chapter) and construction will be completed in 2023.

### *Electric Buses*

BT plans to replace heavy-duty diesel buses with electric buses as diesel buses age and reach the end of their service life, and as funds become available. Based on the current replacement schedule, a completely electric fleet is achievable by 2032.

### *Facility Renovation and Expansion*

The existing transit facility has significant space constraints and the building is aging. It was constructed in 1992 and expanded in 2006. Since the expansion, Blacksburg Transit's ridership has increased by 61%, service has increased by nearly 50%, the fleet has expanded by 121%, and staff has grown by 71%. The result is crowded and increasingly inefficient space, with more growth anticipated. A facility renovation and expansion project is in the design phase and will include construction associated with replacement, upgrade, and expansion of the building and site.

### *Passenger Amenities and Technology*

Each year BT updates signage, adjusts stop locations and, when necessary, consolidates closely grouped stops. Future improvement plans include upgrading existing bus stops with bus pull-offs to enhance safety, adding stop amenities such as bike racks, and replacing shelters. BT will also continue to improve the existing suite of rider information tools to provide users with real-time information using a smartphone app, web browser, text messaging, and an interactive phone service. To remain up-to-date, BT is an active participant in research studies and follows the latest advancements and developments in public transportation.

## **The SmartWay Commuter Bus**

The SmartWay Commuter Bus is a service operated by Valley Metro of Roanoke that links the Roanoke Valley to the New River Valley. Service is provided between downtown Roanoke and the Virginia Tech Squires Student Center with stops in downtown Blacksburg, the Corporate Research Center, Christiansburg, the Roanoke-Blacksburg Regional Airport, Virginia Tech/Carilion Research Institute, and several Park & Ride areas along the route. Blacksburg Transit provides connecting service to and from SmartWay Bus stops in Blacksburg.

## **Long Distance Bus Service**

Strong community interest has facilitated the provision of multiple transit options for long distance travel, particularly to Richmond and Washington, D.C. The Virginia Breeze provides bus service connecting Blacksburg with Washington, D.C., on a daily basis. The Breeze also includes stops in several locations including Harrisonburg (James Madison University) and the Dulles International Airport. For Greyhound service, Roanoke, VA, is the closest location with connecting service via the Smart Way Commuter Bus. In addition, Virginia Tech offers a Blacksburg/Roanoke to Ballston/Arlington bus to connect the Blacksburg Campus with the National Capital Region Campus. Multiple private companies also provide students with holiday and weekend bus service to in-state and popular metro areas.

## **TRANSPORTATION PARTNERS, PLANNING, AND FUNDING**

The Town partners with other localities, regional organizations, and state agencies for planning, funding, and construction of transportation projects which are further described below. The costs for these projects can vary widely, and while the Town funds some smaller projects, the majority of projects are dependent on outside funding sources.

### **State-Wide Transportation Planning**

To meet federal requirements, states are required to develop a state-wide transportation improvement program that provides for development, management and operation of the multimodal transportation system and facilities. Virginia's plan, VTrans, lays out the vision and goals for transportation, identifies investment priorities, and provides direction on implementation strategies and programs. The current plan, VTrans 2040, was completed in 2018 and includes a vision plan, needs assessment, and freight plan. The Town participates in the process through the Metropolitan Planning Organization and input from localities is consolidated through the regional transportation organizations.

### **Virginia Department of Transportation**

The Town of Blacksburg is located within VDOT's Salem District. The Salem District maintains more than 9,200 miles of specific roads in a 12-county area in southwestern Virginia including 14 cities and towns in its boundaries. The district serves more than 650,000 residents who live in this area.

### ***Transportation Funding***

Various funding sources exist for multimodal transportation projects within the VDOT administered system. The primary funding programs are: Smart Scale, Highway Safety Programs, Transportation Alternatives, Revenue Sharing, and State of Good Repair. These programs have different purposes, funding allocations and breakdowns, eligibility requirements, evaluation criteria, and funding cycles. The Town competes for these funding sources with localities across the state. Some of these programs prioritize funding for projects based on traffic congestion, which is more common in more urbanized areas.

### ***Establishing Road and Transportation Project Priorities***

As required by Virginia Code § 15.2-2223, the Town establishes its long-range transportation policies and projects, including cost estimates in the Comprehensive Plan. These policies and project priorities are forwarded to the New River Valley Metropolitan Planning Organization, which coordinates and prioritizes the long range transportation policies of the region as detailed below. Blacksburg's priorities are detailed later in this chapter.

### **New River Valley Metropolitan Planning Organization**

The NRV MPO is a transportation policy-making organization serving the towns of Blacksburg and Christiansburg and the City of Radford, as well as surrounding urbanized portions of Montgomery and Pulaski Counties. The NRV MPO provides the information, tools, and public input necessary to improve the performance of the transportation system in the region. The Town and NRV MPO also coordinate with the regional transportation planning efforts conducted by the New River Valley Regional Commission, such as the NRV's Bikeway, Walkway, Blueway Plan.

### ***New River Valley MPO 2045 Long Range Transportation Plan (2045 Plan)***

Adopted in November 2020, the 2045 Plan describes a comprehensive set of transportation improvements for the NRV MPO area. The goals and scope of the 2045 Plan are the same as the goals of VTrans 2040 (the State’s Transportation Plan) addressing the following transportation issues and needs:

1. Economic Competitiveness and Prosperity
2. Accessible and Connected Places
3. Safety for All Users
4. Proactive System Management
5. Healthy Communities and Sustainable Transportation Communities

The Plan was developed in accordance with federal, state, and local requirements for an MPO Plan. These included early and ongoing public involvement, extensive coordination with local governments to ensure that local goals and objectives were reflected in the Plan recommendations, a 20-plus year horizon for Plan recommendations, and consideration of anticipated transportation funding.

### **Transportation Project Priorities & Cost Estimates**

The Virginia State Code Section 15.2-2223 requires comprehensive plans to “include a map that shall show road and transportation improvements, including the cost estimates of such road and transportation improvements from the Virginia Department of Transportation, taking into account the current and future needs of residents in the locality while considering the current and future needs of the planning district within which the locality is situated.” The following table and map address this requirement with project cost estimates as of 2021. Cost estimates will need to be adjusted accordingly prior to construction for inflation and fluctuating prices in material costs and labor and any revisions to the scope of work. The numbering system in the following table correspond to the locations shown on the map but does not indicate order of importance within a priority category.

### **Transportation Projects – Funding in Place/In Progress**

1. **Clay Street Sidewalk** from Church Street to Jefferson Street to include sidewalk and roadway improvements. *\$1.3 million*
2. **Draper Road Improvements** from College Avenue to Miller Street to include streetscape improvements. Schematic Design is underway. *\$5 million*
3. **Harding Avenue Improvements** between Progress Street and the corporate limits to focus on bicycle and pedestrian infrastructure as well as storm drainage. *\$3 million*
4. **Prices Fork Road/Toms Creek Road/Stanger Street Intersection Improvements** to include pedestrian and bicycle infrastructure. Construction currently underway.
5. **Research Center Drive Improvements** from S. Knollwood to VT Campus line. *\$1.4 million*
6. **South Main Street Improvements** from Roanoke Street to Washington Street streetscape improvements to include widened brick sidewalks, streetlights, signals and streetscape to match Downtown. *\$780,000*

### **High Priority Projects**

7. **Cross County Connector Extension** - Connecting with Southgate Interchange as 4-lane boulevard with median, bicycle routes/trails, sidewalks and grade-separated interchanges with the Huckleberry Trail crossings; extending to Prices Fork Road to improve access to Hethwood, Merrimac, and Warm Hearth areas. Detailed Routing Study is needed as the first step towards this regional project with Montgomery County. *\$114 million*
8. **Eheart Street Improvements** from Main Street to the Huckleberry trail to include bicycle and pedestrian infrastructure. *Interim \$30,000; Final \$750,000*
9. **Meadowbrook Drive Trail** from Heritage Park parking area to Glade Road. *\$1.9 million*
10. **North Main Street Road Diet** from Progress Street to Red Maple Drive to include bicycle and pedestrian infrastructure. *Paint only \$80,000; Full rebuild \$25 million*
11. **North Main Street Trail** from Vinyard Avenue to U.S. 460/Bishop Road connection. Final phase. *\$750,000*
12. **North Main Street/US Route 460 Grade-Separated Interchange** – Specific project location to be determined. *\$45 million*
13. **Prices Fork Road Pedestrian Improvements** from Turner Street to N. Main Street. *\$2 million*
14. **Prices Fork Road/US Route 460 Bypass Interchange Modification** to include bicycle and pedestrian infrastructure. *\$20 million*

### **Medium Priority Projects**

15. **\*16 Squares Infill Sidewalk** - Specific projects to be determined. No cost estimate.
16. **Ellett Road Improvements** from South Main to Town limits with safety improvements, bicycle and pedestrian infrastructure. *\$5.9 million*
17. **Glade Road Improvements** from Boxwood Drive to Meadowbrook Drive to include safety improvements, bicycle and pedestrian infrastructure. *\$1.7 million*
18. **\*Industrial Park Trail** – Design and construction of an interconnected trail system for the Blacksburg Industrial Park to accommodate recreational and commuter bicycle and pedestrian travel. *\$609,000*
19. **Meadowbrook Drive Improvements** from Toms Creek Road to Glade Road to include safety improvements, bicycle and pedestrian infrastructure. *\$3.9 million*

20. **Mount Tabor Road Improvements** from Main Street to the Town limits to include bicycle and pedestrian infrastructure. *\$4 million*
21. **Mount Tabor Realignment** to Mountain Breeze Road, to align across North Main Street with Givens Lane. May include intersection improvements. *\$4 million*
22. **Old Glade Road Realignment** from Glade Road to Prices Fork Road to align with proposed Western Perimeter Road spur and coordinated with Virginia Tech development. *\$1.4 million*
23. **Park Drive Sidewalk** from Palmer Drive to Grissom Lane. *\$500,000*
24. **Patrick Henry Drive Road Diet** from N. Main Street to Toms Creek Road to include bicycle and pedestrian infrastructure. *Paint only \$100,000; Full rebuild \$11.3 million*
25. **\*Prices Fork Road Safety and Mobility Study** – Specific projects to be determined. No cost estimate.
26. **Progress Street Extension** through Northside Park from Givens Lane to North Main Street as collector road with bicycle and pedestrian infrastructure. *\$4 million*
27. **Progress Street Improvements** from Jackson Street to N. Main Street to include bicycle and pedestrian infrastructure and streetscape improvements. Further study needed prior to providing cost estimate.
28. **South Main Street Improvements** from Miller Street to Country Club Drive to include bicycle and pedestrian infrastructure and streetscape improvements. May include intersection improvements, for example at Country Club Drive. Further study needed prior to providing cost estimate.
29. **South Main Street/US Route 460 Business Improvements** from Industrial Park Road to Peppers Ferry Road to include transit, bicycle, and pedestrian infrastructure. Regional project with Montgomery County and the Town of Christiansburg. *\$6.5 million*
30. **Toms Creek Road Improvements** from Route 460 to Meadowbrook Drive to include safety improvements, bicycle and pedestrian infrastructure. *\$2.1 million*
31. **University City Boulevard Improvements** from Prices Fork Road to Broce Drive to include bicycle and pedestrian infrastructure. Further study needed prior to providing cost estimate.

### Low Priority Projects

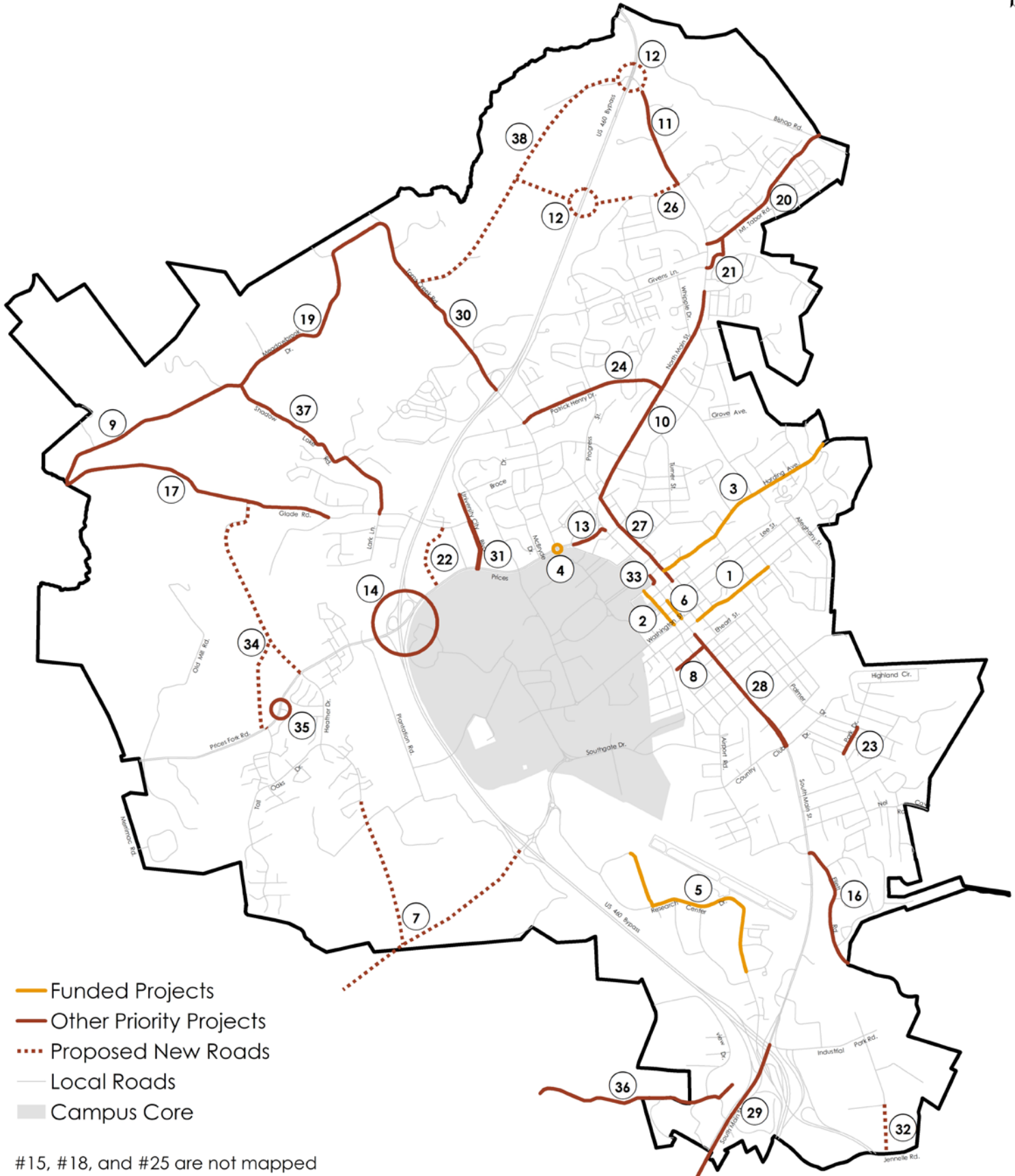
32. **Commerce Street Extension** from the Industrial Park to Jennelle Road. *\$1.6 million*
33. **Downtown Pedestrian Improvements** from Wilson Avenue to N. Main Street/College Avenue intersection to include a car-free pedestrian area. Further study needed prior to providing cost estimate.
34. **Heather Drive/Hethwood Drive Extensions** from Prices Fork Road to Glade Road. Collector roads with bicycle and pedestrian infrastructure. *\$6.5 million*
35. **Huckleberry Trail Bridge** across Prices Fork Road at Sheffield Drive to provide grade-separated trail crossing. *\$4.4 million*
36. **Huckleberry Trail Extension** from the existing trail at Hightop Road to the park at South Point. *\$882,000*
37. **Shadow Lake Road Improvements** from Glade Road to Meadowbrook Drive to include safety improvements, bicycle and pedestrian infrastructure and realignment from Basil Lane to Lakewood Street. *\$2.2 million*
38. **Toms Creek Road/Farmingdale Lane Connector** – new road network to connect area

between Toms Creek Road and Farmingdale Lane. Further study needed for routing and cost estimation.

***Projects with an asterisk (\*) are not shown on the accompanying map.  
All road projects should include bicycle lanes, trails, sidewalks and other amenities as called for  
in the Comprehensive Plan and Town Zoning Ordinance.***



# Transportation Project Priorities



- Funded Projects
- Other Priority Projects
- ⋯ Proposed New Roads
- Local Roads
- Campus Core

#15, #18, and #25 are not mapped as the projects include multiple locations or the location is not known.

## **REGIONAL ACCESS**

### **U.S. Route 460**

U.S. Route 460, the Heartland Corridor, runs east-to-west from Norfolk, VA to Frankfort, KY and is recognized as a Corridor of Statewide Significance with multi-modal connections to the Commonwealth's active centers. It is an important freight corridor providing access between the Port of Virginia and the Midwest.

U.S. Route 460 connects the Town of Blacksburg to Interstate 81 (I-81) and to the Town of Christiansburg along a seven-mile corridor through a major commercial center. To the North, U.S. Route 460 serves as a connection to Interstate 77 (I-77) in West Virginia. To the South, U.S. Route 460 links Blacksburg to eastern Montgomery County, Roanoke, and beyond.

U.S. Route 460 Business is the Town's Main Street, running north-south directly through the Downtown, carrying as many as 24,000 vehicles per day. U.S. Route 460 Bypass, carries as many as 45,000 vehicles per day on a limited-access bypass, guiding through-traffic past the commercial center of Town (2019 VDOT). U.S. Route 460 Bypass is an integral connection for the daily commutes of residents, helping to alleviate congestion and significantly reduce travel time between the Town and the interstate while stimulating economic development opportunities.

### **Interstate Access**

Blacksburg is proximate to I-81, which serves as the major north-south transportation corridor along the Appalachian mountain range from Tennessee to New York. This interstate serves as a primary commuting corridor between Blacksburg and Roanoke and carries as many as 53,000 vehicles per day in the Christiansburg area (2019 VDOT). VDOT recently constructed a truck lane over Christiansburg Mountain to facilitate transportation between Roanoke and Montgomery County. The State has approved an I-81 Corridor Improvement Plan and projects from this plan will impact regional transportation with respect to overall safety and freight network efficiency.

I-77 serves as another major transportation corridor primarily used between Ohio and South Carolina. This interstate is accessible to the south via I-81 (approximately 40 miles from Town) and northwest via U.S. Route 460 (approximately 50 miles from Town). The section of I-77 between the North Carolina border and Wytheville, VA serves as a significant truck cargo route and carries as many as 42,000 vehicles per day in the Wytheville area (2019 VDOT). The proximity of the Town to these two interstates provides for the efficient delivery of goods and provides easy vehicular access to Blacksburg.

### **Proposed Interstate 73 and the Smart Road**

In accordance with the Intermodal Surface Transportation Efficiency Act of 1991, Interstate 73 (I-73) is the proposed north-south commerce route from the Great Lakes region to South Carolina. The Virginia portion of this four-lane divided interstate is slated to follow U.S. Route 460 Bypass through Giles and Montgomery Counties, the Smart Road, I-81, I-581 through Roanoke, and then south, roughly following U.S. Route 220 to the Virginia-North Carolina state line. Blacksburg's quality of life could be significantly affected by the proposed I-73, or other high speed travel corridors, passing through the Town.

In 2000, a two-mile Smart Road testing facility was constructed adjacent to the Blacksburg Industrial Park and Route 460 Bypass as a joint project of VDOT, Virginia Tech Transportation Institute (VTTI), and the FHWA. The Smart Road is used for transportation technology and safety research that allows researchers to observe traffic and driver performance. The Smart Road can test impacts of varying conditions such as changes in weather and lighting. Another phase of the Smart Road is planned to connect the roadway to I-81. Right of way has been acquired but no funding has been identified for the project.

## **RAIL TRANSPORTATION**

The Huckleberry Line provided passenger access to the Town during the first half of the 20<sup>th</sup> Century. Currently there is no passenger rail service in the Town. The closest terminal for passenger service is located in Roanoke, VA, approximately 40 miles northeast of Blacksburg. The Smart Way Connector bus provides service between Blacksburg and the Roanoke Amtrak train station.

Seeking to bring passenger rail to the region, the NRV Passenger Rail community initiative was formed in 2013 and is a partnership between many entities including the localities in the NRV, the NRV Regional Commission, the NRV MPO, tourism groups, Virginia Tech, Radford University, New River Community College, the Blacksburg Partnership, and state and federal legislators. This partnership identified a need for a passenger rail study, which was completed in 2015 and recommended a specific station location in Christiansburg for passenger rail service extension from Roanoke. The Town of Christiansburg has acquired the land for a potential Amtrak station and in 2021, the State approved the creation of a New River Valley Passenger Rail Station Authority. Passenger rail could increase tourism in the area, help decrease traffic congestion on I-81, and reduce carbon emissions through fewer vehicle trips. The Town supports the extension of passenger rail service to the NRV and the pursuit of any funding opportunities that will further this goal. Blacksburg Transit plans to provide bus service to the future passenger rail station. In addition to passenger rail, a Norfolk Southern railway hub for freight service is located in Roanoke.

## **AIR TRANSPORTATION**

### **Virginia Tech/Montgomery County Executive Airport**

The Virginia Tech/Montgomery County Executive Airport, located on the Virginia Tech campus, opened in 1931. It is a public general aviation airport situated in the southern portion of Town between the Corporate Resource Center and the U.S. Route 460/Smart Road interchange.

The airport is operated by the regional Airport Authority, which is made up of Blacksburg, Christiansburg, Montgomery County, and Virginia Tech. The Virginia Tech/Montgomery County Airport provides primarily corporate and executive service. The airport sits on 255 acres with a primary runway length of 5,500 feet that supports corporate executive jets and generates an average of 94 flights per day. In addition to the runway area, the airport entails a terminal building, parking area, and hangar space. New hangar space was constructed in 2018 and the runway was extended in 2019 to enable the use of larger aircraft. The area surrounding the airport includes airport safety zones and runway protection zones which limit the height and uses permitted.

## **Roanoke-Blacksburg Regional Airport**

The closest commercial passenger service to Town is provided by the Roanoke-Blacksburg Regional Airport, located in Roanoke. In 2014, this airport was renamed to include Blacksburg, reflecting the growing economic connection between Roanoke and the NRV. The airport provides commercial flights from several major airlines, averaging almost 2,000 passengers a day (2019). The Roanoke-Blacksburg Regional Airport also serves non-commercial, cargo and military needs with an average of 140 total flights per day (2019).

## **EMERGING AND CONTINUING TRANSPORTATION TRENDS**

Trends such as the increase in the share of zero-car households, combined with increased knowledge of climate change impacts and the need for climate action, contribute to an increasing demand for more sustainable and healthy transportation options and technologies. The trends described in the following sections could be opportunities to reimagine use of the right-of-way and implement ideas such as car-free streets that prioritize active modes. An example of a car-free area, although temporary, is when College Avenue is closed for festivals and events. The combination of trends described below may lead to a shrinking need for convenient parking and a growing need for convenient drop off and pick up locations. These changes highlight the importance of local governments being able to respond to innovations that will change the way people travel, and reinforce the need to determine policies and regulations related to these topics that fit within the context of the community. It is important for the Town to be nimble and responsive in the short-term as technology evolves and to be thoughtful in the longer-term to plan for broader impacts of the trends described below.

### **Ridesharing and Carsharing**

Ridesharing companies provide passengers with vehicles for hire for point to point travel through a smartphone application based service. Carsharing companies offer a type of car rental service where shared vehicles can be rented by passengers for a specified amount of time from a specific location. Ridesharing and carsharing options can decrease the need for personal vehicle ownership and use. The rise in popularity of ridesharing has increased the need for pick-up/drop-off locations around destinations, which can present challenges with multiple modes competing for space along the curb and in rights-of-way. Frequent review and revision of regulations can ensure the Town remains adaptable to these mobility options.

### **Microtransit**

Microtransit is another mobility option that typically includes publicly and privately operated transit services that use smaller vehicles such as vans. Microtransit typically provides on-demand service but can include fixed route and deviated fixed route services as well and is technology-enabled similar to ridesharing. This type of mobility presents many of the same needs and challenges with respect to pick-up/drop-off locations around destinations. While this mobility option is not currently in use in Blacksburg, the Town should consider how this model fits into the greater transportation network.

### **Micromobility**

According to the American Planning Association's (APA) QuickNotes for Managing Shared-Use Micromobility, "*shared mobility* is a transportation strategy that allows users to share vehicles,

reducing the need for vehicle ownership to complete both routine and special trips. *Micromobility* is a transport mode encompassing vehicles that are relatively low in weight and maximum speed.” Shared micromobility is ideal for short trips, can replace vehicle trips, and offers first-mile/last-mile connections, which supplement public transit providing the first or last leg of a trip from fixed transit stops to destinations such as home or work. The most common options for shared micromobility are bikeshare and scooters. To integrate micromobility into the transportation network, consideration should be given to street design that accommodates these uses such as appropriate travel lanes and dedicated parking areas.

To address micromobility interactions and safety, infrastructure for all modes can be planned according to the typical speed of the users. For example, scooter users may choose to ride on sidewalks rather in vehicular travel lanes due to the speed of vehicles. Providing protected infrastructure where scooter users, bicyclists, and other modes with similar travel speeds can share space enhances safety for pedestrians and scooter users. In 2019, the Town passed an ordinance regarding electric-assist mobility devices including e-bikes, motorized skateboards, and scooters, which specifies where the devices can be used, identifies safety requirements, and establishes speed limits for trail users. The Town should review and update these regulations as technology changes and infrastructure improvements are made.

### **Unmanned Aerial Vehicles**

An unmanned aerial vehicle (UAV) or “drone” is an aircraft without a human pilot on board. Technology improving drone delivery capabilities has advanced significantly over the last decade. Drone delivery services are in the early stages of development with several companies starting operation within the last five years, primarily focused on health care deliveries such as prescriptions and vaccines. In 2019, after three years of collaboration between Wing and the Virginia Tech Mid-Atlantic Aviation Partnership (MAAP), a trial program launched in Christiansburg using drones to deliver goods such as take-out food and beverages from local businesses as well as library books. The MAAP operates one of seven Federal Aviation Administration (FAA) designated test sites for unmanned aircraft systems in the country and manages the Virginia Tech Drone Park which offers an enclosed environment for drone research, testing, education, and recreation. The FAA regulates UAVs including delivery services but as these services become more prevalent, the Town should consider how drones will impact the transportation network. This will become increasingly important as drone technology expands, potentially allowing for drones to carry people in addition to goods.

### **Autonomous Vehicles**

An autonomous vehicle (AV) is a vehicle that is capable of sensing its environment and moving safely without human input. Technology improving autonomous vehicle capabilities has rapidly evolved over the last two decades. AVs will likely be used as personal vehicles, shared vehicles, and by mobility providers such as ridesharing and transit. According to the APA’s Planning Advisory Service 2018 Report on Planning for Autonomous Mobility, passenger “AVs have the potential to improve the safety and efficiency of transportation systems, reduce vehicle emissions, and improve the mobility of transportation-disadvantaged populations” as well as reallocate right-of-way to prioritize active travel modes. However, as the report suggests, AVs can create planning challenges around parking needs, use of the curb and rights-of-way, and new transportation infrastructure including changes to signage, street markings, and signalization. AVs also have the potential to increase sprawl as perceived costs to

travel may be reduced and travel becomes more convenient. Like ridesharing and microtransit, curbside pick-up/drop-off locations will be important for AVs as well. Parking demands may be reduced at destinations but AVs may require parking areas or storage space for vehicles while awaiting passengers.

Locally, research and development of autonomous vehicle technology is being conducted by VTTI, a local research institute, and Torc Robotics, an AV company, both located in the Blacksburg Industrial Park. Due to the presence of these two research entities; Blacksburg could be one of the first places to have widespread implementation of this technology. The Town can demonstrate support for less impactful modes by serving as a test community for these technology advances. To ensure the safety of all modes and maintain the reliability of the transportation network, the Town should address the needs and challenges of this emerging technology through policies and regulations for parking, infrastructure needs, curbside use, allocation of rights-of-way, and coordination with transit services.

### **Open Streets and Slow Streets**

Ciclovía is a frequent car-free street event established in Bogotá, Colombia in the 1970s and Twenty is Plenty is a campaign established in the United Kingdom in the 1990s that aims to lower speed limits resulting in reduced fatalities and injuries from vehicular crashes. These concepts of car-free areas and lower speed limits have become more prevalent and have been adopted in places worldwide. Building on these historical concepts and gaining popularity during the 2020 global pandemic, the Open Streets and Slow Streets movements reimagine rights-of-way by creating safe street spaces that prioritize walking, biking, outdoor dining, and other uses. These two movements focus on temporarily closing streets to vehicles, prohibiting through vehicular traffic, and adding temporary infrastructure for pedestrians and bicyclists.

Many towns and cities have taken advantage of the reduced vehicular traffic volumes during the pandemic to implement these concepts, with the hope of considering permanent changes in the longer term. During the pandemic, the Town implemented the concept of Open Streets with the temporary closure of Draper Road to create a car-free street with expanded outdoor dining areas. As with College Avenue closures, the Town supports evaluating alternatives for how to allocate street space through pilot projects. Combining disincentives for vehicular travel, such as lower speed limits and changes to traffic patterns, with the addition of protected infrastructure for pedestrians and bicyclists can lead to mode shift to active modes.

# TRANSPORTATION

## Objectives and Policies

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### TRANSPORTATION NETWORK

- T.1. Provide a road network that is safe for all users.
  - T.1.1. Make the best use of the available right-of-way for streets to accommodate pedestrians, bicyclists, transit, and personal vehicles.
  - T.1.2. Incorporate traffic calming principles as needed to reduce speeding.
  - T.1.3. Provide regular tree trimming along rights-of-way.
  - T.1.4. Limit driveway access along collector and arterial roads.
  - T.1.5. Maintain storm drainage facilities, resurface pavements and streets when necessary, replace and rehabilitate bridges.
- T.2. Encourage employers to provide incentives to employees for regularly using active modes and/or transit to get to work.
- T.3. Review and amend the Zoning and Subdivision ordinances to provide clear standards for multimodal infrastructure design.

### The Blacksburg Grid

- T.4. Provide for a street network that achieves the interconnection of parcels, blocks, and neighborhoods, keeping consistent with the historical grid network pattern of the Town.
  - T.4.1. Identify opportunities to enhance the grid through use of alleys and unbuilt streets and dedication of right-of-way during development and re-development.
- T.5. Avoid the creation of new culs-de-sac in developments.

### Measuring the Effectiveness of the Transportation Network

- T.6. Identify and evaluate multimodal transportation metrics for use in the development review process.

### Pedestrian Network

- T.7. Complete the construction of a connected sidewalk system.
  - T.7.1. Include sidewalks on both sides of the road in all publicly-funded, new road construction projects.
  - T.7.2. Require the inclusion of sidewalks or multi-purpose trails in all new subdivisions.
  - T.7.3. Consider requiring sidewalks on both sides of the street in infill areas with high pedestrian traffic.
  - T.7.4. Minimize curb cuts when redeveloping and limit curb cuts in new development.
  - T.7.5. Pursue new sources of funding for sidewalks.
  - T.7.6. Ensure the sidewalk system is ADA accessible.

- T.8. Minimize pedestrian and vehicular conflicts by:
- Implementing crossing signals at all signalized intersections
  - Maintaining sidewalks and streets
  - Educating drivers on yielding to pedestrians in crosswalk
  - Ensuring appropriate signage, lighting, markings, and other physical improvements are made
- T.9. Maintain and improve the aesthetic quality of the pedestrian environment by planting street trees and other landscaping and installing street furniture where appropriate.
- T.10. Pursue Walk Friendly Community designation.
- T.11. Remove utility poles and other obstructions from sidewalks.

### **Bicycle Network**

- T.12. Continue implementation of the Bicycle Master Plan.
- T.12.1. Achieve the League of American Bicyclists' bronze-level Bicycle Friendly Community designation within 2-3 years.
- T.12.2. Implement improvements along designated bicycle routes according to the Plan matrix for recommended facilities.
- T.12.3. Maintain an up-to-date inventory of existing bicycle facilities.
- T.12.4. Educate community members on bicycle safety and encouraging ridership.
- T.12.5. Consider Town Code changes to promote bicycle activity.
- T.13. Review and update the Bicycle Master Plan.
- T.14. Create a safe and convenient bicycle network for all users.
- T.14.1. Construct protected bicycle infrastructure such as cycle tracks, separated bicycle lanes, and off-street trails.
- T.14.2. Construct bicycle infrastructure for intersections such as bike boxes, bike signals, and other pavement markings.
- T.14.3. Minimize potential conflicts between bicycles, pedestrians and vehicles.
- T.14.4. Conduct regular maintenance of existing bicycle lanes.
- T.14.5. Provide appropriate signage, lighting, markings, and other physical improvements.
- T.15. Develop and implement a comprehensive bicycle parking program throughout the Town and in coordination with Blacksburg Transit to install covered bicycle racks at public sites and commercial and residential locations.
- T.16. Coordinate with Montgomery County and the New River Valley Regional Commission for bicycle and pedestrian connections throughout the region.
- T.17. Expand the bikeshare program, including adding e-assist bicycles.



- T.18. Work locally with Virginia Tech, Christiansburg, and Montgomery County and regionally with the New River Valley localities to achieve a connected bike system.

### **Paths to the Future**

- T.19. Prioritize implementation of this map through Town projects and private development to bolster the multimodal transportation network.
  - T.19.1. As part of the development review process, determine how proposed trails will be incorporated into the development design and how trails will be connected to internal sidewalks and bike routes.
- T.20. Educate the public on the economic value of having trails in residential areas.
- T.21. Increase access to the trail network to promote the network as an effective means of transportation and a recreational amenity.
  - T.21.1. Include parking, bicycle racks, shelters, and other facilities at trail access points to promote use of the system.
  - T.21.2. Construct multi-use trails that are accessible to the physically challenged and meet ADA standards as topography permits.
  - T.21.3. Improve connections from trails to sidewalks and bicycle lanes with safe crossings at major roads.
- T.22. Ensure the clear delineation of maintenance responsibilities for trails.
- T.23. Provide maintenance of the trail system to ensure a safe and clean trail system year-round.
  - T.23.1. Monitor the condition of trails and establish criteria for trail maintenance.
  - T.23.2. Perform snow removal on trails when feasible.
  - T.23.3. Provide opportunities for community members, businesses, and service organizations to keep the trail system litter-free.
  - T.23.4. Provide safety phones and safety lighting along bike-walkways where appropriate.

### **Blacksburg Street Classification System**

- T.24. Develop the Town street system in accordance with the Town Street Classifications Map, updating when needed.

### **Alleys & Unbuilt Streets**

- T.25. Retain existing alleys and unbuilt right-of-ways, and do not approve vacations without a clear demonstration of why elimination of the alley or unbuilt right-of-way serves a greater public purpose than its retention. All vacations will be in compliance with the criteria contained in the Alley and unbuilt right-of-way vacation process.
- T.26. Amend the Zoning Ordinance to incorporate the Alley and unbuilt right-of-way vacation process.

- T.27. Perform an assessment of alleys and unbuilt right-of-ways in Town, reviewing current use, level of maintenance, and contribution to transportation network connectivity.
- T.28. Maximize the use of alleys and unbuilt right-of-ways by all modes of transportation that can safely be accommodated.
- T.29. Maintain and improve alleys when and where necessary.
- T.30. Encourage the design of new developments that incorporate alleys for primary or secondary vehicular access in keeping with the historic development pattern of the Town.

### **Private Streets**

- T.31. Update policies and regulations to prevent the construction of private driveways that function as streets.

## **VEHICULAR PARKING**

- T.32. Assess the land use impacts of parking, particularly surface parking.
- T.33. During the development process, ensure:
- Surface parking facilities are landscaped and appropriately lighted
  - Structured parking facilities are designed to minimize the visual impact of the bulk of the structure and the horizontal appearance of a parking deck
  - Consideration is given to pervious parking surface materials with lower environmental impacts
  - New parking lots minimize impacts on stormwater
  - Consideration is given to future re-use of structured parking
  - Surface and structured parking provide an adequate number of electric vehicle charging stations and provide the infrastructure for additional stations
- T.34. Require that parking for commercial and industrial development is adequate to serve employee and customer needs without excessive unused spaces.
- T.35. Promote multimodal transportation, including the development of a shuttle or trolley service between commercial centers and outlying parking nodes and mixed-use areas.
- T.36. Maintain an inventory of available public parking spaces and publicize parking locations using best available technologies.
- T.37. Encourage shared use of existing parking areas in Downtown, including parking lots of churches, law firms, and other businesses. Have business owners provide alternate parking hours for daytime and nighttime to better provide for the array of individuals parking Downtown.

- T.38. Continue to improve accessibility in the Downtown area through accessible parking spaces, bus stops, and accessible pedestrian connections in order to meet ADA standards.
- T.39. Encourage businesses, particularly in the Downtown, to incentivize employees to walk, bike, or take transit to reduce the need for employee parking.
- T.40. Expand and enforce permit parking in Downtown residential neighborhoods affected by campus parking shortages or deficiencies.
- T.41. Support the development of two new structured parking facilities in the Downtown to lessen the inefficient use of land with surface parking.

## **TRANSIT**

- T.42. Improve regional accessibility by supporting connections with bus, rail, and air modes of transportation, such as the SmartWay Commuter Bus.

### **Blacksburg Transit**

- T.43. Review and update Blacksburg Transit's Transit Development Plan annually.
- T.44. Monitor transit effectiveness and efficiency while maintaining the priorities of safety and scheduling.
- T.45. Operate the transit system in a cost-effective, fiscally sound manner that is well supported by federal and state grants.
- T.46. To encourage public transit use, enhance transit accessibility and convenience; educate the community on transit's reduced environmental impact.
- T.47. Work regionally and locally to develop satellite park-and-ride facilities with bus service to reduce traffic congestion.
- T.48. Continue acquisition of electric buses to convert the Blacksburg Transit fleet to all-electric.
- T.49. Continue to upgrade the Blacksburg Transit fleet and system to ensure riders are provided with current technology services including real-time route information.
- T.50. Increase the number of covered bus shelters and covered bike parking provided at transit stops.
- T.51. During the development review process, ensure that transit service and access to/from the transit stop and the development are provided.
- T.52. Ensure that transit service is accommodated in designing Town projects.

- T.53. Continue to expand Blacksburg Transit fixed routes and explore demand response service for non-traditional ridership areas.

## **TRANSPORTATION PARTNERS, PLANNING, AND FUNDING**

### **New River Valley Metropolitan Planning Organization**

- T.54. Actively participate in the NRV MPO and updates to the NRV MPO's Long Range Transportation Plan.
- T.55. Support the implementation of the New River Valley's Bikeway, Walkway, Blueway Plan.

### **Transportation Project Priorities**

- T.56. Complete projects identified in the Town's Project Priority table and update as needed.
- T.57. Keep current cost estimates for transportation projects in compliance with State Code Section §15.2-2223.
- T.58. Identify new funding sources for transportation project priorities.

## **REGIONAL ACCESS**

- T.59. Monitor future expansion of the interstate highway system that may involve the U.S. Route 460 Bypass or Smart Road and pursue funding to construct a grade-separated interchange at North Main Street and U.S. Route 460 Bypass.
- T.60. Monitor the implementation of the I-81 Corridor Improvement Study and any potential impacts upon the Town.

## **RAIL TRANSPORTATION**

- T.61. Support all efforts to bring passenger rail service to the NRV with convenient transit connections from the Town to the station.

## **AIR TRANSPORTATION**

- T.62. Support the Virginia Tech/Montgomery County Executive Airport in providing air service for the New River Valley and working in conjunction with other regional airports promoting regional economic development activities associated with business, industry, and university-related research and development.
- T.63. Participate in the Virginia Tech/Montgomery County Executive Airport Authority to ensure the Airport is safe and convenient for use while serving the Town and region's businesses, residents, and visitors.

## **EMERGING AND CONTINUING TRANSPORTATION TRENDS**

- T.64. Address needs and challenges of carsharing and ridesharing through policies and regulations for curbside use and pick-up/drop-off areas, and allocation of rights-of-way during the development review process.
- T.65. Consider how microtransit will impact the transportation network and plan for these impacts.
- T.66. Review and update the electric-assist mobility devices ordinance and other regulations as technology changes and infrastructure improvements are made.
- T.67. Ensure protected infrastructure is provided for micromobility users in street design and re-design.
- T.68. Consider how drones will impact the transportation network and plan for these impacts.
- T.69. Address the needs and challenges of autonomous vehicles through policies and regulations for parking, infrastructure needs, curbside use, allocation of rights-of-way, and coordination with transit.
- T.70. Support events and ideas that prioritize active modes and encourage mode shift, such as Bike to Work Day and car-free street days.
  - T.70.1. Consider locations for temporary road closures and car-free street events.
- T.71. Use lower speed limits combined with protected infrastructure for pedestrians and bicyclists to improve safety for active modes.